ZNC - Armored RTD

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Product Overview

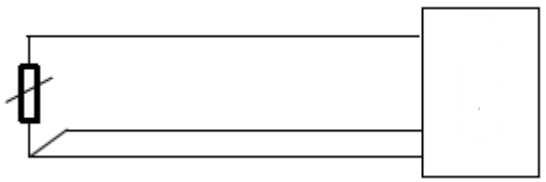
The armored platinum RTD offers several advantages over conventional assembled platinum RTDs, including smaller diameter, high flexibility, and excellent vibration resistance, making it ideal for applications where assembled RTDs cannot be installed. Our armored platinum RTDs use imported platinum sensing elements, ensuring stable performance, long service life, high measurement accuracy, high sensitivity, and fast thermal response.

The outer protective sheath is made of **1Cr18Ni9Ti or 316L stainless steel** and filled with high-density magnesium oxide insulation, providing strong contamination resistance and excellent mechanical strength, making it suitable for installation in harsh environments.

The armored platinum RTD can measure temperatures in the range of **-200°C to 600°C** and can be directly connected to secondary instruments using copper wires. Its reliable electrical output characteristics allow it to provide precise temperature input signals to **display instruments, recorders, controllers, PLCs, and DCS systems**.

Working Principle

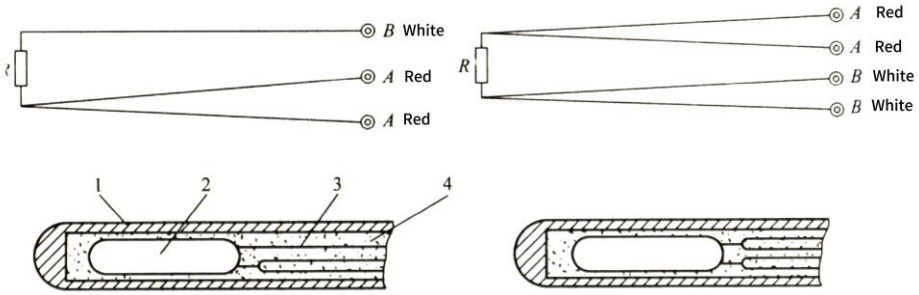
An RTD measures temperature by utilizing the characteristic that the electrical resistance of a material (usually a pure metal) changes with temperature in a predictable functional relationship. During temperature measurement, the changing resistance is converted into an electrical signal input to display instruments. The instruments then display the corresponding temperature change through the measurement circuit, achieving accurate temperature measurement.



Basic Structure

An armored RTD is constructed by placing the temperature-sensing element into a metal sheath filled with compacted magnesium oxide insulation and equipped with internal lead wires. After welding the sensing element to the

internal leads, the ends of the metal sheath containing the sensing element are filled and sealed by welding, forming a robust, integrated RTD assembly.



a) Three-wire RTD b) Four-wire RTD

①Stainless steel sheath ②Temperature-sensing element

③Internal lead wires ④Magnesium oxide insulation

RTD Tolerance

The tolerance class corresponds to the effective temperature range. Within the specified range, the maximum deviation between the temperature *t* calculated from the resistance value of the RTD (according to the reference table) and the true temperature shall not exceed the tolerance values given in **Table 1**.

Table 1 applies to any nominal resistance value of RTDs. For a specific RTD, if its effective temperature range is narrower than that specified in the table, this should be stated explicitly.

Table 1 – Tolerance Classes and Tolerance Values for RTDs

RTD Type	Tolerance Class	Effective Temperature Range (°C)		Tolerance Value
		Wire-wound element	Diaphragm element	
Industrial Platinum RTD (PRT)	AA A B C	-50 ~ +250 -100 ~ +450 -196 ~ +600 -196 ~ +600	0~+150 -30~+300 -50~+500 -50~+600	±（0.100℃+0.0017｜t｜） ±（0.150℃+0.002｜t｜） ±（0.30℃+0.005｜t｜） ±（0.6℃+0.010｜t｜）

Notes:

1. The tolerance range from 600℃ to 850℃ shall be determined by the manufacturer in the technical specification.
2. |t| denotes the absolute value of temperature in ℃.
3. If special tolerance classes different from Table 1 are required, the manufacturer must state them explicitly, including the corresponding effective temperature range.
4. Special tolerance grades for platinum RTDs are recommended as fractions or multiples of Class B (e.g., 1/10B, 1/5B, 3B).