

## Features

- 4-channel
- Outputs Ex ia
- Installation in suitable enclosures in Zone 1
- Module can be exchanged under voltage (hot swap)
- Line fault detection (LFD)
- Positive or negative logic selectable
- Simulation mode for service operations (forcing)
- Permanently self-monitoring
- Output with watchdog

## Function

The digital output features 4 independent channels.

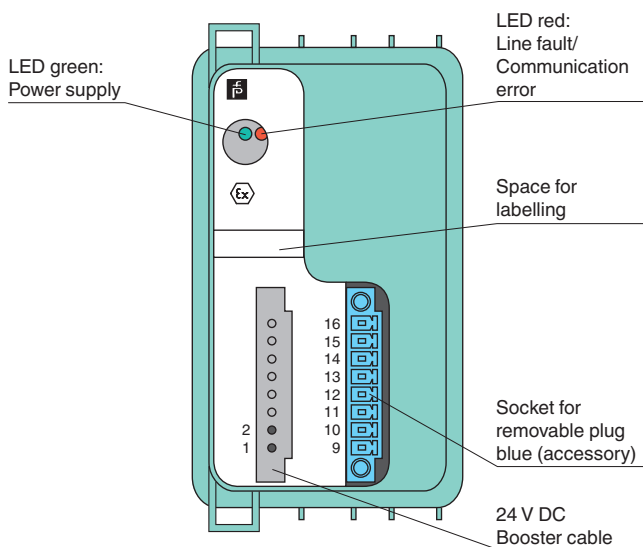
The device can be used to drive solenoids, sounders, or LEDs.

Open and short-circuit line faults are detected.

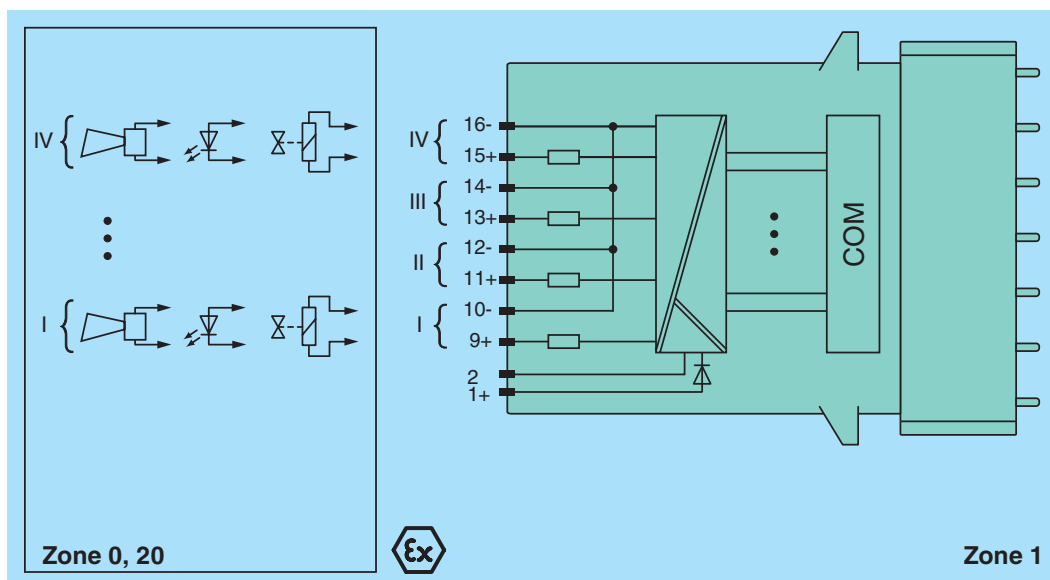
The outputs are galvanically isolated from the bus and the power supply.



