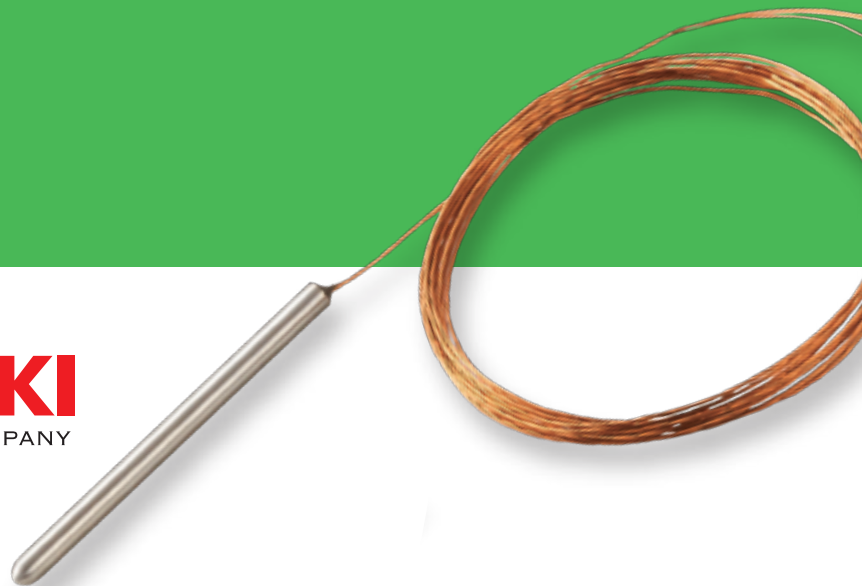


02

Resistance Thermometer Sensors Catalog



OKAZAKI
MANUFACTURING COMPANY



Green Procurement

Okazaki Manufacturing Company has established a policy for the control of hazardous chemical substances as an environmental measure, and promotes green purchasing and procurement activities that take the environment into consideration.

Security Policy

Okazaki Manufacturing Company handles customer information as a critical asset. We thoroughly recognize the importance of ensuring confidentiality and protecting information, and have implemented security measures through company rules and regulations.

To prevent the leakage of information, we take steps such as installing anti-virus software on company computers, implementing measures to prevent data leaks when exchanging data between computers, and prohibiting employees from taking computers out of company facilities and bringing their own private computers into company facilities.

Product Warranty

Okazaki Manufacturing Company conducts appropriate product inspections based on our own company standards. If a problem occurs with the product, contact your nearest service representative with the specific details of the problem.

Warranty Period

Period of warranty will be limited to one year from the date of the delivery.

Scope of Warranty

If, during the warranty period specified above, a problem occurs due to a fault attributable to Okazaki Manufacturing Company, the product shall be replaced or repaired.

However, this warranty does not apply in the following cases:

- (1) If the product has been handled or used improperly
- (2) If the cause of the problem is attributable to factors external to the purchased product
- (3) If modifications or repairs have been performed by a party other than Okazaki Manufacturing Company
- (4) If the product is used for purposes or applications in which the product is intended as a consumable item
- (5) In other cases such as a natural disaster or accident

Furthermore, the scope of the warranty is limited to the purchased product itself, and it does not cover other damage arising from the problem with the purchased product.

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Okazaki Manufacturing Company
 UK Limited

Europe
 Kamet Trading BV

Middle East
 Petroleum Services Co.
 Haffar Petroleum Services Co W.L.L
 Petro Middle East
 Energy Support Trading Est.
 Technical Supplies International Co.LLC

- Overseas Bases
- Overseas Representatives

Main Manufacturing Factory



Head Office

Okazaki Manufacturing Company
 supplies highly reliable and
 trusted products for use in
 a wide range of industries.

Aerospace



Petrochemicals



Gas



Fibers



Semiconductors



the world through “heat”



Aerospace Division

Kobe-Iwaoka Factory

Fukuoka Factory

Kyushu Factory

Okazaki Manufacturing (Taiwan) Company

ARI INDUSTRIES, INC., USA



[Business Sites]

Sales Offices

International Division/Tokyo Branch/Ibaraki Branch/Kita-kanto Branch/Chiba Branch/Yokohama Branch/Nagoya Branch/Kyoto Branch/Osaka Branch/Kobe Sales Office/Takasago Branch/Okayama Branch/Hiroshima Branch/Kita-kyushu Branch/Nagasaki Branch

Factories

Main Manufacturing Factory/Aerospace Division in Main Manufacturing Factory/Kobe-Iwaoka Factory/Fukuoka Factory/Kyushu Factory

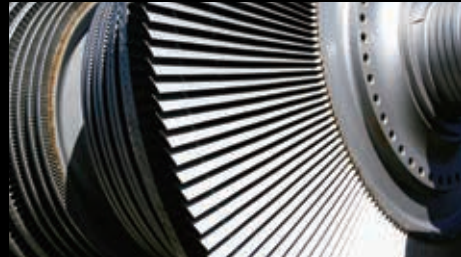
Overseas Bases

ARI Industries Inc., USA/Okazaki Manufacturing (Taiwan) Co., Ltd./Okazaki Manufacturing Company UK Limited

Environment



Power Generation



Medical & Food



Automobiles



Ships



Iron & Steel



Sensors and Heaters

Connecting across industries with “heat”

01 Thermocouples

AEROPAK®

02 Resistance Thermometer Sensors

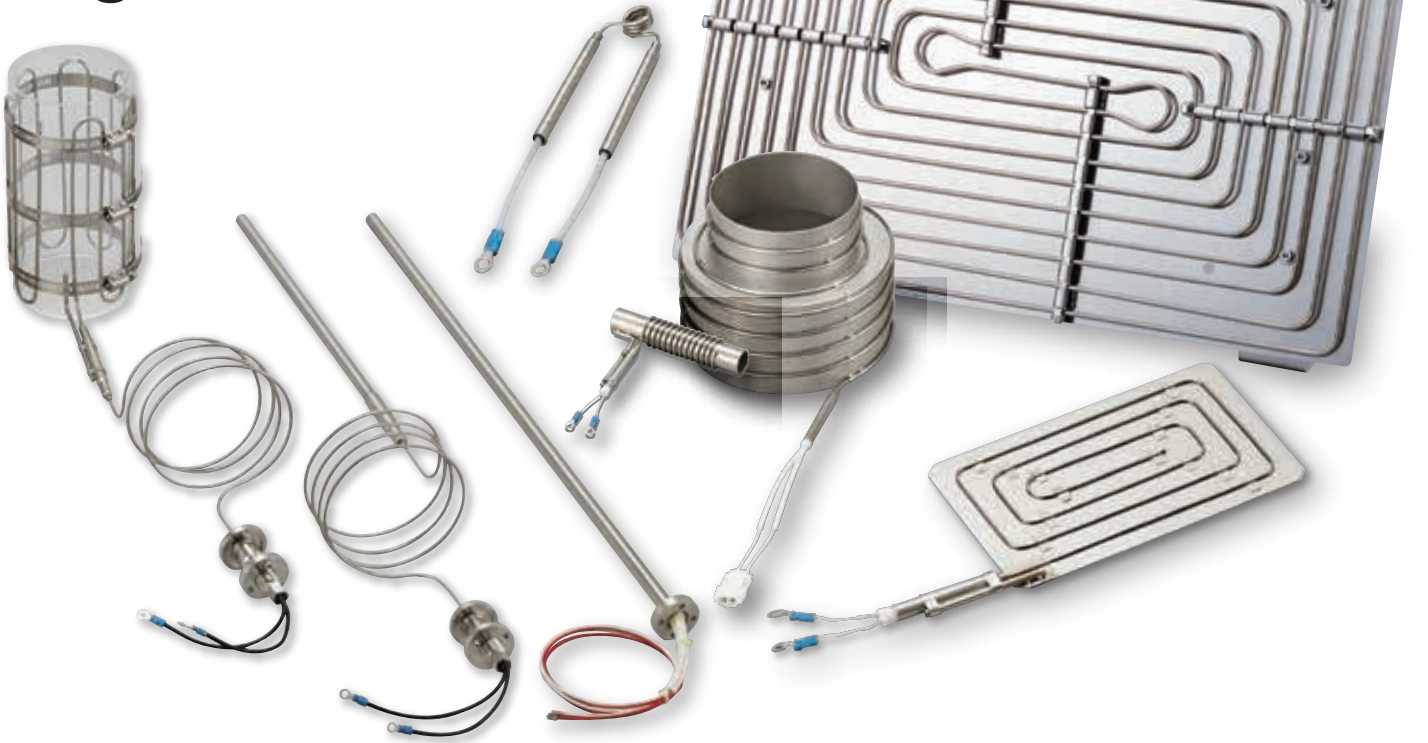
RESIOPAK®



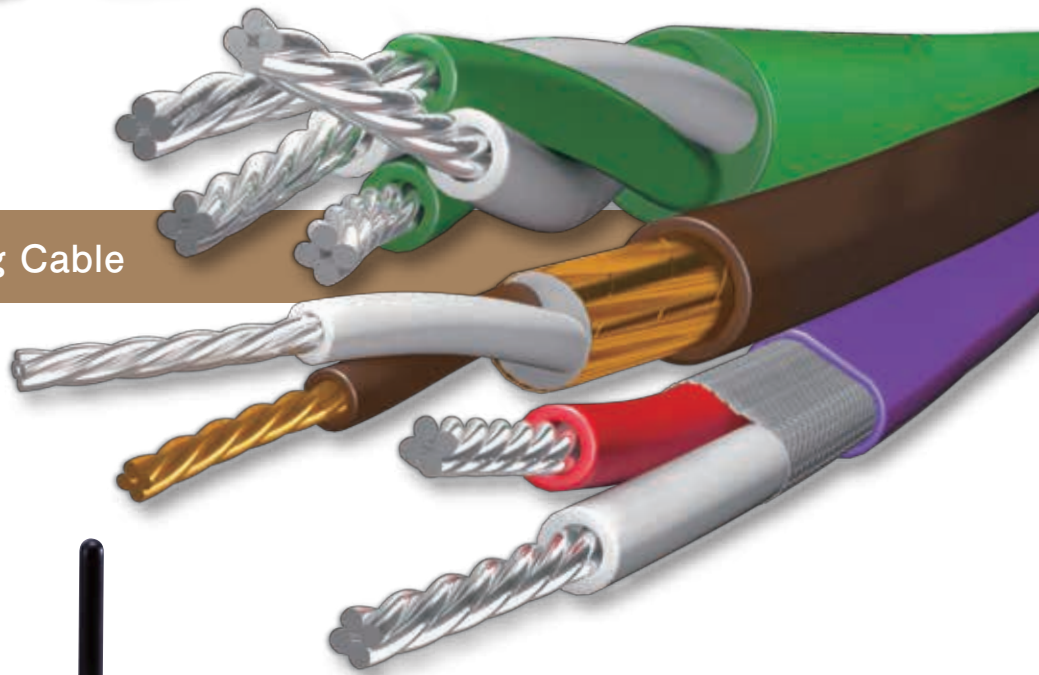
MI Cables

03 Heaters

AEROHEAT®



04 Compensating Cable



05 Thermowells



RESIOPAK®**Sheathed Resistance Thermometer Sensors**

RESIOPAK is a trademark of our sheathed resistance thermometer sensor and consists of a stainless steel thin tube (sheath), conductor wires, a temperature sensing element inside the tube, and an inorganic insulator (MgO) firmly packed and insulated around them. We manufacture a variety of products based on this structure, which vary depending on the purpose of use. Compared to general protection tube type resistance thermometer sensors, sheathed resistance thermometer sensors have many superior characteristics.

Characteristics

RESIOPAK has the following characteristics compared to conventional protection tube type resistance thermometer sensors.

- 1. Wider application range**
- 2. Better responsiveness**
- 3. Easier handling**
- 4. Longer product life**
- 5. Excellent mechanical strength/vibration resistance**
- 6. Able to handle specific needs**

Since the sheath outer diameter is small and the bending processing is easy, the sensor can be installed in a small space without disturbing the flow of the target to be measured. We can also manufacture a single sheath with two elements (six conducting wires), and work with a wide range of different needs using our various outer diameters.

Types of Resistance Thermometer Sensor

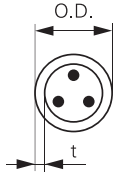
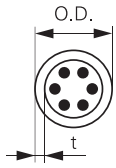
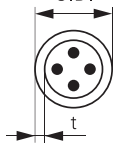
JIS C1604

Nominal resistance value at 0°C	Class	Measuring current	R100/R0 (resistance ratio)
Pt100 (JPt100)	AA	2 mA, 1 mA, 0.5 mA	1.3851 (1.3916)
	A		
	B		
	C		

Notes

1. R100 is the resistance value of the resistance element at 100°C
2. R0 is the resistance value of the resistance element at 0°C

RESIOPAK® Standard Specifications of Sheathed Resistance Thermometer Sensor

	Sheath			Conductor wire		
	Outer diameter (mm)	Thickness (mm)	Material	Wire diameter (mm)	Resistance per wire (Ω/m)	Material
Single element 	φ 1.6	10% or more of sheath outer diameter	316SS	10% or more of sheath outer diameter	6.34Max.	Nickel
	φ 3.2				1.59Max.	
	φ 4.8				0.71Max.	
	φ 6.4				0.40Max.	
	φ 8.0				0.25Max.	
	φ 9.0				0.20Max.	
	φ 12.75				0.10Max.	
Double element 	φ 3.2	10% or more of sheath outer diameter	316SS	10% or more of sheath outer diameter	1.59Max.	Nickel
	φ 4.8				0.71Max.	
	φ 6.4				0.40Max.	
	φ 8.0				0.25Max.	
	φ 9.0				0.20Max.	
	φ 12.75				0.10Max.	
Single 4-conductor cable 	φ 0.8	10% or more of sheath outer diameter	316SS	10% or more of sheath outer diameter	25.37Max.	Nickel
	φ 3.2				1.59Max.	
	φ 4.8				0.71Max.	
	φ 6.4				0.40Max.	
	φ 8.0				0.25Max.	
	φ 4.8				0.14Max.	Copper

We can manufacture with sheath diameters and materials other than the above.

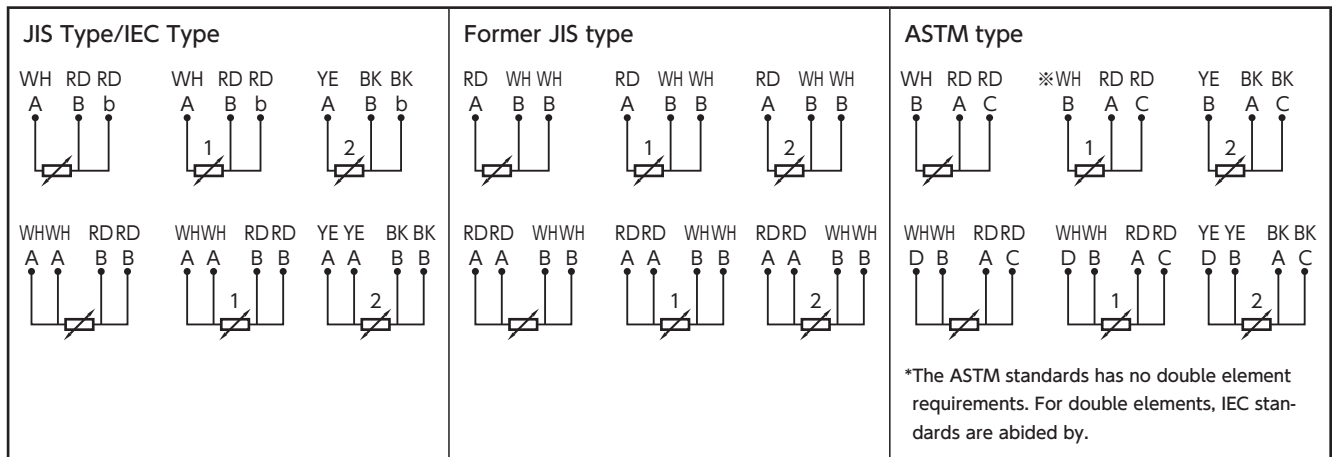
List of Temperature Tolerances and the Standards Applied by Each Country

Basic standard Nominal resistance value	Class	Tolerance (°C)	JIS C1604/IEC 60751		ASTM E1137
			Wire-wound element	Thin-film element	
			Temperature range (°C)		
Pt100 Ω at 0°C (R100/R0=1.3851)	AA	±[0.1 + 0.0017 t]	-196 to 450	0 to 150	-
	A	±[0.15 + 0.002 t]	-196 to 450	-30 to 300	-
		±[0.13 + 0.0017 t]	-	-	-200 to 650
	B	±[0.3 + 0.005 t]	-196 to 500	-50 to 500	-
		±[0.25 + 0.0042 t]	-	-	-200 to 650
C	±[0.6 + 0.01 t]	-196 to 500	-50 to 600	-	

Notes

1. The tolerance is the maximum allowable error of the value calculated by subtracting the measured temperature|t|from the value obtained by converting in accordance to the standard resistance table the resistance value indicated by the resistance element.
2. |t| is the measured temperature which is indicated as a temperature (°C) unrelated to + and - signs.
3. The latest version is applied for the standard year.

Resistance Thermometer Sensor Wire Connection Methods and Colors



2-conductor type:

As the conductor resistance is added to the resistance value, it is necessary to make the conductor resistance smaller or to know the conductor resistance beforehand.

3-conductor type:

Caution should be exercised when transmitting over long distances, as the variations in conductor resistance in the 3 cables may affect accuracy. Most commonly used in general.

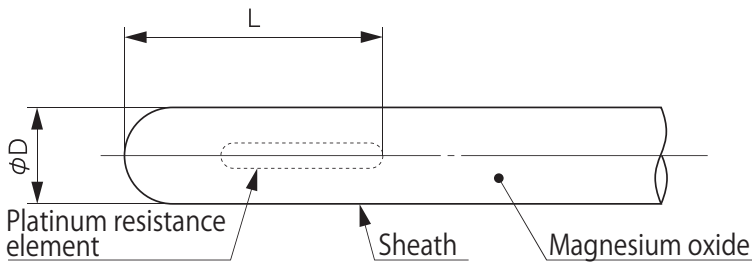
4-conductor type:

Used for high precision measurement because the conductor resistance does not significantly affect accuracy. A constant current is generally supplied and the resistance value is measured with the potential difference.

RESIOPAK® Operating Temperature Ranges JIS C1604-2013

Code	Classification	Operating temp. range (°C)
L	Use in lower temperatures	-196 to +100
N	Use in more moderate temperatures	-30 to +200
M	Use in higher temperatures	0 to 350
H	Use in high temperatures	0 to 500

RESIOPAK® Structure



Sheath outer diameter (φD)	Temperature sensor length (L mm) *	
	Double	Single
φ 3.2	32	
φ 4.8	43	27
φ 6.4	45	29
φ 8.0	46	30
φ 9.0	47	31
φ 12.7	51	35

*Lengths shown here are just an example. Other lengths may be available upon request.

RESIOPAK® Extension Cable

Code	Type	Core cable	Specifications	Resistance per core
LEA-3(6)	Extension cable for heat resistance	20/φ 0.18 x 3(6)		0.034 Ω/m
LEC-3(6)	Extension cable for general use	20/φ 0.18 x 3(6)		
LED-4-SS	Extension cable for general use	7/φ 0.16 x 4		Approx. 0.121 Ω/m
LED-6	Extension cable for general use	12/φ 0.18 x 6		Approx. 0.055 Ω/m
LEF-3(6)	Extension cable for heat resistance	30/φ 0.08 x 3(6)		Approx. 0.022 Ω/m
Insulation material		Classification by use		Operating temp. range in °C
90°C heat resistance PVC		General use		-20 to 90
Glassfiber yarn		Heat resistance		-20 to 150
Silicone rubber		Heat resistance		-60 to 180

RESIOPAK® Inspection Standards

Dimensional inspection

RESIOPAK outer diameter	φ 3.0 to φ 4.8 mm	±0.05 mm
	φ 6.0 to φ 6.4 mm	±0.06 mm
	φ 8 to φ 12.75 mm	± 1%
RESIOPAK length	≤150 mm	±2.0 mm
	150 mm<	±1.5%
Nipple length	Spring type	±3.0 mm
	Bellows type	±2.0%
	Maximum length is up to 1 m. If length exceeds 1 m, details will be provided separately.	
Extension cable length	≤1000 mm	±15 mm
	1000 mm<	±1.5%

Resistance value test

Measurement of basic resistance value	0°C	Freezing point
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Insulation resistance test

The resistance between the conductor cable and metallic sheath is measured in room temperature.

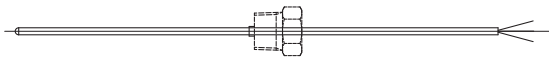
RESIOPAK outer diameter (mm)	Features
φ 3.0 to φ 12.75	100 MΩ/100 V DC

Documentation

The inspection certificate shall be attached to the product. Detailed test report shall be available upon request.

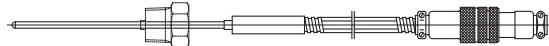
R14 >> D-11

Basic Sheathed Resistance Thermometer Sensor



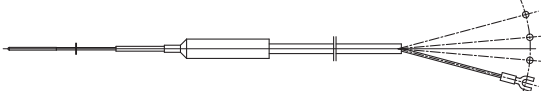
R68 >> D-16

Sheathed Resistance Thermometer Sensor with A Type Connector/Flexible Armoured Lead




R33 >> D-12

Super Fine Sheathed Resistance Thermometer Sensor



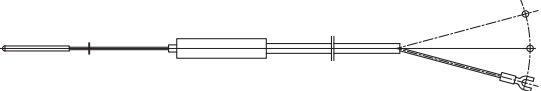
R90 >> D-17

Sheathed Resistance Thermometer Sensor with A Type Connector



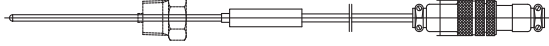
R34 >> D-13

Super Fine Sheathed Resistance Thermometer Sensor



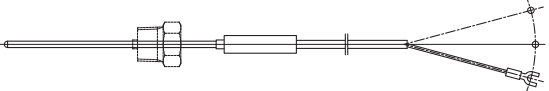
R102 >> D-18

Sheathed Resistance Thermometer Sensor with A Type Connector/Extension Cable



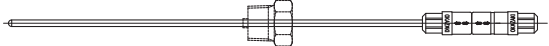
R35 >> D-14

Sheathed Resistance Thermometer Sensor with Extension Cable



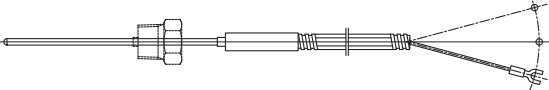
R110 >> D-19

Resistance Thermometer Sensor with Push-Pull Type Connector



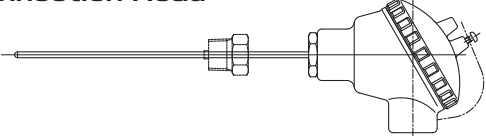
R40 >> D-15

Sheathed Resistance Thermometer Sensor with Flexible Armoured Lead



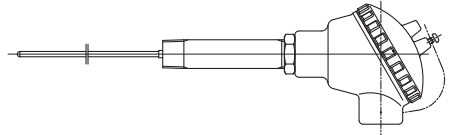
R96 >> D-20

Sheathed Resistance Thermometer Sensor with Connection Head



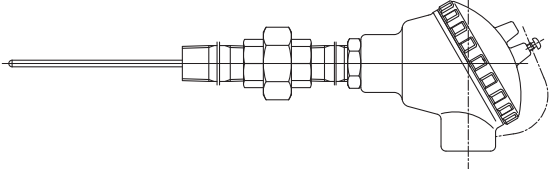
R96N >> D-21

Sheathed Resistance Thermometer Sensor with Connection Head/Nipple



R96U >> D-22

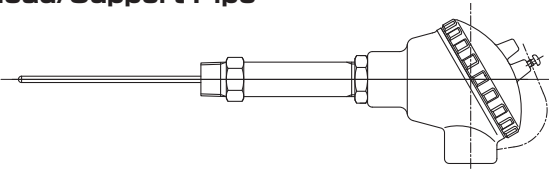
Sheathed Resistance Thermometer Sensor with Connection Head/Nipple/Union



A technical drawing of a sheathed resistance thermometer sensor. It features a long, thin sensing probe extending from a cylindrical connection head. The head has a multi-pin terminal block on its side and a mounting flange at the bottom.

R400S >> D-27

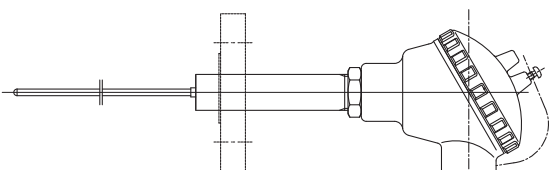
Spring Loaded Sheathed Resistance Thermometer Sensor with Connection Head/Support Pipe



A technical drawing of a spring-loaded sheathed resistance thermometer sensor. It has a sensing probe that passes through a connection head and into a support pipe. The head includes a terminal block and a mounting flange.

R96S >> D-23

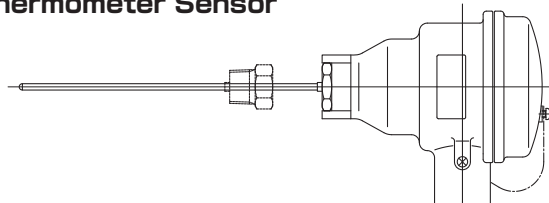
Sheathed Resistance Thermometer Sensor with Connection Head/Support Pipe



A technical drawing of a sheathed resistance thermometer sensor with a support pipe. The sensing probe is inserted into a support pipe that passes through a connection head. The head has a terminal block and a mounting flange.

R97 >> D-28

Explosion-Proof Sheathed Resistance Thermometer Sensor

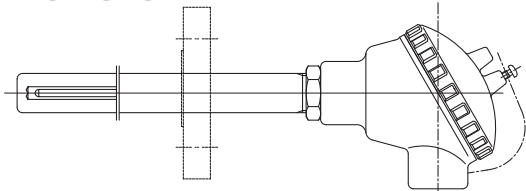


d2G4

A technical drawing of an explosion-proof sheathed resistance thermometer sensor. The sensing probe is housed within a robust, cylindrical explosion-proof enclosure. The enclosure has a terminal block and a mounting flange.

