



ExBin-FR... Frost protection thermostat

Electrical, explosion proof frost protection thermostat with internal transducer
24 VAC/DC supply voltage, output potential free switching contact
PTB-certified in acc. with ATEX directive 94/9/EC for zone 1, 2, 21, 22

ExBin - FR3
ExBin - FR6
ExBin - FR.. - CT

subject to change!

Compact. Easy installation. Universal. Cost effective. Safe.

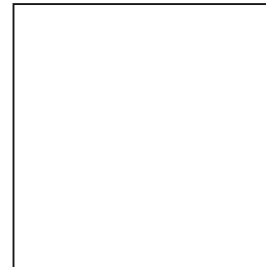
Type	Capillary length	Supply	Output switch	Max. ratings	Wiring
ExBin - FR3	3 m	24 VAC/DC	pot. free contact	250 VAC, 0.1A / 30 V, 0.5 A	SB 1.0
ExBin - FR6	6 m	24 VAC/DC	pot. free contact	250 VAC, 0.1A / 30 V, 0.5 A	SB 1.0
ExBin - FR.. - CT	as above, with Al housing and amercoat painting (sensor connection and cable glands nickel-plated, screws in stainless steel)				

Product views/Application

ExBin-FR..



ExBin-FR..CT (Amercoat version)



Description

The new **ExBin-FR...** frost protection thermostat generation (available with 3 m and 6 m capillary length) is a revolution for switching sensors in HVAC systems, in chemical, pharmaceutical, industrial and Offshore-/Onshore plants, for use in hazardous areas zone 1, 2 (gas) and zone 21, 22 (dust).

Highest protection class (ATEX) and IP66 protection, small dimension, universal functions and technical data guarantee safe operation even under difficult environmental conditions.

Highlights

- ▶ For all type of gas, mixtures, vapours and dust for use in zone 1, 2, 21 and 22
- ▶ No additionally Ex-i module required
- ▶ No intrinsically safe wiring/installation between transducer and sensor required
- ▶ No intrinsically safe wiring/installation and no space in the panel required
- ▶ Integrated Ex-e junction box
- ▶ Power supply 24 VAC/DC
- ▶ Output potential free switching contact
- ▶ LED for switching state indication
- ▶ Compact design and small dimension (L x W x H = 180 x 107 x 66 mm)
- ▶ Robust aluminium housing in protection class IP66
- ▶ Down to -20°C ambient temperature applicable
- ▶ CT versions have an excellent resistance to chemicals and seawater


Technical data

Power supply	24 VAC/DC \pm 20 % (19,2...28,8 VAC/DC) 50...60 Hz
Current, power consumption	150 mA, ~ 4 W, internal fuse 500 mA, without bracket, not removable
Galvanic isolation	Supply – output 1,5 kV
Electrical connection	Terminals 0,14...2,5 mm ² at integrated Ex-e junction box
Cable entry	2 x M16 x 1,5 mm Ex-e approved, cable diameter ~ \varnothing 5...10 mm (...-CT in nickel-plated)
Protection class	Class I (grounded)
Display	Actual value indication via LEDs "green": temperature is over setpoint, LEDs "red": temperature is under the setpoint
Housing protection	IP66 in acc. to IEC 60529
Housing material	Aluminium casting, coated (...-CT = version in Amercoat, marine painting, seawater-resistant)
Dimension / weight	L x W x H = 180 x 107 x 66 mm / ~ 950 g
Ambient temperature/-humidity	-20...+50 °C / 0...95 % rH, non condensed, max. temperature capillary +80 °C
Maintenance	Maintenance free, nevertheless maintenance must be complied with regional standards, rules and regulations
Capillary Length	ExBin-FR3: 3 m \pm 15 cm / ExBin-FR6: 6 m \pm 20 cm
Active capillary length	~ 40 cm
Minimum capillary bending radius	2 cm
Temperature range	-10 °C...+15 °C
Hysteresis	~ 6 K
Accuracy of threshold	\pm 3 K
Start delay	5 sec.
Output switch	Potential free switching contact
Ratings load max.	0,5 A at 30 VAC/DC / 0,1 A at 250 VAC / 0,1 A at 220 VDC
Ratings load min.	10 mW / 0,1 V / 1 mA
Mechanical life	10 x 10 ⁶
Electrical life (rated load)	100 x 10 ³
Wiring diagram (SB)	SB 1.0
Installation sensor / tubing	In Ex-area zone 1, 2, 21, 22

Explosion proof

PTB-tested	PTB 09 ATEX 2011	94/9/EC (ATEX)
Approval for gas	II2(1)G Ex emb[ia] IIC T6	for zone 1, 2
Approval for dust	II2(1)D Ex tD A21 [iaD] IP66 T80°C	for zone 21, 22
CE-Mark	CE No. 0158	
EMC directive	2004/108/EC	
Low voltage directive	2006/95/EC	
Protection type	IP66 in acc. to EN 60529	
Elect. safety	Protection class I (grounded), Over voltage category II acc. to. EN 61010-1	

