Взрывозащищённая система ввода/вывода серии LB

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Киргизия +996(312)96-26-47

эл.почта: phb@nt-rt.ru || сайт: https://pepperl-fuchs.nt-rt.ru/



Universal Input/Output (HART) LB7104A

- 4-channel
- Inputs Ex ia, Outputs Ex ia
- Analog input, digital input, analog output, digital output
- Mounting in Zone 2, Class I/Div.2 or in the safe area
- Supply circuit 15 V (20 mA)
- HART communication via field bus or service bus
- Simulation mode for service operations (forcing)
- Line fault detection (LFD): one LED per channel
- Permanently self-monitoring
- Module can be exchanged under voltage





Function

The device is a configurable universal module. Each channel can operate in the following modes:
- As an analog input (AI) it feeds 2-wire transmitters.
- As an analog output (AO) it can drive proportional valves, I/P converters, or local indicators.
- As a digital input (DI) it reads dry contacts.

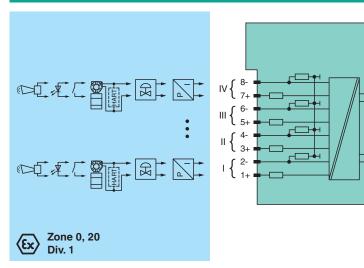
- As a digital output (DO) it can drive solenoids, sounders, or LED.

A combination of analog and digital I/O is possible.

Channel LEDs indicate the status of each channel. White LEDs indicate whether AI, AO, DI, DO are selected.

The intrinsically safe signals are galvanically isolated from the bus and the power supply.

Connection



Technical Data

	1
	backplane bus
Ur	12 V DC , only in connection with the power supplies LB9***
	2 W
	3 W
	backplane bus
	Ur

COM

Zone 2

Div. 2

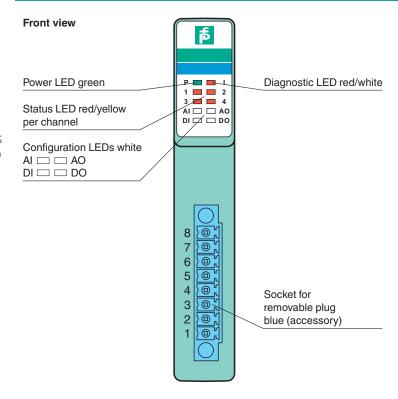
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Interface	manufacturer-specific bus to standard com unit
Analog input	
Number of channels	4
Suitable field devices	
Field device	pressure converter
Field device [2]	flow converter
Field device [3]	level converter
Field device [4]	Temperature Converter
Field device interface	
Connection	2-wire transmitter
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Transmitter supply voltage	min. 15 V at 20 mA; 21.5 V at 4 mA
Input resistance	15 Ω
Line fault detection	can be switched on/off for each channel via configuration tool , configurable via configuration tool
Short-circuit	factory setting: > 21 mA Can be parameterized in the range 0 22 mA
Open-circuit	factory setting: < 3.6 mA Can be parameterized in the range 0 22 mA
HART communication	yes
HART secondary variable	yes
Analog output	
Number of channels	4
Suitable field devices	
Field device	Proportional Valve
Field device [2]	I/P converters
Field device [3]	on-site display
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Current	0 20 mA short-circuit protected
Line fault detection	can be switched on/off for each channel via configuration tool, configurable via configuration tool
Short-circuit	factory setting: $< 50 \Omega$ configurable between 0 26 mA
Open-circuit	deviation of preset output value > 0.5 mA
Load	max. 750 Ω at 20 mA
HART communication	yes
HART secondary variable	yes
Watchdog	output off 0.5 s after serious fault
Digital input	·
Number of channels	4
Sensor interface	
Connection [2]	volt-free contact
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Line fault detection	can be switched on/off for each channel via configuration tool
Connection	mechanical switch with additional resistors (see connection diagram)
Short-circuit	> 7 mA
Open-circuit	< 0.1 mA
Digital signals (active)	
Switching point: ON	> 2.1 mA
Switching point: OFF	< 1.2 mA
Digital output	
Number of channels	4
Suitable field devices	7
Field device	Solenoid Valve
	audible alarm
Field device [2]	audibie alarm visual alarm
Field device [3] Connection	terminals 1+, 2-, 3+, 4-, 5+, 6-, 7+, 8-

