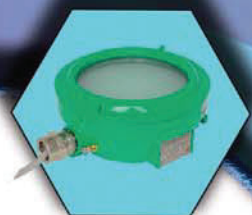


COELBO



EXPLOSIONPROOF ELECTRICAL EQUIPMENT



COELBO S.R.L.



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- ◆ An Introduction to Ex World

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NOTES:



COELBO - The Home of Explosionproof Equipment

A

Certified equipment to improve quality and safety in every industrial sector

Leader since the early 70s of last century in the development, design, production and distribution of a wide range of safety equipment for hazardous area applications, COELBO has quickly become the Italian reference company for technical and quality aspects in the industry by virtue the most qualified, overall, offering products and services for all industrial applications.

- ⊗ PETROCHEMICAL;
- ⊗ GASLINES & PIPELINES;
- ⊗ ENERGIA TERMOELETRICA;
- ⊗ PHARMACEUTICAL;
- ⊗ OFFSHORE PLATFORMS;
- ⊗ BREADS TREATMENT;
- ⊗ FERTILIZERS;
- ⊗ REFINERIES;
- ⊗ MINING;
- ⊗ EXPLOSIVES;
- ⊗ NAVAL;
- ⊗ FOOD;
- ⊗ ENGINEERING;
- ⊗ OEM;

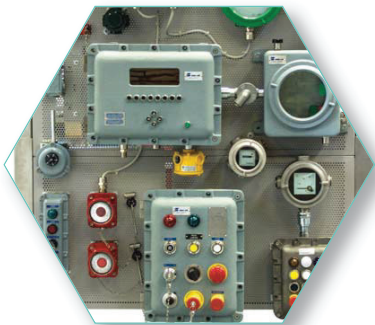
- ⊗ BREAKING AIR;
- ⊗ GLN/GPL TREATMENT;
- ⊗ GRAIN STORAGE.



Company Mission The principles

Coelbo's company mission is inspired by updated operating principles, such as:

- ⊗ strict **CONFORMITY** with European and International Standards;
- ⊗ **INNOVATION**, starting from the Concept to Development, to Design and construction of each product;
- ⊗ optimal **QUALITY** both of Products and Services;
- ⊗ the **COMPETITIVENESS** of its own proposals;
- ⊗ the customer's **SATISFACTION** in ensuring cost-effective, timely and appropriate solutions to any kind of plant.



Standard & Custom Solutions in conformity with European and International Standards

Although it may be implicit and even obvious, it is useful and appropriate to reaffirm to all of our customers that COELBO makes its own equipment according with the relevant and applicable International and European Standards:

- ⊗ IEC/EN 60079-0;
- ⊗ IEC/EN 60079-1;
- ⊗ IEC/EN 60079-11;
- ⊗ IEC/EN 60079-31;
- ⊗ Directive 2014/34/EU (ATEX).

COELBO systematically reserves the utmost care to the development of International Standards to ensure its products the greater compatibility with local markets.

Finally, Coelbo completes its technical proposal with the

ATEX Quality Assurance Notification (CESI 02 ATEX 063Q) and IEC-Ex Quality Assessment Report (IT/CES/QAR10.0009).

Design, Development, Design and Construction

In a market traditionally less sensitive to the progress and evolution of technologies and to the influence of modern industrial design, COELBO constantly offers both innovative products and original concepts (either rethought or reworked) to satisfy customers' needs. This is possible thanks to:

- ⊗ High level, experienced and reliable design team;
- ⊗ First-level tools for the development of products (such as climatic chamber, salt spray testing machine, 3D printer, etc.);
- ⊗ Prototyping, manufacturing and testing carried out in our laboratories and workshops;
- ⊗ Technically and technologically advanced solutions;
- ⊗ Strict and continuous relationship with the Notified Bodies.

COELBO is available to study, to develop, to produce and to certify "ad-hoc" - OEM, exclusive or not - for third party clients.

The Range of Products

Most of the products' range proposed is originally made by COELBO.

Even the necessary sub-supplies of materials and semi-finished products are carried out in strict accordance to our drawings and specifications:

- ⊗ Explosionproof enclosures Ex d;
- ⊗ Local Control Panels;
- ⊗ Pushbuttons and Switches;
- ⊗ Acoustic and Optical Signallers;
- ⊗ Lighting Fixtures;
- ⊗ Grounding Plugs for Commercial Vehicles;
- ⊗ Cable Glands;
- ⊗ Fittings.

To meet all customers' needs, where required, we complete our supplies through major Italian houses products.





Certified equipment to improve quality and safety in every industrial sector

Superior Quality Guaranteed

The best quality of our supplies is already ensured at the design and development stages and continuously pursued and guaranteed by the strict selection of raw materials and semi-finished products as well as by the advanced production techniques.

...From the first contact with the Customer, to Technical support to After-sales services, to Delivery of materials...

A complete cycle of production certified by our Quality Assurance System, issued by CSQ (certificate no. 9101.COB1) according to ISO 9001:2008.

Research, Development and Testing Laboratories

The excellence of COELBO's products in competent and passionate work of our research and development team, corroborated and supported by adequate availability of technologies:

- ⊗ Material test laboratory;
- ⊗ Environmental chamber for temperature and humidity tests;
- ⊗ Salt spray chamber for accelerated corrosion tests;
- ⊗ Rapid prototyping;
- ⊗ 3D measures with CMM;
- ⊗ Overpressure test room with semi-auto machines for pressures up to 25 bar and 120 bar (3 test stations - 100% of enclosures tested).

And also... widespread capability of testing on prototypes and products

- ⊗ Electric and mechanical measures;
- ⊗ Impact test;
- ⊗ Flatness check (thanks to a big comparison table);
- ⊗ Dimensional Survey with Electronic Instruments (rugosimeters, thickness gauges, etc...);
- ⊗ Fatigue test machine;
- ⊗ Instruments subjected to periodic recalibration (i.e. SIT).

Excellent quality/price ratio

Although the tight production cycle COELBO, together with the careful selection of materials and the strict Quality Assurance program are generously contributing to placing our products at the top of every technical, functional and qualitative specification, offers prices to the market extremely interesting and competitive, thanks to:

- ⊗ Expert and computerized design;
- ⊗ Careful scheduling of production;
- ⊗ Considerable stock of raw materials, semi-finished and finished products;
- ⊗ Long-term supply agreements;
- ⊗ CNC machining.

CUSTOMERS' SATISFACTION

Customers' satisfaction is the key of COELBO's mission. Your satisfaction is pursued by:

- ⊗ "Customer-oriented" organization;
- ⊗ Pre-order technical support;
- ⊗ Extremely fast deliveries;
- ⊗ Reliable punctuality in deliveries;
- ⊗ Prestigious customer reference;
- ⊗ New customers sponsored by existing ones.

Staff & Organization

The almost unique experience accumulated by Coelbo staff makes this organization particularly capable of facing any security issues in classified areas through a range of products and solutions that represent the ideal platform to meet the most stringent application constraints.

Contact COELBO and its own staff.

Through each standard version of our products or any solution developed specifically, it will be possible to analyze, develop and realize what is requested by your application and plant requirements.

From our headquarters in Brugherio (MB) a young and highly experienced technical-commercial staff (33 years of average age) who is extremely trustworthy (12 years of average service in COELBO) is completely at your disposal to assess freely technical-commercial proposal.

In the same headquarters of 4500 m², recently expanded and renovated, all the business functions find place.

From Sales and Post-Sales to R&D, Engineering, Production (including CNC machines), to Assembly, Painting, Testing, Quality Assurance and lastly the wide Warehouse and Shipping service.

Though the sale of our products is largely for direct transaction with all of our customers, even at international level the local collaboration network offers enough technical-commercial coverage in many countries of the world (sales are steadily increasing in all 5 continents).



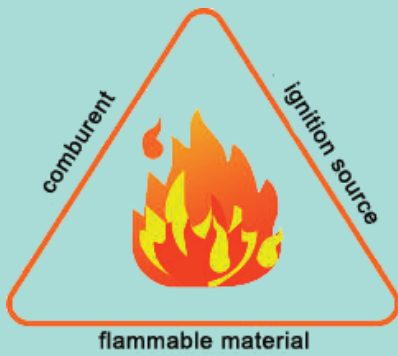


AN INTRODUCTION TO Ex WORLD

A brief guide to Ex world follows, including technical and regulatory topics.

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NOTES:



An explosion is a rapid chemical reaction between a combustible substance and the oxygen with the consequent release of energy (in the form of heat and light).

An explosion can occur ONLY IF the following three factors are present simultaneously:

1. **Flammable material** (in the right amount);
2. **Comburent agent** (it is usually the oxygen present in the atmosphere);
3. **Ignition source.**

If one of these three factors is missing, than explosion cannot occur.

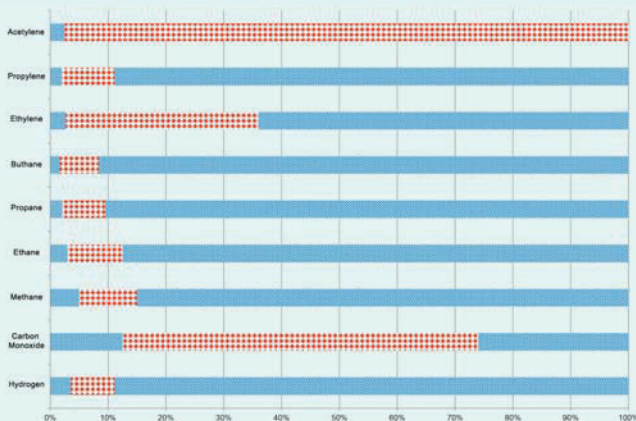
Some characteristics of flammable materials shall be taken into account to understand how a potentially explosive atmosphere is formed.

The ignition temperature (flash point T_{FL}) of a flammable liquid is the minimum temperature at which a liquid releases vapor in such a concentration that it forms a flammable mixture with air near the surface of the liquid itself (at atmospheric pressure). If the flash point is much greater than maximum temperature that can be reached, the explosive atmosphere will not be created. However, it must be considered that flash point of a mixture of more substances may be lower than the value of the components alone. The flash point, together with boiling point, is used to classify liquids into three different categories: extremely flammable, highly flammable and flammable.

TYPE OF FLAMMABLE LIQUID	FLASH POINT T_{FL}	BOILING POINT
EXTREMELY FLAMMABLE	$T_{FL} < 0^{\circ}\text{C}$	$< 35^{\circ}\text{C}$
HIGHLY FLAMMABLE	$T_{FL} < 21^{\circ}\text{C}$	$> 35^{\circ}\text{C}$
FLAMMABLE	$21^{\circ}\text{C} < T_{FL} < 55^{\circ}\text{C}$	

In order to create a potentially explosive atmosphere, the flammable substances must be in a given concentration. If the concentration is too high or too low, the explosion may not occur.

The **L.E.L.** (Lower Explosive Limit) and the **U.E.L.** (Upper Explosive Limit) state the concentration range where a given substance dissolved in the air can produce an explosion. In fact, a mixture can be ignited only if the concentration of substance in the air is between the L.E.L. and the U.E.L.



The ignition temperature is the lowest temperature at which the mixture air/gas or air/vapour spontaneously ignites in normal atmosphere conditions.

SUBSTANCE	IGNITION TEMPERATURE
HYDROGEN	500°C
ACETONE	465°C
ETHYLENE OXIDE	435°C
BUTANE	372°C
ETHANOL	363°C
PETROL	280°C

The last aspect concerns the ignition source. A potentially explosive atmosphere needs a source of ignition to explode and the most commons are the following:

- hot surfaces
- flames and hot gases
- mechanically generated sparks
- electrical equipment
- static electricity
- electromagnetic waves (high frequency)
- optical radiations
- ionizing radiations
- ultrasounds
- adiabatic compression and shock waves.

TEMPERATURE CLASS and MAXIMUM SURFACE TEMPERATURE

The chosen of equipment according to ignition temperature of the substances is one of the fundamental aspects in order to ensure the safety of the plants against the risk of explosion.

The choice criterion is different depending on whether the equipment is used in gas or dust atmospheres.

Equipment for gas

The surface temperature of electrical equipment must not exceed the ignition temperature of the hazardous substances present in the atmosphere; the maximum surface temperatures for electrical equipment of group

II are divided into six temperature classes from T1 to T6 according to the limits shown in the following table:

TEMPERATURE CLASS	IGNITION TEMPERATURE OF GAS				MAXIMUM SURFACE TEMPERATURE OF EQUIPMENT
T1			$T \geq$	450°C	450°C
T2	300°C	\leq	$T <$	450°C	300°C
T3	200°C	\leq	$T <$	300°C	200°C
T4	135°C	\leq	$T <$	200°C	135°C
T5	100°C	\leq	$T <$	135°C	100°C
T6	85°C	\leq	$T <$	100°C	85°C

Equipment for combustible dust

Unlike for what happens for the gases, when combustible dusts are present we shall distinguish between two different cases:

1. Dust cloud;
2. Dust layers.

1. To prevent ignition of dust clouds, maximum surface temperature (T) of electrical equipment shall not exceed the ignition temperature of dust cloud (indicated with T_{cl}). In the calculation phase a safety coefficient equal to $T_{cl,max} = 2/3 \cdot T_{cl}$ is introduced, therefore the maximum allowable temperature of the equipment shall be $(T) \leq T_{cl,max}$.

2. To prevent ignition of dust layers, surface temperature of equipment shall be limited in relation to the thickness of dust layer.

In fact, for each type of dust a minimum ignition temperature value for a 5 mm thickness dust layer T_{5mm} is defined. The maximum surface temperature that can be reached by the equipment ($T_{max,l}$) avoiding ignition of dust layers shall be less than 75 K compared to T_{5mm} , that is: $T_{max,l} = T_{5mm} - 75$.

Maximum surface temperature (T) of equipment shall not exceed the lowest value between $T_{cl,max}$ and $T_{max,l}$.

Example:

Choice of maximum surface temperature of an electrical equipment in the presence of sugar powder.

T_{cl} = minimum ignition temperature in cloud = 350°C

$T_{cl,max} = 2/3 \cdot T_{cl} = 233°C$

T_{5mm} = minimum ignition temperature in layer = 490°C

$T_{max,l} = T_{5mm} - 75 = 415°C$

lowest value between $T_{cl,max}$ (233°C) and $T_{max,l}$ (415°C) = 233°C

Surface temperature of equipment $\leq 233°C$

ZONE with PRESENCE of GAS

A

GAS		
ZONE 0	ZONE 1	ZONE 2
Place in which an explosive atmosphere consisting of a mixture with air of flammable substances in the form of gas or vapour is present continuously or for long periods or frequently.	Place in which an explosive atmosphere consisting of a mixture with air of flammable substances in the form of gas or vapour is likely to occur in normal operation occasionally.	Place in which an explosive atmosphere consisting of a mixture with air of flammable substances in the form of gas or vapour is not likely to occur in normal operation but, if it does occur, will persist for a short period only.
> 1000 h/year	10 ÷ 1000 h/year	< 10 h/year

GAS SUBDIVISION		
IIA	IIB	IIC
A typical gas is propane	A typical gas is ethylene	A typical gas is hydrogen

NOTE: Equipment marked IIB is suitable for applications requiring Group IIA equipment. Similarly, equipment marked IIC is suitable for applications requiring Group IIA or Group IIB equipment.

TABLE OF SOME REPRESENTATIVE GASES

NAME	FORMULA	L.E.L.	U.E.L.	M.I.T.	M.I.E.	GROUP	TEMPERATURE CLASS
		(vol %)	(vol %)	(°C)	(µJ)		
Acetylene	CH=CH	2,30	100,00	305	19	IIC	T2
Acetone	(CH ₃) ₂ CO	2,50	14,30 (100°C)	539		IIA	T1
Ammonia	NH ₃	15,00	33,60	630		IIA	T1
Ethanol	CH ₃ CH ₂ OH	3,10	19,00 (60°C) 27,70 (100°C)	400		IIB	T2
Diethyl ether	(CH ₃ CH ₂) ₂ O	1,70	39,20	175		IIB	T4
Ethylene	CH ₂ =CH ₂	2,30	36,00	440	82	IIB	T2
Firedamp		4,40	17,00	595	280	I	T1
Hydrogen	H ₂	4,00	77,00	560	16	IIC	T1
Methane	CH ₄	4,40	17,00	600	280	IIA	T1
Metanolo	CH ₃ OH	6,00	36,00 (60°C) 50,00 (100°C)	440		IIA	T2
Propane	CH ₃ CH ₂ CH ₃	1,70	10,90	450	250	IIA	T1
Propanol	(CH ₃) ₂ CHOH	2,00	12,70	399		IIA	T2
Carbon disulphide	CS ₂	0,60	60,00	90		IIC	T6
Tetrahydrofuran	OCH ₂ CH ₂ CH ₂ CH ₂ OH	1,50	9,70	280		IIB	T3
LEGEND	L.E.L. = Lower Explosive Limit; U.E.L. = Upper Explosive Limit;			M.I.T. = Minimum Ignition Temperature; M.I.E. = Minimum Ignition Energy.			



ZONE with PRESENCE of COMBUSTIBLE DUSTS

COMBUSTIBLE DUSTS		
ZONE 20	ZONE 21	ZONE 22
Area in which an explosive atmosphere in the form of a cloud of dust in air is present continuously, or for long periods or frequently.	Area in which an explosive atmosphere in the form of a cloud of dust in air is likely to occur, occasionally, in normal operation	Area in which an explosive atmosphere in the form of a cloud of dust in air is not likely to occur in normal operation but, if it does occur, will persist for a short period only.
> 1000 h/year	10 ÷ 1000 h/year	< 10 h/year

COMBUSTIBLE DUSTS SUBDIVISION		
IIIA	IIIB	IIIC
Combustible flyings: solid particles, included fibers, whose nominal size is > of 500 µm	Non-conductive dust: finely divided solid particles, whose nominal size is ≤ 500 µm, with electrical resistivity greater than 10 ³ Ωm	Conductive dust: finely divided solid particles, whose nominal size is ≤ 500 µm, with electrical resistivity equal to or less than 10 ³ Ωm

NOTE: Equipment marked IIIB is suitable for applications requiring Group IIIA equipment. Similarly, equipment marked IIIC is suitable for applications requiring Group IIIA or Group IIIB equipment.

TABLE OF SOME REPRESENTATIVE COMBUSTIBLE DUSTS

Combustible Dusts	Granulometry	Explosibility L.E.L.	M.I.T.		M.I.E.	K _{st}
			T _{cl}	T _{5mm}		
			(µm)	(g/m ³)		
Aluminum	29	40	700	320	50	415
Coke	15	80	---	---	80	47
Wheat Flour	57	60	430	450	50	87
Lactose	23	125	450	fonde	10	81
Wood	70	40	440	325	20	128
Magnesium	28	30	600	490	120	508
Polyethylene	< 10	25	450	---	80	156
Rise	45	60	490	---	80	101
Zinc	< 10	480	680	460	650	176
Sugar	35	200	350	490	30	138

Legend

L.E.L.: Lower Explosive Limit;
M.I.E.: Minimum Ignition Energy;
M.I.T.: Minimum Ignition Temperature;

K_{st}: specific parameter that depends on dusts and test method;
T_{cl}: ignition temperature for dust clouds;
T_{5mm}: ignition temperature due to dust layers on surfaces (layer thickness reference equal to 5 mm).

GROUPS, CATEGORIES and EPLs

A

GROUPS	
GROUP I	GROUP II
comprises equipment intended for use in the underground mines, which are susceptible to firedamp and/or to coal dust.	comprises equipment intended for use in places with an explosive atmosphere other than mines susceptible to firedamp (typically atmospheres with presence of gas and/or combustible dusts).

CATEGORIES				
GROUP I		GROUP II		
CATEGORY M1	CATEGORY M2	CATEGORY 1	CATEGORY 2	CATEGORY 3
Equipment in this category is required to remain functional in the presence of an explosive atmosphere and ensures a <u>very high level of protection</u> .	This equipment is intended to be de-energised in the event of an explosive atmosphere and ensures a <u>high level of protection</u> .	Comprises equipment designed to ensure a <u>very high level of protection</u> for use in areas in which explosive atmospheres caused by mixtures of air and gases, vapours or mists or by air/dust mixtures are present continuously, for long periods or frequently.	Comprises equipment designed to ensure a <u>high level of protection</u> for use in areas in which explosive atmospheres caused by gases, vapours, mists or air/dust mixtures are likely to occur occasionally.	Comprises equipment designed to ensure a <u>normal level of protection</u> for use in areas in which explosive atmospheres caused by gases, vapours, mists, or air/dust mixtures are unlikely to occur or, if they do occur, are likely to do so only infrequently and for a short period only.

PROTECTION LEVEL				
Very high	High	Very high	High	Normal

LEVEL OF PROTECTION				
Either, in the event of failure of one means of protection, at least an independent second means provides the requisite level of protection, or the requisite level of protection is assured in the event of two faults occurring independently of each other.	The means of protection assure the requisite level of protection during normal operation and also in the case of more severe operating conditions, in particular those arising from rough handling and changing environmental conditions..	Either, in the event of one means of protection failure, at least an independent second means provides the requisite level of protection, or the level of protection is assured in the event of two faults occurring independently of each other.	The means of protection ensure the requisite level of protection, even in the event of frequently occurring disturbances or equipment faults which normally have to be taken into account.	Equipment in this category ensures the requisite level of protection during normal operation.

OPERATING CONDITIONS				
Equipment remains functional, even in the event of rare incidents relating to equipment, with an explosive atmosphere present.	Equipment is intended to be de-energised in the event of an explosive atmosphere.	Equipment remains functional (see table category-zone correlation).	Equipment remains functional (see table category-zone correlation)	Equipment remains functional (see table category-zone correlation)

CATEGORY-ZONE CORRELATION FOR GROUP II						
	G			D		
	Zone 0	Zone 1	Zone 2	Zone 20	Zone 21	Zone 22
1	1G	1G	1G	1D	1D	1D
2	X	2G	2G	X	2D	2D
3	X	X	3G	X	X	3D

CATEGORY and PROTECTION LEVEL (EPL) CORRELATION								
	M		G			D		
	M1	M2	1G	2G	3G	1D	2D	3D
1	Ma	Ma	Ga	Ga	Ga	Da	Da	Da
2	X	Mb	X	Gb	Gb	X	Db	Db
3	n.a.	n.a.	X	X	Gc	X	X	Dc



MODE of PROTECTION

There are several applicable mode of protection for **gas atmospheres**, which are divided into four different types:

1. **CONTAINMENT**: the idea is not to avoid in any ways the explosion, but to make it occur within an enclosure that it may contain and limit it. the mode of protection Ex d is made on this criterion.

2. **PREVENTION**: the idea is to manufacture more sophisticated electrical apparatuses that, in their normal use, do not create explosion causes (i.e. low surface temperature, non sparking equipment, etc.) and thus the ignition source is eliminated. Mode of protections based on this criterion are Ex e and Ex n.

3. **LIMITATION**: electrical components are designed and made with a limited power so that in every operating condition the explosion cannot be ignited in anyway. Mode of protection Ex i is based on this criterion.

4. **ISOLATION**: the idea is to isolate the electrical equipment, that can cause the ignition of combustible mixture due to sparkings or high temperature, so that the explosion cannot be possible to ignite at any time. Several mode of protections such as Ex m, Ex p, Ex q and Ex o take advantage of this criterion.

MODE OF PROTECTION	ZONE CLASSIFICATION			CALSSIFICATION ACCORDING TO ATEX DIRECTIVE 2014/34/EU			
	ZONE 0	ZONE 1	ZONE 2	GROUP		CATEGORY	
				MINES	SURFACE	MINES	SURFACE
Ex d	FORBIDDEN	SUITABLE	SUITABLE	I	II	M2	2G
Ex e	FORBIDDEN	SUITABLE	SUITABLE	I	II	M2	2G
Ex n	FORBIDDEN	FORBIDDEN	SUITABLE	N.A.	II	N.A.	3G
Ex ia	SUITABLE	SUITABLE	SUITABLE	I	II	M1	1G
Ex ib	FORBIDDEN	SUITABLE	SUITABLE	I	II	M2	2G
Ex ic	FORBIDDEN	FORBIDDEN	SUITABLE	N.A.	II	N.A.	3G
Ex ma	SUITABLE	SUITABLE	SUITABLE	I	II	M1	1G
Ex mb	FORBIDDEN	SUITABLE	SUITABLE	I	II	M2	2G
Ex mc	FORBIDDEN	FORBIDDEN	SUITABLE	N.A.	II	N.A.	3G
Ex pb	FORBIDDEN	SUITABLE	SUITABLE	I	II	M2	2G
Ex pc	FORBIDDEN	FORBIDDEN	SUITABLE	N.A.	II	N.A.	3G
Ex q	FORBIDDEN	SUITABLE	SUITABLE	I	II	M2	2G
Ex o	FORBIDDEN	SUITABLE	SUITABLE	N.A.	II	N.A.	2G

There are several applicable mode of protection for **dust atmospheres**, which are divided into three different types:

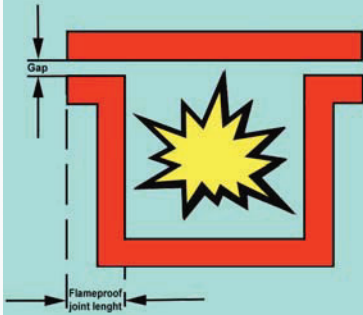
1. **CONTAINMENT**: the idea is to prevent the ingres of combustible dust inside the enclosure thanks to an adequate degree of protection (IP). Mode of protection Ex t is based upon this criterion.

2. **LIMITATION**: electrical components are designed and made with a limited power so that in every operating condition the explosion cannot be ignited in anyway. Mode of protection Ex i is based on this criterion.

3. **ISOLATION**: the idea is to isolate the electrical equipment, that can cause the ignition of combustible mixture due to sparkings or high temperature, so that the explosion cannot be possible to ignite at any time. Mode of protections such as Ex m and Ex p take advantage of this criterion.

MODE OF PROTECTION	ZONE CLASSIFICATION			CALSSIFICATION ACCORDING TO ATEX DIRECTIVE 2014/34/EU			
	ZONE 20	ZONE 21	ZONE 22	GROUP		CATEGORY	
Ex ta	SUITABLE	SUITABLE	SUITABLE	I	II	M1	1D
Ex tb	FORBIDDEN	SUITABLE	SUITABLE	I	II	M2	2D
Ex tc	FORBIDDEN	FORBIDDEN	SUITABLE	N.A.	II	N.A.	3D
Ex ia	SUITABLE	SUITABLE	SUITABLE	I	II	M1	1D
Ex ib	FORBIDDEN	SUITABLE	SUITABLE	I	II	M2	2D
Ex ic	FORBIDDEN	FORBIDDEN	SUITABLE	N.A.	II	N.A.	3D
Ex ma	SUITABLE	SUITABLE	SUITABLE	I	II	M1	1D
Ex mb	FORBIDDEN	SUITABLE	SUITABLE	I	II	M2	2D
Ex mc	FORBIDDEN	FORBIDDEN	SUITABLE	N.A.	II	N.A.	3D
Ex pD	FORBIDDEN	SUITABLE	SUITABLE	I	II	M2	2D
Ex pD	FORBIDDEN	FORBIDDEN	SUITABLE	N.A.	II	N.A.	3D

EXPLOSIONPROOF ENCLOSURES "d"



Group	I	II
Category	M2	2G
Zone	N.A.	1, 2
EPL	Mb	Gb

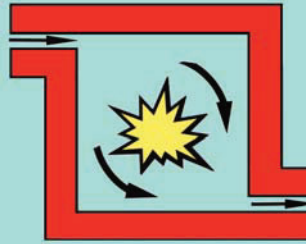
Principle

Mode of protection Ex d is based on the principle of containing the explosion inside the enclosure. In this way every electrical equipment is installed within metallic enclosures that are able to withstand pressures which are generated in case of a possible internal explosion due to the ingress of gas or vapour (overpressure resistance). In addition, enclosures are made with flameproof joints of such dimensions as to prevent the transmission of the explosion to the outside atmosphere (flameproof resistance).

Applications

Electrical equipment in general, including switches, circuit breakers, deviators, command and/or signalling units, motors, transformers, instruments, etc.

PROTECTION by PRESSURIZED ENCLOSURES "p"



Group	N.A.	II	
Category	N.A.	2G 3G	2D 3D
Zone	N.A.	1 2	21 22
EPL	N.A.	Gb Gc	Db Dc

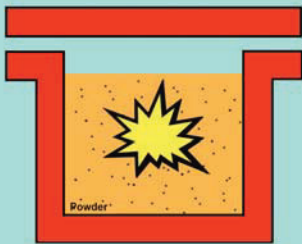
Principle

Mode of protection Ex p is based on the principle of inserting an inert gas with a greater pressure than the atmospheric in an enclosure. In this way the external potentially explosive atmosphere can not penetrate inside. Air or nitrogen are normally used as inert gases. Obviously, in case of malfunctioning of the circuit which pumps in pressurized gas, a control unit provides to switch off all electrical equipment. Mode of protection Ex p can be used also for ambient with presence of combustible dusts; in this case the relative mode of protection will be indicated with Ex pD.

Applications

Transformers, electrical machineries, automation panels, analysis cabins etc.

PROTECTION by POWDER FILLING "q"



Group	I	II
Category	M2	2G
Zone	N.A.	1, 2
EPL	Mb	Gb

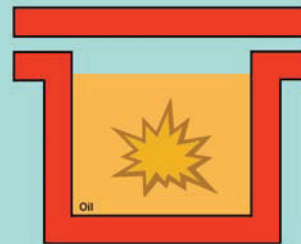
Principle

Mode of protection Ex q (also called "powder filling"), completely similar to mode Ex o, considers that parts likely to ignite an explosive atmosphere are embedded in a filling material (typically quartz or glass particles). This, contrary to the mode Ex o, cannot be used for moving machineries. With powder filling the gas can enter inside the enclosure but the explosion is extinguished through the propagating path into the filling material.

Applications

In particular for low voltage equipment (1000 V is the maximum admitted voltage), typically power factor correction capacitors.

PROTECTION by LIQUID IMMERSION "o"



Group	N.A.	II
Category	N.A.	2G
Zone	N.A.	1, 2
EPL	N.A.	Gb

Principles

Mode of protection Ex o, using the same principle of mode of protection Ex q, provides that parts likely to ignite an explosive atmosphere are submerged in a protective liquid (typically oil) so that the potentially explosive atmosphere, located above the liquid, could not be ignited. Mode Ex o, contrary to the mode Ex q, can be used for moving machineries. Obviously, this method presents many problems during maintenance and/or control phases (i.e. to keep oil level and pressure to acceptable level, for problems in the event of emptying of the enclosure, etc.).

Application

Transformers.

PROTECTION by INCREASED SAFETY "e"



Group	I	II
Category	M2	2G
Zone	N.A.	1
EPL	Mb	Gb

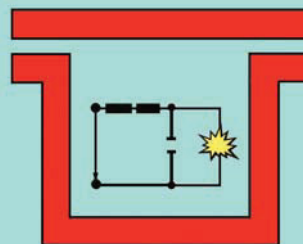
Principles

Mode of protection Ex e uses additional measures in order to ensure an increased safety level against the possibility of excessive temperatures and the formation of arcs and sparks. Therefore, the mode Ex e has a narrow scope of application than Ex d, since all increased safety equipment shall avoid the ignition causes (arc, spark or excessive temperature). This can be achieved by constructive means (as the equipment overdimensioning) to limit extreme temperatures, the strengthen of insulation to avoid arc formation, the increase of distances between mechanical parts to avoid spark and a greater care to the used material resistance and to degree of protection IP.

Applications

Rotating electrical machines (asynchronous motors with squirrel-cage rotor), lighting fittings, batteries, junction boxes, resistance heaters.

PROTECTION by INTRINSIC SAFETY "i"



Group	I	II	
Category	M1	1G	1D
	M2	2G	2D
		3G	3D
Zone	N.A.	0	20
		1	21
		2	22
EPL	Ma	Ga	Da
	Mb	Gb	Dc

Principio

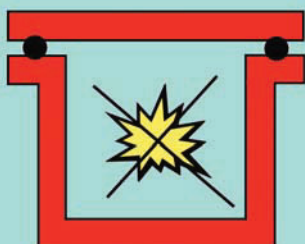
Mode of protection Ex i uses the principle of energy limitation. So, in an intrinsic safety circuit no sparks and/or thermal effect, both under normal conditions and under fault conditions, can cause the ignition of a given potentially explosive atmosphere. For each gas group characteristics of the circuit and used components are designed in order to limit the energy stored and released by the circuit itself.

Mode of protection Ex i can be also used for cobustible dust explosive atmospheres.

Applications

Measuring, control and regulation instruments, telecommunication systems and portable equipment.

PROTECTION "n"



Group	N.A.	II
Category	N.A.	3G
Zone	N.A.	2
EPL	N.A.	Gb

Principles

Mode of protection Ex n includes a set of different modes of protection: containment, segregation and prevention each one able to prevent the ignition of explosive atmosphere only under normal conditions. Therefore, mode Ex n is applicable only to zone 2 and provides simplified protection methods.

More in particular equipment are divided into not sparking equipment (lighting fittings, motors, etc.) and sparking equipment (restricted breathing enclosure, closed-cell devices and sealed) or which produces arcs, sparks or excessive surface temperatures under the normal conditions. So, it could be the following:

Ex nA: non-sparking equipment;

Ex nC: sparking equipment

Ex nR: restricted breathing enclosures.

NON-SPARKING EQUIPMENT "na"

Principles

This mode of protection applies to non-sparking equipment, i.e. that under normal conditions does not produce arcs, sparks or overheating.

Applications

Motors, fuses, lighting fittings, instruments and low-power equipment, transformers, plant material such as terminal boxes, junction boxes, plugs and sockets.

RESTRICTED BREATHING ENCLOSURES "nR"

Principles

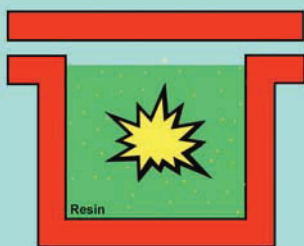
Restricted breathing technique tries to reduce the possibility of surrounding explosive atmosphere ingress inside the enclosure so as not to exceed the lower limit of explosivity of the gas.

On Ex nR enclosures are carried out tests by creating a pressure difference between inside and outside and it is verified that leakage is lower than a predetermined value in a certain period. In addition equipment installed inside Ex nR enclosure shall have a reduced heat dissipation in order that the internal temperature does not exceed the outdoor temperature of 10°C. Finally, the enclosures shall be equipped with a test connection that allows the control of breathing properties during operation.

Applications

It applies to sparking equipment that under normal conditions creates arcs, sparks or hot spots (switches, contactors, relays, measuring instruments, lighting fittings).

PROTECTION by ENCAPSULATION "m"



Group	I	II	
Category	M1	1G	1D
	M2	2G	2D
		3G	3D
Zone	N.A.	0	20
		1	21
		2	22
EPL	Ma	Ga	Da
	Mb	Gb	Db
		Gc	Dc

Principle

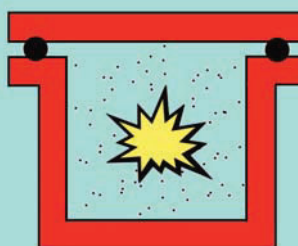
Mode of protection Ex m consists of encapsulating the electrical equipment, or their components, inside a resin compound so that the explosive atmosphere cannot be ignited.

The encapsulated component, however, needs a connection with the rest of the plant and there is a problem of how to connect the cable without altering the protection. A bare conductor of at least 5 mm section is generally left into the compound. Mode of protection Ex mD is based on the encapsulation with sealing requirements to the ingress of dust and limitation of the surface temperature.

Applications

Printed circuits, single small size components such as capacitors, transistors, relays, sensors, batteries, fuses, power supply circuits for lighting fittings and all the static components in general.

DUST IGNITION PROTECTION by ENCLOSURE "t"



Group	I	II
Category	M1	1D
	M2	2D
		3D
Zone	N.A.	20
		21
		22
EPL	Ma	Da
	Mb	Db
		Dc

Principle

Mode of protection Ex t is based on the protection by enclosure with sealing requirements against dust ingress and limitation of surface temperature. Electrical components that can ignite the ambient (high temperatures, sparks, etc.) are installed inside enclosures with degree of protection IP6X. In addition, temperatures of equipment external surfaces is kept below the maximum surface temperature T_s , in relation with the maximum temperature for dust cloud T_{Cl} and dust layer T_{5mm} provided at the installation site.

Applications

Switches, command and control units, motors, transformers, lighting fittings, instrumentations and all equipment that under normal operation can cause the ignition of a dust cloud or the combustible dust layer (e.g. due to arcs, sparks, or excessive temperatures).

PROTECTION "s"

Principle

Mode of protection Ex s, actually not covered by any standards, is called mode of protection special. It is used whenever the protection solution are not regulated by any standards and the product must be tested by a Notified Body. If the tests verify the safety requirements a certificate will be issued and the equipment marked with mode of protection Ex s.

COMPOSED MODE of PROTECTION

Principle

It often happens that an electric equipment uses more than one of the mode of protection listed above. The typical example is a motor protected by an Ex d explosionproof enclosure and an Ex e increased safety terminal strip, or a lighting fitting protected by an Ex d enclosure and an Ex e increased safety terminal block.

These cases are usually called composed mode of protection and the marking will present after Ex the codes of the modes of protection concerned.

REFERENCE STANDARDS

It follows the list of the main applicable standards of products:

IEC STANDARD	EN STANDARD	TITLE
IEC 60079-0	EN 60079-0	Part 0: Equipment - General requirements
IEC 60079-1	EN 60079-1	Part 1: Equipment protection by flameproof enclosures "d"
IEC 60079-2	EN 60079-2	Part 2: Equipment protection by pressurized enclosure "p"
IEC 60079-5	EN 60079-5	Part 5: Equipment protection by powder filling "q"
IEC 60079-6	EN 60079-6	Part 6: Equipment protection by liquid immersion "o"
IEC 60079-7	EN 60079-7	Part 7: Equipment protection by increased safety "e"
IEC 60079-11	EN 60079-11	Part 11: Equipment protection by intrinsic safety "i"
IEC 60079-15	EN 60079-15	Part 15: Equipment protection by type of protection "n"
IEC 60079-18	EN 60079-18	Part 18: Equipment protection by encapsulation "m"
IEC 60079-31	EN 60079-31	Part 31: Equipment dust ignition protection by enclosure "t"

It follows the list of the main applicable standards of plants:

IEC STANDARD	EN STANDARD	TITLE
IEC 60079-10-1	EN 60079-10-1	Part 10-1: Classification of areas - Explosive gas atmospheres
IEC 60079-10-2	EN 60079-10-2	Part 10-2: Classification of areas - Explosive dust atmospheres
IEC 60079-14	EN 60079-14	Part 14: Electrical installations design, selection and erection
IEC 60079-17	EN 60079-17	Part 17: Electrical installations inspection and maintenance
IEC 60079-19	EN 60079-19	Part 19: Equipment repair, overhaul and reclamation

DEGREE of PROTECTION IP

The degree of protection IP, as defined in EN IEC 60529, is a code that summarizes the level of protection of electrical equipment against accidental or intentional contact with

the human body or objects and the protection against contact with water. The code is applicable to systems with rated voltages up to 72.5 kV.

Coding

International Protection

IP

1st digit

1, 2, 3, 4, 5, 6

2nd digit



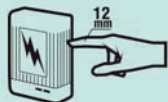

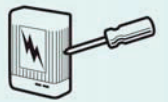

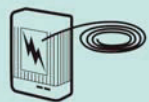







1, 2, 3, 4, 5, 6, 7, 8

Additional letter (optional)

A, B, C, D

Supplementary letter (optional)

H, M, S, W

1 st DIGIT - SOLIDS			2 nd DIGIT - LIQUIDS		
LEVEL	DEFINITION		LEVEL	DEFINITION	
IPOX	Non protected		IPX0	Non protected	
IP1X		Protected against solid foreign objects of 50 mm and greater	IPX1		Protected against vertically falling water drops
IP2X		Protected against solid foreign objects of 12 mm and greater	IPX2		Protected against vertically falling water drops when enclosure tilted up to 15°
IP3X		Protected against solid foreign objects of 2.5 mm and greater	IPX3		Protected against spraying water
IP4X		Protected against solid foreign objects of 1 mm and greater	IPX4		Protected against splashing water
IP5X		Dust-protected	IPX5		Protected against water jets
IP6X		Dust-tight	IPX6		Protected against powerful water jets
			IPX7		Protected against the effects of temporary immersion in water
			IPX8		Protected against the effects of continuous immersion in water

ADDITIONAL LETTER (OPTIONAL)

LEVEL	DEFINITION
A	Protected against access with the back of the hand
B	Protected against access with finger
C	Protected against access with a tool
D	Protected against access with a wire

SUPPLEMENTARY LETTER (OPTIONAL)

LEVEL	DEFINITION
H	High-voltage apparatus
M	Tested for harmful effects due to the ingress of water with movable part are in motion
S	Tested for harmful effects due to the ingress of water with movable part are stationary
W	Suitable for use under specified weather conditions

The new **ATEX Directive 2014/34/EU** (on the harmonization of the laws of the Member States relating to equipment and protective systems intended for use in potentially explosive atmospheres), published on Official Journal of the European Union (no. OJ EU L96) of 29 March 2014 and entered into force on 30 March 2014, has repealed the previous Directive 94/9/EC on 20 April 2016 in accordance with art. 43.

It is applied to all products, electrical and mechanical, intended for use in potentially explosive atmospheres, it finds place among directives that allow the freedom of movement of goods and it defines the essential health and safety requirements (ESHR) of products that shall comply with. In particular, the Directive defines the characteristics that products shall comply to be installed in potentially explosive atmospheres and defines the different assessments to follow to obtain the conformity.

The scope of the Directive also applies to safety, control and regulation devices that are installed outside the potentially explosive atmosphere, from which depends the safety of equipment placed inside the hazardous area. Categories of excluded products from the scope of the directive are as follows:

- medical devices intended for use in a medical environment;
- gas equipment intended for use in domestic and non-commercial environments;
- equipment and protective systems used in environments with the presence of explosive substances;
- personal protective equipment;
- means of transport by land, sea, river and air (aside from vehicles that can cause an explosive atmosphere during loading and unloading phases or that are used in explosive atmosphere).

PRODUCTS CLASSIFICATION

The directive considers equipment for surface plants and for mines plants, because the hazards, the protective measures are similar for both; the first distinction concerns the subdivision into two groups:

- group I: equipment intended for use in underground mines;
- group II: equipment intended for use in surface plants.

Directive 2014/34/EU categorizes the products in relation to the protection level and to the environment grade of dangerousness where they will be installed.

GROUP I PRODUCTS

The equipment for underground mines are divided into 2 categories:

- category M1: equipment or protective systems that ensure a very high level of protection;
- category M2: equipment or protective systems that ensure a high level of protection; they shall be de-energised in the event of an explosive atmosphere.

GROUP II PRODUCTS

The equipment for surface plants (group II) are divided into 3 categories, depending on the level of protection (zone of use); categories are identified by the digits 1, 2, or 3 followed by the letter G (for gas) or D (for dust).

- category 1: equipment or protective systems that ensure a very high level of protection;
- category 2: equipment or protective systems that ensure a high level of protection;
- category 3: equipment or protective systems that ensure a normal level of protection.

CONFORMITY ASSESSMENT PROCEDURES

Several conformity assessment procedures depending on equipment and category are performed for the purpose of marking. All electrical equipment of category 1 and category 2 must be compulsorily certified by an ATEX Notified Body, i.e. a conformity assessment body whose notifying authority of the Member State gave the task of carrying out verification of compliance with the Directive. The updated list of ATEX Notified Body is available at the following link: <http://ec.europa.eu/enterprise/newapproach/nando/>.

Notification and surveillance of quality management system by an ATEX Notified Body is mandatory for companies manufacturing electrical equipment of category 1 and category 2; the identification number of the NB is affixed on marking plate together with EC marking.

For the equipment of category 3 is sufficient only the self-certification, with the internal production control.

Manufacturer must prepare technical documentations to demonstrate that the equipment conforms to the requirements of the Directive; documentation shall be kept at disposal for at least 10 years after the last product has been placed on the market. It is compulsory that all the products (category 1, 2 or 3) are delivered together with EU declaration of conformity and instruction for use.

Directive 99/92/EC, transposed in Italy by the Legislative Decree no. 233/03 and mandatory starting from the 1st of July 2003, unlike directive 2014/34/EU (ATEX) concerning products and their use in hazardous areas, is a social policy directive, which examines people and their own safety when they have to operate and to work in potentially explosive atmospheres. Very briefly, it is possible to say that is a sort of sub-directive of 89/391/EEC (transposed in Italy by the wellknown Legislative Decree 626/94 and currently in force with D.Lgs. 81/08 and subsequent amendments), that deals with specific regulations to follow in areas subjected to potentially explosive atmospheres.

This directive shall apply to same areas where the ATEX directive is applied, except for the mines; therefore it is a directive valid only for surface plants, both for gas and for dust atmospheres.

Directive 99/92/EC considers the zone classification of working places where an explosive atmosphere may occur made by the employer and latter decides groups, categories of equipment to be used in each zone.

This classification - recalled by standard IEC/EN 60079-10-1 (for gas) and IEC/EN 60079-10-2 (for dust) - is carried out based on frequency and duration of explosive atmosphere presence.

Ex MARKING

A

Each electrical devices intended for use in potentially explosive atmospheres must present a minimum marking in accordance with Directive 2014/34/EU (only for European market) and products technical standards.

In compliance with the **Directive 2014/34/EU ATEX**, all equipment intended for use in potentially explosive atmospheres must provide indication of the following minimum information (EC marking):

- Name and address of the manufacturer;
- EC marking;
- Equipment identification by a product code and traceability with a serial number;
- The specific mark of protection against explosion according to Directive 2014/34/EU (ATEX);
- The indication of equipment group and the relevant category (see page A13).

In accordance with **IEC/EN 60079-0** standard, all equipment intended for use in potentially explosive atmospheres must provide indication of the following minimum information (Ex marking):

- Name of the manufacturer or trademark;
- Product code;
- Community trademark;
- Ex logo (product conforming to IEC/CENELEC standards);
- Mode or modes of protection used (e.g. "d", "t" or "de", etc.);
- Indication of apparatus group (see page A13);
- Symbols of gases and/or dusts of subgroups (see pages A11 and A12);
- Temperature class and/or maximum surface temperature (see page A10);
- Number of the certificate of conformity with the addition of some suffixes for particular cases (X = specific conditions of use, U = Ex component not intended to be used alone)
- classic rating plate data required for the equipment, such as voltage, current, degree of protection, ambient temperature, etc.

1  2 

7  8 **H 2 GD** 9 10 13 17 6 5 0722 

11 **INERIS 14 ATEX 0008X** 14 15
 Ex db IIB+H2 T 5 Gb 18 19 20

12 **IECEX INE 13.0065X** 22

16 **Amb.Temp.:** -20°C ÷ +50°C 21

3 CEF 10AG Mod. KU1 24

4 S/N 1016/0001 Wdiss. 45

Vmax 690 Amax 5




23

NON APRIRE SOTTO TENSIONE E SE PUÒ ESSERE PRESENTE UN'ATMOSFERA ESPLOSIVA
ATTENZIONE: ATTENDERE ALMENO 15 MINUTI PRIMA DI PROCEDERE ALL'APERTURA DELLA CUSTODIA. DOPO OGNI APERTURA RIPRISTINARE LO STRATO DI GRASSO SUL GIUNTO PIANO. USARE CAVI IDONEI PER TEMPERATURE > 95.
 IN CASO DI SMARRIMENTO, LE VITI SOSTITUTIVE DEL COPERCHIO DEVONO ESSERE ESCLUSIVAMENTE IN ACCIAIO INOX, QUALITÀ A2-70.

DO NOT OPEN WHEN ENERGIZED AND IF AN EXPLOSIVE ATMOSPHERE MAY BE PRESENT
WARNING: WAIT 15 MINUTES BEFORE STARTING ANY OPENING OPERATIONS. GREASE COATING ON PLAIN JOINT SHALL BE RESTORED BEFORE CLOSURE. WIRES MUST BE SUITABLE FOR TEMPERATURE > 95. IF NECESSARY REPLACE SCREWS OF THE COVER WITH STAINLESS STEEL ONES, QUALITY A2-70, RESISTANCE CLASS 8.8.

Ex MARKING

A

No.	Marking	Descrizione	Possible Variants
1		Manufacturer's logo	----
2	Coelbo S.r.l. 20861 Brugherio MILANO-IT	Manufacturer's address	----
3	CCF 10AG	Equipment code	----
4	1016/0001	Serial number	----
5		Conformity mark	It must be followed by Notified Body number encharged of surveillance for equipment of category 1 and 2 (see 6).
6	0722	Number of Notified Body encharged of surveillance of Quality Assurance Notification	----
7		Specific marking of explosion protection	----
8	II	Equipment group	I = equipment for underground mines II = equipment for surface plants
9	2	Category group	1 for category 1 2 for category 2 3 for category 3
10	GD	Type of explosive atmosphere	G = for gas D = for dust
11	Ex	Compliance with International and European harmonized	----
12	db	Mode of protection for gas used	Mode of protection for GAS: d = flameproof enclosure; e = increased safety equipment; i = intrinsic safety equipment; de = equipment protected by a flameproof enclosure "d" together with a part protected by an increased safety "e"; d [ia Ga] = equipment protected by a flameproof enclosure "d" which contains internally an intrinsic safety "i" apparatus (typically a barrier); nA = equipment built to minimize the risk of arcs and sparks that can ignite the explosive atmosphere under normal operation; nR = equipment designed to limit gas and vapours ingress; p = protection by pressurized enclosure; q = protection by powder filling; o = protection by liquid immersion; m = protection by encapsulation.
13	IIB+H2	Gas group	IIA, IIB, IIC (+ characteristics gas, if any)
14	T5	Temperature class	T1 = 450°C T2 = 300°C T3 = 200°C T4 = 130°C T5 = 100°C T6 = 85°C
15	Gb	EPL for gas	Ga = category 1G Gb = category 2G Gc = category 3G
16	tb	Mode of protection for dust used	Mode of protection for DUST: t = dust ignition protection by enclosure with means to limit surface temperatures; i = intrinsic safety equipment; t [ia Da] = equipment protected by a dust ignition protection by enclosure "t" which contains internally an intrinsic safety "ia" apparatus (typically a barrier); p = protection by pressurized enclosure; m = protection by encapsulation.
17	IIIC	Dust group	IIIA, IIIB, IIIC
18	T100°C	Maximum surface temperature	Maximum surface temperature of equipment stated in °C
19	Db	EPL for dust	Da = category 1D Db = category 2D Dc = category 3D
20	IP66	Degree of Protection IP	"IP6X": states protection against solids "IPX6": states protection against liquids
21	-20°C÷+50°C	Ambient temperature range	To be specified if different from standard range (-20°C÷+40°C)
22	INERIS 14 ATEX 0008X IECEx INE 13.0065X	EC certificate number (ATEX) CoC certificate number (IEC-Ex)	"X": states the presence of specific conditions of use "U": states an Ex component
23	NON APIRIRE ...	Warning and precaution markings	----
24	W _{diss} / V _{max} / A _{max}	Electrical ratings	----

ALUMINUM LIGHT ALLOYS

Aluminum light alloy is the most used materials to make flameproof enclosures all over the world.

Its excellent corrosion resistance characteristics make this material to be recognized as the most efficient and versatile for most kind of applications. It has the advantage of being much more lighter than cast iron, facilitating thus both assembly and maintenance of plants, and in addition it has a very good resistance to corrosion without the need to be surface protected (unlike cast iron that needs a galvanic protection and painting). Compared to stainless steel then, the aluminum has a hugely lower cost.

Mechanical characteristics of light alloy aluminum castings are highly satisfactory for uses in explosion proof equipment.

In the past either aluminum-copper alloys (with a poor corrosion resistance) or aluminum-magnesium alloys (though it offer a greater

corrosion resistance, they showed the limit of magnesium presence that was able to cause sparks with energy values capable to ignite an explosion if mechanically hit - technical standards nowadays limit magnesium quantity by weight in alloys) were used.

Currently most used alloys are aluminum-silicon ones where the copper content is in very low quantities and present the following characteristics:

- good mechanical strength;
- sufficient ductility;
- good compactness;
- corrosion resistance.

Most used aluminum alloy are AlSi10Mg(b) (EN AB 43100) and AlSi12(b) (EN AB 44100) whose chemical compositions in accordance with standard EN 1706 are shown in the following table:

ALLOY	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Pb	Sn	Ti	Impurities
EN AB 43100	9.0÷11.0	0.45	0.08	0.45	0.25÷0.45	-	0.05	0.10	0.05	0.05	0.15	0.05 - single 0.15 - global
EN AB 44100	10.5÷13.5	0.55	0.10	0.55	0.10	-	0.10	0.15	0.10	-	0.15	0.05 - single 0.15 - global

STAINLESS STEEL

Stainless steel are alloys made from iron, carbon and chromium that combine the typical mechanical properties of carbon steels to the corrosion resistance characteristics, due to a thin and transparent surface layer called "passivation layer" that it is formed by the contact between chemical elements constituting the alloy (typically chromium) and the oxygen.

Stainless steel are traditionally divided into three major categories, according to their microstructure: martensitic, ferritic and austenitic.

In the last years market has requested more and more materials that were able to resist corrosion due to chloride and, for this reasons, our range of products are made in stainless steel AISI 316L (X2 CrNiMo 1712), belonging to austenitic group. Its special features are:

- excellent resistance to corrosion;
- ease of cleaning and excellent hygienic coefficient.

On the contrary, it should be noted that:

- corrosion resistance decreases at low temperatures: the acid breaks the oxide film leading to general corrosion;
- into the slots and in protected areas, the amount of oxygen may not be sufficient to preserve passivation layer, resulting in crevice corrosion;
- halides ions, in particular the anion (Cl⁻), break the passivation film causing the so-called pitting corrosion.

It follows chemical composition, in accordance with standard EN 10888:

ALLOY	C	Mn	P	S	Si	Cr	Ni	Mo	N
AISI 316L	<0.03	<2.0	<0.045	<0.03	<1	16.5÷18.5	10.0÷13.0	2.0÷2.5	<0.11

NICKEL PLATED BRASS

This type of material (CuZn39Pb3), which presents a good corrosion resistance, is mostly used to make Ex cable entries systems (typically cable glands). Besides the typical binary alloy composed by Copper (Cu) and Zinc (Zn), a low percentage of lead (Pb) is added to simplify machining.

Subsequently, the item is subjected to electrolytic surface treatment in order to improve both aesthetic appearance and corrosion protection against external agents.

It follows chemical composition, in accordance with standard EN 12164

ALLOY	Cu	Zn	Pb	Sn	Fe	Ni	Al	Altri
CuZn39Pb3	5,0÷59,0	Rem.	2,5÷3,5	<0,3	0,3	<0,2	0,05	<0,2

ZINC PLATED STEEL

Zinc plated steel is an iron (Fe) carbon (C) alloy and, as for the nickel plated brass, is used to make fittings elements.

It is a mild alloy steel for general purpose with small quantities of lead, bismuth, tellurium and sulfur. To improve corrosion resistance characteristics is subjected to galvanizing process after machining.

GLASS

Soda lime tempered glass is used in all applications where it is necessary to observe something without being in contact or as protection, with operating temperature up to +250°C.

GASKETS

For our gaskets the following elastomers are used:

EPDM (Ethylene-Propylene Diene Monomer) rubbers are a synthetic rubbers family of the group M, that show a satisfactory compatibility with hydraulic fluids, incombustible, ketones, hot and cold water and alkalis and an unsatisfactory compatibility with most of the oils, gasoline, kerosene, hydrocarbons, halogenated solvents and concentrated acids.

The main properties of EPDM are its strong resistance to heat, ozone and weathering. It has excellent properties of electrical insulation.

Silicones are inorganic polymers based on a silicon-oxygen chain and functional organic groups (R) bound to the silicon atoms.

The **liquid silicone rubbers** (or LSR), polymeric masses made with addition of the appropriate catalyst, have the characteristics to be remarkably resistant to the temperature, chemical and corrosion attacks, and are excellent electrical insulators. In addition they present excellent non-stick behaviour, flexibility, resistance to aging and high temperatures.

What's ALUMINOX®?

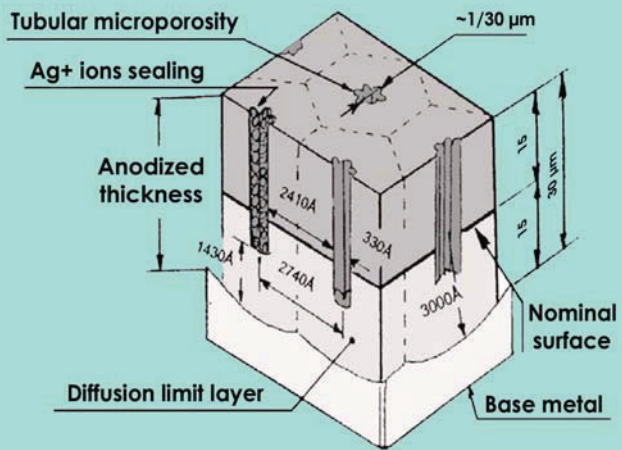
ALUMINOX® is a combination of Aluminium alloy used for all Coelbo's products with a final surface treatment which involves the exclusive GHA technology (Golden Hard Anodizing).

The Aluminium alloys, because of their low hardness, present an extremely vulnerable surface (scratches, wear). Moreover, their natural bent to get oxidized, quickly triggers dangerous corrosion processes either locally (pitting) or diffused. This is why aluminium items are protected by painting, chrome, nickel or anodic oxidation coatings.

The Anodic Oxidation represents the most suitable and safe surface treatment among any others as it cannot be removed: the aluminium surface becomes Aluminium Oxide (Al₂O₃), creating a hard not removable protective layer. The Aluminium Oxide crystals present a very hard and compact hexahedron structure with a capillary hole on its centre, that severely limits its application especially when the surfaces are subject to frictions or to corrosive environments.

Scientists of M/s SOUKEN (Japan) have developed the process for sealing the porosities of the Al₂O₃ by a special galvanic process using Ag⁺ ions, transforming the porosity (which was a real defect) into a new material.

The technological characteristics led by this process make extremely convenient and competitive any Aluminium alloys item Vs. the equivalent solution based on most valuable materials such as Stainless Steel, Titanium alloys or Steel coatings involving TIN, PVD, CVD, Hard Chrome, Chemical Nickel, etc.



Which are the advantages of ALUMINOX®?

ALUMINOX® preserves all the advantages of the Aluminium alloys with the addition of characteristics normally belonging to Stainless Steel as well as to other advanced materials:

- Unparalleled corrosion resistance in Marine/Saline environment;
- High antibacterial and anti-mildew capability;
- Extreme surface hardness (resistance to wear);
- Elevate thermal conductivity;
- Superior fire and heat resistance;
- Non stick and Antistatic properties (less dirt/easy cleaning and electrically safer);
- Self-lubricating surfaces (i.e. non-seizing threading).

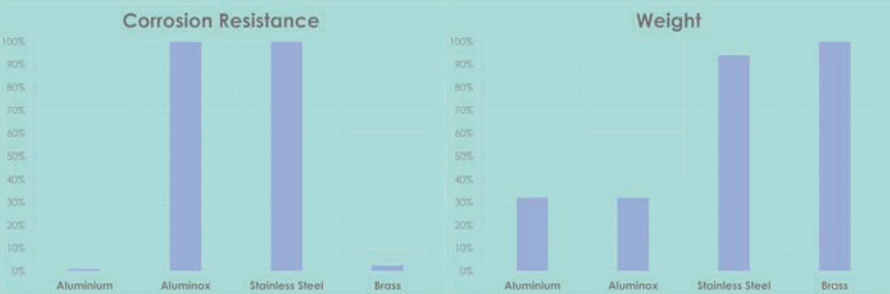
MATERIAL	HARDNESS (Hv)	Melting Point (°C)	Coefficient of Friction	Bacteriostatic capacity	Corrosion resistance (NSS)	Resistance to wear
Aluminum alloy	70÷100	680°C	0,44	None	50÷100 hours	10 ² hours
ALUMINOX®	500÷550	2100°C	0,025	Very High	10000 hours	10 ⁵ hours
Hard anodizing	500÷550	2100°C	0,15	None	200÷500 hours	10 ³ hours

When and where using ALUMINOX®?

All the listed characteristics let the ALUMINOX® to be suitable where there is a particularly aggressive environment and in many different industrial areas such as:

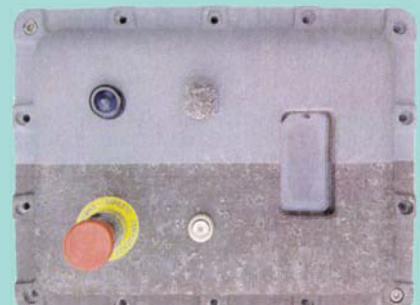
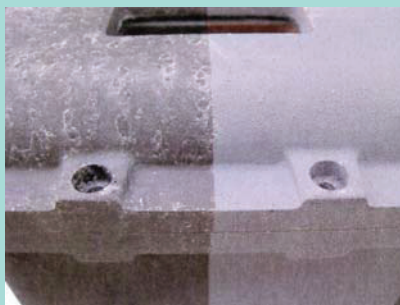
- Off-Shore platforms;
- Coastal Oil & Gas Exploration;
- Coastal Oil & Gas Drilling;
- Petrochemical Industries
- Fertilizers Production Plants;
- Food;
- Beverage;
- Pharmaceutical Industries;
- Etc.

The graphs below shows how the ALUMINOX® has the same behaviour as the Stainless Steel regarding corrosion resistance but at one third of the weight. This leads to some saving aspects, because less weight means minor costs of transportation and even smaller frame-works on site of installation.



All the extraordinary characteristics of ALUMINOX® have been scientifically tested and proven by independent laboratories.

For example, as far as the resistance to corrosion is concerned, these laboratories have exposed a number of our enclosures to ACCELERATED CORROSION TESTS, lasting 600 hours in a Saline Atmosphere Chamber (Heraeus Votsch GmbH). The test report no. 10661/2009 dated January 30th 2009, indicates that "the enclosures and their covers present a uniform downgrading localized to some small circular corrosion hotbeds (see picture below). No invasive damages such as rising of surface layers or craters (pitting) occurred".



PLANTS WITH CONDUIT

Making a plants with conduit means placing all the conductors in metallic threaded conduits.

The most obvious advantage is that it is made evidently a plant with a very high mechanical protection level, therefore suitable in those places where this is a very real problem (e.g. oil and chemical industries).

On the contrary, such kind of plant is totally rigid and therefore really low adaptable to wiring changes, installation is expensive and conduits tend to rust over time.

To prevent that a possible explosion may propagate through the conduit system, between one enclosure and the other, technical standards request that a "sealing nipple or a sealing joint" (an element filled with resin that does not allow the transmission of the explosion) is placed before the conduit.

This sealing joint shall be installed at a distance lesser than 45 cm from the enclosure. Indeed, it shall be installed every time that the conduit passes from an hazardous area to an ordinary one. The filling of joint with the blocking resin is a delicate operation which must be carried out with several precautions necessary to prevent the creation of empty zones which could void the flame arrest.

Eventually, when three or more cables are used in conduits, the total section of cables, including insulating material, shall not be greater than 40% of conduit section.

Conduits are normally rigid, but there are situations where it could be useful and reasonable to use flexible conduits, for example when it is necessary to connect a control panel with a vibrating equipment such as a motor.

PLANTS WITH DIRECT ENTRY OF CABLE INTO ENCLOSURES

This type of plants is much more similar to traditional plant, because the cables are not inserted into rigid metallic conduits, but are installed with normal modes.

In case of direct entry, the cable goes directly into the enclosure by a cable gland with sealing ring that prevents the propagation of a possible explosion outside the enclosure.

Used cable glands shall be certified in accordance with standards IEC/EN 60079-0 and IEC/EN 60079-1 (at least) and are divided into two different categories:

- cable glands where the seal is made only by the inner sealing ring;
- sealing cable glands where the seal is made both by the inner sealing ring and by the blocking resin.

Sealing ring of cable gland (or the blocking resin) shall have a

certain length such as to ensure flameproof characteristics. For the correct choice of cable glands see following page.

In addition, cable glands are suitable for use with:

- armoured cables (cables with an armour that ensures a certain mechanical resistance with grounding continuity);
- not armoured cables (suitable when risk of mechanical damages is limited and grounding continuity is not mandatory).

Whether armoured cables or not armoured cables are used, obviously, it is necessary to respect some different installation requirements as not to insert more than one cable in the same cable gland and using cable glands with internal diameter equal to cable diameter.



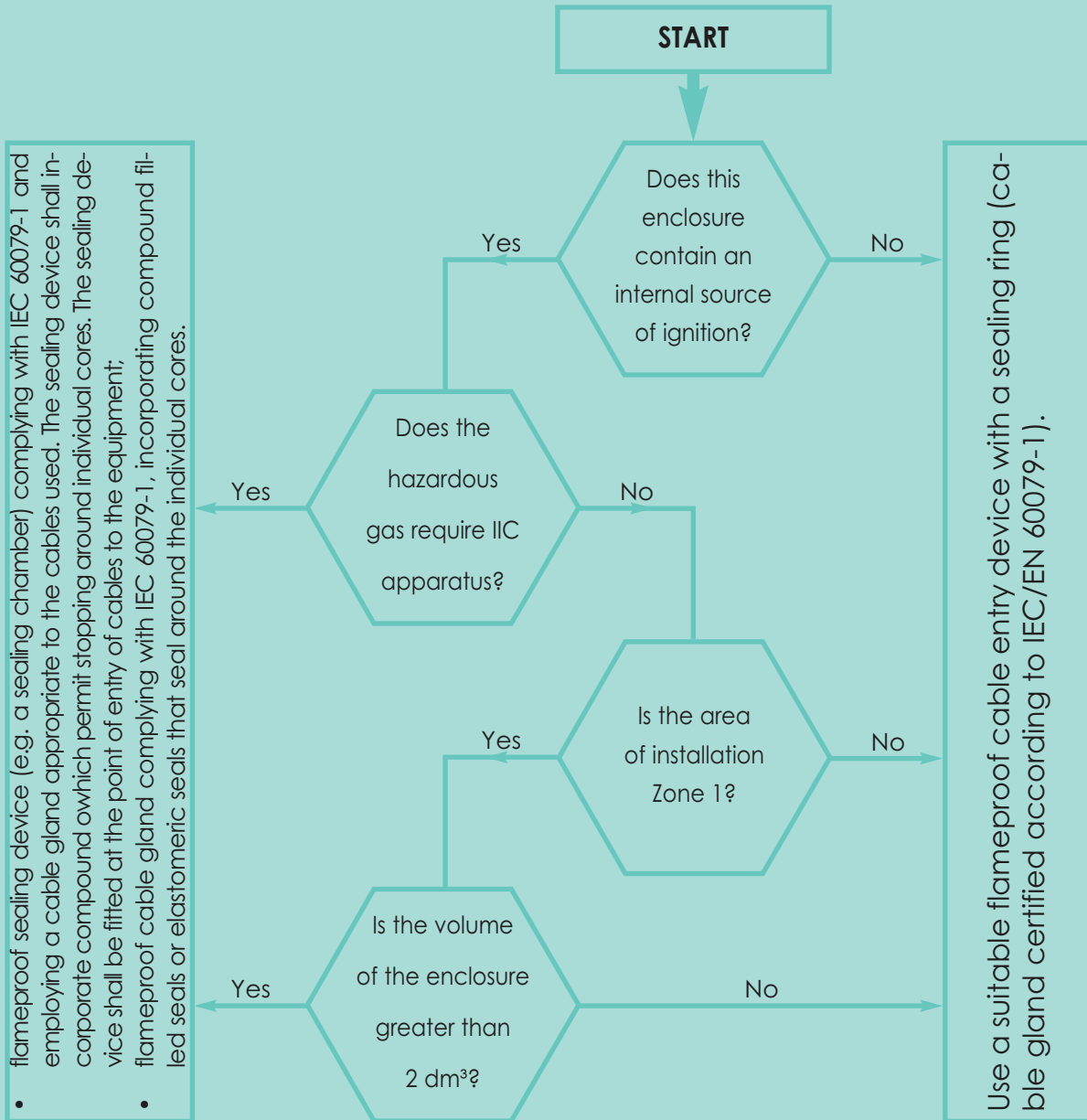
PLANTS WITH INDIRECT ENTRY OF CABLE INTO ENCLOSURES

In this type of plants cable does not enter directly into explosion proof enclosure Ex d, but pass through an increased safety enclosure Ex e, where are present terminal strips.

The cables then continue and arrive through sealed passages in the Ex d enclosure which contains equipment that could cause sparks.

CABLE ENTRIES SELECTION

In accordance with paragraph 10.4.2. of IEC 60079-14:2007 and EN 60079-14:2008 the cable entry system shall comply with the following diagram:



NEW STANDARD

Starting from 02/01/2017 the IEC/EN 60079-14:2015 will supersede the previous edition of the standard.

This will cause the application of the new paragraph (10.6.2.) concerning the selection of cable entries, that will no longer use the diagram above, but the following choices:

- a) Cable glands sealed with setting compound (barrier cable glands) in compliance with IEC 60079-1 and certified as equipment;
- b) Cables and glands meeting all of the following:
 - cable glands comply with IEC 60079-1 and are certified as equipment,
 - cables used comply with 9.3.2(a),
 - the connected cable is at least 3 m in length;
- c) Indirect cable entry using combination of flameproof enclosure with a bushing and increased safety terminal box;
- d) Flameproof sealing device (for example a sealing chamber) specified in the equipment documentation or complying with IEC 60079-1 and employing a cable gland appropriate to the cables used. The sealing device shall incorporate compound or other appropriate seals which permit stopping around individual cores. The sealing device shall be fitted at the point of entry of cables to the equipment.

NOTES:



JUNCTION BOXES and BOXES for EQUIPMENT

series
S
SO

Essential elements of any safety electrical plants intended for classified areas with explosion hazard, the COELBO's enclosures series "S" and "SO" cover the whole application range of to implement control networks, derivation of power lines, interconnections and to accommodate instrumentation and/or standard electrical/ electronic measurement and control devices. Of course, anything, mounted inside these boxes, gets the same safety features.

The boxes series "S" and "SO", despite their common circular geometry, are available in several configurations that provide articulated cable entries from 1 to 5 ways, with many orientation for the entry or the cable passage as well as numerous accessories for the optimal equipment

accommodation within them depending on the use or application which they are intended. Countless applications are ideally reflected in the use of these boxes by virtue of their degree of protection IP66/67, provided by special seals, and large ambient temperature range with certified values between -50°C and +85°C.

The boxes series "S" and "SO" are equipped with threaded joint cover provided with special wings that facilitate its tightening/ loosening.

The lid of series "SO" consists of an inspection round window in tempered glass of adequate thickness to allow the view of any analog or digital indicating instruments installed inside the boxes.

The boxes series "S" and "SO" are

usually supplied with external Stainless Steel screws. Only the "SO" Series is externally epoxy coated in RAL 7000 or any other RAL color indicated by the customer. The customer may also specify possible alternatives to the internal anti-condense coating RAL 2004.

Advanced technologies characterize the version in Aluminox that has anti-corrosion and surface hardness properties superior to Stainless Steel which, together with unmatched antibacterial and self-lubricant (avoiding i.e. seizure situation), offer the user significant savings with a third of its weight.

Each model is fully specified on the following pages.

JUNCTION BOXES



series

Page

S

B03

BOXES for EQUIPMENT and INSTRUMENTS



S

B05

BOXES for EQUIPMENT



SO

B06

ACCESSORIES



S
SO

B07

BOXES for INSTRUMENTS



EMH90

B08

NOTES:

B

JUNCTION BOXES

series
S

Protection	Gas	Zone	1-2	II2G	Ex db IIC T6÷T4 Gb
	Dust		21-22	II2D	Ex tb IIIC T85°C÷T135°C Db

Degree of Protection
IP66/67

Amb. Temp.	Standard	-20°C	+40°C
	Extended	-50°C	+85°C



Entries Threading
NPT ANSI B1.20

Material
Aluminum Light Alloy

Painting
See Options

Standards and Certificates

Directive 2014/34/EU (ATEX)
 EN 60079-0 • EN 60079-1 • EN 60079-31

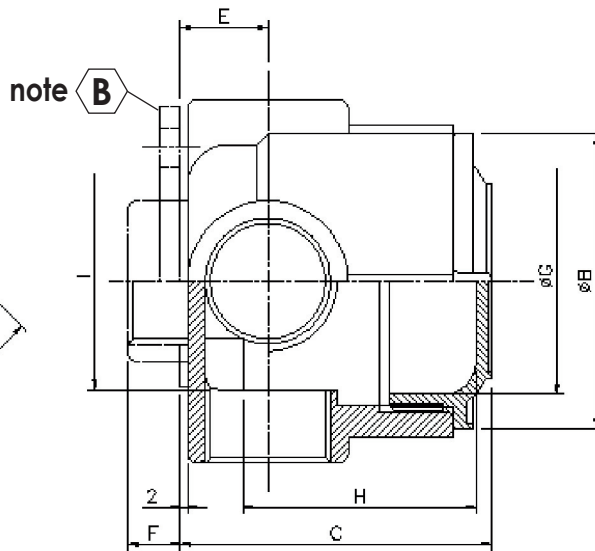
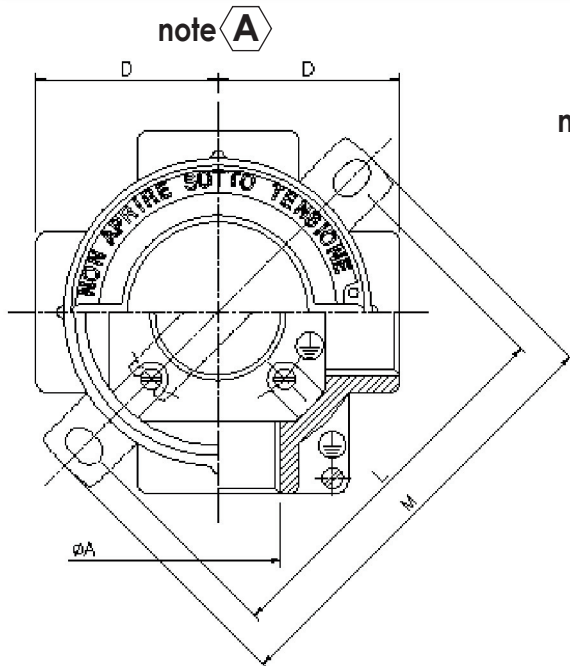
CE **BVI 14 ATEX 0068X**

U **BVI 14 ATEX 0067U**

IEC 60079-0 • IEC 60079-1 • IEC 60079-31
IECEx EPS 14.0086X
IECEx EPS 14.0087U

- Ideal for routing and interconnecting the wires at the intersection of the conduits.
- Supplied with rough surface or outside painted according to customer specifications
- Certificated either for the version complete with electrical apparatus or empty as an Ex component.

Options	- Terminal block: slatted terminals = MH modular terminals = MM	- Cable entries threading: Metric ISO 262 (M). - External Painting: on customer specification.	- Anti-corrosion technology: ALUMINOX. - Accessories (see page B07).
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NOTES

A. The drawing is valid for dimensional data only. For further details, such as the orientation of the internal / external joints, there might be differences among the different models.

B. See page B07.

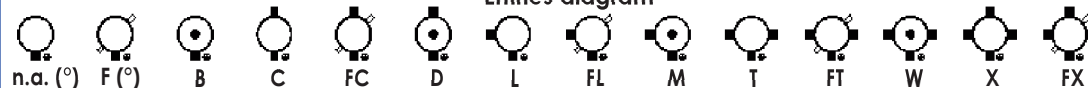
(°): Diameter refers to the diagram for single entry only (see diagrams in the table).

The temperature class and the maximum surface temperature may vary depending on the ambient temperature and the power dissipation of the equipment contained in the box (see page B8).

The extended A.T. is -40°C÷+85°C for boxes with EPDM O-Ring (temperature class T6/T5). The extended A.T. is -50°C÷+85°C for boxes with Silicone O-Ring (temperature class T6/T5/T4).

Further information on first page (B01).

Entries diagram



Type	Size	ØA [NPT]	External dimensions (mm)					Internal Dimensions (mm)			SF... Mounting Bracket		Weight (g)
			ØB	C	D	E	F	ØG	H	I	L	M	
S	14	1/2"	70	77	40	20	9	51	49	51	87	105	350
S	16	1/2"	90	78	50	20	8	70	49	70	108	126	440
S	24	3/4"	70	77	40	20	9	51	49	51	87	105	320
S	26	3/4"	90	78	50	20	8	70	49	70	108	126	440
S	236	3/4"	90	86	50	23	8	70	57	70	108	126	480
S	36	1"	90	86	50	23	8	70	57	70	108	126	480
S	47	1.1/4"	130	112	69	32	14	103	80	98	143	161	1260
S	57	3/4" (°) - 1.1/2"	130	113	75	32	14	103	80	98	143	161	1190
S	69	1" (°) - 2"	145	126	83	36	14	118	90	112	156	176	1410

Example: SC 36 MH2-6

Order Coding

Type
S

Diagram
C

Size
36

Terminal Block Type
MH

Terminal Dimension
2

Number of terminals
6

NOTES

The data given in the tables are for guidance only.

Terminals type and sections other than those specified may be used providing their compliance with the maximum dissipated power as indicated on page B08.

Model	Terminal Blocks
MH	Slatted Terminals
MM	Modular Terminals

TERMINAL BLOCKS for JUNCTION BOXES Size ...14 - ...24

Model	Section (mm ²)	Max No.
MH 1-5	1.5	5
MH 2-4	2.5	4
MH 4-4	4	4
MH 6-3	6	3
MM 1-5	1.5	5
MM 2-5	2.5	5
MM 4-4	4	4

TERMINAL BLOCKS for JUNCTION BOXES Size ...26 - ...36

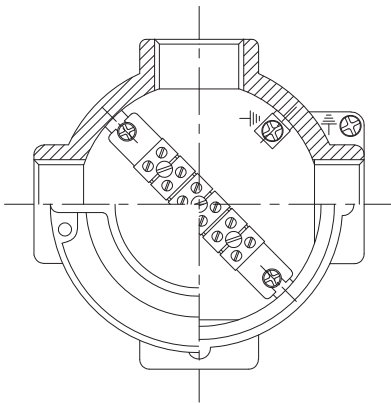
Model	Section (mm ²)	Max No.
MH 1-7	1.5	7
MH 2-6	2.5	6
MH 4-6	4	6
MH 6-5	6	5
MM 1-8	1.5	8
MM 2-8	2.5	8
MM 4-7	4	7

TERMINAL BLOCKS for JUNCTION BOXES Size ...47 - ...57

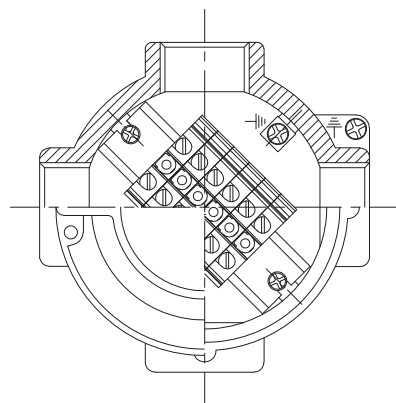
Model	Section (mm ²)	Max No.
MM 2-9	2.5	9
MM 4-8	4	8
MM 6-6	6	6
MM 10-6	10	6
MM 16-5	16	5
MM 2-12	2.5	12
MM 35-3	35	3
MM 4-10	4	10
MM 6-8	6	8

TERMINAL BLOCKS for JUNCTION BOXES Size ...69

Model	Section (mm ²)	Max No.
MM 2-10	2.5	10
MM 4-10	4	10
MM 6-8	6	8
MM 10-8	10	8
MM 16-6	16	6
MM 2-14	2.5	14
MM 35-4	35	4
MM 4-12	4	12
MM 6-10	6	10



TERMINAL BLOCKS MH



TERMINAL BLOCKS MM

BOXES for EQUIPMENT and INSTRUMENTS

series
S

Protection	Gas	Zone	1-2	II2G	Ex db IIC T6÷T4 Gb
	Dust		21-22	II2D	Ex tb IIIC T85°C÷T135°C Db

Degree of Protection	IP66/67
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Amb. Temp.	Standard	-20°C	+40°C
	Extended	-50°C	+85°C



Entries Threading	NPT ANSI B1.20
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Material	Aluminum Light Alloy
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Painting	External epoxy RAL 7000
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Standards and Certificates	Directive 2014/34/EU (ATEX)
	EN 60079-0 • EN 60079-1 • EN 60079-31
CE	BVI 14 ATEX 0068X
U	BVI 14 ATEX 0067U
IECEX	IEC 60079-0 • IEC 60079-1 • IEC 60079-31
	IECEX EPS 14.0086X
	IECEX EPS 14.0087U

- Suitable for electrical/electronic equipment and instruments.
- Standard or extended depth by adding one of the extensions (short or long).
- Supplied with rough surface or outside painted according to customer specifications.
- Certificated either for the version complete with electrical apparatus or empty as an Ex component.

Options	- Cable entry threading: METRIC ISO 262 (M).	- Anti-corrosion technology: ALUMINOX.	- Apparatus mounted inside the box (see page B10).
	- Different RAL colours.	- Accessories (see page B07).	

NOTES

A. The drawing is valid for dimensional data only. For further details, such as the orientation of the internal / external joints, there might be differences among the different models.

B. See page B07.

(°): Diameter refers to the diagram for single entry only (see diagrams in the table).

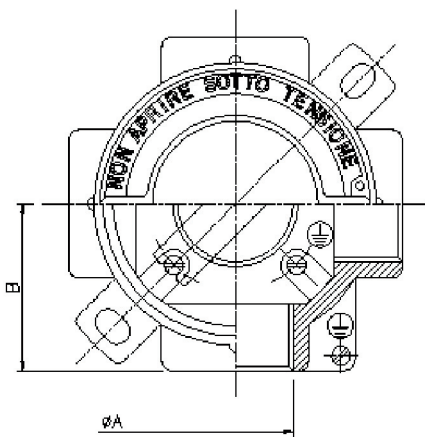
(*) Data refer to boxes with no extension, with short and long extension respectively.

The temperature class and the maximum surface temperature may vary depending on the ambient temperature and the power dissipation of the equipment contained in the box.

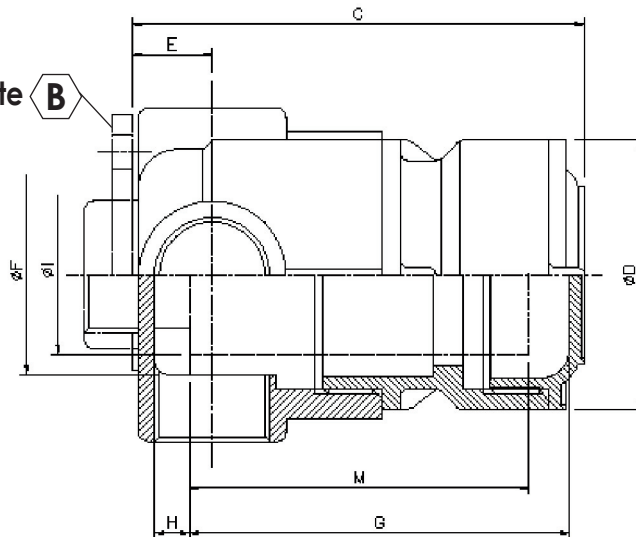
The extended A.T. is -40°C÷+85°C for boxes with EPDM O-Ring (temperature class T6/T5). The extended A.T. is -50°C÷+85°C for boxes with Silicone O-Ring (temperature class T6/T5/T4).

More information on first page (B01).

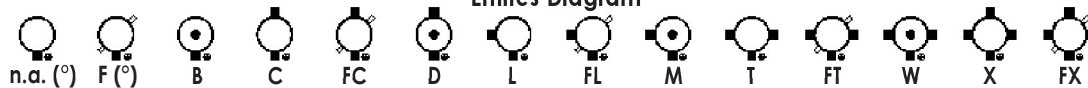
note **A**



note **B**



Entries Diagram



Type	Size	ØA [NPT]	External Dimensions (mm)				Internal Dimensions (mm)				Electrical Apparatus (mm)	Max dissipated Power	Weight (*) (g)
			B	C(*)	D	E	ØF	G(*)	H	ØI			
S	14	1/2"	40	61 / 121	70	20	48	47 / 105	8	44	45 / 103	See Table on page. B8	310/610
S	24	3/4"	40	61 / 121	70	20	48	47 / 105	8	44	45 / 103		265/565
S	26	3/4"	50	66 / 121 / 141	90	20	68	47 / 105 / 125	8	64	45 / 103 / 123		420/710/780
S	36	1"	50	73 / 128 / 148	90	23	68	57 / 113 / 133	8	64	55 / 111 / 131		450/740/810
S	57	3/4" (°) - 1.1/2"	75	93 / 155 / 185	130	32	100	78 / 140 / 170	8	96	76 / 138 / 168		1090/1650/1830
S	69	1" (°) - 2"	83	104 / 165 / 205	145	36	112	91 / 150 / 190	9	106	89 / 148 / 188		1400/1980/2220

Example: SC 36/113

Order Coding

Type
S

Diagram
C

Size
36

Inside depth G (with extension only)
113

Cable entries threading if different from std. (NPT)
M = Metric

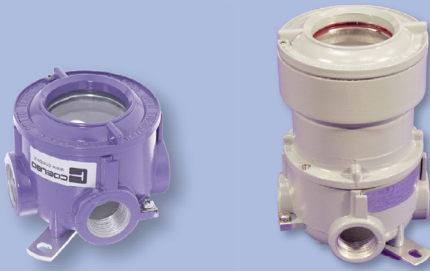
BOXES for EQUIPMENT and INSTRUMENTS

series
SO

Protection	Gas	Zone	1-2	II2G	Ex db IIC T6÷T4 Gb
	Dust		21-22	II2D	Ex tb IIIC T85°C÷T135°C Db

Degree of Protection
IP66/67

Amb. Temp. Standard -20°C +40°C
Extended -50°C +85°C



Entries Threading
NPT ANSI B1.20

Material
Aluminum Light Alloy

Painting
External epoxy RAL 7000

Standards and Certificates



Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1 • EN 60079-31

CE BVI 14 ATEX 0068X

U BVI 14 ATEX 0067U



IEC 60079-0 • IEC 60079-1 • IEC 60079-31

IECEX EPS 14.0086X

IECEX EPS 14.0087U

- Screw cap with heat-resistant tempered glass and O-ring which ensures both IP66/67 protection and protection against dusts (2D).
- Suitable for electrical/electronic equipment and instruments.
- Standard or extended depth by adding one of the extensions (short or long).
- Supplied with rough surface or outside painted according to customer specifications.
- Certificated either for the version complete with electrical apparatus or empty as an Ex component.

- Options**
- Cable entry threading: METRIC ISO 262 (M).
 - Different RAL colours.
 - Anti-corrosion technology: ALUMINOX.
 - Accessories (see page B07).
 - Apparatus mounted inside the box (see page B10).

NOTES

A. The drawing is valid for dimensional data only. For further details, such as the orientation of the internal / external joints, there might be differences among the different models.

B. See page B07.

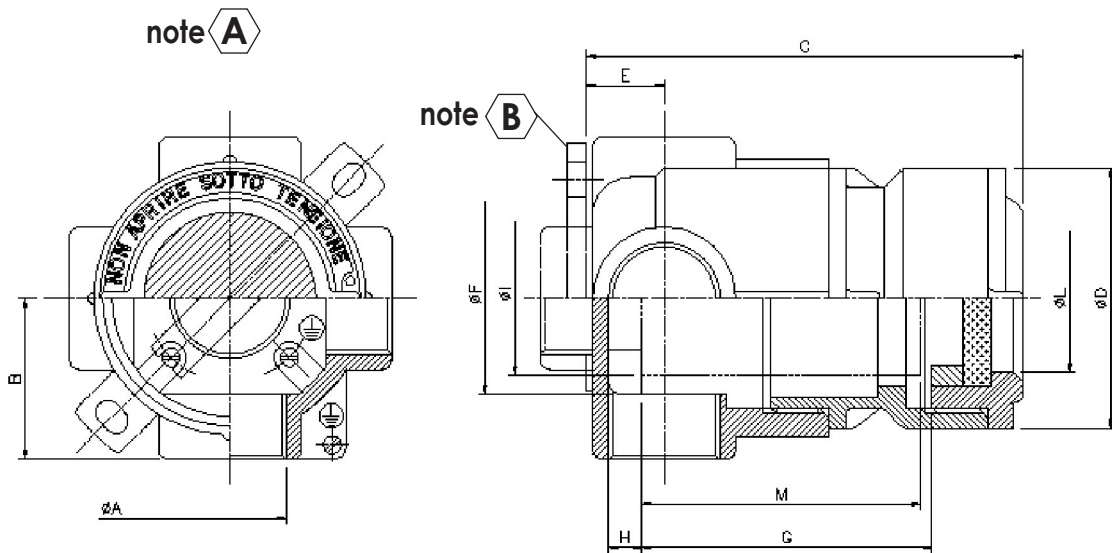
(*) Diameter refers to the diagram for single entry only (see diagrams in the table).

(*) Data refer to boxes with no extension, with short and long extension respectively.

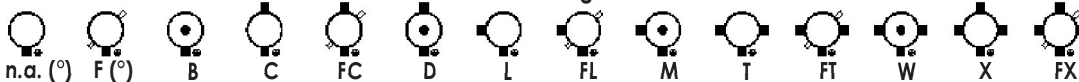
The temperature class and the maximum surface temperature may vary depending on the ambient temperature and the power dissipation of the equipment contained in the box.

The extended A.T. is -40°C÷+85°C for boxes with EPDM O-Ring (temperature class T6/T5). The extended A.T. is -50°C÷+85°C for boxes with Silicone O-Ring (temperature class T6/T5/T4).

More information on first page (B01).



Entries Diagram



Type	Size	ØA [NPT]	External Dimensions (mm)			Internal Dimensions (mm)			Electrical Apparatus (mm)		Max Dissipated Power	Opening ØL	Weight (*) (g)	
			B	C (*)	ØD	E	ØF	G (*)	H	ØI				M
SO 14	1/2"	1/2"	40	61 / 121	70	20	48	24 / 84	8	44	22 / 82	See table page B8	38	415/715
SO 24	3/4"	3/4"	40	61 / 121	70	20	48	24 / 84	8	44	22 / 82		38	390/690
SO 26	3/4"	3/4"	50	66 / 121 / 141	90	20	68	25 / 85 / 100	8	64	23 / 78 / 98		50	525/815/885
SO 36	1"	1"	50	73 / 128 / 148	90	23	68	32 / 87 / 107	8	64	30 / 85 / 105		50	570/860/930
SO 57	3/4" (°)-1.1/2"	3/4" (°)-1.1/2"	75	100 / 155 / 185	130	32	100	48 / 110 / 140	8	96	46 / 108 / 138		82	1305/1865/2045
SO 69	1" (°)-2"	1" (°)-2"	83	104 / 165 / 205	145	36	112	54 / 115 / 155	9	106	52 / 113 / 153		96	1635/2215/2455

Example: SOC 36/87

Order Coding	Type	Diagram	Size	Internal Depth G (with extension only)	Cable entries threading if different from std. (NPT)
	SO	C	36	87	M = Metric

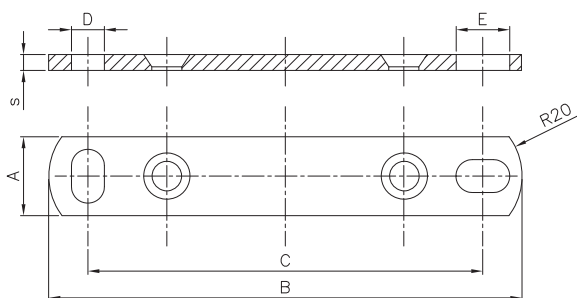
ACCESSORIES for JUNCTION BOXES

series
S
SO

EXTERNAL BRACKET KF for Series SF... - SOF...

Options

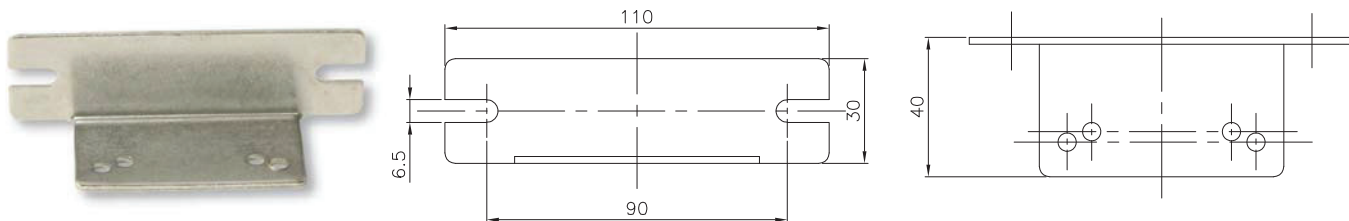
Materials: - Aluminum and relevant screws in galvanized Steel (suffix "A"),
- Stainless Steel AISI 316 and relevant screws in Stainless Steel (suffix "I").



Order Code	Box Size	Dimensions (mm)						Weight (g)	
		A	B	C	D	E	S	KF...A	KF...I
KF 4A / KF4	14/24	18	105	87	6,5	10	3	12	36
KF 6A / KF6	16/26/36/236	18	126	108	6,5	10	3	15	45
KF 7A / KF7	47/57	20	162	142	7	11	4	32	96
KF 9A / KF9	69	20	176	156	7	11	4	35	105

EXTERNAL BRACKET KE 46I for Series S.. - SL.. - ST.. - SO... - SOL... - SOT...

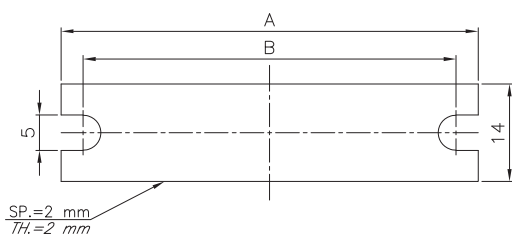
Material: Stainless Steel AISI 316. For Junction Boxes Size 14-24 and 16-26-36 only



KE 46I

INTERNAL PLATE for Series S... - SF...

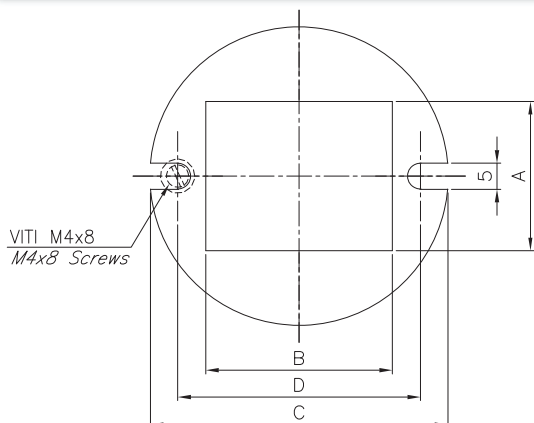
Material: Aluminum



Order Code	Box size	Dimensions (mm)		Weight (g)
		A	B	
KS 4	14/24	52	44	10
KS 6	26/36	70	63	12
KS 7	47/57	100	93	22
KS 9	69	110	102	24

KIT for INSTRUMENT MOUNTING into Series S... / SO...

Material: galvanized Steel Painted Black (RAL 9005).



Order Code	Box Size	Tab Dimensions (mm)	Dimensions (mm)			
			A	B	C	D
K06-00	SO 26 - SO 36	48x48	45	45	76	70
K0-00	SO 57	48x48	45	45	111	102
K0-01	SO 57	48x72	45	68	111	102
K0-11	SO 57	72x72	68	68	111	102
K1-11	SO 69	72x72	68	68	126	117
K-1-02	SO 69	48x96	45	92	126	117
K1-12	SO 69	72x96	68	92	126	117

BOXES for INSTRUMENTS

type
EMH 90

Protection	Gas	Zone	1-2	II2G	Ex db IIC T6÷T4 Gb
	Dust	Zone	21-22	II2D	Ex tb IIIC T85°C÷T135°C Db

Degree of Protection
IP66/67

Amb. Temp.	Standard	-20°C	+40°C
	Extended	-50°C	+85°C



Entries Threading
NPT ANSI B1.20

Material
Aluminum Light Alloy

Painting
External epoxy RAL 7000

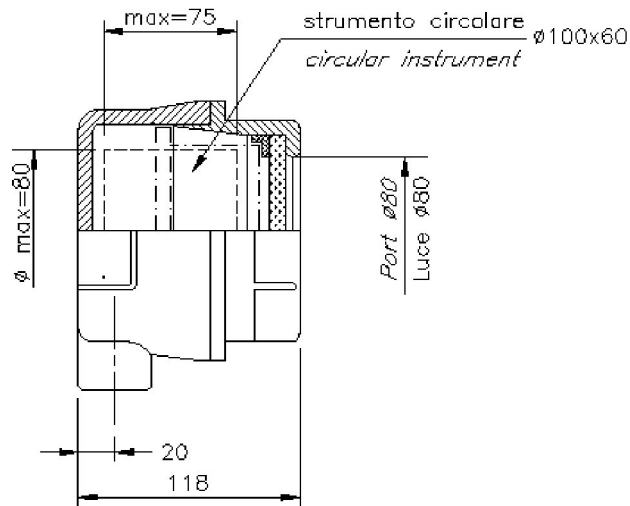
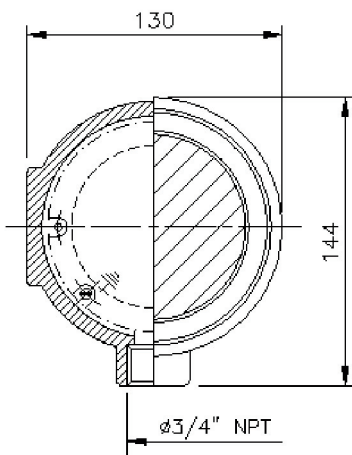
Standards and Certificates



Directive 2014/34/EU (ATEX)	
EN 60079-0 • EN 60079-1 • EN 60079-31	
CE	BVI 14 ATEX 0068X
U	BVI 14 ATEX 0067U
IEC 60079-0 • IEC 60079-1 • IEC 60079-31	
IECEx EPS 14.0086X	
IECEx EPS 14.0087U	

- Screw cap with heat-resistant tempered glass and O-ring which ensures both IP66/67 protection and protection against dusts (2D)
- Complete with Stainless Steel screws

Options	- Cable entry threading: METRIC ISO 262 (M).	- Anti-corrosion technology: ALUMINOX.	- Apparatus mounted inside the box
	- Different RAL colours.	- Accessories (see page B07).	(see page B10).



NOTE

No external mounting bracket is available

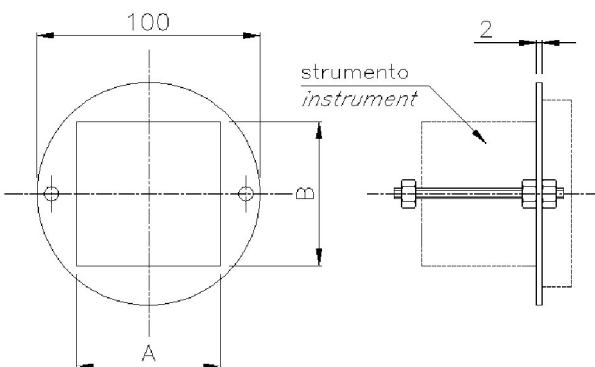
The temperature class and the maximum surface temperature may vary depending on the ambient temperature and the power dissipation of the equipment contained in the box.

The extended A.T. is -40°C÷+85°C for boxes with EPDM O-Ring (temperature class T6/T5). The extended A.T. is -50°C÷+85°C for boxes with Silicone O-Ring (temperature class T6/T5/T4).

More information on first page (B01).

INSTRUMENT MOUNTING KIT 72x72 mm - Model KH...

Material: Tropicalized Steel



Code	Dimensions (mm)	
	A	B
KH-00	45	45
KH-11	68	68

Example: EMH 90

Order Coding	Box	Model	Cable entries threading if different from std. (NPT)
	EMH 90	See table on page B9	M = Metric

MAX DISSIPATED POWER and TEMPERATURE CLASS relating to AMBIENT TEMPERATURE RANGE

series
S
SO
EMH90

B

ENCLOSURE	MAX. AMBIENT TEMPERATURE	MAX. DISSIPATED POWER	TEMPERATURE CLASS	MAXIMUM SURFACE TEMPERATURE	CABLE ENTRY POINT TEMPERATURE	O-RING TYPE
S..4 S..4/.. SO..4 SO..4/..	40°C	7,5 W	T6	T85°C	80°C	EPDM / SILICONE
	50°C	5,5 W				
	60°C	3,0 W				
	70°C	1,0 W				
	40°C	11,0 W	T5	T100°C	95°C	EPDM / SILICONE
	50°C	8,5 W				
	60°C	6,0 W				
	70°C	4,5 W				
	85°C	1,0 W	T4	T135°C	130°C	SILICONE
	40°C	19,5 W				
	50°C	17,0 W				
	60°C	14,0 W				
70°C	12,0 W	T6	T85°C	80°C	EPDM / SILICONE	
85°C	8,5 W					
40°C	11,5 W					
50°C	9,0 W					
60°C	6,5 W	T5	T100°C	95°C	EPDM / SILICONE	
70°C	4,5 W					
85°C	1,0 W					
40°C	20,5 W					
50°C	18,0 W	T4	T135°C	130°C	SILICONE	
60°C	15,0 W					
70°C	12,5 W					
85°C	9,0 W					
S..7 S..7/.. SO..7 SO..7/.. EMH 90	40°C	11,0 W	T6	T85°C	80°C	EPDM / SILICONE
	50°C	7,5 W				
	60°C	4,5 W				
	70°C	2,0 W				
	40°C	16,0 W	T5	T100°C	95°C	EPDM / SILICONE
	50°C	12,5 W				
	60°C	9,0 W				
	70°C	6,0 W				
	85°C	2,0 W	T4	T135°C	130°C	SILICONE
	40°C	31,0 W				
	50°C	27,0 W				
	60°C	22,0 W				
70°C	18,0 W	T6	T85°C	80°C	EPDM / SILICONE	
85°C	12,5 W					
40°C	14,0 W					
50°C	10,0 W					
60°C	6,0 W	T5	T100°C	95°C	EPDM / SILICONE	
70°C	2,5 W					
85°C	2,5 W					
40°C	21,0 W					
50°C	16,0 W	T4	T135°C	130°C	SILICONE	
60°C	12,0 W					
70°C	8,0 W					
85°C	2,5 W					
40°C	42,0 W	T5	T100°C	95°C	EPDM / SILICONE	
50°C	35,0 W					
60°C	29,0 W					
70°C	24,0 W					
85°C	16,0 W	T4	T135°C	130°C	SILICONE	
40°C	42,0 W					
50°C	35,0 W					
60°C	29,0 W					
70°C	24,0 W	T5	T100°C	95°C	EPDM / SILICONE	
85°C	2,5 W					
40°C	42,0 W					
50°C	35,0 W					
60°C	29,0 W	T4	T135°C	130°C	SILICONE	
70°C	24,0 W					
85°C	16,0 W					
40°C	42,0 W					



TYPES of EQUIPMENT / INSTRUMENTS to be HOUSED inside the JUNCTION BOXES

series
S
SO
EMH90

B

General Instruments Types Definitions	MOD. (°)
• Alarm & Alerting Module	K
• Ambient thermostat	
• Amperometer (Analog / Digital)	
• Amperometric Relay (electronic)	
• Anti-surge device (single-phase)	
• Anti-surge device (three-phase)	
• Control Relay	
• Cosfimeter 0,1 to 1 or Cosfimeter 0,2 to 1 (electrodynamic)	
• Current Relay	
• Cycles Programmer	
• Digital Clock (electronic)	
• Electromechanical Timer (Eletttonic, Analog/Digital)	
• Electronic Control & Measurement Board	
• Frequency meter 5 to 500 Hz and 36 to 66 Hz	
• Fuse-holder (for fuses 8,5 x 31,5 or 10,3 x 38 mm)	
• Hour Counter (electric)	
• Isolation Controller	
• LCD Indicator Mod. E4... (self-powered)	
• Light Barrier (with built-in relay)	
• Light Intensity Switch	
• Programmable Switch (hourly, daily, weekly)	
• Programmer (electronic digital)	
• Programmer (Analog, with up to 10 LED's)	
• Programmer (electronic with transponder)	
• Pulse Counter (electric)	
• Pulse Counter (electronic, with built-in relay)	
• Stepping Relay	
• Strain gauge Signal Converter Series ICA ...	
• Temperature Controller (Electronic, Digital, adjustable up to 1600°C)	
• Temperature Transmitter (2-wires Series T...)	
• Thermometer (electronic, digital up to 1600°C)	
• Time Relay (electronic)	
• Transmitter (2-wireseries PR)	
• Twilight switch	
• Voltage Relay	
• Voltmeter (electromagnetic or with permanent magnet up to 600 V)	
• Wattmeter up to 999 kW or eletcrodynamic up to 300 kW	

NOTES

• Max supply voltage:
660 VAC / 440 VDC.

• All the electrical equipment shall conform to their respective IEC/CENELEC standards regarding their nominal characteristics and operating mode. Furthermore, they must have dimensions as to ensure

that, in any cross-section, at least 40% of the surface is free.

• Maximum dissipated power shall be in according to table reported on page B9.

• A circuit breakers or contactors containing oil filling and apparatus

producing turbulences are not allowed to be installed inside the enclosure.

• The equipment must be installed to avoid a risk from propagating brush discharges.

(°) I.D. on the external plate



ENCLOSURES for JUNCTION and INSTRUMENTS

series
CCA
CPS

The enclosures Series CCA/CPS are normally used for either the derivation of electrical conductors or to house measurement and control instrumentation as well as electrical / electronic devices normally classified as "General Purpose". The possibility of having indicating, control and signalling units mounted along the sides of these enclosures extends their functionality and flexibility of use.

The enclosures Series CCA/CPS are fully customizable in terms of the number and position of cable entries and control units as well as the RAL external color.

By virtue of specific design features the degree of protection IP66/67, secured by special gaskets, as well as the wide range of temperature, certificate for values between -50°C and +80°C, extend their use to innumerable applications.

For protection against combustible dusts the temperature class reaches T4 allowing a maximum surface temperature up to 135°C.

Conversely, in cases where inside intrinsically safe (Ex ia) is mounted, the ambient temperature range becomes -20°C to +40°C and the temperature class T6 (T85° C for combustible dust).

The CCA and CPS enclosures are characterized by a lid with threaded joint with special fins that facilitate its tightening/loosening. The threaded lid of the series CPS consists of an inspection porthole in thermoresistant glass sealed with a resin suitable to withstand operating temperatures between -55°C and +250°C. This allows the view of the instrumentation housed inside the enclosure.

The standard supply of enclosures

Series CCA / CPS provides external Stainless Steel screws, external embossed effect painting with epoxy paint RAL7000 and internal anti-condense coating RAL 2004. The customer, however, may specify the preferred alternatives either for the external or internal colors (for more information, refer to the tables in Section A).

Available on request, a series of different kits for proper housing of instruments and terminals inside the case.

Advanced technologies characterize the version in Aluminox that has anti-corrosion and surface hardness properties superior to Stainless Steel, which, together with unmatched antibacterial and self-lubricant (avoiding i.e. seizure situation), offer the user significant savings with a third of its weight.

Each model is fully specified on the following pages.

ENCLOSURES with THREADED JOINT LID



series	Page
CCA	B13

ENCLOSURES with THREADED JOINT PORTHOLE



CPS	B15
------------	------------

ACCESSORIES



CCA CPS	B18
--------------------------	------------

TYPES of EQUIPMENT / INSTRUMENTS to be HOUSED within the the ENCLOSURES

CCA CPS	B20
--------------------------	------------

NOTES:

B

ENCLOSURES with THREADED LID for MEASURING and CONTROL DEVICES and SYSTEMS

series
CCA

Protection	Gas	Zone	1-2	II2G	Ex db IIC T6÷T4 Gb
	Dust	Zone	21-22	II2D	Ex tb IIIC T85°C÷T135°C Db

Degree of Protection	IP66/67
----------------------	---------

Amb. Temp.	Standard		-20°C		+40°C
	Extended		-50°C		+80°C



Entries Threading	NPT
	Metric

Material	Aluminum Light Alloy
----------	----------------------

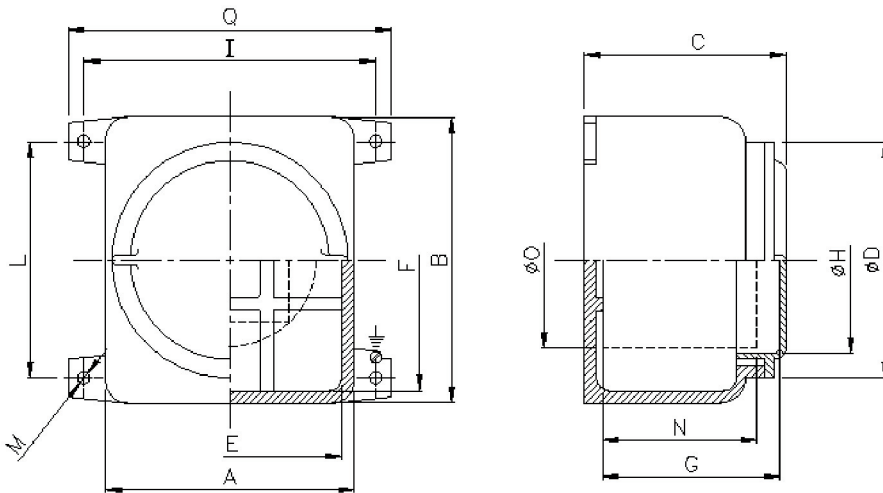
Painting	external epoxy RAL 7000
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	Directive 2014/34/EU (ATEX)
	EN 60079 - 0 • EN 60079 - 1 EN 60079 - 11 • EN 60079 - 31
	CE BVI 14 ATEX 0007
	U BVI 14 ATEX 0008U
	IEC 60079 - 0 • IEC 60079 - 1 IEC 60079 - 11 • IEC 60079 - 31
	IECEx EPS 14.0017
	IECEx EPS 14.0016U

B

- Ideal to interconnect the wires and to accommodate a vast variety of equipment and instruments.
- Internal anti-condense painting RAL 2004.
- Certificated either for the version complete with electrical apparatus or empty as an Ex component.

Options	- Various paints RAL 7000	- Accessories see page B18	- External units (signaling units, pushbuttons, etc.)
	- Anti-corrosion technology: ALUMINOX	- Apparatus to be housed: see page B20.	



NOTES

For enclosure cable entries layout see page B17.

For internal apparatus mounting plates see page B18.

For maximum dissippable power see page B19.

In presence of Intrinsically Safe apparatus see guidelines on page B20.

Type	Size	External Dimensions (mm)					Internal Dimensions (mm)					Mounting Template (mm)			Electrical apparatus (mm)		Weight (kg)
		A	B	C	ØD	Q	E	F	G	ØH	I	L	M	N	ØO		
CCA	0	150	150	110	130	195	122	122	90	102	175	125	8	80	95	2,9	
CCA	1	165	165	120	145	210	137	137	100	117	190	140	8	90	110	3,5	
CCA	2	190	190	150	166	238	160	160	122	135	215	165	8	110	125	5,6	
CCA	3	225	255	172	200	290	193	223	145	161	260	220	10	130	156	10,4	
CCA	4	270	305	202	240	330	238	273	160	198	300	270	10	145	190	14,6	
CCA	5	300	340	240	270	360	264	304	190	225	330	300	10	175	217	21,3	

Example: CCA 3 - Mod. KIU3

Order Coding

Type CCA	Size 3	Type of apparatus housed in the enclosure K = Electrical apparatus non I.S. KI = presence of I.S. electrical apparatus	Presence of control and/or signalling units U	Units Size 1: up to 1/2" - M20 2: up to 3/4" - M25 3: up to 1"
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ENCLOSURES with THREADED LID and EXTENSION for MEASURING and CONTROL DEVICES and SYSTEMS

series
CCA

Protection	Gas	Zone	1-2	II2G	Ex db IIC T6÷T4 Gb
	Dust	Zone	21-22	II2D	Ex tb IIIC T85°C÷T135°C Db

Degree of Protection	IP66/67
----------------------	---------

Amb. Temp.	Standard	-20°C	+40°C
	Extended	-50°C	+80°C



Entries Threading	NPT
	Metric

Material	Aluminum Light Alloy
----------	----------------------

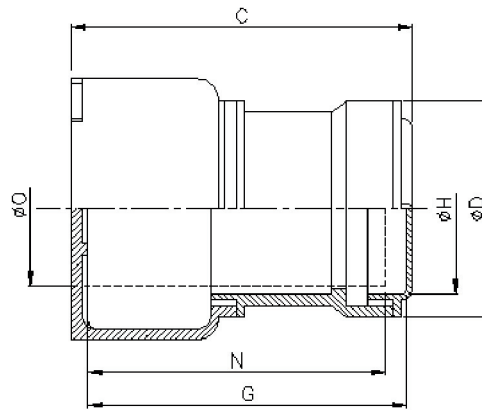
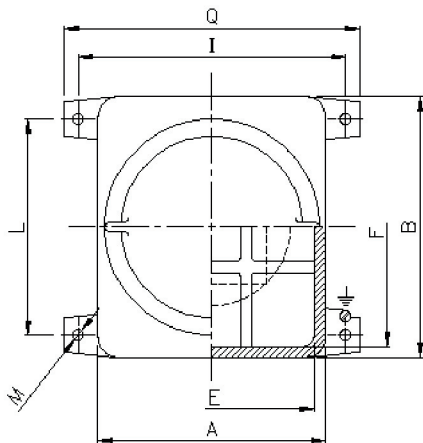
Painting	external epoxy RAL 7000
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Standards and Certificates

	Directive 2014/34/EU (ATEX)
	EN 60079 - 0 • EN 60079 - 1 EN 60079 - 11 • EN 60079 - 31
CE	BVI 14 ATEX 0007
U	BVI 14 ATEX 0008U
	IEC 60079 - 0 • IEC 60079 - 1 IEC 60079 - 11 • IEC 60079 - 31
	IECEx EPS 14.0017
	IECEx EPS 14.0016U

- Ideal to interconnect the wires and to accommodate a vast variety of equipment and instruments.
- Internal anti-condense painting RAL 2004.
- Standard or extended depth by adding one of the extensions (short or long) to accommodate larger instruments.
- Certificated either for the version complete with electrical apparatus or empty as an Ex component.

Options	- Various RAL paints	- Accessories see page B18	- External units (signaling units, pushbuttons, etc.)
	- Anti-corrosion technology: ALUMINOX	- Apparatus to be housed: see page B20.	



NOTES

(°) Data refer to enclosures with short extension and long extension respectively.

For enclosure cable entries layout see page B17.

For internal apparatus mounting plates see page B18.

For maximum dissipable power see page B19.

In presence of Intrinsically Safe apparatus see guidelines on page B20.

Type	Size	External Dimensions (mm)					Internal Dimensions (mm)					Mounting Template (mm)			Electrical apparatus (mm)		Weight (kg)
		A	B	C (°)	ØD	Q	E	F	G (°)	ØH	I	L	M	N (°)	ØO		
CCA	0	150	150	170-201	130	195	122	122	150-180	102	175	125	8	140-170	95	3,2	
CCA	1	165	165	183-223	145	210	137	137	160-200	117	190	140	8	150-190	110	3,8	
CCA	2	190	190	243-293	166	238	160	160	210-260	135	215	165	8	195-245	125	7,0-7,3	
CCA	3	225	255	260-335	200	290	193	223	240-315	161	260	220	10	225-300	156	12,5-13,4	
CCA	4	270	305	305-380	240	330	238	273	260-335	198	300	270	10	245-320	190	17,6-19,0	
CCA	5	300	340	350-440	270	360	264	304	300-390	225	330	300	10	285-375	217	25,0-26,9	

Example: CCA 1/160 - Mod. KIU3

Order Coding

Type CCA	Size 1	Internal depth G (with extension only) 160	Type of apparatus housed within the enclosure K = non I.S. electrical apparatus KI = presence of I.S. electrical apparatus	Presence of control and/or signalling units U	Units Size 1: up to 1/2" - M20 2: up to 3/4" - M25 3: up to 1"
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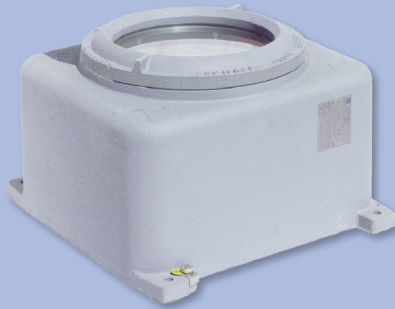
ENCLOSURES with THREADED PORTHOLE for MEASURING and CONTROL DEVICES and SYSTEMS

series
CPS

Protection	Gas	Zone	1-2	II2G	Ex db IIC T6÷T4 Gb
	Dust		21-22	II2D	Ex tb IIIC T85°C÷T135°C Db

Degree of Protection	IP66/67
----------------------	---------

Amb. Temp.	Standard		-20°C		+40°C
	Extended		-50°C		+80°C



Entries Threading	NPT
	Metric

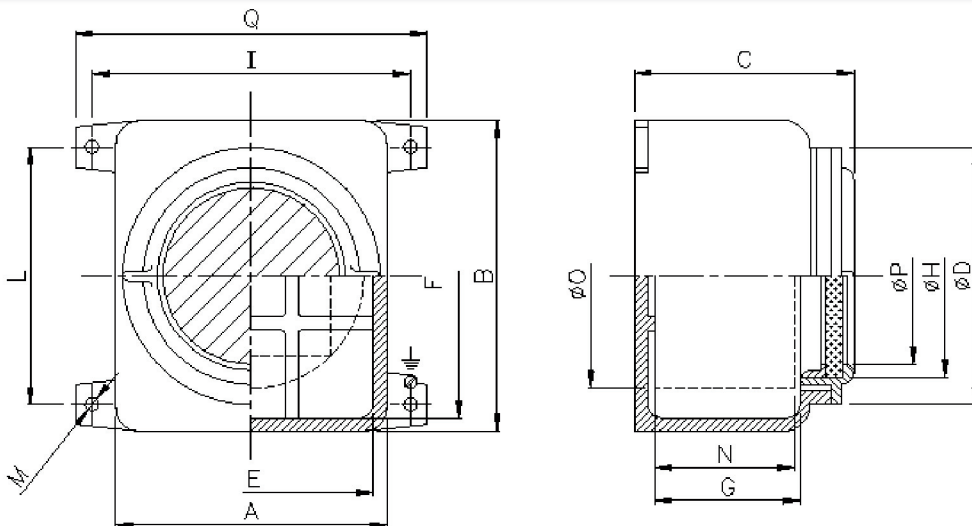
Material	Aluminum Light Alloy
----------	----------------------

Painting	external epoxy RAL 7000
----------	-------------------------

Standards and Certificates		Directive 2014/34/EU (ATEX)
		EN 60079 - 0 • EN 60079 - 1 EN 60079 - 11 • EN 60079 - 31
		BVI 14 ATEX 0007
		BVI 14 ATEX 0008U
		IEC 60079 - 0 • IEC 60079 - 1 IEC 60079 - 11 • IEC 60079 - 31
		IECEx EPS 14.0017
		IECEx EPS 14.0016U

- Ideal to interconnect the wires and to accommodate a vast variety of equipment and instruments.
- Internal anti-condense painting RAL 2004.
- Certificated either for the version complete with electrical apparatus or empty as an Ex component.

Options	- Various RAL paints	- Accessories see page B18	- External units (signaling units, pushbuttons, etc.)
	- Anti-corrosion technology: ALUMINOX	- Apparatus to be housed: see page B20.	



NOTES

For enclosure cable entries layout see page B17.

For internal apparatus mounting plates see page B18.

For maximum dissipable power see page B19.

In presence of Intrinsically Safe apparatus see guidelines on page B20.

Type	Size	External Dimensions (mm)					Internal Dimensions (mm)					Mounting Template (mm)			Electrical Apparatus (mm)		Opening	Weight (kg)
		A	B	C	ØD	Q	E	F	G	ØH	I	L	M	N	ØO	ØP		
CPS	0	150	150	110	130	195	122	122	59	112	175	125	8	57	105	82	3,0	
CPS	1	165	165	120	145	210	137	137	69	127	190	140	8	67	120	96	3,7	
CPS	2	190	190	150	166	238	160	160	91	147	215	165	8	89	140	115	5,8	
CPS	3	225	255	172	200	290	193	223	108	176	260	220	10	106	170	140	10,7	
CPS	4	270	305	202	240	330	238	273	132	216	300	270	10	130	205	165	14,8	
CPS	5	300	340	240	270	360	264	304	157	245	330	300	10	155	235	195	21,0	

Example: CPS 2 - Mod.KIU2

Order Coding

Type CPS	Size 2	Type of apparatus housed in the enclosure K = Electrical apparatus non I.S. KI = presence of I.S. electrical apparatus	Presence of control and/or signalling unit U	Units Size 1: up to 1/2" - M20 2: up to 3/4" - M25 3: up to 1"
--------------------	------------------	--	--	---

ENCLOSURES with THREADED PORTHOLE and EXTENSION for MEASURING and CONTROL DEVICES and SYSTEMS

series
CPS

Protection	Gas	Zone	1-2	II2G	Ex db IIC T6÷T4 Gb
	Dust	Zone	21-22	II2D	Ex tb IIIC T85°C÷T135°C Db

Grade of Protection	IP66/67
---------------------	---------

Amb. Temp.	Standard	Extended	-20°C	+40°C
			-50°C	+80°C



Entries Threading	NPT
	Metric

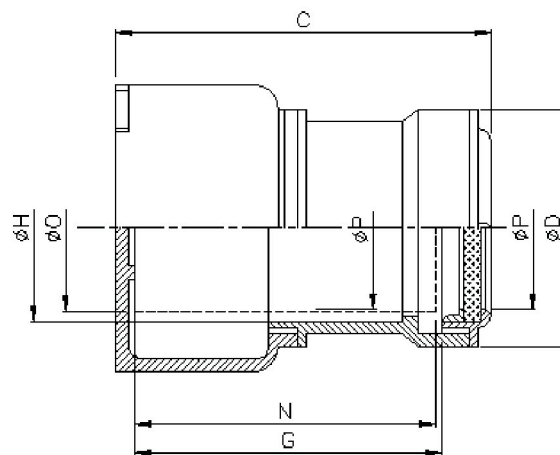
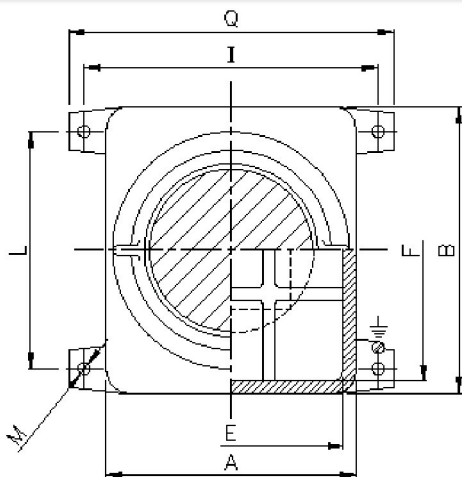
Material	Aluminum Light Alloy
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Painting	external epoxy RAL 7000
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Standards and Certificates	Directive 2014/34/EU (ATEX)
	EN 60079 - 0 • EN 60079 - 1 EN 60079 - 11 • EN 60079 - 31
CE	BVI 14 ATEX 0007
U	BVI 14 ATEX 0008U
IECEx	IEC 60079 - 0 • IEC 60079 - 1 IEC 60079 - 11 • IEC 60079 - 31
	IECEx EPS 14.0017
	IECEx EPS 14.0016U

- Ideal to interconnect the wires and to accommodate a vast variety of equipment and instruments.
- Internal anti-condense painting RAL 2004.
- Standard or extended depth by adding one of the extensions (short or long) to accommodate larger instruments.
- Certificated either for the version complete with electrical apparatus or empty as an Ex component.

Options	- Various RAL paints	- Accessories see page B18	- External units (signaling units, pushbuttons, etc.)
	- Anti-corrosion technology: ALUMINOX	- Apparatus to be housed: see page B20.	



NOTES

(°) Data refer to enclosures with short extension and long extension respectively.

For enclosure cable entries layout see page B17.

For internal apparatus mounting plates see page B18.

For maximum dissipable power see page B19.

In presence of Intrinsically Safe apparatus see guidelines on page B20.

Type	Size	External Dimensions (mm)				Internal Dimensions (mm)				Mounting Template (mm)			Electrical Apparatus (mm)		Opening (°)	Weight (kg)	
		A	B	C (°)	ØD	Q	E	F	G	ØH	I	L	M	N (°)			ØO
CPS	0	150	150	170-200	130	195	122	122	121-151	112	175	125	8	119-149	105	82	3,3
CPS	1	165	165	180-220	145	210	137	137	129-169	127	190	140	8	127-167	120	96	4,0
CPS	2	190	190	243-293	166	238	160	160	183-233	147	215	165	8	181-231	140	115	7,2-7,5
CPS	3	225	255	260-335	200	290	193	223	197-272	176	260	220	10	195-270	170	140	12,8-13,7
CPS	4	270	305	305-380	240	330	238	273	235-310	216	300	270	10	235-307	205	165	17,8-19,2
CPS	5	300	340	350-440	270	360	264	304	270-360	245	330	300	10	267-357	235	195	25,3-27,2

Example: CPS 4/310 - Mod.KU2

Order Coding

Type CPS	Size 4	Internal depth G (with extension only) 310	Type of apparatus housed within the enclosure K = non I.S. electrical apparatus KI = presence of I.S. electrical apparatus	Presence of control and/or signalling units U	Units Size 1: up to 1/2" - M20 2: up to 3/4" - M25 3: up to 1"
--------------------	------------------	--	---	---	---

GUIDE to ENCLOSURE CABLE ENTRIES LAYOUT

series
CCA
CPS

B

The table indicates the maximum number of cable entries that can be made on each side of the enclosure for each threading diameter.

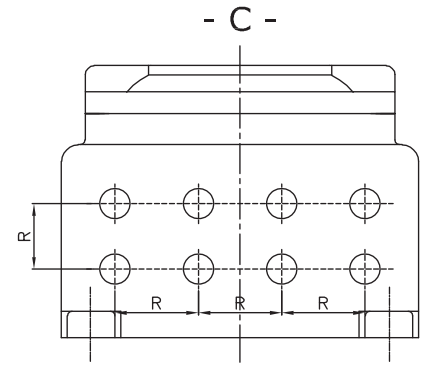
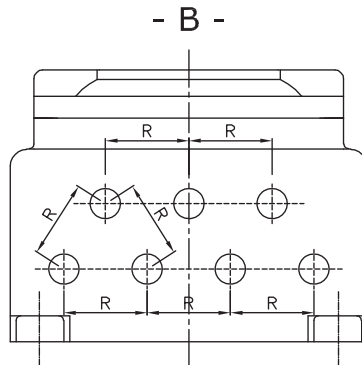
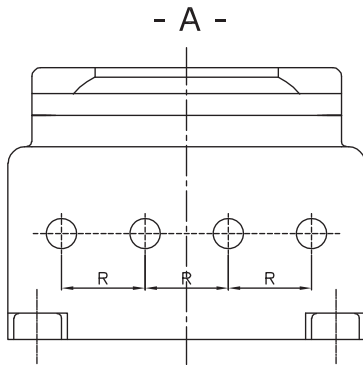
The distance between the entries allows the installing of cable glands (see page H3 and following) and/or the three-piece fittings (see page H18).

On the same side it is possible to make cable entries of different diameter and different thread between them up to the maximum number allowed for the largest diameter.

Example: CCA 5 long side L (scheme A):

- 2 bores size 1;
- 2 bore size 2;
- 1 bore size 3;

In total max 5 holes as the maximum number of entries allowed for size 3.



Enclosure	Side	Size 1			Size 2			Size 3			Size 4			Size 5			Size 6			Size 7			Size 8			Size 9																				
		R	Scheme			R	Scheme			R	Scheme			R	Scheme			R	Scheme			R	Scheme			R	Scheme																			
			A	B	C		A	B	C		A	B	C		A	B	C		A	B	C		A	B	C		A	B	C	A	B	C														
CCA 0	L	45	3	5	-	50	2	-	-	60	2	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	C	45	3	5	-	50	2	-	-	60	2	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
CCA 1	L	45	3	5	6	45	3	5	-	45	3	-	-	75	2	-	-	75	2	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	C	45	3	5	6	45	3	5	-	45	3	-	-	75	2	-	-	75	2	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
CCA 2	L	45	4	7	8	50	3	5	6	50	3	5	6	90	2	-	-	90	2	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	C	45	4	7	8	50	3	5	6	50	3	5	6	90	2	-	-	90	2	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
CCA 3	L	45	5	9	10	45	5	9	10	55	4	7	8	80	3	-	-	80	3	-	-	100	2	-	-	115	2	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C	45	4	7	8	45	4	7	8	55	3	5	6	90	2	-	-	90	2	-	-	100	2	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CCA 4	L	45	6	11	12	45	6	11	12	55	4	7	8	80	3	-	-	80	3	-	-	95	3	-	-	130	2	-	-	130	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C	45	5	9	10	45	4	7	8	55	4	7	8	80	3	-	-	80	3	-	-	100	2	-	-	120	2	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CCA 5	L	45	7	13	14	45	7	13	14	60	5	9	10	100	3	-	-	100	3	-	-	100	3	-	-	150	2	-	-	150	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C	45	6	11	12	45	6	11	12	60	4	7	8	80	3	-	-	95	3	-	-	90	3	-	-	150	2	-	-	140	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Available threadings:

- NPT ANSI B1.20.1;
- Metric M...x1,5 ISO 965.

