

■ GENERAL DISCRIPTION

Sheathed Resistance Bulb is metal sheathed RTD that has a monolithic structure comprising of Ceramic element and MI cable(MgO compacted, metal sheathed lead wires.

This newly developed RTD has very quick response, longer service life and high accuracy under critical conditions.

■ FEATURES

1) Quick Response :

Since Sheathed RTD sensing parts is filled with high purity Alumina powder and protected by a metal sheath, it has much faster response than those of ordinary RTD's and can follow any slight change in temperature.

2) High Flexibility :

Except for the sensing part of up to 60mm from the tip, it can be bent to the radius equal to 2 times of the sheath O.D.

3) High Accuracy :

Since high purity platinum resistance wire is used, it has high accuracy falling within the class of 0.15, 0.2 or 0.5 stipulated by K.S. or other internationally known Standards.

4) Wide Variety of Specifications:

Outer diameters from 3.2mm to 8.0mm and total length up to 150 meters are available.

5) Wide Range of Measuring Temperature:

From cryogenic (-200℃) to high temperature (+500℃) can be measured although it may vary depending on surrounding atmospheres.

6) Insulation Resistance & Withstand Voltage



■ TECHNICAL SPECIFICATION

| JIC C1606 Metal sheathed Resistance Bulbs | | |
|---|---------------------------|-------------------|
| Sheath (O.D.(mm)) | Insulation Resistance. | Withstand Voltage |
| 3.2 | 5MΩ/250V DC | 1min./250V AC |
| 4.8, 6.4, 8.0 | 5MΩ/500V DC | 1min./500V AC |

① Insulation resistance shall be above the listed figures.

② Withstand voltage shall be those withstand for 1 min. under the test voltage.

For those with protection tube of less than 4.8mm O.D., test voltage shall be $\frac{1}{2}$.



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E-9

SHICO.

MODEL : STC-RM Series

SHEATH RESISTANCE TEMPERATURE DETECTOR

■ TYPE AND CODES

| Nominal Resistance | Code |
|--------------------|------|
| Pt 100Ω at 0°C | 100 |



| Number of Element | Code |
|-------------------|------|
| 1 (Single) | S |
| 2 (Double) | D |

| Number of Leads | Code |
|-----------------|------|
| 2 wires | W |
| 3 wires | X |
| 4 wires | Y |

| Rated Current | Code |
|---------------|------|
| 2 mA | 02 |
| 5 mA | 05 |
| 10 mA | 10 |

Standard resistivity to JIS ($\alpha=0.003916$), BS and DIN($\alpha=0.00385$) also available

