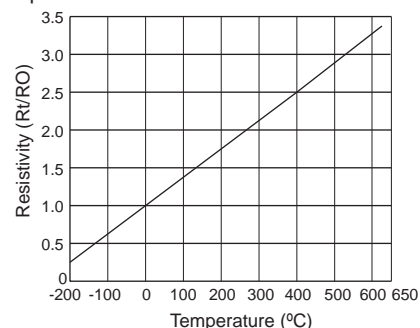


# General type • Sheathed Resistance Temperature Detectors

## ■ Resistance Temperature Detector


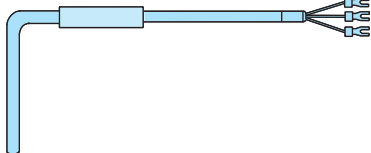

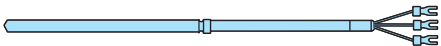

The value of metal resistance changes according to temperature change. This measuring element which utilizes a relationship between temperature and resistance is called Resistance Temperature Detectors (RTDs). Platinum, nickel, and copper are used as metals of RTDs, and utilizes a characteristic that the resistance increases as the temperature rises. Platinum is the most excellent element in accuracy and stability and is defined in "JIS" standard. Platinum is fragile compared with the other elements, be cautious about its usage at a place where vibrations and shocks will occur. All of our RTDs are platinum ones of the type Pt100.

Platinum Resistance Temperature Detector (Pt100) Temperature Characteristic



## ■ Sheathed Resistance Temperature Detector

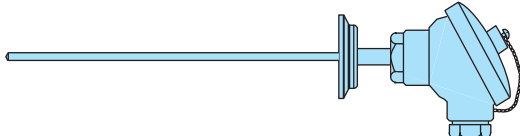
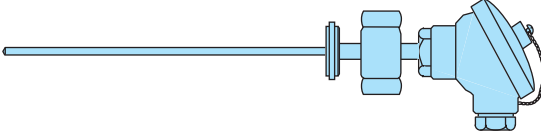
Inside the thin stainless steel pipe, element is located, and then Stainless pipe is filled with a MgO. This type of sensor features in excellent responsiveness and vibration resistances.

| Sleeve type  | Terminal head type  |
|--|---|
| R-101(General type)/R-101S(Sheathed type)<br><br>R-111(General type)/R-111S(Sheathed type)<br> | R-30,35(General type)/R-30S,35S(Sheathed type)<br> |
| No-sleeve type<br>(Only for General type)  | Metal connector type  |
| R-102<br>   | R-90(General type)/R-90S(Sheathed type)<br>       |

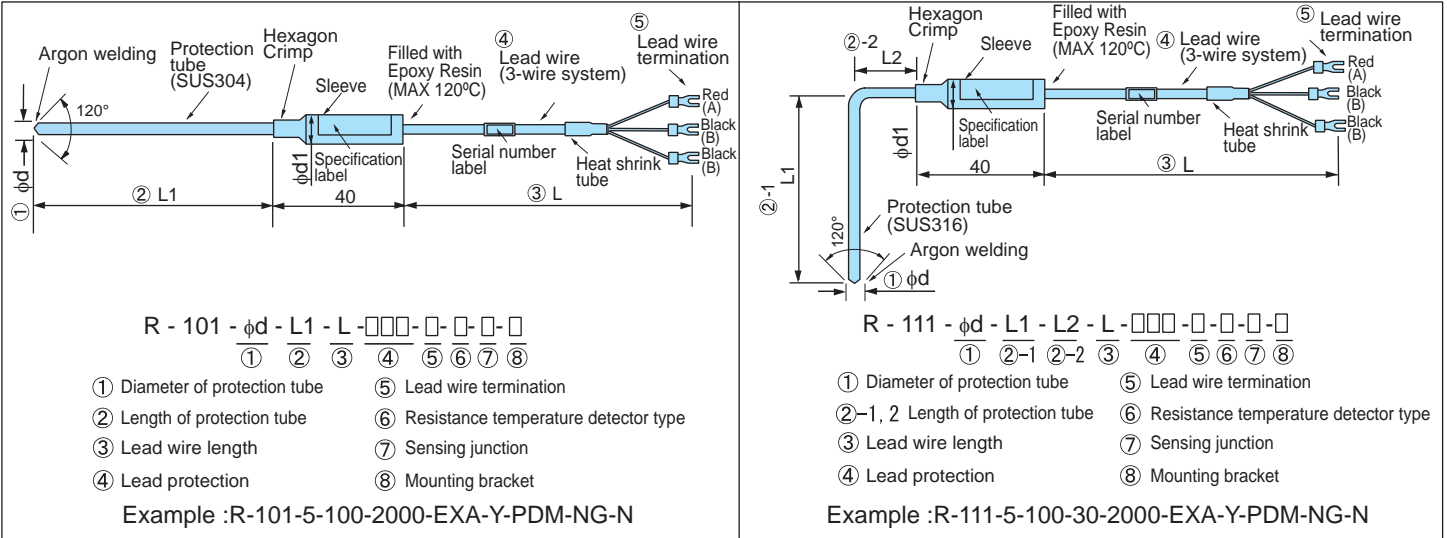
## ■ Sanitary type Resistance Temperature Detector

Sanitary Sensors are able to keep cleanness of foreign matters and bacteria, users can relief to apply them in food, beverage, and chemical processing applications.

- Protection tube is #400 polish finishing.
- Ferrule cap and hexagon nut and linear cap are available.
- Protection tube material is SUS316.
- Electropolishing is available (Specify from "option" code).

| Ferrule cap<br>(Sheathed Resistance Temperature Detector)   | Hexagon nut and Linear cap<br>(Sheathed Resistance Temperature Detector)                               |
|---|--|
| R-31S, R-36S<br> | R-31RS, R-36RS<br> |

