



ExBin-FR Frost protection thermostat

Electrical, explosion-proof frost protection thermostat

24 VAC/DC supply voltage, potential free relay output

EC type-approved in acc. with ATEX directive 2014/34/EU 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	Max. ratings	Wiring diagram
ExBin- FR3	3 m	24 VAC/DC	Relay contact	250 VAC, 0.1 A / 30 V, 0.5 A	SB 1.0
ExBin- FR6	6 m	24 VAC/DC	Relay contact	250 VAC, 0.1 A / 30 V, 0.5 A	SB 1.0
ExBin- FR... - CT	Types as above with aluminium housing and seawater resistant coating (sensor connection and cable glands brass nickel-plated, screws in stainless steel)				

Product views and applications

Frost protection thermostat



...Bin-FR...-CT



Description

The ExBin-FR... frost protection thermostat is a revolution 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 dimensions, universal functions and technical data guarantee safe operation even under difficult environmental conditions.

All frost protection thermostats are programmable on site without any additional tools. The switching point is scalable within the maximum ranges.

Highlights

- ▶ For all types of gases, mists, vapours and dust for use in zone 1, 2, 21 and 22
- ▶ Power supply 24 VAC/DC
- ▶ Output potential free switching contact
- ▶ Integrated Ex-e terminal box
- ▶ No additional Ex-i module required
- ▶ No intrinsically safe wiring/installation between panel and sensor required
- ▶ No intrinsically safe wiring/installation and no space in the panel required
- ▶ LED switching state indication
- ▶ Compact design and small dimension
- ▶ Robust aluminium housing (optional with seawater resistant coating)
- ▶ IP66 protection
- ▶ Fulfils K1 according to TRGS 725



Technical data	ExBin	...-FR3	...-FR6
Supply voltage, frequency	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, not removable		
Galvanic isolation	Supply for relay output min. 1,5 kV		
Electrical connection	Terminals 0,14...2,5 mm ² at integrated Ex-e terminal box, stripping length 9 mm, torque 0,4...0,5 Nm, equipotential bonding 4 mm ²		
Cable glands	2 x M16 x 1,5 mm, Ex-e approved, for cable diameter ~ \varnothing 5...9 mm		
...-CT	2 x M16 x 1,5 mm, Ex-e approved, brass nickel-plated, for cable diameter ~ \varnothing 6...10 mm		
Protection class	Class III (grounded)		
Control elements	Rotary control for setpoint adjustment and fixing screw		
Measuring range	Setpoint adjustable -10 °C...+15 °C		
Status indication	via LEDs – GREEN: ambient temperature is above setpoint (normal), RED: ambient temperature is below setpoint		
Housing material	Aluminium die-cast housing, coated. Optional with seawater resistant coating (...-CT)		
Dimensions (L x B x H)	~ 180 x 107 x 66 mm (without connectors)		
Weight	~ 950 g		
Ambient temperature	-20...+50 °C, storage temperature -35...+70 °C, capillary max. +80 °C		
Temperature class	T6 (T80 °C) bei -20...+50 °C		
Ambient humidity	0...95 % rH, non condensing		
Sensor circuit	Internal intrinsically safe (IS) circuit		
Capillary	Length	3 m \pm 15 cm	6 m \pm 20 cm
	min. active length	~ 40 cm	
	min. bending radius	2 cm	
Hysteresis	~ 6 K, accuracy of setpoints ± 3 K		
Start delay	5 s		
Output	Potential free switching contact – breaking contact		
	max. rating load	0,5 A (30 VAC/DC) – 0,1 A (250 VAC) – 0,1 A (220 VDC)	
	min. rating load	10 mW / 0,1 V / 1 mA	
Duration of life	mechanical	10 x 10 ⁶	
	electrical (rated load)	100 x 10 ³	
Wiring diagram	SB 1.0		
Scope of delivery	Frost protection thermostat, self-tapping screws 4,2 x 13 mm resp. in stainless steel (with ...-CT versions)		

