

Platinum Resistance Temperature Detector

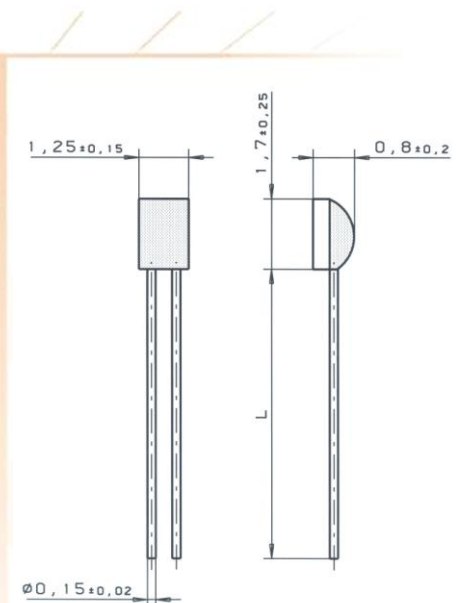
M 213

M series PRTDs are designed for large volume applications where long term stability, interchangeability and accuracy over a large temperature range are vital. Typical applications are Automotive, White goods, HVAC, Energy management, Medical and Industrial equipment.

Nominal Resistance R0	Tolerance DIN EN 60751 1996-07	Tolerance DIN EN 60751 2009-05	Order Number Plastic Box
100 Ohm at 0°C	Class 1/3 B	F 0.1	32 207 692
	Class A	F 0.15	32 207 691
	Class B	F 0.3	32 207 690
1000 Ohm at 0°C	Class B	F 0.3	32 207 695

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

Specification	DIN EN 60751 (according to IEC 751)	
Temperature range	-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	
Temperature coefficient	TC = 3850 ppm/K	
Leads	Pt clad Ni- wire Recommended connection technology: Welding, Crimping and Brazing	
Lead lengths (L)	10mm ±1mm	
Long-term stability	max. R ₀ -drift 0.04% after 1000h at 500°C	
Vibration resistance	at least 40g acceleration at 10 to 2000 Hz, depends on installation	
Shock resistance	at least 100g acceleration with 8ms half sine wave, depends on installation	
Environmental conditions	unhoused for dry environments only	
Insulation resistance	> 100 MΩ at 20°C; > 2 MΩ at 500°C	
Self heating	0.6 K/mW at 0°C	
Response time	water current (v= 0.4m/s):	t _{0.5} = 0.04s t _{0.9} = 0.12s
	air stream (v= 2m/s):	t _{0.5} = 2.2s t _{0.9} = 7.0s
Measuring current	100Ω: 0.3 to 1.0 mA 1000Ω: 0.1 to 0.3 mA (self heating has to be considered)	
Note	Other tolerances, values of resistance and wire lengths are available on request.	



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Platinum Resistance Temperature Detector

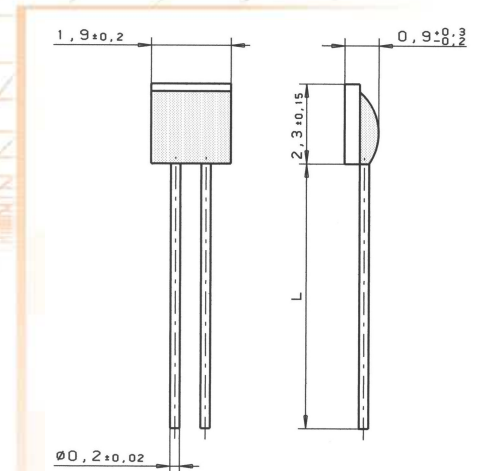
M 220

M series PRTDs are designed for large volume applications where long term stability, interchangeability and accuracy over a large temperature range are vital. Typical applications are Automotive, White goods, HVAC, Energy management, Medical and Industrial equipment.

