

# NTC Type JW, JC Thermometrics Clip-On Pipe and Surface Sensors



## Features

- Suitable for use in conditions of high condensation and occasional immersion in water
- 0 - 100°C operating range
- Low temperature gradient (<1.8°F at 140°F (<1°C at 60°C))
- Sensing element electrically isolated from shoe (isolation >20M  $\Omega$  at 500V)
- Type JC meets IP44 standard
- Range of clips for pipe diameters 0.51 in to 1.18 in (13 mm to 30 mm). (Consult factory for additional size options.)
- Self-adjusts to irregular pipe surfaces
- Fast time response (1.5s typical) for JC and 3.0s for JW
- Water resistant version (Type JW) meets IP46 standard (with connector tabs encapsulated)
- Offers cost benefits over traditional immersion probes
- Typical applications include gas boiler control, domestic water systems, air conditioners, radiator inlet-outlet, electric showers, vending machines, chiller and refrigeration units



# Type JW Specifications

## Description

NTC or PTC chip thermistor on a ceramic/metal shoe assembly sealed in a polymer housing and provided with flexible twin cable connections. The housing is fitted with a spring metal clip for pipe attachment.

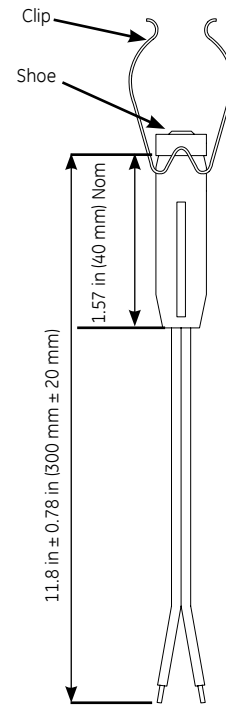
## Options

- Other resistance - temperature characteristics
- Other wire lengths
- Special pipe sizes

## General Data

- Minimum operating temperature: 32°F (0°C)
- Maximum temperature: 212°F (100°C) (sensor) 185°F (85°C) (housing)
- Dissipation factor:  $\geq 2\text{mW/K}$  (mounted on copper pipe at 77°F (25°C))
- Isolation voltage: 500 VDC
- Clip force: <50N for mounting / de-mounting on pipe  
5N will not cause rotation on pipe
- Shoe material: Plated brass
- Body material: Nylon
- Pack quantity & MOQ: 200 pcs

| Response Time (seconds) |                                                                          |
|-------------------------|--------------------------------------------------------------------------|
| NTC                     | $\leq 4$ (to 90% voltage change)                                         |
| PTC                     | $\leq 4$ to TNF 41°F (5°C) (sensor applied to pipe at TNF 73.4°F (23°C)) |



NTC Type JW dimensions

## Ordering Information

The code number to be ordered may be specified as follows:

| Code | Type                                   |
|------|----------------------------------------|
| JW   | Resin-Coated Thermistor With PVC Wires |
| Code | Pipe Diameter Range in mm              |
| 13   | 13 - 15                                |
| 17   | 17 - 18.5                              |
| 20   | 20 - 22                                |
| 28   | 28-30                                  |
| JW - | Typical model number                   |

Clip size is specified in the code above as shown in the table below, e.g., JW103C3R5/17

## NTC Data

For codes, see below.

| Code        | Nominal Resistance |          |          | Tolerances |                     |         |                     |         |                     |                |
|-------------|--------------------|----------|----------|------------|---------------------|---------|---------------------|---------|---------------------|----------------|
|             | 77°F               | 140°F    | 185°F    | 77°F       | 140°F               | 185°F   | B 25/85             |         |                     |                |
|             | (25°C)             | (60°C)   | (85°C)   | (25°C)     | (60°C)              | (85°C)  |                     |         |                     |                |
|             | $\Omega$           | $\Omega$ | $\Omega$ | $\pm\%$    | $\pm^\circ\text{C}$ | $\pm\%$ | $\pm^\circ\text{C}$ | $\pm\%$ | $\pm^\circ\text{C}$ | K              |
| JW103C3R5/X | 9983               | 2500     | 1079     | 6.46       | 1.48                | 5.00    | 1.40                | 5.90    | 1.87                | 3960 $\pm 1\%$ |

## PTC Data

- Maximum applied voltage: 30V
  - Maximum applied voltage for temperature sensing: 2.5V
- For codes see below.