R96W >> D-24

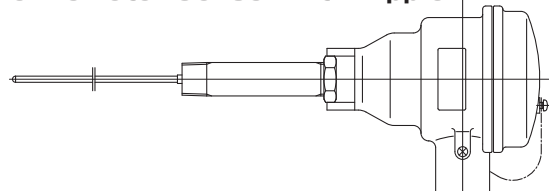
Sheathed Resistance Thermometer Sensor with Thermowell



A technical drawing of a sheathed resistance thermometer sensor with a thermowell. The sensing probe is inserted into a thermowell, which is then inserted into a connection head. The head has a terminal block and a mounting flange.

R97N >> D-29

Explosion-Proof Sheathed Resistance Thermometer Sensor with Nipple

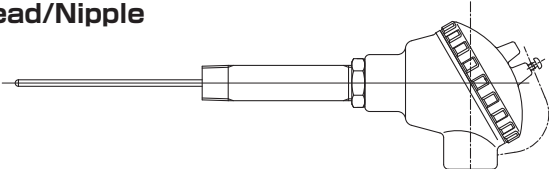


d2G4

A technical drawing of an explosion-proof sheathed resistance thermometer sensor with a nipple. The sensing probe is inserted into a nipple that passes through an explosion-proof enclosure. The enclosure has a terminal block and a mounting flange.

R400N >> D-25

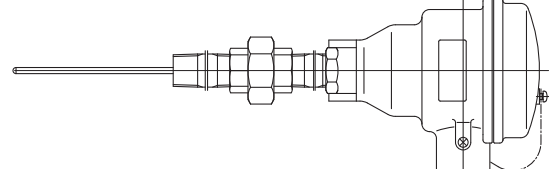
Spring Loaded Sheathed Resistance Thermometer Sensor with Connection Head/Nipple



A technical drawing of a spring-loaded sheathed resistance thermometer sensor with a connection head and nipple. The sensing probe is inserted into a nipple that passes through a connection head. The head has a terminal block and a mounting flange.

R97U >> D-30

Explosion-Proof Sheathed Resistance Thermometer Sensor with Nipple/Union

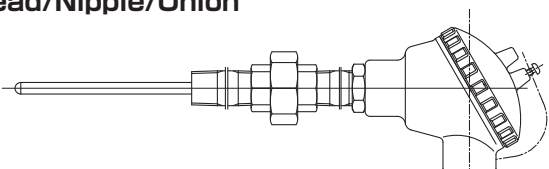


d2G4

A technical drawing of an explosion-proof sheathed resistance thermometer sensor with a nipple/union. The sensing probe is inserted into a nipple/union that passes through an explosion-proof enclosure. The enclosure has a terminal block and a mounting flange.

R400U >> D-26

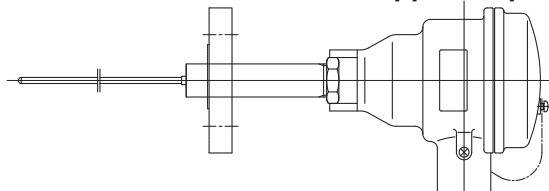
Spring Loaded Sheathed Resistance Thermometer Sensor with Connection Head/Nipple/Union



A technical drawing of a spring-loaded sheathed resistance thermometer sensor with a connection head, nipple, and union. The sensing probe is inserted into a nipple/union that passes through a connection head. The head has a terminal block and a mounting flange.

R97S >> D-31

Explosion-Proof Sheathed Resistance Thermometer Sensor with Support Pipe

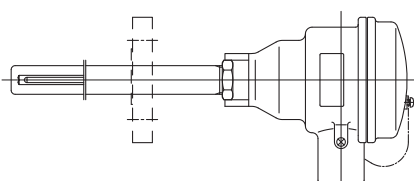


d2G4

A technical drawing of an explosion-proof sheathed resistance thermometer sensor with a support pipe. The sensing probe is inserted into a support pipe that passes through an explosion-proof enclosure. The enclosure has a terminal block and a mounting flange.

R97W >> D-32

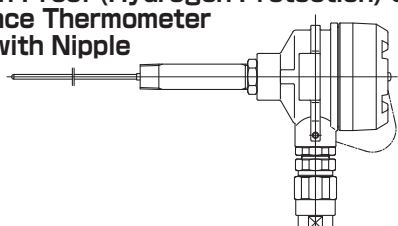
Explosion-Proof Sheathed Resistance Thermometer Sensor with Thermowell



d2G4

R99N >> D-37

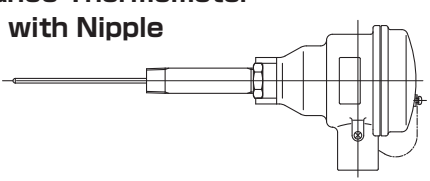
Explosion-Proof (Hydrogen Protection) Sheathed Resistance Thermometer Sensor with Nipple



IEC IECEx

R407N >> D-33

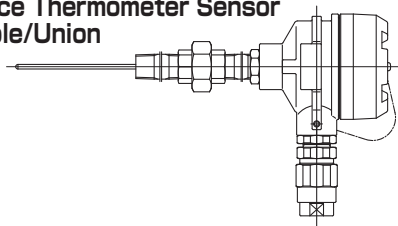
Spring Loaded Explosion-Proof Sheathed Resistance Thermometer Sensor with Nipple



d2G4

R99U >> D-38

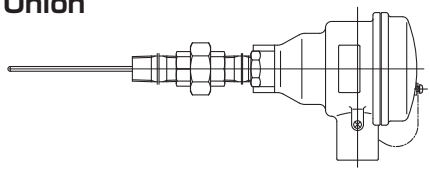
Explosion-Proof (Hydrogen Protection) Sheathed Resistance Thermometer Sensor with Nipple/Union



IEC IECEx

R407U >> D-34

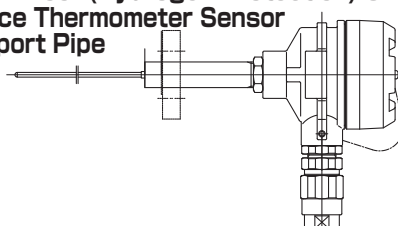
Spring Loaded Explosion-Proof Sheathed Resistance Thermometer Sensor with Nipple/Union



d2G4

R99S >> D-39

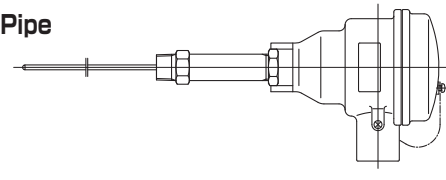
Explosion-Proof (Hydrogen Protection) Sheathed Resistance Thermometer Sensor with Support Pipe



IEC IECEx

R407S >> D-35

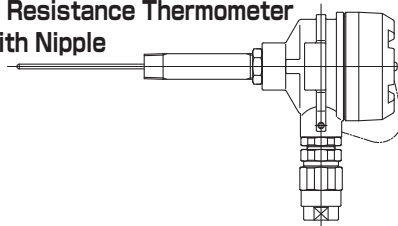
Spring Loaded Explosion-Proof Sheathed Resistance Thermometer Sensor with Support Pipe



d2G4

R409N >> D-40

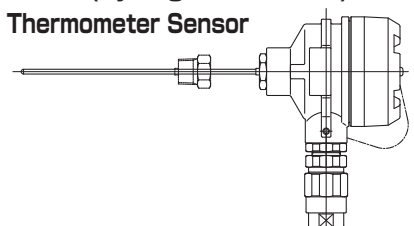
Spring Loaded Explosion-Proof (Hydrogen Protection) Sheathed Resistance Thermometer Sensor with Nipple



IEC IECEx

R99 >> D-36

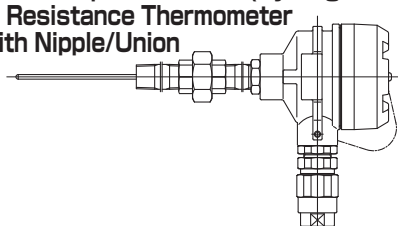
Explosion-Proof (Hydrogen Protection) Sheathed Resistance Thermometer Sensor



IEC IECEx

R409U >> D-41

Spring Loaded Explosion-Proof (Hydrogen Protection) Sheathed Resistance Thermometer Sensor with Nipple/Union



IEC IECEx

R409S >> D-42 IEC IECEx

Spring Loaded Explosion-Proof (Hydrogen Protection) Sheathed Resistance Thermometer Sensor with Support Pipe

R49U >> D-43 IEC IECEx

Explosion/Flame Proof Nipple Type Temperature Sensor (Spring Loaded Sheathed Resistance Thermometer Sensor)

R39N >> D-43 IEC IECEx

Explosion/Flame Proof Nipple Type Temperature Sensor (Sheathed Resistance Thermometer Sensor)

R49S >> D-43 IEC IECEx

Explosion/Flame Proof Nipple Type Temperature Sensor (Spring Loaded Sheathed Resistance Thermometer Sensor)

R39S >> D-43 IEC IECEx

Explosion/Flame Proof Nipple Type Temperature Sensor (Sheathed Resistance Thermometer Sensor)

R96M(6) >> D-44

Multipoint Sheathed Resistance Thermometer Sensor with Connection Head

R39U >> D-43 IEC IECEx

Explosion/Flame Proof Nipple Type Temperature Sensor (Sheathed Resistance Thermometer Sensor)

R96M(12) >> D-45

Multipoint Sheathed Resistance Thermometer Sensor with Connection Head

R49N >> D-43 IEC IECEx

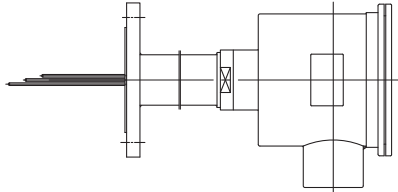
Explosion/Flame Proof Nipple Type Temperature Sensor (Spring Loaded Sheathed Resistance Thermometer Sensor)

R96M(24) >> D-46

Multipoint Sheathed Resistance Thermometer Sensor with Connection Head

R97M(24) >> D-47

Explosion-Proof Multipoint Sheathed Resistance Thermometer Sensor

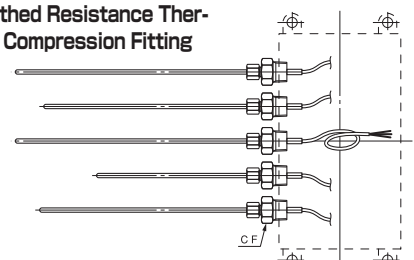


d2G4

R35EC

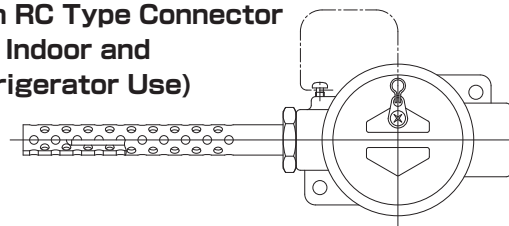
(Example of multilevel assembly)

Explosion-Proof Sheathed Resistance Thermometer Sensor with Compression Fitting (European Spec.)



RC1 >> D-48

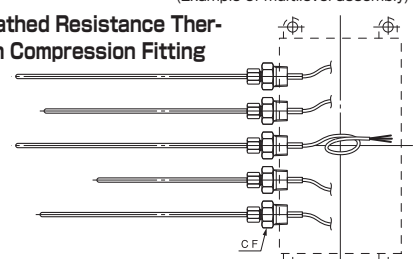
Sheathed Resistance Thermometer Sensor with RC Type Connector (for Indoor and Refrigerator Use)



R35FM

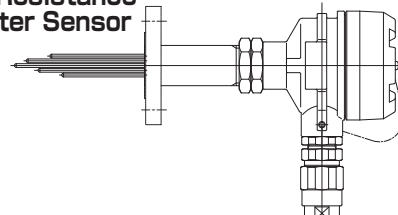
(Example of multilevel assembly)

Explosion-Proof Sheathed Resistance Thermometer Sensor with Compression Fitting (US Spec.)



R99M >> D-49

Explosion-Proof (Hydrogen Protection) Multipoint Sheathed Resistance Thermometer Sensor



IEC IECEx

Models with Intrinsic Safety Explosion-Proof Specifications

- Received approval for combined use of terminal box with intrinsic safety explosion-proof specifications + certified safety barriers in each country/area + simple apparatus (resistance thermometer sensors)¹
- Received approval for combined use of specified safety barrier + sensor (resistance thermometer sensor)²
- Received approval for the sensor (device test) and can be used in the following combinations²
 - Sensor + safety barrier
 - + wireless temperature transmitter
 - + temperature transmitter + safety barrier

Typical example of explosion proof marking

- *1 Exia II C T6
- *2 i3aG5/Exia II C T2 to T6 (TIIS)
Exia II C T4 or T3 Ga, Ga/Gb (CML)

Approved areas/countries

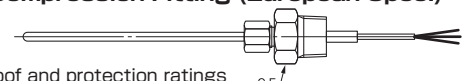
- *1 ATEX (Europe)
- *1 NEPSI (China)
- *1 PESO (India)
- *2 TIIS or CML (Japan)

- *1 European specifications (not for use in Japan)
- *2 Japan specifications

- *1 Simple apparatus
For electrical devices that do not exceed the rated values listed below, approval and description are not required. (According to EN 50020 section 5.4)
Rated voltage: 1.5 V
Rated current: 0.1 A
Power: 25 mV
(Resistance thermometer sensors fall under the category of simple apparatus)
- *1 Terminal box with intrinsic safety explosion-proof specifications
We have received certification for the standard terminal boxes in our standard parts list, except for ES and EP types.
- *2 As the types of devices that can be used with specified safety barriers, etc. are limited, please contact us for details.
As there are many different combinations possible for the sensor (device test) with safety barriers, etc., please contact us for details.

R35EC

Explosion-Proof Sheathed Resistance Thermometer Sensor with Compression Fitting (European Spec.)



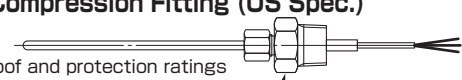
Main explosion-proof and protection ratings
Exde II C T6 & T5, IP66

Approved areas/countries
*1 ATEX (Europe) *1 NEPSI (China) *1 PESO (India)
Contact us for details.

Certified sensor product with compression fitting
Can be used in combination with temperature transmitters and terminal boxes certified in each country and area.
Not approved for use in Japan.

R35FM

Explosion-Proof Sheathed Resistance Thermometer Sensor with Compression Fitting (US Spec.)

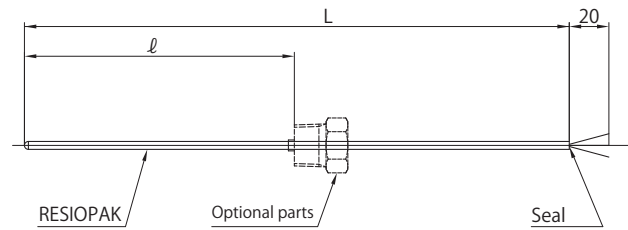


Main explosion-proof and protection ratings
Class I, Div 1 Gr.C to D NEMA 4 & 4X

Approved areas/countries
FM (US)
With specified terminal box (excluding hydrogen support)
Contact us for details.

Certified sensor product with compression fitting
Can be used in combination with temperature transmitters and terminal boxes certified in each country and area.
Not approved for use in Japan.

Basic Sheathed Resistance Thermometer Sensor

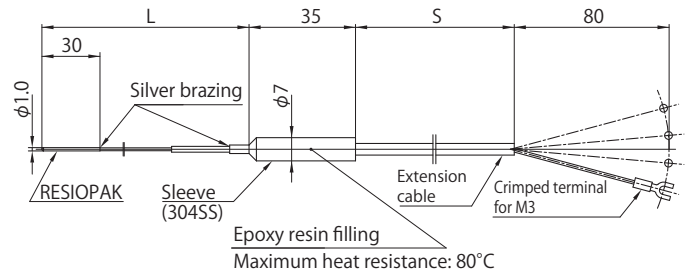


Model code R14

R14- ① _____ ② _____ ③ _____ ④ _____ ⑤ _____ ⑥ _____ ⑦ _____ / ⑧ _____

①	Length (Unit: mm)	L	
②	Sheath outer diameter	D E F G S	φ3.2 φ4.8 φ6.4 φ8.0 φ9.0
③	Number of conductor cables	3 6	Single Double
④	Operating temp. range	L N M H	-196 to 100°C -30 to 200°C 0 to 350°C 0 to 500°C
⑤	Resistance value	100	Pt100 Ω or JPt100 Ω
⑥	Class	-AAJ -AJ -BJ -CJ -A -B -AAI -AI -BI -CI -10 -11 -1 -2	Pt100 Ω AA class (JIS-2013) Pt100 Ω A class (JIS-2013) Pt100 Ω B class (JIS-2013) Pt100 Ω C class (JIS-2013) Pt100 Ω A class (JIS-1997) Pt100 Ω B class (JIS-1997) Pt100 Ω AA class (IEC) Pt100 Ω A class (IEC) Pt100 Ω B class (IEC) Pt100 Ω C class (IEC) Pt100 Ω B class (ASTM) Pt100 Ω A class (ASTM) JPt100 Ω B class JPt100 Ω A class
⑦	Optional parts		See the "Standard Parts" section
⑧	Immersion length (Unit: mm)	-ℓ	

Super Fine Sheathed Resistance Thermometer Sensor



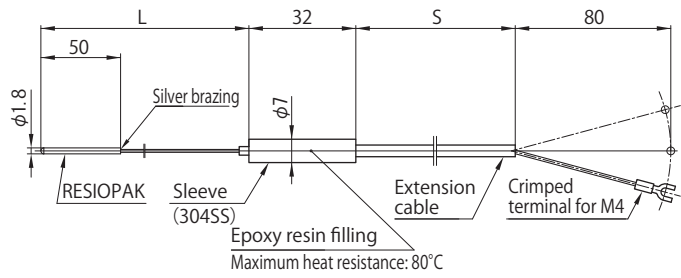
Model code R33

R33- ① _____ ② _____ ③ _____ ④ _____ ⑤ _____ ⑥ _____ / ⑦ _____ ⑧ _____ / ⑨ _____ ⑩ _____

①	Length (Unit: mm)	L	
②	Sheath outer diameter	Y	φ0.8
③	Number of conductor cables	4	Single (Note 1)
④	Operating temp. range	L M	-196 to 100°C 0 to 350°C
⑤	Resistance value	100	Pt100 Ω or JPt100 Ω
⑥	Class	-AAJ -AJ -BJ -CJ -A -B -AAI -AI -BI -CI -10 -11 -1 -2	Pt100 Ω AA class (JIS-2013) Pt100 Ω A class (JIS-2013) Pt100 Ω B class (JIS-2013) Pt100 Ω C class (JIS-2013) Pt100 Ω A class (JIS-1997) Pt100 Ω B class (JIS-1997) Pt100 Ω AA class (IEC) Pt100 Ω A class (IEC) Pt100 Ω B class (IEC) Pt100 Ω C class (IEC) Pt100 Ω B class (ASTM) Pt100 Ω A class (ASTM) JPt100 Ω B class JPt100 Ω A class
⑦	Extension cable length (Unit: mm)	S	
⑧	Extension cable types	LED-4-SS	For general use
⑨	Optional parts		N/A
⑩	Immersion length (Unit: mm)		N/A

Note 1) When used with a 3-conductor type, the sheath length should be up to 1000 mm and be in the B class only.

Super Fine Sheathed Resistance Thermometer Sensor



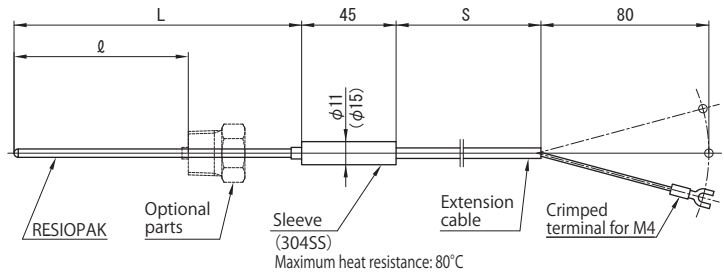
Model code R34

R34- ① _____ ② _____ ③ _____ ④ _____ ⑤ _____ ⑥ _____ / ⑦ _____ ⑧ _____ / ⑨ _____ ⑩ _____

①	Length (Unit: mm)	L	(Note1)
②	Sheath outer diameter	B	φ 1.6
③	Number of conductor cables	3	Single
④	Operating temp. range	L N M H	-196 to 100°C -30 to 200°C 0 to 350°C 0 to 500°C
⑤	Resistance value	100	Pt100 Ω or JPt100 Ω
⑥	Class	-AAJ -AJ -BJ -CJ -A -B -AAI -AI -BI -CI -10 -11 -1 -2	Pt100 Ω AA class (JIS-2013) Pt100 Ω A class (JIS-2013) Pt100 Ω B class (JIS-2013) Pt100 Ω C class (JIS-2013) Pt100 Ω A class (JIS-1997) Pt100 Ω B class (JIS-1997) Pt100 Ω AA class (IEC) Pt100 Ω A class (IEC) Pt100 Ω B class (IEC) Pt100 Ω C class (IEC) Pt100 Ω B class (ASTM) Pt100 Ω A class (ASTM) JPt100 Ω B class JPt100 Ω A class
⑦	Extension cable length (Unit: mm)	S	
⑧	Extension cable types	LEF	Extension cable for general use
⑨	Optional parts		See the "Standard Parts" section
⑩	Immersion length (Unit: mm)		N/A

Note 1) Class A accuracy up to 1000 mm
Class B accuracy up to 2000 mm

Sheathed Resistance Thermometer Sensor with Extension Cable



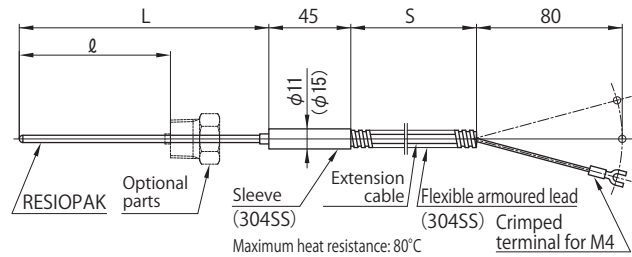
Model code R35

R35- ① _____ ② _____ ③ _____ ④ _____ ⑤ _____ ⑥ _____ / ⑦ _____ ⑧ _____ / ⑨ _____ ⑩ _____

①	Length (Unit: mm)	L	
②	Sheath outer diameter	D E F G	φ3.2 φ4.8 φ6.4 φ8.0
③	Number of conductor cables	3 6	Single Double
④	Operating temp. range	L N M H	-196 to 100°C -30 to 200°C 0 to 350°C 0 to 500°C
⑤	Resistance value	100	Pt100 Ω or JPt100 Ω
⑥	Class	-AAJ -AJ -BJ -CJ -A -B -AAI	Pt100 Ω AA class (JIS-2013) Pt100 Ω A class (JIS-2013) Pt100 Ω B class (JIS-2013) Pt100 Ω C class (JIS-2013) Pt100 Ω A class (JIS-1997) Pt100 Ω B class (JIS-1997) Pt100 Ω AA class (IEC)
		-AI -BI -CI -10 -11 -1 -2	Pt100 Ω A class (IEC) Pt100 Ω B class (IEC) Pt100 Ω C class (IEC) Pt100 Ω B class (ASTM) Pt100 Ω A class (ASTM) JPt100 Ω B class JPt100 Ω A class
⑦	Extension cable length (Unit: mm)	S	
⑧	Extension cable types	LEA-3 LEA-6 LEC-3 LEC-6 LED-6	Extension cable for heat resistance Extension cable for heat resistance Extension cable for general use Extension cable for general use Extension cable for general use
⑨	Optional parts		See the "Standard Parts" section
⑩	Immersion length (Unit: mm)		N/A

Sheath outer diameter	Sleeve outer diameter	
	Single	Double
φ3.2	φ11	φ11 or φ15
φ4.8	φ11	φ15
φ6.4	φ11	φ15
φ8.0	φ11	φ15
Extension cable	LEA-3 LEC-3	LEA-6 LEC-6 LED-6

Sheathed Resistance Thermometer Sensor with Flexible Armoured Lead



Model code R40

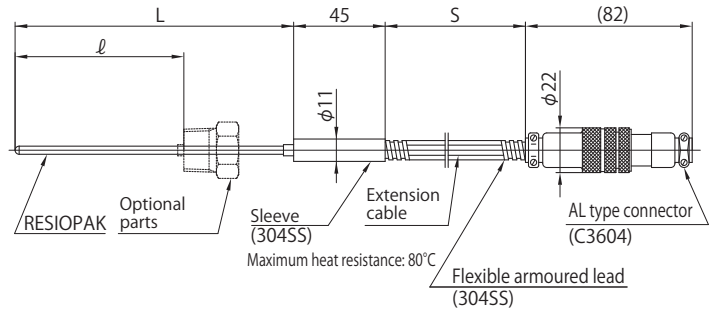
R40- ① _____ ② _____ ③ _____ ④ _____ ⑤ _____ ⑥ _____ / ⑦ _____ ⑧ _____ / ⑨ _____ ⑩ _____

①	Length (Unit: mm)	L			
②	Sheath outer diameter	D	φ 3.2		
		E	φ 4.8		
		F	φ 6.4		
		G	φ 8.0		
③	Number of conductor cables	3	Single		
		6	Double		
④	Operating temp. range	L	-196 to 100°C		
		N	-30 to 200°C		
		M	0 to 350°C		
		H	0 to 500°C		
⑤	Resistance value	100	Pt100 Ω or JPt100 Ω		
⑥	Class	-AAJ	Pt100 Ω AA class (JIS-2013)	-AI	Pt100 Ω A class (IEC)
		-AJ	Pt100 Ω A class (JIS-2013)	-BI	Pt100 Ω B class (IEC)
		-BJ	Pt100 Ω B class (JIS-2013)	-CI	Pt100 Ω C class (IEC)
		-CJ	Pt100 Ω C class (JIS-2013)	-10	Pt100 Ω B class (ASTM)
		-A	Pt100 Ω A class (JIS-1997)	-11	Pt100 Ω A class (ASTM)
		-B	Pt100 Ω B class (JIS-1997)	-1	JPt100 Ω B class
		-AAI	Pt100 Ω AA class (IEC)	-2	JPt100 Ω A class
		⑦	Extension cable length (Unit: mm)	S	
⑧	Extension cable types	LEA-3	Extension cable for heat resistance		
		LEA-6	Extension cable for heat resistance		
		LED-6	Extension cable for general use		
⑨	Optional parts		See the "Standard Parts" section		
⑩	Immersion length (Unit: mm)	-ℓ			

Sheath outer diameter	Sleeve outer diameter	
	Single	Double
φ 3.2	φ 11	φ 15
φ 4.8	φ 11	φ 15
φ 6.4	φ 11	φ 15
φ 8.0	φ 11	φ 15
Extension cable	LEA-3	LEA-6 LED-6