## Assembly

Front view



## Connection



<b>Supply</b>		
Connection		backplane bus / 24 V booster via wire ends
Rated voltage	$U_r$	12 V DC , only in connection with the power supplies FB92**
Power consumption		0.6 W at power supply 5 W if 24 V booster voltage
<b>Internal bus</b>		
Connection		backplane bus
Interface		manufacturer-specific bus to standard com unit
<b>Output</b>		
Number of channels		4
Connection		channel I: 9+, 10-; channel II: 11+, 12-; channel III: 13+, 14-; channel IV: 15+, 16-
Internal resistor	$R_i$	320 $\Omega$
Open loop voltage	$U_s$	24.5 V
Current limit	$I_{max}$	60 mA
Response time		10 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		< 180 $\Omega$
Open-circuit		> 6 k $\Omega$
Watchdog		within 0.5 s the device goes in safe state, e.g. after loss of communication
<b>Indicators/settings</b>		
LED indicator		LED green: supply LED red: line fault , red flashing: communication error
Coding		optional mechanical coding via front socket
<b>Directive conformity</b>		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1
<b>Conformity</b>		
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
<b>Ambient conditions</b>		
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 <sup>2</sup> , number of shock directions 6, number of shocks per direction 100
Vibration resistance		frequency range 5 ... 500 Hz, amplitude 5 ... 13.2 Hz $\pm$ 1.5 mm, 13.2 ... 100 Hz 1g, sweep rate 1 octave/min, duration 10 sweeps 5 Hz - 100 Hz - 5 Hz
Damaging gas		designed for operation in environmental conditions acc. to ISA-S71.04-1985, severity level G3
<b>Mechanical specifications</b>		
Degree of protection		IP20 (module) , a separate housing is required acc. to the system description
Connection		removable front connector with screw flange (accessory) wiring connection via spring terminals (0.14 ... 1.5 mm <sup>2</sup> ) or screw terminals (0.08 ... 1.5 mm <sup>2</sup> )
Mass		approx. 750 g
Dimensions		57 x 107 x 132 mm (2.2 x 4.2 x 5.2 inch)
<b>Data for application in connection with hazardous areas</b>		
EU-Type Examination Certificate		PTB 97 ATEX 1074 U
Marking		 II 2(1) G Ex d [ia Ga] IIC Gb  II (1) D [Ex ia Da] IIIC
<b>Output</b>		
Voltage	$U_o$	27.8 V
Current	$I_o$	107 mA
Power	$P_o$	744 mW
Internal capacitance	$C_i$	2.5 nF
Internal inductance	$L_i$	0 mH
Galvanic isolation		
Output/power supply, internal bus		safe electrical isolation acc. to EN 60079-11, voltage peak value 375 V
Directive conformity		

Release date 2017-03-24 17:17 Date of issue 2017-03-24 542114\_eng.xml

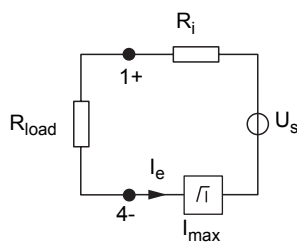
Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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Directive 2014/34/EU	EN 60079-0:2009 EN 60079-1:2007 EN 60079-11:2007 EN 60079-26:2007 EN 61241-11:2006
<b>International approvals</b>	
ATEX approval	PTB 97 ATEX 1075 ; PTB 97 ATEX 1074 U
EAC approval	Russia: RU C-IT.MIII06.B.00129
Marine approval	
Lloyd Register	15/20021
DNV GL Marine	TAA0000034
American Bureau of Shipping	T1450280/UN
Bureau Veritas Marine	22449/B0 BV
<b>General information</b>	
System information	The module has to be mounted in appropriate backplanes and housings (FB92**) in Zone 1, 2, 21, 22 or outside hazardous areas (gas or dust). Here, observe the corresponding EC-type examination certificate.
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 <a href="http://www.pepperl-fuchs.com">www.pepperl-fuchs.com</a> .

## Output data

### Load calculation



$$R_{load} = \text{Field loop resistance}$$

$$U_e = U_s - R_i \times I_e$$

$$I_e = U_s / (R_i + R_{load})$$

### Output characteristics