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Technical Data		
Drive capability	_	12 V / 22 mA
Internal resistor	Ri	385 Ω
Current limit	I _{max}	22 mA
Open loop voltage	Us	min. 22.7 V
Line fault detection		can be switched on/off for each channel via configuration tool
Test current		0.4 mA
Short-circuit		<50 Ω
Open-circuit		< 0.2 mA
ransfer characteristics		
Deviation		
After calibration		0.1 % of the signal range at 20 °C (68 °F)
Influence of ambient temperature		0.1 %/10 K of the signal range
Refresh time		approx. 100 ms (4 channels)
ndicators/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 (1-4) red: line fault (lead breakage or short circuit), yellow: state of digital I/O (0/1) Configuration LED (AI, AO, DI, DO) white: selected channel mode
Coding		optional mechanical coding via front socket
Pirective conformity		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013
onformity		
Electromagnetic compatibility		NE 21:2007
Degree of protection		IEC 60529:2000
Environmental test		EN 60068-2-14:2009
Shock resistance		EN 60068-2-27:2009
Vibration resistance		EN 60068-2-6:2008
Damaging gas		EN 60068-2-42:2003
Relative humidity		EN 60068-2-78:2001
mbient 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 ± mm/0.7 g; 90 minutes at each resonance
Damaging gas		designed for operation in environmental conditions acc. to ISA-S71.04-1985, severi level G3
lechanical 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 mm²) or screw terminals (0.08 1.5 mm²)
Mass		approx. 100 g
Dimensions		16 x 100 x 102 mm (0.63 x 3.9 x 4 inch)
ata for application in connection with hazar	rdous a	ireas
EU-type examination certificate		BVS 11 ATEX E 116 X
Marking		 ⊕ II 3(1) G Ex nA [ia Ga] IIC T4 Gc ⊕ I (M1) [Ex ia Ma] I ⊕ II (1) D [Ex ia Da] IIIC
Input		
r ·		

Technical Data		
Voltage	U _o	27 V
Current	lo	87 mA
Power	Po	575 mW (linear characteristic)
Output		
Voltage	U_{\circ}	27 V
Current	lo	87 mA
Power	P_o	575 mW (linear characteristic)
Galvanic isolation		
Rated voltage	U_{m}	250 V field circuits to control and supply circuits
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
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		BVS 11 ATEX E 116X
UL approval		E106378
IECEx approval		
IECEx certificate		IECEx BVS 11.0068X
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		





Universal Input/Output (HART) LB7004A

- 4-channel
- Analog input, digital input, analog output, digital output
- Installation in Zone 2 or safe area
- Supply circuit 21.5 V (4 mA)
- HART communication via field bus or service bus
- Simulation mode for service operations (forcing)
- Line fault detection (LFD): one LED per channel
- Permanently self-monitoring
- Module can be exchanged under voltage





Function

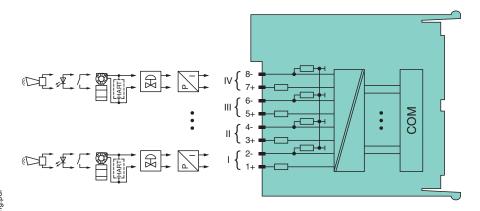
The device is a configurable universal module. Each channel can operate in the following modes:
- As an analog input (AI) it feeds 2-wire transmitters.
- As an analog output (AO) it can drive proportional valves, I/P converters, or local indicators.

- As a digital input (DI) it reads dry contacts.
- As a digital output (DO) it can drive solenoids, sounders, or LED.

A combination of analog and digital I/O is possible.

Channel LEDs indicate the status of each channel. White LEDs indicate whether AI, AO, DI, DO are selected. The signals are galvanically isolated from the bus and the power supply.

