

Sheathed Type Resistance Temperature Detector(RTD)

OUTLINE

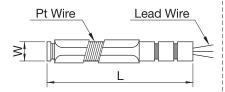
Resistance temperature detectors (RTD's) operate under the principle the electrical resistance of certain metals increase or decrease in a repeatable and predictable manner with a temperature change.

RTD's may have a lower temperature range than some thermocouples and a slower response time however they are more stable and repeatable over long periods of time.

RTD's are used in chemical and petrochemical industry, pulp and paper industry.

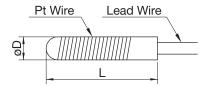
RTD's are available in the same configurations as thermocouples to suit applications.

Mica type platinum RTD element



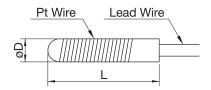
It is composed of a mica plate wound with a high purity platinum wire and sand-wiched between two mica plates for insulation and between two stainless steel plate springs, and fixed tightly by stainless steel wires. Because of ease in handling and rigid structure, it is being used widely in industrial application.

Ceramic type platinum RTD element



It is composed of a coil-formed high purity platinum wire instead of bored of a fine polished recrystallized alumina ceramic body and fixed on its bottom by special heat resistance frit. As approximately 80% of the resistance wire is free of heat strain from temperature change, drift in resistivity is minimized and its reproducibility and long term stability are superior to any of conventional corewound element.

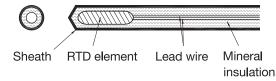
Glass sealed platinum RTD element



It is composed of a high purity platinum wire wound noninductively around a special glass body, of which resistivity at 0°C is adjusted to fall within the respective standard ranges, instead of another special glass tube and heat sealed overall. Quick response and excellent in insulation, withstand voltage vibration and high resistance to liquid, chemicals and gases.

FEATURES

- Sheathed RTD is a registered trade name of one metal sheathed RTD that has a monolithic structure comprising of sheathed element and MI cable (MgO compacted, metal sheathed lead wires). This is newly developed RTD with quick response, longer service and life and high accuracy under critical conditions.



- Quick response
- High flexibility
- High accuracy
- Wide selection of specification :

Available for outer diameter from 3.2mm to 8.0mm and total length up to 150mm

Sheathed RTD response time

The time constants(63.2%) when sheathed RTD is immersed into 100°C (boiling water) from 0°C (ice bath)

 \bigcirc 3.2 less than 2sec

○6.4 less than 6sec

○4.8 less than 4sec

○8.0 less than 11sec

GENERAL SPECIFICATION

Resistance temperature detectors(RTD's) operate under the principle the electrical resistance of certain metals increased or decreaseds in a repeatable and predictable manner with a temperature change. RTD's may have a lower temperature range than some thermocouples and a slower response time however they are more stable and repeatable over long periods of time.

RTD's are used in chemical and petrochemical industry, pulp and paper industry.

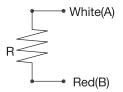
RTD's are available in the same configurations as thermocouples to suit applications.

Sheath type Resistance temperature detector (RTD)

1. Lead wires connection method

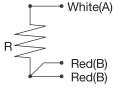
- 2 wires connection:

One wire is connected to one end of the RTD. Generally used when the changes in lead wires resistance due to ambient temperature change can be ignored.



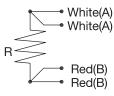
- 3 wires connection:

Two wires are connected to one end of the RTD and one wires to the other. This is the most commonly used. The third wire compensates for changes in lead wire resistance.



- 4 wires connection:

Two wires are connected to each end of the RTD. This type of connection is used for high precision measurements.



2. Temperature tolerance

Туре	Nominal resistance (Ω at 0 ℃)	Resistance ratio R100/R0	Class	Tolerance (℃)	Rated current (mA)
Pt100	100	1,3850	Α	±(0.15+0.002t)	1,2
			В	±(0.3+0.005t)	1,25

- * R100 is resistance value at 100℃
- * R0 is resistance value at 0°C

Measuring temp.(°C)		-200	-100	0	100	200
Temp.(°C)	Class A	±0.55	±0.35	±0.15	±0.35	±0.55
	Class B	±1.3	±0.8	±0.3	±0.8	±1.3
Measuring temp.(°C)						
		300	400	500	600	650
		300 ±0.75	400 ±0.95	500 ±1.15	600 ±1.35	650 ±1.45

