



Ex-TX490

Ex - TX

Protection class with immersion tube:

⊕ II 2G Ex d e IIC T6 Gb

⊕ II 1/2D Ex ta/tb IIC 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

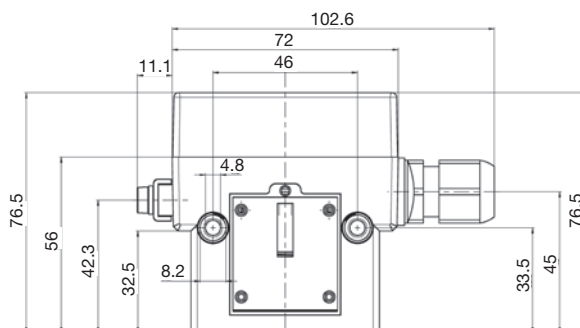
Type	Setting range	Switching differential (Tolerance)	Max. permissible temperature
Immersion depth 135 mm			
Ex-TX023	-20 to + 30 °C	0,5 ... 1,0 K	110 °C
Ex-TX150	+10 to + 50 °C	0,4 ... 1,5 K	110 °C
Ex-TX490	+40 to + 90 °C	0,2 ... 3,0 K	125 °C
Immersion depth 220 mm			
Ex-TXB023	-20 to + 30 °C	0,5 ... 1,0 K	110 °C
Ex-TXB150	+10 to + 50 °C	0,4 ... 1,5 K	110 °C
Ex-TXB490	+40 to + 90 °C	0,2 ... 3,0 K	125 °C

+ Accessories

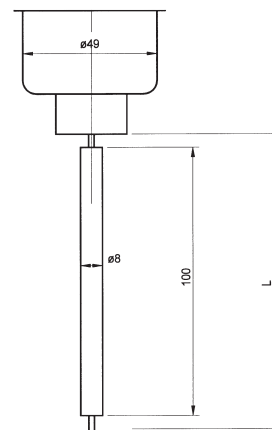
Immersion tube type R10/MS, R20/MS, R10/NST, R20/NST, RN20/MS, RN10/NST, RN20/NST, R6, R7 see page 148.

Dimensioned drawings (mm)

Switching housing 700 (terminal connection, Ex-d)




Switching housing



Temperature sensor

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:

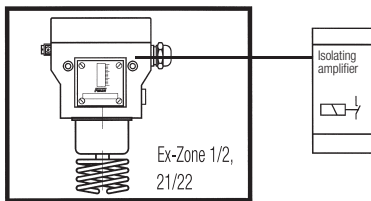
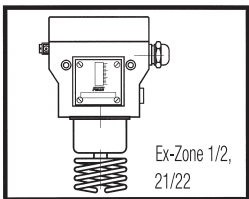
1. Type of ignition protection Ex-d, Ex-e and Ex-t:

The thermostat with protection type "Flameproof Ex-d and Increased Safety 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 "protected 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

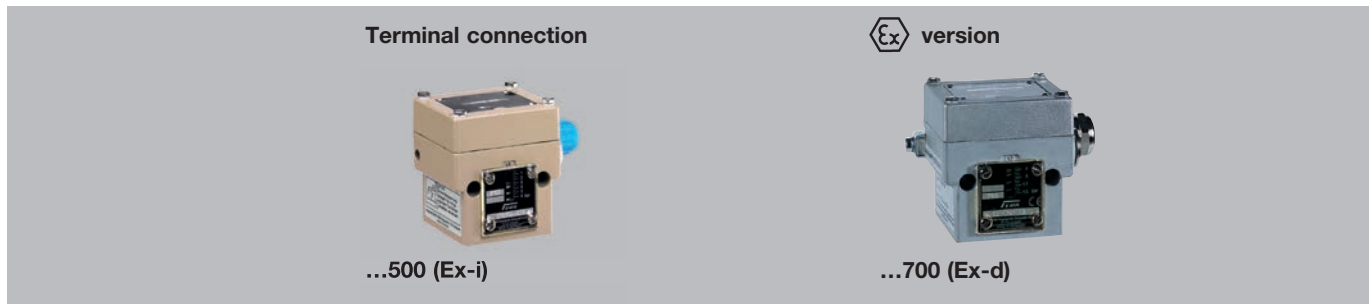
All thermostat with features for intrinsically safe circuits can be used in hazardous areas Zone 1 and 2 (Gas) and zones 21 and 22 (Dust). A circuit is considered to be "intrinsically safe" if the amount of energy conveyed therein is not capable of generating an ignitable sparks. This thermostat can 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.

Ignition 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  II 2G Ex d e IIC T6 Gb CE 0035  II 1/2D Ex ta/tb IIIC T80°C Da/Db Exception: EX-TRM...: CE 0035  II 2G Ex d e IIC T6 Gb CE 0035  II 2D Ex tb IIIC T80°C Db	Marking: CE 0035  II 2G Ex ia IIC T6 Gb CE 0035  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.

