



Universal Input/Output (HART) FB7204B3

- 4-channel
- Inputs Ex ia, Outputs Ex ia
- Installation in suitable enclosures in Zone 1
- Module can be exchanged under voltage (hot swap)
- Analog input, digital input, analog output, digital output
- Supply circuit 21.5 V (4 mA)
- 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



Function

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

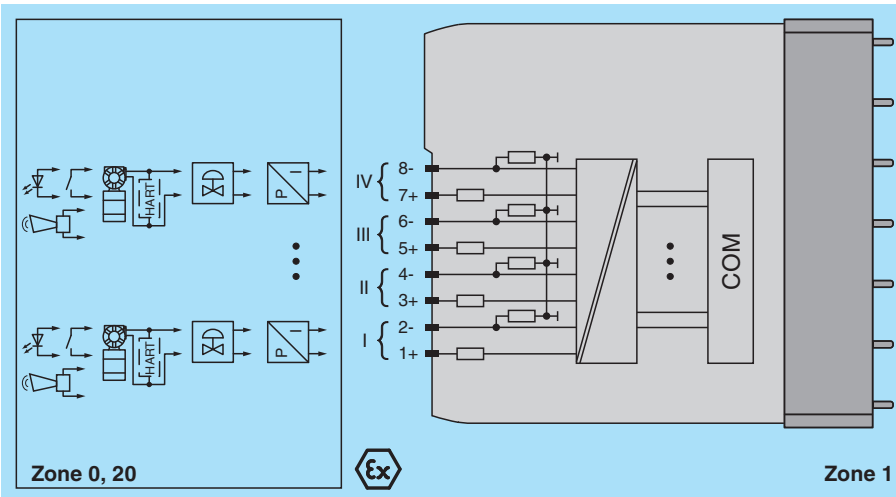
- As an analog input (AI) it feeds 2-wire transmitters.
- As an analog output (AO) it can drive proportional valves, I/P converters, or local indicators.
- As a digital input (DI) it reads dry contacts.
- As a digital output (DO) it can drive solenoids, sounders, or LED.

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.

Connection



Technical Data

Slots	
Occupied slots	1
Supply	
Connection	backplane bus
Rated voltage	U_r 12 V DC , only in connection with the power supplies FB92**
Power dissipation	2 W
Power consumption	3 W
Internal bus	
Connection	backplane bus

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Technical Data

Interface	manufacturer-specific bus to standard com unit
Analog input	
Number of channels	4
Suitable field devices	
Field device	pressure converter
Field device [2]	flow converter
Field device [3]	level converter
Field device [4]	Temperature Converter
Field device interface	
Connection	2-wire transmitter
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Transmitter supply voltage	min. 15 V at 20 mA ; 21.5 V at 4 mA
Input resistance	15 Ω
Line fault detection	can be switched on/off for each channel via configuration tool , configurable via configuration tool
Short-circuit	factory setting: > 21 mA Can be parameterized in the range 0 ... 22 mA
Open-circuit	factory setting: < 3.6 mA Can be parameterized in the range 0 ... 22 mA
HART communication	yes
HART secondary variable	yes
Analog output	
Number of channels	4
Suitable field devices	
Field device	Proportional Valve
Field device [2]	I/P converters
Field device [3]	on-site display
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Current	0 ... 20 mA short-circuit protected
Line fault detection	can be switched on/off for each channel via configuration tool , configurable via configuration tool
Short-circuit	factory setting: < 50 Ω configurable between 0 ... 26 mA
Open-circuit	deviation of preset output value > 0.5 mA
Load	max. 750 Ω at 20 mA
HART communication	yes
HART secondary variable	yes
Watchdog	output off 0.5 s after serious fault
Digital input	
Number of channels	4
Sensor interface	
Connection [2]	volt-free contact
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
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
Digital signals (active)	
Switching point: ON	> 2.1 mA
Switching point: OFF	< 1.2 mA
Digital output	
Number of channels	4
Suitable field devices	
Field device	Solenoid Valve
Field device [2]	audible alarm
Field device [3]	visual alarm
Connection	terminals 1+, 2-, 3+, 4-, 5+, 6-, 7+, 8-

