



ExBin-FR... frost protection thermostat

ExBin - FR3

ExBin - FR6

subject to change!

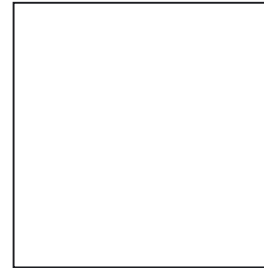
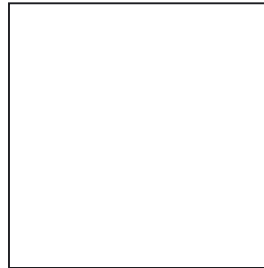
Electrical, explosion proof frost protection thermostat with internal transducer
24 VAC/DC supply voltage, output potential free switching contact
PTB-certified in acc. with ATEX directive 94/9/EC for zone 1, 2, 21, 22

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

Product views/Application

ExBin-FR6



Description

The new **ExBin-FR...** frost protection thermostat generation (available with 3m and 6m 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 IP 66 protection, small dimension, universal functions and technical data guarantee safe operation even under difficult environmental conditions.

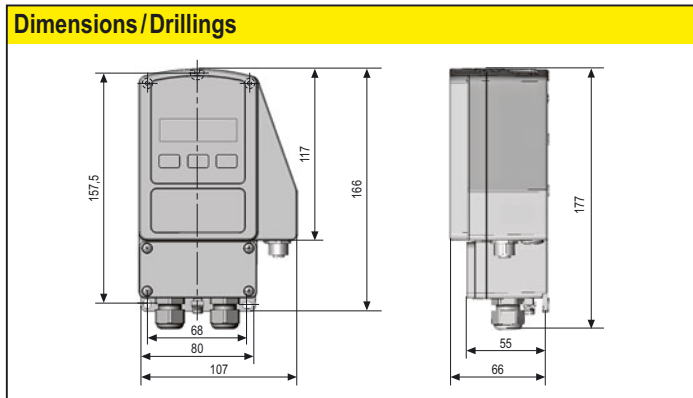
Highlights

- ▶ 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 × B × H = 177 × 107 × 66 mm)
- ▶ Robust aluminium housing in protection class IP 66
- ▶ Down to -20°C ambient temperature applicable



Technical data	ExBin - FR...
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 Ex e approved, cable diameter ~ \varnothing 5...10 mm
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
Dimension / weight	L x W x H = 177 x 107 x 66 mm / ~ 950 g
Ambient temperature/-humidity	- 20...+ 50 °C / 0...95 % rH, non condensed
Maintenance	Maintenance free, nevertheless maintenance must be complied with regional standards, rules and regulations
Capillary Length	ExBin-FR3: 3m \pm 15cm / ExBin-FR6: 6m \pm 20cm
Active capillary length	~ 40 cm
Minimum capillary bending radius	2 cm
Temperature range	- 10°C...+ 15°C
Hysteresis	6 K \pm 1 K
Accuracy of threshold	\pm 3 K
Start delay	5 sec.
Output switch	Potential free switching contact
Ratings load max.	0,5 A @ 30 VAC/DC / 0,1 A @ 250 VAC / 0,1 A @ 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	ExBin-FR...
PTB-testet	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	RL 89/336/EC
Low voltage directive	RL 73/23/EC
Protection type	IP 66 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

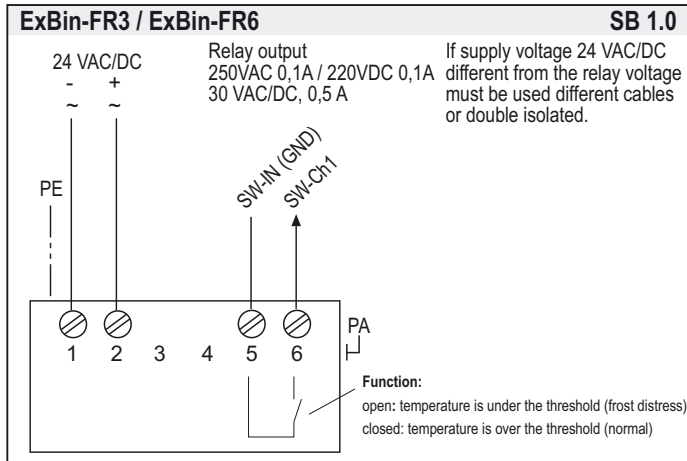


Electrical connection

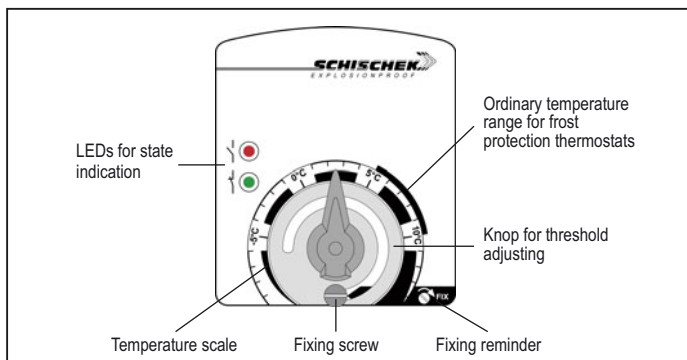
ExBin-FR... transducers are equipped with a 24 VAC/DC power supply. The supply has to be connected at terminal 1 (-/~) and 2 (+/~). The electrical wiring must be realized via integrated Ex-e junction box in acc. to ATEX. Type of protection for the terminals is „Ex-e“. If supply voltage 24 VAC/DC different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



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 tight. 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.

Installation

Ex area
Zone 1, 2, 21, 22



safe area



Relay output
250VAC 0,1A / 220VDC 0,1A
30 VAC/DC / 0,5 A

Supply
24 V AC/DC ± 20%

- 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 @ 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.