# Resistance Temperature Detectors : R-101/R-111



| ①   | Diameter of protection tube                       | φ3.0, φ3.2, φ4.0, φ4.8, φ5.0, φ6.0, φ8.0   |                                      |         |   |            |  |   |   |  |            |  |   |              |   |                              |         |                       |   |   |              |     |   |               |     |   |            |  |  |  |
|---|---|--|--------------------------------------|---------|---|------------|--|---|---|--|------------|--|---|--------------|---|------------------------------|---------|-----------------------|---|---|--------------|-----|---|---------------|-----|---|------------|--|--|--|
| ②   | Length of protection tube                         | Specify length by “mm” (100mm to 1,000mm)<br>• Please contact distributors regarding other length.   |                                      |         | ②-1: Specify length by “mm”<br>(100mm or more, L1+L2=1,000mm or less)<br>②-2: Specify length by “mm”<br>(25mm or more, L1+L2=1,000mm or less)<br>• Length is 25mm without specification.<br>• Please contact distributors regarding other length. |            |  |   |   |  |            |  |   |              |   |                              |         |                       |   |   |              |     |   |               |     |   |            |  |  |  |
| ③   | Lead wire length                                  | Specify length by “mm” (100mm or more)   |                                      |         |   |            |  |   |   |  |            |  |   |              |   |                              |         |                       |   |   |              |     |   |               |     |   |            |  |  |  |
| ④   | Lead protection                                   | <table><tr><th>Code</th><th>Details</th><th>Operating temperature</th></tr><tr><td>EXA</td><td>Fiberglass with stainless steel</td><td>0 to 150°C</td></tr><tr><td>EXB</td><td>Fiberglass</td><td>0 to 150°C</td></tr><tr><td>EXC</td><td>PVC (polyvinyl chloride) with copper wire braided</td><td>-20 to +90°C</td></tr></table>   | Code                                 | Details | Operating temperature   | EXA        | Fiberglass with stainless steel              | 0 to 150°C                                  | EXB   | Fiberglass                                   | 0 to 150°C | EXC  | PVC (polyvinyl chloride) with copper wire braided | -20 to +90°C | <table><tr><th>Code</th><th>Details</th><th>Operating temperature</th></tr><tr><td>EXD</td><td>PVC (polyvinyl chloride)</td><td>-20 to +90°C</td></tr><tr><td>EXE</td><td>Silicone rubber</td><td>-55 to +180°C</td></tr><tr><td>EXF</td><td>Fluorocarbon polymers (FEP)</td><td>0 to 200°C</td></tr></table>   | Code                         | Details | Operating temperature | EXD   | PVC (polyvinyl chloride)                      | -20 to +90°C | EXE | Silicone rubber                               | -55 to +180°C | EXF | Fluorocarbon polymers (FEP)                 | 0 to 200°C |  |  |  |
| Code  | Details   | Operating temperature  |                                      |         |   |            |  |   |   |  |            |  |   |              |   |                              |         |                       |   |   |              |     |   |               |     |   |            |  |  |  |
| EXA   | Fiberglass with stainless steel                   | 0 to 150°C   |                                      |         |   |            |  |   |   |  |            |  |   |              |   |                              |         |                       |   |   |              |     |   |               |     |   |            |  |  |  |
| EXB   | Fiberglass  | 0 to 150°C   |                                      |         |   |            |  |   |   |  |            |  |   |              |   |                              |         |                       |   |   |              |     |   |               |     |   |            |  |  |  |
| EXC   | PVC (polyvinyl chloride) with copper wire braided | -20 to +90°C   |                                      |         |   |            |  |   |   |  |            |  |   |              |   |                              |         |                       |   |   |              |     |   |               |     |   |            |  |  |  |
| Code  | Details   | Operating temperature  |                                      |         |   |            |  |   |   |  |            |  |   |              |   |                              |         |                       |   |   |              |     |   |               |     |   |            |  |  |  |
| EXD   | PVC (polyvinyl chloride)                          | -20 to +90°C   |                                      |         |   |            |  |   |   |  |            |  |   |              |   |                              |         |                       |   |   |              |     |   |               |     |   |            |  |  |  |
| EXE   | Silicone rubber                                   | -55 to +180°C  |                                      |         |   |            |  |   |   |  |            |  |   |              |   |                              |         |                       |   |   |              |     |   |               |     |   |            |  |  |  |
| EXF   | Fluorocarbon polymers (FEP)                       | 0 to 200°C   |                                      |         |   |            |  |   |   |  |            |  |   |              |   |                              |         |                       |   |   |              |     |   |               |     |   |            |  |  |  |
| ⑤   | Lead wire termination                             | <table><tr><th>Code</th><th>Details</th><th>Code</th><th>Details</th></tr><tr><td>Y</td><td>Spade lugs for JIS standard "M3" size screw</td><td>N</td><td>No terminal lugs * terminal soldered</td></tr><tr><td>R</td><td>Ring lugs for JIS standard "M4" size screw</td><td></td><td></td></tr><tr><td>M</td><td>Metal connector (SCK-1603-P)</td><td></td><td></td></tr></table> | Code                                 | Details | Code  | Details    | Y  | Spade lugs for JIS standard "M3" size screw | N   | No terminal lugs * terminal soldered         | R          | Ring lugs for JIS standard "M4" size screw |   |              | M   | Metal connector (SCK-1603-P) |         |                       | •See Page7  |   |              |     |   |               |     |   |            |  |  |  |
| Code  | Details   | Code   | Details                              |         |   |            |  |   |   |  |            |  |   |              |   |                              |         |                       |   |   |              |     |   |               |     |   |            |  |  |  |
| Y   | Spade lugs for JIS standard "M3" size screw       | N  | No terminal lugs * terminal soldered |         |   |            |  |   |   |  |            |  |   |              |   |                              |         |                       |   |   |              |     |   |               |     |   |            |  |  |  |
| R   | Ring lugs for JIS standard "M4" size screw        |  |                                      |         |   |            |  |   |   |  |            |  |   |              |   |                              |         |                       |   |   |              |     |   |               |     |   |            |  |  |  |
| M   | Metal connector (SCK-1603-P)                      |  |                                      |         |   |            |  |   |   |  |            |  |   |              |   |                              |         |                       |   |   |              |     |   |               |     |   |            |  |  |  |
| ⑥   | Resistance temperature detector type              | <table><tr><th>Code</th><th>Details</th><th>Operating temperature</th></tr><tr><td>PDP</td><td>Pt100 Middle Temperature Type (φ3.0 to φ4.0)</td><td>0 to 220°C</td></tr><tr><td>PDM</td><td>Pt100 Middle Temperature Type (φ4.8 or more)</td><td>0 to 350°C</td></tr><tr><td>PDH</td><td>Pt100 High Temperature Type (φ4.8 or more)</td><td>0 to 500°C</td></tr></table>           | Code                                 | Details | Operating temperature   | PDP        | Pt100 Middle Temperature Type (φ3.0 to φ4.0) | 0 to 220°C                                  | PDM   | Pt100 Middle Temperature Type (φ4.8 or more) | 0 to 350°C | PDH  | Pt100 High Temperature Type (φ4.8 or more)        | 0 to 500°C   | <table><tr><th>Code</th><th>Details</th><th>Operating temperature</th></tr><tr><td>PAP</td><td>JPt100 Middle Temperature Type (φ3.0 to φ4.0)</td><td>0 to 220°C</td></tr><tr><td>PAM</td><td>JPt100 Middle Temperature Type (φ4.8 or more)</td><td>0 to 350°C</td></tr><tr><td>PAH</td><td>JPt100 High Temperature Type (φ4.8 or more)</td><td>0 to 500°C</td></tr></table> | Code                         | Details | Operating temperature | PAP   | JPt100 Middle Temperature Type (φ3.0 to φ4.0) | 0 to 220°C   | PAM | JPt100 Middle Temperature Type (φ4.8 or more) | 0 to 350°C    | PAH | JPt100 High Temperature Type (φ4.8 or more) | 0 to 500°C |  |  |  |
| Code  | Details   | Operating temperature  |                                      |         |   |            |  |   |   |  |            |  |   |              |   |                              |         |                       |   |   |              |     |   |               |     |   |            |  |  |  |
| PDP   | Pt100 Middle Temperature Type (φ3.0 to φ4.0)      | 0 to 220°C   |                                      |         |   |            |  |   |   |  |            |  |   |              |   |                              |         |                       |   |   |              |     |   |               |     |   |            |  |  |  |
| PDM   | Pt100 Middle Temperature Type (φ4.8 or more)      | 0 to 350°C   |                                      |         |   |            |  |   |   |  |            |  |   |              |   |                              |         |                       |   |   |              |     |   |               |     |   |            |  |  |  |
| PDH   | Pt100 High Temperature Type (φ4.8 or more)        | 0 to 500°C   |                                      |         |   |            |  |   |   |  |            |  |   |              |   |                              |         |                       |   |   |              |     |   |               |     |   |            |  |  |  |
| Code  | Details   | Operating temperature  |                                      |         |   |            |  |   |   |  |            |  |   |              |   |                              |         |                       |   |   |              |     |   |               |     |   |            |  |  |  |
| PAP   | JPt100 Middle Temperature Type (φ3.0 to φ4.0)     | 0 to 220°C   |                                      |         |   |            |  |   |   |  |            |  |   |              |   |                              |         |                       |   |   |              |     |   |               |     |   |            |  |  |  |
| PAM   | JPt100 Middle Temperature Type (φ4.8 or more)     | 0 to 350°C   |                                      |         |   |            |  |   |   |  |            |  |   |              |   |                              |         |                       |   |   |              |     |   |               |     |   |            |  |  |  |
| PAH   | JPt100 High Temperature Type (φ4.8 or more)       | 0 to 500°C   |                                      |         |   |            |  |   |   |  |            |  |   |              |   |                              |         |                       |   |   |              |     |   |               |     |   |            |  |  |  |
| ⑦   | Measuring junction                                | <table><tr><th>Code</th><th>Details</th></tr><tr><td>NG</td><td>Ungrounded</td></tr><tr><td>O</td><td>Exposed</td></tr></table>  | Code                                 | Details | NG  | Ungrounded | O  | Exposed                                     | * Exposed-junction type is available depending on specification such as shapes, environment of usage, etc.<br>Please contact with our distributors. |  |            |  |   |              |   |                              |         |                       |   |   |              |     |   |               |     |   |            |  |  |  |
| Code  | Details   |  |                                      |         |   |            |  |   |   |  |            |  |   |              |   |                              |         |                       |   |   |              |     |   |               |     |   |            |  |  |  |
| NG  | Ungrounded  |  |                                      |         |   |            |  |   |   |  |            |  |   |              |   |                              |         |                       |   |   |              |     |   |               |     |   |            |  |  |  |
| O   | Exposed   |  |                                      |         |   |            |  |   |   |  |            |  |   |              |   |                              |         |                       |   |   |              |     |   |               |     |   |            |  |  |  |
| ⑧   | Mounting bracket                                  | <table><tr><th>Code</th><th>Details</th><th>Code</th><th>Details</th></tr><tr><td>A</td><td>Fixed nipple (nut)</td><td>E</td><td>Compression fitting</td></tr><tr><td>B</td><td>Rotary nipple (nut)</td><td>N</td><td>No bracket</td></tr><tr><td>C</td><td>Fixed flange</td><td></td><td></td></tr></table>   | Code                                 | Details | Code  | Details    | A  | Fixed nipple (nut)                          | E   | Compression fitting                          | B          | Rotary nipple (nut)                        | N   | No bracket   | C   | Fixed flange                 |         |                       | Specify size of mounting bracket when code is "A", "B", or "E". (See Page 6)<br>Specify size of flange when code is "C". (See Page 6) |   |              |     |   |               |     |   |            |  |  |  |
| Code  | Details   | Code   | Details                              |         |   |            |  |   |   |  |            |  |   |              |   |                              |         |                       |   |   |              |     |   |               |     |   |            |  |  |  |
| A   | Fixed nipple (nut)                                | E  | Compression fitting                  |         |   |            |  |   |   |  |            |  |   |              |   |                              |         |                       |   |   |              |     |   |               |     |   |            |  |  |  |
| B   | Rotary nipple (nut)                               | N  | No bracket                           |         |   |            |  |   |   |  |            |  |   |              |   |                              |         |                       |   |   |              |     |   |               |     |   |            |  |  |  |
| C   | Fixed flange                                      |  |                                      |         |   |            |  |   |   |  |            |  |   |              |   |                              |         |                       |   |   |              |     |   |               |     |   |            |  |  |  |
| • Please contact distributors regarding other mounting bracket. |   |  |                                      |         |   |            |  |   |   |  |            |  |   |              |   |                              |         |                       |   |   |              |     |   |               |     |   |            |  |  |  |