Sides key:

- L = long side
- C = short side

Cable entries size key:

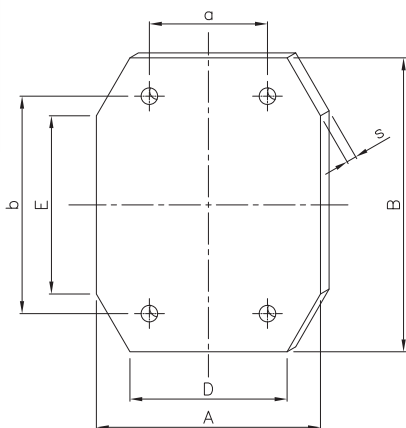
- 1 = M20 - 1/2"
- 2 = M25 - 3/4"
- 3 = M32 - 1"
- 4 = M40 - 1"1/4
- 5 = M50 - 1"1/2
- 6 = M63 - 2"
- 7 = M75 - 2"1/2
- 8 = M80 - 3"
- 9 = M90 - 4"



ACCESSORIES

series
**CCA
CPS**

Plates Series PC - Material: Tropicalized Steel

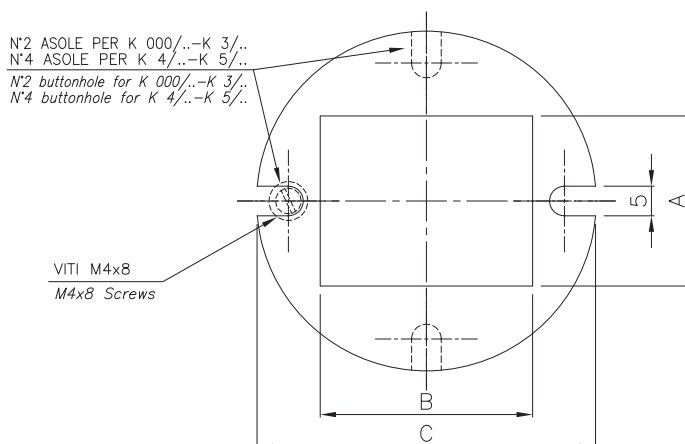


Order Code	Enclosure	Dimensions (mm)					Internal Fixing			Weight (g)
		A	B	D	E	S	a	b	ØC	
PC 0	CCA 0 CPS 0	105	105	42	92	2	40	90	M6	160
PC 1	CCA 1 CPS 1	120	120	48	100	2	48	100	M6	210
PC 2	CCA 2 CPS 2	140	140	70	124	2	58	120	M6	380
PC 3	CCA 3 CPS 3	160	190	75	150	2	70	147	M6	620
PC 4	CCA 4 CPS 4	200	230	88	182	2	85	182	M6	900
PC 5	CCA 5 CPS 5	215	265	100	207	2	100	207	M6	1170

INSTRUMENT MOUNTING KIT

series
**CCA
CPS**

Disk Series K - Material: tropicalized Steel, painted black (RAL 9005)



Order Code	Enclosure	Instrument Dimensions	Dimensions (mm)		
			A	B	C
K 0/00	CPS 0	48 x 48	45	45	111
K 0/01	CPS 0	48 x 72	45	68	111
K 0/11	CPS 0	72 x 72	68	68	111
K 1/11	CPS 1	72 x 72	68	68	126
K 1/02	CPS 1	48 x 96	45	92	126
K 1/12	CPS 1	72 x 96	68	92	126
K 2/02	CPS 2	48 x 96	45	92	146
K 2/12	CPS 2	72 x 96	68	92	146
K 2/22	CPS 2	96 x 96	92	92	146
K 3/12	CPS 3	72 x 96	68	92	175
K 3/22	CPS 3	96 x 96	92	92	175
K 3/03	CPS 3	48 x 144	45	137	175
K 3/13	CPS 3	72 x 144	68	137	175
K 4/03	CPS 4	48 x 144	45	137	214
K 4/13	CPS 4	68 x 144	68	137	214
K 4/23	CPS 4	96 x 144	92	137	214
K 4/33	CPS 4	144 x 144	137	137	214
K 5/23	CPS 5	96 x 144	92	137	244
K 5/33	CPS 5	144 x 144	137	137	244

NOTES

On request disks having instrument dimensions as specified by the customer are available; obviously they shall be consistent with the internal dimensions of the chosen enclosure.

MAX DISSIPATED POWER and TEMPERATURE CLASS as a Function of AMBIENT TEMPERATURE

series
**CCA
CPS**

B

Protection Mode Ex d															
Temperature Class															
Enclosure	Ambient +40°C			Ambient +50°C			Ambient +60°C			Ambient +70°C			Ambient +80°C		
	T6	T5	T4	T6	T5	T4	T6	T5	T4	T6	T5	T4	T6	T5	T4
CCA 0	23	29	49	14	23	43	9	17	37	3	12	32	--	6	26
CCA 0 / 182	32	40	68	20	32	60	12	24	52	4	16	44	--	8	36
CCA 0 / 212	37	46	79	23	37	69	14	28	60	5	19	51	--	9	42
CCA 1	28	35	60	18	28	53	11	21	46	4	14	39	--	7	32
CCA 1 / 195	39	49	83	24	39	73	15	29	63	5	20	54	--	10	44
CCA 1 / 235	46	58	98	29	46	86	17	35	75	6	23	63	--	12	52
CCA 2	39	49	83	24	39	73	15	29	63	5	20	54	--	10	44
CCA 2 / 235	53	66	113	33	53	99	20	40	86	7	27	73	--	13	60
CCA 2 / 303	66	83	140	41	66	124	25	50	107	8	33	91	--	17	74
CCA 3	56	70	119	35	56	105	21	42	91	7	28	77	--	14	63
CCA 3 / 279	77	96	164	48	77	144	29	58	125	10	39	106	--	19	87
CCA 3 / 354	95	119	202	59	95	178	36	71	154	12	48	131	--	24	107
CCA 4	80	100	170	50	80	150	30	60	130	10	40	110	--	20	90
CCA 4 / 328	109	136	232	68	109	204	41	82	177	14	55	150	--	27	123
CCA 4 / 403	130	163	276	81	130	244	49	98	211	16	65	179	--	33	146
CCA 5	90	113	191	56	90	169	34	68	146	11	45	124	--	23	101
CCA 5 / 373	139	174	295	87	139	261	52	104	226	17	70	191	--	35	156
CCA 5 / 463	168	210	357	105	168	315	63	126	273	21	84	231	--	42	189

Protection Mode Ex d [ia]	
Amb. Temp. -20°C ÷ +40°C	
Enclosure	Temp. Class T6
CCA 0 / ...	11
CCA 1 / ...	12
CCA 2 / ...	18
CCA 3 / ...	26
CCA 4 / ...	34
CCA 5 / ...	40

Protection Mode Ex d															
Temperature Class															
Enclosure	Ambient +40°C			Ambient +50°C			Ambient +60°C			Ambient +70°C			Ambient +80°C		
	T6	T5	T4	T6	T5	T4	T6	T5	T4	T6	T5	T4	T6	T5	T4
CPS 0	20	25	43	13	20	38	8	15	33	3	10	28	--	5	23
CPS 0 / 170	27	34	57	17	27	51	10	20	44	3	14	37	--	7	30
CPS 0 / 200	31	39	66	19	31	58	12	23	50	4	16	43	--	8	35
CPS 1	24	30	51	15	24	45	9	18	39	3	12	33	--	6	27
CPS 1 / 180	32	40	68	20	32	60	12	24	52	4	16	44	--	8	36
CPS 1 / 220	38	48	81	24	38	71	14	29	62	5	19	52	--	10	43
CPS 2	33	41	70	21	33	62	15	25	54	4	17	45	--	8	37
CPS 2 / 239	48	60	102	30	48	90	18	36	78	6	24	66	--	12	54
CPS 2 / 289	57	71	121	36	57	107	21	43	93	7	29	78	--	14	64
CPS 3	46	58	98	29	46	86	17	35	75	6	23	63	--	12	52
CPS 3 / 259	64	80	136	40	64	120	24	48	104	8	32	88	--	16	72
CPS 3 / 334	80	100	170	50	80	150	30	60	130	10	40	110	--	20	90
CPS 4	66	83	140	41	66	124	25	50	107	8	33	91	--	17	74
CPS 4 / 305	91	114	193	57	91	171	34	68	148	11	46	125	--	23	102
CPS 4 / 380	110	138	234	69	110	206	41	83	179	14	55	151	--	28	124
CPS 5	86	108	183	54	86	161	32	65	140	11	43	118	--	22	97
CPS 5 / 345	116	145	247	73	116	218	44	87	189	15	58	160	--	29	131
CPS 5 / 435	142	178	302	89	142	266	53	107	231	18	71	195	--	36	160

Protection Mode Ex d [ia]	
Amb. Temp. -20°C ÷ +40°C	
Enclosure	Temp. Class T6
CPS 0 / ...	9
CPS 1 / ...	10
CPS 2 / ...	15
CPS 3 / ...	23
CPS 4 / ...	32
CPS 5 / ...	37

NOTES

Data given in the tables are expressed in W.

For the enclosures containing circuits and/or Intrinsically Safe apparatus it is allowed only temperature class T6 with

reference to an ambient temperature range -20°C ÷ +40°C.



TYPES of EQUIPMENT / INSTRUMENTS to be HOUSED inside the ENCLOSURES

series
CCA
CPS

Enclosures Series CCA/CPS Model K... (without Intrinsically Safe -I.S.- circuits/apparatus)

- Max Voltage: 1000 V (a.c./d.c.)
- Current: 12 A ÷ 240 A
- Minimum conductor section: 1,5 mm²
- Max Current Density:
 - 3 A/mm² for sections up to 10 mm²
 - 2 A/mm² for sections > 10 mm²
- All electrical equipment shall conform to their respective IEC/CENELEC Standards concerning the characteristics and the operating mode.
- The electric equipment installed inside the enclosure shall be such that their dimensions allow, at any cross-section, at least 40% of free surface.
- In case of equipment conceived on electronic boards the distance between two parallel boards is ≥30 mm.
- Distance between any electronic component shall be ≥ 15 mm.
- Electrical equipment contained in the enclosure shall not be intrinsically safe, it shall not include capillaries or other non electric connections
- In case of presence of capacitors, when the voltage goes off they must be discharged within their own circuit in less than one second.

Enclosures Series CCA/CPS Model KI... (with Intrinsically Safe -I.S.- circuits/apparatus)

It is essential to consider the following, in case of presence of intrinsically safe circuits and/or I.S. apparatus:

Protection Mode	GAS:	Ex d [ja Ga] IIC T6 Gb
Protection Mode	DUST:	Ex tb IIIC [ia Da] T85°C Db
Group / Category	II 2 (1) GD	
Ambient Temperature	-20°C ÷ +40°C	
Temperature Class	T6	

• ELECTRICAL RATINGS

- Max Voltage: 660 V a.c. - 440 V d.c.
- Max Current: 60 A

• WIRING

The internal wiring, placed in suitable ducts, shall be made directly on the barriers without interposing terminals, the relevant insulation must have a minimum thickness >0.5 mm and shall include a metallic braid to firmly grounded.

• MINIMUM DISTANCES

- Between two different I.S. circuits: >6 mm
- Between an I.S. circuit S.I. and Ground: >3 mm
- Between I.S. and non I.S. circuits: >50 mm

- Max Power Voltage of I.S. circuit: <250 V (with a double insulation cable);
- Presumed power supply short circuit current: <1500 A (unless otherwise specified).

• I.S. EQUIPMENT FASTENING

The interface barriers are installed on a metal DIN rail fixed to the bottom of the enclosure by screws and lock washer or, as alternative, on the supporting plate also fixed the bottom of the enclosure by screws and lock washer.



ENCLOSURES for JUNCTION and INSTRUMENTS

series
CCL
CPL

B

The enclosures series CCL/CPL are normally used for either the derivation of electrical conductors or to house measurement and control instrumentation as well as electrical / electronic devices normally classified as "General Purpose". The possibility of having indicating, control and signalling units mounted along the sides of these enclosures extends their functionality and flexibility of use.

The enclosures series CCL/CPL are fully customizable in terms of the number and position of cable entries and control units as well as the RAL external color.

By virtue of specific design features the degree of protection IP66/67, secured by special gaskets, as well as the wide range of temperature, certificate for values between -20°C and +80°C, extend their use to innumerable applications.

Temperature class reaches T4, whereas the maximum surface temperature up to 135°C for protection against combustible dusts.

Conversely, in cases where inside intrinsically safe (Ex ia) is mounted, the ambient temperature range becomes -20°C to +40°C and the temperature class T6 (T85°C for combustible dust).

The CCL and CPL enclosures are characterized by a lid with threaded joint with special fins that facilitate its tightening/loosening. The threaded lid of the series CPL consists of an inspection porthole in thermoresistant glass sealed with a resin suitable to withstand operating temperatures between -55°C and +250°C. This allows the view of the instrumentation housed inside the enclosure.

The standard supply of enclosures series CCL/CPL provides external Stainless Steel screws, external

embossed effect painting with epoxy paint RAL7000 and internal anti-condense coating RAL 2004. The customer, however, may specify the preferred alternatives either for the external or internal colors (for more information, refer to the tables in Section A).

Available on request, a series of different kits for proper housing of instruments and terminals inside the case.

Advanced technologies characterize the version in Aluminox that has anti-corrosion and surface hardness properties superior to Stainless Steel, which, together with unmatched antibacterial and self-lubricant (avoiding i.e. seizure situation), offer the user significant savings with a third of its weight.

Each model is fully specified on the following pages.

ENCLOSURES with THREADED JOINT LID



series	Page
CCL	B23

ENCLOSURES with THREADED JOINT PORTHOLE



CPL	B25
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ACCESSORIES



CCL CPL	B28
--------------------------	------------

TYPES of EQUIPMENT / INSTRUMENTS to be HOUSED within the the ENCLOSURES

CCL CPL	B30
--------------------------	------------

NOTES:

B

ENCLOSURES with THREADED LID for MEASURING and CONTROL DEVICES and SYSTEMS

series
CCL

Protection	Gas	Zone	1-2	II2G	Ex d IIC T6÷T4 Gb
	Dust	Zone	21-22	II2D	Ex tb IIIC T85°C÷T135°C Db

Degree of Protection	IP66/67
----------------------	---------

Amb. Temp.	Standard	-20°C	+40°C
	Extended	-20°C	+80°C



Entries Threading	NPT
	Metric

Material	Aluminum Light Alloy
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Painting	external epoxy RAL 7000
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Standards and Certificates



Directive 2014/34/EU (ATEX)

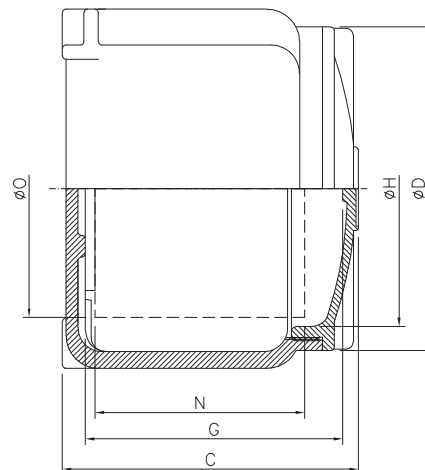
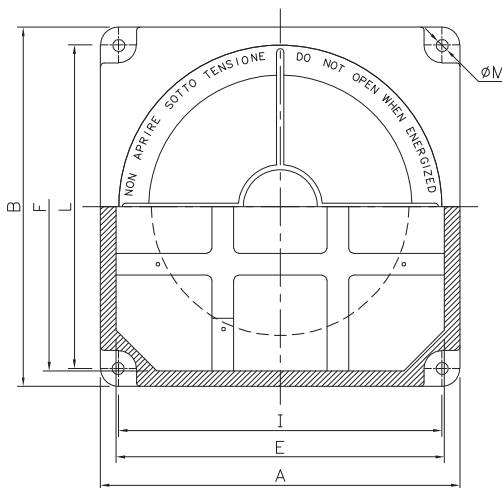
EN 60079 - 0 • EN 60079 - 1
EN 60079 - 11 • EN 60079 - 13

CE IMQ 10 ATEX 003

U IMQ 10 ATEX 004U

- Ideal to interconnect the wires and to accommodate a vast variety of equipment and instruments.
- Internal anti-condense painting RAL 2004.
- Certificated either for the version complete with electrical apparatus or empty as an Ex component.

Options	- Various RAL colors.	- Accessories see page B28.	- External units (signaling units, pushbuttons, etc.)
	- Anti-corrosion technology: ALUMINOX.	- Apparatus to be housed: see page B30.	



NOTES

For enclosure cable entries layout see page B27.

For internal apparatus mounting plates see page B28.

For maximum dissipation power see page B29.

In presence of Intrinsically Safe apparatus see guidelines on page B30.

Type	Size	External Dimensions (mm)				Internal Dimensions (mm)				Mounting Template (mm)			Electrical Apparatus (mm)		Weight (kg)
		A	B	C	ØD	E	F	G	ØH	I	L	ØM	N	ØO	
CCL	0	150	150	110	130	128	128	94	103	130	130	7	80	98	2.6
CCL	1	165	165	120	145	143	143	104	118	145	145	7	90	110	3.5
CCL	2	190	190	150	166	164	164	131	135	168	168	9	110	128	5.0
CCL	3	230	230	170	200	204	204	145	163	208	208	9	130	152	8.0
CCL	4	270	270	205	240	242	242	177	203	245	245	11	145	190	12.0
CCL	5	300	300	245	270	272	272	212	228	270	270	11	175	215	15.0
CCL	6	380	380	280	350	350	350	238	290	345	345	12	190	300	25.0
CCL	7	440	440	323	410	416	416	266	350	405	405	12	226	380	38.0
CCL	8	520	520	340	480	482	482	272	416	480	480	14	254	435	52.0

Example: CCL 3 - Mod. KIU3

Order Coding

Type

CCL

Size

3

Type of apparatus housed in the enclosure

K = Electrical apparatus non I.S.

KI = presence of I.S. electrical apparatus

Presence of control and/or signalling units

U

Units Size

1: up to 1/2" - M20

2: up to 3/4" - M25

3: up to 1"

ENCLOSURES with THREADED LID and EXTENSION for MEASURING and CONTROL DEVICES and SYSTEMS

series
CCL

Protection	Gas	Zone	1-2	II2G	Ex d IIC T6÷T4 Gb
	Dust	Zone	21-22	II2D	Ex tb IIIC T85°C÷T135°C Db

Degree of Protection	IP66/67
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Amb. Temp.	Standard		-20°C		+40°C
			Extended		-20°C




Entries Threading	NPT
	Metric

Material	Aluminum Light Alloy
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Painting	external epoxy RAL 7000
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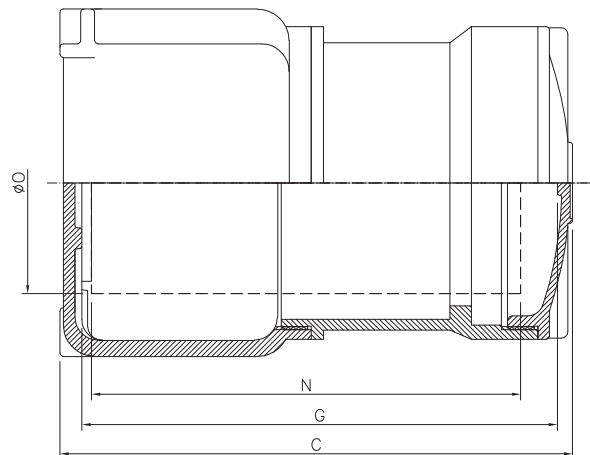
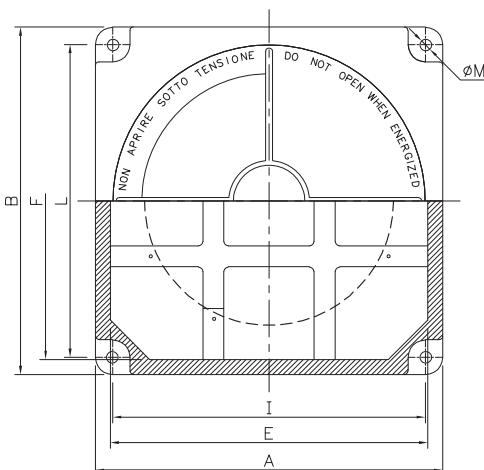
Standards and Certificates



Directive 2014/34/EU (ATEX)	
EN 60079 - 0 • EN 60079 - 1 EN 60079 - 11 • EN 60079 - 31	
CE	IMQ 10 ATEX 003
U	IMQ 10 ATEX 004U

- Ideal to interconnect the wires and to accommodate a vast variety of equipment and instruments.
- Internal anti-condense painting RAL 2004.
- Standard or extended depth by adding one of the extensions (short or long) to accommodate larger instruments.
- Certificated either for the version complete with electrical apparatus or empty as an Ex component.

Options	- Various RAL paints	- Accessories see page B28	- External units (signaling units, pushbuttons, etc.)
	- Anti-corrosion technology: ALUMINOX	- Apparatus to be housed: see page B30.	



NOTES

(°) Data refer to enclosures with short extension and long extension respectively.

For enclosure cable entries layout see page B27.

For internal apparatus mounting plates see page B28.

For maximum dissipable power see page B29.

In presence of Intrinsically Safe apparatus see guidelines on page B30.

Type	Size	External Dimensions (mm)				Internal Dimensions (mm)				Mounting Template (mm)			Electrical apparatus (mm)		Weight (kg) (°)
		A	B	C (°)	ØD	E	F	G (°)	ØH	I	L	ØM	N (°)	ØO	
CCL	0	150	150	172 - 202	130	128	128	156 - 186	103	130	130	7	142 - 172	98	2.9 - 3.2
CCL	1	165	165	180 - 220	145	143	143	164 - 204	118	145	145	7	150 - 190	110	3.8 - 4.2
CCL	2	190	190	243 - 293	166	164	164	224 - 274	135	168	168	9	203 - 253	128	6.4 - 6.7
CCL	3	230	230	259 - 334	200	204	204	234 - 309	163	208	208	9	219 - 294	152	10.1 - 11.0
CCL	4	270	270	308 - 383	240	242	242	280 - 355	203	245	245	11	248 - 323	190	15.0 - 16.4
CCL	5	300	300	358 - 448	270	272	272	325 - 415	228	270	270	11	288 - 378	215	18.7 - 20.6

Example: CCL 1/164 - Mod. KIU3

Order Coding

Type CCL	Size 1	Internal depth G (with extension only) 160	Type of apparatus housed within the enclosure K = non I.S. electrical apparatus KI = presence of I.S. electrical apparatus	Presence of control and/or signalling units U	Units Size 1: up to 1/2" - M20 2: up to 3/4" - M25 3: up to 1"
--------------------	------------------	--	--	---	---

ENCLOSURES with THREADED PORTHOLE for MEASURING and CONTROL DEVICES and SYSTEMS

series
CPL

Protection	Gas	Zone	1-2	II2G	Ex d IIC T6÷T4 Gb
	Dust	Zone	21-22	II2D	Ex tb IIIC T85°C÷T135°C Db

Degree of Protection	IP66/67
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Amb. Temp.	Standard	-20°C	+40°C
	Extended	-20°C	+80°C




Entries Threading	NPT
	Metric

Material	Aluminum Light Alloy
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Painting	external epoxy RAL 7000
----------	-------------------------

Standards and Certificates

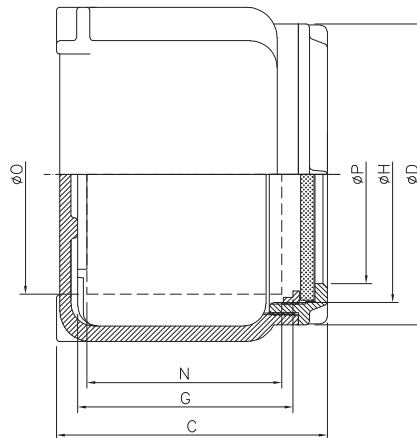
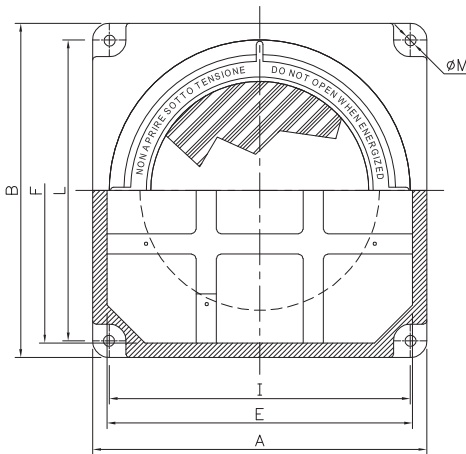


- Directive 2014/34/EU (ATEX)
- EN 60079 - 0 • EN 60079 - 1
- EN 60079 - 11 • EN 60079 - 13
- CE IMQ 10 ATEX 003
- U IMQ 10 ATEX 004U

B

- Ideal to interconnect the wires and to accommodate a vast variety of equipment and instruments.
- Internal anti-condense painting RAL 2004.
- Certificated either for the version complete with electrical apparatus or empty as an Ex component.

Options	- Various RAL paints	- Accessories see page B28	- External units (signaling units, pushbuttons, etc.)
	- Anti-corrosion technology: ALUMINOX	- Apparatus to be housed: see page B30.	



NOTES

For enclosure cable entries layout see page B27.

For internal apparatus mounting plates see page B28.

For maximum dissipable power see page B29.

In presence of Intrinsically Safe apparatus see guidelines on page B30.

Type	Size	External Dimensions (mm)				Internal Dimensions (mm)				Mounting Template (mm)			Electrical apparatus (mm)		Opening ØP	Peso (kg)
		A	B	C	ØD	E	F	G	ØH	I	L	M	N	ØO		
CPL	0	150	150	110	130	128	128	74	103	130P	130	7	60	98	82	3.1
CPL	1	165	165	120	145	143	143	82	118	145	145	7	70	110	96	4.1
CPL	2	190	190	150	166	164	164	106	135	168	168	9	85	128	115	5.6
CPL	3	230	230	170	200	204	204	117	163	208	208	9	102	152	140	8.6
CPL	4	270	270	205	240	242	242	147	203	245	245	11	115	190	165	12.8
CPL	5	300	300	245	270	272	272	180	230	270	270	11	143	215	195	15.8
CPL	6	380	380	280	350	350	350	192	328	345	345	12	150	310	254	26.0

Example: CPL 2 - Mod.KIU2

Order Coding

Type
CPL

Size
2

Type of apparatus housed within the enclosure
K = non I.S. electrical apparatus
KI = presence of I.S. electrical apparatus

Presence of control and/or signalling units
U

Units Size
1: up to 1/2" - M20
2: up to 3/4" - M25
3: up to 1"



ENCLOSURES with THREADED PORTHOLE and EXTENSION for MEASURING and CONTROL DEVICES and SYSTEMS

series
CPL

Protection	Gas	Zone	1-2	II2G	Ex d IIC T6÷T4 Gb
	Dust	Zone	21-22	II2D	Ex tb IIIC T85°C÷T135°C Db

Degree of Protection	IP66/67
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Amb. Temp.	Standard		-20°C		+40°C
			Extended		-20°C




Entries Threading	NPT
	Metric

Material	Aluminum Light Alloy
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Painting	external epoxy RAL 7000
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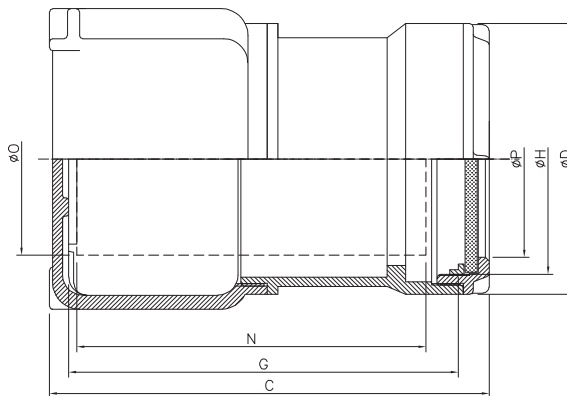
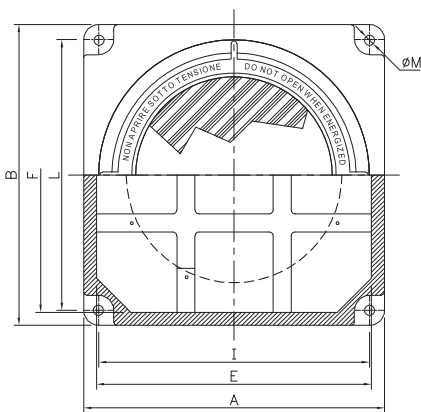
Standards and Certificates



Directive 2014/34/EU (ATEX)	
EN 60079 - 0 • EN 60079 - 1 EN 60079 - 11 • EN 60079 - 31	
CE	IMQ 10 ATEX 003
U	IMQ 10 ATEX 004U

- Ideal to interconnect the wires and to accommodate a vast variety of equipment and instruments.
- Internal anti-condense painting RAL 2004.
- Standard or extended depth by adding one of the extensions (short or long) to accommodate larger instruments.
- Certificated either for the version complete with electrical apparatus or empty as an Ex component.

Options	- Various RAL paints	- Accessories see page B28	- External units (signaling units, pushbuttons, etc.)
	- Anti-corrosion technology: ALUMINOX	- Apparatus to be housed: see page B30.	



NOTES

(°) Data refer to enclosures with short extension and long extension respectively.

For enclosure cable entries layout see page B27.

For internal apparatus mounting plates see page B28.

For maximum dissipable power see page B29.

In presence of Intrinsically Safe apparatus see guidelines on page B30.

Type	Size	External Dimensions (mm)				Internal Dimensions (mm)				Mounting Template (mm)			Electrical Apparatus (mm)		Opening	Weight (kg)	Weight (°)
		A	B	C (°)	ØD	E	F	G (°)	ØH	I	L	M	N (°)	ØO			
CPL	0	150	150	172 - 202	130	130	130	136 - 166	103	130	130	7	122 - 152	98	82	3.4 - 3.7	
CPL	1	165	165	180 - 220	145	145	145	142 - 182	118	145	145	7	129 - 169	110	96	4.4 - 4.8	
CPL	2	190	190	243 - 293	166	166	166	199 - 249	135	168	168	9	178 - 228	128	115	7.0 - 7.3	
CPL	3	230	230	259 - 334	200	206	206	206 - 281	163	208	208	9	191 - 266	152	140	10.7 - 11.6	
CPL	4	270	270	308 - 383	240	244	244	250 - 325	203	245	245	11	218 - 293	190	165	15.8 - 17.2	
CPL	5	300	300	358 - 448	270	274	274	293 - 383	228	270	270	11	256 - 346	215	195	19.5 - 21.4	

Esempio: CPL 4/325 - Mod.KU2

Order Coding	Type	Size	Internal depth G (with extension only)	Type of apparatus housed within the enclosure	Presence of control and/or signalling units	Units Size
	CPL	4				

GUIDE to ENCLOSURE CABLE ENTRIES LAYOUT

serie
CCL
CPL

B

The table indicates the maximum number of cable entries that can be made on each side of the enclosure for each threading diameter.

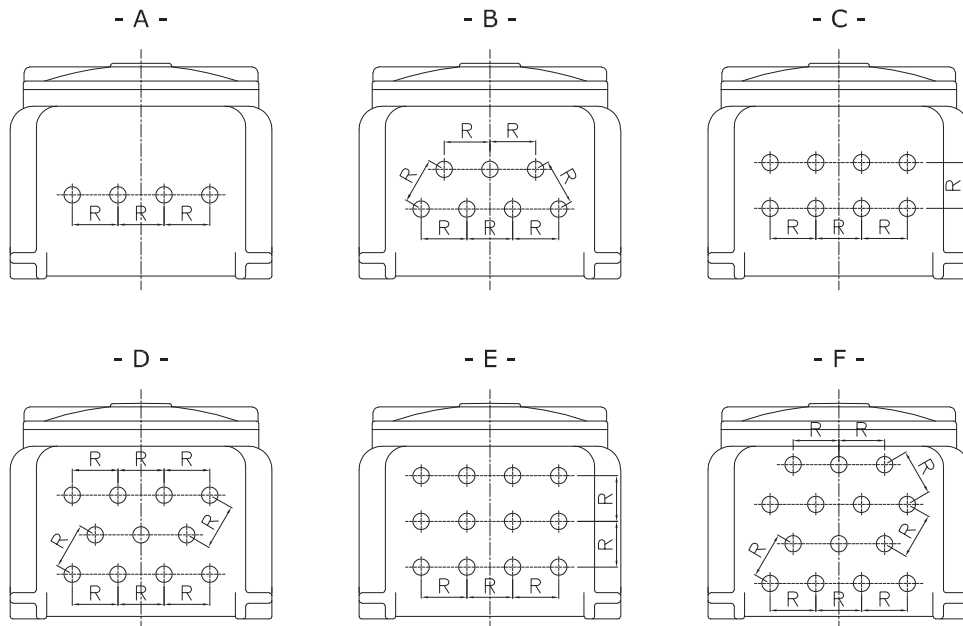
The distance between the entries allows the installing of cable glands (see page H3 and following) and/or the three-piece fittings (see page H18).

On the same side it is possible to make cable entries of different diameter and different thread between them up to the maximum number allowed for the largest diameter.

Example: CCL 6 (scheme A):

- 2 bores size 1;
- 2 bore size 2;
- 1 bore size 3;

In total max 5 holes as the maximum number of entries allowed for size 3.



Enclosure	Size 1						Size 2						Size 3						Size 4						Size 5						Size 6						Size 7						Size 8						Size 9											
	R	Scheme						R	Scheme						R	Scheme						R	Scheme						R	Scheme						R	Scheme						R	Scheme																
		A	B	C	D	E	F		A	B	C	D	E	F		A	B	C	D	E	A		B	C	D	E	F	A		B	C	D	E	F	A		B	C	D	E	F	A		B	C	D	E	F	A	B	C	D	E	F	A	B	C	D	E	F
CCL 0/CPL 0	40	2	3	-	-	-	40	2	3	-	-	-	52	2*	2*	-	-	-	-	1*	1*	-	-	-	-	1*	1*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
CCL 1/CPL 1	40	3	4	-	-	-	40	2	3	-	-	-	55	2*	2*	-	-	-	-	1*	1*	-	-	-	-	1*	1*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
CCL 2/CPL 2	40	3	5	6	-	-	45	3	5	6	-	-	60	2	3	-	-	-	70	2	2	-	-	-	70	2	2	-	-	-	80	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CCL 3/CPL 3	40	4	7	8	11	-	45	3	5	6	8	-	60	3	5	-	-	-	70	2	2	-	-	-	70	2	2	-	-	-	80	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CCL 4/CPL 4	40	5	9	10	14	15	45	4	7	8	11	-	62	3	5	6	-	-	70	3	5	-	-	-	70	3	5	-	-	-	85	2	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CCL 5/CPL 5	45	5	9	10	14	15	50	4	7	8	11	12	62	3	5	6	-	-	75	3	5	6	7	5	75	3	5	6	7	5	85	2	3	-	-	-	115	2	-	-	-	-	115	2	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
CCL 6/CPL 6	45	7	13	14	20	21	50	6	11	12	17	18	62	5	9	10	14	-	80	3	5	6	8	3	80	3	5	6	8	3	90	3	5	-	-	-	120	2	-	-	-	-	120	2	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
CCL 7	50	7	13	14	20	21	55	6	11	12	17	18	65	5	9	10	14	15	85	4	7	8	8	5	85	4	7	8	8	5	100	3	5	6	7	5	120	2	3	-	-	-	120	2	3	-	-	-	180	2	-	-	-	-	-	-	-	-	-	-
CCL 8	50	8	15	16	23	24	60	7	13	14	20	21	70	6	11	12	17	18	85	5	9	10	8	5	85	5	9	10	8	5	100	4	7	8	7	5	120	3	4	-	-	-	120	3	4	-	-	-	180	2	-	-	-	-	-	-	-	-	-	-

* available only metric threading.

Available threadings:
NPT ANSI B1.20.1;
Metric M...x1,5 ISO 965.

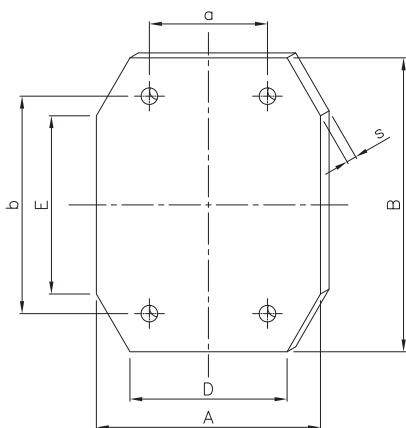
Cable entries size key:

- 1 = M20 - 1/2"
- 2 = M25 - 3/4"
- 3 = M32 - 1"
- 4 = M40 - 1"1/4"
- 5 = M50 - 1"1/2"
- 6 = M63 - 2"
- 7 = M75 - 2"1/2"
- 8 = M80 - 3"
- 9 = M90 - 4"

ACCESSORIES

series
CCL
CPL

INTERNAL FIXING PLATE Series PL - Material: Tropicalized Steel

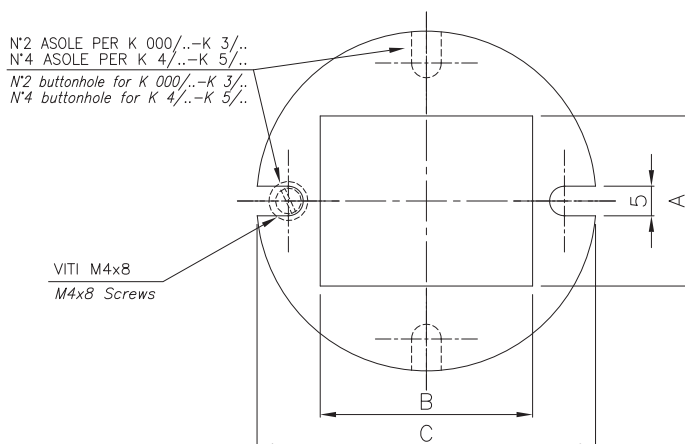
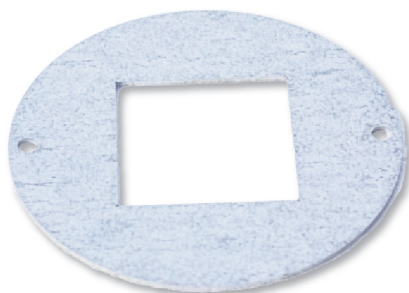


Order Code	Enclosure	Dimensions (mm)					Internal Fixing			Weight (g)
		A	B	D	E	S	a	b	ØC	
PL 0	CCL 0/CPL 0	105	105	65	65	2	45	90	M5	160
PL 1	CCL 1/CPL 1	120	120	80	80	2	50	100	M5	210
PL 2	CCL 2/CPL 2	140	140	95	95	2	58	100	M5	290
PL 3	CCL 3/CPL 3	155	155	90	90	2	70	140	M5	340
PL 4	CCL 4/CPL 4	190	190	145	145	2	86	170	M5	550
PL 5	CCL 5/CPL 5	240	240	160	160	2	96	204	M5	850
PL 6	CCL 6/CPL 6	280	280	190	190	2.5	210	216	M6	1450
PL 7	CCL 7	340	340	240	240	2.5	250	252	M6	2150
PL 8	CCL 8	420	420	280	280	2.5	240	328	M6	3300

INSTRUMENT MOUNTING KIT

series
CCL
CPL

Disk Series K - Material: tropicalized Steel, painted black (RAL 9005)



Order Code	Enclosure	Instrument Dimensions	Dimensions (mm)		
			A	B	C
K 0/00	CPL 0	48 x 48	45	45	111
K 0/01	CPL 0	48 x 72	45	68	111
K 0/11	CPL 0	72 x 72	68	68	111
K 1/11	CPL 1	72 x 72	68	68	126
K 1/02	CPL 1	48 x 96	45	92	126
K 1/12	CPL 1	72 x 96	68	92	126
K 2/02	CPL 2	48 x 96	45	92	146
K 2/12	CPL 2	72 x 96	68	92	146
K 2/22	CPL 2	96 x 96	92	92	146
K 3/12	CPL 3	72 x 96	68	92	175
K 3/22	CPL 3	96 x 96	92	92	175
K 3/03	CPL 3	48 x 144	45	137	175
K 3/13	CPL 3	72 x 144	68	137	175
K 4/03	CPL 4	48 x 144	45	137	214
K 4/13	CPL 4	68 x 144	68	137	214
K 4/23	CPL 4	96 x 144	92	137	214
K 4/33	CPL 4	144 x 144	137	137	214
K 5/23	CPL 5	96 x 144	92	137	244
K 5/33	CPL 5	144 x 144	137	137	244

NOTES

On request disks having instrument dimensions as specified by the customer are available; obviously they shall be consistent with the internal dimensions of the chosen enclosure.

MAX DISSIPATED POWER and TEMPERATURE CLASS as a Function of AMBIENT TEMPERATURE

series
**CCL
CPL**

B

Protection Mode Ex d															
Temperature Class															
Enclosure	Ambient +40°C			Ambient +50°C			Ambient +60°C			Ambient +70°C			Ambient +80°C		
	T6	T5	T4	T6	T5	T4	T6	T5	T4	T6	T5	T4	T6	T5	T4
CCL 0	23	29	49	14	23	43	9	17	37	3	12	32	--	6	26
CCL 0 / 182	32	40	68	20	32	60	12	24	52	4	16	44	--	8	36
CCL 0 / 212	37	46	79	23	37	69	14	28	60	5	19	51	--	9	42
CCL 1	28	35	60	18	28	53	11	21	46	4	14	39	--	7	32
CCL 1 / 195	39	49	83	24	39	73	15	29	63	5	20	54	--	10	44
CCL 1 / 235	46	58	98	29	46	86	17	35	75	6	23	63	--	12	52
CCL 2	39	49	83	24	39	73	15	29	63	5	20	54	--	10	44
CCL 2 / 235	53	66	113	33	53	99	20	40	86	7	27	73	--	13	60
CCL 2 / 303	66	83	140	41	66	124	25	50	107	8	33	91	--	17	74
CCL 3	56	70	119	35	56	105	21	42	91	7	28	77	--	14	63
CCL 3 / 279	77	96	164	48	77	144	29	58	125	10	39	106	--	19	87
CCL 3 / 354	95	119	202	59	95	178	36	71	154	12	48	131	--	24	107
CCL 4	80	100	170	50	80	150	30	60	130	10	40	110	--	20	90
CCL 4 / 328	109	136	232	68	109	204	41	82	177	14	55	150	--	27	123
CCL 4 / 403	130	163	276	81	130	244	49	98	211	16	65	179	--	33	146
CCL 5	90	113	191	56	90	169	34	68	146	11	45	124	--	23	101
CCL 5 / 373	139	174	295	87	139	261	52	104	226	17	70	191	--	35	156
CCL 5 / 463	168	210	357	105	168	315	63	126	273	21	84	231	--	42	189
CCL 6	125	175	295	90	140	60	55	105	225	18	69	191	--	35	157
CCL 7	170	234	400	120	190	355	75	145	305	25	96	259	--	48	212
CCL 8	230	325	545	165	260	480	100	200	420	33	132	357	--	79	359

Protection Mode Ex d [ia]	
A.T.: -20°C ÷ +40°C	
Enclosure	Temperature class T6
CCL 0 / ...	11
CCL 1 / ...	12
CCL 2 / ...	18
CCL 3 / ...	26
CCL 4 / ...	34
CCL 5 / ...	40
CCL 6	40
CCL 7	55
CCL 8	75

Protection Mode Ex d															
Temperature Class															
Enclosure	Ambient +40°C			Ambient +50°C			Ambient +60°C			Ambient +70°C			Ambient +80°C		
	T6	T5	T4	T6	T5	T4	T6	T5	T4	T6	T5	T4	T6	T5	T4
CPL 0	20	25	43	13	20	38	8	15	33	3	10	28	--	5	23
CPL 0 / 170	27	34	57	17	27	51	10	20	44	3	14	37	--	7	30
CPL 0 / 200	31	39	66	19	31	58	12	23	50	4	16	43	--	8	35
CPL 1	24	30	51	15	24	45	9	18	39	3	12	33	--	6	27
CPL 1 / 180	32	40	68	20	32	60	12	24	52	4	16	44	--	8	36
CPL 1 / 220	38	48	81	24	38	71	14	29	62	5	19	52	--	10	43
CPL 2	33	41	70	21	33	62	15	25	54	4	17	45	--	8	37
CPL 2 / 239	48	60	102	30	48	90	18	36	78	6	24	66	--	12	54
CPL 2 / 289	57	71	121	36	57	107	21	43	93	7	29	78	--	14	64
CPL 3	46	58	98	29	46	86	17	35	75	6	23	63	--	12	52
CPL 3 / 259	64	80	136	40	64	120	24	48	104	8	32	88	--	16	72
CPL 3 / 334	80	100	170	50	80	150	30	60	130	10	40	110	--	20	90
CPL 4	66	83	140	41	66	124	25	50	107	8	33	91	--	17	74
CPL 4 / 305	91	114	193	57	91	171	34	68	148	11	46	125	--	23	102
CPL 4 / 380	110	138	234	69	110	206	41	83	179	14	55	151	--	28	124
CPL 5	86	108	183	54	86	161	32	65	140	11	43	118	--	22	97
CPL 5 / 345	116	145	247	73	116	218	44	87	189	15	58	160	--	29	131
CPL 5 / 435	142	178	302	89	142	266	53	107	231	18	71	195	--	36	160
CPL 6	125	175	295	90	140	260	55	105	225	19	70	190	0	35	156

Protection Mode Ex d [ia]	
A.T.: -20°C ÷ +40°C	
Enclosure	Temperature class T6
CPL 0 / ...	9
CPL 1 / ...	10
CPL 2 / ...	15
CPL 3 / ...	23
CPL 4 / ...	32
CPL 5 / ...	37
CPL 6	40

NOTES Data given in the tables are expressed in W.

For the enclosures containing circuits and/or Intrinsically Safe apparatus it is allowed only temperature class T6 with reference to an ambient temperature range -20°C ÷ +40°C.

TYPES of EQUIPMENT / INSTRUMENTS to be HOUSED inside the ENCLOSURES

series
CCL
CPL

Enclosures Series CCL/CPL Model K... (without Intrinsically Safe -I.S.- circuits/apparatus)

- Max Voltage: 1000 V (a.c./d.c.)
- Current: 12 A ÷ 240 A
- Minimum conductor section: 1,5 mm²
- Max Current Density:
 - 3 A/mm² for sections up to 10 mm²
 - 2 A/mm² for sections > 10 mm²
- All electrical equipment shall conform to their respective IEC/CENELEC Standards concerning the characteristics and the operating mode.
- The electric equipment installed inside the enclosure shall be such that their dimensions allow, at any cross-section, at least 40% of free surface.
- In case of equipment conceived on electronic boards the distance between two parallel boards is ≥30 mm.
- Distance between any electronic component shall be ≥ 15 mm.
- Electrical equipment contained in the enclosure shall not be intrinsically safe, it shall not include capillaries or other non electric connections
- In case of presence of capacitors, when the voltage goes off they must be discharged within their own circuit in less than one second.

Enclosures Series CCL/CPL Model KI... (with Intrinsically Safe -I.S.- circuits/apparatus)

It is essential to consider the following, in case of presence of intrinsically safe circuits and/or I.S. apparatus:

Protection Mode	GAS:	Ex d [ia Ga] IIC T6 Gb
Protection Mode	DUST:	Ex tb IIIC [ia Da] T85°C Db
Group / Category	II 2 (1) GD	
Ambient Temperature	-20°C ÷ +40°C	
Temperature Class	T6	

• ELECTRICAL RATINGS

- Max Voltage: 660 V a.c. - 440 V d.c.
- Max Current: 60 A

• WIRING

The internal wiring, placed in suitable ducts, shall be made directly on the barriers without interposing terminals, the relevant insulation must have a minimum thickness >0.5 mm and shall include a metallic braid to firmly grounded.

• MINIMUM DISTANCES

- Between two different I.S. circuits: >6 mm
- Between an I.S. circuit S.I. and Ground: >3 mm
- Between I.S. and non I.S. circuits: >50 mm

- Max Power Voltage of I.S. circuit: <250 V (with a double insulation cable);
- Presumed power supply short circuit current: <1500 A (unless otherwise specified).

• I.S. EQUIPMENT FASTENING

The interface barriers are installed on a metal DIN rail fixed to the bottom of the enclosure by screws and lock washer or, as alternative, on the supporting plate also fixed the bottom of the enclosure by screws and lock washer.



ENCLOSURES with FLANGED LID

series
CCF

B

Enclosures Series CCF are normally used to house measurement and control instrumentation as well as electrical/electronic devices normally classified as "General Purpose". By providing indicating, control and signalling units mounted on the front of the enclosures series CCF configure these as real electrical control panels for hazardous areas.

Highly customizable in terms of number and position of cable entries, number and location of accessories on the cover (buttons, control units, warning lights and/or inspection windows) as well as the RAL external color.

Innumerable applications require the use of these enclosures by virtue their degree of protection IP66. This is secured by a special gasket, and thanks to specific design arrangements, the enclo-

tures can be used in wide range of ambient temperature featuring values between -50°C and +60°C. The temperature class reaches T3 allowing a maximum surface temperature up to 200°C for protection against combustible dusts. When Intrinsically Safe (Ex ia) apparatus are housed, the ambient temperature range becomes -20°C ÷ +60°C and the temperature class T6 (T85°C for combustible dust).

The enclosures series CCF are equipped with a lid with flanged joints, on which a rectangular window or a porthole, made with tempered glass and internal or external frames, may be created to be able to see the instruments located inside.

The standard supply of enclosures Series CCF provides external stainless steel screws, external embossed effect painting with

epoxy paint RAL 7000 and internal anti-condense coating RAL 2004. The customer, however, may specify the preferred alternatives either for the external or internal colors (for further information, refer to the tables in Section A). Available on request, a series of different kits for proper housing of instruments and terminals inside the case.

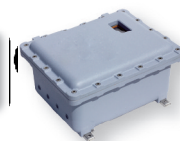
Advanced technologies characterize the version in Aluminox that has anti-corrosion and surface hardness properties superior to Stainless Steel, which, together with unmatched antibacterial and self-lubricant (avoiding i.e. seizure situation), offer the user significant savings with a third of its weight. Each model is fully specified on the following pages.

ENCLOSURES with FLANGED LID



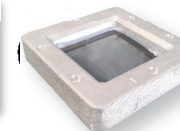
series **CCF** Page **B33**

APPLICATIONS / USES



series **CCF** Page **B36**

RECTANGULAR FRAMES and PORTHOLES



series **T...
TC...** Page **B44**

ACCESSORIES



series **PJ...
CJ...** Page **B45**

TYPES of ELECTRICAL APPARATUS to be HOUSED inside the ENCLOSURES



series **CCF** Page **B48**



NOTES:

B

ENCLOSURES with FLANGED LID

series
CCF

Protection	Gas	Zone	1-2	II2G	Ex db IIB+H2 T6÷T3 Gb
	Dust	Zone	21-22	II2D	Ex tb IIIC T85°C÷T200°C Db

Degree of Protection	IP66
----------------------	------

Amb. Temp.	Standard	-20°C	+40°C



Entries Threading	NPT
	Metric

Material	Aluminum Light Alloy
----------	----------------------

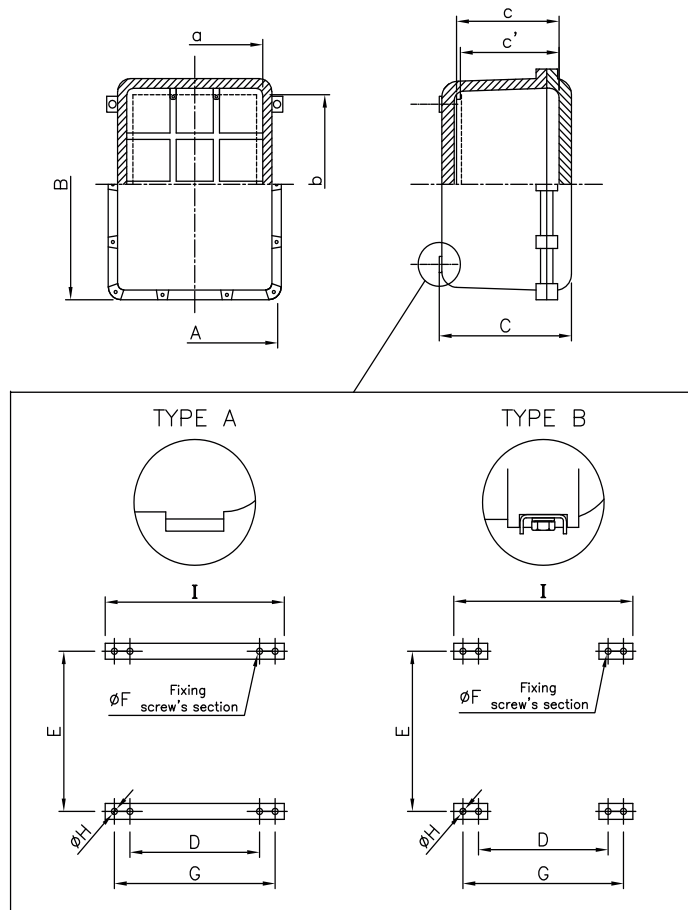
Painting	Epoxy RAL 7000
----------	----------------

Standards and Certificates	Directive 2014/34/EU (ATEX)
	EN 60079 - 0 • EN 60079 - 1 EN 60079 - 11 • EN 60079 - 31
CE	INERIS 14 ATEX 0008X
U	INERIS 14 ATEX 9005U
IECEx	IEC 60079 - 0 • IEC 60079 - 1 IEC 60079 - 11 • IEC 60079 - 31
	IECEx INE 13.0065X
	IECEx INE 14.0056U

- Ideal to interconnect the wires and to accommodate a vast variety of equipment and instruments.
- Certificated either for the version complete with electrical apparatus or empty as an Ex component.
- Internal anti-condense painting RAL 2004.
- External screws in Stainless Steel.
- Fixing brackets (type "A") and lugs (type "B") in zinc plated steel.
- More information on first page (B31).

Options	- Various paints RAL.	- Mounting of external units (lights, push buttons etc.) see page B38.	- Apparatus to be housed inside the box see page B48.
	- Fixing brackets/lugs in stainless steel.	- Accessories see page B45.	
	- Anti-corrosion technology: ALUMINOX.		

Principal Dimensions (mm) and Installation Bracket Details



NOTES

The degree of protection IP66 is ensured by restoring the grease layer on the plane joint and by the presence and integrity of its specific gasket.

For models CCF 16... minimum ambient temperature is -40°C.

For enclosure cable entries layout see page B35.

For internal apparatus mounting plates see page B45.

For max dissipable power see page B46.

In presence of I.S. apparatus see guidelines on page B48.

The diagram is referred to the dimensions indicated on page B34

ENCLOSURES with FLANGED LID MOST SIGNIFICANT DIMENSIONS

series
CCF

Order Code	Ext. Dimensions(mm)			Int. Dimensions(mm)				Mounting Template (mm)						Weight (kg)	Closing screws	Tightening torque (Nm)	
	A	B	C	a	b	c	c'	Tipo (°)	D	E	F	G	H				I
CCF 0G	150	150	127	93	93	96	94	A	104	60	M6	140	7	160	3.2	M6	11
CCF 1G	150	200	127	93	143	97	95	A	104	110	M6	140	7	160	4.1		
CCF 1AG	150	200	145	93	143	115	113	A	104	110	M6	140	7	160	4.3		
CCF 2G	200	250	150	140	190	118	116	A	154	160	M6	190	7	210	6.8		
CCF 3G	250	300	150	175	225	111	108	A	185	180	M6	230	9	255	10.6	M8	25
CCF 3AG	250	300	200	175	225	161	158	A	185	180	M6	230	9	255	11.9		
CCF 4G	250	350	150	175	275	110	108	A	185	230	M6	230	9	255	12.0		
CCF 4AG	250	350	200	175	275	163	160	A	185	230	M6	230	9	255	13.3		
CCF 5G	300	400	200	218	318	163	160	A	225	275	M8	275	9	300	18.0		
CCF 5AG	300	400	255	218	318	213	211	A	225	275	M8	275	9	300	20.0		
CCF 6G	300	450	200	218	368	162	160	A	225	325	M8	275	9	300	20.0	M10	48
CCF 6AG	300	450	250	218	368	213	211	A	225	325	M8	275	9	300	22.5		
CCF 7G	400	500	200	305	405	148	145	B	315	350	M8	370	9	400	31.0		
CCF 7AG	400	500	250	305	405	200	197	B	315	350	M8	370	9	400	34.0		
CCF 8G	350	550	200	255	455	153	148	A	265	400	M10	320	11	350	31.0		
CCF 8AG	350	550	250	255	455	202	199	A	265	400	M10	320	11	350	34.0		
CCF 9G	400	600	200	300	500	145	142	A	315	450	M10	370	11	400	38.0	M12	85
CCF 9AG	400	600	250	300	500	198	195	A	315	450	M10	370	11	400	43.0		
CCF 10G	450	650	200	330	548	148	144	B	360	500	M10	420	11	450	49.0		
CCF 10AG	450	650	250	330	548	195	191	B	360	500	M10	420	11	450	55.0		
CCF 10BG	450	650	300	330	548	248	244	B	360	500	M10	420	11	450	61.5	M12	85
CCF 11G	500	700	250	370	580	183	180	B	395	520	M12	465	13	500	68.0		
CCF 11AG	500	700	300	370	580	234	231	B	395	520	M12	465	13	500	76.0		
CCF 11BG	500	700	350	370	580	283	280	B	395	520	M12	465	13	500	84.0		
CCF 12G	550	750	250	420	630	176	173	B	445	570	M12	515	13	550	82.0		
CCF 12AG	550	750	300	420	630	227	224	B	445	570	M12	515	13	550	90.0		
CCF 12BG	550	750	350	420	630	278	275	B	445	570	M12	515	13	550	98.0	M8	25
CCF 13G	200	600	140	115	515	104	102	A	135	470	M6	180	9	205	15.5		
CCF 14G	220	750	175	140	670	130	125	A	150	610	M8	200	9	225	24.0	M14	130
CCF 16G	670	920	330	550	800	245	242	A	560	650	M14	660	16	710	134.0		
CCF 16AG	670	920	390	550	800	306	303	A	560	650	M14	660	16	710	145.0		
CCF 16BG	670	920	450	550	800	362	359	A	560	650	M14	660	16	710	162.0	M10	48
CCF 20BG	450	450	465	347	347	406	403	A	360	300	M10	420	11	450	51.0		

NOTES

- Dimensions relevant to drawing on page B33.
- Weights are comprehensive of body, cover, hinges, inner panel, screws and brackets.
- (°) Details of mounting bracket on page B33.

Example: CCF 12G - Mod. KIU3

Order Coding

Type

CCF

Size

12

Degree IP

G: IP66

...: IP65

Type of electrical apparatus housed inside the enclosure

K = Non I.S. device

KI = Presence of I.S. circuits

Presence of Control and/or signalling Units

U

Unit Size

1: up to 1/2" - M20

2: up to 3/4" - M25

3: up to 1"

ENCLOSURES with FLANGED LID

GUIDE to ENCLOSURE CABLE ENTRIES LAYOUT

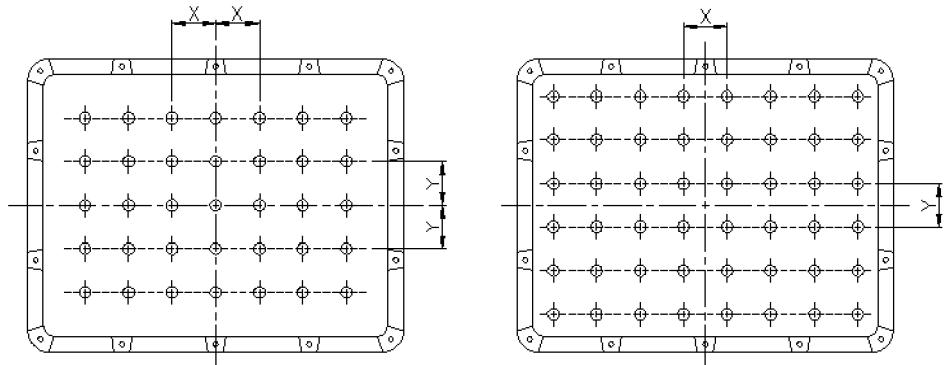
series
CCF

B

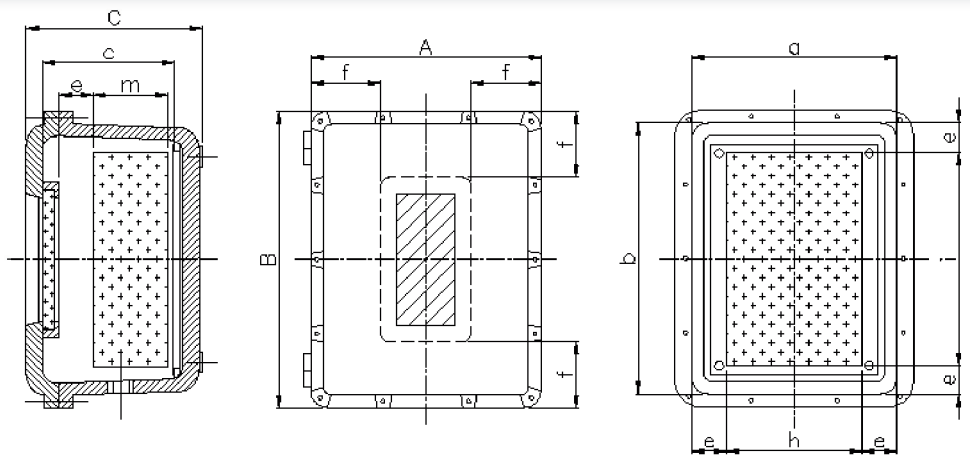
Order Code	Side	Size 1					Size 2					Size 3				Size 4				Size 5				Size 6			Size 7		Size 8		Size 9								
		R	Scheme				R	Scheme				R	Scheme			R	Scheme			R	Scheme		R	Sch.	R	Sch.	R	Sch.											
			A	B	C	D		A	B	C	D		E	A	B		C	D	A		B	C		D		A		B	C	A	B	A	B	A	B				
CCF 0G	L	45	2	3	-	-	-	50	2	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
	C	45	2	3	-	-	-	50	2	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
CCF 1G	L	45	3	5	-	-	-	50	3	-	-	-	-	60	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
	C	45	2	3	-	-	-	50	2	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
CCF 2G	L	50	4	7	-	-	-	55	4	6	-	-	-	60	3	4	-	-	90	2	-	-	-	90	2	-	-	-	-	-	-	-	-	-	-				
	C	45	3	5	-	-	-	50	3	5	-	-	-	60	2	3	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-				
CCF 3G	L	45	5	7	-	-	-	55	4	5	-	-	-	55	4	-	-	-	90	2	-	-	-	90	2	-	-	-	-	-	-	-	-	-	-				
	C	45	4	5	-	-	-	55	3	4	-	-	-	60	3	-	-	-	100	2	-	-	-	100	2	-	-	-	-	-	-	-	-	-	-				
CCF 3AG	L	45	5	9	10	-	-	55	4	7	8	-	-	60	4	7	8	-	70	3	5	-	-	70	3	5	-	100	2	-	-	-	1*	-	1*	-			
	C	45	4	7	8	-	-	55	3	5	6	-	-	60	3	5	6	-	70	2	3	-	-	70	2	3	-	85	2	-	-	-	1*	-	1*	-			
CCF 4G	L	50	5	7	-	-	-	50	5	6	-	-	-	60	4	5	-	-	95	3	-	-	-	95	3	-	-	-	-	-	-	-	-	-	-				
	C	50	4	5	-	-	-	50	3	4	-	-	-	60	3	5	-	-	95	2	-	-	-	95	2	-	-	-	-	-	-	-	-	-	-				
CCF 4AG	L	50	5	9	10	-	-	55	5	9	10	-	-	60	4	7	8	-	70	3	5	-	-	70	3	5	-	130	2	-	-	-	1	-	1	-			
	C	50	3	6	6	-	-	55	3	5	6	-	-	55	3	5	6	-	70	2	3	-	-	70	2	3	-	85	2	-	-	-	1	-	1	-			
CCF 5G	L	55	6	11	12	-	-	60	5	9	10	-	-	65	5	9	-	-	100	3	-	-	-	100	3	-	-	140	2	-	-	-	-	-	-				
	C	55	4	7	8	-	-	60	4	7	8	-	-	65	3	5	6	-	100	2	-	-	-	100	2	-	-	1	-	-	-	-	-	-	-				
CCF 5AG	L	50	6	11	12	17	-	-	50	6	11	12	17	-	-	60	4	7	8	11	80	3	5	6	-	80	3	5	6	-	90	3	5	-	160	2*	-	160	2*
	C	50	4	7	8	11	-	-	50	4	7	8	11	-	-	60	3	5	6	8	70	3	5	6	-	70	3	5	6	-	100	2	3	-	1*	-	1*	-	
CCF 6G	L	50	7	13	14	-	-	60	6	11	12	-	-	65	6	11	12	-	100	4	-	-	-	100	3	-	-	140	2	-	-	-	-	-	-	-			
	C	55	4	7	8	-	-	55	4	7	8	-	-	65	3	5	6	-	100	2	-	-	-	100	2	-	-	1	-	-	-	-	-	-	-	-			
CCF 6AG	L	50	7	13	14	20	-	-	50	7	13	14	20	-	-	60	6	11	12	17	80	3	5	6	-	80	3	5	6	-	90	3	5	-	160	2*	-	160	2*
	C	50	4	7	8	11	-	-	50	4	7	8	11	-	-	60	3	5	6	8	70	3	5	6	-	70	3	5	6	-	100	2	3	-	1*	-	1*	-	
CCF 7G	L	55	7	13	14	-	-	55	7	13	14	-	-	70	5	9	-	-	100	4	-	-	-	100	4	-	-	120	3	-	-	-	-	-	-	-			
	C	55	5	9	10	-	-	55	5	9	10	-	-	70	4	7	-	-	100	3	-	-	-	100	3	-	-	95	3	-	-	-	-	-	-	-			
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	C	55	5	9	10	14	-	-	55	5	9	10	14	-	-	70	4	7	8	-	80	3	5	-	-	80	3	5	-	95	3	-	-	-	1*	-	1*	-	
CCF 8G	L	60	7	13	14	20	-	-	60	7	13	14	20	-	-	70	5	9	-	-	90	5	-	-	-	90	5	-	-	110	4	-	-	-	-	-	-		
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	C	60	4	7	8	11	-	-	60	4	7	8	11	-	-	70	3	5	6	-	80	3	5	-	-	80	3	5	-	120	2	-	-	-	1*	-	1*	-	
CCF 9G	L	60	8	15	16	-	-	60	8	15	16	-	-	70	6	-	-	-	80	6	-	-	-	80	6	-	-	120	4	-	-	-	-	-	-	-			
	C	60	4	7	8	-	-	60	4	7	8	-	-	70	4	-	-	-	90	3	-	-	-	90	3	-	-	90	3	-	-	-	-	-	-	-			
CCF 9AG	L	60	8	15	16	23	-	-	60	8	15	16	23	-	-	70	6	11	12	-	80	6	11	-	-	80	6	11	-	120	4	-	-	-	160	3*	-	160	3*
	C	60	4	7	8	11	-	-	60	4	7	8	11	-	-	70	4	7	8	-	80	3	5	-	-	80	3	5	-	90	3	-	-	-	160	2*	-	160	2*
CCF 10G	L	60	9	17	-	-	-	60	9	17	-	-	-	65	8	-	-	-	85	5	-	-	-	85	5	-	-	110	5	-	-	-	-	-	-	-			
	C	55	6	11	-	-	-	55	6	11	-	-	-	65	5	-	-	-	85	4	-	-	-	85	4	-	-	110	3	-	-	-	-	-	-	-			
CCF 10AG	L	60	9	17	18	26	-	-	60	9	17	18	26	-	-	65	8	15	16	-	85	5	9	-	-	85	5	9	-	110	5	-	-	-	180	3*	-	180	3*
	C	55	6	11	12	17	-	-	55	6	11	12	17	-	-	65	5	9	10	-	85	4	7	-	-	85	4	7	-	110	3	-	-	-	180	2*	-	180	2*
CCF 10BG	L	60	9	17	18	26	-	-	60	9	17	18	26	-	-	65	8	15	16	23	85	5	9	10	-	85	5	9	10	-	110	5	9	-	180	3	-	180	3
	C	55	6	11	12	17	-	-	55	6	11	12	17	-	-	65	5	9	10	14	85	4	7	8	-	85	4	7	8	-	110	3	5	-	180	2	-	180	2
CCF 11G	L	60	9	17	18	-	-	60	9	17	18	-	-	65	8	15	-	-	90	6	-	-	-	90	6	-	-	110	5	-	-	-	-	-	-	-			
	C	60	6	11	12	-	-	60	6	11	12	-	-	65	5	9	-	-	90	4	-	-	-	90	4	-	-	110	3	-	-	-	-	-	-	-			
CCF 11AG	L	60	9	17	18	26	-	-	60	9	17	18	26	-	-	65	8	15	16	-	90	6	11	-	-	90	6	11	-	110	5	-	-	-	180	3	-	180	3
	C	60	6	11	12	17	-	-	60	6	11	12	17	-	-	65	5	9	10	-	90	4	7	-	-	90	4	7	-	110	3	-	-	-	180	2	-	180	2
CCF 11BG	L	60	9	17	18	26	34	60	9	17	18	26	34	65	8	15	16	23	90	6	11	12	-	90	6	11	12	-	110	5	9	-	180	3	-	180	3		
	C	60	6	11	12	17	22	60	6	11	12	17	22	65	5	9	10	14	90	4	7	8	-	90	4	7	8	-	110	3	5	-	180	2	-	180	2		
CCF 12G	L	65	9	17	18	-	-	65	9	17	18	-	-	70	8	15	-	-	80	6	-	-	-	80	6	-	-	110	5	-	-	-	200	3	-	200	3		
	C	55	7	13	14	-	-	55	7	13	14	-	-	65	6	11	-	-	90	4	-	-	-	90	4	-	-	110	3	-	-	-	240	2	-	240	2		
CCF 12AG	L	65	9	17	18	26	-	-	65	9	17	18	26	-	-	70	8	15	16	-	80	6	11	12	-	80	6	11	12	-	90	5	9	-	200	3	-	200	3
	C	55	7	13	14	20	-	-	55	7	13	14	20	-	-	65	6	11	12	-	90	4	7	8	-	90	4	7	8	-	90	4	7	-	240	2	-	240	2
CCF 12BG	L	65	9	17	18	26	34	6																															

B

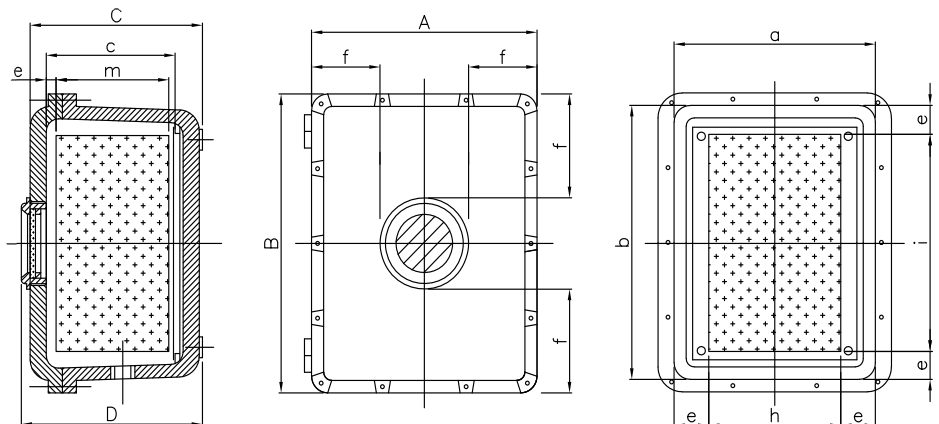
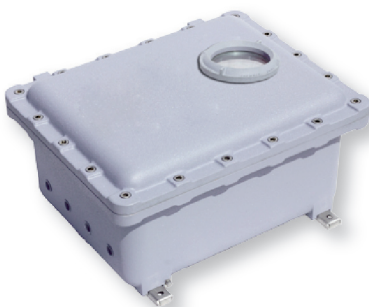
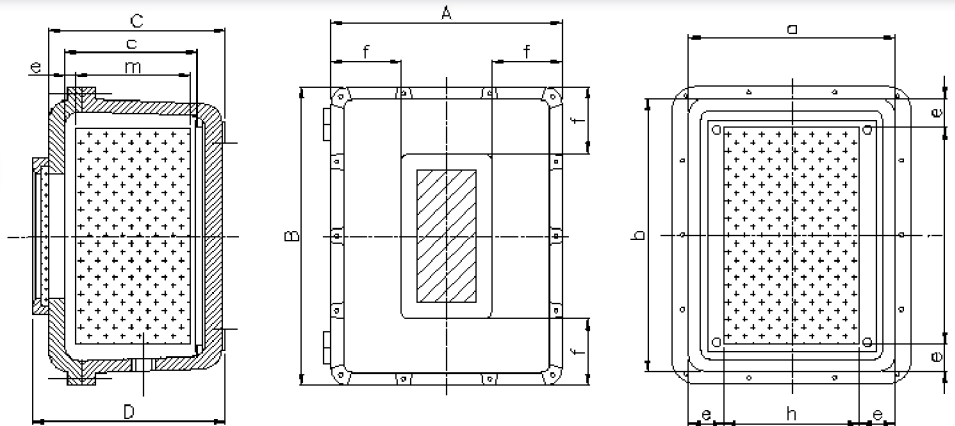
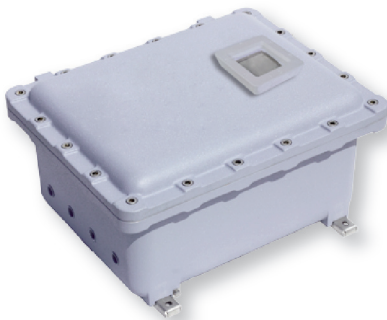
Case 1 - Units Only / No Units (see page B38-B39)



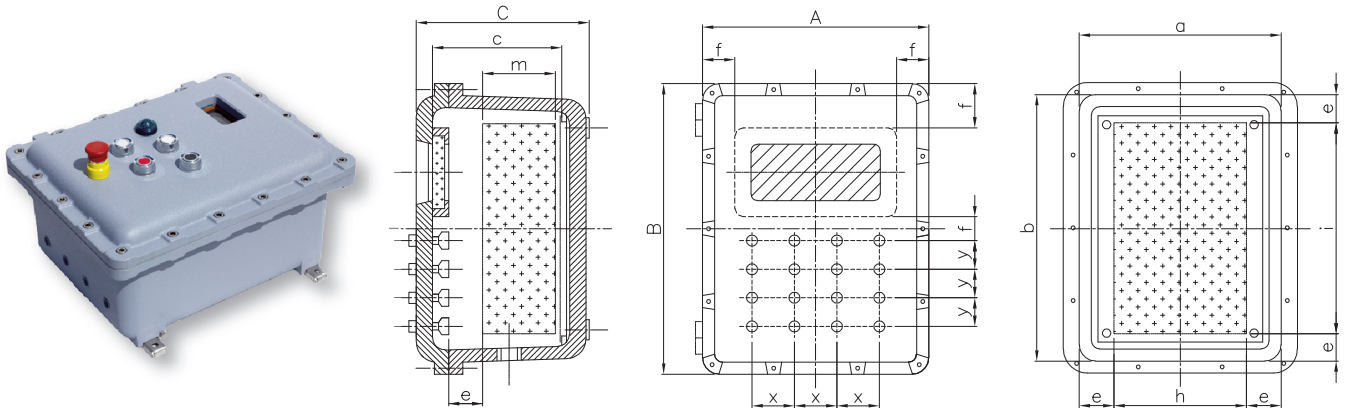
Case 2 - Internal Rectangular Glass Window Only (see page B40-B41)



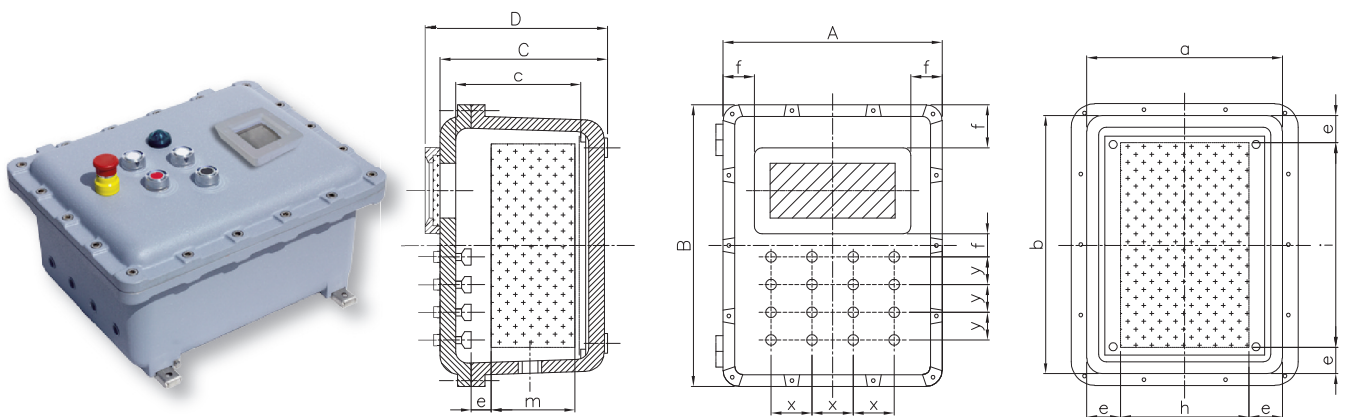
Case 3 - External Rectangular Glass Window Only / Circular glass window (see page B40-B41)



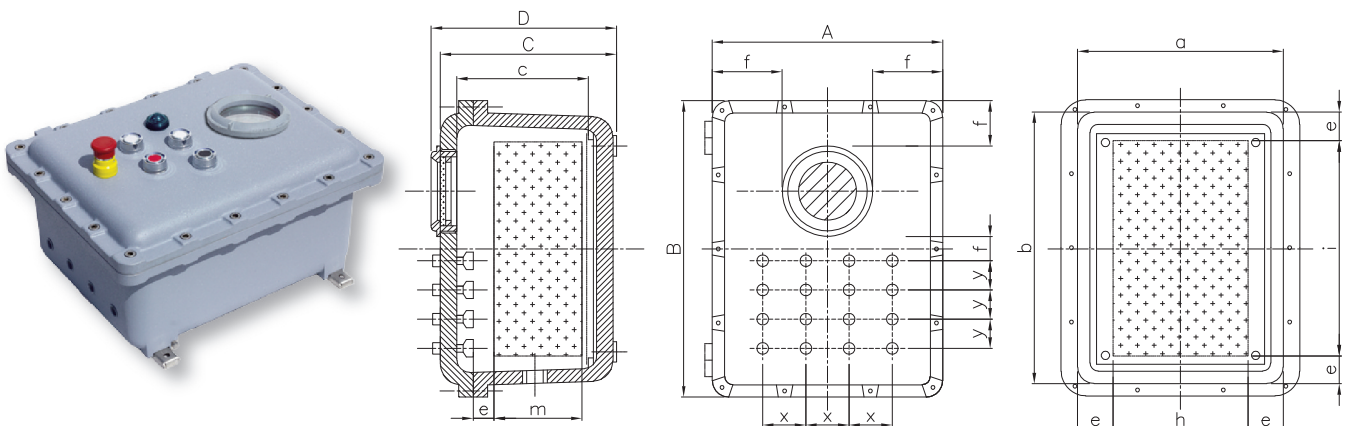
Case 4 - Internal Rectangular Glass Window + Units (see page B42-B43)



Case 5 - External Rectangular Glass Window + Units (see page B42-B43)



Case 6 - Circular Glass Window + Units (see page B42-B43)



ENCLOSURES with FLANGED LID for CONTROL and SIGNALING UNITS

series
CCF

Protection	Gas	Zone	1-2	II2G	Ex db IIB+H2 T6÷T3 Gb
	Dust	Zone	21-22	II2D	Ex tb IIIC T85°C÷T200°C Db

Degree of Protection	IP66
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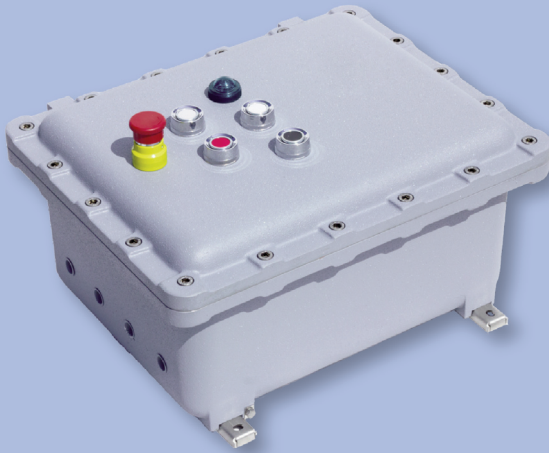
Amb. Temp.	Standard	Extended	-20°C	+40°C
			-50°C	+60°C

Entries Threading	NPT
	Metric

Material	Aluminum Light Alloy
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Painting	Epoxy RAL 7000
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Standards and Certificates	Directive 2014/34/EU (ATEX)
	EN 60079 - 0 • EN 60079 - 1 EN 60079 - 11 • EN 60079 - 31
	CE INERIS 14 ATEX 0008X
	U INERIS 14 ATEX 9005U
	IEC 60079 - 0 • IEC 60079 - 1 IEC 60079 - 11 • IEC 60079 - 31
	IECEx INE 13.0065X IECEx INE 14.0056U



- The control and signaling units are mounted and fastened to the lid as indicated on the respective drawings
- The combinations shall be compatible with the dimensions and characteristics of the units
- Also available for I.S. electrical equipment
- Internal anti-condense painting RAL 2004.
- External screws in Stainless Steel.
- Fixing brackets (type "A") and lugs (type "B") in zinc plated steel.
- More information on first page (B31).

Options	- Various paints RAL.	- Mounting of external units (lights, push buttons etc.) see section C.	- Apparatus to be housed inside the box see page B48.
	- Fixing brackets/lugs in stainless steel.	- Accessories see page B45.	
	- Anti-corrosion technology: ALUMINOX.		

NOTES

The degree of protection IP66 is ensured by restoring the grease layer on the plane joint and by the presence and integrity of its specific gasket.

For models CCF 16... minimum ambient temperature is -40°C.

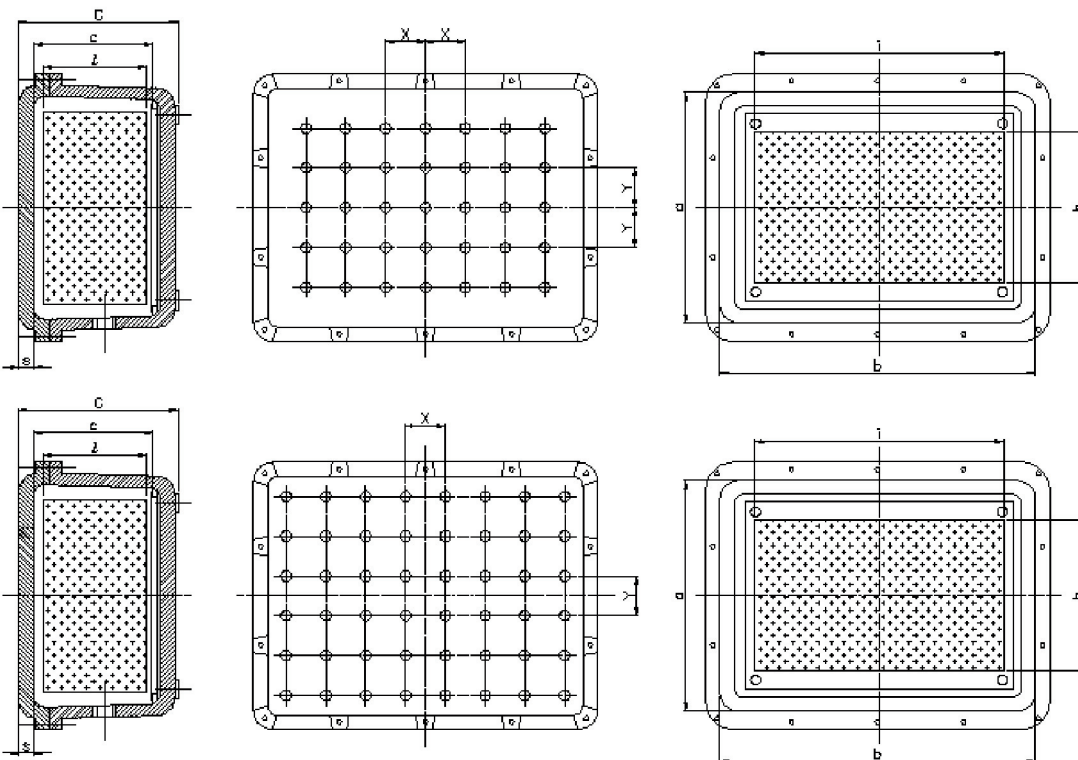
For enclosure cable entries layout see page B35.

For internal apparatus mounting plates see page B45.

For max dissipable power see page B46.

In presence of I.S. apparatus see guidelines on page. B48.

The diagram is referred to the dimensions indicated on page B34 and B39.



ENCLOSURES with FLANGED LID For CONTROL and SIGNALLING UNITS

series
CCF

B

Order Code	Dimensions						Electrical Apparatus Max Dimensions			s	Units 1/2" - M20			Units 1" - M25		
											Position		max n°	Position		max n°
							A	B	C		a	b		c	h	
CCF 0G	see page B34						63	63	79	14	48	48	4	45	45	4
CCF 1G							63	113	79	14	33	48	8	75	45	4
CCF 2G							113	163	107	14	37	33	20	55	70	6
CCF 3G							148	198	97	14	42	40	20	70	50	9
CCF 3AG							148	198	147	14	42	40	20	70	50	9
CCF 4G							148	248	97	14	44	40	24	65	50	12
CCF 4AG							148	248	147	14	44	40	24	65	50	12
CCF 5G							184	284	139	14	43	40	35	80	70	12
CCF 5AG							184	284	189	14	43	40	35	80	70	12
CCF 6G							184	334	139	14	44	40	40	70	70	15
CCF 6AG							184	334	189	14	44	40	40	70	70	15
CCF 7G							268	368	130	18	46	45	48	75	70	20
CCF 7AG							268	368	180	18	46	45	48	75	70	20
CCF 8G							218	418	130	18	47	47	45	85	60	20
CCF 8AG							218	418	180	18	47	47	45	85	60	20
CCF 9G							267	467	123	20	75	52	30	75	70	24
CCF 9AG							267	467	173	20	75	52	30	75	70	24
CCF 10G							296	496	111	22	62	48	48	88	80	24
CCF 10AG							296	496	161	22	62	48	48	88	80	24
CCF 10BG							296	496	211	22	62	48	48	88	80	24
CCF 11G							334	534	153	27	68	58	48	95	72	30
CCF 11AG							334	534	203	27	68	58	48	95	72	30
CCF 11BG							334	534	253	27	68	58	48	95	72	30
CCF 12G							384	584	150	30	76	66	48	76	82	40
CCF 12AG							384	584	200	30	76	66	48	76	82	40
CCF 12BG							384	584	250	30	76	66	48	76	82	40
CCF 13G							88	488	57	14	40	40	36	80	55	12
CCF 14G							104	634	110	16	44	44	42	70	65	18
CCF 16G							488	738	206	35	90	80	48 (*)	90	80	48
CCF 16AG							488	738	266	35	90	80	48 (*)	90	80	48
CCF 16BG	488	738	326	35	90	80	48 (*)	90	80	48						
CCF 20BG	326	324	278	22	48	48	36	80	80	16						

Dimensions given in the table refer to diagrams of page B38.

If the number of Units mounted on the lid is lower than the maximum allowed, the same may be mounted in any position as long as the spacing between them is not less than the minimum permitted (see column X and Y of the table).

(*) available on request scheme for max. 70 1/2" units (10x7).

NOTES



ENCLOSURES with FLANGED LID with Internal/External Rectangular FRAME Series T.. or Circular Glass Windows series TC..

series
CCF

Protection	Gas	Zone	1-2	II2G	Ex db IIB+H2 T6÷T3 Gb
	Dust	Zone	21-22	II2D	Ex tb IIIC T85°C÷T200°C Db

Degree of Protection	IP66
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Amb. Temp.	Standard	Extended	-20°C	+40°C
			-50°C	+60°C



Entries Threading	NPT
	Metric

Material	Aluminum Light Alloy
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Painting	Epoxy RAL 7000
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Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079 - 0 • EN 60079 - 1
EN 60079 - 11 • EN 60079 - 31

CE INERIS 14 ATEX 0008X

U INERIS 14 ATEX 9005U

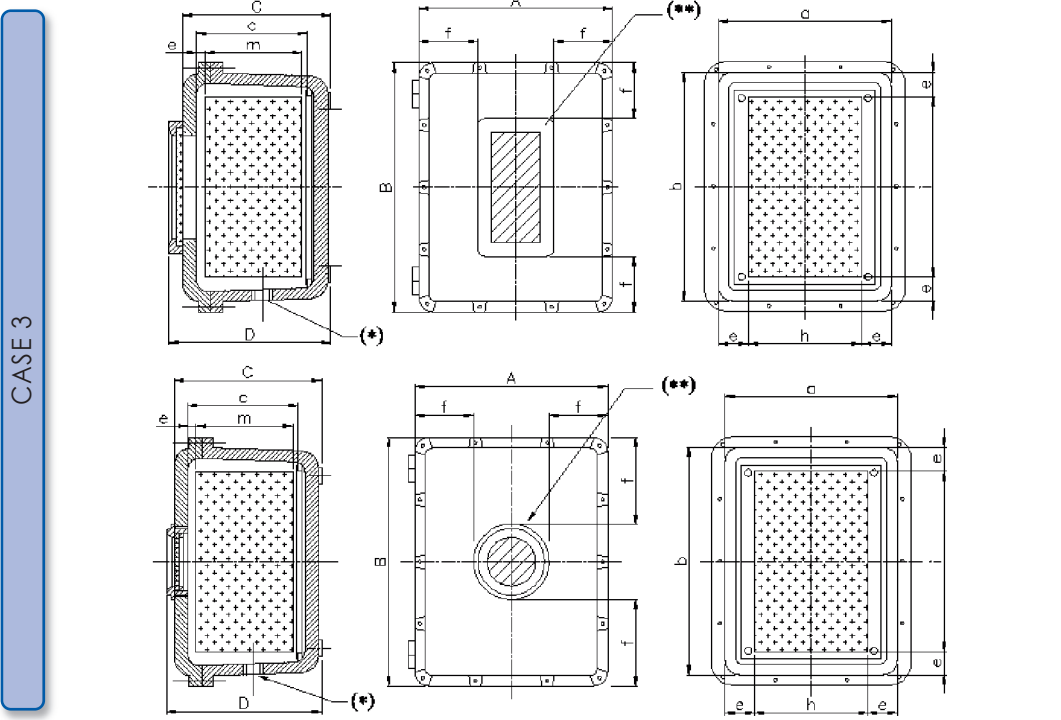
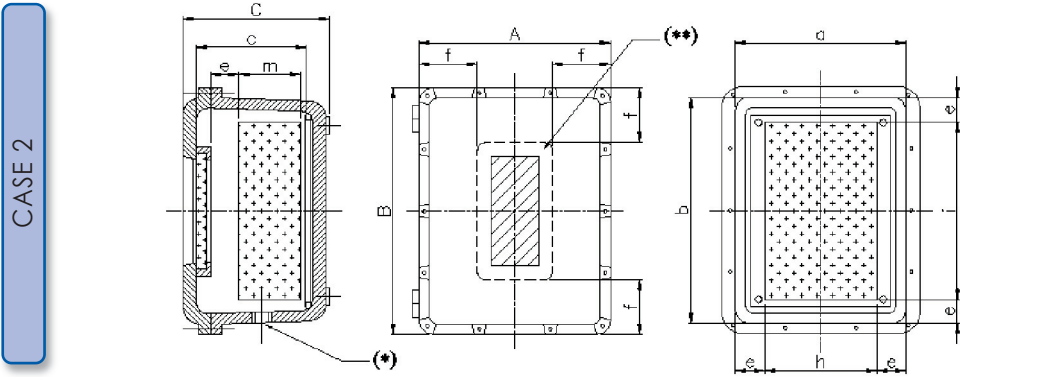
IEC 60079 - 0 • IEC 60079 - 1
IEC 60079 - 11 • IEC 60079 - 31

IECEx INE 13.0065X

IECEx INE 14.0056U

- Ideal to interconnect the wires and to accommodate a vast variety of equipment and instruments.
- Certified either for the version complete with electrical apparatus or empty as an Ex component.
- Windows in thermoresistant tempered glass (see page B44).
- Frame in Aluminum light alloy.
- Internal anti-condense painting RAL 2004.
- External screws in Stainless Steel.
- Fixing brackets (type "A") and lugs (type "B") in zinc plated steel.
- More information on first page B31.

Options	- Various paints RAL.	- Mounting of external units (lights, push buttons etc.) see section C.	- Apparatus to be housed inside the box see page B48.
	- Fixing brackets/lugs in stainless steel.	- Accessories see page B45.	
	- Anti-corrosion technology: ALUMINOX.		



NOTES

The degree of protection IP66 is ensured by restoring the grease layer on the plane joint and by the presence and integrity of its specific gasket.

For models CCF 16... minimum ambient temperature is -40°C.

(*) For enclosure cable entries layout see page B35.

(**) Frames and circular windows configuration may include more than one frame/window. They may be placed in any position providing they comply with the minimum dimension "f".

For internal apparatus mounting plates see page B45.

For max dissipable power see page B46.

In presence of I.S. apparatus see guidelines on page. B48.

The diagram is referred to the dimensions indicated on page B34 and B41.

ENCLOSURES with FLANGED LID

with Internal/External Rectangular FRAME Series T.. or Circular Glass Window series TC..

series
CCF

B

Order Code	Dimensions (mm)						Electrical apparatus Max Dimensions (mm)				RECTANGULAR FRAMES Mounting: - internal TI - external TE(°)	CIRCULAR GLASS WINDOW series TC..	
	A	B	C	D (case 3)		e	f	h	i	case 2			case 3
	a	b	c	TE(°)	TC					m			m
CCF 0G				-	134	15	36	63	63	-	79	-	TC4
CCF 1G				-	134	15	36	63	113	-	79	-	
CCF 2G				178	160	15	36	113	163	86	107	T00 T01 T02 T11 T12	TC4 TC6
CCF 3G				181	164	15	48	148	198	74	97	T00 T01 T02 T03 T11 T12 T13 T22 T23	TC4 TC6 TC7 TC9
CCF 3AG				231	214	15	48	148	198	124	147		
CCF 4G				181	164	15	48	148	248	69	97	T00 T01 T02 T03 T04 T11 T12 T13 T22 T23 T24 T25	TC4 TC6 TC7 TC9 TC15 TC18
CCF 4AG				231	214	15	50	148	248	119	147		
CCF 5G				231	217	20	50	184	284	111	139	T00 T01 T02 T03 T04 T11 T12 T13 T16 T22 T23 T24 T25	TC4 TC6 TC7 TC9 TC15 TC18
CCF 5AG				281	267	20	50	184	284	161	189		
CCF 6G				231	217	20	50	184	334	111	139	T00 T01 T02 T03 T04 T07 T11 T12 T13 T16 T19 T22 T23 T24 T25 T28 T29	TC4 TC6 TC7 TC9 TC15 TC18 TC22 TC25
CCF 6AG				281	267	20	50	184	334	161	189		
CCF 7G				234	222	20	62	268	368	89	130	T00 T01 T02 T03 T04 T07 T09 T11 T12 T13 T16 T19 T22 T23 T24 T25 T28 T29 T33 T34	TC4 TC6 TC7 TC9 TC15 TC18 TC22 TC25
CCF 7AG				284	272	20	62	268	368	139	180		
CCF 8G				234	217	20	62	218	418	89	130	T00 T01 T02 T03 T04 T07 T09 T11 T12 T13 T16 T19 T22 T23 T24 T25 T28 T29 T33 T34	TC4 TC6 TC7 TC9 TC15 TC18
CCF 8AG				284	267	20	62	218	418	139	180		
CCF 9G				234	222	20	68	267	467	82	123	T00 T01 T02 T03 T04 T07 T09 T11 T12 T13 T16 T19 T22 T23 T24 T25 T28 T29 T33 T34	TC4 TC6 TC7 TC9 TC15 TC18 TC22
CCF 9AG				284	272	20	68	267	467	132	173		
CCF 10G				-	222	30	68	296	496	70	111	T00 T01 T02 T03 T04 T07 T09 T11 T12 T13 T16 T19 T22 T23 T24 T25 T28 T29 T33 T34	TC4 TC6 TC7 TC9 TC15 TC18 TC22 TC25
CCF 10AG				-	272	30	68	296	496	120	161		
CCF 10BG				-	322	30	68	296	496	170	211	T00 T01 T02 T03 T04 T07 T09 T11 T12 T13 T16 T19 T22 T23 T24 T25 T28 T29 T33 T34	TC4 TC6 TC7 TC9 TC15 TC18 TC22 TC25
CCF 11G				-	272	30	85	334	534	112	153		
CCF 11AG				-	322	30	85	334	534	162	203	T00 T01 T02 T03 T04 T07 T09 T11 T12 T13 T16 T19 T22 T23 T24 T25 T28 T29 T33 T34	TC4 TC6 TC7 TC9 TC15 TC18 TC22 TC25
CCF 11BG				-	372	30	85	334	534	212	253		
CCF 12G				-	272	30	88	384	584	109	150	T00 T01 T02 T03 T04 T07 T09 T11 T12 T13 T16 T19 T22 T23 T24 T25 T28 T29 T33 T34	TC4 TC6 TC7 TC9 TC15 TC18 TC22 TC25
CCF 12AG				-	322	30	88	384	584	159	200		
CCF 12BG				-	372	30	88	384	584	209	250	T00 T01 T02 T03 T04 T07 T09	TC4 TC6
CCF 13G				-	150	20	51	88	488	57	57		
CCF 14G				-	185	20	57	104	634	87	110	T04 T07 T09	TC4 TC6
CCF 16G				-	362	30	110	488	738	164	205	T00 T01 T02 T03 T04 T07 T09 T11 T12 T13 T16 T19 T22 T23 T24 T25 T28 T29 T33 T34	TC4 TC6 TC7 TC9 TC15 TC18 TC22 TC25
CCF 16AG				-	422	30	110	488	738	214	265		
CCF 16BG				-	482	30	110	488	738	264	325	T00 T01 T02 T03 T04 T06 T07 T08 T11 T12 T13 T14 T16 T17 T18 T22 T23 T24 T25 T26 T33 T34	TC4 TC6 TC7 TC9 TC15
CCF 20BG				-	484	15	68	326	326	346	484		

SEE PAGE B34

NOTES Dimensions given in the table refer to diagrams of page B40.
 (°) It is possible to mount rectangular glass window externally (TE) up to code CCF 9A included. For enclosures of upper size the rectangular glass window can ONLY be mounted internally (TI) or (TC) (More information on page B44).

Example: CCF 10B T100 - Mod. K

Order Coding	Type	Size	Rectangular glass window/ Circular glass window	Frame size	Type of electrical apparatus housed inside the enclosure
	CCF	10BG	TE: external frame	00	K = non I.S. electrical apparatus
			TI: internal frame		KI = presence of I.S. electrical apparatus
			TC: circular glass window		

ENCLOSURES with FLANGED LID for CONTROL and SIGNALING UNITS with Internal/External Rectangular FRAME Series T.. or Circular Glass Window series TC..

series
CCF

Protection	Gas	Zone	1-2	II2G	Ex db IIB+H2 T6÷T3 Gb
	Dust	Zone	21-22	II2D	Ex tb IIIC T85°C÷T200°C Db

Degree of Protection	IP66
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Amb. Temp.	Standard	Extended	-20°C	+40°C
			-50°C	+60°C



Entries Threading	NPT
	Metric

Material	Aluminum Light Alloy
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Painting	Epoxy RAL 7000
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Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079 - 0 • EN 60079 - 1
EN 60079 - 11 • EN 60079 - 31

CE INERIS 14 ATEX 0008X

U INERIS 14 ATEX 9005U

IEC 60079 - 0 • IEC 60079 - 1
IEC 60079 - 11 • IEC 60079 - 31

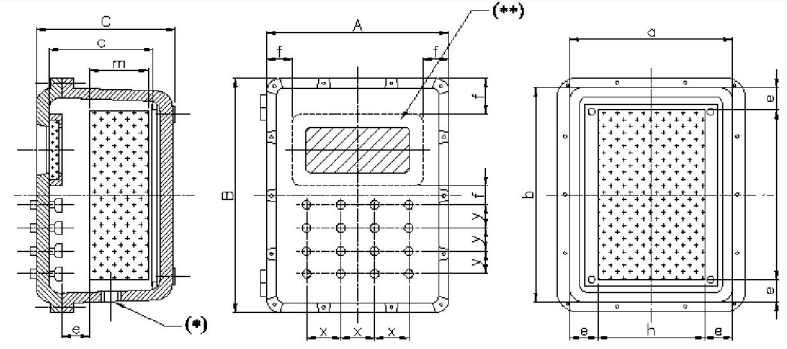
IECEx INE 13.0065X

IECEx INE 14.0056U

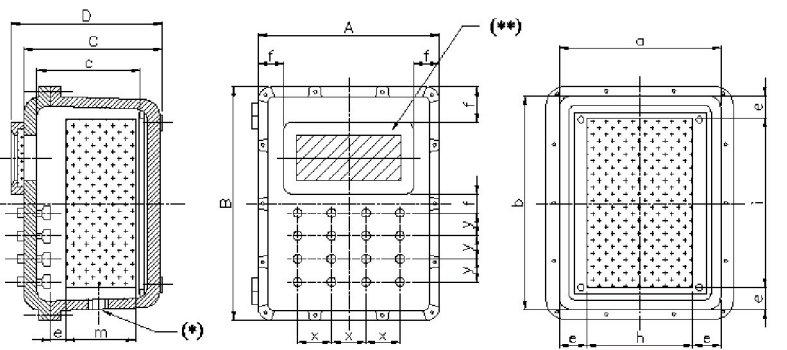
- Ideal to interconnect the wires and to accommodate a vast variety of equipment and instruments.
- Certified either for the version complete with electrical apparatus or empty as an Ex component.
- Windows in thermoresistant tempered glass (see page B44).
- Frame in Aluminum light alloy.
- Internal anti-condense painting RAL 2004.
- External screws in Stainless Steel.
- Fixing brackets (type "A") and lugs (type "B") in zinc plated steel.
- More information on first page B31.

Options	- Various paints RAL.	- Mounting of external units (lights, push buttons etc.) see section C.	- Apparatus to be housed inside the box see page B48.
	- Fixing brackets/lugs in stainless steel.	- Accessories see page B45.	
	- Anti-corrosion technology: ALUMINOX.		

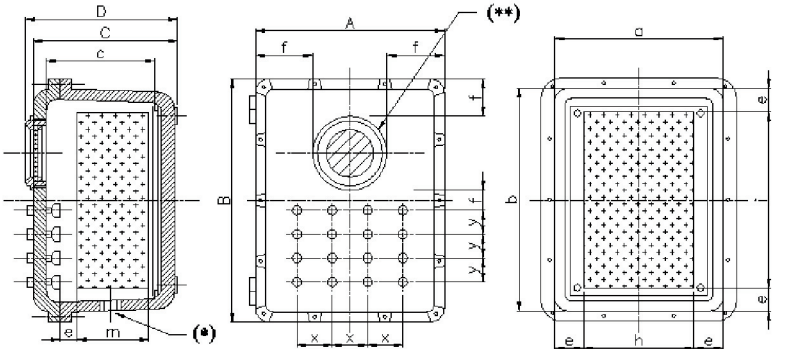
CASE 4



CASE 5



CASE 6



NOTES

The degree of protection IP66 is ensured by restoring the grease layer on the plane joint and by the presence and integrity of its specific gasket.

For models CCF 16... minimum ambient temperature is -40°C.

(*) For enclosure cable entries layout see page B35.

(**) Rectangular glass window and Circular glass window configuration may include more than one frame/window. They may be placed in any position providing they comply with the minimum dimension "x", "y" and "f".

For internal apparatus mounting plates see page B45.

For max dissipable power see page B46.

In presence of I.S. apparatus see guidelines on page. B48.

The diagram is referred to the dimensions indicated on page B34 and B43.

ENCLOSURES with FLANGED LID for CONTROL and SIGNALING UNITS with Internal/External Rectangular FRAME Series T.. or Circular Glass Windows series TC..

series
CCF

B

Order Code	Dimensions (mm)				Electrical apparatus Max Dimensions (mm)				Units						RECTANGULAR FRAMES Mounting: - internal TI - external TE(°)	CIRCULAR GLASS WINDOWS series TC..		
									up to 1/2"			up to 1"						
	A	B	C	D _{max}	e	f	h	i	case 4	case 5/6	X	Y	n°	X			Y	n°
CCF 0G				210	15	36	63	63	-	79	-	-	-	-	-	-	-	TC4
CCF 1G				208	15	36	63	113	-	79	32	44	4	-	-	-	-	TC4
CCF 2G				233	15	36	113	163	-	107	32	36	8	70	-	2	-	TC4
CCF 3G				233	15	48	148	198	64	97	40	42	8	50	-	3	-	TC4 TC6
CCF 3AG				283	15	48	148	198	114	147	40	42	8	50	-	3	T00 T01 T02	TC4 TC6
CCF 4G				233	15	48	148	248	64	97	40	44	12	50	60	6	T00 T01 T02 T11 T12	TC4 TC6
CCF 4AG				283	15	50	148	248	114	147	40	44	12	50	60	6	T00 T01 T02 T11 T12	TC4 TC6
CCF 5G				283	20	50	184	284	106	139	41	44	15	70	70	6	T00 T01 T02 T03 T11 T12 T13 T22 T23	TC4 TC6 TC7 TC9
CCF 5AG				333	20	50	184	284	156	189	41	44	15	70	70	6	T00 T01 T02 T03 T11 T12 T13 T22 T23	TC4 TC6 TC7 TC9
CCF 6G				283	20	50	184	334	106	139	41	45	15	70	80	6	T00 T01 T02 T03 T11 T12 T13 T22 T23	TC4 TC6 TC7 TC9 TC15
CCF 6AG				333	20	50	184	334	156	189	41	45	15	70	80	6	T00 T01 T02 T03 T11 T12 T13 T22 T23	TC4 TC6 TC7 TC9 TC15
CCF 7G				283	20	62	268	368	85	130	47	48	18	70	75	8	T00 T01 T02 T03 T04 T11 T12 T13 T16 T22 T23 T24 T25	TC4 TC6 TC7 TC9 TC15
CCF 7AG				333	20	62	268	368	135	180	47	48	18	70	75	8	T00 T01 T02 T03 T04 T11 T12 T13 T16 T22 T23 T24 T25	TC4 TC6 TC7 TC9 TC15
CCF 8G				283	20	62	218	418	85	130	46	48	20	60	86	8	T00 T01 T02 T03 T11 T12 T13 T22 T23 T33	TC4 TC6 TC7 TC9 TC15 TC18
CCF 8AG				333	20	62	218	418	135	180	46	48	20	60	86	8	T00 T01 T02 T03 T11 T12 T13 T22 T23 T33	TC4 TC6 TC7 TC9 TC15 TC18
CCF 9G				283	20	68	267	467	78	123	55	53	20	70	80	12	T00 T01 T02 T03 T04 T11 T12 T13 T22 T23 T24 T25 T33 T34	TC4 TC6 TC7 TC9 TC15 TC18
CCF 9AG				333	20	68	267	467	128	173	55	53	20	70	80	12	T00 T01 T02 T03 T04 T11 T12 T13 T22 T23 T24 T25 T33 T34	TC4 TC6 TC7 TC9 TC15 TC18
CCF 10G				283	30	68	296	496	66	111	54	52	24	82	90	12	T00 T01 T02 T03 T04 T07 T11 T12 T13 T16 T22 T23 T24 T25 T28 T33 T34	TC4 TC6 TC7 TC9 TC15 TC18 TC22
CCF 10AG				333	30	68	296	496	116	161	54	52	24	82	90	12	T00 T01 T02 T03 T04 T07 T11 T12 T13 T16 T22 T23 T24 T25 T28 T33 T34	TC4 TC6 TC7 TC9 TC15 TC18 TC22
CCF 10BG				383	30	68	296	496	166	211	54	52	24	82	90	12	T00 T01 T02 T03 T04 T07 T11 T12 T13 T16 T22 T23 T24 T25 T28 T33 T34	TC4 TC6 TC7 TC9 TC15 TC18 TC22
CCF 11G				333	30	85	334	534	108	153	58	54	24	72	94	15	T00 T01 T02 T03 T04 T07 T11 T12 T13 T16 T22 T23 T24 T25 T28 T33 T34 T48	TC4 TC6 TC7 TC9 TC15 TC18 TC22 TC25
CCF 11AG				383	30	85	334	534	158	203	58	54	24	72	94	15	T00 T01 T02 T03 T04 T07 T11 T12 T13 T16 T22 T23 T24 T25 T28 T33 T34 T48	TC4 TC6 TC7 TC9 TC15 TC18 TC22 TC25
CCF 11BG				433	30	85	334	534	208	253	58	54	24	72	94	15	T00 T01 T02 T03 T04 T07 T11 T12 T13 T16 T22 T23 T24 T25 T28 T33 T34 T48	TC4 TC6 TC7 TC9 TC15 TC18 TC22 TC25
CCF 12G				333	30	88	384	584	105	150	55	59	28	83	76	20	T00 T01 T02 T03 T04 T07 T11 T12 T13 T16 T19 T22 T23 T24 T25 T28 T29 T33 T34 T48	TC4 TC6 TC7 TC9 TC15 TC18 TC22
CCF 12AG				383	30	88	384	584	155	200	55	59	28	83	76	20	T00 T01 T02 T03 T04 T07 T11 T12 T13 T16 T19 T22 T23 T24 T25 T28 T29 T33 T34 T48	TC4 TC6 TC7 TC9 TC15 TC18 TC22
CCF 12BG				433	30	88	384	584	205	250	55	59	28	83	76	20	T00 T01 T02 T03 T04 T07 T11 T12 T13 T16 T19 T22 T23 T24 T25 T28 T29 T33 T34 T48	TC4 TC6 TC7 TC9 TC15 TC18 TC22
CCF 13G				223	20	51	88	488	48	85	36	57	15	55	75	6	T00 T01 T02 T03 T04 T07	TC4 TC6
CCF 14G				258	20	57	104	634	78	110	40	45	18	65	70	8	T00 T01 T02 T03 T04 T07	TC4 TC6
CCF 16G				413	30	110	488	738	165	205	80	90	24	80	80	24	T00 T01 T02 T03 T04 T07 T09 T11 T12 T13 T16 T19 T22 T23 T24 T25 T28 T29 T33 T34 T48	TC4 TC6 TC7 TC9 TC15 TC18 TC22 TC25
CCF 16AG				473	30	110	488	738	225	265	80	90	24	80	80	24	T00 T01 T02 T03 T04 T07 T09 T11 T12 T13 T16 T19 T22 T23 T24 T25 T28 T29 T33 T34 T48	TC4 TC6 TC7 TC9 TC15 TC18 TC22 TC25
CCF 16BG				533	30	110	488	738	285	325	80	90	24	80	80	24	T00 T01 T02 T03 T04 T06 T07 T08 T11 T12 T13 T14 T16 T17 T18 T22 T23 T24 T25 T26 T33 T34	TC4 TC6 TC7 TC9 TC15
CCF 20BG				553	15	68	326	326	323	387	48	48	18	80	80	16	T00 T01 T02 T03 T04 T06 T07 T08 T11 T12 T13 T14 T16 T17 T18 T22 T23 T24 T25 T26 T33 T34	TC4 TC6 TC7 TC9 TC15

SEE PAGE B34

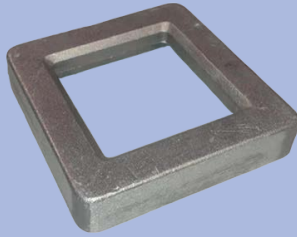
NOTES Dimensions given in the table refer to diagrams of page B42.
(°) It is possible to mount rectangular glass window externally (TE) up to code CCF 9A included. For enclosures of upper size the rectangular glass window can ONLY be mounted internally (TI) or (TC) (More information on page B44).

Example: CCF 7A TC15 - Mod. KU 3

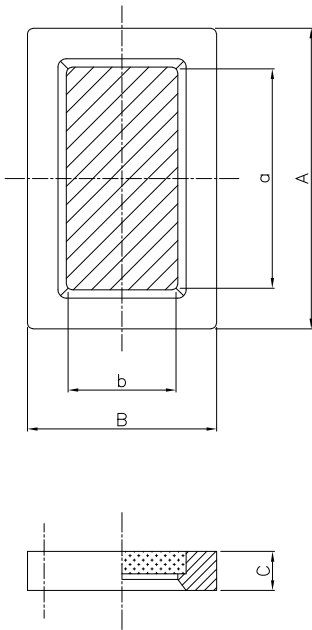
Order Coding	Type	Size	Rectangular glass window/ Circular glass window	Frame Size	Type of electrical apparatus housed inside the enclosure	Presence of Control and Signaling units	Units Size
	CCF	7A	TE: external frame TI: internal frame TC: circular glass window	15	K = non I.S. electrical apparatus KI = presence of I.S. electrical apparatus	U	1: up to 1/2" - M20 2: up to 3/4" - M25 3: up to 1"

RECTANGULAR FRAMES Series T

series
CCF



- Material: Aluminum light alloy
- Thermoresistant tempered glass.
- Paintable such as the enclosure where it is mounted



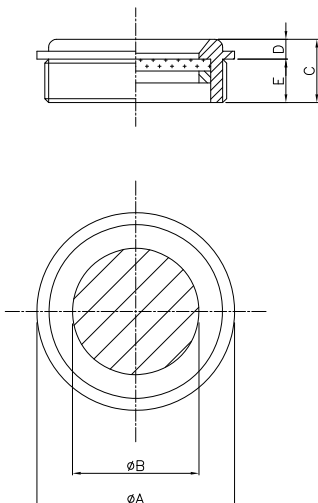
Order Code	Dimensions (mm)					Weight (g)
	A	B	C	a	b	
T 00	96	96	23	49	49	460
T 01	120	96	23	73	49	575
T 02	146	96	23	98	49	660
T 03	194	96	23	146	49	880
T 04	242	96	23	194	49	1035
T 07	290	96	27	242	49	1495
T 09	338	96	27	290	49	1685
T 11	125	125	28	73	73	890
T 12	150	125	28	98	73	895
T 13	198	125	28	146	73	1355
T 16	270	125	31	218	73	1815
T 19	342	125	31	290	73	2495
T 22	156	156	31	98	98	1530
T 23	204	156	31	146	98	1660
T 24	252	156	31	194	98	2280
T 25	258	156	31	200	98	2362
T 28	318	156	31	260	98	2925
T 29	348	156	31	290	98	3054
T 33	208	208	37	146	146	3045
T 34	256	208	37	194	146	3660

CIRCULAR GLASS WINDOWS Series TC

series
CCF



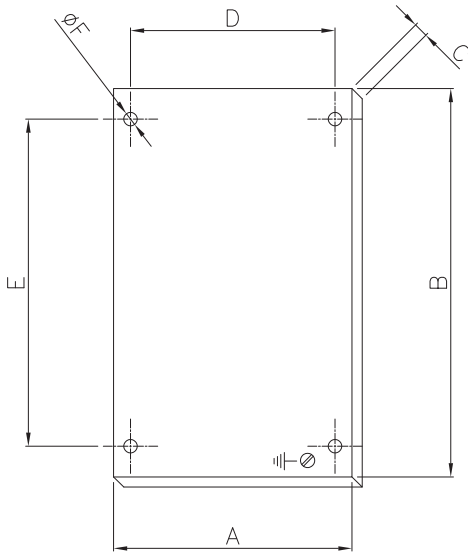
- Material: Aluminum light alloy
- Thermoresistant tempered glass.
- Paintable such as the enclosure where it is mounted



Order Code	Dimensions (mm)					Weight (g)
	ØA	ØB	C	D	E	
TC 4	71	38	29	10	19	165
TC 6	91	50	29	9	20	225
TC 7	130	82	35	14	21	490
TC 9	145	96	35	13	22	615
TC 15	165	115	37	14	23	850
TC 18	199	140	41	17	24	1405
TC 22	240	165	48	22	26	2565
TC 25	270	195	50	22	28	2985

Internal Plate Series PJ

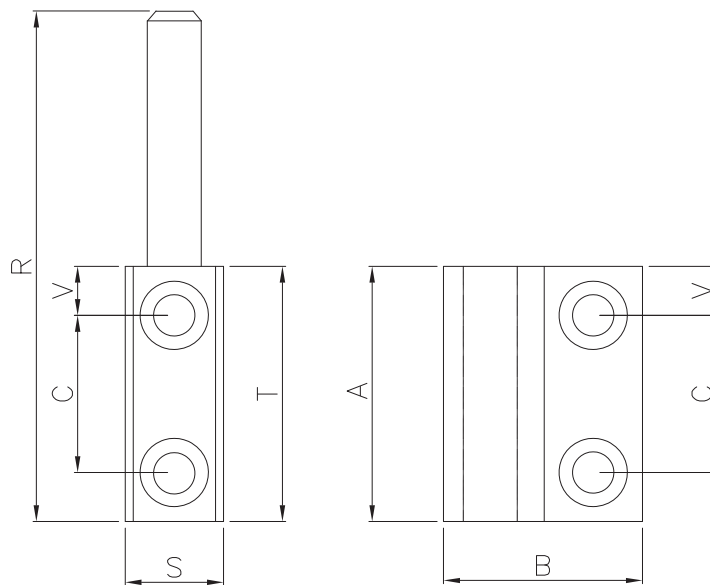
Material: Zinc Plated Steel



Order Code	Enclosure Type	Dimensions (mm)			Centre-to-centre distance (mm)			Weight (g)
		A	B	C	D	E	ØF	
PJ 0	CCF 0	80	80	2	60	60	5.5	100
PJ 1	CCF 1	80	130	2	60	110	5.5	160
PJ 2	CCF 2	130	180	2	110	160	5.5	350
PJ 3	CCF 3	160	210	2	140	180	5.5	510
PJ 4	CCF 4	160	260	2	140	230	5.5	650
PJ 5	CCF 5	205	305	2	185	275	6.5	950
PJ 6	CCF 6	205	355	2	185	325	6.5	1150
PJ 7	CCF 7	290	390	2.5	270	350	6.5	2150
PJ 8	CCF 8	240	440	2.5	220	400	6.5	1950
PJ 9	CCF 9	290	490	2.5	265	450	7.5	2700
PJ 10	CCF 10	320	520	2.5	300	500	7.5	3440
PJ 11	CCF 11	352	552	3	330	520	7.5	4750
PJ 12	CCF 12	402	602	3	380	570	7.5	5900
PJ 13	CCF 13	110	510	2	90	470	5.5	880
PJ 14	CCF 14	120	650	2.5	100	610	6.5	1530
PJ 16	CCF 16	490	730	3	465	640	7.5	8000
PJ 20	CCF 20B	320	320	2.5	300	300	7.5	3000

Hinges Series CJ

Material: Zinc plated Steel (*)



Order Code	Enclosure Type	Dimensions (mm)						
		A	B	C	R	S	T	V
CJ 0-2	CCF 0-2	18	17.5	9	36	9	18	4.5
CJ 3-4	CCF 3-4	25	23	13	50	12	25	6
CJ 5-6	CCF 5-6	25	23	13	50	12	25	6
CJ 7-8	CCF 7-8	30	29	16	60	15	30	7
CJ 9	CCF 9	30	29	16	60	15	30	7
CJ 10-20	CCF 10-20	40	35	22	80	18	40	9
CJ 11-12	CCF 11-12	40	35	22	80	18	40	9
CJ 13-14	CCF 13-14	25	23	13	50	12	25	6
CJ 16	CCF 16	52	50	32	104	20	52	10

(*) Option: Material Stainless Steel AISI 316L (Please add suffix 16 to the order coding)

MAXIMUM DISSIPATED POWER

serie
CCF

NOTES

Data given in the tables are expressed in Watt.

For temperatures class T3 Windows/Round glass window are not allowed.

Protection Mode Ex db

Enclosure	Amb. Temp. +40 °C				Amb. Temp. +50 °C				Amb. Temp. +55 °C				Amb. Temp. +60 °C			
	Temperature Class				Temperature Class				Temperature Class				Temperature Class			
	T6	T5	T4	T3	T6	T5	T4	T3	T6	T5	T4	T3	T6	T5	T4	T3
CCF0G	23	33	57	90	17	27	50	83	13	23	47	80	10	20	43	77
CCF1G	31	44	75	119	22	35	66	110	18	31	62	106	13	26	57	101
CCF1AG	35	50	86	136	25	40	76	126	20	35	71	121	15	30	66	116
CCF2G	57	82	139	220	41	65	122	204	33	57	114	196	24	49	106	188
CCF3G	70	100	170	270	50	80	150	250	40	70	140	240	30	60	130	230
CCF3AG	91	130	221	351	65	104	195	325	52	91	182	312	39	78	169	299
CCF4G	51	74	125	199	37	55	111	139	28	51	102	134	18	42	92	129
CCF4AG	66	96	161	257	48	72	143	179	36	66	132	173	24	54	120	167
CCF5G	81	118	199	318	59	89	177	222	44	81	163	214	30	66	148	207
CCF5AG	99	144	243	387	72	108	216	270	54	99	198	261	36	81	180	252
CCF6G	90	131	222	353	66	99	197	246	49	90	181	238	33	74	164	230
CCF6AG	110	160	269	429	80	120	239	299	60	110	219	289	40	90	199	279
CCF7G	112	164	276	440	82	123	245	307	61	112	225	297	41	92	205	286
CCF7AG	136	198	334	532	99	148	297	371	74	136	272	359	49	111	247	346
CCF8G	110	160	270	430	80	120	240	300	60	110	220	290	40	90	200	280
CCF8AG	146	210	351	555	105	169	310	514	82	146	292	497	64	129	269	473
CCF9G	139	201	335	530	100	162	296	491	78	139	279	474	61	123	257	452
CCF9AG	169	243	405	641	121	196	358	594	94	169	337	574	74	148	310	547
CCF10G	167	240	401	634	120	194	354	588	93	167	334	568	73	147	307	541
CCF10AG	200	288	480	760	144	232	424	704	112	200	400	680	88	176	368	648
CCF10BG	233	335	559	885	168	270	494	820	130	233	466	792	103	205	429	755
CCF11G	220	317	529	837	159	256	467	775	123	220	441	749	97	194	405	714
CCF11AG	256	368	614	972	184	297	542	900	143	256	512	870	113	225	471	829
CCF11BG	291	419	699	1107	210	338	618	1025	163	291	583	990	128	256	536	944
CCF12G	250	360	600	950	180	290	530	880	140	250	500	850	110	220	460	810
CCF12AG	289	416	694	1099	208	335	613	1018	162	289	578	983	127	254	532	937
CCF12BG	328	473	788	1247	236	381	696	1156	184	328	657	1116	144	289	604	1064
CCF13G	72	103	172	273	52	83	152	253	40	72	144	244	32	63	132	233
CCF14G	111	160	267	422	80	129	236	391	62	111	222	378	49	98	205	360
CCF16G	402	579	965	1528	290	467	853	1416	225	402	804	1368	177	354	740	1303
CCF16AG	461	664	1107	1753	332	535	978	1624	258	461	923	1569	203	406	849	1495
CCF16BG	521	750	1249	1978	375	604	1103	1832	291	521	1041	1770	229	458	958	1686
CCF20BG	257	370	616	976	185	298	545	904	144	257	514	873	113	226	473	832
Tcable	80 °C				95 °C				130 °C				175 °C			

MAXIMUM DISSIPATED POWER

serie
CCF

NOTES

Data given in the tables are expressed in Watt.

For the enclosures containing circuits and/or intrinsically safe apparatus, associated or not to "General Purpose" electrical equipment, only temperature class T6 is allowed with reference to an ambient temperature range -20°C +60°C.

B

Protection Mode Ex db [ia]								
Enclosure	Amb. Temp. +40°C	Amb. Temp. +45°C		Amb. Temp. +50°C		Amb. Temp. +55°C		Amb. Temp. +60°C
	Max Amb. Temp. IS barrier	Max Amb. Temp. IS barrier		Max Amb. Temp. IS barrier		Max Amb. Temp. IS barrier		Max Amb. Temp. IS barrier
	60°C	70°C	80°C	70°C	80°C	70°C	80°C	80°C
CCF0G	7	10	17	7	10	3	7	7
CCF1G	9	13	22	9	13	4	9	9
CCF1AG	10	15	25	10	15	5	10	10
CCF2G	16	24	41	16	24	8	16	16
CCF3G	20	30	50	20	30	10	20	20
CCF3AG	26	39	65	26	39	13	26	26
CCF4G	14	28	42	14	28	9	23	14
CCF4AG	18	36	54	18	36	12	30	18
CCF5G	22	44	66	22	44	15	37	22
CCF5AG	27	54	81	27	54	18	45	27
CCF6G	25	49	74	25	49	16	41	25
CCF6AG	30	60	90	30	60	20	50	30
CCF7G	31	61	92	31	61	20	51	31
CCF7AG	37	74	111	37	74	25	62	37
CCF8G	30	60	90	30	60	20	50	30
CCF8AG	47	82	111	47	82	29	64	47
CCF9G	45	78	106	45	78	28	61	45
CCF9AG	54	94	128	54	94	34	74	54
CCF10G	53	93	127	53	93	33	73	53
CCF10AG	64	112	152	64	112	40	88	64
CCF10BG	75	130	177	75	130	47	103	75
CCF11G	70	123	167	70	123	44	97	70
CCF11AG	82	143	194	82	143	51	113	82
CCF11BG	93	163	221	93	163	58	128	93
CCF12G	80	140	190	80	140	50	110	80
CCF12AG	93	162	220	93	162	58	127	93
CCF12BG	105	184	249	105	184	66	144	105
CCF13G	23	40	55	23	40	14	32	23
CCF14G	36	62	84	36	62	22	49	36
CCF16G	129	225	306	129	225	80	177	129
CCF16AG	148	258	351	148	258	92	203	148
CCF16BG	167	291	396	167	291	104	229	167
CCF20BG	82	144	195	82	144	51	113	82



ELECTRICAL EQUIPMENT to be HOUSED within the ENCLOSURE PRINCIPAL REQUIREMENTS

serie
CCF

ENCLOSURES series CCF Mod. K-KU (NO Intrinsically Safe -I.S.- circuits/apparatus)

- Max Voltage: 1000 V ac/dc
- Max Current: 12÷240 A
- Minimum conductor section: 1.5 mm²
- Max Current Density:
 - 3 A/mm² for sections up to 10 mm²
 - 2 A/mm² for sections > 10 mm²
- All electrical equipment shall conform their respective IEC/CENELEC Standards concerning the characteristics and the operating mode
- The electric equipment housed within the enclosure shall be such that their dimensions allow, at any cross-section, at least 40% of free surface
- In the of equipment conceived on electronic board the distance between two parallel boards is ≥30 mm.
- Distance between any electronic component is ≥ 15 mm.
- Electrical equipment contained in the enclosure shall not be intrinsically safe, it shall not include capillaries or other non electric connections.
- In case of presence of capacitors, when the voltage goes off they must be discharged within their own circuit in less than one second.

