

**Features**

- 4-channel
- Analog input, digital input, analog output, digital output
- Installation in Zone 2, Zone 22, 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.

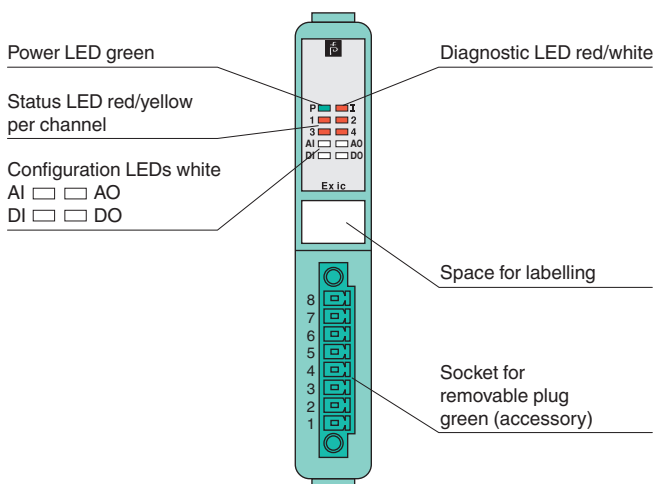
A combination of analog and digital I/O is possible.

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

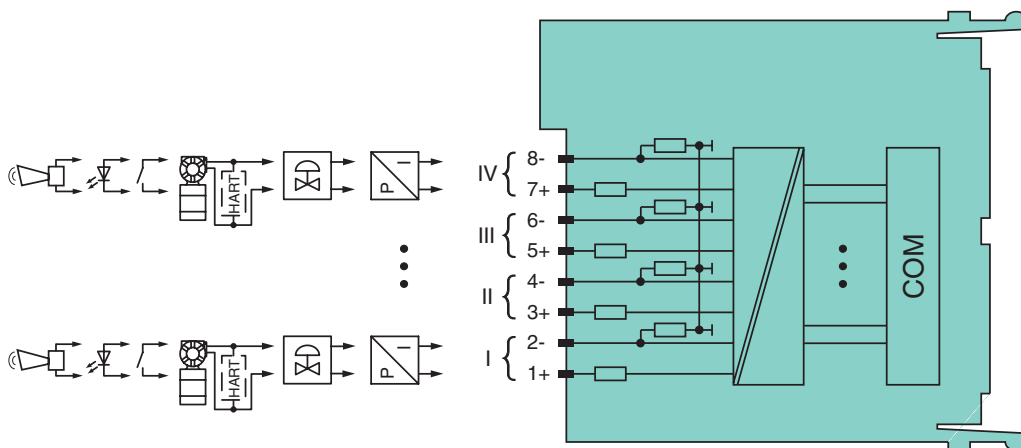
The signals are galvanically isolated from the bus and the power supply.

**Assembly**

Front view



**Connection**



Zone 2  
Div. 2

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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	≥ 15 V at 20 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	0.01 %/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".

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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) , 70 °C (non-Ex)
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 (module) , 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>	
Statement of conformity	BVS 12 ATEX E 115 X
Group, category, type of protection	Ⓔ II 3 G Ex nA [ic] 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
<b>International approvals</b>	
IECEx approval	BVS 11.0068X
Approved for	Ex nAc [ic] IIC T4
<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 or Zone 22) 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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