Specifications

Class : class B \* Class A is available (Please specify when you order)

Element : Single element \* Double element is available.

(Diameter of protection tube : φ4.8 or more)

(Please specify when you order)

Maximum temperature for use

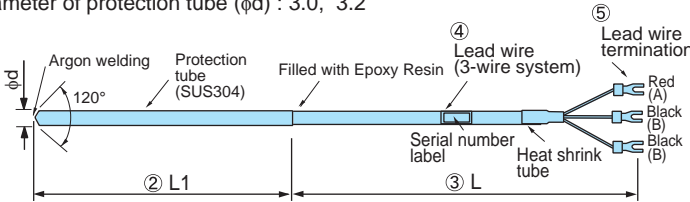
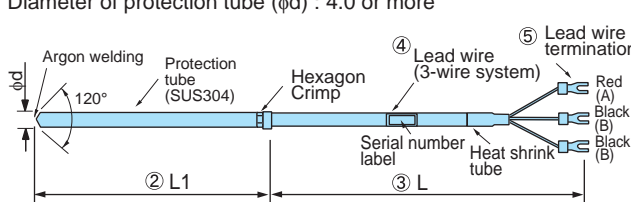
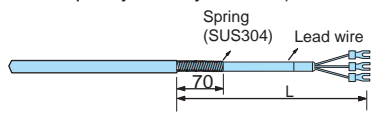
| Diameter of protection tube                           | Operating temperature |
|---|-----------------------|
| φ3.0 to φ4.0 (Middle temperature type : Code PDP/PAP) | 0 to 220°C            |
| φ4.8 or more (Middle temperature type : Code PDM/PAM) | 0 to 350°C            |
| φ4.8 or more (High temperature type : Code PDH/PAH)   | 0 to 500°C            |

Sleeve Dimension (φd1)