ENCLOSURES series CCF Mod. KI-KIU (WITH Intrinsically Safe -I.S.- circuits/apparatus)

In case of presence of intrinsically safe circuits and/or I.S. apparatus it is essential to consider the following:

Protection Mode	GAS:	Ex d [Ia Ga] IIB+H ₂ T6÷T3 Gb
	DUST:	Ex tb IIIC [Ia Da] T85°C÷T200°C Db IP66
Group / Category	II 2 (1) GD	
Ambient Temperature	-20°C ÷ +60°C	
Temperature Class	T6 or T6÷T3	

• ELECTRICAL RATINGS

- Max Voltage: 1000 Vac/dc
- Max Current: 60 A

• WIRING

The internal wiring, placed in suitable ducts, shall be made directly on the barriers without interposing terminals, the relevant insulation must have a minimum thickness >0.5 mm and shall include a metallic braid to firmly grounded.

• MINIMUM DISTANCES

- Between two different I.S. circuits: >6 mm
- Between an I.S. circuit S.I. and Ground: >3 mm
- Between I.S. and non I.S. circuits: >50 mm

- Max Power Voltage of I.S. circuit: <250 V (with a double insulation cable);
- Presumed power supply short circuit current: <1500 A (unless otherwise specified).

• I.S. EQUIPMENT FASTENING

The interface barriers are installed on a metal DIN rail fixed to the bottom of the enclosure by screws and lock washer or, as alternative, on the supporting plate also fixed the bottom of the enclosure by screws and lock washer.

NOTES: For information on dissipated power please refer to page B37

For information on dissipated power please refer to page B36 if the enclosure is equipped with an internal thermal probe with maximum threshold equal to: maximum barrier's temperature-5°C)±5°C.

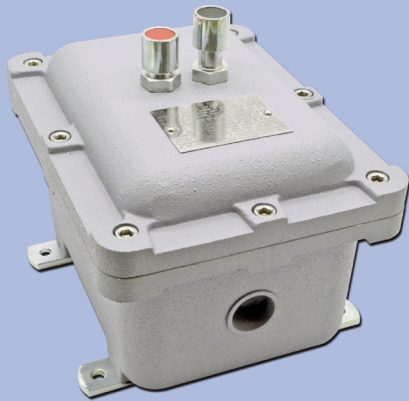
Special execution ENCLOSURE WITH MOTOR PROTECTION CIRCUIT BREAKER

model
CCF 1G IS

Protection	Gas	Zone	1-2	II2G	Ex db IIB+H2 T6÷T3 Gb
	Dust	Zone	21-22	II2D	Ex tb IIIC T85°C÷T200°C Db

Degree of Protection	IP66
----------------------	------

Amb. Temp.	Standard	-20°C	+40°C



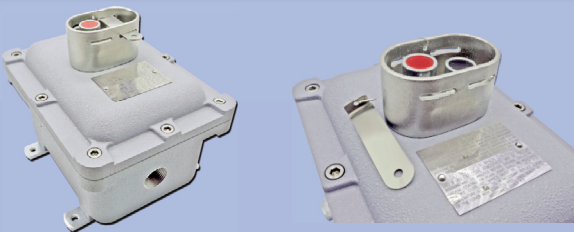
Entries Threading	NPT
	Metric

Material	Aluminium Light Alloy
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Painting	Epoxy RAL 7000
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Standards and Certificates	Directive 2014/34/EU (ATEX)
	EN 60079 - 0 • EN 60079 - 1 EN 60079 - 11 • EN 60079 - 31
	CE INERIS 14 ATEX 0008X
	U INERIS 14 ATEX 9005U
	IEC 60079 - 0 • IEC 60079 - 1 IEC 60079 - 11 • IEC 60079 - 31
	IECEx INE 13.0065X IECEx INE 14.0056U

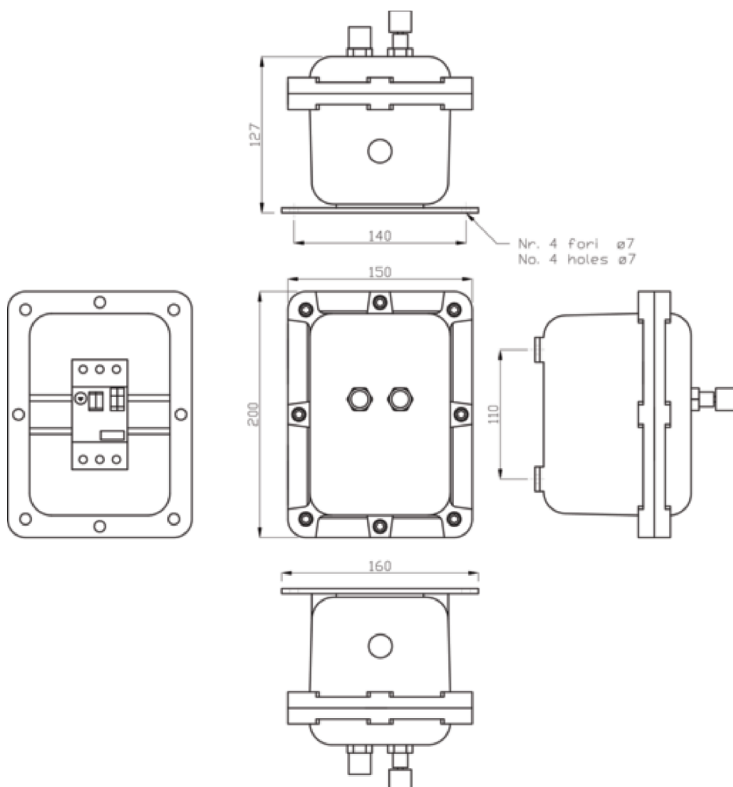
Option with protective guard



- Internal anti-condensate painting RAL 2004.
- External screws in Stainless Steel.
- Fixing brackets in galvanized steel.
- Standard drilling arrang.: 2 cable entries ø 3/4" NPT (top/bottom).
- Construction is based on a MPCB max 32A (3 poles) from series GV2-ME...(Schneider Electric).
For different models/brands please contact our sales office.
- More information on main CCF...dimensions table.
- The degree of protection IP66 is ensured by restoring the grease layer on the flat joint and by the presence and integrity of its specific gasket.

Options	- Different RAL... paint colors.	- Accessories see page B45.	- Stainless steel protective guard with st.st. lockable insert (see above photos)
	- Fixing brackets/lugs in stainless steel.	- Hinges (also available in stainless steel)	
	- Anti-corrosion technology: ALUMINOX.	- Different cable entries on request	

Dimensions and Details



Ordering Code	Model	Current adjust. range (A)
CCF 1G IS	GV2-ME01	0.1-0.16
	GV2-ME02	0.16-0.25
	GV2-ME03	0.25-0.40
	GV2-ME04	0.40-0.63
	GV2-ME05	0.63-1
	GV2-ME06	1-1.6
	GV2-ME07	1.6-2.5
	GV2-ME08	2.5-4
	GV2-ME10	4-6.3
	GV2-ME14	6-10
	GV2-ME16	9-14
	GV2-ME20	13-18
	GV2-ME21	17-23
	GV2-ME22	20-25
GV2-ME32	24-32	

NOTES:

B





COMMAND AND SIGNALLING UNITS LOCAL CONTROL STATIONS - SWITCHES

All items in this section have been designed and manufactured to replicate every possible functionality in classified areas normally available in the control room to the operator.

All COELBO's Command Units, Local Control Stations and Switches reflect the existing ergonomic, operating and displaying philosophies extending comfort and safety (according to ATEX Directive) at the highest levels.

If the explosionproof enclosures used in hazardous areas allow the housing of the necessary electrical equipment in their standard versions (or "General

Purpose"), the original means developed by COELBO, from the optical indicators (lights, LED or conventional) to the Control Units (buttons and pushbuttons and local control stations with the classic START / STOP, ON / OFF, EMERGENCY, ALARMS etc.) allow the operators in the field to interact with their machinery and processes, being controlled and/or monitored, in the most absolute safety .

In principle the units consist of two essential sections: the first, mechanical of COELBO exclusive intellectual property, allowing to transfer the command outside/ inside the housing and the latter typically electric, strategically available

anywhere on the international market.

These products, usually available from stock, can be delivered in bulk (although certified to meet solutions developed directly by customers) or together with COELBO enclosures (see sect. B) on which they are directly mounted optimizing spaces and overall dimensions.

Although designed for a virtually unlimited duration, to guarantee the operational safety and certified compatibility, purchasing any spare parts directly from COELBO is recommended.

COMMAND AND SIGNALLING UNITS



Series	Page
DP - DFP	C03

COMMAND AND SIGNALLING UNITS



RX - RS	C11
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DRAINING AND BREATHING VALVES - BULKHEADS



VDF-VD-P	C25
----------	-----

LOCAL CONTROL STATIONS



PB	C30
----	-----

EMERGENCY BUTTON with BREAKING GLASS



PB	C33
----	-----

ALARMING BUZZER



AB1-S	C34
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BREAKERS - SELECTORS - SWITCHES - CONNECTING SWITCHES



EFS	C35
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NOTES:

C

SIGNALING UNITS

series
DP - DFP

Protection	Gas	1-2	II2G	Ex d IIC or IIB+H ₂ Gb
	Dusts	Zone 21-22	II2D	Ex tb IIIC Db

Degree of Protection	IP66
----------------------	------

Amb. Temp.	Standard	-20°C	+40°C
	Extended	-50°C	+80°C



Standards and Certificates



Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1 • EN 60079-31



IEC 60079-0 • IEC 60079-1 • IEC 60079-31

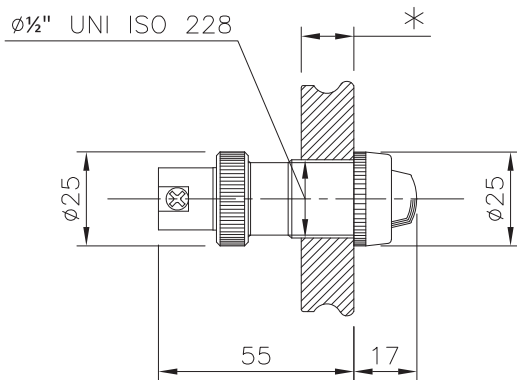
IECEX INE 14.0023U

- For COELBO enclosures Series CCA - CCL - CCF (see section B).
- The 1/2" Series, due to its compact size, allows to save space on the enclosures where they are installed.
- Body in Zinc plated Brass.
- Ring nuts in Chrome plated Brass and/or Polycarbonate.
- Optical components in tempered glass.
- Colored filters in self-extinguishing polycarbonate.

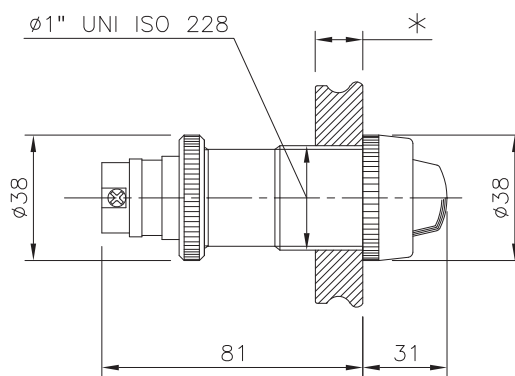
Options

- LED light (series LD...)

- Incandescent Lamp (series LI...)



DP
Threading 1/2" ISO 228
Lamp holder BA 9S
Power ≤ 2,5 W
Weight: 80 g



DFP
Threading 1" ISO 228
Lamp holder E14
Power ≤ 5 W
Weight: 210 g

Signaling Unit	
Color	Id code
Red	R
Green	V
Yellow	G
White	B
Blue	A

Example: DP R

Order Coding

Type

DP = 1/2" unit

DFP = 1" unit

Lamp color (see table)

R = Red

NOTES

The control and signaling units get same temperature class as the enclosure on which they are mounted.

These units shall be installed on enclosure with volume up to 160,6 dm³ for gas group IIB+H₂ and up to 62,9 dm³ for gas group IIC.

These units may be mounted on electrical equipment suitable for group IM2 (fire-damp mines) if no component is made of light alloy. The resulting mode of protection will be Ex d I Mb.

(*) See page B11 for enclosures CCA-CPS, page B21 for CCL-CPL and page B31 for CCF.

Remark: lamp is supplied on request.

PUSH BUTTON

series
DP - DFP

Protection	Gas	Zone	1-2	II2G	Ex d IIC or IIB+H ₂ Gb
	Dusts	Zone	21-22	II2D	Ex tb IIIC Db

Degree of Protection	IP66
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Amb. Temp.	Standard	-20°C	+40°C



Standards and Certificates



Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1 • EN 60079-31

U INERIS 14 ATEX 9009U



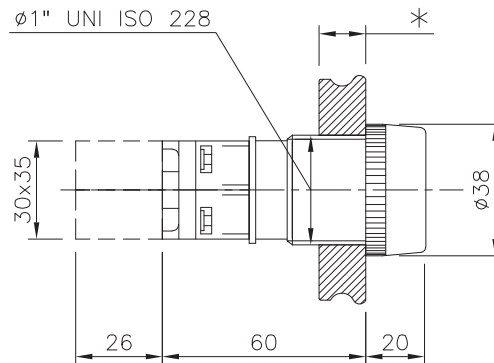
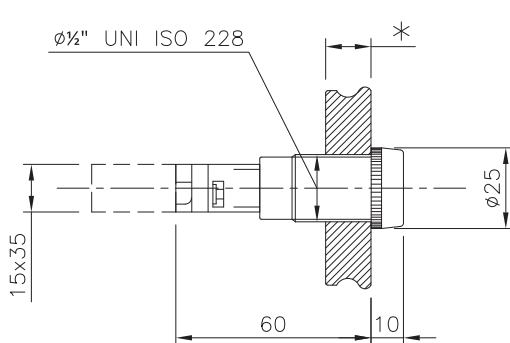
IEC 60079-0 • IEC 60079-1 • IEC 60079-31

IECEX INE 14.0023U

- For COELBO enclosures Series CCA - CCL - CCF (see section B).
- The 1/2" Series, due to its compact size, allows to save space on the enclosures where they are installed.
- Body in Zinc plated Brass.
- Ring nuts in Chrome plated Brass and/or Polycarbonate.
- Drive shafts in Stainless Steel.

- Options**
- Push button color different than black (standard): green, yellow, white or blue.
 - Possibility of having two or more contacts
 - Push button protection in silicon rubber, colors: white, red, black.

PUSH BUTTONS



NOTES

The control and signaling units get same temperature class as the enclosure on which they are mounted.

These units shall be installed on enclosure with volume up to 160,6 dm³ for gas group IIB+H₂ and up to 62,9 dm³ for gas group IIC.

These units may be mounted on electrical equipment suitable for group IM2 (firedamp mines) if no component is made of light alloy. The resulting mode of protection will be Ex d I Mb.

(* See page B11 for enclosures CCA-CPS, page B21 for CCL-CPL and page B31 for CCF.

Contacts: more information on page C05.

Type	Threading	Contact	Element	Push button color	Weight (g)
DP 1	Ø1/2"	NA	Start- ON	Black	115
DFP 1	Ø1"				220
DP 0	Ø1/2"	NC	Stop- OFF	Red	115
DFP 0	Ø1"				220

Example: DP 1V

Order Coding

Type	Element	Push button color (different from std.)	Rubber protection
DP = 1/2" unit	0 = Stop	V = green	.. = none
DFP = 1" unit	1 = Start	G = yellow	S = yes
		B = white	
		A = blue	

PUSH BUTTON

series
DP - DFP

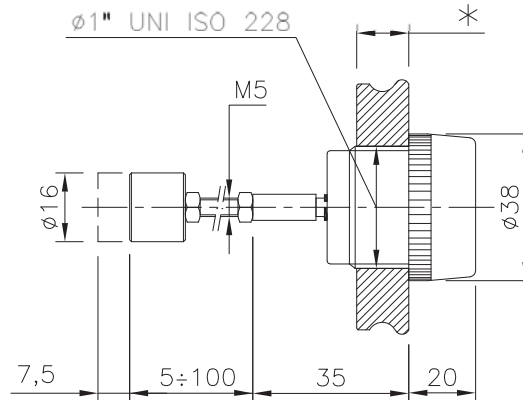
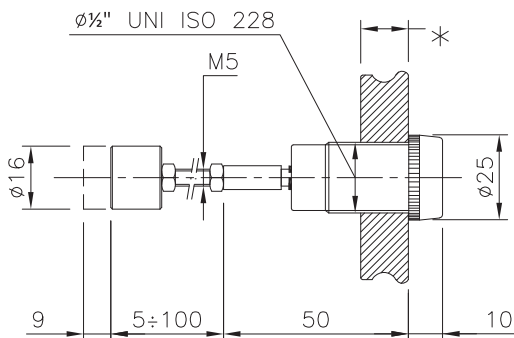
CONTACT ELEMENTS TECHNICAL DATA:

- Nominal current : $I_{th} = 10 \text{ A}$
- Nominal Isolation Voltage : $U_i = 660 \text{ V}$
- Short circuit protection $U_e < 500 \text{ Vac}$: 10 A cartridge fuse
- Terminals ID : according to EN/IEC 60947-1
- Screw type joining terminals with captive clamp
- Wire capacity : $2 \times 2.5 \text{ mm}^2$
- Self cleaning contacts EN01 (NC) EN10 (NA)
- Working cycles: : 1800 operations / hr (max)

	AC15 - A600			DC13 - Q600		
Voltage (V)	24	240	400	24	125	250
Current (A)	10	6	4	2.8	0.55	0.27

NC Contact Diagram	NO Contact Diagram

RESET PUSH BUTTON



NOTES

The control and signaling units get same temperature class as the enclosure on which they are mounted.

These units shall be installed on enclosure with volume up to 160,6 dm³ for gas group IIB+H2 and up to 62,9 dm³ for gas group IIC.

These units may be mounted on electrical equipment suitable for group IM2 (firedamp mines) if no component is made of light alloy. The resulting mode of protection will be Ex d I Mb.

(*) See page B11 for enclosures CCA-CPS, page B21 for CCL-CPL and page B31 for CCF.

Remark: for any further information and characteristics (e.g. protection mode, ambient temperature, etc.) see page C04.

Type	Threading	Push button color	Weight (g)
DP 3	Ø1/2"	Black	110
DFP 3	Ø1"	Black	210

Example: DP 3BS

Order Coding

Type	Element	Push button color (different from std.)	Rubber protection
DP = 1/2" units	3 = Reset	V = green	.. = none
DFP = 1" units		G = yellow	S = yes
		B = white	
		A = blue	

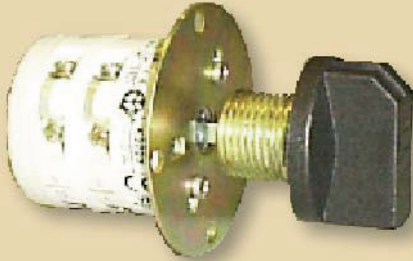
KNOB OPERATED CONTROL UNIT

series
DP - DFP

Protection	Gas	Zone	1-2	II2G	Ex d IIC or IIB+H ₂ Gb
	Dusts	Zone	21-22	II2D	Ex tb IIIC Db

Degree of Protection	IP66
----------------------	------

Amb. Temp.	Standard	Extended	-20°C	+40°C



Standards and Certificates



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EN 60079-0 • EN 60079-1 • EN 60079-31

U INERIS 14 ATEX 9009U



IEC 60079-0 • IEC 60079-1 • IEC 60079-31

IECEX INE 14.0023U

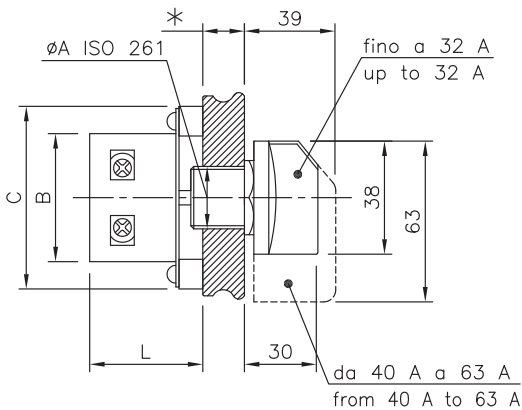
- For COELBO enclosures series CCA - CCL - CCF (see section B).
- Specific to operate cam rotary switches.
- Bush in galvanized brass.
- External knob in polycarbonate.

Options

- Lockable external handle (suffix "L").

- Lockable handle available in different color (black or red).

KNOB OPERATED CONTROL UNIT



Electrical ratings:

- Current: $I_{max} = 63 A$
- Voltage: $V_{max} = 500 V$
- Frequency = 50/60 Hz

Main Function	ID letter (°)	Size (Nominal current)
Switch Pos. 0-1	I	1 (10 A)
Three position changeover switch (pos.1-0-2)	C	3 (16 A)
Two position changeover switch (pos.1-2)	D	5 (25 A)
Reverser switch (pos.1-0-2)	R	6 (32 A)
Connecting Switch (by diagram)	M followed by the diagram code	7 (40 A)
		9 (63 A)

NOTES

The control and signaling units get same temperature class as the enclosure on which they are mounted.

These units shall be installed on enclosure with volume up to 160,6 dm³ for gas group IIB+H₂ and up to 62,9 dm³ for gas group IIC.

These units may be mounted on electrical equipment suitable for group IM2 (firedamp mines) if no component is made of light alloy. The resulting mode of protection will be Ex d I Mb.

(*) See page B11 for enclosures CCA-CPS, page B21 for CCL-CPL and page B31 for CCF.

(°) Schemes C - D - R - M are available up to size 6 (32 A).

Size	B	C	L										Weight (g)	
			Switch		Three position changeover switch		Two position changeover switch		Reverser switch					
			Poles n°		Poles n°		Poles n°		Poles n°					
			1 ÷ 3	4	1	2 ÷ 3	4	1	2 ÷ 3	4	1	2 ÷ 3	4	
1 - 3	43	60	38	50	38	50	62	38	50	62	38	50	62	180
5 - 6	58	90	42	56	42	56	70	42	56	70	42	56	70	240
7 - 9	58	90	56	84	-	-	-	-	-	-	-	-	-	320

The dimensions shown in the table refer to the K series of VANTAGGIMAURI. As alternative switches from other manufacturers may be used, but first check the dimensions and their adaptability.

Example: DP C 23

Order Coding

Type	ID Letter of the switch function	Pole Number	Size
DP = unit	C = selector switches	2 = 2 poles	3 = 16 A

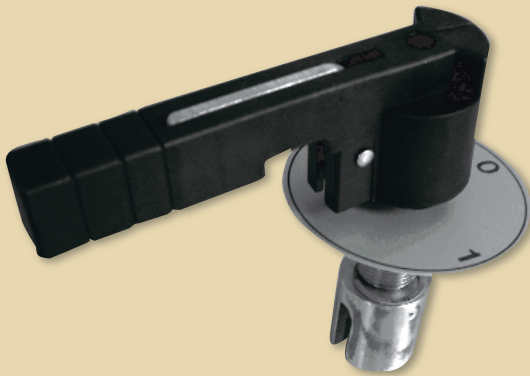
KNOB OPERATED CONTROL UNIT

series
DP - DFP

Protection	Gas	1-2	II2G	Ex d IIC or IIB+H ₂ Gb
	Dusts	Zone 21-22	II2D	Ex tb IIIC Db

Degree of Protection	IP66
----------------------	------

Amb. Temp.	Standard	-20°C	+40°C



Standards and Certificates



Directive 2014/34/EU (ATEX)

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INERIS 14 ATEX 9009U



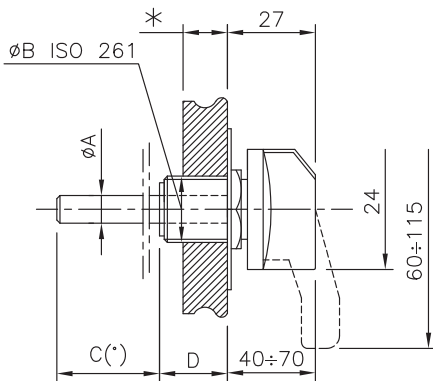
IEC 60079-0 • IEC 60079-1 • IEC 60079-31

IECEx INE 14.0023U

- For COELBO enclosures Series CCA - CCL - CCF (see section B).
- Specific to operate rotary shafts of isolators, MCB, MCCB, MPCB, etc.
- Bushing in tropicalized brass.
- Drive shaft in Stainless Steel.
- Internal leverages in light alloy.
- External knob in polycarbonate.

Options

- Lockable external handle (suffix "L").



Order Code	Dimensions (mm)			
	ØA	ØB	Min C	D
DPM 28 ...A	7	M12x1.5	10	21
DPM 38 ...A	10	M16x1.5	10	21
DPM 1 ...A	14	M20x1.5	10	21
DPM 2 ...A	R	M25x1.5	14	21
DPM 3 ...A	R	M32x1.5	18	25

(*) Length to be specified

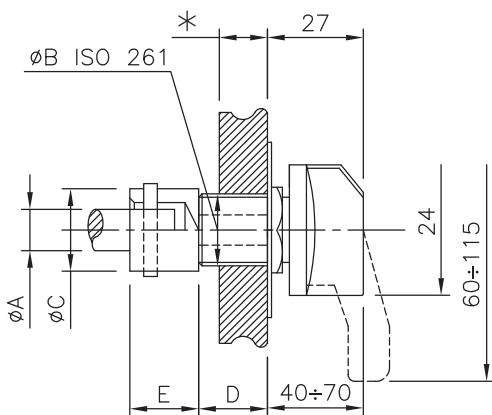
NOTES

The control and signaling units get same temperature class as the enclosure on which they are mounted.

These units shall be installed on enclosure with volume up to 160,6 dm³ for gas group IIB+H₂ and up to 62,9 dm³ for gas group IIC.

These units may be mounted on electrical equipment suitable for group IM2 (firedamp mines) if no component is made of light alloy. The resulting mode of protection will be Ex d I Mb.

(*) See page B11 for enclosures CCA-CPS, page B21 for CCL-CPL and page B31 for CCF.



Order Code	Dimensions (mm)				
	ØA	ØB	ØC	D	E
DPM 28 ...S	7	M12x1.5	13	21	15
DPM 38 ...S	10	M16x1.5	18	21	15
DPM 1 ...S	14	M20x1.5	23	21	20
DPM 2 ...S	R	M25x1.5	28	21	20
DPM 3 ...S	R	M32x1.5	34	25	25

Esempio: DPM 287

Order Coding

Type of control

DPM

Bushing diameter according to conventional coding

28

Command shaft diameter (mm)

7

KEY COMMAND UNIT

series
DFP

Protection	Gas	Zone	1-2	II2G	Ex d IIC or IIB+H ₂ Gb
	Dusts	Zone	21-22	II2D	Ex tb IIIC Db

Degree of Protection	IP66
----------------------	------

Amb. Temp.	Standard	-20°C	+40°C



Standards and Certificates



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U INERIS 14 ATEX 9009U



IEC 60079-0 • IEC 60079-1 • IEC 60079-31

IECEX INE 14.0023U

- For COELBO enclosures series CCA - CCL - CCF (see section B).
- Designed to prevent tampering of the devices, allowing the operation by authorized and key holder personnel only.
- Body in Zinc plated brass.
- Rings in Chrome plated brass.
- Drive shaft in Stainless Steel.

Electrical ratings

- Current: $I_{max} = 63$ A
- Voltage: $V_{max} = 500$ V
- Frequency = 50/60 Hz

NOTES

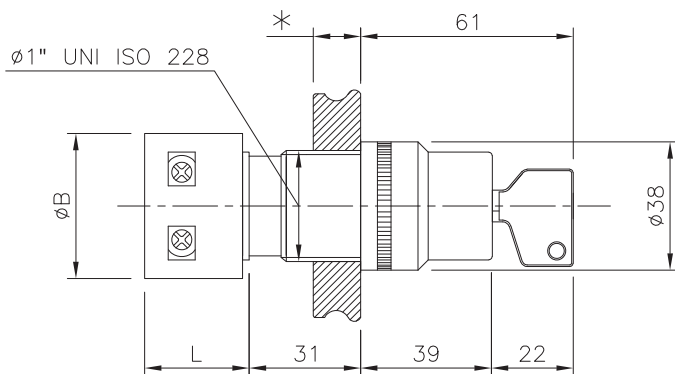
The control and signaling units get same temperature class as the enclosure on which they are mounted.

These units shall be installed on enclosure with volume up to 160,6 dm³ for gas group IIB+H₂ and up to 62,9 dm³ for gas group IIC.

These units may be mounted on electrical equipment suitable for group IM2 (fire d a m p mines) if no component is made of light alloy. The resulting mode of protection will be Ex d I Mb.

(*) See page B11 for enclosures CCA-CPS, page B21 for CCL-CPL and page B31 for CCF.

(°) Schemes C - D - R - M are available up to size 6 (32 A).



Main function	ID letter(°)
Switch (pos. 0-1)	-
Three position changeovers switch (pos.1-0-2)	C
Two position changeover switch (pos.1-2)	D
Reverser switch (pos.1-0-2)	R
Connecting Switch (by diagram)	M - diagram code

Size	Nominal current
1	10 A
3	16 A
5	25 A
6	32 A
7	40 A
9	63 A

Size	Nominal current (A)	ØB	L											Weight (g)
			Switch		Three position changeover switch			Two position changeover switch			Reverser switch			
			Poles n°		Poles n°			Poles n°			Poles n°			
1 - 3	10 - 16	43	32	44	32	44	56	32	44	56	32	44	56	510
5 - 6	25 - 32	58	34	48	34	48	62	34	48	62	34	48	62	560
7 - 9	40 - 63	58	56	84	-	-	-	-	-	-	-	-	-	610

The dimensions shown in the table refer to the K series of VANTAGGIMAURI. As alternative switches from other manufacturers may be used, but first check the dimensions and their adaptability.

Example: DFP 743 / D

Order Coding

Type

DFP = 1" unit

Element

7 = key control

Number of Poles

4 = 4 poles

Size

3 = 16 A

ID letter

D = switch

MUSHROOM PUSH BUTTON

series
DP - DFP

Protection	Gas	Zone	1-2	II2G	Ex d IIC or IIB+H ₂ Gb
	Dusts	Zone	21-22	II2D	Ex tb IIIC Db

Degree of Protection	IP66
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Amb. Temp.	Standard	-20°C	+40°C



Standards and Certificates



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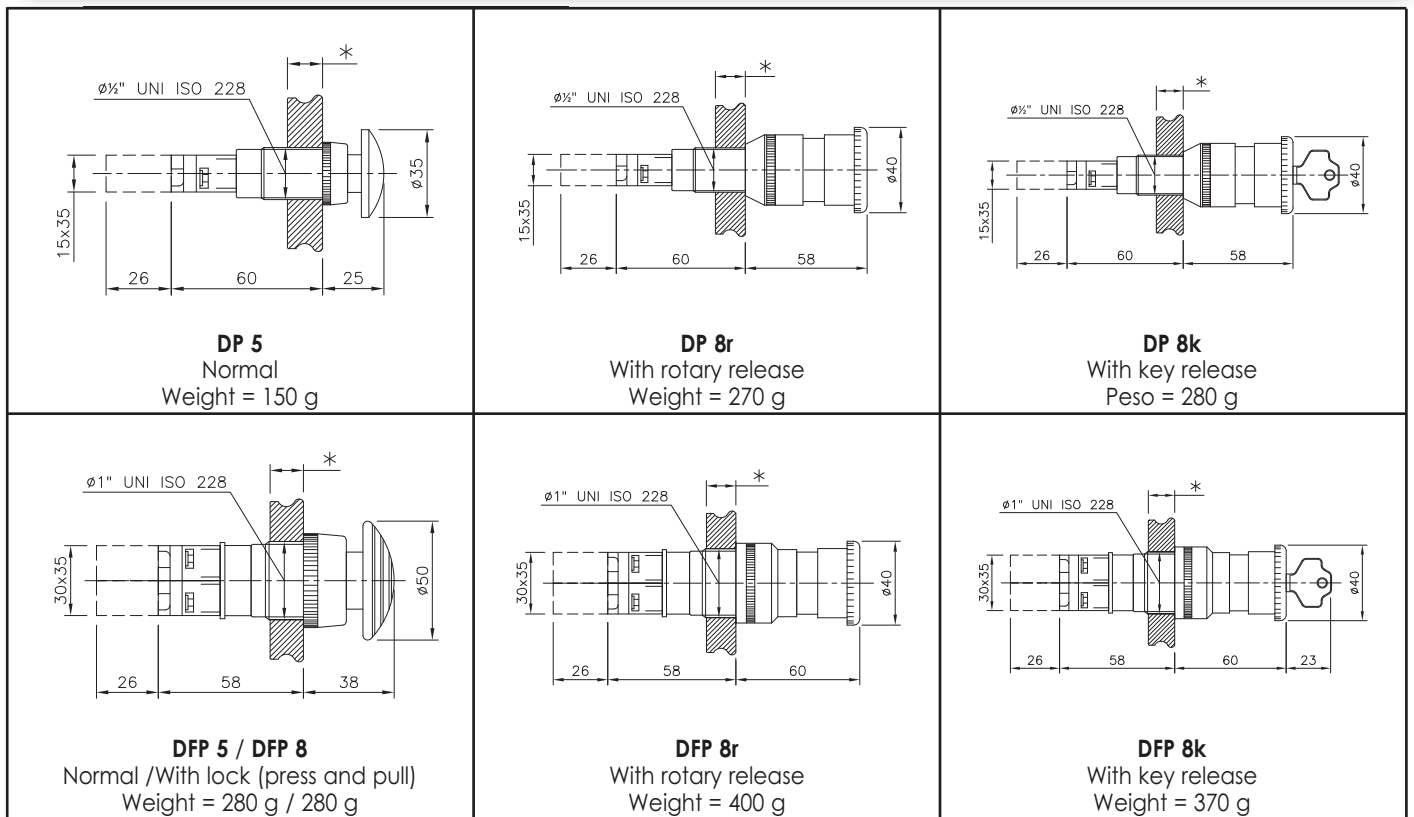


U INERIS 14 ATEX 9009U

IEC 60079-0 • IEC 60079-1 • IEC 60079-31

IECEX INE 14.0023U

- For COELBO enclosures Series CCA - CCL - CCF (see section B).
- The 1/2" Series, due to its compact size, allows to save space on the enclosures where they are installed.
- Body in Zinc plated Brass.
- Ring nuts in Chrome plated Brass and/or Polycarbonate.
- Drive shafts in Stainless Steel.
- Mushroom push button in painted Aluminum or plastic.



Ø1/2"		Ø1"		Units
Code	Contacts	Code	Contacts	
DP 5	NO + NC	DFP 5	NO+ NC	Normal (with spring return and no lock)
-		DFP 8		With lock (press and pull)
DP 8r		DFP 8r		With rotary release
DP 8k		DFP 8k		With key release

Order Coding

Example: DP 8r

Type	Element (see Table)
DP = 1/2" unit	8r = rotary release
DFP = 1" unit	

NOTES

The control and signaling units get same temperature class as the enclosure on which they are mounted.

These units shall be installed on enclosure with volume up to 160,6 dm³ for gas group IIB+H₂ and up to 62,9 dm³ for gas group IIC.

These units may be mounted on electrical equipment suitable for group IM2 (firedamp mines) if no component is made of light alloy. The resulting mode of protection will be Ex d I Mb.

(*) See page B11 for enclosures CCA-CPS, page B21 for CCL-CPL and page B31 for CCF.

Contacts: more information on page C05.

NOTES:

C

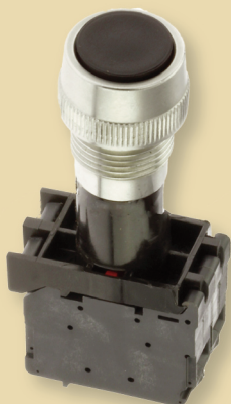
PUSH BUTTON

series
RX - RS

Protection	Gas	1-2	II2G	Ex db IIC or IIB+H ₂ Gb
	Dusts	21-22	II2D	Ex tb IIIC Db
	Mine	n.d.	IM2	Ex db I Mb

Degree of Protection	IP66
----------------------	------

Amb. Temp.	Standard	-20°C	+40°C



Standards and Certificates



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U INERIS 14 ATEX 9009U



IEC 60079-0 • IEC 60079-1 • IEC 60079-31

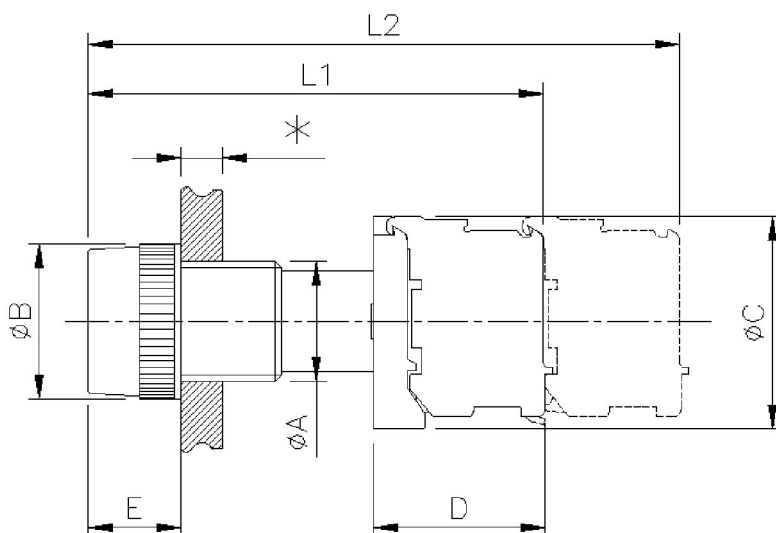
IECEx INE 14.0023U

- Body in Nickel plated Brass.
- Drive shafts in Stainless Steel AISI 316L.
- Push Button in Polyamide 6 (on request Stainless Steel).
- Ring nuts in Nickel plated Brass (on request Stainless Steel or Polycarbonate).
- Operating temperature: -50°C ÷ +180°C.

Options

- Stainless Steel version (RX...I & RS...I).
- Two or more contacts available.

- Color of push button different than black (standard): red, green, yellow, white or blue.



NOTES

The control and signaling units get same temperature class as the enclosure on which they are installed.

(*) Units RX.. shall be installed on enclosures with internal volume up to 2 dm³; whereas units RS.. shall be installed on enclosures with volume up to 160,6 dm³ for group IIB+H₂ and up to 62,9 dm³ for group IIC.

These units may be installed on electrical equipment suitable for group IM2 (fire-damp mines) if no component is made of light alloy. In such case mode of protection will be labelled Ex db I Mb.

(*) See page B11 for enclosures CCA-CPS, page B21 for CCL-CPL and page B31 for CCF.

Contacts: more information on page C23.

Type	ØA Threading	ØB	ØC	D	E	L1	L2	Weight (g)
RX1P..	M20x1,5	26	38	29	16	72	95	59
RX2P..	M25x1,5	32	38	29	16	72	95	71
RS1P..	M20x1,5	26	38	29	16	78	101	69
RS2P..	M25x1,5	32	38	29	16	78	101	98

Example: RX2PK-01

Order Coding

Type
RX = V < 2 dm ³ (*)
RS = V > 2 dm ³ (*)

Size
1 = M20x1,5
2 = M25x1,5

Main Function
P = Pushbutton

Push button color
K = black
G = green
Y = yellow
R = red
W = white
B = blue

Electric Contact
10 = 1 NO
01 = 1 NC
11 = 1 NO+1 NC

PUSH BUTTON - RESET

series
RX - RS

NOTES

The control and signaling units get same temperature class as the enclosure on which they are mounted.

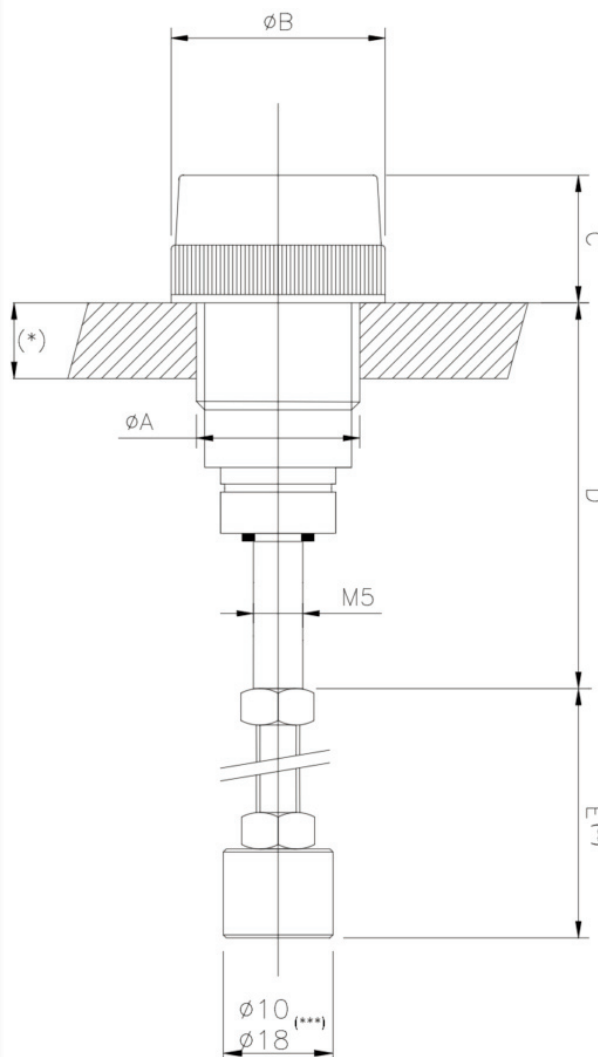
(°) Units RX.. shall be installed on enclosures with internal volume up to 2 dm³; whereas units RS.. shall be installed on enclosures with volume up to 160,6 dm³ for group IIB+H₂ and up to 62,9 dm³ for group IIC.

These units may be mounted on electrical equipment suitable for group IM2 (firedamp mines) if no component is made of light alloy. The resulting mode of protection will be Ex db I Mb.

(*) See page B11 for enclosures CCA-CPS, page B21 for CCL-CPL and page B31 for CCF.

(**) The one indicated is the standard length. Custom lengths available on demand.

(***) Available in two different diameters of probe (to be defined in the order)



Type	ØA Threading	ØB	C	D	E	Weight (g)
RX1P..	M20x1,5	25	15	44	115	59
RX2P..	M25x1,5	32	15	42	115	71
RS1P..	M20x1,5	25	15	50	115	69
RS2P..	M25x1,5	32	15	48	115	98

Example: RX2PRK

Order Coding

Type
RX = V<2 dm ³ (°)
RS = V>2 dm ³ (°)

Size
1 = M20x1,5
2 = M25x1,5

Main Function
PR = Reset Pushbutton

Push button Color
K = black
G = green
Y = yellow
R = red
W = white
B = blue

PUSHBUTTON WITH RUBBER MEMBRANE

series
RX - RS

Protection	Gas	1-2	II2G	Ex db IIC or IIB+H ₂ Gb
	Dust	21-22	II2D	Ex tb IIIC Db
	Mine	n.d.	IM2	Ex db I Mb

Degree of Protection
IP66

Amb. Temp. Standard -20°C +40°C
Extended -50°C +80°C



Available colours:
Colori disponibili:



Standards and Certificates

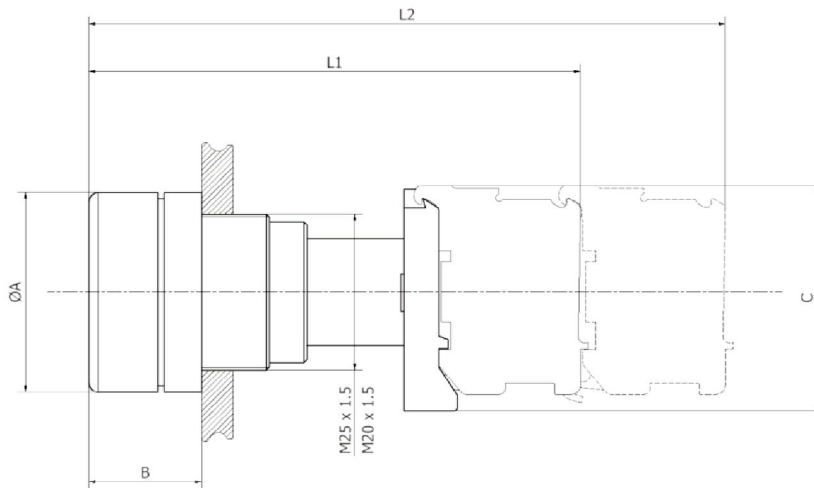
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INERIS 14 ATEX 9009U
IEC 60079-0 • IEC 60079-1 • IEC 60079-31
IECEX INE 14.0023U

- Body in nickel plated brass (on request Stainless Steel AISI 316L).
- Drive shafts in Stainless Steel AISI 316L
- Ring nuts in Nickel plated Brass (on request Stainless Steel AISI 316L).
- Membrane in fluorosilicone rubber, particularly resistant to hydrocarbons
- Operating temperature: -60°C ÷ +180°C.
- Possibility to mount the ring nuts of the M25 pushbutton on the M20 threaded body (MOD. RX12PX... and RS12PX...)

Options

- Complete Stainless Steel version (RX..PX...I & RS..PX...I).
- Two or more contacts available.

- Possibility to mount the ring nuts with membrane on pre-installed units or replace the worn membrane.



NOTES

The control and signaling units get same temperature class as the enclosure on which they are installed.

These units may be installed on electrical equipment suitable for group IM2 (firedamp mines) and mode of protection will be labelled Ex db I Mb

Contacts: more information on page C23.

Type	ØA	Threading	B	ØC	L1	L2	Weight (g)
RX1PX..	27	M20 x 1,5	17	38	72	95	82
RX12PX..	32	M20 x 1,5	18	38	72	95	108
RX2PX..	32	M25 x 1,5	18	38	72	95	110
RS1PX..	27	M20 x 1,5	17	38	78	101	94
RS12PX..	32	M20 x 1,5	18	38	78	101	122
RS2PX..	32	M25 x 1,5	18	38	78	101	130

Example: RX2P XK-01

Order Coding

Type	Size	Main function	Button type	Push button color	Electric contact
RX = V < 2 dm ³ (°)	1 = M20x1,5	P = Push Button	X = Membrane	K = black	10 = 1 NO
RS = V > 2 dm ³ (°)	2 = M25x1,5			G = green	01 = 1 NC
				R = red	11 = 1 NO+1 NC
				W = white	
				B = blue	
				Y = yellow	
				S = grey	

ILLUMINATED PUSH BUTTON

series
RX - RS

Protection	Gas	1-2	II2G	Ex db IIC or IIB+H ₂ Gb
	Dusts	Zone 21-22	II2D	Ex tb IIIC Db
	Mine	n.d.	IM2	Ex db I Mb

Degree of Protection
IP66

Amb. Temp. **Standard** -20°C +40°C
Extended -50°C +80°C



Standards and Certificates



Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1 • EN 60079-31

U INERIS 14 ATEX 9009U



IEC 60079-0 • IEC 60079-1 • IEC 60079-31

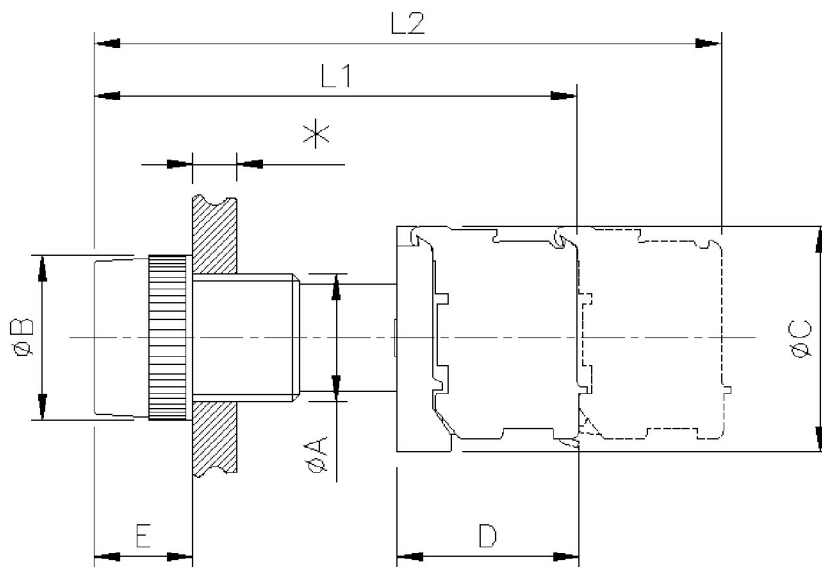
IECEx INE 14.0023U

- Illuminated pushbutton with LED lamp.
- Body in Nickel plated Brass.
- Drive shafts in Stainless Steel AISI 316L.
- Push Button in Polyamide 6.
- Ring nuts in Nickel plated Brass (on request Stainless Steel or Polycarbonate).
- Operating temperature: -50°C ÷ +180°C.

Options

- Complete Stainless Steel version (RX...I & RS...I).
- LED lamps with different voltages and colors.

- Two or more contacts available.
- Different push button color: red, green, yellow, white or blue.



Type	ØA Threading	ØB	ØC	D	E	L1	L2	Weight (g)
RX2PL..	M25x1,5	32	38	29	16	72	95	91
RS2PL..	M25x1,5	32	38	29	16	78	101	104

NOTES

The control and signaling units get same temperature class as the enclosure on which they are installed.

(*) Units RX.. shall be installed on enclosures with internal volume up to 2 dm³; whereas units RS.. shall be installed on enclosures with volume up to 160,6 dm³ for group IIB+H₂ and up to 62,9 dm³ for group IIC.

These units may be installed on electrical equipment suitable for group IM2 (fire-damp mines) if no component is made of light alloy. In such case mode of protection will be labelled Ex db I Mb.

(*) See page B11 for enclosures CCA-CPS, page B21 for CCL-CPL and page B31 for CCF.

Contacts: more information on page C23.

Example: RS2PLR-103

Order Coding

Type	Size	Main Function	Push button / LED color	Electric Contact	LED Voltage
RX = V < 2 dm ³ (*) RS = V > 2 dm ³ (*)	2 = M25x1,5	PL = Illuminated Pushbutton	G = green Y = yellow R = red W = white B = blue	10 = 1 NO 01 = 1 NC 11 = 1 NO+1 NC	3 = 24 V ac/dc 5 = 120 V ac 7 = 230 V ac

SIGNALING UNIT

series
RX - RS

Protection	Gas	1-2	II2G	Ex db IIC or IIB+H ₂ Gb
	Dusts	21-22	II2D	Ex tb IIIC Db
	Mine	n.d.	IM2	Ex db I Mb

Degree of Protection	IP66
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Amb. Temp.	Standard	-20°C	+40°C



Standards and Certificates



Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1 • EN 60079-31

U

INERIS 14 ATEX 9009U



IEC 60079-0 • IEC 60079-1 • IEC 60079-31

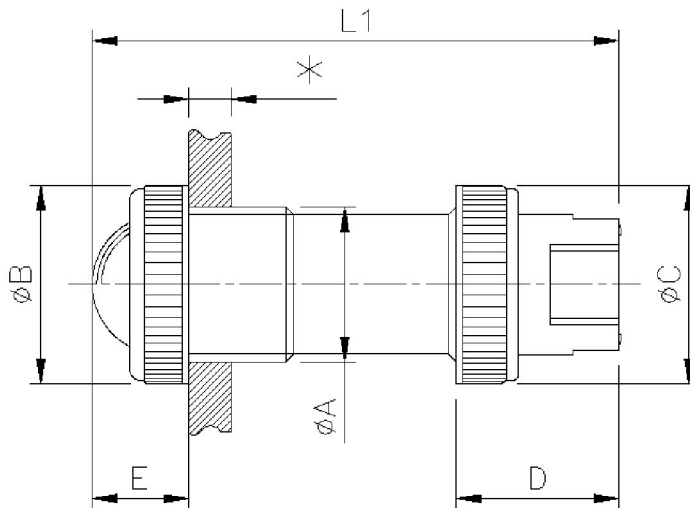
IECEx INE 14.0023U

- Body in Nickel plated Brass.
- Internal optical components in tempered glass.
- Colored caps in self-extinguishing polycarbonate.
- Operating temperature: -50°C ÷ +180°C.
- Lamp holder Ba9S for RX1../RS1...
- Lamp holder Ba15S for RX2../RS2...
- Complete of lamp on request (different voltages are available).

Options

- Complete Stainless Steel version (RX...I & RS...I).

- Filters of different colors: red, green, yellow, white or blue.



NOTES

The control and signaling units get same temperature class as the enclosure on which they are installed.

(*) Units RX.. shall be installed on enclosures with internal volume up to 2 dm³; whereas units RS.. shall be installed on enclosures with volume up to 160,6 dm³ for group IIB+H₂ and up to 62,9 dm³ for group IIC.

These units may be installed on electrical equipment suitable for group IM2 (firedamp mines) if no component is made of light alloy. In such case mode of protection will be labelled Ex db I Mb.

(*) See page B11 for enclosures CCA-CPS, page B21 for CCL-CPL and page B31 for CCF.

Lamps: more information on page C24.

Remark: lamp is supplied on request.

Type	ØA Threading	ØB	ØC	D	E	L	Weight (g)
RX1L..	M20x1,5	26	26	25	14	72	63
RX2L..	M25x1,5	32	32	33	16	78	101
RS1L..	M20x1,5	26	26	25	14	80	68
RS2L..	M25x1,5	32	32	27	16	82	108

Example: RS1LY-7

Order Coding

Type
RX = V < 2 dm ³ (*)
RS = V > 2 dm ³ (*)

Size
1 = M20x1,5
2 = M25x1,5

Main Function
L = Signaling

Filter / LED color
G = green
Y = yellow
R = red
W = white
B = blue

LED Voltage
3 = 24 V ac/dc
5 = 120 V ac
7 = 230 V ac

MUSHROOM PUSH BUTTON

series
RX - RS

Protection	Gas	1-2	II2G	Ex db IIC or IIB+H ₂ Gb
	Dusts	Zone 21-22	II2D	Ex tb IIIC Db
	Mine	n.d.	IM2	Ex db I Mb

Degree of Protection
IP66

Amb. Temp. Standard -20°C +40°C
Extended -50°C +80°C



Standards and Certificates



Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1 • EN 60079-31

U INERIS 14 ATEX 9009U



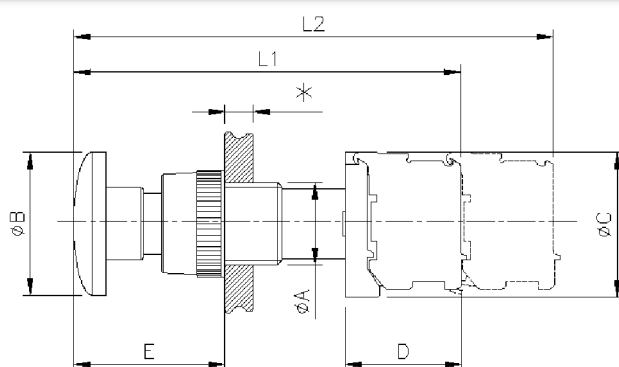
IEC 60079-0 • IEC 60079-1 • IEC 60079-31

IECEX INE 14.0023U

- Body in Nickel plated Brass.
- Drive shafts in Stainless Steel AISI 316L.
- Mushroom Push Button in Polyamide 6.
- Ring nuts in Nickel plated Brass (on request Stainless Steel or Polycarbonate).
- Operating temperature: -50°C ÷ +180°C.

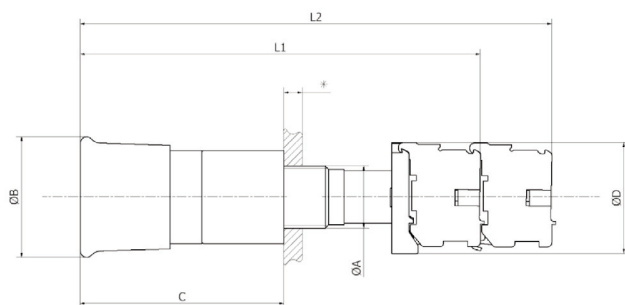
Options - Complete Stainless Steel version (RX...I & RS...I).
- Two or more contacts available.

- Black color mushroom button.



F = Normal

Type	ØA Threading	ØB	ØC	D	E	L1	L2	Weight (g)
RX1F..	M20x1,5	35	38	29	30	86	109	66
RX2F..	M25x1,5	50	38	29	30	86	109	88
RS1F..	M20x1,5	35	38	29	30	92	115	76
RS2F..	M25x1,5	50	38	29	30	92	115	108



FP = Push-Pull

Type	ØA Threading	ØB	C	ØD	L1	L2	Weight (g)
RX1FP..	M20x1,5	40	72	38	135	160	187
RX2FP..	M25x1,5	40	72	38	135	160	205
RS1FP..	M20x1,5	40	72	38	135	160	187
RS2FP..	M25x1,5	40	72	38	135	160	205

NOTES

The control and signaling units get same temperature class as the enclosure on which they are installed.

(*) Units RX.. shall be installed on enclosures with internal volume up to 2 dm³; whereas units RS.. shall be installed on enclosures with volume up to 160,6 dm³ for group IIB+H₂ and up to 62,9 dm³ for group IIC.

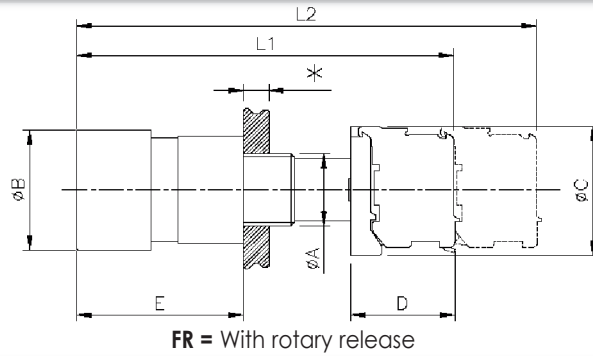
These units may be installed on electrical equipment suitable for group IM2 (firedamp mines) if no component is made of light alloy. In such case mode of protection will be labelled Ex db I Mb.

(*) See page B11 for enclosures CCA-CPS, page B21 for CCL-CPL and page B31 for CCF

Contacts: more information on page C23.

MUSHROOM PUSH BUTTON

series
RX - RS



FR = With rotary release

NOTE

The control and signaling units get same temperature class as the enclosure on which they are installed.

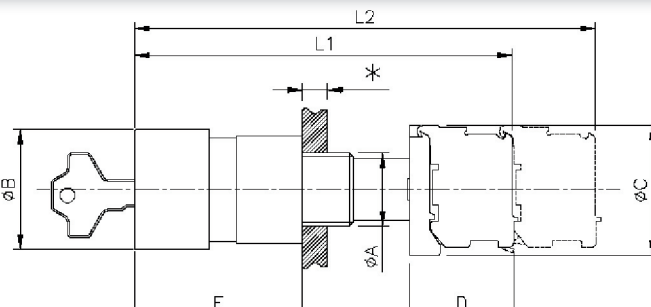
These units may be installed on electrical equipment suitable for group IM2 (firedamp mines) if no component is made of light alloy.

In such case mode of protection will be labelled Ex db I Mb.

(*) See page B11 for enclosures CCA-CPS, page B21 for CCL-CPL and page B31 for CCF.

Contacts: more information on page C23.

Type	ØA Threading	ØB	ØC	D	E	L1	L2	Weight (g)
RX1FR..	M20x1,5	33	38	29	57	113	136	168
RX2FR..	M25x1,5	33	38	29	57	113	136	174
RS1FR..	M20x1,5	33	38	29	57	119	142	178
RS2FR..	M25x1,5	33	38	29	57	119	142	194



FY = with key release

Type	ØA Threading	ØB	ØC	D	E	L1	L2	Weight (g)
RX1FY..	M20x1,5	33	38	29	57	113	136	168
RX2FY..	M25x1,5	33	38	29	57	113	136	174
RS1FY..	M20x1,5	33	38	29	57	119	142	178
RS2FY..	M25x1,5	33	38	29	57	119	142	194

Example: RX1FRR-01

Order Coding

Type	Size	Main Function	Push button color	Electric Contact
RX = V < 2 dm ³ (°)	1 = M20x1,5	F = normal	R = red	10 = 1 NO
RS = V > 2 dm ³ (°)	2 = M25x1,5	FR = with rotary release	N = black	01 = 1 NC
		FY = with key release		11 = 1 NO+1 NC

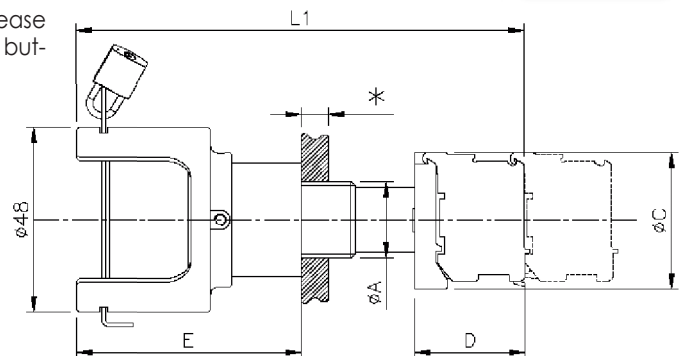
ACCESSORIES for MUSHROOM PUSH BUTTON

serie
RX - RS

Protective plasti guard for mushroom pushbutton with rotary release RX1FR.., RX2FR.., RS1FR.. and RS2FR.. with lockable bracket to lock button in pressed position in order to have maintenance on plant.

ORDER CODING:

- RX1FR...GRD
- RX2FR...GRD
- RS1FR...GRD
- RS2FR...GRD



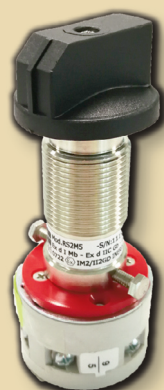
KNOB OPERATED CONTROL UNIT

series
RX - RS

Protection	Gas	1-2	II2G	Ex db IIC or IIB+H ₂ Gb
	Dusts	21-22	II2D	Ex tb IIIC Db
	Mine	n.d.	IM2	Ex db I Mb

Degree of Protection	IP66
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Amb. Temp.	Standard	Extended	-20°C	+40°C
			-50°C	+80°C



Standards and Certificates	Directive 2014/34/EU (ATEX)
	EN 60079-0 • EN 60079-1 • EN 60079-31
	U INERIS 14 ATEX 9009U
	IEC 60079-0 • IEC 60079-1 • IEC 60079-31 IECEx INE 14.0023U

- Used to operate cam rotary switches.
- Components in galvanized brass.
- External knob in polycarbonate.

Opzioni

- Complete version in stainless steel (RX...I & RS...I).
- Lockable external handle (suffix "L").

- Lockable handle available in different colors: black, red.

Electrical ratings:

- Current: $I_{max} = 16 \text{ A}$
- Voltage: $V_{max} = 500 \text{ V}$
- Frequency: 50/60 Hz

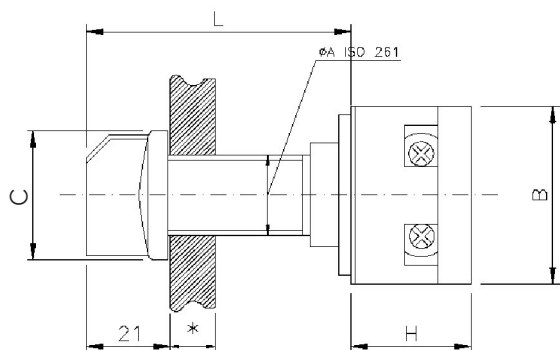
Main Function	ID letter	Size (Nominal current)
Switch Pos. 0-1	I	1 (10 A)
Three position changeover switch (pos.1-0-2)	C	
Two position changeover switch (pos.1-2)	D	
Reverser switch (pos.1-0-2)	R	3 (16 A)
Connecting Switch (by diagram)	M followed by the diagram code	

NOTES

The control and signaling units get same temperature class as the enclosure on which they are installed.

(*) Units RX.. shall be installed on enclosures with internal volume up to 2 dm³; whereas units RS.. shall be installed on enclosures with volume up to 160,6 dm³ for group IIB+H₂ and up to 62,9 dm³ for group IIC.

Type	ØA Threading	C	L	Weight (g)
RX1M..	M20x1,5	32	52.5	115
RX2M..	M25x1,5	32	52.5	180
RS1M..	M20x1,5	39	67.5	180
RS2M..	M25x1,5	39	67.5	250



Size	B	H										
		Switches		Three position changeover switch			Two position changeover switch			Reverser switch		
		Poles no.		Poles no.			Poles no.			Poles no.		
		1 ÷ 3	4	1	2 ÷ 3	4	1	2 ÷ 3	4	1	2 ÷ 3	4
1 - 3	43	29	41	29	41	53	29	41	53	29	41	53

The dimensions shown in the table refer to the K series of VANTAGGIMAURI. As alternative switches from other manufacturers may be used, but first check the dimensions and their adaptability.

These units may be installed on electrical equipment suitable for group IM2 (firedamp mines) if no component is made of light alloy. In such case mode of protection will be labelled Ex db I Mb.

Example: RS 2 M5C 23

Order Coding	Type	Size	Main Function	ID letter	Poles No.	Size
	RX = $V < 2 \text{ dm}^3$ (*) RS = $V > 2 \text{ dm}^3$ (*)	1 = M20x1,5 2 = M25x1,5	M5 = Knob control unit	C = Three position changeover switch (pos.1-0-2)	2 = 2 poli	3 = 16 A

(*) See page B11 for enclosures CCA-CPS, page B21 for CCL-CPL and page B31 for CCF.

KEY OPERATED CONTROL UNIT

series
RX - RS

Protection	Gas	1-2	II2G	Ex db IIC or IIB+H ₂ Gb
	Dusts	21-22	II2D	Ex tb IIIC Db
	Mine	n.d.	IM2	Ex db I Mb

Degree of Protection
IP66

Amb. Temp. Standard -20°C +40°C
Extended -50°C +80°C



Standards and Certificates



Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1 • EN 60079-31

U INERIS 14 ATEX 9009U



IEC 60079-0 • IEC 60079-1 • IEC 60079-31

IECEx INE 14.0023U

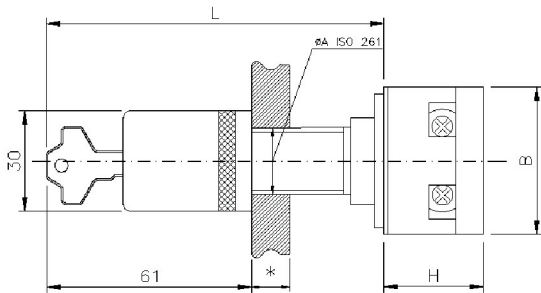
- Used to operate cam rotary switches.
- Bush in galvanized brass.
- Designed to prevent tampering of the devices, allowing the operation by authorized and key holder personnel only.

Options

- Complete version in stainless steel (RX...I & RS...I).

Electrical ratings:

- Current: $I_{max} = 63 \text{ A}$
- Voltage: $V_{max} = 500 \text{ V}$
- Frequency = 50/60 Hz



Main Function	ID letter (1)	Size (Nominal current)
Switch Pos. 0-1	I	1 (10 A)
Three position changeover switch (pos.1-0-2)	C	3 (16 A)
Two position changeover switch (pos.1-2)	D	5 (25 A)
Reverser switch (pos.1-0-2)	R	6 (32 A)
Connecting Switch (by diagram)	M followed by the diagram code	7 (40 A)
		9 (63 A)

Type	ØA Threading	L
RX2..Y5..	M25x1,5	89.0
RS2..Y5..	M25x1,5	96.0

NOTES

The control and signaling units get same temperature class as the enclosure on which they are installed.

(*) Units RX.. shall be installed on enclosures with internal volume up to 2 dm³; whereas units RS.. shall be installed on enclosures with volume up to 160,6 dm³ for group IIB+H₂ and up to 62,9 dm³ for group IIC.

These units may be installed on electrical equipment suitable for group IM2 (firedamp mines) if no component is made of light alloy. In such case mode of protection will be labelled Ex db I Mb.

(*) See page B11 for enclosures CCA-CPS, page B21 for CCL-CPL and page B31 for CCF.

(1) Schemes C - D - R - M are available up to size 6 (32 A).

Size	B	H											Weight (g)
		Switches		Three position changeover switch			Two position changeover switch			Reverser switch			
		Poles no.		Poles no.			Poles no.			Poles no.			
		1 ÷ 3	4	1	2 ÷ 3	4	1	2 ÷ 3	4	1	2 ÷ 3	4	
1 - 3	43	38	50	38	50	62	38	50	62	38	50	62	180
5 - 6	58	42	56	45	56	70	42	56	70	42	56	70	240
7 - 9	58	56	84	-	-	-	-	-	-	-	-	-	320

The dimensions shown in the table refer to the K series of VANTAGGIMAURI.

As alternative switches from other manufacturers may be used, but first check the dimensions and their adaptability.

Example: RS 2 Y5C 23

Order Coding

Type	Size	Main Function	ID letter	Poles No.	Size
RX = V < 2 dm ³ (*)	2 = M25x1,5	Y5 = Key	C = Three position changeover switch (pos.1-0-2)	2 = 2 poli	3 = 16 A
RS = V > 2 dm ³ (*)					

TRIANGULAR KEY OPERATED CONTROL UNIT

series
RX - RS

Protection	Gas	1-2	II2G	Ex db IIC or IIB+H ₂ Gb
	Dusts	21-22	II2D	Ex tb IIIC Db
	Mine	n.d.	IM2	Ex db I Mb

Degree of Protection	IP66
----------------------	------

Amb. Temp.	Standard	-20°C	+40°C



Standards and Certificates



Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1 • EN 60079-31

U INERIS 14 ATEX 9009U



IEC 60079-0 • IEC 60079-1 • IEC 60079-31

IECEX INE 14.0023U

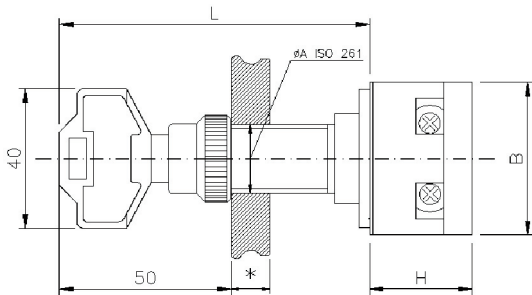
- Used to operate cam rotary switches.
- Bush in galvanized brass.
- Designed to prevent tampering of the devices, allowing the operation by authorized and key holder personnel only.

Options

- Complete version in stainless steel (RX...I & RS...I).

Electrical ratings:

- Current: $I_{max} = 63$ A
- Voltage: $V_{max} = 500$ V
- Frequency = 50/60 Hz



Main Function	ID letter (1)	Size (Nominal current)
Switch Pos. 0-1	I	1 (10 A)
Three position changeover switch (pos.1-0-2)	C	3 (16 A)
Two position changeover switch (pos.1-2)	D	5 (25 A)
Reverser switch (pos.1-0-2)	R	6 (32 A)
Connecting Switch (by diagram)	M followed by the diagram code	7 (40 A)
		9 (63 A)

Type	ØA Threading	L
RX1..H..	M20x1,5	74.0
RX2..H..	M25x1,5	74.0
RS1..H..	M20x1,5	89.0
RS2..H..	M25x1,5	89.0

NOTES

The control and signaling units get same temperature class as the enclosure on which they are installed.

(*) Units RX.. shall be installed on enclosures with internal volume up to 2 dm³; whereas units RS.. shall be installed on enclosures with volume up to 160,6 dm³ for group IIB+H₂ and up to 62,9 dm³ for group IIC.

These units may be installed on electrical equipment suitable for group IM2 (firedamp mines) if no component is made of light alloy. In such case mode of protection will be labelled Ex db I Mb.

(*) See page B11 for enclosures CCA-CPS, page B21 for CCL-CPL and page B31 for CCF.

(1) Schemes C - D - R - M are available up to size 6 (32 A).

Size	B	H											Weight (g)
		Switches		Three position changeover switch			Two position changeover switch			Reverser switch			
		Poles no.		Poles no.			Poles no.			Poles no.			
		1 ÷ 3	4	1	2 ÷ 3	4	1	2 ÷ 3	4	1	2 ÷ 3	4	
1 - 3	43	38	50	38	50	62	38	50	62	38	50	62	180
5 - 6	58	42	56	45	56	70	42	56	70	42	56	70	240
7 - 9	58	56	84	-	-	-	-	-	-	-	-	-	320

The dimensions shown in the table refer to the K series of VANTAGGIMAURI.

As alternative switches from other manufacturers may be used, but first check the dimensions and their adaptability.

Example: RS 2 HC 23

Order Coding

Type	Size	Main Function	ID letter	Poles No.	Size
RX = V < 2 dm ³ (*)	1 = M20x1,5	H = Triangular Key	C = Three position changeover switch (pos.1-0-2)	2 = 2 poli	3 = 16 A
RS = V > 2 dm ³ (*)	2 = M25x1,5				

EMERGENCY PUSH BUTTON

series
RX - RS

Protection	Gas	1-2	II2G	Ex db IIC or IIB+H ₂ Gb
	Dusts	21-22	II2D	Ex tb IIIC Db
	Mine	n.d.	IM2	Ex db I Mb

Degree of Protection
IP66

Amb. Temp. Standard -20°C +40°C
Extended -50°C +80°C



Standards and Certificates



Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1 • EN 60079-31

U INERIS 14 ATEX 9009U



IEC 60079-0 • IEC 60079-1 • IEC 60079-31

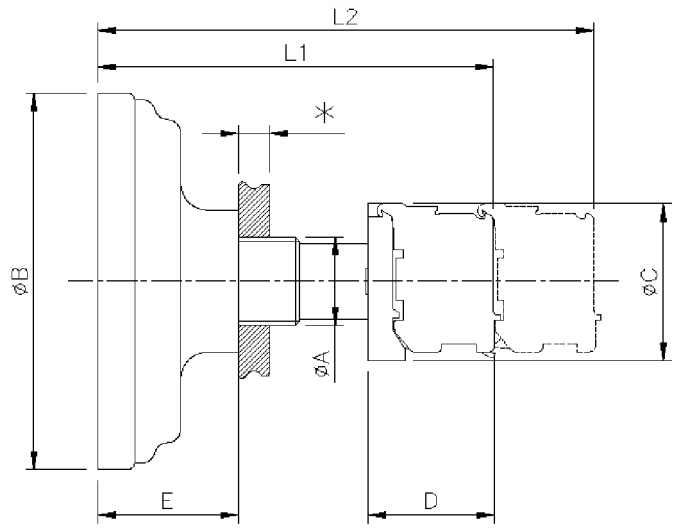
IECEx INE 14.0023U

- Body in Nickel plated Brass.
- Drive shafts in Stainless Steel AISI 316L.
- Push Button in Polyamide 6 (on request Stainless Steel).
- Aluminium ring with protective (breakable) glass.
- Operating temperature: -50°C ÷ +180°C.

Options

- Complete Stainless Steel version (RX...I & RS...I).
- Two or more contacts available.

- Color of push button different than black (standard): red, green, yellow, white or blue.



NOTES

The control and signaling units get same temperature class as the enclosure on which they are installed.

(*) Units RX.. shall be installed on enclosures with internal volume up to 2 dm³; whereas units RS.. shall be installed on enclosures with volume up to 160,6 dm³ for group IIB+H₂ and up to 62,9 dm³ for group IIC.

These units may be installed on electrical equipment suitable for group IM2 (fire-damp mines) if no component is made of light alloy. In such case mode of protection will be labelled Ex db I Mb.

Electric Execution Identification

E0
The breaking of the glass releases the button that automatically closes and / or opens a contact.

E1
The breaking of the glass releases the button that shall be pressed to open and / or close a contact.

Type	ØA Threading	ØB	ØC	D	E	L1	L2	Weight (g)
RX2..	M25x1,5	85	38	29	26	82	105	200
RS2..	M25x1,5	85	38	29	26	88	111	220

Example: RX2E0R-11

Order Coding

Type	Size	Main Function (see above)	Push button color	Electric Contact
RX = V < 2 dm ³ (*)	2 = M25x1,5	E0 = Self releas button when glass broken	K = black	10 = 1 NO
RS = V > 2 dm ³ (*)		E1 = Pushbutton to press after glass breaking	G = green	01 = 1 NC
			Y = yellow	11 = 1 NO+1 NC
			R = red	
			W = white	
			B = blue	

(*) See page B11 for enclosures CCA-CPS, page B21 for CCL-CPL and page B31 for CCF.

Contacts: more information on page C23.

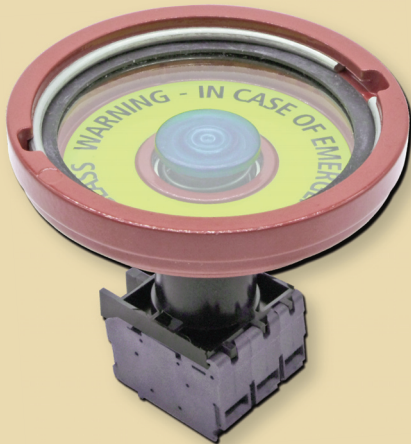
ILLUMINATED EMERGENCY PUSH BUTTON

series
RX - RS

Protection	Gas	1-2	II2G	Ex db IIC or IIB+H ₂ Gb
	Dusts	Zone 21-22	II2D	Ex tb IIIC Db
	Mine	n.d.	IM2	Ex db I Mb

Degree of Protection
IP66

Amb. Temp. **Standard** -20°C +40°C
Extended -50°C +80°C



Standards and Certificates



Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1 • EN 60079-31

U INERIS 14 ATEX 9009U



IEC 60079-0 • IEC 60079-1 • IEC 60079-31

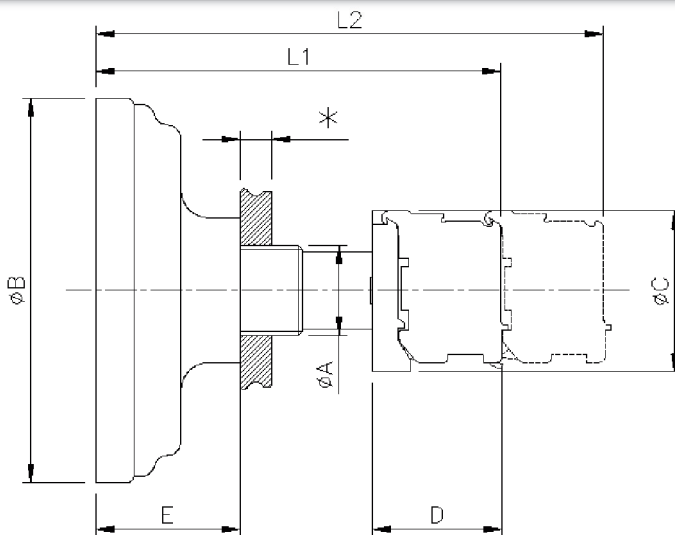
IECEx INE 14.0023U

- Illuminated pushbutton with LED lamp.
- Body in Nickel plated Brass.
- Drive shafts in Stainless Steel AISI 316L.
- Push Button in Polyamide 6.
- Aluminium ring with protective (breakable) glass.
- Operating temperature: -50°C ÷ +180°C.

Options

- Complete Stainless Steel version (RX...I & RS...I).
- LED lamps with different voltages and colors.

- Two or more contacts available.
- Different push button color: red, green, yellow, white or blue.



NOTES

The control and signaling units get same temperature class as the enclosure on which they are installed.

(*) Units RX.. shall be installed on enclosures with internal volume up to 2 dm³; whereas units RS.. shall be installed on enclosures with volume up to 160,6 dm³ for group IIB+H₂ and up to 62,9 dm³ for group IIC.

These units may be installed on electrical equipment suitable for group IM2 (firedamp mines) if no component is made of light alloy. In such case mode of protection will be labelled Ex db I Mb.

(*) See page B11 for enclosures CCA-CPS, page B21 for CCL-CPL and page B31 for CCF.

Contacts: more information on page C23.

Electric Execution Identification

ELO
The breaking of the glass releases the illuminated button that automatically closes and / or opens a contact.

EL1
The breaking of the glass releases the illuminated button that shall be pressed to open and / or close a contact.

Type	ØA Threading	ØB	ØC	D	E	L1	L2	Weight (g)
RX2..	M25x1,5	85	38	29	26	82	105	200
RS2..	M25x1,5	85	38	29	26	88	111	220

Example: RS2EL1R-017

Order Coding

Type

RX = V < 2 dm³ (*)
RS = V > 2 dm³ (*)

Size

2 = M25x1,5

Main Function (see above)

ELO = Self release button when glass broken
EL1 = Pushbutton to press after glass breaking

Push button / LED color

G = green
Y = yellow
R = red
W = white
B = blue

Electric Contact

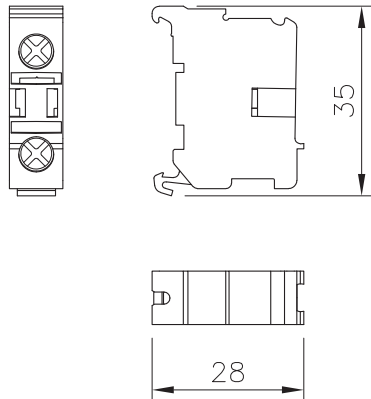
10 = 1 NO
01 = 1 NC
11 = 1 NO+1 NC

LED Voltage

3 = 24 V ac/dc
5 = 120 V ac
7 = 230 V ac

CONTACT ELEMENTS

series
RX - RS



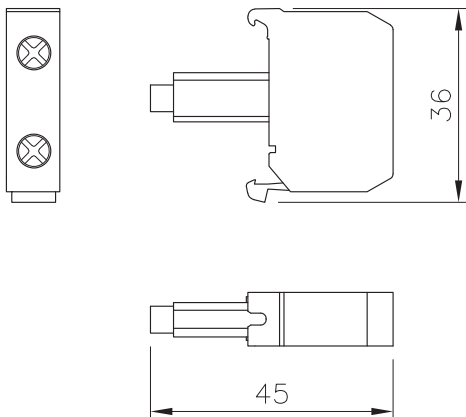
CONTACT ELEMENTS TECHNICAL DATA:

- Nominal current : $I_{th} = 10 \text{ A}$
- Nominal Isolation Voltage : $U_i = 690 \text{ V}$
- Dielectric strength (minimum) : 2500 V (1 minute)
- Short circuit protection $U_e < 500 \text{ Vac}$: 10 A type gL/gG cartridge fuse
- Terminals ID : according to EN/IEC 60947-1
- Screw type joining terminals with captive clamp
- Wire capacity : #18÷12 AWG (0.75÷2.5 mm²) Max. (2) #14 AWG or (1) #12 AWG
- Recommended tightening torque on screw terminals : 0,7÷0,9 Nm
- Contact durability per EN 60947-5-1 (Annex C) : 10 000 000 cycles

	AC15 - A600						DC13 - Q600				
Voltage (V)	120	240	380	480	500	600	125	250	400	500	600
Current (A)	6	3	1,9	1,5	1,4	1,2	0,55	0,27	0,15	0,13	0,10
I_{th} (A)	10 A						2,5 A				

LED MODULES

series
RX - RS



LED MODULES TECHNICAL DATA:

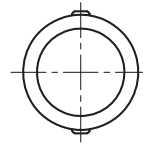
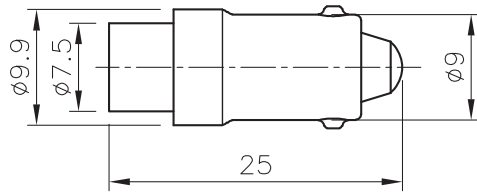
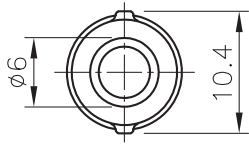
- Nominal current : $I_{th} = 10 \text{ A}$
- Nominal Isolation Voltage : $U_i = 690 \text{ V}$
- Dielectric strength (minimum) : 2500 V (1 minute)
- Short circuit protection $U_e < 500 \text{ Vac}$: 10 A type gL/gG cartridge fuse
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- Screw type joining terminals with captive clamp
- Wire capacity : #18÷12 AWG (0.75÷2.5 mm²) Max. (2) #14 AWG or (1) #12 AWG
- Recommended tightening torque on screw terminals : 0,7÷0,9 Nm

LED	24 V	120 V	240 V
Voltage (V)	10 ÷ 29	102 ÷ 132	204 ÷ 264
Current (mA)	30	6	6
Frequency (Hz)	50/60	50/60	50/60

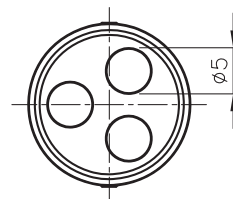
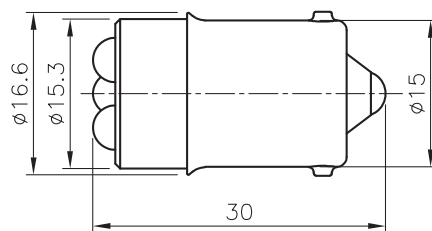
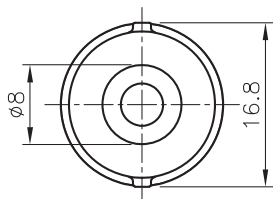
LED COLOR	GREEN	RED	WHITE
Dominant Wavelength	525 nm	629 nm	---
Luminous Intensity	780 mcd	780 mcd	360 mcd

LED LAMP

series
RX - RS



Order Coding	LDB1R	LDB3R	LDB4R	LDB1G	LDB3G	LDB4G	LDB1A	LDB3A	LDB4A	LDB1V	LDB3V	LDB4V	LDB1B	LDB3B	LDB4B
Colour	RED			YELLOW			BLUE			GREEN			WHITE		
LED no.	1			1			1			1			1		
Single LED intensity (mcd)	102.1	44	102.1	92.5	25	95.2	98.6	28	98.6	95.2	132	95.2	103.1	149	103.1
Color Temp. (K)	1001			1330			>100000			7401			8468		
View angle (°)	98.2			107.2			104.2			101.0			99.5		
Wavelength (nm)	628.2÷640.0			595.0÷600.0			470.0÷472.7			525.0÷532.3			X:0.293-Y:0.292		
Luminance (lm)	1.44	0.50	0.25	1.07	0.27	0.18	0.87	0.27	0.23	2.49	1.62	0.69	3.35	1.75	0.88
Voltage (AC/DC)	24	115	230	24	115	230	24	115	230	24	115	230	24	115	230
Current (mA)	15	5	3	15	5	3	15	5	3	15	5	3	15	5	3
Diss. Power (W)	0.4	0.6	0.6	0.4	0.6	0.6	0.4	0.6	0.6	0.4	0.6	0.6	0.4	0.6	0.6



Order Coding	LDB11R	LDB13R	LDB14R	LDB11G	LDB13G	LDB14G	LDB11A	LDB13A	LDB14A	LDB11V	LDB13V	LDB14V	LDB11B	LDB13B	LDB14B
Colour	RED			YELLOW			BLUE			GREEN			WHITE		
LED no.	3			3			3			3			3		
Single LED intensity (cd)	7.5	3.5	2.5	8.8	3.8	2.8	4.5	2.4	1.5	21.5	8.5	4.5	10.8	5.8	4.8
Color Temp. (K)	<1500			<1500			>25000			7500			8500		
View angle (°)	21			19			14			14			17		
Wavelength (nm)	630			595			470			525			X:0.29-Y:0.28		
Luminance (lm)	5	2	1.5	5	2	1.5	2	1	0.5	10	4	2	12	6	3
Voltage (AC/DC)	24	115	230	24	115	230	24	115	230	24	115	230	24	115	230
Current (mA)	15	5	3	15	5	3	15	5	3	15	5	3	15	5	3
Diss. Power (W)	0.36	0.6	0.7	0.36	0.6	0.7	0.36	0.6	0.7	0.36	0.6	0.7	0.36	0.6	0.7

DRAINING VALVES

series
VDF

Protection	Mines	n.a.	IM2	Ex d I Mb
	Gas	1-2	II2G	Ex d IIC or IIB+H ₂ Gb - Ex e IIC Gb
	Dusts	21-22	II2D	Ex tb IIIC Db

Degree of Protection	IP66
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Amb. Temp.	Standard Extended	 -20°C  +40°C



Standards and Certificates



Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1
EN 60079-7 • EN 60079-31

U

INERIS 14 ATEX 9014U



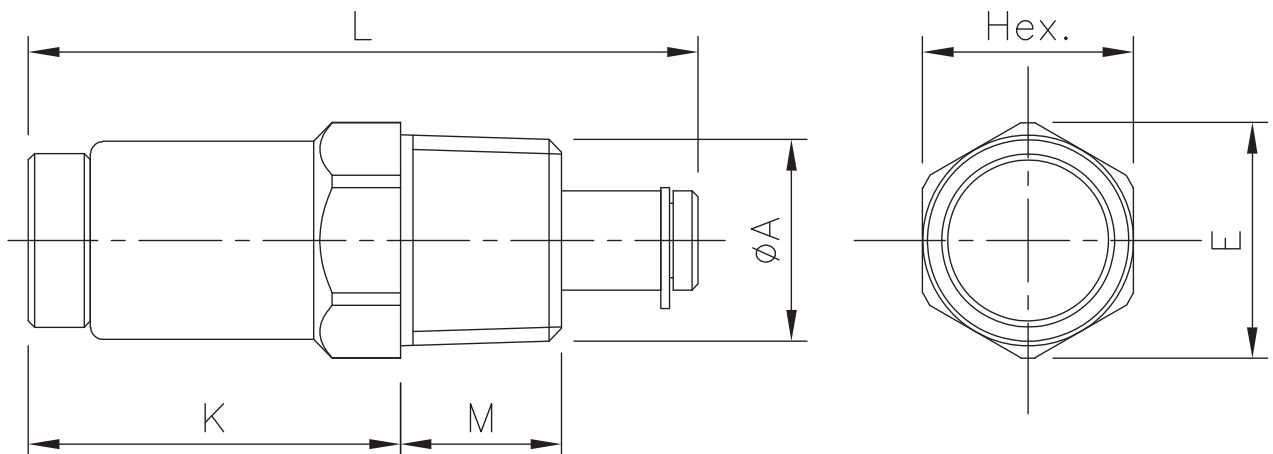
IEC 60079-0 • IEC 60079-1
IEC 60079-7 • IEC 60079-31

IECEx INE 14.0045U

- Draining valves with manual opening and closure operation.
- Particularly recommended for moist heat environments, they are used to allow the passage of any condensation from the internal to the external side of the explosionproof enclosure on which they are installed.
- Made completely in stainless steel AISI 316L.

Options

- Accessories see page C28.



Type	ØA Threading	M	K	Hex	E	L	Weight (g)
VDF38S	3/8" NPT	12	27	17	19	55	79
VDF1S	1/2" NPT	16	23	22	24	55	123
VDF16S	M16x1,5	12	27	22	24	55	109
VDF20S	M20x1,5	16	23	27	30	55	155

NOTES

Draining valves get same temperature class as the enclosure on which they are installed

Draining valves shall be installed on enclosures with volume up to 160,6 dm³ for group IIB+H₂ and up to 62,9 dm³ for group IIC.

Example: VDF38S

Order Coding

Type

VDF = draining valve

Size and Threading

38 = 3/8" NPT

1 = 1/2" NPT

16 = M16x1,5

20 = M20x1,5

Material

S = stainless steel AISI 316L

BREATHING VALVES

series
VD

Protection	Mines	n.a.	IM2	Ex d I Mb
	Gas	1-2	II2G	Ex d IIC or IIB+H ₂ Gb - Ex e IIC Gb
	Dusts	21-22	II2D	Ex tb IIIC Db

Degree of Protection
IP66(*)

Amb. Temp. Standard -20°C +40°C
Extended -60°C +60°C



Standards and Certificates



Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1
EN 60079-7 • EN 60079-31

U

INERIS 14 ATEX 9014U



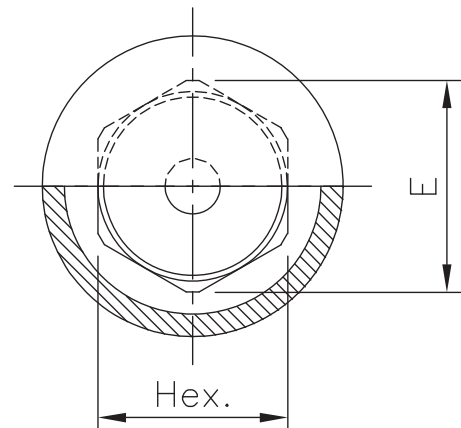
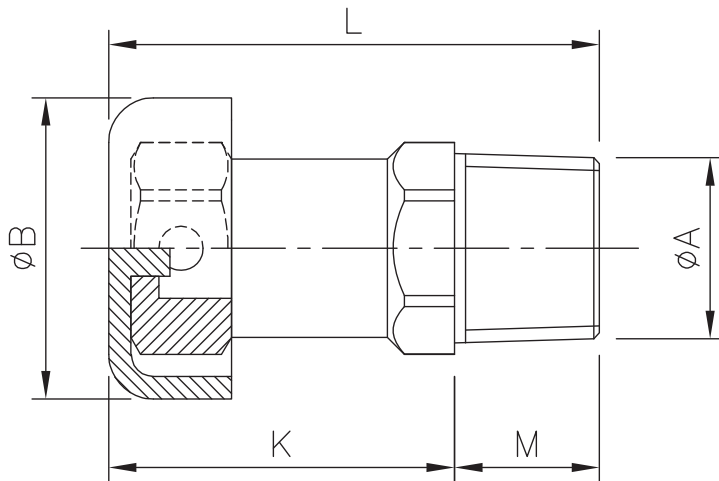
IEC 60079-0 • IEC 60079-1
IEC 60079-7 • IEC 60079-31

IECEx INE 14.0045U

- Breathing valves.
- Particularly recommended for moist heat environments, they are used to allow the air passage from the internal to the external side of the explosionproof enclosure on which they are installed.
- Made completely in stainless steel AISI 316L.

Options

- Accessories see page C28.



Type	ØA Threading	ØB	M	K	Hex	E	L	Weight (g)
VD38S	3/8" NPT	27	13	31	17	19	44	70
VD1S	1/2" NPT	32	17	27	22	24	44	119
VD16S	M16x1,5	32	13	31	22	24	44	104
VD20S	M20x1,5	37	17	27	27	30	44	155

NOTES

Breathing valves get same temperature class as the enclosure on which they are installed

Breathing valves shall be installed on enclosures with volume up to 160,6 dm³ for group IIB+H₂ and up to 62,9 dm³ for group IIC.

(*) degree of protection IP66 is guaranteed when the plastic cap (VD03) is installed on the valve. Without it the degree of protection is IP64.

Example: VD20S

Order Coding

Type

VD = breathing valve

Size and Threading

38 = 3/8" NPT

1 = 1/2" NPT

16 = M16x1,5

20 = M20x1,5

Material

S = stainless steel AISI 316L

BULKHEADS

series
P

Protection	Mines	n.a.	IM2	Ex d I Mb
	Gas	1-2	II2G	Ex d IIC or IIB+H ₂ Gb - Ex e IIC Gb
	Dusts	21-22	II2D	Ex tb IIIC Db

Degree of Protection
IP64

Amb. Temp. Standard -20°C +40°C
Extended -60°C +60°C



Standards and Certificates



Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1
EN 60079-7 • EN 60079-31

U

INERIS 14 ATEX 9014U



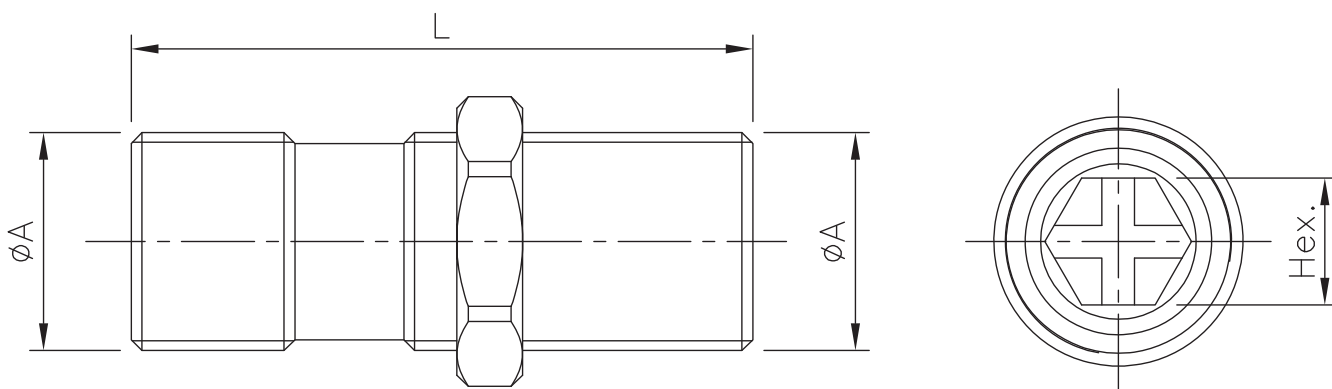
IEC 60079-0 • IEC 60079-1
IEC 60079-7 • IEC 60079-31

IECEX INE 14.0045U

- They allow a gas or a liquid passage from inside to outside of explosion proof enclosure guaranteeing flame's lamination
- Made completely in stainless steel AISI 316L.

Options

- Accessories see page C28.



Type	ØA Threading	L (*)	Hex.	Weight (g)
P12S-52	M12x1,5	52	5	25
P12S-70	M12x1,5	70	5	37
P16S-52	M16x1,5	52	6	51
P16S-70	M16x1,5	70	6	73
P20S-52	M20x1,5	52	10	58
P20S-70	M20x1,5	70	10	86
P25S-52	M25x1,5	52	12	101
P25S-70	M25x1,5	70	12	147

NOTES

Bulkheads get same temperature class as the enclosure on which they are installed

Bulkheads shall be installed on enclosures with volume up to 160,6 dm³ for group IIB+H₂ and up to 62,9 dm³ for group IIC.

(*) Dimension L may vary according to customer's requirements

Example: P12S-70

Order Coding

Type
P = bulkheads

Size and Threading
12 = M12x1,5
16 = M16x1,5
20 = M20x1,5
25 = M25x1,5

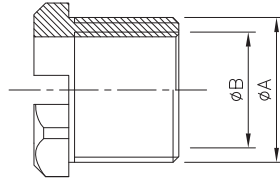
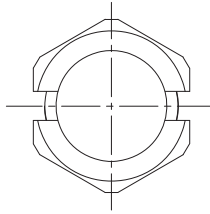
Material
S = stainless steel AISI 316L

Length
70 = 70 mm

THREADING ADAPTOR series VD04

Material: Stainless Steel AISI 316L (S)

Required for the installation of draining valves on Ex e enclosures with reduced wall thickness.

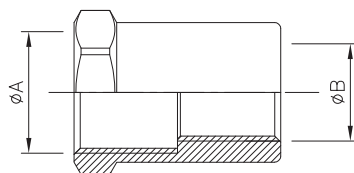
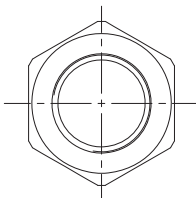


Order Coding	Dimensions	
	ØA	ØB
VD0416S	M20x1,5	M16x1,5
VD0420S	M25x1,5	M20x1,5
VD0438S	M20x1,5	3/8" NPT
VD041S	M25x1,5	1/2" NPT

FEMALE - FEMALE REDUCER series PF

Material: Stainless Steel AISI 316L (S)

Required for the installation of Bulkheads on enclosures with reduced diameter cable entries.



Order Coding	Dimensions	
	ØA	ØB
PF128S	M12x1,5	M8x1,25
PF1612S	M16x1,5	M12x1,5
PF2016S	M20x1,5	M16x1,5
PF2520S	M25x1,5	M20x1,5
PF12M18NS	M12x1,5	1/8" NPT
PF16M14NS	M16x1,5	1/4" NPT
PF20M38NS	M20x1,5	3/8" NPT
PF25M1NS	M25x1,5	1/2" NPT

LOCKNUTS series DL

Material: Stainless Steel AISI 316L (S)

Useful in order to avoid the loosening of valves and/or bulkheads and for the installation on Ex e enclosures with reduced wall thickness.



Order Coding	Dimensions
DL12S	M12x1,5
DL16S	M16x1,5
DL20S	M20x1,5
DL25S	M25x1,5

GASKETS series SW

Material: White Nylon (N)

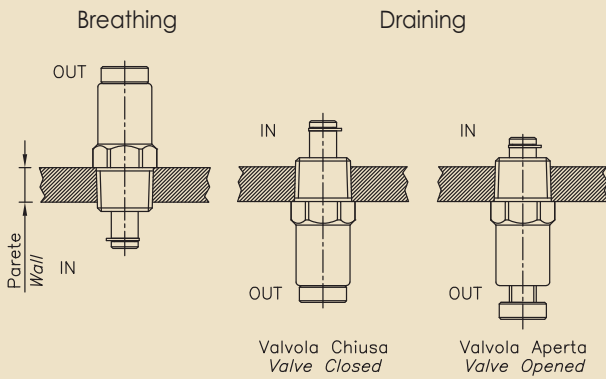
Useful to ensure the IP degree of protection of enclosure on which valves and/or bulkheads are installed.



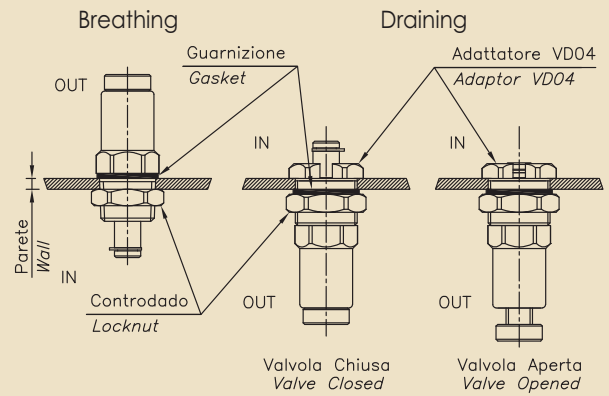
Order Coding	Dimensions
SW12N	M12x1,5
SW16N	M16x1,5
SW20N	M20x1,5
SW25N	M25x1,5

VALVE series VDF

Mode of Protection "Ex d"

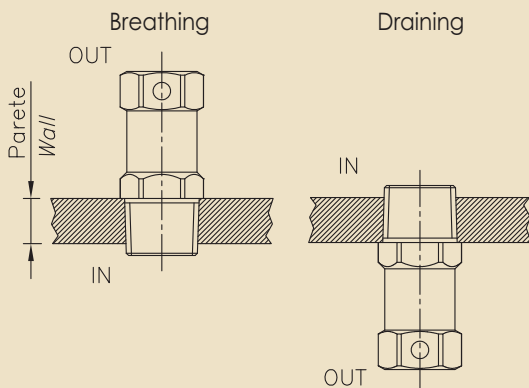


Mode of Protection "Ex e"

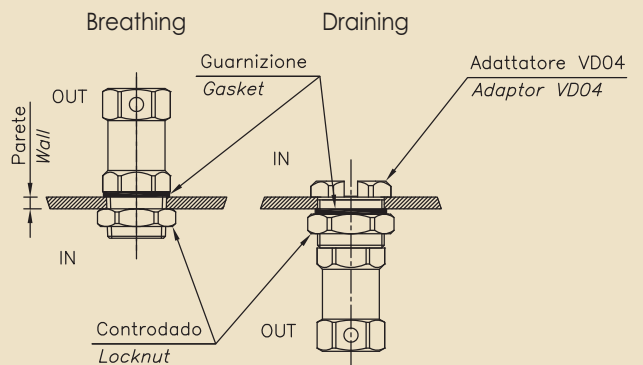


VALVE series VD

Mode of Protection "Ex d"

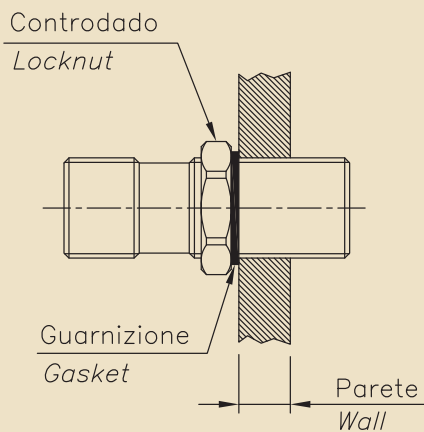


Mode of Protection "Ex e"

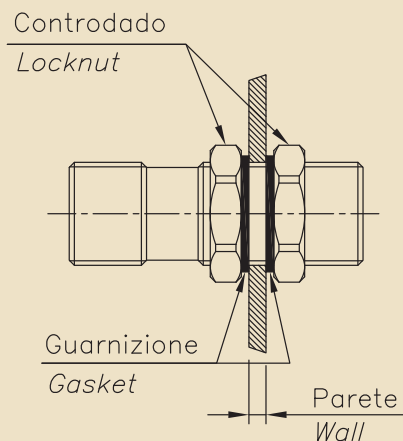


BULKHEADS series P

Mode of Protection "Ex d"



Mode of Protection "Ex e"



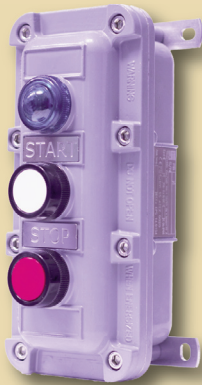
LOCAL CONTROL STATIONS SERIES PB

series
PB

Protection	Gas	Zone	1-2	II2G	Ex db IIC o IIB+H ₂ T6÷T4 Gb
	Dusts		21-22	II2D	Ex tb IIIC T85°C÷T135°C Db

Degree of Protection	IP66
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Amb. Temp.	Standard	-20°C	+40°C



Entries Threading	NPT ANSI B1.20
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Material	Aluminum light alloy
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Painting	External epoxy RAL3000
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Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1
EN 60079-31

CE BVI 15 ATEX 0020

IEC 60079-0 • IEC 60079-1
IEC 60079-31

IECEx EPS 14.0104

- To be used either as Pushbutton or as Local Control Station.
- Fully configurable through a huge variety of COELBO elements.
- External screws in Stainless Steel AISI 304 (On request AISI 316L)

Options

- Push button protection in silicon rubber, colors: white, red, black.
- Cable entries Isometric M25x1,5 (or M32x1,5 for PB 4 only) (M).
- Anticorrosion technology: ALUMINOX (see section A).
- Full execution in stainless steel AISI 316L (including the external fittings)

CONTACT ELEMENTS TECHNICAL DATA:

- Nominal current : 10 A
- Nominal Isolation Voltage : 660 V
- Nominal pulse Voltage : 6 kV
- Short circuit protection U_e<500 Vac : Cartridge Fuse 10 A
- Terminals ID : according to IEC/EN 60947-1
- Screw type joining terminals with captive clamp
- Max wires section: : 2x2,5 mm²
- Self cleaning contacts : EN01(NC) EN10(NA)
- Working cycles: : 1800 operations / hr (max)

AC15 - A600			
Voltage (V)	24	240	400
Current (A)	10	6	4
DC13 - Q600			
Voltage (V)	24	125	250
Current (A)	2.8	0.55	0.27

NOTES

Installation and maintenance instructions shall be carefully read

Local Control Station PB 1 and PB 2 only belong to gas group IIC while models PB 3 ed PB 4 belong to group IIB+H₂.

The combinations of the various elements on the local control stations shall be compatible with the dimensions and the characteristics of the selected elements.

The rated voltage of the signal lamps shall be at least 20% higher than the line voltage.

(*) It is suggested the use of LED lamps only.

(*) On request the control may be provided with a potentiometer.

Electrical Data

Manipulators

- Nominal AC Voltage : 400 V
- Nominal Current : 10 A

Signalling Lamps

- Max Nominal AC Voltage : 260 V
- Suggested lamp type : LED

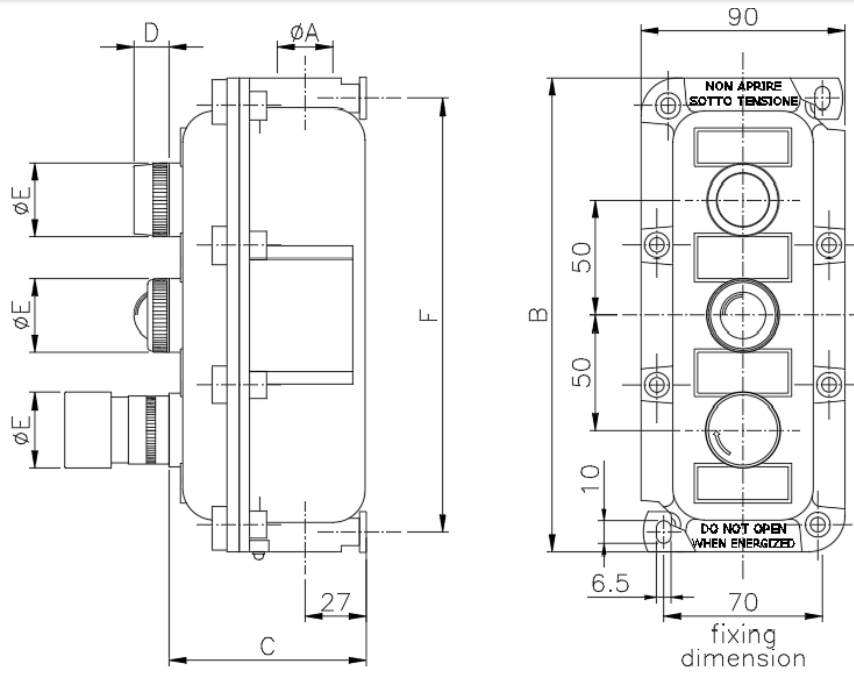
Illuminated pushbuttons

- Max Voltage : 230 V AC/DC
- Max Power : 2 W

Command/signaling unit type	Temperature class		Max ambient temperature range
	Gas	Dust	
Halogen lamps (°)	T6	T85°C	-50°C÷+50°C
	T5	T100°C	-50°C÷+65°C
	T4	T135°C	-50°C÷+80°C
LED lamps (°)	T6	T85°C	-50°C÷+60°C
	T5	T100°C	-50°C÷+80°C
Only with command units	T6	T85°C	-50°C÷+80°C

LOCAL CONTROL STATIONS

series
PB



Enclosure	Elements	Cable Entries		B	C	F	Enclosure weight (g)
		ØA	n				
PB1	1	3/4" NPT	2	106	87	86	480
PB2	2	3/4" NPT	2	156	87	136	685
PB3	3	3/4" NPT	2	206	87	186	890
PB4	4	1" NPT	2	256	82	236	1520

Element	Symbol	Dimensions (mm)		Contacts	Weight (g)
		D	ØE		
START pushbutton	1	16	32	1NO	90
STOP pushbutton	0	16	32	1NC	90
Lighting START pushbutton	1R-1B-1V-1G-1A	16	32	1NO	130
Lighting STOP pushbutton	0R-0B-0V-0G-0A	16	32	1NC	130
Mushroom type push button with spring return	5	30	50	1NO+1NC	100
Key switch 1-2 poles (pos. 0-1)	7/1-7/2	60	30	-	400
Two position key changeover switch 1-2 poles (pos. 1-2)	7/1D - 7/2D	60	30	-	400
Three position key changeover switch 1-2 poles (pos. 1-0-2)	7/1C - 7/2C	60	30	-	400
Triangular Key switch 1-2 poles (pos. 0-1)	9/1-9/2	50	41	-	370
Two position triangular key changeover switch 1-2 poles (pos. 1-2)	9/1D - 9/2D	50	41	-	370
Three position triangular key changeover switch 1-2 poles (pos. 1-0-2)	9/1C - 9/2C	50	41	-	370
Mushroom type push button with locking	8	30	50	1NO+1NC	100
Mushroom type push button with rotary locking	8R	58	33	1NO+1NC	180
Mushroom type push button with locking and keylock	8K	58	33	1NO+1NC	180
Pilot light	R-B-V-G-A	16	32	-	130
Switch 1-2 poles (pos. 0-1)	I1-I2	22	32	-	300
Two way changeover switch 1-2 poles (pos. 1-2)	D1-D2	22	32	-	300
Three way changeover switch 1-2 poles (pos. 1-0-2)	C1-C2	22	32	-	300
Potentiometer control (single turn) (*)	P	16	15	-	-
Potentiometer control (multiturn) (*)	PM	18	35	-	-

Example: PB 4 108RR

Order Coding

Type

PB

Enclosure Size

- 1** = 1 element
- 2** = 2 elements
- 3** = 3 elements
- 4** = 4 elements

Code of installed elements (max. 4)
see table above

- 1** = START pushbutton
- 0** = STOP pushbutton
- 8R** = mushroom type pushbutton with rotary locking
- R** = RED pilot light

Threading

- = NPT (std.)
- M** = Metric

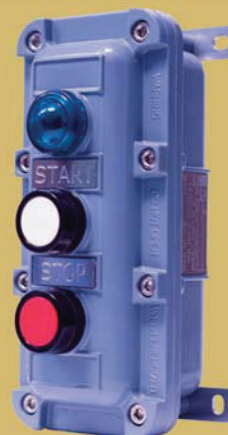
JUNCTION BOXES SERIES PB - APPLICATIONS EXAMPLES

PB 2 1LV8R



JUNCTION BOXES
WITH
START PUSHBUTTON
AND
MUSHROOM TYPE PUSH BUTTON WITH SPRING RETURN

PB 3 01V



JUNCTION BOXES
WITH
RED STOP PUSHBUTTON
WHITE START PUSHBUTTON
AND
PILOT LIGHT

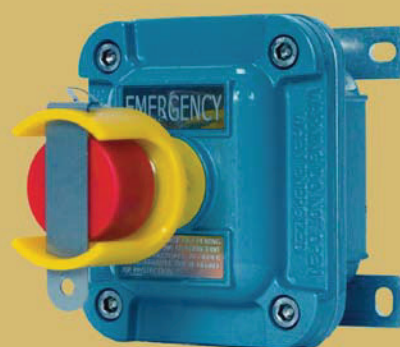
SPECIAL APPLICATIONS

PB 1 8RP /D



JUNCTION BOXES
WITH
MUSHROOM TYPE PUSH BUTTON
AND
PROTECTIVE ALUMINIUM GUARD WITH S.ST. DISC

PB 1 8RGRD



JUNCTION BOXES WITH
MUSHROOM TYPE PUSH BUTTON
AND
PROTECTIVE PLASTIC GUARD WITH LOCKABLE BRACKET

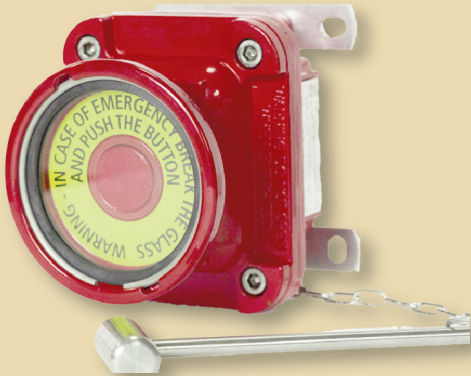
EMERGENCY PUSHBUTTONS with BREAKING GLASS

series
PB

Protection	Gas	Zone	1-2	II2G	Ex db IIC T6÷T4 Gb
	Dusts	Zone	21-22	II2D	Ex tb IIIC T85°C÷T135°C Db

Degree of Protection	IP66
----------------------	------

Amb. Temp.	Standard	-20°C	+40°C
	Extended	-50°C	+80°C



Entries Threading	NPT ANSI B1.20
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Material	Aluminum light alloy
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Painting	External epoxy RAL 3000
----------	-------------------------

Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1
EN 60079-31

CE BVI 15 ATEX 0020

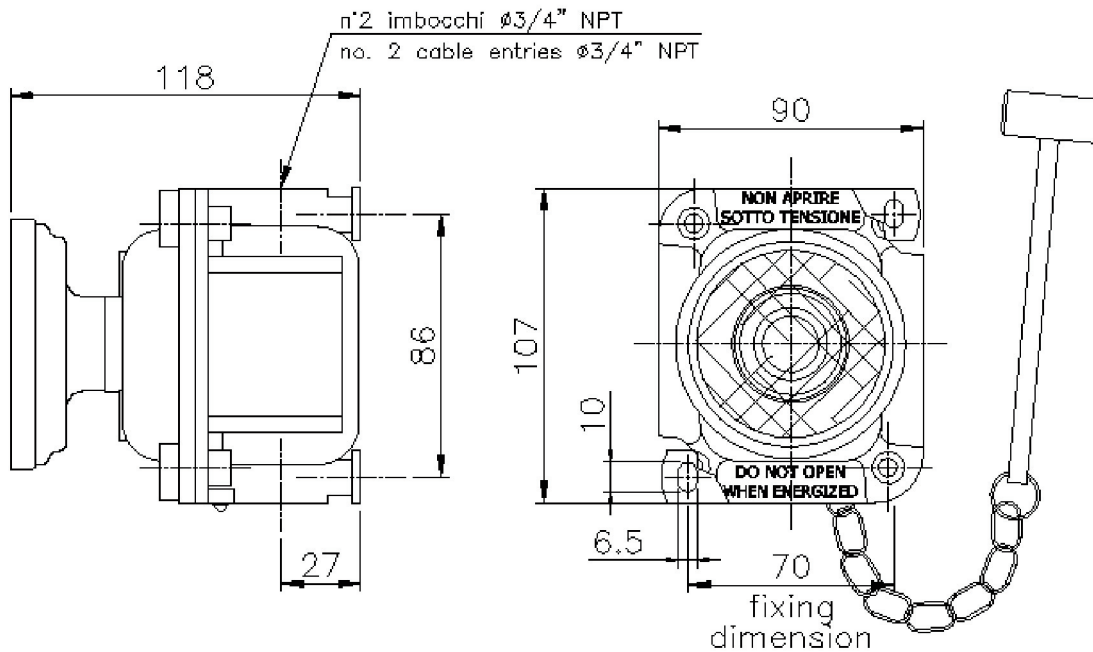
IEC 60079-0 • IEC 60079-1
IEC 60079-31

IECEx EPS 14.0104

- External screws in Stainless Steel AISI 304 (On request AISI 316L).
- External accessories (hammer, chain, glass holder ring) in Stainless Steel.
- Extremely lightweight: 1050 g only.

- Options**
- Two contacts NC or NO.
 - Isometric M25x1,5 (M) cable entries threading.
 - Presence of illuminated pushbutton (°).

- Full execution in AISI 316L (including the external fittings).



NOTES

Installation and maintenance instructions shall be carefully read

The temperature class T6/T85°C considers an Ambient Temperature (A.T.) extended up to +50°C, class T5/T100°C with an A.T. extended up to +65°C and class T4/T135°C an A.T. extended up to +80°C. Using LED lamps, in case of using lighting signallers, the temperature class is T6/T85°C with an A.T. up to +60°C and T5/T100°C for an extended A.T. up to +80°C. In presence of control units only the temperature class is T6/T85°C for an extended A.T. up to +80°C.

(°) It is suggested the use of LED lamps only.

Electric Execution Identification

PB1 E0

The breaking of the glass releases the button that automatically closes and / or opens a contact (1NO+1NC).

PB1 E1

The breaking of the glass releases the button that shall be pressed to open and / or close a contact (1NO+1NC).

Example: PB 1 E1

Order Coding

Type

PB

Enclosure Size

1 = 1 element

Pushbutton operating code
open/close

E1 = pushbutton to press
E0 = pushbutton in releasing

Threading

N = NPT (std)
M = Metric

ALARMING BUZZER

series
AB1-S

Protection	Gas	1-2	II2G	Ex mb IIC T4 Gb
	Dusts	21-22	II2D	Ex mb IIIC T80°C Db

Degree of Protection	IP66
----------------------	------

Amb. Temp.	Standard	-20°C	+40°C
	Extended	-40°C	+60°C



Thread	Metric ISO 262
--------	----------------

Material	Stainless Steel AISI 303
----------	--------------------------

Painting	N.A.
----------	------

Standards and Certificates

Directive 2014/34/EU (ATEX)

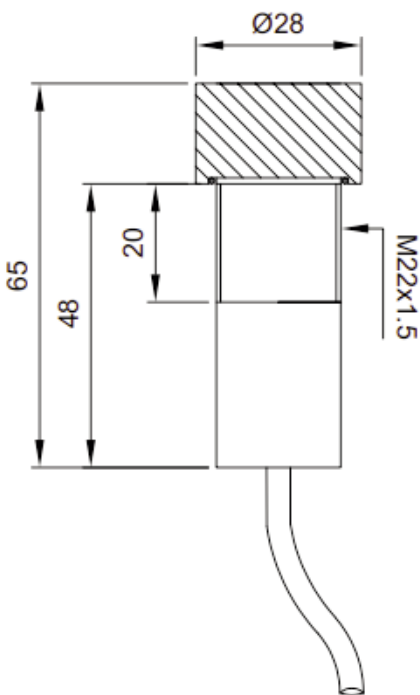
EN 60079-0 • EN 60079-1
EN 60079-31

CE TÜV-A 20 ATEX 0102X

N.A.

- This Buzzer stands for alarming, with a penetrating, acoustic signal, to safely indicate possible dangers in potentially explosive areas.
- The high degree of IP protection and the corrosion-resistant stainless steel housing guarantee a long service life even under aggressive environmental conditions.
- The buzzer can be used in a variety of ways in potentially explosive areas (call our technical department for additional details).
- It has also been tested in order to be installed in certified control panels of types of protection Ex d, Ex t and Ex e.

Options - Available with different cable length: 1,5m - 3m - 5m - 10m - Earthing set (earth lug + nut).



Electrical Data	
Operating voltage:	24 VDC
Power consumption:	max. 30 mA
Protection fuse:	63 mA
Frequency:	4300 Hz volume ca. 85 dB / 40 cm
Electrical connection:	2x0,5 mm ² , Ø4.8 mm brown = +24 VDC blue = 0 V

Mechanical Data	
Sealing:	EPDM
Torque:	8 Nm
Mounting hole:	min Ø22 mm - max Ø22,3 mm
Max. wall thickness:	min 1 mm / max 15 mm
Weight (complete of 1,5 mt cable length):	150 g

NOTES

Installation and maintenance instructions shall be carefully read.

The Buzzer can be installed directly in the front of a machine without further certification, as it is approved as a device.

A lock nut is always included in the scope of delivery.

Example: AB1-S3-04 01 2

Order Coding	Type	Frequency	Operating Voltage	Cable Length (mt)
	AB1-S3	04= 4300 Hz (standard)	01= 24 VDC	1 = 1,5 mt
				2 = 3 mt
				3 = 5 mt
				4 = 10 mt

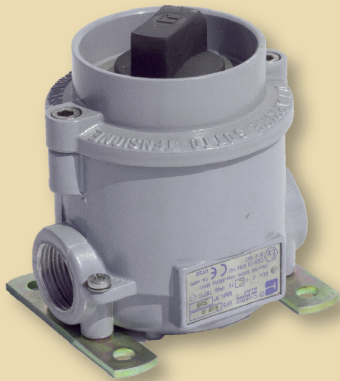
BREAKERS - SELECTORS - SWITCHES - CONNECTING SWITCHES

series
EFS

Protection	Gas	Zone	1-2	II2G	Ex db IIB o IIC T6÷T5 Db
	Dusts	Zone	21-22	II2D	Ex tb IIIC T85°C÷T135°C Db

Degree of Protection	IP66/67
----------------------	---------

Amb. Temp.	Standard	-20°C	+40°C
	Extended	-50°C	+80°C



Entries Threading	NPT ANSI B1.20
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Material	Aluminum Light Alloy
----------	----------------------

Painting	External epoxy RAL 7000
----------	-------------------------

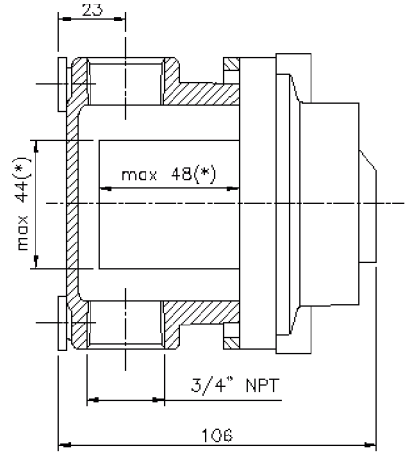
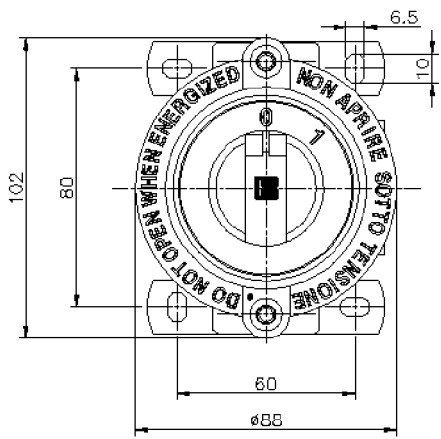
Standards and Certificates



Directive 2014/34/EU (ATEX)	
EN 60079-0 • EN 60079-1 EN 60079-31	
CE	BVI 15 ATEX 0021
IEC 60079-0 • IEC 60079-1 IEC 60079-31	
IECEx EPS 14.0103	

- Breakers, selector switches, connecting switches series EFS are of rotating type with its knob on the front.
- Suitable for currents up to 16 A and voltages up to 690 VAC / 660 VDC.
- External screws in Stainless Steel.

Options	- Knob pad-lockable (add suffix "L").	- Cable entries Isometric M25x1.5 (M).
	- Version for Group Gas IIC (add suffix "IIC").	- Anticorrosion technology: ALUMINOX (see section A).



NOTES

Installation and maintenance instructions shall be carefully read.

The temperature class T6/T85°C considers an Ambient Temperature (A.T.) extended up to +60°C and class T5/T100°C with an A.T. extended up to +80°C.

(*) Max dimensions of the selector.

Code	Contact Elements	Identification Letter Suffix	Weight (g)
EFS 116	Single pole switch	-	700
EFS 216	Double pole switch	-	700
EFS 316	Three pole switch	-	700
EFS 416	Four pole switch	-	700
EFS 116/C	Single pole three position changeover switch	C	700
EFS 216/C	Double pole three position changeover switch	C	700
EFS 316/C	Three poles three position changeover switch	C	700
EFS 116/D	Single pole two position changeover switch	D	700
EFS 216/D	Double pole two position changeover switch	D	700
EFS 316/D	Three poles two position changeover switch	D	700
EFS .../I	(*) Reverser switch three poles up to 16 A	I	700
EFS .../ M..	(*) Connecting switch, single or multiple poles up to 16 A	"M" followed by diagram code	700

Example: EFS 116DN

Type	Number of Poles	Max Current (A)	Identification Letter of the switch main function	Special electrical diagram code	Threading
EFS	1 = single pole 2 = double pole 3 = three poles 4 = four poles	16	.. = Switch C = Three pole changeover switch D = Two pole changeover switch I = Reverser switch M = Connecting switch	..	N = NPT (std) M = Metric

BREAKERS - SELECTORS - SWITCHES - CONNECTING SWITCHES

series
EFS

Protection	Gas	1-2	II2G	Ex db IIB o IIC ⁽¹⁾ (²)T6÷T4 Gb
	Dusts	Zone 21-22	II2D	Ex tb IIIC T85°C÷T135°C Db

Degree of Protection	IP66
	o IP66/67

Amb. Temp.	Standard	-20°C	+40°C
	Extended	-50°C	+80°C

Entries Threading	NPT ANSI B1.20
-------------------	----------------

Material	Aluminum Light Alloy
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Painting	External epoxy RAL 7000
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Standards and Certificates

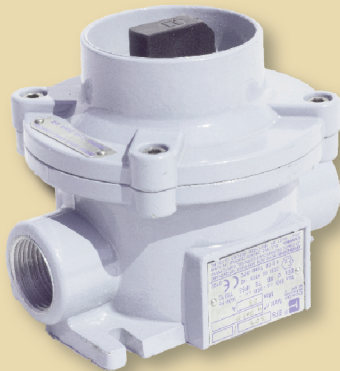
Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1
EN 60079-31

CE BVI 15 ATEX 0021

IEC 60079-0 • IEC 60079-1
IEC 60079-31

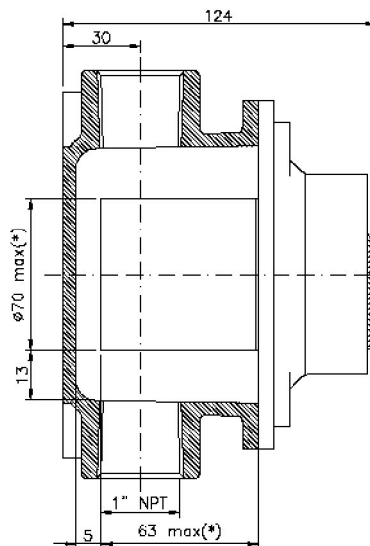
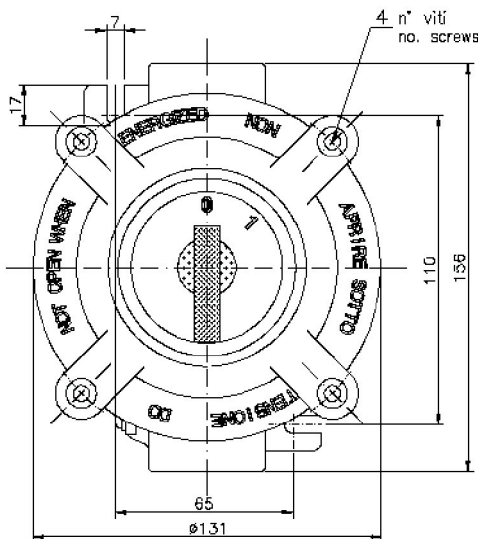
IECEx EPS 14.0103



- Breakers, selectors, switches and connecting switches series EFS are of rotating type with its knob on the front.
- Suitable for currents up to 32 A and voltages up to 690 VAC / 660 VDC.
- External screws in Stainless Steel.
- Weight: 1300 g.

