

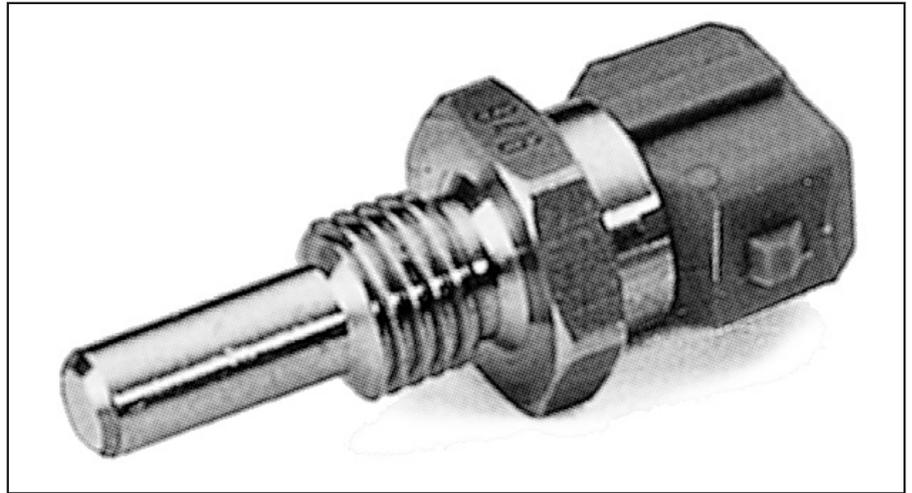
# NTC temperature sensors: -40°C to 150°C

## Measurement of liquid temperatures

Input quantity:  $\vartheta$

Output quantity:  $R$

- Wide range of liquid temperature measurements with temperature-sensitive resistors.



### NTC temperature sensor

Plastic-sheathed NTC thermistor in a brass housing.

### Design and operation

NTC thermistors have a negative temperature coefficient, i.e. their electrical conductivity increases with increasing temperature (high-temperature conductor): Their resistance decreases. The conductive element of the temperature sensor consists of semiconducting heavy metal oxides and oxidized mixed crystals, pressed or sintered into wafer or bead form using binding agents and provided with a protective enclosure. In combination with suitable evaluation circuits, such thermistors allow precise temperature determination. Depending on the housing design, the sensors are suitable for measuring temperatures in liquids and gases.

In motor vehicles they are used to measure the temperature of engine oil, coolant, fuel and intake air, i.e. in the range -40...150 °C.

### Note

For a 2-pin connector, 1 connector housing, 2 contact pins and 2 individual seals are required.

Genuine AMP crimping tools must be used for motor vehicle applications.

### Explanation of characteristic quantities

$R$  Resistance  $\vartheta$  Temperature

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## Part number

**0 280 130 026**

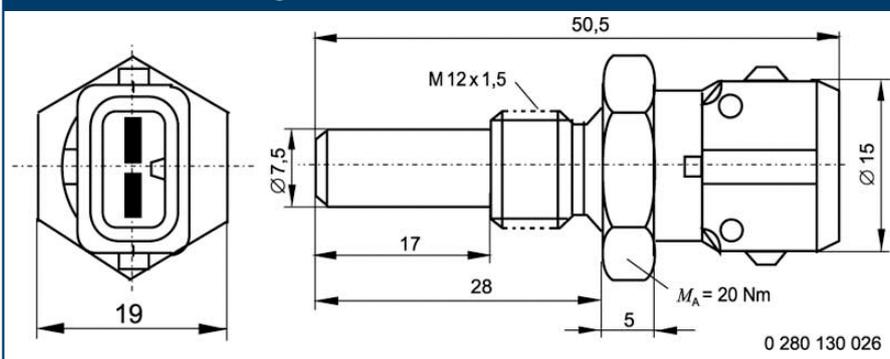
### Technical data

Application/medium		Oil/water/natural gas
Measuring range	°C	- 40 ... + 130
Tolerance at +20 °C	K	1,2
Tolerance at +100 °C	K	3,4
Rated resistance at 20 °C	kΩ	2,5 ± 5 %
Resistance at -10 °C	kΩ	8,727 ... 10,067
Resistance at +20 °C	kΩ	2,375 ... 2,625
Resistance at +80 °C	kΩ	0,296 ... 0,349
Temperature/time constant $\tau_{c3}$ <sup>1)</sup>	s	≤ 15
Approximate value for permissible vibration acceleration $a_{sin}$ (sinusoidal vibration)	m/s <sup>2</sup>	300
Degree of protection <sup>1)</sup>		IP 64K
Thread		M 12 x 1,5
Corrosion-tested as per		DIN 50 021
Connector		Jetronic, tinned pins
Tightening torque	Nm	20
Rated voltage	V	5 ± 0,15
Max. measurement current	mA	1

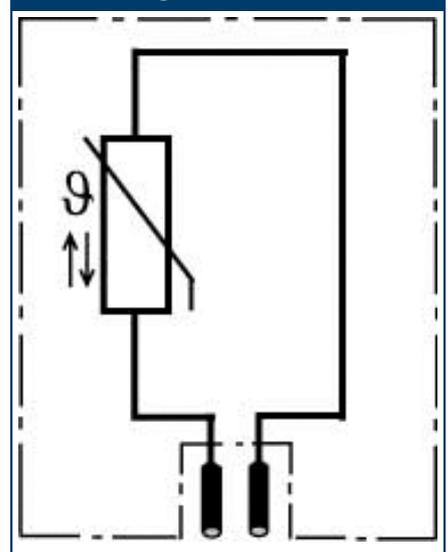
Accessories are not included in the scope of delivery of the sensor and are therefore to be ordered separately as required.

<sup>1)</sup> Available from Tyco Electronics.

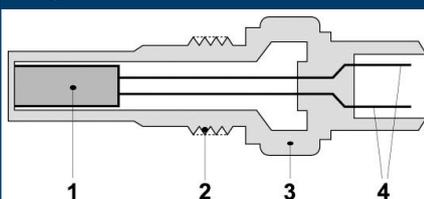
### Dimensional drawing



### Circuit diagram

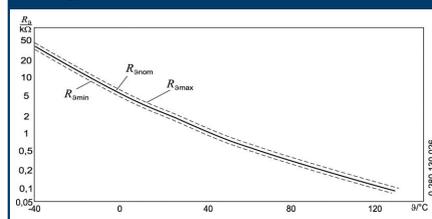


### Temperature sensor (block diagram)



- 1 NTC thermistor
- 2 Screw-in thread
- 3 Housing
- 4 Electrical connection

### Resistance profile of temperature sensor




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Accessories		Part number
Jetronic connector		2-pin 1 928 402 078
Protective cap		Temperature-resistant; Contents: 1 x 1 280 703 031
Contact pins	For $\varnothing$ 0.5...1.0 mm <sup>2</sup>	Tyco number 929 939-3 <sup>1)</sup>
Contact pins	For $\varnothing$ 1.5...2.5 mm <sup>2</sup>	Tyco number 929 937-3 <sup>1)</sup>
Single-wire seal		For $\varnothing$ 0.5...1.0 mm <sup>2</sup> ; Contents: 50 x 1 928 498 106
Single-wire seal		For $\varnothing$ 1.5...2.5 mm <sup>2</sup> ; Contents: 20 x 1 987 280 107

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