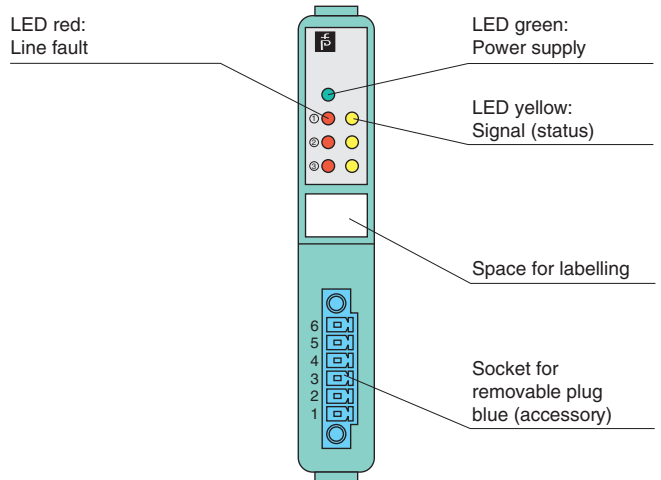## Features

- 1 digital output, 2 digital inputs
- Inputs and output Ex ia
- Installation in Zone 2, Zone 22, Div. 2, or safe area
- Positive or negative logic selectable
- Simulation mode for service operations (forcing)
- Line fault detection (LFD)
- Permanently self-monitoring
- Output with watchdog
- Output with bus-independent safety shutdown
- Up to SIL2 acc. to IEC 61508
- Module can be exchanged under voltage

Function

The digital output features 1 output with 2 feedback inputs.

The device can be used to switch solenoids, sounders, or indicators (without line fault detection) in the field. Furthermore, the device accepts digital input signals of NAMUR sensors or mechanical contacts from the field.

The output can be switched off via a contact. This can be used for bus-independent safety applications.

Open and short circuit line faults are detected.

The intrinsically safe inputs and the output are galvanically isolated from the bus and the power supply.
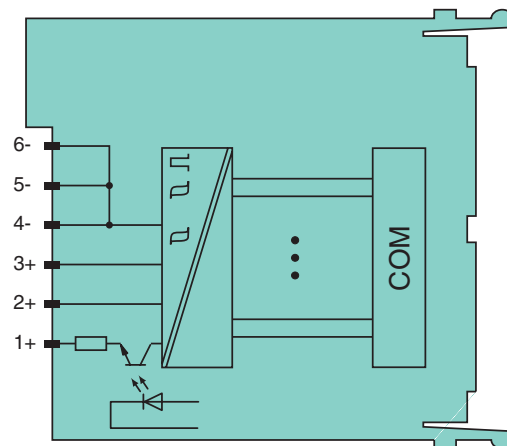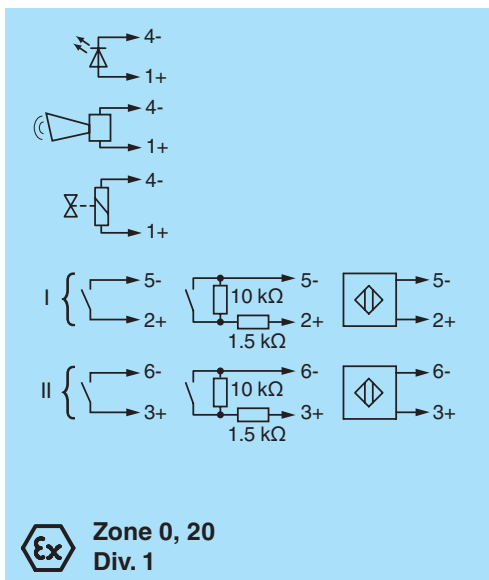
Assembly

Front view

LED red: Line fault

LED green: Power supply

LED yellow: Signal (status)

Space for labelling

Socket for removable plug blue (accessory)

