

TEMPERATURE SWITCHES TFA



DESCRIPTION AND APPLICATION

TFA temperature switches are designed as two-state controllers (ON/OFF control) that compare the pre-set temperature to actual temperature reading and switch galvanically separated relay contacts when the set temperature is reached. Based on the order information, the required temperature settings are pre-set by the factory. These settings cannot be adjusted afterwards.

With the choice of location of the sensing element and typical switch applications, the following TFA-220-version are available:

- TFA 220 A** – Temperature switch for sensing temperature in the switch ambient. The sensing element is placed in the metal stem of the 60 mm length.
- TFA 220 K** – The sensing element is placed in the metal stem for use in air condition equipment or in tubings. This temperature switch version is available with a plastic holder. Stainless steel thermowell or metal holder can be delivered as an accessory.
- TFA 220 C** – The sensing element is protected by the TG 8 case, 40 mm long, and provided with a cable 1 m long. Another case type or another cable length should be specified in the order.
- TFA 220 P** – Contact version switch for fixing on pipeline surfaces for surface temperature measurements. The sensing element is housed in a measuring case made of metal, which is protected by a protection case made of SILIKON and SILAMID. It is delivered with the fastening strap of the length 40 cm and with closure device.

Maximal operating temperature of TFA 220 A switches is 70 °C, for TFA 220 P it is 110 °C. For operating TFA 220 K in temperature higher than 140 °C, a variant with an extended measuring stem (60 mm) and a metal centric holder is provided. The switches are designed for operating in a chemically non-aggressive environment.



ACCESSORIES

- The thermowell JS 130
- The metal central holder K 120
- The thermal conductive paste up to 200 °C, 5 g for TFA 220 P type

DECLARATION, CERTIFICATES, CALIBRATION

EC Declaration of Conformity – in accordance with Act No. 22/1997 Coll. as amended for temperature switches.

Calibration – we perform standard calibration of resistance temperature sensors in accordance with EN ISO/IEC 17025 standard in the temperature range of the stated type of sensor.

SPECIFICATIONS

BASIC DATA

Type of sensing element	Ni 1000/5000
Power supply	230 V / 50 Hz
Maximum switched voltage	250 V AC / 6 A
Set point adjustment failure	± 0.5 °C
Standard hysteresis	2 °C
Connection of the switch	according to the wiring diagram
Recommended wire cross section	0.35 to 1.5 mm ²
Material of the enclosure	LEXAN 503RS
Enclosure dimensions	62 x 62 x 55 mm
Enclosure ambient temperature	-25 to 70 °C
Ingress protection	IP 65 according to EN 60 529
Grommet type	M 16 x 1.5
Weight	depending on design, min. 0.2 kg

SUPPLEMENTARY DATA TO PARTICULAR TYPES

TFA 220 A

Standard length of the stem L1	60 mm
Diameter of the stem	6 + 0.2 mm
Material of the stem	stainless steel 1.4301
Switch installation	on the wall, by means of a metal holder
Maximum range of measured temperature	-25 to 70 °C

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TFA 220 K

Standard length of the stem L1	70, 120, 180, 240 mm
Diameter of the stem	6 + 0.2 mm
Material of the stem	stainless steel 1.4301
Switch installation	by means of a plastic or stainless steel holder or a stainless steel thermowell
Maximum range of measured temperature	-25 to 200 °C (using an elongated stem above 120 °C)

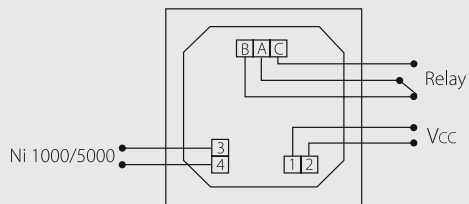
TFA 220 C

Standard type of sensor	TG8 – 40, kabel 1 m
Diameter of the case	5.7 ± 0.1 mm
Material of the case	stainless steel 1.4301
Lead-in cable	shielded silicone 2 x 0.34 mm ²
Sensor ingress protection	IP 67 according to EN 60 529
Switch installation	on the wall, by means of a metal holder
Maximum range of measured temperature	-30 to 200 °C

