

# GE Sensing

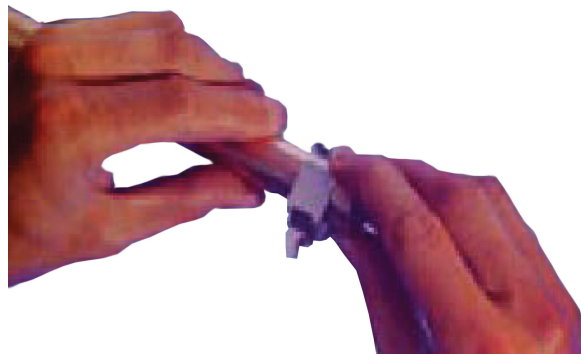
## Features

- Suitable for use in conditions of high condensation and occasional immersion in water
  - 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 IP48 standard
  - Range of clips for pipe diameters 0.51 in to 1.18 in (13 mm to 30 mm)
  - Self-adjusts to irregular pipes
  - Offers cost benefits over traditional immersion probes
  - Fast time response (1.5s typical) for JC and 3.0s for JW
  - Water resistant version (Type JW) meets IP44 standard (with connector tabs encapsulated)
  - Typical applications include gas boiler control, domestic water systems, air conditioners, radiator inlet-outlet, electric showers, vending machines
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## NTC Type JW, JC

### Thermometrics Waterproof Clip-On Pipe Sensor

NTC Type JW, JC is a Thermometrics product. Thermometrics has joined other GE high-technology sensing businesses under a new name—GE Industrial, Sensing.



# 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

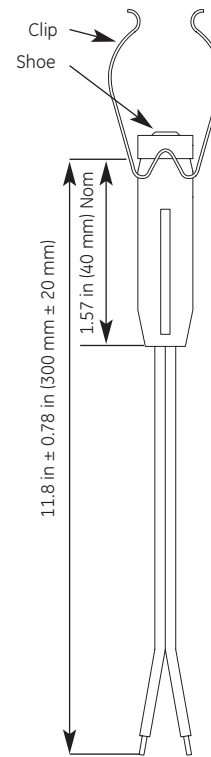
- **Minimum operating temperature:** 32°F (0°C)
- **Maximum temperature:** 212°F (100°C) (sensor)  
185°F (85°C) (housing)
- **Dissipation factor:** ≥2mW/K  
(mounted on copper pipe at 77°F (25°C))
- **Isolation voltage:** 500 VDC
- **Clip force:** <50N for mounting / de-mounting on pipe  
5N will not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

	Response Time (seconds)
NTC	≤4 (to 90% voltage change)
PTC	≤4 to $T_{NF}$ 41°F (5°C) (sensor applied to pipe at $T_{NF}$ 73.4°F (23°C))

## NTC Data

For codes see below

Code	Nominal Resistance						Tolerances				B 25/85
	77°F	140°F	185°F	77°F	140°F	185°F	±%	±°C	±%	±°C	
	(25°C)	(60°C)	(85°C)	(25°C)	(60°C)	(85°C)					
JW103C3R5/X	9983	2500	1079	6.46	1.48	5.00	1.40	5.90	1.87	3960±1%	



NTC Type JW dimensions

## PTC Data

- **Maximum applied voltage:** 30V
- **Maximum applied voltage for temperature sensing:** 2.5V

For codes see below

	$T_{NF}$	(-20 to $T_{NF}$ -20°C)		25°C		$T_{NF}$ -5°C		$T_{NF}$ +5°C		$T_{NF}$ +23°C	
		Ω	VDC	Ω	VDC	Ω	VDC	Ω	VDC	Ω	VDC
JW 060/X	60°C	≤250	2.5	≤100	0.2	≤570	2.5	≥570	2.5	≥10000	2.5
JW 070/X	70°C	≤250	2.5	≤100	0.2	≤570	2.5	≥570	2.5	≥10000	2.5
JW 080/X	80°C	≤250	2.5	≤100	0.2	≤570	2.5	≥570	2.5	≥10000	2.5