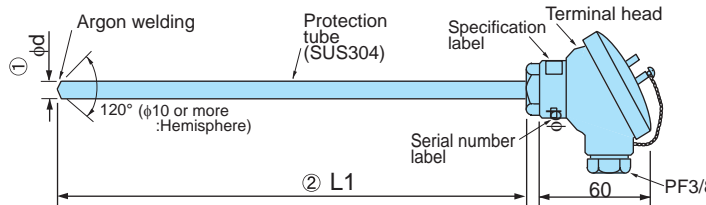
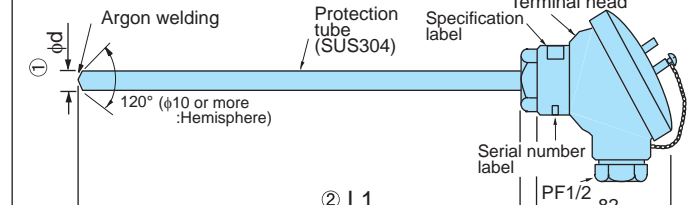
| Diameter of protection tube / Lead wire type | φ3.0 to φ5.0 | φ6.0 to φ8.0 |
|--|--------------|--------------|
| EXA, EXB, EXC<br>EXD, EXE, EXF               | φ8×40        | φ10×40       |

|           |   |   |  |
|-----------|---|---|--|
| Reference | <ul style="list-style-type: none"> <li>Stainless flexible lead wire is available</li> </ul> <p>Model Code : R-101F/R-111F</p> <p>For flexible lead wire, the dimension of the sleeve is <math>\phi 10 \times 40</math>mm.</p> <ul style="list-style-type: none"> <li>No waterproof</li> </ul> | <ul style="list-style-type: none"> <li>Spring loaded type is available (Please specify when you order)</li> </ul> <p>Dimensions for the spring loaded sleeve is as follows.</p> <ul style="list-style-type: none"> <li>Protection tube <math>\phi 1.0</math> to <math>\phi 4.8</math> with extension lead wire<br/>EXC, EXD : <math>\phi 10 \times 40</math>mm</li> <li>Protection tube <math>\phi 6.0</math> to <math>\phi 8.0</math> : <math>\phi 10 \times 40</math>mm</li> <li>Except from the above : <math>\phi 8 \times 40</math>mm</li> </ul> | <ul style="list-style-type: none"> <li>Material of protection tube SUS316 is available. (Please specify when you order)</li> </ul> |
|           |   |   |  |

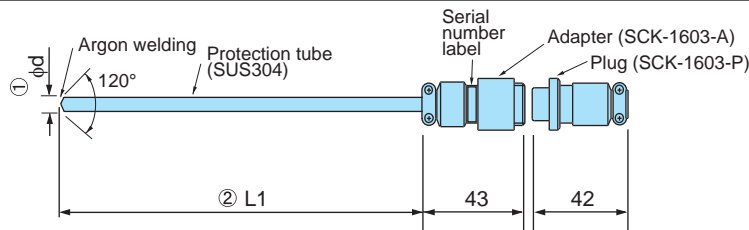
# Resistance Temperature Detectors : R-102