- Options**
- Knob pad-lockable (add suffix "L").
 - Isometric cable entries (M).

- Anticorrosion technology: ALUMINOX (see section A).



NOTES

Installation and maintenance instructions shall be carefully read.

The temperature class T6/T85°C considers an Ambient Temperature (A.T.) extended up to +50°C, class T5/T100°C with an A.T. extended up to +70°C and class T4/T135°C an A.T. extended up to +80°C.

(1) Available only in IIB, for any different requirements please contact our tech.dpt.

(2) IIC version is available only with degree of protection IP66/67.

(*) Max dimensions of the selector.

(°) Diagrams C - D - I - M are available up to size 32 A.

Code	Contact elements	Identification letter suffix	Weight (g)
EFS 325	Three pole switch	-	1300
EFS 425	Four poles switch	-	1300
EFS 332	Three pole switch	-	1300
EFS 432	Four poles switch	-	1300
EFS .../C	(*) Single or multiple pole three position changeover switch up to 32 A	C (°)	
EFS .../D	(*) Single or multiple pole two position changeover switch up to 32 A	D (°)	
EFS .../I	(*) Three pole reverser switch up to 32 A	I (°)	
EFS .../ M..	(*) Single or multiple pole connecting switch up to 32 A	"M" Followed by diagram code (°)	

Example: EFS 325CN

Order Coding

Type	Number of poles	Max current (A)	Identification Letter of the switch main function	Special electrical diagram code	Threading
EFS	1 = single pole 2 = double pole 3 = three pole 4 = four pole	25 32	.. = Switch C = Three pole changeover switch D = Two pole changeover switch I = Reverser switch M = Connecting switch	..	N= NPT (std) M = Metric

BREAKERS - SELECTORS - SWITCHES - CONNECTING SWITCHES

series
EFS

Protection	Gas	1-2	II2G	Ex db IIB o IIC ⁽¹⁾ (²)T6÷T4 Gb
	Dusts	21-22	II2D	Ex tb IIIC T85°C÷T135°C Db

Degree of Protection	IP66 or IP66/67
----------------------	-----------------

Amb. Temp.	Standard	-20°C	+40°C
	Extended	-50°C	+80°C



Entries Threading	NPT ANSI B1.20
-------------------	----------------

Material	Aluminum Light Alloy
----------	----------------------

Painting	External epoxy RAL 7000
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Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1
EN 60079-31

CE BVI 15 ATEX 0021

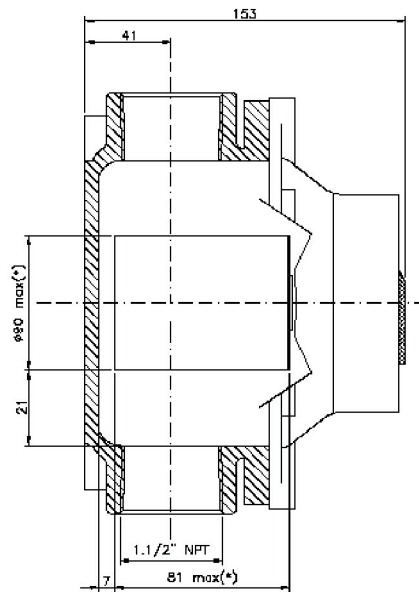
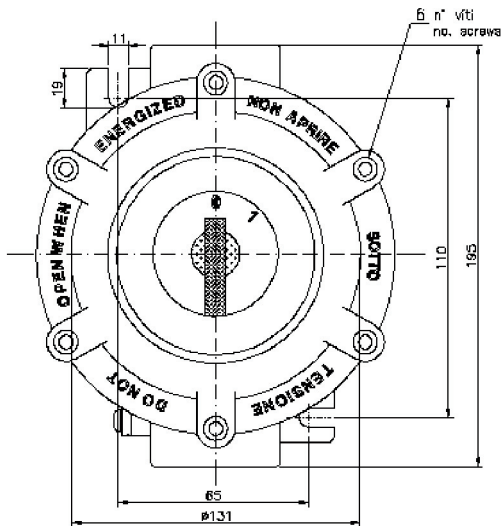
IEC 60079-0 • IEC 60079-1
IEC 60079-31

IECEx EPS 14.0103

- Breakers, selectors, switches and connecting switches series EFS are of rotating type with its knob on the front.
- Suitable for currents up to 63 A and voltages up to 690 VAC / 660 VDC.
- External screws in Stainless Steel.
- Weight: 2300 g.

- Options**
- Knob pad-lockable (add suffix "L").
 - Isometric cable entries (M).

- Anticorrosion technology: ALUMINOX (see section A).



NOTES

Installation and maintenance instructions shall be carefully read.

The temperature class T6/T85°C considers an Ambient Temperature (A.T.) extended up to +50°C, class T5/T100°C with an A.T. extended up to +70°C and class T4/T135°C an A.T. extended up to +80°C.

(1) Available only in IIB, for any different requirements, please contact our tech.dpt.

(2) IIC version is available only with degree of protection IP66/67.

(*) Max dimensions of the selector.

Code	Contact elements	Identification letter suffix	Weight (g)
EFS 340	Three pole switch	-	2300
EFS 440	Four poles switch	-	2300
EFS 363	Three pole switch	-	2300
EFS 463	Four poles switch	-	2300

Example: EFS 463N

Order Coding

Type	Number of poles	Max current (A)	Identification Letter of the switch main function	Special electrical diagram code	Threading
EFS	1 = single pole 2 = double pole 3 = three pole 4 = four pole	63	.. = Switch	..	N = NPT (std) M = Metric

NOTES:

C





SWITCHES for AUTOMATION and SAFETY

The original COELBO limit switches, certainly among the first ever designed to be used in environments with risk of explosion, allow to extend also to classified areas all forms of machine automation (and/or process) in total safety complying with the ATEX Directive.

Our limit switches are normally used as detectors of the relative position of moving parts, between them coordinated (eg: by automation systems such as smart wired logic, dedicated microprocessors and PLC) or as elements associated with automatic devices for protection and safety for operators and machinery (e.g. alarm and shutdown intrusion, penetration,

collision, presence systems, etc.).

To cover all possible needs have developed two different types of limit switches characterized by two distinct technologies: one purely mechanical and the other more properly magnetic; in the first case the movement of the limit switch, or of another element in relative motion, moves a piston or lever to produce the subsequent actuation of an electrical circuit (associated with its own automation or alarm/safety system on which the limit switch is installed) contained within the same explosionproof enclosure.

The other technology, the magnetic one, takes advan-

tage of the effects produced by the interference of a stranger metal item in a normally stable magnetic circuit. It is evident that the "proximity" - with no contact or mechanical action - of such foreign items to alter the magnetic field of the sensor and thus providing the actuation of an electric circuit in turn associated to the automation or alarm/security system.

These products are usually available from stock. Although designed for a virtually unlimited duration, to guarantee the operational safety and certified compatibility, purchasing any spare parts directly from COELBO is recommended.

POSITION SWITCHES



Series Page

LS

D03

POSITION SWITCHES



PS

D13

LIMIT SWITCHES



FCL

D26

MAGNETIC PROXIMITY SWITCHES



IM

D29



NOTES:

D

POSITION SWITCHES

series
LS

Protection	Gas	Zone	1-2	II2G	Ex db IIB+H ₂ T6÷T5 Gb
	Dusts		21-22	II2D	Ex tb IIIC T85°C÷T100°C Db

Degree of Protection	IP66
----------------------	------

Amb. Temp.	Standard		-20°C		+40°C
			Extended		-50°C



Entries Threading	NPT ANSI B1.20
-------------------	----------------

Material	Aluminum light alloy
----------	----------------------

Painting	External epoxy RAL7000
----------	------------------------

Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1
EN 60079-31

BVI 13 ATEX 0084

IEC 60079-0 • IEC 60079-1
IEC 60079-31

IECEx EPS 13.0034

- Ideal for use in dangerous process in hazardous environments: simple and rugged construction, compact size with the possibility of entry and branching on the three sides of the enclosure.
- Complete with two plugs for closing unused entries.
- Wide range of actuators in metal or in self-extinguishing glass-fiber-reinforced polymer (GFRP).
- Wide variety of options for adaptation and assembly.
- Internal operating rod in Stainless Steel AISI 303 on OT 58 UNI 5705/65 brass bushing.
- External screws in Stainless Steel except for actuators that may have components in tropicalized steel.

Options

- Contact Units for currents and/or voltages beyond the standard.
- Cable entry with metric thread M20x1.5 (M).
- Rollers in Metal.
- Different diameters rollers.
- Actuators with some metal parts in Stainless Steel.

Degree of pollution: 3 conforming to IEC/EN 60947-5-1 Standards.

Frequency of operations: 20/min (*) max

Number of cycles: 8÷10 millions

Storage Temperature: -40°C ÷ +85°C

Contact Unit

Nominal current (active):	: 10 A
Insulating Voltage:	U _i = 500 V _{ac} / 600 V _{dc}
Short Circuit Protection:	10 A Fuse
Minimum conductor section	:1.5 mm ²
Max Current Density:	: 5 A/mm ²

	AC15 - A600				DC13 - Q600		
U _e (V)	24	130	240	400	24	110	250
I _e (A)	10	5.5	3	1.8	2.8	0.6	0.27

NOTES

To read the installation and maintenance instructions is recommended.

The temperature class T6/T85°C considers an Ambient Temperature (A.T.) extended up to +60°C, whereas, class T5/T100°C considers an A.T. extended up to +80°C.

(*) For A.T. up to +40°C the max surface temperature is 65°C reducing the number of operations to 600/h.

(**) As safety switches only those with symbol shall be used.

The safety circuit must always be connected to NC contacts (11-12 or 21-22). Exceed by 1.5 mm (25°) the gap between the contacts. Operate the switch with the indicated opening force.

Electrical Diagram

Type	Contact	Diagram	Operating	Type	Contact	Diagram	Operating
C2	1NO+1NC		Snap action	C6I	1NC+1NO		Non overlapping slow action
C3I	1NC+1NC		Simultaneous snap action	C7I	1NC+1NO		Overlapping slow action
C4I	1NO+1NO		Simultaneous slow action	C9I	2NC		Simultaneous slow action
C5I	1NC+1NO		Snap action				

Contacts identification (by numbers) in compliance with IEC/EN 60947-1 Standards

All types (except C2) allow different voltages at the contacts terminals.

For type C2 the contacts 13-14 and 21-22 are electrically separated from contacts 31-32 and 43-44.

Positive opening of contacts (***) for some models available in compliance with IEC/EN 60947-5-1 e CEI 17-45 - F. 1914 Standards.

Swivel heads

All switches allow to rotate the head by 90° x 90° by unscrewing the four fixing screws (fig. 1).

Adjustable levers

Position switches with roller lever have the lever adjustable by 10° x 10° (fig. 2). The positive movement transmission is always ensured by the particular geometric coupling between the lever and the shaft.

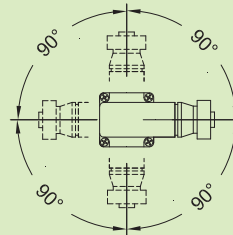


Fig. 1

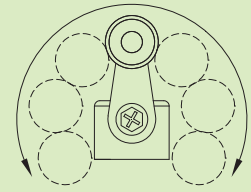
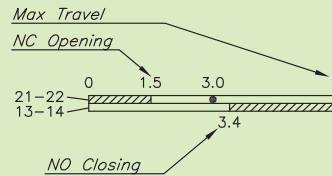
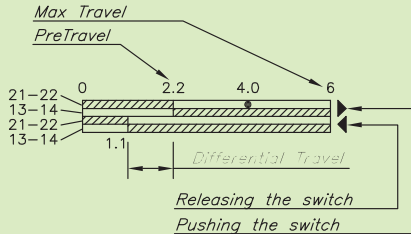


Fig. 2

Stroke diagrams



Opened Contact
Closed Contact
Positive Opening

Example: LS 5101M

Order coding

Type	Contact Unit	Actuator	Threading
LS	C51	01	N = NPT (N) M = metric (M)

Series LS: AVAILABLE MODELS

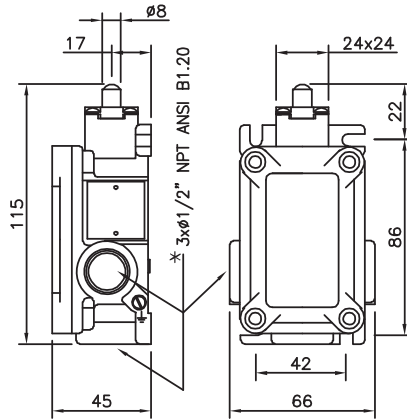
* I PRODOTTI CONTRASSEGNA TI SONO NORMALMENTE DISPONIBILI A MAGAZZINO
The marked products are normally available to store

A PERNO IN ACCIAIO
With push button stainless steel

VELOCITA' MASSIMA: 0.5 m/s
Max speed
FORZA MIN. DI AZIONAMENTO: 15 N
Min. force actuation:
FORZA MIN. PER APERTURA POSITIVA: 30 N
Min. force positive opening operation:

LEGENDA
Legenda

- ➔ APERTURA POSITIVA
Positive opening
- CORSA APERTURA POSITIVA
Positive opening travel
- ▶ PREMENDO
Pushing
- ◀ RILASCIANDO
Releasing

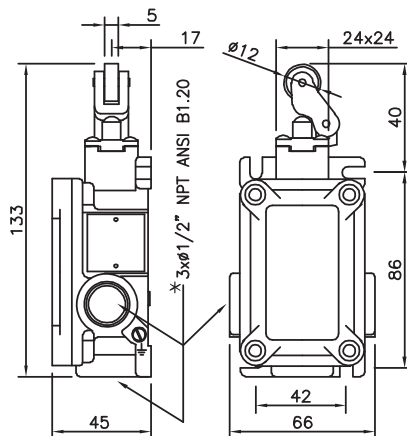


A LEVA SEMPLICE CON ROTELLA
With simple roller lever

VELOCITA' MASSIMA: 1.0 m/s
Max speed
FORZA MIN. DI AZIONAMENTO: 7 N
Min. force actuation:
FORZA MIN. PER APERTURA POSITIVA: 24 N
Min. force positive opening operation:

LEGENDA
Legenda

- ➔ APERTURA POSITIVA
Positive opening
- CORSA APERTURA POSITIVA
Positive opening travel
- ▶ PREMENDO
Pushing
- ◀ RILASCIANDO
Releasing



UNITA' DI CONTATTO Contact blocks	N°CATALOGO Catalogue n°	DIAGRAMMI CORSE Travel diagrams
C51 1NC+1NO	LS5101N	21-22 0 2.5 4.1 5.6 13-14 1.3 21-22 13-14
C61 1NC+1NO	LS6101N	21-22 0 1.6 3.2 5.6 13-14 2.5
C71 1NC+1NO	LS7101N	21-22 0 2.9 4.5 5.6 13-14 1.5
C91 1NC+1NC	LS9101N	11-21 0 1.5 3.1 5.6 12-22
C41 1NO+1NO	LS4101N	13-14 0 1.4 5.6 23-24
C31 1NC+1NC	LS3101N	11-21 0 2.4 4.0 5.6 12-22 1.3
C2 1NO+1NC 1NO+1NC	LS201N	13-14 0 1.3 6 21-22 0.7 43-44 31-32
C51 1NC+1NO	LS5102N	21-22 0 9.0 14.5 21.0 13-14 4.9 21-22 13-14
C61 1NC+1NO	LS6102N	21-22 0 6.0 10.5 21.0 13-14 8.6
C71 1NC+1NO	LS7102N	21-22 0 10.2 14.6 21.0 13-14 5.4
C91 1NC+1NC	LS9102N	11-21 0 5.7 10.2 21.0 12-22
C41 1NO+1NO	LS4102N	13-14 0 5.3 21.0 23-24
C31 1NC+1NC	LS3102N	11-21 0 8.6 13.1 21.0 12-22 5.1
C2 1NO+1NC 1NO+1NC	LS202N	13-14 0 2.0 8.0 21-22 1.1 43-44 31-32

*IN ALTERNATIVA:
Alternative: M20x1.5 ISO 262

POSITION SWITCHES

series
LS

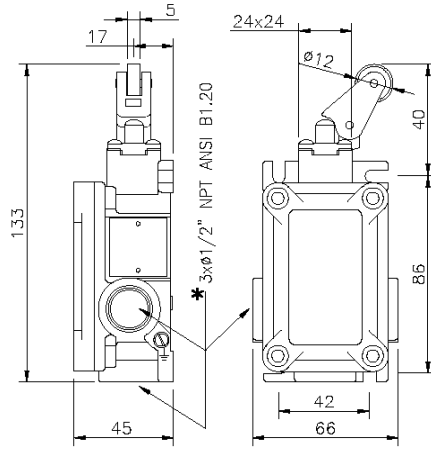
* I PRODOTTI CONTRASSEGNA TI SONO NORMALMENTE DISPONIBILI A MAGAZZINO
The marked products are normally available to store

A LEVA ANGOLARE CON ROTELLA
With angular roller lever

VELOCITA' MASSIMA: 1.0 m/s
Max speed
FORZA MIN. DI AZIONAMENTO: 7 N
Min. force actuation:
FORZA MIN. PER APERTURA POSITIVA: 24 N
Min. force positive opening operation:

LEGENDA
Legenda

- ⊕ APERTURA POSITIVA
Positive opening
- CORSA APERTURA POSITIVA
Positive opening travel
- ▶ PREMENDO
Pushing
- ◀ RILASCIANDO
Releasing

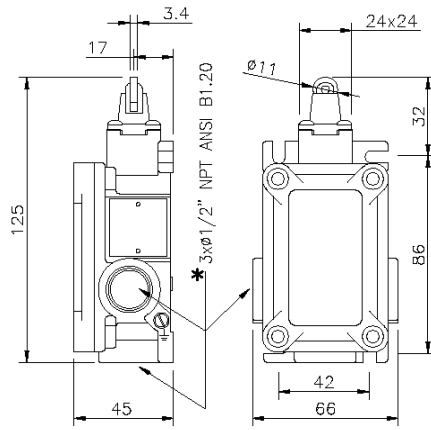


A PERNO CON ROTELLA
With push button roller

VELOCITA' MASSIMA: 0.3 m/s
Max speed
FORZA MIN. DI AZIONAMENTO: 12 N
Min. force actuation:
FORZA MIN. PER APERTURA POSITIVA: 30 N
Min. force positive opening operation:

LEGENDA
Legenda

- ⊕ APERTURA POSITIVA
Positive opening
- CORSA APERTURA POSITIVA
Positive opening travel
- ▶ PREMENDO
Pushing
- ◀ RILASCIANDO
Releasing

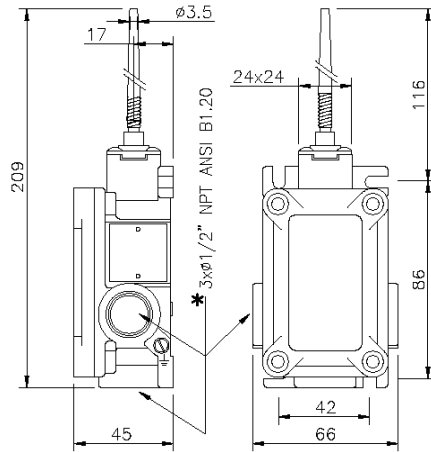


AD ASTA CON MOLLA INOX
With spring rod stainless steel

VELOCITA' MASSIMA: 1.0 m/s
Max speed
COPPIA MIN. DI AZIONAMENTO: 0.12 Nm
Min. torque actuation:
COPPIA MIN. PER APERTURA POSITIVA: - Nm
Min. torque positive opening operation:

LEGENDA
Legenda

- ▶ PREMENDO
Pushing
- ◀ RILASCIANDO
Releasing

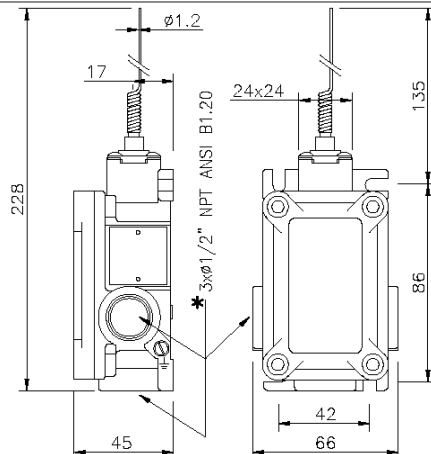


A STELO CON MOLLA INOX
With spring rod stainless steel

VELOCITA' MASSIMA: 1.0 m/s
Max speed
COPPIA MIN. DI AZIONAMENTO: 0.12 Nm
Min. torque actuation:
COPPIA MIN. PER APERTURA POSITIVA: - Nm
Min. torque positive opening operation:

LEGENDA
Legenda

- ▶ PREMENDO
Pushing
- ◀ RILASCIANDO
Releasing



UNITA' DI CONTATTO Contact blocks	N° CATALOGO Catalogue n°	DIAGRAMMI CORSE Travel diagrams
C5I 1NC+1NO	LS5105N	
C6I 1NC+1NO	LS6105N	
C7I 1NC+1NO	LS7105N	
C9I 1NC+1NC	LS9105N	
C4I 1NO+1NO	LS4105N	
C3I 1NC+1NC	LS3105N	
C2 1NO+1NC 1NO+1NC	LS205N	
C5I 1NC+1NO	LS5115N	
C6I 1NC+1NO	LS6115N	
C7I 1NC+1NO	LS7115N	
C9I 1NC+1NC	LS9115N	
C4I 1NO+1NO	LS4115N	
C3I 1NC+1NC	LS3115N	
C2 1NO+1NC 1NO+1NC	LS21N5N	
C5I 1NC+1NO	LS5120N	
C6I 1NC+1NO	LS6120N	
C7I 1NC+1NO	LS7120N	
C9I 1NC+1NC	LS9120N	
C4I 1NO+1NO	LS4120N	
C3I 1NC+1NC	LS3120N	
C2 1NO+1NC 1NO+1NC	LS220N	
C5I 1NC+1NO	LS5121N	
C6I 1NC+1NO	LS6121N	
C7I 1NC+1NO	LS7121N	
C9I 1NC+1NC	LS9121N	
C4I 1NO+1NO	LS4121N	
C3I 1NC+1NC	LS3121N	
C2 1NO+1NC 1NO+1NC	LS221N	

*IN ALTERNATIVA:
Alternative: M20x1.5 ISO 262

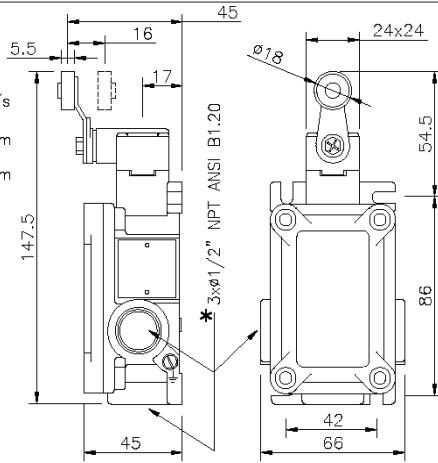
* I PRODOTTI CONTRASSEGNA TI SONO NORMALMENTE DISPONIBILI A MAGAZZINO
The marked products are normally available to store

A LEVA CON ROTELLA With roller lever

VELOCITA' MASSIMA:
Max speed: 1.5 m/s
COPPIA MIN. DI AZIONAMENTO:
Min. torque actuation: 0.10 Nm
COPPIA MIN. PER APERTURA POSITIVA:
Min. torque positive opening operation: 0.32 Nm

LEGENDA Legenda

- ▶ APERTURA POSITIVA
Positive opening
- CORSA APERTURA POSITIVA
Positive opening travel
- ▶ PREMENDO
Pushing
- ◀ RILASCIANDO
Releasing

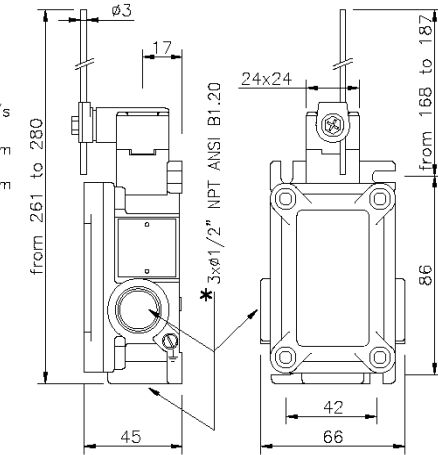


A LEVA CON ASTA RIGIDA TONDA INOX With rigid round rod lever stainless steel

VELOCITA' MASSIMA:
Max speed: 1.5 m/s
COPPIA MIN. DI AZIONAMENTO:
Min. torque actuation: 0.10 Nm
COPPIA MIN. PER APERTURA POSITIVA:
Min. torque positive opening operation: 0.32 Nm

LEGENDA Legenda

- ▶ APERTURA POSITIVA
Positive opening
- CORSA APERTURA POSITIVA
Positive opening travel
- ▶ PREMENDO
Pushing
- ◀ RILASCIANDO
Releasing

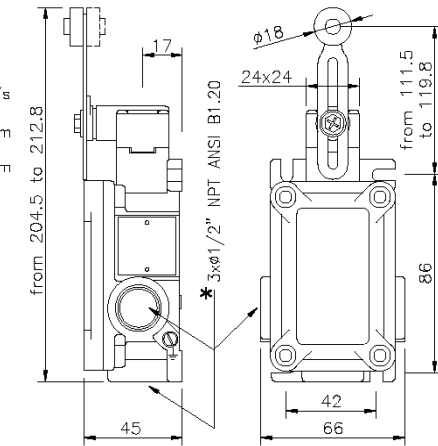


A LEVA LUNGA CON ROTELLA With lengthened roller lever

VELOCITA' MASSIMA:
Max speed: 1.5 m/s
COPPIA MIN. DI AZIONAMENTO:
Min. torque actuation: 0.10 Nm
COPPIA MIN. PER APERTURA POSITIVA:
Min. torque positive opening operation: 0.32 Nm

LEGENDA Legenda

- ▶ APERTURA POSITIVA
Positive opening
- CORSA APERTURA POSITIVA
Positive opening travel
- ▶ PREMENDO
Pushing
- ◀ RILASCIANDO
Releasing

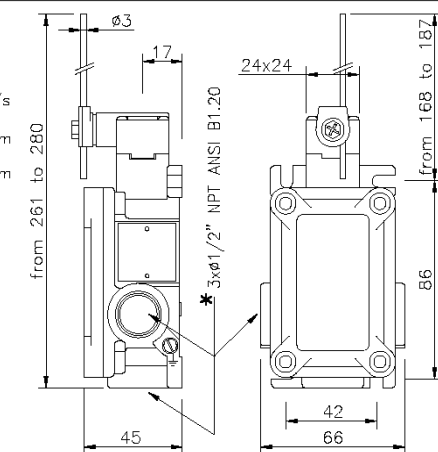


A LEVA CON ASTA RIGIDA IN NYLON With rigid rod lever nylon

VELOCITA' MASSIMA:
Max speed: 1.5 m/s
COPPIA MIN. DI AZIONAMENTO:
Min. torque actuation: 0.10 Nm
COPPIA MIN. PER APERTURA POSITIVA:
Min. torque positive opening operation: 0.32 Nm

LEGENDA Legenda

- ▶ APERTURA POSITIVA
Positive opening
- CORSA APERTURA POSITIVA
Positive opening travel
- ▶ PREMENDO
Pushing
- ◀ RILASCIANDO
Releasing



UNITA' DI CONTATTO Contact blocks	N° CATALOGO Catalogue n°	DIAGRAMMI CORSE Travel diagrams
C5I 1NC+1NO	LS5130N	
C6I 1NC+1NO	LS6130N	
C7I 1NC+1NO	LS7130N	
C9I 1NC+1NC	LS9130N	
C4I 1NO+1NO	LS4130N	
C3I 1NC+1NC	LS3130N	
C2 1NO+1NC 1NO+1NC	LS230N	
C5I 1NC+1NO	LS5150N	
C6I 1NC+1NO	LS6150N	
C7I 1NC+1NO	LS7150N	
C9I 1NC+1NC	LS9150N	
C4I 1NO+1NO	LS4150N	
C3I 1NC+1NC	LS3150N	
C2 1NO+1NC 1NO+1NC	LS250N	
C5I 1NC+1NO	LS5155N	
C6I 1NC+1NO	LS6155N	
C7I 1NC+1NO	LS7155N	
C9I 1NC+1NC	LS9155N	
C4I 1NO+1NO	LS4155N	
C3I 1NC+1NC	LS3155N	
C2 1NO+1NC 1NO+1NC	LS255N	
C5I 1NC+1NO	LS5169N	
C6I 1NC+1NO	LS6169N	
C7I 1NC+1NO	LS7169N	
C9I 1NC+1NC	LS9169N	
C4I 1NO+1NO	LS4169N	
C3I 1NC+1NC	LS3169N	
C2 1NO+1NC 1NO+1NC	LS269N	

*IN ALTERNATIVA:
Alternative: M20x1.5 ISO 262

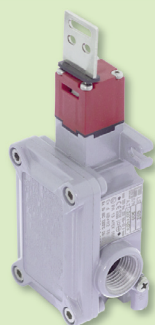
KEY-LOCK SAFETY SWITCHES with POSITIVE OPENING

series
LS

Protection	Gas	1-2	II2G	Ex db IIB+H ₂ T6÷T5 Gb
	Dusts	21-22	II2D	Ex tb IIIC T85°C÷T100°C Db

Degree of Protection	IP66
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Amb. Temp.	Standard	-20°C	+40°C
	Extended	-50°C	+80°C



Entries Threading	NPT ANSI B1.20
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Material	Aluminum light alloy
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Painting	External epoxy RAL7000
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Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1
EN 60079-31

CE BVI 13 ATEX 0084

IEC 60079-0 • IEC 60079-1
IEC 60079-31

IECEx EPS 13.0034

- Ideal to control Gates, Protections, Carters and any moving mechanical parts.
- Stainless Steel operating key has to be fixed to the mobile part of the protection. When opening the protection the key is removed from the switch and a mechanism ensures the positive opening of the electric contact.
- Applicable to any type of protection (hinged, sliding or removable).
- For any other information pls. see pages D03 and D04.

Options

- Contact Units for currents and/or voltages beyond the standard.
- Cable entry with metric thread M20x1.5 (M).
- Orthogonal key.
- Jointed Key.

Information on available contacts: see pages D03 and D04.

Installation instructions

- The safety circuit shall be connected to the contact NC 21-22 when the key is inserted.
- The safety switches shall be assembled to the body of the machine, while the key-lock is fixed to the protection.
- The head may be positioned on any of the four sides of the switch just by removing the four fixing screws: This allows up to 8 different actuation directions.
- The head of model LS ...93, adjustable over 360°, may be positioned in any actuation direction. **When the key is not inserted make sure that any dust and dirt do not obstruct its seat.**
- **Verify periodically the correct operation of the switch.**
- Fix the switch interposing a washer under fixing screws head.

Application on fences


When the switch is used to protect parts of machines physically accessible to people, to prevent the door or gate may accidentally close when the operator is inside, a padlock may be used at the appropriate hole on the key. The arc of the padlock shall be of 6 mm diameter minimum.

NOTES

To read the installation and maintenance instructions is recommended.

The temperature class T6/T85°C considers an Ambient Temperature (A.T.) extended up to +60°C, whereas, class T5/T100°C considers an A.T. extended up to +80°C.

(*) For A.T. up to +40°C the max surface temperature is 65°C reducing the number of operations to 600/h.

(**) As safety switches only those with  symbol shall be used.

The safety circuit must always be connected to NC contacts (11-12 or 21-22). Exceed by 1.5 mm (25°) the gap between the contacts. Operate the switch with the indicated opening force.

Order coding

Key-lock safety switch with positive opening : LS ..92N

Type	Contact Unit	Actuator	Threading
LS	..	92	N = NPT (N) M = metric (M)

Key-lock safety switch with positive opening  with swivel head: LS ..93N

Type	Contact Unit	Actuator	Threading
LS	..	93	N = NPT (N) M = metric (M)

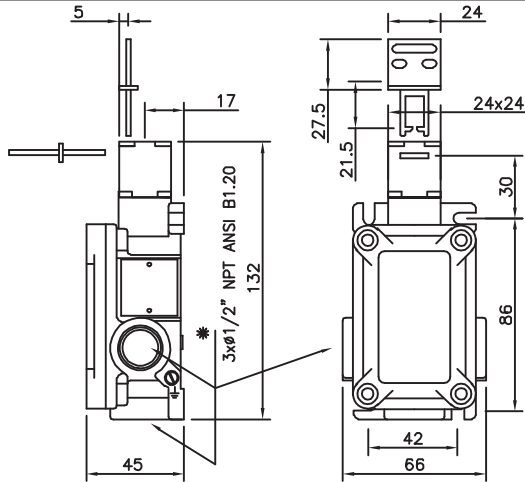
KEY-LOCK SAFETY SWITCHES with POSITIVE OPENING

series
LS

* I PRODOTTI CONTRASSEGNA TI SONO NORMALMENTE DISPONIBILI A MAGAZZINO
The marked products are normally available to store

UNITA' DI CONTATTO Contact blocks
N° CATALOGO Catalogue n°
DIAGRAMMI CORSE Travel diagrams

A CHIAVE
With key



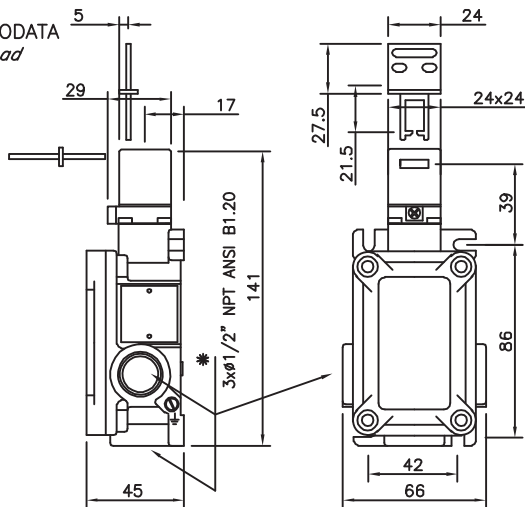
A RICHIESTA CON CHIAVE SNODATA
On request with jointed key

LEGENDA
Legenda

⊕ APERTURA POSITIVA
Positive opening

C6 1NO+1NC		LS 692N	⊕	21-22 13-14	
		*			
C9 2NC		LS 992N	⊕	11-12 21-22	

A CHIAVE E TESTA SNODATA
With key and jointed head



A RICHIESTA CON CHIAVE SNODATA
On request with jointed key

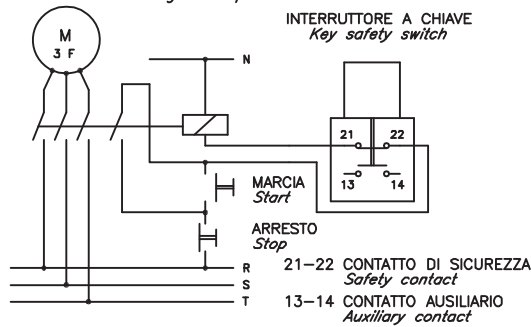
LEGENDA
Legenda

⊕ APERTURA POSITIVA
Positive opening

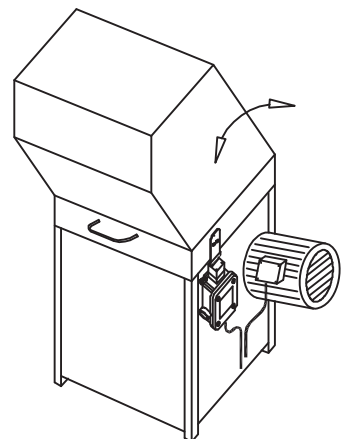
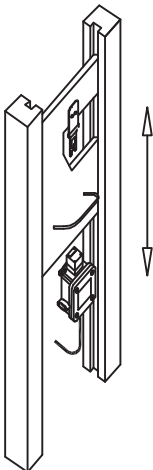
C6 1NO+1NC		LS 693N	⊕	21-22 13-14	
		*			
C9 2NC		LS 993N	⊕	11-12 21-22	

*IN ALTERNATIVA:
Alternative: M20x1.5 ISO 262

ESEMPIO DI COLLEGAMENTO
Wiring example



ESEMPI DI APPLICAZIONE
Installation example



SLOTTED HOLE LEVER SAFETY SWITCHES with POSITIVE OPENING

series
LS

Protection	Gas	Zone	1-2	II2G	Ex db IIB+H ₂ T6÷T5 Gb
	Dusts		21-22	II2D	Ex tb IIIC T85°C÷T100°C Db

Degree of Protection	IP66
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Amb. Temp.	Standard		-20°C		+40°C
			Extended		-50°C



Entries Threading	NPT ANSI B1.20
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Material	Aluminum light alloy
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Painting	External epoxy RAL7000
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Standards and Certificates		Directive 2014/34/EU (ATEX)
		EN 60079-0 • EN 60079-1 EN 60079-31
		BVI 13 ATEX 0084
		IEC 60079-0 • IEC 60079-1 IEC 60079-31
		IECEx EPS 13.0034

- Ideal to control Gates, Protections, Carfers and any moving mechanical parts.
- Positively opens the contacts when exceeding a rotation of a few degrees, immediately releasing the stop signal.
- Applicable to any type of protection (hinged, removable or sliding).
- For any other characteristics see pages D03 and D04.

Options

- Contact Units for currents and/or voltages beyond the standard.
- Cable entry with metric thread M20x1.5 (M).

Information on available contacts: see pages D03 and D04.

NOTES

To read the installation and maintenance instructions is recommended.

The temperature class T6/T85°C considers an Ambient Temperature (A.T.) extended up to +60°C, whereas, class T5/T100°C considers an A.T. extended up to +80°C.

(*) For A.T. up to +40°C the max surface temperature is 65°C reducing the number of operations to 600/h.

(**) As safety switches only those with shall be used.

The safety circuit must always be connected to NC contacts (11-12 or 21-22). Exceed by 1.5 mm (25°) the gap between the contacts. Operate the switch with the indicated opening force.

Installation instructions

- The safety circuit must be connected to the NC contact (11-12 or 21-22).
- Fix the switch interposing a washer under fixing screws head.
- To connect the scrolling slotted hole lever to the hinged door (or equivalent) use a suitable swivel (i.e. a rivet) that will not derail from the scrolling slottedhole lever.
- The switch must be mounted having the lever rotation axis as close as possible to the hinge rotation axis.
- Make sure that at the maximum opening of the door (or equivalent) the swivel is not acting as a mechanical stop.
- **Verify periodically the correct operation of the switch.**

Order Coding

Slotted hole lever safety switch with positive opening 180° to the right: LS ..A77N

Type	Contact Unit	Actuator	Threading
LS	..	A77	N = NPT (N) M = metric (M)

Slotted hole lever safety switch with positive opening 90°: LS ..B77M

Type	Contact Unit	Actuator	Threading
LS	..	B77	N = NPT (N) M = metric (M)

Slotted hole lever safety switch with positive opening 180° to the left: LS ..C77N

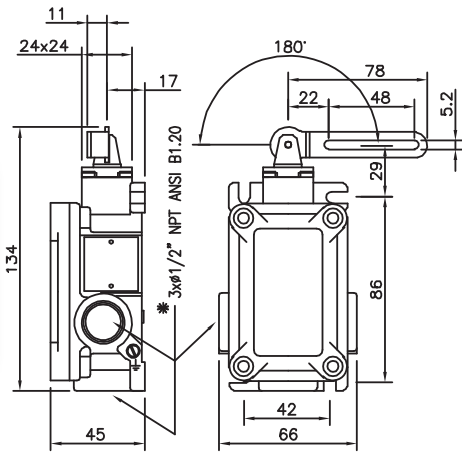
Type	Contact Unit	Actuator	Threading
LS	..	C77	N = NPT (N) M = metric (M)

SLOTTED HOLE LEVER SAFETY SWITCHES with POSITIVE OPENING

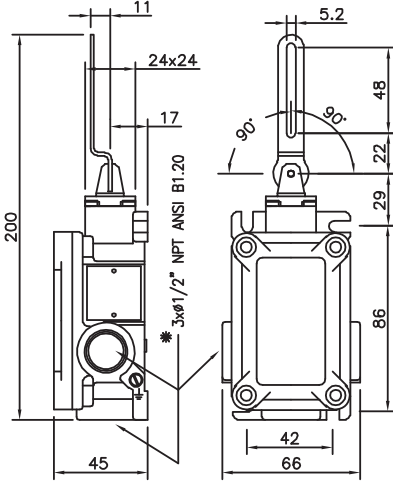
series
LS

* I PRODOTTI CONTRASSEGNA TI SONO NORMALMENTE DISPONIBILI A MAGAZZINO
The marked products are normally available to store

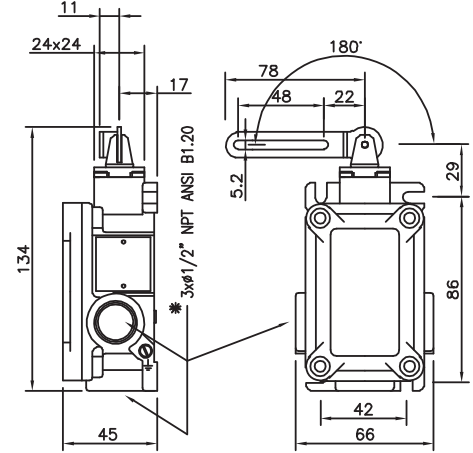
A LEVA ASOLATA DX
With slotted hole lever DX



A LEVA ASOLATA
With slotted hole lever

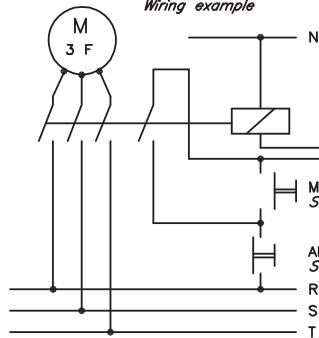


A LEVA ASOLATA SX
With slotted hole lever SX

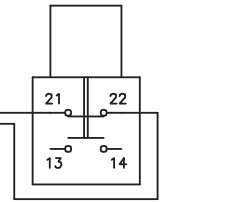


UNITA' DI CONTATTO Contact blocks	N°CATALOGO Catalogue n°	DIAGRAMMI CORSE Travel diagrams	N°CATALOGO Catalogue n°	DIAGRAMMI CORSE Travel diagrams	N°CATALOGO Catalogue n°	DIAGRAMMI CORSE Travel diagrams
C6 1NO+1NC	LS 6A77N	21-22 4' 13-14 180' 0' 8'	LS 6B77N	21-22 90' 13-14 4' 4' 90' 8' 0' 8'	LS 6C77N	21-22 4' 13-14 180' 0' 8'
C9 2NC	LS 9A77N	11-12 0' 21-22 180' 10'	LS 9B77N	11-12 90' 21-22 10' 0' 10'	LS 9C77N	11-12 0' 21-22 180' 10'

ESEMPIO DI COLLEGAMENTO
Wiring example



INTERRUTTORE A LEVA ASOLATA
Switch with slotted hole lever

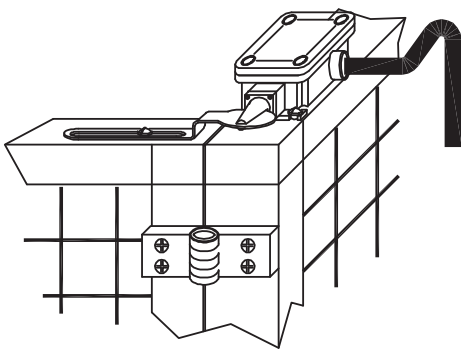


21-22 CONTATTO DI SICUREZZA
Safety contact
13-14 CONTATTO AUSILIARIO
Auxiliary contact

APERTURA POSITIVA
Positive opening

* IN ALTERNATIVA:
Alternative: M20x1.5 ISO 262

ESEMPIO DI APPLICAZIONE - Installation examples



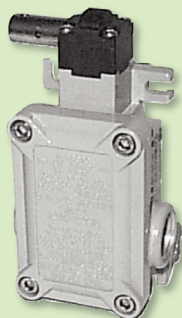
SAFETY SWITCHES for HINGES with POSITIVE OPENING

series
LS

Protection	Gas	1-2	II2G	Ex db IIB+H ₂ T6÷T5 Gb
	Dusts	21-22	II2D	Ex tb IIIC T85°C÷T100°C Db

Degree of Protection	IP66
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Amb. Temp.	Standard	-20°C	+40°C
	Extended	-50°C	+80°C



Entries Threading	NPT ANSI B1.20
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Material	Aluminum light alloy
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Painting	External epoxy RAL7000
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Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1
EN 60079-31

CE BVI 13 ATEX 0084

IEC 60079-0 • IEC 60079-1
IEC 60079-31

IECEx EPS 13.0034

- Ideal to control Gates, Protections, Carters and any moving mechanical parts.
- Positively opens the contacts when exceeding a rotation of a few degrees, immediately releasing the stop signal.
- Applicable to any type of protection (hinged, removable or sliding).
- For any other information pls. see pages D03 and D04.

Options

- Contact Units for currents and/or voltages beyond the standard.
- Cable entry with metric thread M20x1.5 (M).

Information on available contacts: see pages D03 and D04.

Installation instructions


- The safety circuit shall be connected to the NC contact (11-12 or 21-22).
- Fix the switch interposing a washer under fixing screws head.
- Insert the pivot Ø 8 mm (outgoing from the hinge) in the shaft of the switch temporarily fixing it with the M4 screw (included).
- Verify the opening set position of the NC safety contact and adjust it as necessary. When the set position is adjusted the pin of the hinge has to be drilled in coincidence with the the most convenient hole between the two present on the shaft and then secured with the relevant plug (supplied).
- **Periodically verify the correct operations of the switch.**

NOTES

To read the installation and maintenance instructions is recommended.

The temperature class T6/T85°C considers an Ambient Temperature (A.T.) extended up to +60°C, whereas, class T5/T100°C considers an A.T. extended up to +80°C.

(*) For A.T. up to +40°C the max surface temperature is 65°C reducing the number of operations to 600/h.

(**) As safety switches only those with  symbol shall be used.

The safety circuit must always be connected to NC contacts (11-12 or 21-22). Exceed by 1.5 mm (25°) the gap between the contacts. Operate the switch with the indicated opening force.

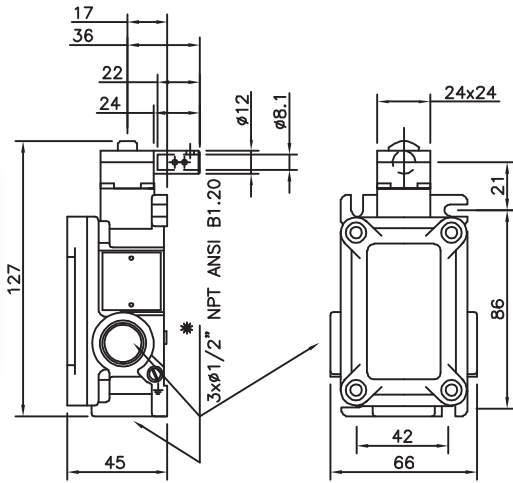
Order Coding

Safety switch for hinges with positive opening : LS ..95N

Type	Contact unit	Actuator	Threading
LS	..	95	N = NPT (N) M = metric (M)

* I PRODOTTI CONTRASSEGNA TI SONO NORMALMENTE DISPONIBILI A MAGAZZINO
The marked products are normally available to store

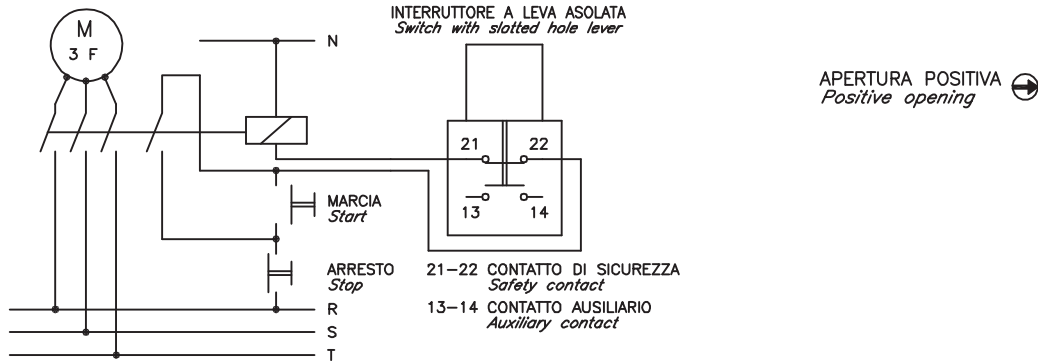
A PERNO PER CERNIERE *With hinge push button*



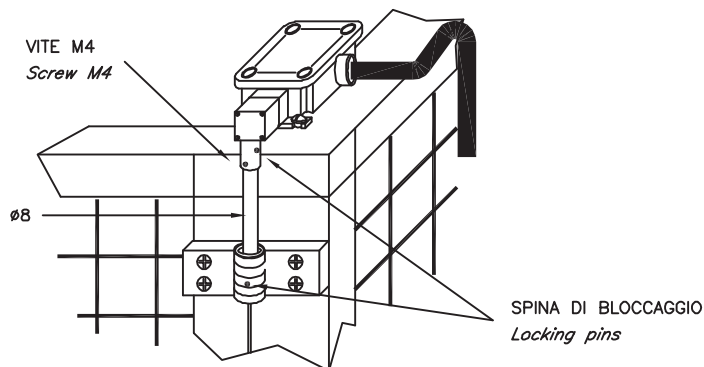
UNITA' DI CONTATTO <i>Contact blocks</i>	N° CATALOGO <i>Catalogue n°</i>	DIAGRAMMI CORSE <i>Travel diagrams</i>
C6 1NO+1NC	LS 695N	
C9 2NC	LS 995N	

* IN ALTERNATIVA:
Alternative: M20x1.5 ISO 262

ESEMPIO DI COLLEGAMENTO *Wiring example*



ESEMPIO DI APPLICAZIONE - *Installation examples*



LIMIT SWITCHES

series
PS

Protection	Gas	Zone	1-2	II2G	Ex db IIC T6÷T5 Gb
	Dusts		21-22	II2D	Ex tb IIIC T85°C÷T100°C Db

Degree of Protection	IP66/67
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Amb. Temp.	Standard		-20°C		+40°C
			Extended		-50°C



Entries Threading	NPT ANSI B1.20
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Material	Aluminum light alloy
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Painting	External epoxy RAL7000
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Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1
EN 60079-31

BVI 13 ATEX 0083

IEC 60079-0 • IEC 60079-1
IEC 60079-31

IECEx EPS 13.0033

- Compact and lightweight (450 g) design with ideal features for use in dangerous process and hazardous environments.
- Wide range of actuators in metal or in self-extinguishing glass-fiber-reinforced polymer (GFRP).
- Wide variety of options for adaptation and assembly.
- Internal operating rod in Stainless Steel AISI 303 on a brass bushing OT 58 UNI 5705/65.
- External screws in Stainless Steel except for actuators that may have components in tropicalized steel.

Options

- Stainless Steel version (see page I19).
- Quick snap-action contact units 2NC (C11) with positive opening
- Cable entry with metric thread M20x1.5 (M).
- Rollers in Metal.
- Different diameters rollers.
- Actuators with some metal parts in Stainless Steel.

Degree of pollution: 3 conforming to IEC/EN 60947-5-1 Standards.

Frequency of operations: 20/min (*) max

Number of cycles: 8÷10 millions

Storage Temperature: -40°C ÷ +70°C

Contact Unit

Nominal current (active):	I: 10 A
Insulating Voltage:	U _i : 500 Vac / 600 Vdc [°]
Impulse Withstand Voltage:	U _{imp} : 6 kV
Short Circuit Current	: 1000 AV
Short Circuit Protection:	Fuse 10 A 500 V
Minimum conductor section	: 1.5 mm ²
Max Current Density	: 5 A/mm ²

	AC15 - A600			DC13 - Q600		
U _e (V)	240	400	500	24	125	250
I _e (A)	6	4	1	3	0.55	0.3

NOTES

To read the installation and maintenance instructions is recommended.

The temperature class T6/T85°C considers an Ambient Temperature (A.T.) extended up to +60°C, whereas, class T5/T100°C considers an A.T. extended up to +80°C.

[°] The insulating voltage is equal to 400 VAC / 500 VDC for C2 and C11 contacts.

(*) For A.T. up to +40°C the max surface temperature is 65°C reducing the number of operations to 600/h.

(**) As safety switches only those with symbol shall be used.

The safety circuit must always be connected to NC contacts (11-12 or 21-22). Exceed by 1.5 mm (25°) the gap between the contacts. Operate the switch with the indicated opening force.

Electrical Diagram

Type	Contact	Diagram	Operating	Type	Contact	Diagram	Operating
C2	1NO+1NC 1NO+1NC		Snap action	C10	2NO		Slow action
C5	1NO+1NC		Snap action	C11	2NC		Snap action
C6	1NO+1NC		Slow action	C14	2NC		Slow action
C7	1NO+1NC		Overlapping slow action	C15	2NO		Slow action
C9	2NO		Slow action	C20	1NO+2NC		Slow action

Contacts identification (by numbers) in compliance with IEC/EN 60947-1 Standards

All types (except C2) allow different voltages at the contacts terminals.

For type C2 the contacts 13-14 and 21-22 are electrically separated from contacts 31-32 and 43-44.

Positive opening of contacts (**) for some models available in compliance with IEC/EN 60947-5-1 e CEI 17-45 - F. 1914 Standards.

Swivel heads

All switches allow to rotate the head by 90° x90° by unscrewing the four fixing screws (fig. 1).

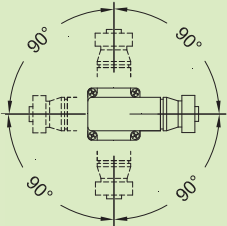


Fig. 1

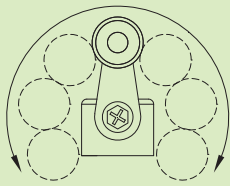


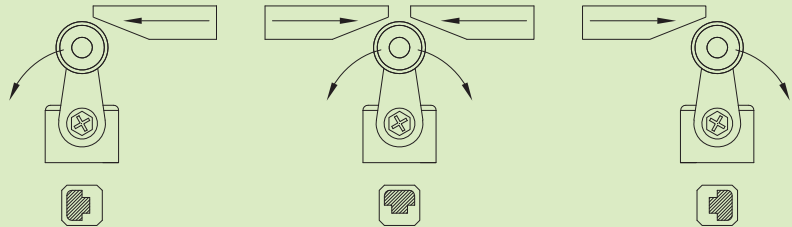
Fig. 2

Adjustable levers

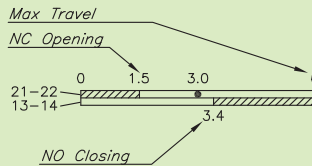
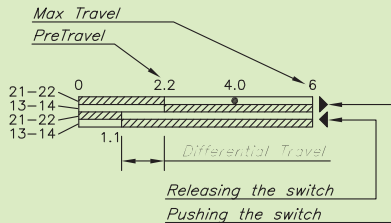
Position switches with roller lever have the lever adjustable by 10° x 10° (fig. 2). The positive movement transmission is always ensured by the particular geometric coupling between the lever and the shaft.

Unidirectional heads

To get the unidirectional operation on switches with revolving lever it is necessary to remove the four screws of the head and totate the internal piston.



Stroke Diagrams



Opened Contact
Closed Contact
Positive Opening

Example: PS 511N

Order coding

Type	Contact Unit	Actuator	Threading
PS	C5	11	N = NPT (N) M = metric (M)

Series PS : AVAILABLE MODELS

* I PRODOTTI CONTRASSEGNA TI SONO NORMALMENTE DISPONIBILI A MAGAZZINO
The marked products are normally available to store

A PERNO

With push button

VELOCITA' MASSIMA: 0.5 m/s
Max speed

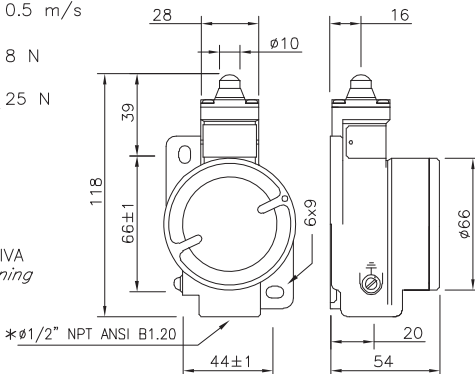
FORZA MIN. DI AZIONAMENTO: 8 N
Min. force actuation:

FORZA MIN. PER APERTURA POSITIVA: 25 N
Min. force positive opening operation:

LEGENDA

Legenda

- ▶ APERTURA POSITIVA
Positive opening
- INIZIO APERTURA POSITIVA
Positive opening beginning
- ▶ PREMENDO
Pushing
- ◀ RILASCIANDO
Releasing



UNITA' DI CONTATTO Contact blocks	N° CATALOGO Catalogue n°	DIAGRAMMI CORSE Travel diagrams
C2 1NO+1NC+ 1NO+1NC	PS 20IN	13-14, 21-22, 43-44, 31-32 0, 1.3, 0.7, 2.2, 4.0, 6
C5 1NO+1NC	PS 50IN	21-22, 13-14, 43-44, 31-32 0, 1.1, 2.2, 4.0, 6
C6 1NO+1NC	PS 60IN	21-22, 13-14 0, 1.5, 3.0, 3.4, 6
C7 1NO+1NC	PS 70IN	21-22, 13-14 0, 3.1, 4.6, 1.6, 6
C9 2NC	PS 90IN	11-12, 21-22 0, 2.9, 4.4, 6
C10 2NO	PS 100IN	13-14, 23-24 0, 1.4, 6
C14 2NC	PS 140IN	11-12, 21-22 0, 3.0, 4.5, 1.4, 6
C15 2NO	PS 150IN	13-14, 23-24 0, 3.0, 1.4, 6
C20 1NO+2NC	PS 200IN	13-14, 21-22, 33-34 0, 1.5, 3.0, 2.0, 6

* IN ALTERNATIVA:
Alternative: M20x1.5 ISO 262

* I PRODOTTI CONTRASSEGNA TI SONO NORMALMENTE DISPONIBILI A MAGAZZINO
The marked products are normally available to store

A LEVA SEMPLICE CON ROTELLA

With simple roller lever

VELOCITA' MASSIMA:
CON CAMMA A 30°
Max speed with 30° cam: 0.5 m/s

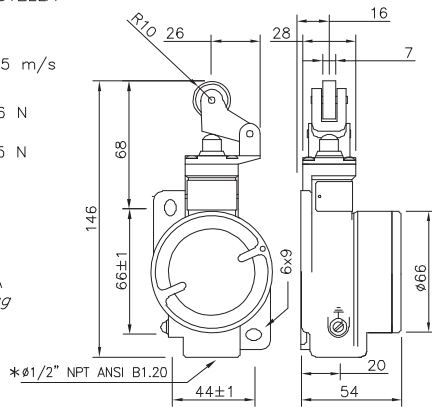
FORZA MIN. DI AZIONAMENTO:
Min. force actuation: 6 N

FORZA MIN. PER APERTURA POSITIVA:
Min. force positive opening operation: 25 N

LEGENDA

Legenda

- ▶ APERTURA POSITIVA
Positive opening
- INIZIO APERTURA POSITIVA
Positive opening beginning
- ▶ PREMENDO
Pushing
- ◀ RILASCIANDO
Releasing



A LEVA ANGOLARE CON ROTELLA

With angular roller lever

VELOCITA' MASSIMA:
CON CAMMA A 30°
Max speed with 30° cam: 0.5 m/s

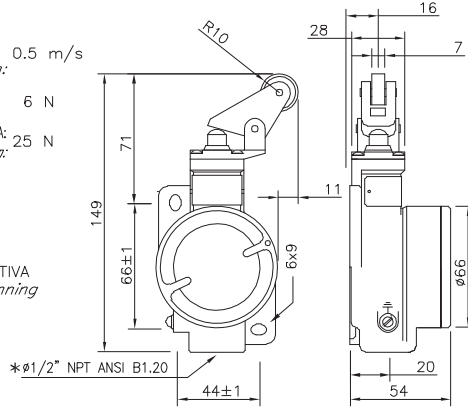
FORZA MIN. DI AZIONAMENTO:
Min. force actuation: 6 N

FORZA MIN. PER APERTURA POSITIVA:
Min. force positive opening operation: 25 N

LEGENDA

Legenda

- ▶ APERTURA POSITIVA
Positive opening
- INIZIO APERTURA POSITIVA
Positive opening beginning
- ▶ PREMENDO
Pushing
- ◀ RILASCIANDO
Releasing



A PERNO CON PROTEZIONE IN GOMMA

With rubber gasket push button

VELOCITA' MASSIMA:
Max speed: 0.5 m/s

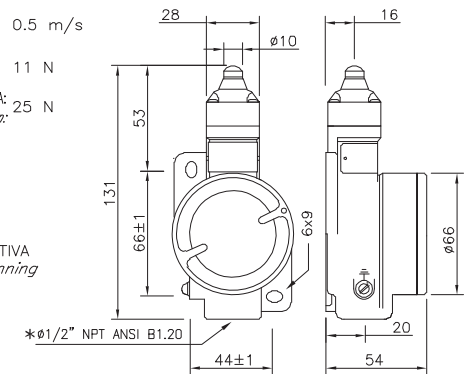
FORZA MIN. DI AZIONAMENTO:
Min. force actuation: 11 N

FORZA MIN. PER APERTURA POSITIVA:
Min. force positive opening operation: 25 N

LEGENDA

Legenda

- ▶ APERTURA POSITIVA
Positive opening
- INIZIO APERTURA POSITIVA
Positive opening beginning
- ▶ PREMENDO
Pushing
- ◀ RILASCIANDO
Releasing



A PERNO ALLUNGATO

With lengthened push button

VELOCITA' MASSIMA:
Max speed: 0.5 m/s

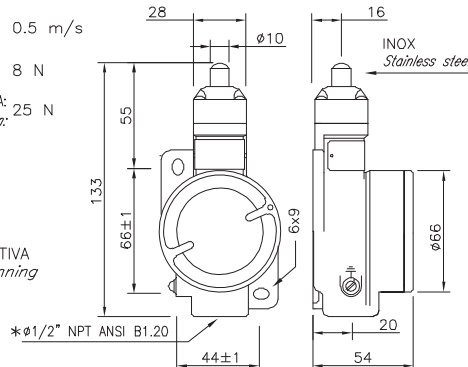
FORZA MIN. DI AZIONAMENTO:
Min. force actuation: 8 N

FORZA MIN. PER APERTURA POSITIVA:
Min. force positive opening operation: 25 N

LEGENDA

Legenda

- ▶ APERTURA POSITIVA
Positive opening
- INIZIO APERTURA POSITIVA
Positive opening beginning
- ▶ PREMENDO
Pushing
- ◀ RILASCIANDO
Releasing



*IN ALTERNATIVA:
Alternative: M20x1.5 ISO 262

UNITA' DI CONTATTO Contact blocks	N° CATALOGO Catalogue n°	DIAGRAMMI CORSE Travel diagrams
C2 1NO-1NC+ 1NO-1NC	PS 202N	
C5 1NO+1NC	PS 502N	
C6 1NO+1NC	PS 602N	
C7 1NO+1NC	PS 702N	
C9 2NC	PS 902N	
C10 2NO	PS 1002N	
C14 2NC	PS 1402N	
C15 2NO	PS 1502N	
C20 1NO+2NC	PS 2002N	
C2 1NO-1NC+ 1NO-1NC	PS 205N	
C5 1NO+1NC	PS 505N	
C6 1NO+1NC	PS 605N	
C7 1NO+1NC	PS 705N	
C9 2NC	PS 905N	
C10 2NO	PS 1005N	
C14 2NC	PS 1405N	
C15 2NO	PS 1505N	
C20 1NO+2NC	PS 2005N	
C2 1NO-1NC+ 1NO-1NC	PS 210N	
C5 1NO+1NC	PS 510N	
C6 1NO+1NC	PS 610N	
C7 1NO+1NC	PS 710N	
C9 2NC	PS 910N	
C10 2NO	PS 1010N	
C14 2NC	PS 1410N	
C15 2NO	PS 1510N	
C20 1NO+2NC	PS 2010N	
C2 1NO-1NC+ 1NO-1NC	PS 211N	
C5 1NO+1NC	PS 511N	
C6 1NO+1NC	PS 611N	
C7 1NO+1NC	PS 711N	
C9 2NC	PS 911N	
C10 2NO	PS 1011N	
C14 2NC	PS 1411N	
C15 2NO	PS 1511N	
C20 1NO+2NC	PS 2011N	

LIMIT SWITCHES

series
PS

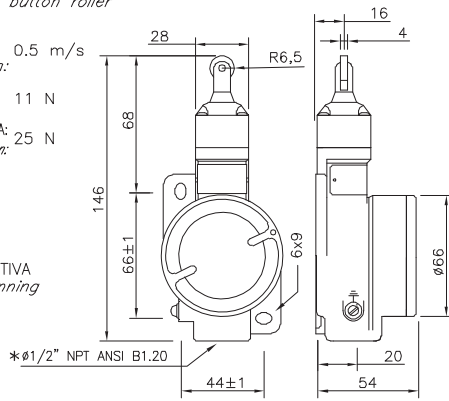
* I PRODOTTI CONTRASSEGNA TI SONO NORMALMENTE DISPONIBILI A MAGAZZINO
The marked products are normally available to store

A PERNO CON ROTELLA E PROTEZIONE IN GOMMA With rubber gasket push button roller

VELOCITA' MASSIMA:
CON CAMMA A 30° 0.5 m/s
Max speed with 30° cam:
FORZA MIN. DI AZIONAMENTO: 11 N
Min. force actuation:
FORZA MIN. PER APERTURA POSITIVA: 25 N
Min. force positive opening operation:

LEGENDA Legenda

- ➔ APERTURA POSITIVA
Positive opening
- INIZIO APERTURA POSITIVA
Positive opening beginning
- ▶ PREMENDO
Pushing
- ◀ RILASCIANDO
Releasing

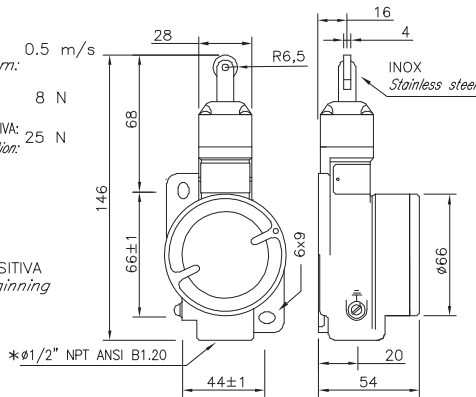


A PERNO CON ROTELLA With push button roller

VELOCITA' MASSIMA:
CON CAMMA A 30° 0.5 m/s
Max speed with 30° cam:
FORZA MIN. DI AZIONAMENTO: 8 N
Min. force actuation:
FORZA MIN. PER APERTURA POSITIVA: 25 N
Min. force positive opening operation:

LEGENDA Legenda

- ➔ APERTURA POSITIVA
Positive opening
- INIZIO APERTURA POSITIVA
Positive opening beginning
- ▶ PREMENDO
Pushing
- ◀ RILASCIANDO
Releasing

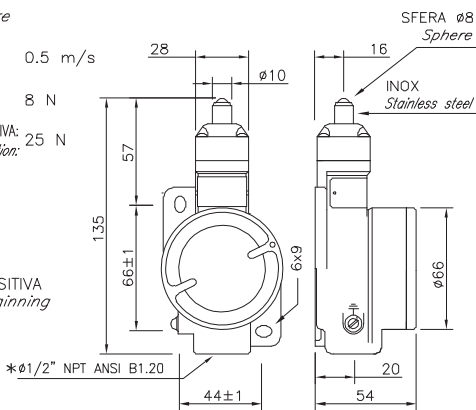


A PERNO CON SFERA With push button sphere

VELOCITA' MASSIMA:
Max speed 0.5 m/s
FORZA MIN. DI AZIONAMENTO: 8 N
Min. force actuation:
FORZA MIN. PER APERTURA POSITIVA: 25 N
Min. force positive opening operation:

LEGENDA Legenda

- ➔ APERTURA POSITIVA
Positive opening
- INIZIO APERTURA POSITIVA
Positive opening beginning
- ▶ PREMENDO
Pushing
- ◀ RILASCIANDO
Releasing

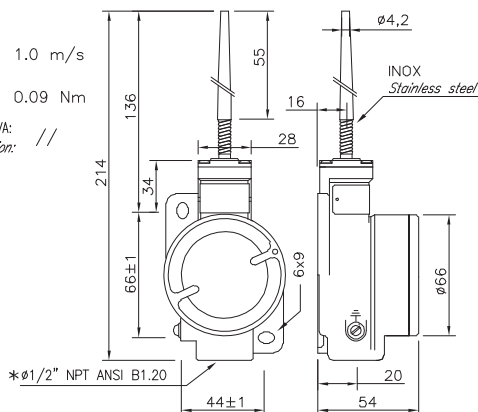


AD ASTA CON MOLLA With spring rod

VELOCITA' MASSIMA:
Max speed 1.0 m/s
COPPIA MIN. DI AZIONAMENTO: 0.09 Nm
Min. torque actuation:
COPPIA MIN. PER APERTURA POSITIVA: //
Min. torque positive opening operation:

LEGENDA Legenda

- ▶ PREMENDO
Pushing
- ◀ RILASCIANDO
Releasing



UNITA' DI CONTATTO Contact blocks	N° CATALOGO Catalogue n°	DIAGRAMMI CORSE Travel diagrams
C2 1NO,1NC+ 1NO,1NC	PS 215N	
C5 1NO+1NC	PS 515N	
C6 1NO+1NC	PS 615N	
C7 1NO+1NC	PS 715N	
C9 2NC	PS 915N	
C10 2NO	PS 1015N	
C14 2NC	PS 1415N	
C15 2NO	PS 1515N	
C20 1NO+2NC	PS 2015N	
C2 1NO,1NC+ 1NO,1NC	PS 216N	
C5 1NO+1NC	PS 516N	
C6 1NO+1NC	PS 616N	
C7 1NO+1NC	PS 716N	
C9 2NC	PS 916N	
C10 2NO	PS 1016N	
C14 2NC	PS 1416N	
C15 2NO	PS 1516N	
C20 1NO+2NC	PS 2016N	
C2 1NO,1NC+ 1NO,1NC	PS 218N	
C5 1NO+1NC	PS 518N	
C6 1NO+1NC	PS 618N	
C7 1NO+1NC	PS 718N	
C9 2NC	PS 918N	
C10 2NO	PS 1018N	
C14 2NC	PS 1418N	
C15 2NO	PS 1518N	
C20 1NO+2NC	PS 2018N	
C2 1NO,1NC+ 1NO,1NC	PS 220N	
C5 1NO+1NC	PS 520N	
C10 2NO	PS 1020N	
C20 1NO+2NC	PS 2020N	

*IN ALTERNATIVA:
Alternative: M20x1.5 ISO 262

LIMIT SWITCHES

series
PS

* I PRODOTTI CONTRASSEGNA TI SONO NORMALMENTE DISPONIBILI A MAGAZZINO
The marked products are normally available to store

CON MOLLA INOX
With spring stainless steel

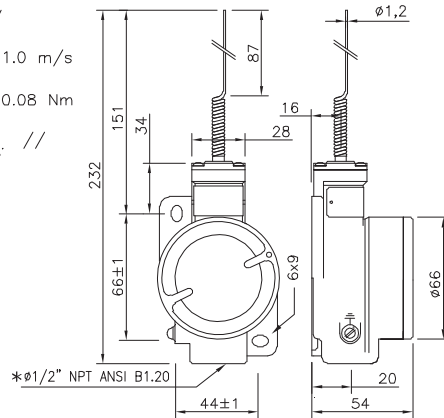
VELOCITA' MASSIMA:
Max speed 1.0 m/s

COPPIA MIN. DI AZIONAMENTO:
Min. torque actuation: 0.08 Nm

COPPIA MIN. PER APERTURA POSITVA:
Min. torque positive opening operation: //

LEGENDA
Legenda

- ▶ PREMENDO
Pushing
- ◀ RILASCIANDO
Releasing



UNITA' DI CONTATTO Contact blocks	N° CATALOGO Catalogue #	DIAGRAMMI CORSE Travel diagrams
C2 1NO,1NC+ 1NO,1NC	PS 22IN	
C5 1NO+1NC	PS 52IN	
C10 2NO	PS 102IN	
C20 1NO+2NC	PS 202IN	

CON MOLLA INOX
With spring stainless steel

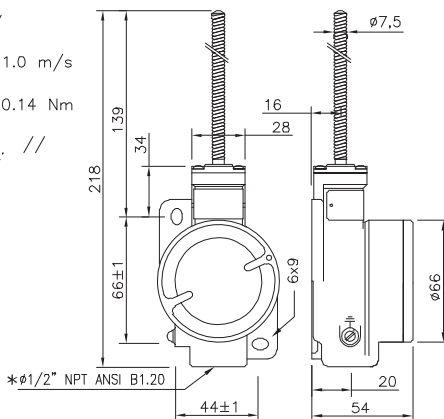
VELOCITA' MASSIMA:
Max speed 1.0 m/s

COPPIA MIN. DI AZIONAMENTO:
Min. torque actuation: 0.14 Nm

COPPIA MIN. PER APERTURA POSITVA:
Min. torque positive opening operation: //

LEGENDA
Legenda

- ▶ PREMENDO
Pushing
- ◀ RILASCIANDO
Releasing



UNITA' DI CONTATTO Contact blocks	N° CATALOGO Catalogue #	DIAGRAMMI CORSE Travel diagrams
C2 1NO,1NC+ 1NO,1NC	PS 225N	
C5 1NO+1NC	PS 525N	
C10 2NO	PS 1025N	
C20 1NO+2NC	PS 2025N	

A LEVA CON ROTELLA
With roller lever

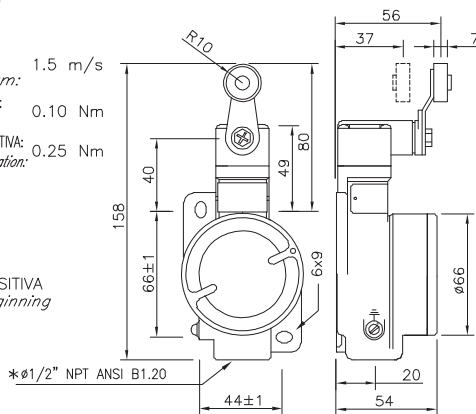
VELOCITA' MASSIMA:
CON CAMMA A 30°
Max speed with 30° cam: 1.5 m/s

COPPIA MIN. DI AZIONAMENTO:
Min. torque actuation: 0.10 Nm

COPPIA MIN. PER APERTURA POSITVA:
Min. torque positive opening operation: 0.25 Nm

LEGENDA
Legenda

- ➡ APERTURA POSITVA
Positive opening
- INIZIO APERTURA POSITVA
Positive opening beginning
- ▶ PREMENDO
Pushing
- ◀ RILASCIANDO
Releasing



UNITA' DI CONTATTO Contact blocks	N° CATALOGO Catalogue #	DIAGRAMMI CORSE Travel diagrams
C2 1NO,1NC+ 1NO,1NC	PS 23IN	
C5 1NO+1NC	PS 53IN	
C6 1NO+1NC	PS 63IN	
C7 1NO+1NC	PS 73IN	
C9 2NC	PS 93IN	
C10 2NO	PS 103IN	
C14 2NC	PS 143IN	
C15 2NO	PS 153IN	
C20 1NO+2NC	PS 203IN	
C2 1NO,1NC+ 1NO,1NC	PS 232N	
C5 1NO+1NC	PS 532N	
C6 1NO+1NC	PS 632N	
C7 1NO+1NC	PS 732N	
C9 2NC	PS 932N	
C10 2NO	PS 1032N	
C14 2NC	PS 1432N	
C15 2NO	PS 1532N	
C20 1NO+2NC	PS 2032N	

A LEVA CON ASTA RIGIDA TONDA
With rigid round rod lever

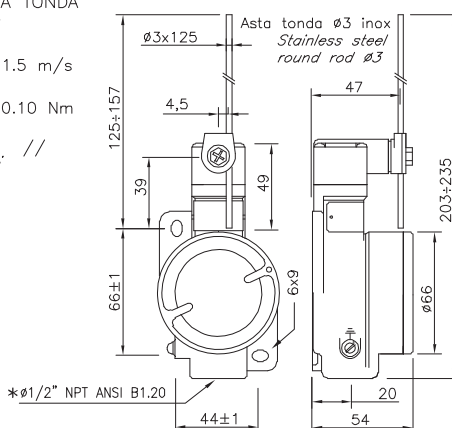
VELOCITA' MASSIMA:
Max speed 1.5 m/s

COPPIA MIN. DI AZIONAMENTO:
Min. torque actuation: 0.10 Nm

COPPIA MIN. PER APERTURA POSITVA:
Min. torque positive opening operation: //

LEGENDA
Legenda

- ▶ PREMENDO
Pushing
- ◀ RILASCIANDO
Releasing



*IN ALTERNATIVA:
Alternative: M20x1.5 ISO 262

LIMIT SWITCHES

series
PS

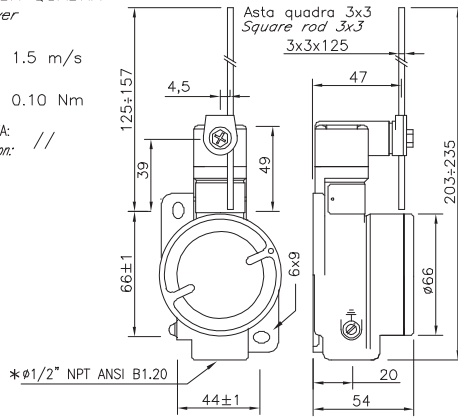
* I PRODOTTI CONTRASSEGNA TI SONO NORMALMENTE DISPONIBILI A MAGAZZINO
The marked products are normally available to store

A LEVA CON ASTA RIGIDA QUADRA With rigid square rod lever

VELOCITA' MASSIMA:
Max speed 1.5 m/s
COPPIA MIN. DI AZIONAMENTO:
Min. torque actuation: 0.10 Nm
COPPIA MIN. PER APERTURA POSITIVA:
Min. torque positive opening operation: //

LEGENDA Legenda

- ▶ PREMENDO
Pushing
- ◀ RILASCIANDO
Releasing

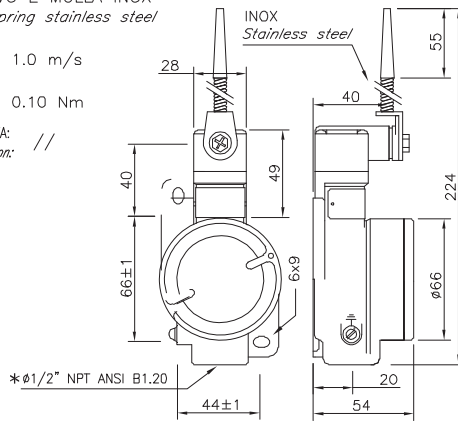


A LEVA CON ASTA IN PVC E MOLLA INOX With PVC rod lever and spring stainless steel

VELOCITA' MASSIMA:
Max speed 1.0 m/s
COPPIA MIN. DI AZIONAMENTO:
Min. torque actuation: 0.10 Nm
COPPIA MIN. PER APERTURA POSITIVA:
Min. torque positive opening operation: //

LEGENDA Legenda

- ▶ PREMENDO
Pushing
- ◀ RILASCIANDO
Releasing

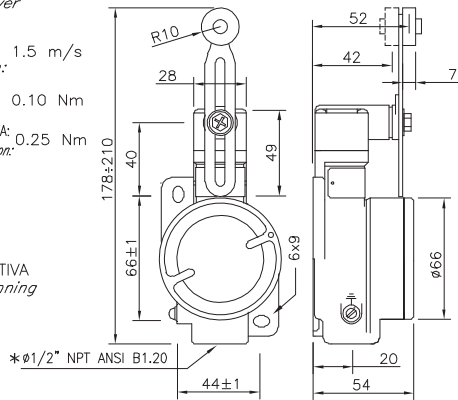


A LEVA LUNGA CON ROTELLA With lengthened roller lever

VELOCITA' MASSIMA:
CON CAMMA A 30°
Max speed with 30° cam: 1.5 m/s
COPPIA MIN. DI AZIONAMENTO:
Min. torque actuation: 0.10 Nm
COPPIA MIN. PER APERTURA POSITIVA:
Min. torque positive opening operation: 0.25 Nm

LEGENDA Legenda

- ⊕ APERTURA POSITIVA
Positive opening
- INIZIO APERTURA POSITIVA
Positive opening beginning
- ▶ PREMENDO
Pushing
- ◀ RILASCIANDO
Releasing

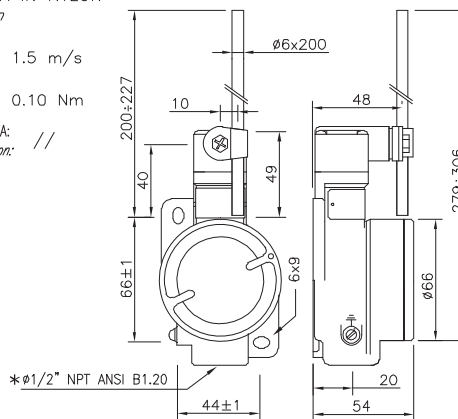


A LEVA CON ASTA RIGIDA IN NYLON With rigid rod lever nylon

VELOCITA' MASSIMA:
Max speed 1.5 m/s
COPPIA MIN. DI AZIONAMENTO:
Min. torque actuation: 0.10 Nm
COPPIA MIN. PER APERTURA POSITIVA:
Min. torque positive opening operation: //

LEGENDA Legenda

- ▶ PREMENDO
Pushing
- ◀ RILASCIANDO
Releasing



UNITA' DI CONTATTO 2NC Contact blocks	N°CATALOGO Catalogue n°	DIAGRAMMI CORSE Travel diagrams
C2 1NO+1NC 1NO.1NC	PS 233N	13-14 0' 20' 75' 21-22 13-14 13 43-44 31-32
C5 1NO+1NC	PS 533N	21-22 0' 22' 75' 13-14 13-14 9' 21-22 13-14
C6 1NO+1NC	PS 633N	21-22 0' 14' 75' 13-14 15' 34'
C7 1NO+1NC	PS 733N	21-22 0' 32' 75' 13-14 15'
C9 2NC	PS 933N	11-12 0' 32' 75' 21-22 15'
C10 2NO	PS 1033N	13-14 0' 14' 75' 23-24 15'
C14 2NC	PS 1433N	11-12 0' 32' 75' 21-22 14'
C15 2NO	PS 1533N	13-14 0' 32' 75' 23-24 14'
C20 1NO+2NC	PS 2033N	13-14 0' 15' 75' 21-22 21' 33-34
C2 1NO.1NC 1NO.1NC	PS 234N	13-14 0' 20' 75' 21-22 13-14 13 43-44 31-32
C5 1NO+1NC	PS 534N	21-22 0' 22' 75' 13-14 13-14 9' 21-22 13-14
C6 1NO+1NC	PS 634N	21-22 0' 14' 75' 13-14 15' 34'
C7 1NO+1NC	PS 734N	21-22 0' 32' 75' 13-14 15'
C9 2NC	PS 934N	11-12 0' 32' 75' 21-22 15'
C10 2NO	PS 1034N	13-14 0' 14' 75' 23-24 15'
C14 2NC	PS 1434N	11-12 0' 32' 75' 21-22 14'
C15 2NO	PS 1534N	13-14 0' 32' 75' 23-24 14'
C20 1NO+2NC	PS 2034N	13-14 0' 15' 75' 21-22 21' 33-34
C2 1NO.1NC 1NO.1NC	PS 235N	13-14 0' 20' 75' 21-22 13-14 13 43-44 31-32
C5 1NO+1NC	PS 535N	21-22 0' 22' 75' 13-14 13-14 9' 21-22 13-14
C6 1NO+1NC	PS 635N	21-22 0' 14' 75' 13-14 15' 34'
C7 1NO+1NC	PS 735N	21-22 0' 32' 75' 13-14 15' 52'
C9 2NC	PS 935N	11-12 0' 32' 75' 21-22 15' 52'
C10 2NO	PS 1035N	13-14 0' 14' 75' 23-24 15'
C14 2NC	PS 1435N	11-12 0' 32' 75' 21-22 14' 52'
C15 2NO	PS 1535N	13-14 0' 32' 75' 23-24 14'
C20 1NO+2NC	PS 2018N	13-14 0' 15' 35' 75' 21-22 21' 33-34
C2 1NO.1NC 1NO.1NC	PS 236N	13-14 0' 20' 75' 21-22 13-14 13 43-44 31-32
C5 1NO+1NC	PS 536N	21-22 0' 22' 75' 13-14 13-14 9' 21-22 13-14
C6 1NO+1NC	PS 636N	21-22 0' 14' 75' 13-14 15' 34'
C7 1NO+1NC	PS 736N	21-22 0' 32' 75' 13-14 15'
C9 2NC	PS 936N	11-12 0' 32' 75' 21-22 15'
C10 2NO	PS 1036N	13-14 0' 14' 75' 23-24 15'
C14 2NC	PS 1436N	11-12 0' 32' 75' 21-22 14'
C15 2NO	PS 1536N	13-14 0' 32' 75' 23-24 14'
C20 1NO+2NC	PS 2036N	13-14 0' 15' 75' 21-22 21' 33-34

*IN ALTERNATIVA:
Alternative: M20x1.5 ISO 262

* I PRODOTTI CONTRASSEGNA TI SONO NORMALMENTE DISPONIBILI A MAGAZZINO
The marked products are normally available to store

A LEVA CON ROTELLA With roller lever

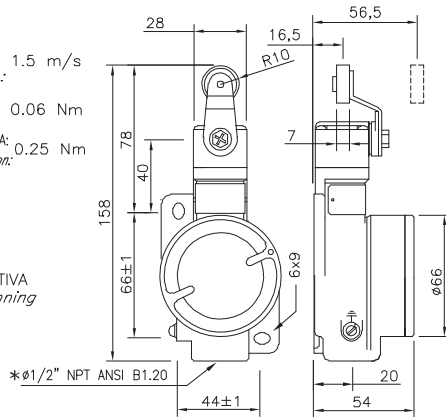
VELOCITA' MASSIMA:
CON CAMMA A 30°
Max speed with 30° cam: 1.5 m/s

COPPIA MIN. DI AZIONAMENTO:
Min. torque actuation: 0.06 Nm

COPPIA MIN. PER APERTURA POSITIVA:
Min. torque positive opening operation: 0.25 Nm

LEGENDA Legenda

- APERTURA POSITIVA
Positive opening
- INIZIO APERTURA POSITIVA
Positive opening beginning
- ▶ PREMENDO
Pushing
- ◀ RILASCIANDO
Releasing



UNITA' DI CONTATTO Contact blocks	N°CATALOGO Catalogue n°	DIAGRAMMI CORSE Travel diagrams
C2 1NO+1NC+ 1NO+1NC	PS 251N	
C5 1NO+1NC	PS 551N	
C6 1NO+1NC	PS 651N	
C7 1NO+1NC	PS 751N	
C9 2NC	PS 951N	
C10 2NO	PS 1051N	
C14 2NC	PS 1451N	
C15 2NO	PS 1551N	
C20 1NO+2NC	PS 2051N	
C2 1NO+1NC+ 1NO+1NC	PS 252N	
C5 1NO+1NC	PS 552N	
C6 1NO+1NC	PS 652N	
C7 1NO+1NC	PS 752N	
C9 2NC	PS 952N	
C10 2NO	PS 1052N	
C14 2NC	PS 1452N	
C15 2NO	PS 1552N	
C20 1NO+2NC	PS 2052N	
C5 1NO+1NC	PS 553N	
C6 1NO+1NC	PS 653N	
C5 1NO+1NC	PS 542N	

A LEVA CON ROTELLA With roller lever

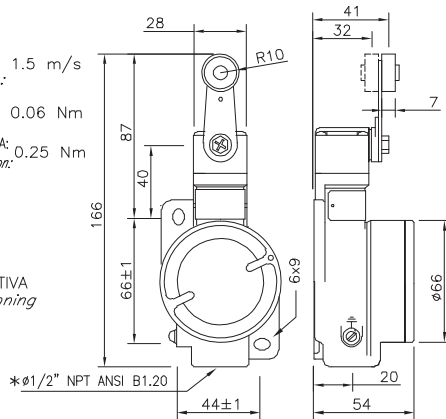
VELOCITA' MASSIMA:
CON CAMMA A 30°
Max speed with 30° cam: 1.5 m/s

COPPIA MIN. DI AZIONAMENTO:
Min. torque actuation: 0.06 Nm

COPPIA MIN. PER APERTURA POSITIVA:
Min. torque positive opening operation: 0.25 Nm

LEGENDA Legenda

- APERTURA POSITIVA
Positive opening
- INIZIO APERTURA POSITIVA
Positive opening beginning
- ▶ PREMENDO
Pushing
- ◀ RILASCIANDO
Releasing



A LEVA CON RULLO IN PORCELLANA With porcelain roller lever

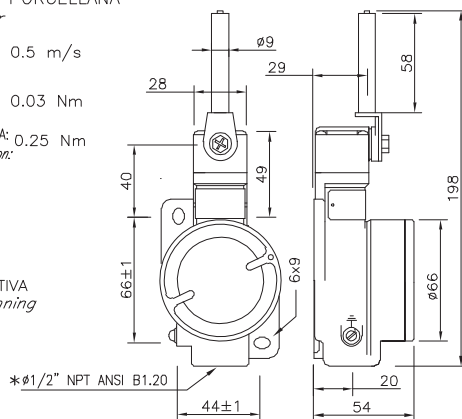
VELOCITA' MASSIMA:
Max speed: 0.5 m/s

COPPIA MIN. DI AZIONAMENTO:
Min. torque actuation: 0.03 Nm

COPPIA MIN. PER APERTURA POSITIVA:
Min. torque positive opening operation: 0.25 Nm

LEGENDA Legenda

- APERTURA POSITIVA
Positive opening
- INIZIO APERTURA POSITIVA
Positive opening beginning
- ▶ PREMENDO
Pushing
- ◀ RILASCIANDO
Releasing



CON LEVA A LIRA With lyra lever

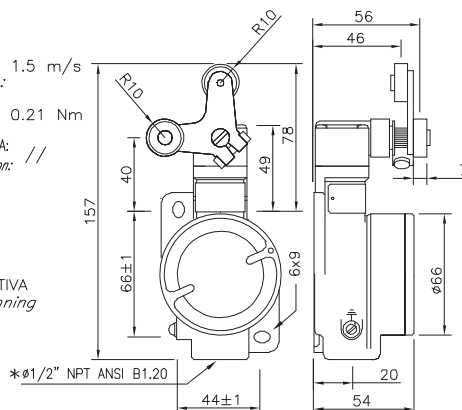
VELOCITA' MASSIMA:
CON CAMMA A 30°
Max speed with 30° cam: 1.5 m/s

COPPIA MIN. DI AZIONAMENTO:
Min. torque actuation: 0.21 Nm

COPPIA MIN. PER APERTURA POSITIVA:
Min. torque positive opening operation: //

LEGENDA Legenda

- APERTURA POSITIVA
Positive opening
- INIZIO APERTURA POSITIVA
Positive opening beginning
- ▶ PREMENDO
Pushing
- ◀ RILASCIANDO
Releasing

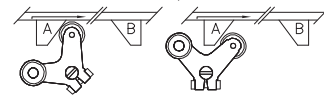


C5 1NO+1NC	PS 553N	
C6 1NO+1NC	PS 653N	

C5 1NO+1NC	PS 542N	
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FINECORSA A DUE POSIZIONI STABILI
Limit switch with two stable position

Leva a lyra a due piste
Double trak lyra lever



Escursione meccanica
Mechanical excursion

A richiesta
On request

PS 541N
Leva a lyra ad una pista
Single trak lyra lever

*IN ALTERNATIVA:
Alternative: M20x1.5 ISO 262

* I PRODOTTI CONTRASSEGNA TI SONO NORMALMENTE DISPONIBILI A MAGAZZINO
The marked products are normally available to store

A LEVA ALLUNGABILE CON ROTELLA

With roller extensible lever

VELOCITA' MASSIMA:
CON CAMMA A 30°
Max speed with 30° cam: 1.5 m/s

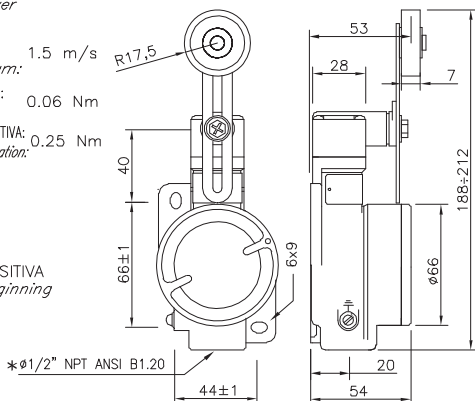
COPIA MIN. DI AZIONAMENTO:
Min. torque actuation: 0.06 Nm

COPIA MIN. PER APERTURA POSITIVA:
Min. torque positive opening operation: 0.25 Nm

LEGENDA

Legenda

- ➔ APERTURA POSITIVA
Positive opening
- INIZIO APERTURA POSITIVA
Positive opening beginning
- ▶ PREMENDO
Pushing
- ◀ RILASCIANDO
Releasing



A LEVA CON ROTELLA IN GOMMA

With rubber roller lever

VELOCITA' MASSIMA:
CON CAMMA A 30°
Max speed with 30° cam: 1.5 m/s

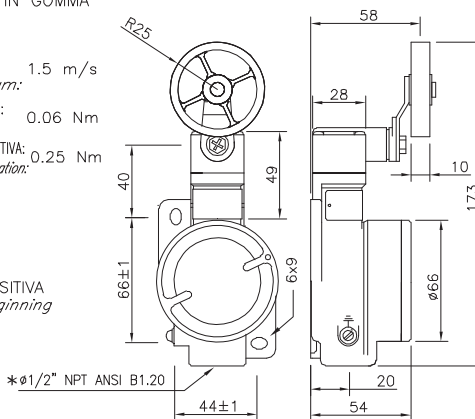
COPIA MIN. DI AZIONAMENTO:
Min. torque actuation: 0.06 Nm

COPIA MIN. PER APERTURA POSITIVA:
Min. torque positive opening operation: 0.25 Nm

LEGENDA

Legenda

- ➔ APERTURA POSITIVA
Positive opening
- INIZIO APERTURA POSITIVA
Positive opening beginning
- ▶ PREMENDO
Pushing
- ◀ RILASCIANDO
Releasing



A LEVA ALLUNGABILE CON ROTELLA IN GOMMA

With rubber roller extensible lever

VELOCITA' MASSIMA:
CON CAMMA A 30°
Max speed with 30° cam: 1.5 m/s

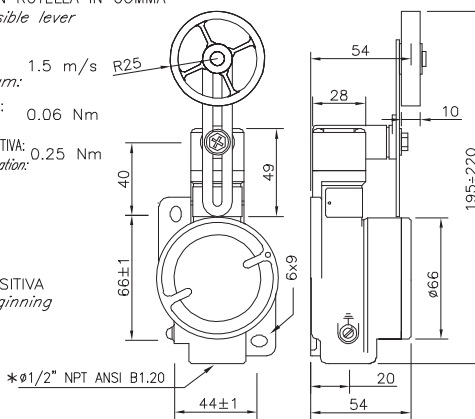
COPIA MIN. DI AZIONAMENTO:
Min. torque actuation: 0.06 Nm

COPIA MIN. PER APERTURA POSITIVA:
Min. torque positive opening operation: 0.25 Nm

LEGENDA

Legenda

- ➔ APERTURA POSITIVA
Positive opening
- INIZIO APERTURA POSITIVA
Positive opening beginning
- ▶ PREMENDO
Pushing
- ◀ RILASCIANDO
Releasing



A LEVA ALLUNGABILE CON ROTELLA IN GOMMA

With rubber roller extensible lever

VELOCITA' MASSIMA:
CON CAMMA A 30°
Max speed with 30° cam: 1.5 m/s

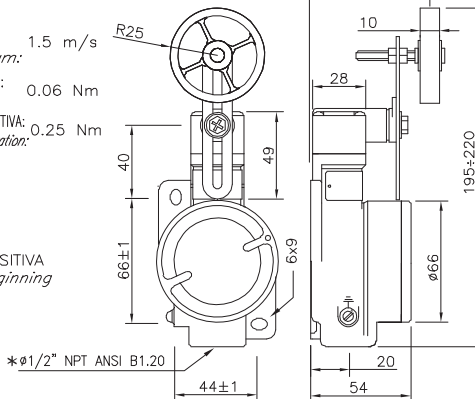
COPIA MIN. DI AZIONAMENTO:
Min. torque actuation: 0.06 Nm

COPIA MIN. PER APERTURA POSITIVA:
Min. torque positive opening operation: 0.25 Nm

LEGENDA

Legenda

- ➔ APERTURA POSITIVA
Positive opening
- INIZIO APERTURA POSITIVA
Positive opening beginning
- ▶ PREMENDO
Pushing
- ◀ RILASCIANDO
Releasing



*IN ALTERNATIVA:
Alternative: M20x1.5 ISO 262

UNITA' DI CONTATTO <i>Contact blocks</i>	N°CATALOGO <i>Catalogue n.</i>	DIAGRAMMI CORSE <i>Travel diagrams</i>
C2 1NO-1NC+ 1NO-1NC	PS 238EN	
C5 1NO+1NC	PS 538EN	
C6 1NO+1NC	PS 638EN	
C7 1NO+1NC	PS 738EN	
C9 2NC	PS 938EN	
C10 2NO	PS 1038EN	
C14 2NC	PS 1438EN	
C15 2NO	PS 1538EN	
C20 1NO+2NC	PS 2038EN	
C2 1NO-1NC+ 1NO-1NC	PS 238AN	
C5 1NO+1NC	PS 538AN	
C6 1NO+1NC	PS 638AN	
C7 1NO+1NC	PS 738AN	
C9 2NC	PS 938AN	
C10 2NO	PS 1038AN	
C14 2NC	PS 1438AN	
C15 2NO	PS 1538AN	
C20 1NO+2NC	PS 2038AN	
C2 1NO-1NC+ 1NO-1NC	PS 238BN	
C5 1NO+1NC	PS 538BN	
C6 1NO+1NC	PS 638BN	
C7 1NO+1NC	PS 738BN	
C9 2NC	PS 938BN	
C10 2NO	PS 1038BN	
C14 2NC	PS 1438BN	
C15 2NO	PS 1538BN	
C20 1NO+2NC	PS 2038BN	
C2 1NO-1NC+ 1NO-1NC	PS 238CN	
C5 1NO+1NC	PS 538CN	
C6 1NO+1NC	PS 638CN	
C7 1NO+1NC	PS 738CN	
C9 2NC	PS 938CN	
C10 2NO	PS 1038CN	
C14 2NC	PS 1438CN	
C15 2NO	PS 1538CN	
C20 1NO+2NC	PS 2038CN	

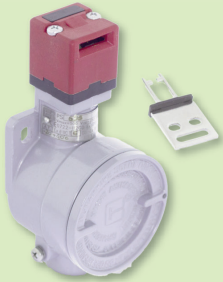
KEY-LOCK SAFETY SWITCHES with POSITIVE OPENING

series
PS

Protection	Gas	1-2	II2G	Ex db IIC T6÷T5 Gb
	Dusts	21-22	II2D	Ex tb IIIC T85°C÷T100°C Db

Degree of Protection	IP66/67
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Amb. Temp.	Standard Extended	-20°C	+40°C
		-50°C	+80°C



Entries Threading	NPT ANSI B1.20
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Material	Aluminum light alloy
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Painting	External epoxy RAL7000
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Standards and Certificates

Directive 2014/34/EU (ATEX)

**EN 60079-0 • EN 60079-1
EN 60079-31**

CE **BVI 13 ATEX 0083**

**IEC 60079-0 • IEC 60079-1
IEC 60079-31**

IECEx EPS 13.0033

- Ideal to control Gates, Protections, Carters and any moving mechanical parts.
- Stainless Steel operating key has to be fixed to the mobile part of the protection. The key is removed from the switch when opening the protection and a mechanism ensures the positive opening of the electric contact.
- Applicable to any type of protection (hinged, removable or sliding)
- Possibility to operate the switch with a key allowing the restart only by inserting the same key
- The switch with manual mechanical delay are used on machines where dangerous conditions continue for a limited time even after pressing the stop command of the machine (mechanical inertia of pulleys, belt saw, grinders, etc.)
- Electrical power or timers not required
- For any other information pls. see pages D13 and D14.

Options

- Stainless Steel version (see page I19).
- Cable entry with metric thread M20x1.5 (M).
- Orthogonal key.
- Jointed Key.

Information on available contacts: see pages D13 and D14.

Installation

- The safety circuit shall be connected to the NC contact 21-22 when the key is inserted.
- The safety switches must be mounted to the body of the machine while the key-lock is fixed to the protection.
- Safety switches with manual mechanical delay firmly lock the key, once installed. Turn the knob to release/remove the key. Since the early rounds of rotation the electrical contact is positively open, only after about 20 seconds, the key is released: for closing the knob must be rotated in reverse.
- The head may be positioned on any of the four sides of the switch just by removing the four fixing screws: this allows up to 8 different actuation directions (the head has two key entries). Switches with manual mechanical delay allow up to 32 different possible configurations as the head has two key entries and a release knob independently swiveled 90° x 90°.
- When the key is not inserted make sure that any dust and dirt do not obstruct its seat (use the protection cap).
- **Periodically verify the correct operation of the switch.**
- Fix the switch interposing a washer under fixing screws head.

Application on fences

When the switch is used to protect parts of machines physically accessible to people, to prevent the door or gate may accidentally close when the operator is inside, a padlock may be used at the appropriate hole on the key. The arc of the padlock shall be of 6 mm diameter minimum.

NOTES

To read the installation and maintenance instructions is recommended.

The temperature class T6/T85°C considers an Ambient Temperature (A.T.) extended up to +60°C, whereas, class T5/T100°C considers an A.T. extended up to +80°C.

[°] The insulating voltage is equal to 400 VAC / 500 VDC for C2 and C11 contacts.

(*) For A.T. up to +40°C the max surface temperature is 65°C reducing the number of operations to 600/h.

(**) As safety switches only those with symbol shall be used.

The safety circuit must always be connected to NC contacts (11-12 or 21-22). Exceed by 1.5 mm (25°) the gap between the contacts. Operate the switch with the indicated opening force.

Codifica d'Ordine

Key-lock safety switch with positive opening : PS 693N

Type	Contact unit	Actuator	Threading
PS	C6	93	N = NPT (N) M = metric (M)

Key-lock safety switch with manual mechanical delay and positive opening : PS 9R2M

Type	Contact unit	Actuator	Threading
PS	C9	R2	N = NPT (N) M = metric (M)



KEY-LOCK SAFETY SWITCHES with POSITIVE OPENING

series
PS

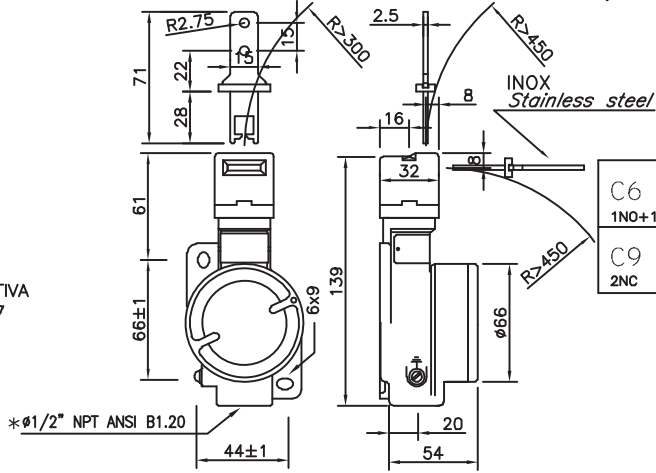
* I PRODOTTI CONTRASSEGNA TI SONO NORMALMENTE DISPONIBILI A MAGAZZINO
The marked products are normally available to store

UNITA' DI CONTATTO
Contact blocks

N'CATALOGO
Catalogue n°

DIAGRAMMI CORSE
Travel diagrams

A CHIAVE
With key

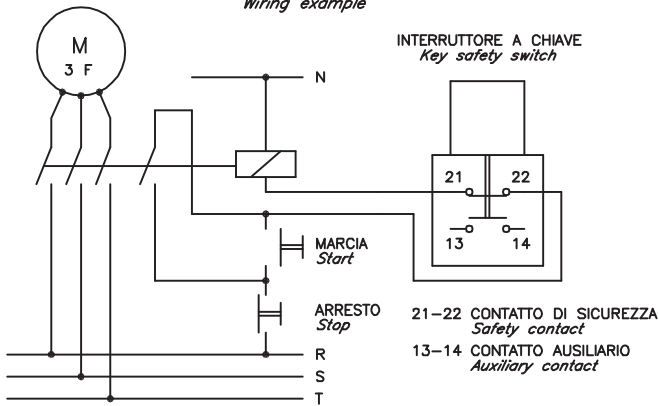


C6		PS 693N		0 4.7 7.2
1NO+1NC				7
C9		PS 993N		0 6.5 9
2NC				

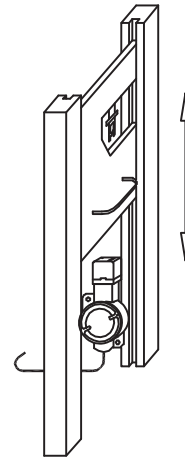
LEGENDA
Legenda

➔ APERTURA POSITIVA
Positive opening

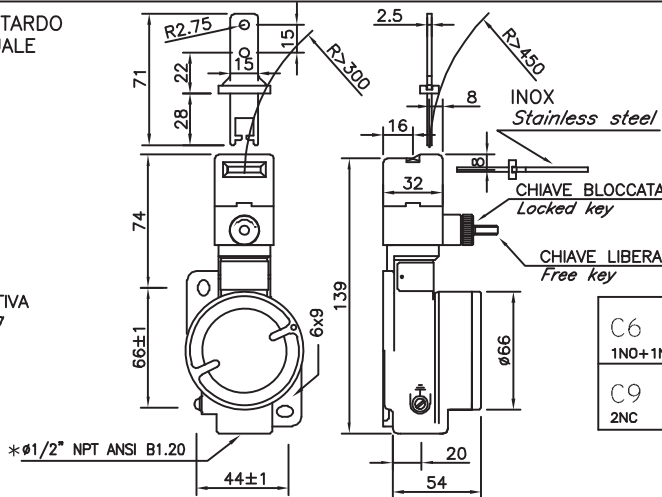
ESEMPIO DI COLLEGAMENTO
Wiring example



ESEMPIO DI APPLICAZIONE
Installation example



A CHIAVE CON RITARDO
MECCANICO MANUALE
With key manual
mechanical delay

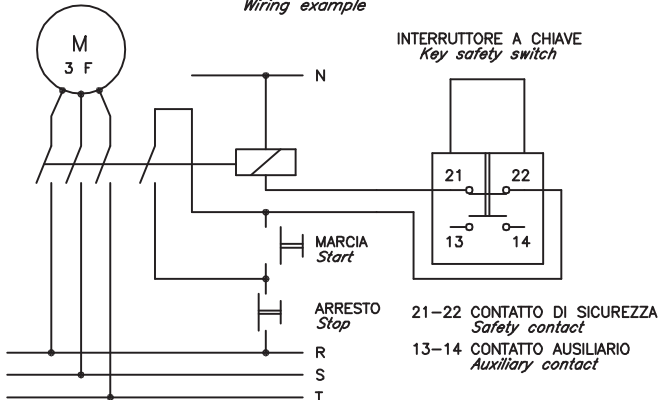


C6		PS 6R2N	
1NO+1NC			
C9		PS 9R2N	
2NC			

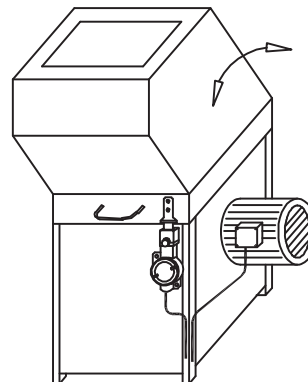
LEGENDA
Legenda

➔ APERTURA POSITIVA
Positive opening

ESEMPIO DI COLLEGAMENTO
Wiring example



ESEMPIO DI APPLICAZIONE
Installation example



*IN ALTERNATIVA:
Alternative: M20x1.5 ISO 262

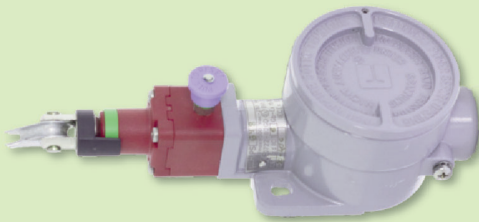
CABLE OPERATED SAFETY SWITCHES with POSITIVE OPENING

series
PS

Protection	Gas	1-2	II2G	Ex db IIC T6÷T5 Gb
	Dusts	Zone 21-22	II2D	Ex tb IIIC T85°C÷T100°C Db

Degree of Protection	IP66/67
----------------------	---------

Amb. Temp.	Standard Extended	-20°C	+40°C
		-50°C	+80°C



Entries Threading	NPT ANSI B1.20
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Material	Aluminum light alloy
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Painting	External epoxy RAL7000
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Standards and Certificates

Directive 2014/34/EU (ATEX)

**EN 60079-0 • EN 60079-1
EN 60079-31**

CE **BVI 13 ATEX 0083**

**IEC 60079-0 • IEC 60079-1
IEC 60079-31**

IECEx EPS 13.0033

- Ideal to control any moving mechanical parts especially conveyors. They make possible to stop the machine from any point of intervention by manually pulling the cable.
- Self-diagnostic for the correct operation of the unit by opening the contacts in case of cable loosening or breakage detection.
- The version with reset includes the indicator of correct tension of the cable as well as a mechanical indicator of the status of the contacts. Contacts remain open after the intervention even if the cable is released.
- Suitable for cables with free span up to 16 m and, with appropriate extensions, even beyond.
- For any other information pls. see pages D13 and D14.

Options

- Stainless Steel version (see page I19).

- Cable entry with metric thread M20x1.5 (M).

Information on available contacts: see pages D13 and D14.

NOTES

To read the installation and maintenance instructions is recommended.

The temperature class T6/T85°C considers an Ambient Temperature (A.T.) extended up to +60°C, whereas, class T5/T100°C considers an A.T. extended up to +80°C.

[?] The insulating voltage is equal to 400 VAC / 500 VDC for C2 and C11 contacts.

(*) For A.T. up to +40°C the max surface temperature is 65°C reducing the number of operations to 600/h.

(**) As safety switches only those with symbol shall be used.

The safety circuit must always be connected to NC contacts (11-12 or 21-22). Exceed by 1.5 mm (25°) the gap between the contacts. Operate the switch with the indicated opening force.

Installation

The switch is supplied with the following accessories:

- Plastic coated steel cable Ø5 mm lenght 6 m or 16 m;
- 1 tie rod for tensioning the cable;
- 2 terminals;
- 2 jumpers.

- The safety circuit shall be connected to NC contact (11-12 or 21-22).
- For tensioning the cable allow a stroke of about 8 mm to the cursor of the switch.
- Use original accessories only, otherwise the switch performances are not guaranteed.
- **Periodically verify the correct operation of the switch.**

Order coding

Safety switch with tie rod for cable and positive opening PS 680M

Type	Contact unit	Actuator	Threading
PS	C6	80	N = NPT (N) M = metric (M)

Safety switch with tie rod for cable and positive opening with reset: PS 984N

Type	Contact unit	Actuator	Threading
PS	C9	84 = right 83 = left	N = NPT (N) M = metric (M)

Safety switch with tie rod for vertical cable and positive opening with reset: PS 678M

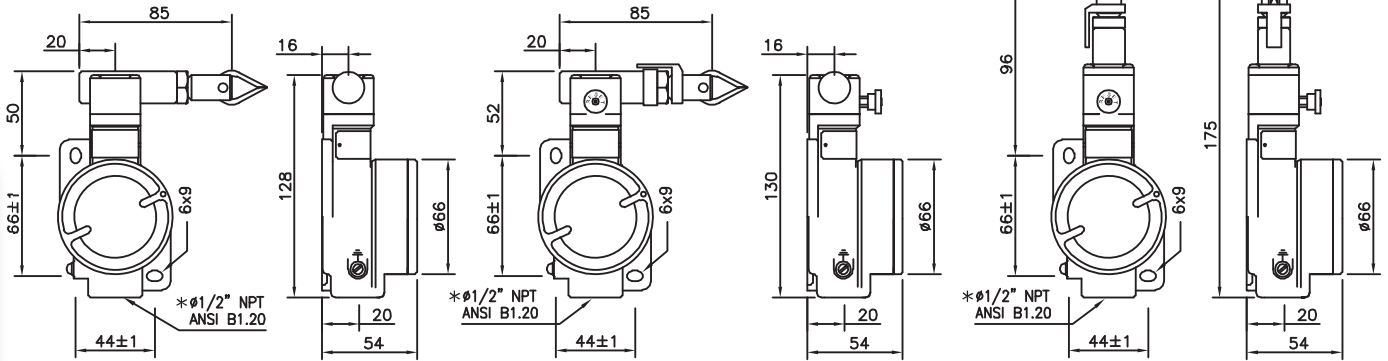
Type	Contact unit	Actuator	Threading
PS	C6	78	N = NPT (N) M = metric (M)

* I PRODOTTI CONTRASSEGNA TI SONO NORMALMENTE DISPONIBILI A MAGAZZINO
The marked products are normally available to store

CON TIRANTE PER FUNE
With connecting rod for rope

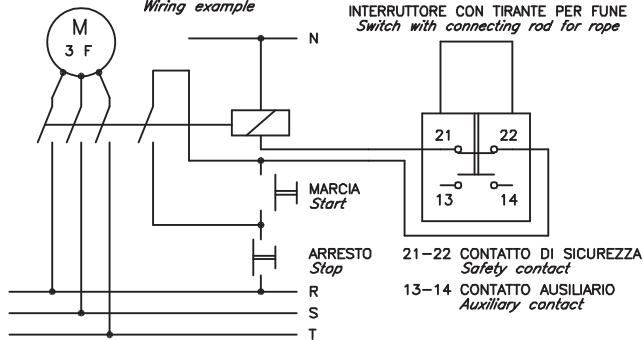
CON TIRANTE PER FUNE DESTRA (684N-984N) E SINISTRA (683N-983N)
CON RESET
With connecting rod reset rope on the right (684N-984N) and left (683N-983N)

CON TIRANTE PER FUNE VERTICALE E RESET
With connecting rod reset rope on the vertical
(Lungh. max 6 o 12 m)
(max length 6 or 12 m)



UNITA' DI CONTATTO Contact blocks	N° CATALOGO Catalogue n°	DIAGRAMMI CORSE Travel diagrams	N° CATALOGO Catalogue n°	DIAGRAMMI CORSE Travel diagrams	N° CATALOGO Catalogue n°	DIAGRAMMI CORSE Travel diagrams
C6 1NO+1NC	PS 680N*		PS 684N* PS 683N*		PS 678N*	
C9 2NC	PS 980N		PS 984N* PS 983N*		PS 978N	

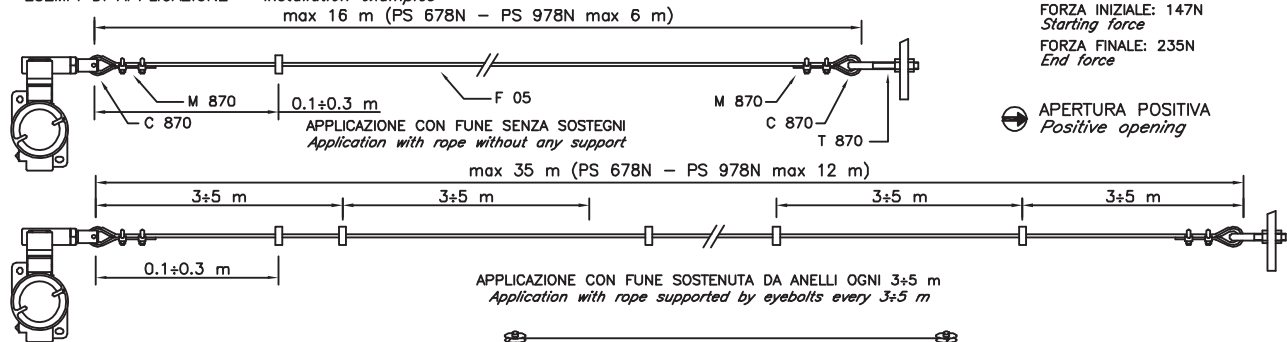
ESEMPIO DI COLLEGAMENTO
Wiring example



ACCESSORI - Accessories

- Art. T 870 TIRANTE PER METTERE IN TENSIONE LA FUNE IN MODO CORRETTO (Pz. 1).
Stay bolt suitable for setting the rope in tension correctly (pcs. 1).
- Art. M 870 MORSETTO (Pz. 2 o 4).
Rope clamp (pcs. 2 or 4).
- Art. C 870 CAVALLOTTO (Pz. 1).
Thimble (pcs. 1).
- Art. F 05 FUNE IN ACCIAIO PLASTIFICATA ROSSA Ø5 mm (in rotoli da 100 m).
Red plasticized steel rope Ø5 mm (coils of 100 m).

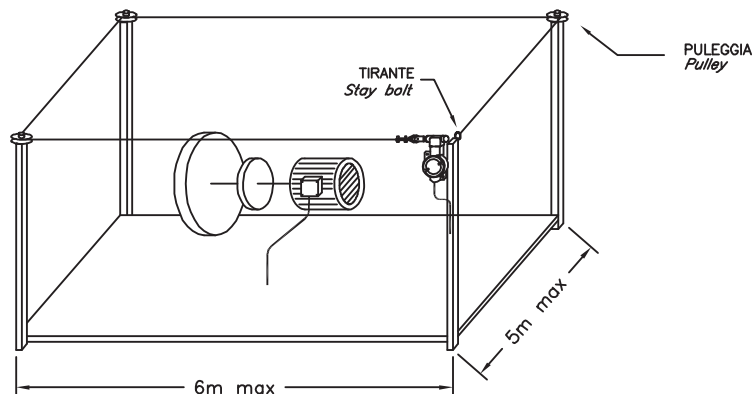
ESEMPI DI APPLICAZIONE - Installation examples



FORZA INIZIALE: 147N
Starting force
FORZA FINALE: 235N
End force

APERTURA POSITIVA
Positive opening

*IN ALTERNATIVA:
Alternative: M20x1.5 ISO 262



BUOYANT OPERATED LIMIT SWITCHES

series
PS

Protection	Gas	1-2	II2G	Ex db IIC T6÷T5 Gb
	Dusts	21-22	II2D	Ex tb IIIC T85°C÷T100°C Db

Degree of Protection
IP66/67

Amb. Temp.	Standard	-20°C	+40°C
	Extended	-50°C	+80°C



Entries Threading
NPT ANSI B1.20

Material
Aluminum light alloy

Painting
External epoxy RAL7000

Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1
EN 60079-31

CE BVI 13 ATEX 0083

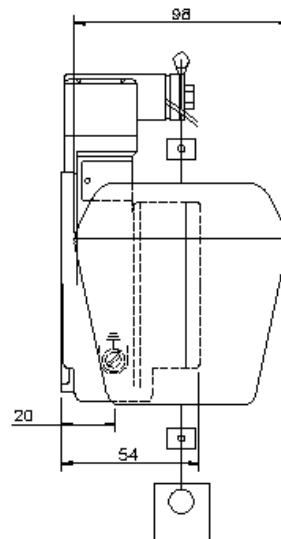
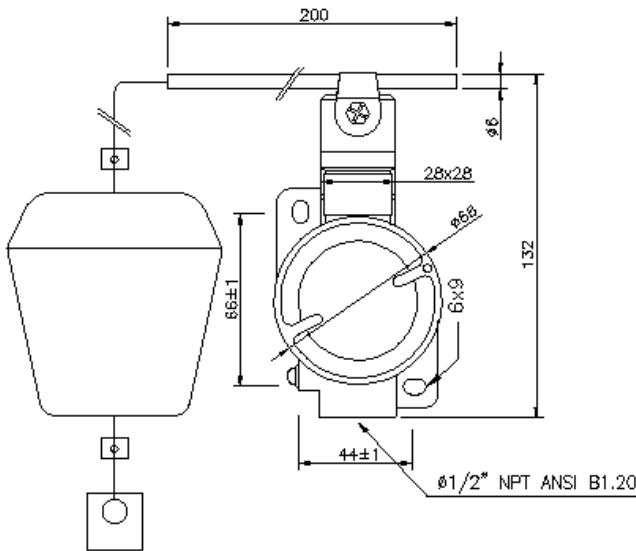
IEC 60079-0 • IEC 60079-1
IEC 60079-31

IECEx EPS 13.0033

- Buoyant in Moplen, Cable in Nylon (2 m) and counterweight in Zinc plated Steel
- The limit switch may be used in any position and the mechanical actuator rotated by 90° x 90°.
- Tags and screws in Stainless Steel.
- Information on available contacts: see pages D13 and D14.

Opzioni

- Stainless Steel version (see page I19).
- Double counterweight.
- Cable entry with metric thread M20x1,5 (M).
- Stainless Steel AISI 304 counterweight/s and buoyant.



NOTES

To read the installation and maintenance instructions is recommended.

The temperature class T6/T85°C considers an Ambient Temperature (A.T.) extended up to +60°C, whereas class T5/T100°C considers an A.T. extended up to +80°C.

(*) For A.T. up to +40°C the max surface temperature is 65°C reducing the number of operations to 600/h.

Use screw-terminals for wiring. Max section wires 2.5 mm².

CHARACTERISTICS of the CONTACT ELEMENTS

MODEL	CONTACT TYPE	CONTACT	CURRENT (A)	VOLTAGE (V)
PS 10AG	Single Pole	1NO+1NC	I _{max} =10 A	V _{max} =220 V AC/DC
PS 20AG	Double Pole	2NO+2NC	I _{max} =10 A	V _{max} =220 V AC/DC

- The rod can be adjusted in length and tilt.
- The switch is normally supplied with actuator acting in both directions (actuator with float left or right) to set one sole direction loose the screws of the turret beneath which there is a knurled ring: by pressing and rotating it 90° to the right or left the desired direction of actuation is set. Restore the turret.
- Periodically verify the correct operation of the switch.

Example: PS 10AG N

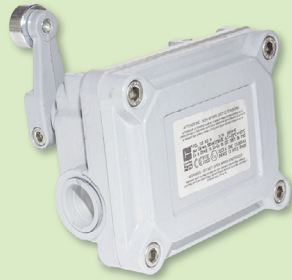
Order Coding

Type PS	Contact Unit 10 = Single Pole 20 = Double Pole	Actuator AG	Threading N = NPT (N) M = metric (M)
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LIMIT SWITCHES

series
FCL

Protection	Gas	Zone	1-2	II2G	Ex db IIB+H ₂ T6 Gb	Degree of Protection	IP65	Amb. Temp.	Standard	-25°C	+60°C
	Dusts	Zone	21-22	II2D	Ex tb IIIC T85°C Db						



Entries Threading
NPT ANSI B1.20

Material
Aluminum light alloy

Painting
External epoxy RAL7000

Standards and Certificates



Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1
EN 60079-31



INERIS 13 ATEX 0040X



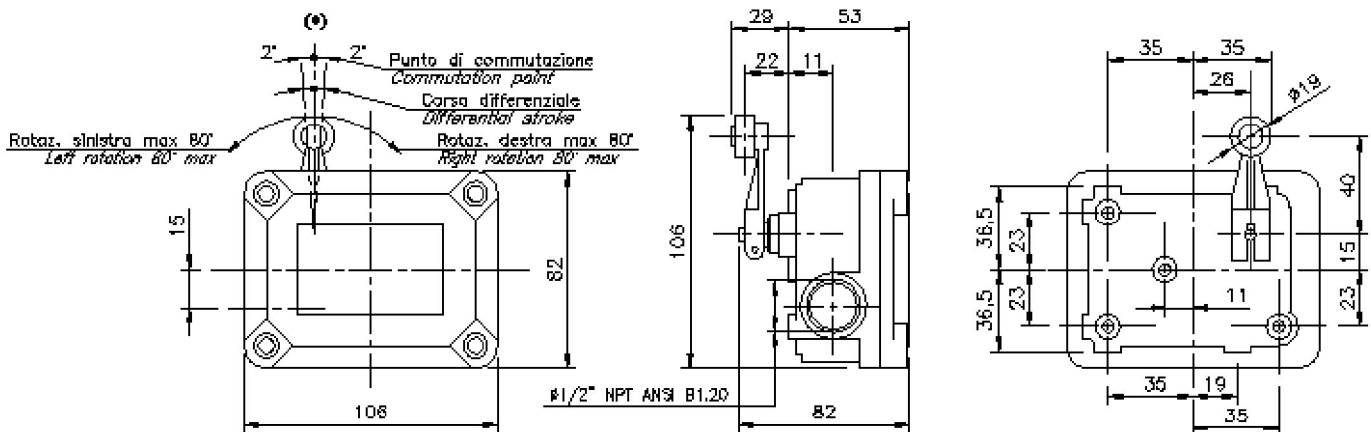
IEC 60079-0 • IEC 60079-1
IEC 60079-31

IECEx INE 13.0054X

- Stainless Steel shaft over a brass bush.
- Lever may be positioned along 360°.
- The lever may be operated either clockwise or counterclockwise.
- External screws in Stainless Steel.
- Single or double pole contact element.

Options

- Cable entry with metric thread M20x1,5 (M).



Code	Lever Actuation	Contact Element	Weight (g)
FCL 110 RS	Counterclockwise rotation	Single Pole Switch	10 A - 250 V AC 0.4 A - 125 V DC 5 A - 30 V DC
FCL 110 RD	Clockwise rotation		
FCL 205 RS	Counterclockwise rotation	Double Pole Switch	5 A - 250 V AC 0.4 A - 125 V DC 5A - 30 V DC
FCL 205 RD	Clockwise rotation		

Example: FCL 110 RD M

Order Coding

Type

FCL

Contact Element

110 = Single Pole
205 = Double Pole



Lever Actuation

RS = Counterclockwise
RD = Clockwise

Threading

N = NPT (N)
M = metric (M)

INSTALLATION OF SINGLE SWITCHES WITH SAFETY FUNCTIONS

- Use **only** switches with the symbol .
- Connect the safety circuit to **the NC normally closed contacts (11-12, 21-22 or 31-32)**.
- **The NO normally open contacts (13-14, 23-24, 33-34)** should be used only for signalling; these contacts are not to be connected with the safety circuit. However, if in the same protection two or more switches are used, it is possible to connect the contact NO to the safety circuit. In this case at least one of the two switches must have a positive opening and a normally closed contact NC (11-12, 21-22 or 31-32) must be connected to the safety circuit.
- Actuate the switch **at least up to the positive opening travel** shown in the travel diagrams with symbol .
- Operate the switch **at least with the positive opening force** indicated.
- The fixing of the device must occur in compliance with the standard EN ISO 14119.

Whenever the machine guard is opened and during the whole opening travel, **the switch must be pressed directly** (fig. 1) or **through a rigid connection** (fig. 2).

Only in this way the positive opening of the NC normally closed contacts (11-12, 21-22, 31-32) is guaranteed.

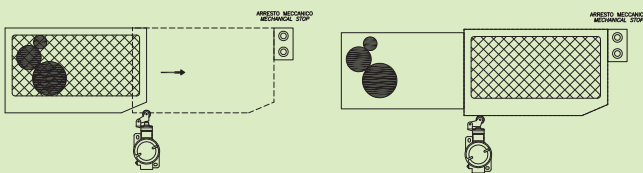


Fig. 1

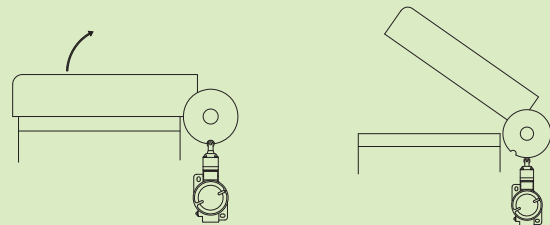


Fig. 2

In safety applications with only one switch for each guard, the switches **must never be activated by a release** (fig. 3) or **through a non rigid connection** (i.e. by a spring).

