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Global
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Susol **DC DSU ACB**

UL DC Switch-disconnectors



LS[®]**ELECTRIC**

1500Vdc UDA Series for PV/ESS System

1. Application for PV/ESS system
2. 100% rated switch disconnecter (Molded circuit switch)
3. Draw-out or fixed mount, 3/4 pole construction
4. High short circuit withstand capacity: 100kA
5. Accessories common to the UL Susol series
6. Maintained the overall dimensions of UL Susol series
7. UL listed (UL489B & UL489F)

Susol

Contents

DC Switch-disconnectors

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Rated nominal voltage : 1250 Vdc (4P) / 800 Vdc (3P)
 Rated maximum voltage : 1500 Vdc (4P) / 1000 Vdc (3P)
 Rated current : 4000A
 Short circuit rating : 100kA



Codes and standards

UDA series are manufactured and tested in accordance with the following standards

UL 489 B
UL 489 F

Mark	File Number
	E493630 (UL 489 B, Molded circuit switch)
	E491572 (UL 489 F, Molded circuit switch)
	E223241 (Accessories)
	E494756 (Adapters)

UL489 B: Molded-Case Switches for Use with Photovoltaic(PV) Systems
UL489 F: Molded-Case Switches for Use with Battery Power Supplies

Susol
UDA-40E4-00A

PV / BPS Molded Circuit Switch
 UL 489B (50°C) / UL 489F (40°C)

Rated Current (A)	4000
Pole	4P
Rated Nominal Voltage (V dc)	1250
Rated Maximum Voltage (V dc)	1500
Short Circuit Rating (kA)	100

File E326950
 File E491572

For 100 kA short circuit current at 1250 V dc nominal 1500 V dc maximum rating the switch is suitable only for use with BPS

For ungrounded system only / Remotely operated
 Caution—Does not provide overcurrent protection

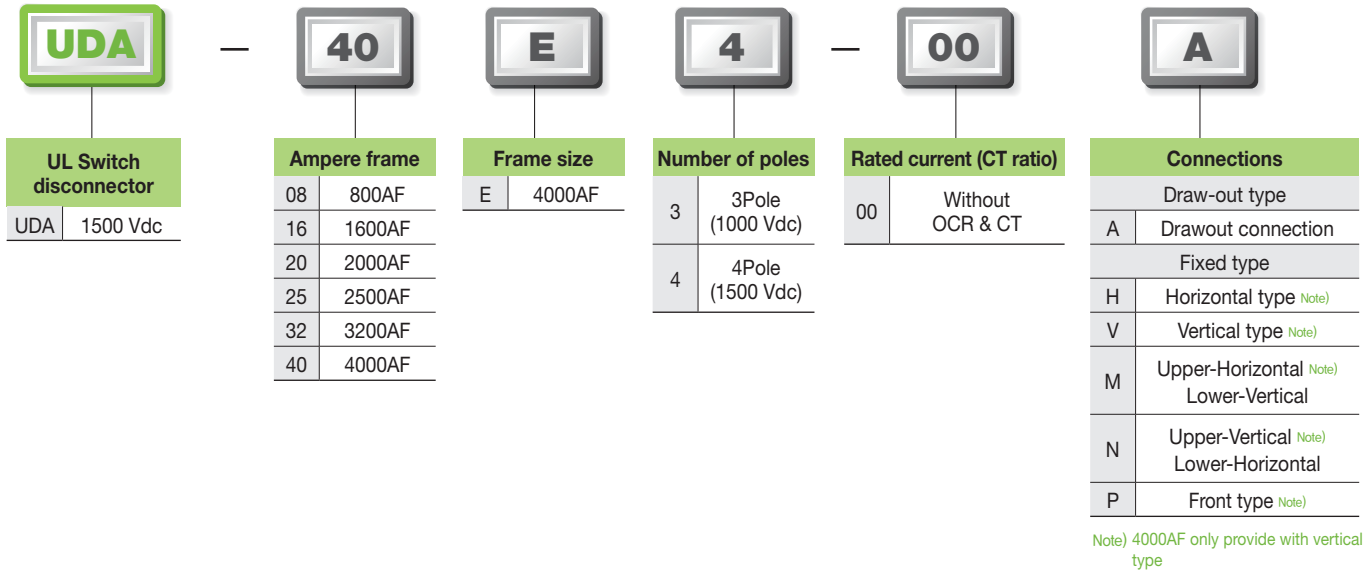
Cat.
M2D2D2HX 000U2 UL

MFG, Date : **2017.08**
 Serial No. : **170810-7270.01**

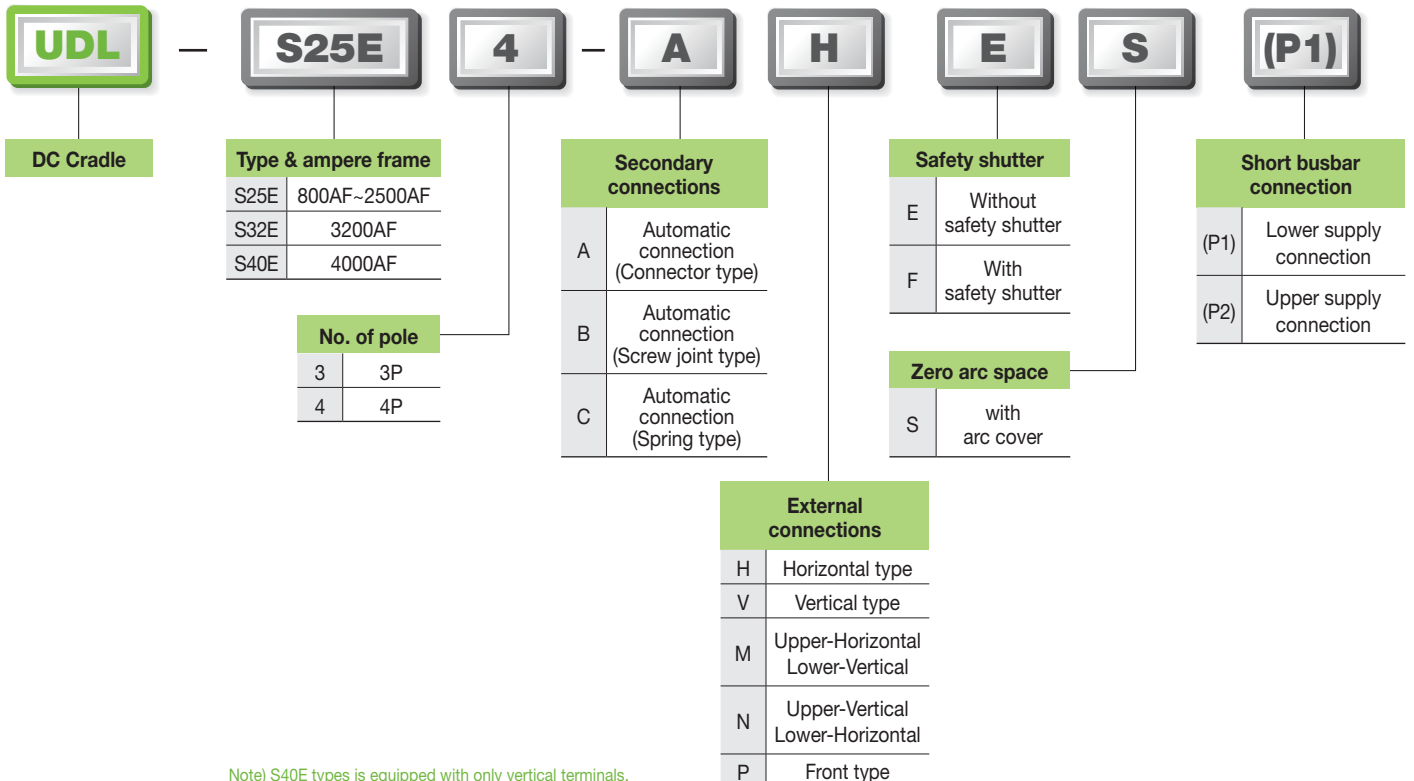
MADE IN KOREA

Ordering

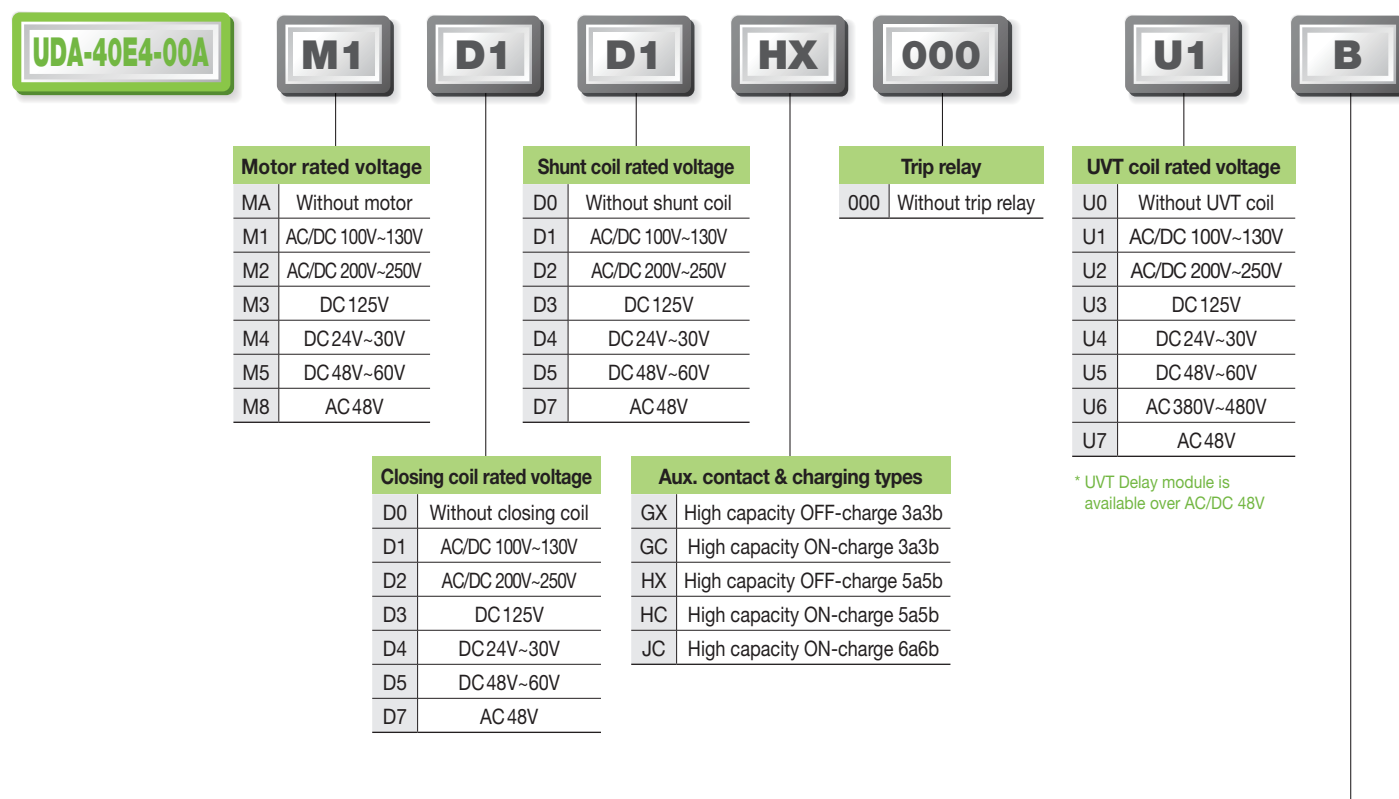
Main frame



Cradle



Accessories



Option table						
Character	Option name		Character	Option name		
S	CS2	Charge switch communication	H1	SHT2	AC/DC 100-125V	Sencondary shunt coil
B	B	On/Off button lock	H2		AC/DC 200-250V	
M	MI	Mechanical interlock	H3		DC 125V	
D	DI or MOC	Door interlock or MOC (Mechanism operated cell switch)	H4		DC 24-30V	
			H5		DC48-60V	
K	K1	Key lock	H6		AC 380-480V	
K2	K2	Key interlock set	H7		AC 48V	
K3	K3	Key lock double				
R	RCS	Ready to close switch				
T	TM	Temperature monitoring				