## 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 to the left e.g. JW103C3R5/17

# 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

Sensor Type	Response Time (seconds)
NTC	≤ 1.8 (to 90% voltage change)
PTC	≤ 2 (to T <sub>NF</sub> + 5°C – sensor applied to pipe at T <sub>NF</sub> + 23°C)
SLN	≤ 3 (to 63.2% temperature change)
PRT	≤ 3 (to 63.2% temperature change)

## NTC Data

For codes see below

Code	Nominal Resistance			Tolerances						B 25/85	Identification color dot
	77°F 25°C	140°F 60°C	185°F 85°C	77°F 25°C		140°F 60°C		185°F 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 1mA

	77°F (25°C)	140°F (60°C)	185°F (85°C)
Resistance $\Omega$	1980 - 2020	2577.1 - 2641.3	3024.2 - 3146.5
Temperature	$\pm 2.29^\circ\text{F}$ ( $\pm 1.27^\circ\text{C}$ )	$\pm 4.10^\circ\text{F}$ ( $\pm 2.28^\circ\text{C}$ )	$\pm 5.4^\circ\text{F}$ ( $\pm 3.0^\circ\text{C}$ )
Deviation			

For resistances at other temperatures use

$$R_T = R_{25} (1 + \alpha (T - 25) + \beta (T - 25)^2)$$

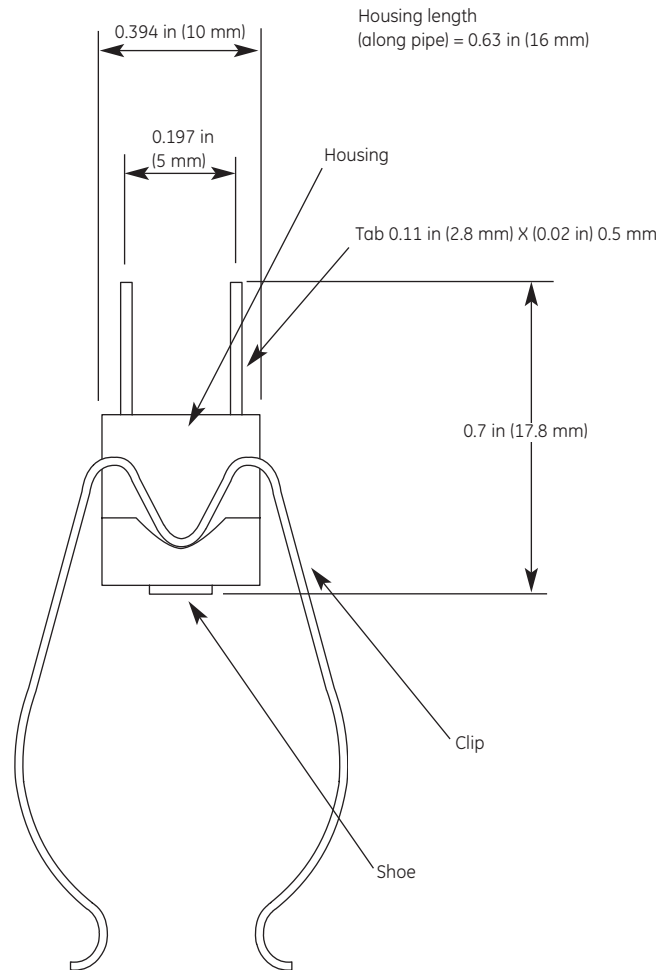
Where:  $\alpha = 7.88 \cdot 10^{-3} \text{ K}^{-1}$ ;  $\beta = 1.937 \cdot 10^{-5} \text{ K}^{-2}$  and T = temperature in °C

## 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 $\Omega$	1000	1097	1232	1328
Temperature	$\pm 0.27^\circ\text{F}$	$\pm 0.36^\circ\text{F}$	$\pm 0.49^\circ\text{F}$	$\pm 0.58^\circ\text{F}$
Deviation	( $\pm 0.15^\circ\text{C}$ )	( $\pm 0.2^\circ\text{C}$ )	( $\pm 0.27^\circ\text{C}$ )	( $\pm 0.32^\circ\text{C}$ )



## Ordering Information

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

Code	Type
JC	Clip-On Pipe Sensor
	<b>Code 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 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. To specify water-resistant version, add suffix M: e.g. JC502C3R5/17M.



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