

Bimetal temperature switch

For switching voltages up to 250 V

Model TFS135

WIKA data sheet TV 35.02



Applications

- Machine building
- Compressors
- Pumps
- Cooling and heating circuits

Special features

- Fixed switching temperature
- Current-independent switching
- Automatic reset
- No additional voltage supply
- Switching voltages up to AC 250 V / 2.5 A



Fig. left: Rectangular connector per
DIN EN 175301-803

Fig. centre: Circular connector M12 x 1 with neck tube

Fig. right: Circular connector M12 x 1

Description

Temperature switches are generally used in industry for limiting temperature. They monitor the temperature of machinery and equipment and, for example, switch off machinery if it overheats or switch on a fan to cool the equipment.

Function

Bimetals form the basis of the WIKA TFS135 temperature switches. Temperature sensing is carried out by a bimetal disc, which snaps over when the Nominal Switching Temperature (NST) is reached.

After cooling back down to the Reset Switching Temperature (RST), the switch returns to its original state.

The reset switching temperature is typically 15 ... 30 K below the switching temperature.

Contact version

The model TFS135 bimetal temperature switch is built with a Normally Closed contact.

A **Normally Closed** contact (NC = closed in the normal state) opens a circuit and shuts down the machinery.

After cooling down below the reset switching temperature, the contact returns to the original state, so that the monitored equipment can again work normally.

Max. switching output

The maximum switching output depends on the mounted connector.

Resistive load ($\cos \varphi = 1$):

- Rectangular connector DIN EN 175301-803
AC 120 V / 60 Hz / 5 A
AC 250 V / 50 Hz / 2.5 A
- Circular connector M12 x 1
AC 120 V / 60 Hz / 1 A
AC 250 V / 50 Hz / 1 A

Contact resistance

< 50 mΩ

Dielectric strength

AC 1,500 V, 50 Hz
between electrical connections and case

Temperature ranges

- Nominal Switching Temperature (NST)
50 ... 130 °C

Note:

The nominal switching temperature can be selected in steps of 5 K. It is preset on delivery and cannot be changed.

- Switch point accuracy
±5 K
- Reset Switching Temperature (RST)
The reset switching temperature for bimetal temperature switches is typically 15 ... 30 K below the switching temperature.
To ensure a safe reset of the switch, care must be taken that the temperature difference between the measuring point and environment is high enough; since otherwise the switch cannot cool back down to the reset switching temperature and thus the instrument will not be able to return to its normal state.
- Ambient temperature
Rectangular connector EN 175301-803: -30 ... +85 °C
Circular connector M12 x 1: -25 ... +55 °C

Note:

With small insertion lengths there is a possibility that the temperature at the connector can reach impermissibly high values. This absolutely must be taken into account when designing the measuring point.

Thermowell

Material

- Brass
- Stainless steel

Stem diameter F_1

10 mm

Process connection

Mounting thread:

- G ½ B
- G ½ A, DIN 3852 Form E
- M14 x 1.5
- M14 x 1.5, DIN 3852 Form E
- ½ NPT

Insertion length U_1

- 35 mm
- 40 mm
- 50 mm
- 75 mm
- 100 mm

Response time

The response time is strongly influenced by

- the thermowell used (diameter, material)
- the heat transfer from thermowell to the switching element
- the flow rate of the medium

Due to the design of the model TFS135 bimetal temperature switch, there is optimum heat transfer from the medium to the switching element.

Vibration resistance

Due to the specific assembly of the switching elements used, the vibration resistance of the model TFS135 bimetal temperature switch is very high.

Depending on the mounting situation, medium, temperature and insertion length, the vibration resistance can be up to 10 g.

Shock resistance

Up to 100 g, depending on the mounting situation, medium and temperature

Operating pressure

The TFS135 is designed for an operating pressure up to max. 50 bar.