Sheathed Resistance Thermometer Sensor with A Type Connector/ Flexible Armoured Lead

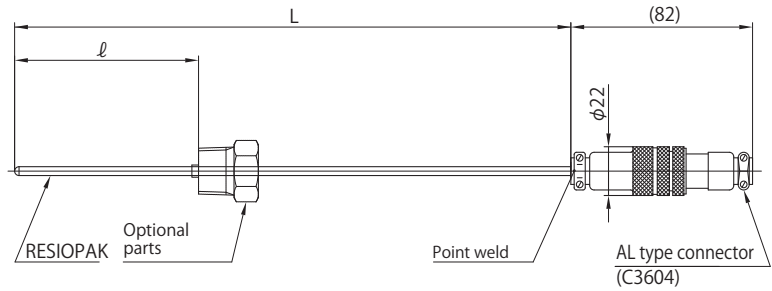
Model code R68



R68- ① _____ ② _____ ③ _____ ④ _____ ⑤ _____ ⑥ _____ / ⑦ _____ ⑧ _____ / ⑨ _____ ⑩ _____

①	Length (Unit: mm)	L	
②	Sheath outer diameter	D E F G	φ3.2 φ4.8 φ6.4 φ8.0
③	Number of conductor cables	3	Single
④	Operating temp. range	L N M H	-196 to 100°C -30 to 200°C 0 to 350°C 0 to 500°C
⑤	Resistance value	100	Pt100 Ω or JPt100 Ω
⑥	Class	-AAJ -AJ -BJ -CJ -A -B -AAI -AI -BI -CI -10 -11 -1 -2	Pt100 Ω AA class (JIS-2013) Pt100 Ω A class (JIS-2013) Pt100 Ω B class (JIS-2013) Pt100 Ω C class (JIS-2013) Pt100 Ω A class (JIS-1997) Pt100 Ω B class (JIS-1997) Pt100 Ω AA class (IEC) Pt100 Ω A class (IEC) Pt100 Ω B class (IEC) Pt100 Ω C class (IEC) Pt100 Ω B class (ASTM) Pt100 Ω A class (ASTM) JPt100 Ω B class JPt100 Ω A class
⑦	Extension cable length (Unit: mm)	S	
⑧	Extension cable types	LEA-3	Extension cable for heat resistance
⑨	Optional parts		See the "Standard Parts" section
⑩	Immersion length (Unit: mm)	-ℓ	

Sheathed Resistance Thermometer Sensor with A Type Connector

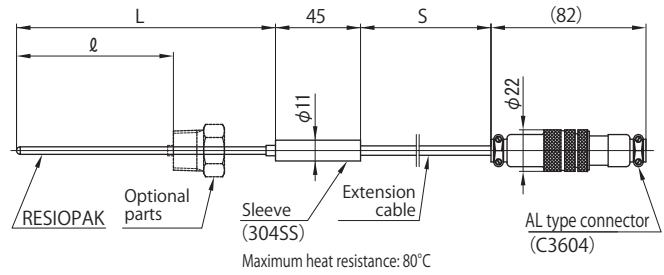


Model code R90

R90- ① _____ ② _____ ③ _____ ④ _____ ⑤ _____ ⑥ _____ ⑦ _____ / ⑧ _____

①	Length (Unit: mm)	L	
②	Sheath outer diameter	D	φ3.2
		E	φ4.8
		F	φ6.4
		G	φ8.0
③	Number of conductor cables	3	Single
④	Operating temp. range	L	-196 to 100°C
		N	-30 to 200°C
		M	0 to 350°C
		H	0 to 500°C
⑤	Resistance value	100	Pt100 Ω or JPt100 Ω
⑥	Class	-AAJ	Pt100 Ω AA class (JIS-2013)
		-AJ	Pt100 Ω A class (JIS-2013)
		-BJ	Pt100 Ω B class (JIS-2013)
		-CJ	Pt100 Ω C class (JIS-2013)
		-A	Pt100 Ω A class (JIS-1997)
		-B	Pt100 Ω B class (JIS-1997)
		-AAI	Pt100 Ω AA class (IEC)
		-AI	Pt100 Ω A class (IEC)
		-BI	Pt100 Ω B class (IEC)
		-CI	Pt100 Ω C class (IEC)
		-10	Pt100 Ω B class (ASTM)
		-11	Pt100 Ω A class (ASTM)
		-1	JPt100 Ω B class
-2	JPt100 Ω A class		
⑦	Optional parts		See the "Standard Parts" section
⑧	Immersion length (Unit: mm)	-ℓ	

Sheathed Resistance Thermometer Sensor with A Type Connector/Extension Cable

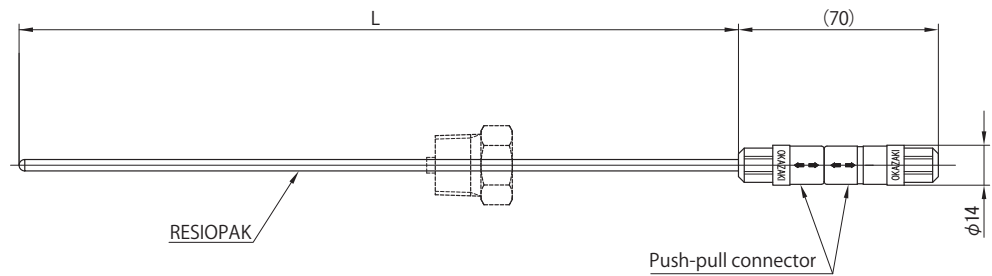


Model code R102

R102- ① _____ ② _____ ③ _____ ④ _____ ⑤ _____ ⑥ _____ / ⑦ _____ ⑧ _____ / ⑨ _____ ⑩ _____

①	Length (Unit: mm)	L	
②	Sheath outer diameter	D	φ3.2
		E	φ4.8
		F	φ6.4
		G	φ8.0
③	Number of conductor cables	3	Single
④	Operating temp. range	L	-196 to 100°C
		N	-30 to 200°C
		M	0 to 350°C
		H	0 to 500°C
⑤	Resistance value	100	Pt100 Ω or JPt100 Ω
⑥	Class	-AAJ	Pt100 Ω AA class (JIS-2013)
		-AJ	Pt100 Ω A class (JIS-2013)
		-BJ	Pt100 Ω B class (JIS-2013)
		-CJ	Pt100 Ω C class (JIS-2013)
		-A	Pt100 Ω A class (JIS-1997)
		-B	Pt100 Ω B class (JIS-1997)
		-AAI	Pt100 Ω AA class (IEC)
		-AI	Pt100 Ω A class (IEC)
		-BI	Pt100 Ω B class (IEC)
		-CI	Pt100 Ω C class (IEC)
		-10	Pt100 Ω B class (ASTM)
		-11	Pt100 Ω A class (ASTM)
-1	JPt100 Ω B class		
-2	JPt100 Ω A class		
⑦	Extension cable length (Unit: mm)	S	
⑧	Extension cable types	LEA-3	Extension cable for heat resistance
		LEC-3	Extension cable for general use
⑨	Optional parts		See the "Standard Parts" section
⑩	Immersion length (Unit: mm)	-ℓ	

Resistance Thermometer Sensor with Push-Pull Type Connector



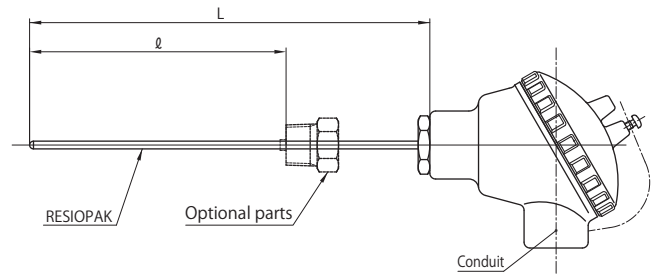
Model code R110

R110- ① _____ ② _____ ③ _____ ④ _____ ⑤ _____ ⑥ _____

①	Length (Unit: mm)	L	
②	Sheath outer diameter	D.E FN.F	φ3.2, φ4.8 φ6.0, φ6.4
③	Number of conductor cables	3 4	3-conductor cable type (single) 4-conductor cable type (single)
④	Operating temp. range	L M H	-200 to 100°C 0 to 350°C 0 to 500°C
⑤	Resistance value	100	Pt100 Ω or JPt100 Ω
⑥	Class	-AAJ -AJ -BJ -CJ -A -B -AAI -AI -BI -CI -10 -11 -1 -2	Pt100 Ω AA class (JIS-2013) Pt100 Ω A class (JIS-2013) Pt100 Ω B class (JIS-2013) Pt100 Ω C class (JIS-2013) Pt100 Ω A class (JIS-1997) Pt100 Ω B class (JIS-1997) Pt100 Ω AA class (IEC) Pt100 Ω A class (IEC) Pt100 Ω B class (IEC) Pt100 Ω C class (IEC) Pt100 Ω B class (ASTM) Pt100 Ω A class (ASTM) JPt100 Ω B class JPt100 Ω A class

- Please specify applicable cable diameter range up to φ6.5.
- Extension cables for resistance thermometer sensors can be added as an option.
- The connector parts are heat resistant up to 80°C.

Sheathed Resistance Thermometer Sensor with Connection Head

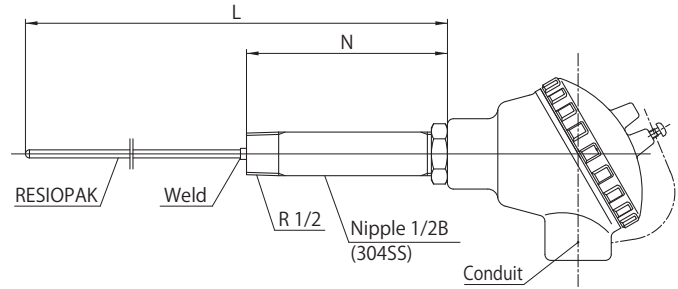


Model code R96

R96- ① _____ - ② _____ ③ _____ ④ _____ ⑤ _____ ⑥ _____ ⑦ _____ ⑧ _____ / ⑨ _____ ⑩ _____

①	Structure		N/A	
②	Terminal box	ES EL ED EF EP	Aluminum die-cast (ADC) (small) Aluminum die-cast (ADC) (large) Aluminum die-cast (ADC) (two-way) Cast iron Resin	
③	Length (Unit: mm)	L		
④	Sheath outer diameter	D E F G S K	φ 3.2 φ 4.8 φ 6.4 φ 8.0 φ 9.0 φ 12.75	
⑤	Number of conductor cables	3 6	Single Double	
⑥	Operating temp. range	L N M H	-196 to 100°C -30 to 200°C 0 to 350°C 0 to 500°C	
⑦	Resistance value	100	Pt100 Ω or JPt100 Ω	
⑧	Class	-AAJ -AJ -BJ -CJ -A -B -AAI	Pt100 Ω AA class (JIS-2013) Pt100 Ω A class (JIS-2013) Pt100 Ω B class (JIS-2013) Pt100 Ω C class (JIS-2013) Pt100 Ω A class (JIS-1997) Pt100 Ω B class (JIS-1997) Pt100 Ω AA class (IEC)	-AI -BI -CI -10 -11 -1 -2
⑨	Optional parts		See the "Standard Parts" section	
⑩	Immersion length (Unit: mm)	-ℓ		

Spring Loaded Sheathed Resistance Thermometer Sensor with Connection Head/Nipple

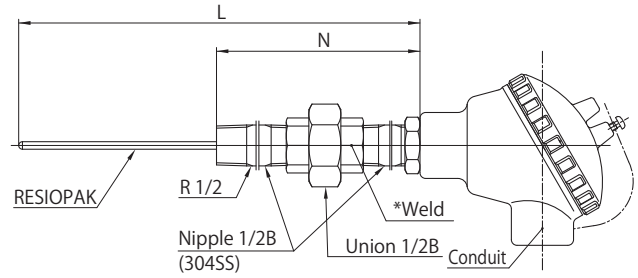


Model code **R96N**

R96N- ① — ② ③ ④ ⑤ ⑥ ⑦ ⑧ / ⑨ ⑩

①	Structure	1	N=100 *Not welded			
		2	N=150 *Not welded			
		3	N=100 *Welded			
		4	N=150 *Welded			
②	Terminal box	EL	Aluminum die-cast (ADC)			
		ED	Aluminum die-cast (ADC) (two-way)			
		EF	Cast iron			
		EP	Resin			
③	Length (Unit: mm)	L				
④	Sheath outer diameter	D	φ 3.2			
		E	φ 4.8			
		F	φ 6.4			
		G	φ 8.0			
		S	φ 9.0			
		K	φ 12.75			
⑤	Number of conductor cables	3	Single			
		6	Double			
⑥	Operating temp. range	L	-196 to 100°C			
		N	-30 to 200°C			
		M	0 to 350°C			
		H	0 to 500°C			
⑦	Resistance value	100	Pt100 Ω or JPt100 Ω			
⑧	Class	-AAJ	Pt100 Ω AA class (JIS-2013)		-AI	Pt100 Ω A class (IEC)
		-AJ	Pt100 Ω A class (JIS-2013)		-BI	Pt100 Ω B class (IEC)
		-BJ	Pt100 Ω B class (JIS-2013)		-CI	Pt100 Ω C class (IEC)
		-CJ	Pt100 Ω C class (JIS-2013)		-10	Pt100 Ω B class (ASTM)
		-A	Pt100 Ω A class (JIS-1997)		-11	Pt100 Ω A class (ASTM)
		-B	Pt100 Ω B class (JIS-1997)		-1	JPt100 Ω B class
		-AAI	Pt100 Ω AA class (IEC)		-2	JPt100 Ω A class
		⑨	Optional parts		See the "Standard Parts" section	
⑩	Immersion length (Unit: mm)		N/A			

Sheathed Resistance Thermometer Sensor with Connection Head/Nipple/Union



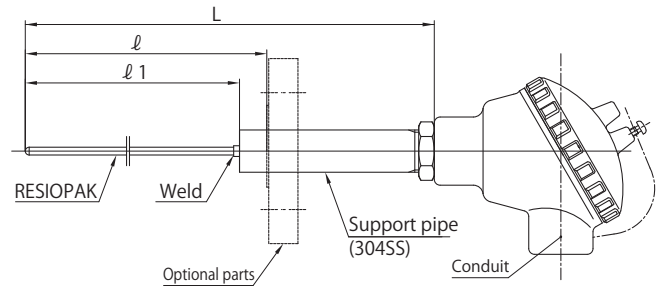
Model code **R96U**

R96U- ① _____ - ② _____ ③ _____ ④ _____ ⑤ _____ ⑥ _____ ⑦ _____ ⑧ _____ / ⑨ _____ ⑩ _____

①	Structure	2 4	N=150 *Not welded N=150 *Welded		
②	Terminal box	EL ED EF EP	Aluminum die-cast (ADC) Aluminum die-cast (ADC) (two-way) Cast iron Resin		
③	Length (Unit: mm)	L			
④	Sheath outer diameter	D E F G S K	φ3.2 φ4.8 φ6.4 φ8.0 φ9.0 φ12.75		
⑤	Number of conductor cables	3 6	Single Double		
⑥	Operating temp. range	L N M H	-196 to 100°C -30 to 200°C 0 to 350°C 0 to 500°C		
⑦	Resistance value	100	Pt100 Ω or JPt100 Ω		
⑧	Class	-AAJ -AJ -BJ -CJ -A -B -AAI	Pt100 Ω AA class (JIS-2013) Pt100 Ω A class (JIS-2013) Pt100 Ω B class (JIS-2013) Pt100 Ω C class (JIS-2013) Pt100 Ω A class (JIS-1997) Pt100 Ω B class (JIS-1997) Pt100 Ω AA class (IEC)	-AI -BI -CI -10 -11 -1 -2	Pt100 Ω A class (IEC) Pt100 Ω B class (IEC) Pt100 Ω C class (IEC) Pt100 Ω B class (ASTM) Pt100 Ω A class (ASTM) JPt100 Ω B class JPt100 Ω A class
⑨	Optional parts		See the "Standard Parts" section		
⑩	Immersion length (Unit: mm)		N/A		

Sheathed Resistance Thermometer Sensor with Connection Head/Support Pipe

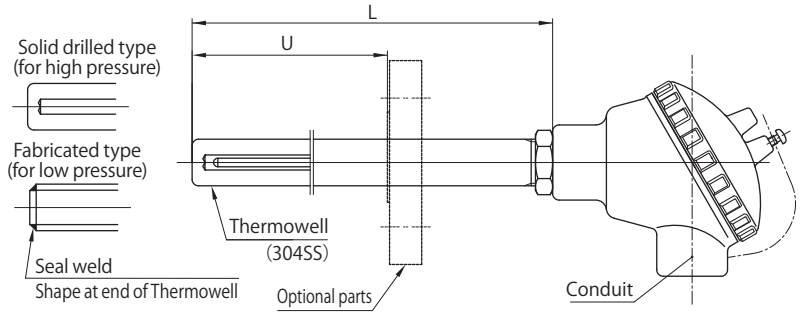
Model code R96S



R96S- ① — ② ③ ④ ⑤ ⑥ ⑦ ⑧ / ⑨ ⑩

①	Structure	1	1/2B support pipe					
		2	φ 15 support pipe					
		3	φ 12 support pipe					
②	Terminal box	EL	Aluminum die-cast (ADC)					
		ED	Aluminum die-cast (ADC) (two-way)					
		EF	Cast iron					
		EP	Resin					
③	Length (Unit: mm)	L						
④	Sheath outer diameter	D	φ 3.2					
		E	φ 4.8					
		F	φ 6.4					
		G	φ 8.0					
		S	φ 9.0					
⑤	Number of conductor cables	3	Single					
		6	Double					
⑥	Operating temp. range	L	-196 to 100°C					
		N	-30 to 200°C					
		M	0 to 350°C					
		H	0 to 500°C					
⑦	Resistance value	100	Pt100 Ω or JPt100 Ω					
⑧	Class	-AAJ	Pt100 Ω AA class (JIS-2013)		-AI	Pt100 Ω A class (IEC)		
		-AJ	Pt100 Ω A class (JIS-2013)		-BI	Pt100 Ω B class (IEC)		
		-BJ	Pt100 Ω B class (JIS-2013)		-CI	Pt100 Ω C class (IEC)		
		-CJ	Pt100 Ω C class (JIS-2013)		-10	Pt100 Ω B class (ASTM)		
		-A	Pt100 Ω A class (JIS-1997)		-11	Pt100 Ω A class (ASTM)		
		-B	Pt100 Ω B class (JIS-1997)		-1	JPt100 Ω B class		
		-AAI	Pt100 Ω AA class (IEC)		-2	JPt100 Ω A class		
		⑨	Optional parts	See the "Standard Parts" section				
		⑩	Immersion length (Unit: mm)	-l	(l 1)			

Sheathed Resistance Thermometer Sensor with Thermowell



Model code R96W

R96W- ① — ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ / ⑩ ⑪ ⑫

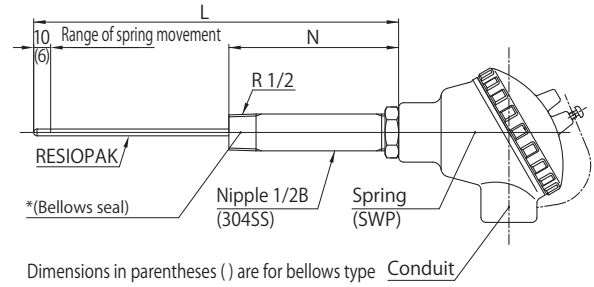
①	Structure	1	Fabricated type		
		2	Solid drilled type		
②	Terminal box	EL	Aluminum die-cast (ADC)	EF	Cast iron
		ED	Aluminum die-cast (ADC) (two-way)	EP	Resin
③	Length (Unit: mm)	L			
④	Sheath outer diameter	D	φ 3.2	F	φ 6.4
		E	φ 4.8	G	φ 8.0
⑤	Number of conductor cables	3	Single		
		6	Double		
⑥	Operating temp. range	L	-196 to 100°C	M	0 to 350°C
		N	-30 to 200°C	H	0 to 500°C
⑦	Resistance value	100	Pt100 Ω or JPt100 Ω		
⑧	Class	-AAJ	Pt100 Ω AA class (JIS-2013)	-AI	Pt100 Ω A class (IEC)
		-AJ	Pt100 Ω A class (JIS-2013)	-BI	Pt100 Ω B class (IEC)
		-BJ	Pt100 Ω B class (JIS-2013)	-CI	Pt100 Ω C class (IEC)
		-CJ	Pt100 Ω C class (JIS-2013)	-10	Pt100 Ω B class (ASTM)
		-A	Pt100 Ω A class (JIS-1997)	-11	Pt100 Ω A class (ASTM)
		-B	Pt100 Ω B class (JIS-1997)	-1	JPt100 Ω B class
		-AAI	Pt100 Ω AA class (IEC)	-2	JPt100 Ω A class
⑨	Thermowell dimensions	-10	See the table below		
		-12			
		-15			
		-22			
⑩	Thermowell materials	A	304SS		
		C	316SS		
⑪	Optional parts		See the "Standard Parts" section		
⑫	Immersion length (Unit: mm)	-U			

Thermowell dimensions

Code	Outer diameter	Inner diameter for fabricated type	Inner diameter for solid drilled type
-10	φ 10	φ 7	φ 7
-12	φ 12	φ 9	φ 9
-15	φ 15	φ 11	φ 9
-22	φ 21.7	φ 16.1	-
	φ 22	-	φ 9

Spring Loaded Sheathed Resistance Thermometer Sensor with Connection Head/Nipple

Model code R400N

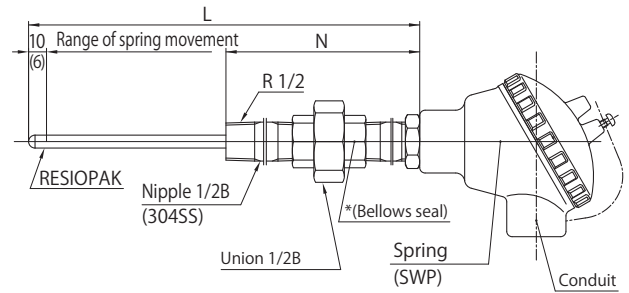


R400N- ① — ② ③ ④ ⑤ ⑥ ⑦ / ⑧ ⑨ ⑩

①	Structure	1	N=100		
		2	N=150		
		3	N=100 *Bellows seal		
		4	N=150 *Bellows seal		
②	Terminal box	EL	Aluminum die-cast (ADC)		
		ED	Aluminum die-cast (ADC) (two-way)		
		EF	Cast iron		
		EP	Resin		
③	Length (Unit: mm)	L			
④	Sheath outer diameter	D	φ 3.2		
		E	φ 4.8		
		F	φ 6.4		
		G	φ 8.0		
		S	φ 9.0 (excluding bellows type)		
⑤	Number of conductor cables	3	Single		
		6	Double		
⑥	Operating temp. range	L	-196 to 100°C		
		N	-30 to 200°C		
		M	0 to 350°C		
		H	0 to 500°C		
⑦	Resistance value	100	Pt100 Ω or JPt100 Ω		
⑧	Class	-AAJ	Pt100 Ω AA class (JIS-2013)	-AI	Pt100 Ω A class (IEC)
		-AJ	Pt100 Ω A class (JIS-2013)	-BI	Pt100 Ω B class (IEC)
		-BJ	Pt100 Ω B class (JIS-2013)	-CI	Pt100 Ω C class (IEC)
		-CJ	Pt100 Ω C class (JIS-2013)	-10	Pt100 Ω B class (ASTM)
		-A	Pt100 Ω A class (JIS-1997)	-11	Pt100 Ω A class (ASTM)
		-B	Pt100 Ω B class (JIS-1997)	-1	JPt100 Ω B class
		-AAI	Pt100 Ω AA class (IEC)	-2	JPt100 Ω A class
		⑨	Optional parts		See the "Standard Parts" section
⑩	Immersion length (Unit: mm)		N/A		

Spring Loaded Sheathed Resistance Thermometer Sensor with Connection Head/Nipple/Union

Model code R400U

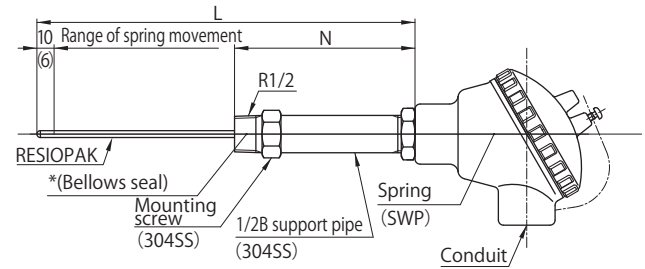


R400U- ① — ② — ③ — ④ — ⑤ — ⑥ — ⑦ — ⑧ / ⑨ — ⑩

①	Structure	2 4	N=150 N=150 *Bellows seal
②	Terminal box	EL ED EF EP	Aluminum die-cast (ADC) Aluminum die-cast (ADC) (two-way) Cast iron Resin
③	Length (Unit: mm)	L	
④	Sheath outer diameter	D E F G S	φ3.2 φ4.8 φ6.4 φ8.0 φ9.0 (excluding bellows type)
⑤	Number of conductor cables	3 6	Single Double
⑥	Operating temp. range	L N M H	-196 to 100°C -30 to 200°C 0 to 350°C 0 to 500°C
⑦	Resistance value	100	Pt100 Ω or JPt100 Ω
⑧	Class	-AAJ -AJ -BJ -CJ -A -B -AAI	Pt100 Ω AA class (JIS-2013) Pt100 Ω A class (JIS-2013) Pt100 Ω B class (JIS-2013) Pt100 Ω C class (JIS-2013) Pt100 Ω A class (JIS-1997) Pt100 Ω B class (JIS-1997) Pt100 Ω AA class (IEC)
		-AI -BI -CI -10 -11 -1 -2	Pt100 Ω A class (IEC) Pt100 Ω B class (IEC) Pt100 Ω C class (IEC) Pt100 Ω B class (ASTM) Pt100 Ω A class (ASTM) JPt100 Ω B class JPt100 Ω A class
⑨	Optional parts		See the "Standard Parts" section
⑩	Immersion length (Unit: mm)		N/A

Spring Loaded Sheathed Resistance Thermometer Sensor with Connection Head/Support Pipe

