

# Digital Output with Shutdown Input

## LB6110ER



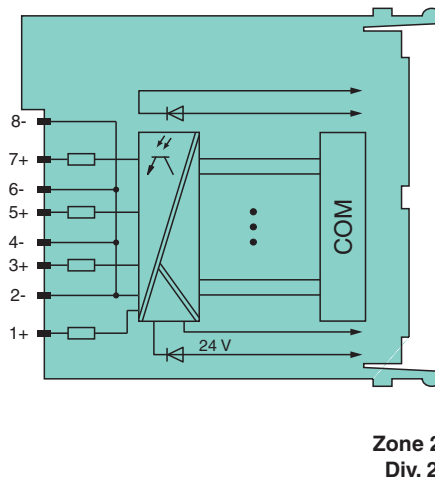
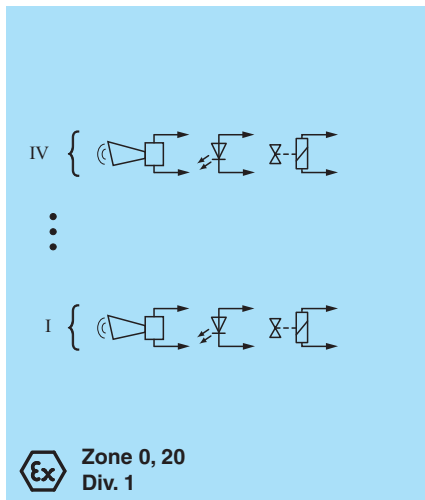
- 4-channel
- Outputs Ex ia
- Installation in Zone 2 or safe area
- Line fault detection (LFD)
- Positive or negative logic selectable
- Simulation mode for service operations (forcing)
- Permanently self-monitoring
- Output with watchdog
- Output with bus-independent safety shutdown



### Function

The digital output features 4 independent channels.  
 The device can be used to drive solenoids, sounders, or LEDs.  
 Open and short-circuit line faults are detected.  
 The outputs are galvanically isolated from the bus and the power supply.  
 The output can be switched off via a contact. This can be used for bus-independent safety applications.

### Connection



### Technical Data

<b>Slots</b>	
Occupied slots	2
<b>Functional safety related parameters</b>	
Safety Integrity Level (SIL)	SIL 2
<b>Supply</b>	
Connection	backplane bus / booster terminals
Rated voltage	$U_r$ 12 V DC , only in connection with the power supplies LB9***
Input voltage range	$U$ 18.5 ... 32 V DC (SELV/PELV) booster voltage
Power dissipation	3 W
Power consumption	0.15 W
<b>Internal bus</b>	

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

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## Technical Data

Connection		backplane bus
Interface		manufacturer-specific bus to standard com unit
<b>Digital output</b>		
Number of channels		4
Suitable field devices		
Field device		Solenoid Valve
Field device [2]		audible alarm
Field device [3]		visual alarm
Connection		channel I: 1+, 2-; channel II: 3+, 4-; channel III: 5+, 6-; channel IV: 7+, 8-
Internal resistor	$R_i$	max. 370 $\Omega$
Current limit	$I_{max}$	37 mA
Open loop voltage	$U_s$	24.5 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		< 100 $\Omega$
Open-circuit		> 15 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
Reaction time		10 s
<b>Indicators/settings</b>		
LED indication		Power LED (P) green: supply Status LED (I) red: line fault , red flashing: communication error
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		
		-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
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. 150 g
Dimensions		
		32.5 x 100 x 102 mm (1.28 x 3.9 x 4 inch)
<b>Data for application in connection with hazardous areas</b>		
EU-type examination certificate		PTB 03 ATEX 2042 X

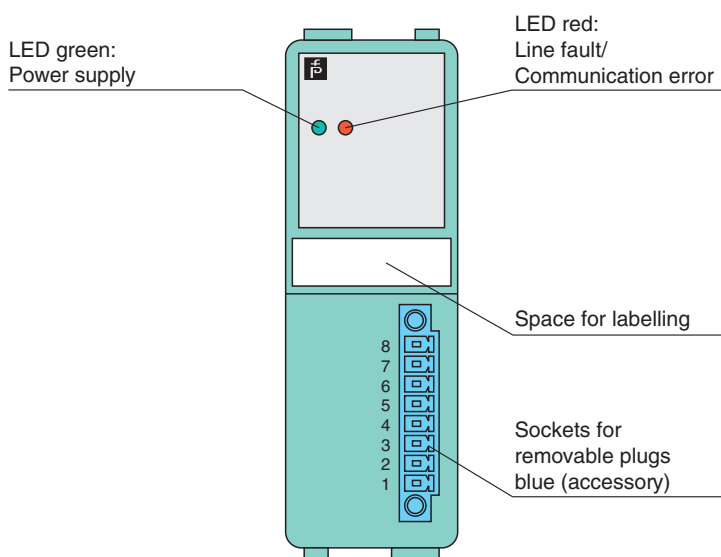
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**Technical Data**

Marking		Ⓜ II (1)G [Ex ia Ga] IIC Ⓜ II (1)D [Ex ia Da] IIIC Ⓜ I (M1) [Ex ia Ma] I
<b>Output</b>		
Voltage	$U_o$	27.8 V
Current	$I_o$	90.4 mA
Power	$P_o$	629 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 IIC T4 Gc
<b>Galvanic isolation</b>		
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		PTB 03 ATEX 2042 X
IECEX approval		
IECEX certificate		IECEX BVS 09.0037X
IECEX marking		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		EC-Type Examination Certificate, Statement of Conformity, Declaration of Conformity, Attestation of Conformity and instructions have to be observed where applicable. For information see <a href="http://www.pepperl-fuchs.com">www.pepperl-fuchs.com</a> .

**Assembly**

**Front view**



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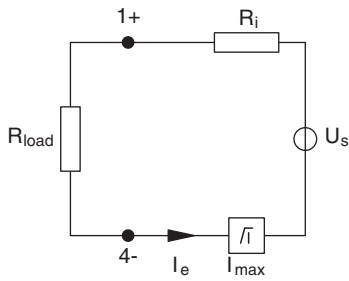
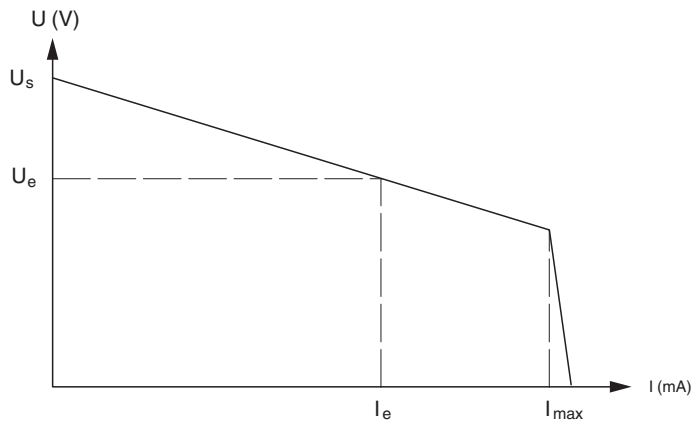
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**Load calculation**  
 $R_{load}$  = Field loop resistance  
 $U_e = U_s - R_i \times I_e$   
 $I_e = U_s / (R_i + R_{load})$

**Characteristic Curve**



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