Connection

Zone 0, 20 Div. 1

Zone 2 Div. 2

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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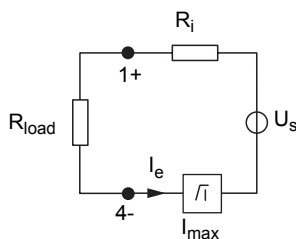| Supply		
Connection		backplane bus
Rated voltage	U_n	12 V DC , only in connection with the power supplies LB9***
Power loss		1.3 W
Power consumption		1.8 W
Internal bus		
Connection		backplane bus
Interface		manufacturer-specific bus to standard com unit
Input		
Number of channels		2
Suitable sensors		mechanical contacts, NAMUR proximity switches, 2-wire initiators
Connection		channel I: 2+, 5-; channel II: 3+, 6-
Rated values		acc. to EN 60947-5-6 (NAMUR)
Switching point/switching hysteresis		1.2 ... 2.1 mA / ± 0.2 mA
Voltage		8.2 V
Internal resistor		1 kΩ
Line fault detection		can be switched on/off for each channel via configuration tool
Connection		mechanical switch with additional resistors (see connection diagram) , proximity switches without additional wiring
Short-circuit		< 360 Ω
Open-circuit		< 0.35 mA
Minimum pulse duration		1 ms
Output		
Number of channels		1
Suitable field devices		solenoid valves, acoustic alarms and LED indicators (without line fault detection)
Connection		channel I: 1+, 4-
Internal resistor	R_i	329 Ω
Open loop voltage	U_s	25.3 V
Response time		20 ms (depending on bus cycle time)
Line fault detection		can be switched on/off for each channel via configuration tool , also when turned off (every 2.5 s the valve is turned on for 2 ms)
Short-circuit		< 25 Ω
Open-circuit		> 3.5 kΩ
Watchdog		within 0.5 s the device goes in safe state, e.g. after loss of communication
Indicators/settings		
LED indicator		LED green: supply LED red: line fault, per channel LED yellow: signal (status), per channel
Coding		optional mechanical coding via front socket
Directive conformity		
Electromagnetic compatibility		
Directive 2004/108/EC		EN 61326-1
Conformity		
Electromagnetic compatibility		NE 21
Degree of protection		IEC 60529
Environmental test		EN 60068-2-14
Shock resistance		EN 60068-2-27
Vibration resistance		EN 60068-2-6
Damaging gas		EN 60068-2-42
Relative humidity		EN 60068-2-56
Ambient conditions		
Ambient temperature		-20 ... 60 °C (-4 ... 140 °F)
Storage temperature		-25 ... 85 °C (-13 ... 185 °F)
Relative humidity		95 % non-condensing
Shock resistance		shock type I, shock duration 11 ms, shock amplitude 50 m/s^2, number of shock directions 6, number of shocks per direction 100
Vibration resistance		frequency range 5 ... 500 Hz, amplitude 5 ... 13.2 Hz ± 1.5 mm, 13.2 ... 100 Hz 1g, sweep rate 1 octave/min, duration 10 sweeps 5 Hz - 100 Hz - 5 Hz
Damaging gas		for plugs: 21 days in 25 ppm SO_2, at 25 °C and 75 % rel. humidity, device G3
Mechanical specifications		
Degree of protection		IP20 when mounted on backplane
Connection		removable front connector with screw flange (accessory) wiring connection via spring terminals (0.14 ... 1.5 mm^2) or screw terminals (0.08 ... 1.5 mm^2)
Mass		approx. 110 g
Dimensions		16 x 100 x 103 mm (0.63 x 3.9 x 4 in)

Release date 2015-01-30 12:29   Date of issue 2015-01-30   542173_eng.xml

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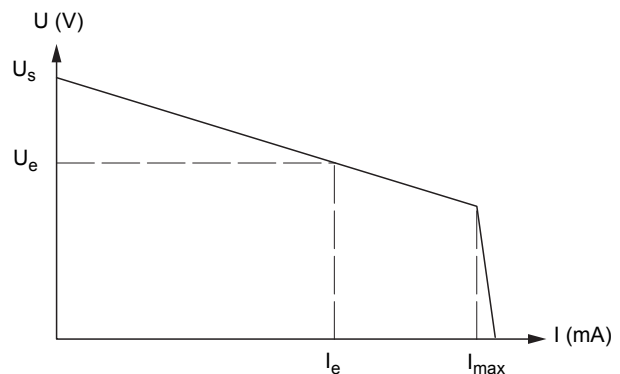| Data for application in connection with Ex-areas		
EC-Type Examination Certificate		PTB 03 ATEX 2042 , for additional certificates see www.pepperl-fuchs.com
Group, category, type of protection		⟨Ex⟩ II (1) G [Ex ia] IIC ⟨Ex⟩ II (1) D [Ex ia] IIIC
Input		
Voltage	U_o	14 V
Current	I_o	16 mA
Power	P_o	55 mW (linear characteristic)
Internal capacitance	C_i	1.65 µF
Internal inductance	L_i	0 mH
Output		
Voltage	U_o	27.8 V
Current	I_o	108 mA
Power	P_o	751 mW
Internal capacitance	C_i	1.65 µF
Internal inductance	L_i	0 mH
Statement of conformity		PF 08 CERT 1234 X
Group, category, type of protection		⟨Ex⟩ II 3 G Ex nA IIC T4 Gc
Electrical isolation		
Input/power supply, internal bus		safe electrical isolation acc. to EN 60079-11, voltage peak value 375 V
Output/power supply, internal bus		safe electrical isolation acc. to EN 60079-11, voltage peak value 375 V
Directive conformity		
Directive 94/9/EC		EN 60079-0:2009 EN 60079-11:2007 EN 60079-15:2010 EN 61241-11:2006
International approvals		
UL approval		E106378
IECEx approval		BVS 09.0037X
Approved for		Ex nAc [ia] IIC T4 [Ex iaD] IIIC
General information		
System information		The module has to be mounted in appropriate backplanes (LB9***) in Zone 2 or outside hazardous areas. Here, the corresponding declaration of conformity has to be observed. For use in hazardous areas (e. g. Zone 2, Zone 22 or Div. 2) the module must be installed in an appropriate enclosure.
Supplementary information		EC-Type Examination Certificate, Statement of Conformity, Declaration of Conformity, Attestation of Conformity and instructions have to be observed where applicable. For information see www.pepperl-fuchs.com.

Output data

Load calculation

R_{load} = Field loop resistance
$U_e = U_s - R_i \times I_e$
$I_e = U_s/(R_i + R_{load})$

Output characteristics

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