| Diameter of protection tube (φd) : 3.0, 3.2   |  | Diameter of protection tube (φd) : 4.0 or more  |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
|---|--|---|------|-----------------------------|-----------------------|---|-------------------------------|---|--|--------------------------------|---|---|---------|--|--------------------------------------|-----|---|------------|-----|--|--------------|-----|---|--------------|-----|--|---------------|-----|--|------------|
|    |  |   |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| R - 102 - $\frac{\phi d}{1}$ - $\frac{L1}{2}$ - $\frac{L}{3}$ - $\frac{\square\square\square}{4}$ - $\frac{\square}{5}$ - $\frac{\square}{6}$ - $\frac{\square}{7}$ - $\frac{\square}{8}$ |  | R - 102 - $\frac{\phi d}{1}$ - $\frac{L1}{2}$ - $\frac{L}{3}$ - $\frac{\square\square\square}{4}$ - $\frac{\square}{5}$ - $\frac{\square}{6}$ - $\frac{\square}{7}$ - $\frac{\square}{8}$   |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| ① Diameter of protection tube<br>② Length of protection tube<br>③ Lead wire length<br>④ Lead protection   |  | ⑤ Lead wire termination<br>⑥ Resistance temperature detector type<br>⑦ Sensing junction<br>⑧ Mounting bracket   |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| Example :R-102-3.2-100-2000-EXF-Y-PDM-NG-N  |  | Example :R-102-5-100-2000-EXA-Y-PDM-NG-N  |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| ①   | Diameter of protection tube  | φ3.0, φ3.2  |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| ②   | Length of protection tube  | Specify length by “mm” (50mm to 500mm) • Please contact distributors regarding other length.  |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| ③   | Lead wire length   | Specify length by “mm” (100mm or more)  |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| ④   | Lead protection  | <table><tr><th>Code</th><th>Details</th><th>Operating temperature</th></tr><tr><td>EXF</td><td>Fluorocarbon polymers (FEP)</td><td>0 to 200°C</td></tr></table>   | Code | Details                     | Operating temperature | EXF   | Fluorocarbon polymers (FEP)   | 0 to 200°C  | <table><tr><th>Code</th><th>Details</th><th>Operating temperature</th></tr><tr><td>EXA</td><td>Fiberglass with stainless steel (Diameter of protection tube : φ4.8 or more)</td><td>0 to 150°C</td></tr><tr><td>EXB</td><td>Fiberglass (Diameter of protection tube : φ4.8 or more)</td><td>0 to 150°C</td></tr><tr><td>EXC</td><td>PVC (polyvinyl chloride) with copper wire braided (Diameter of protection tube : φ5.0 or more)</td><td>-20 to +90°C</td></tr><tr><td>EXD</td><td>PVC (polyvinyl chloride) (Diameter of protection tube : φ5.0 or more)</td><td>-20 to +90°C</td></tr><tr><td>EXE</td><td>Silicone rubber (Diameter of protection tube : φ5.0 or more)</td><td>-55 to +180°C</td></tr><tr><td>EXF</td><td>Fluorocarbon polymers (FEP) (Diameter of protection tube : φ4.0 or more)</td><td>0 to 200°C</td></tr></table> | Code                           | Details   | Operating temperature   | EXA     | Fiberglass with stainless steel (Diameter of protection tube : φ4.8 or more) | 0 to 150°C                           | EXB | Fiberglass (Diameter of protection tube : φ4.8 or more) | 0 to 150°C | EXC | PVC (polyvinyl chloride) with copper wire braided (Diameter of protection tube : φ5.0 or more) | -20 to +90°C | EXD | PVC (polyvinyl chloride) (Diameter of protection tube : φ5.0 or more) | -20 to +90°C | EXE | Silicone rubber (Diameter of protection tube : φ5.0 or more) | -55 to +180°C | EXF | Fluorocarbon polymers (FEP) (Diameter of protection tube : φ4.0 or more) | 0 to 200°C |
| Code  | Details  | Operating temperature   |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| EXF   | Fluorocarbon polymers (FEP)  | 0 to 200°C  |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| Code  | Details  | Operating temperature   |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| EXA   | Fiberglass with stainless steel (Diameter of protection tube : φ4.8 or more)                   | 0 to 150°C  |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| EXB   | Fiberglass (Diameter of protection tube : φ4.8 or more)  | 0 to 150°C  |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| EXC   | PVC (polyvinyl chloride) with copper wire braided (Diameter of protection tube : φ5.0 or more) | -20 to +90°C  |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| EXD   | PVC (polyvinyl chloride) (Diameter of protection tube : φ5.0 or more)                          | -20 to +90°C  |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| EXE   | Silicone rubber (Diameter of protection tube : φ5.0 or more)                                   | -55 to +180°C   |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| EXF   | Fluorocarbon polymers (FEP) (Diameter of protection tube : φ4.0 or more)                       | 0 to 200°C  |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| ⑤   | Lead wire termination  | <table><tr><th>Code</th><th>Details</th></tr><tr><td>Y</td><td>Spade lugs for JIS standard "M3" size screw</td></tr><tr><td>R</td><td>Ring lugs for JIS standard "M4" size screw</td></tr><tr><td>M</td><td>Metal connector (SCK-1603-P)</td></tr></table>  | Code | Details                     | Y                     | Spade lugs for JIS standard "M3" size screw   | R                             | Ring lugs for JIS standard "M4" size screw            | M  | Metal connector (SCK-1603-P)   | <table><tr><th>Code</th><th>Details</th></tr><tr><td>N</td><td>No terminal lugs * terminal soldered</td></tr></table><br>•See Page7   | Code  | Details | N  | No terminal lugs * terminal soldered |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| Code  | Details  |   |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| Y   | Spade lugs for JIS standard "M3" size screw  |   |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| R   | Ring lugs for JIS standard "M4" size screw   |   |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| M   | Metal connector (SCK-1603-P)   |   |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| Code  | Details  |   |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| N   | No terminal lugs * terminal soldered   |   |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| ⑥   | Resistance temperature detector type   | <table><tr><th>Code</th><th>Details</th><th>Operating temperature</th></tr><tr><td>PDP</td><td>Pt100 Middle Temperature Type</td><td>0 to 220°C</td></tr><tr><td>PAP</td><td>JPt100 Middle Temoerature Type</td><td>0 to 220°C</td></tr></table>  | Code | Details                     | Operating temperature | PDP   | Pt100 Middle Temperature Type | 0 to 220°C  | PAP  | JPt100 Middle Temoerature Type | 0 to 220°C  | <table><tr><th>Code</th><th>Details</th><th>Operating temperature</th></tr><tr><td>PDP</td><td>Pt100 Middle Temperature Type (φ4.0)</td><td>0 to 220°C</td></tr><tr><td>PDM</td><td>Pt100 Middle Temperature Type (φ4.8 or more)</td><td>0 to 300°C</td></tr><tr><td>PAP</td><td>JPt100 Middle Temoerature Type (φ4.0)</td><td>0 to 220°C</td></tr><tr><td>PAM</td><td>JPt100 Middle Temperature Type (φ4.8 or more)</td><td>0 to 300°C</td></tr></table> | Code    | Details  | Operating temperature                | PDP | Pt100 Middle Temperature Type (φ4.0)                    | 0 to 220°C | PDM | Pt100 Middle Temperature Type (φ4.8 or more)   | 0 to 300°C   | PAP | JPt100 Middle Temoerature Type (φ4.0)                                 | 0 to 220°C   | PAM | JPt100 Middle Temperature Type (φ4.8 or more)                | 0 to 300°C    |     |  |            |
| Code  | Details  | Operating temperature   |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| PDP   | Pt100 Middle Temperature Type  | 0 to 220°C  |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| PAP   | JPt100 Middle Temoerature Type   | 0 to 220°C  |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| Code  | Details  | Operating temperature   |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| PDP   | Pt100 Middle Temperature Type (φ4.0)   | 0 to 220°C  |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| PDM   | Pt100 Middle Temperature Type (φ4.8 or more)   | 0 to 300°C  |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| PAP   | JPt100 Middle Temoerature Type (φ4.0)  | 0 to 220°C  |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| PAM   | JPt100 Middle Temperature Type (φ4.8 or more)  | 0 to 300°C  |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| ⑦   | Measuring junction   | <table><tr><th>Code</th><th>Details</th></tr><tr><td>NG</td><td>Ungrounded</td></tr><tr><td>O</td><td>Exposed</td></tr></table><br>* Exposed-junction type is available depending on specification such as shapes, environment of usage, etc. Please contact with our distributors.   |      | Code                        | Details               | NG  | Ungrounded                    | O   | Exposed  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| Code  | Details  |   |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| NG  | Ungrounded   |   |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| O   | Exposed  |   |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| ⑧   | Mounting bracket   | <table><tr><th>Code</th><th>Details</th></tr><tr><td>A</td><td>Fixed nipple (nut)</td></tr><tr><td>B</td><td>Rotary nipple (nut)</td></tr><tr><td>C</td><td>Fixed flange</td></tr></table><br>• Please contact distributors regarding other mounting bracket.   | Code | Details                     | A                     | Fixed nipple (nut)                            | B                             | Rotary nipple (nut)                                   | C  | Fixed flange                   | <table><tr><th>Code</th><th>Details</th></tr><tr><td>E</td><td>Compression fitting</td></tr><tr><td>N</td><td>No bracket</td></tr></table><br>Specify size of mounting bracket when code is "A", "B", or "E". (See Page 6)<br>Specify size of flange when code is "C". (See Page 6) | Code  | Details | E  | Compression fitting                  | N   | No bracket  |            |     |  |              |     |   |              |     |  |               |     |  |            |
| Code  | Details  |   |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| A   | Fixed nipple (nut)   |   |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| B   | Rotary nipple (nut)  |   |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| C   | Fixed flange   |   |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| Code  | Details  |   |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| E   | Compression fitting  |   |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| N   | No bracket   |   |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| Specifications  |  | Class : class B * Class A is available (Please specify when you order)<br>Element : Single element<br>Maximum temperature for use : 0 to 220°C<br><br>Class : class B * Class A is available (Please specify when you order)<br>Element : Single element * Double element is available. (Diameter of protection tube : φ8.0 or more) (Please specify when you order)<br>Maximum temperature for use<br><table><tr><th>Diameter of protection tube</th><th>Operating temperature</th></tr><tr><td>φ4.0 (Middle temperature type : Code PDP/PAP)</td><td>0 to 220°C</td></tr><tr><td>φ4.8 or more (Middle temperature type : Code PDM/PAM)</td><td>0 to 300°C</td></tr></table> |      | Diameter of protection tube | Operating temperature | φ4.0 (Middle temperature type : Code PDP/PAP) | 0 to 220°C                    | φ4.8 or more (Middle temperature type : Code PDM/PAM) | 0 to 300°C   |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| Diameter of protection tube   | Operating temperature  |   |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| φ4.0 (Middle temperature type : Code PDP/PAP)   | 0 to 220°C   |   |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| φ4.8 or more (Middle temperature type : Code PDM/PAM)   | 0 to 300°C   |   |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |
| Reference   |  | • Spring loaded type is available (Please specify when you order)<br><br>• Material of protection tube<br>SUS316 of protection tube is available. (Please specify when you order)  |      |                             |                       |   |                               |   |  |                                |   |   |         |  |                                      |     |   |            |     |  |              |     |   |              |     |  |               |     |  |            |

