

# Resistance Temperature Sensor

- High reliability sensor with reasonable price.
- Made from high quality sensing element.
- Excellent stability and high accuracy.
- Suitable for corrosive medium at high temperature.



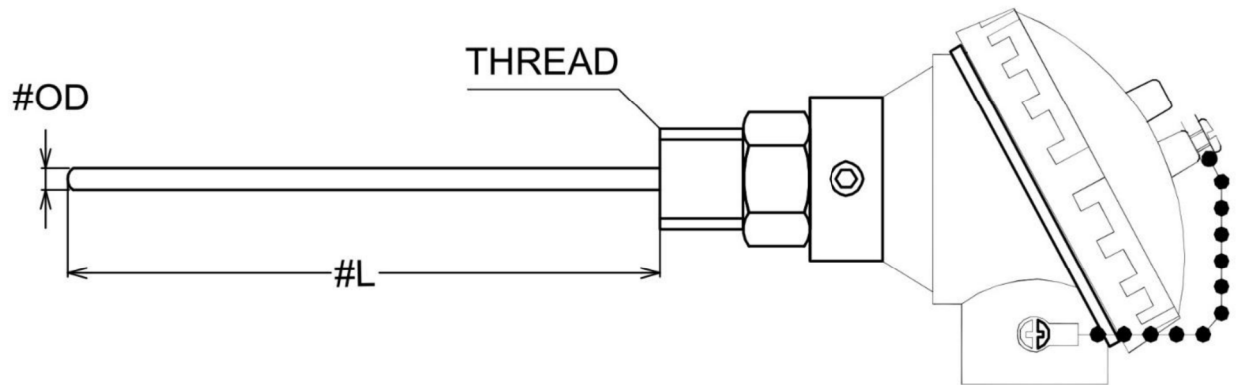
## Applications:

- Energy and power plant technology
- Process industry
- Chemical industry
- Machinery, plant and vessel construction.

## Technical data

<b>Type of element</b>	Pt100, 2xPt100
<b>Temperature range</b>	Tolerance Class A: -196°C to +600°C ( Part KN1515) Tolerance Class A: -50°C to +300°C ( Part M416) Tolerance Class B: -70°C to +600°C (Part HM220)
<b>Process connection</b>	1/2" NPTM in default the others on request.
<b>Sheath diameter</b>	6.3 mm, others on request.
<b>Sheath length</b>	100, 150, 200mm (standard ) & the other on request
<b>Sheath material</b>	SS316, others on request.
<b>Terminal head</b>	Aluminum housing , IP65
<b>Terminal</b>	3 wires( A, B, B'), 4 wires(A,A',B,B') or 6 wires(2xPt100)