3. Sheath tube specifications

Dia.	Material
	316SS
ø3.2	INCONEL 600
ø4.8	310SS
5 110	446SS
ø6.4	347SS
ø8.0	321SS
	Other

4. Application specifications

• Head: Material - Aluminium alloy with metallic silver plating. Type - General type & Ex-Proof type Construction - Weather & Ex-Proof

• Terminal block :

Type: Single (3-wire System) Double (6-wire System) Material: Ceramic (General head) Phenol resin (Ex-Proof head)

• Cable gland: JIS15b (PF1/2) JIS20b (PF3/4)

· Sheath element :

Type - Pt100 Ω , Pt50 Ω at 0 $^{\circ}$ C Dia. - ø3.2, ø4.8, ø6.4, ø8 (Request) Material - 316SS, 310SS, 347SS (Request)

• Grade :

A or B

• Connection :

Type - Nipple 1/2", 3/4", Other (Request) Union nipple 1/2", 3/4", Other (Request) Length - 100mm(L), 150mm(L), Other (Request) Size - 1/2"PT, 1/2"NPT, 3/4"PT, 3/4"NPT

Other (Request)

· Sensing type:

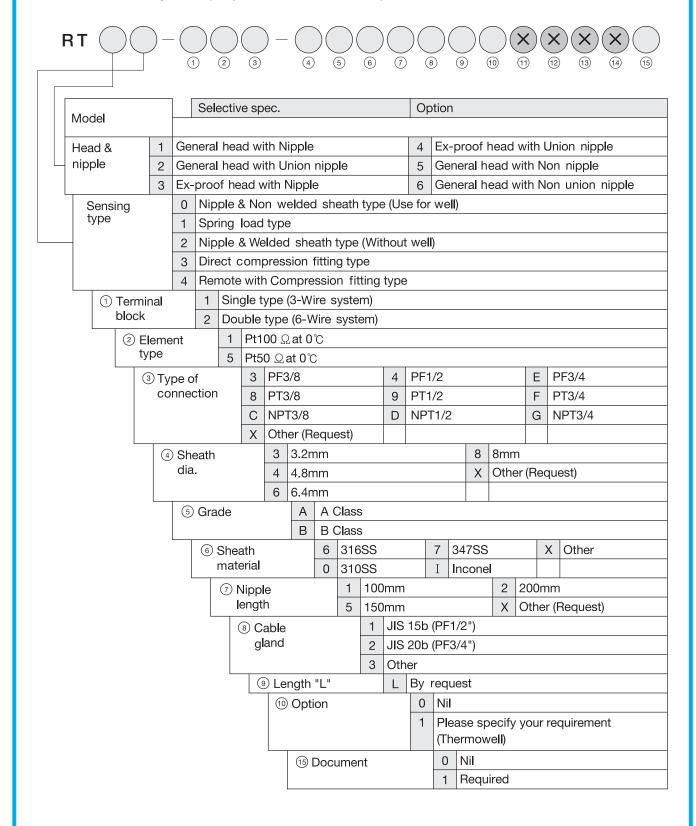
Fixed type Spring load type

• Insert length(L): by Request

* Thermowell is option (Request)

Model number configuration (Sheathed type resistance Temp. detector(RTD))

* For ordering, Please specify the model number and each spec.



