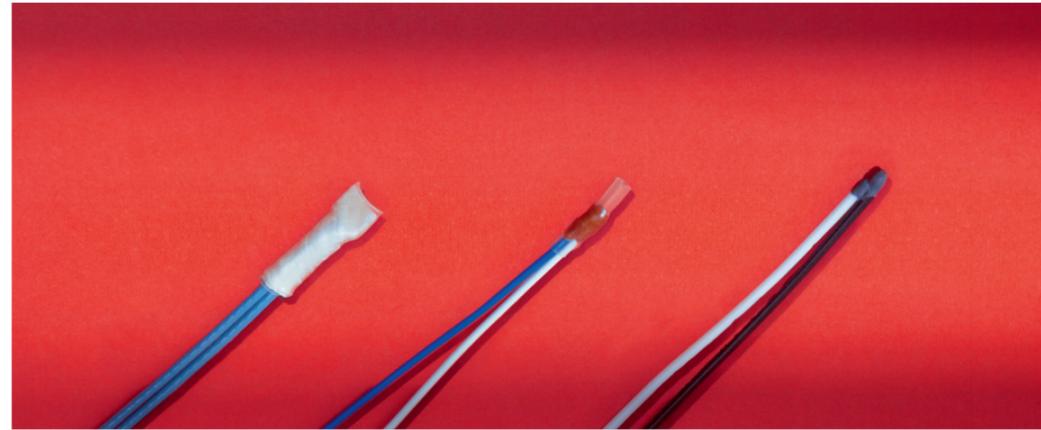


Temperature sensor  
PTC thermistor  
up to 190 °C



Technical specifications | TMC M series  
Version 2.0 EN 2016  
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**Description**

PTC thermistors of the series M are ceramic semiconductor devices on the basis of Bariumtitanat. Due to their shape they are perfectly suitable to be used in electrical windings of motors and transformers. In case the nominal response temperature is exceeded they change their resistance in a sudden rise. This change in resistance can be registered for example by an electronic device.

**Customer specific solutions**

Our creative R&D team turn your ideas into innovative products. Please contact us.

**Internationally applicable**

because of UL approval for the whole temperature range

**High response sensitivity**

by use of a miniature PTC with smallest diameter of 2 mm, 1.8 mm diameter optionally

**Reliable evaluation**

by cold resistance  $R_{25} < 100 \Omega$

**Standardised characteristic curve**

according to DIN 44081 (single) & 44082 (triple)

**High mechanical and chemical resistance**

by a thermally conductive protection layer

**Long term thermal stability**

by optimised material composition of the PTC ceramic

**Safe separation**

by suitable insulation structure

**Cost efficient special versions**

for further automated processing



**TMC product range overview**

**Temperature limiters:**

Product design	Feature	Application	Series
	automatic reset	up to 250 mA	F
	automatic reset	up to 6,3 A	C
	automatic reset	up to 16 A	G
	selfhold	up to 10 A	R
	normally open	up to 1 A	O

**Temperature sensors:**

Product design	Version	Features	Series
	PTC	sudden change of resistance	M
	PT1000 NTC	consistent dimensions	S
	Platinum sensor	extremely precise	PT

**Imprint**

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Edition 09/16



# PTC thermistors

## M series

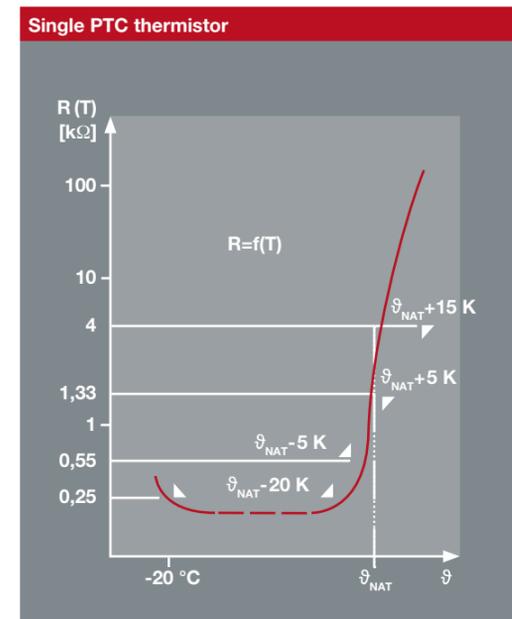
### Technical specifications

#### Specifications

	Single	Triplet
Max. operating voltage $U_{\text{max}}$	30 V	
Nominal response temperature $\vartheta_{\text{NAT}}$	60 °C ... 190 °C	
Tolerance of $\vartheta_{\text{NAT}}$	± 5 K	
Reproducibility of $\vartheta_{\text{NAT}}$	± 0,5 K	
$R_{25}^*$	≤ 100 Ω	≤ 300 Ω
Resistance at $\vartheta_{\text{NAT}} - T^*$	≤ 550 Ω	≤ 1650 Ω
Resistance at $\vartheta_{\text{NAT}} + T^*$	≥ 1330 Ω	≥ 3990 Ω
Resistance at $\vartheta_{\text{NAT}} + 15\text{K}^{**}$	≥ 4 kΩ	≥ 12 kΩ
Thermal response time	< 5 s	
Dielectric strength of insulation	2 kV	
Max. operating temperature	200 °C	
Ambient temperature	-25 °C ... 200 °C	

\* measuring DC voltage ≤ 2,5 V    \*\* measuring DC voltage ≤ 7,5V

#### Curve



The resistance can be > 250 Ω for temperatures < -20 °C.

#### Colour code

$\vartheta_{\text{NAT}}$ °C	Colour
	outer / outer
60	white / grey
70	white / brown
80	white / white
90	green / green
100	red / red
110	brown / brown
120	grey / grey
130	blue / blue
140	white / blue
145	white / black
150	black / black
155	blue / black
160	blue / red
170	white / green
180	white / red
190	black / grey

#### Options

Connectors	Version 1	Example: Triplet in version 1
- Wire end sleeves - Wire end eyelets - Push-on contacts - Snap-on contacts	Sensor insulated Kynar-tubing	Sensor insulated Kynar-tubing
	Leads: stranded, solid	

Dimensions in mm. Further options on request.

#### Wires

Standard	
Type (Insulation)	FEP, colour code according to table
Length	Single: 500 mm; Triplet: Outer 500 mm, inner 200 mm
Stripped length	7 mm
Cross section	AWG26 resp. 0,14 mm <sup>2</sup>
Operating voltage	300 V

#### Ordering example for standard version

MF1 - D150 - 500/200/200/500	Wiring
	E Single
Wire length (500 mm/200 mm/200 mm/500 mm)	Z Twin
Nominal response temperature (150 °C)	D Triplet
Wiring (Triplet)	S Sextuplet
Version (1 = Kynar-tubing)	
M series, Type MF	