| T <sub>NF</sub> | (-20 to T <sub>NF</sub> -20°C) |     | 25°C       |     | T <sub>NF</sub> - 5°C |     | T <sub>NF</sub> + 5°C |     | T <sub>NF</sub> + 23°C |     |
|-----------------|--------------------------------|-----|------------|-----|-----------------------|-----|-----------------------|-----|------------------------|-----|
|                 | $\Omega$                       | VDC | $\Omega$   |     | $\Omega$              | VDC | $\Omega$              | VDC | $\Omega$               | VDC |
| JW 060/X 60°C   | $\leq 250$                     | 2.5 | $\leq 100$ | 0.2 | $\leq 570$            | 2.5 | $\geq 570$            | 2.5 | $\geq 10000$           | 2.5 |
| JW 070/X 70°C   | $\leq 250$                     | 2.5 | $\leq 100$ | 0.2 | $\leq 570$            | 2.5 | $\geq 570$            | 2.5 | $\geq 10000$           | 2.5 |
| JW 080/X 80°C   | $\leq 250$                     | 2.5 | $\leq 100$ | 0.2 | $\leq 570$            | 2.5 | $\geq 570$            | 2.5 | $\geq 10000$           | 2.5 |

# Type JC Specifications

## Description

A range of temperature sensing elements on a ceramic/metal shoe assembly, held in a polymer housing and provided with connector tabs. The housing is fitted with a spring metal clip for pipe attachment. The elements available are NTC, PTC, SLN (silicon linear PTC) and PRT (Pt).

## Options

- Other resistance – temperature characteristics
- Special pipe sizes
- Waterproof version – JW (see page 2)

## General Data

- Minimum operating temperature: 32°F (0°C)
- Maximum temperature: 212°F (100°C) (sensor) 185°F (85°C) (housing)
- Dissipation factor: =2mW/K (mounted on copper pipe at 77°F (25°C))
- Isolation voltage: 500 VDC
- Clip force: <50N for mounting/de-mounting on pipe  
5N will not cause rotation on pipe
- Shoe material: Plated brass
- Body material: Nylon
- Pack quantity & MOQ: 200 pcs

## NTC Data

For codes, see below.

| Code        | Nominal Resistance |               |               |              |               | Tolerances    |      |      |      | B 25/85<br>K | Identification<br>color dot |
|-------------|--------------------|---------------|---------------|--------------|---------------|---------------|------|------|------|--------------|-----------------------------|
|             | 77°F<br>25°C       | 140°F<br>60°C | 185°F<br>85°C | 77°F<br>25°C | 140°F<br>60°C | 185°F<br>85°C |      |      |      |              |                             |
|             | Ω                  | Ω             | Ω             | ±%           | ±°C           | ±%            | ±°C  | ±%   | ±°C  |              |                             |
| JC502C3R5/X | 4990               | 1250          | 540           | 6.46         | 1.48          | 5.00          | 1.40 | 5.90 | 1.87 | 3960 ± 1%    | Orange                      |
| JC103C3R5/X | 9983               | 2500          | 1079          | 6.46         | 1.48          | 5.00          | 1.40 | 5.90 | 1.87 | 3960 ± 1%    | None                        |
| JC103C4R5/X | 9925               | 3000          | 1441          | 6.26         | 1.67          | 5.00          | 1.60 | 5.77 | 2.09 | 3435 ± 1%    | Yellow                      |

## PTC Data

- Maximum applied voltage: 30V
  - Maximum applied voltage for temperature sensing: 2.5V
- For codes, see below.

|         | T <sub>NF</sub> | -20°C to T <sub>NF</sub> -20°C |     | 77°F (25°C) |     | T <sub>NF</sub> -5°C |     | T <sub>NF</sub> + 5°C |     | T <sub>NF</sub> + 23°C |     | Identification dots |
|---------|-----------------|--------------------------------|-----|-------------|-----|----------------------|-----|-----------------------|-----|------------------------|-----|---------------------|
|         |                 | Ω                              | VDC | Ω           | VDC | Ω                    | VDC | Ω                     | VDC | Ω                      | VDC |                     |
| JC060/X | 60°C            | <=250                          | 2.5 | <=100       | 0.2 | <=570                | 2.5 | >=570                 | 2.5 | >=10000                | 2.5 | White/Gray          |
| JC070/X | 70°C            | <=250                          | 2.5 | <=100       | 0.2 | <=570                | 2.5 | >=570                 | 2.5 | >=10000                | 2.5 | White/Brown         |
| JC080/X | 80°C            | <=250                          | 2.5 | <=100       | 0.2 | <=570                | 2.5 | >=570                 | 2.5 | >=10000                | 2.5 | White/White         |



