

## WMTR-X Thermal Resistor



As a temperature sensor, the resistance of thermal resistor can be varied under the change of temperature. WMTR-X thermal resistor is used to measure the temperature of liquid, steam, gas and the solid surface ranging  $-200^{\circ}\text{C}$  to  $500^{\circ}\text{C}$ . It is noted for their flexibility, wear resistance, vibration resistance and high temperature resistance. The outer protective tube of the armored thermo element is made of stainless steel and in which high density oxide is used as the insulating layer, it is pollution resistance and enough mechanical strength, in order to meet the adverse circumstances.

WMTR-X thermal resistor consists of temperature sensitive components, protection tube made of stainless steel, joint box, and fixture for different purposes, with two specifications as single and dual box. It can be output two sets at the same time, used for same electrical signal.

WMTR-X thermal resistor can be made by assembly structure or sheathed structure. In comparison with assembly type, the sheathed is with small diameter, easy to bend, perfect vibration endurance, suitable for the place where assembly type is not suitable.



### Technical specification

Resistance value at  $0^{\circ}\text{C}$  for thermal resistance temperature sensitive components ( $R_0$ )

Graduating number Pt100:

Level A  $R_0 = 100 \pm 0.06\Omega$

Level B  $R_0 = 100 \pm 0.12\Omega$

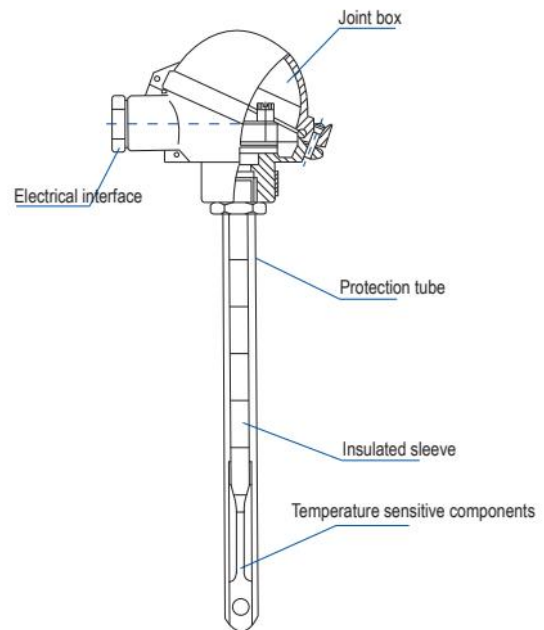
Graduating	Measurement Range $^{\circ}\text{C}$	Accuracy level	Allowed deviation $\Delta t$ $^{\circ}\text{C}$
PT100	-200~500	Level A	$\pm(0.15+0.002 t)(-200\sim 650^{\circ}\text{C})$
PT100	-200~500	Level B	$\pm(0.30+0.005 t)(-200\sim 800^{\circ}\text{C})$

### Heat response time

Variety	Graduation	Diameter	Max Length	Thermal response time	Output wires
Pt. element single and dual	Pt100	Φ8 Φ6	20m	≤30s	3 wires of single
		Φ5 Φ4 Φ3		≤15s	6 wires of dual

Sheath Diameter	Thermal response time
Φ3	≤3s
Φ4	≤5s
Φ5	≤8s
Φ6	≤12s
Φ8	≤15s

### Structure of protection tube



Basic structure diagram of thermal resistance

### Nominal pressure

In general, it indicates the static external pressure undertaken by protection tube at normal temperature, without break occurred. Normal trial pressure is 1.5 times of nominal pressure. In fact, allowed nominal pressure is not only related with protection material, diameter, wall thickness, also with structure, installation method, probing depth, and flow and type of measured media.

