

Digital Output with Shutdown Input

LB6016E

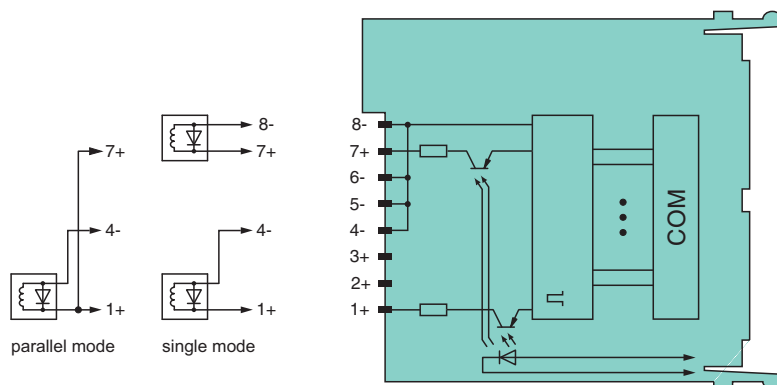
- 2-channel
- Outputs Ex ic
- Installation in Zone 2 or safe area
- Line fault detection switched on and off
- Positive or negative logic selectable
- Simulation mode for service operations (forcing)
- Permanently self-monitoring
- Output with watchdog
- Output with bus-independent safety shutdown
- Module can be exchanged under voltage (hot swap)



Function

The digital output features 2 independent channels.
 The device can be used to drive solenoids, sounders, or LEDs.
 Open and short circuit line faults are detected in on and off state.
 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 2

Technical Data

Slots		
Occupied slots		1
Supply		
Connection		backplane bus
Rated voltage	U _r	Use only in connection with the power supplies LB9***
Power dissipation		1.95 W
Power consumption		2.9 W
Internal bus		
Connection		backplane bus
Interface		manufacturer-specific bus to standard com unit
Digital output		

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

Pepperl+Fuchs Group
 www.pepperl-fuchs.com

USA: +1 330 486 0002
 pa-info@us.pepperl-fuchs.com

Germany: +49 621 776 2222
 pa-info@de.pepperl-fuchs.com

Singapore: +65 6779 9091
 pa-info@sg.pepperl-fuchs.com

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Technical Data

Number of channels	2
Suitable field devices	
Field device	Solenoid Valve
Field device [2]	audible alarm
Field device [3]	visual alarm
Connection	channel I: 1+, 4/5/6/8-; channel II: 7+, 4/5/6/8-
Internal resistor	R_i 258 Ω , both channels parallel 129 Ω
Current limit	I_{max} 40 mA both channels parallel 80 mA
Open loop voltage	U_s 23 V , both channels parallel 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	< 50 Ω
Open-circuit	> 10 k Ω
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
Indicators/settings	
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 (1, 2) red: line fault (lead breakage or short circuit) , yellow: state of digital I/O (0/1) Mode LED (M) white: Parallel operation of outputs
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	-40 ... 60 °C (-40 ... 140 °F)
Storage temperature	-40 ... 85 °C (-40 ... 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	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	EXA 16 ATEX 0035X
Marking	Ⓔ II 3 G Ex nA [ic] IIC T4 Gc
Output	

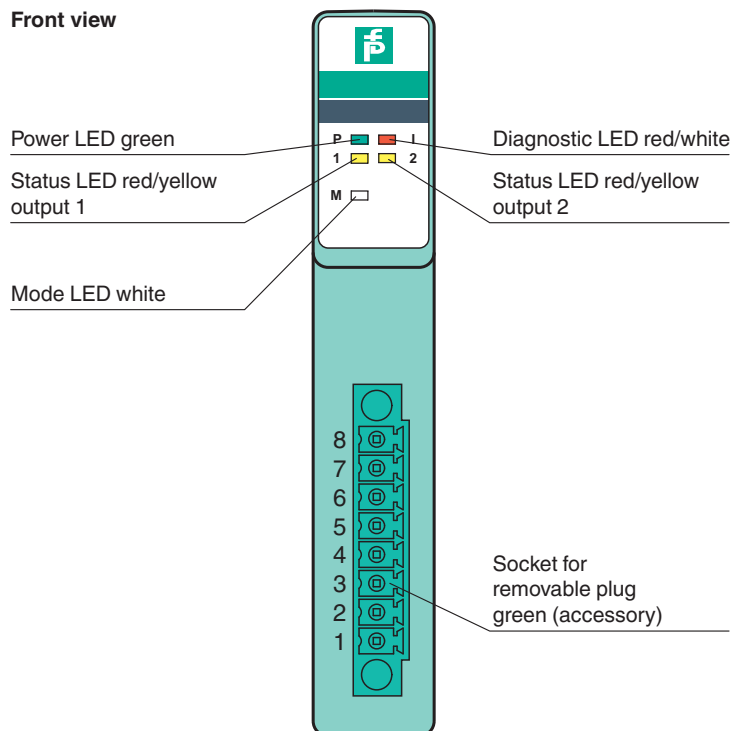
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Technical Data

Voltage	U_o	24.2 V
Current	I_o	108 mA
Power	P_o	654 mW
Internal capacitance	C_i	12 nF
Internal inductance	L_i	0 mH
Output (both channels parallel)		
Voltage	U_o	24.2 V
Current	I_o	216 mA
Power	P_o	1307 mW
Internal capacitance	C_i	24 nF
Internal inductance	L_i	0 mH
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		EXA 16 ATEX 0035X
IECEx approval		IECEx EXA 16.0010X
Approved for		Ex nA [ic] IIC T4 Gc
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		Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable. For information see www.pepperl-fuchs.com .

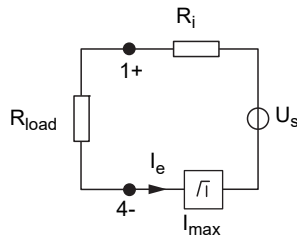
Assembly

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