Ratings



Brand			
Rated nominal voltage		Vdc	
Rated maximum voltage		Vdc	
Poles		(P)	
Version			
Standard			
Type			
Ampere frame		(AF)	
Short circuit withstand current		(kA)	
Operating time (ms)		Max. opening time	
		Max. closing time	
Lift cycle (times)		Mechanical	
		Electrical	
Weight lb (kg)	Draw-out type	Main body	3P
		with cradle	4P
		Only cradle	3P
			4P
	Fixed type	Motor	3P
		charging type	4P
External dimensions Inches (mm)	Draw-out type	H×W×D	3P
			4P
	Fixed type	H×W×D	3P
			4P
Enclosure dimensions		H×W×D	3P
Inches (mm)			4P

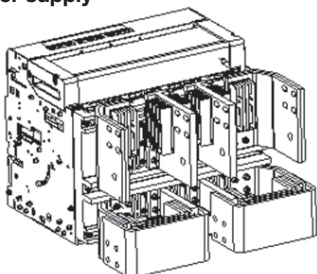
Note 1) External dimensions are excluded external terminal.

Note 2) UL certificate(UL489B/F) is listed on UL site.

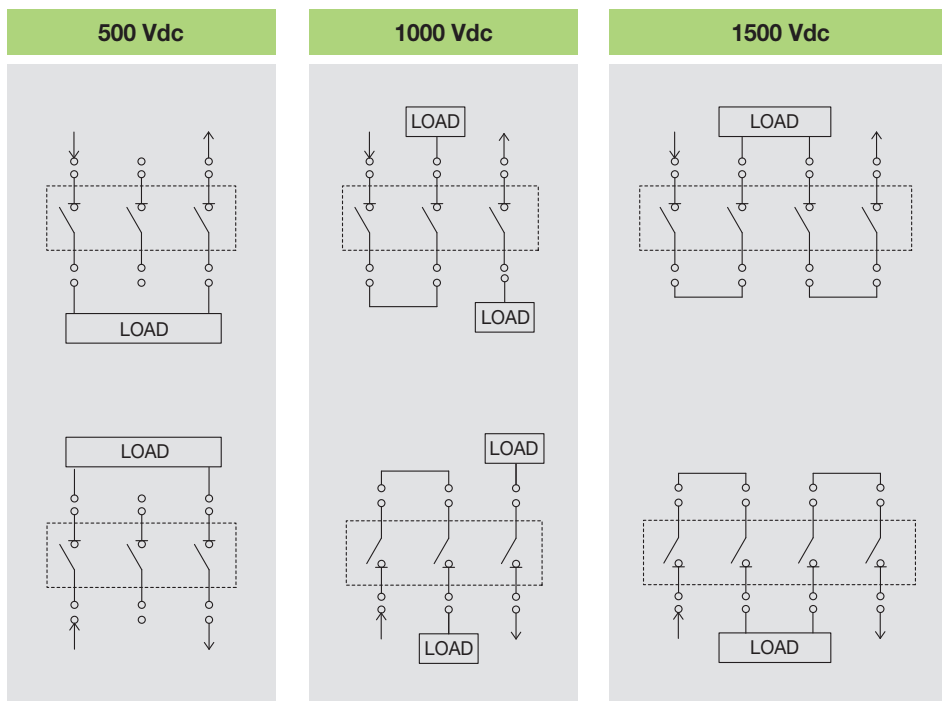
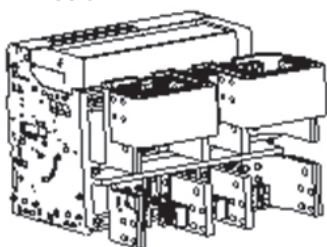
Susol					
DC 1250 V (4P) / DC 800 V (3P)					
DC 1500 V (4P) / DC 1000 V (3P)					
4P / 3P					
Fixed / Draw-out					
UL 489B, UL 489F					
UDA-08E	UDA-16E	UDA-20E	UDA-25E	UDA-32E	UDA-40E
800	1600	2000	2500	3200	4000
100					
Less than 25ms under Icw/Less than 75ms over Icw					
80ms under					
12,500					
10,000	8,000	5,000	3,000	2,000	
214 (97)				245 (111)	326 (148)
269(122)				309 (140)	414 (188)
99(45)				123 (56)	205 (93)
121(55)				152 (69)	256 (116)
101 (46)				110 (50)	196 (89)
126 (57)				137 (62)	249 (113)
16.93×16.22×16.02 (430×412×407)					
16.93×20.75×16.02 (430×527×407)					
11.81×14.88×11.61 (300×378×295)					
11.81×19.41×11.61 (300×493×295)					
19.69×19.69×13.39 (500×500×340)					
19.69×24.21×13.39 (500×615×340)					

Connection type

Upper supply



Lower supply

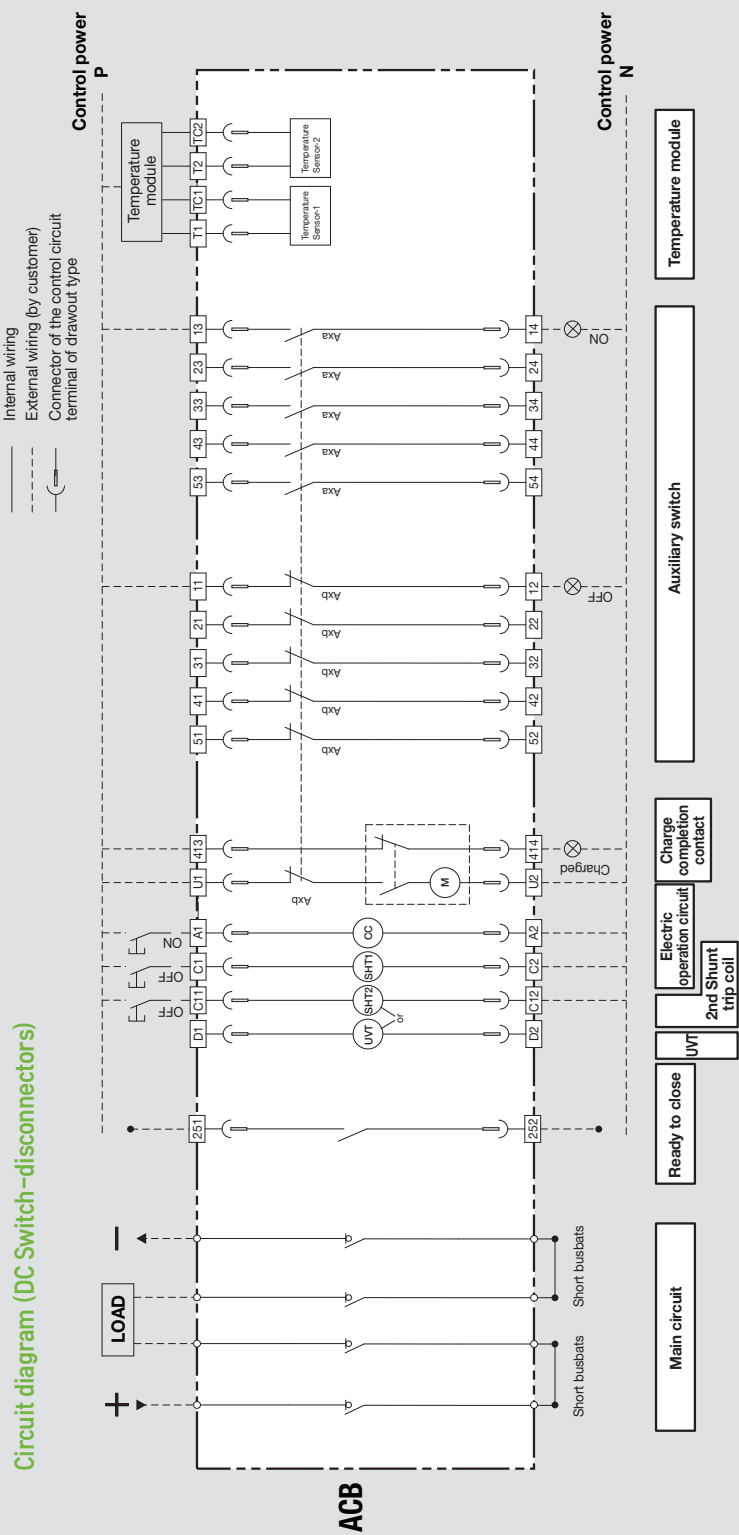


Note) If you set up connections not involved in the instruction above, ask the LS technical team.

Specification

Type	AF	Ordering number	3D configuration	Configuration
UDA series	2500AF	70223467601 3P : 1 ea 4P : 2 ea		Short busbar: 75mm×10T×2ea Bolt: M12×50×4 ea Nut: M12, 4 ea Spring washer, Plain washer
	3200AF	70223467602 3P : 1 ea 4P : 2 ea		Short busbar: 75mm×10T×2ea Bolt: M12×50×8 ea Nut: M12, 4 ea Spring washer, Plain washer
	4000AF	70223467603 3P : 1 ea 4P : 2 ea		Short busbar: 125mm×10T×3ea Spacer busbar: 125mm×10T×2ea Bolt: M12×50×8 ea Nut: M12, 4 ea Spring washer, Plain washer

Circuit diagram



[inch (mm)]

The technical drawings show the front and side views of the 3P and 4P switchgear. The front views (3P and 4P) include dimensions for overall width, height, and internal components. The side view shows the depth of the unit. Dimensions are provided in both millimeters (mm) and inches (in).