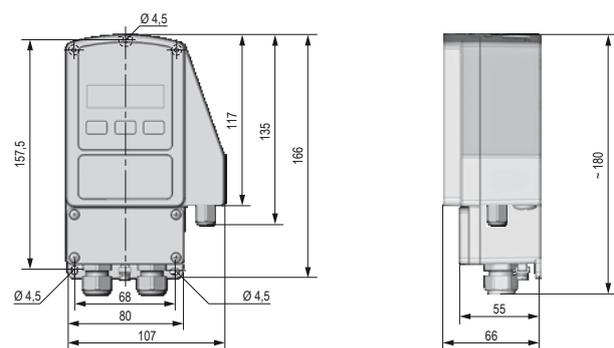
Approbationen

ATEX directive	2014/34/EU
EC type-approved	EPS 14 ATEX 1 657
IECEX certified	IECEX EPS 14.0074
Approval for gas	II 2 (1) G Ex e mb [ia Ga] IIC T6 Gb
Types ...-CT	II 2 (1) G Ex e mb [ia Ga] IIB T6 Gb
Approval for dust	II 2 (1) D Ex tb [ia Da] IIIC T80°C Db IP66
CE identification	CE № 0158
EMC directive	2014/30/EU
Enclosure protection	IP66 in acc. with EN 60529
EAC	TC RU C-DE.ГБ08.B.01510
TRGS 725	K1

Accessories

MKR	Mounting bracket for round ducts up to \varnothing 600 mm
Installation Kit 1.3	Assembly cramp and 4 assembly brackets for ...Bin-FR3
Installation Kit 1.6	Assembly cramp and 8 assembly brackets for ...Bin-FR6
WS-CBR	Stainless steel weather shield

Dimensions (mm)



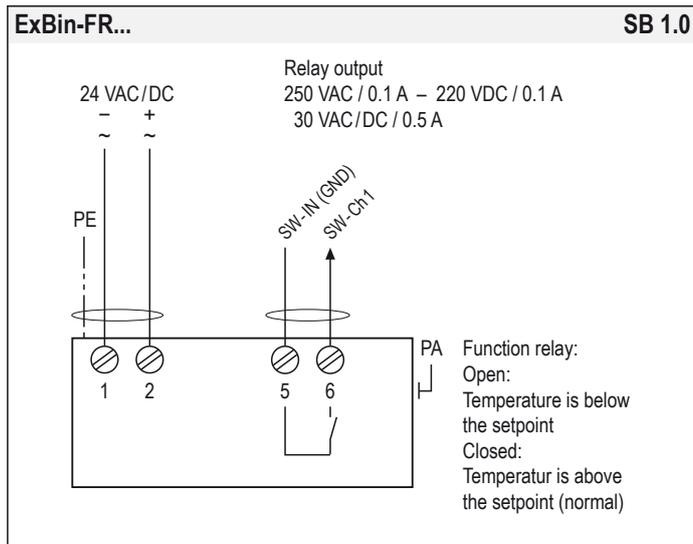


Electrical connection

All frost protection thermostats require a 24 VAC/DC power supply. The electrical wiring must be realized via the integrated Ex-e terminal box acc. to ATEX. The terminals' type of protection is "Increased safety Ex-e".