Outline dimension & Specifications (Sheath type RTD) Model : RT10 - □ □ □ Model : RT20 - □□□ CHAIN NAME PLATE CHAIN NAME PLATE CONNECTION CONNECTION Ø CABLE CABLE GLAND **GLAND GENERAL SPECIFICATION GENERAL SPECIFICATION** 1. MODEL: RT10 - ____ 1. MODEL: RT20 - □□□ 2. TERMINAL BLOCK 2. TERMINAL BLOCK ☐ SINGLE (3WIRE) ☐ DOUBLE (6WIRE) ☐ SINGLE (3WIRE) ☐ DOUBLE (6WIRE) 3. HEAD (GENERAL) 3. HEAD (GENERAL) MATERIAL: ALUMINIUM ALLOY MATERIAL: ALUMINIUM ALLOY SURFACE COLOR: METALLIC SILVER SURFACE COLOR: METALLIC SILVER TERMINAL BLOCK MATERIAL: CERAMIC TERMINAL BLOCK MATERIAL: CERAMIC 4. PROTECTION TUBE: SHEATHED 4. PROTECTION TUBE: SHEATHED 5. CONSTRUCTION: WEATHER PROOF 5. CONSTRUCTION: WEATHER PROOF 6. CABLE GLAND 6. CABLE GLAND □JIS15b □ JIS20b □JIS15b □ JIS20b 7. ELEMENT TYPE (CERAMIC OR MICA) at 0°C 7. ELEMENT TYPE (CERAMIC) at 0°C ☐ Pt100 (ohm) ☐ Pt50 (ohm) ☐ Pt100 (ohm) ☐ Pt50 (ohm) 8. GRADE: □ A **8. GRADE** : □ A $\square B$ \square B 9. PROTECTION TUBE OUTER DIAMETER (D) 9. PROTECTION TUBE OUTER DIAMETER (D) □ 4.8 □ 6.4 □ 8 □ OTHER □4.8 □6.4 □8 □OTHER 10. PROTECTION TUBE MATERIAL 10. PROTECTION TUBE MATERIAL □316SS □310SS □347SS □INCONEL □OTHER □ 304SS □ 316SS □ INCONEL □ OTHER 11. UNION & NIPPLE SIZE (Dn), MAT'L 11. NIPPLE SIZE (Dn), MAT'L ☐ 1/2B (21.7mm) ☐ 3/4B (27.2mm) ☐ 1/2B (21.7mm) ☐ 3/4B (27.2mm) 12. NIPPLE LENGTH (A mm) 12. UNION & NIPPLE LENGTH (A mm) □50 □100 □150 □OTHER □ 100 □ 150 □ OTHER 13. CONNECTION 13. CONNECTION ☐ 1/2PT ☐ 1/2NPT ☐ 3/4PT ☐ 3/4NPT ☐ 1/2PT ☐ 1/2NPT ☐ 3/4PT ☐ 3/4NPT 14. LENGTH "L" _____(mm) 14. LENGTH "L" _____ Title Title General head with Nipple type sheathed RTD General head with Union nipple type sheathed RTD

Outline dimension & Specifications (Sheath type RTD)				
Model : RT30 - □□□	Model : RT40 - □□□			
CHAIN WELDING CABLE 78 A L	NAME PLATE WELDING CONNECTION WELDING CABLE 78 A L			
GENERAL SPECIFICATION	GENERAL SPECIFICATION			
1. MODEL : RT30 - □□□	1. MODEL: RT40 - □□□			
2. TERMINAL BLOCK SINGLE (3WIRE) DOUBLE (6WIRE)	2. TERMINAL BLOCK SINGLE (3WIRE) DOUBLE (6WIRE)			
3. HEAD (EX-PROOF ExdIICT6) MATERIAL: ALUMINIUM ALLOY SURFACE COLOR: METALLIC SILVER TERMINAL BLOCK MATERIAL: PHENOL RESIGN	3. HEAD (EX-PROOF ExdIICT6) MATERIAL : ALUMINIUM ALLOY SURFACE COLOR : METALLIC SILVER TERMINAL BLOCK MATERIAL : PHENOL RESIGN			
4. PROTECTION TUBE : SHEATHED	4. PROTECTION TUBE : SHEATHED			
5. CONSTRUCTION : ExdIICT6	5. CONSTRUCTION: ExdIICT6			
6. CABLE GLAND □ JIS15b □ JIS20b	6. CABLE GLAND ☐ JIS15b ☐ JIS20b			
7. ELEMENT TYPE (CERAMIC) at 0°C ☐ Pt100 (ohm) ☐ Pt50 (ohm)	7. ELEMENT TYPE (CERAMIC) at 0°C ☐ Pt100 (ohm) ☐ Pt50 (ohm)			
8. GRADE: □A □B	8. GRADE: □A □B			
9. PROTECTION TUBE OUTER DIAMETER (D) □ 4.8 □ 6.4 □ 8 □ OTHER	9. PROTECTION TUBE OUTER DIAMETER (D) □ 4.8 □ 6.4 □ 8 □ OTHER			
10. PROTECTION TUBE MATERIAL ☐ 316SS ☐ 310SS ☐ 347SS ☐ INCONEL ☐ OTHER	10. PROTECTION TUBE MATERIAL ☐ 304SS ☐ 316SS ☐ INCONEL ☐ OTHER			
11. NIPPLE SIZE (Dn), MAT'L ☐ 1/2B (21.7mm) ☐ 3/4B (27.2mm)	11. UNION & NIPPLE SIZE (Dn), MAT'L ☐ 1/2B (21.7mm) ☐ 3/4B (27.2mm)			
12. NIPPLE LENGTH (A mm) ☐ 50 ☐ 100 ☐ 150 ☐ OTHER	12. UNION & NIPPLE LENGTH (A mm) ☐ 100 ☐ 150 ☐ OTHER			
13. CONNECTION ☐ 1/2PT ☐ 1/2NPT ☐ 3/4PT ☐ 3/4NPT	13. CONNECTION ☐ 1/2PT ☐ 1/2NPT ☐ 3/4PT ☐ 3/4NPT			
14. LENGTH "L"(mm)	14. LENGTH "L"(mm)			
Title	Title			
Ex-Proof head with Nipple type sheathed RTD	Ex-Proof head with Union nipple type sheathed RTD			