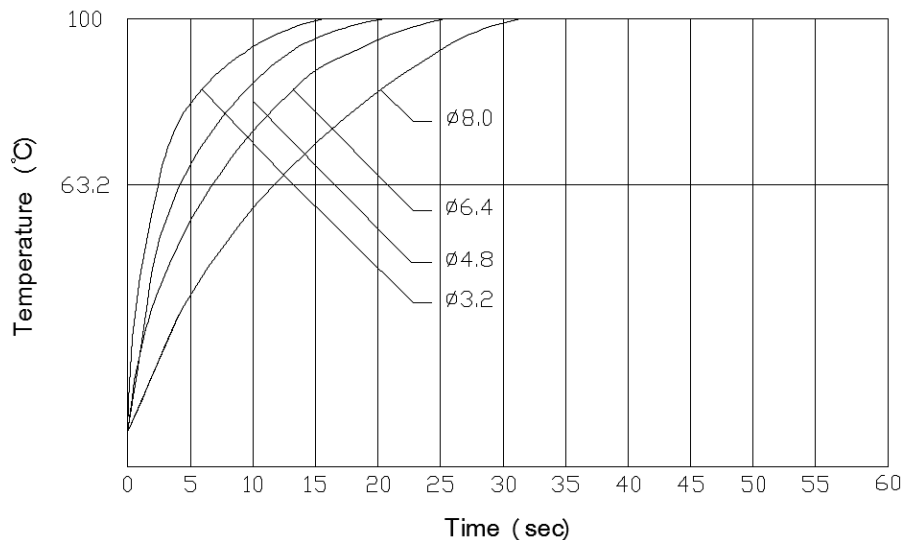
■ SHEATHED LEADS

| Construction | Sheath O.D. (mm) | Conductor Dia. (mm) | Lead Resistance (Ω/m at 20°C) | Sheath Wall(mm) | Sheath Material | Max. Length (m) |
|---|------------------|---------------------|---------------------------------------|-----------------|-----------------|-----------------|
|  | 3.2 | 0.45 | 0.627 | 0.48 | SUS316 | 150 |
| | 4.8 | 0.70 | 0.248 | 0.73 | SUS316 | 60 |
| | 6.4 | 0.93 | 0.15 | 1.02 | SUS316 | 30 |
| | 8.0 | 1.14 | 0.099 | 1.27 | SUS316 | 15 |
|  | 4.8 | 0.38 | 0.881 | 0.457 | SUS316 | 60 |
| | 6.4 | 0.48 | 0.55 | 0.63 | SUS316 | 30 |
| | 8.0 | 0.63 | 0.31 | 0.78 | SUS316 | 15 |

■ RESPONSE TIME OF SHEATH RESISTANCE BULB

The 't' Constants (63.2%) when RESIMIC is immersed into 100°C (boiling water) from 0°C (ice bath)

- Ø3.2 less than 2 sec.
- Ø4.8 less than 4 sec.
- Ø6.4 less than 6 sec.
- Ø8.0 less than 11 sec.



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SHEATH RESISTANCE TEMPERATURE DETECTOR

■ NOMINAL RESISTANCE FOR PT 100Ω ELEMENT

Pt100 : $R_0 = 100.00\Omega$ $R_{100}/R_0 = 1.3850$ to JIS C1604 - 1989, IEC751, BS1904, DIN43760.

JPt100 : $R_0 = 100.00\Omega$ $R_{100}/R_0 = 1.3916$ to JIS C1604 - 1981, American Curve.

| Std. °C | Pt100 | JPt100 | Std. °C | Pt100 | JPt100 | Std. °C | Pt100 | JPt100 | Std. °C | Pt100 | JPt100 | Std. °C | Pt100 | JPt100 |
|---------|-------|--------|---------|--------|--------|---------|--------|--------|---------|--------|--------|---------|--------|--------|
| -200 | 18.49 | 17.14 | 0 | 100.00 | 100.00 | 200 | 175.84 | 177.13 | 400 | 247.04 | 249.56 | 600 | 313.59 | |
| -190 | 22.80 | 21.46 | 10 | 103.90 | 103.97 | 210 | 179.51 | 180.86 | 410 | 250.48 | 253.06 | 610 | 316.80 | |
| -180 | 27.08 | 25.80 | 20 | 107.79 | 107.93 | 220 | 183.17 | 184.58 | 420 | 253.90 | 253.55 | 620 | 319.99 | |
| -170 | 31.32 | 30.12 | 30 | 111.67 | 111.88 | 230 | 186.82 | 188.29 | 430 | 257.32 | 260.02 | 630 | 323.18 | |
| -160 | 35.53 | 34.42 | 40 | 115.54 | 115.81 | 240 | 190.45 | 191.99 | 440 | 260.72 | 263.49 | 640 | 326.35 | |
| -150 | 39.71 | 38.68 | 50 | 119.40 | 119.73 | 250 | 194.07 | 195.67 | 450 | 264.11 | 266.95 | 650 | 329.51 | |
| -140 | 43.87 | 42.91 | 60 | 123.24 | 123.64 | 260 | 197.69 | 199.35 | 460 | 267.49 | 270.38 | 660 | 332.66 | |
| -130 | 48.00 | 47.11 | 70 | 127.07 | 127.54 | 270 | 201.29 | 203.01 | 470 | 270.86 | 273.80 | | | |
| -120 | 52.11 | 51.29 | 80 | 130.89 | 131.42 | 280 | 204.88 | 206.66 | 480 | 274.22 | 277.22 | | | |
| -110 | 56.19 | 55.44 | 90 | 134.70 | 135.30 | 290 | 208.45 | 210.30 | 490 | 277.56 | 280.63 | | | |
| -100 | 60.25 | 59.57 | 100 | 138.50 | 139.16 | 300 | 212.02 | 213.93 | 500 | 280.90 | 284.02 | | | |
| -90 | 64.30 | 63.68 | 110 | 142.29 | 143.01 | 310 | 215.57 | 217.54 | 510 | 284.22 | 287.40 | | | |
| -80 | 68.33 | 67.77 | 120 | 146.06 | 146.85 | 320 | 219.12 | 221.15 | 520 | 287.53 | | | | |
| -70 | 72.33 | 71.85 | 130 | 149.82 | 150.67 | 330 | 222.65 | 224.74 | 530 | 290.83 | | | | |
| -60 | 76.33 | 75.91 | 140 | 153.58 | 154.49 | 340 | 226.17 | 228.32 | 540 | 294.11 | | | | |
| -50 | 80.31 | 79.96 | 150 | 157.31 | 158.29 | 350 | 229.67 | 231.89 | 550 | 297.39 | | | | |
| -40 | 84.27 | 83.99 | 160 | 161.04 | 162.08 | 360 | 233.17 | 235.45 | 560 | 300.65 | | | | |
| -30 | 88.22 | 88.01 | 170 | 164.76 | 165.86 | 370 | 236.65 | 238.99 | 570 | 303.91 | | | | |
| -20 | 92.16 | 92.02 | 180 | 168.46 | 169.63 | 380 | 240.13 | 242.53 | 580 | 307.15 | | | | |
| -10 | 96.09 | 96.02 | 190 | 172.16 | 173.38 | 390 | 243.59 | 246.05 | 590 | 310.38 | | | | |