## Thread type



## Product

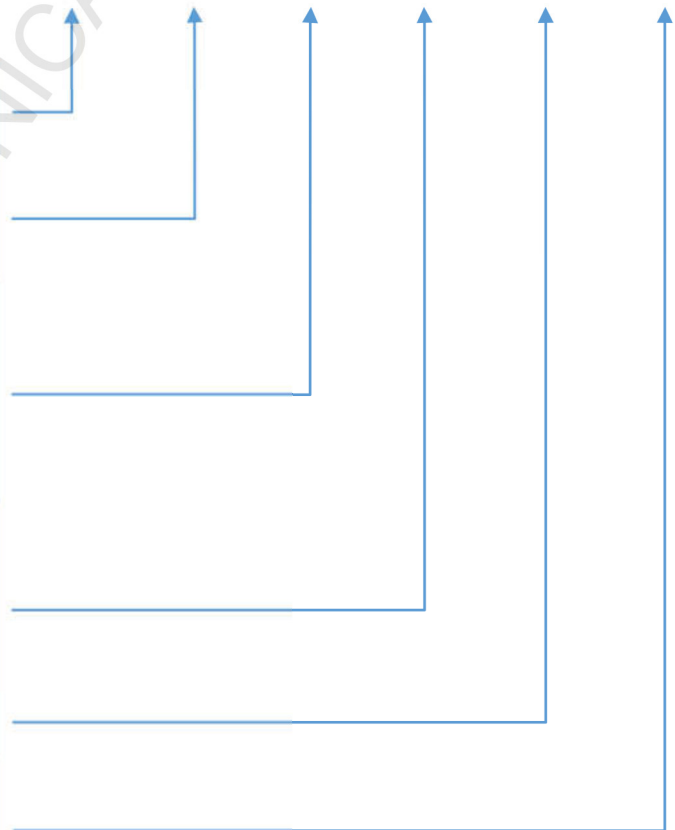
### Order code

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Example code:

-  -  -  \*  \*   
 M416 - 3W - 1/2 - 6.3 \* 100 \* SS

M416	class A -50...+300 °C ( Standard)
KN1515	class A -196...+600 °C
HM220	class B -70...+600 °C
2W	2 wires
<b>3W</b>	<b>3 wires (standard)</b>
4W	4 wires
6W	6 wires (2XPt100)
Process connection:	
¼	¼ "NPTM
½	½ " NPTM (standard)
¾	¾ " NPTM
1	1 " NPTM
X1	Special on request(Ex: G½" BSPP; ½" BSPT, M12 x 1.5...)
Sheath diameter(#OD):	
4	4 mm
<b>6.3</b>	<b>6.3 mm (standard)</b>
8	8 mm
10	10 mm
X1	Special on request
<b>100</b>	<b>Sheath length(#L):100mm, 150mm, 200mm ...</b>
SS	Sheath material by SS316.
Ti	Sheath material byTitanium
H	Sheath material by Alloy C276
PF	Sheath material by PTFE



Ex1 (Standard code): **M416-3W-1/2-6.3\*100\*SS**

(It's mean:PartM416 Pt100-3wires class A, range :-50...300°C, thread 1/2NPTM, sheath length = 100mm, sheath diameter = 6.3mm, sheath material SS316)

## Platinum Resistance Temperature Detector

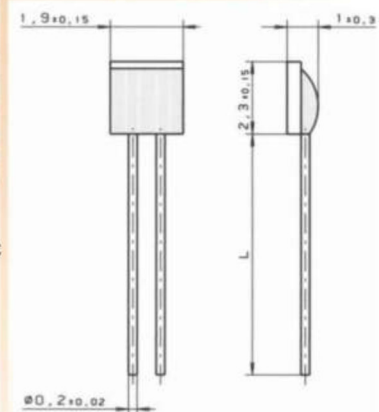
HM 220

HM 220 type platinum sensors are characterised by long-term stability, precision over a broad temperature range and compatibility. The main feature is the small design. They are used in particular for applications with high consumption volumes, e.g. white goods and heating power.

Nominal Resistance R0	Tolerance DIN EN 60751 1996-07	Tolerance DIN EN 60751 2009-05	Order Number Plastic bag
100 Ohm at 0°C	Class B	F 0.3	32 208 787
	Class A	F 0.15	32 208 788

The measuring point for the nominal resistance is defined at 6mm from the end of the sensor body.