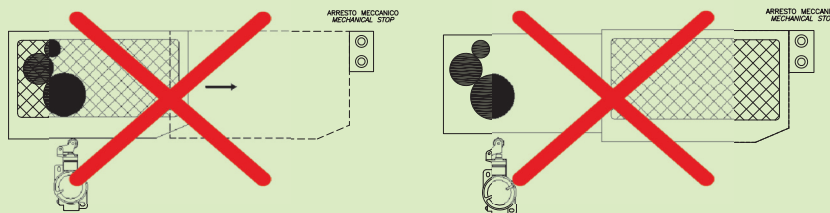
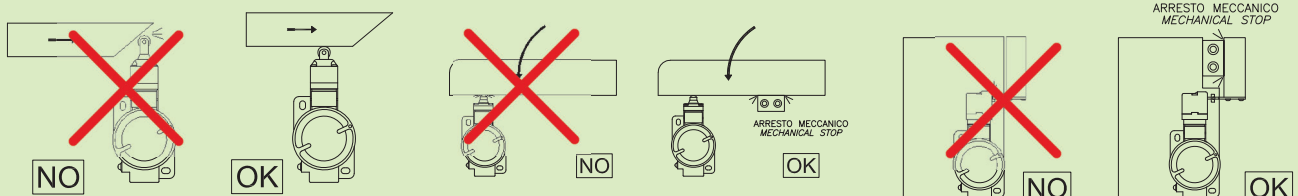


Fig. 3

MECHANICAL STOP

Limit switches must not be used as mechanical stop.

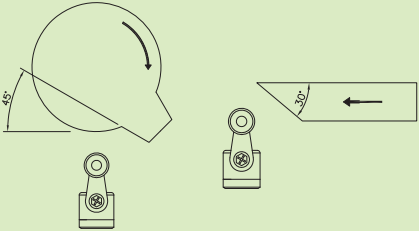
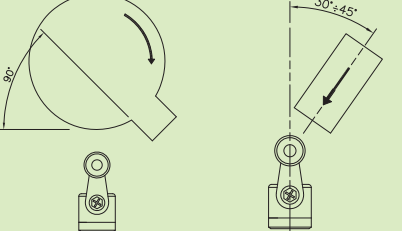
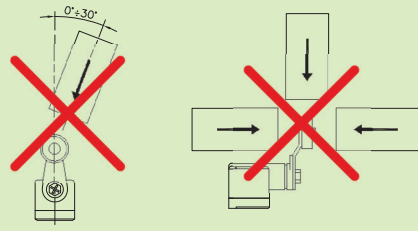
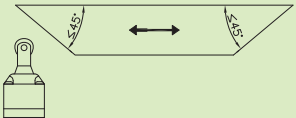
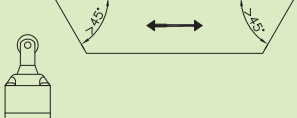
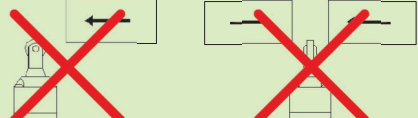

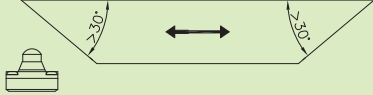
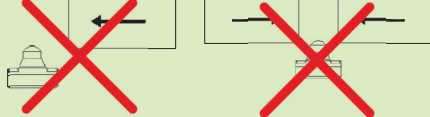


The actuator must not exceed the max. travel as indicated in the travel diagrams.

The guard must not make a mechanical stop on the switch head.

The actuator must not strike directly against the switch head

ACTUATION MODES

Recommended application	Application to avoid Possible application but with mechanical stress for the switch higher than expected, mechanical endurance is not guaranteed	Forbidden application
		
		
		

General prescriptions

- The installation must be performed only by qualified staff aware of the regulations in force in the country of installation.
- The device must be used exactly as supplied, properly fixed to the machine and wired.
- It is not allowed to disassemble the product and use only parts of the same; it is prohibited to modify the device.
- Failure to comply with these requirements or incorrect use during operation can lead to the damage of the device and the loss of the function performed by the device itself. This entails the cessation of the warranty on the item and relieves the manufacturer of any liability.

Device utilization

- Before use, check if the national rules provide for further requirements in addition to those given here.
- Before installation, make sure the device is not damaged in any part.
- Do not use the device as mechanical stop of the actuator.
- Do not apply excessive force to the device once it has reached the end of its actuating travel.
- Do not exceed the maximum actuation travel.
- Do not stress the device with bending and torsion.
- Do not disassemble or try to repair the device, in case of defect or fault replace the whole device.
- In case the device is deformed or damaged replace it completely. There is no guarantee of working for a deformed or damage device.

Wiring and installation

- The installation has to be made by qualified staff.
- Limit the use of these devices to control functions.
- Keep the electrical load below the value specified by the respective utilization category.
- Turn off the power before access to the contacts, also during the wiring.
- Do not paint or varnish the devices.
- Do not bend or deform the device during installation.
- Do not use the device as a support for other parts of the machine (e.g. wireways, conduits, etc.).
- Comply with the minimum and maximum sections of electrical conductors admitted by terminals (if present).
- Do not introduce polluting agents into the device as: talc, lubricants for cable sliding, powder separating agents for multipolar cables, small strands of copper and other pollutants that could affect the proper functioning of the device.
- Verify that the electrical cables, terminals, cable numbering systems and any other part do not obstruct the cover from closing correctly or if pressed between them do not damage or compress the internal contact block.
- After the installation and before commissioning of the machine, verify: the correct operation of the device and all its parts, the correct wiring and tightening of all screws and that the actuating travel of the actuator is shorter than the maximum travel allowed by the device.
- After installation, periodically check for correct device operation.

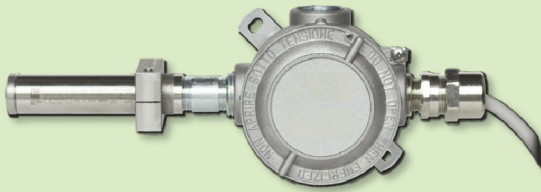
MAGNETIC PROXIMITY SWITCHES

series
IM

Protection	Gas	Zone	1-2	II2G	Ex db IIC T6÷T5 Gb
	Dusts		21-22	II2D	Ex tb IIIC T85°C÷T100°C Db

Degree of Protection	IP66
----------------------	------

Amb. Temp.	Standard	-20°C	+40°C
	Extended	-50°C	+80°C



Entries Threading	NPT ANSI B1.20
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Material	Stainless Steel AISI 316
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Painting	N.A.
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Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1
EN 60079-31

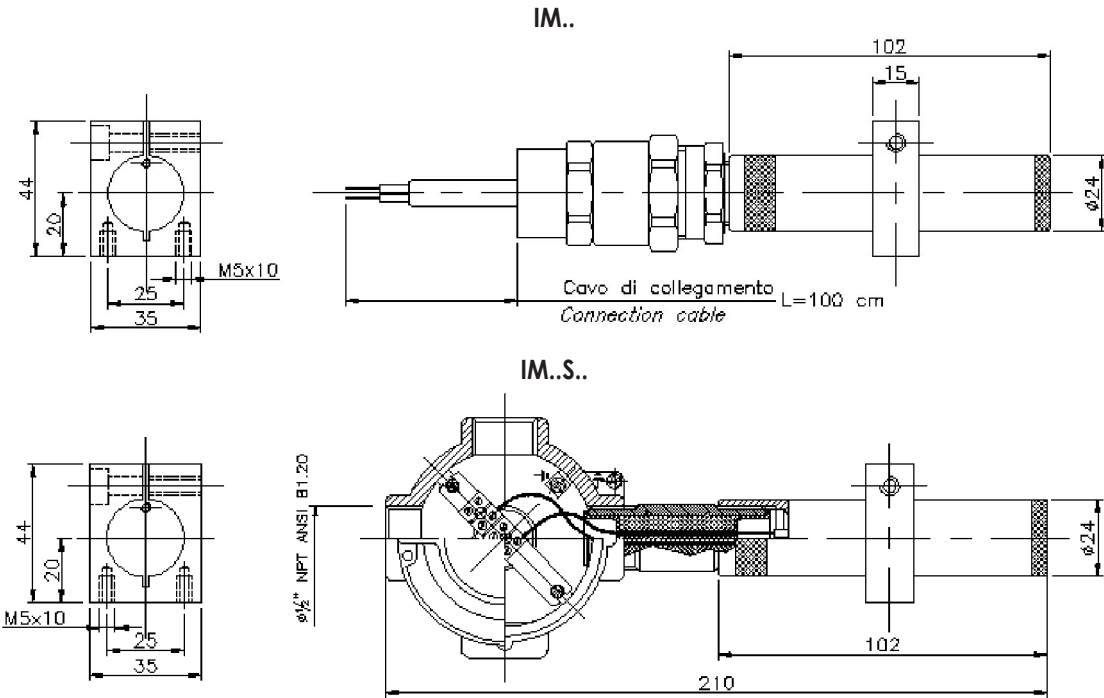
CE BVI 13 ATEX 0085X

IECEx IEC 60079-0 • IEC 60079-1
IEC 60079-31

IECEx EPS 13.0037X

- Ideal for any contactless control.
- Peculiar for applications in critical environments dominated by the presence of oils, greases, liquids, dusts, etc.
- Indispensable to detect and/or count any items passing by at remarkable speed.
- Not subject to any mechanical wear and thus, compared to traditional switches, a longer operating life is guaranteed.
- The switch actuated by a permanent magnet series MG (see page D30).
- Fixing bracket in Stainless Steel AISI 316L.
- Cable gland with female bushing 1/2" NPT ANSI B1.20 and 1 m cable included.
- Available version provided with junction box (SX 14 see page B3) and sealing nipple.

- Options**
- Bistable contact (Available only with 1NO contact).
 - Cable gland with female bushing M20x1,5.
 - Stainless steel AISI 316L cable gland.
 - Cable with length other than standard.
 - Junction box and sealing nipple in Stainless Steel.



NOTES

To read the installation and maintenance instructions is recommended.

The temperature class T6/T85°C considers an Ambient Temperature (A.T.) extended up to +60°C, whereas class T5/T100°C considers an A.T. extended up to +80°C.

Contact	Scheme	Box	Weight (g)
1 switchin		Stainless steel	370
1 Normally open		Stainless steel	370

Example: IM/U

Order Coding

Type	Material (cable gland)	Junction Box	Contact	Threading
IM	.. = Nickel Plated Brass I = Stainless Steel	SX 14 = presence .. = absence	U = Monostable deviation AB = Bistable deviation	.. = NPT (N) M = metric (M)

MAGNETIC PROXIMITY SWITCHES

series
IM

Contact elements Technical Data:

• Contact type	Switching (NO)	• Switching hysteresis	~5 mm
• Contact material	Rhodium	• Set point accuracy	0.01 mm
• Max switching power	40 VA	• Axial vibration resistance	100 gr
• Max switching voltage	250 VDC - 220 VAC	• Contact mechanical life	10 ⁸ operations
• Max current peak	1 A	• Storage temperature	-10 °C ÷ +80 °C
• Contact resistance	0.075 Ω	• Connecting cable	2x0.75 mm ² ÷ 3x0.75 mm ²
• Contact vibration time	0.3 ms		
• Switching frequency	100 Hz		

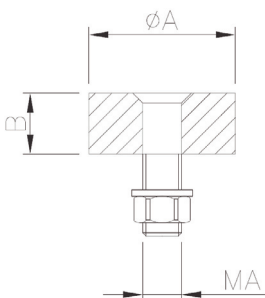
Instructions

- The enclosure must neither be distorted nor subjected to shocks since the contact element may be damaged.
- Magnetic proximity switches are sensitive to high current loads.
- As the elasticity of the contact shells is minimum, a small welding effect can cause the bonding of the contact blades.
- The opening of the contacts is very fast so that, by switching off inductive loads such as coils of relays, solenoid valves, electromagnets, etc.. high voltages are determined by self-induction. To prevent the sticking of contacts the allowed max. electrical values (power, voltage and current peak) must never be exceeded. Pay attention to the insertion current peak. The charging currents of the capacitors must be limited by appropriate pre-resistors (i.e. incandescent lamps insertion demands 3-4 times the nominal current value; consequently contacts rated for 100 W can pilot incandescent lamps lower than 25 W).
- The control of inductive loads (relays, solenoid valves, etc.) makes essential the spark suppression by inserting in parallel:
 - in d.c. a diode
 - in a.c.. an RC circuit (resistance + capacitor)
- For the switching contacts the color code is as follows:
 - brown-black: contact NO;
 - brown-blue: contact NC.

PERMANENT MAGNETS

series
MG

- Used to operate the magnetic proximity switches series IM...
- Available in three different sizes.



PERMANENT MAGNETS					
Code	A	B	MA	Actuation Distance	Weight (g)
MG1	20	6	M3x16	3 ÷ 7	10
MG2	20	10	M4x20	5 ÷ 12	15
MG3	31	15	M5x20	12 ÷ 25	50

Instructions

- Permanent magnets must be mounted by countersunk screws in non-magnetic materials such as brass, aluminum, stainless steel or plastic.
- Larger switch control distance is reached when the permanent magnet is fixed directly on an iron support.
- Embedding the permanent magnet in a mass of iron causes a short circuit of the magnetic field; it is necessary provide for a distance of 1-3 millimeters from the iron surface. This type of mounting significantly reduces the operating distance of magnetic switch.
- The permanent magnets featuring north polarity are painted red.



OPTICAL SIGNALLERS - ACOUSTIC SIGNALLERS










In all working, manufacturing and industrial areas signaling (mainly optical) and alarm systems (mainly acoustic) exist to warn people for any latent, imminent or in progress dangers.

Even more so, these systems must be provided in classified areas with danger of explosion to effectively warn everyone of the actual state of looming danger. For these contingencies, and

also to set the most basic safety criteria, COELBO has made available to its customers a range of well-articulated "field" signallers, certified in accordance with ATEX Directive, normally triggered by alarm equipment and/or sensors specific to the nature of occurring hazards (presence of fumes, gases and toxic atmospheres, fire, radiations, accidents, malfunctions, etc.).

The variety of the range, normally available from stock, meets almost all the most challenging demands for hazard warnings.

Although designed for a virtually unlimited duration, to guarantee the operational safety and certified compatibility, purchasing any spare parts directly from COELBO is recommended.

	Series	Page
OPTICAL SIGNALLERS	 EV..50/F	E03
OPTICAL SIGNALLERS for AIR NAVIGATION	 LP	E04
ACOUSTIC SIGNALLERS	 ETH	E05
ACOUSTIC SIGNALLERS	 ETR	E05
ACOUSTIC SIGNALLERS	 ETS 30	E06
ACOUSTIC SIGNALLERS	 ETS 60	E07
ACOUSTIC SIGNALLERS	 ETS 60/114	E08
ACOUSTIC SIGNALLERS	 ETH 12	E09
ACOUSTIC SIGNALLERS	 ETH 20	E10

NOTES:

E



OPTICAL SIGNALLERS

series
EV..50/F

Protection	Gas	1-2	II2G	Ex d IIC T6 Gb
	Dusts	21-22	II2D	Ex tb IIC T85°C Db

Degree of Protection	IP65
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Amb. Temp.	Standard	-20°C	+40°C
	Extended	-20°C	+60°C



Entries Threading	EN 10226 (Gk)
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Painting	External epoxy RAL7000
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Standards and Certificates



Directive 2014/34/EU (ATEX)

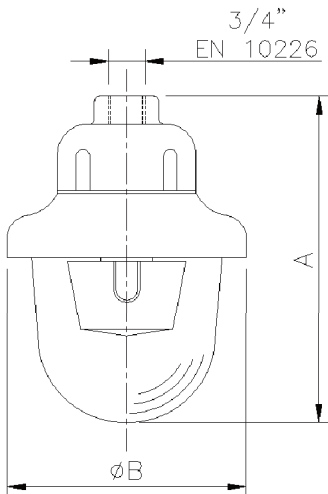
EN 60079-0 • EN 60079-1
EN 60079-31

CE INERIS 01 ATEX 0072X

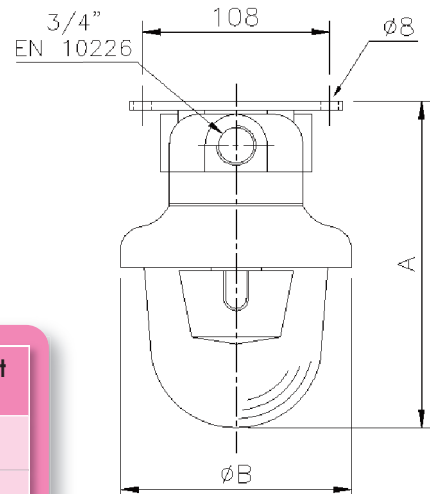
Material	<ul style="list-style-type: none"> Body in Aluminum light alloy. Safety globe: tempered borosilicate.
----------	---

- Reduced dimensions by virtue of the fixture type EVA 50; they are normally associated to alarm and signalling systems, either fixed or mobile.
- Complete with blinking Xenon flash lamp.
- Connection E27.
- Power Supply 12V / 24V d.c./ a.c..
- Continuous duty.

- Options**
- Cage in Stainless Steel AISI 304.
 - Painting RAL 3000.
 - Power Supply 110 or 230 VAC.
 - Signalling colors (Light Blue, White, Yellow, Orange, Red, Green).
 - Cable entries NPT ANSI B1.20.1 (N) or Metric ISO 262 (M).



EVA 50/F



EVC 50/F

Code	A (mm)	ØB (mm)	Cable Entries	Weight (kg)
EVA 50/F	200	135	1 x 3/4"	1,4
EVC 50/F	200	135	2 x 3/4"	1,5

Electric Characteristics							
Voltage Code	Voltage (V)	Frequency (Hz)	Current (mA)	Power (W)	Thermal emission (J)	Blinking (cycles/min)	Duty
1	12 ÷ 24 VAC/DC	---	90 ÷ 130	1 ÷ 3	6	75	continuous
3	110 VAC	50 / 60	15	1,8	6	110	continuous
4	230 V	50 / 60	20	4,5	6	110	continuous

Example: EVA 50/FR3

Order Coding

Type	Installation mode	Lamp	Color	Voltage
EV	A = suspension C = ceiling	F = Flashing	A = Light Blue B = White G = Yellow O = Orange R = Red V = Green	1 = 12/24 V 2 = 48 V 3 = 110V 4 = 230 V

OPTICAL SIGNALLERS for AIR NAVIGATION

series
LP

Protection	Gas	1-2	II2G	Ex d IIC T6÷T3 Gb
	Dusts	n.a.	n.a.	n.a.

Degree of Protection	IP65
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Amb. Temp.	Standard	-20°C	+40°C
	Extended	-20°C	+60°C



Entries Threading	EN 10226 (Gk)
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Painting	External epoxy RAL7000
----------	------------------------

Standards and Certificates



Directive 2014/34/EU (ATEX)

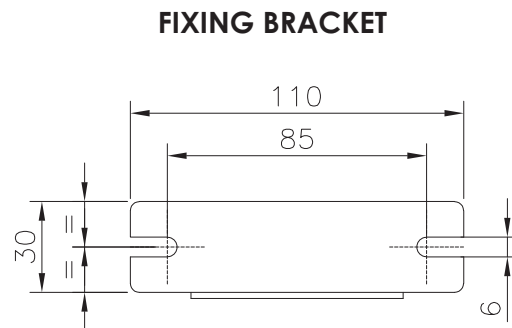
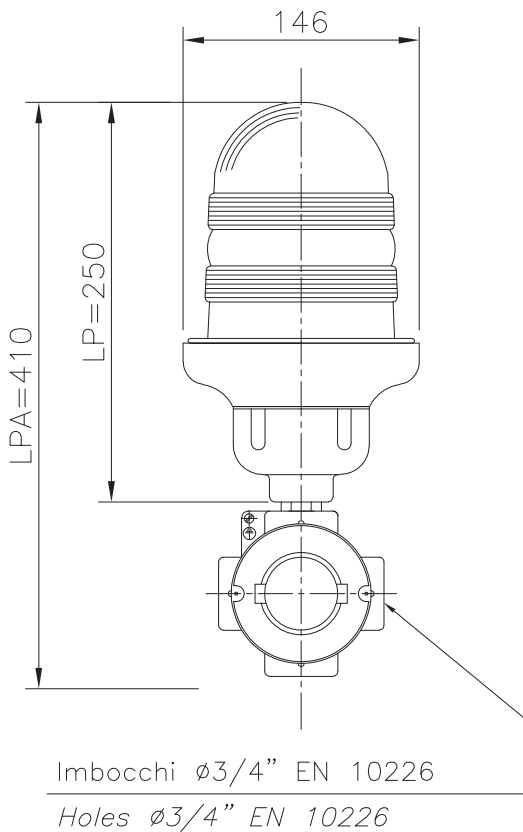
EN 60079-0 • EN 60079-1

CE INERIS 01 ATEX 0072X

- Material**
- Body in Aluminum light alloy.
 - Safety globe in tempered borosilicate.
 - Red colored polycarbonate external protection.

- Recommended for installation on top of towers and any other building for signalling to aircraft.
- Lamp Holder E27.

- Options**
- Cable entries threaded NPT ANSI.B1.20.1 (N) or Metric ISO 965 (M).
 - External Painting: RAL 3000.
 - Various types of lamps (fluorescent, incandescence, halogen, LED, multiLED, XENON 6J).(*)
 - External protection of different colors (Light Blue, White, Yellow, Orange, Red, Green)



NOTES

(*) With the incandescent or halogen lamps the optical signaller takes the temperature class T3 and T4, respectively, and it's suitable for ambient temperature up to +40°C. With all the other lamps types the optical signaller takes T6 (multi-LED), T5 (LED) and T4 (fluorescent) temperature class with extended ambient temperature up to +60°C.

Code	Installation	Max Power (W)	Voltage (V)	Weight (kg)
LP 50	Suspended	100	12 ÷ 240	1,7
LPA 50	With mounting box	100	12 ÷ 240	2,3
LPC 50	On flat surface	100	12 ÷ 240	2,2

ACOUSTIC SIGNALLERS

series
ETH

Protection	Gas	Zone	1-2	II2G	Ex d IIB T6÷T5
	Dusts		n.a.	n.a.	n.a.

Degree of Protection	IP55
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Amb. Temp.	Standard	-20°C	+40°C
	Extended	-50°C	+60°C



Entries Threading	EN 10226 (Gk)
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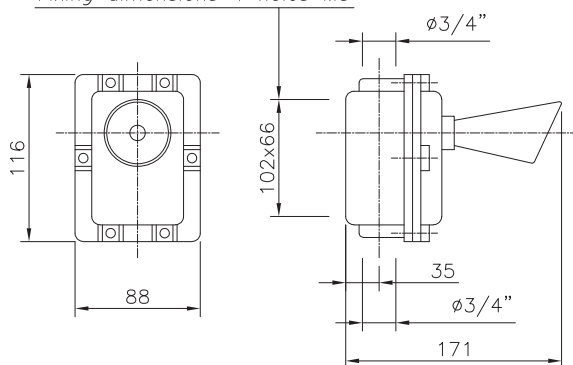
Material	Aluminum light alloy
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Painting	External epoxy RAL7000
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Standards and Certificates	Directive 2014/34/EU (ATEX)
	EN 60079-0 • EN 60079-1
	CEC 10 ATEX 073

- Vibrating membrane signaller with loudspeaker.
- Continuous duty.

Dim. di fissaggio 4 fori M5
Fixing dimensions 4 holes M5



Code	Voltage (V c.a.)	Power (VA)	Sound Intensity dB(2m)	Weight (kg)
ETH 01	12	35	95÷110	2,2
ETH 1	24	115	95÷110	2,2
ETH 2	48	110	95÷110	2,2
ETH 3	110	70	95÷110	2,2
ETH 4	220	75	95÷110	2,2

NOTES

- The acoustic signallers series ETH are suitable only for AC voltages.
- The temperature Class T6 is related to an Ambient Temperature (A.T.) up to +40°C, while Class T5 to an A.T. extended up to +60°C.

ACOUSTIC SIGNALLERS

series
ETR

Protection	Gas	Zone	1-2	II2G	Ex d IIB T6÷T5
	Dusts		n.a.	n.a.	n.a.

Degree of Protection	IP55
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Amb. Temp.	Standard	-20°C	+40°C
	Extended	-50°C	+60°C



Entries Threading	EN 10226 (Gk)
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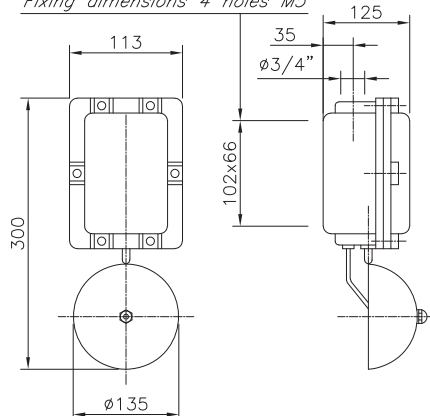
Material	Aluminum light alloy
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Painting	External epoxy RAL7000
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Standards and Certificates	Directive 2014/34/EU (ATEX)
	EN 60079-0 • EN 60079-1
	CEC 10 ATEX 073

- Bell type signalling.
- Continuous duty.

Dim. di fissaggio 4 fori M5
Fixing dimensions 4 holes M5



Code	Voltage (V c.a.)	Power (VA)	Sound Intensity dB(2m)	Weight (kg)
ETR 12	12	35	90÷105	2,5
ETR 24	24	55	90÷105	2,5
ETR 48	48	70	90÷105	2,5
ETR 110	110	40	90÷105	2,5
ETR 220	220	40	90÷105	2,5

NOTE

- The acoustic signallers series ETR are suitable only for AC voltages.
- The temperature Class T6 is related to an Ambient Temperature (A.T.) up to +40°C, while Class T5 to an A.T. extended up to +60°C.

ACOUSTIC SIGNALLERS

series
ETS 30

Protection	Gas	Zone	1-2	II2G	Ex d IIC T6 Gb
	Dusts	Zone	n.a.	n.a.	Ex tb IIIC T85°C Db

Degree of Protection	IP66
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Amb. Temp.	Standard	-20°C	+40°C
	Extended	-50°C	+50°C



Enables Threading	EN 10226 (Gk)
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Material	Aluminum light alloy
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Painting	External epoxyvinyl RAL 3000
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Standards and Certificates

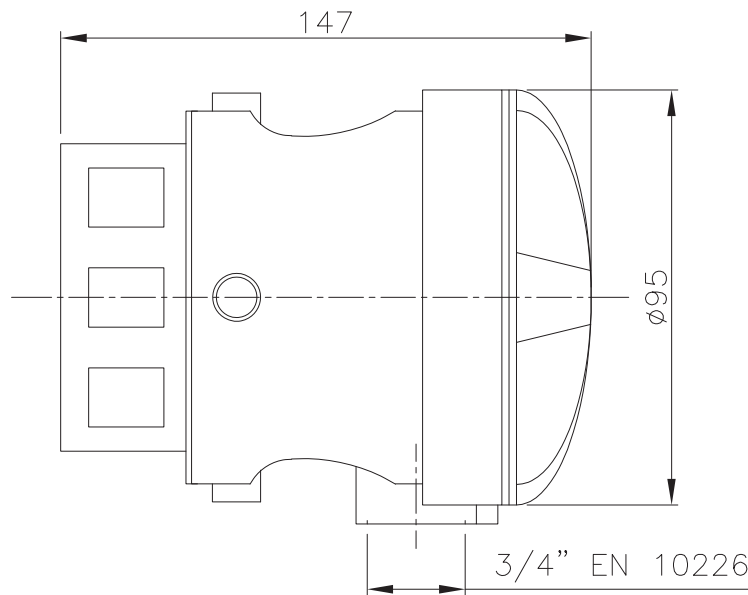
Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1
EN 60079-31

CE ISseP 08 ATEX 004 X

- Specific for potentially explosive atmospheres (chemical plants and refineries, pumping stations, painting plants, silos and movement of wheat) and/or anywhere there may be the presence of dust.
- The dimensions particularly limited and the possibility of fastening by bracket in four different positions (at 90° along the longitudinal axis) allow the maximum installation flexibility.
- Intermittent duty S3 ON 1 min - 10 min OFF, according to EN 60034-1.
- External screws in Stainless Steel AISI 304.

- Options**
- Versions in Stainless Steel AISI 316L or Zinc plated cast iron EN-GJL-200 (*)
 - Threading NPT ANSI.B1.20.1 (N) or Metric ISO 262 (M).
 - Other colors.
 - Mounting bracket for installation.



NOTES

(*) For the versions in Stainless Steel and Cast Iron the installation of the siren in mines is allowed and the protection mode is as follows:
 IM2 Ex d I
 II2G
 Ex d IIC T6 Gb
 II2D
 Ex tb IIIC T85°C Db

Code	Voltage (V)	Power (W)	Sound characteristics		Weight (kg)
			Frequency (Hz)	Sound Intensity (dB/m)	
ETS 30/01	12 AC/DC	34	1400	100	1,50
ETS 30/1	24 AC/DC	39	1500	102	1,50
ETS 30/2	48 AC/DC	39	1500	102	1,50
ETS 30/3	110 AC/DC	50	1500	100	1,50
ETS 30/4	230 AC/DC	50	1600	102	1,50

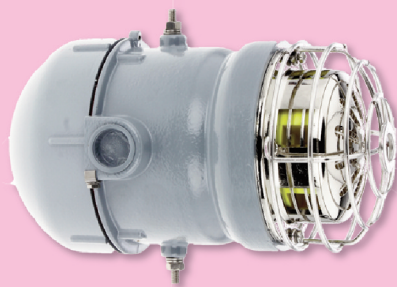
ACOUSTIC SIGNALLERS

series
ETS 60

Protection	Gas	1-2	II2G	Ex d IIC T6
	Dusts	n.a.	n.a.	n.a.

Degree of Protection	IP65
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Amb. Temp.	Standard	-20°C	+40°C
	Extended	n.a.	n.a.



Entries Threading	EN 10226 (Gk)
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Material	Aluminum light alloy
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Painting	External epoxy RAL7000
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Standards and Certificates

Directive 2014/34/EU (ATEX)

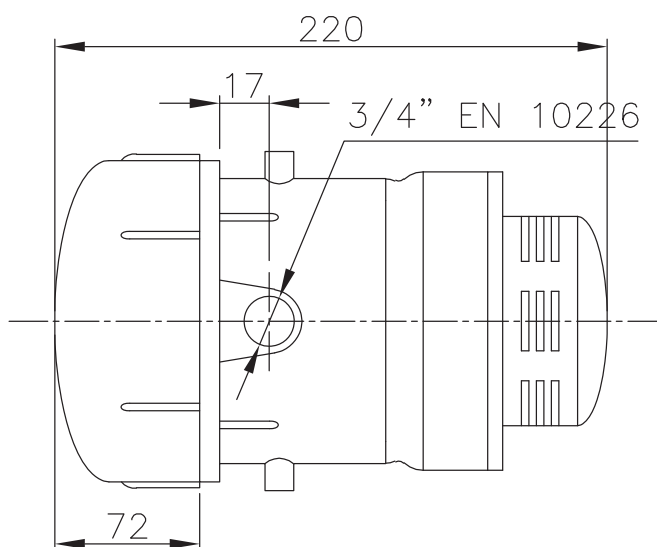
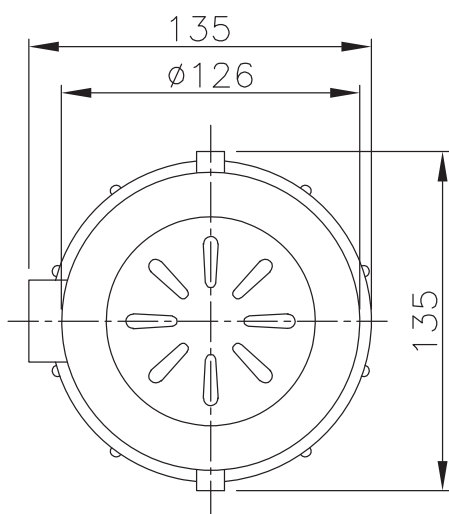
EN 60079-0 • EN 60079-1
EN 61241-0 • EN 61241-1

CE INERIS 02 ATEX 0001

- Specific for potentially explosive atmospheres (chemical plants and refineries, pumping stations, painting plants, silos and movement of wheat) and/or anywhere there may be the presence of dust.
- Intermittent duty S3 ON 1 min - 10 min OFF, according to EN 60034-1.
- External screws in Stainless Steel AISI 304.
- Protecting Cage included.

Options

- Threading NPT ANSI.B1.20.1 (N) or Metric ISO 262 (M).
- Other colors.
- Mounting bracket for installation.



Code	Voltage (V)	Power (W)	Sound characteristics		Weight (kg)
			Frequency (Hz)	Sound Intensity (dB/m)	
ETS 60/01	12 AC/DC	130	1150	109	2,30
ETS 60/1	24 AC/DC	130	1250	109	2,30
ETS 60/2	48 AC/DC	130	1300	109	2,30
ETS 60/3	110 AC/DC	130	1300	109	2,30
ETS 60/4	230 AC/DC	130	1300	109	2,30

ACOUSTIC SIGNALLERS (SIREN)

series
ETS 60 114

Protection	Gas	Zone	1-2	II2G	Ex d IIC T6
	Dusts	Zone	21-22.	II2D	Ex tD A21 T85°C

Degree of Protection	IP65
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Amb. Temp.	Standard	-20°C	+40°C



Entries Threading	EN 10226 (Gk)
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Material	Aluminum light alloy
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Painting	External epoxy RAL7000
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Standards and Certificates

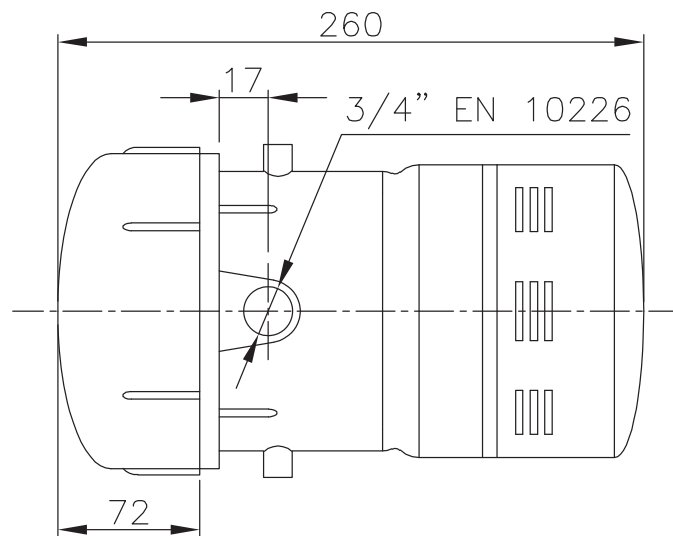
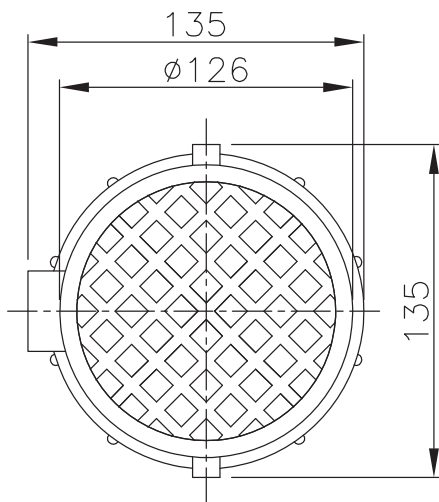
Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1
EN 61241-0 • EN 61241-1

CE INERIS 02 ATEX 0001

- Specific for potentially explosive atmospheres (chemical plants and refineries, pumping stations, painting plants, silos and movement of wheat) and/or anywhere there may be the presence of dust.
- For their strong power they are most used where there is a significant background noise.
- Intermittent duty S3 ON 1 min - 10 min OFF, according to EN 60034-1.
- External screws in Stainless Steel AISI 304.

Options	- Threading NPT ANSI.B1.20.1 (N) or Metric ISO 262 (M).	- Mounting bracket for installation.
	- Other colors.	



Code	Voltage (V)	Power (W)	Sound characteristics		Weight (kg)
			Frequency (Hz)	Sound Intensity (dB/m)	
ETS 60 114/01	12 AC/DC	140	650	114	2,30
ETS 60 114/1	24 AC/DC	140	650	114	2,30
ETS 60 114/3	110 AC	200	650	114	2,30
ETS 60 114/4	230 AC	200	650	114	2,30

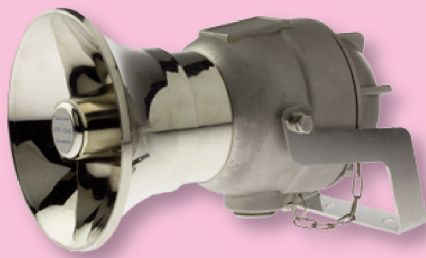
ACOUSTIC SIGNALLERS

series
ETH 12

Protection	Gas	1-2	II2G	Ex d IIC T6 Gb
	Dusts	21-22	II2D	Ex tb IIIC T85°C Db

Degree of Protection	IP65
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Amb. Temp.	Standard	-20°C	+40°C
	Extended	-20°C	+55°C



Entries Threading	EN 10226 (Gk)
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Material	Aluminum light alloy
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Painting	External epoxy RAL7000
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Standards and Certificates

Directive 2014/34/EU (ATEX)

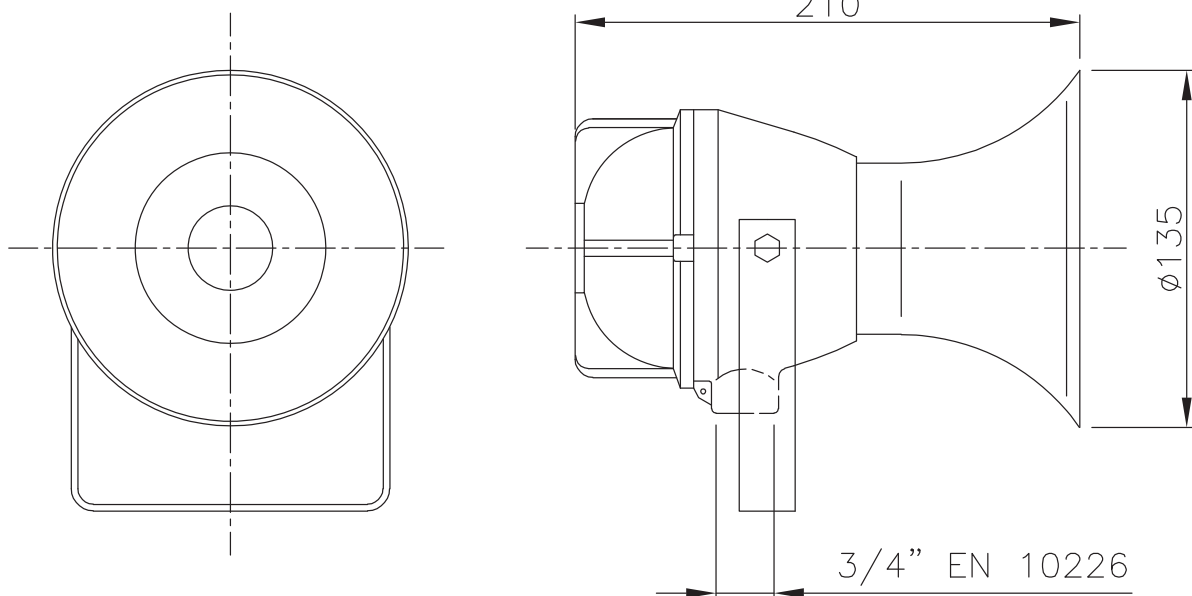
EN 60079-0 • EN 60079-1
EN 60079-31

CE INERIS 02 ATEX 0074

- Specific for Acoustic alarm in closed ambients with low background noise.
- 32 selectable sounds.
- Continuous duty.
- External screws in Stainless Steel AISI 304.

Options

- Threading NPT ANSI.B1.20.1 (N) or Metric ISO 262 (M).
- Other colors.
- Fixing bracket.
- Other power supplies (48 VDC., 48 VAC., 110 VDC).



Code	Voltage (V)	Power (W)	Sound characteristics		Sound selection	Weight (kg)
			Frequency (Hz)	dB/m		
ETH 12MD/41	12÷24 AC/DC	4	400÷1600	102	Bi-tone YELP	1,5
ETH 12MD/43	110 AC	4	400÷1600	106	WAIL	1,5
ETH 12MD/44	230 AC	4	400÷1600	106	INTERMITTENT FIXED TONE	1,5

ACOUSTIC SIGNALLERS

series
ETH 20

Protection	Gas	Zone	1-2	II2G	Ex d IIC o IIB+H ₂ T3/T4 Gb
	Dusts	Zone	21-22.	II2D	Ex tb III T150°C/T130°C Db

Degree of Protection	IP66
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Amb. Temp.	Standard	-20°C	+40°C



Entires Threading	EN 10226 (Gk)
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Material	Aluminum light alloy
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Painting	External epoxy RAL7000
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Standards and Certificates



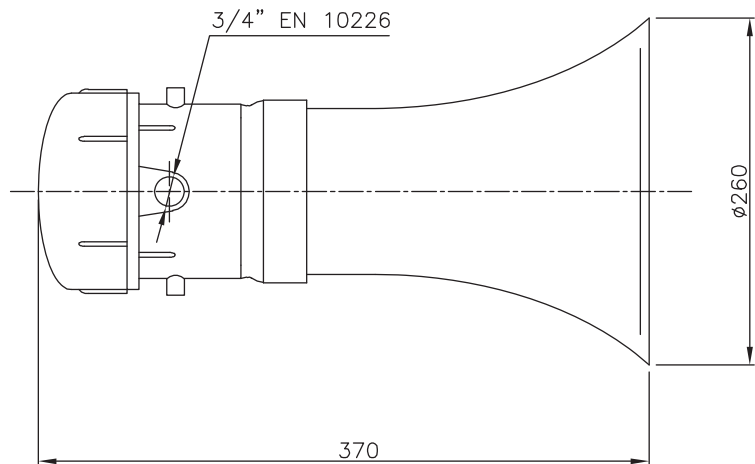
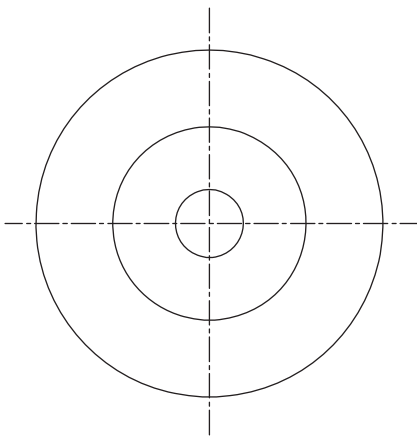
Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1
EN 60079-31

CE | ISSEP 11 ATEX 040X

- Specific for alarm signaling in potentially explosive atmospheres in ambients featuring significant background noise.
- 32 selectable sounds.
- Continuous duty.
- External screws in Stainless Steel AISI 304.

- Options**
- Threading NPT ANSI.B1.20.1 (N) or Metric ISO 262 (M).
 - Altri colori.
 - Staffa di supporto con fori di fissaggio
 - Diverse tensioni di alimentazione (48 V c.a. 48 V c.c., 110 V c.c.).



Code	Voltage (V)	Power (W)	Sound characteristics		Sound selection	Weight (kg)
			Frequency (Hz)	dB/m		
ETH 20MD101	12÷24 AC/DC	19	440÷1600	112	Bi-tone	3,7
ETH 20MD103	110 AC	19	440÷1600	112	YELP WAIL	3,7
ETH 20MD104	230 AC	19	440÷1600	112	INTERMITTENT FIXED TONE	3,7



GROUNDING CLAMPS - THERMOSTATS - SOCKETS & PLUGS

This section contains devices of different nature and purpose but all designed to observe the most stringent security criteria enabling anyone to operate in hazardous areas classified for the danger of explosion.

The most significant example is represented by the COELBO explosionproof Grounding Clamps, designed, despite their apparent simplicity and practicality, to discharge to ground any static electricity from all types of metal structures, but, more often, from vehicles used for the transport of goods, gas and hazardous liquids.









Hence the need to protect people and equipment by connecting these structures and

vehicles with COELBO explosionproof clamps, prior any operations of loading/unloading of those substances which could result in explosive mixtures, even in areas not classified (remember, surprisingly for someone, that grain and food powders are included).

The series of explosionproof thermostats described in this section is particularly suitable for permanent installations in the field as part of systems to control, supervising and alarming temperatures either ambient (perhaps associated with air conditioning systems) and/or process. In principle, COELBO Thermostats are made of two essential components: the

first ensures the temperature detection through conventional probes (obviously certified according to ATEX Directive) and the latter, typically electric - based on the change of state of electrical contacts - well known and appreciated by the international market in its standard execution ("General Purpose"), depending on the functions to be implemented within the automation or safety strategies.

Although designed for a virtually unlimited duration, to guarantee the operational safety and certified compatibility, purchasing any spare parts directly from COELBO is recommended.

	Series	Page
GROUNDING CLAMPS	 PTA 10	F03
GROUNDING CLAMPS	 ISEO 1	F04
GROUNDING CLAMPS with ELECTRICAL CONTROL	 DMTB	F05
AMBIENT THERMOSTATS	 TA	F06
CONTROL THERMOSTATS	 TR	F07
SAFETY THERMOSTATS	 TS	F08
SOCKETS	 FSQ	F09
PLUGS	 BP	F10



NOTES:

F

GROUNDING CLAMPS

series
PTA 10

Protection	Gas	1-2	II2G	Ex db IIC T6÷T5 Gb
	Dusts	21-22	II2D	Ex tb IIIC T85°C÷T100°C Db

Degree of Protection
IP66/67

Amb. Temp.	Standard	-20°C	+40°C
	Extended	-50°C	+80°C



Material
Sleeve in Polyamide.
Anchor hook in Stainless Steel
AISI 304.
Contact Spring in Brass.

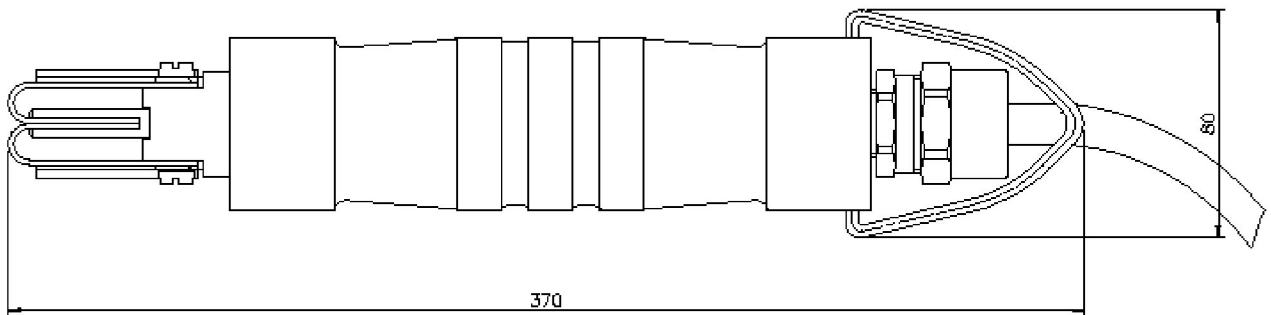
Standards and Certificates	Directive 2014/34/EU (ATEX)
	EN 60079-0 • EN 60079-1 EN 60079-31
	CE BVI 14 ATEX 0011
IECEx	IEC 60079-0 • IEC 60079-1 IEC 60079-31
	IECEx EPS 14.0030X

- Indispensable whenever it is required the temporary grounding of tank trucks or tankers during transfer either of liquids or hazardous substances.
- The fastening is secured by two brass springs of great strength.

Options

- Stainless steel AISI 316L cable gland.

- Cable gland with female bushing 1/2" NPT (N).



Insulation Voltage	Gripping capacity	Max Current	Cable Section	Weight (kg)
3000 V	0.5 mm ÷ 3 mm	10 A	6 - 10 - 16 mm ²	1

NOTES

To read the installation and maintenance instructions is recommended.

The temperature class T6/T85°C takes into account an extended Ambient Temperature (A.T.) from -50°C to +60°C; whereas the temperature class T5/T100°C of an extended A.T. from -50°C to +80°C.

GROUNDING CLAMPS

series
ISEO I

Protection	Gas	Zone	1-2	II2G	Ex d IIC T6 Gb
	Dusts	Zone	21-22	II2D	Ex tb IIIC T85°C Db


Degree of Protection	IP65
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Amb. Temp.	Standard		-20°C		+55°C
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Material	Aluminum. Contact tips in Carbonitrided steel.
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Standards and Certificates



Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1
EN 61241-0 • EN 61241-1

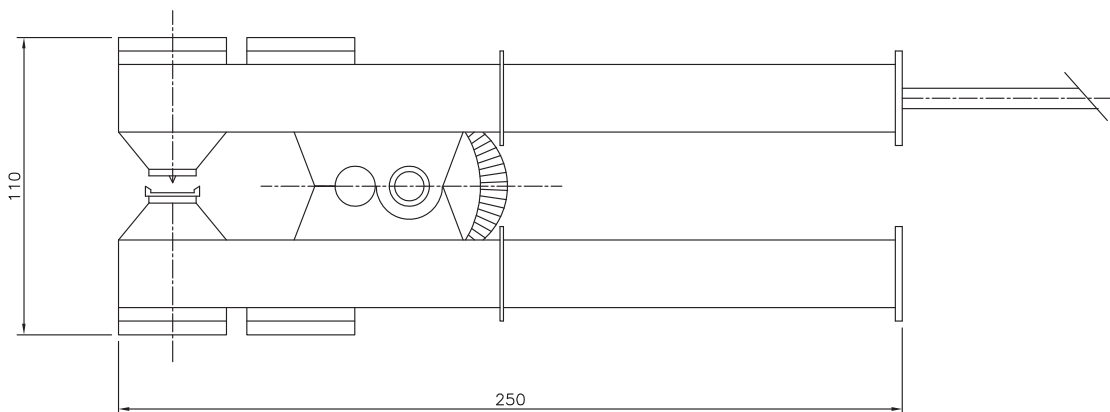
CE | CESI 03 ATEX 101X

- Normally supplied with 11 m of special high flexibility and tenacity cable of 6 mm² section.
- Recommended for grounding of tanks, drums, etc..
- Equipped with tearingproof junction between the cable of the user and the one of the clamp.

- The electrical continuity is ensured by the carbonitrided steel contact tips which make a firm connection to any foothold having a thickness between 2 and 20 mm.

Options - Cable length as per customer specification.

- Available ISEO 2 provided with 3x3 mm² cables of 11 m lenght.



Insulation Voltage	Gripping capacity	Max Current	Cable Section	Weight (kg)
3000 V	2 mm ÷ 20 mm	10 A	4.0 ÷ 6.0 mm ²	0.7

NOTES

Check daily the sliding of the crimping rod within the body of the clamp. Keep the coupling clean and lubricated with silicone spray. This is necessary to ensure grounding while making sure that any disruptive discharges occur in the inner chamber, purposely isolated, and not in the external environment.

For correct operation of the clamp it is recommended a monthly check of the crimping plugs, subject to wear; this ensures a perfect contact with the terminal which are linked to.

Check the integrity of the electrical cable to the ground terminal in the vicinity of the clamp itself; verify the electrical continuity (at least once a month).

For use in potentially explosive atmospheres caused by dusts the user must provide a regular cleaning to limit the formation of layers of dust.

GROUNDING CLAMPS with ELECTRICAL CONTROL

series
DMTB 20R

Protection	Gas	Zona	1-2	II2G	Ex d[ia] IIB+H2 T6 Gb
	Dust	Zona	21-22	II2GD	Ex tb IICT180°C=T130°C Db


Degree of Protection
IP65/IP66

Amb. Temp.	Standard		-20°C		+40°C
	Extended		-50°C		+60°C



Material
Light Alloy Aluminium
Carbo-nitrided Steel Contact Tips.

Standards and Certificates



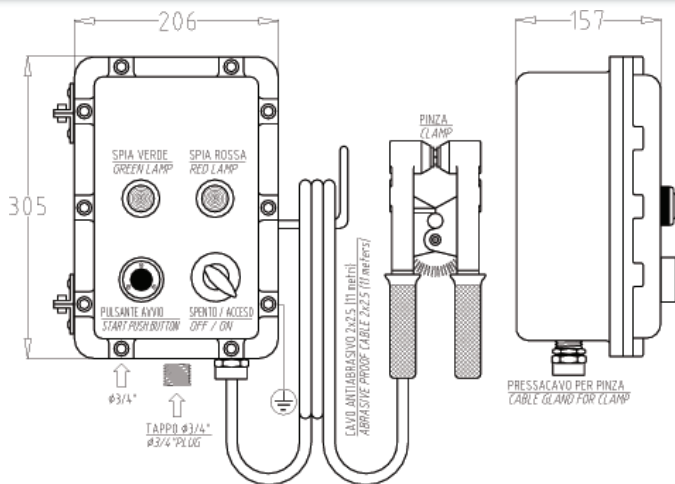
Directive 2014/34/EU
EN 60079-0 • EN 60079-1

CE | CEC 10ATEX0036

- Normally supplied complete with 11m of special 2x2.5mm² non-abrasive electric cable with high flexibility and tenacity.
- Recommended for the grounding of tankers.
- Equipped with anti-tear system of the joint between the user's cable and the cable of the same clamp.
- The electrical continuity is ensured by the carbonitrided steel contact points which guarantee a firm connection to any support having a thickness between 2 and 20 mm.

Options - Different cable gland length (to define)

- Screws in stainless steel AISI 316L and gaskets for degree IP66



Supply Voltage	Holding capacity	Nominal Current	Cable section	Weight (kg)
230 V - 50/60Hz	2 mm ÷ 20 mm	28 mA	2x2,5 mm ²	14

NOTES

Check the sliding of the crimping rod daily in the clamp, keeping the coupling clean and lubricated with silicone spray. This operation is necessary to ensure grounding and to guarantee that any destructive discharges occur in the internal chamber, specifically isolated and not in the external environment.

For a good operation of the clamp we recommend a monthly check of the crimping pins subject to worn, which ensures perfect link with the terminal to which they are attached.

Check the integrity of the electric cable both at the ground terminal and near the clamp; check the electrical continuity (at least once a month).

For use in a potentially explosive atmosphere caused by combustible dusts, the user must ensure regular cleaning to limit the formation of dust layers.

AMBIENT TEMPERATURE THERMOSTATS

series
TA

Protection	Gas	1-2	II2G	Ex db IIB+H ₂ T6÷T5 Gb
	Dusts	21-22	II2D	Ex tb IIIC T85°C÷T100°C Db

Degree of Protection	IP65
----------------------	------

Amb. Temp.	Standard	-20°C	+40°C
	Extended	-50°C	+60°C



Entries Threading	NPT ANSI B1.20
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Material	Aluminum light alloy
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Painting	External Epoxy RAL 7000
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Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1
EN 60079-31

CE INERIS 13 ATEX 0039X

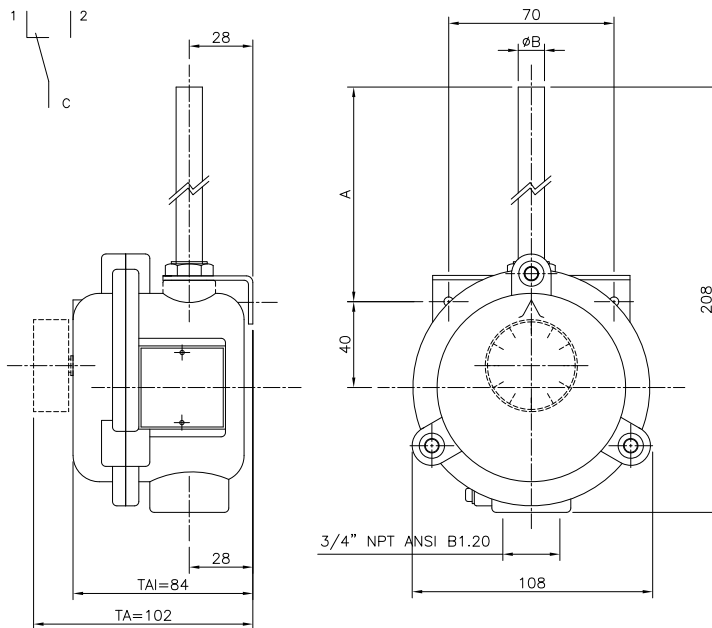
IEC 60079-0 • IEC 60079-1
IEC 60079-31

IECEx INE 13.0053X

- Thermostat with liquid expansion probe suitable for the automatic control of ambient temperature.
- Available either with external or internal temperature adjustment (type TA or type TAI respectively).
- The internal adjustment helps to prevent unauthorized manipulations.
- Bracket in galvanized steel, sheath in zinc plated brass.
- Plate and external screws in Stainless Steel.

- Options**
- Sheath and bracket in Stainless Steel AISI 316.
 - Sheath of different length other than standard (L).

- Cable entry: cylindrical M25x1,5 (M).
- Control temperature range other than standard.



NOTES

It is recommended to read the installation and maintenance instructions.

Temperature adjustment on TAI is allowed at open case only. This operation shall not be carried out with the thermostat powered and, in any case, far from hazardous atmosphere.

The Temperature class T6/T85°C takes into account an Ambient Temperature (A.T.) up to +40 °C, the Temperature class T5/T100°C an extended A.T. up to +60°C.

Code	Temperature Control Range (°C)	Max Bulb Temperature (°C)	Differential ΔT (°C)	A (mm)	ØB (mm)
TA 40/TAI 40	0°C÷40°C±2°C	50°C	3°C±1°C	112 ÷ 242	13
TA 90/TAI 90	0°C÷90°C±3°C	120°C	4°C±1°C	112 ÷ 242	10
TA 120/TAI 120	0°C÷120°C±3°C	150°C	4°C±1°C	112 ÷ 242	10

Example: TA 40N

Order Coding

Type
TA = thermostat with external adjustment
TAI = thermostat with internal adjustment

Temperature control range
40 = 0°C ÷ +40°C
90 = 0°C ÷ +90°C
120 = 0°C ÷ +120°C

Sheath
.. = std.
L = long version

Threading
N = NPT (N)
M = metric (M)

CONTROL THERMOSTATS

series
TR

Protection	Gas	1-2	II2G	Ex db IIB+H ₂ T6÷T5 Gb
	Dusts	21-22	II2D	Ex tb IIIC T85°C÷T100°C Db

Degree of Protection	IP65
----------------------	------

Amb. Temp.	Standard	-20°C	+40°C
	Extended	-50°C	+60°C



Entries Threading	NPT ANSI B1.20
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Material	Aluminum light alloy
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Painting	External epoxy RAL 7000
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Standards and Certificates



Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1
EN 60079-31



INERIS 13 ATEX 0039X



IEC 60079-0 • IEC 60079-1
IEC 60079-31

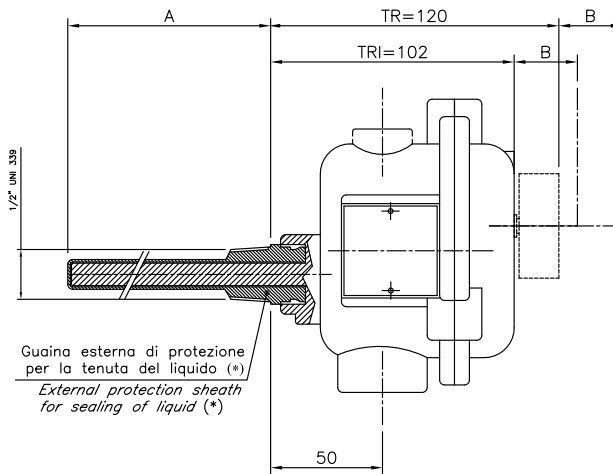
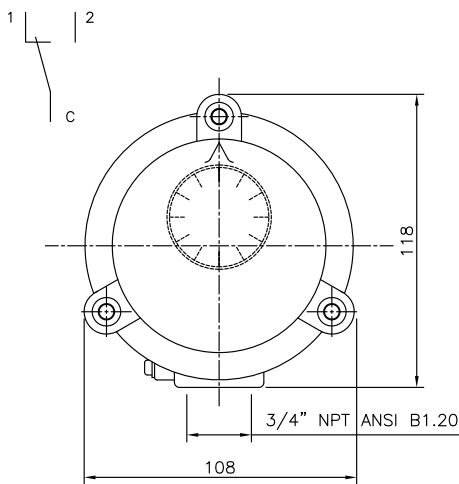
IECEx INE 13.0053X

- Thermostat with liquid expansion probe.
- Recommended for the automatic control of liquids temperature and for industrial heating process.
- Its design allows the rapid replacement of the control unit without having to empty the process fluid containers.
- Available either with external or internal temperature adjustment (type TR or TRI respectively).
- The internal adjustment helps to prevent unauthorized manipulations.
- External sheath in AISI 316L Stainless Steel.
- Plate and external screws in Stainless Steel.

Options

- Sheath of different length other than standard (L).
- Cable entry: cylindrical M25x1,5 (M).

- Control temperature range other than standard.



Guaina esterna di protezione per la tenuta del liquido (*)
External protection sheath for sealing of liquid (*)

NOTES

It is recommended to read the installation and maintenance instructions.

(*) The temperature probe is protected by an internal explosion-proof sheath as well as by an external watertight sheath which induces a greater thermal inertia of the thermostat that raises the temperature reading of the controlled fluid. It's advisable to carry out tests on the adjustments to minimize this effect.

Temperature adjustment on TRI is allowed at open case only. This operation shall not be carried out with the thermostat powered and, in any case, far from hazardous atmosphere.

The Temperature Class T6/T85°C takes into account an Ambient Temperature (A.T.) up to +40 °C, the Temperature class T5/T100°C an extended A.T. up to +60°C

Code \	Temperature Control Range (°C)	Max Bulb Temperature (°C)	Differential ΔT (°C)	A (mm)	B (mm)
TR 40 TRI 40	0°C÷40°C±2°C	50°C	3°C±1°C	95 ÷ 225	111
TR 90 TRI 90	0°C÷90°C±3°C	120°C	4°C±1°C	95 ÷ 225	111
TR 120 TRI 120	0°C÷120°C±3°C	150°C	4°C±1°C	95 ÷ 225	111

B = Minimum clearance in mm to remove the case without removing the sheath.

Exemple: TRI 120N

Order Coding

Type

TR = thermostats with external adjustment
TRI = thermostats with internal adjustment

Temperature control range

40 = 0°C ÷ +40°C
90 = 0°C ÷ +90°C
120 = 0°C ÷ +120°C

Sheath

.. = std.
L = long version

Threading

N = NPT (N)
M = metric (M)

SAFETY THERMOSTATS

series
TS

Protection	Gas	1-2	II2G	Ex db IIB+H ₂ T6÷T5 Gb
	Dusts	21-22	II2D	Ex tb IIIC T85°C÷T100°C Db

Degree of Protection	IP65
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Amb. Temp.	Standard	-20°C	+40°C
	Extended	-50°C	+60°C



Entries Threading	NPT ANSI B1.20
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Material	Aluminum light alloy
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Painting	External Epoxy RAL 7000
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Standards and Certificates

Directive 2014/34/EU (ATEX)
EN 60079-0 • EN 60079-1
EN 60079-31

CE INERIS 13 ATEX 0039X

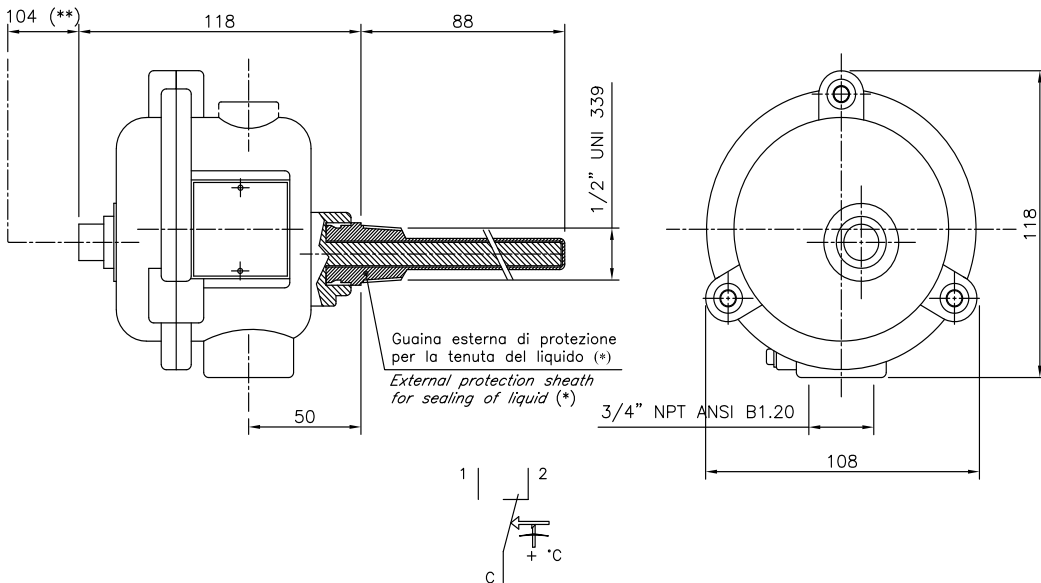
IECEx
IEC 60079-0 • IEC 60079-1
IEC 60079-31

IECEx INE 13.0053X

- Thermostat with liquid expansion probe with manual reset and positive safety for capillary breakup.
- Especially suitable for boilers, heating systems and in all applications where it is necessary not to exceed the maximum temperature set.
- Its design allows the rapid replacement of the control unit without having to empty the process fluid containers.
- External sheath in AISI 316L Stainless Steel.
- Plate and external screws in Stainless Steel.

- Options**
- Cable entry: cylindrical threading M25x1,5 (M).
 - Thermostat with automatic reset.

- Control temperature range other than standard.



NOTES

It is recommended to read the installation and maintenance instructions.

The temperature probe is protected by an internal explosionproof sheath as well as by an external watertight sheath which induces a greater thermal inertia of the thermostat that raises the temperature reading of the controlled fluid. It's advisable to carry out tests on the adjustments to minimize this effect.

The Temperature Class T6/T85°C takes into account an Ambient Temperature (A.T.) up to +40 °C, the Temperature class T5/T100°C an extended A.T. up to +60°C.

(**) Minimum space in mm to remove the case without removing the sheath.

Code	Control Temperature (°C)	Max Bulb Temperature (°C)	Differential ΔT (°C)
TS 100	100°C ^{+0°C} _{-6°C}	125°C	15°C±8°C

Example: TS 100N

Order Coding

Type	TS = safety thermostat
------	------------------------

Control Temperature	100 = 100°C
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Threading	N = NPT (N) M = metric (M)
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SOCKETS

series
FSQ

Protection	Gas	1-2	II2G	Ex d IIC T6 Gb
	Dusts	21-22	II2D	Ex tb IIIC T80°C Db

Degree of Protection	IP66
----------------------	------

Amb. Temp.	Standard	-20°C	+40°C
	Extended	-20°C	+60°C



Entries Threading	EN 10226 (Gk)
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Material	Aluminum light alloy
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Painting	External Epoxy RAL 9006
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Standards and Certificates



Directive 2014/34/EU (ATEX)

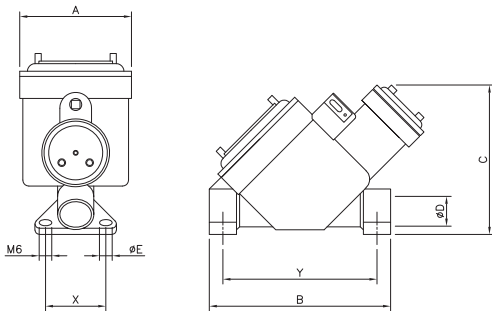
EN 60079-0 • EN 60079-1
EN 60079-31

CEC 13 ATEX 141

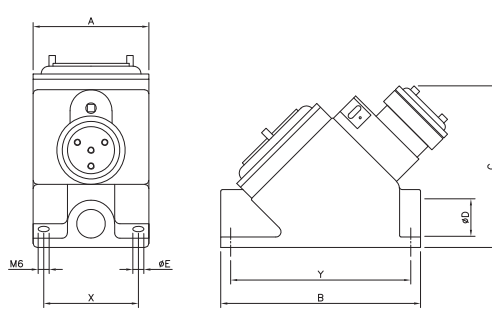
• The socket is complete with interlocked switch which can only be activated when the plug is inserted and viceversa.

Opt. - Automatic circuit breaker (add suffix "A" to Order Code).

FSQ 215 - 325 - 425



FSQ 360 - 460 / FSQA ...



NOTES

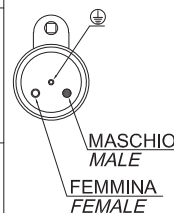
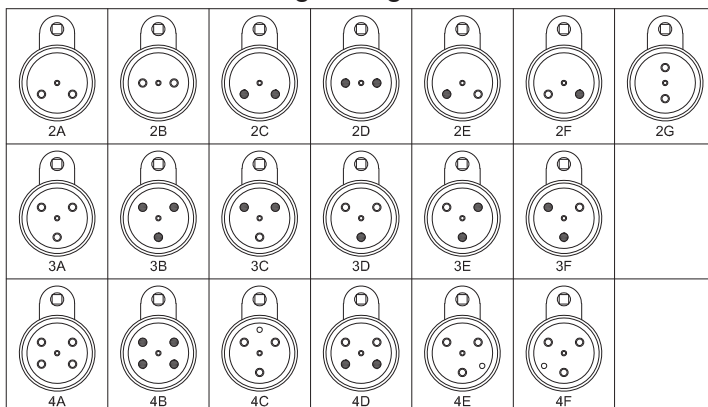
To read the installation and maintenance instructions is recommended.

The degree of protection IP66 is guaranteed only when the plug is supplied with the relevant specific gasket. Maximum ambient temperature with EPDM O-ring is +40°C, whereas with Silicone O-ring is +60°C.

(*) The automatic circuit breaker is mounted into external enclosure.

Code	Poles No.	Current (A)	Voltage (V)	Dimensions (mm)						
				A	B	C	ØD	ØE	X	Y
SOCKETS with CAM ROTARY SWITCH										
FSQ 215	2 + E	25	500	110	180	145	1"	7	60	160
FSQ 325	3 + E	32	500	110	180	145	1"	7	60	160
FSQ 425	4 + E	32	500	110	180	145	1"	7	60	160
FSQ 360	3 + E	63	500	155	246	190	1.1/2"	11	160	222
FSQ 460	4 + E	63	500	155	246	190	1.1/2"	11	160	222
SOCKETS WITH AUTOMATIC CIRCUIT BREAKER										
FSQA 215	2 + E	25	500	155	246	190	1"	11	160	222
FSQA 325	3 + E	32	500	155	246	190	1"	11	160	222
FSQA 425(*)	4 + E	32	500	155	246	190	1"	11	160	222
FSQA 360	3 + E	63	500	155	246	190	1.1/2"	11	160	222
FSQA 460(*)	4 + E	63	500	155	246	190	1.1/2"	11	160	222

Plug-in Diagrams



Poles No.	Current	Diagram
2P-12V	25 A	2E
2P-24V	25 A	2C
2P-28V	25 A	2F
2P-48V	25 A	2D
2P-110V	25 A	2B
2P-230V	25 A	2A
3P-400V	32 A	3A
3P-24V	25 A	3D
3P-400V	63 A	3A
3P-500V	32 A	3B
4P-230V	32 A	4D
4P-400V	32 A	4A
4P-500V	32 A	4B
2P-230V	63 A	2G
4P-500V	63 A	4F
4P-400V	63 A	4C

PLUGS

series
BP

Protection	Gas	1-2	II2G	Ex d IIC T6 Gb
	Dusts	21-22	II2D	Ex tb IIIC T80°C Db

Degree of Protection	IP66
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Amb. Temp.	Standard	-20°C	+40°C
	Extended	-20°C	+60°C




Entries Threading	EN 10226 (Gk)
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Material	Aluminum light alloy
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Painting	External epoxy RAL 9006
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Standards and Certificates



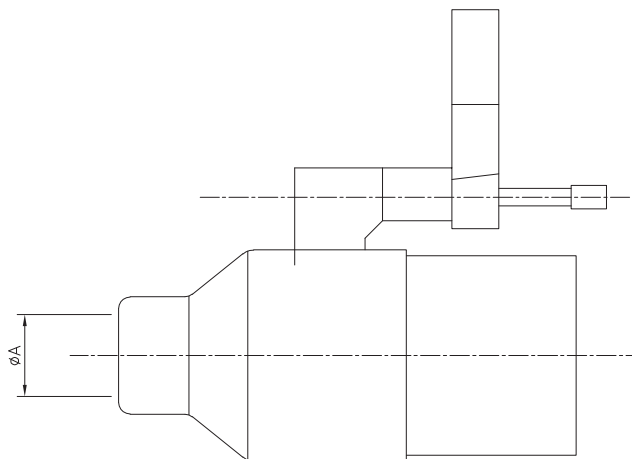
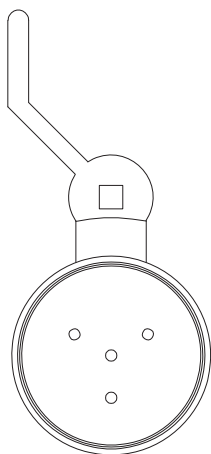
Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1
EN 60079-31

CE | CEC 13 ATEX 141

• Plug for socket series FSQ with interlocked switch.

F



Code	Poles No.	Current (A)	Voltage (V)	ØA
BP 215	2 + E	25 A	500	3/4"
BP 325	3 + E	32 A	500	3/4"
BP 425	4 + E	32 A	500	3/4"
BP 360	3 + E	63 A	500	1"
BP 460	4 + E	63 A	500	1"

NOTES

- To read the installation and maintenance instructions is recommended.
- The degree of protection IP66 is guaranteed only when the plug is supplied with the relevant specific gasket. Maximum ambient temperature with EPDM O-ring is +40°C, whereas with Silicone O-ring is +60°C.



LIGHTING

Providing the correct lighting solutions for every workplace, manufacturing and industry, particularly in areas classified for danger of explosion, is the first security measure that the range of specific products COELBO intends to offer and guarantee depending on the degree of hazard and protection required.

The range of equipment that COELBO makes available is articulated as much as lighting technologies (read light

sources) proliferated over time... From incandescence to sodium and Metal Halide vapors lamps, from neon (including low power consumption ones) to the last technology expression: the high efficiency LED solutions.

We have also provided space for a multiplicity of application solutions to be able also to cover some specific needs ... From the normal lighting ambients to that of sites

particularly poky, to that, more specialistic, for silos or process containers, or, again, to large yards and so on lighting... Without underestimating, however, any type of installation.

The variety of our range is normally available from stock. Although designed for a virtually unlimited duration, to guarantee the operational safety and certified compatibility, purchasing any spare parts directly from COELBO is recommended.

	Series	Page
LED LIGHTING FIXTURES	EVL	G03
LIGHTING FIXTURES	EVS	G05
LIGHTING FIXTURES for PORTHOLES	EVO	G06
LIGHTING FIXTURES EMERGENCY LIGHTING FIXTURES	EVF EVFE	G07
INCREASED SAFETY LIGHTING FIXTURES INCREASED SAFETY EMERGENCY LIGHTING FIXTURES	AVF AVFE	G14
LIGHTING FIXTURES	EV	G19
LIGHTING FIXTURES	EW	G22
FLOOD LIGHTS	RFL	G24



NOTES:

G

LED LIGHTING FIXTURES

series
EVL

Protection	Gas	1-2	II2G	Ex db IIC T6÷T4 Gb
	Dusts	21-22	II2D	Ex tb IIIC T85°C÷T135°C Db

Degree of Protection	IP66/67
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Amb. Temp.	Standard	-20°C	+40°C
	Extended	-50°C	+80°C

Entries Threading	NPT ANSI B1.20
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Material	Aluminum light alloy
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Painting	External epoxy RAL 6032
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Standards and Certificates

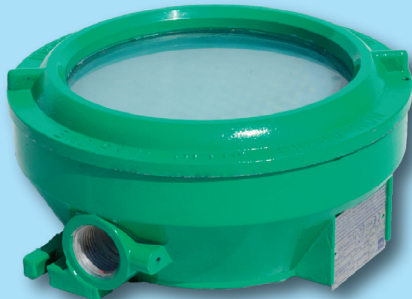
Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1
EN 60079-31

CE BVI 14 ATEX 0009

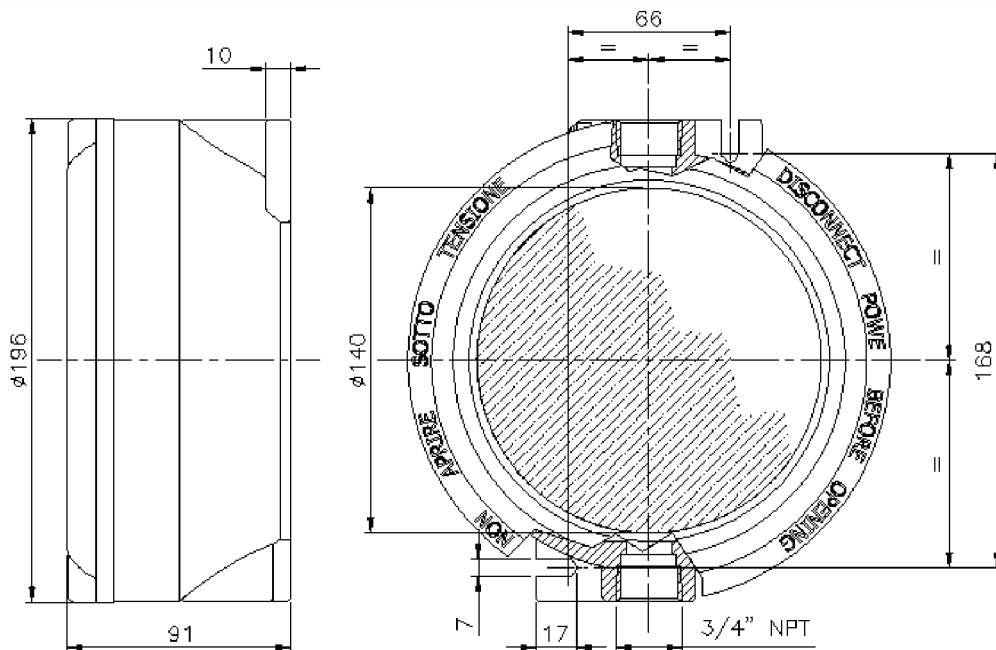
IEC 60079-0 • IEC 60079-1
IEC 60079-31

IECEx EPS 14.0036



- Light fixture for LED lamps up to 30 W.
- Compact unit for use in tunnels, boiler rooms, rooms with low ceilings, narrow deposits and in all places where space does not permit the use of traditional lighting fittings (EVA-EVF).
- 12 W LED lamp.
- Max Power = 30 W.
- Max Voltage = 230 V AC.
- External screws in Stainless Steel AISI 316.
- Weight: 2,7 kg.

Opzioni - Various RAL painting and/or Nickel chemical plating surface treatment. - Cable entry threading: M25x1,5 (M) ISO 262. - 15 W LED lamp.



NOTES

(*) Through the use of a multi-voltage power supply for LED.

The temperature class T6/T85 °C takes into account the ambient temperature (A.T.) up to +50°C.

The temperature class T5/T100°C is relevant to an A.T. extended up to +60°C.

Finally, the temperature class T4/T135°C is relevant to an extended A.T. up to +80°C.

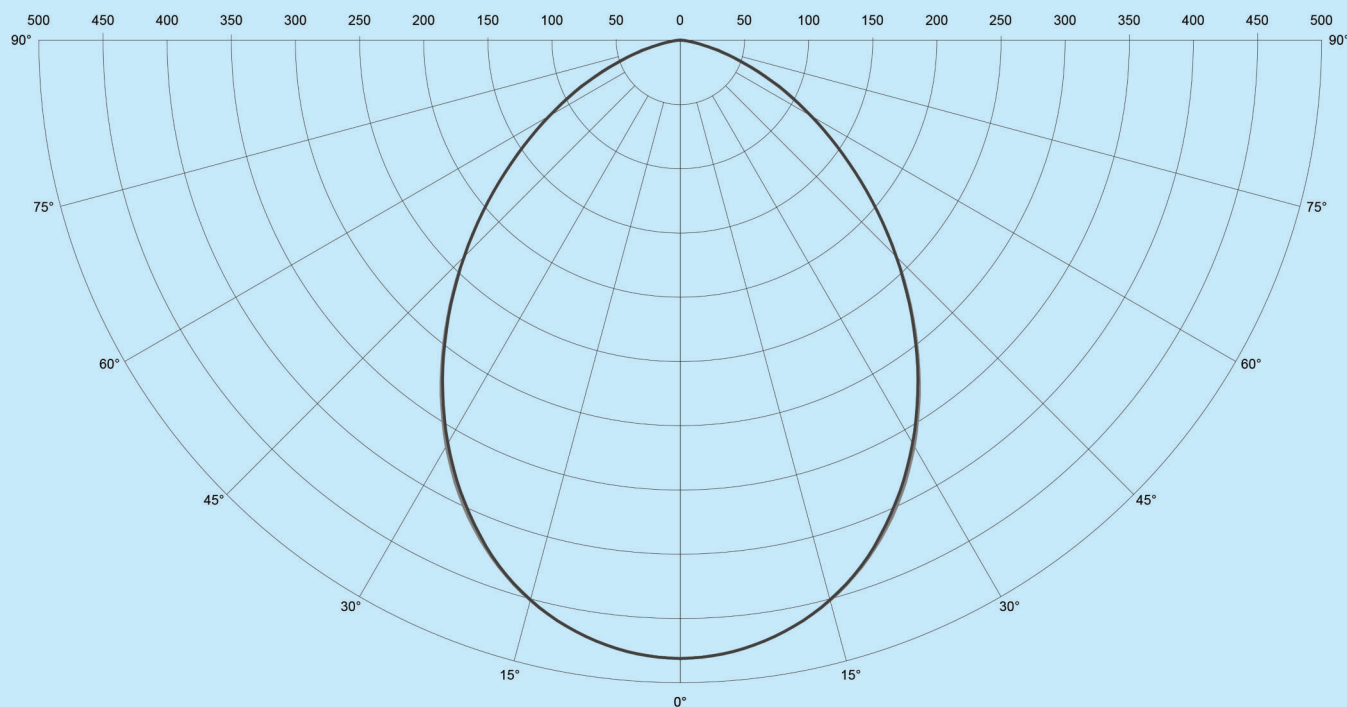
LED Lamp Characteristics

Code	Power (W)	Voltage	Luminous Flux (Lm)	Color
12	12	12 / 24 V DC	1150	White / 6000 K
15	15	100÷230 V AC/DC (*)	1500	White / 6000 K

Example: EVL 12 AN

Order Coding

Type	Lamp power	Input Voltage	Surface Treatment	Threading
EVL	12 = 12 W 15 = 15 W	A = power supply 100÷230 V AC/DC D = 12 / 24 V DC	.. = painting H = Nikel chemical plating HP = painting + Nikel chemical plating	N = NPT ANSI B1.20.1 M = Metric ISO 262



C = 0-180° 90-270°

Code CIE
Efficiency
Beam Angle
Asymmetry
Orientation
Tilt
Rotation

59 88 99 100 100
LOR = 100,0; DLOR = 100,0; ULOR = 0,0
C0-180 = 88,0°; C90-270 = 88,0°
IMax = 481,3 cd/klm; C = 0,0°; gamma = 0,0°
0
0
0

Luminous Intensity Table

	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85
0,0	481,3	477,5	467,5	451,5	428,9	400,0	365,0	325,2	282,5	238,7	195,8	154,7	117,2	83,3	52,8	29,1	11,1	3,2
15,0	481,3	477,5	167,4	451,4	428,8	400,1	364,9	325,0	282,3	238,4	195,2	154,1	116,9	83,1	53,1	29,3	10,8	3,0
30,0	481,3	477,6	467,4	451,1	428,5	399,6	364,6	325,0	282,0	238,3	195,1	154,2	117,0	83,6	53,3	29,6	10,9	2,8
45,0	481,3	477,7	467,7	451,3	428,3	398,7	363,4	324,1	281,9	238,8	195,6	154,9	117,6	84,0	53,3	29,9	11,3	3,0
60,0	481,3	477,8	467,9	451,3	428,1	398,3	362,4	323,6	281,6	238,7	196,0	155,2	117,9	84,4	53,7	30,2	11,7	3,0
75,0	481,3	477,8	467,4	451,3	427,9	397,5	362,2	323,4	281,4	238,1	195,6	155,0	118,3	84,8	54,2	30,5	11,7	3,2
90,0	481,3	477,7	467,5	451	427,8	397,3	362,3	323,0	281,0	238,0	195,6	154,7	117,9	84,9	54,2	30,7	11,7	3,2
	90	95	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175
0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
15,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
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45,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
60,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
75,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
90,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0

LIGHTING FIXTURES

series
EVS

Protection	Gas	1-2	II2G	Ex db IIC T6÷T3 Gb
	Dusts	21-22	II2D	Ex tb IIIC T85°C÷T200°C Db

Degree of Protection	IP66/67
----------------------	---------

Amb. Temp.	Standard	-20°C	+40°C
	Extended	-50°C	+80°C



Entries Threading	NPT ANSI B1.20
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Material	Aluminum light alloy
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Painting	External epoxy RAL 7000
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Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1
EN 60079-31

CE BVI 14 ATEX 0010

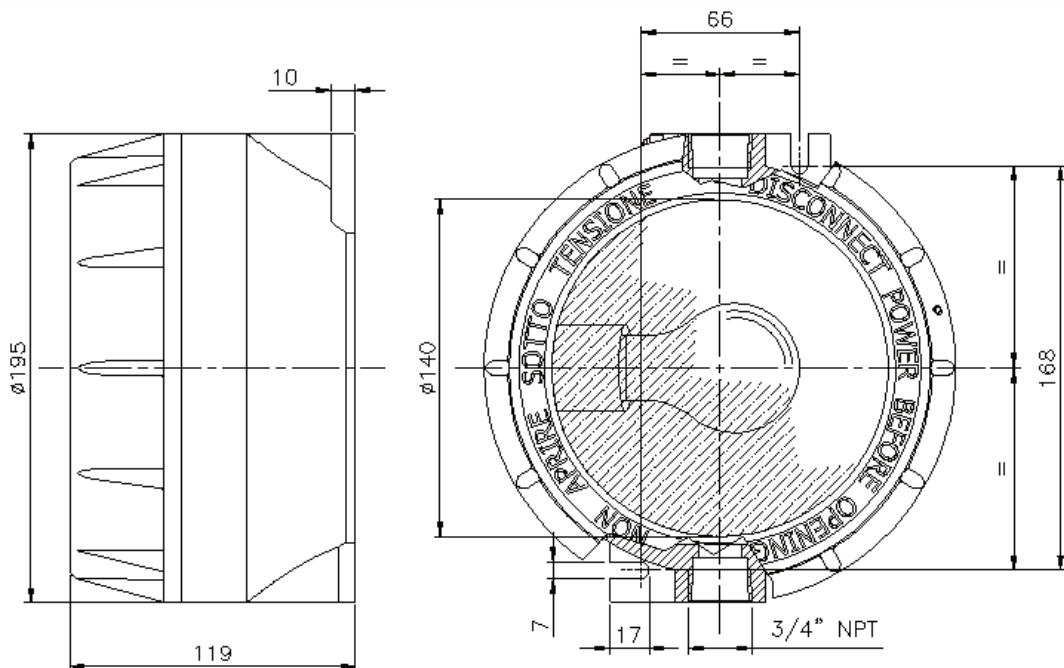
IEC 60079-0 • IEC 60079-1
IEC 60079-31

IECEX EPS 14.0035

- Lighting fixtures EVS 100N for halogen lamps up to 70 W (equal to 100 W incandescent lamps).
- Compact unit for use in tunnels, boiler rooms, rooms with low ceilings, narrow deposits and in all places where space does not permit the use of traditional lighting (EVA-EVF).
- Epoxyvinyl internal white coating for optimal luminosity
- Max power = 70 W (100 W).
- Max voltage = 240 V AC.
- External screws in Stainless Steel AISI 316.
- Weight: 2.8 kg.

Options

- External red paint RAL 3000.



Temperature class as a function of Ambient Temperature

HALOGEN < 70 W			ENERGY SAVING LAMP / LED		
Temperature Class	Max. Surface Temperature	Ambient Temperature	Temperature Class	Max. Surface Temperature	Ambient Temperature
T3	T200°C	-50°C ÷ +80°C	T6	T85°C	-50°C ÷ +50°C
			T5	T100°C	-50°C ÷ +60°C
			T4	T135°C	-50°C ÷ +80°C

LIGHTING FIXTURES for PORTHOLES

series
EVO

Protection	Gas	Zone	1-2	II2G	Ex db IIC T6÷T3 Gb
	Dusts	Zone	21-22	II2D	Ex tb IIIC T85°C÷T200°C Db

Degree of Protection	IP66/67
----------------------	---------

Amb. Temp.	Standard	-20°C	+40°C
	Extended	-50°C	+80°C



Entries Threading	NPT ANSI B1.20
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Material	Aluminum light alloy
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Painting	External Epoxy RAL 7000
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Standards and Certificates



Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1
EN 60079-31



BVI 14 ATEX 0010

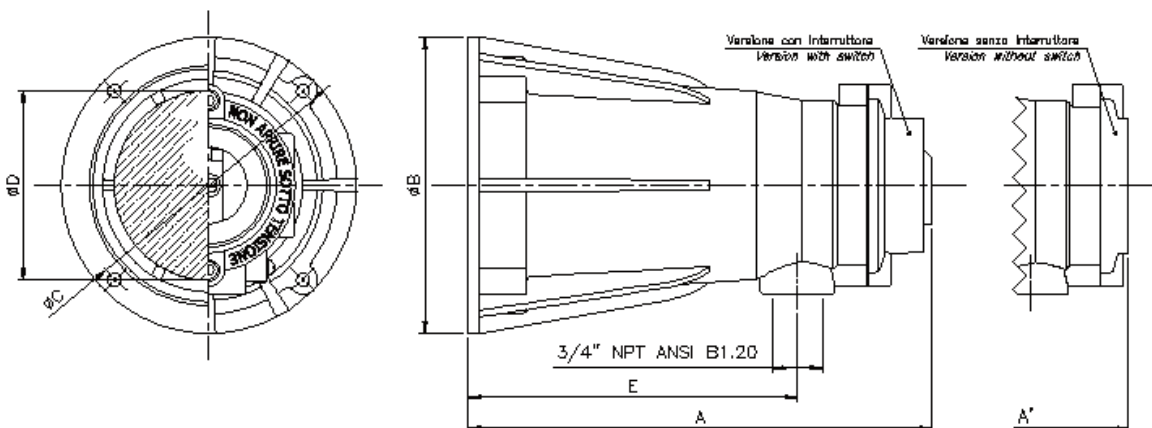


IEC 60079-0 • IEC 60079-1
IEC 60079-31

IECEx EPS 14.0035

- Lighting fixtures for portholes, ideal for the optimum viewing area to be monitored.
- The built-in switch version allows the lamp to be switched on and off directly from the observation point and the for the necessary time.
- The lamp can be replaced without removing the armor.
- Epoxyvinyl internal white coating for optimal luminosity.
- Lampholder E27.
- External screws in Stainless Steel AISI 316.

G



NOTES

The armature shall be installed in vertical position only with the glass facing down-wards, viceversa, in a horizontal position it is permissible using only halogen lamps up to 50 W (equivalent to 75 W incandescent lamps) or energy saving lamps/LED with no limitation of power.

(**) With h.70 lamp, lamp-holder E27.

Code	Lamp	Dimensions (mm)						Weight (kg)
		A	A'	ØB	ØC	ØD	E	
EVO 60	42 W (equivalent 60 W)	-	183	130	115	82	135	1,77
EVO 61	70 W (equivalent 100 W)	-	183	130	115	82	135	1,77
EVO 60I	42 W (eq. 70 W) with Switch (**)	190	-	130	115	82	135	1,87
EVO 100	70 W (equivalent 100 W)	-	233	150	135	96	165	2,00
EVO 100I	70 W (eq. 100 W) with Switch	240	-	150	135	96	165	2,10

Temperature class as a function of Ambient Temperature

HALOGEN < 42 W			HALOGEN < 70 W			ENERGY SAVING LAMP / LED		
Temperature Class	Max. Surf. Temperature	Ambient Temperature	Temperature Class	Max. Surf. Temperature	Ambient Temperature	Temperature Class	Max. Surf. Temperature	Ambient Temperature
T4	T85°C	-50°C÷+40°C	T3	T200°C	-50°C÷+80°C	T6	T85°C	-50°C÷+50°C
T3	T100°C	-50°C÷+80°C				T5	T100°C	-50°C÷+60°C
						T4	T135°C	-50°C÷+80°C

LIGHTING FIXTURES

series
EVF

Protection	Gas	1-2	II2G	Ex d IIC T6 ÷ T4 Gb
	Dusts	Zone 21-22	II2D	Ex tb IIIC T80°C÷T130°C Db

Degree of Protection	IP66/67
----------------------	---------


Amb. Temp.	Standard	-20°C	+40°C
	Extended	-20°C	+60°C

Entries Threading	EN 10226 (Gk)
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Material	Aluminum light alloy
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Painting	External Epoxy RAL 9006
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Standards and Certificates



Directive 2014/34/EU (ATEX)

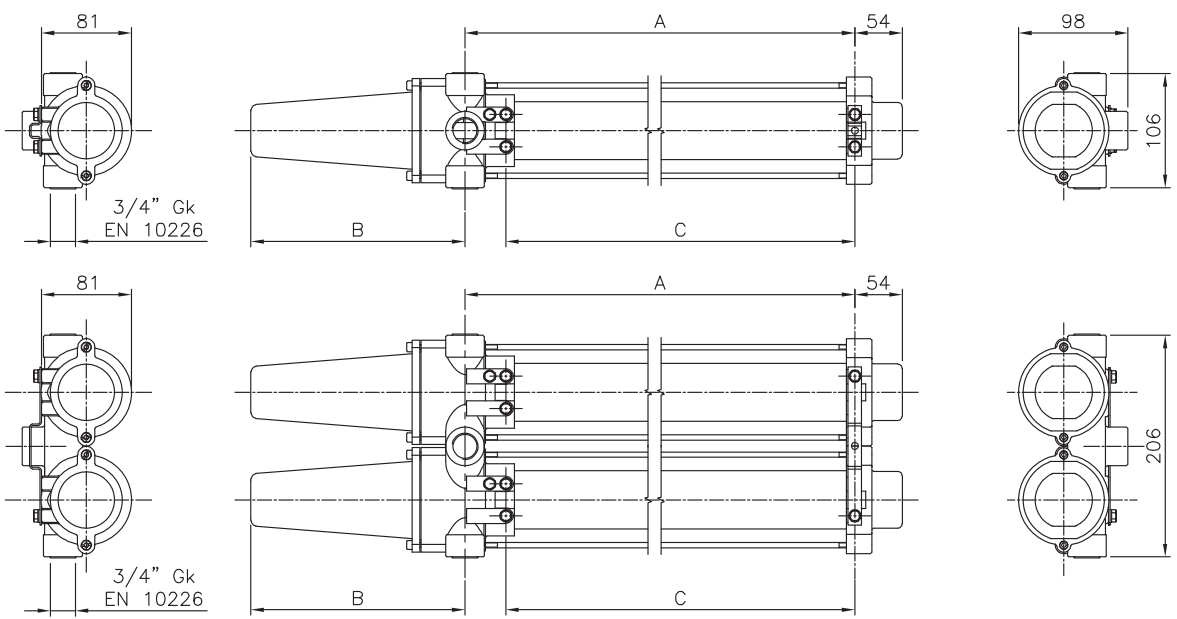
EN 60079-0 • EN 60079-1
EN 60079-31

CE CEC 13 ATEX 144



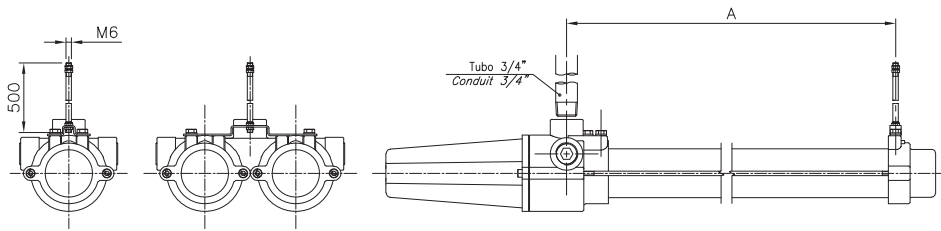
- For fluorescent lamps Ø 26 mm with bipin plugs.
- Supplied completed with electronic ballast, starter and fuses interconnected.
- Tubular thermo-insulating borosilicate glass.
- Quick screw fastening, if done at the work bench.
- Use supplied brackets to install at ceiling or wall. Use Ø6 mm diameter rod or chain included to install at suspension.
- External reflector and cage (not included) can be mounted on site with powered on equipment.
- External screws in Stainless Steel.

- Options**
- Different voltages.
 - Frequency 60 Hz.
 - Capacitor.
 - Protection cage in Zinc plated Steel.
 - External reflector in polished Aluminum.
 - Emergency version (series EVFE), see page G10.
 - LED lamp (series EVF RUN), see page G13.

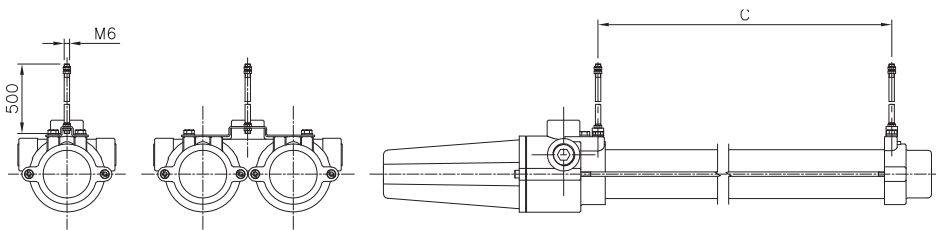


Cocce	Dimensions (mm)			Lamp no.	Power (W)	Weight (kg)
	A	B	C			
EVF 118	610	205	573	1	1x18	3,2
EVF 218	610	205	573	2	2x18	6,5
EVF 136	1210	205	1173	1	1x36	5,2
EVF 236	1210	205	1173	2	2x36	10,0
EVF 158	1510	260	1473	1	1x58	7,3
EVF 258	1510	260	1473	2	2x58	14,3

EVF: Suspended installation

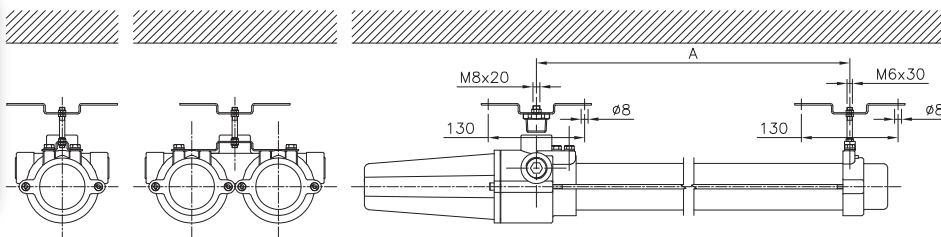


Code	Lamps	A (mm)
EVF 118	1 x 18 W	610
EVF 218	2 x 18 W	610
EVF 136	1 x 36 W	1210
EVF 236	2 x 36 W	1210
EVF 158	1 x 58 W	1510
EVF 258	2 x 58 W	1510



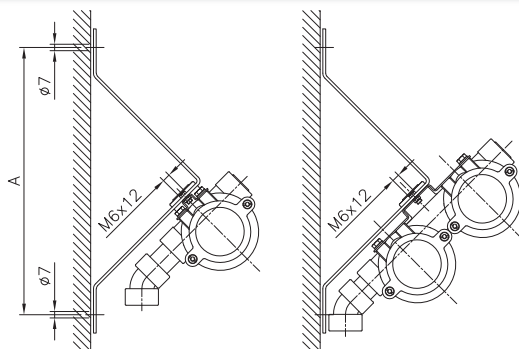
Code	Lamps	C (mm)
EVF 118	1 x 18 W	573
EVF 218	2 x 18 W	573
EVF 136	1 x 36 W	1173
EVF 236	2 x 36 W	1173
EVF 158	1 x 58 W	1473
EVF 258	2 x 58 W	1473

EVFC: Ceiling installation



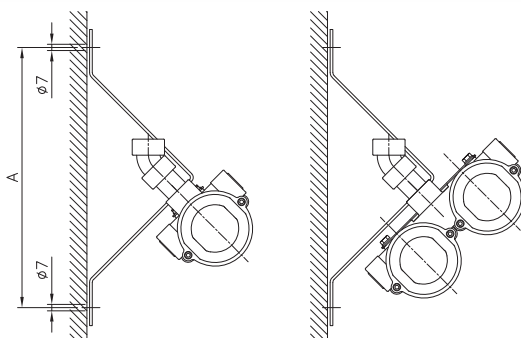
Code	Lamps	A (mm)
EVFC 118	1 x 18 W	610
EVFC 218	2 x 18 W	610
EVFC 136	1 x 36 W	1210
EVFC 236	2 x 36 W	1210
EVFC 158	1 x 58 W	1510
EVFC 258	2 x 58 W	1510

EVFJ: 45° Wall installation (bottom power supply entry)



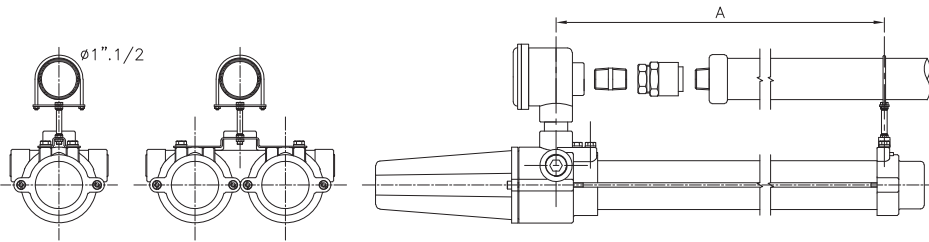
Code	Lamps	A (mm)
EVFJ 118	1 x 18 W	290
EVFJ 218	2 x 18 W	290
EVFJ 136	1 x 36 W	290
EVFJ 236	2 x 36 W	290
EVFJ 158	1 x 58 W	290
EVFJ 258	2 x 58 W	290

EVFJA: 45° Wall installation (top power supply entry)



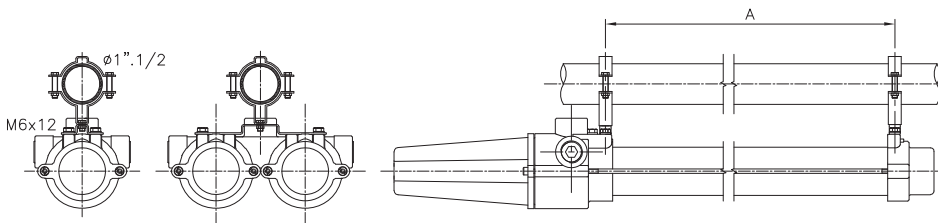
Code	Lamps	A (mm)
EVFJA 118	1 x 18 W	290
EVFJA 218	2 x 18 W	290
EVFJA 136	1 x 36 W	290
EVFJA 236	2 x 36 W	290
EVFJA 158	1 x 58 W	290
EVFJA 258	2 x 58 W	290

EVFP: Pole installation



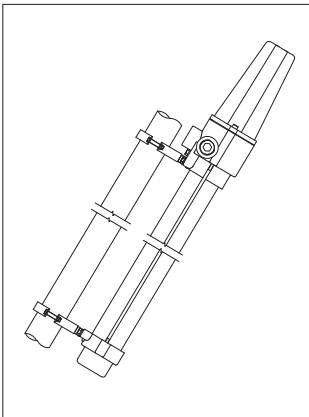
Code	Lamps	A (mm)
EVFP 118	1 x 18 W	610
EVFP 218	2 x 18 W	
EVFP 136	1 x 36 W	1210
EVFP 236	2 x 36 W	
EVFP 158	1 x 58 W	1510
EVFP 258	2 x 58 W	

EVFCP: Pole installation (cable entry with cable gland)

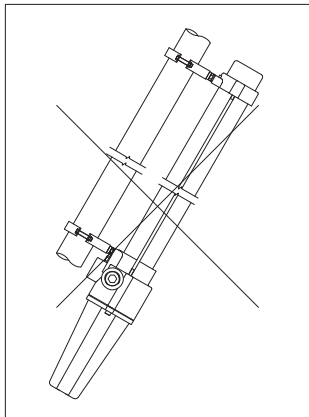


Code	Lamps	A (mm)
EVFCP 118	1 x 18 W	573
EVFCP 218	2 x 18 W	
EVFCP 136	1 x 36 W	1173
EVFCP 236	2 x 36 W	
EVFCP 158	1 x 58 W	1473
EVFCP 258	2 x 58 W	

CORRECT INSTALLATION



WRONG INSTALLATION



NOTES

If the equipment is installed outdoor it is advisable to use the external reflector to protect the glass tube from rain and dust.

Use only original mounting fittings and install them properly according to instruction manual.

The correct installation of the lighting fixture on pole (excluded from the supply) requires that the ballast is positioned upward, to facilitate a better heat dissipation.

For extended A.T. up to +60°C it is requested the installation of electronic ballast.

Example: EVFJA 136 RFL

Order Coding

Type	Installation mode	Lamps no.	Power	Accessories
EVF	... = suspended	1 = 1 lamp	18 = 18 W	D = external reflector
	C = ceiling	2 = 2 lamps	36 = 36 W	P = cage
	J = 45° wall bottom power supply	3 = 3 lamps	58 = 58 W	C = capacitor
	JA = 45° wall top power supply			X = electronic ballast
	P = pole			F = fuse & starter (std)
	CP = pole with cable gland			L = fluorescent lamp (std)

EMERGENCY LIGHTING FIXTURES

series
EVFE

Protection	Gas	1-2	II2G	Ex d IIC T6 ÷ T4 Gb
	Dusts	Zone 21-22	II2D	Ex tb IIIC T80°C ÷ T130°C Db

Degree of Protection	IP66/67
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Amb. Temp.	Standard	-20°C	+40°C
	Extended	-20°C	+60°C

Entries Threading	EN 10226 (Gk)
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Material	Aluminum light alloy
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Painting	External Epoxy RAL 9006
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Standards and Certificates



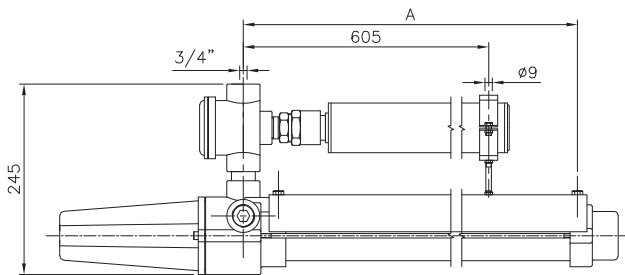
Directive 2014/34/EU (ATEX)
EN 60079-0 • EN 60079-1 EN 60079-31
CE CEC 13 ATEX 144



- For Ø26 mm fluorescent lamps with bipin plugs.
- Completed with lamp, ballast 230 V - 50 Hz and starter.
- Tubular thermo-insulating glass protection..
- Battery charger/inverter, 4 Ah Ni-Cd batteries with switch, installed in external enclosure.
- Backup time: 18 W = 120' / 36 W = 90' / 58 W = 60'.
- Recharging time: 24 h.
- Fittings in Galvanized Steel.

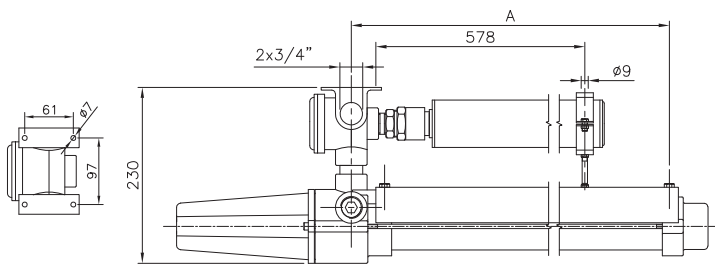
- Options**
- Different voltages.
 - Frequency 60 Hz.
 - Electronic ballast, rapidstart or tachistart.
 - Fittings in Stainless Steel AISI 316
 - External reflector on request for 18 W version (item EVF 12/8 or EVF 22/8).

EVFE: Suspended installation



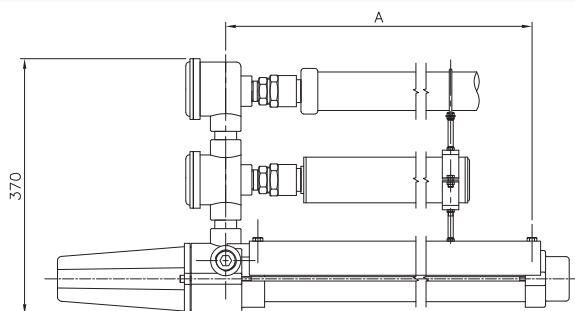
Code	Lamps	A (mm)
EVFE 118	1 x 18 W	605
EVFE 218	2 x 18 W ^(*)	
EVFE 136	1 x 36 W	1205
EVFE 236	2 x 36 W ^(*)	
EVFE 158	1 x 58 W	1505
EVFE 258	2 x 58 W ^(*)	

EVFEC: Ceiling installation



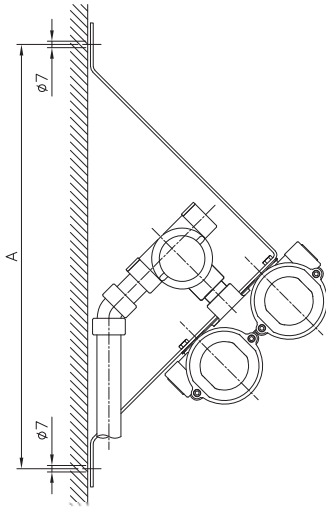
Code	Lamps	A (mm)
EVFEC 118	1 x 18 W	578
EVFEC 218	2 x 18 W ^(*)	
EVFEC 136	1 x 36 W	1178
EVFEC 236	2 x 36 W ^(*)	
EVFEC 158	1 x 58 W	1478
EVFEC 258	2 x 58 W ^(*)	

EVFEP: Pole installation



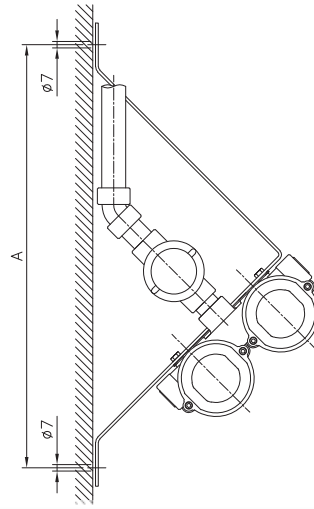
Code	Lamps	A (mm)
EVFEP 118	1 x 18 W	605
EVFEP 218	2 x 18 W ^(*)	
EVFEP 136	1 x 36 W	1205
EVFEP 236	2 x 36 W ^(*)	
EVFEP 158	1 x 58 W	1505
EVFEP 258	2 x 58 W ^(*)	

EVFEJ: 45° Wall installation (bottom power supply entry)



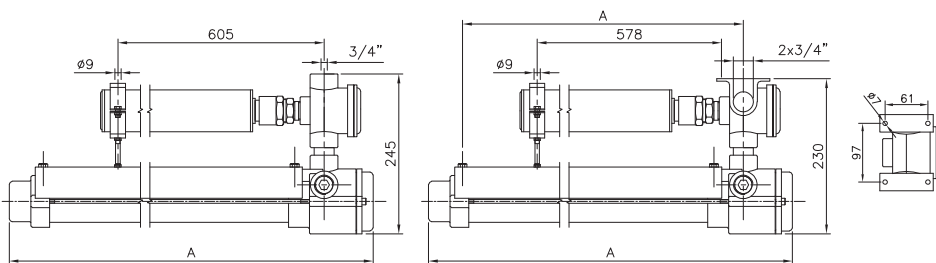
Code	Lamp	A (mm)
EVFEJ 118	1 x 18 W	490
EVFEJ 218	2 x 18 W(*)	545
EVFEJ 136	1 x 36 W	490
EVFEJ 236	2 x 36 W(*)	545
EVFEJ 158	1 x 58 W	490
EVFEJ 258	2 x 58 W(*)	545

EVFEJA: 45° Wall installation (top power supply entry)



Codice	Lampade	A (mm)
EVFEJA 118	1 x 18 W	490
EVFEJA 218	2 x 18 W(*)	545
EVFEJA 136	1 x 36 W	490
EVFEJA 236	2 x 36 W(*)	545
EVFEJA 158	1 x 58 W	490
EVFEJA 258	2 x 58 W(*)	545

EVFEE and EVFEEC: Emergency only



Code (suspended installation)	Code (ceiling installation)	A (mm)
EVFEE 118	EVFEEC 118	723
EVFEE 136	EVFEEC 136	1323
EVFEE 158	EVFEEC 158	1623

NOTES

If the equipment is installed outdoor it is advisable to use the external reflector to protect the glass tube from rain and dust.

Use only original mounting fittings and install them properly according to instruction manual.

For extended A.T. up to +60°C it is requested the

installation of electronic ballast.

The correct installation of the lighting fixture on pole (excluded from the supply) requires that the ballast is positioned upward, to facilitate a better heat dissipation.

(*) In emergency mode only one lamp is powered.

Example: EVFEP 258 XFLD

Order Coding

Type EVFE	Installation mode ... = suspended C = ceiling J = 45° wall bottom power supply JA = 45° wall top power supply P = pole CP = pole with cable gland E = emergency only - suspended EC = emergency only - ceiling	Lamps no. 1 = 1 lamp 2 = 2 lamps	Power 18 = 18 W 36 = 36 W 58 = 58 W	Accessories D = external reflector P = cage C = capacitor X = electronic ballast F = fuse & starter (std) L = fluorescent lamp (std)
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EMERGENCY LIGHTING FIXTURES (customizable message)

series
EVFE

Protection	Gas	1-2	II2G	Ex d IIC T6 ÷ T4 Gb
	Dusts	21-22	II2D	Ex tb IIIC T80°C ÷ T130°C Db

Degree of Protection	IP66/67
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Amb. Temp.	Standard	-20°C	+40°C
	Extended	-20°C	+60°C

Entries Threading	EN 10226 (Gk)
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Material	Aluminum light alloy
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Painting	External Epoxy RAL 9006
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Standards and Certificates



Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1
EN 60079-31

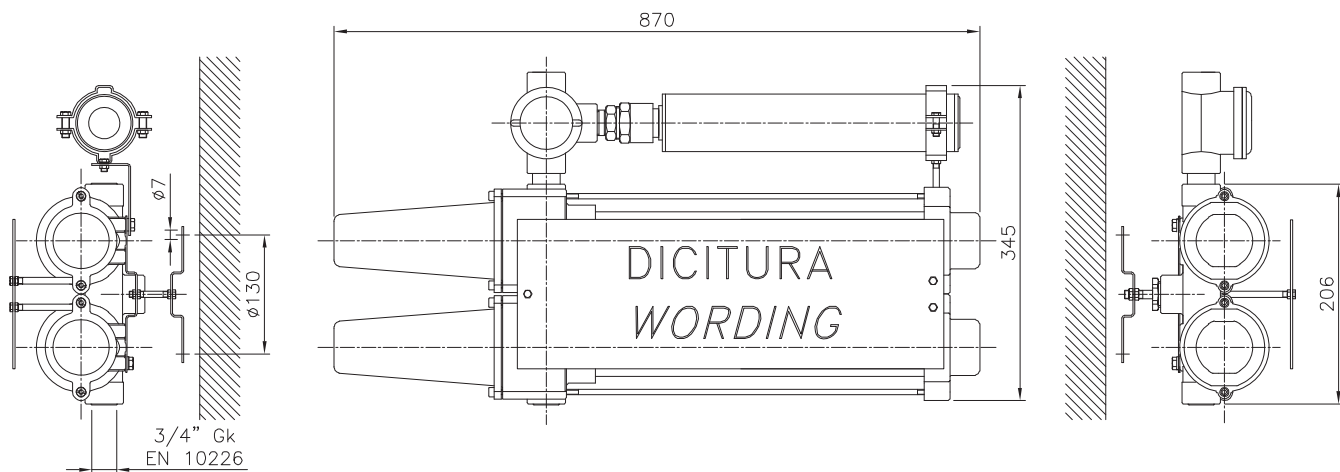
CE CEC 13 ATEX 144



- For luminous customizable messages (content and background color).
- Backlighting: 2x18 W fluorescent lamps (included).
- Tubular thermo-insulating glass protection..
- Battery charger/inverter, 4 Ah Ni-Cd batteries with switch, installed in external enclosure.
- Backup time: 18 W = 120' / 36 W = 90' / 58 W = 60'.
- Recharging time: 24 h.
- Fittings in Galvanized Steel.

Options

- Different voltages.
- Frequency 60 Hz.
- Electronic ballast, rapidstart or tachistart.
- Fittings in Stainless Steel AISI 316.



NOTE For extended A.T. up to +60°C it is requested the installation of electronic ballast.

(*) In emergency mode only one lamp is powered.

LED LIGHTING FIXTURES

series
EVF..RUN

Protection	Gas	1-2	II2G	Ex d IIC T6 ÷ T4 Gb
	Dusts	Zone 21-22	II2D	Ex tb IIIC T80°C÷T130°C Db

Degree of Protection
IP66/67

Amb. Temp.	Standard	-20°C	+40°C
	Extended	-20°C	+60°C

Entries Threading
EN 10226 (Gk)

Material
Aluminum light alloy

Painting
External Epoxy RAL 9006

Standards and Certificates



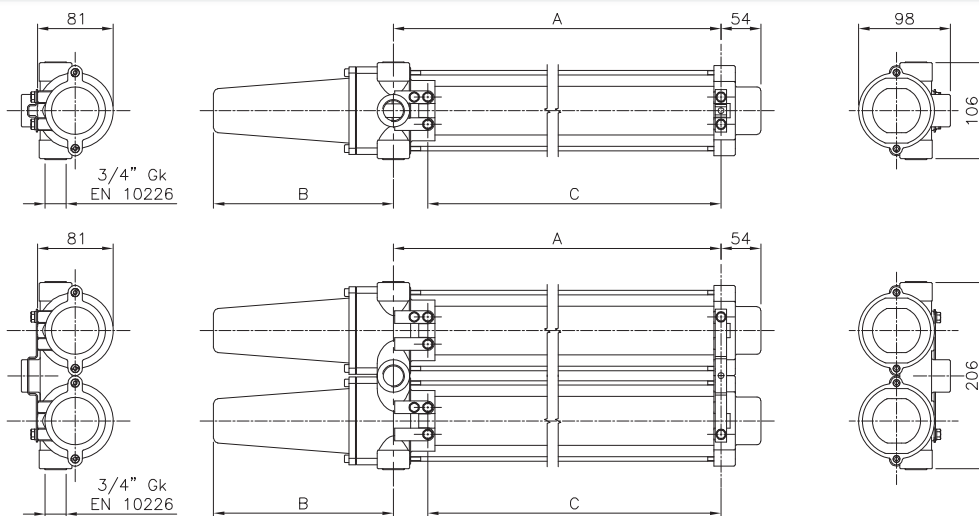
Directive 2014/34/EU (ATEX)
EN 60079-0 • EN 60079-1
EN 60079-31
CEC 13 ATEX 144



- Tubular thermo-insulating borosilicate glass.
- Use supplied brackets to install at ceiling or wall. Use Ø6 mm diameter rod or chain included to install at suspension (further information on pages G7-G8-G9).
- External reflector and cage (not included) can be mounted on site with powered on equipment.
- External screws in Stainless Steel.
- For Ø26 mm LED lamp with bipin plugs at 230 V.
- Instant start without flicker or hum.
- Lamp lifetime: 30000 ÷ 40000 h.

- Options**
- Different voltages (110 VAC).
 - Protection cage in Zinc plated Steel.

- External reflector in polished Aluminum.



Code	Dimensions (mm)			Power (W)	Luminous Flux (Lm)	Code	Dimensions (mm)			Power (W)	Luminous Flux (Lm)
	A	B	C				A	B	C		
PHILIPS CORELED TUBE						PHILIPS MASTERLED TUBE VALUE GA110					
EVF.. 10118RUNLT	610	205	573	1x10	800	EVF.. 1118RUNLT	610	205	573	1x10	825
EVF.. 21018RUNLT	610	205	573	2x10	1600	EVF.. 21118RUNLT	610	205	573	2x10	1650
EVF.. 2036RUNLT	1210	205	1173	1x20	1600	EVF.. 1936RUNLT	1210	205	1173	1x19	1650
EVF.. 22036RUNLT	1210	205	1173	2x20	3200	EVF.. 21936RUNLT	1210	205	1173	2x19	3300
EVF.. 2558RUNLT	1510	260	1473	1x25	2000	EVF.. 2458RUNLT	1510	260	1473	1x24	2065
EVF.. 22558RUNLT	1510	260	1473	2x25	4000	EVF.. 22458RUNLT	1510	260	1473	2x24	4130
OSRAM SUBSTITUTE ST8-HB						OSRAM SUBSTITUTE ST8-HA					
EVF.. 918RUNLT	610	205	573	1x9	800	EVF.. 10118RUNLT	610	205	573	1x10	900
EVF.. 2918RUNLT	610	205	573	2x9	1600	EVF.. 21018RUNLT	610	205	573	2x10	1800
EVF.. 1836RUNLT	1210	205	1173	1x18	1600	EVF.. 2036RUNLT	1210	205	1173	1x20	2200
EVF.. 21836RUNLT	1210	205	1173	2x18	3200	EVF.. 22036RUNLT	1210	205	1173	2x20	4400
EVF.. 2258RUNLT	1510	260	1473	1x22	2000	EVF.. 3058RUNLT	1510	260	1473	1x22	3200
EVF.. 22258RUNLT	1510	260	1473	2x22	4000	EVF.. 23058RUNLT	1510	260	1473	2x22	6400

INCREASED SAFETY LIGHTING FIXTURES

series
AVF

Protection	Gas	1-2	II2G	Ex de IIC T5 Gb
	Dusts	Zone 21-22	II2D	Ex tb IIIC T70°C Db

Degree of Protection	IP66
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Amb. Temp.	Standard	-20°C	+40°C
	Extended	-20°C	+50°C

Entries Threading	M25x1,5 ISO 262
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Material	GRP
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Painting	n.a.
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Standards and Certificates



Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1
EN 60079-7 • EN 60079-31

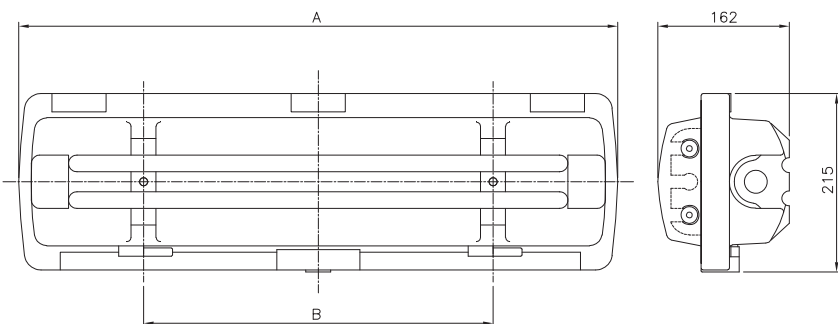
CEC 13 ATEX 024



- Increased safety lighting fixtures completed with fluorescent T8 tubes with G13 bipin plugs.
- Electronic ballast (230 V AC - 50 Hz - cosφ>0.9) suitable for ignition at low temperatures.
- Body in GRP (glass-reinforced polyester), transparent part in polycarbonate and internal reflector in white anodized aluminum.
- Supplied with cable gland (13÷18 mm) and plugs.
- External fittings in Stainless Steel.

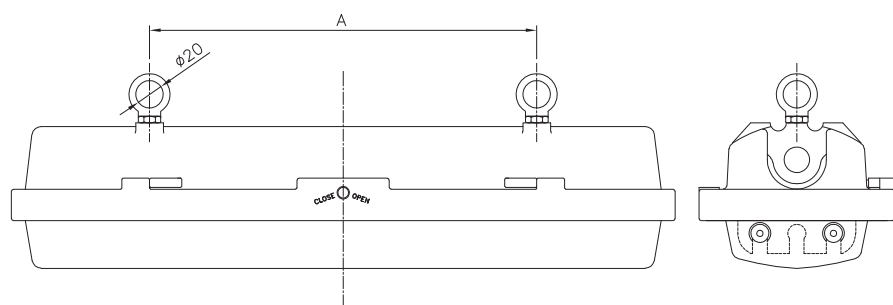
Option - Different voltages (110 V AC).
- Frequency 60 Hz.

- Version with LED lamp (code AVL...) see page G18.



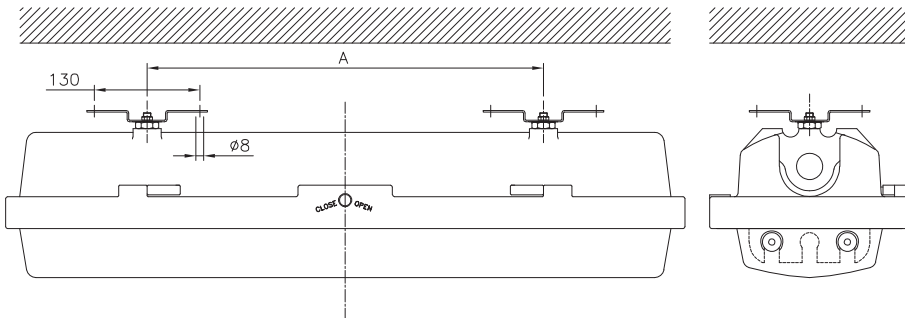
Code	Lamps	A (mm)	B (mm)
AVF 118	1 x 18 W	732	400
AVF 218	2 x 18 W	732	400
AVF 136	1 x 36 W	1342	450
AVF 236	2 x 36 W	1342	450

AVFS: Suspended installation



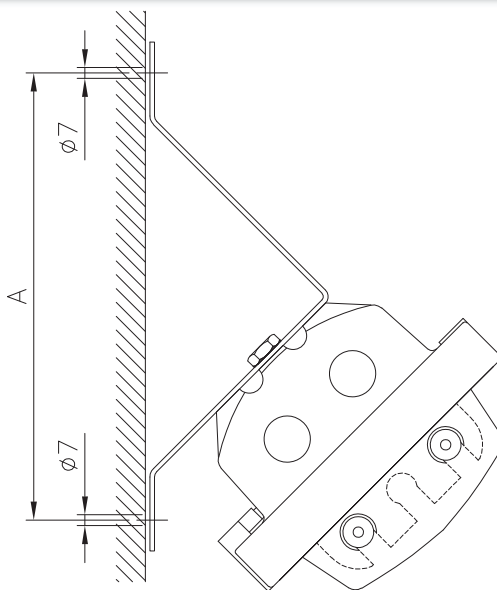
Code	Lamps	A (mm)
AVFS 118	1 x 18 W	400
AVFS 218	2 x 18 W	400
AVFS 136	1 x 36 W	450
AVFS 236	2 x 36 W	450

AVFC: Ceiling installation



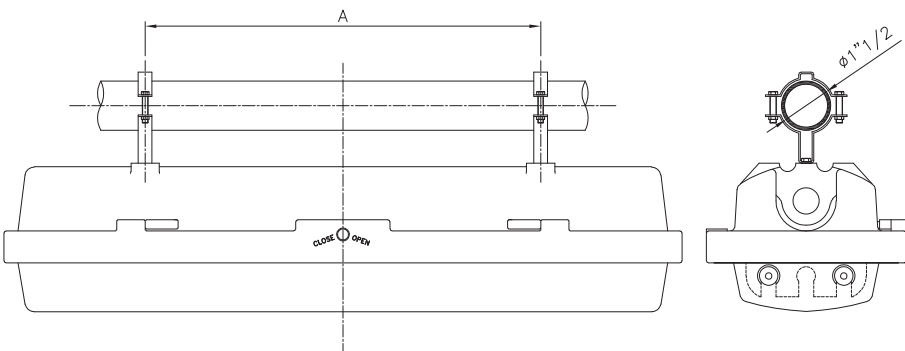
Code	Lamps	A (mm)
AVFC 118	1 x 18 W	400
AVFC 218	2 x 18 W	
AVFC 136	1 x 36 W	450
AVFC 236	2 x 36 W	

AVFJ: 45° wall installation



Code	Lamps	A (mm)
AVFJ 118	1 x 18 W	400
AVFJ 218	2 x 18 W	
AVFJ 136	1 x 36 W	450
AVFJ 236	2 x 36 W	

AVFP: Pole installation



Code	Lamps	A (mm)
AVFP 118	1 x 18 W	400
AVFP 218	2 x 18 W	
AVFP 136	1 x 36 W	450
AVFP 236	2 x 36 W	

Example: AVFC 236L

Order Coding

Type
AVF

Installation mode

S = suspended
C = ceiling
J = 45° wall
P = pole

Lamps no.

