



ExBin-N Fan belt monitoring

via speed control switch up to 10,000 min⁻¹

ExBin - N
ExBin - N - 2

Subject to change!

Electrical, explosion proof transducer for fan belt monitoring
24 VAC/DC supply voltage, potential free switching contact output
EC type-approved in acc. with ATEX directive 2014/34/EU for zone 1, 2, 21, 22

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

Type	Sensor	Supply	Range	Min. Setting	Output	Max. Ratings	Wiring diagram
ExBin- N	Namur DIN19234	24 VAC/DC	0...10,000 min ⁻¹	50 min ⁻¹	Switching contact *	250 VAC / 0.1 A – 30 V / 0.5 A	SB 1.0 / 2.0
ExBin- N - 2	as above with additional switching contact output				2 × Switching contact *		SB 1.0 / 2.0
					* potential free		

Product views and applications

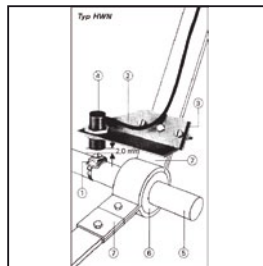
...Bin-N... transducer



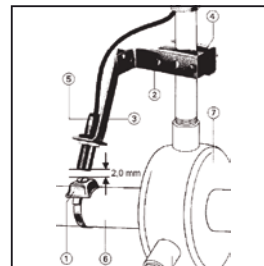
...Bin-N with Namur sensor



Installation Kit 3



Installation Kit 4



Description

The ...Bin-N... transducer generation is a revolution for fan belt monitoring 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 dataguarantee safe operation even under difficult environmental conditions.

All sensors are programmable on site without any additional tools. The switching points are scalable within the maximum ranges. The integrated display (can be switched off as needed) is for parametrisation and an actual value indication at working mode.

...Bin-N-2 transducer are additionally equipped with a second switching output, which can be parameterized independently.

Highlights

- ▶ For all types of gases, mists, vapours and dust for use in zone 1, 2, 21 and 22
- ▶ Power supply 24 VAC/DC
- ▶ Adjustable, potential free switching contact
- ▶ Integrated Ex-e junction 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
- ▶ Selectable switching characteristic
- ▶ Adjustable start-up bypass time
- ▶ Optional second switching output
- ▶ Display with backlight, can be switched off
- ▶ Password lock
- ▶ Down to -20 °C ambient temperature applicable
- ▶ Compact design and small dimension
- ▶ Robust aluminium housing with IP66 protection



Technical data	ExBin- N	ExBin- N- 2
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	1,5 kV between supply–contact output	
Electrical connection	Terminals 0,14...2,5 mm ² at integrated Ex-e junction box, stripping length 9 mm, torque 0,4...0,5 Nm, equipotential bonding 4 mm ²	
Cable glands	2 \times M16 \times 1,5 mm, Ex-e approved, for cable diameter ~ Ø 5...9 mm	
Protection class	Class I (grounded)	
Display	Matrix LCD, backlit, for configuration, user guidance, parameter and actual value indication	
Control elements	3 buttons for configuration	
Housing material	Aluminium die casting, coated	
Dimensions	L \times W \times H = 180 \times 107 \times 66 mm	
Weight	~ 950 g	
Ambient temperature / humidity	-20...+50 °C / 0...95 % rH, non condensing	
Storage temperature	-35...+70 °C	
Sensor	Nemur, DIN 19234	
Sensor circuit	internal, intrinsically safe	
Measuring range	0...10.000 min ⁻¹ , adjustable 50...10.000 min ⁻¹	
Response time of sensor	T90 / ~ 16 s	
Accuracy of rotary speed	\pm 0,5 % of full scale value	
Setting range hysteresis	25...1.000 min ⁻¹ (default setting 50 min ⁻¹)	
Start delay	5 s	
Start-up bypass time (AUB)	3...240 s, adjustable per menu (default setting 120 s)	
Output	Potential free switching contact – breaking/making contact adjustable per menu	
max. rating load	0,5 A at 30 VAC/DC – 0,1 A at 250 VAC – 0,1 A at 220 VDC. Power 20 W resp. 10 W per channel	
min. rating load	10 mW / 0,1 V / 1 mA	
Duration of life	10 \times 10 ⁶	
Mechanical	100 \times 10 ³	
Electrical (rated load)	100 \times 10 ³	
Wiring diagram	SB 1.0 / 2.0	SB 1.0 / 2.0
Scope of delivery	Transducer, 3 self-tapping screws 4,2 \times 13 mm	

Approbations

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
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.В.01510



Electrical connection

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

Attention: Before opening the junction box cover, the supply voltage must be shut off!

The supply has to be connected at terminals 1 (-/-) and 2 (+/+). For start-up bypass time (AUB) a bridge between terminal 2 and 3 has to be connected.