# Resistance Temperature Detectors : R-30/R-35

|    |  |    |                                      |   |                       |   |            |   |   |   |  |            |  |   |              |     |   |            |     |  |               |     |   |              |     |  |            |
|--|--|--|--------------------------------------|---|-----------------------|---|------------|---|---|---|--|------------|--|---|--------------|-----|---|------------|-----|--|---------------|-----|---|--------------|-----|--|------------|
| No lead wire<br>R - 30 - $\phi d$ - L1 - $\square$ - $\square$ - $\square$<br>① ② ⑥ ⑦ ⑧  |  | No lead wire<br>R - 35 - $\phi d$ - L1 - $\square$ - $\square$ - $\square$<br>① ② ⑥ ⑦ ⑧  |                                      |   |                       |   |            |   |   |   |  |            |  |   |              |     |   |            |     |  |               |     |   |              |     |  |            |
| With lead wire<br>R - 30 - $\phi d$ - L1 - L - $\square$ - $\square$ - $\square$ - $\square$<br>① ② ③ ④ ⑤ ⑥ ⑦ ⑧  |  | With lead wire<br>R - 35 - $\phi d$ - L1 - L - $\square$ - $\square$ - $\square$ - $\square$<br>① ② ③ ④ ⑤ ⑥ ⑦ ⑧  |                                      |   |                       |   |            |   |   |   |  |            |  |   |              |     |   |            |     |  |               |     |   |              |     |  |            |
| ① Diameter of protection tube      ⑤ Lead wire termination<br>② Length of protection tube      ⑥ Resistance temperature detector type<br>③ Lead wire length      ⑦ Sensing junction<br>④ Lead protection      ⑧ Mounting bracket |  | ① Diameter of protection tube      ⑤ Lead wire termination<br>② Length of protection tube      ⑥ Resistance temperature detector type<br>③ Lead wire length      ⑦ Sensing junction<br>④ Lead protection      ⑧ Mounting bracket   |                                      |   |                       |   |            |   |   |   |  |            |  |   |              |     |   |            |     |  |               |     |   |              |     |  |            |
| Example :R-30-5-100-PDM-NG-N (No lead wire)<br>:R-30-5-100-2000-EXA-Y-PDM-NG-N (With lead wire)  |  | Example :R-35-5-100-PDM-NG-N (No lead wire)<br>:R-35-5-100-2000-EXA-Y-PDM-NG-N (With lead wire)  |                                      |   |                       |   |            |   |   |   |  |            |  |   |              |     |   |            |     |  |               |     |   |              |     |  |            |
| ①  | Diameter of protection tube                                | $\phi 3.0, \phi 3.2, \phi 4.8, \phi 5.0, \phi 6.0$<br>$\phi 6.4, \phi 8.0, \phi 10.0, \phi 12.0$   |                                      |   |                       |   |            |   |   |   |  |            |  |   |              |     |   |            |     |  |               |     |   |              |     |  |            |
| ②  | Length of protection tube                                  | Specify length by "mm" (100mm to 1,000mm)<br>• Please contact distributors regarding other length.   |                                      |   |                       |   |            |   |   |   |  |            |  |   |              |     |   |            |     |  |               |     |   |              |     |  |            |
| ③  | Lead wire length   | Specify length by "mm" (100mm or more)   |                                      |   |                       |   |            |   |   |   |  |            |  |   |              |     |   |            |     |  |               |     |   |              |     |  |            |
| ④  | Lead protection  | <table><tr><th>Code</th><th>Details</th><th>Operating temperature</th><th>Code</th><th>Details</th><th>Operating temperature</th></tr><tr><td>EXA</td><td>Fiberglass with stainless steel</td><td>0 to 150°C</td><td>EXD</td><td>PVC (polyvinyl chloride)</td><td>-20 to +90°C</td></tr><tr><td>EXB</td><td>Fiberglass</td><td>0 to 150°C</td><td>EXE</td><td>Silicone rubber</td><td>-55 to +180°C</td></tr><tr><td>EXC</td><td>PVC (polyvinyl chloride) with copper wire braided</td><td>-20 to +90°C</td><td></td><td></td><td></td></tr></table>   |                                      | Code  | Details               | Operating temperature   | Code       | Details   | Operating temperature                       | EXA   | Fiberglass with stainless steel                            | 0 to 150°C | EXD  | PVC (polyvinyl chloride)                                    | -20 to +90°C | EXB | Fiberglass  | 0 to 150°C | EXE | Silicone rubber                                      | -55 to +180°C | EXC | PVC (polyvinyl chloride) with copper wire braided | -20 to +90°C |     |  |            |
| Code   | Details  | Operating temperature  | Code                                 | Details   | Operating temperature |   |            |   |   |   |  |            |  |   |              |     |   |            |     |  |               |     |   |              |     |  |            |
| EXA  | Fiberglass with stainless steel                            | 0 to 150°C   | EXD                                  | PVC (polyvinyl chloride)                                    | -20 to +90°C          |   |            |   |   |   |  |            |  |   |              |     |   |            |     |  |               |     |   |              |     |  |            |
| EXB  | Fiberglass   | 0 to 150°C   | EXE                                  | Silicone rubber   | -55 to +180°C         |   |            |   |   |   |  |            |  |   |              |     |   |            |     |  |               |     |   |              |     |  |            |
| EXC  | PVC (polyvinyl chloride) with copper wire braided          | -20 to +90°C   |                                      |   |                       |   |            |   |   |   |  |            |  |   |              |     |   |            |     |  |               |     |   |              |     |  |            |
| ⑤  | Lead wire termination                                      | <table><tr><th>Code</th><th>Details</th><th>Code</th><th>Details</th></tr><tr><td>Y</td><td>Spade lugs for JIS standard "M3" size screw</td><td>N</td><td>No terminal lugs * terminal soldered</td></tr><tr><td>R</td><td>Ring lugs for JIS standard "M4" size screw</td><td></td><td></td></tr><tr><td>M</td><td>Metal connector (SCK-1603-P)</td><td></td><td></td></tr></table> <p style="text-align: right;">•See Page7</p>  |                                      | Code  | Details               | Code  | Details    | Y   | Spade lugs for JIS standard "M3" size screw | N   | No terminal lugs * terminal soldered                       | R          | Ring lugs for JIS standard "M4" size screw |   |              | M   | Metal connector (SCK-1603-P)                        |            |     |  |               |     |   |              |     |  |            |
| Code   | Details  | Code   | Details                              |   |                       |   |            |   |   |   |  |            |  |   |              |     |   |            |     |  |               |     |   |              |     |  |            |
| Y  | Spade lugs for JIS standard "M3" size screw                | N  | No terminal lugs * terminal soldered |   |                       |   |            |   |   |   |  |            |  |   |              |     |   |            |     |  |               |     |   |              |     |  |            |
| R  | Ring lugs for JIS standard "M4" size screw                 |  |                                      |   |                       |   |            |   |   |   |  |            |  |   |              |     |   |            |     |  |               |     |   |              |     |  |            |
| M  | Metal connector (SCK-1603-P)                               |  |                                      |   |                       |   |            |   |   |   |  |            |  |   |              |     |   |            |     |  |               |     |   |              |     |  |            |