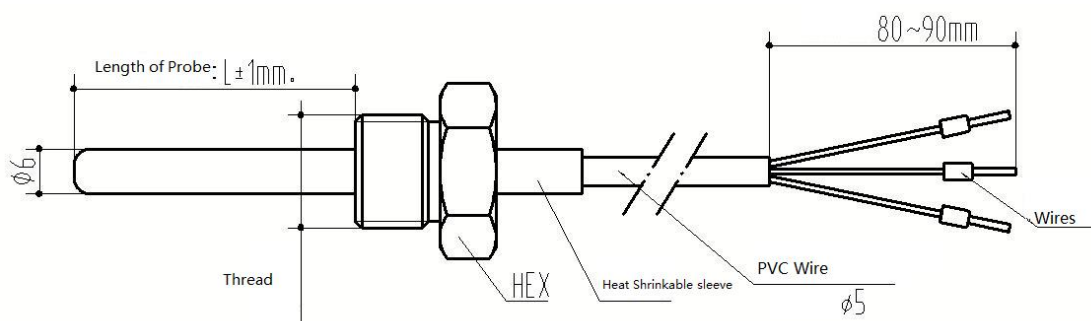
### Insulated resistance

Trial voltage for insulated resistance at normal temperature can be selected as any value within 10~100V, and atmosphere temperature shall be within 15 ~ 35℃. Relative humidity shall be less than 80%. Insulated value at normal temperature shall be greater than 100MΩ.

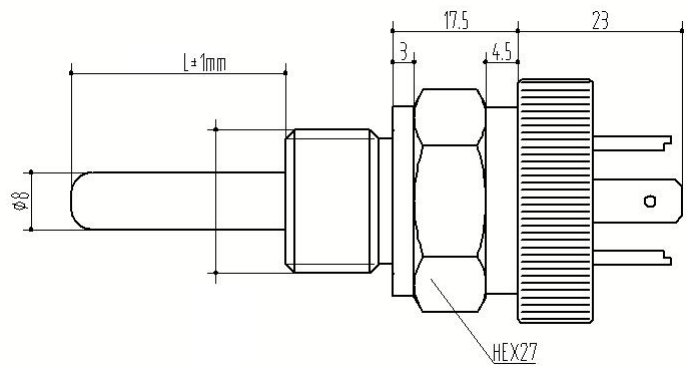
### Model selection

WMTR	Thermal Resistor	
-	Material of thermal resistor	P: Platinum C: Copper
-	(Temperature range)	e.g. (0-100℃) or (0-200°F) etc.
-	Type	None: Single RTD output D: Dual RTD output
-	Case type	W: Water-proof type Ex: Ex-proof type HS: Hersman connection O: Outlet type X: Wire lead out S: Customer specified

-	Material of wet parts	-SS: SS wet parts -F4: PTFE lined wet parts -O: specified For SS (stainless steel) , please specified 304SS or 316SS.
-	Signal output	None: RTD S1: signal output 4-20mA S2: signal output 0-5V S3: signal output 0-10V S4: signal output RTD S5: signal output thermocouple S0: customer specified
-A	Installment type	1: fixed thread 2: slide adjustable thread 3: rotatable adjustable thread 4: flange 5: clamp 6: none thread or flange 0: customer specified
	Thermo well	None: without TW: with thermo well
-	Size of installment	e.g. for A1, -1/2BSP or -M20*1.5 etc.; for A3, -2" or 3" etc.
-	(Diameter of Probe)	E.g. -6 (6mm), or -1/4". etc.
-	(Length of Probe)	E.g. -200 (200mm), or -8". etc.