Connection



Zone 2

Technical Data

Slots		
Occupied slots		1
Supply		
Connection		backplane bus
Rated voltage	U _r	12 V DC , only in connection with the power supplies LB9***
Power dissipation		2.15 W
Power consumption		3.3 W
Internal bus		
Connection		backplane bus

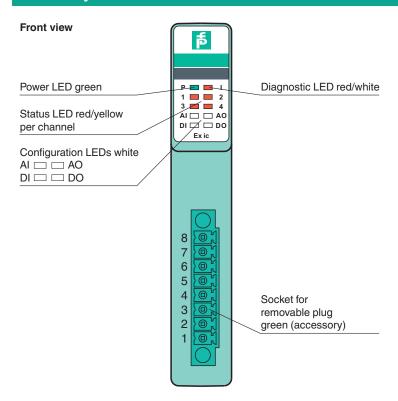
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Interface	manufacturer-specific bus to standard com unit
Analog input	
Number of channels	4
Suitable field devices	
Field device	pressure converter
Field device [2]	flow converter
Field device [3]	level converter
Field device [4]	Temperature Converter
Field device interface	
Connection	2-wire transmitter
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Transmitter supply voltage	min. 15 V at 20 mA; 21.5 V at 4 mA
Input resistance	15 Ω
Line fault detection	can be switched on/off for each channel via configuration tool , configurable via configuration tool
Short-circuit	factory setting: > 21 mA Can be parameterized in the range 0 22 mA
Open-circuit	factory setting: < 3.6 mA Can be parameterized in the range 0 22 mA
HART communication	yes
HART secondary variable	yes
nalog output	
Number of channels	4
Suitable field devices	
Field device	Proportional Valve
Field device [2]	I/P converters
Field device [3]	on-site display
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Current	0 20 mA short-circuit protected
Line fault detection	can be switched on/off for each channel via configuration tool, configurable via configuration tool
Short-circuit	factory setting: $< 50~\Omega$ configurable between 0 26 mA
Open-circuit	deviation of preset output value > 0.5 mA
Load	max. 750 Ω at 20 mA
HART communication	yes
HART secondary variable	yes
Watchdog	output off 0.5 s after serious fault
Digital input	
Number of channels	4
Sensor interface	
Connection [2]	volt-free contact
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Line fault detection	can be switched on/off for each channel via configuration tool
Connection	mechanical switch with additional resistors (see connection diagram)
Short-circuit	> 7 mA
Open-circuit	< 0.1 mA
Digital signals (active)	
Switching point: ON	> 2.1 mA
Switching point: OFF	< 1.2 mA
Digital output	
Number of channels	4
Suitable field devices	
Field device	Solenoid Valve
Field device [2]	audible alarm
Field device [3]	visual alarm
Connection	terminals 1+, 2-, 3+, 4-, 5+, 6-, 7+, 8-

Technical Data		
Drive capability		12 V / 22 mA
Internal resistor	Ri	385 Ω
Current limit	I _{max}	22 mA
Open loop voltage	Us	min. 22.7 V
Line fault detection	- 5	can be switched on/off for each channel via configuration tool
Test current		0.4 mA
Short-circuit		< 50 Ω
Open-circuit		< 0.2 mA
Transfer characteristics		,
Deviation		
After calibration		0.1 % of the signal range at 20 °C (68 °F)
Influence of ambient temperature		0.01 %/K of the signal range
Refresh time		approx. 100 ms (4 channels)
ndicators/settings		applox. 100 H3 (4 Chamlels)
•		Devices I ED (D) cream comple
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 (1-4) red: line fault (lead breakage or short circuit), yellow: state of digital I/O (0/1) Configuration LED (AI, AO, DI, DO) white: selected channel mode
Coding		optional mechanical coding via front socket
Directive conformity		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013
Conformity		EN 010E0 1.E010
Electromagnetic compatibility		NE 21:2007
Degree of protection		IEC 60529:2000
Environmental test		EN 60068-2-14:2009
Shock resistance		EN 60068-2-14.2009 EN 60068-2-27:2009
Vibration resistance		EN 60068-2-6;2008
		EN 60068-2-42:2003
Damaging gas		
Relative humidity		EN 60068-2-78:2001
Ambient conditions		
Ambient temperature		-40 60 °C (-40 140 °F) , 70 °C (non-Ex)
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 ± mm/0.7 g; 90 minutes at each resonance
Damaging gas		designed for operation in environmental conditions acc. to ISA-S71.04-1985, severi level G3
Mechanical specifications		
Degree of protection		IP20 (module), mounted on backplane
Connection		removable front connector with screw flange (accessory) wiring connection via spring terminals (0.14 1.5 mm²) or screw terminals (0.08 1.5 mm²)
Mass		approx. 100 g
Dimensions		16 x 100 x 102 mm (0.63 x 3.9 x 4 inch)
Data for application in connection with haza	rdous a	reas
Certificate		BVS 12 ATEX E 115 X
Marking		© II 3 G Ex nA [ic] IIC T4 Gc
Galvanic isolation		
Rated voltage	U _m	250 V field circuits to control and supply circuits
	- 111	