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		32 208 466
	Class A	F 0.15	32 208 715	32 208 465
	Class B	F 0.3	32 208 714	32 208 440

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

Specification	DIN EN 60751 (according to IEC 751)	
Temperature range	-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	
Temperature coefficient	TCR = 3850 ppm/K	
Leads	Pt clad Ni- wire Recommend connection technology: Welding, Crimping and Brazing	
Lead lengths (L)	10mm ±1mm	
Long-term stability	max. R ₀ -drift 0.04% after 1000h at 500°C	
Vibration resistance	at least 40g acceleration at 10 to 2000 Hz, depends on installation	
Shock resistance	at least 100g acceleration with 8ms half sine wave, depends on installation	
Environmental conditions	unhoused for dry environments only	
Insulation resistance	> 100 MΩ at 20°C; > 2 MΩ at 500°C	
Self heating	0.4 K/mW at 0°C	
Response time	water current (v= 0.4m/s):	t _{0.5} = 0.05s t _{0.9} = 0.15s
	air stream (v= 2m/s):	t _{0.5} = 3.0s t _{0.9} = 10.0s
Measuring current	100Ω: 0.3 to 1.0mA (self heating has to be considered)	
Note	Other tolerances, values of resistance and wire lengths are available on request.	



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Platinum Resistance Temperature Detector

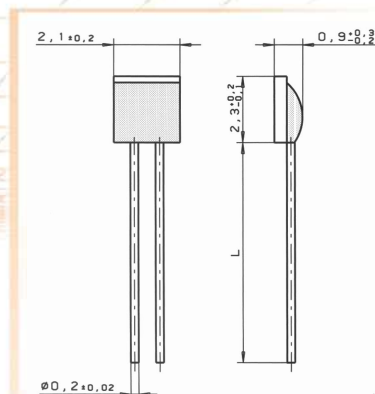
M 222

M-series PRTDs are designed for large volume applications where long term stability, interchangeability and accuracy over a large temperature range are vital. Typical applications are Automotive, White goods, HVAC, Energy management, Medical and Industrial equipment.

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 1/3 B	F 0.1	32 208 551
	Class A	F 0.15	32 208 550
	Class B	F 0.3	32 208 548
500 Ohm at 0°C	Class B	F 0.3	32 208 706
1000 Ohm at 0°C	Class 1/3 B	F 0.1	32 208 707
	Class A	F 0.15	32 208 572
	Class B	F 0.3	32 208 571

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

Specification	DIN EN 60751 (according to IEC 751)	
Temperature range	-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
Temperature coefficient	TCR = 3850 ppm/K	
Leads	Pt clad Ni- wire Recommend connection technology: Welding, Crimping and Brazing	
Lead lengths (L)	10mm ±1mm	
Long-term stability	max. R ₀ -drift 0.04% after 1000h at 500°C	
Vibration resistance	at least 40g acceleration at 10 to 2000 Hz, depends on installation	
Shock resistance	at least 100g acceleration with 8ms half sine wave, depends on installation	
Environmental conditions	unhoused for dry environments only	
Insulation resistance	> 100 MΩ at 20°C; > 2 MΩ at 500°C	
Self heating	0.4 K/mW at 0°C	
Response time	water current (v= 0.4m/s):	t _{0.5} = 0.05s t _{0.9} = 0.15s
	air stream (v= 2m/s):	t _{0.5} = 3.0s t _{0.9} = 10.0s
Measuring current	100Ω: 0.3 to 1.0mA 500Ω: 0.1 to 0.7mA 1000Ω: 0.1 to 0.3mA (self heating has to be considered)	
Note	Other tolerances, values of resistance and wire lengths are available on request.	



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Platinum temperature sensor in thin-film technology

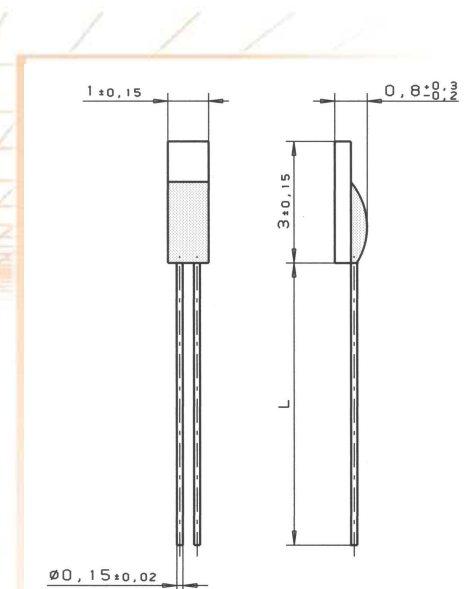
M 310

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 Box	Order Number Plastic Bag
100 Ohm at 0°C	Class B	F 0.3	32 208 721	50 142 52
1000 Ohm at 0°C	Class B	F 0.3	32 208 723	50 142 53
100 Ohm at 0°C	Class A	F 0,15	32 208 725	50 142 54
1000 Ohm at 0°C	Class A	F 0,15	32 208 727	50 142 55

