

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



Function

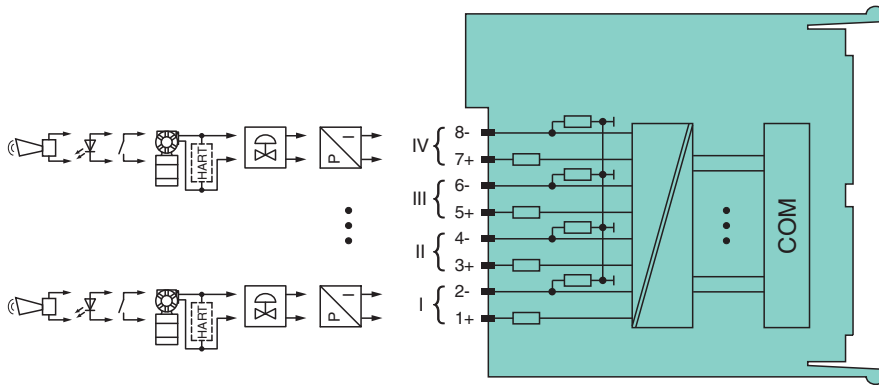
The device is a configurable universal module. Each channel can operate in the following modes:

- 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.

Wiring Diagram



Zone 2

Technical Data

| | |
|---------------------|--|
| Slots | |
| Occupied slots | 1 |
| 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 |
| Interface | manufacturer-specific bus to standard com unit |

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Technical Data

| | |
|----------------------------|--|
| 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- |
| Drive capability | 12 V / 22 mA |

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| 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) |
| Height | | 100 mm |
| Width | | 16 mm |
| Length | | 103 mm |
| Data for application in connection with hazardous areas | | |
| Certificate | | BVS 12 ATEX E 115 X |
| Marking | | Ⓔ II 3 G Ex nA [ic] IIC T4 Gc |

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Technical Data

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|-----------------------------------|-------|---|
| 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 60079-11:2012 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