3P Front View Dimensions:

- Overall width: 14.88 (378)
- Distance between main busbars: 7.44 (189)
- Distance between terminal busbars: 7.44 (189)
- Distance from main busbar to terminal busbar: 11.02 (280)
- Operating panel center: 11.02 (280)
- Overall height: 11.81 (300)
- Height of main busbar: 10.63 (270)
- Height of terminal busbar: 12.60 (320)
- Distance from main busbar to terminal busbar: 8.03 (204)
- Distance from terminal busbar to main busbar: 8.03 (204)
- Distance from main busbar to terminal busbar: 17.01 (432)
- Distance from main busbar to terminal busbar: 0.79 (20)
- Distance from terminal busbar to main busbar: 0.47 (12)
- Distance from main busbar to terminal busbar: 0.47 (12)
- Distance from terminal busbar to main busbar: 0.47 (12)

4P Front View Dimensions:

- Overall width: 19.41 (493)
- Distance between main busbars: 11.97 (304)
- Distance between terminal busbars: 7.44 (189)
- Distance from main busbar to terminal busbar: 11.02 (280)
- Operating panel center: 11.02 (280)
- Overall height: 11.81 (300)
- Height of main busbar: 10.63 (270)
- Height of terminal busbar: 12.60 (320)
- Distance from main busbar to terminal busbar: 12.56 (319)
- Distance from terminal busbar to main busbar: 8.03 (204)
- Distance from main busbar to terminal busbar: 21.54 (547)
- Distance from main busbar to terminal busbar: 0.79 (20)
- Distance from terminal busbar to main busbar: 0.47 (12)
- Distance from main busbar to terminal busbar: 0.47 (12)
- Distance from terminal busbar to main busbar: 0.47 (12)

Side View Dimensions:

- Overall depth: 13.52 (343.5)
- Distance from main busbar to terminal busbar: 1.91 (56.5)
- Distance from terminal busbar to main busbar: 2.83 (72)
- Distance from main busbar to terminal busbar: 0.59 (15)
- Distance from terminal busbar to main busbar: 1.38 (35)
- Distance from main busbar to terminal busbar: 0.79 (20)
- Distance from terminal busbar to main busbar: 0.79 (20)

The image contains two technical drawings of terminal blocks, labeled 3P and 4P. Both drawings show a side view of the terminal block with three green terminal modules. Key dimensions and labels include:

- Operating panel center:** Indicated by a vertical line and arrow pointing to the center of the terminal block.
- Ø0.55 (Ø14):** Dimension for the terminal hole diameter.
- 2.34 (59.5):** Dimension for the terminal height.
- 0.98 (25):** Dimension for the terminal width.
- 6.99 (177.5):** Total height of the terminal block.
- 0.79 (20):** Dimension for the terminal spacing.
- 3.50 (89):** Dimension for the terminal spacing.
- 4.53 (115):** Dimension for the terminal spacing.
- 8.03 (204):** Dimension for the terminal spacing.
- 12.56 (319):** Dimension for the terminal spacing.

[illegible]

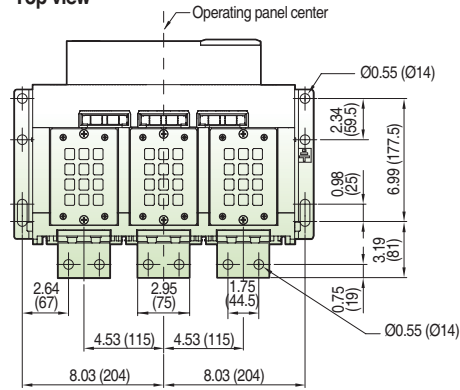
Dimensions

Fixed type 800~2500A (UDA-08~25E)

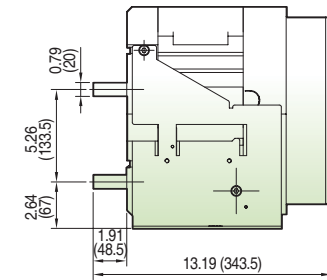
[inch (mm)]

Horizontal type

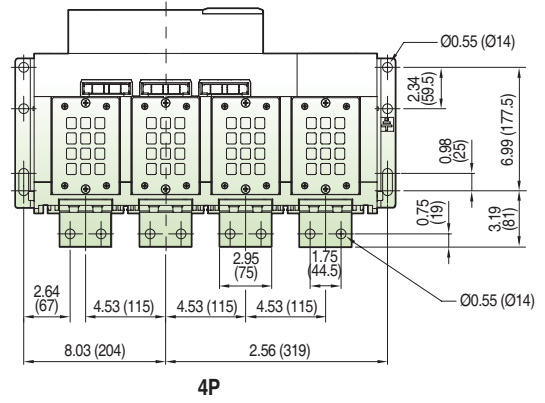
Top view



Side view

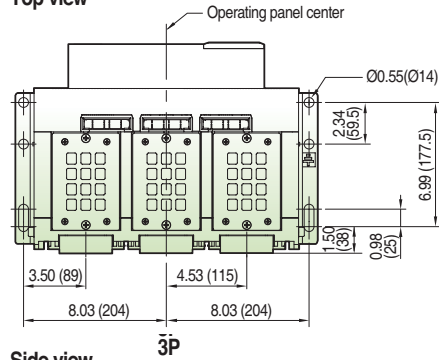


Operating panel center

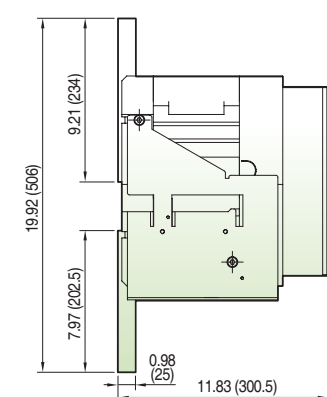


Front connection type

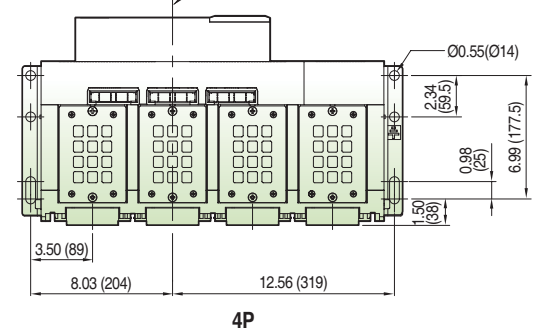
Top view



Side view



Operating panel center

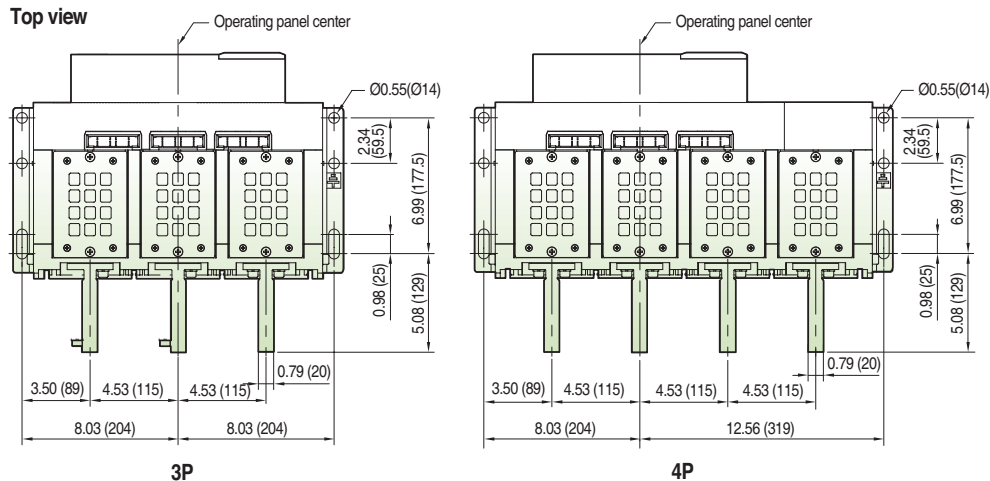


Fixed type 3200A (UDA-32E)

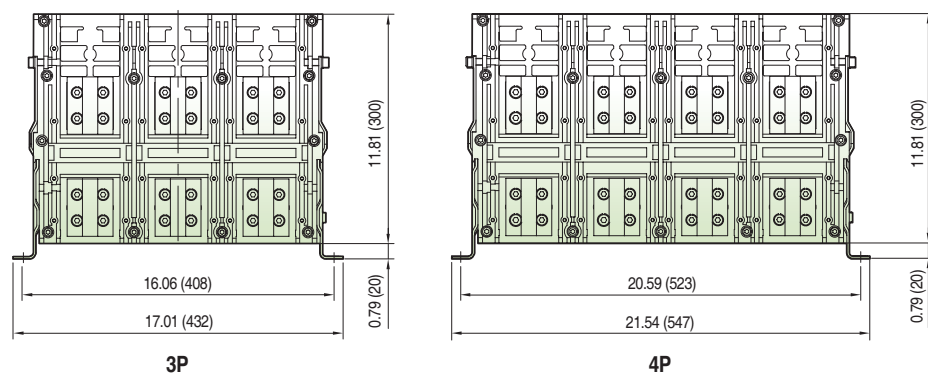
[inch (mm)]