Technical Data	
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
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	BVS 12 ATEX E 115 X
IECEx approval	
IECEx certificate	IECEx BVS 11.0068X
IECEx marking	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 or Zone 22) the module must be installed in an appropriate enclosure.
Supplementary information	





Universal Input/Output LB7104E

- 4-channel
- Inputs Ex ia, Outputs Ex ia
- Analog input, digital input, analog output, digital output
- Mounting in Zone 2, Class I/Div.2 or in the safe area
- Supply circuit 15 V (20 mA)
- HART communication via field bus or service bus
- Simulation mode for service operations (forcing)
- Line fault detection (LFD): one LED per channel
- Permanently self-monitoring
- Output with bus-independent safety shutdown

Universal input/output with HART communication and switch-off input





Function

The device is a configurable universal module. Each channel can operate in the following modes:
- As an analog input (AI) it feeds 2-wire transmitters.
- As an analog output (AO) it can drive proportional valves, I/P converters, or local indicators.

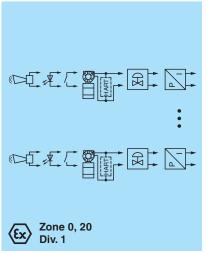
- As a digital input (DI) it reads dry contacts.
- As a digital output (DO) it can drive solenoids, sounders, or LED.

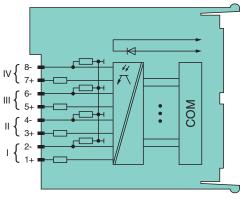
A combination of analog and digital I/O is possible. Channel LEDs indicate the status of each channel. White LEDs indicate whether AI, AO, DI, DO are selected.

The outputs can be switched off via a contact. This can be used for bus independent safety applications.

The intrinsically safe signals are galvanically isolated from the bus and the power supply.

Connection





Zone 2 Div. 2

Technical Data

Slots		
Occupied slots		1
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 2
Supply		
Connection		backplane bus
Rated voltage	Ur	12 V DC , only in connection with the power supplies LB9***
Power dissipation		2 W