Model code R400S



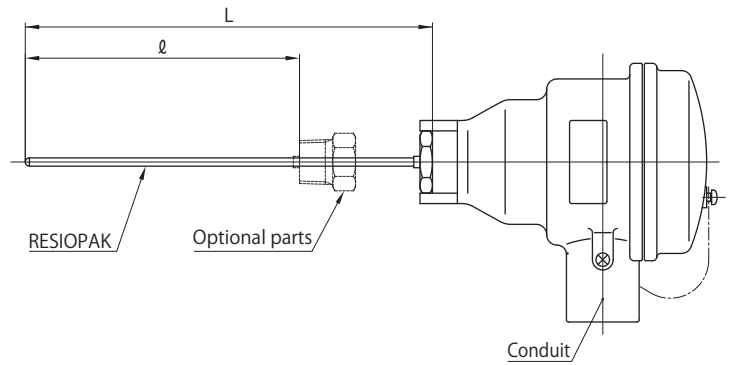
Dimensions in parentheses () are for bellows type

R400S- ① — ② ③ ④ ⑤ ⑥ ⑦ ⑧ / ⑨ ⑩

①	Structure	1	N=100		
		2	N=150		
		3	N=100 *Bellows seal		
		4	N=150 *Bellows seal		
②	Terminal box	EL	Aluminum die-cast (ADC)		
		ED	Aluminum die-cast (ADC) (two-way)		
		EF	Cast iron		
		EP	Resin		
③	Length (Unit: mm)	L			
④	Sheath outer diameter	D	φ 3.2		
		E	φ 4.8		
		F	φ 6.4		
		G	φ 8.0		
		S	φ 9.0 (excluding bellows type)		
⑤	Number of conductor cables	3	Single		
		6	Double		
⑥	Operating temp. range	L	-196 to 100°C		
		N	-30 to 200°C		
		M	0 to 350°C		
		H	0 to 500°C		
⑦	Resistance value	100	Pt100 Ω or JPt100 Ω		
⑧	Class	-AAJ	Pt100 Ω AA class (JIS-2013)	-AI	Pt100 Ω A class (IEC)
		-AJ	Pt100 Ω A class (JIS-2013)	-BI	Pt100 Ω B class (IEC)
		-BJ	Pt100 Ω B class (JIS-2013)	-CI	Pt100 Ω C class (IEC)
		-CJ	Pt100 Ω C class (JIS-2013)	-10	Pt100 Ω B class (ASTM)
		-A	Pt100 Ω A class (JIS-1997)	-11	Pt100 Ω A class (ASTM)
		-B	Pt100 Ω B class (JIS-1997)	-1	JPt100 Ω B class
		-AAI	Pt100 Ω AA class (IEC)	-2	JPt100 Ω A class
		⑨	Optional parts		See the "Standard Parts" section
⑩	Immersion length (Unit: mm)		N/A		

Explosion-Proof Sheathed Resistance Thermometer Sensor

d2G4



Model code R97

R97 ① — ② ③ ④ ⑤ ⑥ ⑦ ⑧ / ⑨ ⑩

①	Structure		N/A			
②	Terminal box	GA GS	Aluminum die-cast (ADC) Stainless steel (ST/ST)	GAD GM	Aluminum die-cast (ADC) (two-way) Stainless steel (two-way)	
③	Length (Unit: mm)	L				
④	Sheath outer diameter	D E F	ϕ 3.2 ϕ 4.8 ϕ 6.4	G S K	ϕ 8.0 ϕ 9.0 ϕ 12.75	
⑤	Number of conductor cables	3 6	Single Double			
⑥	Operating temp. range	L N M H	-196 to 100°C -30 to 200°C 0 to 350°C 0 to 500°C			
⑦	Resistance value	100	Pt100 Ω or JPt100 Ω			
⑧	Class	-AAJ -AJ -BJ -CJ -A -B -AAI	Pt100 Ω AA class (JIS-2013) Pt100 Ω A class (JIS-2013) Pt100 Ω B class (JIS-2013) Pt100 Ω C class (JIS-2013) Pt100 Ω A class (JIS-1997) Pt100 Ω B class (JIS-1997) Pt100 Ω AA class (IEC)	-AI -BI -CI -10 -11 -1 -2	Pt100 Ω A class (IEC) Pt100 Ω B class (IEC) Pt100 Ω C class (IEC) Pt100 Ω B class (ASTM) Pt100 Ω A class (ASTM) JPt100 Ω B class JPt100 Ω A class	
⑨	Optional parts		See the "Standard Parts" section			
⑩	Immersion length (Unit: mm)	- l				

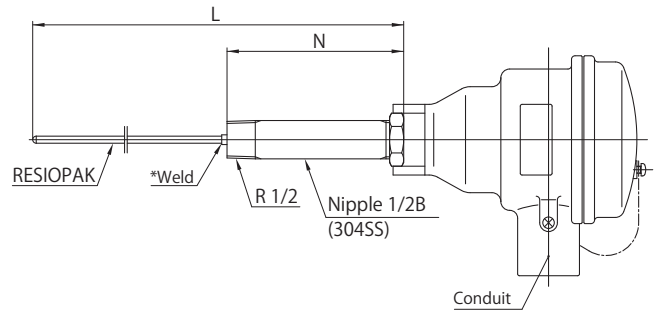
Model codes and sheath outer diameters

Model code	ϕ 3.2	ϕ 4.8	ϕ 6.4	ϕ 8.0	ϕ 9.0	ϕ 12.75
-GA	△	○	○	○	○	○
-GS	-	△	-	○	-	-
-GAD	△	△	△	○	-	-
-GM	-	-	△	-	-	-

For the combinations indicated by the triangle symbol (△), consider a support that holds the terminal head for safety purposes. (See Y-3.)

Notes: The structure of the terminal head for the GM type is different from the standard structure. (See Y-2.)

Explosion-Proof Sheathed Resistance Thermometer Sensor with Nipple d2G4



Model code **R97N**

R97N- ① — ② — ③ — ④ — ⑤ — ⑥ — ⑦ — ⑧ / ⑨ — ⑩

①	Structure	1	N=100 *Not welded	3	N=100 *Welded
		2	N=150 *Not welded	4	N=150 *Welded
②	Terminal box	GA	Aluminum die-cast (ADC)	GAD	Aluminum die-cast (ADC) (two-way)
		GS	Stainless steel (ST/ST)	GM	Stainless steel (two-way)
③	Length (Unit: mm)	L			
④	Sheath outer diameter	D	φ 3.2	G	φ 8.0
		E	φ 4.8	S	φ 9.0
		F	φ 6.4	K	φ 12.75
⑤	Number of conductor cables	3	Single		
		6	Double		
⑥	Operating temp. range	L	-196 to 100°C		
		N	-30 to 200°C		
		M	0 to 350°C		
		H	0 to 500°C		
⑦	Resistance value	100	Pt100 Ω or JPt100 Ω		
⑧	Class	-AAJ	Pt100 Ω AA class (JIS-2013)	-AI	Pt100 Ω A class (IEC)
		-AJ	Pt100 Ω A class (JIS-2013)	-BI	Pt100 Ω B class (IEC)
		-BJ	Pt100 Ω B class (JIS-2013)	-CI	Pt100 Ω C class (IEC)
		-CJ	Pt100 Ω C class (JIS-2013)	-10	Pt100 Ω B class (ASTM)
		-A	Pt100 Ω A class (JIS-1997)	-11	Pt100 Ω A class (ASTM)
		-B	Pt100 Ω B class (JIS-1997)	-1	JPt100 Ω B class
		-AAI	Pt100 Ω AA class (IEC)	-2	JPt100 Ω A class
⑨	Optional parts		See the "Standard Parts" section		
⑩	Immersion length (Unit: mm)		N/A		

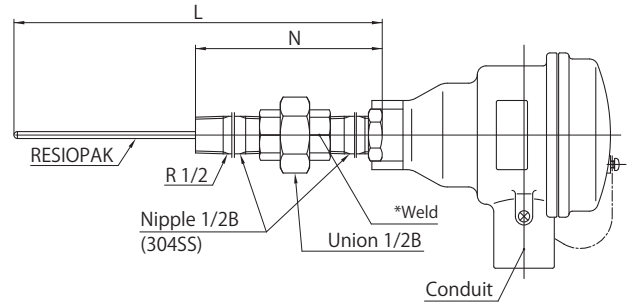
Model codes and sheath outer diameters

Model code	φ 3.2	φ 4.8	φ 6.4	φ 8.0	φ 9.0	φ 12.75
-GA	○	○	○	○	○	○
-GS	-	○	-	○	-	-
-GAD	○	○	○	○	○	○
-GM	-	-	○	-	-	-

Notes: The structure of the terminal head for the GM type is different from the standard structure. (See Y-2.)

Explosion-Proof Sheathed Resistance Thermometer Sensor with Nipple/Union

d2G4



Model code R97U

R97U- ① — ② — ③ — ④ — ⑤ — ⑥ — ⑦ — ⑧ / ⑨ — ⑩

①	Structure	2 4	N=150 *Not welded N=150 *Welded			
②	Terminal box	GA GS GAD GM	Aluminum die-cast (ADC) Stainless steel (ST/ST) Aluminum die-cast (ADC) (two-way) Stainless steel (two-way)			
③	Length (Unit: mm)	L				
④	Sheath outer diameter	D E F	φ3.2 φ4.8 φ6.4	G S K	φ8.0 φ9.0 φ12.75	
⑤	Number of conductor cables	3 6	Single Double			
⑥	Operating temp. range	L N M H	-196 to 100°C -30 to 200°C 0 to 350°C 0 to 500°C			
⑦	Resistance value	100	Pt100 Ω or JPt100 Ω			
⑧	Class	-AAJ -AJ -BJ -CJ -A -B -AAI	Pt100 Ω AA class (JIS-2013) Pt100 Ω A class (JIS-2013) Pt100 Ω B class (JIS-2013) Pt100 Ω C class (JIS-2013) Pt100 Ω A class (JIS-1997) Pt100 Ω B class (JIS-1997) Pt100 Ω AA class (IEC)	-AI -BI -CI -10 -11 -1 -2	Pt100 Ω A class (IEC) Pt100 Ω B class (IEC) Pt100 Ω C class (IEC) Pt100 Ω B class (ASTM) Pt100 Ω A class (ASTM) JPt100 Ω B class JPt100 Ω A class	
⑨	Optional parts		See the "Standard Parts" section			
⑩	Immersion length (Unit: mm)		N/A			

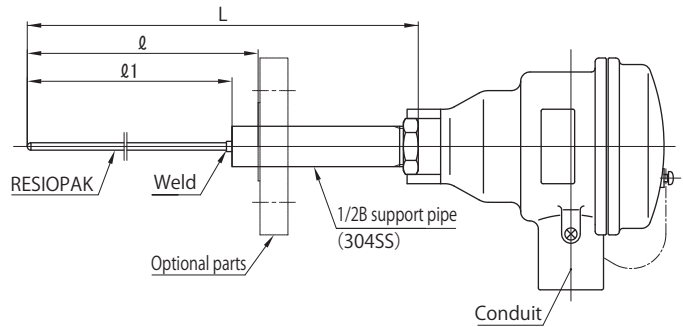
Model codes and sheath outer diameters

Model code	φ3.2	φ4.8	φ6.4	φ8.0	φ9.0	φ12.75
-GA	○	○	○	○	○	○
-GS	-	○	-	○	-	-
-GAD	○	○	○	○	○	○
-GM	-	-	○	-	-	-

Notes: The structure of the terminal head for the GM type is different from the standard structure. (See Y-2.)

Explosion-Proof Sheathed Resistance Thermometer Sensor with Support Pipe d2G4

Model code R97S



R97S- ① — ② ③ ④ ⑤ ⑥ ⑦ ⑧ / ⑨ ⑩

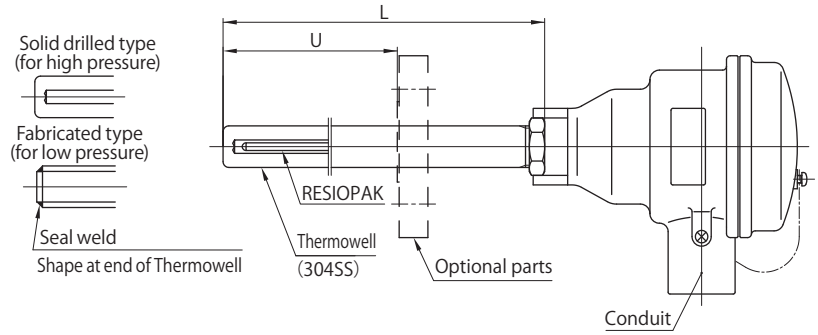
①	Structure	1	Support pipe			
②	Terminal box	GA	Aluminum die-cast (ADC)	GAD	Aluminum die-cast (ADC) (two-way)	
		GS	Stainless steel (ST/ST)	GM	Stainless steel (two-way)	
③	Length (Unit: mm)	L				
④	Sheath outer diameter	D	φ 3.2	G	φ 8.0	
		E	φ 4.8	S	φ 9.0	
		F	φ 6.4	K	φ 12.75	
⑤	Number of conductor cables	3	Single			
		6	Double			
⑥	Operating temp. range	L	-196 to 100°C			
		N	-30 to 200°C			
		M	0 to 350°C			
		H	0 to 500°C			
⑦	Resistance value	100	Pt100 Ω or JPt100 Ω			
⑧	Class	-AAJ	Pt100 Ω AA class (JIS-2013)	-AI	Pt100 Ω A class (IEC)	
		-AJ	Pt100 Ω A class (JIS-2013)	-BI	Pt100 Ω B class (IEC)	
		-BJ	Pt100 Ω B class (JIS-2013)	-CI	Pt100 Ω C class (IEC)	
		-CJ	Pt100 Ω C class (JIS-2013)	-10	Pt100 Ω B class (ASTM)	
		-A	Pt100 Ω A class (JIS-1997)	-11	Pt100 Ω A class (ASTM)	
		-B	Pt100 Ω B class (JIS-1997)	-1	JPt100 Ω B class	
		-AAI	Pt100 Ω AA class (IEC)	-2	JPt100 Ω A class	
⑨	Optional parts		See the "Standard Parts" section			
⑩	Immersion length (Unit: mm)	-l	(-l1)			

Model codes and sheath outer diameters

Model code	φ 3.2	φ 4.8	φ 6.4	φ 8.0	φ 9.0	φ 12.75
-GA	○	○	○	○	○	○
-GS	-	○	-	○	-	-
-GAD	○	○	○	○	○	○
-GM	-	-	○	-	-	-

Notes: The structure of the terminal head for the GM type is different from the standard structure. (See Y-2.)

Explosion-Proof Sheathed Resistance Thermometer Sensor with Thermowell d2G4



Model code **R97W**

R97W- ① — ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ / ⑩ ⑪ ⑫

①	Structure	1 2	Fabricated type Solid drilled type		
②	Terminal box	GA	Aluminum die-cast (ADC)		
③	Length (Unit: mm)	L			
④	Sheath outer diameter	D E	φ 3.2 φ 4.8	F G	φ 6.4 φ 8.0
⑤	Number of conductor cables	3 6	Single Double		
⑥	Operating temp. range	L N	-196 to 100°C -30 to 200°C	M H	0 to 350°C 0 to 500°C
⑦	Resistance value	100	Pt100 Ω or JPt100 Ω		
⑧	Class	-AAJ -AJ -BJ -CJ -A -B -AAI	Pt100 Ω AA class (JIS-2013) Pt100 Ω A class (JIS-2013) Pt100 Ω B class (JIS-2013) Pt100 Ω C class (JIS-2013) Pt100 Ω A class (JIS-1997) Pt100 Ω B class (JIS-1997) Pt100 Ω AA class (IEC)	-AI -BI -CI -10 -11 -1 -2	Pt100 Ω A class (IEC) Pt100 Ω B class (IEC) Pt100 Ω C class (IEC) Pt100 Ω B class (ASTM) Pt100 Ω A class (ASTM) JPt100 Ω B class JPt100 Ω A class
⑨	Thermowell dimensions	-10 -12 -15 -22	See the table below		
⑩	Thermowell materials	A C	304SS 316SS		
⑪	Optional parts		See the "Standard Parts" section		
⑫	Immersion length (Unit: mm)	-U			

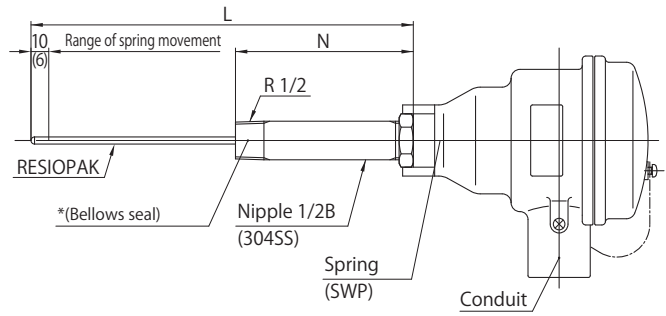
Thermowell dimensions

Code	Outer diameter	Inner diameter for fabricated type	Inner diameter for solid drilled type
-10	φ 10	φ 7	φ 5 to φ 7
-12	φ 12	φ 9	φ 7 to φ 9
-15	φ 15	φ 11	φ 9 to φ 11
-22	φ 21.7	φ 16.1	-
	φ 22	-	φ 14.5 to φ 16

Spring Loaded Explosion-Proof Sheathed Resistance Thermometer Sensor with Nipple

d2G4

Model code **R407N**



R407N- ① — ② ③ ④ ⑤ ⑥ ⑦ ⑧ / ⑨ ⑩

①	Structure	1	N=100			
		2	N=150			
		3	N=100 *Bellows seal			
		4	N=150 *Bellows seal			
②	Terminal box	GA	Aluminum die-cast (ADC)			
		GS	Stainless steel (ST/ST)			
		GAD	Aluminum die-cast (ADC) (two-way)			
③	Length (Unit: mm)	L				
④	Sheath outer diameter	D	φ 3.2			
		E	φ 4.8			
		F	φ 6.4			
		G	φ 8.0			
⑤	Number of conductor cables	3	Single			
		6	Double			
⑥	Operating temp. range	L	-196 to 100°C			
		N	-30 to 200°C			
		M	0 to 350°C			
		H	0 to 500°C			
⑦	Resistance value	100	Pt100 Ω or JPt100 Ω			
⑧	Class	-AAJ	Pt100 Ω AA class (JIS-2013)		-AI	Pt100 Ω A class (IEC)
		-AJ	Pt100 Ω A class (JIS-2013)		-BI	Pt100 Ω B class (IEC)
		-BJ	Pt100 Ω B class (JIS-2013)		-CI	Pt100 Ω C class (IEC)
		-CJ	Pt100 Ω C class (JIS-2013)		-10	Pt100 Ω B class (ASTM)
		-A	Pt100 Ω A class (JIS-1997)		-11	Pt100 Ω A class (ASTM)
		-B	Pt100 Ω B class (JIS-1997)		-1	JPt100 Ω B class
		-AAI	Pt100 Ω AA class (IEC)		-2	JPt100 Ω A class
		⑨	Optional parts	See the "Standard Parts" section		
⑩	Immersion length (Unit: mm)	N/A				

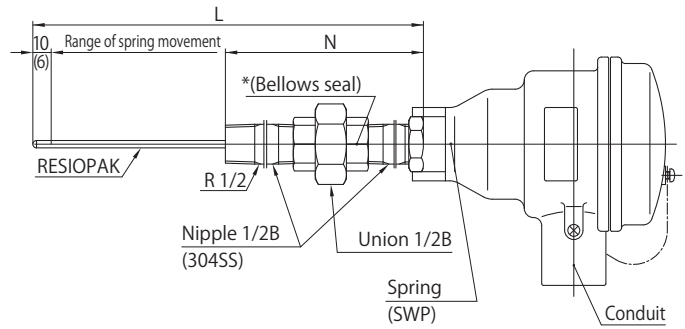
Model codes and sheath outer diameters

Model code	φ 3.2	φ 4.8	φ 6.4	φ 8.0	φ 9.0	φ 12.75
-GA	○	○	○	○	-	-
-GS	-	○	○	○	-	-
-GAD	○	○	○	○	-	-
-GM	-	-	-	-	-	-

Spring Loaded Explosion-Proof Sheathed Resistance Thermometer Sensor with Nipple/Union

d2G4

Model code R407U



R407U- ① — ② ③ ④ ⑤ ⑥ ⑦ ⑧ / ⑨ ⑩

①	Structure	2 4	N=150 N=150 *Bellows seal
②	Terminal box	GA GS GAD	Aluminum die-cast (ADC) Stainless steel (ST/ST) Aluminum die-cast (ADC) (two-way)
③	Length (Unit: mm)	L	
④	Sheath outer diameter	D E F G	φ 3.2 φ 4.8 φ 6.4 φ 8.0
⑤	Number of conductor cables	3 6	Single Double
⑥	Operating temp. range	L N M H	-196 to 100°C -30 to 200°C 0 to 350°C 0 to 500°C
⑦	Resistance value	100	Pt100 Ω or JPt100 Ω
⑧	Class	-AAJ -AJ -BJ -CJ -A -B -AAI	Pt100 Ω AA class (JIS-2013) Pt100 Ω A class (JIS-2013) Pt100 Ω B class (JIS-2013) Pt100 Ω C class (JIS-2013) Pt100 Ω A class (JIS-1997) Pt100 Ω B class (JIS-1997) Pt100 Ω AA class (IEC)
		-AI -BI -CI -10 -11 -1 -2	Pt100 Ω A class (IEC) Pt100 Ω B class (IEC) Pt100 Ω C class (IEC) Pt100 Ω B class (ASTM) Pt100 Ω A class (ASTM) JPt100 Ω B class JPt100 Ω A class
⑨	Optional parts		See the "Standard Parts" section
⑩	Immersion length (Unit: mm)		N/A

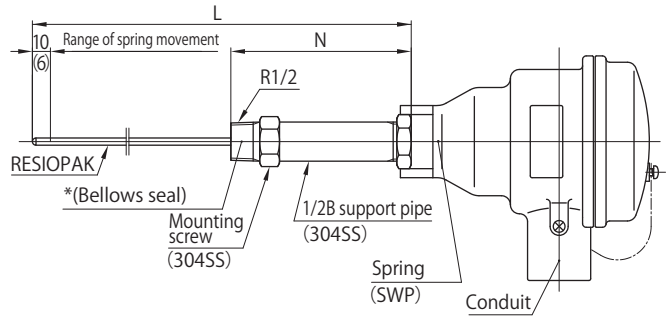
Model codes and sheath outer diameters

Model code	φ 3.2	φ 4.8	φ 6.4	φ 8.0	φ 9.0	φ 12.75
-GA	○	○	○	○	-	-
-GS	-	○	○	○	-	-
-GAD	○	○	○	○	-	-
-GM	-	-	-	-	-	-

Spring Loaded Explosion-Proof Sheathed Resistance Thermometer Sensor with Support Pipe

d2G4

Model code R407S



R407S- ① — ② ③ ④ ⑤ ⑥ ⑦ ⑧ / ⑨ ⑩

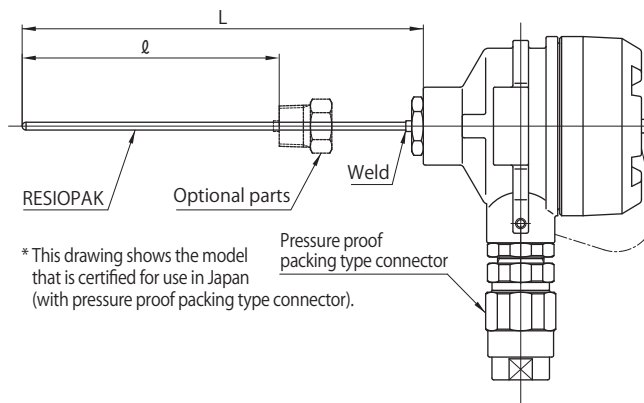
①	Structure	1	N=100			
		2	N=150			
		3	N=100 *Bellows seal			
		4	N=150 *Bellows seal			
②	Terminal box	GA	Aluminum die-cast (ADC)			
		GS	Stainless steel (ST/ST)			
		GAD	Aluminum die-cast (ADC) (two-way)			
③	Length (Unit: mm)	L				
④	Sheath outer diameter	D	φ 3.2			
		E	φ 4.8			
		F	φ 6.4			
		G	φ 8.0			
⑤	Number of conductor cables	3	Single			
		6	Double			
⑥	Operating temp. range	L	-196 to 100°C			
		N	-30 to 200°C			
		M	0 to 350°C			
		H	0 to 500°C			
⑦	Resistance value	100	Pt100 Ω or JPt100 Ω			
⑧	Class	-AAJ	Pt100 Ω AA class (JIS-2013)		-AI	Pt100 Ω A class (IEC)
		-AJ	Pt100 Ω A class (JIS-2013)		-BI	Pt100 Ω B class (IEC)
		-BJ	Pt100 Ω B class (JIS-2013)		-CI	Pt100 Ω C class (IEC)
		-CJ	Pt100 Ω C class (JIS-2013)		-10	Pt100 Ω B class (ASTM)
		-A	Pt100 Ω A class (JIS-1997)		-11	Pt100 Ω A class (ASTM)
		-B	Pt100 Ω B class (JIS-1997)		-1	JPt100 Ω B class
		-AAI	Pt100 Ω AA class (IEC)		-2	JPt100 Ω A class
		⑨	Optional parts		See the "Standard Parts" section	
⑩	Immersion length (Unit: mm)		N/A			

Model codes and sheath outer diameters

Model code	φ 3.2	φ 4.8	φ 6.4	φ 8.0	φ 9.0	φ 12.75
-GA	○	○	○	○	-	-
-GS	-	○	○	○	-	-
-GAD	○	○	○	○	-	-
-GM	-	-	-	-	-	-