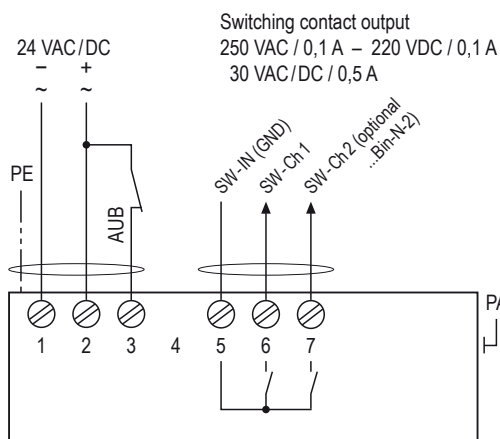


At different switching contact and supply voltages (24 VAC/DC) the cable installation must be considered! (see „Important information for installation and operation“)



ExBin-N...

SB 1.0



Switching function normally closed or open (nc/no) can be selected via menu only.

Intrinsically safe parameters (IS) – Internal, for passive sensor

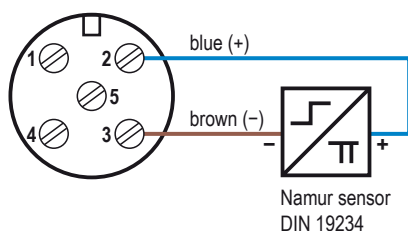
$U_o = 9,6 \text{ V}$	$C_i = 0$		IIC	IIB	IIA
$I_o = 9,7 \text{ mA}$	$L_i = 0$	L_o	5 mH	10 mH	20 mH
$P_o = 24 \text{ mW}$		C_o	0.84 μF	3.8 μF	4.9 μF

Internal sensor IS values are corresponding to the internal sensor.

Namur sensor connection/terminals

SB 2.0

Male connector



Special solutions and accessories

MKR	Mounting bracket for round ducts up to Ø 600 mm
Installation Kit 3	Mounting kit for Namur sensors on ventilators up to 20.000 m³/h
Installation Kit 4	Mounting kit for Namur sensors on ventilators over 20.000 m³/h

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. The built-in cable glands must not be replaced by other types, otherwise the explosion protection is no longer guaranteed. 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). Tighten the cap nut, maximum torque 1.5 Nm.

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. Switching contact output

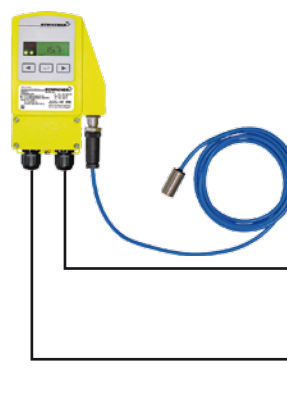
Wires for safety extra-low voltage must be installed separately from other circuits. At 24 VAC/DC only supply and signal wires are permitted in one cable, in all other cases use separate or double isolated cables. An over-current protection fuse < 10 A has to be provided by the installer.

Installation

Hazardous (classified) locations



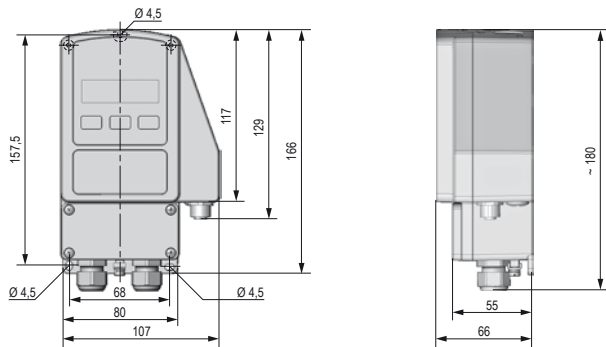
Nonhazardous locations



Switching contact output
250 V AC / 0.1 A
220 V DC / 0.1 A
30 V AC/DC / 0.5 A

Supply *
24 V AC/DC ± 20 %

* electrical wiring see diagram


Dimensions [mm]

Display, buttons and parameters

 Display for
 programming
 and indication

 Push button
 ENTER

 Push button for
 level selection

Change operation – parametrisation mode

To change from operation to parametrisation mode and vice versa, push ENTER button for minimum of 3 seconds. Back to operation mode with menu "save".

Indication of data logging

The flashing unit symbol (min^{-1}) shows that data is received and the device is working.

Start-up bypass time (AUB)

Activation is indicated by flashing green LEDs.

