

# Digital Output with Position Feedback LB2117E

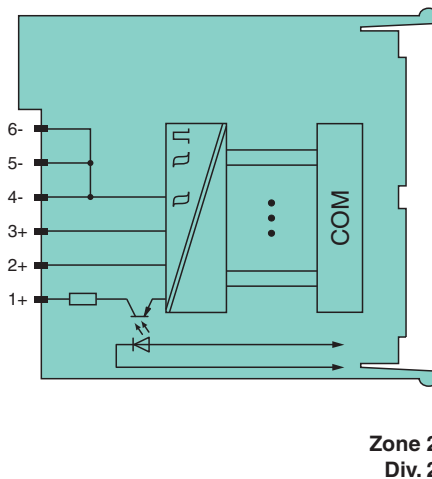
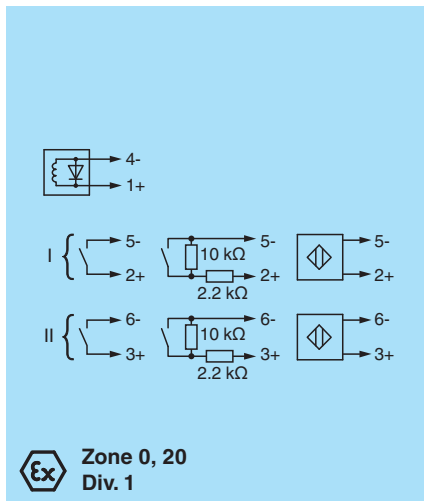
- 1-channel
- 1 digital output, 2 digital inputs
- Mounting in Zone 2, Class I/Div.2 or in the safe area
- Inputs and output Ex ia
- Line fault detection switched on and off
- Positive or negative logic selectable
- Simulation mode for service operations (forcing)
- Permanently self-monitoring
- Output with watchdog
- Output with bus-independent safety shutdown
- 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. The output can be switched off via a contact. This can be used for bus-independent safety applications. Open and short circuit line faults are detected in on and off state. The intrinsically safe inputs and the output are galvanically isolated from the bus and the power supply.

## Connection Assignment



## Technical Data

<b>Slots</b>	
Occupied slots	1
<b>Supply</b>	
Connection	backplane bus
Rated voltage	$U_r$ Use only in connection with the power supplies LB9***
Power dissipation	1.3 W
Power consumption	1.85 W
<b>Internal bus</b>	
Connection	backplane bus
Interface	manufacturer-specific bus to standard com unit

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

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## Technical Data

<b>Digital input</b>		
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 $\Omega$
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 $\Omega$
Open-circuit		< 0.35 mA
Minimum pulse duration		1 ms
<b>Digital output</b>		
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	$R_i$	131 $\Omega$
Current limit	$I_{max}$	50 mA
Open loop voltage	$U_s$	16.5 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		< 50 $\Omega$
Open-circuit		> 10 k $\Omega$
Response time		10 ms (depending on bus cycle time)
Watchdog		within 0.5 s the device goes in safe state, e.g. after loss of communication
<b>Indicators/settings</b>		
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 (O: output, I1: input 1, I2: input 2) red: line fault (lead breakage or short circuit) , yellow: state of digital I/O (0/1)
Coding		optional mechanical coding via front socket
<b>Directive conformity</b>		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013
<b>Conformity</b>		
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
<b>Ambient conditions</b>		
Ambient temperature		-40 ... 60 °C (-40 ... 140 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Relative humidity		95 % non-condensing