■ TERMINAL BOXES

Other entry threads of PT, NPT or Metrics can be specified.

| Type | Weather Proof W | Weather Proof WS | Exposed Terminal GT |
|---|---|--|---|
| Material : Conduit CONN : No. of Terminals : Terminal Block : Surface Finish : Surface Color : | Al-alloy diecast. Cast Iron PF $\frac{1}{2}$ -PF $\frac{3}{4}$ 2, 3, 4, 6 Bakelite-Ceramic Melamin baked Metallic Silver | Al-alloy diecast. Phenol Resin PF $\frac{3}{8}$ 2, 3 Bakelite-Ceramic Melamin baked Metallic Silver | Al-alloy diecast PF $\frac{1}{2}$ 2, 3, 4 Bakelite-Ceramic Black |
| Dimensions | | | |
| Type | *Flame Proof E(ExdII CT5) | Two Way Entry ET | Dual Cable Entry WD |
| Material : Conduit CONN : No. of Terminals : Terminal Block : Surface Finish : Surface Color : | Al-alloy diecast. Cast Iron, SUS M16, 20 25 2, 3, 4, 6 Bakelite-(Ceramic) Melamin baked Metallic Silver | Al-alloy diecast PF $\frac{1}{2}$ ×2 4, 6 Bakelite-Ceramic Melamin baked Metallic Silver | Al-alloy diecast PF $\frac{1}{2}$ ×2 4, 6 Bakelite-Ceramic Melamin baked Metallic Silver |
| Dimensions | | | |

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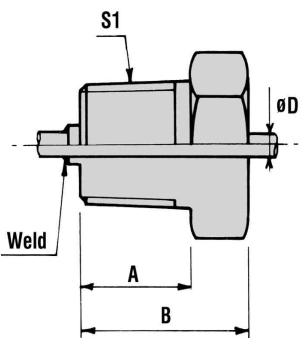
SHICO.