Vertical type

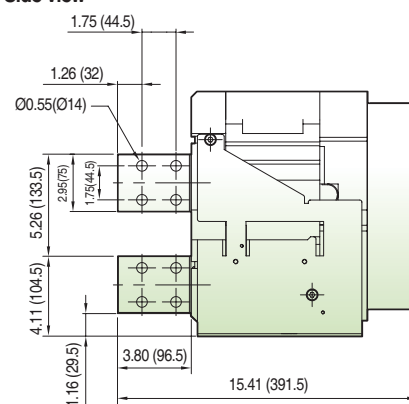
Top view



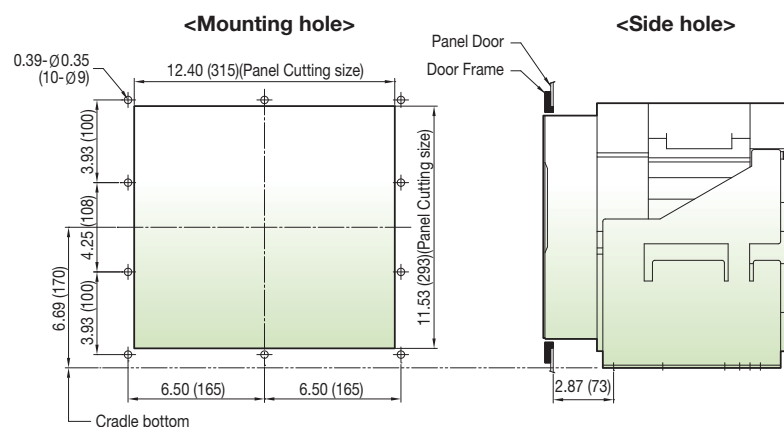
Back view



Side view



Panel front door

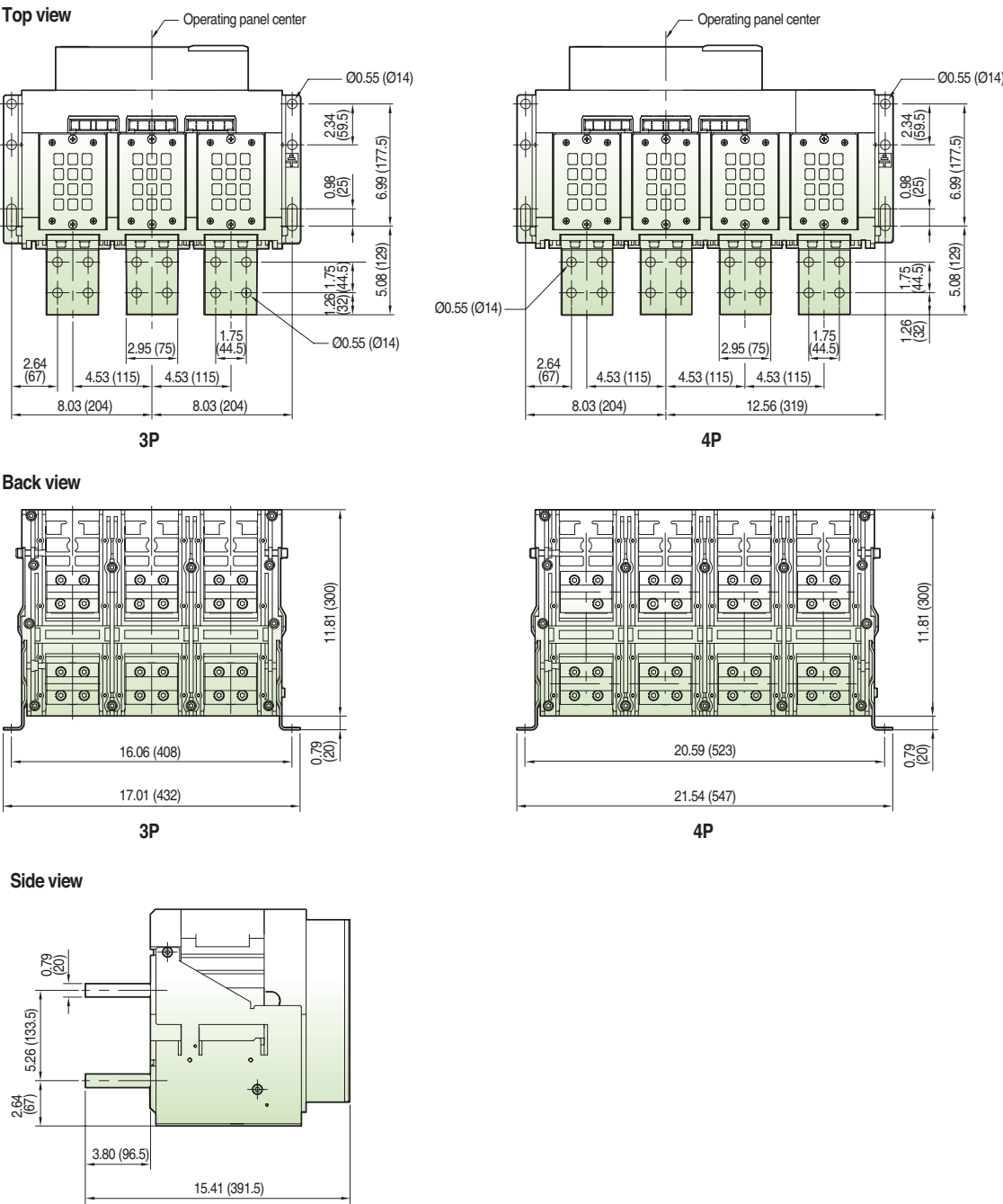


Dimensions

Fixed type 3200A (UDA-32E)

[inch (mm)]

Horizontal type

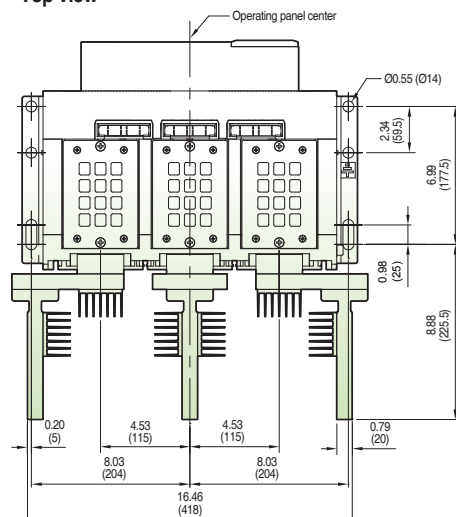


Fixed type 4000A (UDA-40E)

[inch (mm)]

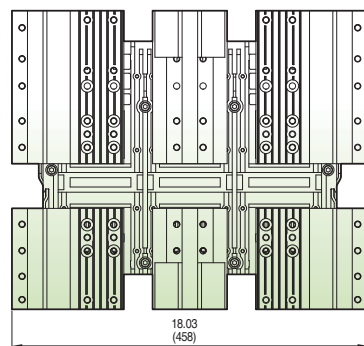
Vertical
type

Top view



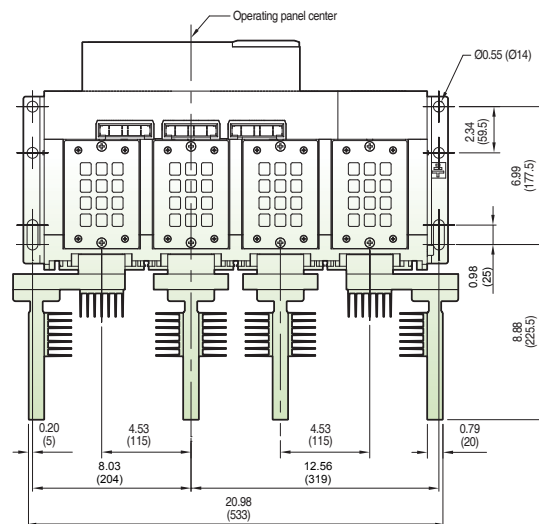
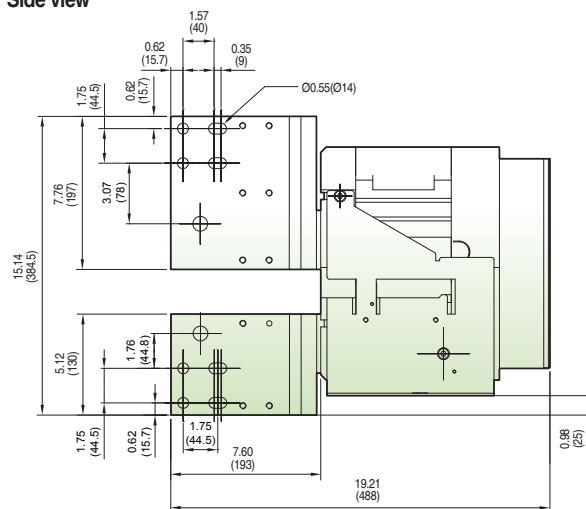
3P

