



Digital Output with Position Feedback

LB2102AR

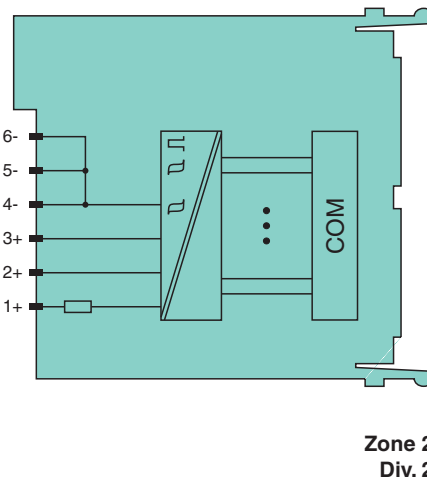
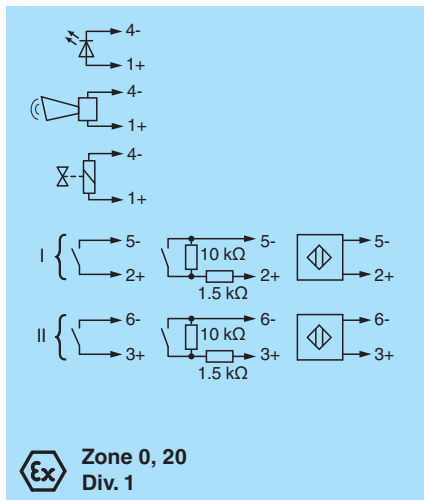
- 1 digital output, 2 digital inputs
- Inputs and output Ex ia
- Mounting in Zone 2, Class I/Div.2 or in the safe area
- Positive or negative logic selectable
- Simulation mode for service operations (forcing)
- Line fault detection (LFD)
- Permanently self-monitoring
- Output with watchdog
- Module can be exchanged under voltage



Function

The digital output features 1 output with 2 feedback inputs.
 The device can be used to switch solenoids, sounders, or indicators (without line fault detection) in the field. Furthermore, the device accepts digital input signals of NAMUR sensors or mechanical contacts from the field.
 Open and short circuit line faults are detected.
 The intrinsically safe inputs and the output 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 LB9*** |
| Power dissipation | 1.8 W |
| Power consumption | 2.4 W |
| Internal bus | |
| Connection | backplane bus |
| Interface | manufacturer-specific bus to standard com unit |
| Digital input | |

Release date: 2023-11-28 Date of issue: 2023-11-28 Filename: 302580_eng.pdf

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

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Technical Data

| | | |
|--------------------------------------|-----------|---|
| Number of channels | | 2 |
| Sensor interface | | |
| Connection | | NAMUR sensor |
| Connection [2] | | volt-free contact |
| Connection | | channel I: 2+, 5-; channel II: 3+, 6- |
| Rated values | | acc. to EN 60947-5-6 (NAMUR) |
| Switching point/switching hysteresis | | 1.2 ... 2.1 mA / ± 0.2 mA |
| Voltage | | 8.2 V |
| Internal resistor | R_i | 1 k Ω |
| Line fault detection | | can be switched on/off for each channel via configuration tool |
| Connection | | mechanical switch with additional resistors (see connection diagram) proximity switches without additional wiring |
| Short-circuit | | < 360 Ω |
| Open-circuit | | < 0.35 mA |
| Minimum pulse duration | | 1 ms |
| Digital output | | |
| Number of channels | | 1 |
| Suitable field devices | | |
| Field device | | Solenoid Valve |
| Field device [2] | | audible alarm |
| Field device [3] | | visual alarm |
| Connection | | channel I: 1+, 4- |
| Internal resistor | R_i | 210 Ω |
| Current limit | I_{max} | 66 mA |
| Open loop voltage | U_s | 24 V |
| Line fault detection | | can be switched on/off for each channel via configuration tool , also when turned off (every 2.5 s the valve is turned on for 2 ms) |
| Short-circuit | | < 200 Ω |
| Open-circuit | | > 1.2 k Ω |
| Response time | | 20 ms (depending on bus cycle time) |
| Watchdog | | within 0.5 s the device goes in safe state, e.g. after loss of communication |
| Indicators/settings | | |
| LED indication | | LED green: supply LED red: line fault, per channel LED yellow: signal (status), per channel |
| Coding | | optional mechanical coding via front socket |
| Directive conformity | | |
| Electromagnetic compatibility | | |
| Directive 2014/30/EU | | EN 61326-1 |
| 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 | | -20 ... 60 °C (-4 ... 140 °F) |
| Storage temperature | | -25 ... 85 °C (-13 ... 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 |