| ⑥  | Resistance temperature detector type                       | <table><tr><th>Code</th><th>Details</th><th>Operating temperature</th><th>Code</th><th>Details</th><th>Operating temperature</th></tr><tr><td>PDP</td><td>Pt100 Middle Temperature Type (<math>\phi 3.0</math> to <math>\phi 4.0</math>)</td><td>0 to 220°C</td><td>PAP</td><td>JPt100 Middle Temperature Type (<math>\phi 3.0</math> to <math>\phi 4.0</math>)</td><td>0 to 220°C</td></tr><tr><td>PDM</td><td>Pt100 Middle Temperature Type (<math>\phi 4.8</math> or more)</td><td>0 to 300°C</td><td>PAM</td><td>JPt100 Middle Temperature Type (<math>\phi 4.8</math> or more)</td><td>0 to 300°C</td></tr><tr><td>PDH</td><td>Pt100 High Temperature Type (<math>\phi 4.8</math> or more)</td><td>0 to 500°C</td><td>PAH</td><td>JPt100 High Temperature Type (<math>\phi 4.8</math> or more)</td><td>0 to 500°C</td></tr></table> |                                      | Code  | Details               | Operating temperature   | Code       | Details   | Operating temperature                       | PDP   | Pt100 Middle Temperature Type ( $\phi 3.0$ to $\phi 4.0$ ) | 0 to 220°C | PAP  | JPt100 Middle Temperature Type ( $\phi 3.0$ to $\phi 4.0$ ) | 0 to 220°C   | PDM | Pt100 Middle Temperature Type ( $\phi 4.8$ or more) | 0 to 300°C | PAM | JPt100 Middle Temperature Type ( $\phi 4.8$ or more) | 0 to 300°C    | PDH | Pt100 High Temperature Type ( $\phi 4.8$ or more) | 0 to 500°C   | PAH | JPt100 High Temperature Type ( $\phi 4.8$ or more) | 0 to 500°C |
| Code   | Details  | Operating temperature  | Code                                 | Details   | Operating temperature |   |            |   |   |   |  |            |  |   |              |     |   |            |     |  |               |     |   |              |     |  |            |
| PDP  | Pt100 Middle Temperature Type ( $\phi 3.0$ to $\phi 4.0$ ) | 0 to 220°C   | PAP                                  | JPt100 Middle Temperature Type ( $\phi 3.0$ to $\phi 4.0$ ) | 0 to 220°C            |   |            |   |   |   |  |            |  |   |              |     |   |            |     |  |               |     |   |              |     |  |            |
| PDM  | Pt100 Middle Temperature Type ( $\phi 4.8$ or more)        | 0 to 300°C   | PAM                                  | JPt100 Middle Temperature Type ( $\phi 4.8$ or more)        | 0 to 300°C            |   |            |   |   |   |  |            |  |   |              |     |   |            |     |  |               |     |   |              |     |  |            |
| PDH  | Pt100 High Temperature Type ( $\phi 4.8$ or more)          | 0 to 500°C   | PAH                                  | JPt100 High Temperature Type ( $\phi 4.8$ or more)          | 0 to 500°C            |   |            |   |   |   |  |            |  |   |              |     |   |            |     |  |               |     |   |              |     |  |            |
| ⑦  | Measuring junction   | <table><tr><th>Code</th><th>Details</th></tr><tr><td>NG</td><td>Ungrounded</td></tr><tr><td>O</td><td>Exposed</td></tr></table> <p>* Exposed-junction type is available depending on specification such as shapes, environment of usage, etc.<br/>Please contact with our distributors.</p>  |                                      | Code  | Details               | NG  | Ungrounded | O   | Exposed                                     |   |  |            |  |   |              |     |   |            |     |  |               |     |   |              |     |  |            |
| Code   | Details  |  |                                      |   |                       |   |            |   |   |   |  |            |  |   |              |     |   |            |     |  |               |     |   |              |     |  |            |
| NG   | Ungrounded   |  |                                      |   |                       |   |            |   |   |   |  |            |  |   |              |     |   |            |     |  |               |     |   |              |     |  |            |
| O  | Exposed  |  |                                      |   |                       |   |            |   |   |   |  |            |  |   |              |     |   |            |     |  |               |     |   |              |     |  |            |
| ⑧  | Mounting bracket   | <table><tr><th>Code</th><th>Details</th><th>Code</th><th>Details</th></tr><tr><td>A</td><td>Fixed nipple (nut)</td><td>E</td><td>Compression fitting</td></tr><tr><td>B</td><td>Rotary nipple (nut)</td><td>N</td><td>No bracket</td></tr><tr><td>C</td><td>Fixed flange</td><td></td><td></td></tr></table> <p>Specify size of mounting bracket when code is "A", "B", or "E". (See Page 6)<br/>Specify size of flange when code is "C". (See Page 6)</p> <p>• Please contact distributors regarding other mounting bracket.</p>  |                                      | Code  | Details               | Code  | Details    | A   | Fixed nipple (nut)                          | E   | Compression fitting  | B          | Rotary nipple (nut)                        | N   | No bracket   | C   | Fixed flange  |            |     |  |               |     |   |              |     |  |            |
| Code   | Details  | Code   | Details                              |   |                       |   |            |   |   |   |  |            |  |   |              |     |   |            |     |  |               |     |   |              |     |  |            |
| A  | Fixed nipple (nut)   | E  | Compression fitting                  |   |                       |   |            |   |   |   |  |            |  |   |              |     |   |            |     |  |               |     |   |              |     |  |            |
| B  | Rotary nipple (nut)  | N  | No bracket                           |   |                       |   |            |   |   |   |  |            |  |   |              |     |   |            |     |  |               |     |   |              |     |  |            |
| C  | Fixed flange   |  |                                      |   |                       |   |            |   |   |   |  |            |  |   |              |     |   |            |     |  |               |     |   |              |     |  |            |
| Specifications   |  | Class : class B * Class A is available (Please specify when you order)<br>Element : Single element * Double element is available. (Only R-35)<br>(Please specify when you order)<br>Maximum temperature for use<br><table><tr><th>Diameter of protection tube</th><th>Operating temperature</th></tr><tr><td><math>\phi 3.0</math> to <math>\phi 4.0</math> (Middle temperature type : Code PDP/PAP)</td><td>0 to 220°C</td></tr><tr><td><math>\phi 4.8</math> or more (Middle temperature type : Code PDM/PAM)</td><td>0 to 300°C</td></tr><tr><td><math>\phi 4.8</math> or more (High temperature type : Code PDH/PAH)</td><td>0 to 500°C</td></tr></table>  |                                      | Diameter of protection tube                                 | Operating temperature | $\phi 3.0$ to $\phi 4.0$ (Middle temperature type : Code PDP/PAP) | 0 to 220°C | $\phi 4.8$ or more (Middle temperature type : Code PDM/PAM) | 0 to 300°C                                  | $\phi 4.8$ or more (High temperature type : Code PDH/PAH) | 0 to 500°C   |            |  |   |              |     |   |            |     |  |               |     |   |              |     |  |            |
| Diameter of protection tube  | Operating temperature                                      |  |                                      |   |                       |   |            |   |   |   |  |            |  |   |              |     |   |            |     |  |               |     |   |              |     |  |            |
| $\phi 3.0$ to $\phi 4.0$ (Middle temperature type : Code PDP/PAP)  | 0 to 220°C   |  |                                      |   |                       |   |            |   |   |   |  |            |  |   |              |     |   |            |     |  |               |     |   |              |     |  |            |
| $\phi 4.8$ or more (Middle temperature type : Code PDM/PAM)  | 0 to 300°C   |  |                                      |   |                       |   |            |   |   |   |  |            |  |   |              |     |   |            |     |  |               |     |   |              |     |  |            |
| $\phi 4.8$ or more (High temperature type : Code PDH/PAH)  | 0 to 500°C   |  |                                      |   |                       |   |            |   |   |   |  |            |  |   |              |     |   |            |     |  |               |     |   |              |     |  |            |
| Reference  |  | • Material of protection tube<br>SUS316 is available.<br>(Please specify when you order)   |                                      |   |                       |   |            |   |   |   |  |            |  |   |              |     |   |            |     |  |               |     |   |              |     |  |            |

