

**Features**

- 4-channel
- Inputs Ex ia, Outputs Ex ia
- Analog input, digital input, analog output, digital output
- Supply circuit 21.5 V (4 mA)
- Installation in Zone 2, Zone 22, Div. 2, or safe area
- HART communication via field bus or service bus
- Simulation mode for service operations (forcing)
- Line fault detection (LFD): one LED per channel
- Permanently self-monitoring
- Module can be exchanged under voltage (hot swap)

**Function**

The device is a configurable universal module. Each channel can operate in the following modes:

- As an analog input (AI) it feeds 2-wire transmitters.
- As an analog output (AO) it can drive proportional valves, I/P converters, or local indicators.
- As a digital input (DI) it reads dry contacts.
- As a digital output (DO) it can drive solenoids, sounders, or LED.

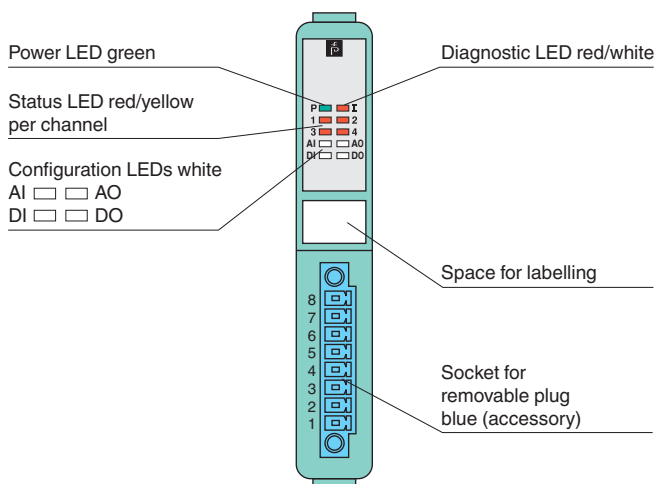
A combination of analog and digital I/O is possible.

Channel LEDs indicate the status of each channel. White LEDs indicate whether AI, AO, DI, DO are selected.

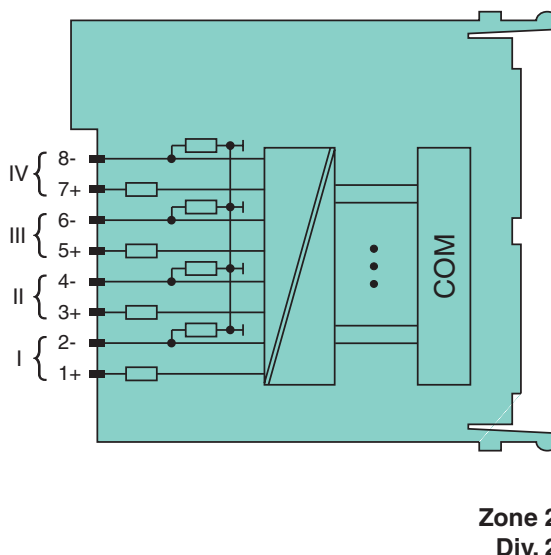
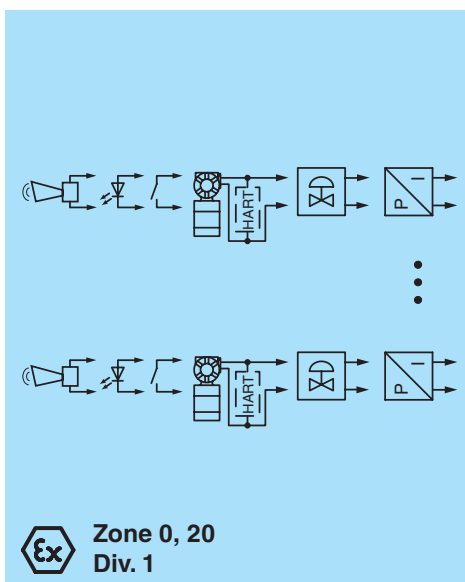
The intrinsically safe signals are galvanically isolated from the bus and the power supply.

