Ex-TX490

Ex-TX

Protection class with immersion tube:

II 2G Ex d e IIC T6 Gb

II 1/2D Ex ta/tb IIIC T80 °C Da/Db

Rod thermostats are suitable for direct installation in tanks, pipelines and air ducts. The immersion wells can be fitted in advance.

SIL 2 according IEC 61508-2

Technical data

Housing	Diecast aluminium GD Al Si 12 according to DIN 1725.
Mounting position	vertically upright
Permitted ambient temperature at switching device	-20...+60°C
Permitted temperature at sensor	See Product Summary
Contact arrangement	Single pole changeover switch
Switching capacity	8 (5) A 250 VAC
Degree of protection	IP 65 according to DIN EN60529 (with vertical installation)
Calibration	Scale value corresponds to the lower switching point (with falling temperature), the upper switching point is higher by the amount of the switching differential
Switching temperature	Adjustable from outside with screwdriver
Switching	Not adjustable

Product Summary

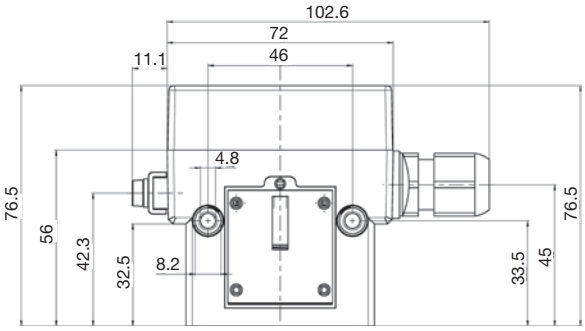
Type	Setting range	Switching differential (mean values) at sensor	Max. permissible temperatur
Immersion depth 135 mm			
Ex-TX023	–20 to + 30 °C	1.5 K	110 °C
Ex-TX150	+10 to + 50 °C	1.5 K	110 °C
Ex-TX490	+40 to + 90 °C	2.5 K	125 °C
Immersion depth 220 mm			
Ex-TXB023	–20 to + 30 °C	1.5 K	110 °C
Ex-TXB150	+10 to + 50 °C	1.5 K	110 °C
Ex-TXB490	+40 to + 90 °C	2.5 K	125 °C

Accessories

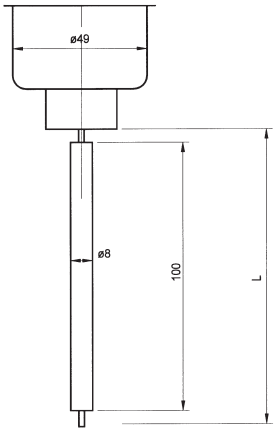
Immersion tube type R10/MS, R20/MS, R10/NST, R20/NST, RN20/MS, RN10/NST, RN20/NST, R6, R7 see page 154.

Dimensioned drawings (mm)

Switching housing 700 (terminal connection, Ex-d)



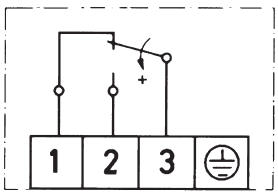
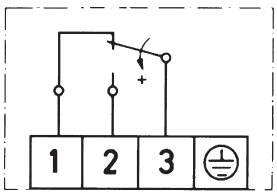
Switching housing



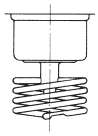
Temperature sensor

Mechanical thermostats

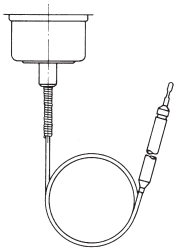
Principal technical data

	Terminal connection	Ex version
		
	...500 (Ex-i)	...700 (Ex-d)
Switch housing	Diecast aluminium GDAlSi 12	Diecast aluminium GDAlSi 12
Switching function and connection scheme (applies only to version with microswitch)	Floating changeover contact With rising temperature single pole switching from 3–1 to 3–2 	Floating changeover contact. With rising temperature single pole switching from 3–1 to 3–2 
Switching capacity (applies only to version with microswitch)	max. 100 mA, 24 VDC min. 2 mA, 24 VDC	3 A at 250 VAC 2 A at 250 VAC inductive 3 A at 24 VDC 0.1 A at 250 VDC min. 2 mA, 24 VDC
Mounting position	Vertically upright	Vertically upright
Protection class (in vertical position)	IP 65	IP 65
Explosion protection with immersion well	**Ex II 1/2G Ex ia IIC T6 Ga/Gb** **Ex II 1/2D Ex ia IIIC T80 °C**	**Ex II 2G Ex d e IIC T6 Gb** **Ex II 1/2D Ex ta/tb IIIC T80 °C Da/Db** **Exception: EX-TRM...:** **Ex II 2G Ex d e IIC T6 Gb** **Ex II 2D Ex tb IIIC T80°C Db**
Electrical connection	Terminal connection	Terminal connection
Cable entry	M 16 x 1.5	M 16 x 1.5
Ambient temperature	–15 to +60 °C	–20 to +60 °C
Switching point	Adjustable with spindle after the terminal box cover is removed	Adjustable with spindle after the terminal box cover is removed
Switching differential	not adjustable	Not adjustable
Medium temperature	Max. 60 °C	Max. 60 °C
Vibration strength	No significant deviations up to 4 g. At higher accelerations, the switching differential is reduced slightly. Use over 25 g is not permitted.	
Isolation values	Overvoltage category III, contamination class 3, reference surge voltage 4000 V. Conformity to DIN VDE 0110 is confirmed.	