Accessories

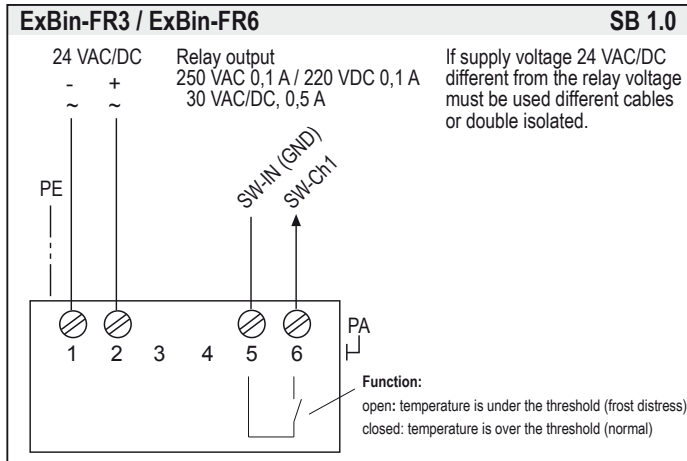
Installation kit 1.3	Assembly cramp and 4 assembly brackets for ExBin-FR3
Installation kit 1.6	Assembly cramp and 8 assembly brackets for ExBin-FR6
MKR	Mounting bracket for round ducts up to \varnothing 600 mm

Electrical connection

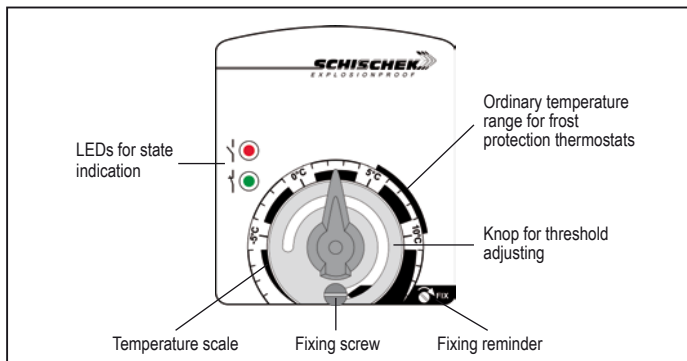
ExBin-FR... transducers are equipped with a 24 VAC/DC power supply. The supply has to be connected at terminal 1 (-/~) and 2 (+/~). The electrical wiring must be realized via integrated Ex-e junction box in acc. to ATEX. Type of protection for the terminals is „Ex-e“. If supply voltage 24 VAC/DC different from the relay voltage must be used different or double isolated cables.

Attention: Do not open covers when circuits alive!

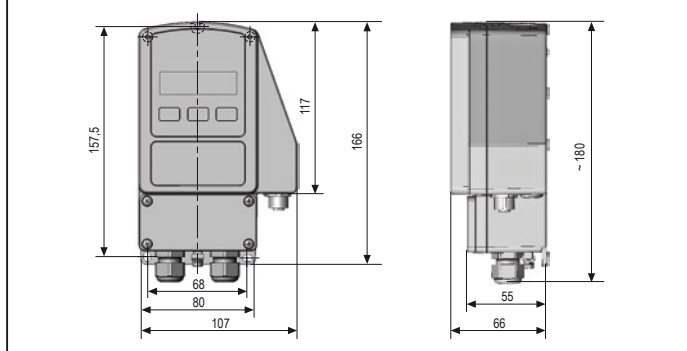
Wiring diagram ExBin-FR (terminal box)



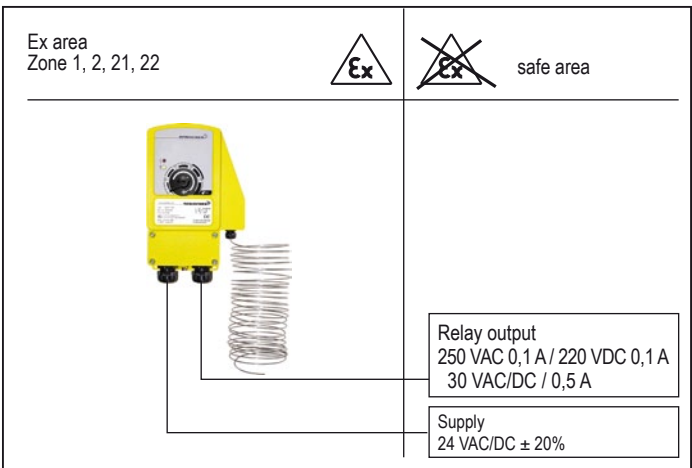
Display and Buttons



Dimensions/Drillings



Installation



- Do not open covers when circuits alive
- The cable must be installed in a fixed position and protected against mechanical and thermal damage
- Connect protection earth
- Avoid thermal transfer from sensor to transducer (ensure max ambient temperature !)
- Ambient temperature -20...+50 °C at T6
- Close all covers, entries with min IP66
- All transducers are maintenance free
- Nevertheless maintenance must comply with regional standards, rules and regulations
- Close after settings all covers and cable entries tight min. IP66
- For outdoor installation a protective housing against rain, snow and sun should be applied
- Do not crack the capillary (notice minimum capillary bending radius)
- For electrical connection use the integrated junction box Ex-e

Important information for installation and operation

Installation, Commissioning, Maintenance

The cable has to be drawn through the cable gland. After electrical connection the cable gland must be fixed tighten. IP66 must be fulfilled. In acc. with operation ExBin switches are maintenance free. Nevertheless maintenance must comply with regional standards, rules and regulations. The sensors must not be opened by the customer. For outdoor installation a protective housing against rain, snow and sun should be applied. For electrical connection use the internal approved Ex-e junction box.

Attention: Note the explosion proof rules before opening the internal junction box. Cut off the power supply.

A. Supply and Contact

Wires from safety extra low voltage must be separated from others. Only at 24 VAC/DC is supply and signal wires in one cable permitted. All others use separate or double isolated cables. Install overload protection fuse < 10 A.

B. Long cabling

For using long signal wires, shielded cables are recommended. The shield must be connected to the ExBin... switch inside the terminal box.

C. Separate ground wires

Use for supply and signal wires a separate ground.