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

Specification	DIN EN 60751	
Temperature range	-70°C to +500°C (continuous operation) (temporary use to 550°C possible) Tolerance Class B: -70°C up to +500°C Tolerance Class A: -50°C up to +300°C	
Temperature coefficient	TCR = 3850 ppm/K	
Leads	Pt clad Ni- wire Recommend connection technology: Welding, Crimping and Brazing	
Lead lengths (L)	10mm ±1mm	
Long-term stability	Max. R ₀ drift 0.04% after 1000h at 500°C	
Vibration resistance	At least 40g acceleration at 10 to 2000 Hz, depends on installation	
Shock resistance	At least 100g acceleration with 8 ms half sine wave, depends on installation	
Ambient conditions	Use unprotected only in dry environments	
Insulation resistance	> 100 MΩ at 20°C; > 2 MΩ at 500°C	
Self heating	0.4 K/mW at 0°C	
Response time	Water current (v= 0.4m/s):	t _{0,5} = 0.04s t _{0,9} = 0.12s
	Air flow (v= 2m/s):	t _{0,5} = 2.5s t _{0,9} = 8.0s
Measuring current	100Ω: 0.3 to 1.0 mA 1000Ω: 0.1 to 0.3 mA (self heating has to be considered)	
Note	Other tolerances, values of resistance and wire lengths are available on request.	



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Platinum temperature sensor in thin-film technology

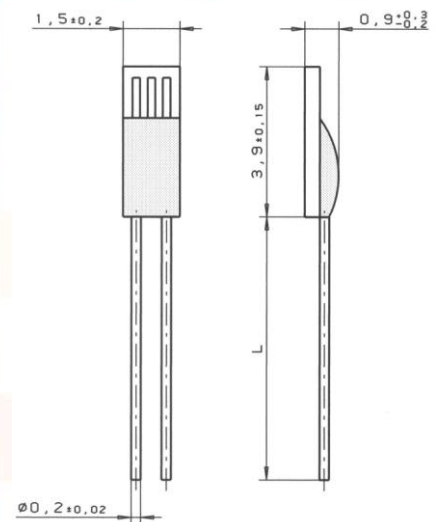
M 416

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.

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



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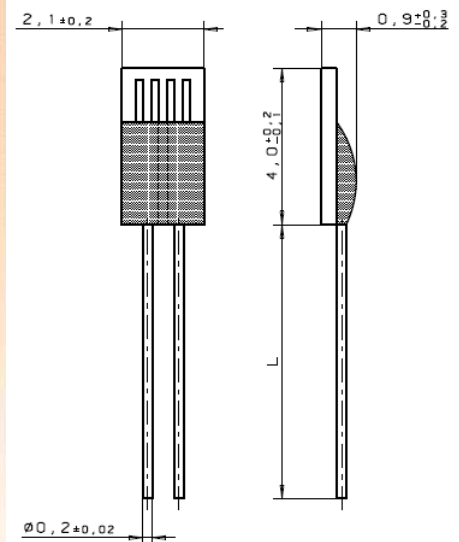
M 422

M series PRTDs are especially robust and are designed for large volume applications where long term stability, interchangeability and accuracy over a large temperature range are vital. Typical applications are Automotive, White Goods, HVAC, Energy Management, Medical and Industrial Equipment.

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	32 208 500	32 208 522
	Class A	F 0.15	32 208 498	32 208 521
	Class B	F 0.3	32 208 392	32 208 520
500 Ohm at 0°C	Class 1/3 B	F 0.1	32 208 502	32 208 525
	Class A	F 0.15	32 208 501	32 208 524
	Class B	F 0.3	32 208 414	32 208 523
1000 Ohm at 0°C	Class 1/3 B	F 0.1	32 208 537	
	Class A	F 0.15	32 208 503	32 208 527
	Class B	F 0.3	32 208 499	32 208 526