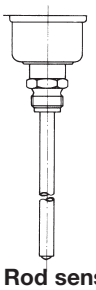
Sensor systems



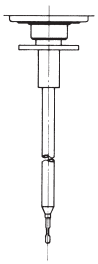
Room sensor TRM



Capillary tube sensor TAM



Rod sensor TX+R10

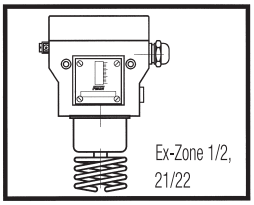


Air duct sensor TX+R6

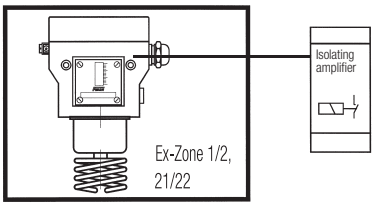
Temperature monitoring
in explosion-endangered areas

Temperature switches with special equipment can also be used in explosion risk areas Zone 1, 2 and 21, 22.

The following alternatives are possible:



1. Type of ignition protection Ex-d, Ex-e and Ex-t:
The thermostat with protection type "Flameproof Ex-d and Increased Saftey Ex-e" can be used in hazardous areas of zone 1 and 2 for flammable gas mixtures. For use in dust atmospheres, the protection is "prtected by enclosure Ex-t".
The thermostat may be used in hazardous areas of zones 21 and 22 for explosive dusts.
In addition, for the dust – explosion protect zone 20 on the sensor (device screwed into container walls, which may occur in the interior permanent dust atmosphere).
The permissible values for switching voltage, switching capacity and ambient temperature please refer to the detailed description of the Ex equipment, and the installation and operating instructions. In addition, please note the general rules for the use and installation of equipment in hazardous atmosphere.
Special circuits, as well as versions with adjustable switching differential or internal interlock (reclosing lock) are not possible.



2. Ignition protection Ex-i
All thermostat with features for intrinsically safe circuits can be used in hazardous areas Zone 1 and 2 (Gas) and zones 21 and 22 (Dust). A circuit is considered to be "intrinsically safe" if the amount of energy conveyed therein is not capable of generating an ignitable sparks. This thermostat can only be operated in combination with a suitable isolating switching amplifier, which is approved for the type Ex-i. Because of the low voltages and currents in intrinsically safe circuits, micro switches with gold contacts are used for temperature monitors with automatic reset. FEMA thermostats for use in intrinsically safe circuit are marked by blue terminals and cable entries. In addition, the thermostats has been tested by a "notified body". The units get a serial number and the nameplate inform about the ignition protection and registration number.

Igniton protection for temperature monitoring in Zone 0 (20), 1 (21) and 2 (22)

Pressure-proof encapsulation Ex-d (EN60079-0:2009) Enhanced safety Ex-e (EN60079-7:2007) Protection via housing Ex-t (EN60079-31:2009) Ex-T…	**Intrinsically safe Ex-i (EN 60079-11:2012) T…-513, …-563**
Marking, use in thermowell: CE 0035 Ex II 2G Ex d e IIC T6 Gb CE 0035 Ex II 1/2D Ex ta/tb IIIC T80°C Da/Db Exception: EX-TRM…: CE 0035 Ex II 2G Ex d e IIC T6 Gb CE 0035 Ex II 2D Ex tb IIIC T80°C Db	Marking: CE 0035 Ex II 2G Ex ia IIC T6 Gb CE 0035 Ex II 2D Ex ia IIIC T80°C Db
ATEX approval for the complete switching device	ATEX approval for the complete switching device ATEX approval for isolating amplifiers
Thermostat with a silver contact	Monitor with gold-plated contacts
Switching capacity: max. 3 A, 250 VAC min. 2 mA, 24 VDC	Rated value without resistor combination …-513 /…-563: Ui: 24VDC Ii: 100mA Ci: 1nF Li: 100µH
Thermostat can be installed within the Ex-Zone	Thermostat will be installed in Ex-Zone. The isolating amplifier must be installed outside the Ex-Zone.