

# Multi point thermocouple and resistance temperature detector

## Model : R500 series

Spec. sheet no. RD05-01

### Service intended

This type of detector is designed to be used in a situation where the user wants to measure the distributed temperature of a reactor or a container. It can measure horizontally distributed temperature and also can measure the temperature in each depth of the container or the reactor. It is also designed to consider the size of nozzle, installation space and requirement and convenience of repairing and replacing. WISE Control Inc. can manufacture any types of multi point temperature sensors, and upon request of the customer, we can employ the requested material of protection tube, the material of sheath, size, measuring points and the method of attaching the sensor.

Especially, we can provide the temperature sensors without protection tube in a high pressure line by employing our own safety measures. The temperature sensors for junction box to connect the terminal can be manufactured in a both non-explosion proof and explosion proof type.



### Standard features

#### Element

Thermocouple : K, E, J, T, N  
R.T.D. : Pt 100  $\Omega$  at 0 °C

#### Number of measuring temperature point

Possible to manufacture according to customer's required number of points within the allowed range of nozzle bore

#### Junction box material

Aluminium (Standard)  
Stainless steel

#### Sheath outer diameter

##### ■ Thermocouple

1.0, 1.6, 2.3, 3.2, 4.8, 6.4, 8.0, 9.5 and 12.7 mm

\* Double element is not available for 1.0 and 1.6 mm sheath outer diameter

##### ■ R.T.D.

3.2, 4.8, 6.4 and 8.0 mm

#### Tolerances on temperature reading

##### ■ Thermocouple

Class 1, Class 2 (DIN/IEC584-2, BS/EN60584-2, JIS C1602)  
Special, Standard (ASTM E230 E988 ISA-MC96.1)

##### ■ R.T.D.

Class A :  $\pm (0.15 + 0.002 |t|)$   
Class B :  $\pm (0.3 + 0.005 |t|)$

**1. Base model**

<b>R511</b>	Thermocouple single element
<b>R512</b>	Thermocouple double element
<b>R521</b>	RTD single element
<b>R522</b>	RTD double element

**2. Head and stem type**

<b>0</b>	General and protection tube
<b>1</b>	General and non - protection tube
<b>2</b>	Explosion proof and protection tube
<b>3</b>	Explosion proof and non - protection tube
<b>9</b>	Other

**3. Head extension type and sealing location**

<b>0</b>	Nipple and head
<b>1</b>	Nipple and flange
<b>2</b>	Union - Nipple and head
<b>3</b>	Union - Nipple and flange

**4. Element (Tolerance)**

<b>K</b>	K (0.75)	<b>1</b>	K (0.4)
<b>J</b>	J (0.75)	<b>2</b>	J (0.4)
<b>T</b>	T (0.75)	<b>3</b>	T (0.4)
<b>N</b>	N (0.75)	<b>4</b>	E (0.4)
<b>E</b>	E (0.5)	<b>5</b>	N (0.4)
<b>Q</b>	Pt 100 Ω (B)	<b>9</b>	Pt 100 Ω (A)
<b>Z</b>	Other		

**5. Number of measuring temperature point**

<b>A</b>	2	<b>J</b>	10
<b>B</b>	3	<b>K</b>	11
<b>C</b>	4	<b>L</b>	12
<b>D</b>	5	<b>M</b>	13
<b>E</b>	6	<b>N</b>	14
<b>F</b>	7	<b>P</b>	15
<b>G</b>	8	<b>Z</b>	Other
<b>H</b>	9		

**6. Sheath outer diameter (mm)**

<b>0</b>	1.6	<b>5</b>	1.6 / weld PAD
<b>1</b>	3.2	<b>6</b>	3.2 / weld PAD
<b>2</b>	4.8	<b>7</b>	4.8 / weld PAD
<b>3</b>	6.4	<b>8</b>	6.4 / weld PAD
<b>4</b>	8.0	<b>9</b>	8.0 / weld PAD

**7. Sheath material**

<b>1</b>	316SS
<b>2</b>	Inconel
<b>3</b>	310SS
<b>4</b>	446SS
<b>5</b>	347SS
<b>6</b>	321SS
<b>7</b>	316L SS
<b>9</b>	Other

**8. Protecting tube material**

<b>1</b>	316SS
<b>2</b>	Inconel
<b>3</b>	310SS
<b>4</b>	446SS
<b>5</b>	347SS
<b>6</b>	321SS
<b>7</b>	Other

**9. Process connection**

**XX** Refer to connection table (12<sup>th</sup> and 13<sup>th</sup> character)

**10. Insert length**

**X** Refer to insert length table (14<sup>th</sup> character)

**11. Option**

<b>0</b>	None
<b>1</b>	Accessories

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>
<b>R511</b>	<b>0</b>	<b>3</b>	<b>K</b>	<b>J</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>XX</b>	<b>X</b>	<b>0</b>

Sample  
ordering code

## Mounting, connection type and insert length table - 12<sup>th</sup> thru 14<sup>th</sup> characters

12 <sup>th</sup> character		13 <sup>th</sup> character		14 <sup>th</sup> character	
Code	Connection size	Code	Connection type	Code	Insertion length (m)
0	1"	A	NPT	A	2
1	1¼"	B	PT	B	3
2	1½"	C	B16.5 Class 150 RF	C	4
3	2"	D	B16.5 Class 150 FF	D	5
4	2½"	E	B16.5 Class 300 RF	E	6
5	3"	F	B16.5 Class 300 FF	F	7
6	4"	G	B16.5 Class 600 RF	G	8
7	6"	H	B16.5 Class 600 FF	H	9
9	Other	I	B16.5 Class 600 RTJ	J	10
		J	B16.5 Class 900 RF	K	15
		K	B16.5 Class 900 FF	L	20
		L	B16.5 Class 1,500 RF	M	25
		M	B16.5 Class 1,500 FF	N	30
		N	B16.5 Class 1,500 RTJ	P	35
		P	B16.5 Class 2,500 RF	Q	40
		Q	B16.5 Class 2,500 FF	R	45
		R	B16.5 Class 2,500 RTJ	S	50
		S	JIS 10K RF	Z	Other
		T	JIS 10K FF		
		U	JIS 20K RF		
		V	JIS 20K FF		
		Z	Other		

■14<sup>th</sup> characters note : Please choose the longest among measuring points.

## R500 : Standard product drawing (1/2)