# Type JC Specifications

## Silistor Data

Code: JC202SLN1/X

Measurements made at 1 mA

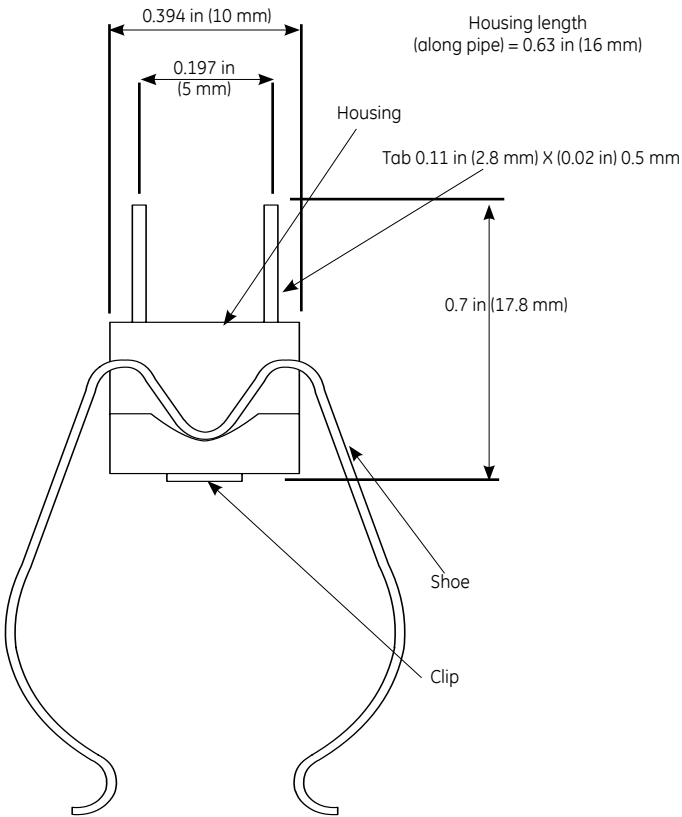
|                       | 77°F (25°C)       | 140°F (60°C)      | 185°F (85°C)    |
|-----------------------|-------------------|-------------------|-----------------|
| Resistance Ω          | 1980 – 2020       | 2577.1 – 2641.3   | 3024.2 – 3146.5 |
| Temperature Deviation | ±2.29°F (±1.27°C) | ±4.10°F (±2.28°C) | ±5.4°F (±3.0°C) |

## PRT Data

- Tolerance: Class A
- Code: JC102PRTA/X

Refer to separate tables for RvT

|                       | 32°F (0°C)        | 77°F (25°C)      | 140°F (60°C)      | 185°F (85°C)      |
|-----------------------|-------------------|------------------|-------------------|-------------------|
| Resistance Ω          | 1000              | 1097             | 1232              | 1328              |
| Temperature Deviation | ±0.27°F (±0.15°C) | ±0.36°F (±0.2°C) | ±0.49°F (±0.27°C) | ±0.58°F (±0.32°C) |



## Ordering Information

The code number to be ordered may be specified as follows:

| Code | Type                                         |
|------|----------------------------------------------|
| JC   | Clip-On Pipe Sensor                          |
|      | <b>Code</b> <b>Type</b>                      |
|      | X NTC (See NTC Data Table on page 3)         |
|      | PTC (See PTC Data Table on page 3)           |
|      | SLN (See Silistor Data Table)                |
|      | PRT (See PRT Data Table)                     |
|      | <b>Code</b> <b>Pipe Diameter Range in mm</b> |
|      | 13 13 - 15                                   |
|      | 17 17 - 18.5                                 |
|      | 20 20 - 22                                   |
|      | 26 26 - 27.5                                 |
|      | 28 28 - 30                                   |
|      | F Flat Surface                               |
| JC - | ___ - ___ Typical model number               |

Clip Size is specified in the codes above as shown in the table on the top.



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920-349D