Back view

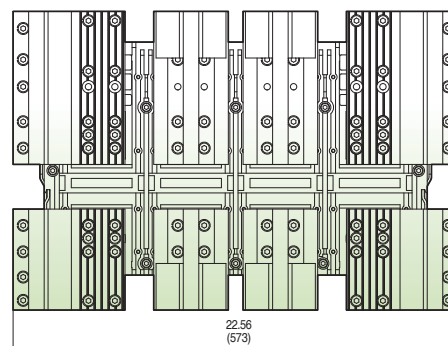


3P

Side view



4P



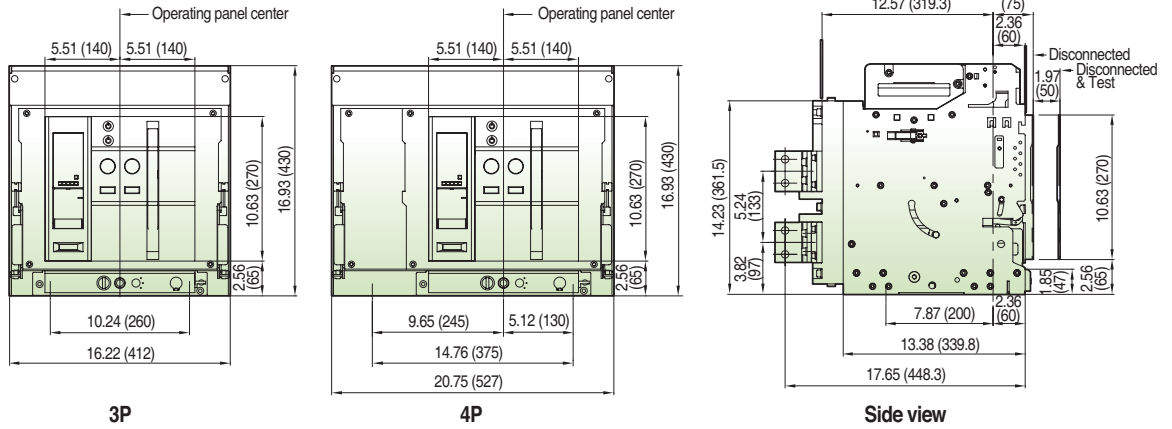
4P

Dimensions

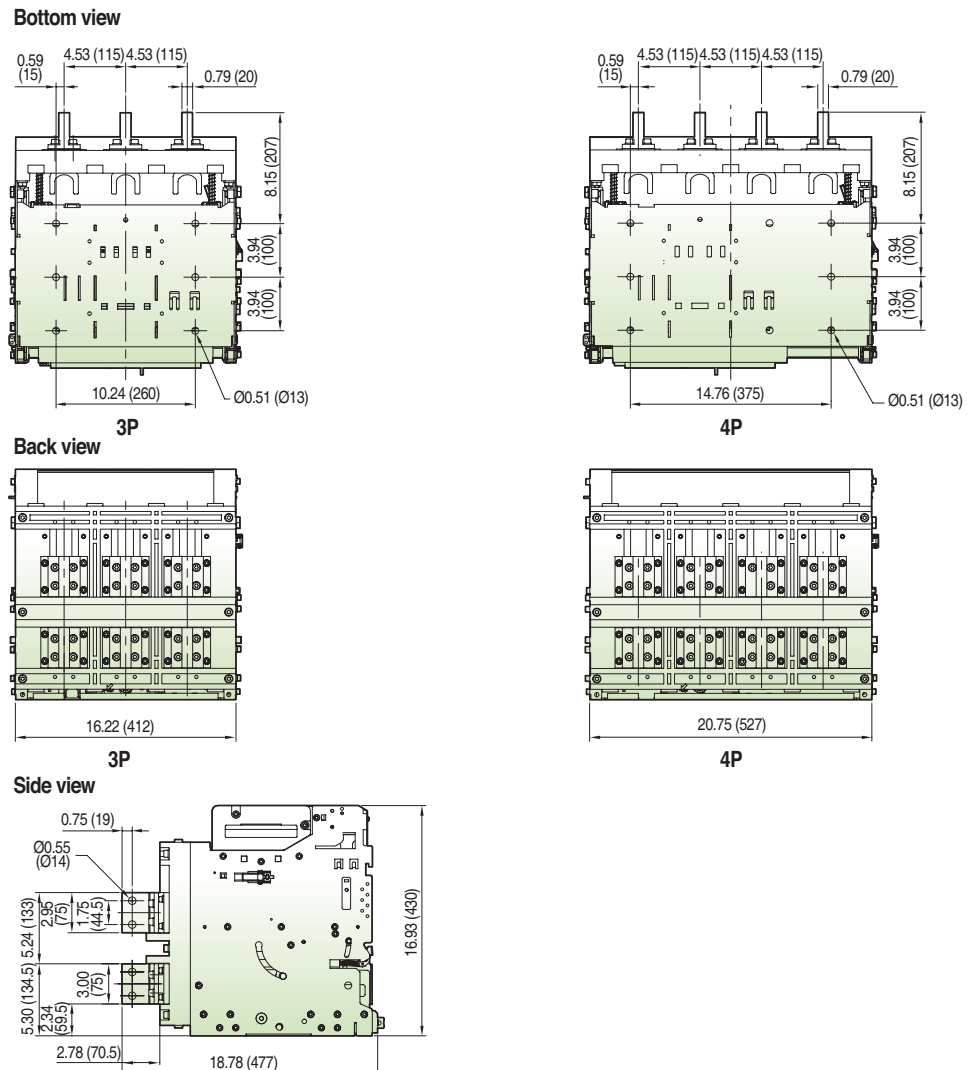
Draw-out type 800~2500A (UDA-08~25E)

[inch (mm)]

Front view



Vertical type



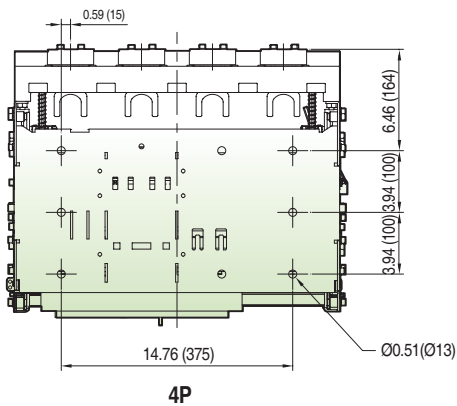
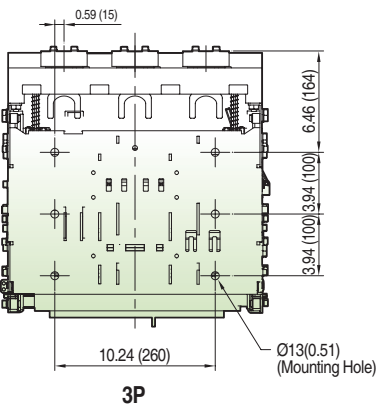
Dimensions

Draw-out type 800~2500A (UDA-08~25E)

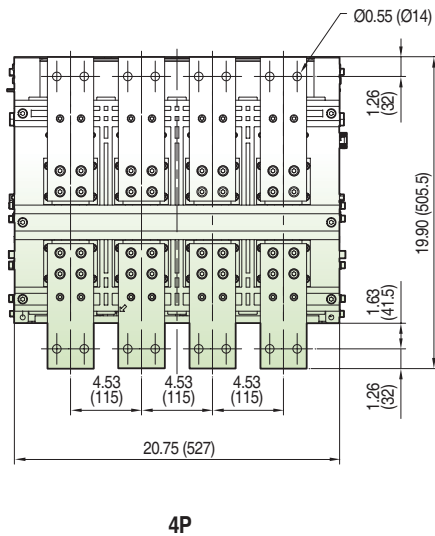
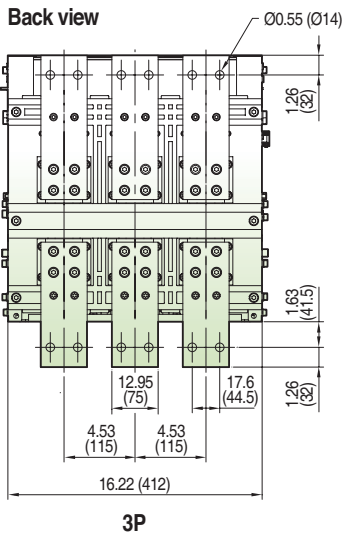
[inch (mm)]

Front
connection
type

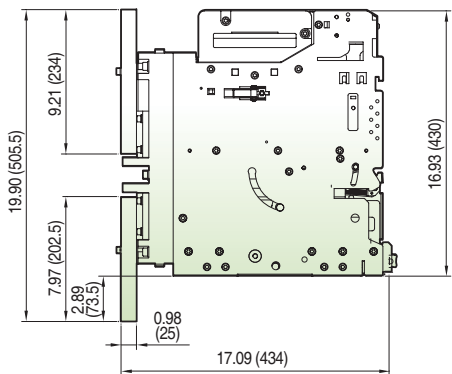
Bottom view



Back view



Side view

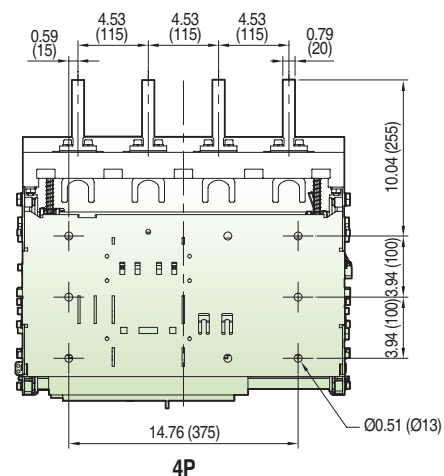
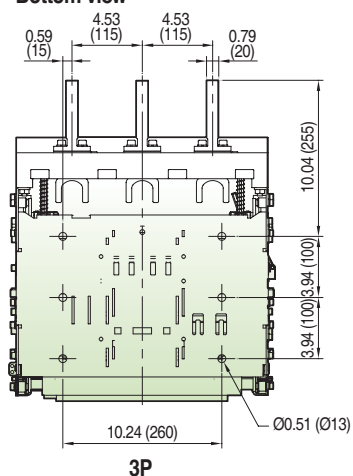


Draw-out type 3200A (UDA-32E)

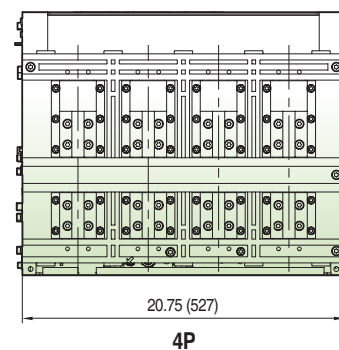
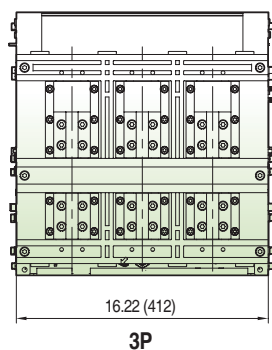
[inch (mm)]

Vertical
type

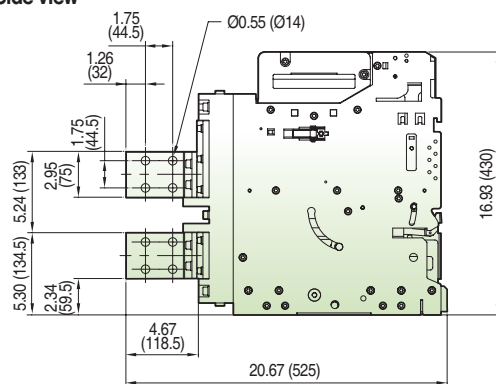
Bottom view



Back view



Side view



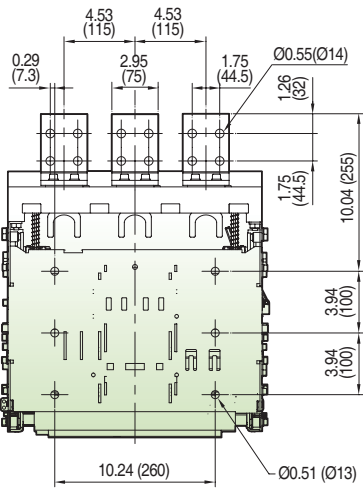
Dimensions

Draw-out type 3200A (UDA-32E)

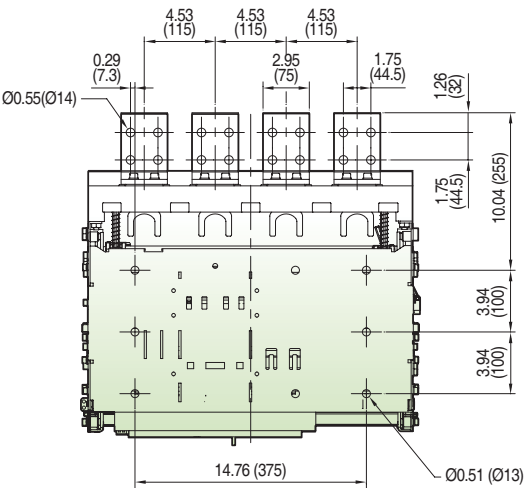
[inch (mm)]