SHEATH RESISTANCE TEMPERATURE DETECTOR

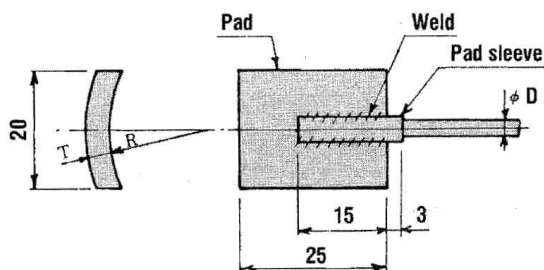
MODEL : STC-RM Series

STANDARD ACCESSORIES

Unit : %

| 1. Bushing(fixed) SUS304 | ØD | TYPE | S ₁ | S ₂ | A | B |
|---|--------|--------|----------------|----------------|----|----|
|  | 1.0 | BN 101 | PT 1/8 | - | 10 | 16 |
| | 1.6 | BN 161 | PT 1/8 | - | 10 | 16 |
| | 2.2 | BN 221 | PT 1/8 | - | 10 | 16 |
| | 3.2 | BN 321 | PT 1/8 | - | 10 | 16 |
| | | BN 322 | PT 1/4 | - | 12 | 20 |
| | | BN 324 | PT 1/2 | - | 20 | 30 |
| | 4.8 | BN 481 | PT 1/8 | - | 10 | 16 |
| | | BN 482 | PT 1/4 | - | 12 | 20 |
| | | BN 484 | PT 1/2 | - | 20 | 35 |
| | | BN 486 | PT 3/4 | - | 20 | 35 |
| | 6.4 | BN 642 | PT 1/4 | - | 12 | 20 |
| | | BN 644 | PT 1/2 | - | 20 | 35 |
| | | BN 646 | PT 3/4 | - | 20 | 35 |
| | 8.0 | BN 802 | PT 1/4 | - | 12 | 20 |
| | | BN 804 | PT 1/2 | - | 20 | 35 |
| | | BN 806 | PT 3/4 | - | 20 | 35 |
| 2. Compression Fitting SUS304 | 1.0 | CF 101 | PT 1/8 | - | 10 | 33 |
| 1.6 | CF 161 | PT 1/8 | - | 10 | 33 | |
| | CF 162 | PT 1/4 | - | 12 | 35 | |
| 2.2 | CF 221 | PT 1/8 | - | 10 | 33 | |
| | CF 222 | PT 1/4 | - | 12 | 35 | |
| 3.2 | CF 321 | PT 1/8 | - | 10 | 33 | |
| | CF 322 | PT 1/4 | - | 12 | 35 | |
| | CF 324 | PT 1/2 | PT 1/8 | 20 | 59 | |
| 4.8 | CF 326 | PT 3/4 | PT 1/8 | 20 | 59 | |
| | CF 481 | PT 1/8 | - | 10 | 33 | |
| | CF 482 | PT 1/4 | - | 12 | 35 | |
| 4.8 | CF 484 | PT 1/2 | PT 1/8 | 20 | 59 | |
| | CF 486 | PT 3/4 | PT 1/8 | 20 | 59 | |
| | CF 642 | PT 1/4 | - | 12 | 35 | |
| 6.4 | CF 644 | PT 1/2 | PT 1/4 | 20 | 59 | |
| | CF 646 | PT 3/4 | PT 1/4 | 20 | 59 | |
| | CF 802 | PT 1/4 | - | 12 | 35 | |
| 8.0 | CF 804 | PT 1/2 | PT 1/4 | 20 | 59 | |
| | CF 806 | PT 3/4 | PT 1/4 | 20 | 59 | |

3. Pad SUS304



| ØD | T |
|-----|---|
| 3.2 | 4 |
| 4.8 | 5 |

Note : Specify "R" when ordering
However, in case R≥50mm,
it will be made as 'Flat'.



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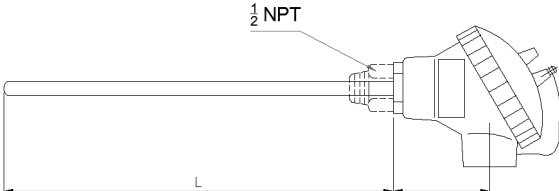
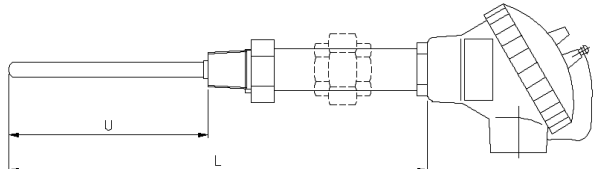
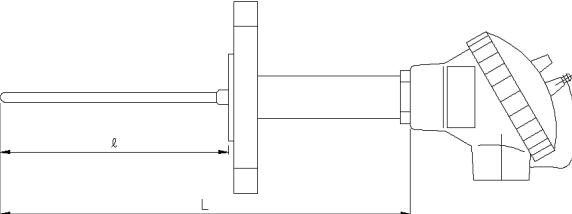
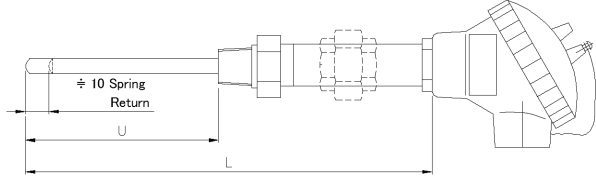
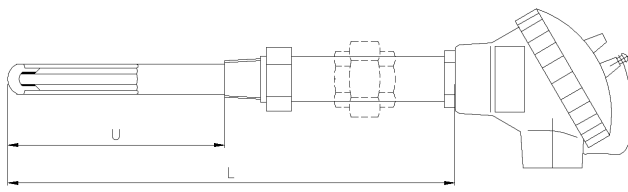
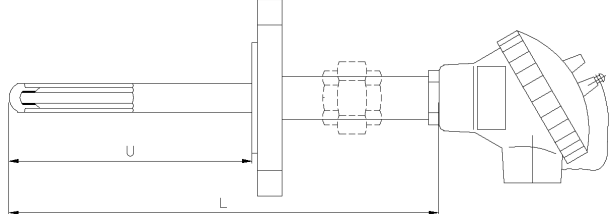