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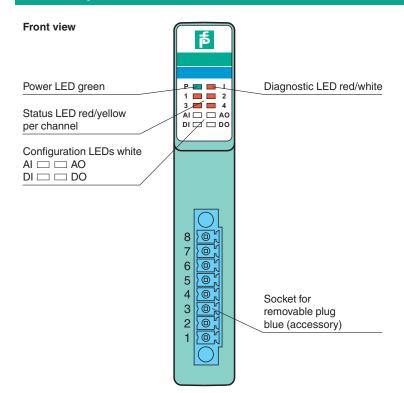
Technical Data	
Power consumption	3 W
nternal bus	
Connection	backplane bus
Interface	manufacturer-specific bus to standard com unit
Analog input	·
Number of channels	4
Suitable field devices	
Field device	pressure converter
Field device [2]	flow converter
Field device [3]	level converter
Field device [4]	Temperature Converter
Field device interface	
Connection	2-wire transmitter
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Transmitter supply voltage	min. 15 V at 20 mA; 21.5 V at 4 mA
Input resistance	15 Ω
Line fault detection	can be switched on/off for each channel via configuration tool , configurable via configuration tool
Short-circuit	factory setting: > 21 mA Can be parameterized in the range 0 22 mA
Open-circuit	factory setting: < 3.6 mA Can be parameterized in the range 0 22 mA
HART communication	yes
HART secondary variable	yes
Analog output	
Number of channels	4
Suitable field devices	
Field device	Proportional Valve
Field device [2]	I/P converters
Field device [3]	on-site display
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Current	0 20 mA short-circuit protected
Line fault detection	can be switched on/off for each channel via configuration tool, configurable via configuration tool
Short-circuit	factory setting: $<$ 50 Ω configurable between 0 26 mA
Open-circuit	deviation of preset output value > 0.5 mA
Load	max. 750 Ω at 20 mA
HART communication	yes
HART secondary variable	yes
Watchdog	output off 0.5 s after serious fault
Digital input	
Number of channels	4
Sensor interface	
Connection [2]	volt-free contact
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Line fault detection	can be switched on/off for each channel via configuration tool
Connection	mechanical switch with additional resistors (see connection diagram)
Short-circuit	> 7 mA
Open-circuit	< 0.1 mA
Digital signals (active)	
Switching point: ON	> 2.1 mA
Switching point: OFF	< 1.2 mA
Digital output	
Number of channels	4
Suitable field devices	
Field device	Solenoid Valve

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Technical Data		
Field device [2]		audible alarm
Field device [3]		visual alarm
Connection		terminals 1+, 2-, 3+, 4-, 5+, 6-, 7+, 8-
Drive capability		12 V / 22 mA
Internal resistor	Ri	385 Ω
Current limit		22 mA
	I _{max} U _s	min. 22.7 V
Open loop voltage Line fault detection	Us	
Test current		can be switched on/off for each channel via configuration tool 0.4 mA
		1 2 7 7 7 7 7
Short-circuit		< 50 Ω
Open-circuit		< 0.2 mA
Fransfer characteristics		
Deviation		0.4.07 of the object to account 00.00 (00.05)
After calibration		0.1 % of the signal range at 20 °C (68 °F)
Influence of ambient temperature		0.1 %/10 K of the signal range
Refresh time		approx. 100 ms (4 channels)
ndicators/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 (1-4) red: line fault (lead breakage or short circuit), yellow: state of digital I/O (0/1) Configuration LED (AI, AO, DI, DO) white: selected channel mode
Coding		optional mechanical coding via front socket
Directive conformity		•
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013
Conformity		
Electromagnetic compatibility		NE 21:2007
Degree of protection		IEC 60529:2000
Environmental test		EN 60068-2-14:2009
Shock resistance		EN 60068-2-27;2009
Vibration resistance		EN 60068-2-6:2008
Damaging gas		EN 60068-2-42:2003
		EN 60068-2-78:2001
Relative humidity		EIN 00000-2-7 8.200 I
Ambient conditions		40 0000 (40 4400)
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 \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
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 mm²) or screw terminals
		(0.08 1.5 mm ²)
Mass		(0.08 1.5 mm ²) approx. 100 g
Mass Dimensions		
		approx. 100 g

Technical Data

Length		103 mm
ata for application in connection with haza	rdous a	reas
EU-type examination certificate		BVS 11 ATEX E 116 X
Marking		 II 3(1) G Ex nA [ia Ga] IIC T4 Gc I (M1) [Ex ia Ma] I II (1) D [Ex ia Da] IIIC
Input		
Voltage	Uo	27 V
Current	Io	87 mA
Power	Po	575 mW (linear characteristic)
Output		
Voltage	Uo	27 V
Current	Io	87 mA
Power	Po	575 mW (linear characteristic)
Galvanic isolation		
Rated voltage	U _m	250 V field circuits to control and supply circuits
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
Directive conformity		
Directive 2014/34/EU		EN IEC 60079-0:2018+AC:2020 EN 60079-11:2012 EN 60079-15:2010
ternational approvals		
ATEX approval		BVS 11 ATEX E 116X
UL approval		E106378
ECEx approval		
IECEx certificate		IECEx BVS 11.0068X
IECEx marking		Ex nA [ia Ga] IIC T4 Gc [Ex ia Da] IIIC [Ex ia Ma] I
eneral 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 conformit For use in hazardous areas (e. g. Zone 2, Zone 22 or Div. 2) the module must be installed in an appropriate enclosure.