Horizontal type

Bottom view

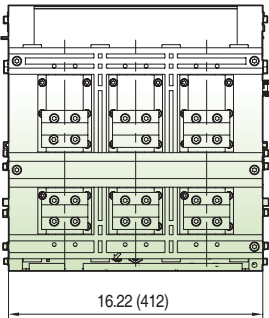


3P

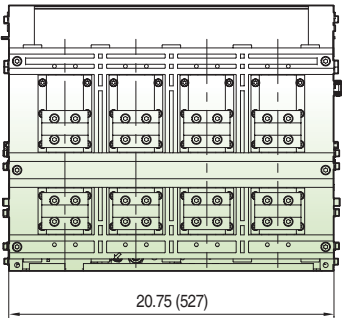


4P

Back view

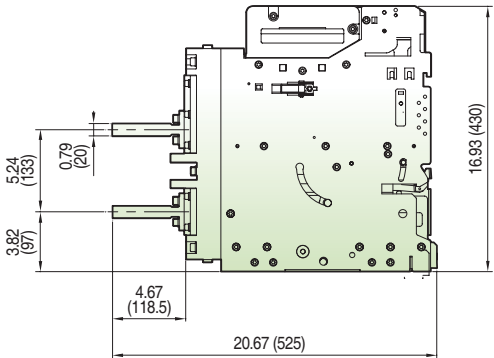


3P

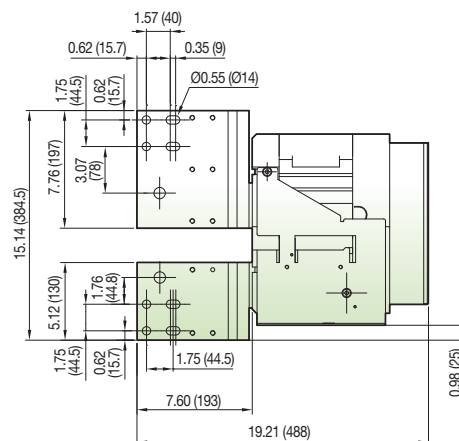
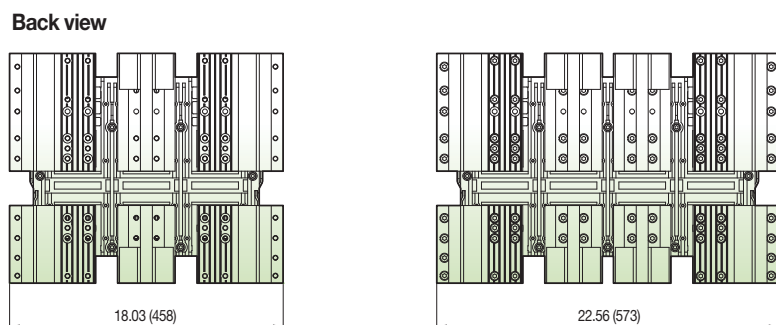


4P

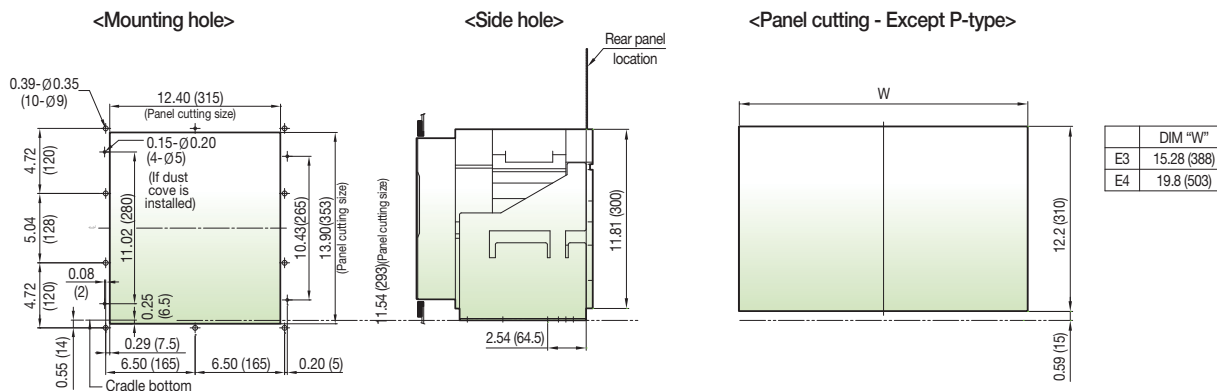
Side view



Vertical type



Panel front door



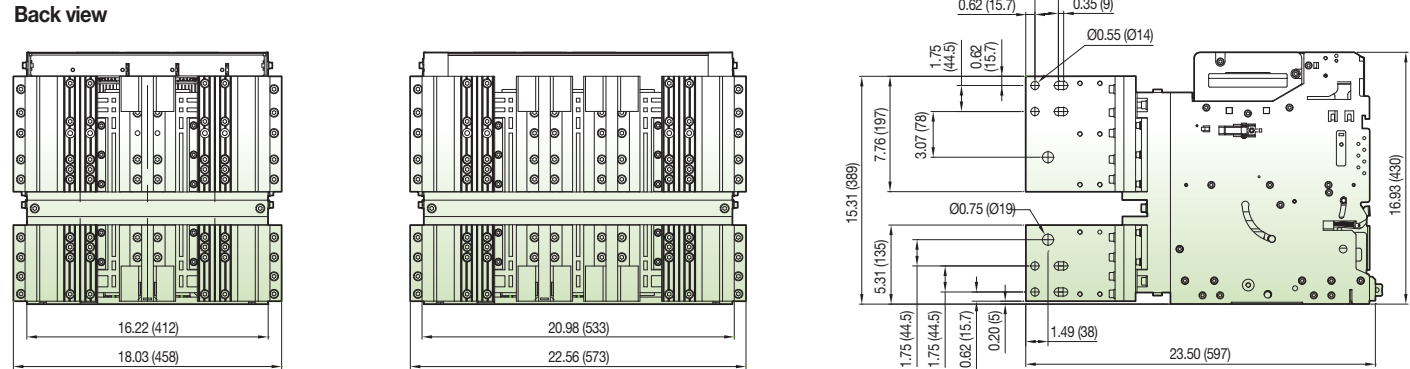
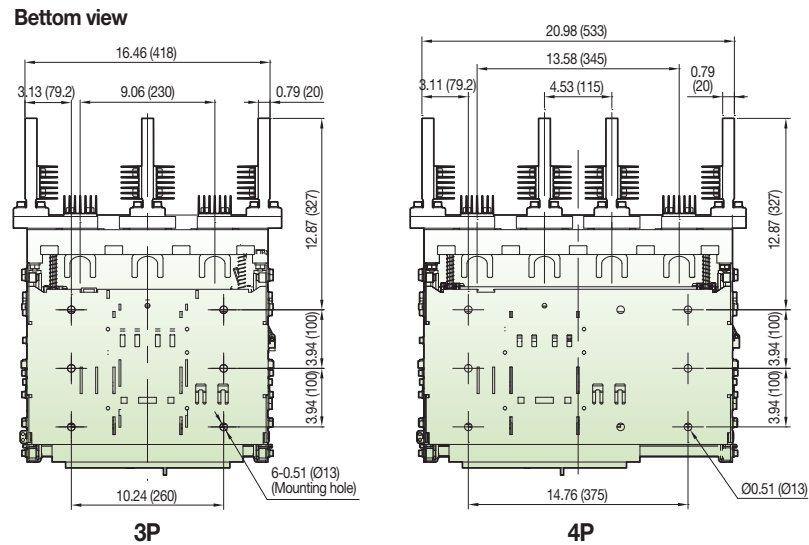
Note) For 4000AF, be aware of the distance between the terminals and any grounded metal.
(Through air : over 1/2 inch (12.7mm), Over surface : over 1inch (25.4mm))

Dimensions

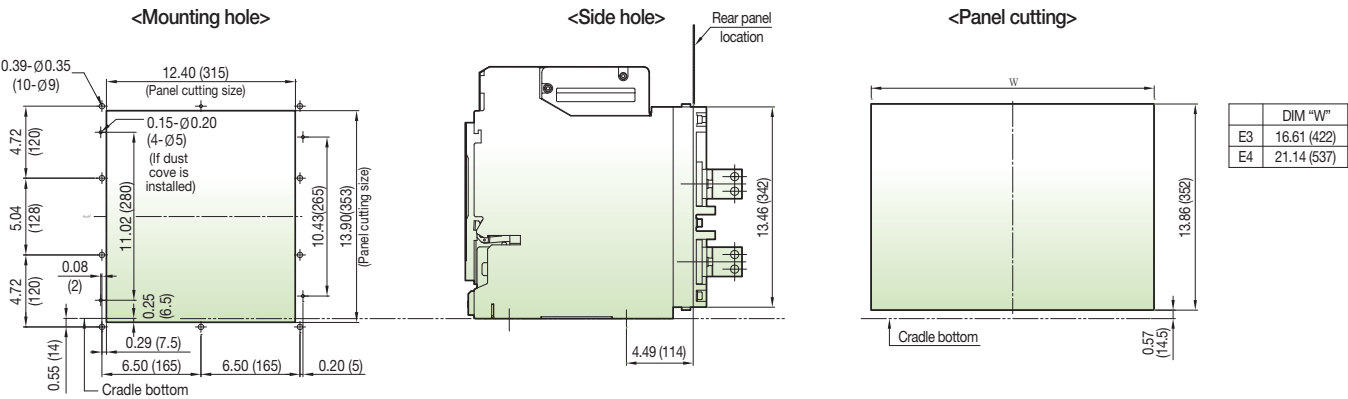
Draw-out type 4000A (UDA-40E)

[inch (mm)]

Vertical type



Panel front door



Note) For 4000AF, be aware of the distance between the terminals and any grounded metal.
(Through air : over 1/2 inch (12.7mm), Over surface : over 1inch (25.4mm))

Temperature derating

The table below indicates the maximum current rating, for each connection type, as a function of the ambient temperature around the circuit breaker and the busbars. For ambient temperatures greater than 60°C, consult us.

Product model	Rated current	Applicable busbar size (mm)																
			Horizontal type								Vertical type							
			40°C	45°C	50°C	55°C	60°C	65°C	70°C	40°C	45°C	50°C	55°C	60°C	65°C	70°C	40°C	45°C
UDA-25E	800A	6.35T×76.2×1ea (inch: 1/4×3×1ea)	800A	800A	800A	800A	800A	800A	800A	800A	800A	800A	800A	800A	800A	800A	800A	800A
		5T×100×1ea																
		6T×80×1ea																
	1600A	6.35T×76.2×2ea (inch: 1/4×3×2ea)	1600A	1600A	1600A	1600A	1600A	1600A	1600A	1600A	1600A	1600A	1600A	1600A	1600A	1600A	1600A	1600A
		10T×100×1ea																
		6T×80×2ea																
	2000A	6.35T×101.6×2ea (inch: 1/4×4×2ea)	-	-	-	-	-	-	-	2000A	2000A	2000A	2000A	2000A	2000A	2000A	2000A	2000A
		5T×125×2ea	-	-	-	-	-	-	-									
		8T×80×2ea	2000A	2000A	2000A	2000A	2000A	1886A	1764A									
	2500A	6.35T×127×2ea (inch: 1/4×5×2ea)	-	-	-	-	-	-	-	2500A	2500A	2500A	2500A	2500A	2500A	2500A	2500A	2500A
		8T×100×2ea																
		5T×100×3ea	2500A	2500A	2500A	2400A	2300A	2168A	2028A									
		10T×80×2ea																
UDA-32E	3200A	6.35T×127×3ea (inch: 1/4×5×3ea)	-	-	-	-	-	-	-	3200A	3200A	3200A	3200A	3200A	3200A	3200A	3200A	3200A
		10T×125×2ea	-	-	-	-	-	-	-									
		10T×80×3ea	3200A	3200A	3200A	3100A	3000A	2900A	2734A									
		8T×100×3ea																
UDA-40E	4000A	6.35T×127×4ea (inch: 1/4×5×4ea)	-	-	-	-	-	-	-	4000A	4000A	4000A	4000A	4000A	4000A	4000A	4000A	4000A
		10T×125×3ea																

* Ambient temperature is greater than 60°C, consult us.