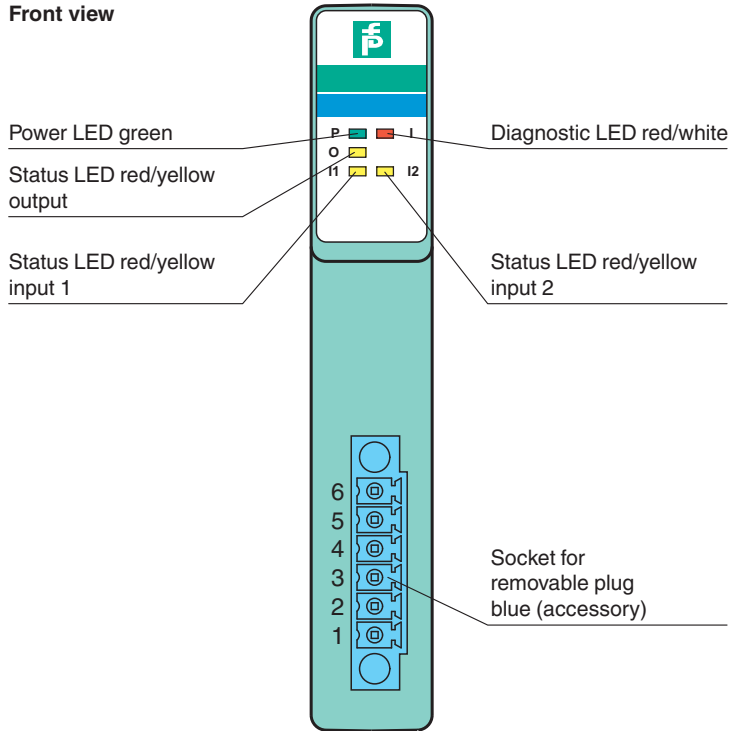
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## Technical Data

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 $\pm 0.075$ mm/1 g; 10 cycles frequency range 5 ... 100 Hz; transition frequency: 13.2 Hz amplitude/acceleration $\pm 1$ 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
<b>Mechanical specifications</b>		
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 <sup>2</sup> ) or screw terminals (0.08 ... 1.5 mm <sup>2</sup> )
Mass		approx. 110 g
Dimensions		16 x 100 x 102 mm (0.63 x 3.9 x 4 inch)
<b>Data for application in connection with hazardous areas</b>		
EU-type examination certificate		EXA 16 ATEX 0025X
Marking		Ⓜ II 3(1) G Ex nA [ia Ga] IIC T4 Gc Ⓜ II (1) D [Ex ia Da] IIIC Ⓜ I (M1) [Ex ia Ma] I
<b>Input</b>		
Voltage	U <sub>o</sub>	10 V
Current	I <sub>o</sub>	13 mA
Power	P <sub>o</sub>	33 mW (linear characteristic)
Internal capacitance	C <sub>i</sub>	1.2 nF
Internal inductance	L <sub>i</sub>	0 mH
<b>Output</b>		
Voltage	U <sub>o</sub>	17.8 V
Current	I <sub>o</sub>	162 mA
Power	P <sub>o</sub>	751 mW
Internal capacitance	C <sub>i</sub>	12 nF
Internal inductance	L <sub>i</sub>	0 mH
<b>Galvanic isolation</b>		
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
<b>Directive conformity</b>		
Directive 2014/34/EU		EN IEC 60079-0:2018+AC:2020 EN 60079-11:2012 EN 60079-15:2010
<b>International approvals</b>		
ATEX approval		EXA 16 ATEX 0025X
UL approval		E106378
Control drawing		116-0426 (cULus)
IECEx approval		IECEx EXA 16.0010X
Approved for		Ex nA [ia Ga] IIC T4 Gc [Ex ia Da] IIIC [Ex ia Ma] I
<b>General information</b>		
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		Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable. For information see <a href="http://www.pepperl-fuchs.com">www.pepperl-fuchs.com</a> .

## Assembly

Front view



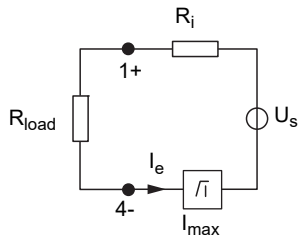
## Accessories

	<p><b>LB9180</b></p>	<p>Watchdog Plug, 1-channel</p>
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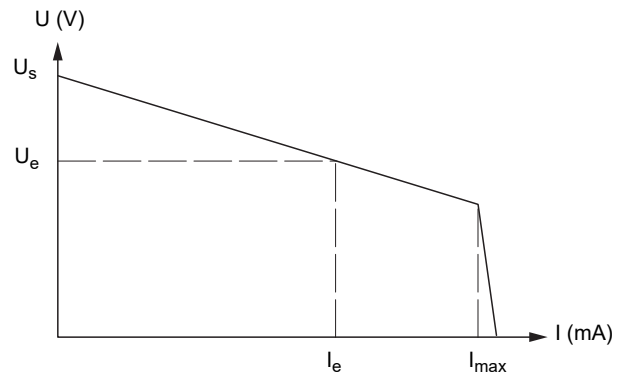
**Characteristic Curve**

**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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