TFA 220 P

Material of the measuring case	brass
Switch installation	by means of fastening band
Standard length of the band	40 cm
Minimum diameter of tubing	20 mm

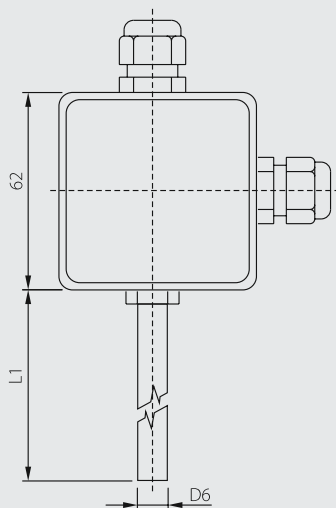
WIRING DIAGRAM



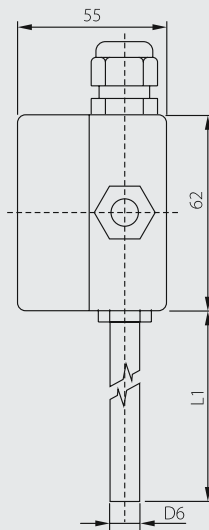
The terminal board for sensing element connection is installed for the TFA 220 C version only. The version is delivered without any sensing element or with an other type than the TG8 - 40.

DIMENSIONAL DRAFT

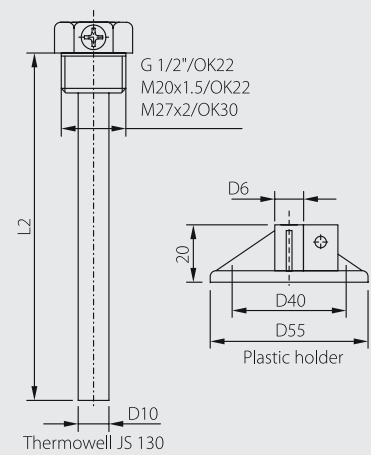
TFA 220 K – front view



TFA 220 K – lateral view



Accessories



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■ OPERATION DESCRIPTION

Suppose the switching temperature set point is 20 °C. When the measured temperature value is above the set point, then the output relay's A and B terminals are closed. When the measured temperature value goes down below 18 °C, then the output relay's A and C terminals are closed. The difference of 2 °C is determined by the switch hysteresis.

■ SENSOR INSTALLATION AND SERVICING

Before connecting the power lead-in cable and the cable for the relay output signal, screw off the switch's lower segment to lift it off slightly. The relevant lead-in cables are pushed through the loosened grommets and connected to the terminals in accordance with the wiring diagram. The recommended wire cross section is 0.35 to 1.5 mm². A shielded cable has to be used when laying the lead-in cable in the vicinity of high voltage conductors or those supplying equipment generating interfering electromagnetic field (e.g. inductance type equipment). To secure a hermetic condition, the grommets have to be tightened and the switch's lower segment has to be replaced. A component part of the TFA 220 A and the TFA 220 C switches is a metal clip making it possible to fasten the switch on plane surfaces by means of two screws.

In case a stainless steel thermowell or a centric holder are used in the TFA 220 K version, these accessories are first to be placed in locations where the temperature should be measured, then the switch has to be inserted into the holder, or, as the case may be, as far as to the thermowell's bottom, and then secured with the screw. The openings designed to install a plastic or a stainless steel holder are to be drilled according to the attached template, on which the opening diameters are depicted, too.

The TFA 220 P switch version is intended to be fixed on tubings by means of the fastening band and a special closing device. After installing and connecting the sensor to the appropriate evaluating electrical equipment the switch is ready to use. The switch does not require any special service or maintenance.

■ CUSTOMER SPECIFIC MODIFICATIONS

REGARDING TO SENSORS MANUFACTURED IN A STANDARD VERSION THE FOLLOWING PARAMETERS CAN BE MODIFIED:

- supply voltage 24 V AC or 24 V DC
- changing the range of temperatures to be switched
- adding a clip for fixing the device on a DIN console instead of the metal holder for fixing the device on the wall
- for the TFA 220 A and TFA 220 K versions changing the stem length; for the TFA 220 C changing the case and cable lengths
- customer specified stem or case design
- functioning of the differential switch can be modified