HART Transmitter Power Supply, Input Isolator

LB3002A2

- 1-channel
- Power supply for 2- or 3-wire transmitters with 4 mA ... 20 mA
- Installation in Zone 2 or safe area
- Supply circuit 15 V (20 mA)
- Input from active signals of 4-wire transmitters
- HART communication via field bus or service bus
- HART communication also for separately powered devices
- Simulation mode for service operations (forcing)
- Line fault detection (LFD) and Live Zero monitoring
- Permanently self-monitoring
- Module can be exchanged under voltage





Function

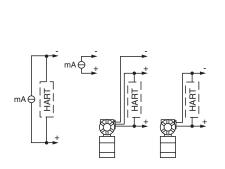
The transmitter power supply feeds 2- and 3-wire transmitters.

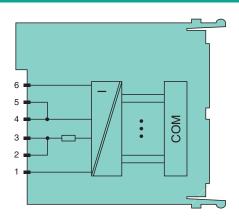
Active signals from separately powered field devices and 4-wire transmitters can be connected.

Open circuit, short circuit, and Live Zero status are detected.

The input is galvanically isolated from the bus and the power supply.

Connection





Zone 2

Technical Data

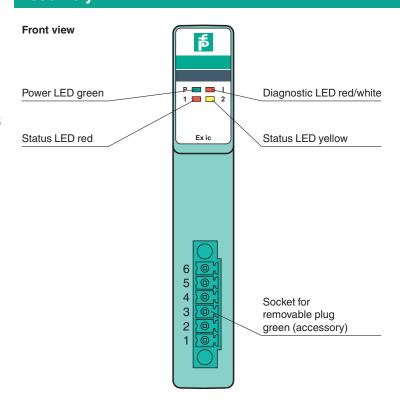
Slots		
Occupied slots		1
Supply		
Connection		backplane bus
Rated voltage	Ur	12 V DC , only in connection with the power supplies LB9***
Power dissipation		0.75 W
Power consumption		1.1 W
Internal bus		
Connection		backplane bus
Interface		manufacturer-specific bus to standard com unit

Release date: 2022-10-21 Date of issue: 2022-10-21 Filename: 254699_eng.pdf

Technical Data	
Analog input	
Number of channels	1
Suitable field devices	
Field device	pressure converter
Field device [2]	flow converter
Field device [3]	level converter
Field device [4]	Temperature Converter
Field device interface	Temperature converter
Connection	2-wire transmitter
Connection [2]	3-wire transmitter
Connection [3]	4-wire transmitter
Connection	2-wire transmitter (HART): supply circuit: 2/3+, 4/5- 3-wire transmitter (HART): supply circuit: 2/3+, 6- measuring circuit: 4/5+, 6- 4-wire transmitter (separately powered): measuring circuit: 4/5+, 6- HART measuring circuit: 1+, 6-
Transmitter supply voltage	min. 15 V at 20 mA; 21.5 V at 4 mA
Input resistance	15 Ω (terminals 5, 6) <p></p> 236 Ω (terminals 1, 6) HART
Line fault detection	can be switched on/off for each channel via configuration tool , configurable via configuration tool
Short-circuit	factory setting: > 22 mA configurable between 0 26 mA
Open-circuit	factory setting: < 1 mA configurable between 0 26 mA
HART communication	yes
HART secondary variable	yes
Transfer characteristics	
Deviation	
After calibration	0.1 % of the signal range at 20 °C (68 °F)
Influence of ambient temperature	0.1 %/10 K of the signal range
Resolution	12 Bit (0 26 mA)
Refresh time	100 ms
ndicators/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) red: line fault (lead breakage or short circuit) Status LED (2) yellow: Live Zero monitoring
Coding	optional mechanical coding via front socket
Directive conformity	
Electromagnetic compatibility	
Directive 2014/30/EU	EN 61326-1:2013
Conformity	
Electromagnetic compatibility	NE 21:2007
Degree of protection	IEC 60529:2000
Environmental test	EN 60068-2-14:2009
Shock resistance	EN 60068-2-27:2009
Vibration resistance	EN 60068-2-6:2008
Damaging gas	EN 60068-2-42:2003
Relative humidity	EN 60068-2-78:2001
Ambient conditions	
Ambient temperature	-40 60 °C (-40 140 °F) , 70 °C (non-Ex)
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