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Drive capability		12 V / 22 mA
Internal resistor	R _i	385 Ω
Current limit	I _{max}	22 mA
Open loop voltage	U _s	min. 22.7 V
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
Transfer characteristics		
Deviation		
After calibration		0.1 % of the signal range at 20 °C (68 °F)
Influence of ambient temperature		0.1 %/10 K of the signal range
Resolution		12 Bit (0 ... 26 mA)
Refresh time		approx. 100 ms (4 channels)
Indicators/settings		
LED indication		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
Directive conformity		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013
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 60068-2-78
Ambient conditions		
Ambient temperature		-40 ... 60 °C (-40 ... 140 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Relative humidity		95 % non-condensing
Shock resistance		shock type I, shock duration 11 ms, shock amplitude 15 g, number of shocks 18
Vibration resistance		frequency range 10 ... 150 Hz; transition frequency: 57.56 Hz, amplitude/acceleration ± 0.075 mm/1 g; 10 cycles frequency range 5 ... 100 Hz; transition frequency: 13.2 Hz amplitude/acceleration ± 1 mm/0.7 g; 90 minutes at each resonance
Damaging gas		designed for operation in environmental conditions acc. to ISA-S71.04-1985, severity level G3
Mechanical specifications		
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 ²) or screw terminals (0.08 ... 1.5 mm ²)
Mass		approx. 425 g
Dimensions		28 x 107 x 132 mm (1.1 x 4.2 x 5.2 inch)
Data for application in connection with hazardous areas		
EU-type examination certificate		Presafe 19 ATEX 14057U
Marking		⊕ II 2(1)G Ex db eb q [ia Ga] IIC Gb II (1)D [Ex ia Da] IIIC I (M1) [Ex ia Ma] I
Supply		

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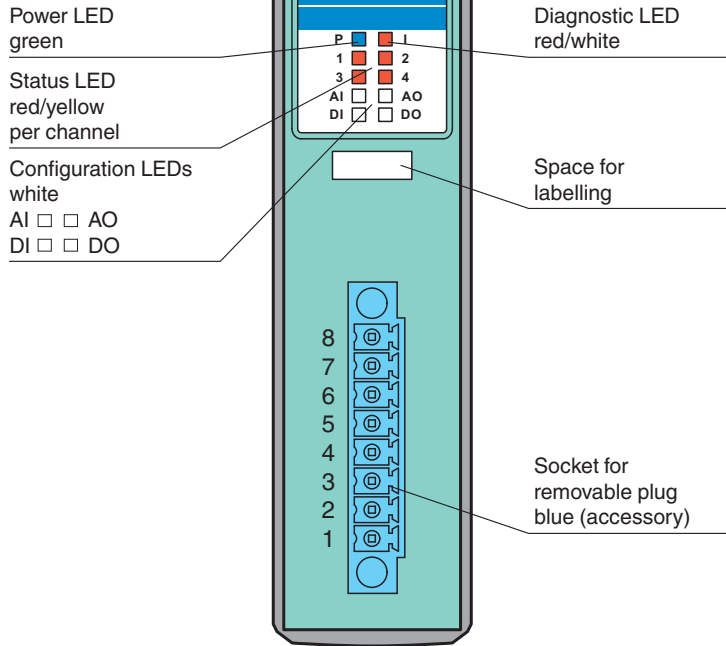
Technical Data

Voltage	U_o	27 V
Current	I_o	87 mA
Power	P_o	575 mW (linear characteristic)
Input		Ex ia
Voltage	U_o	27 V
Current	I_o	87 mA
Power	P_o	575 mW (linear characteristic)
Internal capacitance	C_i	0 nF
Internal inductance	L_i	0 mH
Output		Ex ia
Voltage	U_o	27 V
Current	I_o	87 mA
Power	P_o	575 mW (linear characteristic)
Galvanic isolation		
Rated voltage	U_m	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
Directive conformity		
Directive 2014/34/EU		EN IEC 60079-0:2018+AC:2020 EN 60079-1:2014 EN 60079-5:2015 EN 60079-7:2015+A1:2018 EN 60079-11:2012
International approvals		
ATEX approval		Presafe 19 ATEX 14057U
IECEx approval		
IECEx certificate		IECEx PRE 19.0012U
IECEx marking		Ex db eb q [ia Ga] IIC Gb [Ex ia Da] IIC [Ex ia Ma] I
General information		
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 www.pepperl-fuchs.com .

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Assembly

Front view



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