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

Specification	DIN EN 60751 (according to IEC 751)	
Temperature range	-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	
Temperature coefficient	TC = 3850 ppm/K ; 3750 ppm/K available on request	
Leads	Pt clad Ni- wire Recommend connection technology: Welding, Crimping and Brazing	
Lead lengths (L)	10mm ±1mm	
Longterm stability	max. R ₀ -drift 0.04% after 1000 h at 500 °C	
Vibration resistance	at least 40g acceleration at 10 to 2000 Hz, depends on installation	
Shock resistance	at least 100g acceleration with 8ms half sine wave, depends on installation	
Environmental conditions	unhoused for dry environments only	
Insulation resistance	> 100 MΩ at 20°C; > 2 MΩ at 500°C	
Self heating	0.3 K/mW at 0°C	
Response time	water current (v= 0.4m/s):	t _{0.5} = 0.07s t _{0.9} = 0.20s
	air stream (v= 2m/s):	t _{0.5} = 3.2s t _{0.9} = 11s
Measuring current	100Ω: 0.3 to 1.0mA 500Ω: 0.1 to 0.7mA 1000Ω: 0.1 to 0.3mA (self heating has to be considered)	



Note Other tolerances, values of resistance and wire lengths are available on request.

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Platinum Resistance Temperature Detector

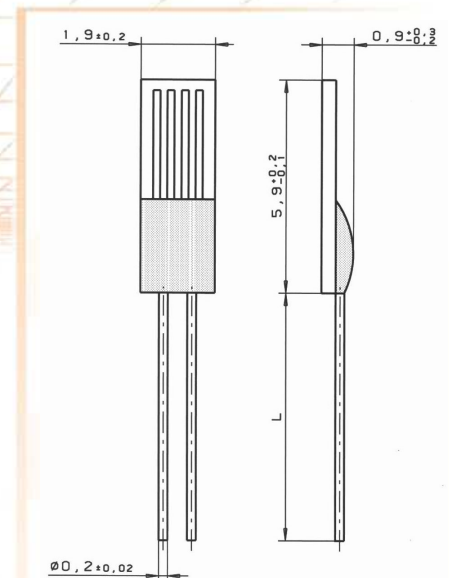
M 620

M series PRTDs are designed for large volume applications where long term stability, interchangeability and accuracy over a large temperature range are vital. Due to the high resistance values of 1000 Ω and 2000 Ω the signal gain is excellent. Typical applications are found in Automotive, White goods, HVAC, Medical and Industrial equipment.

Nominal Resistance R0	Tolerance DIN EN 60751 1996-07	Tolerance DIN EN 60751 2009-05	Order Number Plastic Bag
2000 Ohm at 0°C	Class B	F 0.3	32 208 541

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

Spezifikation	DIN EN 60751 (according to IEC 751)	
Temperature range	-70°C to +500°C (continuous operation) (temporary use to 550°C possible) Tolerance Class B: -70°C to +500°C	
Temperature coefficient	TCR = 3850 ppm/K	
Leads	Pt clad Ni- wire Recommend connection technology: Welding, Crimping and Brazing	
Lead lengths (L)	10mm ±1mm	
Longterm stability	max. R ₀ -drift 0.04% after 1000h at 500 °C	
Vibration resistance	at least 40g acceleration at 10 to 2000 Hz, depends on installation	
Shock resistance	at least 100g acceleration with 8ms half sine wave , depends on installation	
Environmental conditions	unhoused for dry environments only	
Insulation resistance	> 100 MΩ at 20°C; > 2 MΩ at 500°C	
Self heating	0.3 K/mW at 0°C	
Response time	water current (v= 0.4m/s):	t _{0.5} = 0.08s t _{0.9} = 0.25s
	air stream (v= 2m/s):	t _{0.5} = 3.7s t _{0.9} = 11.5s
Measuring current	2000Ω: 0.1 to 0,3mA (self heating has to be considered)	
Note	Other tolerances, values of resistance and wire lengths are available on request.	



