

# Digital Output with Shutdown Input

## LB6111ER



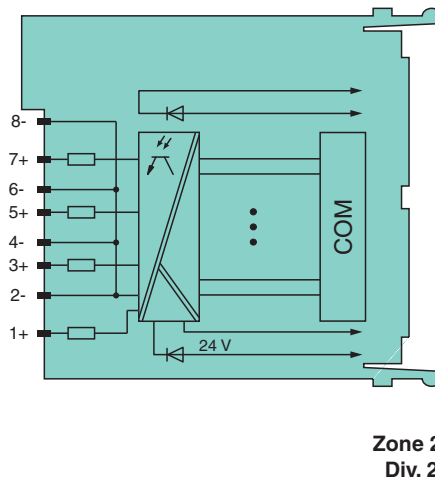
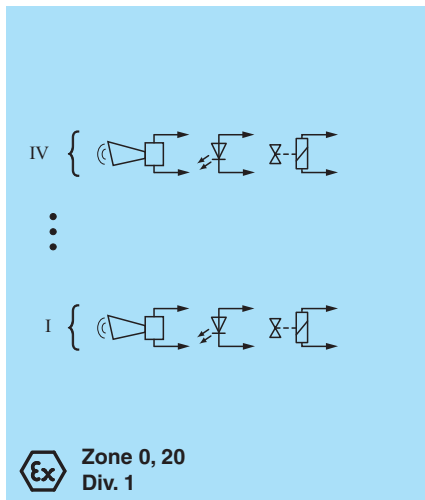
- 4-channel
- Outputs Ex ia
- Installation in Zone 2 or safe area
- Line fault detection (LFD)
- Positive or negative logic selectable
- Simulation mode for service operations (forcing)
- Permanently self-monitoring
- Output with watchdog
- Output with bus-independent safety shutdown



### 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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## 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. 320 $\Omega$
Current limit	$I_{max}$	40 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		
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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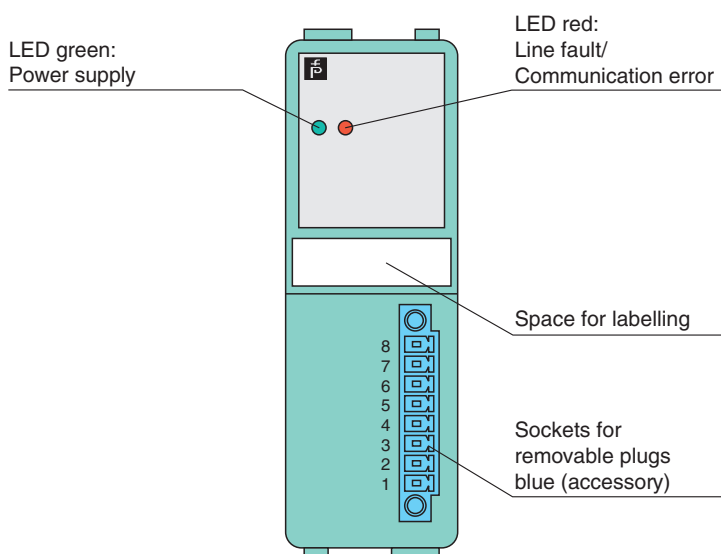
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**Technical Data**

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	$I_o$	107 mA
Power	$P_o$	744 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
<b>IECEX approval</b>		
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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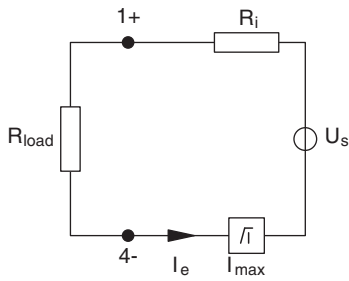
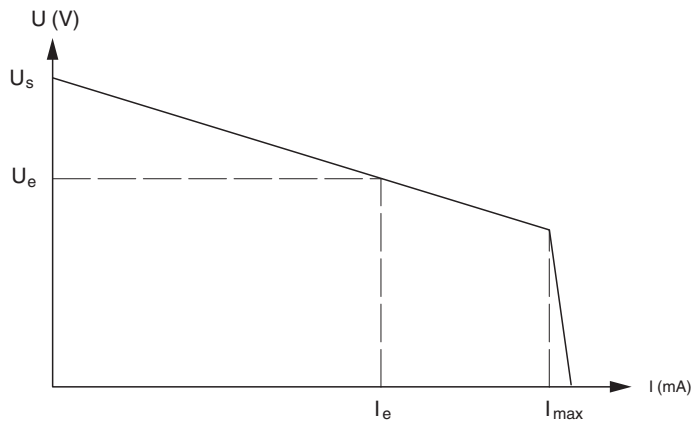
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**Load calculation**  
 $R_{load}$  = Field loop resistance  
 $U_e = U_s - R_i \times I_e$   
 $I_e = U_s / (R_i + R_{load})$

**Characteristic Curve**



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