Outline dimension & Specifications (Sheath type RTD) Model : RT11 - □ □ □ Model : RT21 - □□□ CHAIN NAME PLATE CHAIN NAME PLATE CONNECTION CONNECTION 돃 ΘD RESILIENCE OF RESILIENCE OF 10 **SPRING SPRING** CABLE **GLAND GLAND GENERAL SPECIFICATION GENERAL SPECIFICATION 1.** MODEL : RT11 - □□□ **1.** MODEL : RT21 - □□□ 2. TERMINAL BLOCK 2. TERMINAL BLOCK ☐ SINGLE (3WIRE) ☐ DOUBLE (6WIRE) ☐ SINGLE (3WIRE) ☐ DOUBLE (6WIRE) 3. HEAD (GENERAL) 3. HEAD (GENERAL) MATERIAL: ALUMINIUM ALLOY MATERIAL: ALUMINIUM ALLOY SURFACE COLOR: METALLIC SILVER SURFACE COLOR: METALLIC SILVER TERMINAL BLOCK MATERIAL: CERAMIC TERMINAL BLOCK MATERIAL: CERAMIC 4. PROTECTION TUBE: SHEATHED 4. PROTECTION TUBE: SHEATHED 5. CONSTRUCTION: WEATHER PROOF 5. CONSTRUCTION: WEATHER PROOF 6. CABLE GLAND 6. CABLE GLAND □JIS15b □ JIS20b □JIS15b □ JIS20b 7. ELEMENT TYPE (CERAMIC) at 0°C 7. ELEMENT TYPE (CERAMIC) at 0°C ☐ Pt100 (ohm) ☐ Pt50 (ohm) ☐ Pt100 (ohm) ☐ Pt50 (ohm) 8. GRADE: □ A **8. GRADE** : □ A $\square B$ \square B 9. PROTECTION TUBE OUTER DIAMETER (D) 9. PROTECTION TUBE OUTER DIAMETER (D) □ 4.8 □ 6.4 □ 8 □ OTHER □4.8 □6.4 □8 □OTHER 10. PROTECTION TUBE MATERIAL 10. PROTECTION TUBE MATERIAL □316SS □310SS □347SS □INCONEL □OTHER □ 304SS □ 316SS □ INCONEL □ OTHER 11. UNION & NIPPLE SIZE (Dn), MAT'L 11. NIPPLE SIZE (Dn), MAT'L ☐ 1/2B (21.7mm) ☐ 3/4B (27.2mm) ☐ 1/2B (21.7mm) ☐ 3/4B (27.2mm) 12. NIPPLE LENGTH (A mm) 12. UNION & NIPPLE LENGTH (A mm) □50 □100 □150 □OTHER □ 100 □ 150 □ OTHER 13. CONNECTION 13. CONNECTION ☐ 1/2PT ☐ 1/2NPT ☐ 3/4PT ☐ 3/4NPT ☐ 1/2PT ☐ 1/2NPT ☐ 3/4PT ☐ 3/4NPT 14. SPRING LOAD TYPE 14. SPRING LOAD TYPE 15. LENGTH "L" _____ 15. LENGTH "L" _____(mm) Title Title General head with Union nipple type General head with Nipple type spring load sheathed RTD spring load sheathed RTD

