



TX 490

TX

Rod thermostats (without immersion tube)

Rod thermostats are suitable for direct installation in tanks, pipelines and air ducts. The immersion well 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 Any, preferably vertical

permitted ambient temperature at switching device +70°C

Max. perm. temperature at sensor See Product Summary

Contact arrangement Single pole changeover switch

Switching capacity 8 (5) A 250 VAC

Degree of protection IP 54 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

Plug connection Via angled plug to DIN EN175301 (3-pin + earth contact), cable entry Pg 11, max. cable diameter 10 mm, cable outlet possible in 4 directions spaced 90° apart. Supplied with plug.

Switching temperature Adjustable from outside with screwdriver

Switching differential Not adjustable

Product Summary

Type	Setting range	Switching differential (mean values)	Max. permissible temperature at sensor
Immersion depth L = 135 mm			
TX023	-20 to + 30 °C	1.5 K	110 °C
TX150	+10 to + 50 °C	1.5 K	110 °C
TX490	+40 to + 90 °C	2.5 K	125 °C

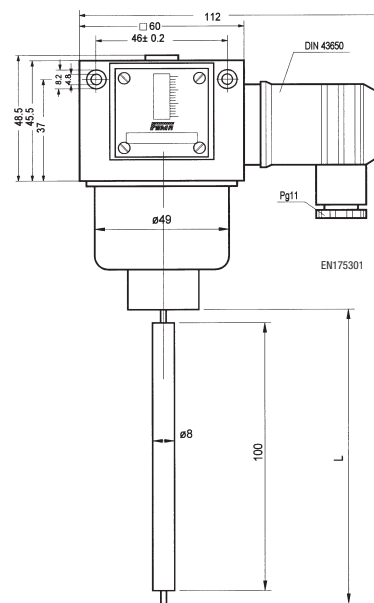
Immersion depth L = 220 mm			
TXB023	-20 to + 30 °C	1.5 K	110 °C
TXB150	+10 to + 50 °C	1.5 K	110 °C
TXB490	+40 to + 90 °C	2.5 K	125 °C

⊕-TX see page 118

Accessories

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

Dimensioned drawing (mm)



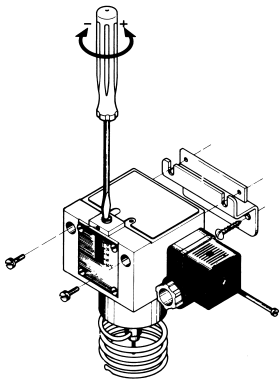
Note to non-available items:

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.

⊕-TX see page 120

General technical information

for series TX, TRM and TAM



Adjustment of thermostats at lower switching point

Setpoint x^s corresponds to the lower switching point (with falling temperature), the upper switching point x^u (with rising temperature) is higher by the amount of the switching differential x^d .

Setting the switching temperature (setpoint adjustment)

Prior to adjustment, the setscrew above the scale must be loosened by approx. 2 turns and retightened after setting.

The switching temperature is set via the spindle. The set switching temperature is shown by the scale. In view of tolerances and variations in the characteristics of sensors and springs, and due to friction in the switching kinematics, slight discrepancies between the setting value and the switching point are unavoidable. The thermostats are usually calibrated in such a way that the setpoint adjustment and the actual switching temperature correspond as closely as possible in the middle of the range. Possible deviations spread to both sides equally.

Clockwise: low switching temperature

Anticlockwise: high switching temperature

Changing the switching differential (only for room thermostat TRMV...)

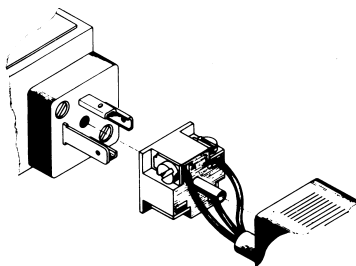
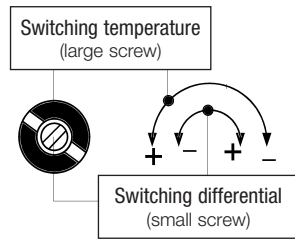
The switching differential is changed by turning the setscrew within the spindle. The lower switching point is not changed by the differential adjustment; only the upper switching point is shifted by the differential. One turn of the differential screw changes the switching differential by about 1/2 of the total differential range.

When adjusting please note:

Switching temperature: Clockwise for lower switching point.

Anticlockwise for higher switching point.

Switching differential: Clockwise for larger differential. Anticlockwise for smaller differential.



Electrical connection

Plug connection to DIN EN175301. Cable entry Pg 11, max. cable diameter 10 mm. Cable outlet possible in 4 directions spaced 90° apart.

Mounting position

A vertical mounting position is preferable if at all possible. IP 54 protection is guaranteed with a vertical mounting position. A different mounting position may alter the protection class, but the operation of the thermostat is not affected.

Outdoor installation of thermostats

FEMA thermostats can be installed out of doors provided they are mounted vertically and suitably protected against the direct effects of weather. At ambient temperatures below 0°C, ensure that condensation cannot occur in the sensor or in the switching device.