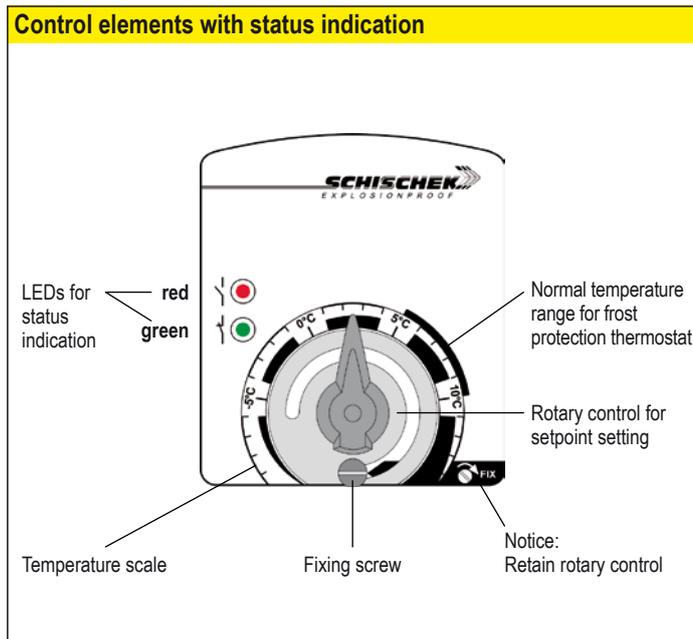
Attention: Before opening the terminal box cover, the supply voltage must be shut off! The supply has to be connected at terminals 1 (-/-) and 2 (+/-).

At different relay and supply voltages (24 VAC/DC) the cable installation must be considered (see "Information for Installation")!



Intrinsically safe parameters (IS) – Internal contact

$U_o = 7.14 \text{ V}$	$C_i \rightarrow 0$	IIC	IIB	IIA	
$I_o = 8 \text{ mA}$	$L_i \rightarrow 0$	L_o	5 mH	10 mH	20 mH
$P_o = 15 \text{ mW}$		C_o	1.5 μF	6.7 μF	8.6 μF



Important information for installation and operation

A. Installation, commissioning, maintenance

All national and international standards, rules and regulations must be complied with. Certified apparatus must be installed in accordance with manufacturer instructions. If the equipment is used in a manner not specified by the manufacturer, the safety protection provided by the equipment may be impaired. For electrical installations design, selection and erection, EN/IEC 60079-14 can be used.

Attention: Apply all Ex rules and regulation before opening the internal terminal box. Do not open cover when circuits are live!

Draw the wiring cables through the cable glands. For connection use the internal Ex-e approved terminal box and connect equipotential bonding. After connection install the cables in a fixed position and protect them against mechanical and thermal damage. Close all openings and ensure IP protection (min. IP66). Avoid temperature transfer and ensure not to exceed max. ambient temperature! For outdoor installation a protective shield against sun, rain and snow should be applied. Sensors are maintenance free. An annual inspection is recommended. For electrical installations inspection and maintenance, EN/IEC 60079-17 can be used. Clean with damp cloth only. Ex sensors must not be opened and repaired by the end user.

B. Long cabling

We recommend using shielded signal wires and to connect one end of the shield to the ...Bin... terminal box.

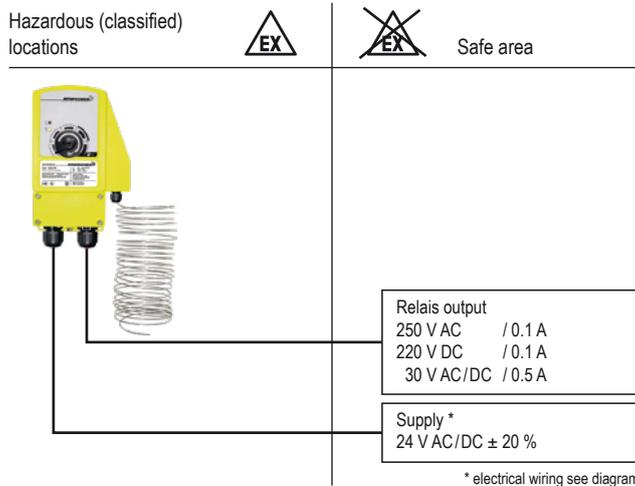
C. Separate ground wires

For supply and signal wires use separate grounds.

D. Relay output

Wires for safety extra-low voltage must be installed separately from other circuits. At 24 VAC/DC only supply and signal wires are permitted in one cable, in all other cases use separate or double isolated cables. An over-current protection fuse < 10 A has to be provided by the installer.

Installation



- Do not crack the capillary, note capillary's bending radius