1 = 1 lamp
2 = 2 lamps

Power

18 = 18 W
36 = 36 W

Accessories

L = fluorescent tube (std)

EMERGENCY INCREASED SAFETY LIGHTING FIXTURES

series
AVFE

Protection	Gas	1-2	II2G	Ex de IIC T5 Gb
	Dusts	Zone 21-22	II2D	Ex tb IIIC T70°C Db

Degree of Protection	IP66
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Amb. Temp.	Standard	-20°C	+40°C
	Extended	-20°C	+50°C

Entries Threading	M25x1,5 ISO 262
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Material	GRP
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Painting	n.a.
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Standards and Certificates



Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1
EN 60079-7 • EN 60079-31

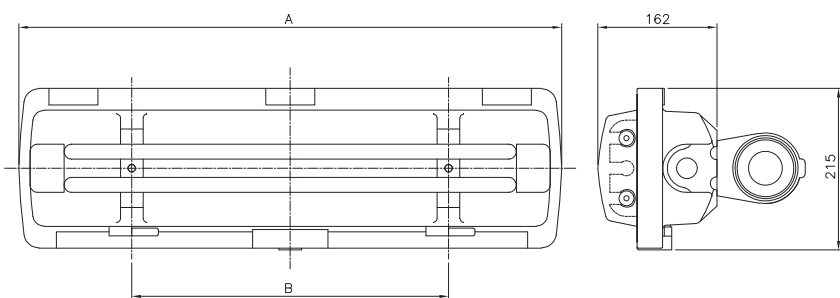
CE CEC 13 ATEX 024



- Increased safety lighting fixtures completed with fluorescent T8 tubes with G13 bipin plugs.
- Electronic ballast (230 V AC - 50 Hz - cosφ>0.9) suitable for ignition at low temperatures.
- Body in GRP (glass-reinforced polyester), transparent part in polycarbonate and internal reflector in white anodized aluminum.
- Supplied with cable gland (13÷18 mm) and plugs.
- Battery charger/inverter, 4 Ah Ni-Cd batteries with switch, installed in external enclosure.
- Backup time: 18 W=120' / 36 W=90'.
- Recharging time: 24 h.
- The electrical apparatuses (safety switch, terminal strip and power supply), mounted on the chassis, ensure ease access and maintenance.
- External fittings in Stainless Steel.

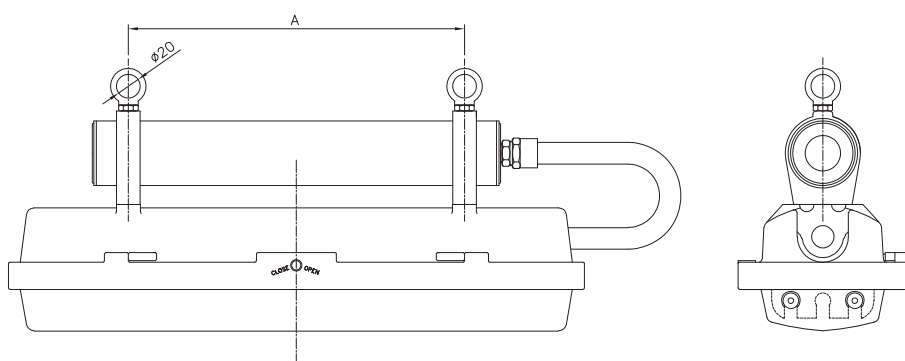
- Options**
- Different voltages (110 V AC).
 - Frequency 60 Hz.

- Version with LED lamp (code AVLE...) see page G18.
- Emergency version with wording EXIT.



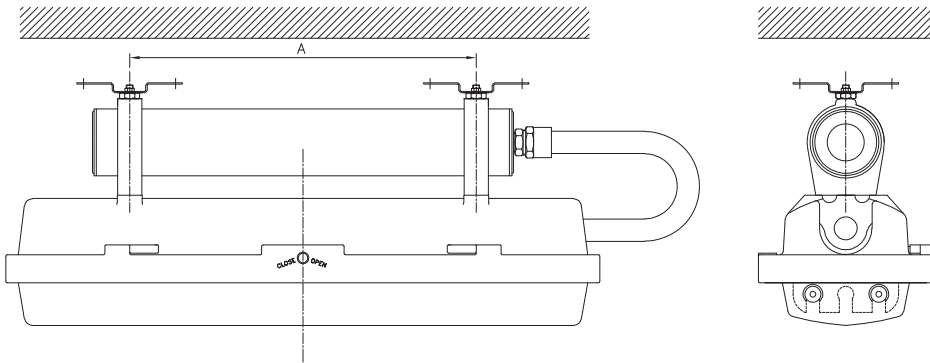
Code	Lamps	A (mm)	B (mm)
AVFE 118	1 x 18 W	732	400
AVFE 218	2 x 18 W ^(*)	732	400
AVFE 136	1 x 36 W	1342	450
AVFE 236	2 x 36 W ^(*)	1342	450

AVFES: Suspended installation



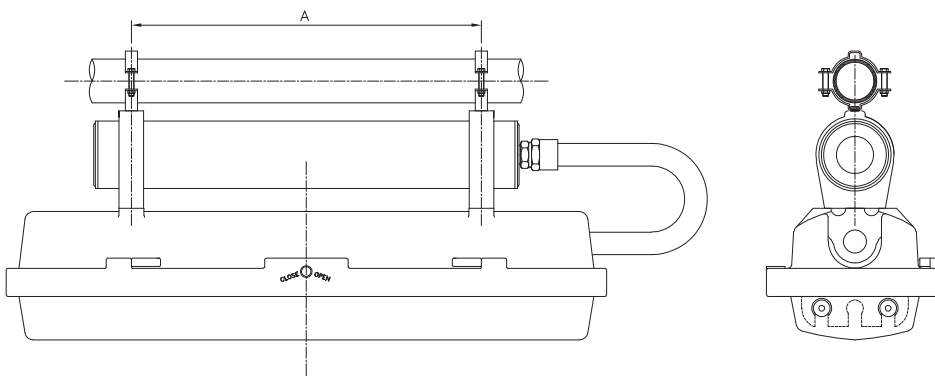
Code	Lamps	A (mm)
AVFES 118	1 x 18 W	400
AVFES 218	2 x 18 W ^(*)	
AVFES 136	1 x 36 W	450
AVFES 236	2 x 36 W ^(*)	

AVFEC: Ceiling installation

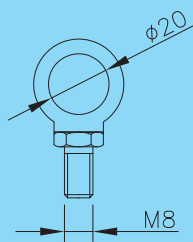


Code	Lamps	A (mm)
AVFEC 118	1 x 18 W	400
AVFEC 218	2 x 18 W(*)	
AVFEC 136	1 x 36 W	450
AVFEC 236	2 x 36 W(*)	

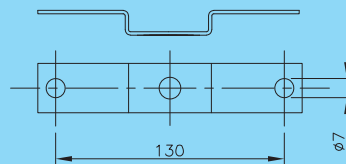
AVFEP: Pole installation



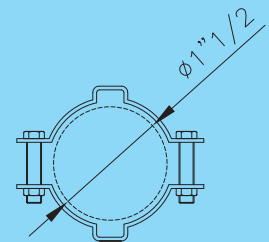
Code	Lamps	A (mm)
AVFEP 118	1 x 18 W	400
AVFEP 218	2 x 18 W(*)	
AVFEP 136	1 x 36 W	450
AVFEP 236	2 x 36 W(*)	



M8 Eyebolt - Code **AVFES 34/1**



Bracket - Code **EVFC 4/1**



1.½" collar - Codice **EVFP 34/1**

NOTES

(*) In emergency mode only one lamp is powered.

Example: AVFES 218L

Order Coding

Type AVFE	Installation mode S = suspended C = ceiling P = pole	Lamps no. 1 = 1 lamp 2 = 2 lamps	Power 18 = 18 W 36 = 36 W	Accessories L = fluorescent tube (std)
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INCREASED SAFETY LED LIGHTING FIXTURES

series
AVL/AVLE

Protection	Gas	Zone	1-2	II2G	Ex de IIC T5 Gb
	Dusts	Zone	21-22	II2D	Ex tb IIIC T70°C Db

Degree of Protection	IP66
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Amb. Temp.	Standard	-20°C	+40°C
	Extended	-20°C	+50°C

Entries Threading	M25x1,5 ISO 262
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Material	GRP
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Painting	n.a.
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Standards and Certificates



Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1
EN 60079-7 • EN 60079-31

CE CEC 13 ATEX 024



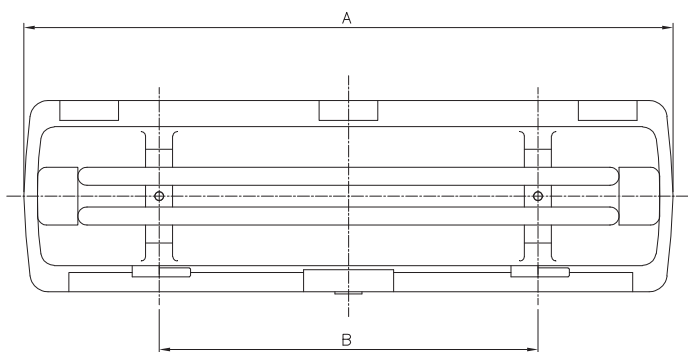
- Increased safety lighting fixtures completed with T8 LED tubes with G13 bipin plugs.
- Color temperature: 4000 K.
Beam angle: 120°.
- Suitable for suspended, ceiling, pole or 45° wall installation. Further information on pages G14-G15.
- Body in GRP (glass-reinforced polyester), transparent part in polycarbonate and internal reflector in white anodized aluminum.
- Supplied with cable gland (13÷18 mm) and plugs.
- External fittings in Stainless Steel.

Options

- Different voltages (110 V AC/DC - 24 V DC).
- Emergency version (code AVLE..).

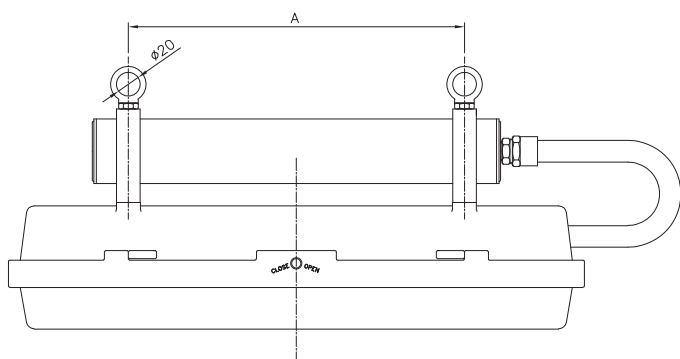
- Emergency version with wording EXIT (code AVLEJ 10EXIT).

AVL...: Lighting fixtures



Code	Dimensions (mm)		Lamps		
	A	B	No.	Power	Luminous Flux
AVL.. 10	732	400	1	10 ÷ 16 W	800 Lm
AVL.. 210	732	400	2	20 ÷ 32 W	1600 Lm
AVL.. 310	732	400	3	30 ÷ 48 W	2400 Lm
AVL.. 30	1342	450	1	20 ÷ 30 W	1600 Lm
AVL.. 230	1342	450	2	40 ÷ 60 W	3200 Lm
AVL.. 330	1342	450	3	60 ÷ 90 W	4800 Lm

AVLE...: Emergency lighting fixtures



Code	A (mm)	Lamps		
		No.	Power	Luminous FLux
AVLE.. 10	400	1	10 ÷ 16 W	800 Lm
AVLE.. 210	400	2	20 ÷ 32 W	1600 Lm
AVLE.. 310	400	3	30 ÷ 48 W	2400 Lm
AVLE.. 30	450	1	20 ÷ 30 W	1600 Lm
AVLE.. 230	450	2	40 ÷ 60 W	3200 Lm
AVLE.. 330	450	3	60 ÷ 90 W	4800 Lm

LIGHTING FIXTURES

series
EV

Protection	Gas	1-2	II2G	Ex d IIC T6 ÷ T3 Gb
	Dusts	21-22	II2D	Ex tb IIIC T85°C ÷ T200°C Db

Degree of Protection	IP65
----------------------	------

Amb. Temp.	Standard	-20°C	+40°C
	Extended	-20°C	+60°C



Entries Threading	EN 10226 (Gk)
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Material	Aluminum light alloy
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Painting	External Epoxy RAL 7000
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Standards and Certificates

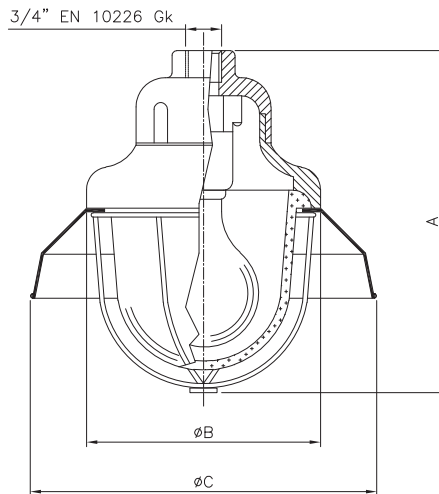
Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1
EN 60079-31

CE INERIS 01 ATEX 0072X

- Suitable for incandescent, halogen, fluorescent, LED, multiLED and flash lamps.
- Voltage 230 V AC.
- Glass globe in tempered borosilicate.
- Ceramic lampholder.
- External screws in Stainless Steel AISI 304.

- Options**
- Cable entry threading: tapered 3/4" NPT ANSI B1.20.1 (N) or Metric M25x1,5 (M) ISO 262.
 - Different voltages.
 - Protective cage in stainless steel AISI 304.
 - External reflector in polished Aluminum REVA (page G20).
 - Optical signaller version (see page E3).



NOTES

Extended ambient temperature range from -20°C to +60°C is permitted with the following type of lamps only: multiLED, LED and fluorescent.

Code	Lamp											Dimensions (mm)			Cable Entries No.	Weight (kg)
	Lamp Holder	Incandescent		Halogen		Fluorescent		LED		multiLED		A	ØB	ØC		
		Wmax	Temp. Class	Wmax	Temp. Class	Wmax	Temp. Class	Wmax	Temp. Class	Wmax	Temp. Class					
EV.. 50	E27	100	T3	100	T3	20	T4	17	T6	9	T6	200	135	220	1	1,6
EV.. 100	E27	150	T3	150	T3	20	T6	-	-	9	T6	245	152	260	1	2,2
EV.. 200	E27	200	T3	200	T3	23	T6	-	-	-	-	280	180	310	1	2,9
EV.. 300	E40	300	T3	-	-	85	T3	-	-	-	-	370	200	340	1	4,3

Example: EVCT 200

Order Coding

Type
EV

Installation mode

A = suspended

C = ceiling (only for EV 50)

CT = ceiling with junction box

JT = 45° wall

Size

50 = max 100 W

100 = max 150 W

200 = max 200 W

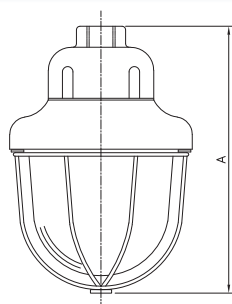
300 = max 300 W

Threading (if different from Gk)

N = NPT ANSI B1.20

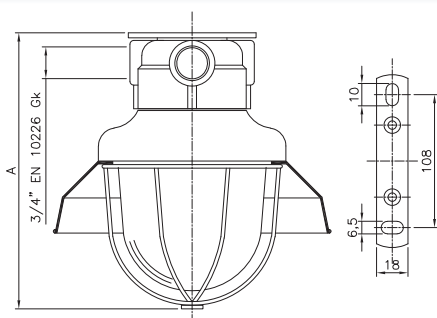
M = Metric ISO 262

EVA: Suspended installation



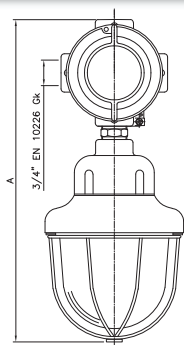
Code	Lamp Holder	A (mm)	Cable Entries No.	Weight (kg)
EVA 50	E27	200	1	1.6
EVA 100	E27	245	1	2.2
EVA 200	E27	280	1	2.9
EVA 300	E40	370	1	4.3

EVC: Ceiling installation



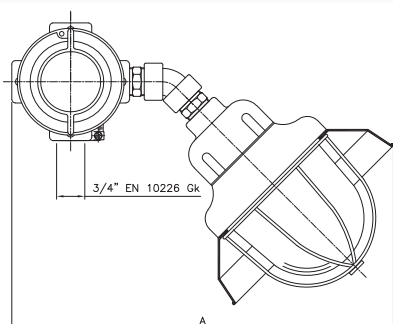
Code	Lamp Holder	A (mm)	Cable Entries No.	Weight (kg)
EVC 50	E27	220	2	1.6

EVCT: Ceiling installation with junction box



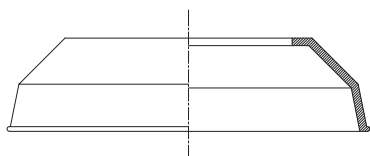
Code	Lamp Holder	A (mm)	Cable Entries No.	Weight (kg)
EVCT 50	E27	335	2	1.6
EVCT 100	E27	380	2	2.9
EVCT 200	E27	415	2	3.6
EVCT 300	E40	505	2	5.0

EVJT: 45° wall installation



Code	Lamp Holder	A (mm)	Cable Entries No.	Weight (kg)
EVJT 50	E27	315	2	1.6
EVJT 100	E27	360	2	3.2
EVJT 200	E27	385	2	3.9
EVJT 300	E40	440	2	5.2

REVA: External reflector



Code	Lighting Fixture	Weight (g)
REVA 50	EV... 50	60
REVA 100	EV... 100	105
REVA 200	EV... 200	108
REVA 300	EV... 300	165

PORTABLE LAMP

series
EVP

Protection	Gas	1-2	II2G	Ex d IIC T6 ÷ T3 Gb
	Dusts	Zone 21-22	II2D	Ex tb IIIC T85°C÷T200°C Db

Degree of Protection	IP65
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Amb. Temp.	Standard	-20°C	+40°C
	Extended	-20°C	+60°C




Entries Threading	EN 10226 (Gk)
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Material	Aluminum light alloy
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Painting	External Epoxy RAL 7000
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Standards and Certificates



Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1
EN 60079-31

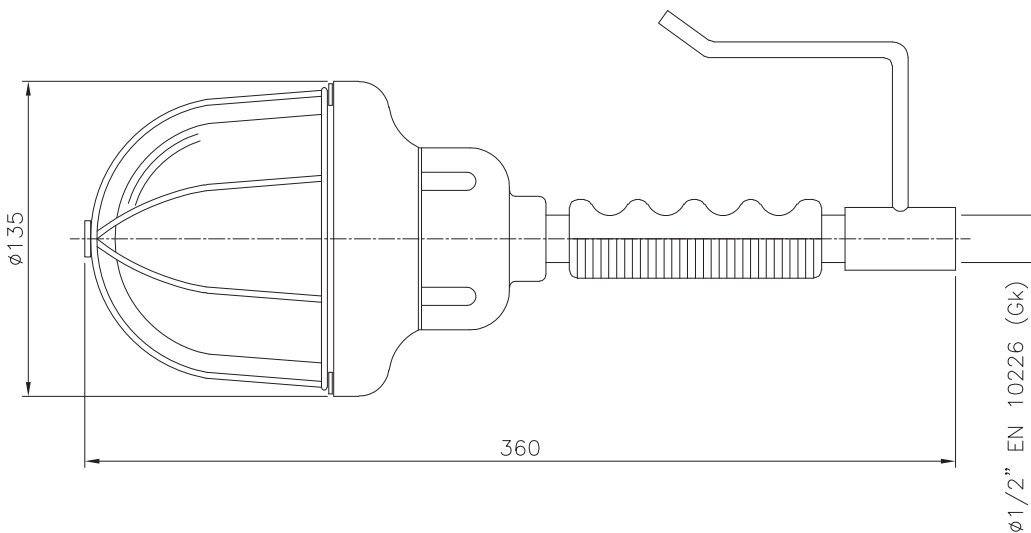
CE INERIS 01 ATEX 0072X

- Suitable for incandescent, energy-saving fluorescent, multiLED or 9 W LED lamps.
- Cage, hook, handle covered with Nylon.
- Glass globe in tempered borosilicate.
- Ceramic lampholder.
- External screws in Stainless Steel AISI 304.

Options

- Cable entry: tapered 3/4" NPT ANSI B1.20.1 (N).

- External painting with different RAL colors.



NOTES

The extended ambient temperature range from -20°C to +60°C is available with the following type of lamps only:

- multiLED;
- LED;
- fluorescente.

Code	Maximum Power	Lamp Holder	Cable Entries No.	Weight (kg)
EVP 50	100 W	E27	1	1.8

Example: EVP 50

Order Coding

Type EV	Installation mode P = portable	Size 50 = max 100 W	Threading (if different from Gk) N = NPT ANSI B1.20
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LIGHTING FIXTURES

series
EW

Protection	Gas	Zone	1-2	II2G	Ex d IIC T5÷T3 Gb
	Dusts	Zone	21-22	II2D	Ex tb IIIC T95°C÷T195°C Db

Degree of Protection	IP66
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Amb. Temp.	Standard	-20°C	+40°C



Entries Threading	EN 10226 (Gk)
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Material	Aluminum light alloy
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Painting	External Epoxy RAL 9006
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Standards and Certificates



Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1
EN 60079-7 • EN 60079-31

CE CEC 13 ATEX 024

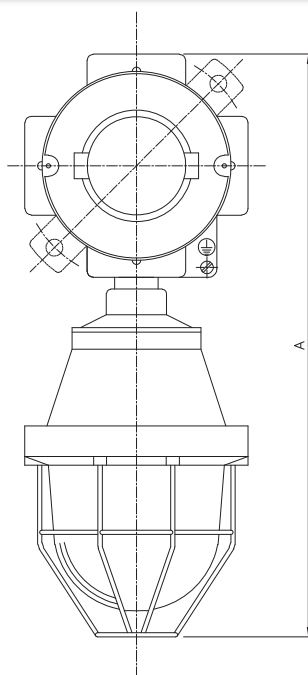
- Lighting fixtures suitable for High Pressure Sodium and Metal Halide lamps.
- Input voltage: 230 V AC - 50 Hz.
- Glass globe in tempered borosilicate.
- Cage in Zinc plated Steel.
- External screws in Stainless Steel AISI 304.

Options

- External reflector in polished Aluminum (code EV).
- Ex e terminal strip^(*).

- Cage in Stainless Steel
- LED lamp version (code EWL).

EWA: Suspended installation



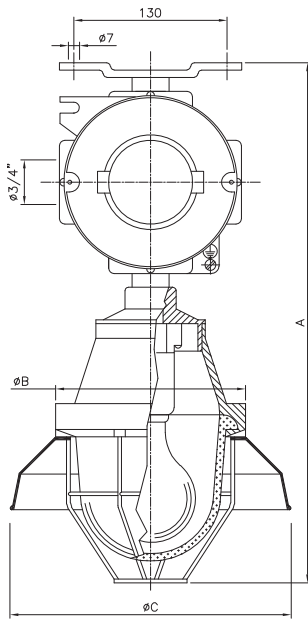
NOTES

With LED lamp, the temperature class is T5 for an Ambient Temperature (A.T.) up to +40°C and T4 for an extended A.T. up to +60°C.

^(*)In case of presence of Ex e terminal strip, the protection mode against gas becomes: Ex de IIC T5÷T3 Gb.

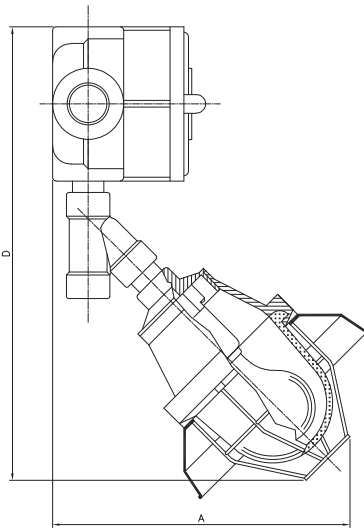
Code	Lamp	Power (W)	A (mm)	Lamp Holder	Temperature Class	Weight (kg)
EWA 70RN _a	High Pressure Sodium	70	440	E27	T4	10
EWA 150RN _a		150	610	E40	T3	10
EWA 250RN _a		250	610	E40	T3	15
EWA 100RMH	Metal Halide	100	440	E27	T4	10
EWA 150RMH		150	440	E27	T3	10
EWA 250RMH		250	610	E40	T3	15

EWCT: Ceiling installation



Code	Lamp	Power (W)	Dimensions (mm)			Lamp Holder	Temperature Class	Weight (kg)
			A	ØB	ØC			
EWCT 70RN _a	High Pressure Sodium	70	280	145	290	E27	T4	10,3
EWCT 150RN _a		150	315	174	324	E40	T3	10,3
EWCT 250RN _a		250	405	195	350	E40	T3	15,3
EWCT 100RMH	Metal Halide	100	280	145	290	E27	T4	10,3
EWCT 150RMH		150	315	174	324	E27	T3	10,3
EWCT 250RMH		250	405	195	350	E40	T3	15,3

EWJ: 45° wall installation



Code	Lamp	Power (W)	Dimensions (mm)		Lamp Holder	Temperature Class	Weight (kg)
			A	C			
EWJ 70RN _a	High Pressure Sodium	70	300	290	E27	T4	10
EWJ 150RN _a		150	330	324	E40	T3	10
EWJ 250RN _a		250	430	350	E40	T3	15
EWJ 100RMH	Metal Halide	100	300	290	E27	T4	10
EWJ 150RMH		150	330	324	E27	T3	10
EWJ 250RMH		250	430	350	E40	T3	15

Example: EWA 80 RHg

Order Coding

Type	Installation mode	Size	Accessories	Lamp
EW	A = suspended CT = ceiling JT = 45° wall	80/70/100 = max 80/70/100 W 125/150/150 = max 125/150/150 W 250 = max 250 W	R = reflector G = cage C = capacitor	Na = High pressure Sodium MH = Metal Halide

External Reflector in polished Aluminum



Code	Lighting Fixture	Weight (g)
EV 80/8	EW... 80	102
EV 125/8	EW... 125	107
EV 250/8	EW... 250	160

FLOODLIGHTS

series
RFL

Protection	Gas	1-2	II2G	Ex de IIB+H ₂ T5÷T3 Gb
	Dusts	Zone 21-22	II2D	Ex tb IIC T95°C÷T195°C Db

Degree of Protection	IP65
----------------------	------

Amb. Temp.	Standard	-20°C	+40°C
	Extended	-20°C	+60°C

Entries Threading	EN 10226 (Gk)
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Material	Aluminum light alloy
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Painting	External Epoxy RAL 9006
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Standards and Certificates



Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1
EN 60079-7 • EN 60079-31

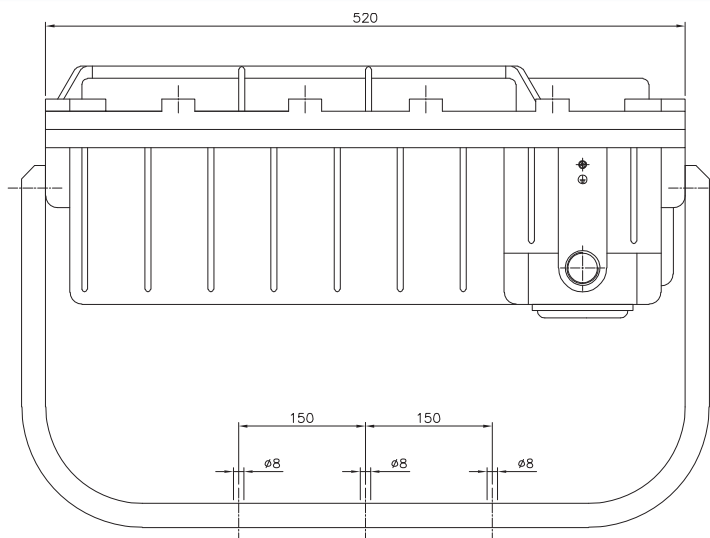
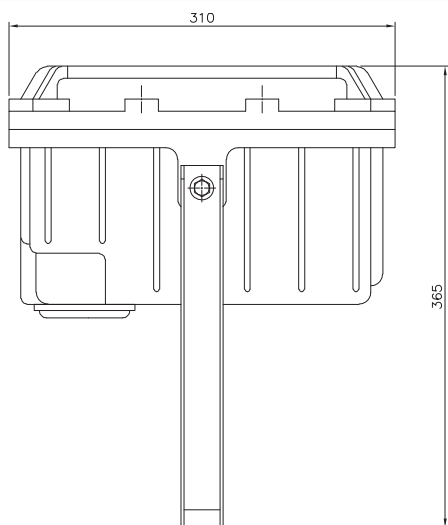
CEC 10 ATEX 037



- Suitable for halogen, high pressure sodium and metal halide lamps.
- Input voltage 230 V AC - 50 Hz.
- Tempered glass.
- Ceramic lamp holder.
- Symmetrical specular reflector in Aluminum.
- Ex e junction box with 4 sqmm terminal strip.
- External fitting in Stainless Steel AISI 304.
- Stainless Steel adjustable bracket.

Options

- Different voltages.
- Degree of protection IP66^(*).
- Frequency 60 Hz.
- LED panel.



Code	Lamp	Power (W)	Lamp Holder	Temperature Class		Weight (kg)
				A.T.<+40°C	A.T.<+60°C	
RFL 150RMH	Metal Halide	150	E27	T4	T3	22
RFL 250RMH		250	E40	T4	T3	22
RFL 400RMH		400	E40	T3	T3	25
RFL 150RNα	High Pressure Sodium	150	E27	T4	T3	22
RFL 250RNα		250	E40	T4	T3	23
RFL 400RNα		400	E40	T3	T3	25
RFL 500H	Halogen	500	E40	T3	T3	20
RFL 140ML	LED Panel	140	---	T5	T5	22

NOTES

(*) Degree of protection IP66 is granted by the presence and integrity of the silicon gasket.



CABLE GLANDS - NIPPLES - SEALING JOINTS CABLE ENTRIES DEVICES - FITTINGS - ACCESSORIES

This section contains a widely comprehensive range of products and accessories designed to fully implement all the plant engineering associated with explosionproof equipment of all kinds in accordance with the applicable International Standards (whether relevant to a product or to plant / maintenance) and the ATEX Directive.

The wide range of materials, the easeness of component inter-connection, by virtue of the infinite range of diameters, threads and adapters available, together with the impressive endowment of our stock (which allow very short delivery times) make COELBO supplies technically complete, absolutely compatible with any sort of existing plant situations, unex-

ceptionable under any regulatory Standards and competitive in every point of view. Despite being of virtually unlimited duration it is recommend to evaluate directly with our Technical-Commercial dept. any need for spare parts or components either for replacements or for additions / expansions of the installations.

	Series	Page
CABLE GLANDS	PM..	H03
SEALING CABLE GLANDS	PM..X	H09
ACCESSORIES for CABLE GLANDS	PM..	H15
SEALING NIPPLES	GN TL	H17
SEALING JOINTS	EZS EYS	H19
CABLE ENTRIES DEVICES		H21
ARMoured CABLES	CA	H23
FITTINGS		H25
ACCESSORIES		H37

H

NOTES:

H

CABLE GLANDS for NOT ARMoured CABLE

series
PM

Protection	Gas	Zone	1-2	II2G	Ex d IIC Gb / Ex e IIC Gb
	Dust		21-22	II2D	Ex tb IIIC Db

Degree of Protection
IP66

Amb. Temp.	Standard	-40°C	+100°C
	Extended	-60°C	+180°C



Entire Threading
NPT ANSI B1.20 (N)
or Metric ISO 262 (M)

Material
Nickel plated Brass.
EPDM Rings.

Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079 - 0 • EN 60079 - 1
EN 60079 - 7 • EN 60079 - 31

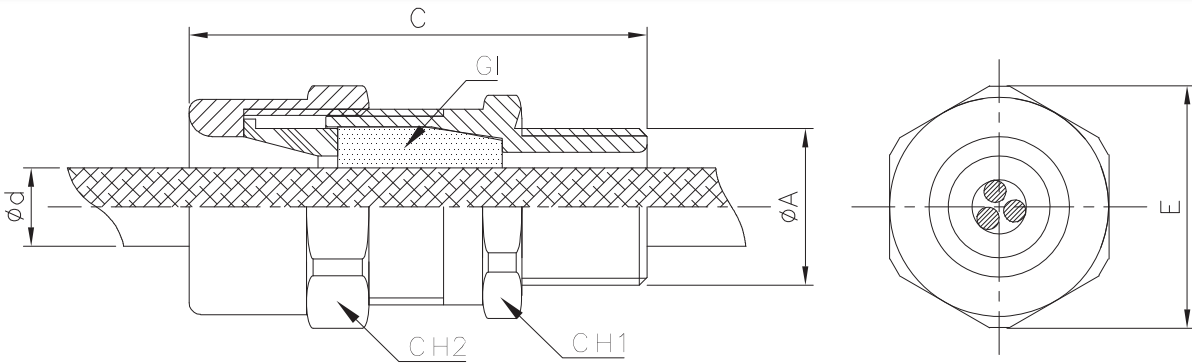
INERIS 10 ATEX 0029X

IEC 60079 - 0 • IEC 60079 - 1
IEC 60079 - 7 • IEC 60079 - 31

IECEx INE 14.0003X

Options

- Material: Stainless Steel AISI 316L (see page I21).
- Accessories: see page H13.
- KIT: cable gland supplied with whole range of available rings.
- Silicon rings.



NOTES

For the optimum choice of the cable glands see also sect. A

Extended temperature range only with Silicon rings.

NPT ANSI B1.20			METRIC ISO 262			CH1	CH2	E	GI	ød cable (mm)	Weight (kg)
Code	øA	C	Code	øA	C						
PM1N7B	1/2" NPT	61	PM1I7B	M20x1.5	59	26	28	31	1GI1	4 ÷ 7	0,135
PM1N9B	"	"	PM1I9B	"	"	"	"	"	1GI2	7 ÷ 9,5	"
PM1N12B	"	"	PM1I12B	"	"	"	"	"	1GI3	9 ÷ 12	"
PM2N12B	3/4" NPT	61	PM2I12B	M25x1.5	59	31	34	37	2GI1	9 ÷ 12	0,173
PM2N14B	"	"	PM2I14B	"	"	"	"	"	2GI2	12 ÷ 14,5	"
PM2N17B	"	"	PM2I17B	"	"	"	"	"	2GI3	14 ÷ 17	"
PM3N17B	1" NPT	75	PM3I17B	M32x1.5	68	42	45	49	3GI1	14 ÷ 17	0,385
PM3N20B	"	"	PM3I20B	"	"	"	"	"	3GI2	17 ÷ 20	"
PM3N23B	"	"	PM3I23B	"	"	"	"	"	3GI3	20 ÷ 23	"
PM4N23B	1.1/4" NPT	75	PM4I23B	M40x1.5	70	46	48	53	4GI1	20 ÷ 23	0,429
PM4N26B	"	"	PM4I26B	"	"	"	"	"	4GI2	23 ÷ 26	"
PM4N29B	"	"	PM4I29B	"	"	"	"	"	4GI3	26 ÷ 29	"
PM5N23B	1.1/2" NPT	75	PM5I23B	M50x1.5	70	56	58	64	5GI1	20 ÷ 23	0,655
PM5N26B	"	"	PM5I26B	"	"	"	"	"	5GI2	23 ÷ 26	"
PM5N29B	"	"	PM5I29B	"	"	"	"	"	5GI3	26 ÷ 29	"
PM5N32B	"	"	PM5I32B	"	"	"	"	"	5GI4	29 ÷ 32	"
PM5N35B	"	"	PM5I35B	"	"	"	"	"	5GI5	32 ÷ 35	"
PM6N39B	2" NPT	75	PM6I39B	M63x1.5	70	65	68	75	6GI1	35 ÷ 39	0,830
PM6N42B	"	"	PM6I42B	"	"	"	"	"	6GI2	39 ÷ 42	"
PM6N45B	"	"	PM6I45B	"	"	"	"	"	6GI3	42 ÷ 45	"

Example: PM3N20B

Order Coding

Type PM	Size 1/2/3/4/5/6	Threadings N = NPT ANSI B1.20 I = Metric ISO 262	Max Cable Diameter See ød cable in the table	Material B = Nickel Plated Brass S = Stainless Steel AISI 316L
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CABLE GLANDS for ARMoured CABLE

series
PMA

Protection	Gas	1-2	II2G	Ex d IIC Gb / Ex e IIC Gb
	Dust	21-22	II2D	Ex tb IIIC Db

Degree of Protection	IP66
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Amb. Temp.	Standard	-40°C	+100°C
	Extended	-60°C	+180°C



Entries Threading	NPT ANSI B1.20 (N) or Metric ISO 262 (M)
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Material	Nickel plated Brass. EPDM Rings.
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Standards and Certificates



Directive 2014/34/EU (ATEX)

EN 60079 - 0 • EN 60079 - 1
EN 60079 - 7 • EN 60079 - 31



INERIS 10 ATEX 0029X

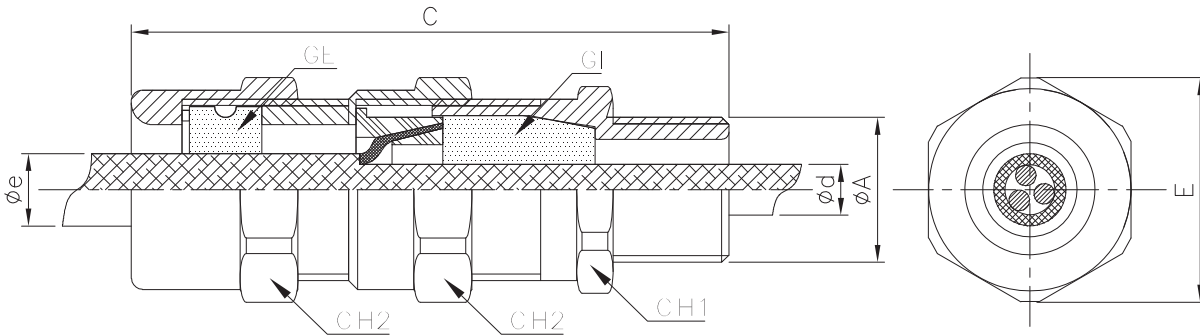


IEC 60079 - 0 • IEC 60079 - 1
IEC 60079 - 7 • IEC 60079 - 31

IECEX INE 14.0003X

Options

- Material: Stainless Steel AISI 316L (see page I22).
- Accessories: see page H13.
- KIT: cable gland supplied with whole range of available rings.
- Silicon rings.



NOTES

For the optimum choice of the cable glands see also sect. A

Extended temperature range only with Silicon rings.

H

NPT ANSI B1.20			METRIC ISO 262			CH1	CH2	E	GI	ød sheath (mm)	GE	øe cable (mm)	Weight (kg)
Code	ØA	C	Code	ØA	C								
PMA1N710B	1/2" NPT	85	PMA1I710B	M20x1.5	83	26	28	31	1GI1	4 ÷ 7	1GE1	6 ÷ 10	0,192
PMA1N913B	"	"	PMA1I913B	"	"	"	"	"	1GI2	7 ÷ 9,5	1GE2	10 ÷ 13	"
PMA1N1218B	"	"	PMA1I1218B	"	"	"	"	"	1GI3	9 ÷ 12	1GE3	13 ÷ 18	"
PMA2N1218B	3/4" NPT	85	PMA2I1218B	M25x1.5	83	31	34	37	2GI1	9 ÷ 12	2GE1	13 ÷ 18	0,253
PMA2N1418B	"	"	PMA2I1418B	"	"	"	"	"	2GI2	12 ÷ 14,5	2GE1	13 ÷ 18	"
PMA2N1723B	"	"	PMA2I1723B	"	"	"	"	"	2GI3	14 ÷ 17	2GE2	18 ÷ 23	"
PMA3N1723B	1" NPT	106	PMA3I1723B	M32x1.5	998	42	45	49	3GI1	14 ÷ 17	3GE1	18 ÷ 23	0,546
PMA3N2026B	"	"	PMA3I2026B	"	"	"	"	"	3GI2	17 ÷ 20	3GE2	21 ÷ 26	"
PMA3N2330B	"	"	PMA3I2330B	"	"	"	"	"	3GI3	20 ÷ 23	3GE3	24 ÷ 30	"
PMA4N2330B	1.1/4" NPT	106	PMA4I2330B	M40x1.5	101	46	48	53	4GI1	20 ÷ 23	4GE1	24 ÷ 30	0,600
PMA4N2635B	"	"	PMA4I2635B	"	"	"	"	"	4GI2	23 ÷ 26	4GE2	29 ÷ 35	"
PMA4N2935B	"	"	PMA4I2935B	"	"	"	"	"	4GI3	26 ÷ 29	4GE3	29 ÷ 35	"
PMA5N2331B	1.1/2" NPT	106	PMA5I2331B	M50x1.5	101	56	58	64	5GI1	20 ÷ 23	5GE1	26 ÷ 31	0,884
PMA5N2637B	"	"	PMA5I2637B	"	"	"	"	"	5GI2	23 ÷ 26	5GE2	31 ÷ 37	"
PMA5N2937B	"	"	PMA5I2937B	"	"	"	"	"	5GI3	26 ÷ 29	5GE2	31 ÷ 37	"
PMA5N3243B	"	"	PMA5I3243B	"	"	"	"	"	5GI4	29 ÷ 32	5GE3	36 ÷ 43	"
PMA5N3543B	"	"	PMA5I3543B	"	"	"	"	"	5GI5	32 ÷ 35	5GE3	36 ÷ 43	"
PMA6N3946B	2" NPT	106	PMA6I3946B	M63x1.5	101	65	68	75	6GI1	35 ÷ 39	6GE1	42 ÷ 46	1,081
PMA6N4249B	"	"	PMA6I4249B	"	"	"	"	"	6GI2	39 ÷ 42	6GE2	45 ÷ 49	"
PMA6N4552B	"	"	PMA6I4552B	"	"	"	"	"	6GI3	42 ÷ 45	6GE3	48 ÷ 52	"

Example: PMA3N2026B

Order Coding

Type
PMA

Size
1/2/3/4/5/6

Threading
N = NPT ANSI B1.20
I = Metric ISO 262

Max. Sheath Diameter below the armour
See **ød sheath** in the table

Max. Diameter Armoured Cable
See **øe cable** in the table

Material
B = Nickel plated Brass
S = Stainless Steel AISI 316L

CABLE GLANDS for NOT ARMoured CABLE with FEMALE BUSHING

series
PMF

Protection	Gas	Zone	1-2	II2G	Ex d IIC Gb / Ex e IIC Gb
	Dust		21-22	II2D	Ex tb IIIC Db

Degree of Protection	IP66
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Amb. Temp.	Standard	-40°C	+100°C
	Extended	-60°C	+180°C



Entire Threading	NPT ANSI B1.20 (N) or Metric ISO 262 (M)
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Material	Nickel plated Brass. EPDM Rings.
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Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079 - 0 • EN 60079 - 1
EN 60079 - 7 • EN 60079 - 31

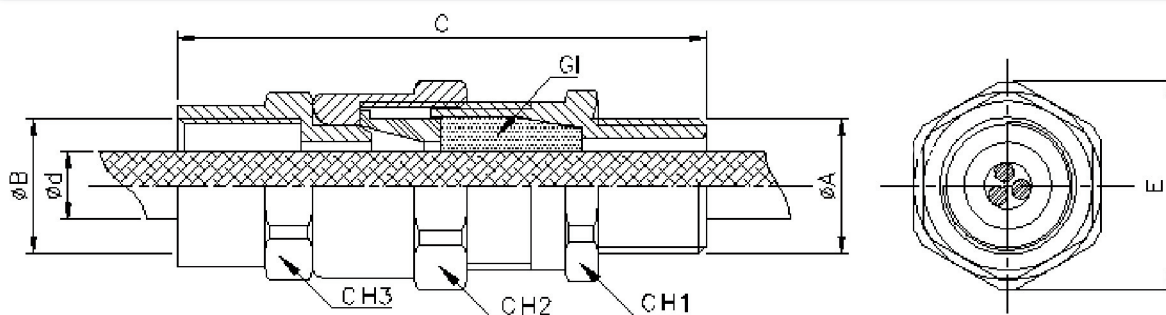
CE INERIS 10 ATEX 0029X

IECEx IEC 60079 - 0 • IEC 60079 - 1
IEC 60079 - 7 • IEC 60079 - 31

IECEx INE 14.0003X

Specific for not armoured cables, they have a female bushing for coupling with the flexible tube end.

- Options**
- Material: Stainless Steel AISI 316L (see page I23).
 - KIT: cable gland supplied with whole range of available rings.
 - Accessories: see page H13.
 - Silicon rings.
 - Mixed configuration.



NOTES

For the optimum choice of the cable glands see also sect. A.

Extended temperature range only with Silicon rings.

NPT ANSI B1.20				METRIC ISO 262				CH1	CH2	CH3	E	GI	Ød cable (mm)	Weight (kg)
Code	ØA	ØB	C	Code	ØA	ØB	C							
PMF1N7B	1/2" NPT	1/2" NPT	82	PMF1I7B	M20x1.5	M20x1.5	80	26	28	24	31	1G11	4 ÷ 7	0,176
PMF1N9B	"	"	"	PMF1I9B	"	"	"	"	"	"	"	1G12	7 ÷ 9,5	"
PMF1N12B	"	"	"	PMF1I12B	"	"	"	"	"	"	"	1G13	9 ÷ 12	"
PMF2N12B	3/4" NPT	3/4" NPT	82	PMF2I12B	M25x1.5	M25x1.5	80	31	34	31	37	2G11	9 ÷ 12	0,243
PMF2N14B	"	"	"	PMF2I14B	"	"	"	"	"	"	"	2G12	12 ÷ 14,5	"
PMF2N17B	"	"	"	PMF2I17B	"	"	"	"	"	"	"	2G13	14 ÷ 17	"
PMF3N17B	1" NPT	1" NPT	102	PMF3I17B	M32x1.5	M32x1.5	97	42	37	45	49	3G11	14 ÷ 17	0,470
PMF3N20B	"	"	"	PMF3I20B	"	"	"	"	"	"	"	3G12	17 ÷ 20	"
PMF3N23B	"	"	"	PMF3I23B	"	"	"	"	"	"	"	3G13	20 ÷ 23	"
PMF4N23B	1.1/4" NPT	1.1/4" NPT	102	PMF4I23B	M40x1.5	M40x1.5	99	46	47	48	53	4G11	20 ÷ 23	0,584
PMF4N26B	"	"	"	PMF4I26B	"	"	"	"	"	"	"	4G12	23 ÷ 26	"
PMF4N29B	"	"	"	PMF4I29B	"	"	"	"	"	"	"	4G13	26 ÷ 29	"
PMF5N23B	1.1/2" NPT	1.1/2" NPT	102	PMF5I23B	M50x1.5	M50x1.5	99	56	56	58	64	5G11	20 ÷ 23	0,839
PMF5N26B	"	"	"	PMF5I26B	"	"	"	"	"	"	"	5G12	23 ÷ 26	"
PMF5N29B	"	"	"	PMF5I29B	"	"	"	"	"	"	"	5G13	26 ÷ 29	"
PMF5N32B	"	"	"	PMF5I32B	"	"	"	"	"	"	"	5G14	29 ÷ 32	"
PMF5N35B	"	"	"	PMF5I35B	"	"	"	"	"	"	"	5G15	32 ÷ 35	"
PMF6N39B	2" NPT	2" NPT	102	PMF6I39B	M63x1.5	M63x1.5	99	65	70	68	75	6G11	35 ÷ 39	1,118
PMF6N42B	"	"	"	PMF6I42B	"	"	"	"	"	"	"	6G12	39 ÷ 42	"
PMF6N45B	"	"	"	PMF6I45B	"	"	"	"	"	"	"	6G13	42 ÷ 45	"

Example: PMF3I20B

Order Coding

Type	Size	Threading	Max Cable Diameter	Material
PMF	1/2/3/4/5/6	N = NPT ANSI B1.20 I = Metric ISO 262	See Ød cable in the table	B = Nickel plated Brass S = Stainless Steel AISI 316L

CABLE GLANDS for NOT ARMoured CABLE with MALE BUSHING

series
PMM

Protection	Gas	Zone	1-2	II2G	Ex d IIC Gb / Ex e IIC Gb
	Dust	Zone	21-22	II2D	Ex tb IIIC Db

Degree of Protection	IP66
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Amb. Temp.	Standard	-40°C	+100°C
	Extended	-60°C	+180°C



Entries Threading	NPT ANSI B1.20 (N) or Metric ISO 262 (M)
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Material	Nickel plated Brass. EPDM Rings.
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Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079 - 0 • EN 60079 - 1
EN 60079 - 7 • EN 60079 - 31

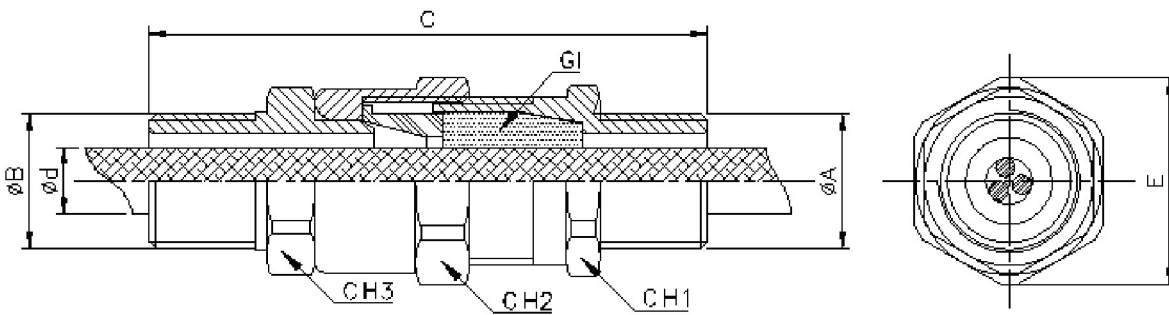
CE INERIS 10 ATEX 0029X

IECEx IEC 60079 - 0 • IEC 60079 - 1
IEC 60079 - 7 • IEC 60079 - 31

IECEx INE 14.0003X

Specific for not armoured cables, they have a male bushing for coupling with the flexible tube end.

- Options**
- Material: Stainless Steel AISI 316L (see page I24).
 - KIT: cable gland supplied with whole range of available rings.
 - Accessories: see page H13.
 - Silicon rings.
 - Mixed configuration.



NOTES

For the optimum choice of the cable glands see also sect. A.

Extended temperature range only with Silicon rings.

NPT ANSI B1.20				METRIC ISO 262				CH1	CH2	CH3	E	GI	ød cable (mm)	Weight (kg)
Code	ØA	ØB	C	Code	ØA	ØB	C							
PMM1N7B	1/2" NPT	1/2" NPT	83	PMM1I7B	M20x1.5	M20x1.5	81	26	28	24	31	1GI1	4 ÷ 7	0,176
PMM1N9B	"	"	"	PMM1I9B	"	"	"	"	"	"	"	1GI2	7 ÷ 9,5	"
PMM1N12B	"	"	"	PMM1I12B	"	"	"	"	"	"	"	1GI3	9 ÷ 12	"
PMM2N12B	3/4" NPT	3/4" NPT	83	PMM2I12B	M25x1.5	M25x1.5	81	31	34	31	37	2GI1	9 ÷ 12	0,243
PMM2N14B	"	"	"	PMM2I14B	"	"	"	"	"	"	"	2GI2	12 ÷ 14,5	"
PMM2N17B	"	"	"	PMM2I17B	"	"	"	"	"	"	"	2GI3	14 ÷ 17	"
PMM3N17B	1" NPT	1" NPT	103	PMM3I17B	M32x1.5	M32x1.5	96	42	37	45	49	3GI1	14 ÷ 17	0,470
PMM3N20B	"	"	"	PMM3I20B	"	"	"	"	"	"	"	3GI2	17 ÷ 20	"
PMM3N23B	"	"	"	PMM3I23B	"	"	"	"	"	"	"	3GI3	20 ÷ 23	"
PMM4N23B	1.1/4" NPT	1.1/4" NPT	103	PMM4I23B	M40x1.5	M40x1.5	98	46	47	48	53	4GI1	20 ÷ 23	0,584
PMM4N26B	"	"	"	PMM4I26B	"	"	"	"	"	"	"	4GI2	23 ÷ 26	"
PMM4N29B	"	"	"	PMM4I29B	"	"	"	"	"	"	"	4GI3	26 ÷ 29	"
PMM5N23B	1.1/2" NPT	1.1/2" NPT	103	PMM5I23B	M50x1.5	M50x1.5	98	56	56	58	64	5GI1	20 ÷ 23	0,839
PMM5N26B	"	"	"	PMM5I26B	"	"	"	"	"	"	"	5GI2	23 ÷ 26	"
PMM5N29B	"	"	"	PMM5I29B	"	"	"	"	"	"	"	5GI3	26 ÷ 29	"
PMM5N32B	"	"	"	PMM5I32B	"	"	"	"	"	"	"	5GI4	29 ÷ 32	"
PMM5N35B	"	"	"	PMM5I35B	"	"	"	"	"	"	"	5GI5	32 ÷ 35	"
PMM6N39B	2" NPT	2" NPT	103	PMM6I39B	M63x1.5	M63x1.5	98	65	70	68	75	6GI1	35 ÷ 39	1,118
PMM6N42B	"	"	"	PMM6I42B	"	"	"	"	"	"	"	6GI2	39 ÷ 42	"
PMM6N45B	"	"	"	PMM6I45B	"	"	"	"	"	"	"	6GI3	42 ÷ 45	"

Example: PMM3I20B

Order Coding	Type	Size	Threading	Max Cable Diameter	Material
	PMM	1/2/3/4/5/6	N = NPT ANSI B1.20 I = Metric ISO 262	See ød cable in the table	B = Nickel plated Brass S = Stainless Steel AISI 316L

CABLE GLANDS for FLEXIBLE METAL CONDUIT with FEMALE BUSHING

series
PMS

Protection	Gas	1-2	II2G	Ex d IIC Gb / Ex e IIC Gb
	Dust	21-22	II2D	Ex tb IIIC Db

Degree of protection
IP66

Amb. Temp.	Standard	-40°C	+100°C
	Extended	-60°C	+180°C



Entries Threading
NPT ANSI B1.20 (N) or Metric ISO 262 (M)

Material
Nickel plated Brass. EPDM Rings(*)

Standards and Certificates



Directive 2014/34/UE (ATEX)

EN 60079 - 0 • EN 60079 - 1
EN 60079 - 7 • EN 60079 - 31



INERIS 10 ATEX 0029X



IEC 60079 - 0 • IEC 60079 - 1
IEC 60079 - 7 • IEC 60079 - 31

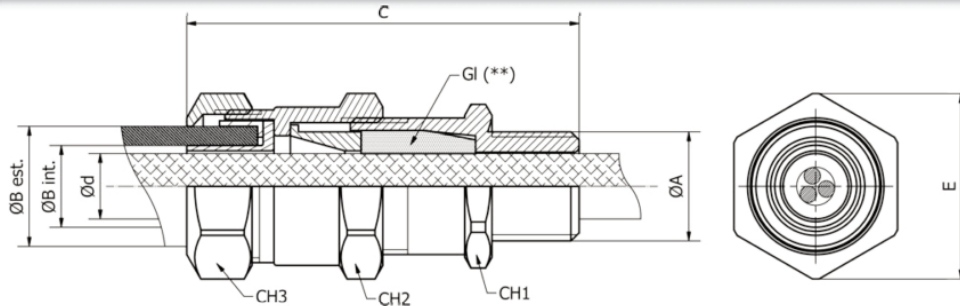
IECEx INE 14.0003X

Specific for not armoured cables, they have a female bushing for coupling with the flexible metal conduit. (see pag. H15).

Options

- (*) Material: Stainless Steel AISI 316L (see page I23).

- (*) Silicon rings.



NOTES

Extended temperature range only with Silicon rings.

Size 4/5/6 and 40/50/63 are available on demand

NPT ANSI B1.20		METRIC ISO 262		ØB int.	ØB ext.	C	CH1	CH2	CH3	Cod GI(**)	cable ød (mm)
Code	ØA	Code	ØA								
PMS1	1/2" NPT	PMS20	M20x1.5	15.5	21	72	30	30	26	1GI1	4 ÷ 7
	1/2" NPT		M20x1.5	15.5	21	72	30	30	26	1GI2	7 ÷ 9,5
	1/2" NPT		M20x1.5	15.5	21	72	30	30	26	1GI3	9 ÷ 12
PMS2	3/4" NPT	PMS25	M25x1.5	20.5	27	75	38	38	31	2GI1	9 ÷ 12
	3/4" NPT		M25x1.5	20.5	27	75	38	38	31	2GI2	12 ÷ 14,5
	3/4" NPT		M25x1.5	20.5	27	75	38	38	31	2GI3	14 ÷ 17
PMS3	1" NPT	PMS32	M32x1.5	26.5	34	81	42	42	45	3GI1	14 ÷ 17
	1" NPT		M32x1.5	26.5	34	81	42	42	45	3GI2	17 ÷ 20
	1" NPT		M32x1.5	26.5	34	81	42	42	45	3GI3	20 ÷ 23

Products in the below table are available on demand

PMS4	1.1/4" NPT	PMS40	M40x1.5	35	43	83	56	56	46	4GI1	20 ÷ 23
	1.1/4" NPT		M40x1.5	35	43	83	56	56	46	4GI2	23 ÷ 26
	1.1/4" NPT		M40x1.5	35	43	83	56	56	46	4GI3	26 ÷ 29
PMS5	1.1/2" NPT	PMS50	M50x1.5	40	48	89	62	62	56	5GI1	20 ÷ 23
	1.1/2" NPT		M50x1.5	40	48	89	62	62	56	5GI2	23 ÷ 26
	1.1/2" NPT		M50x1.5	40	48	89	62	62	56	5GI3	26 ÷ 29
	1.1/2" NPT		M50x1.5	40	48	89	62	62	56	5GI4	29 ÷ 32
	1.1/2" NPT		M50x1.5	40	48	89	62	62	56	5GI5	32 ÷ 35
PMS6	2" NPT	PMS63	M63x1.5	50.5	58.5	89	74	74	68	6GI1	35 ÷ 39
	2" NPT		M63x1.5	50.5	58.5	89	74	74	68	6GI2	39 ÷ 42
	2" NPT		M63x1.5	50.5	58.5	89	74	74	68	6GI3	42 ÷ 45

Example: PMS1NB

Order Coding

Type
PMS

Size
1/2/3/4/5/6
20/25/32/40/50/63

Threading
N = NPT ANSI B1.20
I = Metrica ISO 262

Material
B = Ottone Nichelato
S = Acciaio Inox AISI 316L



CABLE GLANDS SINGLE COMPRESSION for ARMoured CABLE

series
PA

Protection	Gas	1-2	II2G	Ex d IIC Gb / Ex e IIC Gb
	Dust	21-22	II2D	Ex tb IIIC Db

Degree of Protection
IP66

Amb. Temp.	Standard	-40°C	+100°C
	Extended	-60°C	+180°C



Entries Threading
NPT ANSI B1.20 (N)
or
Metric ISO 262 (M)

Material
Nickel plated Brass.
EPDM Rings.

Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079 - 0 • EN 60079 - 1
EN 60079 - 7 • EN 60079 - 31

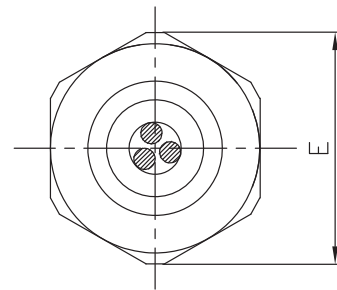
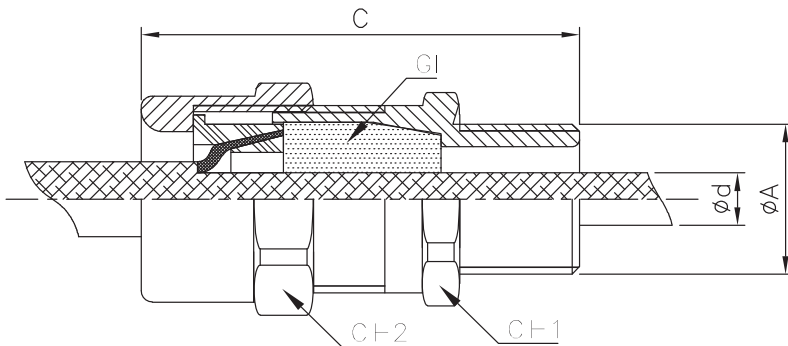
CE INERIS 10 ATEX 0029X

IEC 60079 - 0 • IEC 60079 - 1
IEC 60079 - 7 • IEC 60079 - 31

IECEx INE 14.0003X

Options

- Material: Stainless Steel AISI 316L (see page I25).
- KIT: cable gland supplied with whole range of available rings.
- Accessories: see page H13.
- Silicon rings.



NOTES

For the optimum choice of the cable glands see also sect. A

Extended temperature range only with Silicon rings.

NPT ANSI B1.20			METRIC ISO 262			CH1	CH2	E	GI	ød cable (mm)	Weight (kg)
Code	øA	C	Code	øA	C						
PA1N7B	1/2" NPT	61	PA1I7B	M20x1.5	59	26	28	31	1GI1	4 ÷ 7	0,135
PA1N9B	"	"	PA1I9B	"	"	"	"	"	1GI2	7 ÷ 9,5	"
PA1N12B	"	"	PA1I12B	"	"	"	"	"	1GI3	9 ÷ 12	"
PA2N12B	3/4" NPT	61	PA2I12B	M25x1.5	59	31	34	37	2GI1	9 ÷ 12	0,173
PA2N14B	"	"	PA2I14B	"	"	"	"	"	2GI2	12 ÷ 14,5	"
PA2N17B	"	"	PA2I17B	"	"	"	"	"	2GI3	14 ÷ 17	"
PA3N17B	1" NPT	75	PA3I17B	M32x1.5	68	42	45	49	3GI1	14 ÷ 17	0,385
PA3N20B	"	"	PA3I20B	"	"	"	"	"	3GI2	17 ÷ 20	"
PA3N23B	"	"	PA3I23B	"	"	"	"	"	3GI3	20 ÷ 23	"
PA4N23B	1.1/4" NPT	75	PA4I23B	M40x1.5	70	46	48	53	4GI1	20 ÷ 23	0,429
PA4N26B	"	"	PA4I26B	"	"	"	"	"	4GI2	23 ÷ 26	"
PA4N29B	"	"	PA4I29B	"	"	"	"	"	4GI3	26 ÷ 29	"
PA5N23B	1.1/2" NPT	75	PA5I23B	M50x1.5	70	56	58	64	5GI1	20 ÷ 23	0,655
PA5N26B	"	"	PA5I26B	"	"	"	"	"	5GI2	23 ÷ 26	"
PA5N29B	"	"	PA5I29B	"	"	"	"	"	5GI3	26 ÷ 29	"
PA5N32B	"	"	PA5I32B	"	"	"	"	"	5GI4	29 ÷ 32	"
PA5N35B	"	"	PA5I35B	"	"	"	"	"	5GI5	32 ÷ 35	"
PA6N39B	2" NPT	75	PA6I39B	M63x1.5	70	65	68	75	6GI1	35 ÷ 39	0,830
PA6N42B	"	"	PA6I42B	"	"	"	"	"	6GI2	39 ÷ 42	"
PA6N45B	"	"	PA6I45B	"	"	"	"	"	6GI3	42 ÷ 45	"

Example: PA3N20B

Order Coding

Type PA	Size 1/2/3/4/5/6	Threadings N = NPT ANSI B1.20 I = Metric ISO 262	Max Cable Diameter See ød cable in the table	Material B = Nickel Plated Brass S = Stainless Steel AISI 316L
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SEALING CABLE GLANDS for NOT ARMoured CABLE

series
PMX

Protection	Gas	Zone	1-2	II2G	Ex d IIC Gb / Ex e IIC Gb
	Dust	Zone	21-22	II2D	Ex tb IIIC Db

Degree of Protection	IP66
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Amb. Temp.	Standard	-40°C	+100°C
	Extended	-60°C	+180°C



Entries Threading	NPT ANSI B1.20 (N) or Metric ISO 262 (M)
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Material	Nickel plated Brass. EPDM Rings.
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Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079 - 0 • EN 60079 - 1
EN 60079 - 7 • EN 60079 - 31

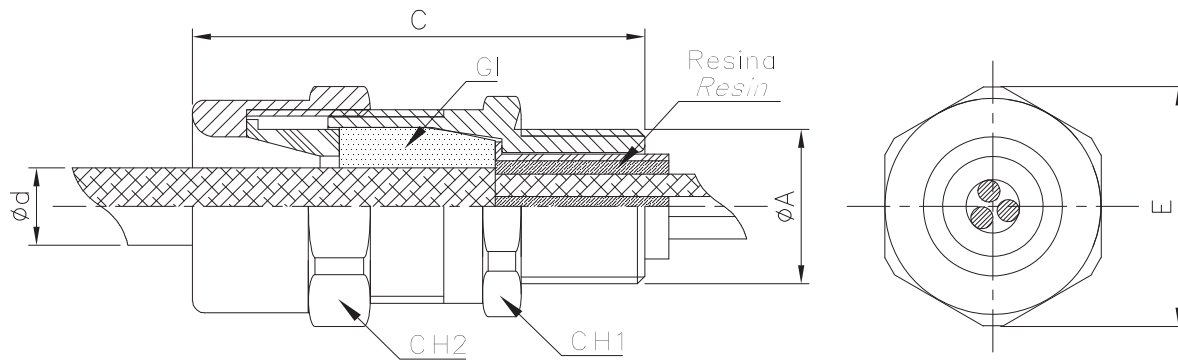
INERIS 10 ATEX 0029X

**IEC 60079 - 0 • IEC 60079 - 1
IEC 60079 - 7 • IEC 60079 - 31**

IECEx INE 14.0003X

Options

- Material: Stainless Steel AISI 316L (see page I26).
- Accessories: see page H13.
- KIT: cable gland supplied with whole range of available rings.
- Silicon rings.



NOTES

For the optimum choice of the cable glands see also sect. A

Extended temperature range only with Silicon rings.

Further information on resin on page H14.

NPT ANSI B1.20			METRIC ISO 262			CH1	CH2	E	GI	Ød cable (mm)	Weight (kg)
Code	ØA	C	Code	ØA	C						
PMX1N7B	1/2" NPT	61	PMX1I7B	M20x1.5	59	26	28	31	1GI1	4 ÷ 7	0,142
PMX1N9B	"	"	PMX1I9B	"	"	"	"	"	1GI2	7 ÷ 9,5	"
PMX1N12B	"	"	PMX1I12B	"	"	"	"	"	1GI3	9 ÷ 12	"
PMX2N12B	3/4" NPT	61	PMX2I12B	M25x1.5	59	31	34	37	2GI1	9 ÷ 12	0,183
PMX2N14B	"	"	PMX2I14B	"	"	"	"	"	2GI2	12 ÷ 14,5	"
PMX2N17B	"	"	PMX2I17B	"	"	"	"	"	2GI3	14 ÷ 17	"
PMX3N17B	1" NPT	75	PMX3I17B	M32x1.5	68	42	45	49	3GI1	14 ÷ 17	0,405
PMX3N20B	"	"	PMX3I20B	"	"	"	"	"	3GI2	17 ÷ 20	"
PMX3N23B	"	"	PMX3I23B	"	"	"	"	"	3GI3	20 ÷ 23	"
PMX4N23B	1.1/4" NPT	75	PMX4I23B	M40x1.5	70	46	48	53	4GI1	20 ÷ 23	0,453
PMX4N26B	"	"	PMX4I26B	"	"	"	"	"	4GI2	23 ÷ 26	"
PMX4N29B	"	"	PMX4I29B	"	"	"	"	"	4GI3	26 ÷ 29	"
PMX5N23B	1.1/2" NPT	75	PMX5I23B	M50x1.5	70	56	58	64	5GI1	20 ÷ 23	0,685
PMX5N26B	"	"	PMX5I26B	"	"	"	"	"	5GI2	23 ÷ 26	"
PMX5N29B	"	"	PMX5I29B	"	"	"	"	"	5GI3	26 ÷ 29	"
PMX5N32B	"	"	PMX5I32B	"	"	"	"	"	5GI4	29 ÷ 32	"
PMX5N35B	"	"	PMX5I35B	"	"	"	"	"	5GI5	32 ÷ 35	"
PMX6N39B	2" NPT	75	PMX6I39B	M63x1.5	70	65	68	75	6GI1	35 ÷ 39	0,836
PMX6N42B	"	"	PMX6I42B	"	"	"	"	"	6GI2	39 ÷ 42	"
PMX6N45B	"	"	PMX6I45B	"	"	"	"	"	6GI3	42 ÷ 45	"

Example: PMX3N20B

Order Coding

Type PMX	Size 1/2/3/4/5/6	Threadings N = NPT ANSI B1.20 I = Metric ISO 262	Max Cable Diameter See Ød cable in the table	Material B = Nickel Plated Brass S = Stainless Steel AISI 316L
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H

SEALING CABLE GLANDS for ARMoured CABLES

series
PMAX

Protection	Gas	1-2	II2G	Ex d IIC Gb / Ex e IIC Gb
	Dusts	Zone 21-22	II2D	Ex tb IIC Db

Degree of Protection
IP66

Amb. Temp.	Standard	-40°C	+100°C
	Extended	-60°C	+180°C



Entries Threading
NPT ANSI B1.20 (N) or Metric ISO 262 (M)

Material
Nickel plated Brass. EPDM Rings.

Standards and Certificates

Directive 2014/34/EU (ATEX)

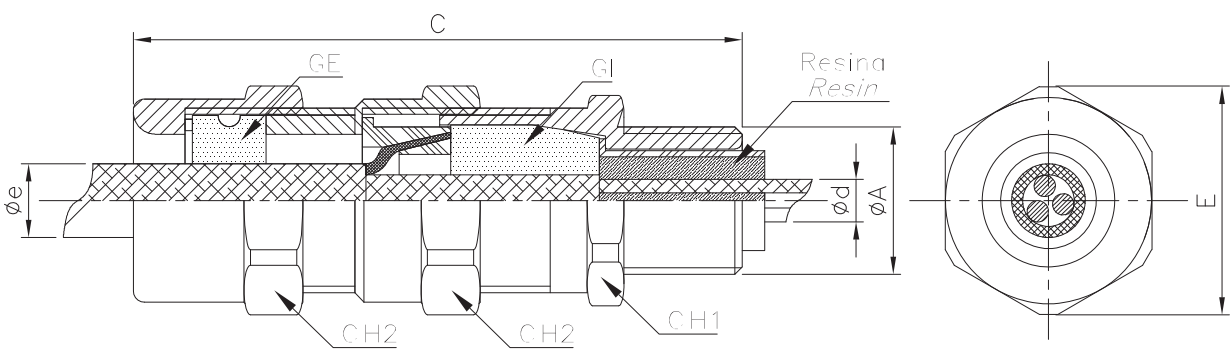
EN 60079 - 0 • EN 60079 - 1
EN 60079 - 7 • EN 60079 - 31

CE INERIS 10 ATEX 0029X

IECEx IEC 60079 - 0 • IEC 60079 - 1
IEC 60079 - 7 • IEC 60079 - 31

IECEx INE 14.0003X

- Options**
- Material: Stainless Steel AISI 316L (see page I27).
 - KIT: cable glands supplied with whole range of available rings.
 - Accessories: see page H13.
 - Silicon rings.



NOTES

For the optimum choice of the cable glands see also sect. A.

Extended temperature range only with Silicon rings.

Further information on resin on page H14.

NPT ANSI B1.20			METRIC ISO 262			CH1	CH2	E	GI	ød sheath (mm)	GE	øe cable (mm)	Weight (kg)
Code	ØA	C	Code	ØA	C								
PMAX1N710B	1/2" NPT	85	PMAX1I710B	M20x1.5	83	26	28	31	1GI1	4 ÷ 7	1GE1	6 ÷ 10	0,198
PMAX1N913B	"	"	PMAX1I913B	"	"	"	"	"	1GI2	7 ÷ 9,5	1GE2	10 ÷ 13	"
PMAX1N1218B	"	"	PMAX1I1218B	"	"	"	"	"	1GI3	9 ÷ 12	1GE3	13 ÷ 18	"
PMAX2N1218B	3/4" NPT	85	PMAX2I1218B	M25x1.5	83	31	34	37	2GI1	9 ÷ 12	2GE1	13 ÷ 18	0,262
PMAX2N1418B	"	"	PMAX2I1418B	"	"	"	"	"	2GI2	12 ÷ 14,5	2GE1	13 ÷ 18	"
PMAX2N1723B	"	"	PMAX2I1723B	"	"	"	"	"	2GI3	14 ÷ 17	2GE2	18 ÷ 23	"
PMAX3N1723B	1" NPT	106	PMAX3I1723B	M32x1.5	99	42	45	49	3GI1	14 ÷ 17	3GE1	18 ÷ 23	0,566
PMAX3N2026B	"	"	PMAX3I2026B	"	"	"	"	"	3GI2	17 ÷ 20	3GE2	21 ÷ 26	"
PMAX3N2330B	"	"	PMAX3I2330B	"	"	"	"	"	3GI3	20 ÷ 23	3GE3	24 ÷ 30	"
PMAX4N2330B	1.1/4" NPT	106	PMAX4I2330B	M40x1.5	101	46	48	53	4GI1	20 ÷ 23	4GE1	24 ÷ 30	0,624
PMAX4N2635B	"	"	PMAX4I2635B	"	"	"	"	"	4GI2	23 ÷ 26	4GE2	29 ÷ 35	"
PMAX4N2935B	"	"	PMAX4I2935B	"	"	"	"	"	4GI3	26 ÷ 29	4GE3	29 ÷ 35	"
PMAX5N2331B	1.1/2" NPT	106	PMAX5I2331B	M50x1.5	101	56	58	64	5GI1	20 ÷ 23	5GE1	26 ÷ 31	0,914
PMAX5N2637B	"	"	PMAX5I2637B	"	"	"	"	"	5GI2	23 ÷ 26	5GE2	31 ÷ 37	"
PMAX5N2937B	"	"	PMAX5I2937B	"	"	"	"	"	5GI3	26 ÷ 29	5GE2	31 ÷ 37	"
PMAX5N3243B	"	"	PMAX5I3243B	"	"	"	"	"	5GI4	29 ÷ 32	5GE3	36 ÷ 43	"
PMAX5N3543B	"	"	PMAX5I3543B	"	"	"	"	"	5GI5	32 ÷ 35	5GE3	36 ÷ 43	"
PMAX6N3946B	2" NPT	106	PMAX6I3946B	M63x1.5	101	65	68	75	6GI1	35 ÷ 39	6GE1	42 ÷ 46	1,087
PMAX6N4249B	"	"	PMAX6I4249B	"	"	"	"	"	6GI2	39 ÷ 42	6GE2	45 ÷ 49	"
PMAX6N4552B	"	"	PMAX6I4552B	"	"	"	"	"	6GI3	42 ÷ 45	6GE3	48 ÷ 52	"

Example: PMAX3N2026B

Order Coding	Type	Size	Threading	Max. Sheath Diameter below the armour	Max. Diameter Armoured Cable	Material
	PMAX	1/2/3/4/5/6	N = NPT ANSI B1.20 I = Metric ISO 262	See Ød sheath in the table	See Øe cable in the table	B = Nickel plated Brass S = Stainless Steel AISI 316L

SEALING CABLE GLANDS for NOT ARMoured CABLE with FEMALE BUSHING

series
PMFX

Protection	Gas	Zone	1-2	II2G	Ex d IIC Gb / Ex e IIC Gb
	Dust	Zone	21-22	II2D	Ex tb IIIC Db

Degree of Protection	IP66
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Amb. Temp.	Standard	-40°C	+100°C
	Extended	-60°C	+180°C



Entries Threading	NPT ANSI B1.20 (N) or Metric ISO 262 (M)
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Material	Nickel plated Brass. EPDM Rings.
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Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079 - 0 • EN 60079 - 1
EN 60079 - 7 • EN 60079 - 31

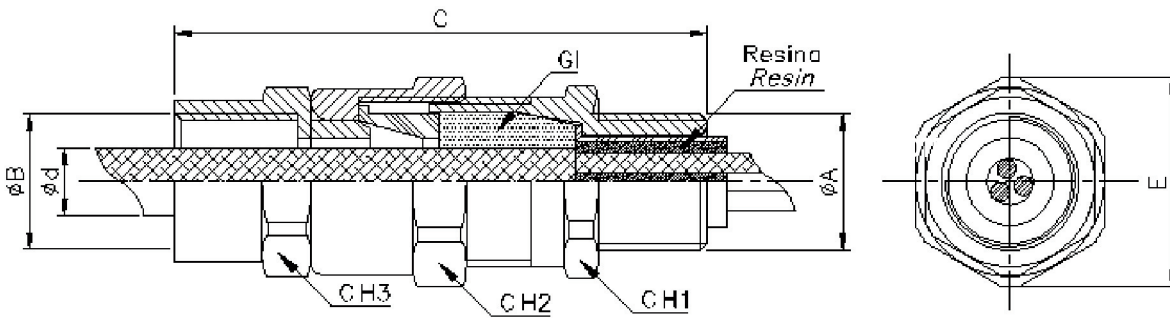
INERIS 10 ATEX 0029X

IEC 60079 - 0 • IEC 60079 - 1
IEC 60079 - 7 • IEC 60079 - 31

IECEx INE 14.0003X

Specific for not armoured cables, they have a female bushing for coupling with the flexible tube end.

- Options**
- Material: Stainless Steel AISI 316L (see page I28).
 - KIT: cable gland supplied with whole range of available rings.
 - Accessories: see page H13.
 - Silicon rings.
 - Mixed configuration.



NOTES

For the optimum choice of the cable glands see also sect. A.

Extended temperature range only with Silicon rings.

Further information on resin on page H14.

NPT ANSI B1.20				METRIC ISO 262				CH1	CH2	CH3	E	GI	Ød cable (mm)	Weight (kg)
Code	ØA	ØB	C	Code	ØA	ØB	C							
PMFX1N7B	1/2" NPT	1/2" NPT	82	PMFX1I7B	M20x1.5	M20x1.5	80	26	28	24	31	1GI1	4 ÷ 7	0,183
PMFX1N9B	"	"	"	PMFX1I9B	"	"	"	"	"	"	"	1GI2	7 ÷ 9,5	"
PMFX1N12B	"	"	"	PMFX1I12B	"	"	"	"	"	"	"	1GI3	9 ÷ 12	"
PMFX2N12B	3/4" NPT	3/4" NPT	82	PMFX2I12B	M25x1.5	M25x1.5	80	31	34	31	37	2GI1	9 ÷ 12	0,251
PMFX2N14B	"	"	"	PMFX2I14B	"	"	"	"	"	"	"	2GI2	12 ÷ 14,5	"
PMFX2N17B	"	"	"	PMFX2I17B	"	"	"	"	"	"	"	2GI3	14 ÷ 17	"
PMFX3N17B	1" NPT	1" NPT	102	PMFX3I17B	M32x1.5	M32x1.5	95	42	45	45	49	3GI1	14 ÷ 17	0,486
PMFX3N20B	"	"	"	PMFX3I20B	"	"	"	"	"	"	"	3GI2	17 ÷ 20	"
PMFX3N23B	"	"	"	PMFX3I23B	"	"	"	"	"	"	"	3GI3	20 ÷ 23	"
PMFX4N23B	1.1/4" NPT	1.1/4" NPT	102	PMFX4I23B	M40x1.5	M40x1.5	97	46	48	48	53	4GI1	20 ÷ 23	0,604
PMFX4N26B	"	"	"	PMFX4I26B	"	"	"	"	"	"	"	4GI2	23 ÷ 26	"
PMFX4N29B	"	"	"	PMFX4I29B	"	"	"	"	"	"	"	4GI3	26 ÷ 29	"
PMFX5N23B	1.1/2" NPT	1.1/2" NPT	102	PMFX5I23B	M50x1.5	M50x1.5	97	56	58	58	64	5GI1	20 ÷ 23	0,864
PMFX5N26B	"	"	"	PMFX5I26B	"	"	"	"	"	"	"	5GI2	23 ÷ 26	"
PMFX5N29B	"	"	"	PMFX5I29B	"	"	"	"	"	"	"	5GI3	26 ÷ 29	"
PMFX5N32B	"	"	"	PMFX5I32B	"	"	"	"	"	"	"	5GI4	29 ÷ 32	"
PMFX5N35B	"	"	"	PMFX5I35B	"	"	"	"	"	"	"	5GI5	32 ÷ 35	"
PMFX6N39B	2" NPT	2" NPT	102	PMFX6I39B	M63x1.5	M63x1.5	97	65	68	68	75	6GI1	35 ÷ 39	1,157
PMFX6N42B	"	"	"	PMFX6I42B	"	"	"	"	"	"	"	6GI2	39 ÷ 42	"
PMFX6N45B	"	"	"	PMFX6I45B	"	"	"	"	"	"	"	6GI3	42 ÷ 45	"

Example: PMFX3I20B

Order
Coding

Type	Size	Threading	Max. Cable Diameter	Material
PMFX	1/2/3/4/5/6	N = NPT ANSI B1.20 I = Metric ISO 262	See Ød cable in the table	B = Nickel plated Steel S = Stainless Steel AISI 316L

SEALING CABLE GLANDS for NOT ARMoured CABLE with MALE BUSHING

series
PMMX

Protection	Gas	Zone	1-2	II2G	Ex d IIC Gb / Ex e IIC Gb
	Dust		21-22	II2D	Ex tb IIIC Db

Degree of Protection	IP66
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Amb. Temp.	Standard	-40°C	+100°C
	Extended	-60°C	+180°C



Entries Threading	NPT ANSI B1.20 (N) or Metric ISO 262 (M)
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Material	Nickel plated Brass. EPDM Rings.
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Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079 - 0 • EN 60079 - 1
EN 60079 - 7 • EN 60079 - 31

CE INERIS 10 ATEX 0029X

IEC 60079 - 0 • IEC 60079 - 1
IEC 60079 - 7 • IEC 60079 - 31

IECEx INE 14.0003X

Specific for not armoured cables, they have a male bushing for coupling with the flexible tube end.

Options

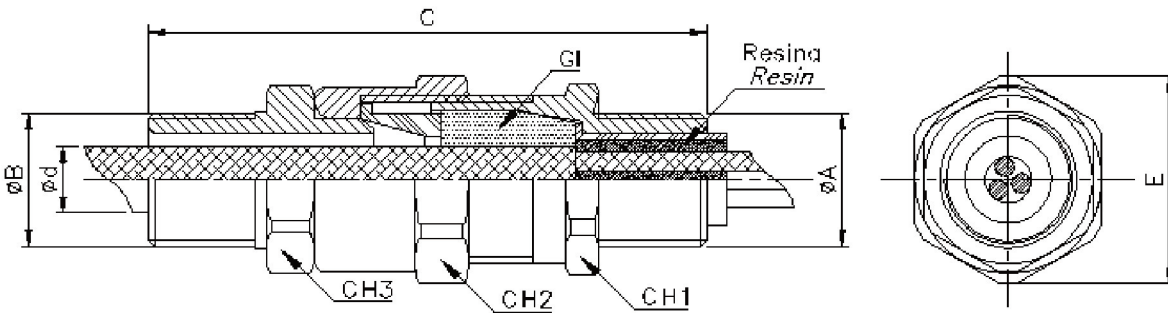
- Material: Stainless Steel AISI 316L (see page I29).
- KIT: cable gland supplied with whole range of available rings.
- Accessories: see page H13.
- Silicon rings.
- Mixed configuration.

NOTES

For the optimum choice of the cable glands see also sect. A.

Extended temperature range only with Silicon rings.

Further information on resin on page H14.



H

NPT ANSI B1.20				METRIC ISO 262				CH1	CH2	CH3	E	GI	Ød cable (mm)	Weight (kg)
Code	ØA	ØB	C	Code	ØA	ØB	C							
PMMX1N7B	1/2" NPT	1/2" NPT	83	PMMX1I7B	M20x1.5	M20x1.5	81	26	28	24	31	1GI1	4 ÷ 7	0,183
PMMX1N9B	"	"	"	PMMX1I9B	"	"	"	"	"	"	"	1GI2	7 ÷ 9,5	"
PMMX1N12B	"	"	"	PMMX1I12B	"	"	"	"	"	"	"	1GI3	9 ÷ 12	"
PMMX2N12B	3/4" NPT	3/4" NPT	83	PMMX2I12B	M25x1.5	M25x1.5	81	31	34	31	37	2GI1	9 ÷ 12	0,251
PMMX2N14B	"	"	"	PMMX2I14B	"	"	"	"	"	"	"	2GI2	12 ÷ 14,5	"
PMMX2N17B	"	"	"	PMMX2I17B	"	"	"	"	"	"	"	2GI3	14 ÷ 17	"
PMMX3N17B	1" NPT	1" NPT	103	PMMX3I17B	M32x1.5	M32x1.5	96	42	45	45	49	3GI1	14 ÷ 17	0,486
PMMX3N20B	"	"	"	PMMX3I20B	"	"	"	"	"	"	"	3GI2	17 ÷ 20	"
PMMX3N23B	"	"	"	PMMX3I23B	"	"	"	"	"	"	"	3GI3	20 ÷ 23	"
PMMX4N23B	1.1/4" NPT	1.1/4" NPT	103	PMMX4I23B	M40x1.5	M40x1.5	98	46	48	48	53	4GI1	20 ÷ 23	0,604
PMMX4N26B	"	"	"	PMMX4I26B	"	"	"	"	"	"	"	4GI2	23 ÷ 26	"
PMMX4N29B	"	"	"	PMMX4I29B	"	"	"	"	"	"	"	4GI3	26 ÷ 29	"
PMMX5N23B	1.1/2" NPT	1.1/2" NPT	103	PMMX5I23B	M50x1.5	M50x1.5	98	56	58	58	64	5GI1	20 ÷ 23	0,864
PMMX5N26B	"	"	"	PMMX5I26B	"	"	"	"	"	"	"	5GI2	23 ÷ 26	"
PMMX5N29B	"	"	"	PMMX5I29B	"	"	"	"	"	"	"	5GI3	26 ÷ 29	"
PMMX5N32B	"	"	"	PMMX5I32B	"	"	"	"	"	"	"	5GI4	29 ÷ 32	"
PMMX5N35B	"	"	"	PMMX5I35B	"	"	"	"	"	"	"	5GI5	32 ÷ 35	"
PMMX6N39B	2" NPT	2" NPT	103	PMMX6I39B	M63x1.5	M63x1.5	98	65	68	68	75	6GI1	35 ÷ 39	1,157
PMMX6N42B	"	"	"	PMMX6I42B	"	"	"	"	"	"	"	6GI2	39 ÷ 42	"
PMMX6N45B	"	"	"	PMMX6I45B	"	"	"	"	"	"	"	6GI3	42 ÷ 45	"

Example: PMMX3I20B

Order Coding

Type

PMMX

Size

1/2/3/4/5/6

Threading

N = NPT ANSI B1.20
I = Metric ISO 262

Max Cable Diameter

See **Ød cable** in the table

Material

B = Nickel plated Brass
S = Stainless Steel AISI 316L

SEALING CABLE GLANDS for FLEXIBLE METAL CONDUIT with FEMALE BUSHING

series
PMSX

Protection	Gas	1-2	II2G	Ex d IIC Gb / Ex e IIC Gb
	Dust	21-22	II2D	Ex tb IIIC Db

Degree of protection
IP66

Amb. Temp.	Standard	-40°C	+100°C
	Extended	-60°C	+180°C



Entries Threading
NPT ANSI B1.20 (N) or Metric ISO 262 (M)

Material
Nickel plated Brass. EPDM Rings(*)

Standards and Certificates



Directive 2014/34/UE (ATEX)

EN 60079 - 0 • EN 60079 - 1
EN 60079 - 7 • EN 60079 - 31



INERIS 10 ATEX 0029X



IEC 60079 - 0 • IEC 60079 - 1
IEC 60079 - 7 • IEC 60079 - 31

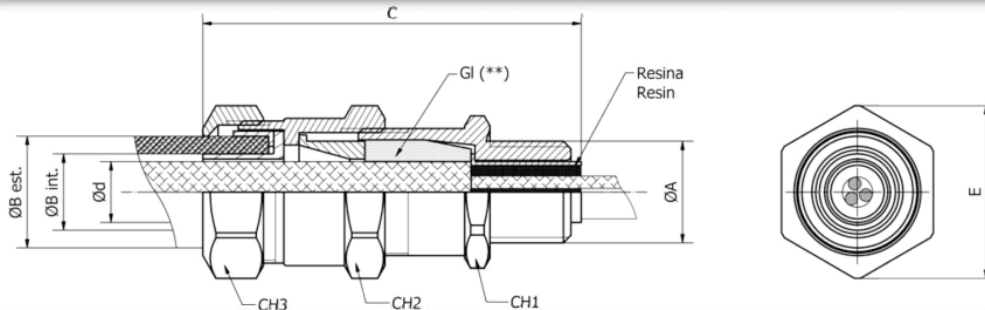
IECEx INE 14.0003X

Specific for not armoured cables, they have a female bushing for coupling with the flexible metal conduit. (see pag. H15).

Options

- (*) Material: Stainless Steel AISI 316L (see page I23).

- (*) Silicon rings.



NOTES

Extended temperature range only with Silicon rings.

Size 4/5/6 and 40/50/63 are available on demand

NPT ANSI B1.20		METRIC ISO 262		ØB int	ØB ext	C	CH1	CH2	CH3	Cod GI(**)	cable ød (mm)
Code	ØA	Code	ØA								
PMSX1	1/2" NPT	PMSX20	M20x1.5	15.5	21	72	30	30	26	1GI1	4 ÷ 7
	1/2" NPT		M20x1.5	15.5	21	72	30	30	26	1GI2	7 ÷ 9,5
	1/2" NPT		M20x1.5	15.5	21	72	30	30	26	1GI3	9 ÷ 12
PMSX2	3/4" NPT	PMSX25	M25x1.5	20.5	27	75	38	38	31	2GI1	9 ÷ 12
	3/4" NPT		M25x1.5	20.5	27	75	38	38	31	2GI2	12 ÷ 14,5
	3/4" NPT		M25x1.5	20.5	27	75	38	38	31	2GI3	14 ÷ 17
PMSX3	1" NPT	PMSX32	M32x1.5	26.5	34	81	42	42	45	3GI1	14 ÷ 17
	1" NPT		M32x1.5	26.5	34	81	42	42	45	3GI2	17 ÷ 20
	1" NPT		M32x1.5	26.5	34	81	42	42	45	3GI3	20 ÷ 23

Products in the below table are available on demand

PMSX4	1.1/4" NPT	PMSX40	M40x1.5	35	43	83	56	56	46	4GI1	20 ÷ 23
	1.1/4" NPT		M40x1.5	35	43	83	56	56	46	4GI2	23 ÷ 26
	1.1/4" NPT		M40x1.5	35	43	83	56	56	46	4GI3	26 ÷ 29
PMSX5	1.1/2" NPT	PMSX50	M50x1.5	40	48	89	62	62	56	5GI1	20 ÷ 23
	1.1/2" NPT		M50x1.5	40	48	89	62	62	56	5GI2	23 ÷ 26
	1.1/2" NPT		M50x1.5	40	48	89	62	62	56	5GI3	26 ÷ 29
	1.1/2" NPT		M50x1.5	40	48	89	62	62	56	5GI4	29 ÷ 32
	1.1/2" NPT		M50x1.5	40	48	89	62	62	56	5GI5	32 ÷ 35
PMSX6	2" NPT	PMSX63	M63x1.5	50.5	58.5	89	74	74	68	6GI1	35 ÷ 39
	2" NPT		M63x1.5	50.5	58.5	89	74	74	68	6GI2	39 ÷ 42
	2" NPT		M63x1.5	50.5	58.5	89	74	74	68	6GI3	42 ÷ 45

Example: PMSX1NB

Order Coding

Type
PMSX

Size
1/2/3/4/5/6
20/25/32/40/50/63

Threading
N = NPT ANSI B1.20
I = Metrica ISO 262

Material
B = Ottone Nichelato
S = Acciaio Inox AISI 316L



SEALING CABLE GLANDS SEALING COMPRESSION for ARMoured CABLE

series
PAX

Protection	Gas	Zone	1-2	II2G	Ex d IIC Gb / Ex e IIC Gb
	Dust	Zone	21-22	II2D	Ex tb IIIC Db

Degree of Protection
IP66

Amb. Temp.	Standard		-40°C		+100°C
	Extended		-60°C		+180°C



Entries Threading
NPT ANSI B1.20 (N)
or
Metric ISO 262 (M)

Material
Nickel plated Brass.
EPDM Rings.

Standards and Certificates



Directive 2014/34/EU (ATEX)

EN 60079 - 0 • EN 60079 - 1
EN 60079 - 7 • EN 60079 - 31

CE INERIS 10 ATEX 0029X



IEC 60079 - 0 • IEC 60079 - 1
IEC 60079 - 7 • IEC 60079 - 31

IECEx INE 14.0003X

Options

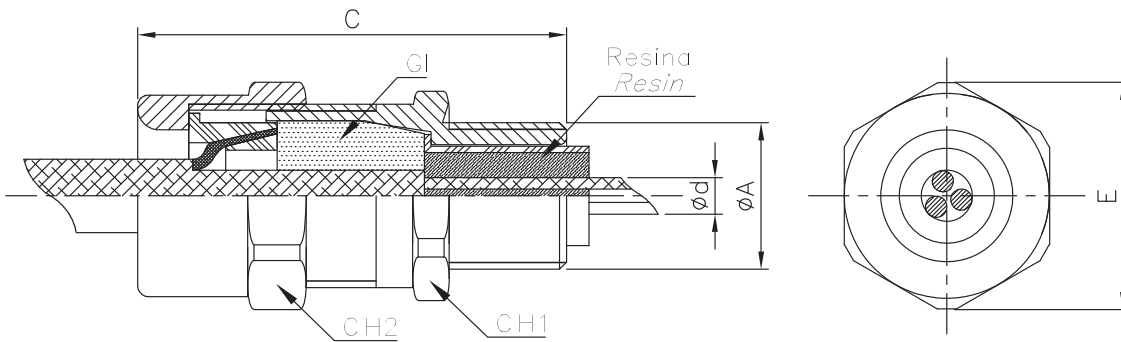
- Material: Stainless Steel AISI 316L (see page I30).
- Accessories: see page H13.
- KIT: cable gland supplied with whole range of available rings.
- Silicon rings.

NOTES

For the optimum choice of the cable glands see also sect. A

Extended temperature range only with Silicon rings.

Further information on resin on page H14.



NPT ANSI B1.20			METRIC ISO 262			CH1	CH2	E	GI	ød cable (mm)	Weight (kg)
Code	øA	C	Code	øA	C						
PAX1N7B	1/2" NPT	61	PAX1I7B	M20x1.5	59	26	28	31	1GI1	4 ÷ 7	0,142
PAX1N9B	"	"	PAX1I9B	"	"	"	"	"	1GI2	7 ÷ 9,5	"
PAX1N12B	"	"	PAX1I12B	"	"	"	"	"	1GI3	9 ÷ 12	"
PAX2N12B	3/4" NPT	61	PAX2I12B	M25x1.5	59	31	34	37	2GI1	9 ÷ 12	0,183
PAX2N14B	"	"	PAX2I14B	"	"	"	"	"	2GI2	12 ÷ 14,5	"
PAX2N17B	"	"	PAX2I17B	"	"	"	"	"	2GI3	14 ÷ 17	"
PAX3N17B	1" NPT	75	PAX3I17B	M32x1.5	68	42	45	49	3GI1	14 ÷ 17	0,405
PAX3N20B	"	"	PAX3I20B	"	"	"	"	"	3GI2	17 ÷ 20	"
PAX3N23B	"	"	PAX3I23B	"	"	"	"	"	3GI3	20 ÷ 23	"
PAX4N23B	1.1/4" NPT	75	PAX4I23B	M40x1.5	70	46	48	53	4GI1	20 ÷ 23	0,453
PAX4N26B	"	"	PAX4I26B	"	"	"	"	"	4GI2	23 ÷ 26	"
PAX4N29B	"	"	PAX4I29B	"	"	"	"	"	4GI3	26 ÷ 29	"
PAX5N23B	1.1/2" NPT	75	PAX5I23B	M50x1.5	70	56	58	64	5GI1	20 ÷ 23	0,685
PAX5N26B	"	"	PAX5I26B	"	"	"	"	"	5GI2	23 ÷ 26	"
PAX5N29B	"	"	PAX5I29B	"	"	"	"	"	5GI3	26 ÷ 29	"
PAX5N32B	"	"	PAX5I32B	"	"	"	"	"	5GI4	29 ÷ 32	"
PAX5N35B	"	"	PAX5I35B	"	"	"	"	"	5GI5	32 ÷ 35	"
PAX6N39B	2" NPT	75	PAX6I39B	M63x1.5	70	65	68	75	6GI1	35 ÷ 39	0,836
PAX6N42B	"	"	PAX6I42B	"	"	"	"	"	6GI2	39 ÷ 42	"
PAX6N45B	"	"	PAX6I45B	"	"	"	"	"	6GI3	42 ÷ 45	"

Example: PAX3N20B

Order Coding

Type

PAX

Size

1/2/3/4/5/6

Threadings

N = NPT ANSI B1.20
I = Metric ISO 262

Max Cable Diameter

See **ød cable**
in the table

Material

B = Nickel Plated Brass
S = Stainless Steel AISI 316L

ACCESSORIES for CABLE GLANDS

series
PM

EXTERNAL SHROUDS series SPM

Material: BLACK PVC.

Shrouds are used to prevent deposits of dust or other substances on the surface of the cable gland and cable entry.



Code	Dimension	
	NPT	ISO 262
SPM1	1/2" NPT	M20x1,5
SPM2	3/4" NPT	M25x1,5
SPM3	1" NPT	M32x1,5
SPM4	1.1/4" NPT	M40x1,5
SPM5	1.1/2" NPT	M50x1,5
SPM6	2" NPT	M63x1,5

EARTHING TAGS series ET

Material: Nickel plated Brass (suffix -B) or Stainless Steel AISI 316L (suffix -S).

Earthing Tags are installed between the cable gland and the electrical equipment.



Code	Dimension	
	ISO 262	
ET20	M20x1,5	
ET25	M25x1,5	
ET32	M32x1,5	
ET40	M40x1,5	
ET50	M50x1,5	
ET63	M63x1,5	

LOCKNUTS series DL

Material: Nickel plated Brass (suffix -B) or Stainless Steel AISI 316L (suffix -S).

Locknuts are used to hold cable glands to the wall of the equipment, ensuring the restraining to the entry of enclosure.



Code	Dimension	
	ISO 262	
DL20	M20x1,5	
DL25	M25x1,5	
DL32	M32x1,5	
DL40	M40x1,5	
DL50	M50x1,5	
DL63	M63x1,5	

SERRATED WASHERS series SR

Material: Nickel plated Brass (suffix -B) or Stainless Steel AISI 316L (suffix -S).

Serrated washers are used together with locknuts to prevent the loose of the attachment.



Code	Dimension	
	ISO 262	
SR20	M20x1,5	
SR25	M25x1,5	
SR32	M32x1,5	
SR40	M40x1,5	
SR50	M50x1,5	
SR63	M63x1,5	

GASKETS series SW

Material: white Nylon (suffix -N).

Gaskets are used to obtain the required degree of protection of enclosure where the cable glands are installed on.



Code	Dimension	
	NPT	ISO 262
SW20N	1/2" NPT	M20x1,5
SW25N	3/4" NPT	M25x1,5
SW32N	1" NPT	M32x1,5
SW40N	1.1/4" NPT	M40x1,5
SW50N	1.1/2" NPT	M50x1,5
SW63N	2" NPT	M63x1,5

FILLING COMPUND - REPM-1

Epoxide resin with an excellent resistance grade to chemicals, heat and water. It is available in 50 ml cartridges.
It is used as sealant into the Cable Glands bushing series PMX, PMAX, PMFX, PMMX to prevent the propagation of the flames.
Operative temperature range: $-20^{\circ}\text{C} \div +80^{\circ}\text{C}$.

(*) The value is purely indicative. The real number depends on the type and the dimension of the cable used.

Dimension	Cable gland n. (*)
1	20
2	10
3	5
4	3
5	2
6	1

MANUAL APPLICATOR FOR 50 ml CARTRIDGES - APM50 - REPLACEMENT NOZZLE FOR 50ml CARTRIDGE - BC-REPM-1

Lightweight and easy to use manual applicator for REPM-1 cartridges.



METAL FLEXIBLE CONDUIT



Compatibility	Internal \varnothing	External \varnothing
PMS/PMSX 1	15.5	21
PMS/PMSX 2	20.5	27
PMS/PMSX 3	26.5	34
PMS/PMSX 20	15.5	21
PMS/PMSX 25	20.5	27
PMS/PMSX 32	26.5	34

Pliable hot deep galvanized steel conduit, reinforced clutch, recovered of smooth grey PVC heavy bore coating and well anchored to the metal conduit, very suited where is necessary a strong mechanical resistance to traction, torsion and compression.

- Available in 30mt. reels lenght (from which user can obtain the necessary lenght by cutting excess portion);
- Heavy resistance to compression ($>1250\text{N}$) and to traction ($>1000\text{N}$) according to Standard CEI EN 61386, comparable with a simple clutched conduit;
- Same flexibility and bending radius of a simple clutched conduit;
- Cost comparable with the one of simple clutched conduit;
- Areas of applications: infrastructures, installed on machines, energy, chemical, pharmaceutical, marine, tertiary and services;
- Good resistance to aging, to a wide range of oils and to a lot of acids used in industries;
- Self-extinguishing according to Standard CEI EN 61386;
- Inside bend radius: $70 \div 120$ mm;
- Temperature range $-15^{\circ}\text{C} \div +70^{\circ}\text{C}$;
- IP rating: IP66.

SEALING NIPPLES

series
GN

Protection	Gas	1-2	II2G	Ex d IIC Gb - Ex e IIC Gb - Ex de IIC Gb
	Dusts	21-22	II2D	Ex tb IIIC Db
	Mine	n.d.	IM2	Ex de I Mb


Degree of Protection	IP66
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Amb. Temp.	Standard	-20°C	+40°C
	Extended	-40°C	+135°C

Entries Threading	NPT ANSI B1.20
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Material	Zinc plated Steel
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Standards and Certificates



Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1
EN 60079-7 • EN 60079-31

U ICEPI 10 ATEX 03C006U

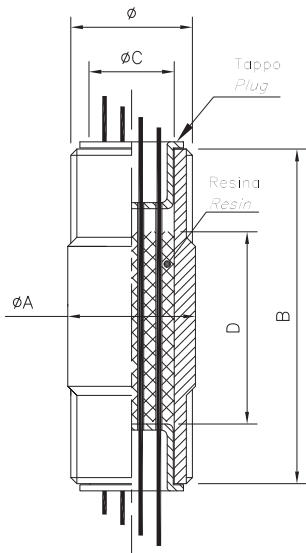


- Compact, economical and easy-to-use are used in all those cases where space does not allow the use of a traditional sealing joint.
- Suitable for use on group IIC enclosures and / or having a no limits of volume.
- Standard material: Galvanized steel
- Standard thread: NPT

Options

- Threading EN 10226 (Gk) or Metric ISO 262 (M).

- Material: Stainless Steel AISI 316, Brass.



Code	Dimensions (mm)(Values in brackets are referred to metric version)		
	Ø	B	D
GN 1	1/2" - M20 x 1,5	48.5 - 50	≥ 25
GN 2	3/4" - M25 x 1,5	47.5 - 50	≥ 25
GN 3	1" - M32 x 1,5	58.5 - 60	≥ 30
GN 4	1.1/4" - M40 x 1,5	62.0 - 60	≥ 35
GN 5	1.1/2" - M50 x 1,5	62.5 - 60	≥ 35
GN 6	2" - M63 x 1,5	63.5 - 60	≥ 35

H

Electrical conductors in the sealing nipples

Section sqmm	0.5 ÷ 1.5	2.5	4	6	10	16	25	35	50	70
Nipples	Maximum number of wires									
GN 1	7	5	4	-	-	-	-	-	-	-
GN 2	13	9	7	4	3	-	-	-	-	-
GN 3	21	15	11	7	4	3	-	-	-	-
GN 4	36	25	19	11	8	6	4	-	-	-
GN 5	52	36	28	16	11	8	5	4	3	-
GN 6	85	59	45	26	18	13	9	7	5	4

Example: GN 3 G S

Order Coding

Type	Size	Threading (if different from NPT)	Material
GN	1/2/3/4/5/6	G = EN 10226 (Gk) I = Metric ISO 262	G = Zinc plated Steel S = Stainless Steel AISI 316 B = Chrome plated Brass A = Aluminum

SEALING BUSHING

series
TL

Protection	Gas	1-2	II2G	Ex d IIC Gb - Ex e IIC Gb
	Dusts	21-22	II2D	Ex tb IIIC Db
	Mine	n.d.	IM2	Ex d e I Mb


Degree of Protection	IP66
----------------------	------

Amb. Temp.	Standard	-20°C	+40°C
	Extended	-40°C	+135°C

Entries Threading	Metric ISO 262
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Material	Nickel plated Brass
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Standards and Certificates



Directive 2014/34/EU (ATEX)

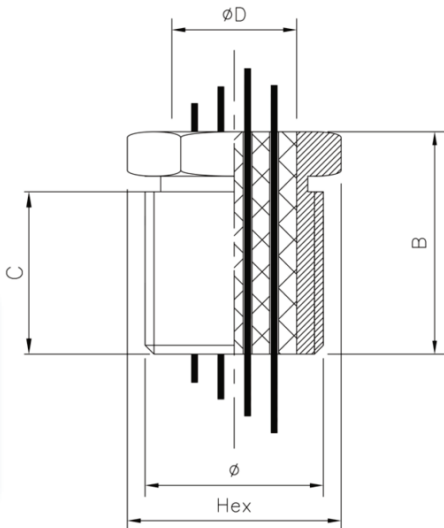
EN 60079-0 • EN 60079-1
EN 60079-7 • EN 60079-31

U ICEPI 10 ATEX 03C006U



- Compact, economical and easy-to-use are used in all those cases where space does not allow the use of a traditional sealing joint.
- Suitable for use on group IIC enclosures and / or having a volume > 2000 cm³.
- Standard material: nickel plated brass

Options - Material: Stainless Steel AISI 316.



Code	Dimensions (mm)				
	Ø	Hex	B	C	ØD
TL 20	M20x1.5	27	30	22.5	14
TL 25	M25x1.5	30	30	22.5	19
TL 32	M32x1.5	40	35	23.5	25
TL 40	M40x1.5	49	40	26.5	32
TL 50	M50x1.5	62	40	24.5	40
TL 63	M63x1.5	78	40	24.5	52

Electrical conductors in the sealing nipples										
Section (sqmm)	0.5 ÷ 1.5	2.5	4	6	10	16	25	35	50	70
Type	Maximum number of wires									
TL 20	7	5	4	-	-	-	-	-	-	-
TL 25	13	9	7	4	3	-	-	-	-	-
TL 32	21	15	11	7	4	3	-	-	-	-
TL 40	36	25	19	11	8	6	4	-	-	-
TL 50	52	36	28	16	11	8	5	4	3	-
TL 63	85	59	45	26	18	13	9	7	5	4

Example: TL 32S

Order Coding

Type
TL

Size
20/25/32/40/50/63

Material
B = Nickel plated Brass
S = Stainless Steel AISI 316

SEALING JOINTS

series
EZS
EYS

Protection	Gas	1-2	II2G	Ex d IIC Gb
	Dusts	21-22	II2D	Ex tb IIIC Db

Degree of Protection	IP66
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Amb. Temp.	Standard	-20°C	+40°C
	Extended	-20°C	+100°C



Material	Aluminum light alloy
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Entries Threading	NPT ANSI B1.20
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Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079 - 0 • EN 60079 - 1
EN 60079 - 31

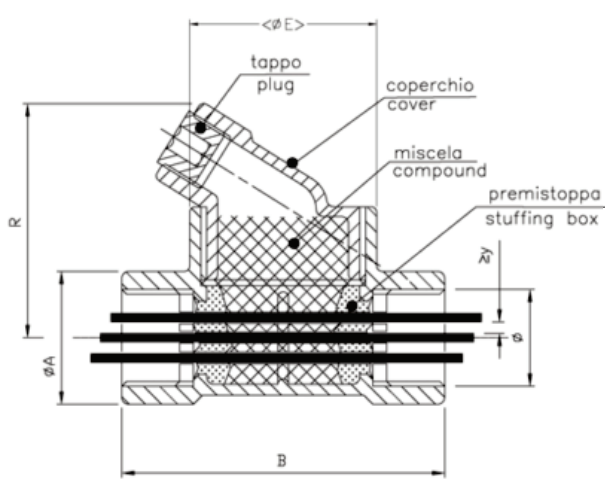
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IEC 60079 - 0 • IEC 60079 - 1
IEC 60079 - 31

IECEx CES 14.0019X

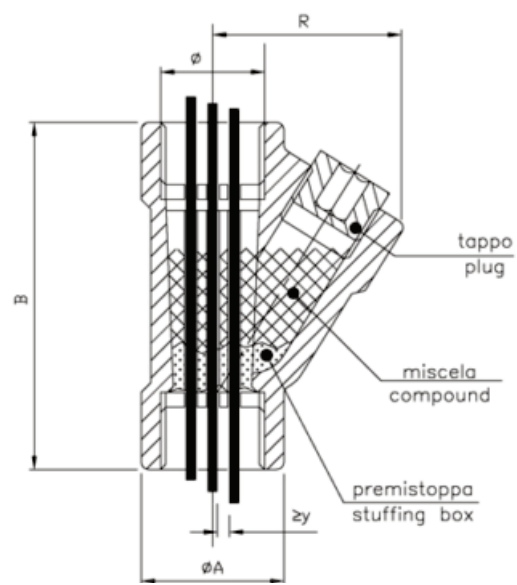
- Recommended for sectioning the conduits preventing the flame propagation either from a part of the installation to another one or from an enclosure to another one.
- Side opening for pouring cold locking mixture CRV 420.
- Series EZS ... is suitable for both VERTICAL and HORIZONTAL piping, while series EYS ... is suitable **only** for VERTICAL piping.
- The sealing joints assume the temperature class of the apparatus on which they are installed.

Options - Material: Stainless Steel. - Other threadings (Metric ISO 262 M..x1,5).



Code	Dimensions (mm)						Weight (g)	Resin Weight* (g)
	Ø	ØA	B	R	ØE	y		
EZS 1	1/2"	34	74	66	63	1.5	230	140
EZS 2	3/4"	34	74	66	63	1.5	220	140
EZS 3	1"	42	74	71	63	2	240	140
EZS 4	1.1/4"	60	98	78	90	2	530	390
EZS 5	1.1/2"	60	98	78	90	2.5	495	390
EZS 6	2"	70	130	88	90	2.5	640	570
EZS 7	2.1/2"	103	142	108	112	3	1400	1400
EZS 8	3"	103	142	108	112	3	1700	1400

* Approximate weight of CRV 420 resin required to seal.
IMPORTANT: instructions for sealing the joints on the following page.



Code	Dimensions (mm)					Weight (g)	Resin Weight* (g)
	Ø	ØA	B	R	y		
EYS 1	1/2"	32	77	44	1.5	100	35
EYS 2	3/4"	34	87	51	1.5	150	50
EYS 3	1"	44	105	62	2	240	100

* Approximate weight of CRV 420 resin required to seal.
IMPORTANT: instructions for sealing the joints on the following page.

The size and the maximum number of conductors in the following tables refer to the type N07V-K with PVC insulation quality R2. The conductors type N07V-K comply with the national standards CEI 20-35 (CENELEC HD 405-1), CEI 20-22 CEI 20-37 II and I.

As alternative, the conductors may have different isolation (gommapiene, neoprene, etc..) providing they conform to CENELEC for nominal characteristics and mode of use.

In any case, the maximum number of conductors referred to the same section for the same diameter will be determined by observing the dimension "y" in the tables in the preceding page.

The same sealing joint can be used with wires of different section as long it is respected the "y" dimension of the sealing joint under consideration.

Electrical Conductors in Sealing Joints Series EZS

Ext. Max. Ø	3.5	4.2	4.8	6.3	7.6	8.8	11	12.5	14.5	17	19	21	23.5	26	29.5
Section mm ²	1.5	2.5	4	6	10	16	25	35	50	70	95	120	150	185	240
JOINTS	Max number of Conductors														
EZS 1	4	3	2	1	1	1	1	--	--	--	--	--	--	--	--
EZS 2	8	5	4	3	1	1	1	1	1	--	--	--	--	--	--
EZS 3	10	8	8	4	3	2	1	1	1	1	--	--	--	--	--
EZS 4	16	13	11	8	7	4	3	1	1	1	1	--	--	--	--
EZS 5	18	16	15	8	8	6	4	4	2	1	1	1	1	--	--
EZS 6	30	20	20	15	10	9	8	7	3	3	2	1	1	1	--
EZS 7	40	35	28	21	18	19	12	8	6	4	4	3	2	--	--
EZS 8	50	42	35	30	25	20	12	10	8	7	5	4	3	2	--

Instructions for making the sealing of the joints series EZS ...

1. Remove the cap.
2. Prepare with the utmost care a "stuffing box" so that the resin does not enter in conduits or equipment. The stuffing box can be arranged by cramming the specific fiber type FCE in the interstices between the conductors and the sealing joint and/or between conductor and conductor observing the dimension "y".
The stuffing box is only necessary for the lower entry when the coupling is in a vertical position; in both entries when it is in a horizontal position.
3. Retighten the cover place vertically the entry.
4. Prepare the resin CRV 420 in sufficient quantity to seal the joint and/or to ensure a duration of 30 minutes.
5. Pour the resin to almost touch on the thread.
6. Screw the cap and tighten.
7. After having poured the resin do not move or stress the conductors for at least 24 hours for joints up to 1" and for at least 48 hours for greater sizes.

Electrical Conductors in sealing joints series EYS

Ext. Max Ø	3.5	4.2	4.8	6.3	7.6	8.8	11	12.5	14.5	17	19	21	23.5	26	29.5
Section mm ²	1.5	2.5	4	6	10	16	25	35	50	70	95	120	150	185	240
Joints	Max number of Conductors														
EYS 1	4	3	2	1	1	1	1	--	--	--	--	--	--	--	--
EYS 2	7	5	4	3	1	1	1	1	1	--	--	--	--	--	--
EYS 3	8	7	6	4	3	2	1	1	1	1	--	--	--	--	--

Instructions for making the sealing of the joints series EYS...

1. Remove the cap.
2. Prepare with the utmost care a "stuffing box" so that the resin does not enter in conduits or equipment. The stuffing box can be arranged by cramming the specific fiber type FCE in the interstices between the conductors and the sealing joint and/or between conductor and conductor observing the dimension "y".
3. Prepare the resin CRV 420 in sufficient quantity to seal the joint and/or to ensure a duration of 30 minutes.
4. Pour the resin to cover the conductor for a minimum height of D (see table).
5. Retighten the cover.
6. After having poured the resin do not move or stress the conductors for at least 24 hours.

FLEXIBLES

series
FNN

Protection	Gas	Zone	1-2	II2G	Ex db IIC Gb
	Dusts		21-22	II2D	Ex tb IIIC Db

Degree of Protection
IP66/67

Amb. Temp. Standard -20°C +40°C
Extended -50°C +80°C



Entries Threading
NPT ANSI B1.20

Material
Flexible Pipe: Stainless Steel AISI 304/321(*)
Fittings: Steel (FE 37-UNI 7070)

Standards and Certificates

Directive 2014/34/EU (ATEX)
EN 60079 - 0 • EN 60079 - 1
EN 60079 - 31

BVI 13 ATEX 0086U

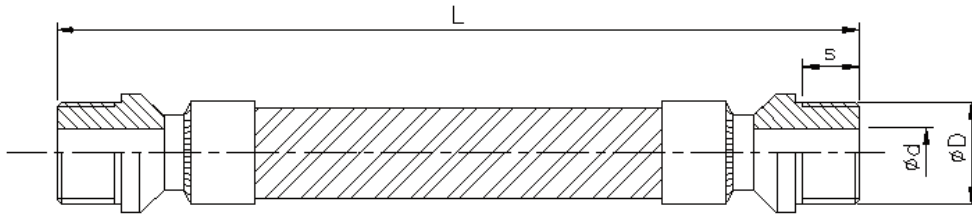
IEC 60079 - 0 • IEC 60079 - 1
IEC 60079 - 31

IECEx EPS 13.0038U

- Recommended for fixed connections and/or when light vibrations may occur.
- T.I.G. welding of fittings.
- Operating temperature: -50°C ÷ +450°C.

Options

- Stainless Steel AISI 304 or AISI 316 fittings.
- Fittings threading Metric ISO 262 (M) or EN 10226 (Gk) (only for ATEX).



NOTES

(*) Flexible pipe:
Inner tube in Stainless Steel AISI 321 with parallel coils and outer braid in Stainless Steel AISI 304.

Determination of Length:
The total length of the flexible sheath (L = 6 m max) is expressed in cm and includes fittings and threads.

Bending radius "R"
Values given in table are indicative and may vary according to the type of installation.
The minimum bending radius depends on several factors including:
- Fixed installation: bending radius smaller than suggested;
- Mobile installation or manual use: suggested bending radius can be increased.
Further adjustments of bending radius may influence by:
- Possible gradual movement, rapid and/or with vibration;
- Number, type and diameter of accommodated conductors.

Nominal diameter code	1	2	3	4	5	6	7	8	9
Fittings threading diameter (ØD)	1/2"	3/4"	1"	1.1/4"	1.1/2"	2"	2.1/2"	3"	4"
Length of threading (s)	14	14	17	17	17	17	18	18	18
Flexible pipe internal usable diameter (Ød)	11	19	25	30	38	50	64	75	100
R - bending radius [see Notes]	250	310	375	405	480	550	675	750	920
Weight (g/m)	290	500	650	1000	1200	1540	2550	2900	4200

Ø	L = Standard Lengths (cm)									On request
	30	35	40	45	50	60	70	80	100	
1/2"	x	x	x	x	x	x	x	x	x	max 600
3/4"	x	x	x	x	x	x	x	x	x	
1"	x	x	x	x	x	x	x	x	x	
1.1/4"	•	•	•	•	•	•	•	•	•	max 300
1.1/2"	•	•	•	•	•	•	•	•	•	
2"	•	•	•	•	•	•	•	•	•	
2.1/2"	•	•	•	•	•	•	•	•	•	max 200
3"	•	•	•	•	•	•	•	•	•	
4"	•	•	•	•	•	•	•	•	•	

x = Lengths normally available at stock.
• = Lengths normally not available at stock.

Example: FNN 2/60N

Example: FNN 1/11/100N

Order Coding

Flexible pipe IP with Male/Male fittings FNN	Nominal Diameter code 2	Internal usable diameter (only for Ø=1/2") ...	Length (cm) 60	Threading N = NPT (N) M = Metric (M) .. = EN 10226 (Gk) only for ATEX
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Standards (IEC/EN 60079-14 par. 9.4) state that the total cross-sectional area of the cables, including insulation, shall be not more than 40% of the cross-sectional area of the conduit.

CABLES RIGID CONDUITS UNI 7683

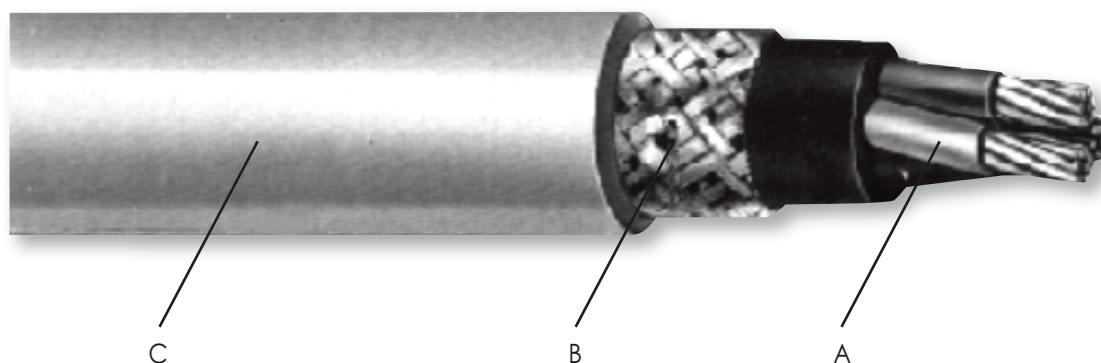
series
AD



Material	Zinc plated Steel according to UNI 5745
Threading	EN 10226 (Gk)

- Recommended for both Ex d installations and plants.
- Both ends are chamfered in the inner part and gas conical threaded in the outer part.
- Pipe length 6 m ± 3%.
On request the conduit may be provided cut in length of 3 m. Threading will be made on one end only. In this case the suffix "3" (see table) must be added to the order code.
- The conduit is marked indelibly with paint at intervals not greater than 1,5 m.
- The 6 m length conduit is provided with a F/F sleeve.

Code	Conduit Dimensions					Weight (kg/m)	Sleeve Dimensions	
	Length (m)	Ø	External Diameter (mm)		Thickness (mm)		Max External Diameter (mm)	Minimum Length (mm)
			Min	Max				
AD 1	6	1/2"	21.0	21.7	2.35	1.20	25	45
AD 2	6	3/4"	26.4	27.1	2.35	1.50	32	45
AD 3	6	1"	33.2	34.0	2.90	2.35	39	60
AD 4	6	1.1/4"	41.9	42.7	2.90	3.00	48	60
AD 5	6	1.1/2"	47.8	48.6	2.90	3.45	54	60
AD 6	6	2"	59.6	60.7	3.25	4.85	66	60
AD 7	6	2.1/2"	75.2	76.3	3.25	6.15	82	70
AD 8	6	3"	87.9	89.4	3.65	8.15	95	70
AD 13	3	1/2"	21.0	21.7	2.35	1.20	25	45
AD 23	3	3/4"	26.4	27.1	2.35	1.50	32	45
AD 33	3	1"	33.2	34.0	2.90	2.35	39	60
AD 43	3	1.1/4"	41.9	42.7	2.90	3.00	48	60
AD 53	3	1.1/2"	47.8	48.6	2.90	3.45	54	60
AD 63	3	2"	59.6	60.7	3.25	4.85	66	60
AD 73	3	2.1/2"	75.2	76.3	3.25	6.15	82	70
AD 83	3	3"	87.9	89.4	3.65	8.15	95	70



- The multicore flexible armored cable series CA ... (A), suitable for permanent installations, have the model code FG7ORAR according to CEI 20-22 and CEI 20-37.
- The cores (A) comply with CEI 20-29 relatively to the formation of strands and CEI 20-11 Chapter VI in relatively to mechanical requirements and thermoplastics. The cores are separated by armor (B) by a extruded PVC sheath compact and of regular cylindrical shape.

On this sheath will tighten the rubber ring of the Ex d cable gland forming thus the lamination joint.

- All inner and intermediate insulations as well as the ending sheath (C) consist of special blends of PVC, all conforming to CEI 20-22-2, CEI 20-37 for anti-fire and anti-flame propagation proofing along with the tests for low smoke, toxic and corrosive gases emissions.

Code	Conductors no. x Section (mm ²)	Diameter under Armour (mm)	External Diameter (mm)	Suggested Cable Gland
CA 31	3x1,5	7.5	11	PMA1..913..
CA 41	4x1,5	8	12.5	PMA1..913..
CA 51	5x1,5	9.5	13	PMA1..1218..
CA 71	7x1,5	11	14.5	PMA1..1218..
CA 121	12x1,5	13	17	PMA2..1418..
CA 161	16x1,5	15.5	20.5	PMA2..1723..
CA 241	24x1,5	18	23	PMA3..2026..
CA 32	3x2,5	8	12	PMA1..913..
CA 42	4x2,5	8.5	13	PMA1..913..
CA 52	5x2,5	10.5	14.5	PMA1..1218..
CA 72	7x2,5	12.5	16	PMA2..1418..
CA 122	12x2,5	16	20	PMA2..1723..
CA 162	16x2,5	18	23.5	PMA3..2026..
CA 34	3x4	11	14.5	PMA1..1218..
CA 44	4x4	13	17	PMA2..1418..
CA 54	5x4	14	18	PMA2..1418..
CA 46	4x6	14	18	PMA2..1418..
CA 56	5x6	15	20	PMA2..1723..
CA 410	4x10	18	23	PMA3..2026..
CA 510	5x10	19	25	PMA3..2026..
CA 416	4x16	20	26	PMA3..2329..
CA 516	5x16	22	28	PMA3..2329..
CA 425	4x25	24	30	PMA5..2637..
CA 525	5x25	25	32	PMA5..2637..

Cables characteristics:

- Conductors: Bare copper capillaries wires.
- Insulation of souls: Getilan GPE400
- Colour code: cables of harmonized type with 3, 4 and 5 cores the yellow-green core it is always there.
National cables of harmonized type staining of the same cores complies with Table CEI-UNEL 00722 and one of the cores is always yellow-green.
- Cables for control and signaling: The number of cores is made by injection molding of white numbers over black PVC insulation. These numbers well spaced and abrasion-resistant are easy to read. The numbering starts from the center of the spiral wound conductors and ends on the outer layer.
- Protective sheath: GK 81/3 flame retardant and atoxic
- Armuor: Galvanized steel wires in 24x5x0,5 twisted to ensure coverage of at least 85%
- Outer sheath: GK 81/3 flame retardant and atoxic
- Color: RAL 7035 gray
- External marking: The marking of the external cable is made by molding, in intervals of 50 cm, indelible black numbers and letters showing the number, the section of the conductor, the reference construction standards, the CE marking, the month and year of manufacturing and the name of the manufacturer.
- Rated voltage: 0.6 / 1 kV
- Test voltage: 4000 V
- Maximum operating temperature: +70°C
- Maximum short circuit temperature: +160°C
- Minimum ambient operating temperature: +5°C
- Minimum bending radius: - 16 times the outer diameter of the cable;
- 10 times the outer diameter of the cable for permanent installations.
- Uses and Applications: suitable for indoors or outdoors installation, in damp and wet environments, for connecting permanenet machinery and equipment in hazardous areas. Suitable for permanent installation on masonry and metal structures, walkways, gutters, pipes or similar systems. Can be directly buried.
- Packaging: in rolls of 100 meters or multiple of 100 meters. (Lenghts on customer's request).

Standards Reference

CEI Standards	CENELEC Standards	IEC Standards	Title
CEI 20-11-Chap. VI 3rd edition			Cable Testing for energy compounds and sheaths.
CEI 20-20-Part 4 4th issue	HD 21.4 S2		PVC insulated cables: permanent installation.
CEI 20-22-Part 2 4th issue			Fire Retardant Cable Testing.
CEI 20-29 2nd issue	CENELEC HD 383 S2; CENELEC HD 383 A1; CENELECHD 383 A2	IEC 228; IEC 228/A1; IEC 228/A	Conductors for insulated cables.
CEI 20-35 1st issue	CENELEC HD 405-1	IEC 332-1	Flame Retardant Cable Testing.
CEI 20-37-Part 1 2nd issue			Cable Testing of reduced emission of corrosive gases.

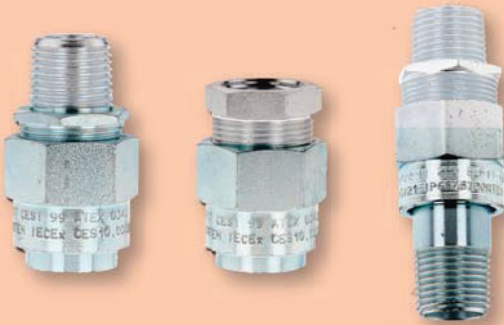
THREE PIECE UNIONS

series
B

Protection	Gas	1-2	II2G	Ex d IIB Gb
	Dusts	21-22	II2D	Ex tb IIIC Db

Degree of Protection	IP66/67
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Amb. Temp.	Standard	-20°C	+40°C
	Extended	-55°C	+60°C



Entries Threading	EN 10226 (Gk)
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Material	Zinc plated Steel
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Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079 - 0 • EN 60079 - 1
EN 60079 - 31

CESI 99 ATEX 034U

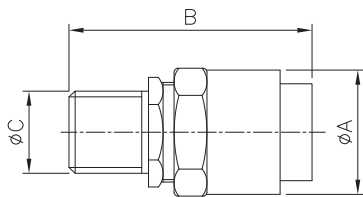
IEC 60079 - 0 • IEC 60079 - 1
IEC 60079 - 31

IECEx CES 10.0002U

- Unions consisting of three elements independently screwed one into the other allowing the connection between rigid parts.
- These unions take the same temperature class of the enclosure where they are installed on.

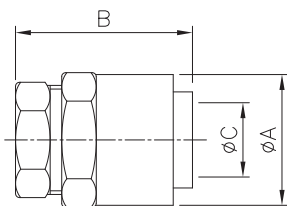
Options

- Available version series R... for gas group IIC with following gas protection mode: Ex d IIC Gb.
- Threading NPT ANSI B1.20.1 (N) or Metric ISO 262 (M).
- Material: Stainless Steel AISI 316.