Explosion-Proof (Hydrogen Protection) Sheathed Resistance Thermometer Sensor

Model code R99



*1R99- ① _____ ② _____ ③ _____ ④ _____ ⑤ _____ ⑥ _____ ⑦ _____ ⑧ _____ ⑨ _____ / ⑩ _____ ⑪ _____

①	Certification classification	Blank EX EC FM FC NP	Does not need to be filled out for certified products of Japan IECEX certified product (international) ATEX (Baseefa) certified product (Europe) FM certified product (US) FMC certified product (Canada) NEPSI certified product (China)	KS TR PS TS IN	KOSHA certified product (South Korea) TR CU certified product (Russia/Kazakhstan/Belarus) PESO certified product (India) OSHA certified products (Taiwan) INMETRO certified product (Brazil)
②	Structure		N/A		
③	Terminal box	GE GE-CFT GED	Aluminum die-cast (ADC) Aluminum die-cast (ADC) ^{2*3} (COPPER-FREE) Aluminum die-cast (ADC) (two-way)	GED-CFT GES GESD	Aluminum die-cast (ADC) ^{2*3} (COPPER-FREE) Stainless steel Stainless steel (two-way)
④	Length (Unit: mm)	L			
⑤	Sheath outer diameter	D,DN E,EN	φ 3.2, φ 3.0 φ 4.8, φ 4.5	F,FN G	φ 6.4, φ 6.0 φ 8.0
⑥	Number of conductor cables	3,4	Single	6	Double
⑦	Operating temp. range	L N	-196 to 100°C -30 to 200°C	M H	0 to 350°C 0 to 500°C
⑧	Resistance value	100	Pt100 Ω or JPt100 Ω		
⑨	Class	-AAJ -AJ -BJ -CJ -A -B -AAI	Pt100 Ω AA class (JIS-2013) Pt100 Ω A class (JIS-2013) Pt100 Ω B class (JIS-2013) Pt100 Ω C class (JIS-2013) Pt100 Ω A class (JIS-1997) Pt100 Ω B class (JIS-1997) Pt100 Ω AA class (IEC)	-AI -BI -CI -10 -11 -1 -2	Pt100 Ω A class (IEC) Pt100 Ω B class (IEC) Pt100 Ω C class (IEC) Pt100 Ω B class (ASTM) Pt100 Ω A class (ASTM) JPt100 Ω B class JPt100 Ω A class
⑩	Optional parts		See the "Standard Parts" section		
⑪	Immersion length (Unit: mm)	-ℓ			

Characteristics

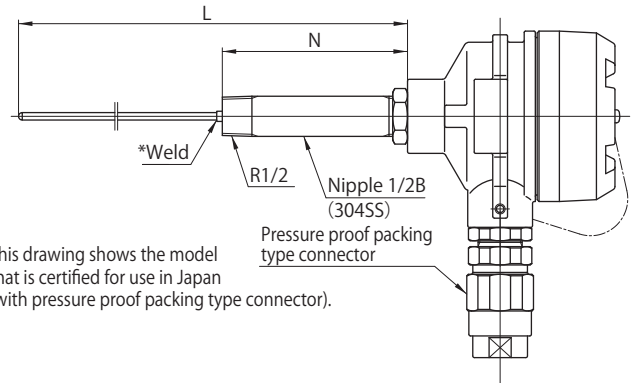
- New technical standards that conform to IEC standard
Explosion proof class: Exd II C T6 (for Japan)
- Suitable for use in environments with gas vapor, dust, etc. in conformance with IECEx and ATEX directives, and supplied with CE marking
Explosion proof class: Ex de II C T6 & T5 Gb
Ex tb III C Db T85°C & T100°C II 2 GD
Ex de II C tD A21 T6 T85°C & T5 T100°C (for international and Europe)
- Suitable for use in environments with gas vapor, dust, etc. in conformance with NEC standard/CSA standard
Explosion proof class: Class I, Div. 1 Gr. A, B, C & D (for US)
Gr. B, C & D (for Canada)
Class II/III, Div. 1 Gr. E, F & G (for US/Canada)
- Conforms to GB China explosion proof standards
Explosion proof class: Ex de II C T5/T6 Gb Ex tD A21 IP66 T85°C/T100°C

- Conforms to South Korea safety standards
Explosion proof class: Exde II C T6
 - Conforms to EAC TR CU customs union regulations for Russia, Kazakhstan, and Belarus
Explosion proof class: 1Ex de II C T5/T6 Gb X
 - Conforms to India safety standards
Explosion proof class: Ex II 2G/Exde II C T6 Ta
 - Excellent protection class: IP66 (for Japan, international, Europe, China, South Korea, Russia, Kazakhstan, Belarus, Taiwan, and India), NEMA 4 & 4X (for US), and Type 4 & 4X (for Canada)
 - Models with two-wire temperature transmitters (4 to 20 mA output) also supported
 - Light and compact body: Made of aluminum die-cast (stainless steel also available)
 - Pressure proof packing type connector equipped as standard (for Japan)
 - Multi-paired type also available (for Japan, certified by IECEx, ATEX, FM, NEPSI, and PESO)
- *1: The type names on the certification certificates are indicated in the table on the right.
*2: Cannot be used with products certified in Japan.
*3: The standard coating color is blue.

Certified product of Japan (TIIS)	R99
International/ATEX (Baseefa) certified product	OFF
FM certified product	R99
NEPSI certified product	OFF
TR CU certified product	OFF
KOSHA certified product	OFF
PESO certified product	OFF
OSHA certified product	OFF
INMETRO certified product	OFF

Explosion-Proof (Hydrogen Protection) Sheathed Resistance Thermometer Sensor with Nipple

Model code R99N



*1R99N- ① — ② — ③ — ④ — ⑤ — ⑥ — ⑦ — ⑧ — ⑨ / ⑩ ⑪

①	Certification classification	Blank EX EC FM FC NP	Does not need to be filled out for certified products of Japan IECEX certified product (international) ATEX (Baseefa) certified product (Europe) FM certified product (US) FMC certified product (Canada) NEPSI certified product (China)	KS TR PS TS IN	KOSHA certified product (South Korea) TR CU certified product (Russia/Kazakhstan/Belarus) PESO certified product (India) OSHA certified product (Taiwan) INMETRO certified product (Brazil)
②	Structure	-1 -2	N=100 *Not welded N=150 *Not welded	-3 -4	N=100 *Welded N=150 *Welded
③	Terminal box	GE GE-CFT GED	Aluminum die-cast (ADC) Aluminum die-cast (ADC) ^{2,3} (COPPER-FREE) Aluminum die-cast (ADC) (two-way)	GED-CFT GES GESD	Aluminum die-cast (ADC) ^{2,3} (COPPER-FREE) Stainless steel Stainless steel (two-way)
④	Length (Unit: mm)	L			
⑤	Sheath outer diameter	D,DN E,EN	φ 3.2, φ 3.0 φ 4.8, φ 4.5	F,FN G	φ 6.4, φ 6.0 φ 8.0
⑥	Number of conductor cables	3,4	Single	6	Double
⑦	Operating temp. range	L N	-196 to 100°C -30 to 200°C	M H	0 to 350°C 0 to 500°C
⑧	Resistance value	100	Pt100 Ω or JPt100 Ω		
⑨	Class	-AAJ -AJ -BJ -CJ -A -B -AAI	Pt100 Ω AA class (JIS-2013) Pt100 Ω A class (JIS-2013) Pt100 Ω B class (JIS-2013) Pt100 Ω C class (JIS-2013) Pt100 Ω A class (JIS-1997) Pt100 Ω B class (JIS-1997) Pt100 Ω AA class (IEC)	-AI -BI -CI -10 -11 -1 -2	Pt100 Ω A class (IEC) Pt100 Ω B class (IEC) Pt100 Ω C class (IEC) Pt100 Ω B class (ASTM) Pt100 Ω A class (ASTM) JPt100 Ω B class JPt100 Ω A class
⑩	Optional parts		See the "Standard Parts" section		
⑪	Immersion length (Unit: mm)		N/A		

Characteristics

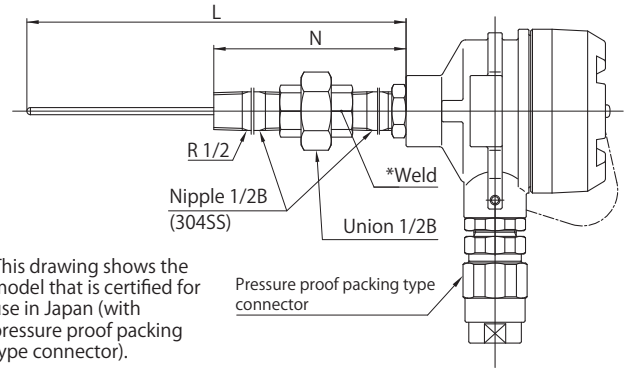
- New technical standards that conform to IEC standard
Explosion proof class: Exd II C T6 (for Japan)
- Suitable for use in environments with gas vapor, dust, etc. in conformance with IECEx and ATEX directives, and supplied with CE marking
Explosion proof class: Ex de II C T6 & T5 Gb
Ex tb III C Db T85°C & T100°C II 2 GD
Ex de II C tD A21 T6 T85°C & T5 T100°C (for international and Europe)
- Suitable for use in environments with gas vapor, dust, etc. in conformance with NEC standard/CSA standard
Explosion proof class: Class I, Div. 1 Gr. A, B, C & D (for US)
Gr. B, C & D (for Canada)
Class II/III, Div. 1 Gr. E, F & G (for US/Canada)
- Conforms to GB China explosion proof standards
Explosion proof class: Ex de II C T5/T6 Gb Ex tD A21 IP66 T85°C/T100°C

- Conforms to South Korea safety standards
Explosion proof class: Exde II C T6
 - Conforms to EAC TR CU customs union regulations for Russia, Kazakhstan, and Belarus
Explosion proof class: 1Ex de II C T5/T6 Gb X
 - Conforms to India safety standards
Explosion proof class: Ex II 2G/Exde II C T6 Ta
 - Excellent protection class: IP66 (for Japan, international, Europe, China, South Korea, Russia, Kazakhstan, Belarus, Taiwan, and India), NEMA 4 & 4X (for US), and Type 4 & 4X (for Canada)
 - Models with two-wire temperature transmitters (4 to 20 mA output) also supported
 - Light and compact body: Made of aluminum die-cast (stainless steel also available)
 - Pressure proof packing type connector equipped as standard (for Japan)
 - Multi-paired type also available (for Japan, certified by IECEx, ATEX, FM, NEPSI, and PESO)
- *1: The type names on the certification certificates are indicated in the table on the right.
*2: Cannot be used with products certified in Japan.
*3: The standard coating color is blue.

Certified product of Japan (TIS)	R99
International/ATEX (Baseefa) certified product	OFF
FM certified product	R99
NEPSI certified product	OFF
TR CU certified product	OFF
KOSHA certified product	OFF
PESO certified product	OFF
OSHA certified product	OFF
INMETRO certified product	OFF

Explosion-Proof (Hydrogen Protection) Sheathed Resistance Thermometer Sensor with Nipple/Union

Model code R99U



***1R99U-** ① _____ ② _____ - ③ _____ ④ _____ ⑤ _____ ⑥ _____ ⑦ _____ ⑧ _____ ⑨ _____ / ⑩ _____ ⑪ _____

①	Certification classification	Blank EX EC FM FC NP	Does not need to be filled out for certified products of Japan IECEX certified product (international) ATEX (Baseefa) certified product (Europe) FM certified product (US) FMC certified product (Canada) NEPSI certified product (China)	KS TR PS TS IN	KOSHA certified product (South Korea) TR CU certified product (Russia/Kazakhstan/Belarus) PESO certified product (India) OSHA certified product (Taiwan) INMETRO certified product (Brazil)
②	Structure	-2 -4	N=150 *Not welded N=150		
③	Terminal box	GE GE-CFT GED	Aluminum die-cast (ADC) Aluminum die-cast (ADC) ² ³ (COPPER-FREE) Aluminum die-cast (ADC) (two-way)	GED-CFT GES GESD	Aluminum die-cast (ADC) ² ³ (COPPER-FREE) Stainless steel Stainless steel (two-way)
④	Length (Unit: mm)	L			
⑤	Sheath outer diameter	D,DN E,EN	φ 3.2, φ 3.0 φ 4.8, φ 4.5	F, FN G	φ 6.4, φ 6.0 φ 8.0
⑥	Number of conductor cables	3,4	Single	6	Double
⑦	Operating temp. range	L N	-196 to 100°C -30 to 200°C	M H	0 to 350°C 0 to 500°C
⑧	Resistance value	100	Pt100 Ω or JPt100 Ω		
⑨	Class	-AAJ -AJ -BJ -CJ -A -B -AAI	Pt100 Ω AA class (JIS-2013) Pt100 Ω A class (JIS-2013) Pt100 Ω B class (JIS-2013) Pt100 Ω C class (JIS-2013) Pt100 Ω A class (JIS-1997) Pt100 Ω B class (JIS-1997) Pt100 Ω AA class (IEC)	-AI -BI -CI -10 -11 -1 -2	Pt100 Ω A class (IEC) Pt100 Ω B class (IEC) Pt100 Ω C class (IEC) Pt100 Ω B class (ASTM) Pt100 Ω A class (ASTM) JPt100 Ω B class JPt100 Ω A class
⑩	Optional parts		See the "Standard Parts" section		
⑪	Immersion length (Unit: mm)		N/A		

Characteristics

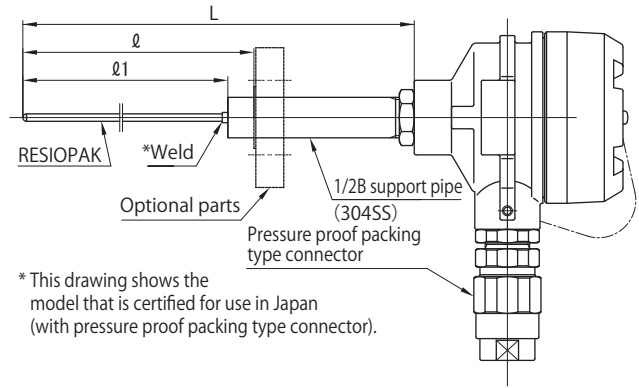
- New technical standards that conform to IEC standard
Explosion proof class: Exd II C T6 (for Japan)
- Suitable for use in environments with gas vapor, dust, etc. in conformance with IECEx and ATEX directives, and supplied with CE marking
Explosion proof class: Ex de II C T6 & T5 Gb
Ex tb III C Db T85°C & T100°C II 2 GD
Ex de II C tD A21 T6 T85°C & T5 T100°C (for international and Europe)
- Suitable for use in environments with gas vapor, dust, etc. in conformance with NEC standard/CSA standard
Explosion proof class: Class I, Div. 1 Gr. A, B, C & D (for US)
Gr. B, C & D (for Canada)
Class II/III, Div. 1 Gr. E, F & G (for US/Canada)
- Conforms to GB China explosion proof standards
Explosion proof class: Ex de II C T5/T6 Gb Ex tD A21 IP66 T85°C/T100°C

- Conforms to South Korea safety standards
Explosion proof class: Exde II C T6
 - Conforms to EAC TR CU customs union regulations for Russia, Kazakhstan, and Belarus
Explosion proof class: 1Ex de II C T5/T6 Gb X
 - Conforms to India safety standards
Explosion proof class: Ex II 2G/Exde II C T6 Ta
 - Excellent protection class: IP66 (for Japan, international, Europe, China, South Korea, Russia, Kazakhstan, Belarus, Taiwan, and India), NEMA 4 & 4X (for US), and Type 4 & 4X (for Canada)
 - Models with two-wire temperature transmitters (4 to 20 mA output) also supported
 - Light and compact body: Made of aluminum die-cast (stainless steel also available)
 - Pressure proof packing type connector equipped as standard (for Japan)
 - Multi-paired type also available (for Japan, certified by IECEx, ATEX, FM, NEPSI, and PESO)
- *1: The type names on the certification certificates are indicated in the table on the right.
*2: Cannot be used with products certified in Japan.
*3: The standard coating color is blue.

Certified product of Japan (TIIS)	R99
International/ATEX (Baseefa) certified product	OFF
FM certified product	R99
NEPSI certified product	OFF
TR CU certified product	OFF
KOSHA certified product	OFF
PESO certified product	OFF
OSHA certified product	OFF
INMETRO certified product	OFF

Explosion-Proof (Hydrogen Protection) Sheathed Resistance Thermometer Sensor with Support Pipe

Model code R99S



*1R99S- ① ② - ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ / ⑩ ⑪

①	Certification classification	Blank EX EC FM FC NP	Does not need to be filled out for certified products of Japan IECEX certified product (international) ATEX (Baseefa) certified product (Europe) FM certified product (US) FMC certified product (Canada) NEPSI certified product (China)	KS TR PS TS IN	KOSHA certified product (South Korea) TR CU certified product (Russia/Kazakhstan/Belarus) PESO certified product (India) OSHA certified product (Taiwan) INMETRO certified product (Brazil)
②	Structure	-1	With $\phi 22$ support pipe		
③	Terminal box	GE GE-CFT GED	Aluminum die-cast (ADC) Aluminum die-cast (ADC) ^{*2*3} (COPPER-FREE) Aluminum die-cast (ADC) (two-way)	GED-CFT GES GESD	Aluminum die-cast (ADC) ^{*2*3} (COPPER-FREE) Stainless steel Stainless steel (two-way)
④	Length (Unit: mm)	L			
⑤	Sheath outer diameter	D,DN E,EN	$\phi 3.2, \phi 3.0$ $\phi 4.8, \phi 4.5$	F,FN G	$\phi 6.4, \phi 6.0$ $\phi 8.0$
⑥	Number of conductor cables	3,4	Single	6	Double
⑦	Operating temp. range	L N	-196 to 100°C -30 to 200°C	M H	0 to 350°C 0 to 500°C
⑧	Resistance value	100	Pt100 Ω or JPt100 Ω		
⑨	Class	-AAJ -AJ -BJ -CJ -A -B -AAI	Pt100 Ω AA class (JIS-2013) Pt100 Ω A class (JIS-2013) Pt100 Ω B class (JIS-2013) Pt100 Ω C class (JIS-2013) Pt100 Ω A class (JIS-1997) Pt100 Ω B class (JIS-1997) Pt100 Ω AA class (IEC)	-AI -BI -CI -10 -11 -1 -2	Pt100 Ω A class (IEC) Pt100 Ω B class (IEC) Pt100 Ω C class (IEC) Pt100 Ω B class (ASTM) Pt100 Ω A class (ASTM) JPt100 Ω B class JPt100 Ω A class
⑩	Optional parts		See the "Standard Parts" section		
⑪	Immersion length (Unit: mm)	- l	(- $l 1$)		

Characteristics

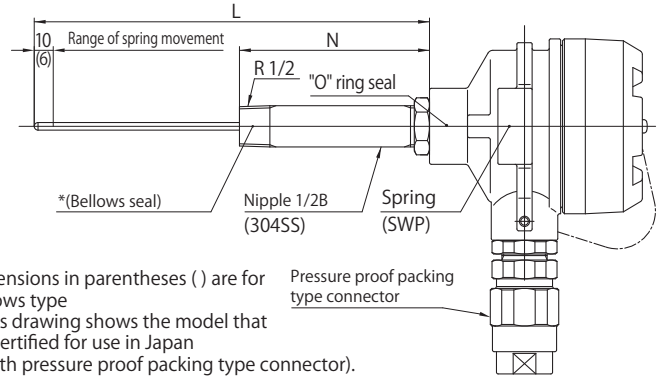
- New technical standards that conform to IEC standard
Explosion proof class: Exd II C T6 (for Japan)
- Suitable for use in environments with gas vapor, dust, etc. in conformance with IECEx and ATEX directives, and supplied with CE marking
Explosion proof class: Ex de II C T6 & T5 Gb
Ex tb III C Db T85°C & T100°C II 2 GD
Ex de II C tD A21 T6 T85°C & T5 T100°C (for international and Europe)
- Suitable for use in environments with gas vapor, dust, etc. in conformance with NEC standard/CSA standard
Explosion proof class: Class I, Div. 1 Gr. A, B, C & D (for US)
Gr. B, C & D (for Canada)
Class II/III, Div. 1 Gr. E, F & G (for US/Canada)
- Conforms to GB China explosion proof standards
Explosion proof class: Ex de II C T5/T6 Gb Ex tD A21 IP66 T85°C/T100°C

- Conforms to South Korea safety standards
Explosion proof class: Exde II C T6
 - Conforms to EAC TR CU customs union regulations for Russia, Kazakhstan, and Belarus
Explosion proof class: 1Ex de II C T5/T6 Gb X
 - Conforms to India safety standards
Explosion proof class: Ex II 2G/Exde II C T6 Ta
 - Excellent protection class: IP66 (for Japan, international, Europe, China, South Korea, Russia, Kazakhstan, Belarus, Taiwan, and India), NEMA 4 & 4X (for US), and Type 4 & 4X (for Canada)
 - Models with two-wire temperature transmitters (4 to 20 mA output) also supported
 - Light and compact body: Made of aluminum die-cast (stainless steel also available)
 - Pressure proof packing type connector equipped as standard (for Japan)
 - Multi-paired type also available (for Japan, certified by IECEx, ATEX, FM, NEPSI, and PESO)
- *1: The type names on the certification certificates are indicated in the table on the right.
*2: Cannot be used with products certified in Japan.
*3: The standard coating color is blue.

Certified product of Japan (TIS)	R99
International/ATEX (Baseefa) certified product	OFF
FM certified product	R99
NEPSI certified product	OFF
TR CU certified product	OFF
KOSHA certified product	OFF
PESO certified product	OFF
OSHA certified product	OFF
INMETRO certified product	OFF

Spring Loaded Explosion-Proof (Hydrogen Protection) Sheathed Resistance Ther- mometer Sensor with Nipple

Model code **R409N**



*1**R409N-** ① — ② — ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ / ⑩ ⑪

①	Certification classification	Blank EX EC FM FC NP	Does not need to be filled out for certified products of Japan IECEX certified product (international) ATEX (Baseefa) certified product (Europe) FM certified product (US) FMC certified product (Canada) NEPSI certified product (China)	KS TR PS TS IN	KOSHA certified product (South Korea) TR CU certified product (Russia/Kazakhstan/Belarus) PESO certified product (India) OSHA certified products (Taiwan) INMETRO certified product (Brazil)
②	Structure	-1 -2	N=100 N=150	-3 -4	N=100 *Bellows seal N=150 *Bellows seal
③	Terminal box	GE GE-CFT GED	Aluminum die-cast (ADC) Aluminum die-cast (ADC) ^{*2*} (COPPER-FREE) Aluminum die-cast (ADC) (two-way)	GED-CFT GES GESD	Aluminum die-cast (ADC) ^{*2*} (COPPER-FREE) Stainless steel Stainless steel (two-way)
④	Length (Unit: mm)	L			
⑤	Sheath outer diameter	D,DN E,EN	φ 3.2, φ 3.0 φ 4.8, φ 4.5	F, FN G	φ 6.4, φ 6.0 φ 8.0
⑥	Number of conductor cables	3,4	Single	6	Double
⑦	Operating temp. range	L N	-196 to 100°C -30 to 200°C	M H	0 to 350°C 0 to 500°C
⑧	Resistance value	100	Pt100 Ω or JPt100 Ω		
⑨	Class	-AAJ -AJ -BJ -CJ -A -B -AAI	Pt100 Ω AA class (JIS-2013) Pt100 Ω A class (JIS-2013) Pt100 Ω B class (JIS-2013) Pt100 Ω C class (JIS-2013) Pt100 Ω A class (JIS-1997) Pt100 Ω B class (JIS-1997) Pt100 Ω AA class (IEC)	-AI -BI -CI -10 -11 -1 -2	Pt100 Ω A class (IEC) Pt100 Ω B class (IEC) Pt100 Ω C class (IEC) Pt100 Ω B class (ASTM) Pt100 Ω A class (ASTM) JPt100 Ω B class JPt100 Ω A class
⑩	Optional parts		See the "Standard Parts" section		
⑪	Immersion length (Unit: mm)		N/A		

Characteristics

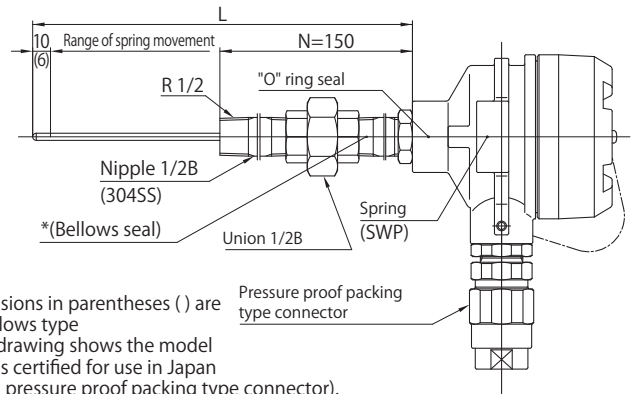
- New technical standards that conform to IEC standard
Explosion proof class: Exd II C T6 (for Japan)
- Suitable for use in environments with gas vapor, dust, etc. in conformance with IECEx and ATEX directives, and supplied with CE marking
Explosion proof class: Ex de II C T6 & T5 Gb
Ex tb III C Db T85°C & T100°C II 2 GD
Ex de II C Td A21 T6 T85°C & T5 T100°C (for international and Europe)
- Suitable for use in environments with gas vapor, dust, etc. in conformance with NEC standard/CSA standard
Explosion proof class: Class I, Div. 1 Gr. A, B, C & D (for US)
Gr. B, C & D (for Canada)
Class II/III, Div. 1 Gr. E, F & G (for US/Canada)
- Conforms to GB China explosion proof standards
Explosion proof class: Ex de II C T5/T6 Gb Ex td A21 IP66 T85°C/T100°C

- Conforms to South Korea safety standards
Explosion proof class: Exde II C T6
 - Conforms to EAC TR CU customs union regulations for Russia, Kazakhstan, and Belarus
Explosion proof class: 1Ex de II C T5/T6 Gb X
 - Conforms to India safety standards
Explosion proof class: Ex II 2G/Exde II C T6 Ta
 - Excellent protection class: IP66 (for Japan, international, Europe, China, South Korea, Russia, Kazakhstan, Belarus, Taiwan, and India), NEMA 4 & 4X (for US), and Type 4 & 4X (for Canada)
 - Models with two-wire temperature transmitters (4 to 20 mA output) also supported
 - Light and compact body: Made of aluminum die-cast (stainless steel also available)
 - Pressure proof packing type connector equipped as standard (for Japan)
 - Multi-paired type also available (for Japan, certified by IECEx, ATEX, FM, NEPSI, and PESO)
- *1: The type names on the certification certificates are indicated in the table on the right.
*2: Cannot be used with products certified in Japan.
*3: The standard coating color is blue.