**Assembly**

Front view



**Connection**



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<b>Supply</b>	
Connection	backplane bus
Rated voltage	12 V DC , only in connection with the power supplies LB9***
Power loss	1.5 W
Power consumption	3 W
<b>Internal bus</b>	
Connection	backplane bus
Interface	manufacturer-specific bus to standard com unit
<b>Input</b>	
Number of channels	4
Connection	Analog input (HART) : terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8- Digital Input : terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
<b>Output</b>	
Number of channels	4
Connection	Analog output (HART) : terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8- Digital Output : terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Watchdog	output off 0.5 s after serious fault
<b>Analog input</b>	
Suitable field devices	transmitters for pressure, differential pressure, level, flow, temperature, etc.
Transmitter supply voltage	21.5 V at 4 mA
Line fault detection	can be switched on/off for each channel via configuration tool , configurable via configuration tool
Short-circuit	Ex works settings: > 21 mA configurable between 0 ... 26 mA
Open-circuit	Ex works settings: < 3.6 mA configurable between 0 ... 26 mA
<b>Analog output</b>	
Suitable field devices	proportional valves , I/P converters , local indicators
Line fault detection	can be switched on/off for each channel via configuration tool , configurable via configuration tool
Short-circuit	Ex works settings: < 50 Ω configurable between 0 ... 26 mA
Open-circuit	deviation of preset output value > 0.5 mA
Load	750 Ω max.
<b>Digital input</b>	
Suitable field devices	mech. contacts or optocouplers
Switching point: OFF	< 1.2 mA
Switching point: ON	> 2.1 mA
Line fault detection	can be switched on/off for each channel via configuration tool
Connection	mechanical switch with additional resistors (see connection diagram)
Short-circuit	> 7 mA
Open-circuit	< 0.1 mA
<b>Digital output</b>	
Suitable field devices	solenoid valves, acoustic alarms and LED indicators (line fault detection can be deactivated)
Drive capability	12 V / 25 mA
Line fault detection	can be switched on/off for each channel via configuration tool
Test current	0.4 mA
Short-circuit	< 50 Ω
Open-circuit	< 0.2 mA
Open loop voltage	≥ 22.7 V
Current limit	26 mA
Internal resistor	385 Ω
<b>Transfer characteristics</b>	
Deviation	0.1 % of the signal range at 20 °C (68 °F)
Influence of ambient temperature	0.1 %/10 K of the signal range
Refresh time	approx. 100 ms (4 channels)
<b>Indicators/settings</b>	
LED indicator	Power LED (P) green: supply Diagnostic LED (I) red: module fault , red flashing: communication error , white: fixed parameter set (parameters from com unit are ignored) , white flashing: requests parameters from com unit Status LED (1-4) red: line fault (lead breakage or short circuit) , yellow: state of digital I/O (0/1) Configuration LED (AI, AO, DI, DO) white: selected channel mode
Coding	optional mechanical coding via front socket
<b>Directive conformity</b>	
Electromagnetic compatibility	
Directive 2004/108/EC	EN 61326-1:2006
<b>Conformity</b>	
Electromagnetic compatibility	NE 21:2007
Degree of protection	IEC 60529:2000
Environmental test	EN 60068-2-14:2009

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

Shock resistance	EN 60068-2-27:2009	
Vibration resistance	EN 60068-2-6:2008	
Damaging gas	EN 60068-2-42:2003	
Relative humidity	EN 60068-2-78:2001	
<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 ± 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 <sub>2</sub> , at 25 °C and 75 % rel. humidity, device G3	
<b>Mechanical specifications</b>		
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 <sup>2</sup> ) or screw terminals (0.08 ... 1.5 mm <sup>2</sup> )	
Mass	approx. 100 g	
Dimensions	16 x 100 x 103 mm (0.63 x 3.9 x 4 in)	
<b>Data for application in connection with Ex-areas</b>		
EC-Type Examination Certificate	BVS 11 ATEX E 116 X , for additional certificates see <a href="http://www.pepperl-fuchs.com">www.pepperl-fuchs.com</a>	
Group, category, type of protection	ⓧ II 3(1) G Ex nA [ia Ga] IIC T4 Gc ⓧ I (M1) [Ex ia Ma] I ⓧ II (1)D [Ex ia Da] IIIC	
<b>Input</b>		
Voltage	U <sub>o</sub>	27 V
Current	I <sub>o</sub>	87 mA
Power	P <sub>o</sub>	575 mW (linear characteristic)
<b>Output</b>		
Voltage	U <sub>o</sub>	27 V
Current	I <sub>o</sub>	87 mA
Power	P <sub>o</sub>	575 mW (linear characteristic)
<b>Electrical isolation</b>		
Rated voltage	U <sub>m</sub>	250 V field circuits to control and supply circuits
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	
<b>Directive conformity</b>		
Directive 94/9/EC	EN 60079-0:2009 EN 60079-11:2007 EN 60079-15:2010 EN 60079-26:2007 EN 61241-11:2006 EN 50303:2000	
<b>International approvals</b>		
UL approval	E106378	
IECEx approval	BVS 11.0068X	
Approved for	Ex nAc [ia] IIC T4 [Ex ia] IIIC [Ex ia] I	
<b>General information</b>		
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 <a href="http://www.pepperl-fuchs.com">www.pepperl-fuchs.com</a> .	

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