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Technical Data

| | | |
|--|----------------|---|
| 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 when 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. 110 g |
| Dimensions | | 16 x 100 x 102 mm (0.63 x 3.9 x 4 inch) |
| Data for application in connection with hazardous areas | | |
| EU-type examination certificate | | PTB 03 ATEX 2042 X |
| Marking | | ⊕ II (1)G [Ex ia Ga] IIB ⊕ II (1)D [Ex ia Da] IIIC ⊕ I (M1) [Ex ia Ma] I |
| Input | | |
| Voltage | U _o | 14.1 V |
| Current | I _o | 16 mA |
| Power | P _o | 55 mW (linear characteristic) |
| Internal capacitance | C _i | 1.65 nF |
| Internal inductance | L _i | 0 mH |
| Output | | |
| Voltage | U _o | 27.83 V |
| Current | I _o | 183 mA |
| Power | P _o | 1270 mW |
| Internal capacitance | C _i | 1.65 nF |
| Internal inductance | L _i | 0 mH |
| Certificate | | PF 08 CERT 1234 X |
| Marking | | ⊕ II 3 G Ex nA IIB T4 Gc |
| Galvanic 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 2014/34/EU | | EN IEC 60079-0:2018+AC:2020 EN 60079-11:2012 EN 60079-15:2010 |
| International approvals | | |
| ATEX approval | | PF 08 CERT 1234 X PTB 03 ATEX 2042 X |
| UL approval | | E106378 |
| Control drawing | | 116-0321A |
| IECEx approval | | |
| IECEx certificate | | IECEx BVS 09.0037X |
| IECEx marking | | Ex nA [ia Ga] IIB T4 Gc [Ex ia Da] IIIC |
| 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, 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 www.pepperl-fuchs.com . |

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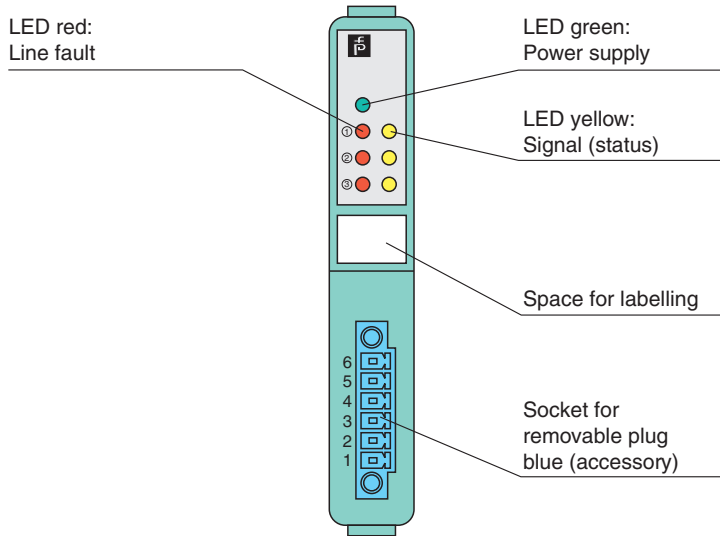
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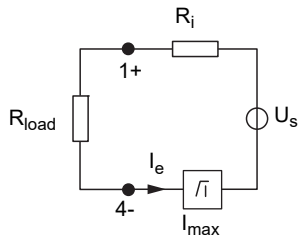
Assembly

Front view



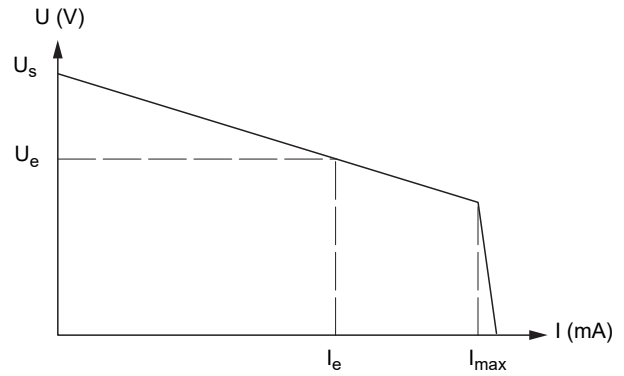
Characteristic Curve

Load calculation



R_{load} = Field loop resistance
 $U_e = U_s - R_i \times I_e$
 $I_e = U_s / (R_i + R_{load})$

Output characteristics



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