**WMTR-X wire lead out:**


**WMTR-HS Hersman connection:**



**WMTR-W outlet type:**



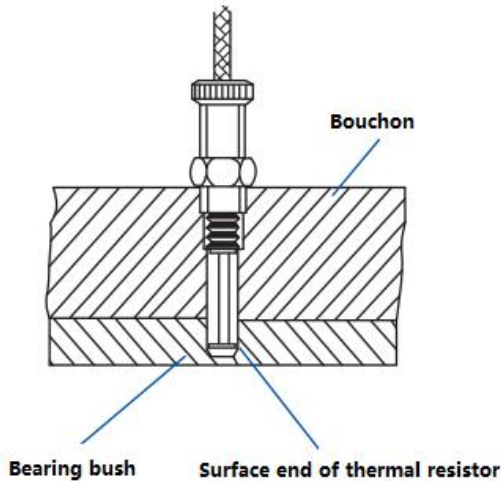
**WMTR-W water proof case:**



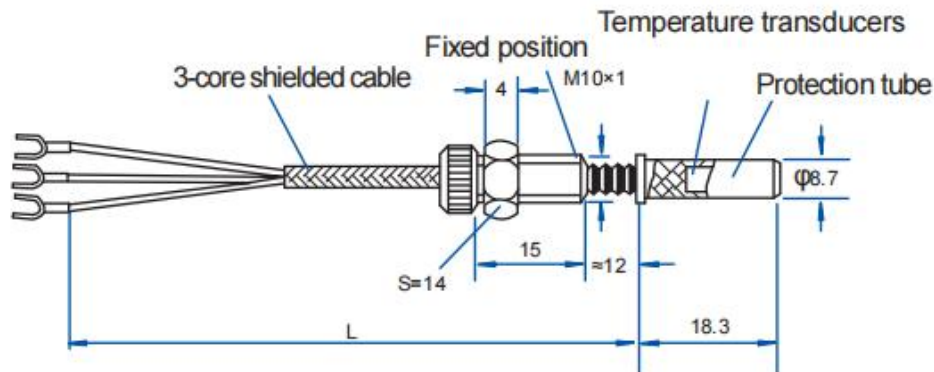
**WMTR-Ex ex-proof type:****WMTR-TW (with thermowell):****Thermowell:**

**WMTR-09 Surface end contact thermal resistor:**

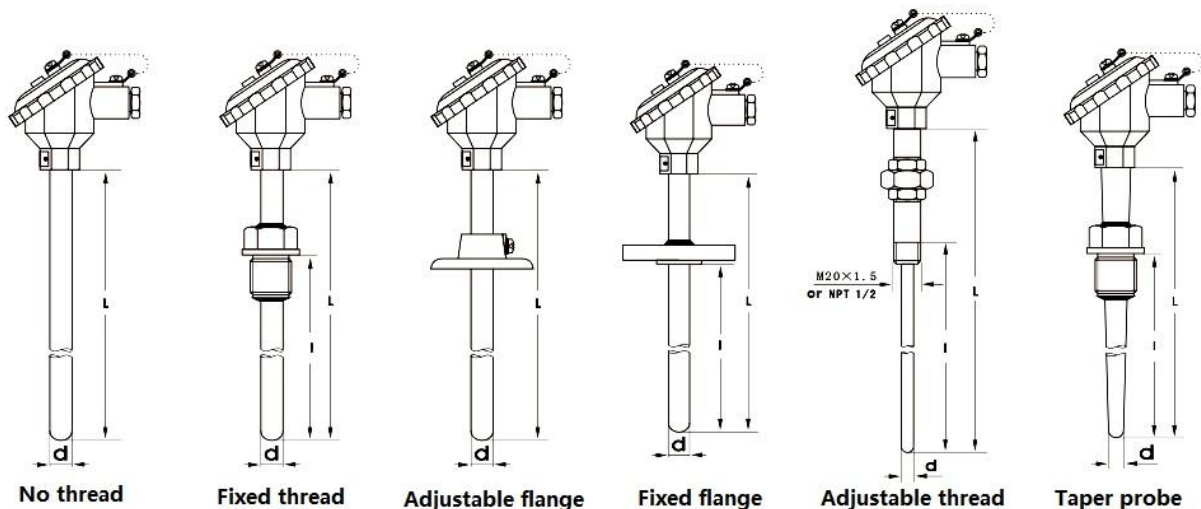
WMTR-09 Surface end contact thermal resistor contacts the both end side of measured object and resistor, it can properly and quickly reflect the actual temperature of measured end, which is applicable to measure the end temperature of shaft bushing or other parts.



Resistance value at 0°C for temperature transducers (R0)  
 Graduating number Cu50:  $R_0 = 50 \pm 0.050\Omega$   
 Graduating number Cu100:  $R_0 = 100 \pm 0.10\Omega$   
 Graduating number Pt100:  $R_0 = 100 \pm 0.12\Omega$  (Level B)  
 Where: R0 is the resistance value at 0°C for the components

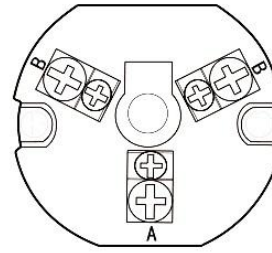
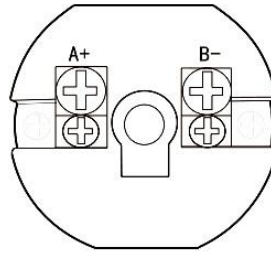
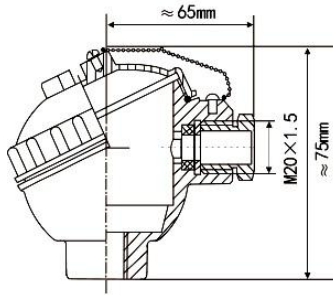


**Connections:**





**Water-proof case and terminals:**



**Water-proof case (IP65)**

**Terminals of thermocouple**

**Terminals of thermal resistor**

**Installation:**