Certified product of Japan (TIIS)	R99
International/ATEX (Baseefa) certified product	OFF
FM certified product	R99
NEPSI certified product	OFF
TR CU certified product	OFF
KOSHA certified product	OFF
PESO certified product	OFF
OSHA certified product	OFF
INMETRO certified product	OFF

Spring Loaded Explosion-Proof (Hydrogen Protection) Sheathed Resistance Thermometer Sensor with Nipple/Union

Model code R409U



*1R409U- ① — ② — ③ — ④ — ⑤ — ⑥ — ⑦ — ⑧ — ⑨ / ⑩ ⑪

①	Certification classification	Blank EX EC FM FC NP	Does not need to be filled out for certified products of Japan IECEX certified product (international) ATEX (Baseefa) certified product (Europe) FM certified product (US) FMC certified product (Canada) NEPSI certified product (China)	KS TR PS TS IN	KOSHA certified product (South Korea) TR CU certified product (Russia/Kazakhstan/Belarus) PESO certified product (India) OSHA certified products (Taiwan) INMETRO certified product (Brazil)
②	Structure	-2 -4	N=150 N=150 *Bellows seal		
③	Terminal box	GE GE-CFT GED	Aluminum die-cast (ADC) Aluminum die-cast (ADC) ^{2,3} (COPPER-FREE) Aluminum die-cast (ADC) (two-way)	GED-CFT GES GESD	Aluminum die-cast (ADC) ^{2,3} (COPPER-FREE) Stainless steel Stainless steel (two-way)
④	Length (Unit: mm)	L			
⑤	Sheath outer diameter	D,DN E,EN	φ 3.2, φ 3.0 φ 4.8, φ 4.5	F, FN G	φ 6.4, φ 6.0 φ 8.0
⑥	Number of conductor cables	3,4	Single	6	Double
⑦	Operating temp. range	L N	-196 to 100°C -30 to 200°C	M H	0 to 350°C 0 to 500°C
⑧	Resistance value	100	Pt100 Ω or JPt100 Ω		
⑨	Class	-AAJ -AJ -BJ -CJ -A -B -AAI	Pt100 Ω AA class (JIS-2013) Pt100 Ω A class (JIS-2013) Pt100 Ω B class (JIS-2013) Pt100 Ω C class (JIS-2013) Pt100 Ω A class (JIS-1997) Pt100 Ω B class (JIS-1997) Pt100 Ω AA class (IEC)	-AI -BI -CI -10 -11 -1 -2	Pt100 Ω A class (IEC) Pt100 Ω B class (IEC) Pt100 Ω C class (IEC) Pt100 Ω B class (ASTM) Pt100 Ω A class (ASTM) JPt100 Ω B class JPt100 Ω A class
⑩	Optional parts		See the "Standard Parts" section		
⑪	Immersion length (Unit: mm)		N/A		

Characteristics

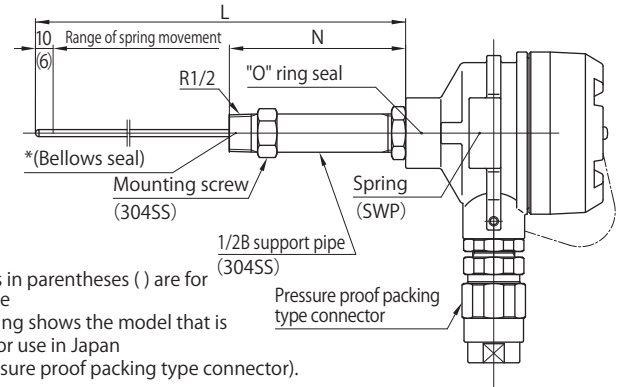
- New technical standards that conform to IEC standard
Explosion proof class: Exd II C T6 (for Japan)
- Suitable for use in environments with gas vapor, dust, etc. in conformance with IECEx and ATEX directives, and supplied with CE marking
Explosion proof class: Ex de II C T6 & T5 Gb
Ex tb III C Db T85°C & T100°C II 2 GD
Ex de II C tD A21 T6 T85°C & T5 T100°C (for international and Europe)
- Suitable for use in environments with gas vapor, dust, etc. in conformance with NEC standard/CSA standard
Explosion proof class: Class I, Div. 1 Gr. A, B, C & D (for US)
Gr. B, C & D (for Canada)
Class II/III, Div. 1 Gr. E, F & G (for US/Canada)
- Conforms to GB China explosion proof standards
Explosion proof class: Ex de II C T5/T6 Gb Ex tD A21 IP66 T85°C/T100°C

- Conforms to South Korea safety standards
Explosion proof class: Exde II C T6
 - Conforms to EAC TR CU customs union regulations for Russia, Kazakhstan, and Belarus
Explosion proof class: 1Ex de II C T5/T6 Gb X
 - Conforms to India safety standards
Explosion proof class: Ex II 2G/Exde II C T6 Ta
 - Excellent protection class: IP66 (for Japan, international, Europe, China, South Korea, Russia, Kazakhstan, Belarus, Taiwan, and India), NEMA 4 & 4X (for US), and Type 4 & 4X (for Canada)
 - Models with two-wire temperature transmitters (4 to 20 mA output) also supported
 - Light and compact body: Made of aluminum die-cast (stainless steel also available)
 - Pressure proof packing type connector equipped as standard (for Japan)
 - Multi-paired type also available (for Japan, certified by IECEx, ATEX, FM, NEPSI, and PESO)
- *1: The type names on the certification certificates are indicated in the table on the right.
 *2: Cannot be used with products certified in Japan.
 *3: The standard coating color is blue.

Certified product of Japan (TIIS)	R99
International/ATEX (Baseefa) certified product	OFF
FM certified product	R99
NEPSI certified product	OFF
TR CU certified product	OFF
KOSHA certified product	OFF
PESO certified product	OFF
OSHA certified product	OFF
INMETRO certified product	OFF

Spring Loaded Explosion-Proof (Hydrogen Protection) Sheathed Resistance Thermometer Sensor with Support Pipe

Model code R409S



*1R409S- ① ② - ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ / ⑩ ⑪

①	Certification classification	Blank EX EC FM FC NP	Does not need to be filled out for certified products of Japan IECEX certified product (international) ATEX (Baseefa) certified product (Europe) FM certified product (US) FMC certified product (Canada) NEPSI certified product (China)	KS TR PS TS IN	KOSHA certified product (South Korea) TR CU certified product (Russia/Kazakhstan/Belarus) PESO certified product (India) OSHA certified products (Taiwan) INMETRO certified product (Brazil)
②	Structure	-1 -2	N=100 N=150	-3 -4	N=100 *Bellows seal N=150 *Bellows seal
③	Terminal box	GE GE-CFT GED	Aluminum die-cast (ADC) Aluminum die-cast (ADC) ^{2,3} (COPPER-FREE) Aluminum die-cast (ADC) (two-way)	GED-CFT GES GESD	Aluminum die-cast (ADC) ^{2,3} (COPPER-FREE) Stainless steel Stainless steel (two-way)
④	Length (Unit: mm)	L			
⑤	Sheath outer diameter	D,DN E,EN	φ 3.2, φ 3.0 φ 4.8, φ 4.5	F, FN G	φ 6.4, φ 6.0 φ 8.0
⑥	Number of conductor cables	3,4	Single	6	Double
⑦	Operating temp. range	L N	-196 to 100°C -30 to 200°C	M H	0 to 350°C 0 to 500°C
⑧	Resistance value	100	Pt100 Ω or JPt100 Ω		
⑨	Class	-AAJ -AJ -BJ -CJ -A -B -AAI	Pt100 Ω AA class (JIS-2013) Pt100 Ω A class (JIS-2013) Pt100 Ω B class (JIS-2013) Pt100 Ω C class (JIS-2013) Pt100 Ω A class (JIS-1997) Pt100 Ω B class (JIS-1997) Pt100 Ω AA class (IEC)	-AI -BI -CI -10 -11 -1 -2	Pt100 Ω A class (IEC) Pt100 Ω B class (IEC) Pt100 Ω C class (IEC) Pt100 Ω B class (ASTM) Pt100 Ω A class (ASTM) JPt100 Ω B class JPt100 Ω A class
⑩	Optional parts		See the "Standard Parts" section		
⑪	Immersion length (Unit: mm)		N/A		

Characteristics

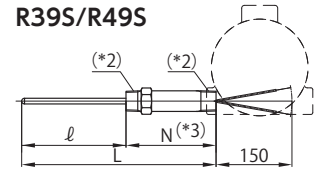
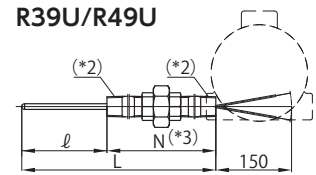
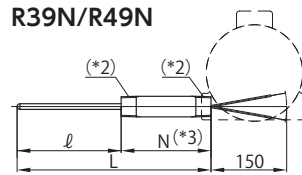
- New technical standards that conform to IEC standard
Explosion proof class: Exd II C T6 (for Japan)
- Suitable for use in environments with gas vapor, dust, etc. in conformance with IECEx and ATEX directives, and supplied with CE marking
Explosion proof class: Ex de II C T6 & T5 Gb
Ex tb III C Db T85°C & T100°C II 2 GD
Ex de II C Td A21 T6 T85°C & T5 T100°C (for international and Europe)
- Suitable for use in environments with gas vapor, dust, etc. in conformance with NEC standard/CSA standard
Explosion proof class: Class I, Div. 1 Gr. A, B, C & D (for US)
Gr. B, C & D (for Canada)
Class II/III, Div. 1 Gr. E, F & G (for US/Canada)
- Conforms to GB China explosion proof standards
Explosion proof class: Ex de II C T5/T6 Gb Ex td A21 IP66 T85°C/T100°C

- Conforms to South Korea safety standards
Explosion proof class: Exde II C T6
 - Conforms to EAC TR CU customs union regulations for Russia, Kazakhstan, and Belarus
Explosion proof class: 1Ex de II C T5/T6 Gb X
 - Conforms to India safety standards
Explosion proof class: Ex II 2G/Exde II C T6 Ta
 - Excellent protection class: IP66 (for Japan, international, Europe, China, South Korea, Russia, Kazakhstan, Belarus, Taiwan, and India), NEMA 4 & 4X (for US), and Type 4 & 4X (for Canada)
 - Models with two-wire temperature transmitters (4 to 20 mA output) also supported
 - Light and compact body: Made of aluminum die-cast (stainless steel also available)
 - Pressure proof packing type connector equipped as standard (for Japan)
 - Multi-paired type also available (for Japan, certified by IECEx, ATEX, FM, NEPSI, and PESO)
- *1: The type names on the certification certificates are indicated in the table on the right.
 *2: Cannot be used with products certified in Japan.
 *3: The standard coating color is blue.

Certified product of Japan (TIIS)	R99
International/ATEX (Baseefa) certified product	OFF
FM certified product	R99
NEPSI certified product	OFF
TR CU certified product	OFF
KOSHA certified product	OFF
PESO certified product	OFF
OSHA certified product	OFF
INMETRO certified product	OFF

Explosion/Flame Proof Nipple Type Temperature Sensor

Model code



- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

①	Basic model ^(*1)	R39N R39U R39S	With nipple With nipple/union With support pipe	R49N R49U R49S	Spring loaded with nipple Spring loaded with nipple/union Spring loaded with support pipe
②	Certification classification	-EX -EC -NP -IN	IECEx certified product And ATEX (Baseefa) certified product NEPSI certified product INMETRO certified product (Brazil)	(R49N, U, and S only) -TR -PS -KS -FM	TRCU certified product PESO certified product KOSHA certified product (South Korea) FM certified product
③	Nipple length ^(*3)	-1 -2	N=75 (39N,49N) N=160 (39U,49U)		
④	Length (Unit: mm)	L			
⑤	Sheath outer diameter	D,DN E,EN F,FN G	φ3.2, φ3.0 φ4.8, φ4.5 φ6.4, φ6.0 φ8.0		
⑥	Number of element wires	3,4 6	Single Double		
⑦	Operating temp. range	L N M H	-196 to 100°C -30 to 200°C 0 to 350°C 0 to 500°C		
⑧	Resistance value	100	Pt100 Ω or JPt100 Ω		
⑨	Class	-AAJ -AJ -BJ -CJ -A -B -AAI	Pt100 Ω AA class (JIS-2013) Pt100 Ω A class (JIS-2013) Pt100 Ω B class (JIS-2013) Pt100 Ω C class (JIS-2013) Pt100 Ω A class (JIS-1997) Pt100 Ω B class (JIS-1997) Pt100 Ω AA class (IEC)	-AI -BI -CI -10 -11 -1 -2	Pt100 Ω A class (IEC) Pt100 Ω B class (IEC) Pt100 Ω C class (IEC) Pt100 Ω B class (ASTM) Pt100 Ω A class (ASTM) JPt100 Ω B class JPt100 Ω A class
⑩	Optional parts		See the "Standard Parts" section		
⑪	Immersion length (Unit: mm)	-ℓ			

(*1) The type name is "FPN" on certificates for IECEx, EC, NP, TR, PS, KS, IN certified products, regardless of the structure.

(*2) NPT 1/2, BSPT 1/2, BSPP 1/2, M20X 1.5...(EX) (EC) (NP) (TR) (PS) (KS) (IN); NPT1/2, R1/2...(FM)

(*3) Standard dimensions. Contact us if other dimensions are required.

Pay attention to the ambient temperature in the place where the terminal box is installed.
EX, EC, NP, TR, PS, KS, IN: -50°C to 60°C (T6), -50°C to 75°C (T5)
FM: -50°C to 75°C

For IECEx, an application procedure such as certification exemption confirmation may be required due to the requirements of the accepting country.

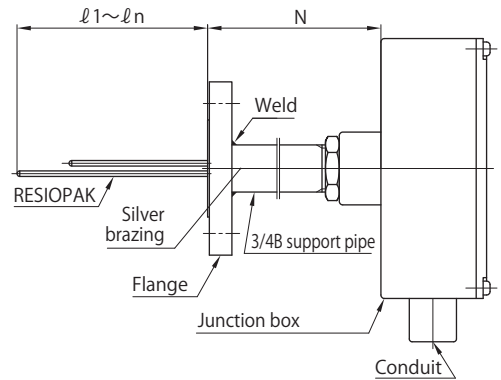
Please specify the screw size of the temperature transmitter or terminal box to be combined.

(Basically, the country (agency) that has certified the sensor must be the same as the country (agency) that has certified the temperature transmitter or terminal box in order to be combined with the sensor. Make sure to check manufacturer's latest information on acquisition. In addition, they cannot be used in dangerous places where Japanese explosion proof certification is required.)

Note: Only for China (NEPSI), the screw sizes of G1/2 and G3/4 cannot be used to combine with the TM or terminal box.

Multipoint Sheathed Resistance Thermometer Sensor with Connection Head

Model code R96M (6)



R96M(6)- ① — ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ / ⑩

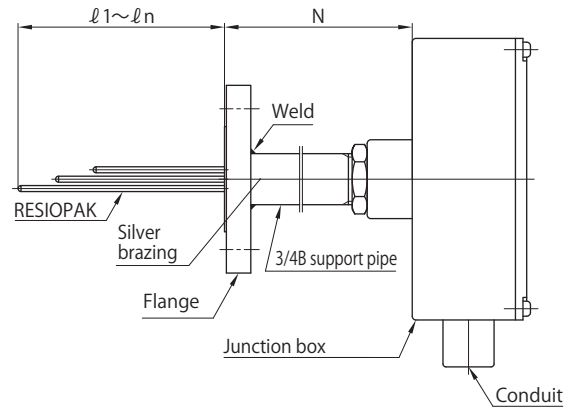
①	Number of terminals	3 to 6	Number of terminals (support pipe 3/4B)
②	Terminal box	T Y	Vertical type JB6 Horizontal type JB6
③	Sheath length	ℓ 1 to ℓ 2	
④	Sheath outer diameter	D E F	φ 3.2 φ 4.8 φ 6.4
⑤	Number of conductor cables	3 6	Single Double
⑥	Operating temp. range	L N M H	-196 to 100°C -30 to 200°C 0 to 350°C 0 to 500°C
⑦	Resistance value	100	Pt100 Ω or JPt100 Ω
⑧	Class	-AAJ -AJ -BJ -CJ -A -B -AAI -AI -BI -CI -10 -11 -1 -2	Pt100 Ω AA class (JIS-2013) Pt100 Ω A class (JIS-2013) Pt100 Ω B class (JIS-2013) Pt100 Ω C class (JIS-2013) Pt100 Ω A class (JIS-1997) Pt100 Ω B class (JIS-1997) Pt100 Ω AA class (IEC) Pt100 Ω A class (IEC) Pt100 Ω B class (IEC) Pt100 Ω C class (IEC) Pt100 Ω B class (ASTM) Pt100 Ω A class (ASTM) JPt100 Ω B class JPt100 Ω A class
⑨	Support pipe length	-N	200 mm or more (specified)
⑩	Optional parts		See the "Standard Parts" section

Notes: The illustration shows the model with the horizontal terminal box. For the model with the vertical terminal box, the temperature sensor is connected where the conduit is shown.

Notes: Dimensions from ℓ 1 to ℓ n
Specification method
Example: 2-point model
ℓ 1=5000
ℓ 2=4000

Multipoint Sheathed Resistance Thermometer Sensor with Connection Head

Model code **R96M (12)**



R96M(12)- ① - ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ / ⑩

①	Number of terminals	9 to 12	Number of terminals (support pipe 3/4B)
②	Terminal box	T Y	Vertical type JB12 Horizontal type JB12
③	Sheath length	ℓ 1 to ℓ 4	
④	Sheath outer diameter	D E F	φ3.2 φ4.8 φ6.4
⑤	Number of conductor cables	3 6	Single Double
⑥	Operating temp. range	L N M H	-196 to 100°C -30 to 200°C 0 to 350°C 0 to 500°C
⑦	Resistance value	100	Pt100 Ω or JPt100 Ω
⑧	Class	-AAJ -AJ -BJ -CJ -A -B -AAI -AI -BI -CI -10 -11 -1 -2	Pt100 Ω AA class (JIS-2013) Pt100 Ω A class (JIS-2013) Pt100 Ω B class (JIS-2013) Pt100 Ω C class (JIS-2013) Pt100 Ω A class (JIS-1997) Pt100 Ω B class (JIS-1997) Pt100 Ω AA class (IEC) Pt100 Ω A class (IEC) Pt100 Ω B class (IEC) Pt100 Ω C class (IEC) Pt100 Ω B class (ASTM) Pt100 Ω A class (ASTM) JPt100 Ω B class JPt100 Ω A class
⑨	Support pipe length	-N	200 mm or more (specified)
⑩	Optional parts		See the "Standard Parts" section

Notes: The illustration shows the model with the horizontal terminal box. For the model with the vertical terminal box, the temperature sensor is connected where the conduit is shown.

Notes: Dimensions from ℓ 1 to ℓ n

Specification method

Example: 4-point model

ℓ 1=5000

ℓ 2=4000

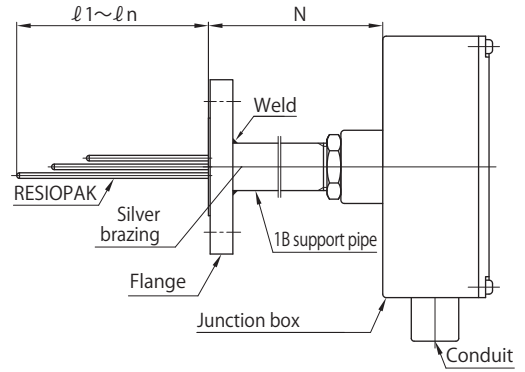
ℓ 3=3000

ℓ 4=2000

Please indicate each position

Multipoint Sheathed Resistance Thermometer Sensor with Connection Head

Model code R96M (24)



R96M(24)- ① — ② — ③ — ④ — ⑤ — ⑥ — ⑦ — ⑧ — ⑨ / ⑩

①	Number of terminals	15 to 24	Number of terminals (support pipe 1B)
②	Terminal box	T Y	Vertical type JB24 Horizontal type JB24 (shown in illustration above)
③	Sheath length	φ 1 to φ 8	
④	Sheath outer diameter	D E F	φ 3.2 φ 4.8 φ 6.4
⑤	Number of conductor cables	3 6	Single Double
⑥	Operating temp. range	L N M H	-196 to 100°C -30 to 200°C 0 to 350°C 0 to 500°C
⑦	Resistance value	100	Pt100 Ω or JPt100 Ω
⑧	Class	-AAJ -AJ -BJ -CJ -A -B -AAI -AI -BI -CI -10 -11 -1 -2	Pt100 Ω AA class (JIS-2013) Pt100 Ω A class (JIS-2013) Pt100 Ω B class (JIS-2013) Pt100 Ω C class (JIS-2013) Pt100 Ω A class (JIS-1997) Pt100 Ω B class (JIS-1997) Pt100 Ω AA class (IEC) Pt100 Ω A class (IEC) Pt100 Ω B class (IEC) Pt100 Ω C class (IEC) Pt100 Ω B class (ASTM) Pt100 Ω A class (ASTM) JPt100 Ω B class JPt100 Ω A class
⑨	Support pipe length	-N	200 mm or more (specified)
⑩	Optional parts		See the "Standard Parts" section

Notes: The illustration shows the model with the horizontal terminal box. For the model with the vertical terminal box, the temperature sensor is connected where the conduit is shown.

Notes: Dimensions from φ 1 to φ n
Specification method

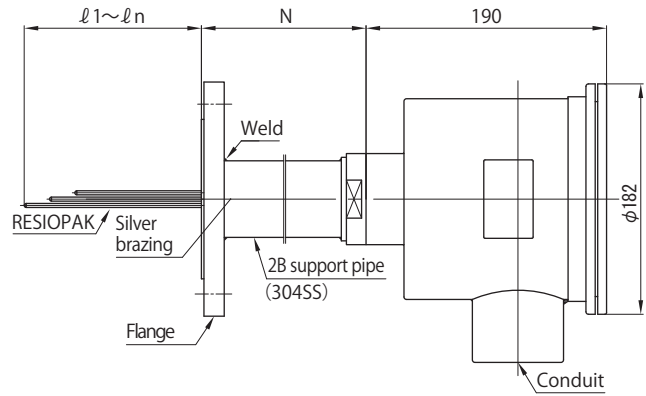
Example: 8-point model

- φ 1=8000
- φ 2=7000
- ⋮
- φ 7=2000
- φ 8=1000

— Please indicate each position

Explosion-Proof Multipoint Sheathed Resistance Thermometer Sensor

d2G4 (Note 1)



Model code **R97M (24)**

R97M(24)- ① — ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ / ⑩

①	Number of terminals	6 to 24	6 to 24 terminals	
②	Terminal box	GM24 25 40 60	Stainless steel (ST/ST) G1 -1 location G1-1/2 -1 location G2 -1 location	
③	Sheath length	ℓ 1 to ℓ 8	(2 to 8 points)	
④	Sheath outer diameter	D E F	φ 3.2 φ 4.8 φ 6.4	
⑤	Number of conductor cables	3	Single	
⑥	Operating temp. range	L N M H	-196 to 100°C -30 to 200°C 0 to 350°C 0 to 500°C	
⑦	Resistance value	100	Pt100 Ω or JPt100 Ω	
⑧	Class	-AAJ -AJ -BJ -CJ -A -B -AAI	-AI -BI -CI -10 -11 -1 -2	Pt100 Ω AA class (JIS-2013) Pt100 Ω A class (JIS-2013) Pt100 Ω B class (JIS-2013) Pt100 Ω C class (JIS-2013) Pt100 Ω A class (JIS-1997) Pt100 Ω B class (JIS-1997) Pt100 Ω AA class (IEC) Pt100 Ω A class (IEC) Pt100 Ω B class (IEC) Pt100 Ω C class (IEC) Pt100 Ω B class (ASTM) Pt100 Ω A class (ASTM) JPt100 Ω B class JPt100 Ω A class
⑨	Support pipe length	-N	200 mm or more (specified) (support pipe 2B)	
⑩	Optional parts		See the "Standard Parts" section	

For this model, there are some cases that have not received certification due to the combination of the sheath outer diameter and the conduit. Please contact us to confirm the details.

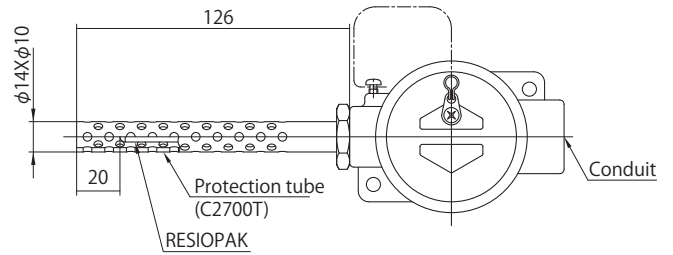
Notes: Dimensions from ℓ 1 to ℓ n
Specification method
Example: 8-point model
ℓ 1=8000
ℓ 2=7000
.
ℓ 7=2000
ℓ 8=1000

Please indicate each position

(Note1)
The R98M (12) and (24) models, which conform to explosion proof class of Ex d II B T4 (SUS terminal box), are also available.

Sheathed Resistance Thermometer Sensor with RC Type Connector (for Indoor and Refrigerator Use)

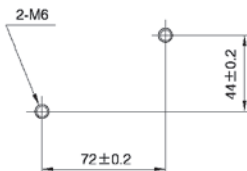
Model code RC1



RC1 ① _____ ② _____ ③ _____ ④ _____ ⑤ _____ / ⑥ _____

①	Sheath outer diameter	E F	φ 4.8 φ 6.4
②	Number of conductor cables	3 6	Single Double
③	Operating temp. range	L H	-196 to 60°C with paraffin filling 61°C or more without paraffin filling
④	Resistance value	100	Pt100 Ω or JPt100 Ω
⑤	Class	-AAJ -AJ -BJ -CJ -A -B -AAI -AI -BI -CI -10 -11 -1 -2	Pt100 Ω AA class (JIS-2013) Pt100 Ω A class (JIS-2013) Pt100 Ω B class (JIS-2013) Pt100 Ω C class (JIS-2013) Pt100 Ω A class (JIS-1997) Pt100 Ω B class (JIS-1997) Pt100 Ω AA class (IEC) Pt100 Ω A class (IEC) Pt100 Ω B class (IEC) Pt100 Ω C class (IEC) Pt100 Ω B class (ASTM) Pt100 Ω A class (ASTM) JPt100 Ω B class JPt100 Ω A class
⑥	Optional parts		See the "Standard Parts" section

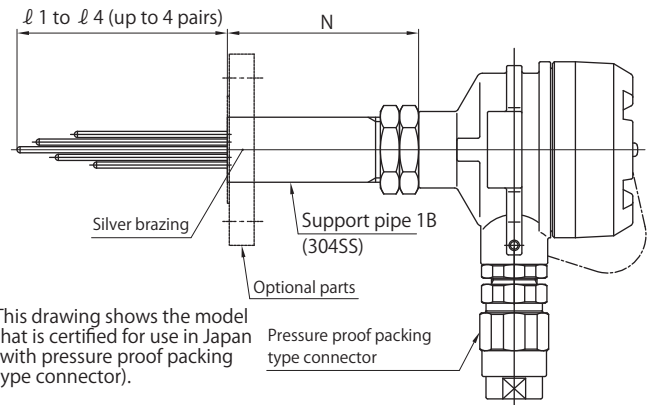
*: The operating temperature range code L.H. of this model is not associated with the JIS standards.