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Platinum Resistance Temperature Detector

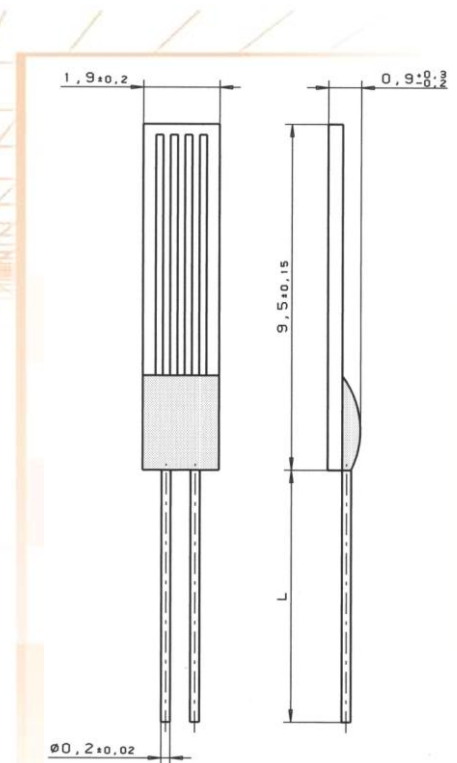
M 1020

M series PRTDs are designed for large volume applications where long term stability, interchangeability and accuracy over a large temperature range are vital. Typical applications are Automotive, White Goods, HVAC, Energy Management, Medical and Industrial equipment.

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	32 208 180	32 208 428
	Class A	F 0.15		32 208 429
	Class B	F 0.3		32 208 280
500 Ohm at 0°C	Class B	F 0.3	32 208 201	32 208 285
1000 Ohm at 0°C	Class 1/3 B	F 0.1	32 208 191	32 208 483
	Class A	F 0.15		32 208 439
	Class B	F 0.3		32 208 286

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

Specification	DIN EN 60751 (according to IEC 751)	
Temperature range	-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 DIN:	0°C to +150°C
Temperature coefficient	TC = 3850 ppm/K	
Leads	Pt clad Ni- wire Recommend connection technology: Welding, Crimping and Brazing	
Lead lengths (L)	10mm ±1 mm	
Long-term stability	max. R ₀ -drift 0.04% after 1000h at 500°C	
Vibration resistance	at least 40g acceleration at 10 to 2000 Hz, depends on installation	
Shock resistance	at least 100g acceleration with 8ms half sine wave, depends on installation	
Environmental conditions	unhoused for dry environments only	
Insulation resistance	> 100 MΩ at 20°C; > 2 MΩ at 500°C	
Self heating	0.2 K/mW at 0°C	
Response time	water current (v= 0.4m/s):	t _{0.5} = 0.10s t _{0.9} = 0.30s
	air stream (v= 2m/s):	t _{0.5} = 4.0s t _{0.9} = 12.0s
Measuring current	100Ω: 0.3 to 1.0mA 500Ω: 0.1 to 0.7mA 1000Ω: 0.1 to 0.3mA (self heating has to be considered)	
Note	Other tolerances, values of resistance and wire lengths are available on request.	



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Platinum Resistance Temperature Detector

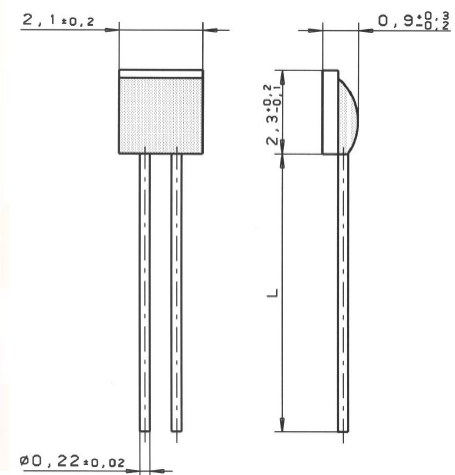
MN 222

MN- series PRTDs are designed for large volume applications where long term stability, interchangeability and accuracy over a large temperature range are vital. Typical applications are Automotive, White Goods, HVAC, Energy management, Medical and Industrial equipment.