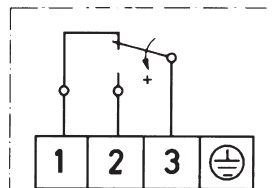
Mechanical thermostats

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)

8 A at 250 VAC
5 A at 250 VAC inductive
8 A at 24 VDC
0.3 A at 250 VDC
min. 10 mA, 12 VDC
Vertical or horizontal,
preferably vertical

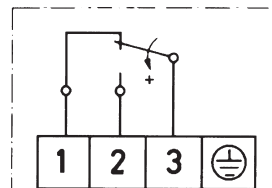
Mounting position
Protection class

(in vertical position)

Electrical connection
Cable entry
Ambient temperature
Switching point
Switching differential
Medium temperature
Vibration strength
Isolation values
Sensor systems

Diecast aluminium GDAISi 12

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



8 A at 250 VAC
5 A at 250 VAC inductive
8 A at 24 VDC
0.3 A at 250 VDC
min. 10 mA, 12 VDC
Vertical

IP 65

Terminal connection

M 16 x 1.5

-15 to +70 °C

Adjustable with spindle after
the terminal box cover is removed
Not adjustable

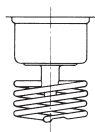
Max. 70 °C, briefly 85 °C

Adjustable or not adjustable
(see Product Summary)

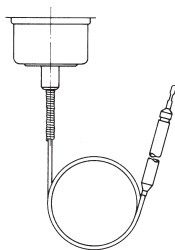
Max. 70 °C, briefly 85 °C

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

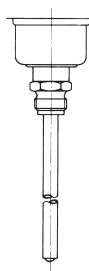
Overvoltage category III, contamination class 3, reference surge voltage 4000 V.
Conformity to DIN VDE 0110 is confirmed.



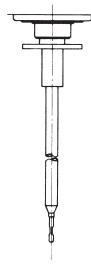
Room
sensor TRM



Capillary tube
sensor TAM



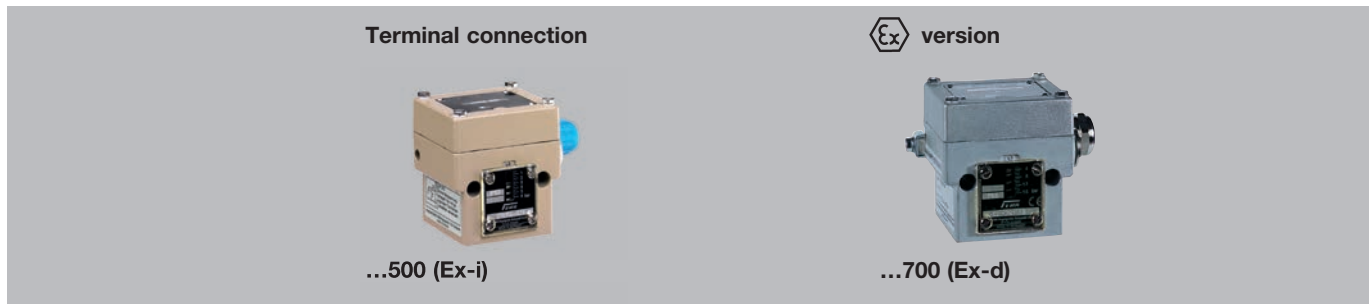
Rod sensor
TX+R10



Air duct sensor
TX+R6

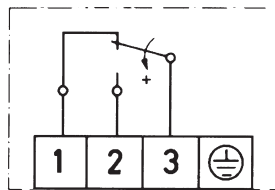
Mechanical thermostats

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

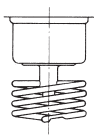
Switching differential
Medium temperature
Vibration strength

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.

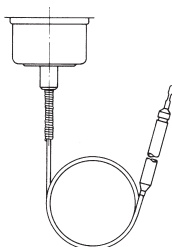
Isolation values

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

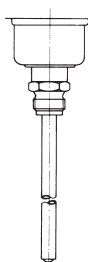
Sensor systems



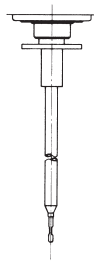
Room sensor TRM



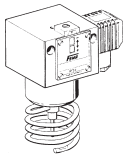
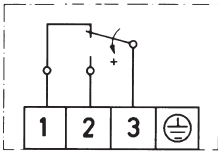
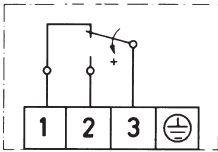
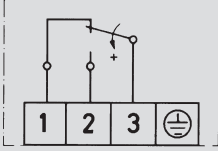
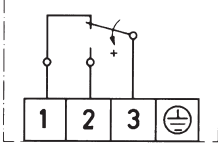
Capillary tube sensor TAM



Rod sensor TX+R10



Air duct sensor TX+R6

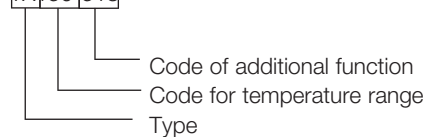
Plug connection 200 series	Description	Connection scheme
	Standard version Microswitch, single pole switching	
ZFT213	Gold-plated contacts with low contact resistance (e. g. for low voltage) Adjustable switching diff. is not available	
ZFT301	Terminal connection housing (IP 65)	
ZFT351	Protection class 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 ATEX-Approval: please see page 10–13	
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



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 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.