* Current values greater than 60°C are based on ANSI standard.

* Total temperature limit is 105°C according to UL standard.

Internal resistance and power consumption

Type	Pole	Rated current (A)	Fixed type		Draw-out type	
			Resistance (mΩ)	Power dissipation (W)	Resistance (mΩ)	Power dissipation (W)
UDA-25E	3P	800	0.031	20	0.061	39
		1600	0.031	79	0.061	156
		2000	0.031	124	0.061	244
		2500	0.031	194	0.061	381
UDA-32E	4P	3200	0.028	287	0.046	471
UDA-40E		4000	0.025	400	0.040	640
UDA-25E		800	0.042	27	0.082	52
		1600	0.042	108	0.082	210
		2000	0.042	168	0.082	328
		2500	0.042	263	0.082	513
UDA-32E		3200	0.038	389	0.062	635
UDA-40E		4000	0.034	544	0.054	864

Note 1) Power dissipation is the value measured at each rated current for 3pole or 4pole breaker.

Note 2) Resistance is the value measured across the terminals of connecting all poles in series.

Technical information

Operating conditions

Ambient temperature

DC Products can operate under the following temperature conditions

- The electrical and mechanical characteristics are stipulated for an ambient temperature of -5°C to +40°C
- The average temperature should be within + 35°C
- Reduce the continuous conducting current when the temperature is over 45°C (refer to temperature derating)
- Storage condition: -20°C to + 60°C is recommended.

Altitude

DC Products is designed for operation at altitudes under 2000m.

At altitudes higher than 2000m, change the ratings upon a service condition.

Altitude [m]	2000	3000	4000	5000
Item				
Maximum rated voltage	1500 Vdc	1350 Vdc	1200 Vdc	1050 Vdc
	1000 Vdc	900 Vdc	800 Vdc	700 Vdc
	750 Vdc	675 Vdc	600 Vdc	525 Vdc
Current compensation constant	$1 \times I_n$	$0.98 \times I_n$	$0.96 \times I_n$	$0.94 \times I_n$

Environment

Under clean air;

Maximum temperature + 40°C (relative humidity should be under 85%)

Maximum temperature + 20°C (relative humidity should be under 90%)

Do not apply under corrosive or ammonia gas circumstances

(H₂S ≤ 0.01ppm, SO₂ ≤ 0.01ppm, NH₃ ≤ a few ppm)

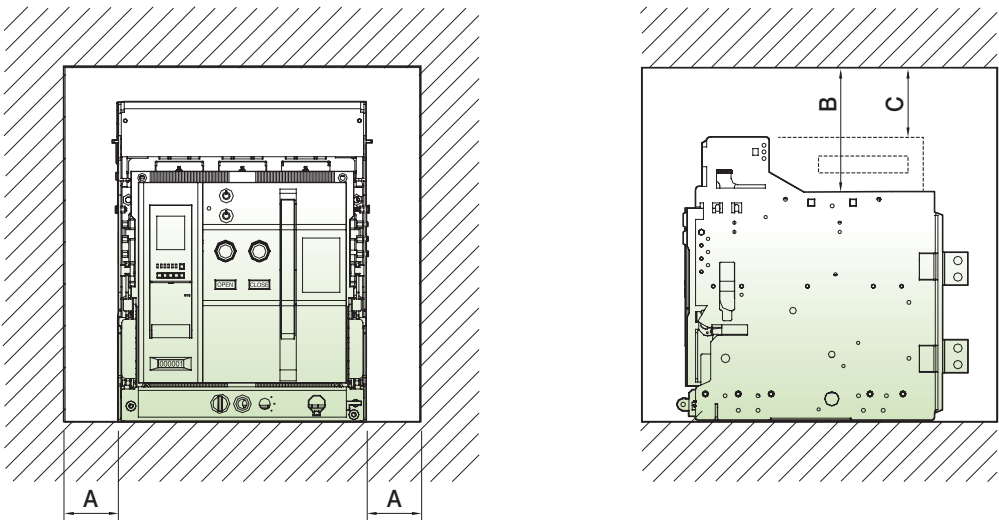
Extreme atmosphere conditions:

Under high temperature and/or high humidity, the insulation durability, electrical and mechanical features could be deteriorated. At this conditions, increasing corrosion-resistant dealing needs.

Corrosion-resistant parts need under this conditions.

Install recommendation

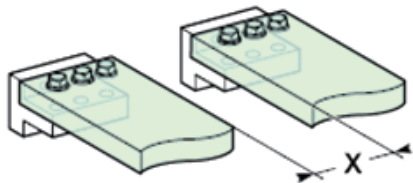
Insulation clearance



Type	A	B	C
Fixed	50	150	N/A
Drawout	5	N/A	0

Minimum spacing

The dimension of all charging parts should be over the minimum spacing.



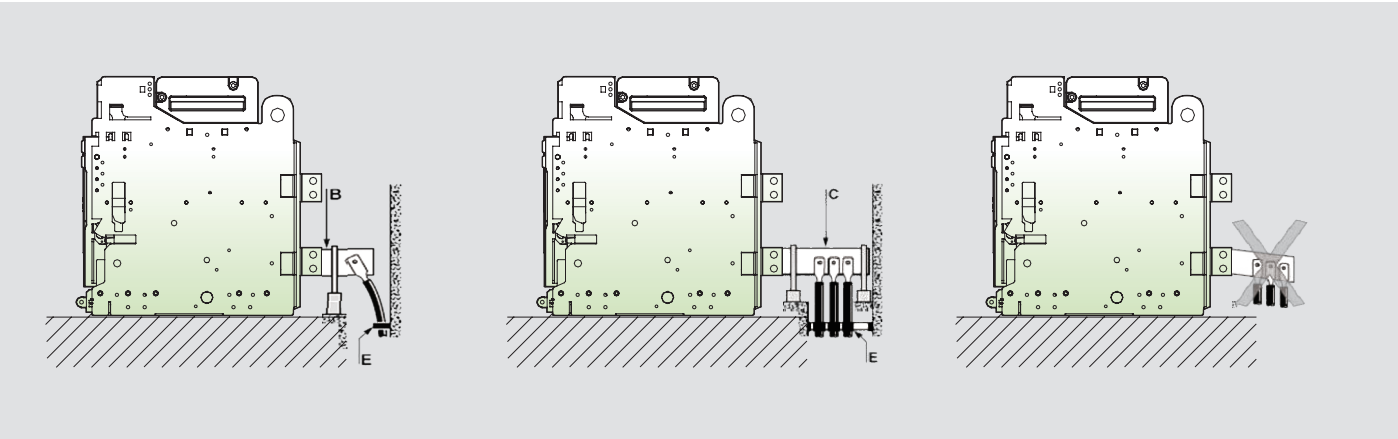
Voltage between parts	Minimum spacing at terminals (through air)	
	Between terminals of opposite polarity (X)	Between terminals and any grounded metal
131 ~ 300V	19.1mm	12.7mm
301~ 1000V (or 1500Vdc)	25.4mm	12.7mm

Technical information

BUS-BAR Connection

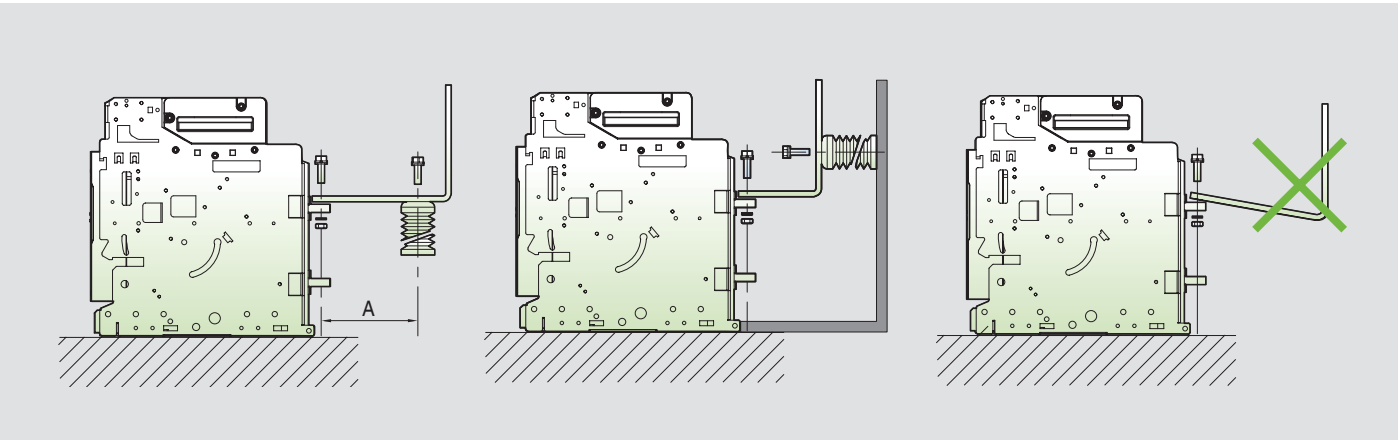
Cables connections

Make sure that no excessive mechanical force put on the rear terminals for cable connection.
Extension terminal is fixed such as B, C and cable is to fixed to the frame such as E