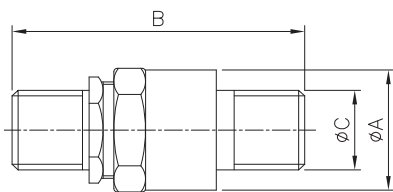
BMF-RMF: Male / Female

Code	Dimensions (mm)					Weight (g)	
	Ø	ØA	B-IIB	B-IIC	ØC	IIB	IIC
BMF-RMF 1	1/2"	35	62	74	13	225	270
BMF-RMF 2	3/4"	40	62	74	19	275	350
BMF-RMF 3	1"	50	74	84	24	380	480
BMF-RMF 4	1.1/4"	61	80	-	32	700	840
BMF-RMF 5	1.1/2"	70	80	86	38	970	1225
BMF-RMF 6	2"	82	88	86	48	1290	1600
BMF-RMF 7	2.1/2"	105	100	-	64	2180	2700
BMF-RMF 8	3"	122	100	-	78	2850	3500
BMF-RMF 9	4"	144	114	-	90	-	-



BFF-RFF: Female / Female

Code	Dimensions (mm)					Weight (g)	
	Ø	ØA	B-IIB	B-IIC	ØC	IIB	IIC
BFF-RFF 1	1/2"	35	48	60	13	180	225
BFF-RFF 2	3/4"	40	48	60	19	240	315
BFF-RFF 3	1"	50	52	64	24	290	390
BFF-RFF 4	1.1/4"	61	56	-	32	550	890
BFF-RFF 5	1.1/2"	70	62	64	38	840	1090
BFF-RFF 6	2"	82	65	64	48	1130	1430
BFF-RFF 7	2.1/2"	105	68	-	64	1800	2350
BFF-RFF 8	3"	122	73	-	78	2250	2900
BFF-RFF 9	4"	144	86	-	90	-	-



BMM-RMM: Male / Male

Code	Dimensions (mm)					Weight (g)	
	Ø	ØA	B-IIB	B-IIC	ØC	IIB	IIC
BMM-RMM 1	1/2"	35	80	-	13	250	300
BMM-RMM 2	3/4"	40	80	-	19	330	410
BMM-RMM 3	1"	50	97	-	24	475	580
BMM-RMM 5	1.1/2"	70	107	-	38	1100	1350
BMM-RMM 6	2"	82	112	-	48	1540	1850

NOTES

- Ambient temperature lower than -20°C is available only with Stainless Steel unions.
- Model RB... allows an extended ambient temperature up to +150°C.

REDUCERS

series
RE

Protection	Gas	1-2	II2G	Ex d IIC Gb / Ex e IIC Gb
	Dusts	21-22	II2D	Ex tb IIIC Db

Degree of Protection	IP66
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Amb. Temp.	Standard	-40°C	+100°C
	Extended	-60°C	+180°C



Entries Threading	NPT ANSI B1.20 or Metric ISO 262
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Material	Nickel plated Brass
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Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079 - 0 • EN 60079 - 1
EN 60079 - 7 • EN 60079 - 31

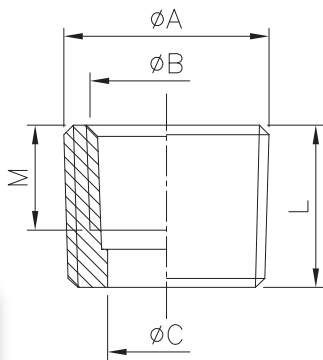
CE INERIS 14 ATEX 0029X

IECEX

IEC 60079 - 0 • IEC 60079 - 1
IEC 60079 - 7 • IEC 60079 - 31

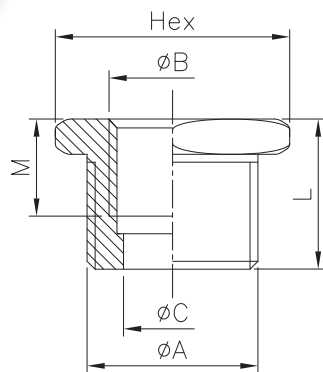
IECEX INE 14.0038X

- Options**
- Material: Stainless Steel AISI 316L ("S") on request.
 - Sizes greater than 3".
 - Different threadings.



Code	ØA [NPT]	ØB [NPT]	Dimensions (mm)			Weight (g)	ØA (MALE) [NPT]	ØB (FEMALE) [NPT]								
			ØC	L	M			3/8"	1/2"	3/4"	1"	1.1/4"	1.1/2"	2"	2.1/2"	
RE 138	1/2"	3/8"	10	19	16	30	1/2"	■	X	X	X	X	X	X	X	X
RE 21	3/4"	1/2"	13	21	18	50	3/4"	□	■	X	X	X	X	X	X	X
RE 31	1"	1/2"	13	21	18	110	1"	□	■	■	X	X	X	X	X	X
RE 32	1"	3/4"	19	21	18	75	1.1/4"	□	□	□	■	X	X	X	X	X
RE 43	1.1/4"	1"	25	27	23	160	1.1/2"	□	□	□	□	■	X	X	X	X
RE 54	1.1/2"	1.1/4"	32	27	23	150	2"	□	□	□	□	□	■	X	X	X
RE 65	2"	1.1/2"	38	27	23	300	2.1/2"	□	□	□	□	□	□	□	□	X
RE 76	2.1/2"	2"	50	27	23	380	3"	□	□	□	□	□	□	□	□	□
RE 87	3"	2.1/2"	60	35	31	750										

■ = available □ = available on request X = not available



Code	ØA [ISO]	ØB [ISO]	Dimensions (mm)				Weight (g)	ØA (MALE) [ISO]	ØB (FEMALE) [ISO]							
			ØC	L	M	Hex			M16	M20	M25	M32	M40	M50	M63	M75
RE 2016	M20x1,5	M16x1,5	10	20	16	26	35	M20	■	X	X	X	X	X	X	X
RE 2520	M25x1,5	M20x1,5	13	21	17	30	55	M25	□	■	X	X	X	X	X	X
RE 3220	M32x1,5	M20x1,5	13	21	17	38	115	M32	□	■	■	X	X	X	X	X
RE 3225	M32x1,5	M25x1,5	19	21	17	38	90	M40	□	□	□	■	X	X	X	X
RE 4032	M40x1,5	M32x1,5	25	24	19	46	150	M50	□	□	□	□	■	X	X	X
RE 5040	M50x1,5	M32x1,5	32	24	19	56	200	M63	□	□	□	□	□	■	X	X
RE 6350	M63x1,5	M40x1,5	42	25	19	70	350	M75	□	□	□	□	□	□	□	X
RE 7563	M75x1,5	M50x1,5	55	28	21	82	450	M90	□	□	□	□	□	□	□	□
RE 9075	M90x1,5	M63x1,5	65	30	23	98	700									

■ = available □ = available on request X = not available

- NOTES**
- Extended operating temperature range is -40°C ÷ +100°C with EPDM O-ring.
 - Extended operating temperature range is -60°C ÷ +180°C with Silicone O-ring.
 - The fitting may be mounted on electrical equipment suitable for group IM2 (firedamp mines) if it is not made of Aluminum light alloy. The resulting mode of protection will be: Ex d I Mb.

Example: RE32S

Order Coding

Type	Size and Threading (Male)	Size and Threading (Female)	Material
RE	1/2/3/4/5/6 = NPT ANSI B1.20 20/25/32/40/50/63/75/90 = Metric ISO 262	38/1/2/3/4/5 = NPT ANSI B1.20 16/20/25/32/40/50/63/75 = Metric ISO 262	B = Nickel plated Brass S = Stainless Steel AISI 316L

ADAPTERS

series
RE

Protection	Gas	1-2	II2G	Ex d IIC Gb / Ex e IIC Gb
	Dusts	Zone 21-22	II2D	Ex tb IIIC Db

Degree of Protection	IP66
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Amb. Temp.	Standard	-40°C	+100°C
	Extended	-60°C	+180°C



Entries Threading	NPT ANSI B1.20 or Metric ISO 262
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Material	Nickel plated Brass
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Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079 - 0 • EN 60079 - 1
EN 60079 - 7 • EN 60079 - 31

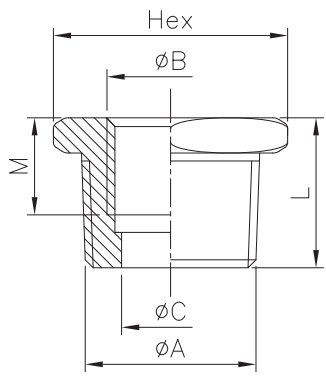
CE INERIS 14 ATEX 0029X

IECEx

IEC 60079 - 0 • IEC 60079 - 1
IEC 60079 - 7 • IEC 60079 - 31

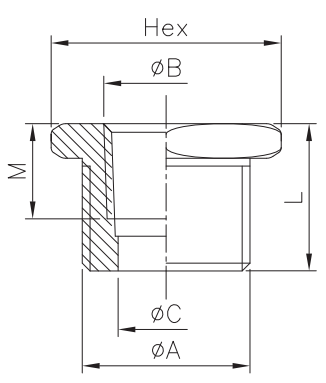
IECEx INE 14.0038X

- Options**
- Material: Stainless Steel AISI 316L ("S") on request.
 - Sizes greater than 3".



Code	ØA [NPT]	ØB [ISO]	Dimensions (mm)				Weight (g)	ØA (MALE) [NPT]	ØB (FEMALE) [ISO]								
			ØC	L	M	Hex			M16	M20	M25	M32	M40	M50	M63	M75	
RE 1N16M	1/2"	M16x1,5	10	22	18	22	40	1/2"	■	X	X	X	X	X	X	X	X
RE 2N20M	3/4"	M20x1,5	13	23	19	28	60	3/4"	□	■	X	X	X	X	X	X	X
RE 3N20M	1"	M20x1,5	13	28	21	35	150	1"	□	■	■	X	X	X	X	X	X
RE 3N25M	1"	M25x1,5	19	28	21	35	110	1.1/4"	□	□	□	■	X	X	X	X	X
RE 4N32M	1.1/4"	M32x1,5	25	29	21	44	180	1.1/2"	□	□	□	□	■	X	X	X	X
RE 5N40M	1.1/2"	M40x1,5	32	29	21	50	190	2"	□	□	□	□	□	■	X	X	X
RE 6N50M	2"	M50x1,5	42	30	21	62	300	2.1/2"	□	□	□	□	□	□	□	□	X
RE 7N63M	2.1/2"	M63x1,5	55	38	21	74	460	3"	□	□	□	□	□	□	□	□	□
RE 8N75M	3"	M75x1,5	65	40	25	90	780										

■ = available □ = available on request X = not available



Code	ØA [ISO]	ØB [NPT]	Dimensions (mm)				Weight (g)	ØA (MALE) [ISO]	ØB (FEMALE) [NPT]								
			ØC	L	M	Hex			3/8"	1/2"	3/4"	1"	1.1/4"	1.1/2"	2"	2.1/2"	
RE 20M38N	M20x1,5	3/8"	10	20	16	26	35	M20	■	X	X	X	X	X	X	X	X
RE 25M1N	M25x1,5	1/2"	13	20	18	30	55	M25	□	■	X	X	X	X	X	X	X
RE 32M1N	M32x1,5	1/2"	13	22	18	38	120	M32	□	■	■	X	X	X	X	X	X
RE 32M2N	M32x1,5	3/4"	19	22	18	38	90	M40	□	□	□	■	X	X	X	X	X
RE 40M3N	M40x1,5	1"	25	24	23	46	180	M50	□	□	□	□	■	X	X	X	X
RE 50M4N	M50x1,5	1.1/4"	32	24	23	56	250	M63	□	□	□	□	□	■	X	X	X
RE 63M5N	M63x1,5	1.1/2"	38	24	23	70	450	M75	□	□	□	□	□	□	□	□	X
RE 75M6N	M75x1,5	2"	50	28	23	82	600	M90	□	□	□	□	□	□	□	□	□
RE 90M7N	M90x1,5	2.1/2"	60	28	31	98	1000										

■ = available □ = available on request X = not available

- NOTES**
- Extended operating temperature range is -40°C ÷ +100°C with EPDM O-ring.
 - Extended operating temperature range is -60°C ÷ +180°C with Silicone O-ring.
 - The fitting may be mounted on electrical equipment suitable for group IM2 (firedamp mines) if it is not made of Aluminum light alloy. The resulting mode of protection will be: Ex d I Mb.

Example: RE75M3NB

Order Coding

Type	Size and Threading (Male)	Threading Identification (Male)	Size and Threading (Female)	Threading Identification (Female)	Material
RE	1/2/3/4/5/6/7/8 = NPT ANSI B1.20 20/25/32/40/50/63/75/90 = Metric ISO 262	N = NPT ANSI B1.20 M = Metric ISO 262	16/20/25/32/40/50/63/75 = Metric ISO 262 1/2/3/4/5/6/7 = NPT ANSI B1.20	M = Metric ISO 262 N = NPT ANSI B1.20	B = Nickel plated Brass S = Stainless Steel AISI 316L

REDUCERS

series
REB

Protection	Gas	1-2	II2G	Ex d IIC Gb / Ex e IIC Gb
	Dusts	Zone 21-22	II2D	Ex tb IIIC Db

Degree of Protection	IP66
----------------------	------

Amb. Temp.	Standard	-40°C	+100°C
	Extended	-60°C	+180°C



Entries Threading	NPT ANSI B1.20 or Metric ISO 262
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Material	Nickel plated Brass
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Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079 - 0 • EN 60079 - 1
EN 60079 - 7 • EN 60079 - 31

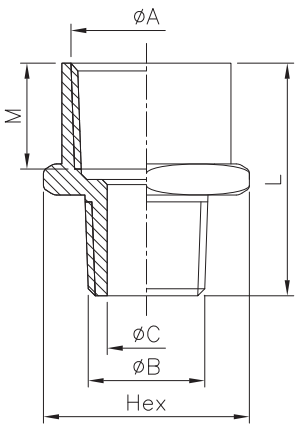
CE INERIS 14 ATEX 0029X

IECEX

IEC 60079 - 0 • IEC 60079 - 1
IEC 60079 - 7 • IEC 60079 - 31

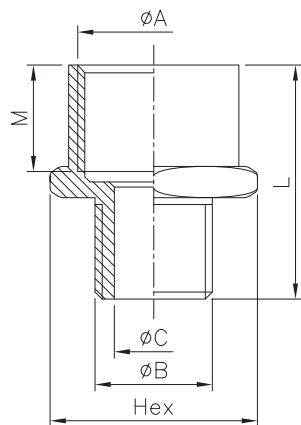
IECEX INE 14.0038X

- Options**
- Material: Stainless Steel AISI 316L ("S") on request.
 - Sizes greater than 3".
 - Different threadings.



Code	ØA [NPT]	ØB [NPT]	Dimensions (mm)				Weight (g)	ØA (FEMALE) [NPT]	ØB (MALE) [NPT]								
			ØC	L	M	Hex			3/8"	1/2"	3/4"	1"	1.1/4"	1.1/2"	2"	2.1/2"	
REB 138	1/2"	3/8"	10	38	18	24	60	1/2"	■	X	X	X	X	X	X	X	X
REB 21	3/4"	1/2"	13	40	18	30	90	3/4"	□	■	X	X	X	X	X	X	X
REB 31	1"	1/2"	13	45	23	38	150	1"	□	■	■	X	X	X	X	X	X
REB 32	1"	3/4"	19	45	23	38	150	1.1/4"	□	□	□	■	X	X	X	X	X
REB 43	1.1/4"	1"	25	50	23	48	240	1.1/2"	□	□	□	□	■	X	X	X	X
REB 54	1.1/2"	1.1/4"	32	50	23	52	260	2"	□	□	□	□	□	■	X	X	X
REB 65	2"	1.1/2"	38	50	23	64	330	2.1/2"	□	□	□	□	□	□	□	□	X
REB 76	2.1/2"	2"	50	60	31	78	620	3"	□	□	□	□	□	□	□	□	□
REB 87	3"	2.1/2"	60	67	31	94	920										

■ = available □ = available on request X = not available



Code	ØA [ISO]	ØB [ISO]	Dimensions (mm)				Weight (g)	ØA (FEMALE) [ISO]	ØB (MALE) [ISO]								
			ØC	L	M	Hex			M16	M20	M25	M32	M40	M50	M63	M75	
REB 2016	M20x1,5	M16x1,5	10	38	17	27	75	M20	■	X	X	X	X	X	X	X	X
REB 2520	M25x1,5	M20x1,5	13	38	17	30	80	M25	□	■	X	X	X	X	X	X	X
REB 3220	M32x1,5	M20x1,5	13	38	17	38	120	M32	□	■	■	X	X	X	X	X	X
REB 3225	M32x1,5	M25x1,5	19	38	17	38	120	M40	□	□	□	■	X	X	X	X	X
REB 4032	M40x1,5	M32x1,5	25	40	19	46	160	M50	□	□	□	□	■	X	X	X	X
REB 5040	M50x1,5	M32x1,5	32	42	19	56	230	M63	□	□	□	□	□	■	X	X	X
REB 6350	M63x1,5	M40x1,5	42	42	19	70	320	M75	□	□	□	□	□	□	□	□	X
REB 7563	M75x1,5	M50x1,5	55	44	21	82	410	M90	□	□	□	□	□	□	□	□	□
REB 9075	M90x1,5	M63x1,5	65	46	21	98	600										

■ = available □ = available on request X = not available

- NOTES**
- Extended operating temperature range is -40°C ÷ +100°C with EPDM O-ring.
 - Extended operating temperature range is -60°C ÷ +180°C with Silicone O-ring.
 - The fitting may be mounted on electrical equipment suitable for group IM2 (firedamp mines) if it is not made of Aluminum light alloy. The resulting mode of protection will be: Ex d I Mb.

Example: REB32S

Order Coding

Type	Size and Threading (Female)	Size and Threading (Male)	Material
REB	1/2/3/4/5/6 = NPT ANSI B1.20 20/25/32/40/50/63/75/90 = Metric ISO 262	38/1/2/3/4/5 = NPT ANSI B1.20 16/20/25/32/40/50/63/75 = Metric ISO 262	B = Nickel plated Brass S = Stainless Steel AISI 316L

ADAPTERS

series
REB

Protection	Gas	1-2	II2G	Ex d IIC Gb / Ex e IIC Gb
	Dusts	21-22	II2D	Ex tb IIIC Db

Degree of Protection	IP66
----------------------	------

Amb. Temp.	Standard	-40°C	+100°C
	Extended	-60°C	+180°C



Entries Threading	NPT ANSI B1.20 or Metric ISO 262
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Material	Nickel plated Brass
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Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079 - 0 • EN 60079 - 1
EN 60079 - 7 • EN 60079 - 31

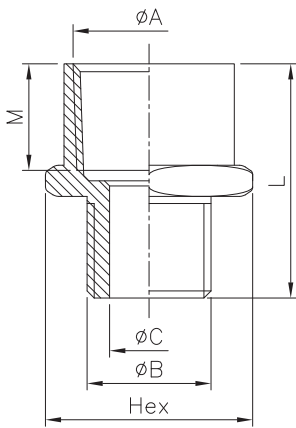
INERIS 14 ATEX 0029X

IEC 60079 - 0 • IEC 60079 - 1
IEC 60079 - 7 • IEC 60079 - 31

IECEx INE 14.0038X

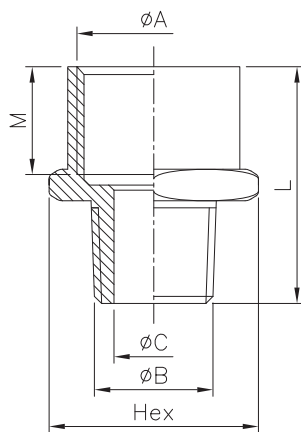
Options

- Material: Stainless Steel AISI 316L ("S") on request.
- Sizes greater than 3".
- Different threadings.



Code	ØA [NPT]	ØB [ISO]	Dimensions (mm)				Weight (g)	ØA (FEMALE) [NPT]	ØB (MALE) [ISO]								
			ØC	L	M	Hex			M16	M20	M25	M32	M40	M50	M63	M75	
REB 38N16M	3/8"	M16x1,5	10	37	16	24	68	3/8"	■	x	x	x	x	x	x	x	x
REB 1N20M	1/2"	M20x1,5	13	39	18	27	80	1/2"	□	■	x	x	x	x	x	x	x
REB 2N20M	3/4"	M20x1,5	13	39	18	30	80	3/4"	□	■	■	x	x	x	x	x	x
REB 3N20M	1"	M20x1,5	13	44	23	38	150	1"	□	■	■	■	x	x	x	x	x
REB 2N25M	3/4"	M25x1,5	19	39	18	30	80	1.1/4"	□	□	□	□	■	x	x	x	x
REB 3N25M	1"	M25x1,5	19	44	23	38	150	1.1/2"	□	□	□	□	□	■	x	x	x
REB 3N32M	1"	M32x1,5	25	44	23	38	150	2"	□	□	□	□	□	□	■	x	x
REB 4N40M	1.1/4"	M40x1,5	32	46	23	48	240	2.1/2"	□	□	□	□	□	□	□	□	□
REB 5N50M	1.1/2"	M50x1,5	38	46	23	56	360	3"	□	□	□	□	□	□	□	□	□
REB 6N63M	2"	M63x1,5	50	46	23	70	520										
REB 7N75M	2.1/2"	M75x1,5	60	56	31	82	830										

■ = available □ = available on request X = not available



Code	ØA [ISO]	ØB [NPT]	Dimensions (mm)				Weight (g)	ØA (FEMALE) [ISO]	ØB (MALE) [NPT]								
			ØC	L	M	Hex			3/8"	1/2"	3/4"	1"	1.1/4"	1.1/2"	2"	2.1/2"	
REB 16M38N	M16x1,5	3/8"	10	38	17	22	58	M16	■	x	x	x	x	x	x	x	x
REB 20M1N	M20x1,5	1/2"	13	40	17	27	80	M20	□	■	x	x	x	x	x	x	x
REB 25M1N	M25x1,5	1/2"	13	40	17	30	80	M25	□	■	■	x	x	x	x	x	x
REB 32M1N	M32x1,5	1/2"	13	40	17	38	120	M32	□	■	■	■	x	x	x	x	x
REB 25M2N	M25x1,5	3/4"	19	40	17	30	90	M40	□	□	□	□	■	x	x	x	x
REB 32M2N	M32x1,5	3/4"	19	40	17	38	130	M50	□	□	□	□	□	■	x	x	x
REB 32M3N	M32x1,5	1"	25	45	17	38	150	M63	□	□	□	□	□	□	■	x	x
REB 40M4N	M40x1,5	1.1/4"	32	47	19	46	220	M75	□	□	□	□	□	□	□	□	□
REB 50M5N	M50x1,5	1.1/2"	38	47	19	56	270	M90	□	□	□	□	□	□	□	□	□
REB 63M6N	M63x1,5	2"	50	47	19	70	370										
REB 75M7N	M75x1,5	2.1/2"	60	56	21	82	600										

■ = available □ = available on request X = not available

NOTES

- Extended operating temperature range is -40°C ÷ +100°C with EPDM O-ring.
- Extended operating temperature range is -60°C ÷ +180°C with Silicone O-ring.
- The fitting may be mounted on electrical equipment suitable for group IM2 (firedamp mines) if it is not made of Aluminum light alloy. The resulting mode of protection will be: Ex d I Mb.

Example: REB32M2NB

Order Coding

Type REB	Size and Threading (Female) 38/1/2/3/4/5/6/7/8 = NPT ANSI B1.20 16/20/25/32/40/50/63/75/90 = Metric ISO 262	Threading Identification (Female) N = NPT ANSI B1.20 M = Metric ISO 262	Size and Threading (Male) 16/20/25/32/40/50/63/75/90 = Metric ISO 262 38/1/2/3/4/5/6/7/8 = NPT ANSI B1.20	Threading Identification (Male) M = Metric ISO 262 N = NPT ANSI B1.20	Material B = Nickel plated Brass S = Stainless Steel AISI 316L
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NIPPLES

series
NP

Protection	Gas	Zone	1-2	II2G	Ex d IIC Gb / Ex e IIC Gb
	Dusts	Zone	21-22	II2D	Ex tb IIIC Db

Degree of Protection	IP66
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Amb. Temp.	Standard	Extended	-20°C	+80°C
			-60°C	+180°C



Entries Threading	NPT ANSI B1.20 or Metric ISO 262
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Material	Nickel plated Brass
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Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079 - 0 • EN 60079 - 1
EN 60079 - 7 • EN 60079 - 31

CE INERIS 14 ATEX 0029X

IECEx

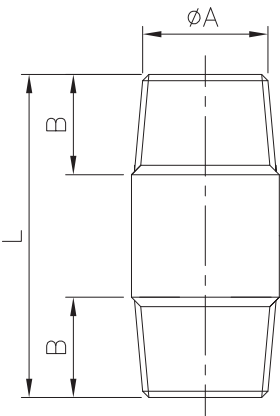
IEC 60079 - 0 • IEC 60079 - 1
IEC 60079 - 7 • IEC 60079 - 31

IECEx INE 14.0038X

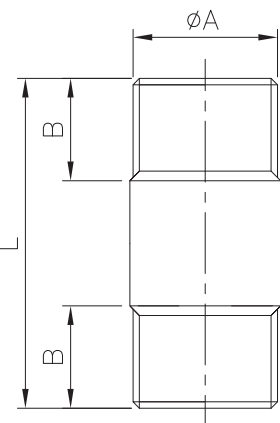
- Nipples of series NP are used for linking enclosures or other fittings with female threading.

Options

- Materials: Stainless Steel AISI 316L ("S") on request.
- Size greater than 3".



Code	Dimensions (mm)			Weight (g)
	ØA	B	L	
NP 38	3/8" NPT	16	40	40
NP 1	1/2" NPT	18	50	60
NP 2	3/4" NPT	18	50	80
NP 3	1" NPT	23	60	120
NP 4	1.1/4" NPT	23	60	160
NP 5	1.1/2" NPT	23	60	180
NP 6	2" NPT	23	60	230
NP 7	2.1/2" NPT	28	70	320
NP 8	3" NPT	28	70	390



Code	Dimensions (mm)			Weight (g)
	ØA	B	L	
NP 16	M16x1.5	16	40	40
NP 20	M20x1.5	16	50	70
NP 25	M25x1.5	16	50	80
NP 32	M32x1.5	16	60	130
NP 40	M40x1.5	18	60	170
NP 50	M50x1.5	18	60	210
NP 63	M63x1.5	18	60	270
NP 75	M75x1.5	20	70	320
NP 90	M90x1.5	20	70	460

NOTES

- Extended operating temperature range is -40°C ÷ +100°C with EPDM O-ring.
- Extended operating temperature range is -60°C ÷ +180°C with Silicone O-ring.
- The fitting may be mounted on electrical equipment suitable for group IM2 (firedamp mines) if it is not made of Aluminum light alloy. The resulting mode of protection will be: Ex d I Mb.

Example: NP25S

Order Coding

Type	Size and Threading	Material
NP	38/1/2/3/4/5/6/7/8 = NPT ANSI B1.20 16/20/25/32/40/50/63/75/90 = Metric ISO 262	B = Nickel plated Brass S = Stainless Steel AISI 316L

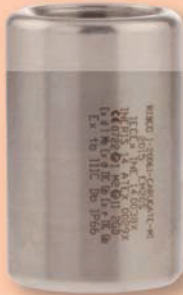
COUPLINGS

series
EM

Protection	Gas	1-2	II2G	Ex d IIC Gb / Ex e IIC Gb
	Dusts	21-22	II2D	Ex tb IIIC Db

Degree of Protection	IP66
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Amb. Temp.	Standard	-20°C	+40°C
	Extended	-60°C	+180°C



Entries Threading	NPT ANSI B1.20 or Metric ISO 262
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Material	Nickel plated Brass
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Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079 - 0 • EN 60079 - 1
EN 60079 - 7 • EN 60079 - 31

CE INERIS 14 ATEX 0029X

IEC 60079 - 0 • IEC 60079 - 1
IEC 60079 - 7 • IEC 60079 - 31

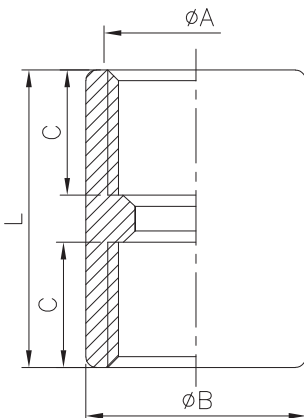
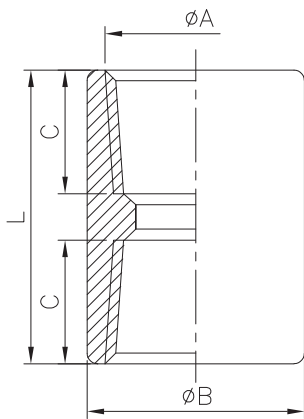
IECEx INE 14.0038X

- Couplings of Series EM are used to join tubes with terminal male threading.

Options

- Materials: Stainless Steel AISI 316L ("S") on request.

- Size greater than 3".



Code	DimensionS (mm)				Weight (g)
	ØA	ØB	C	L	
EM 38	3/8" NPT	22	17	40	50
EM 1	1/2" NPT	27	19	40	70
EM 2	3/4" NPT	31	19	40	100
EM 3	1" NPT	38	24	50	200
EM 4	1.1/4" NPT	46	24	50	230
EM 5	1.1/2" NPT	56	24	50	260
EM 6	2" NPT	66	24	50	330
EM 7	2.1/2" NPT	82	32	70	760
EM 8	3" NPT	92	32	70	940

Code	Dimensions (mm)				Weight (g)
	ØA	ØB	C	L	
EM 16	M16x1.5	22	18	40	70
EM 20	M20x1.5	27	18	40	90
EM 25	M25x1.5	31	18	40	130
EM 32	M32x1.5	38	18	50	220
EM 40	M40x1.5	46	20	50	270
EM 50	M50x1.5	56	20	50	340
EM 63	M63x1.5	70	20	50	460
EM 75	M75x1.5	82	24	70	850
EM 90	M90x1.5	98	24	70	1000

NOTES

- Extended operating temperature range is -40°C ÷ +100°C with EPDM O-ring.
- Extended operating temperature range is -60°C ÷ +180°C with Silicone O-ring.

- The fitting may be mounted on electrical equipment suitable for group IM2 (firedamp mines) if it is not made of Aluminum light alloy. The resulting mode of protection will be: Ex d I Mb.

Example: EM3G

Order Coding

Type
EM

Size and Threading
38/1/2/3/4/5/6/7/8 = NPT ANSI B1.20
16/20/25/32/40/50/63/75/90 = Metric ISO 262

Material
B = Nickel plated Brass
S = Stainless Steel AISI 316L

PLUGS

series
PLG

Protection	Gas	1-2	II2G	Ex d IIC Gb / Ex e IIC Gb
	Dusts	21-22	II2D	Ex tb IIIC Db



Degree of Protection	IP66
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Amb. Temp.	Standard	Extended	-40°C	+100°C
			-60°C	+180°C



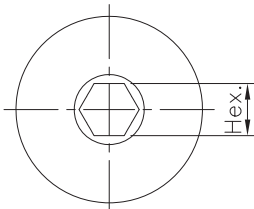
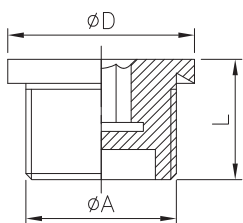
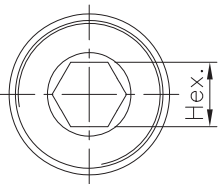
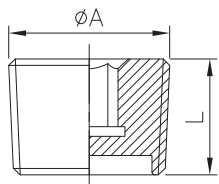
Entries Threading	NPT ANSI B1.20 or Metric ISO 262
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Material	Nickel plated Brass
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Standards and Certificates		Directive 2014/34/EU (ATEX) EN 60079 - 0 • EN 60079 - 1 EN 60079 - 7 • EN 60079 - 31
		IEC 60079 - 0 • IEC 60079 - 1 IEC 60079 - 7 • IEC 60079 - 31 IECEx INE 14.0038X

- Plugs series PLG are used to close the unused entries. Hexagon cavity on the head ensure the possibility to open them only with special tools.

- Options**
- Materials: Stainless Steel AISI 316L ("S") on request.
 - Size greater than 3".



Code	Dimensions (mm)			Weight (g)
	ØA	Hex.	L	
PLG 38	3/8" NPT	8	16	20
PLG 1	1/2" NPT	10	18	40
PLG 2	3/4" NPT	10	22	60
PLG 3	1" NPT	12	22	110
PLG 4	1.1/4" NPT	12	22	130
PLG 5	1.1/2" NPT	12	22	160
PLG 6	2" NPT	12	22	210
PLG 7	2.1/2" NPT	14	29	360
PLG 8	3" NPT	14	29	560

Code	Dimensions (mm)				Weight (g)
	ØA	ØD	Hex.	L	
PLG 16	M16x1.5	22	10	20	30
PLG 20	M20x1.5	26	10	20	50
PLG 25	M25x1.5	31	10	20	70
PLG 32	M32x1.5	38	12	20	110
PLG 40	M40x1.5	50	12	23	170
PLG 50	M50x1.5	60	12	23	210
PLG 63	M63x1.5	73	12	23	280
PLG 75	M75x1.5	85	14	26	450
PLG 80	M80x1.5	90	14	26	510
PLG 85	M85x1.5	95	14	26	550
PLG 90	M90x1.5	100	14	26	580

- NOTES**
- Extended operating temperature range is -40°C ÷ +100°C with EPDM O-ring.
 - Extended operating temperature range is -60°C ÷ +180°C with Silicone O-ring.
 - The fitting may be mounted on electrical equipment suitable for group IM2 (firedamp mines) if it is not made of Aluminum light alloy. The resulting mode of protection will be: Ex d I Mb.

Example: PLG25S

Order Coding	Type	Size and Threading	Material
	PLG	38/1/2/3/4/5/6/7/8 = NPT ANSI B1.20 16/20/25/32/40/50/63/75/80/85/90 = Metric ISO 262	B = Nickel plated Brass S = Stainless Steel AISI 316L

BENDS

series
ELF

Protection	Gas	1-2	II2G	Ex d IIC Gb / Ex e IIC Gb
	Dusts	21-22	II2D	Ex tb IIIC Db

Degree of Protection
IP66/67

Amb. Temp.	Standard Extended	-55°C	+150°C
		-60°C	+180°C



Entries Threading
NPT ANSI B1.20 or Metric ISO 262

Material
Aluminium

Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079 - 0 • EN 60079 - 1
EN 60079 - 7 • EN 60079 - 31

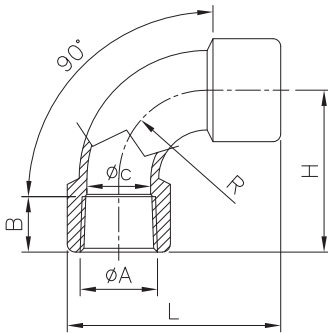
CE CESA 01 ATEX 104U

IEC 60079 - 0 • IEC 60079 - 1
IEC 60079 - 7 • IEC 60079 - 31

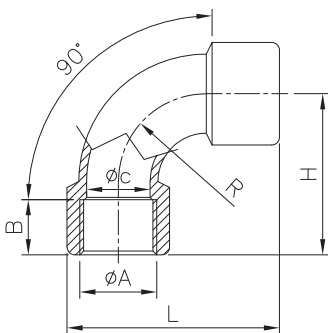
IEC-Ex CES 15.0005U

• 90° Bends Series ELF are used in the electrical installation in tube.

Options - Size greater than 3".



Code	Dimensions (mm)				Weight (g)
	ØA	L	H	R	
ELF 1	1/2" NPT	60	45	30	120
ELF 2	3/4" NPT	75	55	30	100
ELF 3	1" NPT	85	65	35	200
ELF 4	1.1/4" NPT	100	75	50	390
ELF 5	1.1/2" NPT	110	87	50	370
ELF 6	2" NPT	135	98	60	620
ELF 7	2.1/2" NPT	175	135	65	880
ELF 8	3" NPT	210	160	85	1480



Code	Dimensions (mm)				Weight (g)
	ØA	L	H	R	
ELF 20	M20x1.5	60	45	30	120
ELF 25	M25x1.5	75	55	30	100
ELF 32	M32x1.5	85	65	35	200
ELF 40	M40x1.5	100	75	50	390
ELF 50	M50x1.5	110	87	50	370
ELF 63	M63x1.5	135	98	60	620
ELF 75	M75x1.5	175	135	65	880
ELF 90	M90x1.5	210	160	85	1480

Example: ELF3

Order Coding

Type
ELF

Size and Threading
1/2/3/4/5/6/7/8 = NPT ANSI B1.20
20/25/32/40/50/63/75/80/85/90 = Metric ISO 262

Material
- = Aluminum

INSPECTABLE BENDS

series
LBH


Protection	Gas	1-2	II2G	Ex d IIB
	Dusts	n.a.	n.a.	n.a.

Degree of Protection	IP66
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Amb. Temp.	Standard	-20°C	+40°C
	Extended	-20°C	+60°C

Entries Threading	EN 10226 (Gk)
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Standards and Certificates



Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1

U CESI 03 ATEX 141U

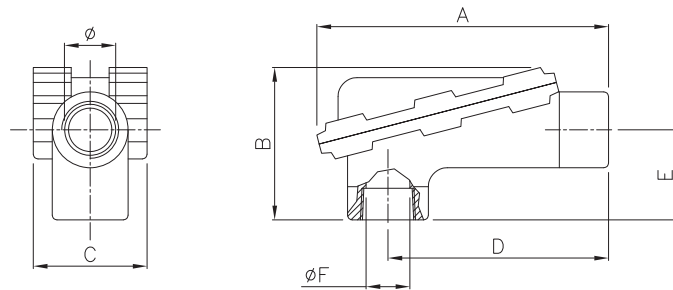


Material	Aluminum light alloy
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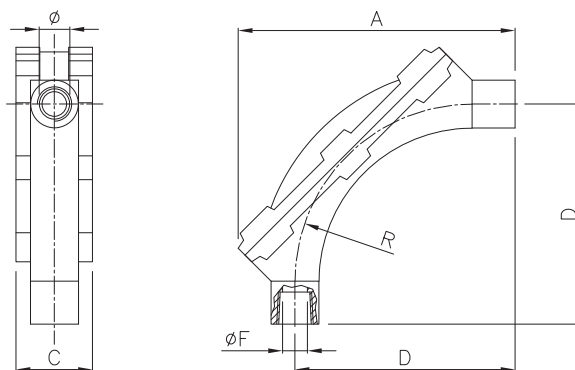
- Recommended for positioning and bending of large conductors.
- Tangent lid opening to facilitate inspection operations.
- The series LBH is recommended for small section conductor bundles.
- Galvanized steel screws.

Options

- Threading NPT ANSI B1.20.1 (N)



Code	Dimensions (mm)							Weight (g)
	Ø	A	B	C	D	E	ØF	
LBH 2	3/4"	160	95	70	132	45	19	410
LBH 3	1"	165	112	70	129	60	25	470
LBH 5	1.1/2"	265	133	110	217	81	38	1170
LBH 6	2"	266	133	110	217	81	48	1045
LBH 7	2.1/2"	363	250	138	267	138	62	3510
LBH 8	3"	363	250	138	267	138	70	3160
LBH 9	4"	710	280	185	600	160	90	9870



Code	Dimensions (mm)						Weight (g)
	Ø	A	C	D	ØF	R	
LBHS 3	1"	245	74	236	25	200	1285
LBHS 5	1.1/2"	285	103	280	38	250	1480
LBHS 6	2"	440	117	380	48	360	2285
LBHS 7	2.1/2"	440	145	350	62	320	6230
LBHS 8	3"	632	150	550	70	500	6770

INSERTION FITTINGS

series
EKC

Protection	Gas	1-2	II2G	Ex d IIB
	Dusts	n.a.	n.a.	n.a.

Degree of Protection	IP66
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Amb. Temp.	Standard	-20°C	+40°C
	Extended	-20°C	+60°C



Entry Threading	EN 10226 (Gk)
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Material	Aluminum light alloy
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Standards and Certificates



Directive 2014/34/EU (ATEX)

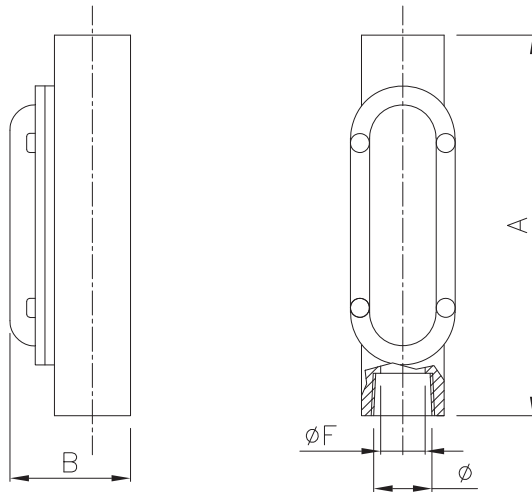
EN 60079-0 • EN 60079-1

U | CESI 03 ATEX 141U

- Recommended to facilitate the insertion and laying of the conductors along long stretches of conduits.
- Galvanized steel screws.

Options

- Threading NPT ANSI B1.20.1 (N)



Code	Dimensions (mm)					Weight (g)
	Ø	A	B	C	ØF	
EKC 2	3/4"	173	60	70	19	480
EKC 3	1"	183	67	70	25	557
EKC 5	1.1/2"	243	90	102	38	1145
EKC 6	2"	300	112	104	48	1750
EKC 7	2.1/2"	380	174	138	62	3600
EKC 8	3"	380	174	138	70	3620

Example: LBH3

Example: LBHS3

Example: EKC5N

Order Coding

Type
LBH = Inspectable bend
LBHS = Inspectable bend
EKC = Insertion fitting

Dimension
1/2/3/4/5/6/7/8

Threading
.. = EN 10226 (Gk)
N = NPT ANSI B1.20

ROTATING JOINTS

series
T..

Protection	Gas	1-2	II2G	Ex d IIC Gb / Ex e IIC Gb
	Dusts	21-22	II2D	Ex tb IIIC Db
	Mine	n.a.	IM2	Ex d I Mb

Degree of Protection	IP66
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Amb. Temp.	Standard	-20°C	+40°C
	Extended	n.a.	n.a.

Threading	NPT ANSI B1.20
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Material	Nickel plated Brass
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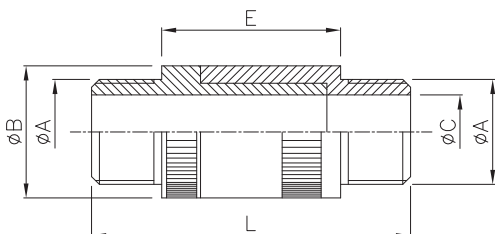
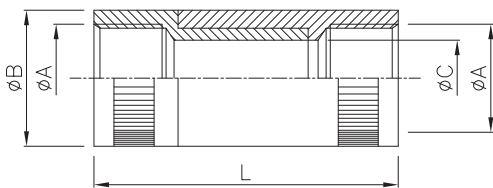
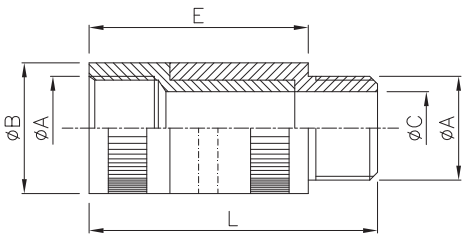
Standards and Certificates	Directive 2014/34/EU (ATEX)
	EN 60079 - 0 • EN 60079 - 1 EN 60079 - 7 • EN 60079 - 31
	TUV 14 ATEX 149645U
Standards and Certificates	IEC 60079 - 0 • IEC 60079 - 1 IEC 60079 - 7 • IEC 60079 - 31
	IECEX TUN 14.0032U



- Joining elements that allow, even after tightening, the rotation of the pipe or of the connecting element.
- They can be used as a termination of any flexible conduit. They eliminate possible torsion effects due to tightening and allow the rotation of the hose for 360° on its axis.

Options - Threading Metric ISO 262.

- Material: Stainless Steel AISI 316L ("S").



Code	ØA [NPT]	Code	ØA [ISO 262]	Dimensions (mm)				Weight (g)
				ØB	ØC	E	L	
TY 1	1/2"	TY 20	M20x1,5	26	15	60	78	165
TY 2	3/4"	TY 25	M25x1,5	34	19	60	78	265
TY 3	1"	TY 32	M32x1,5	40	25	67	85	405
TY 4	1.1/4"	TY 40	M40x1,5	50	34	67	89	560
TY 5	1.1/2"	TY 50	M50x1,5	58	39	67	89	800
TY 6	2"	TY 63	M63x1,5	70	50	67	89	1040

Code	ØA [NPT]	Code	ØA [ISO 262]	Dimensions (mm)			Weight (g)
				ØB	ØC	L	
TF 1	1/2"	TF 20	M20x1,5	26	15	80	165
TF 2	3/4"	TF 25	M25x1,5	34	19	80	265
TF 3	1"	TF 32	M32x1,5	40	25	90	405
TF 4	1.1/4"	TF 40	M40x1,5	50	34	90	560
TF 5	1.1/2"	TF 50	M50x1,5	58	39	90	800
TF 6	2"	TF 63	M63x1,5	70	50	90	1040

Code	ØA [NPT]	Code	ØA [ISO 262]	Dimensions (mm)				Weight (g)
				ØB	ØC	E	L	
TM 1	1/2"	TM 20	M20x1,5	26	15	50	86	170
TM 2	3/4"	TM 25	M25x1,5	34	19	50	86	280
TM 3	1"	TM 32	M32x1,5	40	25	52	88	415
TM 4	1.1/4"	TM 40	M40x1,5	50	34	52	96	575
TM 5	1.1/2"	TM 50	M50x1,5	58	39	55	99	810
TM 6	2"	TM 63	M63x1,5	70	50	55	99	1060

Example: TY 3B

Order Coding

Type

TY = male/female
TF = female/female (on request)
TM = male/male (on request)

Size and Threading

1/2/3/4/5/6 = NPT ANSI B1.20
20/25/32/40/50/63 = Metric ISO 262

Material

B = Nickel plated Brass
S = Stainless Steel AISI 316L

TERMINALS

series
DB



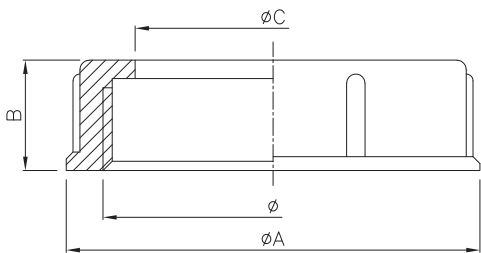
Material
Aluminum
light alloy

Threading
ISO 228

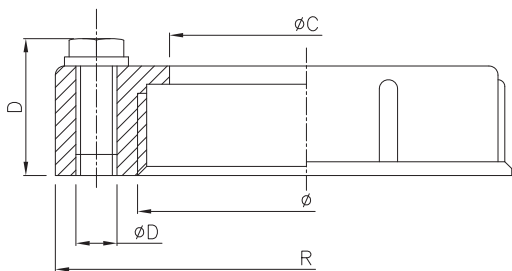
- The terminals series DB... and DB... are screwed to the tube end to protect the cables. They prevent the cable from rubbing on the end part of the conduit and/or against any burr avoiding damages.
- In addition, series DBT... are provided with a screw for the grounding of the conduit.

Options

- Threading NPT ANSI B1.20.1 (N)



Code	Dimensions (mm)				Weight (g)
	Ø	ØA	B	ØC	
DB 1	1/2"	32	17	15	18
DB 2	3/4"	37	17	20	22
DB 3	1"	41	20	25	25
DB 4	1.1/4"	52	20	34	34
DB 5	1.1/2"	57	20	40	46
DB 6	2"	69	20	50	55
DB 7	2.1/2"	87	21	66	72
DB 8	3"	99	21	78	90
DB 9	4"	124	23	102	110
DB 12	5"	152	24	126	165



Code	Dimensions (mm)					Weight (g)
	Ø	A	ØC	ØD	R	
DBT 1	1/2"	24	15	M5	23	18
DBT 2	3/4"	24	20	M5	26	20
DBT 3	1"	24	25	M5	29	22
DBT 4	1.1/4"	25	34	M5	34	32
DBT 5	1.1/2"	25	40	M5	37	45
DBT 6	2"	25	50	M5	41	55
DBT 7	2.1/2"	28	66	M8	54	90
DBT 8	3"	28	78	M6	60	95
DBT 9	4"	30	102	M8	73	135
DBT 12	5"	32	126	M8	86	165

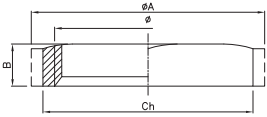
LOCKNUTS

series
DL

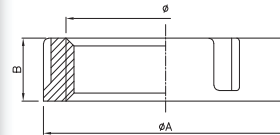


Material	DL1÷DL6 Zinc plated Steel	DL7÷DL12 Aluminum light alloy
	metric DL Nickel plated Brass	

Threading	ISO 228 or metric ISO 262
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Code	Dimensions (mm)			Ch	Weight (g)
	Ø	ØA	B		
DL 1	1/2"	31	6	27	8
DL 2	3/4"	37	6	30	8
DL 3	1"	44	6	38	16
DL 4	1.1/4"	58	8	50	36
DL 5	1.1/2"	64	8	55	42
DL 6	2"	82	10	65	46



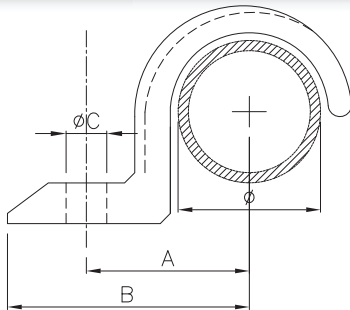
Code	Dimensions (mm)			Weight (g)
	Ø	ØA	B	
DL 7	2.1/2"	90	18	75
DL 8	3"	104	20	112
DL 9	4"	132	22	178
DL 12	5"	157	22	-

CLAMPS

series
GF



Material	Zinc plated Steel
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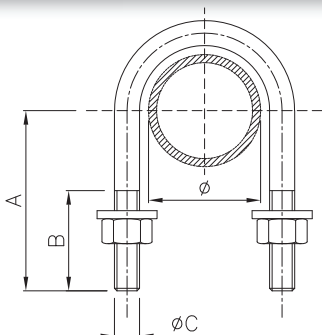
Code	Dimensions (mm)				Weight (g)
	Ø	A	B	ØC	
GF 1	1/2"	30	48	9	35
GF 2	3/4"	34	50	9	45
GF 3	1"	40	60	9	55
GF 5	1.1/2"	45	70	11	130
GF 6	2"	60	80	13	160
GF 7	2.1/2"	75	100	10	340
GF 8	3"	85	115	10	525
GF 9	4"	85	115	13	630

ANCHORS

series
GH



Material	Tropicalized Steel
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Code	Dimensions (mm)				Weight (g)
	Ø	A	B	ØC	
GH 1	1/2"	30	25	M6	25
GH 2	3/4"	35	25	M6	30
GH 3	1"	40	30	M6	35
GH 4	1.1/4"	45	30	M6	40
GH 5	1.1/2"	55	40	M8	80
GH 6	2"	60	40	M8	95
GH 7	2.1/2"	70	40	M8	105
GH 8	3"	75	45	M10	200
GH 9	4"	83	45	M10	225

NOTES:

H



The COELBO STAINLESS STEEL PRODUCT RANGE

The products presented in this catalog are in large part made of materials that the history of explosion proof equipment and the endless tests and experiences carried out in the field have confirmed to be the best technical compromise economically feasible. Above all stands the use of Aluminum light alloys, followed by Brass, Steel and other materials as large minority.

However, when among such applications faces out almost unique requirements related to the need of resistance to corrosion because of the presence and the action of chemical agents (the saline environment, one of the most fearsome ...) with which

equipment and enclosures may come into contact, most of the specifications prescribe, sometimes with excessive easiness, the use of Stainless Steel as far as expensive and heavy it is.

COELBO holds the exclusive solution "ALUMINOX", an excellent economic and functional response to these requirements representing the squaring of the circle having achieved the necessary balance with the costs, well below the Stainless Steel, while maintaining the performances of the same material but with a third of the weight of Aluminum. Our Technical-Commercial dept. is at your disposal for any further -possibly necessary- information.

This does not preclude, however, our particular attention and action towards those products the market has always requested, where specified, and, in fact, imposed with no alternatives. From here, a substantial and comprehensive range of products in AISI 316L, normally available from stock, and in constant evolution and enrichment. Sometimes derived from our historical standard Series, aligned in terms of quality levels, to the traditionally well-known COELBO products but still economically competitive by virtue of our manufacturing technologies. Everything is hosted for convenience of reference in a single section. This one.

JUNCTION BOXES



Series
RI

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BOXES for EQUIPMENT and INSTRUMENTS



ROI

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LOCAL CONTROL STATIONS



LCS

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BREAKERS - SELECTORS - SWITCHES - CONNECTING SWITCHES



LCS

10-2

LOCAL CONTROL STATIONS



PBS

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EMERGENCY PUSHBUTTONS



PBS

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STAINLESS STEEL LIMIT SWITCHES



PSI

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CABLE GLANDS



PM

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SEALING CABLE GLANDS



PM..X

126

BENDS



ELF..S

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NOTES:

JUNCTION BOXES

series
R..I

Protection	Mines	n.a.	IM2	Ex db I Mb
	Gas	1-2	II2G	Ex db IIC T6÷T4 Gb
	Dusts	21-22	II2D	Ex tb IIIC T85°C÷T135°C Db

Degree of Protection	IP66
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Amb. Temp.	Standard	-20°C	+40°C
	Extended	-50°C	+85°C



Entries Threading	NPT ANSI B1.20
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Material	Stainless Steel AISI 316L
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Painting	See Options
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Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1 • EN 60079-31

CE BVI 14 ATEX 0068X

U BVI 14 ATEX 0067U

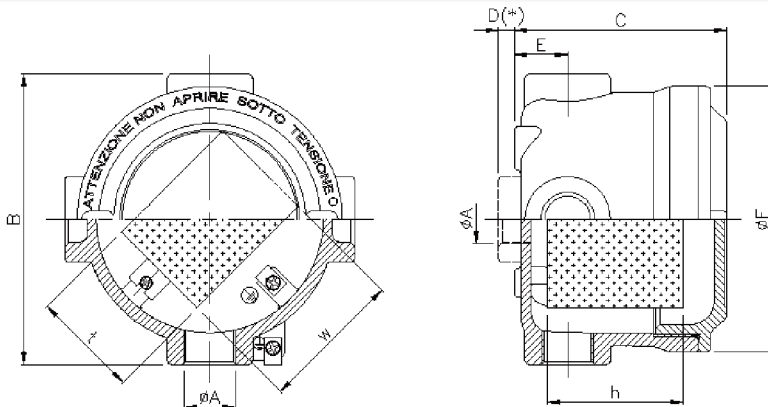
IEC 60079-0 • IEC 60079-1 • IEC 60079-31

IECEx EPS 14.0086X

IECEx EPS 14.0087U

- Ideal for routing and interconnecting the wires at the intersection of the conduits.
- Certificated either for the version complete with electrical apparatus or empty as an Ex component.

Options	- Terminal block: slatted terminals = MH modular terminals = MM	- Cable entries threading: Metric ISO 262 (M). - External Painting: on customer specification.	- Material: Aluminum (see page B03). - Accessories (see page I07).
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NOTES

The drawing is valid for dimensional data only. For further details, such as the orientation of the internal / external joints, there might be differences among the different models.

(*): Applicable to 5 entry version only, where the fifth is at the bottom of the box.

The temperature class and the maximum surface temperature may vary depending on the ambient temperature and the power dissipation of the equipment contained in the box. (see pag. I09).

The extended A.T. is -40°C÷+85°C for boxes with EPDM O-Ring (temperature class T6/T5). The extended A.T. is -50°C÷+85°C for boxes with Silicone O-Ring (temperature class T6/T5/T4).

Entries Diagram



Type	Size	ØA [NPT]	Size	ØA [ISO]	External Dimensions (mm)					Electrical app. dimensions (mm)			V _{app.elef.} (dm³)	Weight (kg)
					B	C	D(*)	E	ØF	h	w	t		
R..I	14	1/2"	14M	M20x1,5	80	69	9	20	71	40	30	28	0.033	0.96
R..I	24	3/4"	24M	M25x1,5	80	69	9	20	71	40	30	28	0.033	0.96
R..I	16	1/2"	16M	M20x1,5	100	68	9.5	22.5	90	40	50	35	0.070	1.25
R..I	26	3/4"	26M	M25x1,5	100	68	9.5	22.5	90	40	50	35	0.070	1.25
R..I	36A	1"	36AM	M32x1,5	100	73	9.5	22.5	90	45	50	35	0.078	1.30
R..I	27	3/4"	27M	M25x1,5	126	82	11	24	112	50	65	45	0.146	2.20
R..I	37	1"	37M	M32x1,5	126	82	11	24	112	50	65	45	0.146	2.20
R..I	28	3/4"	28M	M25x1,5	145	99	9.5	27	131	65	70	60	0.273	3.50
R..I	38	1"	38M	M32x1,5	145	99	9.5	27	131	65	70	60	0.273	3.50
R..I	48	1.1/4"	48M	M40x1,5	145	99	9.5	27	131	65	70	60	0.273	3.50
R..I	58	1.1/2"	58M	M50x1,5	145	99	9.5	27	131	65	70	60	0.273	3.50
R..I	29	3/4"	29M	M25x1,5	161	115	9.5	27	146	80	85	65	0.414	4.40
R..I	39	1"	39M	M32x1,5	161	115	9.5	27	146	80	85	65	0.414	4.40
R..I	59	1.1/2"	59M	M50x1,5	161	115	9.5	27	146	80	85	65	0.414	4.40
R..I	69	2"	69M	M63x1,5	161	115	9.5	27	146	80	85	65	0.414	4.40

Example: RTI 36A MM

Order Coding

Type
Scheme
R T I

Entries Size and Threading
3 = 1" NPT

Body Size
6A

Model
MM

JUNCTION BOXES and BOXES for EQUIPMENT with EXTENSION

series
R..I

Protection	Mines	Zone	n.a.	IM2	Ex db I Mb
	Gas		1-2	II2G	Ex db IIC T6÷T4 Gb
	Dusts		21-22	II2D	Ex tb IIIC T85°C÷T135°C Db

Degree of Protection	IP66
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Amb. Temp.	Standard		-20°C		+40°C
	Extended		-50°C		+85°C



Entries Threading	NPT ANSI B1.20
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Material	Stainless Steel AISI 316L
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Painting	See Options
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Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1 • EN 60079-31

CE BVI 14 ATEX 0068X

U BVI 14 ATEX 0067U

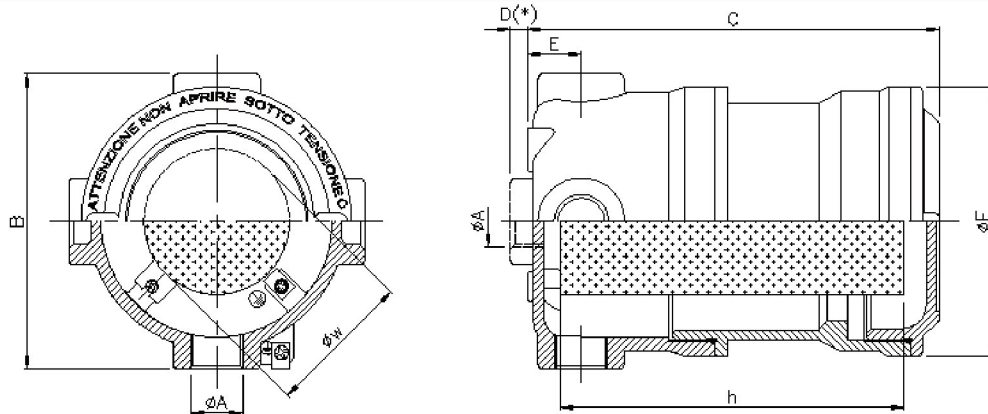
IEC 60079-0 • IEC 60079-1 • IEC 60079-31

IECEx EPS 14.0086X

IECEx EPS 14.0087U

- Designed to house electrical/electronic equipment and instruments.
- Standard or extended depth by adding one of the available extensions (short or long).
- Raw or painted outside surface according to customer specifications.
- Certificated either for the version complete with electrical apparatus or empty as an Ex component.

- Options**
- Terminal block (see page B04).
 - Cable entries threading: Metric ISO 262 (M).
 - External Painting: on customer specification.
 - Material: Aluminum (see page B03).
 - Accessories (see page I07).
 - Apparatus/Instruments (see page I10).



NOTES

The drawing is valid for dimensional data only. For further details, such as the orientation of the internal / external joints, there might be differences among the different models.

(*): Applicable to 5 entry version only, where the fifth is at the bottom of the box.

The temperature class and the maximum surface temperature may vary depending on the ambient temperature and the power dissipation of the equipment contained in the box. (see pag. I09).

The extended A.T. is -40°C÷+85°C for boxes with EPDM O-Ring (temperature class T6/T5). The extended A.T. is -50°C÷+85°C for boxes with Silicone O-Ring (temperature class T6/T5/T4).

Entries Diagram



Type	Size	ØA [NPT]	Size	ØA [ISO]	WITHOUT EXTENSION							WITH EXTENSION						
					External Dimensions (mm)				Elec. app. dimen. (mm)			V _{app.elet.} (dm³)	Weight (kg)	Code	Ext. Dim. (mm)	Elec. app. dim. (mm)	V _{app.elet.} (dm³)	Weight (kg)
					B	C	D(*)	E	ØF	h	Øw							
R..I	14	1/2"	14M	M20x1,5	80	69	9	20	71	40	30	0.033	0.96	110	129	90	0.075	1.70
R..I	24	3/4"	24M	M25x1,5	80	69	9	20	71	40	30	0.033	0.96	110	129	90	0.075	1.70
R..I	16	1/2"	16M	M20x1,5	100	68	9.5	22.5	90	40	50	0.070	1.25	95÷120	118÷143	80÷105	0.14÷0.18	2.10
R..I	26	3/4"	26M	M25x1,5	100	68	9.5	22.5	90	40	50	0.070	1.25	95÷120	118÷143	80÷105	0.14÷0.18	2.10
R..I	36A	1"	36AM	M32x1,5	100	73	9.5	22.5	90	45	50	0.078	1.30	100÷125	123÷148	85÷110	0.14÷0.18	2.20
R..I	27	3/4"	27M	M25x1,5	126	82	11	24	112	50	65	0.146	2.20	105÷145	132÷172	90÷130	0.26÷0.35	3.50
R..I	37	1"	37M	M32x1,5	126	82	11	24	112	50	65	0.146	2.20	105÷145	132÷172	90÷130	0.26÷0.35	3.50
R..I	28	3/4"	28M	M25x1,5	145	99	9.5	27	131	65	70	0.273	3.50	125÷165	149÷189	100÷140	0.42÷0.58	5.10
R..I	38	1"	38M	M32x1,5	145	99	9.5	27	131	65	70	0.273	3.50	125÷165	149÷189	100÷140	0.42÷0.58	5.10
R..I	48	1.1/4"	48M	M40x1,5	145	99	9.5	27	131	65	70	0.273	3.50	125÷165	149÷189	100÷140	0.42÷0.58	5.10
R..I	58	1.1/2"	58M	M50x1,5	145	99	9.5	27	131	65	70	0.273	3.50	125÷165	149÷189	100÷140	0.42÷0.58	5.10
R..I	29	3/4"	29M	M25x1,5	161	115	9.5	27	146	80	85	0.414	4.40	140÷190	165÷215	120÷160	0.66÷0.88	6.80
R..I	39	1"	39M	M32x1,5	161	115	9.5	27	146	80	85	0.414	4.40	140÷190	165÷215	120÷160	0.66÷0.88	6.80
R..I	59	1.1/2"	59M	M50x1,5	161	115	9.5	27	146	80	85	0.414	4.40	140÷190	165÷215	120÷160	0.66÷0.88	6.80
R..I	69	2"	69M	M63x1,5	161	115	9.5	27	146	80	85	0.414	4.40	140÷190	165÷215	120÷160	0.66÷0.88	6.80

Example: RTI 26/105 ...

Order Coding

Type	Scheme
R	T I

Entries Size and Threading
2 = 3/4"

Body Size
6

Internal height (only with extension see h)
105

Model
...

BOXES for EQUIPMENT and INSTRUMENTS

series
RO..I

Protection	Mines	n.a.	IM2	Ex db I Mb
	Gas	1-2	II2G	Ex db IIC T6÷T4 Gb
	Dusts	21-22	II2D	Ex tb IIIC T85°C÷T135°C Db

Degree of Protection	IP66
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Amb. Temp.	Standard	-20°C	+40°C
	Extended	-50°C	+85°C



Entries Threading	NPT ANSI B1.20
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Material	Stainless Steel AISI 316L
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Painting	See Options
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Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1 • EN 60079-31

CE BVI 14 ATEX 0068X

U BVI 14 ATEX 0067U

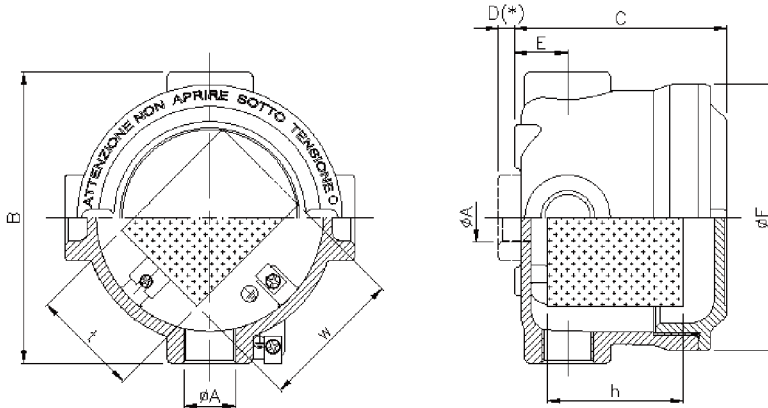
IEC 60079-0 • IEC 60079-1 • IEC 60079-31

IECEx EPS 14.0086X

IECEx EPS 14.0087U

- Threaded cover with tempered glass
- Designed to house electrical/electronic equipment and instruments.
- Raw or painted outside surface according to customer specifications.
- Certificated either for the version complete with electrical apparatus or empty as an Ex component.

Options	- Cable entries threading: Metric ISO 262 (M).	- Material: Aluminum (see page B06).	- Equipment/Instruments (see page I10).
	- External Painting: on customer specification.	- Accessories (see page I07).	



NOTES

The drawing is valid for dimensional data only. For further details, such as the orientation of the internal / external joints, there might be differences among the different models.

(*) Applicable to 5 entry version only, where the fifth is at the bottom of the box.

The temperature class and the maximum surface temperature may vary depending on the ambient temperature and the power dissipation of the equipment contained in the box. (see pag. I09).

The extended A.T. is -40°C÷+85°C for boxes with EPDM O-Ring (temperature class T6/T5). The extended A.T. is -50°C÷+85°C for boxes with Silicone O-Ring (temperature class T6/T5/T4).

Entries Diagram



Type	Size	ØA [NPT]	Size	ØA [ISO]	External Dimensions (mm)					Elect. app. dimensions (mm)			V _{app.elet.} (dm ³)	Weight (kg)	
					B	C	D(*)	E	ØF	ØL	h	w			t
RO..I	14	1/2"	14M	M20x1,5	80	69	9	20	71	38	30	28	30	0.025	0.96
RO..I	24	3/4"	24M	M25x1,5	80	69	9	20	71	38	30	28	30	0.025	0.96
RO..I	16	1/2"	16M	M20x1,5	100	68	9.5	22.5	90	50	50	35	30	0.052	1.25
RO..I	26	3/4"	26M	M25x1,5	100	68	9.5	22.5	90	50	50	35	30	0.052	1.25
RO..I	36A	1"	36AM	M32x1,5	100	73	9.5	22.5	90	50	50	35	35	0.061	1.30
RO..I	27	3/4"	27M	M25x1,5	126	82	11	24	112	70	65	45	40	0.108	2.20
RO..I	37	1"	37M	M32x1,5	126	82	11	24	112	70	65	45	40	0.108	2.20
RO..I	28	3/4"	28M	M25x1,5	145	99	9.5	27	131	85	70	60	55	0.231	3.50
RO..I	38	1"	38M	M32x1,5	145	99	9.5	27	131	85	70	60	55	0.231	3.50
RO..I	48	1.1/4"	48M	M40x1,5	145	99	9.5	27	131	85	70	60	55	0.231	3.50
RO..I	58	1.1/2"	58M	M50x1,5	145	99	9.5	27	131	85	70	60	55	0.231	3.50
RO..I	29	3/4"	29M	M25x1,5	161	115	9.5	27	146	100	85	65	65	0.360	4.40
RO..I	39	1"	39M	M32x1,5	161	115	9.5	27	146	100	85	65	65	0.360	4.40
RO..I	59	1.1/2"	59M	M50x1,5	161	115	9.5	27	146	100	85	65	65	0.360	4.40
RO..I	69	2"	69M	M63x1,5	161	115	9.5	27	146	100	85	65	65	0.360	4.40

Example: ROTI 26 ...

Order Coding

Type	Scheme
RO	T I

Entries Size and Threading
2 = 3/4"

Body Size
6

Model
...

BOXES for EQUIPMENT and INSTRUMENTS with EXTENSION

series
RO..I

Protection	Mines	n.a.	IM2	Ex db I Mb
	Gas	1-2	II2G	Ex db IIC T6÷T4 Gb
	Dusts	21-22	II2D	Ex tb IIIC T85°C÷T135°C Db

Degree of Protection	IP66
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Amb. Temp.	Standard	-20°C	+40°C
	Extended	-50°C	+85°C



Entries Threading	NPT ANSI B1.20
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Material	Stainless Steel AISI 316L
----------	------------------------------

Painting	See Options
----------	-------------

Standards and Certificates

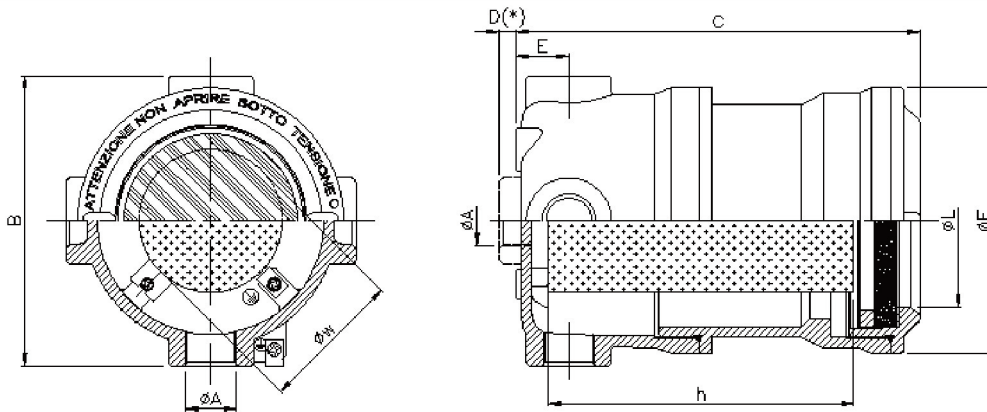
Directive 2014/34/EU (ATEX)
EN 60079-0 • EN 60079-1 • EN 60079-31

CE BVI 14 ATEX 0068X
U BVI 14 ATEX 0067U

IECEX
IEC 60079-0 • IEC 60079-1 • IEC 60079-31
IECEX EPS 14.0086X
IECEX EPS 14.0087U

- Threaded cover with tempered glass
- Designed to house electrical/electronic equipment and instruments.
- Standard or extended depth by adding one of the available extensions (short or long).
- Certified either for the version complete with electrical apparatus or empty as an Ex component.

- Options**
- Cable entries threading: Metric ISO 262 (M).
 - External Painting: on customer specification.
 - Material: Aluminum (see page B06).
 - Accessories (see page I07).
 - Equipment/Instruments (see page I10).



NOTES

The drawing is valid for dimensional data only. For further details, such as the orientation of the internal / external joints, there might be differences among the different models.

(*): Applicable to 5 entry version only, where the fifth is at the bottom of the box.

The temperature class and the maximum surface temperature may vary depending on the ambient temperature and the power dissipation of the equipment contained in the box. (see pag. I09).

The extended A.T. is -40°C÷+85°C for boxes with EPDM O-Ring (temperature class T6/T5). The extended A.T. is -50°C÷+85°C for boxes with Silicone O-Ring (temperature class T6/T5/T4).

Entries Threading



Type	Size	ØA [NPT]	Size	ØA [ISO]	External Dimensions (mm)								Elec. app. dim. (mm)		V _{app.elet.} (dm³)	Weight (kg)			
					B	C	D(*)	E	ØF	ØL	h	Øw	Code	Ext. Dim. (mm)			Elec. app. dim. (mm)	V _{app.elet.} (dm³)	Weight (kg)
RO..I	14	1/2"	14M	M20x1,5	80	69	9	20	71	38	30	30	0.033	0.96	95	129	75	0.053	1.70
RO..I	24	3/4"	24M	M25x1,5	80	69	9	20	71	38	30	30	0.033	0.96	95	129	75	0.053	1.70
RO..I	16	1/2"	16M	M20x1,5	100	68	9.5	22.5	90	50	30	50	0.070	1.25	85÷110	118÷143	70÷95	0.13÷0.15	2.10
RO..I	26	3/4"	26M	M25x1,5	100	68	9.5	22.5	90	50	30	50	0.070	1.25	85÷110	118÷143	70÷95	0.13÷0.15	2.10
RO..I	36A	1"	36AM	M32x1,5	100	73	9.5	22.5	90	50	35	50	0.078	1.30	90÷115	123÷148	75÷100	0.13÷0.15	2.20
RO..I	27	3/4"	27M	M25x1,5	126	82	11	24	112	70	40	65	0.146	2.20	95÷135	132÷172	80÷120	0.23÷0.30	3.50
RO..I	37	1"	37M	M32x1,5	126	82	11	24	112	70	40	65	0.146	2.20	95÷135	132÷172	80÷120	0.23÷0.30	3.50
RO..I	28	3/4"	28M	M25x1,5	145	99	9.5	27	131	85	55	70	0.273	3.50	115÷155	149÷189	90÷130	0.40÷0.55	5.10
RO..I	38	1"	38M	M32x1,5	145	99	9.5	27	131	85	55	70	0.273	3.50	115÷155	149÷189	90÷130	0.40÷0.55	5.10
RO..I	48	1.1/4"	48M	M40x1,5	145	99	9.5	27	131	85	55	70	0.273	3.50	115÷155	149÷189	90÷130	0.40÷0.55	5.10
RO..I	58	1.1/2"	58M	M50x1,5	145	99	9.5	27	131	85	55	70	0.273	3.50	115÷155	149÷189	90÷130	0.40÷0.55	5.10
RO..I	29	3/4"	29M	M25x1,5	161	115	9.5	27	146	100	65	85	0.414	4.40	125÷175	165÷215	100÷150	0.60÷0.80	6.80
RO..I	39	1"	39M	M32x1,5	161	115	9.5	27	146	100	65	85	0.414	4.40	125÷175	165÷215	100÷150	0.60÷0.80	6.80
RO..I	59	1.1/2"	59M	M50x1,5	161	115	9.5	27	146	100	65	85	0.414	4.40	125÷175	165÷215	100÷150	0.60÷0.80	6.80
RO..I	69	2"	69M	M63x1,5	161	115	9.5	27	146	100	65	85	0.414	4.40	125÷175	165÷215	100÷150	0.60÷0.80	6.80

Example: ROXI 36A/115 ...

Order Coding

Type	Scheme
RO	X I

Entries Size and Threading
3 = 1"

Body Size
6A

Internal height (only with extension see h)
115

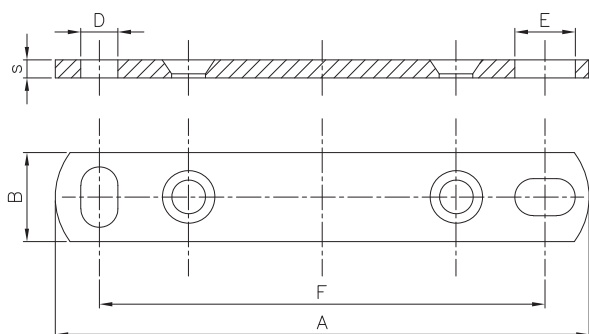
Model
...

ACCESSORIES

series
RI
ROI

EXTERNAL BRACKET KF

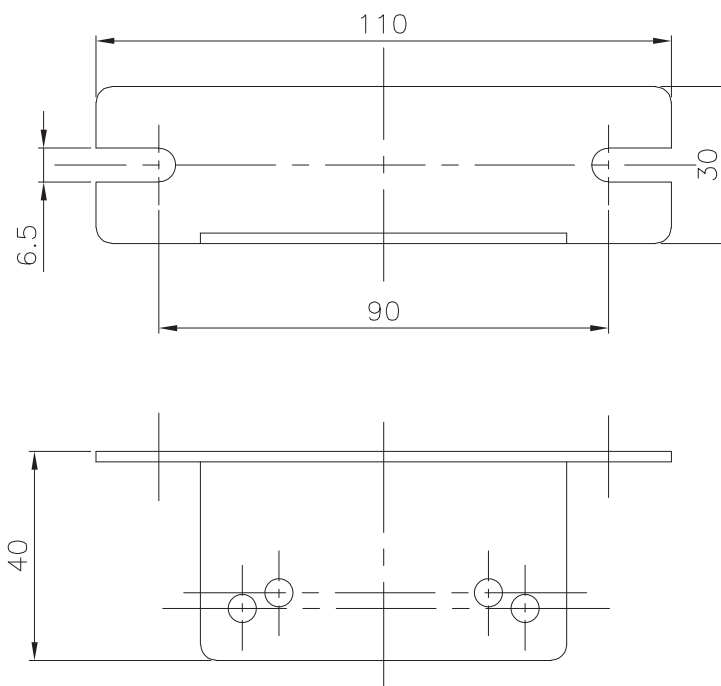
Material: Stainless Steel AISI 316 completed with Class A4-70 screws in Stainless Steel.



Code	Dimensions (mm)						Weight (g)
	A	B	s	D	E	F	
KFI4	105	18	3	6.5	10	87	41
KFI6	126	18	3	6.5	10	108	50
KFI7	142	18	3	6.5	10	124	57
KFI8	158	20	4	8.5	12	138	92
KFI9	174	20	4	8.5	12	154	103

EXTERNAL BRACKET KE 46S

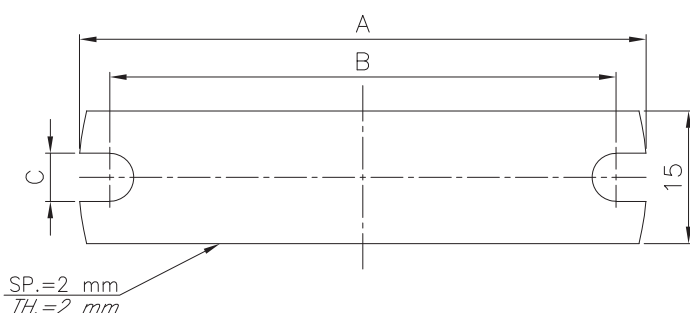
Material: Stainless Steel AISI 316 completed with Class A4-70 screws in Stainless Steel.



INTERNAL MOUNTING PLATE KS

Options

Material: Aluminum (code ..A) or Stainless Steel AISI 316L (code ..S)
Completed with screws for fixing. Ideal for terminal block type MH.



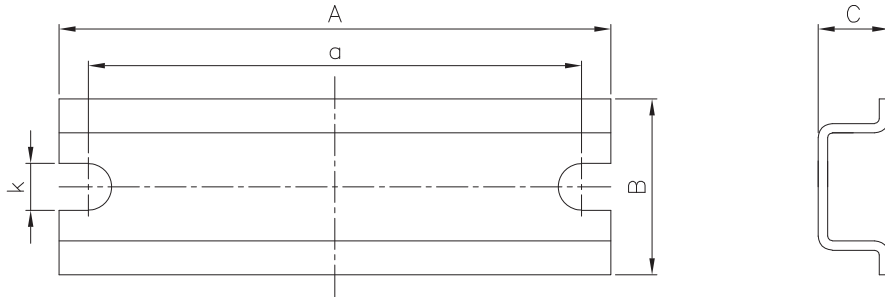
Code	Dimensions (mm)		
	A	B	C
KS4..	52	42	4.5
KS6..	71	62	4.5
KS7..	90	76	4.5
KS8..	100	82	5.5
KS9..	110	98	5.5

ACCESSORIES

series
RI
ROI

INTERNAL MOUNTING PLATE TS

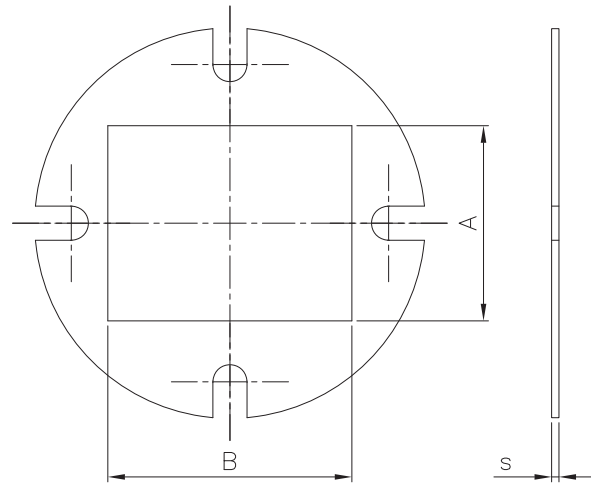
Material: Zinc plated Steel (G).
Completed with screws for fixing. Ideal for terminal block type MM.



Enclosure	TS15			TS35			TS32			a (mm)	k (mm)
	A	B	C	A	B	C	A	B	C		
RI..4	51	15	5.5	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	42	4.5
RI..6	71	15	5.5	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	62	4.5
RI..6A	71	15	5.5	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	62	4.5
RI..7	90	15	5.5	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	76	5.5
RI..8	N.A.	N.A.	N.A.	100	35	7.5 / 15	100	32	15	82	5.5
RI..9	N.A.	N.A.	N.A.	110	35	7.5 / 15	110	32	15	98	5.5

BRACKET FOR DIN 43700 KH

Material: Zinc plated Steel (G).



Code	DIN 47300	Dimensions (mm)		
		A	B	s
KH6-3636	36x36	33	33	1.5
KH6-4824	48x24	45	22.2	1.5
KH7-4848	48x48	45	45	1.5
KH8-7236	72x36	68	33	1.5
KH8-7272	72x72	68	68	1.5
KH9-9624	96x24	92	22.2	1.5
KH9-9648	96x48	92	45	1.5

MAX DISSIPATED POWER and TEMPERATURE CLASS RELATED to AMBIENT TEMPERATURE

**series
RI
ROI**

ENCLOSURE	MAX. AMBIENT TEMPERATURE	MAX. DISSIPATED POWER	TEMPERATURE CLASS	MAXIMUM SURFACE TEMPERATURE	CABLE ENTRY POINT TEMPERATURE	O-RING TYPE
R..I.4 R..I.4/ RO..I.4 RO..I.4/..	40°C	7,5 W	T6	T85°C	80°C	EPDM / SILICONE
	50°C	5,5 W				
	60°C	3,0 W				
	70°C	1,0 W				
	40°C	11,0 W	T5	T100°C	95°C	EPDM / SILICONE
	50°C	8,5 W				
	60°C	6,0 W				
	70°C	4,5 W				
	85°C	1,0 W	T4	T135°C	130°C	SILICONE
	40°C	19,5 W				
	50°C	17,0 W				
	60°C	14,0 W				
70°C	12,0 W					
85°C	8,5 W	R..I.6 R..I.6/ RO..I.6 RO..IO..6/..	T6	T85°C	80°C	EPDM / SILICONE
40°C	8,0 W					
50°C	5,5 W					
60°C	3,0 W					
70°C	1,0 W		T5	T100°C	95°C	EPDM / SILICONE
40°C	11,5 W					
50°C	9,0 W					
60°C	6,5 W					
70°C	4,5 W		T4	T135°C	130°C	SILICONE
85°C	1,0 W					
40°C	20,5 W					
50°C	18,0 W					
60°C	15,0 W					
70°C	12,5 W	R..I.7 R..I.7/ RO..I.7 RO..I.7/..	T6	T85°C	80°C	EPDM / SILICONE
85°C	9,0 W					
40°C	10,0 W					
50°C	7,0 W					
60°C	4,0 W		T5	T100°C	95°C	EPDM / SILICONE
70°C	1,5 W					
40°C	15,0 W					
50°C	11,5 W					
60°C	8,5 W		T4	T135°C	130°C	SILICONE
70°C	5,0 W					
85°C	1,5 W					
40°C	30,0 W					
50°C	26,0 W					
60°C	21,0 W	R..I.8 R..I.8/ RO..I.8 RO..I.8/..	T6	T85°C	80°C	EPDM / SILICONE
70°C	17,0 W					
85°C	11,5 W					
40°C	11,0 W					
50°C	7,5 W		T5	T100°C	95°C	EPDM / SILICONE
60°C	4,5 W					
70°C	2,0 W					
85°C	2,0 W					
40°C	16,0 W		T4	T135°C	130°C	SILICONE
50°C	12,5 W					
60°C	9,0 W					
70°C	6,0 W					
85°C	2,0 W					
40°C	31,0 W	R..I.9 R..I.9/ RO..I.9 RO..I.9/..	T6	T85°C	80°C	EPDM / SILICONE
50°C	11,0 W					
60°C	7,5 W					
70°C	5,0 W					
85°C	1,5 W		T5	T100°C	95°C	EPDM / SILICONE
40°C	15,0 W					
50°C	11,5 W					
60°C	8,5 W					
70°C	5,0 W		T4	T135°C	130°C	SILICONE
85°C	1,5 W					
40°C	21,0 W					
50°C	16,0 W					
60°C	12,0 W					
70°C	8,0 W	T4	T135°C	130°C	SILICONE	
85°C	2,5 W					
40°C	42,0 W					
50°C	35,0 W					
60°C	29,0 W					
70°C	24,0 W	T4	T135°C	130°C	SILICONE	
85°C	16,0 W					

TYPES of EQUIPMENT / INSTRUMENTS to be HOUSED inside the BOXES

serie
RI
ROI

DESCRIPTION	MOD. (°)
• Ammeter	A
• Analogic to digital signal converter	ADC
• Insulation controller	CI
• Electrical hours counter	CO
• Pulse counter	CP
• Digital to analogic signal converter	DAC
• LCD indicator panel	DE
• Frequency meter	F
• Single phase power factor meter	FM
• Three phase power factor meter	FT
• Twilight switch	IC
• Strain gauge signals converter	ICA
• Clock switch, hourly, daily, weekly programmable	IO
• Single phase overload voltage	LVM
• Three phase overload voltage	LVT
• Phase insulation meter	MI
• Multifunction meter	MM
• Electronic digital clock	O
• Cyclic programmer	PC
• Electronic digital programmer	PE
• Modular fuse bases for fuses up to Ø10.3x38	PF
• Control relay	RC
• Step relay	RP
• Electronic timer relay	RT
• Control, measuring and regulation electronic board	SCM
• Light sensor	SL
• Camera	TL
• Electromechanically, electronic, analogic and digital timers	TP
• Electronic thermoregulator	TR
• Wattmeter	W

NOTES

• Max supply voltage:
660 VAC / 440 VDC.

• All the electrical equipment shall conform to their respective IEC/CENELEC standards regarding their nominal characteristics and operating mode. Furthermore, they must have dimensions as to ensure that, in any cross-section, at least 40% of the surface is free.

• Maximum dissipated power shall be in accordance to table reported on page 19.

• A circuit breakers or contactors containing oil filling and apparatus producing turbulences are not allowed to be installed inside the enclosure.

• The equipment must be installed to avoid a risk from propagating brush discharges.

• Electrical equipment contained in the enclosure shall neither be intrinsically safe nor include capillaries or other non electric connections.

• In case of presence of capacitors, when

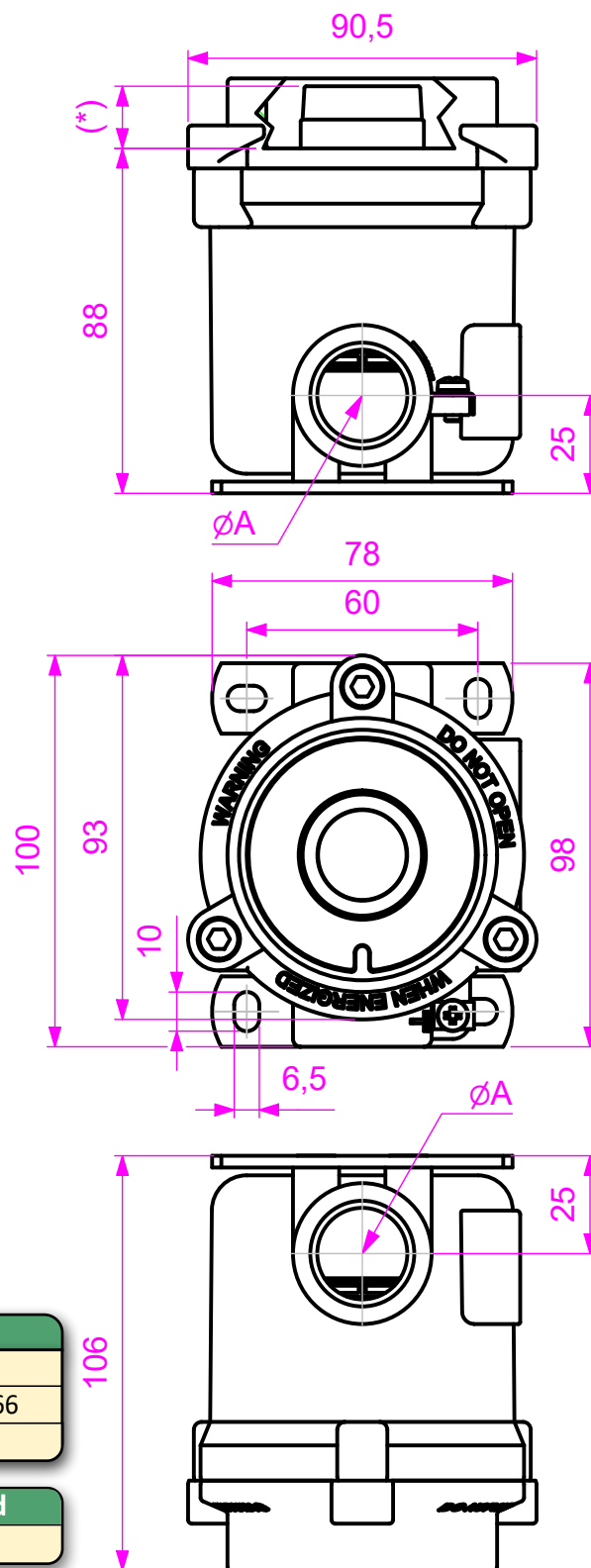
the voltage goes off they must be discharged within their own circuit in less than one second.

• When the device is use for Group I (mines), insulating material subject to electrical stresses capable of causing arc in air and which result from rated currents of more than 16 A shall have a comparative tracking index equal to or greater than CTI 400 M, according to IEC 60112.

(°) I.D. on the external plate.



Example of configuration



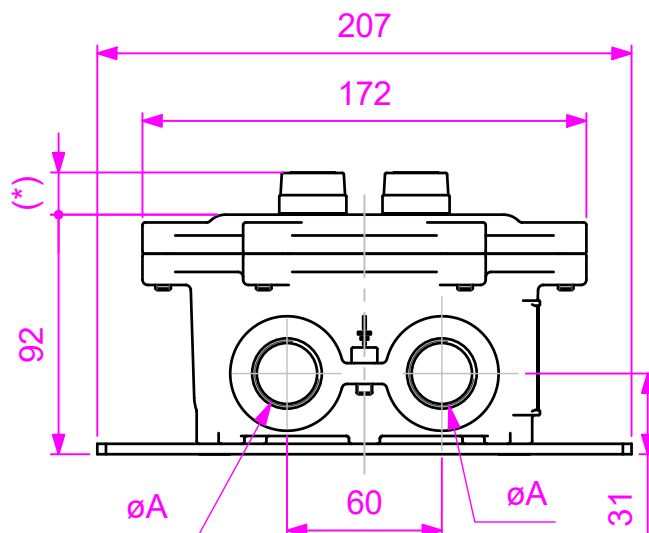
ATEX & IECEx Equipment Data		
Gas	Group I Zone 1	Ex II 2G Ex d IIC T6...T4 Gb
Dust	Group II Zone 21	Ex II 2D Ex tb IIIC T85°C...T135°C Db IP66
Mine	Group I	Ex I M2 Ex d I Mb

- Pushbutton station with one command or signal unit (see Section 7)
- Up to three simultaneous contacts
- Made in stainless steel AISI 316L without any internal or external painting
- Max Voltage=230V
- Max Current= 10A (AC1 mode)
- Frequency= 50-60Hz
- Cable section= 1.5 - 2.5 mm²

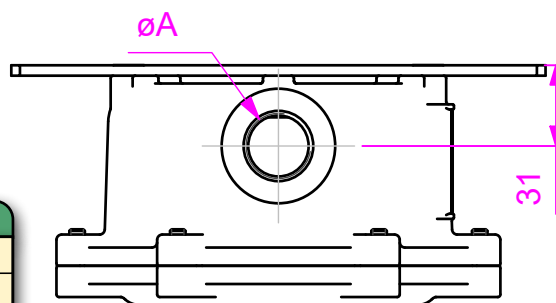
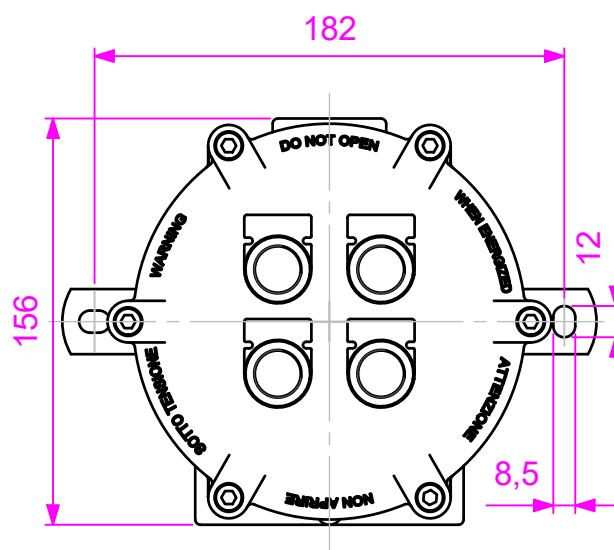
T. Amb Standard	-20°C ÷ + 50°C
T. Amb Max Range	-50°C ÷ +80°C
ATEX Certificate	BVI 15 ATEX 0073
IECEx Certificate	IECEx EPS 15.0069

LCS251	M25x1.5 - 6H
LCS21	3/4" NPT
CODE	ØA

(*) - Dimension are on Section 7



Example of configuration



ATEX & IECEx Equipment Data

Gas	Group I Zone 1	II 2G Ex d IIC T6...T4 Gb
Dust	Group II Zone 21	II 2D Ex tb IIIC T85°C...T135°C Db IP66
Mine	Group I	I M2 Ex d I Mb

- Pushbutton station up to 4 command or signal unit (see Section 7)
- Made in stainless steel AISI 316L without any internal or external painting
- Max Voltage=230V
- Max Current= 10A (AC1 mode)
- Frequency= 50-60Hz
- Cable section= 1.5 - 2.5 mm²

T. Amb Standard
-20°C ÷ + 50°C

T. Amb Max Range
-50°C ÷ +80°C

ATEX Certificate
BVI 15 ATEX 0073

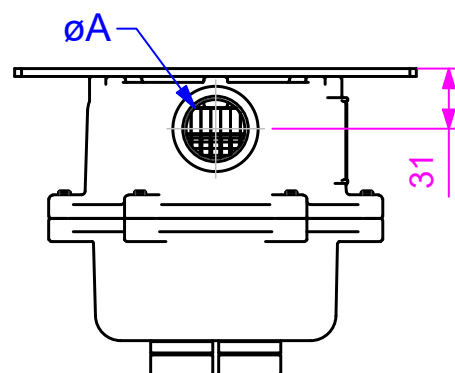
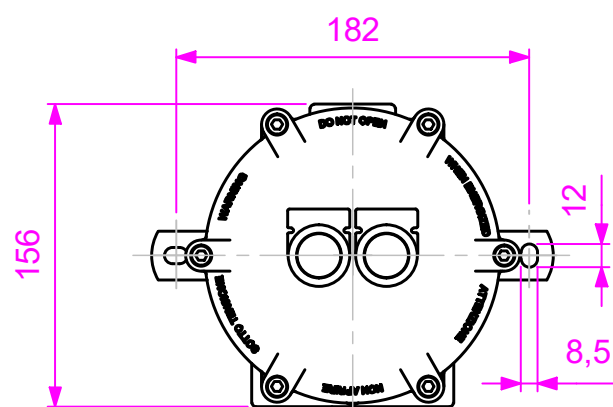
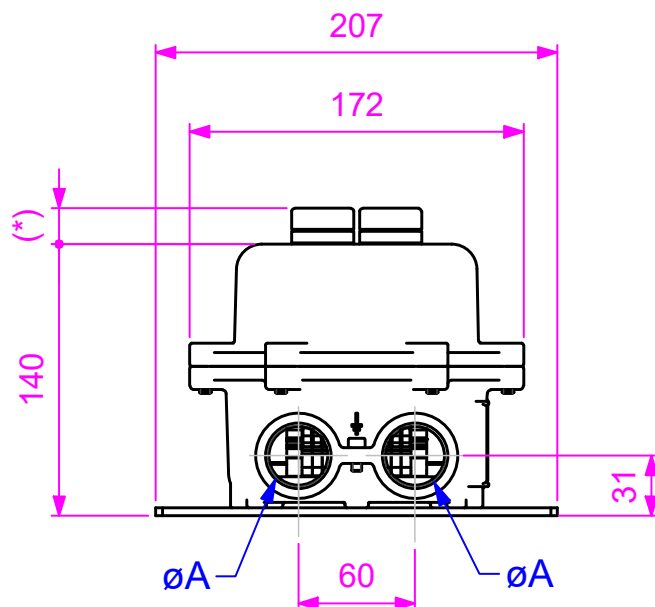
IECEx Certificate
IECEx EPS 15.0069

LCS23	3/4" NPT
LCS33	1" NPT
LCS253	M25x1.5 - 6H
LCS323	M32x1.5 - 6H
CODE	øA

(*) - Dimensions are on Section 7



Example of configuration



ATEX & IECEx Equipment Data

Gas	Group I Zone 1	II 2G Ex d IIC T6...T4 Gb
Dust	Group II Zone 21	II 2D Ex tb IIIC T85°C...T135°C Db IP66
Mine	Group I	I M2 Ex d I Mb

- Pushbutton station up to 2 command or signal unit (see Section 7)
- Made in stainless steel AISI 316L without any internal or external painting
- Max Voltage=230V
- Max Current= 10A (AC1 mode)
- Frequency= 50-60Hz
- Cable section= 1.5 - 2.5 mm² (for contacts)

T. Amb Standard

-20°C ÷ + 50°C

T. Amb Max Range

-50°C ÷ +80°C

ATEX Certificate

BVI 15 ATEX 0073

IECEx Certificate

IECEx EPS 15.0069

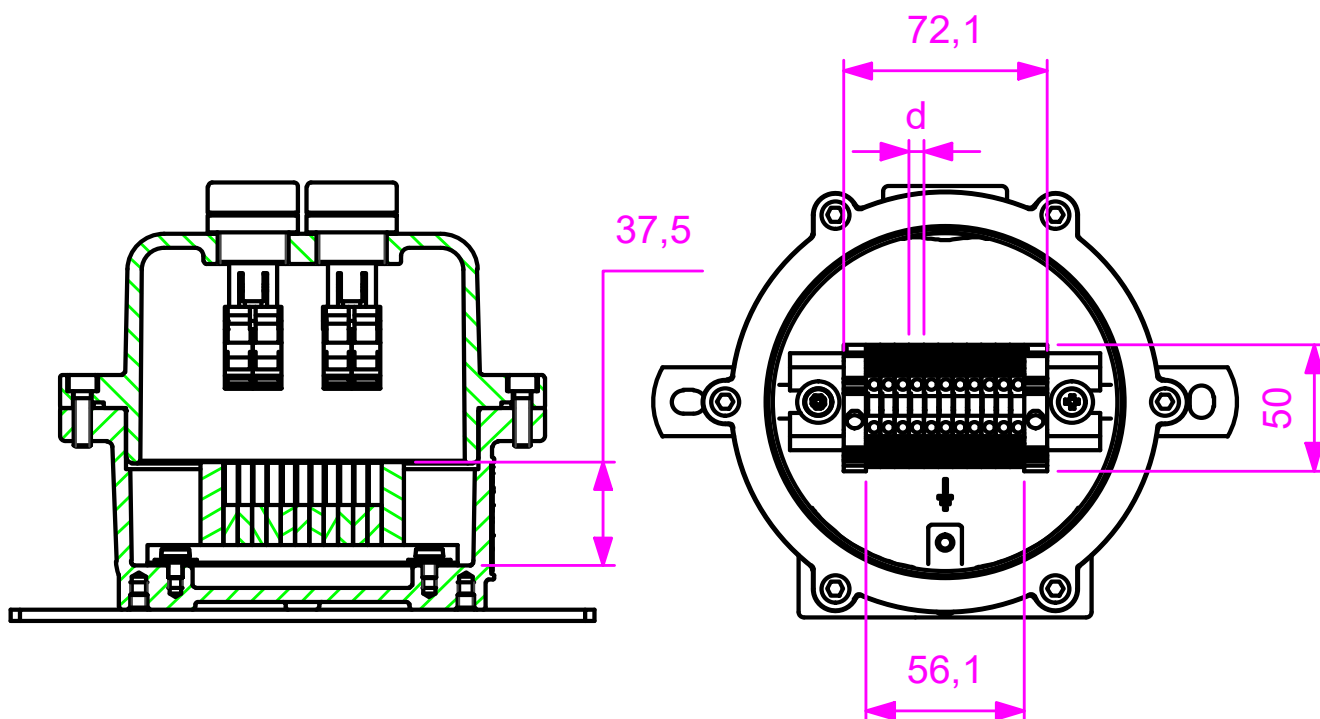
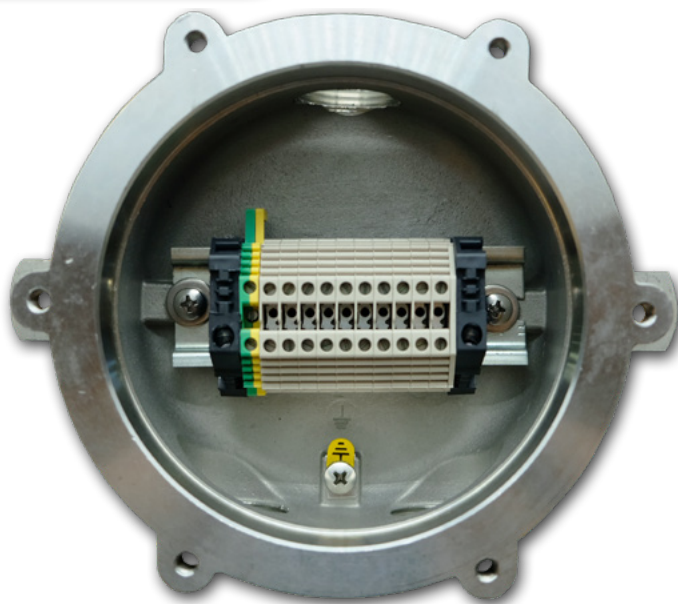
LCS23A	3/4" NPT
LCS33A	1" NPT
LCS253A	M25x1.5 - 6H
LCS323A	M32x1.5 - 6H
CODE	øA

(*) - Dimensions are on Section 7

LCS23A / 33A / 253A / 323A



- Pushbutton station up to 2 command or signal unit (see Section 7)
- Possibility to include also Terminals strips
- Made in stainless steel AISI 316L without any internal or external painting
- Cable section= 1.5 - 2.5 mm² (for contacts)
- Cable section= 1.5 - 4 mm² (for Terminals Strip)
- TERMINAL STRIP COMPACT VERSION WDU brand WEIDMULLER or equivalent
- Max Voltage=230V
- Max Current= 10A (AC1 mode)
- Frequency= 50-60Hz



WPE4N	Modular PE terminal block 4mmq	1,5 ÷ 4	230V	NA	6,1	9
WPE2.5N	Modular PE terminal block 2,5mmq	1,5 ÷ 2,5	230V	NA	5,1	11
WDU4N	Feed-through terminal block 4mmq	1,5 ÷ 4	230V	10A	6,1	9
WDU2.5N	Feed-through terminal block 2,5mmq	1,5 ÷ 2,5	230V	10A	5,1	11
CODE	Description	Cross section	Vmax	Imax	d	Max Q.ty
<i>TERMINAL BLOCK suitable for LCS size 3A</i>						



ATEX & IECEx Equipment Data		
Gas	Group I Zone 1	Ex II 2G Ex d IIC T6...T4 Gb
Dust	Group II Zone 21	Ex II 2D Ex tb IIIC T85°C...T135°C Db IP66
Mine	Group I	Ex I M2 Ex d I Mb

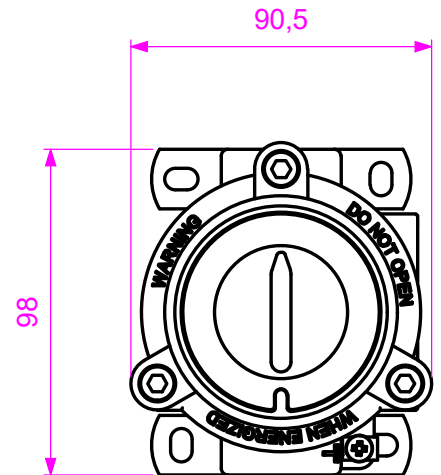
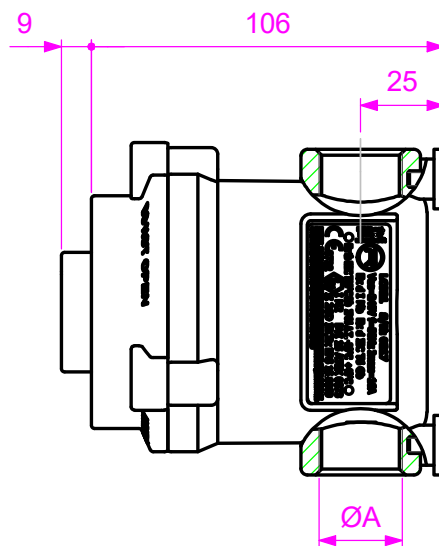
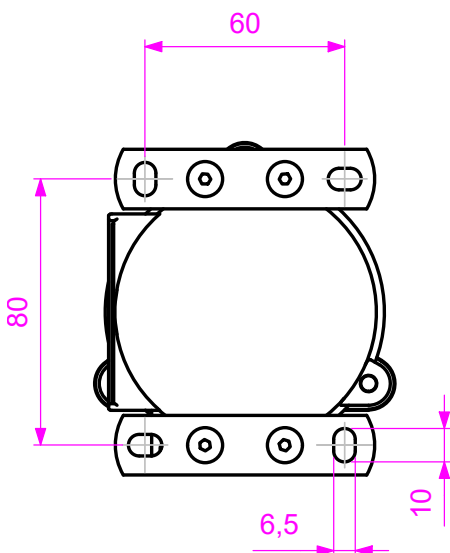
- Rotary cam switch with knob operator
- Made in stainless steel AISI 316L
- No external painting.
- Max Voltage (AC)=690V
- Max Voltage (DC)=440V
- Max Current= 20A
- Frequency= 50-60Hz
- Cable section= 1.5 - 2.5 mm²
- For more detail see page 10-6

T. Amb Standard
-20°C ÷ + 50°C

T. Amb Max Range
-50°C ÷ +80°C

ATEX Certificate
BVI 15 ATEX 0073

IECEx Certificate
IECEx EPS 15.0069



LCS251-K	M25x1.5 - 6H
LCS21-K	3/4" NPT
CODE	ØA

Example: **LCS21-K1023**

ORDER CODING

LCS251

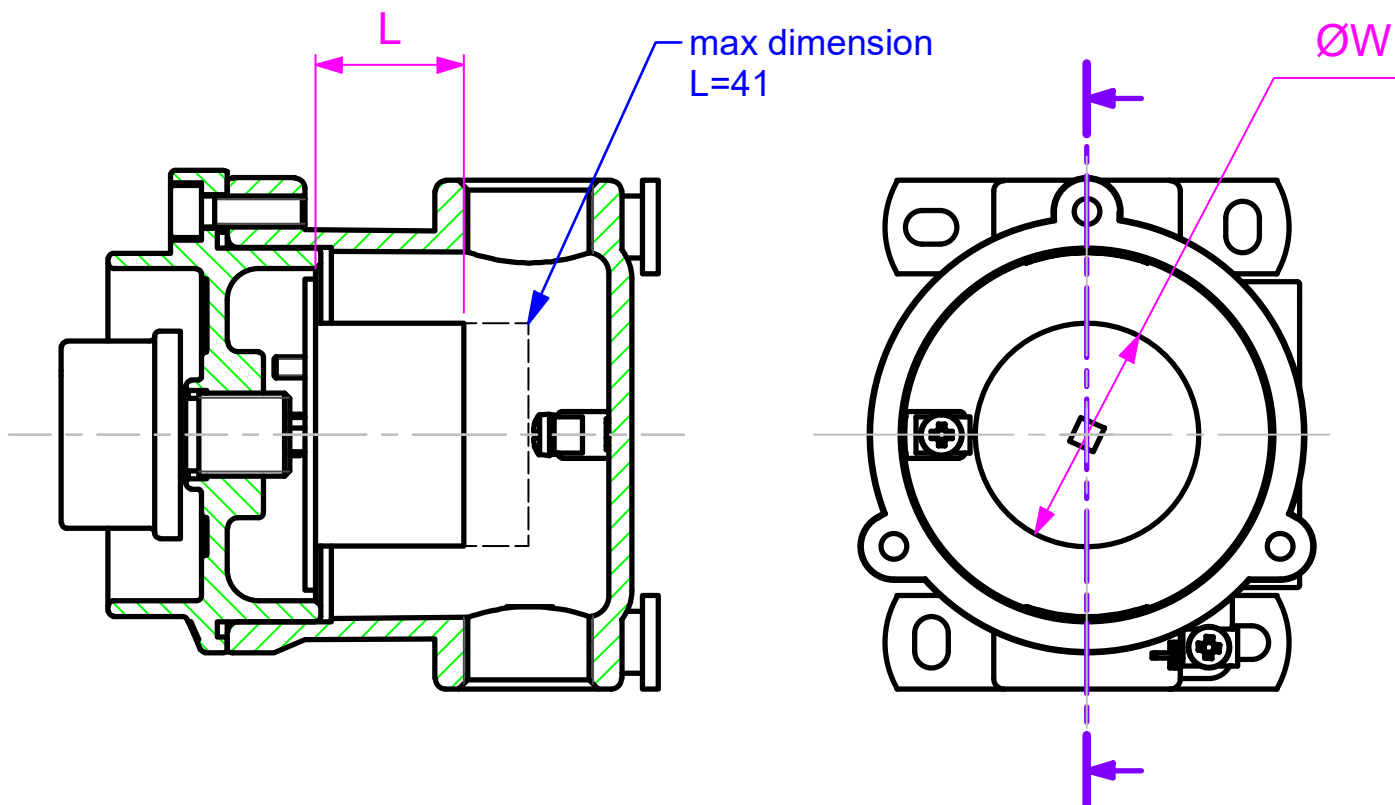
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LCS21

ELECTRICAL CONTACT (*)

- K1002
- K2013
-

(*) For more detail see page 10-6

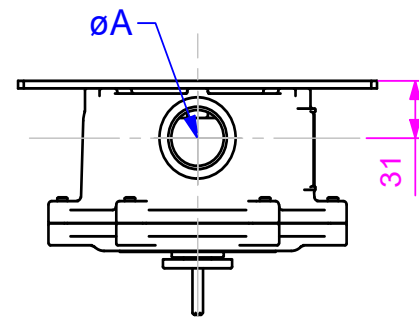
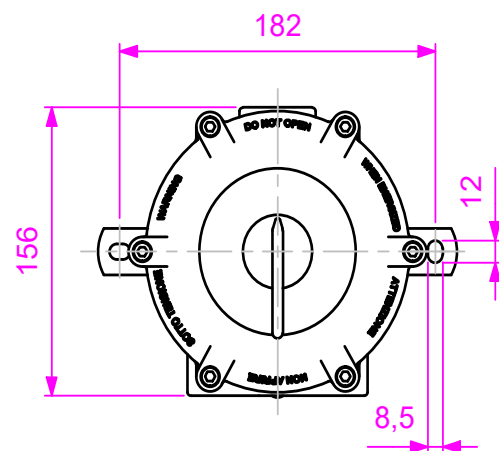
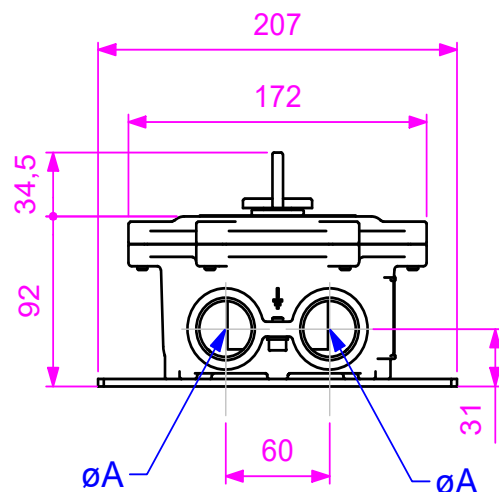


Code	N° Pole	Current I _{th} [A]	AC3 Rated Power [KW]	Switch Angles	Cross Section [mm ²]	ØW [mm]	L [mm]	Function	Suitable for model
K1001	1	16	1.5	60°	2 x 1.5 ÷ 2.5	43	29,5	0-1 ON/OFF	-K / L-K / Y-K / H-K
K2001	1	20	2.2	60°	2 x 1.5 ÷ 2.5	43	29,5	0-1 ON/OFF	-K / L-K / Y-K / H-K
K1002	2	16	1.5	60°	2 x 1.5 ÷ 2.5	43	29,5	0-1 ON/OFF	-K / L-K / Y-K / H-K
K2002	2	20	2.2	60°	2 x 1.5 ÷ 2.5	43	29,5	0-1 ON/OFF	-K / L-K / Y-K / H-K
K1003	3	16	2.2	60°	2 x 1.5 ÷ 2.5	43	29,5	0-1 ON/OFF	-K / L-K / Y-K / H-K
K2003	3	20	4	60°	2 x 1.5 ÷ 2.5	43	29,5	0-1 ON/OFF	-K / L-K / Y-K / H-K
K1004	4	16	2.2	60°	2 x 1.5 ÷ 2.5	43	41	0-1 ON/OFF	-K / L-K / Y-K / H-K
K2004	4	20	4	60°	2 x 1.5 ÷ 2.5	43	41	0-1 ON/OFF	-K / L-K / Y-K / H-K
K3004	4	25	5.5	60°	2 x 1.5 ÷ 2.5	43	41	0-1 ON/OFF	-K / L-K / Y-K / H-K
K1011	1	16	1.5	60°	2 x 1.5 ÷ 2.5	43	29,5	1-0-2 MAINS TRANSFER	-K / L-K / Y-K / H-K
K2011	1	20	2.2	60°	2 x 1.5 ÷ 2.5	43	29,5	1-0-2 MAINS TRANSFER	-K / L-K / Y-K / H-K
K3011	1	25	3	60°	2 x 1.5 ÷ 2.5	43	29,5	1-0-2 MAINS TRANSFER	-K / L-K / Y-K / H-K
K1012	2	16	1.5	60°	2 x 1.5 ÷ 2.5	43	41	1-0-2 MAINS TRANSFER	-K / L-K / Y-K / H-K
K2012	2	20	2.2	60°	2 x 1.5 ÷ 2.5	43	41	1-0-2 MAINS TRANSFER	-K / L-K / Y-K / H-K
K3012	2	25	3	60°	2 x 1.5 ÷ 2.5	43	41	1-0-2 MAINS TRANSFER	-K / L-K / Y-K / H-K
K1013	3	16	2.2	60°	2 x 1.5 ÷ 2.5	43	41	1-0-2 MAINS TRANSFER	-K / L-K / Y-K / H-K
K2013	3	20	4	60°	2 x 1.5 ÷ 2.5	43	41	1-0-2 MAINS TRANSFER	-K / L-K / Y-K / H-K
K3013	3	25	5.5	60°	2 x 1.5 ÷ 2.5	43	41	1-0-2 MAINS TRANSFER	-K / L-K / Y-K / H-K
K1014	4	16	2.2	60°	2 x 1.5 ÷ 2.5	43	53,5	1-0-2 MAINS TRANSFER	-K / L-K / Y-K / H-K
K2014	4	20	4	60°	2 x 1.5 ÷ 2.5	43	53,5	1-0-2 MAINS TRANSFER	-K / L-K / Y-K / H-K
K3014	4	25	5.5	60°	2 x 1.5 ÷ 2.5	43	53,5	1-0-2 MAINS TRANSFER	-K / L-K / Y-K / H-K
K1021	1	16	1.5	60°	2 x 1.5 ÷ 2.5	43	29,5	1-2 CHANGE OVER	-K / L-K / Y-K / H-K
K2021	1	20	2.2	60°	2 x 1.5 ÷ 2.5	43	29,5	1-2 CHANGE OVER	-K / L-K / Y-K / H-K

Rotative electrical contact for LCS21 / 251



Code	N° Pole	Current Ith [A]	AC3 Rated Power [KW]	Switch Angles	Cross Section [mm ²]	ØW [mm]	L [mm]	Function	Suitable for model
K3021	1	25	3	60°	2 x 1.5 ÷ 2.5	43	29,5	1-2 CHANGE OVER	-K / L-K / Y-K / H-K
K1022	2	16	1.5	60°	2 x 1.5 ÷ 2.5	43	41	1-2 CHANGE OVER	-K / L-K / Y-K / H-K
K2022	2	20	2.2	60°	2 x 1.5 ÷ 2.5	43	41	1-2 CHANGE OVER	-K / L-K / Y-K / H-K
K3022	2	25	3	60°	2 x 1.5 ÷ 2.5	43	41	1-2 CHANGE OVER	-K / L-K / Y-K / H-K
K1023	3	16	2.2	60°	2 x 1.5 ÷ 2.5	43	41	1-2 CHANGE OVER	-K / L-K / Y-K / H-K
K2023	3	20	4	60°	2 x 1.5 ÷ 2.5	43	41	1-2 CHANGE OVER	-K / L-K / Y-K / H-K
K3023	3	25	5.5	60°	2 x 1.5 ÷ 2.5	43	41	1-2 CHANGE OVER	-K / L-K / Y-K / H-K



LCS23-K	3/4" NPT
LCS33-K	1" NPT
LCS253-K	M25x1.5 - 6H
LCS32L-K	M32x1.5 - 6H
CODE	øA

ATEX & IECEx Equipment Data		
Gas	Group I Zone 1	Ex II 2G Ex d IIC T6...T4 Gb
Dust	Group II Zone 21	Ex II 2D Ex tb IIIC T85°C...T135°C Db IP66
Mine	Group I	Ex I M2 Ex d I Mb

ATEX Certificate
BVI 15 ATEX 0073

IECEx Certificate
IECEx EPS 15.0069

T. Amb Standard
-20°C ÷ + 50°C

T. Amb Max Range
-50°C ÷ +80°C

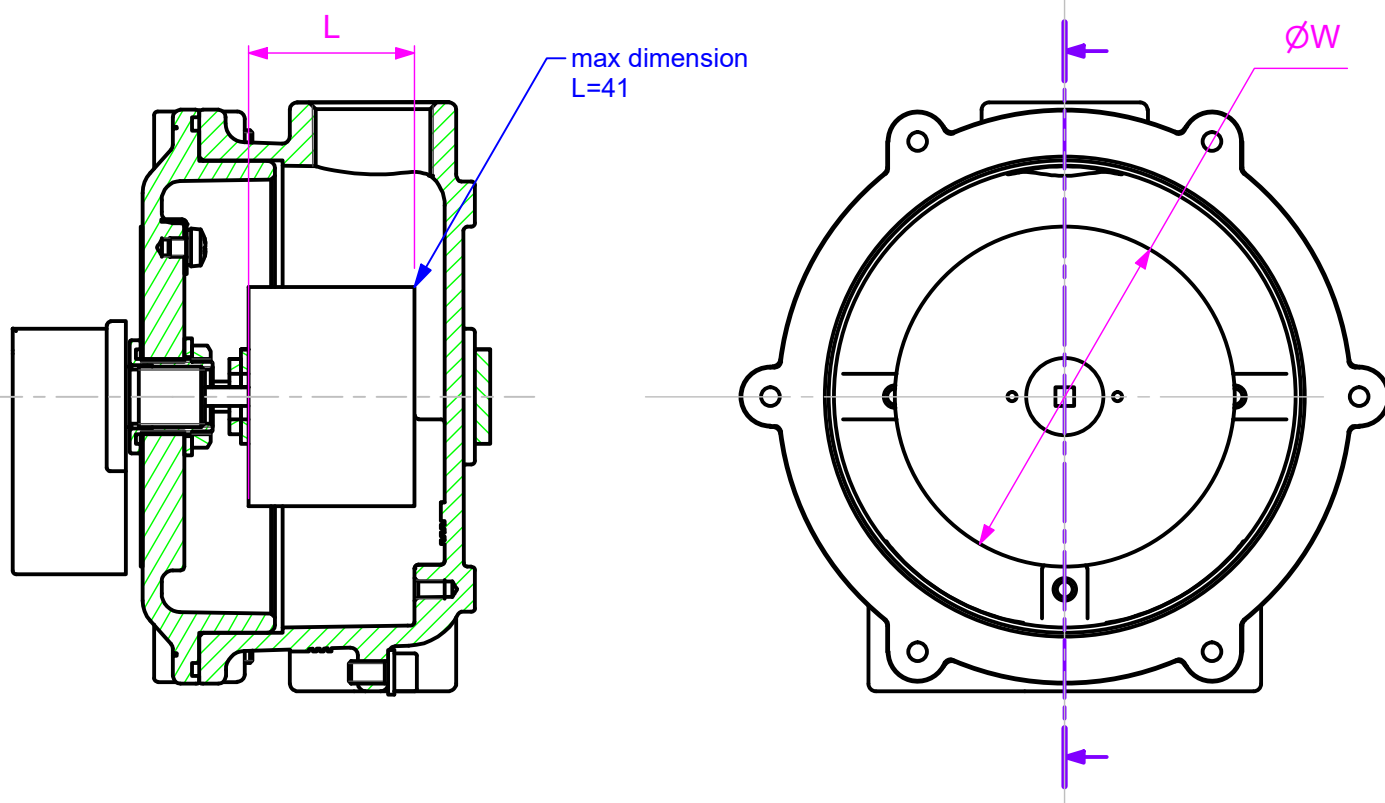
- Rotary cam switch with knob operator
- Made in stainless steel AISI 316L
- No external painting.
- Max Voltage (AC)=690V
- Max Voltage (DC)=440V
- Max Current= 40A
- Frequency= 50-60Hz
- Cable section= 1.5 ÷ 16 mm²
- For more detail see page 10-14

Example: **LCS23-K6003**

ORDER CODING	LCS23	+	ELECTRICAL CONTACT (*)
	LCS33		
	LCS253		
	LCS323		

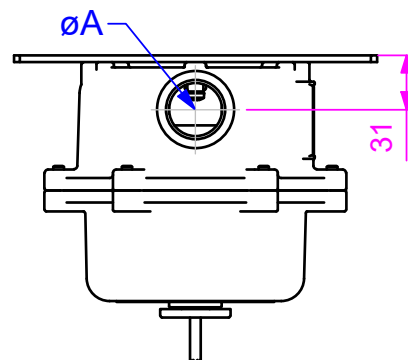
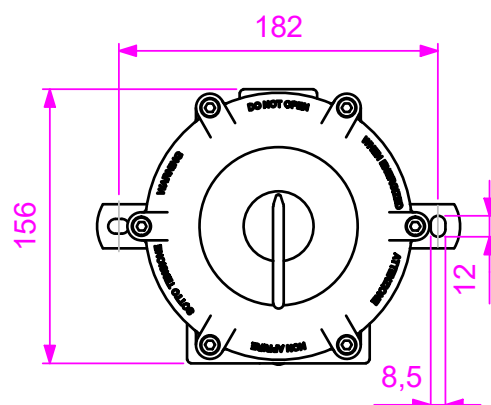
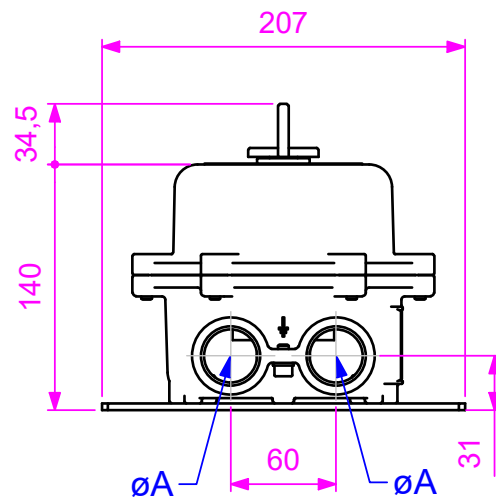
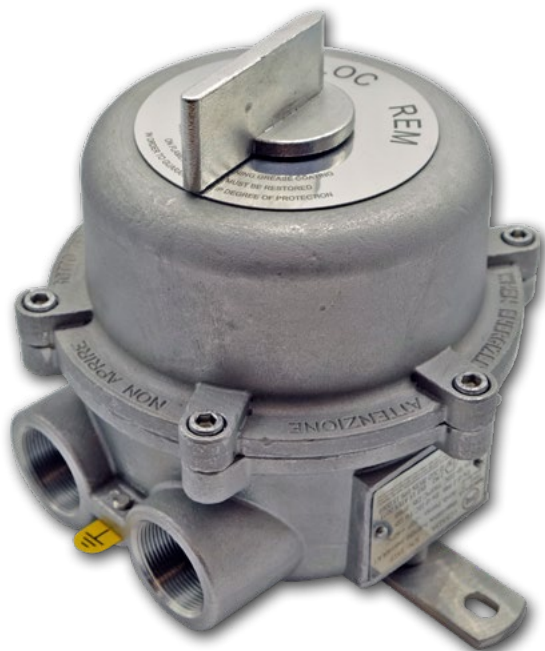
• K6002	• K6013
•	

(*) For more detail see page 10-14



Code	N° Pole	Current I _{th} [A]	AC3 Rated Power [KW]	Switch Angles	Cross Section [mm ²]	ØW [mm]	L [mm]	Function	Suitable for model
K1001	1	16	1.5	60°	2 x 1.5 ÷ 2.5	43	29,5	0-1 ON/OFF	-K / L-K / Y-K / H-K
K2001	1	20	2.2	60°	2 x 1.5 ÷ 2.5	43	29,5	0-1 ON/OFF	-K / L-K / Y-K / H-K
K3001	1	25	3	60°	2 x 1.5 ÷ 2.5	43	29,5	0-1 ON/OFF	-K / L-K / Y-K / H-K
K4001	1	32	4	60°	2 x 2.5 ÷ 4	58	29,5	0-1 ON/OFF	-K / L-K
K5001	1	36	5,5	60°	2 x 2.5 ÷ 4	58	29,5	0-1 ON/OFF	-K / L-K
K6001	1	40	7,5	60°	2 x 2.5 ÷ 4	58	29,5	0-1 ON/OFF	-K / L-K
K7001	1	40	7,5	60°	2 x 6 ÷ 16	58	29,5	0-1 ON/OFF	-K / L-K
K1002	2	16	1.5	60°	2 x 1.5 ÷ 2.5	43	29,5	0-1 ON/OFF	-K / L-K / Y-K / H-K
K2002	2	20	2.2	60°	2 x 1.5 ÷ 2.5	43	29,5	0-1 ON/OFF	-K / L-K / Y-K / H-K
K3002	2	25	3	60°	2 x 1.5 ÷ 2.5	43	29,5	0-1 ON/OFF	-K / L-K / Y-K / H-K
K4002	2	32	4	60°	2 x 2.5 ÷ 4	58	29,5	0-1 ON/OFF	-K / L-K
K5002	2	36	5,5	60°	2 x 2.5 ÷ 4	58	29,5	0-1 ON/OFF	-K / L-K
K6002	2	40	7,5	60°	2 x 2.5 ÷ 4	58	29,5	0-1 ON/OFF	-K / L-K
K7002	2	40	7,5	60°	2 x 6 ÷ 16	58	29,5	0-1 ON/OFF	-K / L-K
K1003	3	16	2,2	60°	2 x 1.5 ÷ 2.5	43	29,5	0-1 ON/OFF	-K / L-K / Y-K / H-K
K2003	3	20	4	60°	2 x 1.5 ÷ 2.5	43	29,5	0-1 ON/OFF	-K / L-K / Y-K / H-K
K3003	3	25	5,5	60°	2 x 1.5 ÷ 2.5	43	29,5	0-1 ON/OFF	-K / L-K / Y-K / H-K
K4003	3	32	7,5	60°	2 x 2.5 ÷ 4	58	29,5	0-1 ON/OFF	-K / L-K
K5003	3	36	11	60°	2 x 2.5 ÷ 4	58	29,5	0-1 ON/OFF	-K / L-K
K6003	3	40	15	60°	2 x 2.5 ÷ 4	58	29,5	0-1 ON/OFF	-K / L-K
K7003	3	40	15	60°	2 x 6 ÷ 16	58	29,5	0-1 ON/OFF	-K / L-K
K1004	4	16	2,2	60°	2 x 1.5 ÷ 2.5	43	41	0-1 ON/OFF	-K / L-K / Y-K / H-K
K2004	4	20	4	60°	2 x 1.5 ÷ 2.5	43	41	0-1 ON/OFF	-K / L-K / Y-K / H-K