Outline dimension & Specifications (Sheath type RTD) Model : RT31 - □□□ Model : RT41 - □□□ NAME PLATE NAME PLATE WELDING CONNECTION CONNECTION CHAIN **CHAIN** RESILIENCE OF 10 RESILIENCE OF 10 WELDING SPRING SPRING WELDING CABLE CABLE 78 78 GLAND **GLAND GENERAL SPECIFICATION GENERAL SPECIFICATION** 1. MODEL: RT31 - □□□ **1. MODEL** : RT41 - □□□ 2. TERMINAL BLOCK 2. TERMINAL BLOCK ☐ DOUBLE (6WIRE) ☐ DOUBLE (6WIRE) ☐ SINGLE (3WIRE) ☐ SINGLE (3WIRE) 3. HEAD (EX-PROOF ExdIICT6) 3. HEAD (EX-PROOF ExdIICT6) MATERIAL: ALUMINIUM ALLOY MATERIAL: ALUMINIUM ALLOY SURFACE COLOR: METALLIC SILVER SURFACE COLOR: METALLIC SILVER TERMINAL BLOCK MATERIAL: PHENOL RESIGN TERMINAL BLOCK MATERIAL: PHENOL RESIGN 4. PROTECTION TUBE: SHEATHED 4. PROTECTION TUBE: SHEATHED 5. CONSTRUCTION: ExdIICT6 5. CONSTRUCTION: ExdIICT6 6. CABLE GLAND 6. CABLE GLAND □JIS15b □JIS20b □ JIS15b □JIS20b 7. ELEMENT TYPE (CERAMIC) at 0°C 7. ELEMENT TYPE (CERAMIC) at 0°C ☐ Pt100 (ohm) ☐ Pt50 (ohm) ☐ Pt100 (ohm) ☐ Pt50 (ohm) 8. GRADE : □ A **8. GRADE** : □ A $\square B$ $\square B$ 9. PROTECTION TUBE OUTER DIAMETER (D) 9. PROTECTION TUBE OUTER DIAMETER (D) □4.8 □6.4 □8 □OTHER □ 4.8 □ 6.4 □ 8 □ OTHER 10. PROTECTION TUBE MATERIAL 10. PROTECTION TUBE MATERIAL □316SS □310SS □347SS □INCONEL □OTHER □ 304SS □ 316SS □ INCONEL □ OTHER 11. UNION & NIPPLE SIZE (Dn), MAT'L 11. NIPPLE SIZE (Dn), MAT'L ☐ 3/4B (27.2mm) ☐ 3/4B (27.2mm) ☐ 1/2B (21.7mm) ☐ 1/2B (21.7mm) 12. NIPPLE LENGTH (A mm) 12. UNION & NIPPLE LENGTH (A mm) □50 □100 □150 □OTHER □ 100 □ 150 □ OTHER 13. CONNECTION 13. CONNECTION ☐ 1/2PT ☐ 1/2NPT ☐ 3/4PT ☐ 3/4NPT ☐ 1/2PT ☐ 1/2NPT ☐ 3/4PT ☐ 3/4NPT 14. SPRING LOAD TYPE 14. SPRING LOAD TYPE 15. LENGTH "L" _____ 15. LENGTH "L" (mm) ☐ 1/2PT ☐ 1/2NPT ☐ 3/4PT ☐ 3/4NPT Title Title Ex-Proof head with Nipple type Ex-Proof head with Union nipple type spring load sheathed RTD spring load sheathed RTD

Outline dimension & Specifications (Sheath type RTD) Model : RT53 - □□□ Model : RT54 - □□□ CHAIN NAME PLATE CHAIN COMPRESSION U FITTING NAME PLATE 50 FLEXIBLE TUBE WITH CABLE VINIL HOSE GLAND **CABLE** GLAND **EPOXY FILLED** 50 WELDING **GENERAL SPECIFICATION GENERAL SPECIFICATION** COMPRESSION 1. MODEL: RT53 - □□□ **1. MODEL** : RT54 - □□□ **FITTING** 2. TERMINAL BLOCK 2. TERMINAL BLOCK ☐ DOUBLE (6WIRE) ☐ SINGLE (3WIRE) ☐ DOUBLE (6WIRE) ☐ SINGLE (3WIRE) 3. HEAD (GENERAL) 3. HEAD (GENERAL) MATERIAL: ALUMINIUM ALLOY MATERIAL: ALUMINIUM ALLOY SURFACE COLOR: METALLIC SILVER SURFACE COLOR: METALLIC SILVER TERMINAL BLOCK MATERIAL: CERAMIC TERMINAL BLOCK MATERIAL: CERAMIC 4. PROTECTION TUBE: SHEATHED 4. PROTECTION TUBE: SHEATHED 5. CONSTRUCTION: WEATHER PROOF 5. CONSTRUCTION: WEATHER PROOF 6. CABLE GLAND 6. CABLE GLAND □JIS15b □ JIS20b □JIS15b □ JIS20b 7. ELEMENT TYPE (CERAMIC) at 0°C 7. ELEMENT TYPE (CERAMIC) at 0°C ☐ Pt100 (ohm) ☐ Pt50 (ohm) ☐ Pt100 (ohm) ☐ Pt50 (ohm) 8. CONNECTION MAT'L: ☐ 304SS ☐ 316SS ☐ OTHER **8. GRADE** : □ A 9. CONNECTION (COMPRESSION FITTING TYPE) 9. PROTECTION TUBE OUTER DIAMETER (D) □ 3/8PT □ 1/2PT □ 3/8NPT □ 1/2NPT □4.8 □6.4 □8 □OTHER 10. GRADE : □ A 10. PROTECTION TUBE MATERIAL $\sqcap B$ □316SS □310SS □347SS □INCONEL □OTHER 11. PROTECTION TUBE OUTER DIAMETER (D) 11. CONNECTION MAT'L □ 4.8 □ 6.4 □ 8 □ OTHER □304SS □316SS □OTHER 12. PROTECTION TUBE MATERIAL 12. CONNECTION (COMPRESSION FITTING) □316SS □310SS □347SS □INCONEL □OTHER □ 1/4PT □ 3/8PT □ 1/2PT □ OTHER 13. LENGTH "L" _____(mm) 13. FLEXIBLE TUBE LENGTH "U": _____(mm) 14. LENGTH "L" _____(mm) 15. MOUNTING BRACKET IS REQUEST (OPTION) Title Title General head with Non nipple General head with Remote type compression fitting type sheathed RTD compression fitting sheathed RTD

