Digital Output with Shutdown Input

LB6114ER

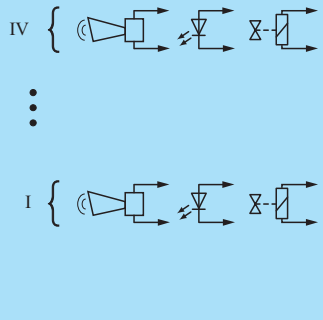
- 4-channel
- Outputs Ex ia
- Installation in Zone 2 or safe area
- Positive or negative logic selectable
- Simulation mode for service operations (forcing)
- Line fault detection (LFD)
- Permanently self-monitoring
- Output with watchdog
- Output with bus-independent safety shutdown

CE Ex SIL 2

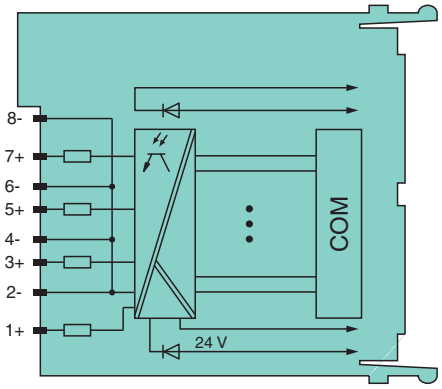
Function

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



Zone 0, 20
Div. 1



Zone 2
Div. 2

Technical Data

Slots		
Occupied slots		2
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 2
Supply		
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
Internal bus		

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Technical Data

Connection		backplane bus
Interface		manufacturer-specific bus to standard com unit
Digital output		
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. 355 Ω
Current limit	I_{max}	55 mA
Open loop voltage	U_s	23 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 Ω
Open-circuit		> 15 kΩ
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
Indicators/settings		
LED indication		Power LED (P) green: supply Status LED (I) red: line fault , red flashing: communication error
Coding		optional mechanical coding via front socket
Directive conformity		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013
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
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. 150 g
Dimensions		32.5 x 100 x 102 mm (1.28 x 3.9 x 4 inch)
Data for application in connection with hazardous areas		
EU-type examination certificate		PTB 03 ATEX 2042 X

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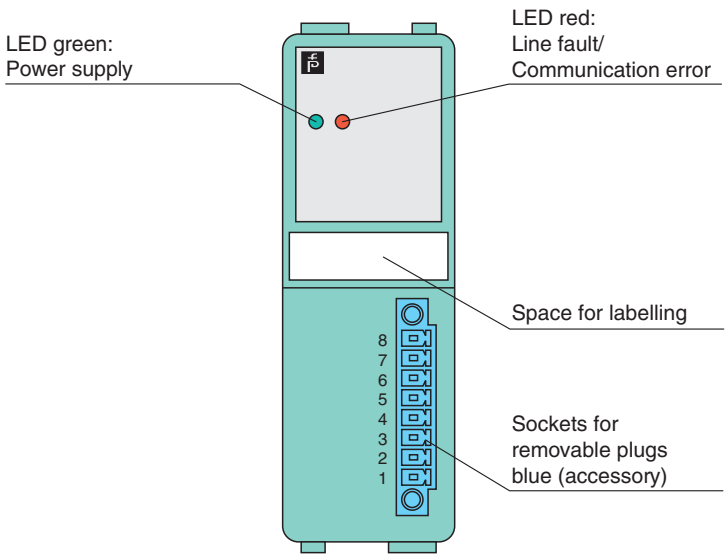
Technical Data

Marking		⟨Ex⟩ II (1)G [Ex ia Ga] IIC ⟨Ex⟩ II (1)D [Ex ia Da] IIIC ⟨Ex⟩ I (M1) [Ex ia Ma] I
Output		
Voltage	U_o	26 V
Current	I_o	88.7 mA
Power	P_o	578 mW
Internal capacitance	C_i	1.65 nF
Internal inductance	L_i	0 mH
Certificate		PF 08 CERT 1234 X
Marking		⟨Ex⟩ II 3 G Ex nA IIC T4 Gc
Galvanic isolation		
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		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
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.

Assembly

Front view



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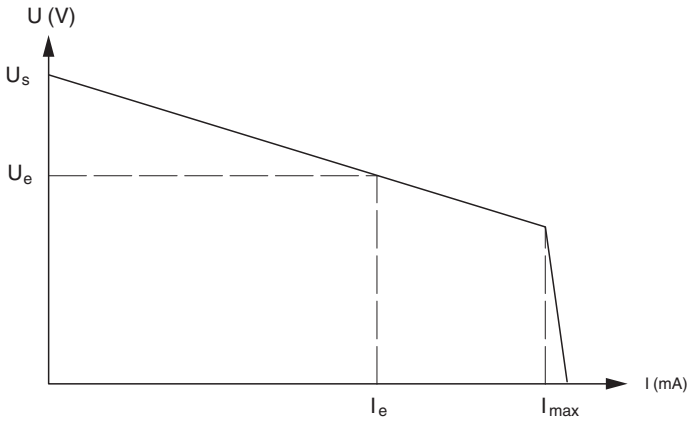
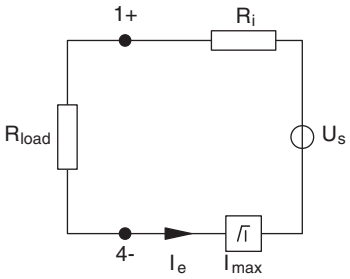
Load calculation
R_{load} = Field loop resistance
$U_e = U_s - R_i \times I_e$
$I_e = U_s/(R_i + R_{load})$

Characteristic Curve





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