Resistance Temperature Detectors : R-90



No lead wire  
R - 90 -  $\phi$ d - L1 - □ - □ - □  
① ② ⑥ ⑦ ⑧

With lead wire  
R - 90 -  $\phi$ d - L1 - L - □□□ - □ - □ - □ - □  
① ② ③ ④ ⑤ ⑥ ⑦ ⑧

- ① Diameter of protection tube  
② Length of protection tube  
③ Lead wire length  
④ Lead protection
- ⑤ Lead wire termination  
⑥ Resistance temperature detector type  
⑦ Sensing junction  
⑧ Mounting bracket

Example :R-90-5-100-PDM-NG-N (No lead wire)  
:R-90-5-100-2000-EXA-Y-PDM-NG-N (With lead wire)

|   |  |   |   |  |                       |   |                          |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
|---|--|---|---|--|-----------------------|---|--------------------------|-----------------------|---|---|---|---|---|--|--|---------|---------|---|---|---|---|---|---|
| ①   | Diameter of protection tube  | φ3.0, φ3.2, φ4.8, φ5.0, φ6.0, φ8.0  |   |  |                       |   |                          |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
| ②   | Length of protection tube  | Specify length by “mm” (100mm to 1,000mm) • Please contact distributors regarding other length.   |   |  |                       |   |                          |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
| ③   | Lead wire length   | Specify length by “mm” (100mm or more)  |   |  |                       |   |                          |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
| ④   | Lead protection  | No need to specify in case of without lead wire   | Code  | Details  | Operating temperature | Code  | Details                  | Operating temperature |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
|   |  |   | EXA   | Fiberglass with stainless steel  | 0 to 150°C            | EXD   | PVC (polyvinyl chloride) | -20 to +90°C          |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
|   |  |   | EXB   | Fiberglass   | 0 to 150°C            | EXE   | Silicone rubber          | -55 to +180°C         |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
|   |  |   | EXC   | PVC (polyvinyl chloride) with copper wire braided  | -20 to +90°C          |   |                          |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
| ⑤   | Lead wire termination  | No need to specify in case of without lead wire   | Code  | Details  | Code                  | Details                                       |                          |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
|   |  |   | Y   | Spade lugs for JIS standard "M3" size screw  | N                     | No terminal lugs * terminal soldered          |                          |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
|   |  |   | R   | Ring lugs for JIS standard "M4" size screw   |                       |   |                          |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
|   |  |   | M   | Metal connector (SCK-1603-P)   |                       | •See Page7                                    |                          |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
| ⑥   | Resistance temperature detector type   | Code  | Details   | Operating temperature  | Code                  | Details                                       | Operating temperature    |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
|   |  | PDP   | Pt100 Middle Temperature Type (φ3.0 to φ4.0)  | 0 to 220°C   | PAP                   | JPt100 Middle Temperature Type (φ3.0 to φ4.0) | 0 to 220°C               |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
|   |  | PDM   | Pt100 Middle Temperature Type (φ4.8 or more)  | 0 to 350°C   | PAM                   | JPt100 Middle Temperature Type (φ4.8 or more) | 0 to 350°C               |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
| ⑦   | Measuring junction   | Code  | Details   | * Exposed-junction type is available depending on specification such as shapes, environment of usage, etc. Please contact with our distributors. |                       |   |                          |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
| ⑧   | Mounting bracket   | Code  | Details   | Code   | Details               |   |                          |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
|   |  | A   | Fixed nipple (nut)  | E  | Compression fitting   |   |                          |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
|   |  | B   | Rotary nipple (nut)   | N  | No bracket            |   |                          |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
|   |  | C   | Fixed flange  |  |                       |   |                          |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
|   |  | • Please contact distributors regarding other mounting bracket.   |   |  |                       |   |                          |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
| Specifications  |  | Class : class B * Class A is available (Please specify when you order)<br>Element : Single element * Double element is available.<br>(Diameter of protection tube : φ4.8 or more)<br>(Please specify when you order)<br><br>Maximum temperature for use |   |  |                       |   |                          |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
|   |  | Diameter of protection tube   |   | Operating temperature  |                       |   |                          |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
|   |  | φ3.0 to φ4.0 (Middle temperature type : Code PDP/PAP)   |   | 0 to 220°C   |                       |   |                          |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
|   |  | φ4.8 or more (Middle temperature type : Code PDM/PAM)   |   | 0 to 350°C   |                       |   |                          |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
| Reference   | • Material of protection tube<br>SUS316 is available.<br>(Please specify when you order) |   | Connector<br>Pin No.  |  |                       |   |                          |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
|   |  |   | Single Element  |  | Double Element        |   |                          |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
|   |  |   |   |  |                       |   |                          |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
|   |  |   | <table><tr><td>Pin No.</td><td>Details</td></tr><tr><td>1</td><td>A</td></tr><tr><td>2</td><td>B</td></tr><tr><td>3</td><td>b</td></tr></table> |  | Pin No.               | Details                                       | 1                        | A                     | 2 | B | 3 | b | <table><tr><td>Pin No.</td><td>Details</td></tr><tr><td>1</td><td>A</td></tr><tr><td>2</td><td>B</td></tr><tr><td>3</td><td>b</td></tr></table> |  |  | Pin No. | Details | 1 | A | 2 | B | 3 | b |
|   |  |   | Pin No.   | Details  |                       |   |                          |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
|   |  |   | 1   | A  |                       |   |                          |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
|   |  |   | 2   | B  |                       |   |                          |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
|   |  |   | 3   | b  |                       |   |                          |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
|   |  |   | Pin No.   | Details  |                       |   |                          |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
|   |  |   | 1   | A  |                       |   |                          |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
| 2   | B  |   |   |  |                       |   |                          |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
| 3   | b  |   |   |  |                       |   |                          |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
| SCK-1603-□  |  | SCK-1606-□  |   |  |                       |   |                          |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
| For connector for R-90, Connector manufactured by Sanwa Connector Laboratory Co., Ltd. is used as standard.<br>Nanaboshi Electric Mfg brand is also available<br>(Please specify when you order).<br>Please specify in case of no need of the plug. |  |   |   |  |                       |   |                          |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
|   |  |   |   |  |                       |   |                          |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
|   |  |   |   |  |                       |   |                          |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
|   |  |   |   |  |                       |   |                          |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |
|   |  |   |   |  |                       |   |                          |                       |   |   |   |   |   |  |  |         |         |   |   |   |   |   |   |