Outline dimension & Specifications (Sheath type RTD)				
Model : RT63 - □□□	Model : RT64 - □□□			
CHAIN NAME PLATE COMPRESSION FITTING FITTING SOLUTION FITTING SOLUTION SOLU	CHAIN WELDING FLEXIBLE TUBE WITH VINIL HOSE CABLE GLAND 78 EPOXY FILLED OG WELDING			
GENERAL SPECIFICATION	GENERAL SPECIFICATION			
1. MODEL: RT63 - □□□ 2. TERMINAL BLOCK □SINGLE (3WIRE) □ DOUBLE (6WIRE) 3. HEAD (ExdIICT6) MATERIAL: ALUMINIUM ALLOY SURFACE COLOR: METALLIC SILVER TERMINAL BLOCK MATERIAL: PHENOL RESIGN 4. PROTECTION TUBE: SHEATHED 5. CONSTRUCTION: ExdIICT6 6. CABLE GLAND □JIS15b □JIS20b 7. ELEMENT TYPE (CERAMIC) at 0°C □Pt100 (ohm) □Pt50 (ohm) 8. CONNECTION MAT'L: □304SS □316SS □OTHER 9. CONNECTION (COMPRESSION FITTING TYPE) □1/4PT □3/8PT □1/2PT □OTHER 10. GRADE: □A □B 11. PROTECTION TUBE OUTER DIAMETER (D) □4.8 □6.4 □8 □OTHER 12. PROTECTION TUBE MATERIAL □316SS □310SS □347SS □INCONEL □OTHER 13. LENGTH "L" (mm)	1. MODEL: RT64 - DOUBLE (GWIRE) 2. TERMINAL BLOCK SINGLE (3WIRE) DOUBLE (GWIRE) 3. HEAD (ExdIICT6) MATERIAL: ALUMINIUM ALLOY SURFACE COLOR: METALLIC SILVER TERMINAL BLOCK MATERIAL: PHENOL RESIGN 4. PROTECTION TUBE: SHEATHED 5. CONSTRUCTION: ExdIICT6 6. CABLE GLAND JIS15b JIS20b 7. ELEMENT TYPE (CERAMIC) at 0°C Pt100 (ohm) Pt50 (ohm) 8. GRADE: B 9. PROTECTION TUBE OUTER DIAMETER (D) 4.8 G.4 B OTHER 10. PROTECTION TUBE MATERIAL 316SS 310SS 347SS INCONEL 11. CONNECTION MAT'L 304SS 316SS OTHER 12. CONNECTION (COMPRESSION FITTING) 1/4PT 3/8PT 1/2PT OTHER 13. FLEXIBLE TUBE LENGTH "U": (mm) 14. LENGTH "L" (mm) 15. MOUNTING BRACKET IS REQUEST (OPTION)			
Title	Title			
Ex-Proof head with Non nipple type compression fitting type sheathed RTD	Ex-Proof head with Remote type compression fitting sheathed RTD			