Terminal box mounting hole machining diagram

Explosion-Proof (Hydrogen Protection) Multipoint Sheathed Resistance Thermometer Sensor

Model code **R99M**



R99M- ① _____ ② _____ – ③ _____ ④ _____ ⑤ _____ ⑥ _____ ⑦ _____ ⑧ _____ ⑨ _____ / ⑩ _____ ⑪ _____

①	Certification classification	Blank EX EC FM	Does not need to be filled out for certified products of Japan IECEX certified product (international) ATEX (Baseefa) certified product (Europe) FM certified product (US)	
②	Structure		N/A	
③	Terminal box	GE GED GES GESD	Aluminum die-cast (ADC) Aluminum die-cast (ADC) (two-way) Cast steel Cast steel (two-way)	
④	Length		N/A	
⑤	Sheath outer diameter	D,DN E,EN F,FN G	φ 3.2, φ 3.0 φ 4.8, φ 4.5 φ 6.4, φ 6.0 φ 8.0	
⑥	Number of conductor cables	3,4 6	Single Double	
⑦	Operating temp. range	L N M H	-196 to 100°C -30 to 200°C 0 to 350°C 0 to 500°C	
⑧	Resistance value	100	Pt100 Ω or JPt100 Ω	
⑨	Class	-AAJ -AJ -BJ -CJ -A -B -AAI	-AI -BI -CI -10 -11 -1 -2	Pt100 Ω A class (JIS-2013) Pt100 Ω A class (JIS-2013) Pt100 Ω B class (JIS-2013) Pt100 Ω C class (JIS-2013) Pt100 Ω A class (JIS-1997) Pt100 Ω B class (JIS-1997) Pt100 Ω AA class (IEC) Pt100 Ω A class (IEC) Pt100 Ω B class (IEC) Pt100 Ω C class (IEC) Pt100 Ω B class (ASTM) Pt100 Ω A class (ASTM) JPt100 Ω B class JPt100 Ω A class
⑩	Optional parts		See the "Standard Parts" section	
⑪	Immersion length (Unit: mm)	l 1 to l 4		

Characteristics

- New technical standards that conform to IEC standard
Explosion proof class: Exd II C T6 (for Japan)
- Conforms with IECEx and ATEX directives, and supplied with CE marking
Explosion proof class: Exde II C T6 & T5, ExtD A21 (for international & Europe)
- Suitable for use in environments with gas vapor, dust, etc. in conformance with NEC standards
Explosion proof class: Class I, Div.1 Gr. A, B, C & D
Class II /III, Div. 1 Gr. E, F & G (for US)

- Excellent protection class: IP66 (for Japan, international, and Europe), NEMA 4 & 4X (for US)
 - Light and compact body: Made of aluminum die-cast (Stainless steel also available)
 - Pressure proof packing type connector equipped as standard (for Japan)
- *1: The type names on the certification certificates are indicated in the table on the right.

Certified product of Japan (TIIS)	R99
International/ATEX (Baseefa) certified product	OFF
FM certified product	R99

OKAZAKI**Resistance Thermometer Sensor**

Generally, the electrical resistance of the metal varies depending on the temperature. In particular, platinum is more linear than other metals in terms of its temperature coefficient and is suitable for temperature measurement. Platinum has excellent chemical and physical properties, making it easy to be obtained in a highly pure form. It can be used stably for a long time as a resistance element for temperature measurement. Its characteristics are standardized under the JIS and other foreign standards, and it makes accurate temperature measurements possible.

Construction

A resistance thermometer sensor consists of various components such as a temperature sensing element, conductor wires, insulator, protection tube, terminal box, and other mounting brackets needed.

- 1. Temperature sensing element**
- 2. Conductor wires**
- 3. Insulator**
- 4. Protection tube**
- 5. Terminal box and terminal block**
- 6. Mounting brackets**



Resistance Thermometer Sensor Types

JIS C1604

Nominal resistance value at 0°C	Class	Measuring current	(Resistance ratio)
Pt100 (JPt100)	AA	2 mA, 1 mA, 0.5 mA	1.3851 (1.3916)
	A		
	B		
	C		

Notes

1. R100 is the resistance value of the resistance element at 100°C
2. R0 is the resistance value of the resistance element at 0°C

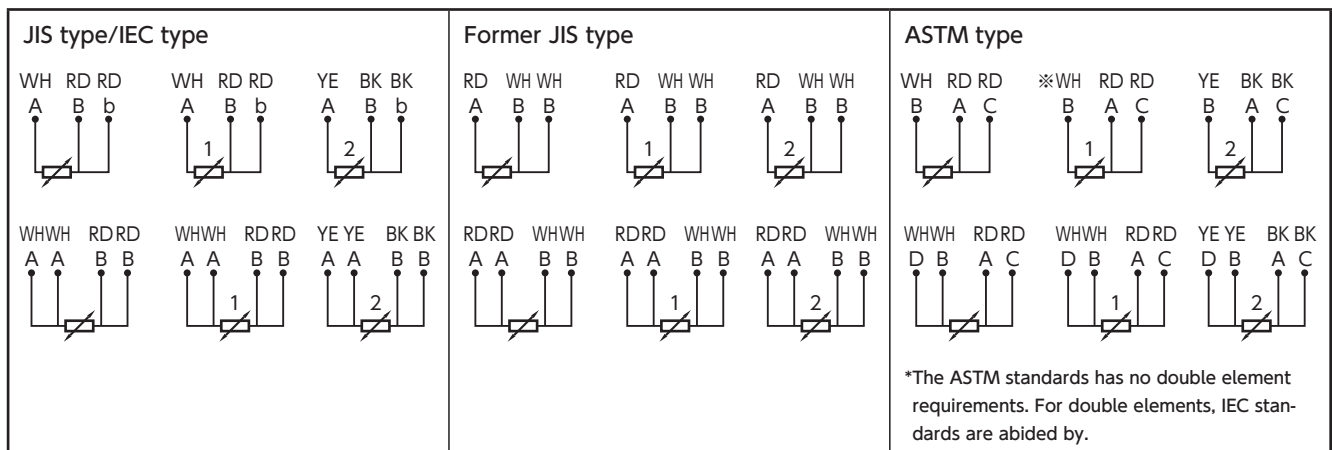
List of Temperature Tolerances and the Standards Applied by Each Country

Nominal resistance	Basic standard	Class	Tolerance (°C)	JIS C1604/IEC 60751		ASTM E1137
				Winding element	Thin-film element	
				Temperature range (°C)		
Pt100 Ω at 0°C (R100/R0=1.3851)	AA	±[0.1 + 0.0017 t]	-196 to 450	0 to 150	-	
	A	±[0.15 + 0.002 t]	-196 to 450	-30 to 300	-	
		±[0.13 + 0.0017 t]	-	-	-200 to 650	
	B	±[0.3 + 0.005 t]	-196 to 500	-50 to 500	-	
		±[0.25 + 0.0042 t]	-	-	-200 to 650	
C	±[0.6 + 0.01 t]	-196 to 500	-50 to 600	-		

Notes

1. The tolerance is the maximum allowable error of the value calculated by subtracting the measured temperature|t|from the value obtained by converting in accordance to the standard resistance table the resistance value indicated by the resistance element.
2. |t| The measured temperature which is indicated as a temperature (°C) unrelated to + and - signs.
3. The latest version is applied for the standard year.

Resistance Thermometer Sensor Wire Connection Methods and Colors



2-conductor cable type:

As the conductor resistance is added to the resistance value, it is necessary to make the conductor resistance smaller or to know the conductor resistance beforehand. In comparison with the other types, it is not often used unless in the case of high resistance.

3-conductor cable type:

Caution should be exercised when transmitting over long distances, as the variations in conductor resistance in the 3 cables may affect accuracy. This is generally the most often used.

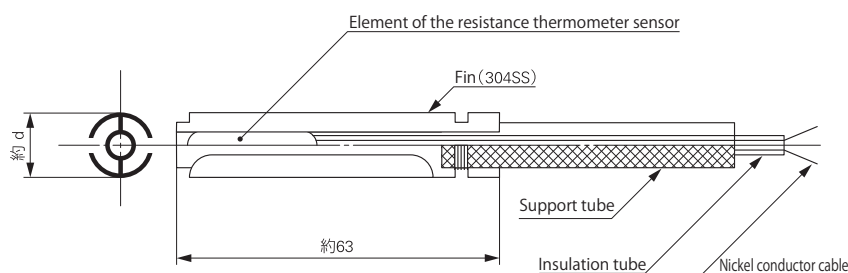
4-conductor cable type:

Used for high precision measurement because the conductor resistance does not significantly affect accuracy. A constant current is generally supplied and the resistance value is measured with the potential difference.

Resistance Thermometer Sensor Operating Temperature Ranges JIS C1604

Code	Classification	Operating temp. range (°C)
L	Use in lower temperatures	-196 to +100
N	Use in more moderate temperatures	-30 to +200
M	Use in higher temperatures	0 to 350
H	Use in high temperatures	0 to 600

The Structure of a Resistance Thermometer Sensor



Model	Approximate diameter			
Pt100 (JPt100)	7	9	11	16

Materials and Standard Dimensions of Metal Protection Tubes

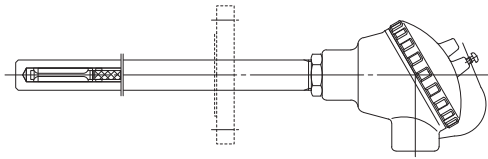
Type Code in the () is the JIS code	Material code	Dimensions (φ/mm)		Max. length (mm)	General operating temp. limit (°C) ^{*1}	Characteristics
		Outer diameter	Inner diameter			
304SS (SUS304)	A	10	7	2000	900	Excellent heat/acid/alkali resistance. Weak against sulfur and reducing gas.
		12	9			
		15	11	3950		
		21.7	15.7			
316SS (SUS316)	C	10	7	2000	900	The heat/acid/alkali resistance is the same as that of 304SS, and the corrosion resistance is excellent at high temperatures.
		12	9			
		15	11	3950		
		21.7	15.7			
316LSS (SUS316L)	CL	10	7	2000	900	The amount of C is less than that of 316SS, and the material has grain-boundary corrosion resistance.
		12	9			
		15	11	3950		
		21.7	16.1			
TITANIUM	T	15	11	3950	250	This material shows excellent corrosion resistance at low temperatures, but the material becomes fragile with oxidation at high temperatures.
		17.3	12.7			
		21.7	16.1			
		27.2	21.6			

*1 The normal operation temperature limit values listed here are reference values from JIS and the manufacturer's catalog. These are not guaranteed values. For additional information, refer to "Protection Tubes/Thermowells."

With terminal box

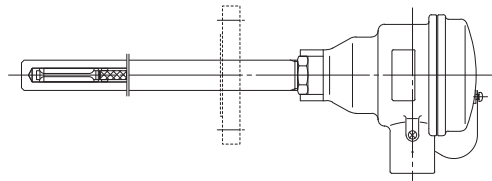
RBW

● RBW Metal Thermowell type resistance thermometer sensor



RBG

● RBG Explosion-Proof/Metal Thermowell Type Resistance Thermometer Sensor (d2G4)



Flattened type

RBF

Type	Flattened case material	Resistance element	Flattened length/Width/Thickness	Schematic
RBF-1	Glass PPS resin mold	Ceracoil	200/8/3	
RBF-2	Silicone glass laminate	Mica wrapping	150, 250/8/3	
RBF-3	Silicone glass laminate	Ceracoil	200/8/3	
RBF-4	Glass PPS resin mold Outer heat shrink tubing	Resin surface Spiral wrapping	50, 100, 150, 200, 250/8/3	

Resistance Thermometer Sensor Inspection Standards

External/ Structural inspection

Perform visual inspection of terminal head, welds, brazed parts, fastened parts, nameplate, and other parts. Perform penetrant inspection and airtightness inspection for welded and brazed parts as required.

Dimension inspection

Protection tube outer diameter	$\phi 3.0$ to $\phi 4.8$ mm $\phi 6.0$ to $\phi 6.4$ mm $\phi 8$ to $\phi 22$ mm	± 0.05 mm ± 0.06 mm $\pm 1\%$
Protection tube length	≤ 150 mm 150 mm <	± 2.0 mm $\pm 1.5\%$
Nipple length		± 3 mm
Other parts	Use a measuring instrument to measure the dimensions of parts specified in the production drawings. In accordance to JIS B 0405 medium grade unless specified otherwise.	

Resistance value test

Measurement of basic resistance value	0°C	Freezing point
---------------------------------------	-----	----------------

The resistance between the conductor cable and protection tube is measured in room temperature.

Insulation resistance test

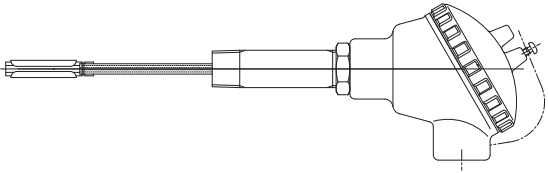
Protection tube outer diameter (mm)	Features
$\phi 3.0$ to $\phi 22$	100 M Ω /100 V DC

Documentation

The inspection certificate shall be attached to the product. Detailed test report shall be available upon request.


RBN >> E-6

Resistance Thermometer Sensor with Connection Head/Nipple



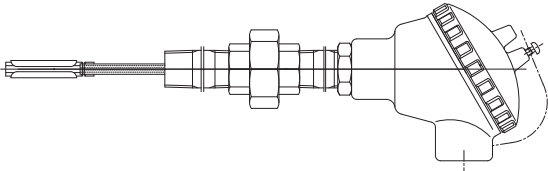
R800-1 >> E-11

Built-in Lead Easy Sensor




RBU >> E-7

Resistance Thermometer Sensor with Connection Head/Nipple/Union



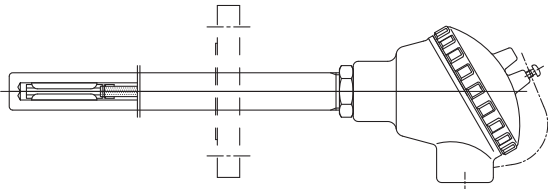
R800-2 >> E-12

Easy Sensor with Metal Tip



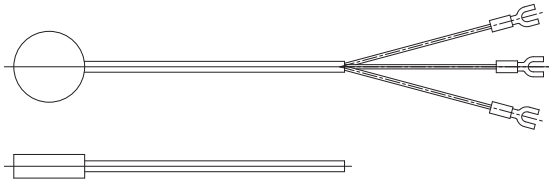
RBW >> E-8

Resistance Thermometer Sensor with Thermowell



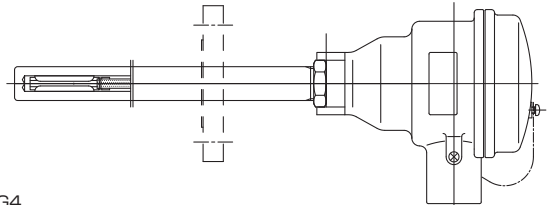
R800-3 >> E-13

Easy Sensor with Silicone Pad



RBG >> E-9

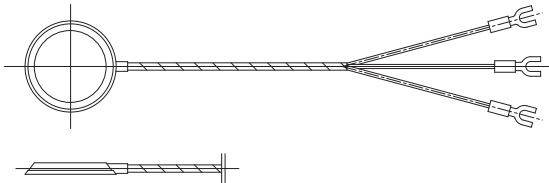
Explosion-Proof Resistance Thermometer Sensor with Thermowell



d2G4


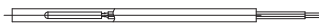


R800-4 >> E-14

Button Cell Type Easy Sensor

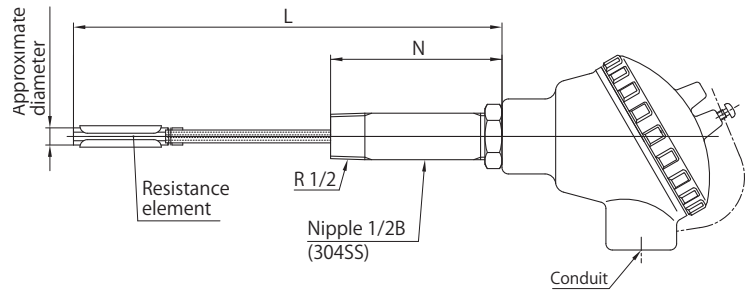


RBF >> E-10

Flattened Type Resistance Thermometer Sensor

- RBF-1 ▯ 
- RBF-2 ▯ 
- RBF-3 ▯ 
- RBF-4 ▯ 

Resistance Thermometer Sensor with Connection Head/Nipple



Model code **RBN**

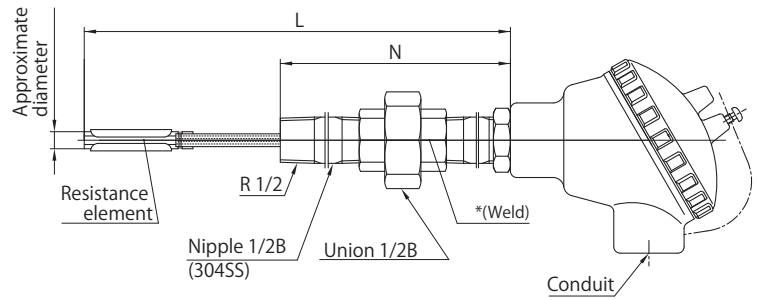
RBN- ① _____ ② _____ ③ _____ ④ _____ ⑤ _____ ⑥ _____ / ⑦ _____ ⑧ _____

①	Structure	1	N=100
		2	N=150
②	Terminal box	-EL	Aluminum die-cast (ADC)
		-ED	Aluminum die-cast (ADC) (two-way)
		-EF	Cast iron
		-EP	Resin
③	Length (Unit: mm)	L	
④	Number of conductor cables	3	Single
		6	Double
⑤	Operating temp. range	L	-196 to 100°C
		N	-30 to 200°C
		M	0 to 350°C
		H	0 to 600°C
⑥	Resistance value	100	Pt100 Ω or JPt100 Ω
⑦	Class	-AAJ	Pt100 Ω AA class (JIS-2013)
		-AJ	Pt100 Ω A class (JIS-2013)
		-BJ	Pt100 Ω B class (JIS-2013)
		-CJ	Pt100 Ω C class (JIS-2013)
		-A	Pt100 Ω A class (JIS-1997)
		-B	Pt100 Ω B class (JIS-1997)
		-AAI	Pt100 Ω AA class (IEC)
		-AI	Pt100 Ω A class (IEC)
		-BI	Pt100 Ω B class (IEC)
		-CI	Pt100 Ω C class (IEC)
		-10	Pt100 Ω B class (ASTM)
		-11	Pt100 Ω A class (ASTM)
		-1	JPt100 Ω B class
-2	JPt100 Ω A class		
⑧	Optional parts		See the "Standard Parts" section

Platinum resistance element outer diameter and protection tube inner diameter

	Minimum inner diameter of protection tube		
	8	10	12
Element outer diameter	φ7	φ9	φ11

Resistant Thermometer Sensor with Connection Head/Nipple/Union



Model code **RBU**

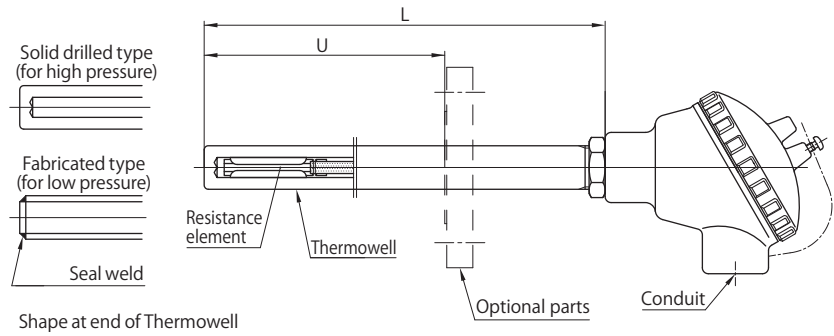
RBU- ① _____ / ② _____ ③ _____ ④ _____ ⑤ _____ ⑥ _____ ⑦ _____ / ⑧ _____

①	Structure	2	N=150
②	Terminal box	-EL -ED -EF -EP	Aluminum die-cast (ADC) Aluminum die-cast (ADC) (two-way) Cast iron Resin
③	Length (Unit: mm)	L	
④	Number of conductor cables	3 6	Single Double
⑤	Operating temp. range	L N M H	-196 to 100°C -30 to 200°C 0 to 350°C 0 to 600°C
⑥	Resistance value	100	Pt100 Ω or JPt100 Ω
⑦	Class	-AAJ -AJ -BJ -CJ -A -B -AAI -AI -BI -CI -10 -11 -1 -2	Pt100 Ω AA class (JIS-2013) Pt100 Ω A class (JIS-2013) Pt100 Ω B class (JIS-2013) Pt100 Ω C class (JIS-2013) Pt100 Ω A class (JIS-1997) Pt100 Ω B class (JIS-1997) Pt100 Ω AA class (IEC) Pt100 Ω A class (IEC) Pt100 Ω B class (IEC) Pt100 Ω C class (IEC) Pt100 Ω B class (ASTM) Pt100 Ω A class (ASTM) JPt100 Ω B class JPt100 Ω A class
⑧	Optional parts		See the "Standard Parts" section

Platinum resistance element outer diameter and Thermowell inner diameter

	Minimum inner diameter of Thermowell		
	8	10	12
Element outer diameter	φ7	φ9	φ11

Resistance Thermometer Sensor with Thermowell



Model code RBW

RBW- ① - ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ / ⑩ ⑪

①	Structure	1	Fabricated type					
		2	Solid drilled type					
②	Terminal box	EL	Aluminum die-cast (ADC)					
		ED	Aluminum die-cast (ADC) (two-way)					
		EF	Cast iron					
		EP	Resin					
③	Length (Unit: mm)	L						
④	Number of conductor cables	3	Single					
		6	Double					
⑤	Operating temp. range	L	-196 to 100°C					
		N	-30 to 200°C					
		M	0 to 350°C					
		H	0 to 600°C					
⑥	Resistance value	100	Pt100 Ω or JPt100 Ω					
⑦	Class	-AAJ	Pt100 Ω AA class (JIS-2013)	-AI	Pt100 Ω A class (IEC)			
		-AJ	Pt100 Ω A class (JIS-2013)	-BI	Pt100 Ω B class (IEC)			
		-BJ	Pt100 Ω B class (JIS-2013)	-CI	Pt100 Ω C class (IEC)			
		-CJ	Pt100 Ω C class (JIS-2013)	-10	Pt100 Ω B class (ASTM)			
		-A	Pt100 Ω A class (JIS-1997)	-11	Pt100 Ω A class (ASTM)			
		-B	Pt100 Ω B class (JIS-1997)	-1	JPt100 Ω B class			
		-AAI	Pt100 Ω AA class (IEC)	-2	JPt100 Ω A class			
		⑧	Thermowell dimensions	-10	See the table below			
				-12				
				-15				
-22								
⑨	Thermowell materials	A	304SS					
		C	316SS					
⑩	Optional parts		See the "Standard Parts" section					
⑪	Immersion length (Unit: mm)	-U						

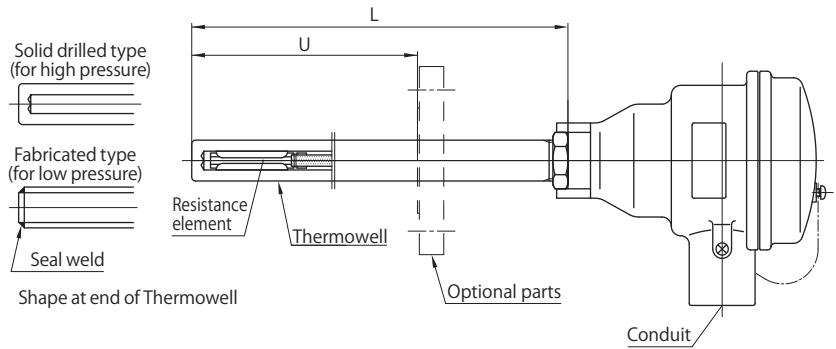
Thermowell dimensions

Code	Outer diameter	Inner diameter for fabricated type	Inner diameter for solid drilled type
-10	φ10	φ7	φ7
-12	φ12	φ9	φ9
-15	φ15	φ11	φ9
-22	φ21.7	φ16.1	-
	φ22	-	φ9

Please contact us for details about sizes other than the above.