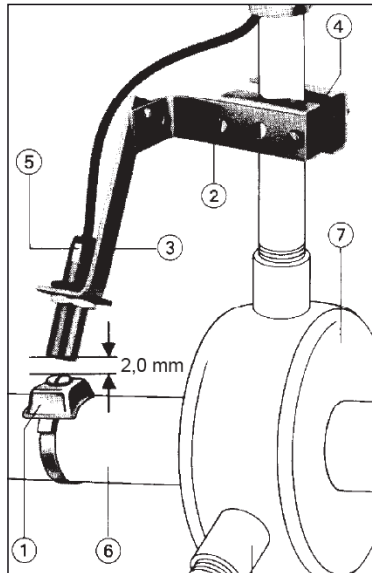
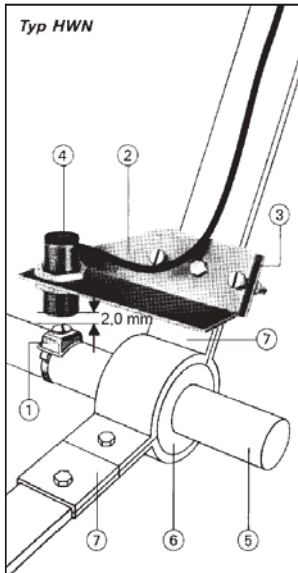
Sensor malfunction

A sensor malfunction is indicated by a red flashing LED and the text "SENS" in the display. The switching outputs will indicate that, too.

Password input

The default/delivery setup is 0000. In this configuration the password input is not activated. To activate the password protection (menu 15) change the 4 digits into your choosen numbers (e.g. 1234) and press ENTER.

Please keep your password in mind for next parameter change! Due to a new parameter setup the password is requested.

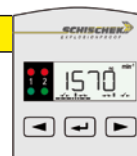




Parametrisation and commissioning

To change from operation to parametrisation mode push the "ENTER" button for minimum 3 seconds.
 If password protected: type password and push .
 Skip menu with , back to operation mode with menu "save".

Operation → Parametrisation
 push for min. 3 s

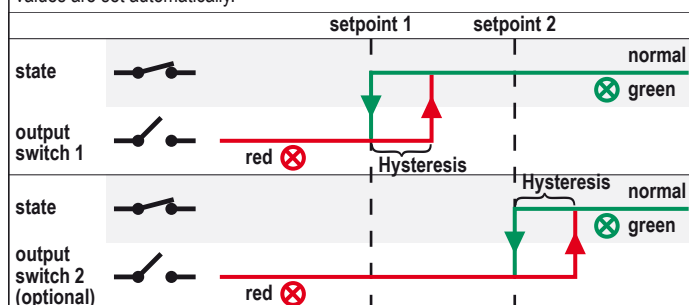


Menu	Function	ENTER	Indication	Select	ENTER	Next indication	Select	ENTER	Next menu
Menu 1	no function – menu skip								
Menu 2	no function – menu skip								
Menu 3	set 1 Select switching point 1 (rotation speed)		Menu 3 700 min ¹						
Menu 4	set 2 (optional) * Select switching point 2 (rotation speed)		Menu 4 1500 min ¹						
Menu 5	hysteresis ** Select hysteresis		Menu 5 100 min ¹						
Menu 6	mode ** Select switching properties (break contact, make contact)		Menu 6 UP nc			Menu 6 NC			
Menu 7	no function – menu skip								
Menu 8	no function – menu skip								
Menu 9	no function – menu skip								
Menu 10	no function – menu skip								
Menu 11	no function – menu skip								
Menu 12	time Select start-up bypass time (AUB)		Menu 12 100 s						
Menu 13	lamp Select display setting		Menu 13 ON						
Menu 14	no function – menu skip								
Menu 15	security Select password protection		Menu 15 0000						
Menu 16	save Select: save data, discard, back to menu, factory setting		Menu 16 YES						(operation mode after "save")

* for ...Bin-N-2 only (2-stage) ** adjustable in professional mode only

Default settings ...Bin-N... (for fan belt monitoring)

By default, the ...Bin-N... is configured specifically for fan belt monitoring in order to facilitate further parameterization.
 Thereby the menu items 5 ("hysteresis") and 6 ("mode") are hidden. The corresponding values are set automatically.



Professional mode

The default settings can be changed using the professional mode. Make sure the main menu is selected (the arrows next to "Menu" have to be visible in the display). Pressing the right button for minimum 3 seconds activates the professional mode. For further parametrisation switching characteristics can be adjusted in menu 5 ("hysteresis") and 6 ("mode") acc. to application.



Menu 6 "mode" – Switching properties

1. Define the device's normal range first:

- The device should indicate (green LED) when the fan speed is
- above the setpoints – mode "up-range" has to be selected.
 - below the setpoints – mode "down-range" has to be selected.
 - between the setpoints – mode "mid-range" has to be selected.
- This mode is available for 2-stage devices only (...Bin-N-2).

2. Select the switching characteristic of the output relay:

- When the measured value is in normal range, the corresponding relays shall
- close – select "normally closed" (nc)
 - open – select "normally open" (no)