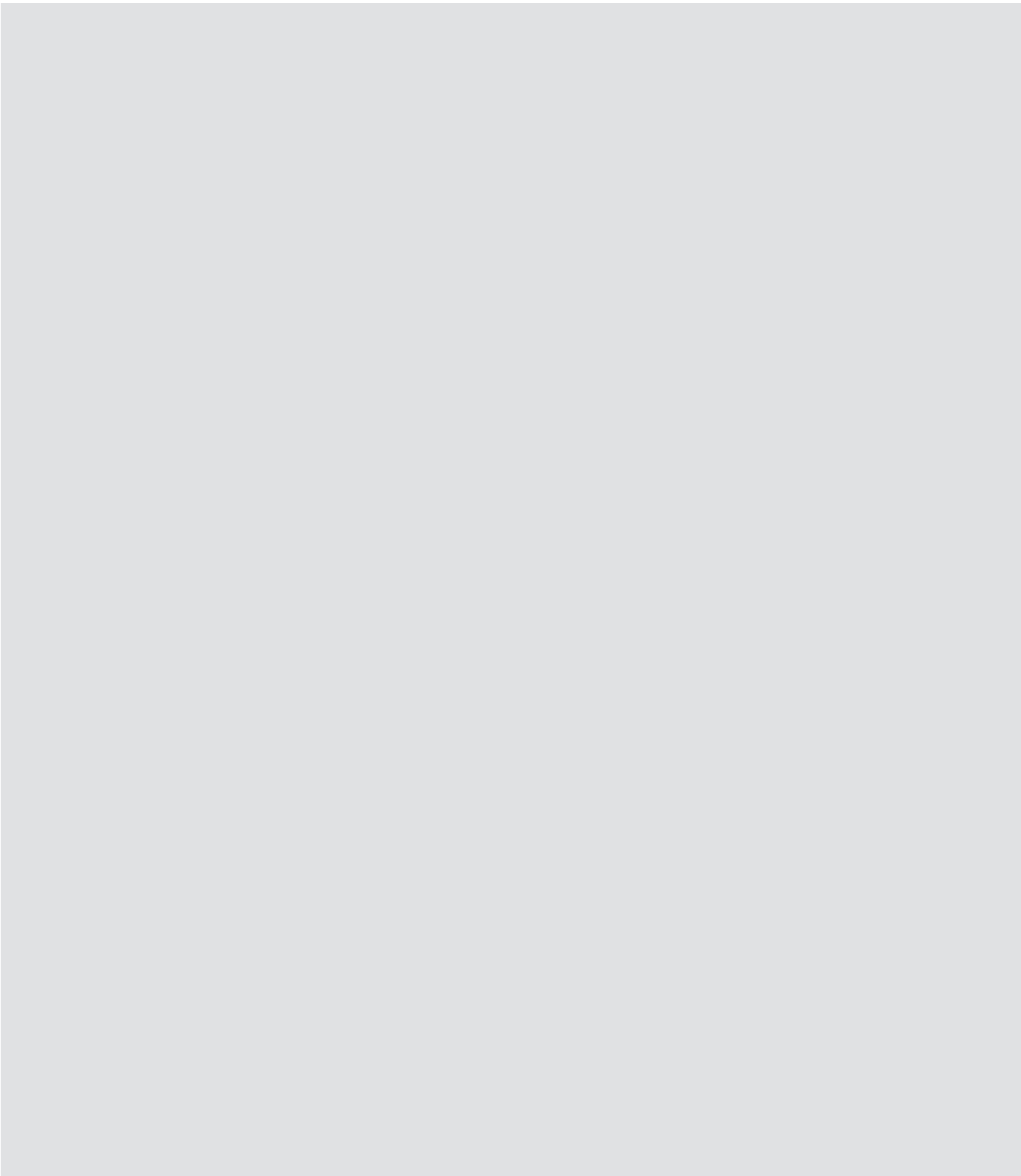
Bus-bar connection

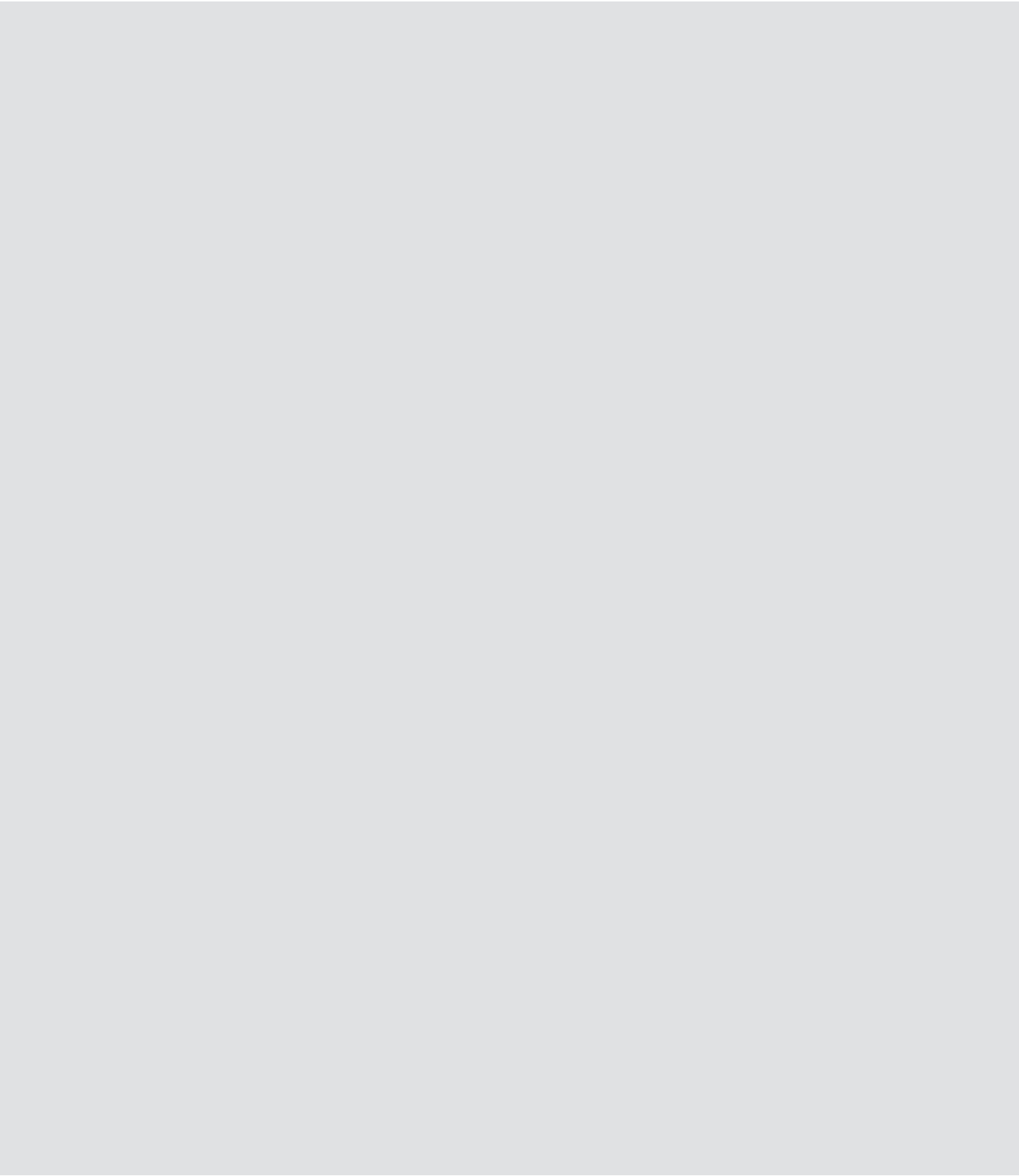
For busbar connection, connect access parts with a provided torque and fix with parallel installing the support not to apply terminal weight to circuit breaker.
In order to prevent the spread safety or secondary accidents, secure maximum safe distance A (Table 1) from the access area to withstand the electrical force during the short circuit faults.

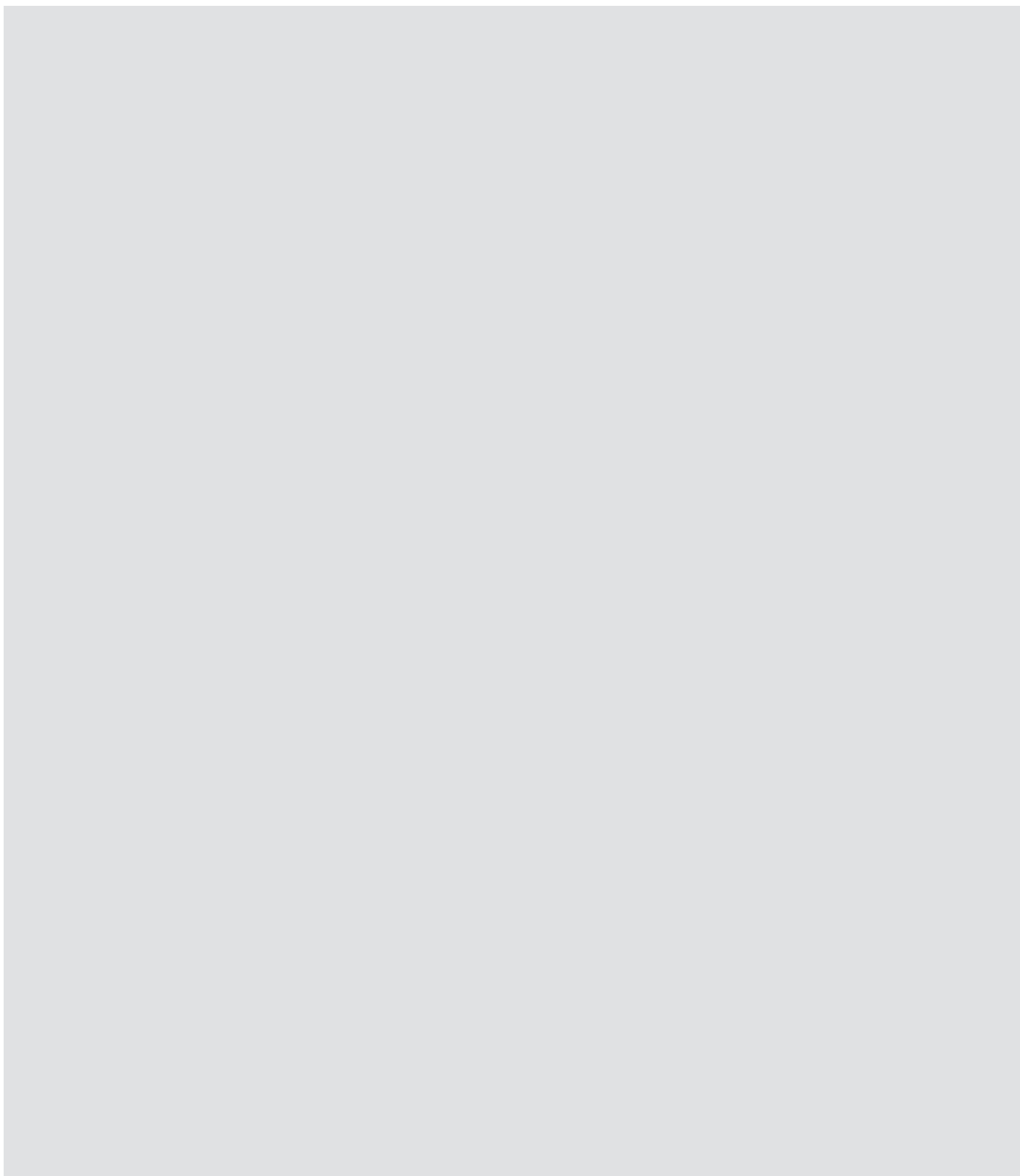


(Table 1) Maximum safe distance A

Short capacity (kA)	30	50	65	80	100	150
Length A (mm)	350	300	250	150	150	150









Safety Instructions

- For your safety, please read user's manual thoroughly before operating.
- Contact the nearest authorized service facility for examination, repair, or adjustment.
- Please contact qualified service technician when you need maintenance.
Do not disassemble or repair by yourself!
- Any maintenance and inspection shall be performed by the personnel having expertise concerned.



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