

# PLATINUM/COBALT RESISTANCE THERMOMETER FOR INDUSTRIAL USE



## MODEL R800-6 (4K to 375K) R800-7 (15K to 375K)

The Platinum/Cobalt resistance thermometer is the temperature sensor for cryogenic temperature by utilizing Platinum/Cobalt thin alloy in the sensing part, and is for the temperature measurement from cryogenic temperature area to room temperature.

The Platinum/Cobalt thin alloy is Platinum alloyed with trace amounts of Cobalt, and has superior characteristics as a cryogenic temperature sensor because its resistance value and sensitivity in cryogenic temperature range are far bigger than precious metals like as Platinum.

Two kinds of thermometers, R800-6 up to 4K and R800-7 up to 15K, are available.

- The temperature from the cryogenic temperature (R800-6 4K, R800-7 15K) to the room temperature (300K) can be measured by a single sensor.
- The accuracy in the whole measuring range is high ( $\pm 0.5K$ ) and the sensor is interchangeable.
- The thin capsule metal type durable construction offers low heat capacity and excellent stability.
- Due to 4-wire type, precision measurement by a DC potentiometer can be executed.



### ■ General Specifications

Measuring element: Platinum/Cobalt thin alloy

Measuring temperature: 4K to 375K (R800-6)  
15K to 375K (R800-7)

Resistance value at 0°C:  $100\Omega \pm 0.15\Omega$

Sensitivity: Min.  $0.09\Omega/K$  at 12K

Max.  $0.40\Omega/K$

Repeatability: Within 10mK

Nominal current: 2mA

Self-heat characteristic: 4mK/1mA (in LN<sub>2</sub>)

Temperature measurement construction:

Spiral coil type aluminum ceramic construction

Protective tube:

Capsule type brass with gold plated

$\varnothing 2.0\text{mm} \times L23\text{mm}$

Lead wire:

4-wire type, Polyester covered copper wire

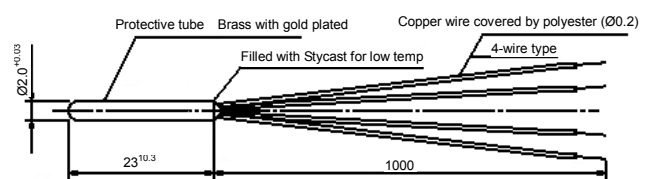
$\varnothing 0.2\text{m} \times L1000\text{mm}$

Response time:

5 seconds at 90% response

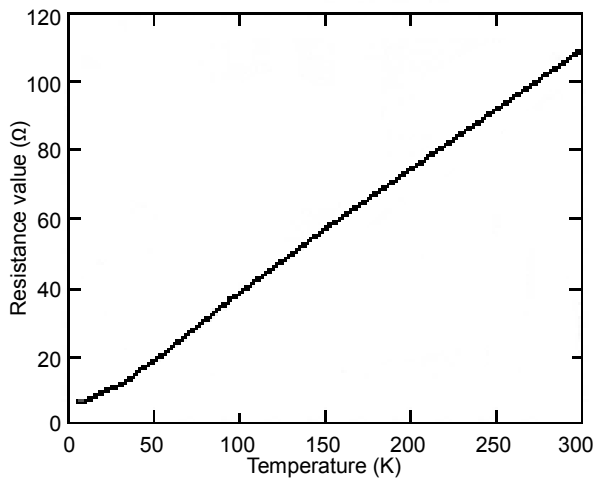
(0°C → Liquid oxygen)

### ■ External Dimensions

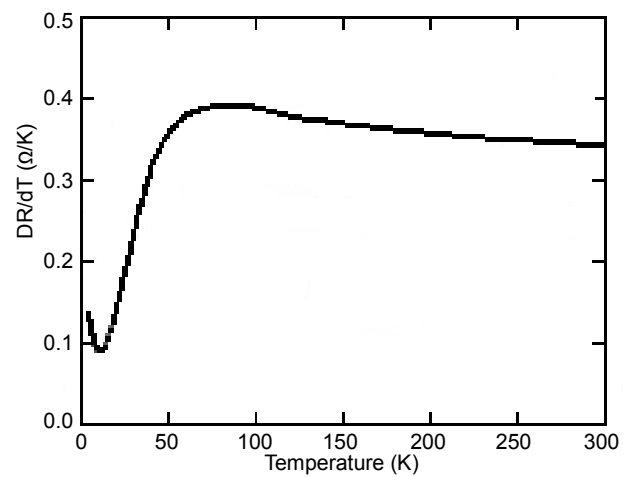


Unit: mm

### ■Temperature – Resistance Characteristics



### ■Temperature – Sensitivity Characteristics



### ■Temperature – Resistance Value Table

Temperature (K)	Resistance value (Ω)	Temperature (K)	Resistance value (Ω)	Temperature (K)	Resistance value (Ω)
4	7.792	110	40.280	220	81.094
10	8.483	120	44.134	230	84.680
20	9.506	130	47.951	240	88.252
30	11.246	140	51.734	250	91.811
40	13.853	150	55.482	260	95.356
50	17.109	160	59.207	270	98.889
60	20.759	170	62.906	280	102.411
70	24.611	180	66.583	290	105.921
80	28.534	190	70.239	300	109.419
90	32.477	200	73.875		
100	36.394	210	77.493		

Specifications subject to change without notice. Original 2002.10

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