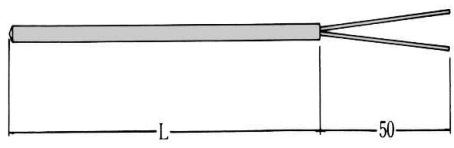
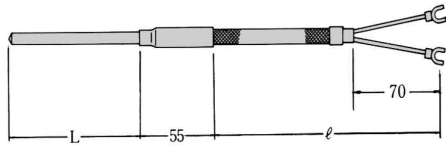
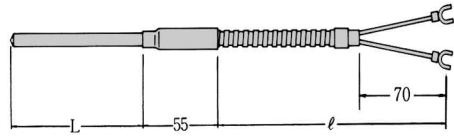
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SHICO. SHEATH RESISTANCE TEMPERATURE DETECTOR

MODEL : STC-RM Series

STANDARD MODEL OF SHEATH RESISTANCE BULB ASSEMBLY (Weather Proof, General type)

| | |
|--|---|
| <p>STC-RM-H, Basic Type with Terminal Head</p>  | <p>STC-RM-NB, Screwed-in Type</p>  |
| <p>STC-RM-NF, Flanged Type</p>  | <p>STC-RM-NS, Spring-Loaded Type (Screwed)</p>  |
| <p>STC-RM-PB, Metal Protection Tube Type (Screwed)</p>  | <p>STC-RM-PF, Metal Protection Type (Flanged)</p>  |
| <p>STC-RM-P, Metal Protection Tube Type</p>  | <p>STC-RM-A, Basic Type, Projecting Conductors</p>  |
| <p>STC-RM-B, Flexible Lead Type</p>  | <p>STC-RM-BF Armoured Lead Type</p>  |



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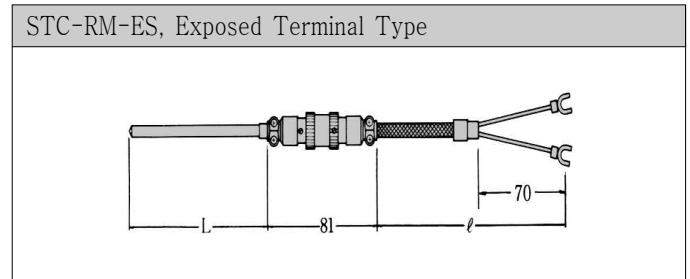
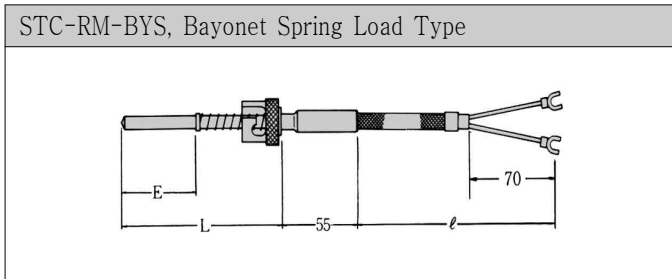
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SHICO.

MODEL : STC-RM Series

SHEATH RESISTANCE TEMPERATURE DETECTOR

(Weather Proof, General type)



ORDERING INFORMATION

SAMHOI THERMOCOUPLE

| | | | | | | | |
|-------------------------------|----------|------|------|---------------|------------------|--------|---|
| EX) | STC-RM-H | K(S) | 4.8Ø | 150mm / 250mm | PT $\frac{1}{2}$ | SUS316 | W |
| SAM HOI Thermocouple | | | | | | | |
| Pt 100 Ohm | | | | | | | |
| H : Head type | | | | | | | |
| NH : Non head type | | | | | | | |
| Element Style | | | | | | | |
| K: Sheathed | | | | | | | |
| S: Ceramic Insulation | | | | | | | |
| Sheath Dia(D/A) : 0.25~8.0 | | | | | | | |
| Information | | | | | | | |
| Insert Length(U) : User | | | | | | | |
| Information | | | | | | | |
| Ex) 150mm DWG : L | | | | | | | |
| Conn : User Information | | | | | | | |
| Ex) Screw PT1/2, DT 3/4 | | | | | | | |
| Total Length(L) | | | | | | | |
| Connection :Flange JIS 10K65A | | | | | | | |
| Sheath Mat'l | | | | | | | |
| Terminal Box Type | | | | | | | |
| IP CODE : Ex)2P 65 | | | | | | | |



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