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 A	F 0.15	32 207 759
	Class B	F 0.3	32 207 758
	Class 2B	F 0.6	32 207 757
500 Ohm at 0°C	Class B	F 0.3	32 207 756
	Class 2B	F 0.6	32 207 755
1000 Ohm at 0°C	Class A	F 0.15	32 207 754
	Class B	F 0.3	32 207 753
	Class 2B	F 0.6	32 207 751

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

Specification	DIN EN 60751 (according to IEC 751)	
Temperature range	Tolerance Class A:	-50°C to +300°C
	Tolerance Class B:	-70°C to +500°C
	Tolerance Class 2B:	-70°C to +500°C
	(temporary use at Cl. B and 2B to 550°C possible)	
Temperature coefficient	TCR = 3850 ppm/K	
Leads	Ni- wire Recommend connection technology: Welding, crimping and Brazing	
Lead lengths (L)	10mm ±1mm	
Ambient conditions	Unhoused for dry environments only	
Insulation resistance	> 100 MΩ at 20°C; > 2 MΩ at 500°C	
Self heating	0.4 K/mW at 0°C	
Response time	water current (v= 0.4m/s):	t _{0.5} = 0.05s t _{0.9} = 0.15s
	air stream (v= 2m/s):	t _{0.5} = 3.0s t _{0.9} = 10.0s
Measuring current	100Ω:0.3 to 1.0mA 500Ω:0.1 to 0.7mA 1000Ω:0.1 bis 0.3mA (self heating has to be considered)	
Application advice	<ol style="list-style-type: none"> 1. To avoid shear forces on the connection area, the connection wires may be neither split or bent. The bending may only take place 3 mm after the element, using a bending or splitting tool. 2. Other nominal values, lengths and temperature coefficients on request. 3. Due to a production-caused oxide layer coating the leads, soft-soldering is restricted. 	
Note	Other tolerances, values of resistance are available on request.	



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Platinum Temperature Sensor in Thin Film Technology

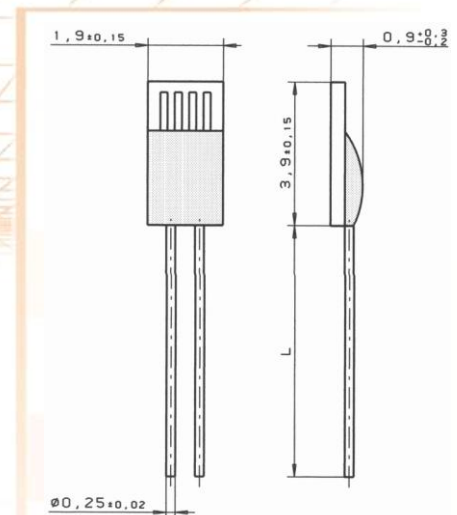
MN 420

M series platinum temperature sensors are characterized by long-term stability, precision over a broad temperature range and compatibility. They are used in particular for applications with high consumption volumes, typically in the automotive, white goods, ventilation, heating and energy generation sectors as well as in medical and industrial equipment. The type of connection technology facilitates the construction of elements with leads up to 200 mm in length.

Nominal Resistance R0	Tolerance DIN EN 60751 1996-07	Tolerance DIN EN 60751 2009-05	L ±1mm	Order Number Plastic Bag
100 Ohm at 0°C	Class 2B	F 0.6	150 mm	32 207 620
1000 Ohm at 0°C	Class B	F 0.3	75 mm	32 207 635

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

Specification	DIN EN 60751	
Temperature range	-70°C to +500°C (continuous operation) (temporary use to 550°C possible) Tolerance Class B: -70°C up to +500°C	
Temperature coefficient	TC = 3850 ppm/K	
Leads	Ni- leads Recommend connection technology: Welding, Crimping and Brazing	
Lead lengths (L)	10mm ±1mm	
Ambient conditions	Unhoused for dry environments only	
Insulation resistance	> 100 MΩ at 20°C; > 2 MΩ at 500°C	
Connection resistance	1.3 mΩ/mm	
Self heating	0.3 K/mW at 0°C	
Response time	Moving water (v= 0.4m/s):	t _{0.5} = 0.07s t _{0.9} = 0.20s
	Air flow (v= 2m/s)	t _{0.5} = 3.2s t _{0.9} = 11s
Measuring current	100Ω: 0.3 to 1.0mA 1000Ω: 0.1 to 0.3mA (self heating has to be considered)	
Application advice	<ol style="list-style-type: none"> To avoid shear forces on the connection area, the connection wires may be neither split or bent. The bending may only take place 3 mm after the element, using a bending or splitting tool. Other nominal values, lengths and temperature coefficients on request. Due to a production-caused oxide layer coating the leads, soft-soldering is restricted. 	
Note	Other tolerances, values of resistance are available on request	



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