



Universal Input/Output (HART) LB7004A

- 4-channel
- Analog input, digital input, analog output, digital output
- Installation in Zone 2 or safe area
- 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
- Module can be exchanged under voltage



Function

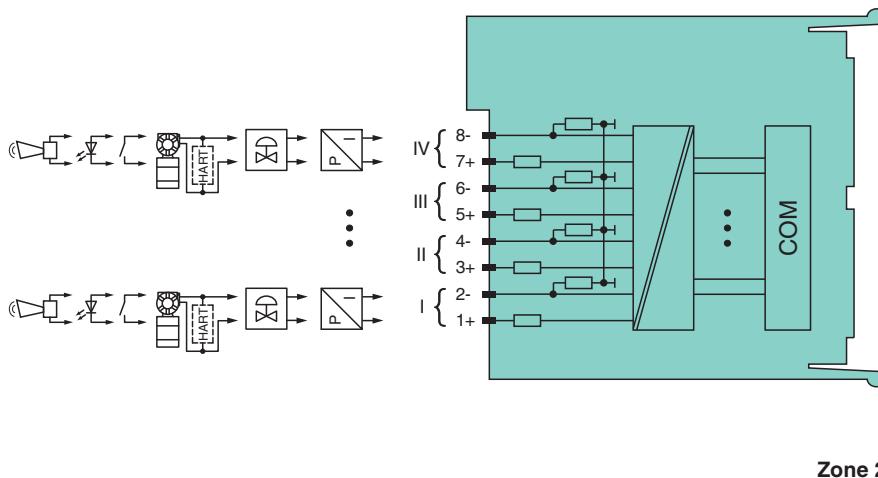
The device is a configurable universal module. Each channel can operate in the following modes:

- 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.

Connection



Technical Data

Slots

Occupied slots	1
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Supply

Connection	backplane bus	
Rated voltage	U_r	12 V DC, only in connection with the power supplies LB9***
Power dissipation	2.15 W	
Power consumption	3.3 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-	

Technical Data

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	0.01 %/K of the signal range	
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 21:2007	
Degree of protection	IEC 60529:2000	
Environmental test	EN 60068-2-14:2009	
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	
Ambient conditions		
Ambient temperature	-40 ... 60 °C (-40 ... 140 °F) , 70 °C (non-Ex)	
Storage temperature	-40 ... 85 °C (-40 ... 185 °F)	
Relative humidity	95 % non-condensing	
Altitude	max. 2000 m	
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) , 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. 100 g	
Dimensions	16 x 100 x 102 mm (0.63 x 3.9 x 4 inch)	
Data for application in connection with hazardous areas		
Certificate	BVS 12 ATEX E 115 X	
Marking	Ex II 3 G Ex nA [ic] IIC T4 Gc	
Galvanic isolation		
Rated voltage	U_m	250 V field circuits to control and supply circuits

Technical Data

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 60079-11:2012 EN 60079-15:2010
International approvals	
ATEX approval	BVS 12 ATEX E 115 X
IECEx approval	
IECEx certificate	IECEx BVS 11.0068X
IECEx marking	Ex nA [ic] IIC T4 Gc
General information	
System information	The module has to be mounted in appropriate backplanes (LB9***) in Zone 2 or outside hazardous areas. Here, observe the corresponding declaration of conformity. 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 www.pepperl-fuchs.com .

Assembly

Front view