Explosion-Proof Resistance Thermometer Sensor with Thermowell

d2G4



Model code RBG

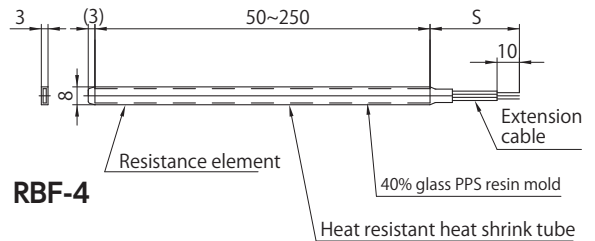
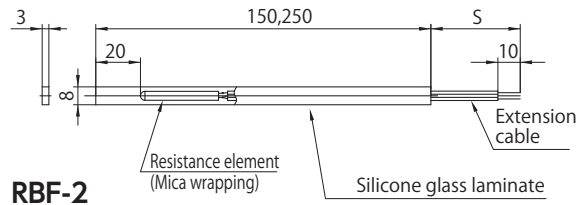
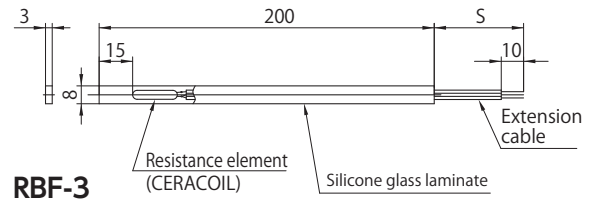
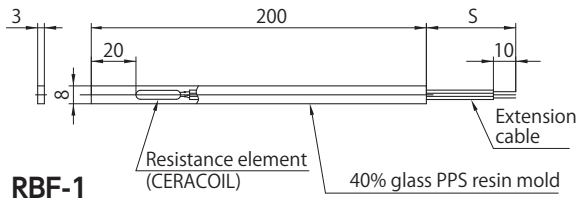
RBG- ① - ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ / ⑩ ⑪

①	Structure	1 2	Fabricated type Solid drilled type		
②	Terminal box	GA	Aluminum die-cast (ADC)		
③	Length (Unit: mm)	L			
④	Number of conductor cables	3 6	Single Double		
⑤	Operating temp. range	L N M H	-196 to 100°C -30 to 200°C 0 to 350°C 0 to 600°C		
⑥	Resistance value	100	Pt100 Ω or JPt100 Ω		
⑦	Class	-AAJ -AJ -BJ -CJ -A -B -AAI	Pt100 Ω AA class (JIS-2013) Pt100 Ω A class (JIS-2013) Pt100 Ω B class (JIS-2013) Pt100 Ω C class (JIS-2013) Pt100 Ω A class (JIS-1997) Pt100 Ω B class (JIS-1997) Pt100 Ω AA class (IEC)	-AI -BI -CI -10 -11 -1 -2	Pt100 Ω A class (IEC) Pt100 Ω B class (IEC) Pt100 Ω C class (IEC) Pt100 Ω B class (ASTM) Pt100 Ω A class (ASTM) JPt100 Ω B class JPt100 Ω A class
⑧	Thermowell dimensions	-10 -12 -15 -22	See the table below		
⑨	Thermowell materials	A C	304SS 316SS		
⑩	Optional parts		See the "Standard Parts" section		
⑪	Immersion length (Unit: mm)	-U			

Thermowell dimensions

Code	Outer diameter	Inner diameter for fabricated type	Inner diameter for solid drilled type
-10	φ10	φ7	φ5 to φ7
-12	φ12	φ9	φ7 to φ9
-15	φ15	φ11	φ9 to φ11
-22	φ21.7	φ16.1	-
	φ22	-	φ14.5 to φ16

Flattened Type Resistance Thermometer Sensor



Model code RBF

RBF- ① _____ ② _____ ③ _____ - ④ _____ - ⑤ _____

①	Structure	1	Mold shape
		2	Silicone resin case
		3	Silicone resin case
		4	Mold shape
②	Type	P	Pt
		J	JPt
		C	Cu (RBF-2, 4 only)
③	Resistance value	100	Pt100 or JPt100
		25	Cu25 Ω at 0°C
		10	Cu10 Ω at 25°C
④	Case length	L	Selected from the table below
⑤	Extension cable length (Unit: mm)	S	

Application standards: JIS C1604-1997
JEM 1252-1991

Tolerance: Class B

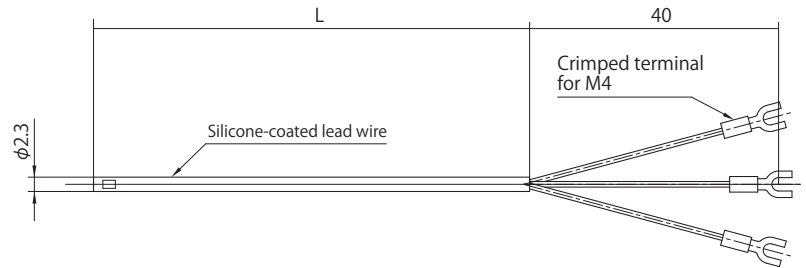
Standard usage

Nominal resistance value	Operating temp. range	Specified current
Pt100 Ω at 0°C JPt100 Ω at 0°C	0 to +180°C	2mA
Cu10 Ω at 25°C Cu25 Ω at 0°C	0 to +130°C	5mA

Case length

L (mm)	50	100	150	200	250
RBF-1	-	-	-	○	-
RBF-2	-	-	○	-	○
RBF-3	-	-	-	○	-
RBF-4	○	○	○	○	○

Built-in Lead Easy Sensor



Model code R800-1

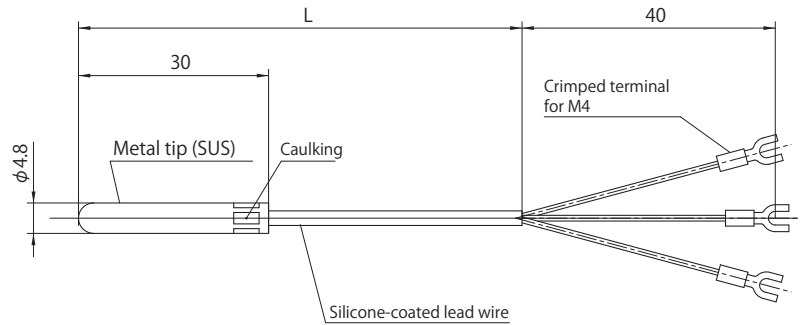
R800- ① _____ - ② _____ ③ _____ ④ _____

①	Structure	1	Built-in lead type
②	Length (Unit: mm)	L	
③	Class	-B -BJ	Pt100 Ω B class (JIS-1997) Pt100 Ω B class (JIS-2013)
④	Lead color	1 2	JIS C 1604-1997 JIS C 1604-2013

Characteristics

- The remarkably simple structure allows for the production of a large amount of high quality products at a low cost.
- Suitable for measuring the temperature of water and oil, high-temperature and high-humidity environments, as well as the temperatures of various surfaces, etc. because of its waterproof structure.

Easy Sensor with Metal Tip



Model code R800-2

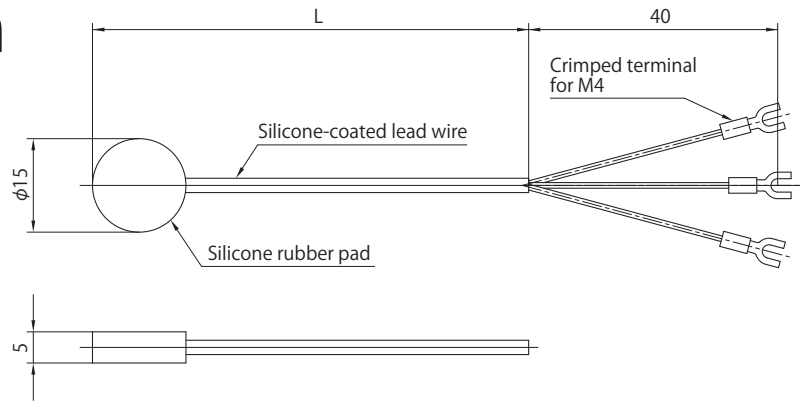
R800- ① _____ - ② _____ ③ _____ ④ _____

①	Structure	2	Metal tip type
②	Length (Unit: mm)	L	
③	Class	-B -A -BJ -AJ	Pt100 Ω B class (JIS-1997) Pt100 Ω A class (JIS-1997) Pt100 Ω B class (JIS-2013) Pt100 Ω A class (JIS-2013)
④	Lead color	1 2	JIS C 1604-1997 JIS C 1604-2013

Characteristics

- The remarkably simple structure allows for the production of a large amount of high quality products at a low cost.
- Suitable for measuring the temperature of water and oil, high-temperature and high-humidity environments, as well as the temperatures of various surfaces, etc. because of its waterproof structure.

Easy Sensor with Silicone Pad



Model code R800-3

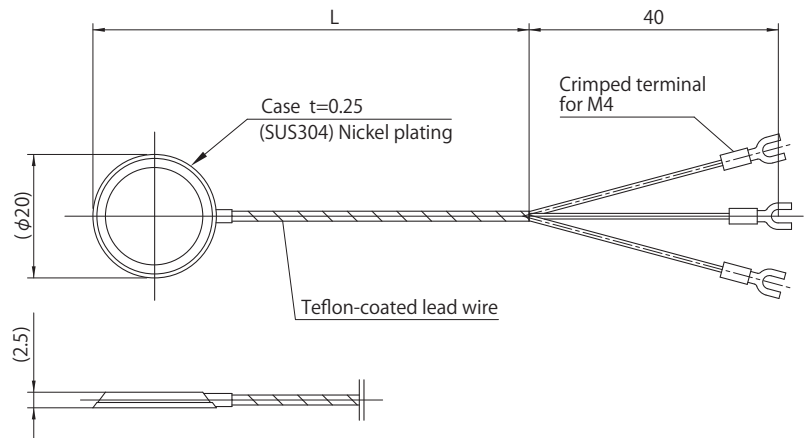
R800- ① _____ - ② _____ ③ _____ ④ _____

①	Structure	3	Silicone pad type
②	Length (Unit: mm)	L	
③	Class	-B -A -BJ -AJ	Pt100 Ω B class (JIS-1997) Pt100 Ω A class (JIS-1997) Pt100 Ω B class (JIS-2013) Pt100 Ω A class (JIS-2013)
④	Lead color	1 2	JIS C 1604-1997 JIS C 1604-2013

Characteristics

- The remarkably simple structure allows for the production of a large amount of high quality products at a low cost.
- Suitable for measuring the temperature of water and oil, high-temperature and high-humidity environments, as well as the temperatures of various surfaces, etc. because of its waterproof structure.

Button Cell Type Easy Sensor



Model code R800-4

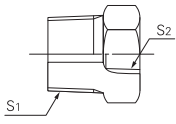
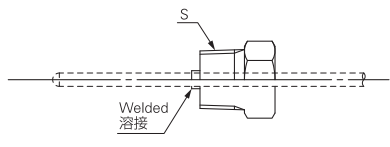
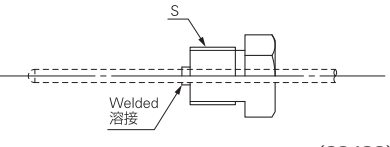
R800- ① _____ - ② _____ ③ _____ ④ _____

①	Structure	4	Button cell type
②	Length (Unit: mm)	L	
③	Class	-B -A -BJ -AJ	Pt100 Ω B class (JIS-1997) Pt100 Ω A class (JIS-1997) Pt100 Ω B class (JIS-2013) Pt100 Ω A class (JIS-2013)
④	Lead color	1 2	JIS C 1604-1997 JIS C 1604-2013

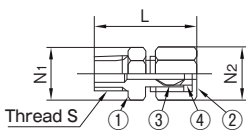
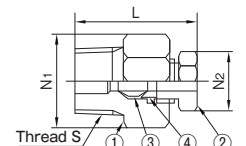
Characteristics

- The remarkably simple structure allows for the production of a large amount of high quality products at a low cost.
- Suitable for measuring the temperature of water and oil, high-temperature and high-humidity environments, as well as the temperatures of various surfaces, etc. because of its waterproof structure.

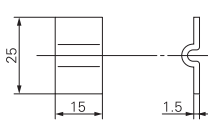
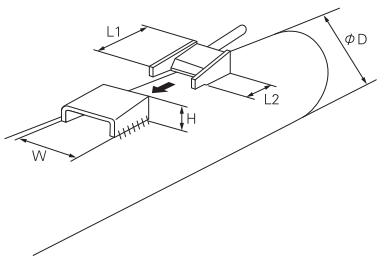
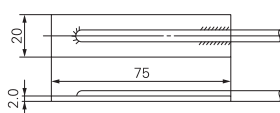
Standard Parts

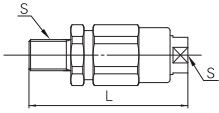
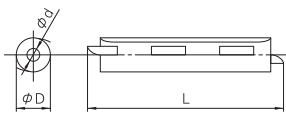
Double threaded adapter			Single threaded adapter			
	S ₁	S ₂	 <p>(304SS)</p>		S	 <p>(304SS)</p>
AD-2T1T	R1/4	R1/8		AS-1T	R1/8	
AD-3T1T	R3/8	R1/8		AS-2T	R1/4	
AD-4T1T	R1/2	R1/8		AS-3T	R3/8	
AD-6T1T	R3/4	R1/8		AS-4T	R1/2	
AD-4T2T	R1/2	R1/4		AS-6T	R3/4	
AD-6T2T	R3/4	R1/4				
AD-2F1T	G1/4	R1/8	AS-1F	G1/8	 <p>(304SS)</p>	
AD-3F1T	G3/8	R1/8	AS-2F	G1/4		
AD-4F1T	G1/2	R1/8	AS-3F	G3/8		
AD-6F1T	G3/4	R1/8	AS-4F	G1/2		
AD-4F2T	G1/2	R1/4	AS-6F	G3/4		
AD-6F2T	G3/4	R1/4				

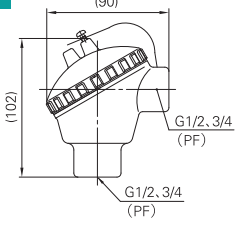
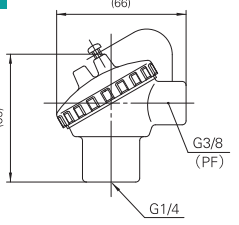
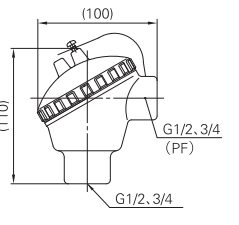
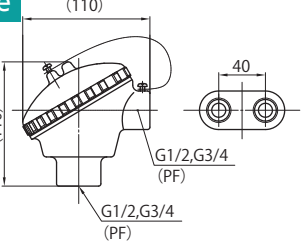
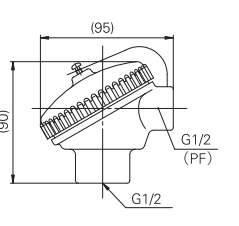
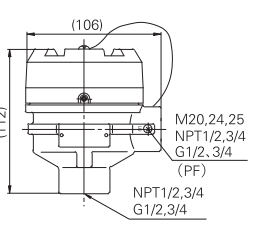
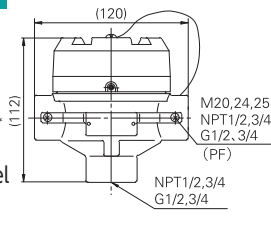
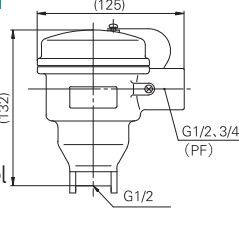
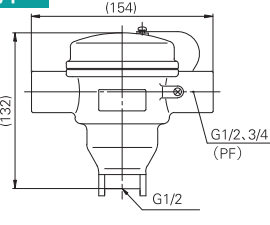
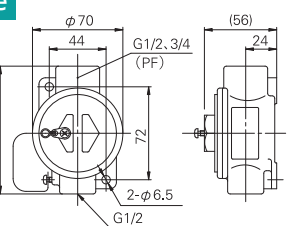
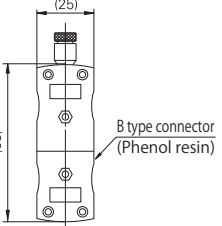
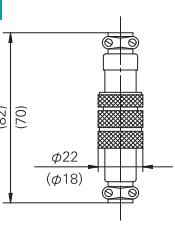
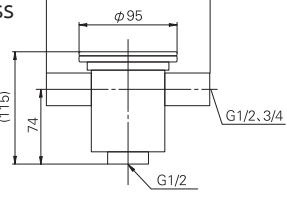
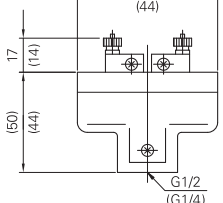
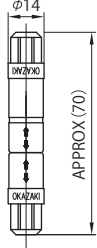
Compression fitting							
	S	φd	 <p>(304SS)</p>		S	φd	 <p>(304SS)</p>
CF2T64	R1/4	φ6.4		CF1T10	R1/8	φ1.0	
CF2T80	R1/4	φ8.0		CF1T16	R1/8	φ1.6	
CF4T64	R1/2	φ6.4		CF1T32	R1/8	φ3.2	
CF4T80	R1/2	φ8.0		CF1T48	R1/8	φ4.8	

Structure	Code	Specifications				Material	Sheath outer diameter applied
		S	N1	N2	L		
	/CF1T10	R1/8	14×16.2	14×16.2	30	① Main body (304SS) ② Cap nut (304SS) ③ Ferrule (C3604) ④ Ferrule holder (SS400)	φ1.0 ^(*)
	/CF1T16						φ1.6
	/CF1T32						φ3.2
	/CF1T48						φ4.8
	/CF2T64	R1/4	17×19.6	14×16.2	40		φ6.4
	/CF2T80			17×19.6			42
	/CF4T64	R1/2	24×27.7	14×16.2	36		φ6.4
	/CF4T80			17×19.6			37

* The ferrule ③ for φ1.0 is made of wound ceramic yarn.

Surface pads			
Strap (304SS) Strap ST-D φ3.2 ST-E φ4.8		U Pad (304SS) U Pad PD-UD φ3.2 φD: φ38 to φ120 PD-UE φ4.8 φD: φ80 to φ200 (Unwelded type) (Unwelded type)	 <p>* Each dimension can be designed to suit your needs. Please contact our branch office nearest you.</p>
RESIOPAD (304SS) RESIOPAD PD-R φ3.2, φ4.8, φ6.4			

Pressure proof packing type connector		S type fin anti-vibration/heat collection plate				
GL-15S-BC (BC Plated) GL-15S-SUS (304SS) S: PF1/2 or G1/2 L=107	 <p>(for d2G4)</p>	ϕd	ϕD	L	 <p>(304SS)</p>	
GL-20S-BC (BC Plated) GL-20S-SUS (304SS) S: PF3/4 or G3/4 L=110		FN-1	$\phi 4.8$	$\phi 11$		65
		FN-2	$\phi 6.4$	$\phi 11$		65
		FN-3	$\phi 4.8$	$\phi 9$		65
		FN-4	$\phi 8.0$	$\phi 16$	100	

Terminal boxes/Connectors		
<p>EL type</p> <p>A.D.C Silver 390g</p> 	<p>ES type</p> <p>A.D.C Silver 150g</p> 	<p>EF type</p> <p>F.C Silver 1250g</p> 
<p>ED type</p> <p>A.D.C Silver 670g</p> 	<p>EP type</p> <p>Phenol resin Black 380g</p> 	<p>GE type</p> <p>A.D.C Silver 750g</p>  <p>GES type</p> <p>Stainless steel 2100g</p>
<p>GED type</p> <p>A.D.C Silver 800g</p>  <p>GESD type</p> <p>Stainless steel 2300g</p>	<p>GA type</p> <p>A.D.C Silver 630g</p>  <p>GS type</p> <p>Stainless steel 1560g</p>	<p>GAD type</p> <p>A.D.C Silver 700g</p> 
<p>RC type</p> <p>A.D.C Silver 230g</p> 	<p>CB type</p> <p>Phenol resin Thermocouple color code (IBJIS) 150g</p> 	<p>AL/AS type</p> <p>Brass Nickel plating 70g (50g)</p> 
<p>GM type</p> <p>Stainless steel 2050g</p> 	<p>TL/TS type</p> <p>Al Silver 120 g (40 g)</p> 	<p>Push-pull</p> <p>Material: PSU 20g</p> 

* Explosion-proof
A.D.C: Aluminum die-cast
F.C: Cast iron The weight (g) is an approximate value.

Mounting plate

Structure	Code	Specifications	Description
	/PL-KSW	Material: 304SS	For holding the terminal head (Main Manufacturing Factory)
	/CP22E	Material: 304SS	For holding the terminal head (Kobe-Iwaoka Factory)

Flange

Structure		
FF 	RF 	RJ

Model code

/ ① _____ ② _____ ③ _____ / ④ _____ ⑤ _____

①	Flange rating	J05 J10 J20 A15 A30 A60	JIS 5K JIS 10K JIS 20K ASME 150LB ASME 300LB ASME 600LB	P15 P30 P60 F-Z	JPI 150LB JPI 300LB JPI 600LB Other flange (Z=□, □)
②	Flange face	FF RF	Flat face Raised face	RJ Z	Ring joint Other seating surface (Z=□, □)
③	Flange size	15 20 25	15A or 1/2B 20A or 3/4B 25A or 1B	40 50 Z	40A or 1-1/2B 50A or 2B Other size (Z=□, □)
④	Flange material	A C	304SS 316SS	D Z	310S SS Other material (Z=□, □)
⑤	Immersion length (Unit: mm)	- l			





Reference Thermoelectromotive Force Table

°C	B Thermocouple										
	0	10	20	30	40	50	60	70	80	90	100
0	0	-2	-3	-2	0	2	6	11	17	25	33
100	33	43	53	65	78	92	107	123	141	159	178
200	178	199	220	243	267	291	317	344	372	401	431
300	431	462	494	527	561	596	632	669	707	746	787
400	787	828	870	913	957	1002	1 048	1 095	1 143	1 192	1 242
500	1 242	1 293	1 344	1 397	1 451	1 505	1 561	1 617	1 675	1 733	1 792
600	1 792	1 852	1 913	1 975	2 037	2 101	2 165	2 230	2 296	2 363	2 431
700	2 431	2 499	2 569	2 639	2 710	2 782	2 854	2 928	3 002	3 078	3 154
800	3 154	3 230	3 308	3 386	3 466	3 546	3 626	3 708	3 790	3 873	3 957
900	3 957	4 041	4 127	4 213	4 299	4 387	4 475	4 564	4 653	4 743	4 834
1000	4 834	4 926	5 018	5 111	5 205	5 299	5 394	5 489	5 585	5 682	5 780
1100	5 780	5 878	5 976	6 075	6 175	6 276	6 377	6 478	6 580	6 683	6 786
1200	6 786	6 890	6 995	7 100	7 205	7 311	7 417	7 524	7 632	7 740	7 848
1300	7 848	7 957	8 066	8 176	8 286	8 397	8 508	8 620	8 731	8 844	8 956
1400	8 956	9 069	9 182	9 296	9 410	9 524	9 639	9 753	9 868	9 984	10 099
1500	10 099	10 215	10 331	10 447	10 563	10 679	10 796	10 913	11 029	11 146	11 263
1600	11 263	11 380	11 497	11 614	11 731	11 848	11 965	12 082	12 199	12 316	12 433
1700	12 433	12 549	12 666	12 782	12 898	13 014	13 130	13 246	13 361	13 476	13 591
1800	13 591	13 706	13 820								

°C	R Thermocouple										
	0	-10	-20	-30	-40	-50	-60	-70	-80	-90	-100
0	0	-51	-100	-145	-188	-226					
100	647	723	800	879	959	1 041	1 124	1 208	1 294	1 381	1 469
200	1 469	1 558	1 648	1 739	1 831	1 923	2 017	2 112	2 207	2 304	2 401
300	2 401	2 498	2 597	2 696	2 796	2 896	2 997	3 099	3 201	3 304	3 408
400	3 408	3 512	3 616	3 721	3 827	3 933	4 040	4 147	4 255	4 363	4 471
500	4 471	4 580	4 690	4 800	4 910	5 021	5 133	5 245	5 357	5 470	5 583
600	5 583	5 697	5 812	5 926	6 041	6 157	6 273	6 390	6 507	6 625	6 743
700	6 743	6 861	6 980	7 100	7 220	7 340	7 461	7 583	7 705	7 827	7 950
800	7 950	8 073	8 197	8 321	8 446	8 571	8 697	8 823	8 950	9 077	9 205
900	9 205	9 333	9 461	9 590	9 720	9 850	9 980	10 111	10 242	10 374	10 506
1000	10 506	10 638	10 771	10 905	11 039	11 173	11 307	11 442	11 578	11 714	11 850
1100	11 850	11 986	12 123	12 260	12 397	12 535	12 673	12 812	12 950	13 089	13 228
1200	13 228	13 367	13 507	13 646	13 786	13 926	14 066	14 207	14 347	14 488	14 629
1300	14 629	14 770	14 911	15 052	15 193	15 334	15 475	15 616	15 758	15 899	16 040
1400	16 040	16 181	16 323	16 464	16 605	16 746	16 887	17 028	17 169	17 310	17 451
1500	17 451	17 591	17 732	17 872	18 012	18 152	18 292	18 431	18 571	18 710	18 849
1600	18 849	18 988	19 126	19 264	19 402	19 540	19 677	19 814	19 951	20 087	20 222
1700	20 222	20 356	20 488	20 620	20 749	20 877	21 003				

°C	S Thermocouple										
	0	-10	-20	-30	-40	-50	-60	-70	-80	-90	-100
0	0	-53	-103	-150	-194	-236					
100	646	720	795	872	950	1029	1 110	1 191	1 273	1 357	1 441
200	1 441	1 526	1 612	1 698	1 786	1 874	1 962	2 052	2 141	2 232	2 323
300	2 323	2 415	2 507	2 599	2 692	2 786	2 880	2 974	3 069	3 164	3 259
400	3 259	3 355	3 451	3 548	3 645	3 742	3 840	3 938	4 036	4 134	4 233
500	4 233	4 332	4 432	4 532	4 632	4 732	4 833	4 934	5 035	5 137	5 239
600	5 239	5 341	5 443	5 546	5 649	5 753	5 857	5 961	6 065	6 170	6 275
700	6 275	6 381	6 486	6 593	6 699	6 806	6 913	7 020	7 128	7 236	7 345
800	7 345	7 454	7 563	7 673	7 783	7 893	8 003	8 114	8 226	8 337	8 449
900	8 449	8 562	8 674	8 787	8 900	9 014	9 128	9 242	9 357	9 472	9 587
1000	9 587	9 703	9 819	9 935	10 051	10 168	10 285	10 403	10 520	10 638	10 757
1100	10 757	10 875	10 994	11 113	11 232	11 351	11 471	11 590	11 710	11 830	11 951
1200	11 951	12 071	12 191	12 312	12 433	12 554	12 675	12 796	12 917	13 038	13 159
1300	13 159	13 280	13 402	13 523	13 644	13 766	13 887	14 009	14 130	14 251	14 373
1400	14 373	14 494	14 615	14 736	14 857	14 978	15 099	15 220	15 341	15 461	15 582
1500	15 582	15 702	15 822	15 942	16 062	16 182	16 301	16 420	16 539	16 658	16 777
1600	16 777	16 895	17 013	17 131	17 249	17 366	17 483	17 600	17 717	17 832	17 947
1700	17 947	18 061	18 174	18 285	18 395	18 503	18 609				

Identification of Compensating Cables for Each National Standard

Standard Type	BC	RCA (RCB) SCA (SCB)	NX/NC	KX/KCA/ KCB	EX	JX	TX
  JIS C 1610 :2012 IEC 584-3 :2007	+	+	+	+	+	+	+
 JIS C 1610 :1995 Category 2	+	+	-	+	+	+	+
 ASTM E230	+	+	+	+	+	+	+

The JIS C 1610 standard for thermocouple compensating cables was revised in June 2012. We are continuing to apply the former JIS C 1610:1995 standard (color codes; Category 2) on a temporary basis. Please contact us if you wish to purchase products that conform to the new standard. However, note that we currently do not have all types of products in stock, so it may take some time to ship items after purchase. In addition, Category 2 has been eliminated in the 2012 version of the standard.

Identification of Thermocouple Wires for ASTM Standard

Standard Type	N	K	E	J	T
ASTM E230	+	+	+	+	+



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