<b>Specification</b>	DIN EN 60751	
<b>Temperature range</b>	-70°C up to +600°C Tolerance Class B: -70°C up to 600°C Tolerance Class A: -50°C up to 300°C	
<b>Temperature coefficient</b>	TC = 3850 ppm/K	
<b>Leads</b>	Pd alloy with Pt coating wire	
<b>Lead lengths (L)</b>	8mm ±1mm	
<b>Long-term tests</b>	R <sub>0</sub> - Drift after 1000h at 600°C (energized) < 0,24% (Unhoused chip in standard atmosphere.)	
<b>Environmental conditions</b>	Unhoused for dry environmental only, above 500°C no reducing atmosphere, free air admission is necessary. Assembly can influence the long term stability!	
<b>Vibration resistance</b>	at least 40g acceleration at 10 to 2000 Hz, depends on installation	
<b>Shock resistance</b>	at least 100g acceleration with 8ms half sine wave, depends on installation	
<b>Insulation resistance</b>	> 100 MΩ at 20°C; > 1 MΩ at 600°C	
<b>Self heating</b>	0.2 K/mW	
<b>Response time</b>	Water current (v= 0.4m/s):	t <sub>0,5</sub> = 0.05s t <sub>0,9</sub> = 0.14s
	Air stream (v=2 m/s):	t <sub>0,5</sub> = 3.0s t <sub>0,9</sub> = 10s
<b>Measuring current</b>	0.1 to 1mA (self heating has to be considered)	
<b>Note</b>	Other tolerances, values of resistance and wire lengths are available on request.	



We reserve the right to make alterations and technical data printed. All technical data serves as a guideline and does not guarantee particular properties to any products.

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## Platinum temperature sensor in thin-film technology

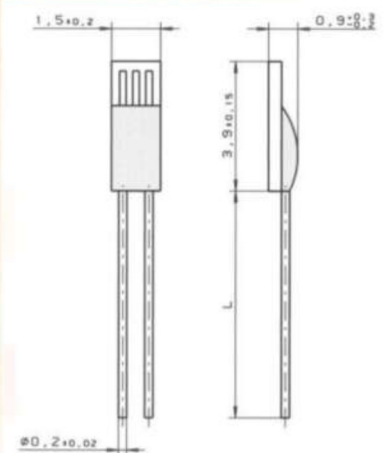
M 416

M-series platinum temperature sensors are characterized by long-term stability, excellent precision over a wide temperature range and compatibility. They are used particularly for applications with high consumption volumes, typically in the automotive, white goods, HVAC and energy generation industries as well as in medical and industrial appliances and machinery.

Nominal Resistance R0	Tolerance DIN EN 60751 1996-07	Tolerance DIN EN 60751 2009-05	Order Number Plastic Bag	Order Number Blister reel
100 Ohm at 0°C	Class 1/3 B	F 0.1	32 208 217	32 208 701
	Class A	F 0.15	32 208 216	32 208 279
	Class B	F 0.3	32 208 213	32 208 278

The measuring point for the nominal resistance is defined at 8mm from the end of the sensor body.

<b>Specification</b>	DIN EN 60751	
<b>Temperature range</b>	-70°C to +500°C (continuous operation) (temporary use to 550°C possible) Tolerance Class B: -70°C to +500°C Tolerance Class A: -50°C to +300°C Tolerance Class 1/3 B: 0°C to +150°C	
<b>Temperature coefficient</b>	TC = 3850 ppm/K	
<b>Leads</b>	Pt clad Ni- wire Recommend connection technology: Welding, Crimping and Brazing	
<b>Lead lengths (L)</b>	10mm ±1mm	
<b>Long-term stability</b>	Max. R <sub>0</sub> drift 0.04% after 1000h at 500°C	
<b>Vibration resistance</b>	At least 40g acceleration at 10 to 2000 Hz, depends on installation	
<b>Shock resistance</b>	At least 100g acceleration with 8ms half sine wave, depends on installation	
<b>Ambient conditions</b>	Use unprotected only in dry environments	
<b>Insulation resistance</b>	> 100 MΩ at 20°C; > 2 MΩ at 500°C	
<b>Self heating</b>	0.4 K/mW at 0°C	
<b>Response time</b>	Water current (v= 0.4m/s):	t <sub>0.5</sub> = 0.06s t <sub>0.9</sub> = 0.18s
	Air flow (v= 2m/s):	t <sub>0.5</sub> = 3.1s t <sub>0.9</sub> = 10.5s
<b>Measuring current</b>	100Ω: 0.3 to 1.0mA (self heating has to be considered)	
<b>Note</b>	Other tolerances, values of resistance and wire lengths are available on request.	



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