

Bimetal temperature switch

For switching voltages up to 48 V

Model TFS35

WIKA data sheet TV 35.01

Applications

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

Special features

- Fixed switching temperature
- Automatic reset
- No additional voltage supply
- Switching voltages up to AC 48 V / 3 A



Fig. left: Model TFS35 with rectangular connector per EN 175301-803

Fig. centre: Model TFS35 with connector AMP Junior Power Timer

Fig. right: Model TFS35 with 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 temperature switches model TFS35. Temperature sensing is carried out by a bimetal disc, which snaps over when the nominal switching temperature (NST) is reached.

On cooling back down to the reset switching temperature (RST), the switch returns to its original state.

The reset switching temperature is typically 15 ... 40 K below the switching temperature.

Contact design

The model TFS35 bimetal temperature switch can be delivered in two contact designs.

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

A **Normally Open (NO)** = open in the normal state) closes a circuit on reaching the switching temperature, in order that, for example, a fan or warning lamp can be switched on.

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 voltage

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

- AC 48 V, 50/60 Hz, 3 A
- DC 24 V, 3 A
- DC 12 V, 4 A

Contact resistance

< 50 mΩ

Dielectric strength

AC 1,500 V, 50 Hz

between electrical connections and housing

Temperature ranges

- Nominal Switching Temperature (NST)
50 ... 155 °C [122 ... 311 °F]

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 in bimetal temperature switches is typically 15 ... 40 K below the switching temperature.
To ensure a safe reset of the switch at low switching temperatures, care must be taken that the temperature difference between the measuring point and ambient is high enough; since otherwise the switch cannot cool back down to the reset switching temperature and thus the equipment will not be able to return to its normal state.

- Ambient temperature

The maximum permissible ambient temperature depends on the electrical connection.

Rectangular connector per EN 175301-803

-40 ... +100 °C [-40 ... +212 °F]

Connector AMP Junior Power Timer

-40 ... +130 °C [-40 ... +266 °F]

Circular connector M12 x 1

-40 ... +90 °C [-40 ... +194 °F]

Note:

Due to short installation length there is a risk that the temperature at the connector will rise up to an inadmissibly high value. This absolutely must be taken into account when designing the measuring point. The temperature at the connector must not exceed the above mentioned temperature range.

Thermowell

Material

- Brass
- Stainless steel

Stem diameter F₁

10 mm [0.394 in]

Process connection E

Mounting thread:

- G ¼ B
- G ½ B
- G ½ A (ISO 1179-2)
- M14 x 1.5 (ISO 9974-2)
- ¼ NPT
- ½ NPT

Others on request

Insertion length U₁

- 30 mm [1.181 in]
- 40 mm [1.575 in]
- 50 mm [1.969 in]
- 80 mm [3.150 in]
- 100 mm [3.937 in]

Response time

The response time is strongly influenced by

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

Due to the design of the model TFS35 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 TFS35 bimetal temperature switch is very high.

Depending on the thermowell design, installation situation, medium and temperature, the vibration resistance can be up to 10 g.

Shock resistance

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

Static operating pressure

The TFS35 is designed for an operating pressure up to max. 50 bar.

Electrical connection

- Rectangular connector per EN 175301-803, form A
- Connector AMP Junior Power Timer
- Circular connector M12 x 1

Ingress protection

The ingress protection depends on the electrical connection.

- Rectangular connector per EN 175301-803: IP65
- Connector AMP Junior Power Timer: IP66, IP67
- Circular connector M12 x 1: IP66, IP67

Note:

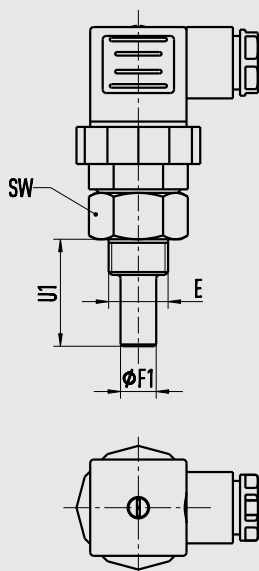
The stated ingress protection only applies when plugged in using mating connectors that have the appropriate ingress protection.

Accessories

On request, WIKA supplies a suitable mating connector for the electrical connections as a separate accessory.

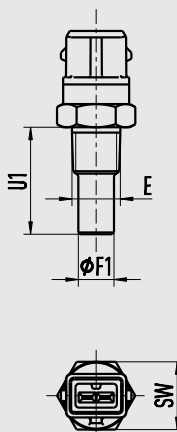
Dimensions in mm [in]

Rectangular connector per EN 175301-803



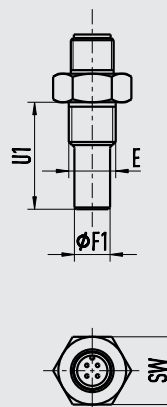
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Connector AMP Junior Power Timer



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Circular connector M12 x 1



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Approvals

Logo	Description	Country
	EU declaration of conformity RoHS directive	European Union
	EAC (option) <ul style="list-style-type: none"> ■ Import certificate ■ Pressure equipment directive ■ Machinery directive 	Eurasian Economic Community

Manufacturer's information and certificates

Logo	Description
-	China RoHS directive

Approvals and certificates, see website

Ordering information

Model / Switching temperature / Contact design / Switching voltage / Thermowell material / Thermowell diameter / Process connection / Insertion length / Electrical connection

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