Code	N° Pole	Current Ith [A]	AC3 Rated Power [KW]	Switch Angles	Cross Section [mm ²]	∅W [mm]	L [mm]	Function	Suitable for model
K3004	4	25	5,5	60°	2 x 1.5 ÷ 2.5	43	41	0-1 ON/OFF	-K / L-K / Y-K / H-K
K4004	4	32	7,5	60°	2 x 2.5 ÷ 4	58	41	0-1 ON/OFF	-K / L-K
K5004	4	36	11	60°	2 x 2.5 ÷ 4	58	41	0-1 ON/OFF	-K / L-K
K6004	4	40	15	60°	2 x 2.5 ÷ 4	58	41	0-1 ON/OFF	-K / L-K
K1011	1	16	1.5	60°	2 x 1.5 ÷ 2.5	43	29,5	1-0-2 MAINS TRANSFER	-K / L-K / Y-K / H-K
K2011	1	20	2.2	60°	2 x 1.5 ÷ 2.5	43	29,5	1-0-2 MAINS TRANSFER	-K / L-K / Y-K / H-K
K3011	1	25	3	60°	2 x 1.5 ÷ 2.5	43	29,5	1-0-2 MAINS TRANSFER	-K / L-K / Y-K / H-K
K4011	1	32	4	60°	2 x 2,5 ÷ 4	58	29,5	1-0-2 MAINS TRANSFER	-K / L-K
K5011	1	36	5,5	60°	2 x 2,5 ÷ 4	58	29,5	1-0-2 MAINS TRANSFER	-K / L-K
K6011	1	40	7,5	60°	2 x 2,5 ÷ 4	58	29,5	1-0-2 MAINS TRANSFER	-K / L-K
K1012	2	16	1.5	60°	2 x 1.5 ÷ 2.5	43	41	1-0-2 MAINS TRANSFER	-K / L-K / Y-K / H-K
K2012	2	20	2.2	60°	2 x 1.5 ÷ 2.5	43	41	1-0-2 MAINS TRANSFER	-K / L-K / Y-K / H-K
K3012	2	25	3	60°	2 x 1.5 ÷ 2.5	43	41	1-0-2 MAINS TRANSFER	-K / L-K / Y-K / H-K
K4012	2	32	4	60°	2 x 2,5 ÷ 4	58	41	1-0-2 MAINS TRANSFER	-K / L-K
K5012	2	36	5,5	60°	2 x 2,5 ÷ 4	58	41	1-0-2 MAINS TRANSFER	-K / L-K
K6012	2	40	7,5	60°	2 x 2,5 ÷ 4	58	41	1-0-2 MAINS TRANSFER	-K / L-K
K1013	3	16	2,2	60°	2 x 1.5 ÷ 2.5	43	41	1-0-2 MAINS TRANSFER	-K / L-K / Y-K / H-K
K2013	3	20	4	60°	2 x 1.5 ÷ 2.5	43	41	1-0-2 MAINS TRANSFER	-K / L-K / Y-K / H-K
K3013	3	25	5,5	60°	2 x 1.5 ÷ 2.5	43	41	1-0-2 MAINS TRANSFER	-K / L-K / Y-K / H-K
K4013	3	32	7,5	60°	2 x 2,5 ÷ 4	58	41	1-0-2 MAINS TRANSFER	-K / L-K
K5013	3	36	11	60°	2 x 2,5 ÷ 4	58	41	1-0-2 MAINS TRANSFER	-K / L-K
K6013	3	40	15	60°	2 x 2,5 ÷ 4	58	41	1-0-2 MAINS TRANSFER	-K / L-K
K1021	1	16	1.5	60°	2 x 1.5 ÷ 2.5	43	29,5	1-2 CHANGE OVER	-K / L-K / Y-K / H-K
K2021	1	20	2.2	60°	2 x 1.5 ÷ 2.5	43	29,5	1-2 CHANGE OVER	-K / L-K / Y-K / H-K
K3021	1	25	3	60°	2 x 1.5 ÷ 2.5	43	29,5	1-2 CHANGE OVER	-K / L-K / Y-K / H-K
K4021	1	32	4	60°	2 x 2,5 ÷ 4	58	29,5	1-2 CHANGE OVER	-K / L-K
K5021	1	36	5,5	60°	2 x 2,5 ÷ 4	58	29,5	1-2 CHANGE OVER	-K / L-K
K6021	1	40	7,5	60°	2 x 2,5 ÷ 4	58	29,5	1-2 CHANGE OVER	-K / L-K
K1022	2	16	1.5	60°	2 x 1.5 ÷ 2.5	43	41	1-2 CHANGE OVER	-K / L-K / Y-K / H-K
K2022	2	20	2.2	60°	2 x 1.5 ÷ 2.5	43	41	1-2 CHANGE OVER	-K / L-K / Y-K / H-K
K3022	2	25	3	60°	2 x 1.5 ÷ 2.5	43	41	1-2 CHANGE OVER	-K / L-K / Y-K / H-K
K4022	2	32	4	60°	2 x 2,5 ÷ 4	58	41	1-2 CHANGE OVER	-K / L-K
K5022	2	36	5,5	60°	2 x 2,5 ÷ 4	58	41	1-2 CHANGE OVER	-K / L-K
K6022	2	40	7,5	60°	2 x 2,5 ÷ 4	58	41	1-2 CHANGE OVER	-K / L-K
K1023	3	16	2,2	60°	2 x 1.5 ÷ 2.5	43	41	1-2 CHANGE OVER	-K / L-K / Y-K / H-K
K2023	3	20	4	60°	2 x 1.5 ÷ 2.5	43	41	1-2 CHANGE OVER	-K / L-K / Y-K / H-K
K3023	3	25	5,5	60°	2 x 1.5 ÷ 2.5	43	41	1-2 CHANGE OVER	-K / L-K / Y-K / H-K
K4023	3	32	7,5	60°	2 x 2,5 ÷ 4	58	41	1-2 CHANGE OVER	-K / L-K
K5023	3	36	11	60°	2 x 2,5 ÷ 4	58	41	1-2 CHANGE OVER	-K / L-K
K6023	3	40	15	60°	2 x 2,5 ÷ 4	58	41	1-2 CHANGE OVER	-K / L-K



ATEX & IECEx Equipment Data		
Gas	Group I Zone 1	Ex II 2G Ex d IIC T6...T4 Gb
Dust	Group II Zone 21	Ex II 2D Ex tb IIIC T85°C...T135°C Db IP66
Mine	Group I	Ex I M2 Ex d I Mb

ATEX Certificate
BVI 15 ATEX 0073

IECEx Certificate
IECEx EPS 15.0069

T. Amb Standard
-20°C ÷ + 50°C

T. Amb Max Range
-50°C ÷ +80°C

- Rotary cam switch with knob operator
- Made in stainless steel AISI 316L
- No external painting.
- Max Voltage (AC)=690V
- Max Voltage (DC)=440V
- Max Current= 40A
- Frequency= 50-60Hz
- Cable section= 1.5 ÷ 16 mm²
- For more detail see page 10-22

LCS23A-K	3/4" NPT
LCS33A-K	1" NPT
LCS253A-K	M25x1.5 - 6H
LCS323A-K	M32x1.5 - 6H
CODE	ϕA

Example: **LCS23-K6003**

ORDER CODING

LCS23A
LCS33A
LCS253A
LCS323A

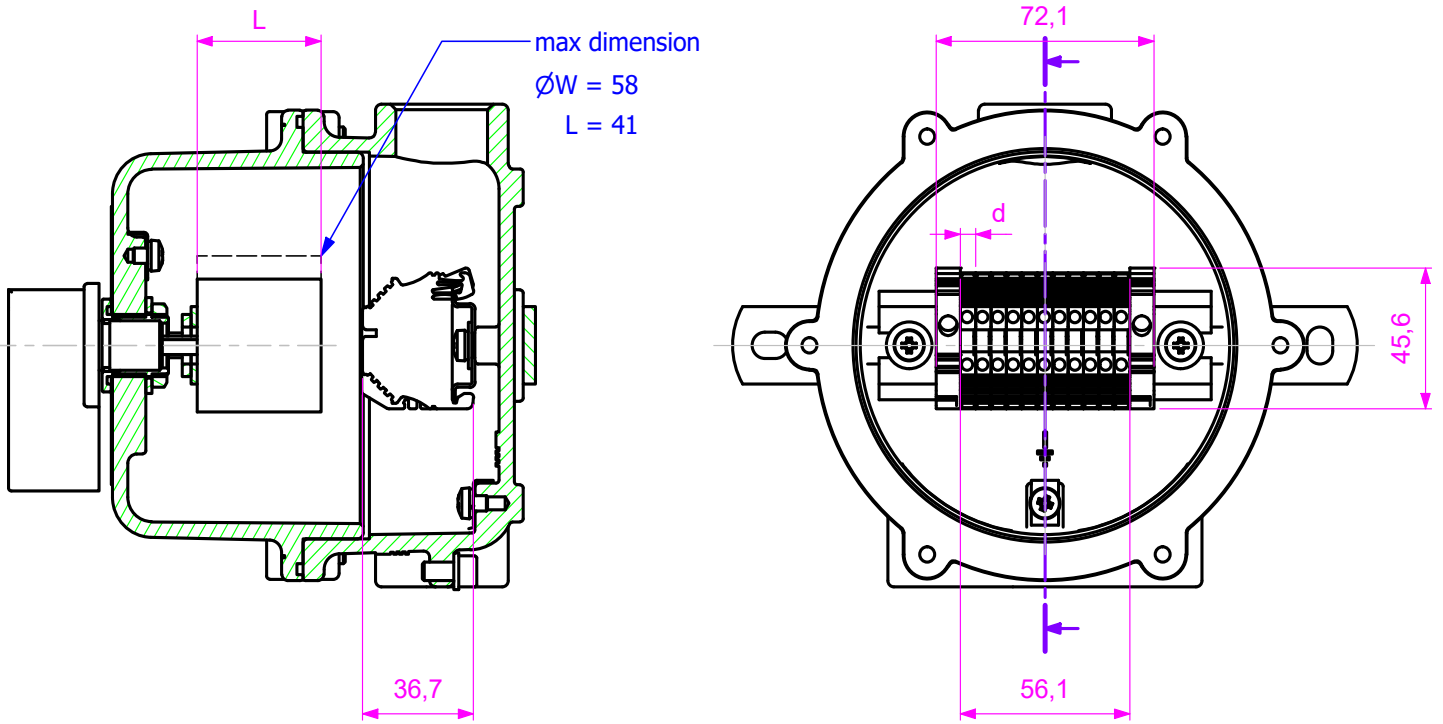
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ELECTRICAL CONTACT (*)

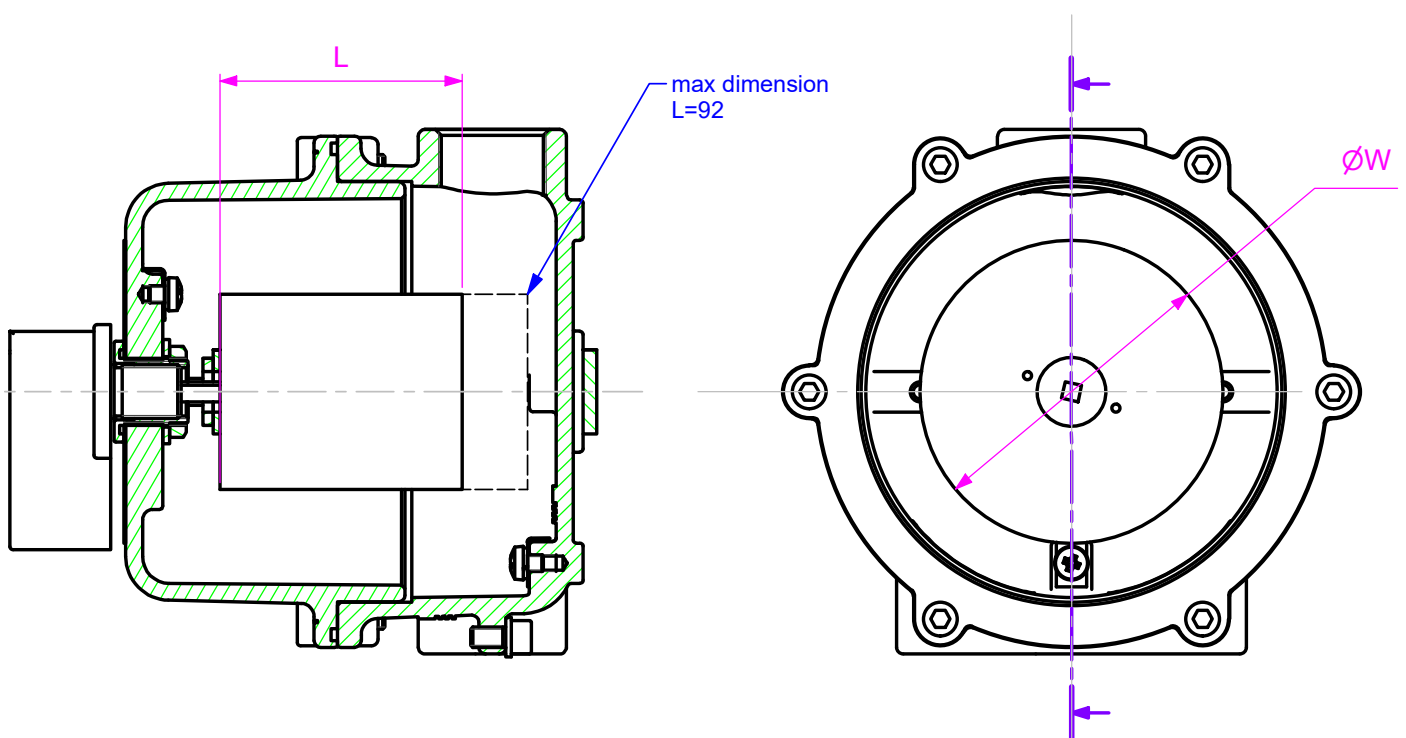
- K6002
- K6013
-

(*) For more detail see page 10-24

With terminal blocks



Without terminal blocks





Code	N° Pole	Current Ith [A]	AC3 Rated Power [KW]	Switch Angles	Cross Section [mm ²]	ØW [mm]	L [mm]	Function	Suitable for model
K1001	1	16	1.5	60°	2 x 1.5 ÷ 2.5	43	29,5	0-1 ON/OFF	-K / L-K / Y-K / H-K
K2001	1	20	2.2	60°	2 x 1.5 ÷ 2.5	43	29,5	0-1 ON/OFF	-K / L-K / Y-K / H-K
K3001	1	25	3	60°	2 x 1.5 ÷ 2.5	43	29,5	0-1 ON/OFF	-K / L-K / Y-K / H-K
K4001	1	32	4	60°	2 x 2.5 ÷ 4	58	29,5	0-1 ON/OFF	-K / L-K
K5001	1	36	5,5	60°	2 x 2.5 ÷ 4	58	29,5	0-1 ON/OFF	-K / L-K
K6001	1	40	7,5	60°	2 x 2.5 ÷ 4	58	29,5	0-1 ON/OFF	-K / L-K
K7001	1	40	7,5	60°	2 x 6 ÷ 16	58	29,5	0-1 ON/OFF	-K / L-K
K1002	2	16	1.5	60°	2 x 1.5 ÷ 2.5	43	29,5	0-1 ON/OFF	-K / L-K / Y-K / H-K
K2002	2	20	2.2	60°	2 x 1.5 ÷ 2.5	43	29,5	0-1 ON/OFF	-K / L-K / Y-K / H-K
K3002	2	25	3	60°	2 x 1.5 ÷ 2.5	43	29,5	0-1 ON/OFF	-K / L-K / Y-K / H-K
K4002	2	32	4	60°	2 x 2.5 ÷ 4	58	29,5	0-1 ON/OFF	-K / L-K
K5002	2	36	5,5	60°	2 x 2.5 ÷ 4	58	29,5	0-1 ON/OFF	-K / L-K
K6002	2	40	7,5	60°	2 x 2.5 ÷ 4	58	29,5	0-1 ON/OFF	-K / L-K
K7002	2	40	7,5	60°	2 x 6 ÷ 16	58	29,5	0-1 ON/OFF	-K / L-K
K1003	3	16	2,2	60°	2 x 1.5 ÷ 2.5	43	29,5	0-1 ON/OFF	-K / L-K / Y-K / H-K
K2003	3	20	4	60°	2 x 1.5 ÷ 2.5	43	29,5	0-1 ON/OFF	-K / L-K / Y-K / H-K
K3003	3	25	5,5	60°	2 x 1.5 ÷ 2.5	43	29,5	0-1 ON/OFF	-K / L-K / Y-K / H-K
K4003	3	32	7,5	60°	2 x 2.5 ÷ 4	58	29,5	0-1 ON/OFF	-K / L-K
K5003	3	36	11	60°	2 x 2.5 ÷ 4	58	29,5	0-1 ON/OFF	-K / L-K
K6003	3	40	15	60°	2 x 2.5 ÷ 4	58	29,5	0-1 ON/OFF	-K / L-K
K7003	3	40	15	60°	2 x 6 ÷ 16	58	29,5	0-1 ON/OFF	-K / L-K
K1004	4	16	2,2	60°	2 x 1.5 ÷ 2.5	43	41	0-1 ON/OFF	-K / L-K / Y-K / H-K
K2004	4	20	4	60°	2 x 1.5 ÷ 2.5	43	41	0-1 ON/OFF	-K / L-K / Y-K / H-K
K3004	4	25	5,5	60°	2 x 1.5 ÷ 2.5	43	41	0-1 ON/OFF	-K / L-K / Y-K / H-K
K4004	4	32	7,5	60°	2 x 2.5 ÷ 4	58	41	0-1 ON/OFF	-K / L-K
K5004	4	36	11	60°	2 x 2.5 ÷ 4	58	41	0-1 ON/OFF	-K / L-K
K6004	4	40	15	60°	2 x 2.5 ÷ 4	58	41	0-1 ON/OFF	-K / L-K
K7004	4	40	15	60°	2 x 6 ÷ 16	58	69	0-1 ON/OFF	-K / L-K
K1011	1	16	1.5	60°	2 x 1.5 ÷ 2.5	43	29,5	1-0-2 MAINS TRANSFER	-K / L-K / Y-K / H-K
K2011	1	20	2.2	60°	2 x 1.5 ÷ 2.5	43	29,5	1-0-2 MAINS TRANSFER	-K / L-K / Y-K / H-K
K3011	1	25	3	60°	2 x 1.5 ÷ 2.5	43	29,5	1-0-2 MAINS TRANSFER	-K / L-K / Y-K / H-K
K4011	1	32	4	60°	2 x 2.5 ÷ 4	58	29,5	1-0-2 MAINS TRANSFER	-K / L-K
K5011	1	36	5,5	60°	2 x 2.5 ÷ 4	58	29,5	1-0-2 MAINS TRANSFER	-K / L-K
K6011	1	40	7,5	60°	2 x 2.5 ÷ 4	58	29,5	1-0-2 MAINS TRANSFER	-K / L-K
K1012	2	16	1.5	60°	2 x 1.5 ÷ 2.5	43	41	1-0-2 MAINS TRANSFER	-K / L-K / Y-K / H-K
K2012	2	20	2.2	60°	2 x 1.5 ÷ 2.5	43	41	1-0-2 MAINS TRANSFER	-K / L-K / Y-K / H-K
K3012	2	25	3	60°	2 x 1.5 ÷ 2.5	43	41	1-0-2 MAINS TRANSFER	-K / L-K / Y-K / H-K
K4012	2	32	4	60°	2 x 2.5 ÷ 4	58	41	1-0-2 MAINS TRANSFER	-K / L-K
K5012	2	36	5,5	60°	2 x 2.5 ÷ 4	58	41	1-0-2 MAINS TRANSFER	-K / L-K
K6012	2	40	7,5	60°	2 x 2.5 ÷ 4	58	41	1-0-2 MAINS TRANSFER	-K / L-K
K1013	3	16	2,2	60°	2 x 1.5 ÷ 2.5	43	41	1-0-2 MAINS TRANSFER	-K / L-K / Y-K / H-K
K2013	3	20	4	60°	2 x 1.5 ÷ 2.5	43	41	1-0-2 MAINS TRANSFER	-K / L-K / Y-K / H-K
K3013	3	25	5,5	60°	2 x 1.5 ÷ 2.5	43	41	1-0-2 MAINS TRANSFER	-K / L-K / Y-K / H-K
K4013	3	32	7,5	60°	2 x 2.5 ÷ 4	58	41	1-0-2 MAINS TRANSFER	-K / L-K



Code	N° Pole	Current Ith [A]	AC3 Rated Power [KW]	Switch Angles	Cross Section [mm ²]	ØW [mm]	L [mm]	Function	Suitable for model
K5013	3	36	11	60°	2 x 2,5 ÷ 4	58	41	1-0-2 MAINS TRANSFER	-K / L-K
K6013	3	40	15	60°	2 x 2,5 ÷ 4	58	41	1-0-2 MAINS TRANSFER	-K / L-K
K1014	4	16	2,2	60°	2 x 1.5 ÷ 2.5	43	53,5	1-0-2 MAINS TRANSFER	-K / L-K / Y-K / H-K
K2014	4	20	4	60°	2 x 1.5 ÷ 2.5	43	53,5	1-0-2 MAINS TRANSFER	-K / L-K / Y-K / H-K
K3014	4	25	5,5	60°	2 x 1.5 ÷ 2.5	43	53,5	1-0-2 MAINS TRANSFER	-K / L-K / Y-K / H-K
K4014	4	32	7,5	60°	2 x 2,5 ÷ 4	58	58	1-0-2 MAINS TRANSFER	-K / L-K
K5014	4	36	11	60°	2 x 2,5 ÷ 4	58	58	1-0-2 MAINS TRANSFER	-K / L-K
K6014	4	40	15	60°	2 x 2,5 ÷ 4	58	58	1-0-2 MAINS TRANSFER	-K / L-K
K1021	1	16	1.5	60°	2 x 1.5 ÷ 2.5	43	29,5	1-2 CHANGE OVER	-K / L-K / Y-K / H-K
K2021	1	20	2.2	60°	2 x 1.5 ÷ 2.5	43	29,5	1-2 CHANGE OVER	-K / L-K / Y-K / H-K
K3021	1	25	3	60°	2 x 1.5 ÷ 2.5	43	29,5	1-2 CHANGE OVER	-K / L-K / Y-K / H-K
K4021	1	32	4	60°	2 x 2,5 ÷ 4	58	29,5	1-2 CHANGE OVER	-K / L-K
K5021	1	36	5,5	60°	2 x 2,5 ÷ 4	58	29,5	1-2 CHANGE OVER	-K / L-K
K6021	1	40	7,5	60°	2 x 2,5 ÷ 4	58	29,5	1-2 CHANGE OVER	-K / L-K
K1022	2	16	1.5	60°	2 x 1.5 ÷ 2.5	43	41	1-2 CHANGE OVER	-K / L-K / Y-K / H-K
K2022	2	20	2.2	60°	2 x 1.5 ÷ 2.5	43	41	1-2 CHANGE OVER	-K / L-K / Y-K / H-K
K3022	2	25	3	60°	2 x 1.5 ÷ 2.5	43	41	1-2 CHANGE OVER	-K / L-K / Y-K / H-K
K4022	2	32	4	60°	2 x 2,5 ÷ 4	58	41	1-2 CHANGE OVER	-K / L-K
K5022	2	36	5,5	60°	2 x 2,5 ÷ 4	58	41	1-2 CHANGE OVER	-K / L-K
K6022	2	40	7,5	60°	2 x 2,5 ÷ 4	58	41	1-2 CHANGE OVER	-K / L-K
K1023	3	16	2,2	60°	2 x 1.5 ÷ 2.5	43	41	1-2 CHANGE OVER	-K / L-K / Y-K / H-K
K2023	3	20	4	60°	2 x 1.5 ÷ 2.5	43	41	1-2 CHANGE OVER	-K / L-K / Y-K / H-K
K3023	3	25	5,5	60°	2 x 1.5 ÷ 2.5	43	41	1-2 CHANGE OVER	-K / L-K / Y-K / H-K
K4023	3	32	7,5	60°	2 x 2,5 ÷ 4	58	41	1-2 CHANGE OVER	-K / L-K
K5023	3	36	11	60°	2 x 2,5 ÷ 4	58	41	1-2 CHANGE OVER	-K / L-K
K6023	3	40	15	60°	2 x 2,5 ÷ 4	58	41	1-2 CHANGE OVER	-K / L-K

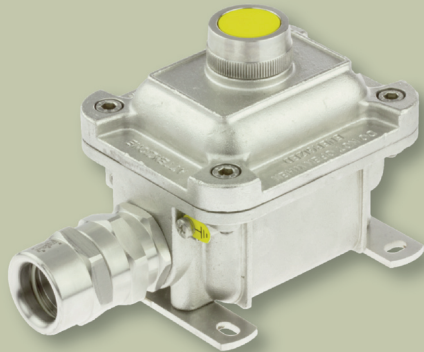
LOCAL CONTROL STATION

series
PBS

Protection	Mines	n.a.	IM2	Ex db I Mb
	Gas	1-2	II2G	Ex db IIC T6÷T4 Gb
	Dusts	21-22	II2D	Ex tb IIIC T85°C÷T135°C Db

Degree of Protection	IP66
----------------------	------

Amb. Temp.	Standard		-20°C		+40°C
	Extended		-50°C		+80°C



Entries Threading	NPT ANSI B1.20
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Material	Stainless Steel AISI 316L
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Painting	See Options
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Standards and Certificates		Directive 2014/34/EU (ATEX)
		EN 60079-0 • EN 60079-1 EN 60079-31
		BVI 15 ATEX 0020
		IEC 60079-0 • IEC 60079-1 IEC 60079-31
		IECEx EPS 14.0104

- External screws in Stainless Steel.
- External accessories in Stainless Steel.
- Weight: 1570 g (the weight of the installed unit must be added, pls refer to page I15).
- For further information about electrical contacts see page C29.

- Options**
- Two contacts: 2xNC or 2xNO.
 - Cable entries with metric threading M25x1.5 (M).
 - Available with illuminated pushbutton (*).

- Material: Aluminum light alloy see page C29.
- External painting: on customer's request.

NOTES

Installation and maintenance instructions shall be carefully read

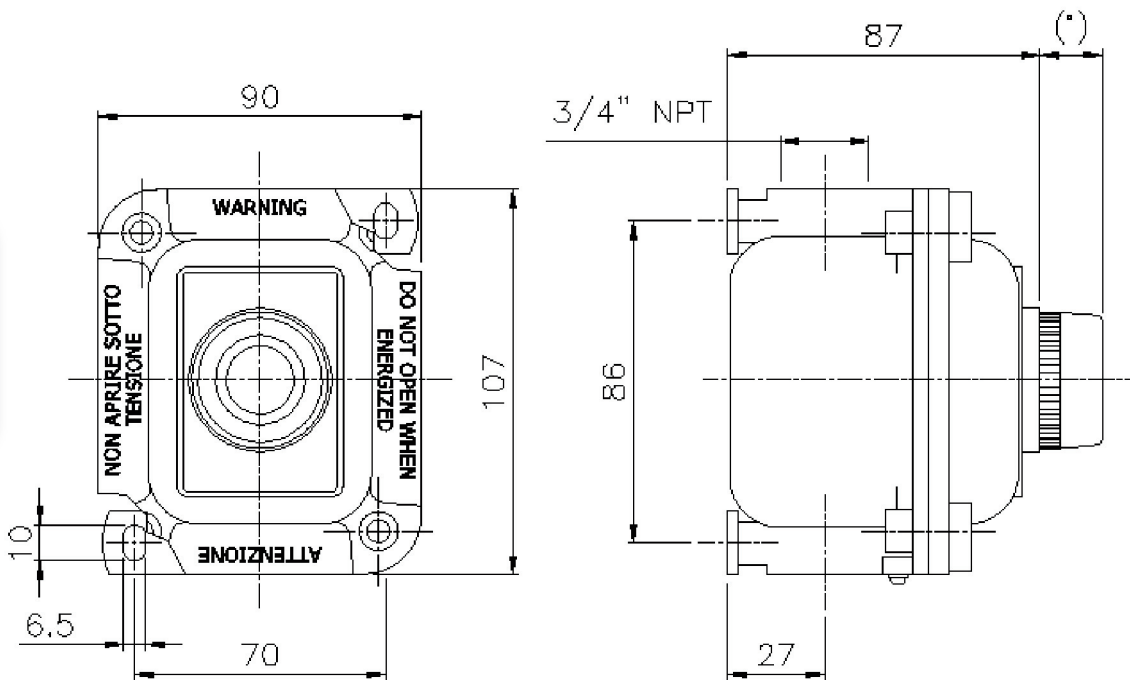
Temperature class T6/T85°C is intended for an Ambient Temperature (A.T.) up to +50°C, temperature class T5/T100°C is for an extended A.T. up to +65°C, whereas temperature class T4/T135°C for an extended A.T. up to +80°C.

The temperature class is T6/T85°C for an A.T. up to +60°C and T5/T100°C for an extended A.T. up to +80°C when using LED lamps.

The temperature class is T6/T85°C for an extended A.T. up to +80°C when only command units are used.

(*) It is suggested the use of LED lamps only.

(°) See section C.



Example: PBS 1 M

Order Coding

Type	Enclosure size	Code of used element	Threading
PBS	1 = 1 element	.. = START pushbutton	N = NPT (std.)
			M = Metric

EMERGENCY PUSHBUTTONS with BREAKING GLASS

series
PBS

Protection	Mines	n.a.	IM2	Ex db I Mb
	Gas	1-2	II2G	Ex db IIC T6÷T4 Gb
	Dusts	21-22	II2D	Ex tb IIIC T85°C÷T135°C Db

Degree of Protection	IP66
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Amb. Temp.	Standard	-20°C	+40°C
	Extended	-50°C	+80°C



Entries Threading	NPT ANSI B1.20
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Material	Stainless Steel AISI 316L
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Painting	External epoxy RAL 3000
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Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1
EN 60079-31

CE BVI 15 ATEX 0020

IEC 60079-0 • IEC 60079-1
IEC 60079-31

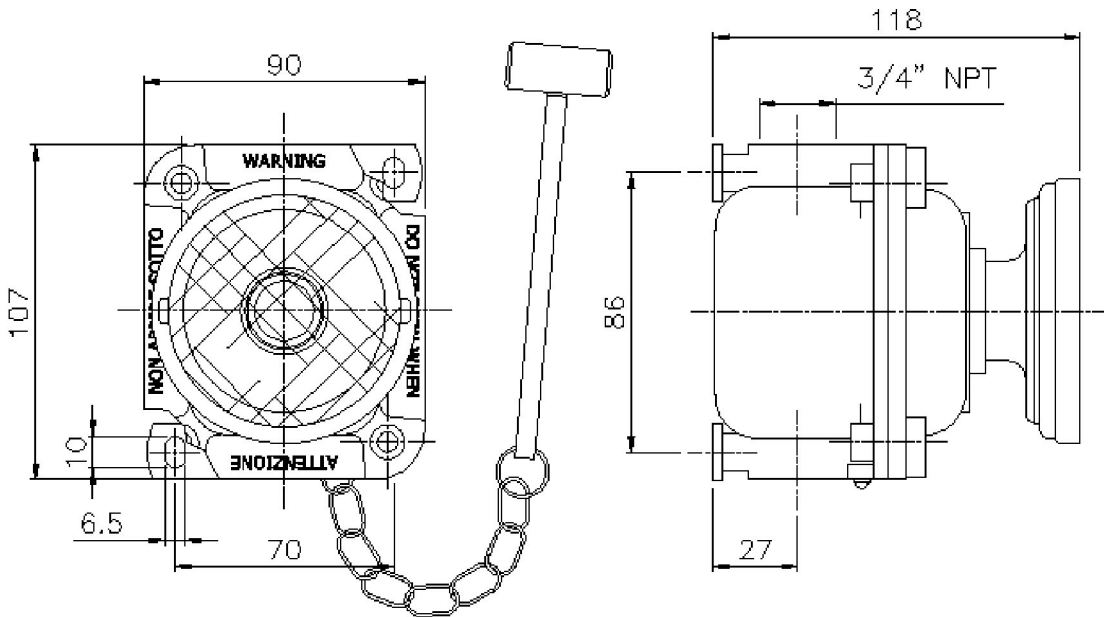
IECEx EPS 14.0104

- External screws in Stainless Steel.
- External accessories (hammer, chain, glass holder ring) in Stainless Steel.
- Weight: 2150 g.
- For further information about electrical contacts see page C29.

Options

- Two contacts: 2xNC or 2xNO.
- Cable entries with metric threading M25x1.5 (M).

- Available with illuminated pushbutton (*).
- Material: Aluminum light alloy see page C31.



NOTE

Installation and maintenance instructions shall be carefully read

Temperature class T6/T85°C is intended for an Ambient Temperature (A.T.) up to +50°C, temperature class T5/T100°C is for an extended A.T. up to +65°C, whereas temperature class T4/T135°C for an extended A.T. up to +80°C.

The temperature class is T6/T85°C for an A.T. up to +60°C and T5/T100°C for an extended A.T. up to +80°C when using LED lamps.

The temperature class is T6/T85°C for an extended A.T. up to +80°C when only command units are used.

(*). It is suggested the use of LED lamps only.

Electric Execution Identification

PBS 1 E0

The breaking of the glass releases the button that automatically closes and / or opens a contact (1NO+1NC).

PBS 1 E1

The breaking of the glass releases the button that shall be pressed to open and / or close a contact (1NO+1NC).

Example: PBS 1 E1 M

Order Coding

Type	Enclosure Size	Pushbutton operating code open/close	Threading
PBS	1 = 1 element	E1 = pushbutton to press E0 = pushbutton in releasing	.. = NPT (std) M = Metric

STAINLESS STEEL LIMIT SWITCHES

series
PSI

Protection	Mines	n.a.	IM2	Ex db I Mb
	Gas	1-2	II2G	Ex db IIC T6÷T5 Gb
	Dusts	21-22	II2D	Ex tb IIIC T85°C÷T100°C Db

Degree of Protection	IP66/67
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Amb. Temp.	Standard		-20°C		+40°C
	Extended		-50°C		+80°C



Entries Threading	NPT ANSI B1.20
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Material	Stainless Steel AISI 316L
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Painting	On request
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Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1
EN 60079-31

BVI 13 ATEX 0083

IEC 60079-0 • IEC 60079-1
IEC 60079-31

IECEx EPS 13.0033

- Compact design with ideal features for use in dangerous process and hazardous environments.
- Wide range of actuators in metal or in self-extinguishing glass-fiber-reinforced polymer (GFRP).
- Wide variety of options for adaptation and assembly.
- Internal operating rod in Stainless Steel AISI 316L.
- External screws in Stainless Steel except for actuators that may have components in tropicalized steel.
- Weight: 780 g (the weight of the installed unit must be added, pls refer to page I20).

Options	- Aluminum light alloy version (see page D13).	- Rollers in Metal.
	- Quick snap-action contact units 2NC (C11) with positive opening	- Different diameters rollers.
	- Cable entry with metric thread M20x1.5 (M).	- Actuators with some metal parts in Stainless Steel.

Degree of pollution: 3 conforming to IEC/EN 60947-5-1 Standards.
Frequency of operations: 20/min (*) max
Number of cycles: 8÷10 millions
Storage Temperature: -40°C ÷ +70°C

Contact Unit

Nominal current (active): I: 10 A
 Insulating Voltage: U_i: 500 Vac / 600 Vdc [°]
 Impulse Withstand Voltage: U_{imp}: 6 kV
 Short Circuit Current: : 1000 AV
 Short Circuit Protection: Fuse 10 A 500 V
 Minimum conductor section : 1.5 mm²
 Max Current Density : 5 A/mm²

	AC15 - A600			DC13 - Q600		
U _e (V)	240	400	500	24	125	250
I _e (A)	6	4	1	6	1.1	0.4

NOTES

To read the installation and maintenance instructions is recommended.

The temperature class T6/T85°C considers an Ambient Temperature (A.T.) extended up to +60°C, whereas, class T5/T100°C considers an A.T. extended up to +80°C.

[°] The insulating voltage is equal to 400 VAC / 500 VDC for C2 and C11 contacts.

(*) For A.T. up to +40°C the max surface temperature is 65°C reducing the number of operations to 600/h.

(**) As safety switches only those with symbol shall be used.

The safety circuit must always be connected to NC contacts (11-12 or 21-22). Exceed by 1.5 mm (25°) the gap between the contacts. Operate the switch with the indicated opening force.

Electrical Diagram

Type	Contact	Diagram	Operating	Type	Contact	Diagram	Operating
C2	1NO+1NC		Snap action	C10	2NO		Slow action
C5	1NO+1NC		Snap action	C11	2NC		Snap action
C6	1NO+1NC		Slow action	C14	2NC		Slow action
C7	1NO+1NC		Overlapping slow action	C15	2NO		Slow action
C9	2NO		Slow action	C20	1NO+2NC		Slow action

Contacts identification (by numbers) in compliance with IEC/EN 60947-1 Standards
 All types (except C2) allow different voltages at the contacts terminals.
 For type C2 the contacts 13-14 and 21-22 are electrically separated from contacts 31-32 and 43-44.

Positive opening of contacts (**) for some models available in compliance with IEC/EN 60947-5-1 e CEI 17-45 - F. 1914 Standards.

Swivel heads

All switches allow to rotate the head by 90° x 90° by unscrewing the four fixing screws (fig. 1).

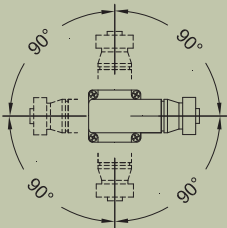


Fig. 1

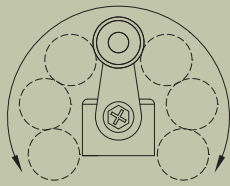


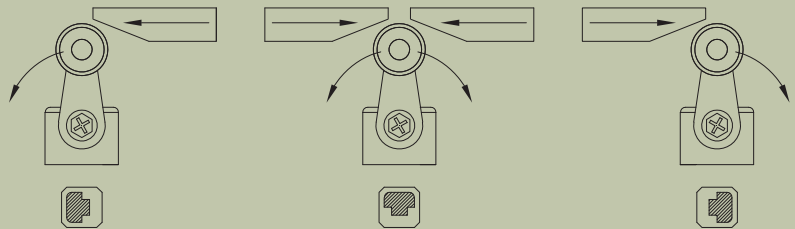
Fig. 2

Adjustable levers

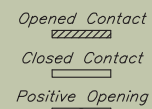
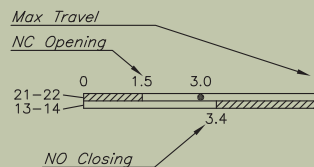
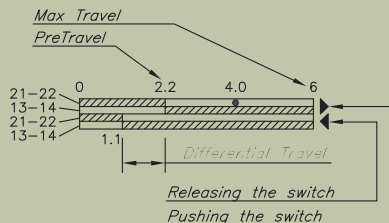
Position switches with roller lever have the lever adjustable by 10° x 10° (fig. 2). The positive movement transmission is always ensured by the particular geometric coupling between the lever and the shaft.

Unidirectional heads

To get the unidirectional operation on switches with revolving lever it is necessary to remove the four screws of the head and totate the internal piston.



Stroke Diagrams



Example: PSI 511N

Order coding

Type
PSI

Contact Unit
C5

Actuator
11

Threading
N = NPT (N)
M = metric (M)

Series PSI : AVAILABLE MODELS

- Stainless steel limit switches series PSI is available with a widespread range of actuators for different purposes. Please see from page D14 to D20 for all the available actuators.
- Limit switch series PSI is available also in key-lock safety version, ideal to control Gates, Protections, Carters and any moving mechanical part. For further details please see pages D21 and D22.
- When necessary to control any moving mechanical parts especially conveyors, limit switches series PSI are available in cable operated safety version. They make possible to stop the machine from any point of intervention by manually pulling the cable. Please see pages D23 and D24.
- Limit switch series PSI is available in buoyant operated safety version whenever the liquid level inside a tank shall be monitored. For further details see page D.25.

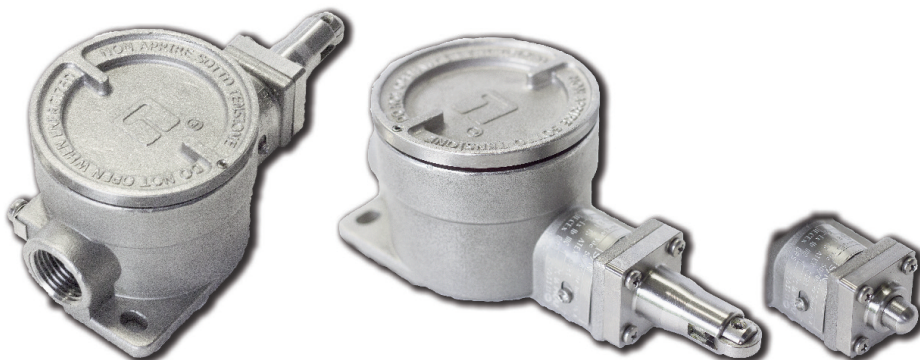
STAINLESS STEEL LIMIT SWITCHES

series
PSI

The following models have the actuators completely made in Stainless Steel AISI 316L.

	UNITA' DI CONTATTO Contact blocks	N° CATALOGO Catalogue n°	DIAGRAMMI CORSE Travel diagrams
A PERNO <i>With push button</i> VELOCITA' MASSIMA: <i>Max speed</i> 0.5 m/s FORZA MIN. DI AZIONAMENTO: <i>Min. force actuation:</i> 8 N FORZA MIN. PER APERTURA POSITIVA: <i>Min. force positive opening operation:</i> 25 N LEGENDA <i>Legenda</i> ◉ APERTURA POSITIVA <i>Positive opening</i> • INIZIO APERTURA POSITIVA <i>Positive opening beginning</i> ► PREMENDO <i>Pushing</i> ◄ RILASCIANDO <i>Releasing</i>	C2 1NO, 1NC+ 1NO, 1NC	PSI 20IN	
	C5 1NO+1NC	PSI 50IN	
	C6 1NO+1NC	PSI 60IN	
	C7 1NO+1NC	PSI 70IN	
	C9 2NC	PSI 90IN	
	C10 2NO	PSI 100IN	
	C14 2NC	PSI 140IN	
	C15 2NO	PSI 150IN	
	C20 1NO+2NC	PSI 200IN	
	A PERNO ALLUNGATO <i>With lengthened push button</i> VELOCITA' MASSIMA: <i>Max speed</i> 0.5 m/s FORZA MIN. DI AZIONAMENTO: <i>Min. force actuation:</i> 8 N FORZA MIN. PER APERTURA POSITIVA: <i>Min. force positive opening operation:</i> 25 N LEGENDA <i>Legenda</i> ◉ APERTURA POSITIVA <i>Positive opening</i> • INIZIO APERTURA POSITIVA <i>Positive opening beginning</i> ► PREMENDO <i>Pushing</i> ◄ RILASCIANDO <i>Releasing</i>	C2 1NO, 1NC+ 1NO, 1NC	PSI 21IN
C5 1NO+1NC		PSI 51IN	
C6 1NO+1NC		PSI 61IN	
C7 1NO+1NC		PSI 71IN	
C9 2NC		PSI 91IN	
C10 2NO		PSI 101IN	
C14 2NC		PSI 141IN	
C15 2NO		PSI 151IN	
C20 1NO+2NC		PSI 201IN	
A PERNO CON ROTELLA <i>With push button roller</i> VELOCITA' MASSIMA: CON CAMMA A 30° <i>Max speed with 30° cam:</i> 0.5 m/s FORZA MIN. DI AZIONAMENTO: <i>Min. force actuation:</i> 8 N FORZA MIN. PER APERTURA POSITIVA: <i>Min. force positive opening operation:</i> 25 N LEGENDA <i>Legenda</i> ◉ APERTURA POSITIVA <i>Positive opening</i> • INIZIO APERTURA POSITIVA <i>Positive opening beginning</i> ► PREMENDO <i>Pushing</i> ◄ RILASCIANDO <i>Releasing</i>		C2 1NO, 1NC+ 1NO, 1NC	PSI 216N
	C5 1NO+1NC	PSI 516N	
	C6 1NO+1NC	PSI 616N	
	C7 1NO+1NC	PSI 716N	
	C9 2NC	PSI 916N	
	C10 2NO	PSI 1016N	
	C14 2NC	PSI 1416N	
	C15 2NO	PSI 1516N	
	C20 1NO+2NC	PSI 2016N	

*IN ALTERNATIVA:
Alternative: M20x1.5 ISO 262



CABLE GLANDS for NOT ARMoured CABLE

series
PM

Protection	Gas	Zone	1-2	II2G	Ex d IIC Gb / Ex e IIC Gb
	Dust		21-22	II2D	Ex tb IIIC Db

Degree of Protection	IP66
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Amb. Temp.	Standard	-40°C	+100°C
	Extended	-60°C	+180°C



Enables Threading	NPT ANSI B1.20 (N) or Metric ISO 262 (M)
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Material	Stainless Steel AISI 316L. EPDM Rings.
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Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079 - 0 • EN 60079 - 1
EN 60079 - 7 • EN 60079 - 31

CE INERIS 10 ATEX 0029X

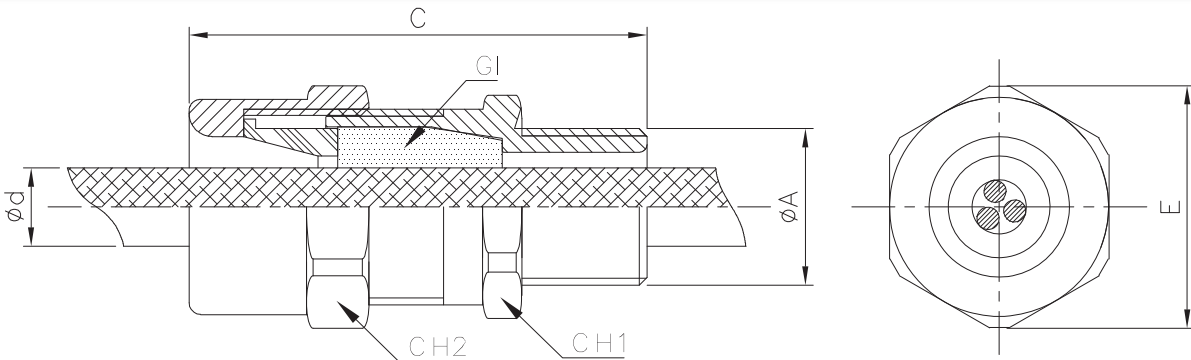
IECEX

IEC 60079 - 0 • IEC 60079 - 1
IEC 60079 - 7 • IEC 60079 - 31

IECEX INE 14.0003X

Options

- Material: Nickel plated brass (see page H03).
- Accessories: see page H13.
- KIT: cable gland supplied with whole range of available rings.
- Silicon rings.



NOTES

For the optimum choice of the cable glands see also sect. A

Extended temperature range only with Silicon rings.

NPT ANSI B1.20			METRIC ISO 262			CH1	CH2	E	GI	Ød cable (mm)	Weight (kg)
Code	ØA	C	Code	ØA	C						
PM1N7S	1/2" NPT	61	PM117S	M20x1.5	59	26	28	31	1GI1	4 ÷ 7	0,135
PM1N9S	"	"	PM119S	"	"	"	"	"	1GI2	7 ÷ 9,5	"
PM1N12S	"	"	PM1112S	"	"	"	"	"	1GI3	9 ÷ 12	"
PM2N12S	3/4" NPT	61	PM2112S	M25x1.5	59	31	34	37	2GI1	9 ÷ 12	0,173
PM2N14S	"	"	PM2114S	"	"	"	"	"	2GI2	12 ÷ 14,5	"
PM2N17S	"	"	PM2117S	"	"	"	"	"	2GI3	14 ÷ 17	"
PM3N17S	1" NPT	75	PM3117S	M32x1.5	68	42	45	49	3GI1	14 ÷ 17	0,385
PM3N20S	"	"	PM3120S	"	"	"	"	"	3GI2	17 ÷ 20	"
PM3N23S	"	"	PM3123S	"	"	"	"	"	3GI3	20 ÷ 23	"
PM4N23S	1.1/4" NPT	75	PM4123S	M40x1.5	70	46	48	53	4GI1	20 ÷ 23	0,429
PM4N26S	"	"	PM4126S	"	"	"	"	"	4GI2	23 ÷ 26	"
PM4N29S	"	"	PM4129S	"	"	"	"	"	4GI3	26 ÷ 29	"
PM5N23S	1.1/2" NPT	75	PM5123S	M50x1.5	70	56	58	64	5GI1	20 ÷ 23	0,655
PM5N26S	"	"	PM5126S	"	"	"	"	"	5GI2	23 ÷ 26	"
PM5N29S	"	"	PM5129S	"	"	"	"	"	5GI3	26 ÷ 29	"
PM5N32S	"	"	PM5132S	"	"	"	"	"	5GI4	29 ÷ 32	"
PM5N35S	"	"	PM5135S	"	"	"	"	"	5GI5	32 ÷ 35	"
PM6N39S	2" NPT	75	PM6139S	M63x1.5	70	65	68	75	6GI1	35 ÷ 39	0,830
PM6N42S	"	"	PM6142S	"	"	"	"	"	6GI2	39 ÷ 42	"
PM6N45S	"	"	PM6145S	"	"	"	"	"	6GI3	42 ÷ 45	"

Example: PM3N20S

Order Coding

Type PM	Size 1/2/3/4/5/6	Threadings N = NPT ANSI B1.20 I = Metric ISO 262	Max Cable Diameter See Ød cable in the table	Material S = Stainless Steel AISI 316L B = Nickel Plated Brass
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CABLE GLANDS for ARMoured CABLE

series
PMA

Protection	Gas	1-2	II2G	Ex d IIC Gb / Ex e IIC Gb
	Dust	21-22	II2D	Ex tb IIIC Db

Degree of Protection	IP66
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Amb. Temp.	Standard	-40°C	+100°C
	Extended	-60°C	+180°C



Entries Threading	NPT ANSI B1.20 (N) or Metric ISO 262 (M)
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Material	Stainless Steel AISI 316L. EPDM Rings.
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Standards and Certificates



Directive 2014/34/EU (ATEX)

EN 60079 - 0 • EN 60079 - 1
EN 60079 - 7 • EN 60079 - 31



INERIS 10 ATEX 0029X

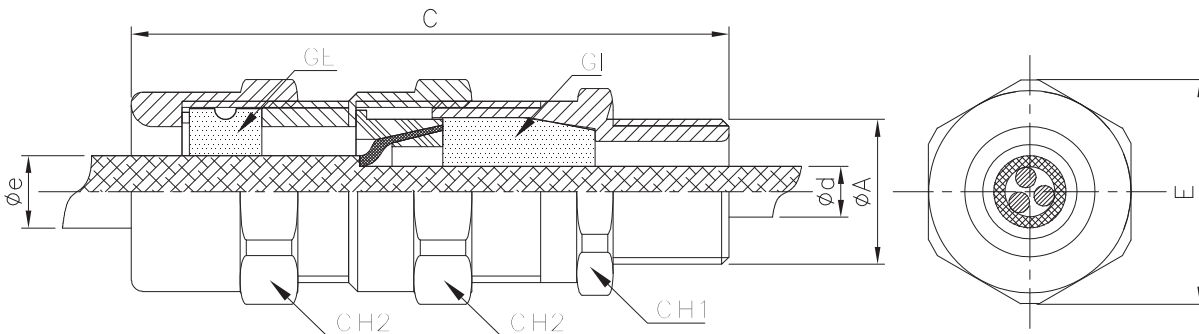


IEC 60079 - 0 • IEC 60079 - 1
IEC 60079 - 7 • IEC 60079 - 31

IECEx INE 14.0003X

Options

- Material: Nickel plated Brass (see page H04).
- Accessories: see page H13.
- KIT: cable gland supplied with whole range of available rings.
- Silicon rings.



NOTES

For the optimum choice of the cable glands see also sect. A

Extended temperature range only with Silicon rings.

NPT ANSI B1.20			METRIC ISO 262			CH1	CH2	E	GI	ød sheath (mm)	GE	øe cable (mm)	Weight (kg)
Code	ØA	C	Code	ØA	C								
PMA1N710S	1/2" NPT	85	PMA11710S	M20x1.5	83	26	28	31	1G11	4 ÷ 7	1GE1	6 ÷ 10	0,192
PMA1N913S	"	"	PMA11913S	"	"	"	"	"	1G12	7 ÷ 9,5	1GE2	10 ÷ 13	"
PMA1N1218S	"	"	PMA111218S	"	"	"	"	"	1G13	9 ÷ 12	1GE3	13 ÷ 18	"
PMA2N1218S	3/4" NPT	85	PMA211218S	M25x1.5	83	31	34	37	2G11	9 ÷ 12	2GE1	13 ÷ 18	0,253
PMA2N1418S	"	"	PMA211418S	"	"	"	"	"	2G12	12 ÷ 14,5	2GE1	13 ÷ 18	"
PMA2N1723S	"	"	PMA211723S	"	"	"	"	"	2G13	14 ÷ 17	2GE2	18 ÷ 23	"
PMA3N1723S	1" NPT	106	PMA311723S	M32x1.5	998	42	45	49	3G11	14 ÷ 17	3GE1	18 ÷ 23	0,546
PMA3N2026S	"	"	PMA312026S	"	"	"	"	"	3G12	17 ÷ 20	3GE2	21 ÷ 26	"
PMA3N2330S	"	"	PMA312330S	"	"	"	"	"	3G13	20 ÷ 23	3GE3	24 ÷ 30	"
PMA4N2330S	1.1/4" NPT	106	PMA412330S	M40x1.5	101	46	48	53	4G11	20 ÷ 23	4GE1	24 ÷ 30	0,600
PMA4N2635S	"	"	PMA412635S	"	"	"	"	"	4G12	23 ÷ 26	4GE2	29 ÷ 35	"
PMA4N2935S	"	"	PMA412935S	"	"	"	"	"	4G13	26 ÷ 29	4GE3	29 ÷ 35	"
PMA5N2331S	1.1/2" NPT	106	PMA512331S	M50x1.5	101	56	58	64	5G11	20 ÷ 23	5GE1	26 ÷ 31	0,884
PMA5N2637S	"	"	PMA512637S	"	"	"	"	"	5G12	23 ÷ 26	5GE2	31 ÷ 37	"
PMA5N2937S	"	"	PMA512937S	"	"	"	"	"	5G13	26 ÷ 29	5GE2	31 ÷ 37	"
PMA5N3243S	"	"	PMA513243S	"	"	"	"	"	5G14	29 ÷ 32	5GE3	36 ÷ 43	"
PMA5N3543S	"	"	PMA513543S	"	"	"	"	"	5G15	32 ÷ 35	5GE3	36 ÷ 43	"
PMA6N3946S	2" NPT	106	PMA613946S	M63x1.5	101	65	68	75	6G11	35 ÷ 39	6GE1	42 ÷ 46	1,081
PMA6N4249S	"	"	PMA614249S	"	"	"	"	"	6G12	39 ÷ 42	6GE2	45 ÷ 49	"
PMA6N4552S	"	"	PMA614552S	"	"	"	"	"	6G13	42 ÷ 45	6GE3	48 ÷ 52	"

Example: PMA3N2026S

Order Coding

Type
PMA

Size
1/2/3/4/5/6

Threading
N = NPT ANSI B1.20
I = Metric ISO 262

Max. Sheath Diameter below the armour
See **ød sheath** in the table

Max. Diameter Armoured Cable
See **øe cable** in the table

Material
S = Stainless Steel AISI 316L
B = Nickel plated Brass

CABLE GLANDS for NOT ARMoured CABLE with FEMALE BUSHING

series
PMF

Protection	Gas	Zone	1-2	II2G	Ex d IIC Gb / Ex e IIC Gb
	Dust		21-22	II2D	Ex tb IIIC Db

Degree of Protection	IP66
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Amb. Temp.	Standard	-40°C	+100°C
	Extended	-60°C	+180°C



Enries Threading	NPT ANSI B1.20 (N) or Metric ISO 262 (M)
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Material	Stainless Steel AISI 316L. EPDM Rings.
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Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079 - 0 • EN 60079 - 1
EN 60079 - 7 • EN 60079 - 31

CE INERIS 10 ATEX 0029X

IECEx

IEC 60079 - 0 • IEC 60079 - 1
IEC 60079 - 7 • IEC 60079 - 31

IECEx INE 14.0003X

Specific for not armoured cables, they have a female bushing for coupling with the flexible tube end.

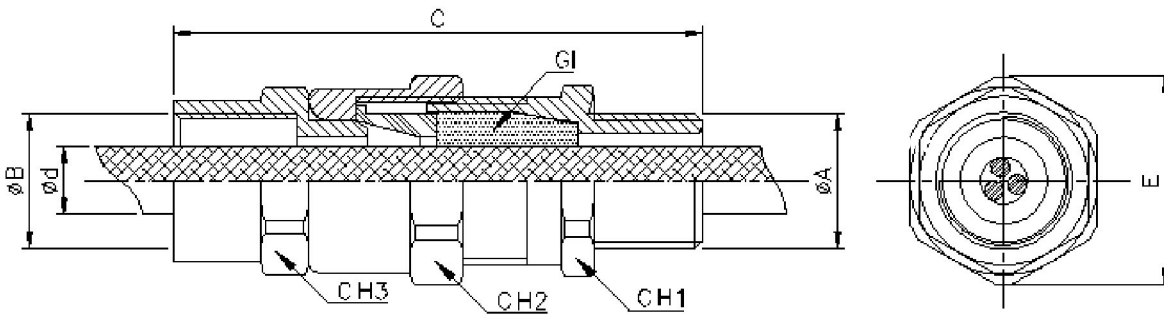
Options

- Material: Nickel plated Brass (see page H05).
- KIT: cable gland supplied with whole range of available rings.
- Accessories: see page H13.
- Silicon rings.
- Mixed configuration.

NOTES

For the optimum choice of the cable glands see also sect. A.

Extended temperature range only with Silicon rings.



NPT ANSI B1.20			METRIC ISO 262				CH1	CH2	CH3	E	GI	Ød cable (mm)	Weight (kg)	
Code	ØA	ØB	C	Code	ØA	ØB								C
PMF1N7S	1/2" NPT	1/2" NPT	82	PMF1I7S	M20x1.5	M20x1.5	80	26	28	24	31	1G11	4 ÷ 7	0,176
PMF1N9S	"	"	"	PMF1I9S	"	"	"	"	"	"	"	1G12	7 ÷ 9,5	"
PMF1N12S	"	"	"	PMF1I12S	"	"	"	"	"	"	"	1G13	9 ÷ 12	"
PMF2N12S	3/4" NPT	3/4" NPT	82	PMF2I12S	M25x1.5	M25x1.5	80	31	34	31	37	2G11	9 ÷ 12	0,243
PMF2N14S	"	"	"	PMF2I14S	"	"	"	"	"	"	"	2G12	12 ÷ 14,5	"
PMF2N17S	"	"	"	PMF2I17S	"	"	"	"	"	"	"	2G13	14 ÷ 17	"
PMF3N17S	1" NPT	1" NPT	102	PMF3I17S	M32x1.5	M32x1.5	97	42	37	45	49	3G11	14 ÷ 17	0,470
PMF3N20S	"	"	"	PMF3I20S	"	"	"	"	"	"	"	3G12	17 ÷ 20	"
PMF3N23S	"	"	"	PMF3I23S	"	"	"	"	"	"	"	3G13	20 ÷ 23	"
PMF4N23S	1.1/4" NPT	1.1/4" NPT	102	PMF4I23S	M40x1.5	M40x1.5	99	46	47	48	53	4G11	20 ÷ 23	0,584
PMF4N26S	"	"	"	PMF4I26S	"	"	"	"	"	"	"	4G12	23 ÷ 26	"
PMF4N29S	"	"	"	PMF4I29S	"	"	"	"	"	"	"	4G13	26 ÷ 29	"
PMF5N23S	1.1/2" NPT	1.1/2" NPT	102	PMF5I23S	M50x1.5	M50x1.5	99	56	56	58	64	5G11	20 ÷ 23	0,839
PMF5N26S	"	"	"	PMF5I26S	"	"	"	"	"	"	"	5G12	23 ÷ 26	"
PMF5N29S	"	"	"	PMF5I29S	"	"	"	"	"	"	"	5G13	26 ÷ 29	"
PMF5N32S	"	"	"	PMF5I32S	"	"	"	"	"	"	"	5G14	29 ÷ 32	"
PMF5N35S	"	"	"	PMF5I35S	"	"	"	"	"	"	"	5G15	32 ÷ 35	"
PMF6N39S	2" NPT	2" NPT	102	PMF6I39S	M63x1.5	M63x1.5	99	65	70	68	75	6G11	35 ÷ 39	1,118
PMF6N42S	"	"	"	PMF6I42S	"	"	"	"	"	"	"	6G12	39 ÷ 42	"
PMF6N45S	"	"	"	PMF6I45S	"	"	"	"	"	"	"	6G13	42 ÷ 45	"

Example: PMF3I20S

Order Coding

Type	Size	Threading	Max Cable Diameter	Material
PMF	1/2/3/4/5/6	N = NPT ANSI B1.20 I = Metric ISO 262	See Ød cable in the table	S = Stainless Steel AISI 316L B = Nickel plated Brass

CABLE GLANDS for NOT ARMoured CABLE with MALE BUSHING

series
PMM

Protection	Gas	Zone	1-2	II2G	Ex d IIC Gb / Ex e IIC Gb
	Dust	Zone	21-22	II2D	Ex tb IIIC Db

Degree of Protection	IP66
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Amb. Temp.	Standard	-40°C	+100°C
	Extended	-60°C	+180°C



Entries Threading	NPT ANSI B1.20 (N) or Metric ISO 262 (M)
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Material	Stainless Steel AISI 316L. EPDM Rings.
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Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079 - 0 • EN 60079 - 1
EN 60079 - 7 • EN 60079 - 31

CE INERIS 10 ATEX 0029X

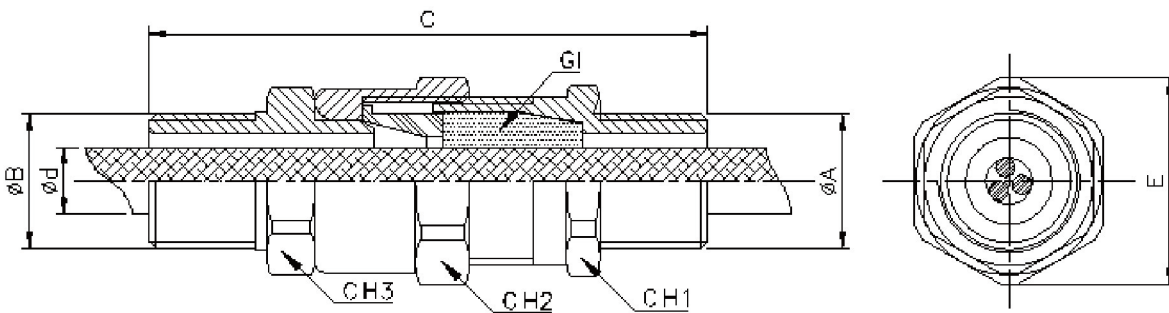
IECEX

IEC 60079 - 0 • IEC 60079 - 1
IEC 60079 - 7 • IEC 60079 - 31

IECEX INE 14.0003X

Specific for not armoured cables, they have a male bushing for coupling with the flexible tube end.

- Options**
- Material: Nickel plated Brass (see page H06).
 - KIT: cable gland supplied with whole range of available rings.
 - Accessories: see page H13.
 - Silicon rings.
 - Mixed configuration.



NOTES

For the optimum choice of the cable glands see also sect. A.

Extended temperature range only with Silicon rings.

NPT ANSI B1.20				METRIC ISO 262				CH1	CH2	CH3	E	GI	ød cable (mm)	Weight (kg)
Code	ØA	ØB	C	Code	ØA	ØB	C							
PMM1N7S	1/2" NPT	1/2" NPT	83	PMM1I7S	M20x1.5	M20x1.5	81	26	28	24	31	1GI1	4 ÷ 7	0,176
PMM1N9S	"	"	"	PMM1I9S	"	"	"	"	"	"	"	1GI2	7 ÷ 9,5	"
PMM1N12S	"	"	"	PMM1I12S	"	"	"	"	"	"	"	1GI3	9 ÷ 12	"
PMM2N12S	3/4" NPT	3/4" NPT	83	PMM2I12S	M25x1.5	M25x1.5	81	31	34	31	37	2GI1	9 ÷ 12	0,243
PMM2N14S	"	"	"	PMM2I14S	"	"	"	"	"	"	"	2GI2	12 ÷ 14,5	"
PMM2N17S	"	"	"	PMM2I17S	"	"	"	"	"	"	"	2GI3	14 ÷ 17	"
PMM3N17S	1" NPT	1" NPT	103	PMM3I17S	M32x1.5	M32x1.5	96	42	37	45	49	3GI1	14 ÷ 17	0,470
PMM3N20S	"	"	"	PMM3I20S	"	"	"	"	"	"	"	3GI2	17 ÷ 20	"
PMM3N23S	"	"	"	PMM3I23S	"	"	"	"	"	"	"	3GI3	20 ÷ 23	"
PMM4N23S	1.1/4" NPT	1.1/4" NPT	103	PMM4I23S	M40x1.5	M40x1.5	98	46	47	48	53	4GI1	20 ÷ 23	0,584
PMM4N26S	"	"	"	PMM4I26S	"	"	"	"	"	"	"	4GI2	23 ÷ 26	"
PMM4N29S	"	"	"	PMM4I29S	"	"	"	"	"	"	"	4GI3	26 ÷ 29	"
PMM5N23S	1.1/2" NPT	1.1/2" NPT	103	PMM5I23S	M50x1.5	M50x1.5	98	56	56	58	64	5GI1	20 ÷ 23	0,839
PMM5N26S	"	"	"	PMM5I26S	"	"	"	"	"	"	"	5GI2	23 ÷ 26	"
PMM5N29S	"	"	"	PMM5I29S	"	"	"	"	"	"	"	5GI3	26 ÷ 29	"
PMM5N32S	"	"	"	PMM5I32S	"	"	"	"	"	"	"	5GI4	29 ÷ 32	"
PMM5N35S	"	"	"	PMM5I35S	"	"	"	"	"	"	"	5GI5	32 ÷ 35	"
PMM6N39S	2" NPT	2" NPT	103	PMM6I39S	M63x1.5	M63x1.5	98	65	70	68	75	6GI1	35 ÷ 39	1,118
PMM6N42S	"	"	"	PMM6I42S	"	"	"	"	"	"	"	6GI2	39 ÷ 42	"
PMM6N45S	"	"	"	PMM6I45S	"	"	"	"	"	"	"	6GI3	42 ÷ 45	"

Example: PMM3I20S

Order Coding

Type
PMM

Size
1/2/3/4/5/6

Threading
N = NPT ANSI B1.20
I = Metric ISO 262

Max Cable Diameter
See **Ød cable** in the table

Material
S = Stainless Steel AISI 316L
B = Nickel plated Brass

CABLE GLANDS for NOT ARMoured CABLE

series
PA

Protection	Gas	1-2	II2G	Ex d IIC Gb / Ex e IIC Gb
	Dust	21-22	II2D	Ex tb IIIC Db

Degree of Protection	IP66
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Amb. Temp.	Standard	-40°C	+100°C
	Extended	-60°C	+180°C



Enables Threading	NPT ANSI B1.20 (N) or Metric ISO 262 (M)
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Material	Stainless Steel AISI 316L. EPDM Rings.
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Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079 - 0 • EN 60079 - 1
EN 60079 - 7 • EN 60079 - 31

CE INERIS 10 ATEX 0029X

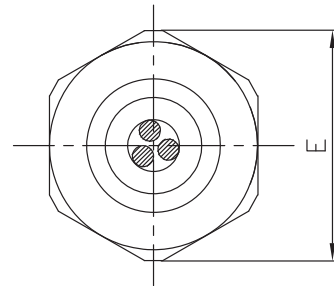
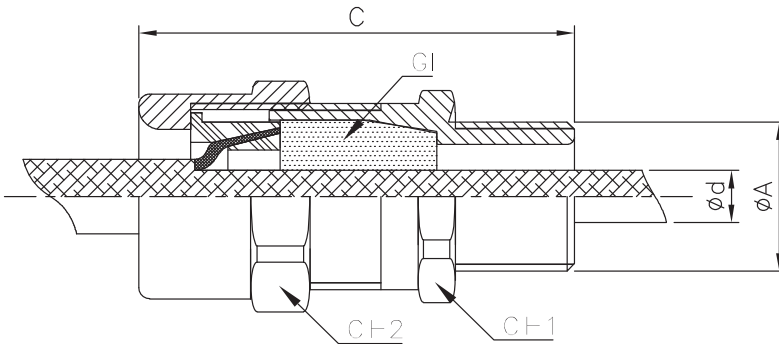
IECEx

IEC 60079 - 0 • IEC 60079 - 1
IEC 60079 - 7 • IEC 60079 - 31

IECEx INE 14.0003X

Options

- Material: Nickel plated brass (see page H07).
- Accessories: see page H13.
- KIT: cable gland supplied with whole range of available rings.
- Silicon rings.



NOTES

For the optimum choice of the cable glands see also sect. A

Extended temperature range only with Silicon rings.

NPT ANSI B1.20			METRIC ISO 262			CH1	CH2	E	GI	Ød cable (mm)	Weight (kg)
Code	ØA	C	Code	ØA	C						
PA1N7S	1/2" NPT	61	PA1I7S	M20x1.5	59	26	28	31	1GI1	4 ÷ 7	0,135
PA1N9S	"	"	PA1I9S	"	"	"	"	"	1GI2	7 ÷ 9,5	"
PA1N12S	"	"	PA1I12S	"	"	"	"	"	1GI3	9 ÷ 12	"
PA2N12S	3/4" NPT	61	PA2I12S	M25x1.5	59	31	34	37	2GI1	9 ÷ 12	0,173
PA2N14S	"	"	PA2I14S	"	"	"	"	"	2GI2	12 ÷ 14,5	"
PA2N17S	"	"	PA2I17S	"	"	"	"	"	2GI3	14 ÷ 17	"
PA3N17S	1" NPT	75	PA3I17S	M32x1.5	68	42	45	49	3GI1	14 ÷ 17	0,385
PA3N20S	"	"	PA3I20S	"	"	"	"	"	3GI2	17 ÷ 20	"
PA3N23S	"	"	PA3I23S	"	"	"	"	"	3GI3	20 ÷ 23	"
PA4N23S	1.1/4" NPT	75	PA4I23S	M40x1.5	70	46	48	53	4GI1	20 ÷ 23	0,429
PA4N26S	"	"	PA4I26S	"	"	"	"	"	4GI2	23 ÷ 26	"
PA4N29S	"	"	PA4I29S	"	"	"	"	"	4GI3	26 ÷ 29	"
PA5N23S	1.1/2" NPT	75	PA5I23S	M50x1.5	70	56	58	64	5GI1	20 ÷ 23	0,655
PA5N26S	"	"	PA5I26S	"	"	"	"	"	5GI2	23 ÷ 26	"
PA5N29S	"	"	PA5I29S	"	"	"	"	"	5GI3	26 ÷ 29	"
PA5N32S	"	"	PA5I32S	"	"	"	"	"	5GI4	29 ÷ 32	"
PA5N35S	"	"	PA5I35S	"	"	"	"	"	5GI5	32 ÷ 35	"
PA6N39S	2" NPT	75	PA6I39S	M63x1.5	70	65	68	75	6GI1	35 ÷ 39	0,830
PA6N42S	"	"	PA6I42S	"	"	"	"	"	6GI2	39 ÷ 42	"
PA6N45S	"	"	PA6I45S	"	"	"	"	"	6GI3	42 ÷ 45	"

Example: PA3N20S

Order Coding

Type PA	Size 1/2/3/4/5/6	Threadings N = NPT ANSI B1.20 I = Metric ISO 262	Max Cable Diameter See Ød cable in the table	Material S = Stainless Steel AISI 316L B = Nickel Plated Brass
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SEALING CABLE GLANDS for NOT ARMoured CABLE

series
PMX

Protection	Gas	Zone	1-2	II2G	Ex d IIC Gb / Ex e IIC Gb
	Dust	Zone	21-22	II2D	Ex tb IIIC Db

Degree of Protection	IP66
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Amb. Temp.	Standard	-40°C	+100°C
	Extended	-60°C	+180°C



Entries Threading	NPT ANSI B1.20 (N) or Metric ISO 262 (M)
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Material	Stainless Steel AISI 316L. EPDM Rings.
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Standards and Certificates



Directive 2014/34/EU (ATEX)

EN 60079 - 0 • EN 60079 - 1
EN 60079 - 7 • EN 60079 - 31



INERIS 10 ATEX 0029X

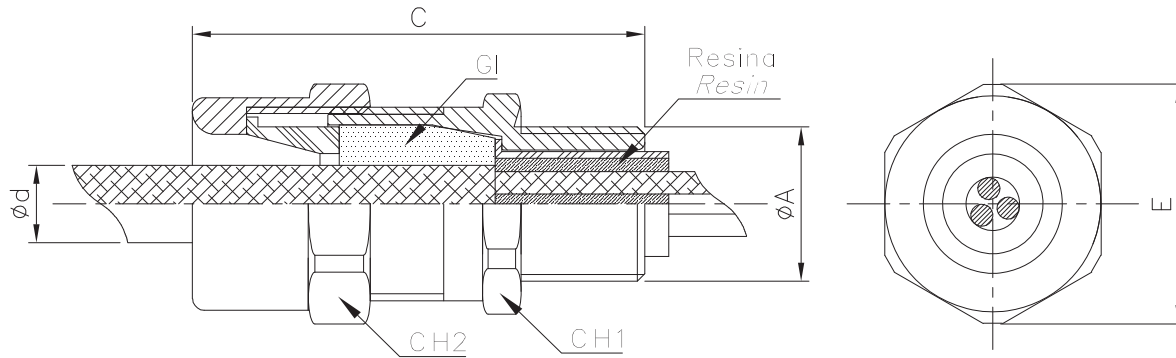


IEC 60079 - 0 • IEC 60079 - 1
IEC 60079 - 7 • IEC 60079 - 31

IECEx INE 14.0003X

Options

- Material: Nickel plated Brass (see page H08).
- Accessories: see page H13.
- KIT: cable gland supplied with whole range of available rings.
- Silicon rings.



NOTES

For the optimum choice of the cable glands see also sect. A

Extended temperature range only with Silicon rings.

Further information on resin on page H14.

NPT ANSI B1.20			METRIC ISO 262			CH1	CH2	E	GI	Ød cable (mm)	Weight (kg)
Code	ØA	C	Code	ØA	C						
PMX1N7S	1/2" NPT	61	PMX1I7S	M20x1.5	59	26	28	31	1GI1	4 ÷ 7	0,142
PMX1N9S	"	"	PMX1I9S	"	"	"	"	"	1GI2	7 ÷ 9,5	"
PMX1N12S	"	"	PMX1I12S	"	"	"	"	"	1GI3	9 ÷ 12	"
PMX2N12S	3/4" NPT	61	PMX2I12S	M25x1.5	59	31	34	37	2GI1	9 ÷ 12	0,183
PMX2N14S	"	"	PMX2I14S	"	"	"	"	"	2GI2	12 ÷ 14,5	"
PMX2N17S	"	"	PMX2I17S	"	"	"	"	"	2GI3	14 ÷ 17	"
PMX3N17S	1" NPT	75	PMX3I17S	M32x1.5	68	42	45	49	3GI1	14 ÷ 17	0,405
PMX3N20S	"	"	PMX3I20S	"	"	"	"	"	3GI2	17 ÷ 20	"
PMX3N23S	"	"	PMX3I23S	"	"	"	"	"	3GI3	20 ÷ 23	"
PMX4N23S	1.1/4" NPT	75	PMX4I23S	M40x1.5	70	46	48	53	4GI1	20 ÷ 23	0,453
PMX4N26S	"	"	PMX4I26S	"	"	"	"	"	4GI2	23 ÷ 26	"
PMX4N29S	"	"	PMX4I29S	"	"	"	"	"	4GI3	26 ÷ 29	"
PMX5N23S	1.1/2" NPT	75	PMX5I23S	M50x1.5	70	56	58	64	5GI1	20 ÷ 23	0,685
PMX5N26S	"	"	PMX5I26S	"	"	"	"	"	5GI2	23 ÷ 26	"
PMX5N29S	"	"	PMX5I29S	"	"	"	"	"	5GI3	26 ÷ 29	"
PMX5N32S	"	"	PMX5I32S	"	"	"	"	"	5GI4	29 ÷ 32	"
PMX5N35S	"	"	PMX5I35S	"	"	"	"	"	5GI5	32 ÷ 35	"
PMX6N39S	2" NPT	75	PMX6I39S	M63x1.5	70	65	68	75	6GI1	35 ÷ 39	0,836
PMX6N42S	"	"	PMX6I42S	"	"	"	"	"	6GI2	39 ÷ 42	"
PMX6N45S	"	"	PMX6I45S	"	"	"	"	"	6GI3	42 ÷ 45	"

Example: PMX3N20S

Order Coding

Type

PMX

Size

1/2/3/4/5/6

Threadings

N = NPT ANSI B1.20
I = Metric ISO 262

Max Cable Diameter

See **Ød cable** in the table

Material

S = Stainless Steel AISI 316L
B = Nickel Plated Brass

SEALING CABLE GLANDS for ARMoured CABLES

series
PMAX

Protection	Gas	1-2	II2G	Ex d IIC Gb / Ex e IIC Gb
	Dusts	21-22	II2D	Ex tb IIIC Db

Degree of Protection
IP66

Amb. Temp.	Standard	-40°C	+100°C
	Extended	-60°C	+180°C



Entries Threading
NPT ANSI B1.20 (N) or Metric ISO 262 (M)

Material
Stainless Steel AISI 316L. EPDM Rings.

Standards and Certificates



Directive 2014/34/EU (ATEX)

EN 60079 - 0 • EN 60079 - 1
EN 60079 - 7 • EN 60079 - 31



INERIS 10 ATEX 0029X

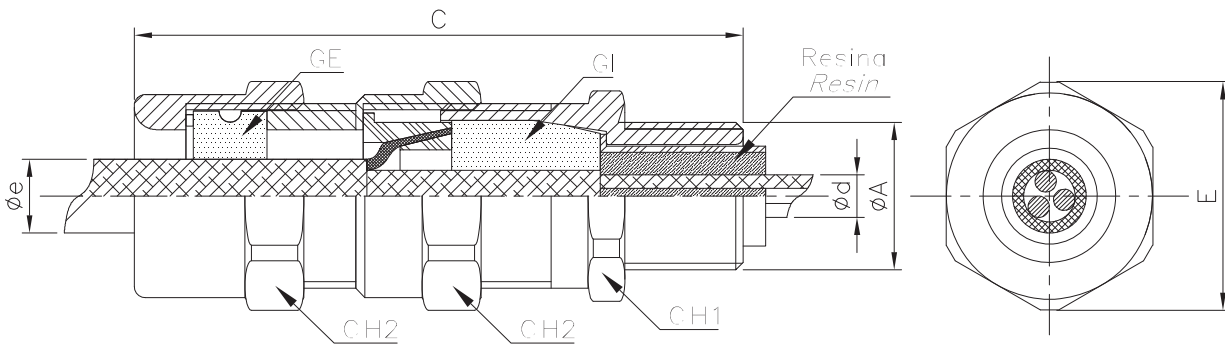


IEC 60079 - 0 • IEC 60079 - 1
IEC 60079 - 7 • IEC 60079 - 31

IECEx INE 14.0003X

Options

- Material: Nickel plated Brass (see page H09).
- Accessories: see page H13.
- KIT: cable glands supplied with whole range of available rings.
- Silicon rings.



NOTES

For the optimum choice of the cable glands see also sect. A.

Extended temperature range only with Silicon rings.

Further information on resin on page H14.

NPT ANSI B1.20			METRIC ISO 262			CH1	CH2	E	GI	$\varnothing d$ sheath (mm)	GE	$\varnothing e$ cable (mm)	Weight (kg)
Code	$\varnothing A$	C	Code	$\varnothing A$	C								
PMAX1N710S	1/2" NPT	85	PMAX1I710S	M20x1.5	83	26	28	31	1G11	4 ÷ 7	1GE1	6 ÷ 10	0,198
PMAX1N913S	"	"	PMAX1I913S	"	"	"	"	"	1G12	7 ÷ 9,5	1GE2	10 ÷ 13	"
PMAX1N1218S	"	"	PMAX1I1218S	"	"	"	"	"	1G13	9 ÷ 12	1GE3	13 ÷ 18	"
PMAX2N1218S	3/4" NPT	85	PMAX2I1218S	M25x1.5	83	31	34	37	2G11	9 ÷ 12	2GE1	13 ÷ 18	0,262
PMAX2N1418S	"	"	PMAX2I1418S	"	"	"	"	"	2G12	12 ÷ 14,5	2GE1	13 ÷ 18	"
PMAX2N1723S	"	"	PMAX2I1723S	"	"	"	"	"	2G13	14 ÷ 17	2GE2	18 ÷ 23	"
PMAX3N1723S	1" NPT	106	PMAX3I1723S	M32x1.5	99	42	45	49	3G11	14 ÷ 17	3GE1	18 ÷ 23	0,566
PMAX3N2026S	"	"	PMAX3I2026S	"	"	"	"	"	3G12	17 ÷ 20	3GE2	21 ÷ 26	"
PMAX3N2330S	"	"	PMAX3I2330S	"	"	"	"	"	3G13	20 ÷ 23	3GE3	24 ÷ 30	"
PMAX4N2330S	1.1/4" NPT	106	PMAX4I2330S	M40x1.5	101	46	48	53	4G11	20 ÷ 23	4GE1	24 ÷ 30	0,624
PMAX4N2635S	"	"	PMAX4I2635S	"	"	"	"	"	4G12	23 ÷ 26	4GE2	29 ÷ 35	"
PMAX4N2935S	"	"	PMAX4I2935S	"	"	"	"	"	4G13	26 ÷ 29	4GE3	29 ÷ 35	"
PMAX5N2331S	1.1/2" NPT	106	PMAX5I2331S	M50x1.5	101	56	58	64	5G11	20 ÷ 23	5GE1	26 ÷ 31	0,914
PMAX5N2637S	"	"	PMAX5I2637S	"	"	"	"	"	5G12	23 ÷ 26	5GE2	31 ÷ 37	"
PMAX5N2937S	"	"	PMAX5I2937S	"	"	"	"	"	5G13	26 ÷ 29	5GE2	31 ÷ 37	"
PMAX5N3243S	"	"	PMAX5I3243S	"	"	"	"	"	5G14	29 ÷ 32	5GE3	36 ÷ 43	"
PMAX5N3543S	"	"	PMAX5I3543S	"	"	"	"	"	5G15	32 ÷ 35	5GE3	36 ÷ 43	"
PMAX6N3946S	2" NPT	106	PMAX6I3946S	M63x1.5	101	65	68	75	6G11	35 ÷ 39	6GE1	42 ÷ 46	1,087
PMAX6N4249S	"	"	PMAX6I4249S	"	"	"	"	"	6G12	39 ÷ 42	6GE2	45 ÷ 49	"
PMAX6N4552S	"	"	PMAX6I4552S	"	"	"	"	"	6G13	42 ÷ 45	6GE3	48 ÷ 52	"

Example: PMAX3N2026S

Order Coding

Type
PMAX

Size
1/2/3/4/5/6

Threading
N = NPT ANSI B1.20
I = Metric ISO 262

Max. Sheath Diameter below the armour
See $\varnothing d$ sheath in the table

Max. Diameter Armoured Cable
See $\varnothing e$ cable in the table

Material
S = Stainless Steel AISI 316L
B = Nickel plated Brass

SEALING CABLE GLANDS for NOT ARMoured CABLE with FEMALE BUSHING

series
PMFX

Protection	Gas	Zone	1-2	II2G	Ex d IIC Gb / Ex e IIC Gb
	Dust	Zone	21-22	II2D	Ex tb IIIC Db

Degree of Protection	IP66
----------------------	------

Amb. Temp.	Standard		-40°C		+100°C
	Extended		-60°C		+180°C



Entries Threading	NPT ANSI B1.20 (N) or Metric ISO 262 (M)
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Material	Stainless Steel AISI 316L EPDM Rings.
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Standards and Certificates



Directive 2014/34/EU (ATEX)

EN 60079 - 0 • EN 60079 - 1
EN 60079 - 7 • EN 60079 - 31



INERIS 10 ATEX 0029X

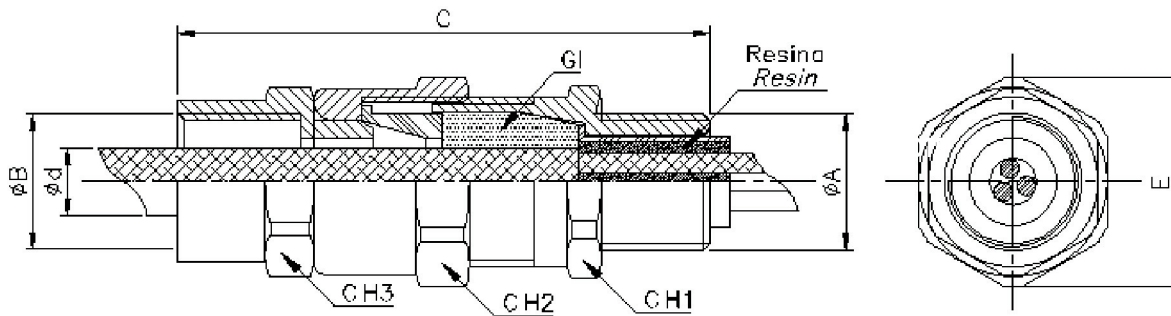


IEC 60079 - 0 • IEC 60079 - 1
IEC 60079 - 7 • IEC 60079 - 31

IECEx INE 14.0003X

Specific for not armoured cables, they have a female bushing for coupling with the flexible tube end.

- | | | |
|---------|--|------------------------|
| Options | - Material: Nickel plated Brass (see page H10). | - Silicon rings. |
| | - KIT: cable gland supplied with whole range of available rings. | - Mixed configuration. |
| | - Accessories: see page H13. | |



NOTES

For the optimum choice of the cable glands see also sect. A.

Extended temperature range only with Silicon rings.

Further information on resin on page H14.

NPT ANSI B1.20				METRIC ISO 262				CH1	CH2	CH3	E	GI	Ød cable (mm)	Weight (kg)
Code	ØA	ØB	C	Code	ØA	ØB	C							
PMFX1N7S	1/2" NPT	1/2" NPT	82	PMFX1I7S	M20x1.5	M20x1.5	80	26	28	24	31	1GI1	4 ÷ 7	0,183
PMFX1N9S	"	"	"	PMFX1I9S	"	"	"	"	"	"	"	1GI2	7 ÷ 9,5	"
PMFX1N12S	"	"	"	PMFX1I12S	"	"	"	"	"	"	"	1GI3	9 ÷ 12	"
PMFX2N12S	3/4" NPT	3/4" NPT	82	PMFX2I12S	M25x1.5	M25x1.5	80	31	34	31	37	2GI1	9 ÷ 12	0,251
PMFX2N14S	"	"	"	PMFX2I14S	"	"	"	"	"	"	"	2GI2	12 ÷ 14,5	"
PMFX2N17S	"	"	"	PMFX2I17S	"	"	"	"	"	"	"	2GI3	14 ÷ 17	"
PMFX3N17S	1" NPT	1" NPT	102	PMFX3I17S	M32x1.5	M32x1.5	95	42	45	45	49	3GI1	14 ÷ 17	0,486
PMFX3N20S	"	"	"	PMFX3I20S	"	"	"	"	"	"	"	3GI2	17 ÷ 20	"
PMFX3N23S	"	"	"	PMFX3I23S	"	"	"	"	"	"	"	3GI3	20 ÷ 23	"
PMFX4N23S	1.1/4" NPT	1.1/4" NPT	102	PMFX4I23S	M40x1.5	M40x1.5	97	46	48	48	53	4GI1	20 ÷ 23	0,604
PMFX4N26S	"	"	"	PMFX4I26S	"	"	"	"	"	"	"	4GI2	23 ÷ 26	"
PMFX4N29S	"	"	"	PMFX4I29S	"	"	"	"	"	"	"	4GI3	26 ÷ 29	"
PMFX5N23S	1.1/2" NPT	1.1/2" NPT	102	PMFX5I23S	M50x1.5	M50x1.5	97	56	58	58	64	5GI1	20 ÷ 23	0,864
PMFX5N26S	"	"	"	PMFX5I26S	"	"	"	"	"	"	"	5GI2	23 ÷ 26	"
PMFX5N29S	"	"	"	PMFX5I29S	"	"	"	"	"	"	"	5GI3	26 ÷ 29	"
PMFX5N32S	"	"	"	PMFX5I32S	"	"	"	"	"	"	"	5GI4	29 ÷ 32	"
PMFX5N35S	"	"	"	PMFX5I35S	"	"	"	"	"	"	"	5GI5	32 ÷ 35	"
PMFX6N39S	2" NPT	2" NPT	102	PMFX6I39S	M63x1.5	M63x1.5	97	65	68	68	75	6GI1	35 ÷ 39	1,157
PMFX6N42S	"	"	"	PMFX6I42S	"	"	"	"	"	"	"	6GI2	39 ÷ 42	"
PMFX6N45S	"	"	"	PMFX6I45S	"	"	"	"	"	"	"	6GI3	42 ÷ 45	"

Example: PMFX3I20S

Order
Coding

Type
PMFX

Size
1/2/3/4/5/6

Threading
N = NPT ANSI B1.20
I = Metric ISO 262

Max. Cable Diameter
See **Ød cable**
in the table

Material
S = Stainless Steel AISI 316L
B = Nickel plated Steel

SEALING CABLE GLANDS for NOT ARMoured CABLE with MALE BUSHING

series
PMMX

Protection	Gas	Zone	1-2	II2G	Ex d IIC Gb / Ex e IIC Gb
	Dust		21-22	II2D	Ex tb IIIC Db

Degree of Protection	IP66
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Amb. Temp.	Standard	-40°C	+100°C
	Extended	-60°C	+180°C



Entries Threading	NPT ANSI B1.20 (N) or Metric ISO 262 (M)
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Material	Stainless Steel AISI 316L. EPDM Rings.
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Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079 - 0 • EN 60079 - 1
EN 60079 - 7 • EN 60079 - 31

CE INERIS 10 ATEX 0029X

IEC 60079 - 0 • IEC 60079 - 1
IEC 60079 - 7 • IEC 60079 - 31

IECEx INE 14.0003X

Specific for not armoured cables, they have a male bushing for coupling with the flexible tube end.

Options

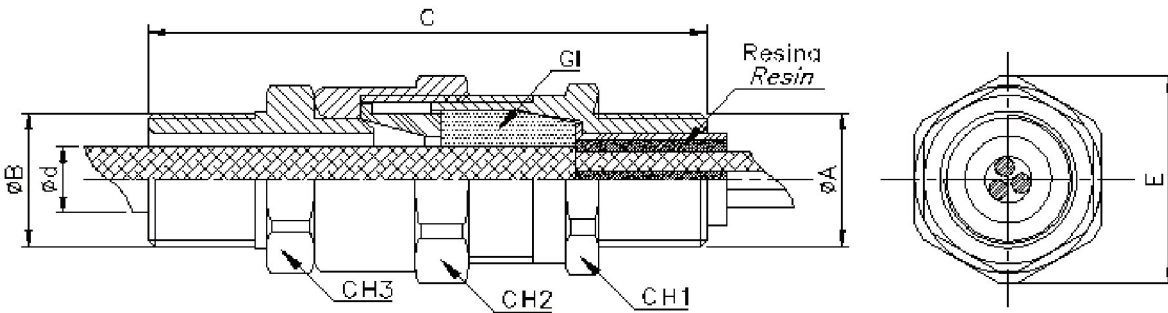
- Material: Nickel plated Brass (see page H11).
- KIT: cable gland supplied with whole range of available rings.
- Accessories: see page H13.
- Silicon rings.
- Mixed configuration.

NOTES

For the optimum choice of the cable glands see also sect. A.

Extended temperature range only with Silicon rings.

Further information on resin on page H14.



NPT ANSI B1.20				METRIC ISO 262				CH1	CH2	CH3	E	GI	Ød cable (mm)	Weight (kg)
Code	ØA	ØB	C	Code	ØA	ØB	C							
PMMX1N7S	1/2" NPT	1/2" NPT	83	PMMX1I7S	M20x1.5	M20x1.5	81	26	28	24	31	1GI1	4 ÷ 7	0,183
PMMX1N9S	"	"	"	PMMX1I9S	"	"	"	"	"	"	"	1GI2	7 ÷ 9,5	"
PMMX1N12S	"	"	"	PMMX1I12S	"	"	"	"	"	"	"	1GI3	9 ÷ 12	"
PMMX2N12S	3/4" NPT	3/4" NPT	83	PMMX2I12S	M25x1.5	M25x1.5	81	31	34	31	37	2GI1	9 ÷ 12	0,251
PMMX2N14S	"	"	"	PMMX2I14S	"	"	"	"	"	"	"	2GI2	12 ÷ 14,5	"
PMMX2N17S	"	"	"	PMMX2I17S	"	"	"	"	"	"	"	2GI3	14 ÷ 17	"
PMMX3N17S	1" NPT	1" NPT	103	PMMX3I17S	M32x1.5	M32x1.5	96	42	45	45	49	3GI1	14 ÷ 17	0,486
PMMX3N20S	"	"	"	PMMX3I20S	"	"	"	"	"	"	"	3GI2	17 ÷ 20	"
PMMX3N23S	"	"	"	PMMX3I23S	"	"	"	"	"	"	"	3GI3	20 ÷ 23	"
PMMX4N23S	1.1/4" NPT	1.1/4" NPT	103	PMMX4I23S	M40x1.5	M40x1.5	98	46	48	48	53	4GI1	20 ÷ 23	0,604
PMMX4N26S	"	"	"	PMMX4I26S	"	"	"	"	"	"	"	4GI2	23 ÷ 26	"
PMMX4N29S	"	"	"	PMMX4I29S	"	"	"	"	"	"	"	4GI3	26 ÷ 29	"
PMMX5N23S	1.1/2" NPT	1.1/2" NPT	103	PMMX5I23S	M50x1.5	M50x1.5	98	56	58	58	64	5GI1	20 ÷ 23	0,864
PMMX5N26S	"	"	"	PMMX5I26S	"	"	"	"	"	"	"	5GI2	23 ÷ 26	"
PMMX5N29S	"	"	"	PMMX5I29S	"	"	"	"	"	"	"	5GI3	26 ÷ 29	"
PMMX5N32S	"	"	"	PMMX5I32S	"	"	"	"	"	"	"	5GI4	29 ÷ 32	"
PMMX5N35S	"	"	"	PMMX5I35S	"	"	"	"	"	"	"	5GI5	32 ÷ 35	"
PMMX6N39S	2" NPT	2" NPT	103	PMMX6I39S	M63x1.5	M63x1.5	98	65	68	68	75	6GI1	35 ÷ 39	1,157
PMMX6N42S	"	"	"	PMMX6I42S	"	"	"	"	"	"	"	6GI2	39 ÷ 42	"
PMMX6N45S	"	"	"	PMMX6I45S	"	"	"	"	"	"	"	6GI3	42 ÷ 45	"

Example: PMMX3I20S

Order Coding

Type

PMMX

Size

1/2/3/4/5/6

Threading

N = NPT ANSI B1.20
I = Metric ISO 262

Max Cable Diameter

See **Ød cable** in the table

Material

S = Stainless Steel AISI 316L
B = Nickel plated Brass

SEALING CABLE GLANDS for NOT ARMoured CABLE

series
PAX

Protection	Gas	Zone	1-2	II2G	Ex d IIC Gb / Ex e IIC Gb
	Dust	Zone	21-22	II2D	Ex tb IIIC Db

Degree of Protection	IP66
----------------------	------

Amb. Temp.	Standard	Extended	-40°C	+100°C
			-60°C	+180°C



Entries Threading	NPT ANSI B1.20 (N) or Metric ISO 262 (M)
-------------------	--

Material	Stainless Steel AISI 316L. EPDM Rings.
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Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079 - 0 • EN 60079 - 1
EN 60079 - 7 • EN 60079 - 31

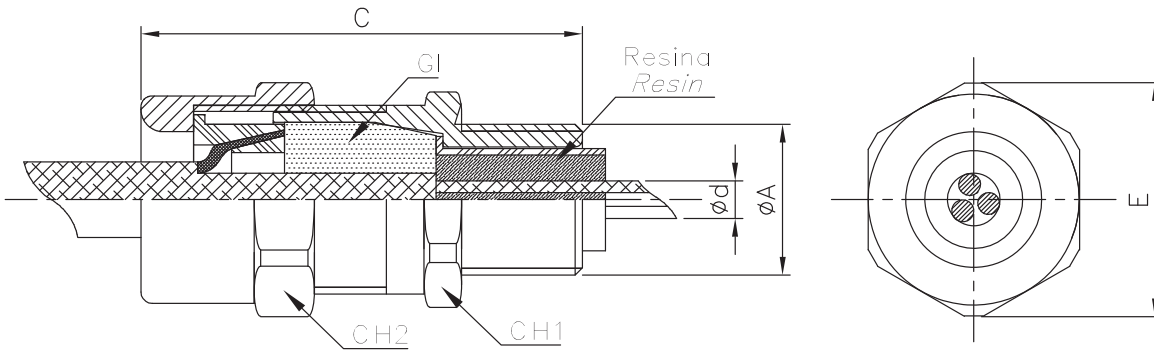
INERIS 10 ATEX 0029X

IEC 60079 - 0 • IEC 60079 - 1
IEC 60079 - 7 • IEC 60079 - 31

IECEx INE 14.0003X

Options

- Material: Nickel plated Brass (see page H12).
- Accessories: see page H13.
- KIT: cable gland supplied with whole range of available rings.
- Silicon rings.



NOTES

For the optimum choice of the cable glands see also sect. A

Extended temperature range only with Silicon rings.

Further information on resin on page H14.

NPT ANSI B1.20			METRIC ISO 262			CH1	CH2	E	GI	ød cable (mm)	Weight (kg)
Code	øA	C	Code	øA	C						
PAX1N7S	1/2" NPT	61	PAX1I7S	M20x1.5	59	26	28	31	1GI1	4 ÷ 7	0,142
PAX1N9S	"	"	PAX1I9S	"	"	"	"	"	1GI2	7 ÷ 9,5	"
PAX1N12S	"	"	PAX1I12S	"	"	"	"	"	1GI3	9 ÷ 12	"
PAX2N12S	3/4" NPT	61	PAX2I12S	M25x1.5	59	31	34	37	2GI1	9 ÷ 12	0,183
PAX2N14S	"	"	PAX2I14S	"	"	"	"	"	2GI2	12 ÷ 14,5	"
PAX2N17S	"	"	PAX2I17S	"	"	"	"	"	2GI3	14 ÷ 17	"
PAX3N17S	1" NPT	75	PAX3I17S	M32x1.5	68	42	45	49	3GI1	14 ÷ 17	0,405
PAX3N20S	"	"	PAX3I20S	"	"	"	"	"	3GI2	17 ÷ 20	"
PAX3N23S	"	"	PAX3I23S	"	"	"	"	"	3GI3	20 ÷ 23	"
PAX4N23S	1.1/4" NPT	75	PAX4I23S	M40x1.5	70	46	48	53	4GI1	20 ÷ 23	0,453
PAX4N26S	"	"	PAX4I26S	"	"	"	"	"	4GI2	23 ÷ 26	"
PAX4N29S	"	"	PAX4I29S	"	"	"	"	"	4GI3	26 ÷ 29	"
PAX5N23S	1.1/2" NPT	75	PAX5I23S	M50x1.5	70	56	58	64	5GI1	20 ÷ 23	0,685
PAX5N26S	"	"	PAX5I26S	"	"	"	"	"	5GI2	23 ÷ 26	"
PAX5N29S	"	"	PAX5I29S	"	"	"	"	"	5GI3	26 ÷ 29	"
PAX5N32S	"	"	PAX5I32S	"	"	"	"	"	5GI4	29 ÷ 32	"
PAX5N35S	"	"	PAX5I35S	"	"	"	"	"	5GI5	32 ÷ 35	"
PAX6N39S	2" NPT	75	PAX6I39S	M63x1.5	70	65	68	75	6GI1	35 ÷ 39	0,836
PAX6N42S	"	"	PAX6I42S	"	"	"	"	"	6GI2	39 ÷ 42	"
PAX6N45S	"	"	PAX6I45S	"	"	"	"	"	6GI3	42 ÷ 45	"

Example: PAX3N20S

Order Coding

Type
PAX

Size
1/2/3/4/5/6

Threadings
N = NPT ANSI B1.20
I = Metric ISO 262

Max Cable Diameter
See **ød cable** in the table

Material
S = Stainless Steel AISI 316L
B = Nickel Plated Brass

BENDS

series
ELF

Protection	Gas	1-2	II2G	Ex d I Mb Ex d IIC Gb Ex e IIC Gb
	Dusts	21-22	II2D	Ex tb IIIC Db

Degree of Protection	IP66
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Amb. Temp.	Standard	-20°C	+40°C
	Extended	-60°C	+180°C



Entries Threading	NPT ANSI B1.20 or Metric ISO 262
-------------------	----------------------------------

Material	Stainless Steel 316L
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Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079 - 0 • EN 60079 - 1
EN 60079 - 7 • EN 60079 - 31

CE INERIS 14 ATEX 0029X

IECEx

IEC 60079 - 0 • IEC 60079 - 1
IEC 60079 - 7 • IEC 60079 - 31

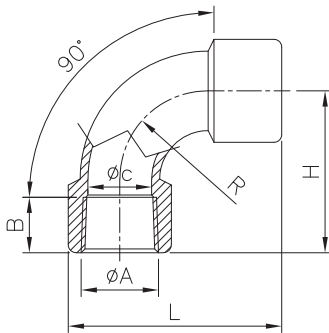
IECEx INE 14.0038X

• 90° Bends Series ELF are used in the electrical installation in tube.

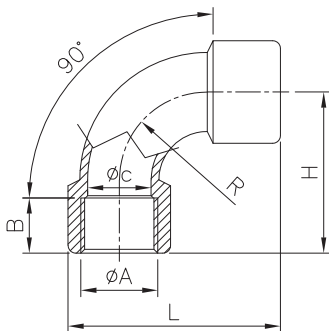
Options

- Materials: Nickel Plated Brass (B)

- Size greater than 3".



Code	Dimensions (mm)						Weight (g)
	ØA	B	Øc	L	H	R	
ELF 38	3/8" NPT	17	10	61	50	30	120
ELF 1	1/2" NPT	19	14	68	55	30	170
ELF 2	3/4" NPT	19	20	71	55	30	230
ELF 3	1" NPT	24	25	85	65	35	430
ELF 4	1.1/4" NPT	24	32	99	75	45	500
ELF 5	1.1/2" NPT	24	40	114	85	55	630
ELF 6	2" NPT	24	50	136	100	70	1100
ELF 7	2.1/2" NPT	32	60	178	135	95	2300
ELF 8	3" NPT	32	76	210	160	120	4100



Code	Dimensions (mm)						Weight (g)
	ØA	B	Øc	L	H	R	
ELF 16	M16x1.5	17	10	61	50	30	120
ELF 20	M20x1.5	19	14	68	55	30	170
ELF 25	M25x1.5	19	20	71	55	30	230
ELF 32	M32x1.5	24	25	85	65	35	430
ELF 40	M40x1.5	24	32	99	75	45	500
ELF 50	M50x1.5	24	40	114	85	55	770
ELF 63	M63x1.5	24	50	136	100	70	1240
ELF 75	M75x1.5	24	60	178	135	95	2230
ELF 90	M90x1.5	24	76	210	160	120	3100

NOTES

- Extended operating temperature range is -40°C ÷ +100°C with EPDM O-ring.
- Extended operating temperature range is -60°C ÷ +180°C with Silicone O-ring.

- The fitting may be mounted on electrical equipment suitable for group IM2 (firedamp mines) if it is not made of Aluminum light alloy. The resulting mode of protection will be: Ex d I Mb.

Example: ELF3S

Order Coding

Type
ELF

Size and Threading
38/1/2/3/4/5/6/7/8 = NPT ANSI B1.20
16/20/25/32/40/50/63/75/80/85/90 = Metric ISO 262

Material
B = Nickel Plated Brass
S = Stainless Steel AISI 316L

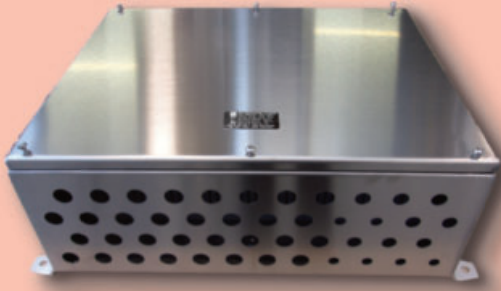
Ex-e Stainless Steel BOXES for TERMINALS and CONTROL/SIGNALING OPERATORS

**series
CBX**

Protection	Gas	1-2	II2G	Ex eb IIC T6/T5/T4 Gb
	Dust	21-22	II2D	Ex tb IIIC T85°C/T100°C/T135°C Db

Degree of Protection	IP65/66
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Amb. Temp.	Standard	-20°C	+40°C
	Extended	-60°C	+65°C



Entries Threading	Through or threaded holes
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Material	Stainless Steel AISI 316L
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Painting	See Options
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Standards and Certificates

Directive 2014/34/UE (ATEX)

EN 60079-0 • EN 60079-1 • EN 60079-7 • EN 60079-11 • EN 60079-18 • EN 60079-31 • EN 60529

CE **IMQ 20 ATEX 036X**

IECEX

IEC 60079-0 • IEC 60079-1 • IEC 60079-7 • IEC 60079-11 • IEC 60079-18 • IEC 60079-31

IECEX IMQ 20.0004X

These boxes are mainly used for:

- Junction and/or cables pulling.
- Sorting of barrier signals and/or transposition signals on field to control rooms like Field-Bus; Mod-Bus and Profi-Bus for analogical, digital and/or measurement signals such as thermocouples, 4 ÷ 20 mA signals, etc.
- Available also complete of a wide range of control and signaling units (see page J05).
- Connections must be performed through cable entries according to IEC / EN 60079-14 standard completed with certified components following IEC / EN 60079-0, IEC / EN 60079-1, IEC / EN 60079-7, IEC / EN 60079-31 Standards.
- Do not add gaskets if not provided by the manufacturer.
- When the cable glands is not equipped with an anti breakage system, the user shall complete the box with an alternative system to avoid the transmission of mechanical stresses to the terminals and cable glands.
- Unused holes must be closed with metallic or plastic plugs, with the same dimensional characteristics of the cable glands as well as certified according to IEC / EN 60079-0, IEC / EN 60079-1, IEC / EN 60079-7, IEC / EN 60079-31 Standards.

Options

- Hinges kit with 180° opening applicable to the "VV" version only.
- Removable flanges (from 1 to 4 for CBX 222215 and available higher sizes). (**)
- High thickness flanges (in case of threaded entries - see page J07).

- Stainless steel document pockets (see page J07).
- External painting: according to customer specification.
- EAC approval.

NOTES

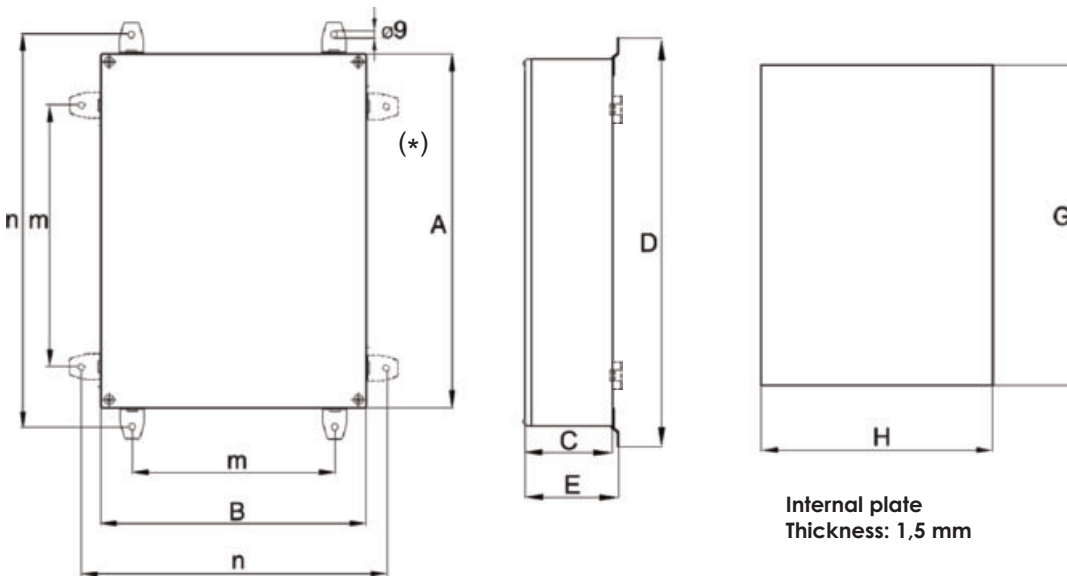
The drawing is valid for dimensional data only.

For enclosure cable entries layout, please refer to page J04.

The Ambient Temperature range, Temperature Class and maximum Surface Temperature are always strictly related to the components installed inside the box (terminals or control and/or signaling units).

(*) Fixing brackets may be installed either perpendicularly to the long or to the short side.

(**) The removable flanges cause a reduction of the available drilling area hence reducing the number of cable entries achievable on the wall. Please contact our Technical/Sales Department for further information.



Example: CBX 44315-CV-2FC 2FL

Order Coding

Type	CBX
	External Dimensions
	44 = A
	33 = B
	15 = C
Lid Fixing	VV = Lid closed by screws
	CV = Lid closed by screws and internal hinges
	CC = Lid fixed by mechanical key locking device and internal hinges
Removable Flanges	xFC = n° removable flanges on short side
	xFL = n° removable flanges on long side



Ex-e Stainless Steel BOXES GUIDE to ENCLOSURE CABLE ENTRIES LAYOUT

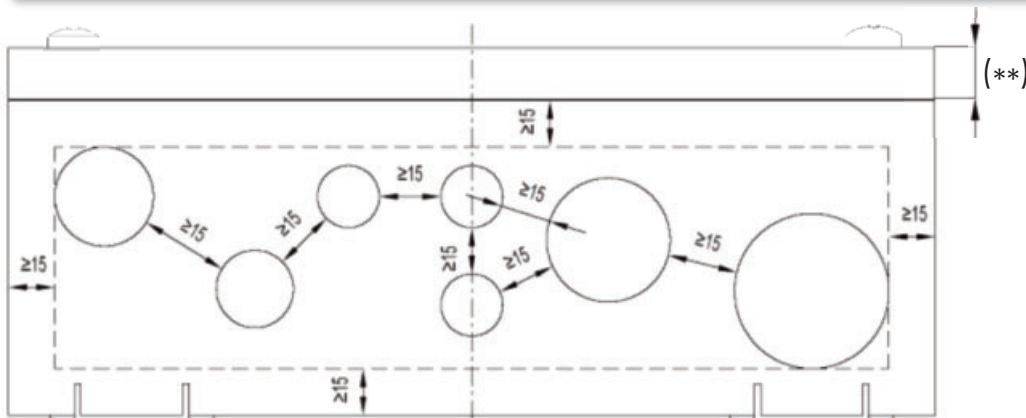
**series
CBX**

Order Coding	External Dimensions (mm)					Fixing Interaxes (mm)		Bottom Plate Dimensions (mm)	
	A	B	C	D	E	m	n	G	H
CBX 101009*	100÷135	100÷155	90÷100	A / B + 80	C + 11,5	A / B - 42	A / B + 50	A - 50	B - 50
CBX 101609*	100÷135	160÷215	90÷100	A / B + 80	C + 11,5	A / B - 42	A / B + 50	A - 50	B - 50
CBX 102209*	100÷135	220÷275	90÷100	A / B + 80	C + 11,5	A / B - 42	A / B + 50	A - 50	B - 50
CBX 102809*	100÷135	280÷300	90÷100	A / B + 80	C + 11,5	A / B - 42	A / B + 50	A - 50	B - 50
CBX 131309*	130÷170	130÷170	90÷100	A / B + 80	C + 11,5	A / B - 42	A / B + 50	A - 50	B - 50
CBX 141409*	140÷170	140÷170	90÷130	A / B + 80	C + 11,5	A / B - 42	A / B + 50	A - 50	B - 50
CBX 171709*	170÷220	170÷220	90÷100	A / B + 80	C + 11,5	A / B - 42	A / B + 50	A - 50	B - 50
CBX 221209*	220÷270	120÷170	90÷100	A / B + 80	C + 11,5	A / B - 42	A / B + 50	A - 50	B - 50
CBX 221609*	220÷270	165÷200	90÷150	A / B + 80	C + 11,5	A / B - 42	A / B + 50	A - 50	B - 50
CBX 221615*	220÷270	165÷200	150÷225	A / B + 80	C + 11,5	A / B - 42	A / B + 50	A - 50	B - 50
CBX 222209*	220÷270	220÷270	90÷150	A / B + 80	C + 11,5	A / B - 42	A / B + 50	A - 50	B - 50
CBX 222215*	220÷270	220÷270	150÷225	A / B + 80	C + 11,5	A / B - 42	A / B + 50	A - 50	B - 50
CBX 332211	330÷400	220÷300	110÷150	A / B + 80	C + 11,5	A / B - 42	A / B + 50	A - 50	B - 50
CBX 332215	330÷400	220÷300	150÷225	A / B + 80	C + 11,5	A / B - 42	A / B + 50	A - 50	B - 50
CBX 333311	330÷400	330÷400	110÷150	A / B + 80	C + 11,5	A / B - 42	A / B + 50	A - 50	B - 50
CBX 333315	330÷400	330÷400	150÷225	A / B + 80	C + 11,5	A / B - 42	A / B + 50	A - 50	B - 50
CBX 404013	400÷490	400÷490	130÷150	A / B + 80	C + 11,5	A / B - 42	A / B + 50	A - 50	B - 50
CBX 404015	400÷490	400÷490	150÷225	A / B + 80	C + 11,5	A / B - 42	A / B + 50	A - 50	B - 50
CBX 442213	440÷530	220÷300	130÷150	A / B + 80	C + 11,5	A / B - 42	A / B + 50	A - 50	B - 50
CBX 442215	440÷530	220÷300	150÷225	A / B + 80	C + 11,5	A / B - 42	A / B + 50	A - 50	B - 50
CBX 443313	440÷530	330÷400	130÷150	A / B + 80	C + 11,5	A / B - 42	A / B + 50	A - 50	B - 50
CBX 443315	440÷530	330÷400	150÷225	A / B + 80	C + 11,5	A / B - 42	A / B + 50	A - 50	B - 50
CBX 493613	490÷600	365÷450	130÷150	A / B + 80	C + 11,5	A / B - 42	A / B + 50	A - 50	B - 50
CBX 493615	490÷600	360÷450	150÷225	A / B + 80	C + 11,5	A / B - 42	A / B + 50	A - 50	B - 50
CBX 504013	500÷600	400÷490	130÷150	A / B + 80	C + 11,5	A / B - 42	A / B + 50	A - 50	B - 50
CBX 504015	500÷600	400÷490	150÷225	A / B + 80	C + 11,5	A / B - 42	A / B + 50	A - 50	B - 50
CBX 524213	520÷600	420÷500	130÷150	A / B + 80	C + 11,5	A / B - 42	A / B + 50	A - 50	B - 50
CBX 524215	520÷600	420÷500	150÷250	A / B + 80	C + 11,5	A / B - 42	A / B + 50	A - 50	B - 50
CBX 602013	600÷720	200÷280	130÷150	A / B + 80	C + 11,5	A / B - 42	A / B + 50	A - 50	B - 50
CBX 602015	600÷720	200÷280	150÷250	A / B + 80	C + 11,5	A / B - 42	A / B + 50	A - 50	B - 50
CBX 634813	630÷900	480÷680	130÷150	A / B + 80	C + 11,5	A / B - 42	A / B + 50	A - 50	B - 50
CBX 634815	630÷900	480÷680	150÷225	A / B + 80	C + 11,5	A / B - 42	A / B + 50	A - 50	B - 50
CBX 744013	740÷100	400÷750	130÷150	A / B + 80	C + 11,5	A / B - 42	A / B + 50	A - 50	B - 50
CBX 744015	740÷100	400÷750	150÷300	A / B + 80	C + 11,5	A / B - 42	A / B + 50	A - 50	B - 50
CBX 806013	750÷110	600÷850	130÷150	A / B + 80	C + 11,5	A / B - 42	A / B + 50	A - 50	B - 50
CBX 806015	800÷110	600÷850	150÷300	A / B + 80	C + 11,5	A / B - 42	A / B + 50	A - 50	B - 50

NOTES

- (*) Boxes are managed at stock without any internal fixing plate, though available on request.
- The identification codes refer to nominal dimensions, generally managed as standard; for any extended dimension please contact our Technical/Sales department.

The boxes can be configured with pass-through holes on the walls to allow entries of the required cables. Allowed holes diameter on the CBX box walls must be within 12 and 75 mm, and their quantity and position depends on the box dimension. Such holes may be placed taking into account the minimum distances between holes centers and box edges, as shown in the following figure:



NOTE

(**) The indicated height is equal to 14,5 mm for the "VV" version, and 23 mm for the "CV" and "CC" versions.

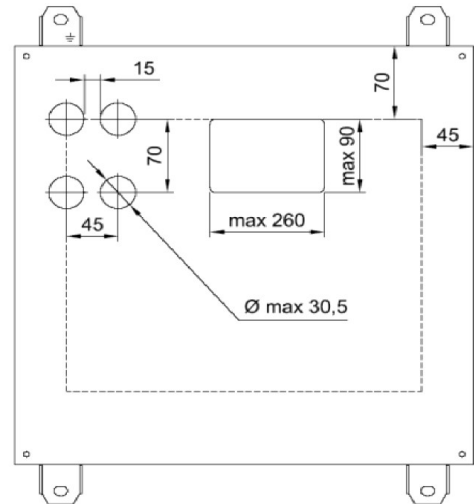
Ex-e BOXES with CONTROL and SIGNALLING UNITS

series
CBX

The holes on the lid for control and signalling units may be placed taking into account the minimum distances between holes centers and box edges, as shown in the following figure:



Examples with control and/or signalling units



ACCESSORIES and OPTIONS

series
CBX

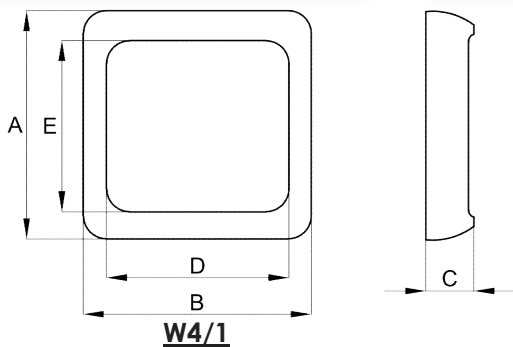
VIEWING WINDOWS: The lid can be fitted of one or more windows, suitable for viewing displays installed inside the box (with fixed windows) or for operating directly on automatic switches, avoiding the opening of the box itself (by using opening windows).



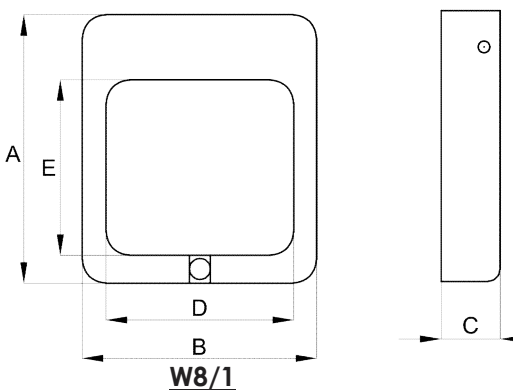
Fixed windows Series W4



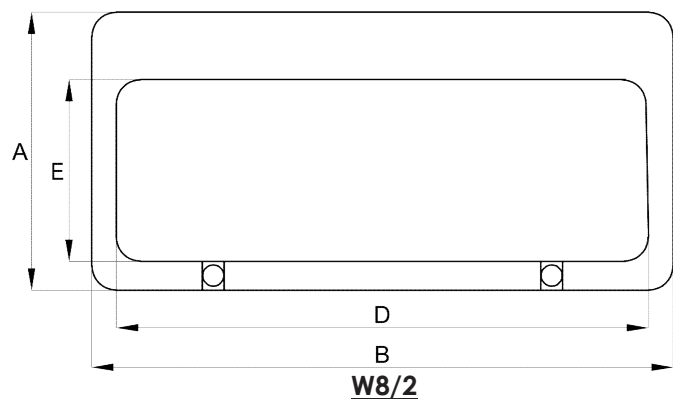
Opening windows Series W8/...



W4/1



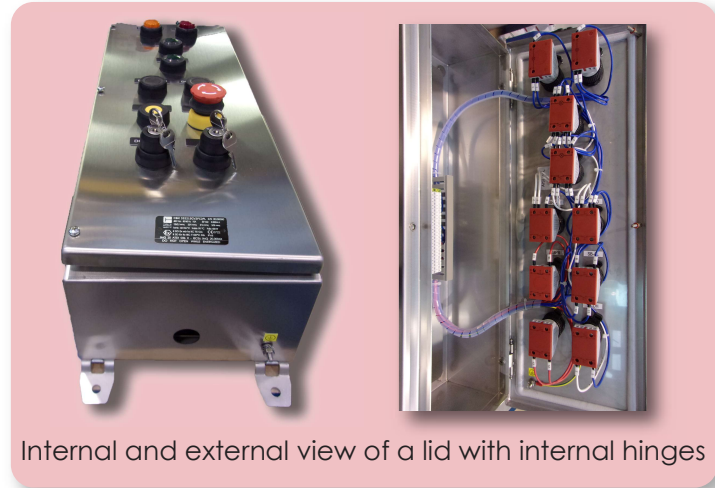
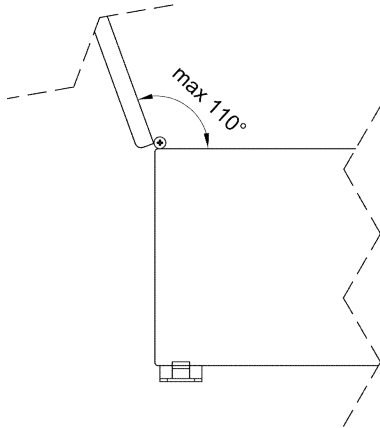
W8/1



W8/2

Order Coding	External Dimensions (mm)			Viewing Area (mm)	
	A	B	C	D	E
W4/1	73	73	15	57,3	53,3
W8/1	139	121	30	86	86
W8/2	139	281	30	255	86

INTERNAL HINGES (“CV” VERSION): On request, instead of four screws, is available the solution with hinged lid consisting in the assembly of internal hinges (not possible after supply) and closing screws (their number depending on the dimensions) on the opposite side to the hinges one; with such configuration the lid can be opened up to 110° (see the drawing).



Internal and external view of a lid with internal hinges

KEY LOCKING DEVICE (“CC” VERSION): Available also closing solution of the lid using one or more key locks (in function of the lid dimension itself - see following photos). Such solution involves presence of internal hinges on the opposite side of the locks one, making possible the opening of the lid up to 110°. For further information about please contact our Technical/Sales Department.

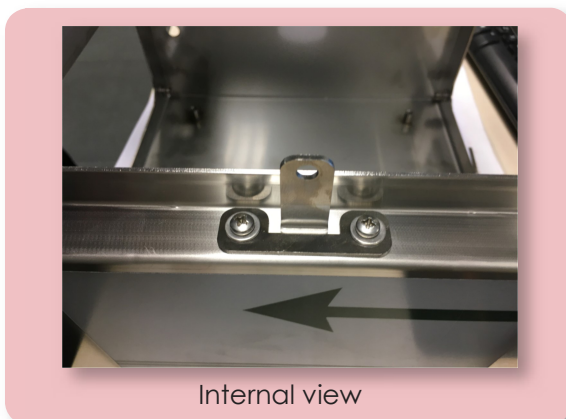


Example with one locking device



Example with two locking devices

PADLOCKABLE LID: On request, a special device allowing to padlock the lid for avoiding not authorized accesses is applicable when ordering.



Internal view



External view complete of padlock

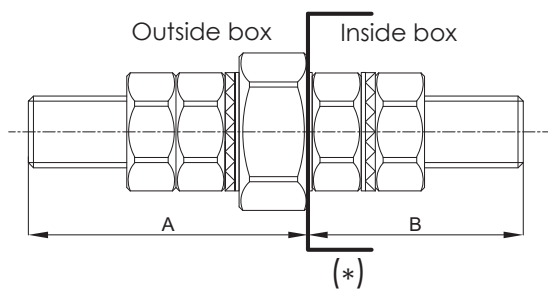
GROUND PASS-THROUGH WALL DEVICE: Alternatively to the external standard earth connections (tab or welded pin M6x15), the ground pass-through wall device with M6 - M8 - M10 diameters may be installed on request (respectively coded GC6, GC8, GC10).



Ground pass-through wall device
"GC6, GC8, GC10"



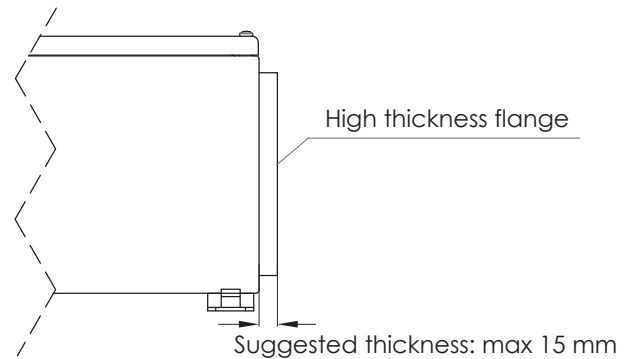
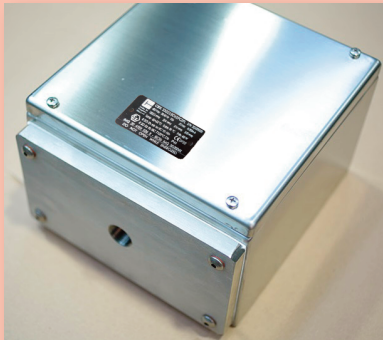
Installation example



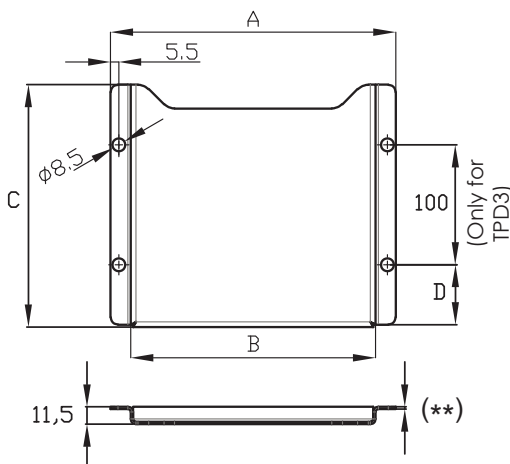
Order Coding	External Dimensions (mm)	
	A	B
GC6	28	20
GC8	32	24
GC10	35	27

NOTES (*) Box wall thickness: 1,5 mm.

HIGH THICKNESS FLANGES: Suitable when are demanded the use of cable entries with conical thread (NPT) necessary; a maximum thickness of 15 mm is recommended.



DOCUMENT POCKETS: Three different sizes of documents pockets (TPD) are available, made of stainless steel 316L and installed inside the boxes.



Order Coding	External Dimensions (mm)			
	A	B	C	D
TPD1	86	59	111,5	55,75 *
TPD2	190	163	111,5	55,75 *
TPD3	190	163	211,5	55,75

NOTE - (*) Only one fixing screw per side.
- (**) Thickness: 1,5 mm.



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