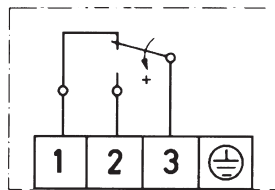
Mechanical thermostats

Principal technical data



Switch housing
Switching function and connection scheme
(applies only to version with microswitch)

Diecast aluminium GDAISi 12
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

Mounting position
Protection class
(in vertical position)

Vertically upright
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

Electrical connection

Terminal connection

Cable entry
Ambient temperature
Switching point

M 16 x 1.5
-15 to +60 °C
Adjustable with spindle after
the terminal box cover is removed

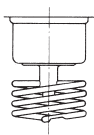
Switching differential
Medium temperature
Vibration strength

not adjustable
Max. 60 °C
No significant deviations up to 4 g.
At higher accelerations, the switching differential is reduced slightly.
Use over 25 g is not permitted.

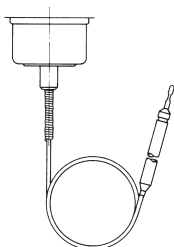
Isolation values

Overvoltage category III, contamination class 3, reference surge voltage 4000 V.
Conformity to DIN VDE 0110 is confirmed.

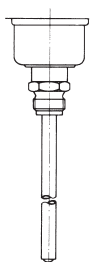
Sensor systems



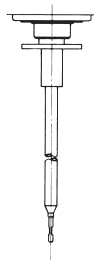
Room sensor TRM



Capillary tube sensor TAM

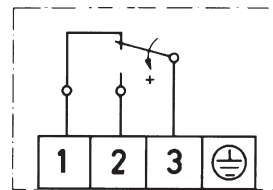


Rod sensor TX+R10



Air duct sensor TX+R6

Diecast aluminium GDAISi 12
Floating changeover contact.
With rising temperature
single pole switching from 3-1 to 3-2



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

Vertically upright
IP 65

Ex II 2G Ex d e IIC T6 Gb
Ex II 1/2D Ex ta/tb IIIC T80 °C Da/Db

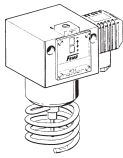
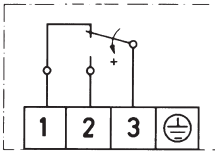
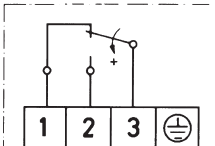
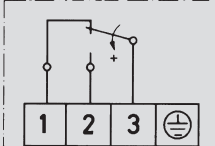
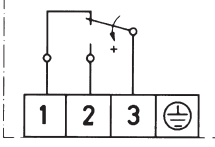
Exception: EX-TRM...:

Ex II 2G Ex d e IIC T6 Gb
Ex II 2D Ex tb IIIC T80 °C Db

Terminal connection

M 16 x 1.5
-20 to +60 °C
Adjustable with spindle after
the terminal box cover is removed

Not adjustable
Max. 60 °C

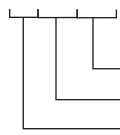
Plug connection 200 series	Description	Connection scheme
	Standard version Microswitch, single pole switching	
ZFT213	Gold-plated contacts with low contact resistance (e. g. for low voltage) Adjustable switching diff. is not available	
ZFT301	Terminal connection housing (IP 65)	
ZFT351	Protection class IP 65 and switch housing with surface protection (terminal connection housing)	
ZFT513	Ex-i-version 500 housing, blue cable entry and terminal connection Gold-plated contacts, protection class IP 65	
	Power supply circuit: U_i 24 V DC C_i 1 nF I_i 100 mA L_i 100 μ H	

Note to non-available items:

In our article master all the possible technical combinations are not created. Therefore we recommend the previous request for clarification and selection of an alternative solution.

Example for ordering:

TX150-513



Code of additional function
Code for temperature range
Type

Service functions

Devices with service functions will be produced individually according to the customer's specifications. The system requires that these product combinations be identified in such a way as to prevent any possibility of confusion. These combinations are characterised by a product code with the suffix "-S" on the packaging label as well as separate labels with barcodes for each service function.

Service functions

ZFT5970	Setting of switching point according to customer's instructions
ZFT5971	Setting of switching points according to customer's instructions with lead sealing
ZFT1978	Labelling of units according to customer's instructions with sticker
WZ2.2	Test certificates according to EN 10 204
WZ2.2	Factory certificate 2.2 based on non-specific specimen test
AZ3.1B1	Acceptance test certificate 3.1 based on specific test

**** Switching point adjustment:** Please specify **switching point and direction of action** (rising or falling pressure).

Service functions are available for the following type series (including Ex-versions):

Thermostats: TAM, TX, TRM,

Ordering devices with service functions: See page 29.