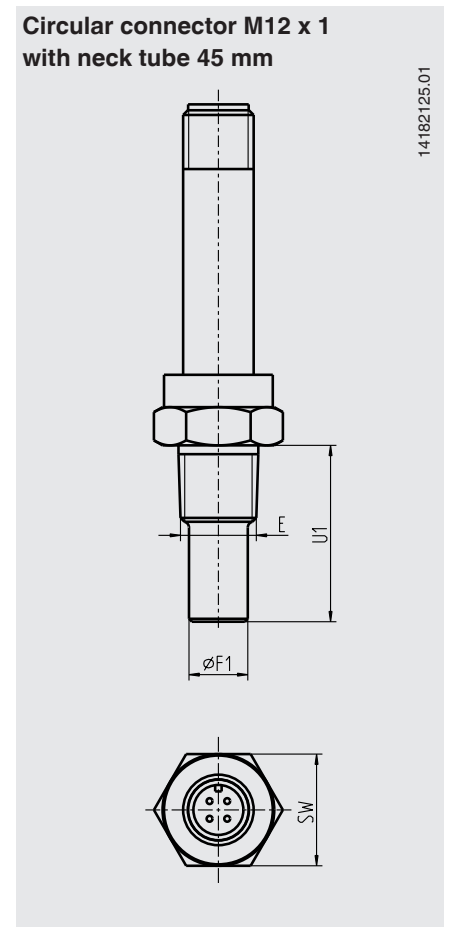
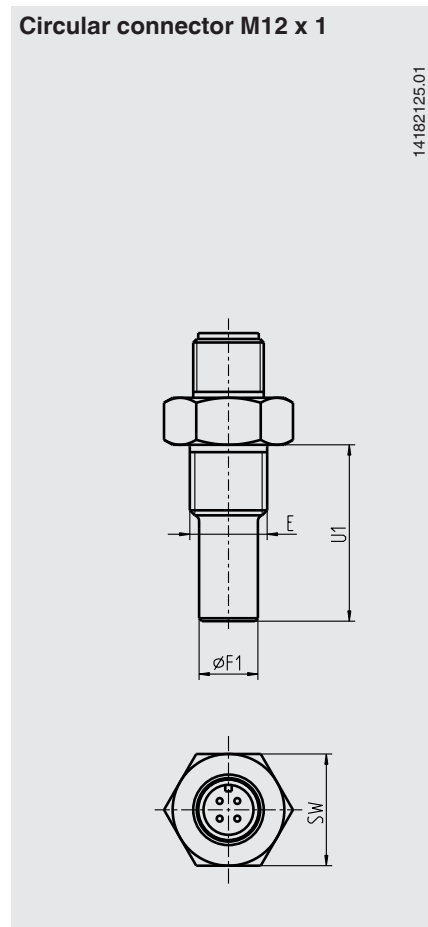
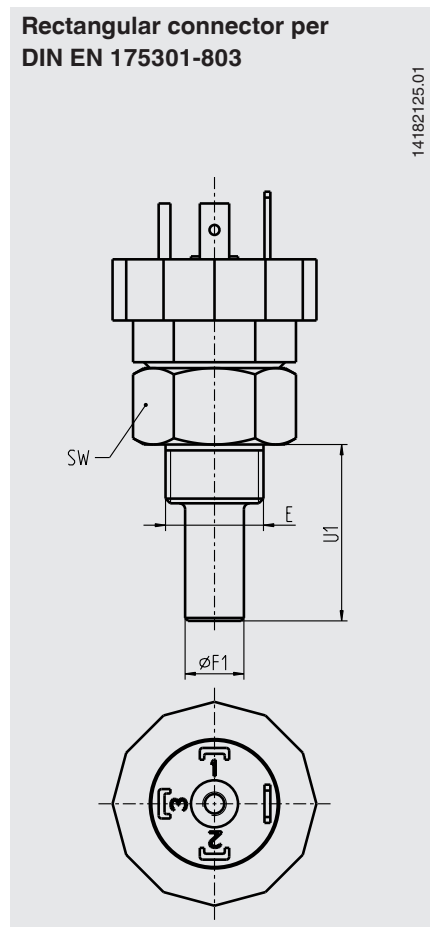
Electrical connection

- Rectangular connector per DIN EN 175301-803, form A (replacement for DIN 43650)
- Circular connector M12 x 1
- Circular connector M12 x 1 with neck tube 45 mm

Ingress protection

IP65 in connection with a suitable mating connector

Dimensions in mm



Approvals

Logo	Description	Country
	EU declaration of conformity <ul style="list-style-type: none">■ Low voltage directive■ RoHS directive	European Union
	UL (option) Component certification	USA and Canada

Approvals and certificates, see website

Ordering information

When ordering choose one criterion from each category.

Nominal Switching Temperature (NST)

- 80 °C
- 90 °C
- 100 °C
- 110 °C
- 120 °C
- 130 °C

Others on request (50 ... 130 °C, in 5 K steps)

Thermowell material

- Brass
- Stainless steel

Process connection

- G ½ B
- G ½ A, DIN 3852 Form E
- M14 x 1.5
- M14 x 1.5, DIN 3852 Form E
- ½ NPT

Insertion length

- 35 mm
- 40 mm
- 50 mm
- 75 mm
- 100 mm

Electrical connection

- Rectangular connector per DIN EN 175301-803 (DIN 43650 A)
- Circular connector M12 x 1
- Circular connector M12 x 1 with neck tube 45 mm

Ordering information

Model / Nominal Switching Temperature (NST) / Thermowell material / Process connection / Insertion length / Electrical connection

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