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Vibration resistance	frequency range 10 150 Hz; transition frequency: 57.56 Hz, amplitude/acceleratior \pm 0.075 mm/1 g; 10 cycles frequency range 5 100 Hz; transition frequency: 13.2 Hz amplitude/acceleration \pm 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 mm²) or screw terminals (0.08 1.5 mm²)
Mass	approx. 90 g
Dimensions	16 x 100 x 102 mm (0.63 x 3.9 x 4 inch)
Data for application in connection with haz	ardous areas
Certificate	BVS 13 ATEX E 038 X
Marking	
Galvanic isolation	
Input/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
nternational approvals	
ATEX approval	BVS 13 ATEX E 038X
IECEx approval	BVS 13.0043X
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 or Zone 22) the module must be installed in an appropriate enclosure.
Supplementary information	





HART Transmitter Power Supply, Input Isolator

LB3005A2

- 4-channel
- Power supply for 2-wire transmitters with 4 mA ... 20 mA
- Installation in Zone 2 or safe area
- Supply circuit 15 V (20 mA)
- Input from active signals of 4-wire transmitters
- HART communication via field bus or service bus
- Simulation mode for service operations (forcing)
- Line fault detection (LFD): one LED per channel
- Permanently self-monitoring
- Module can be exchanged under voltage





Function

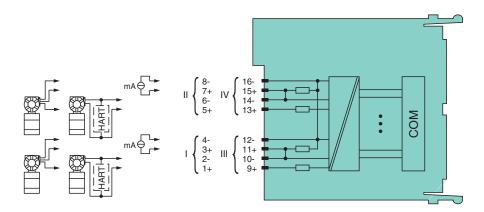
The transmitter power supply feeds 2-wire transmitters.

Active signals from separately powered field devices and 4-wire transmitters can be connected.

Open and short circuit line faults are detected.

The inputs are galvanically isolated from the bus and the power supply.

Connection



Zone 2

Technical Data

Slots		
Occupied slots		2
Supply		
Connection		backplane bus
Rated voltage	U _r	12 V DC , only in connection with the power supplies LB9***
Power dissipation		1.5 W
Power consumption		2.7 W
Internal bus		
Connection		backplane bus
Interface		manufacturer-specific bus to standard com unit

Release date: 2023-03-27 Date of issue: 2023-03-27 Filename: 254700_eng.pdf

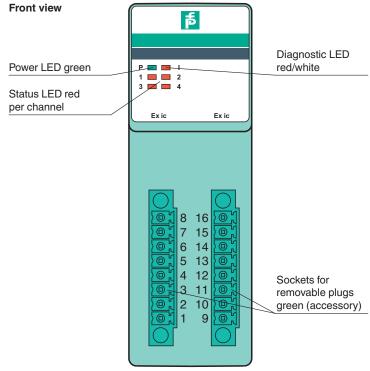
Release date: 2023-03-27 Date of issue: 2023-03-27 Filename: 254700_eng.pdf

Analog input	
Number of channels	4
Suitable field devices	
Field device	pressure converter
Field device [2]	flow converter
Field device [3]	level converter
Field device [4]	Temperature Converter
Field device interface	Temperature conventer
Connection	2-wire transmitter
Connection [2]	3-wire transmitter
Connection [3]	4-wire transmitter
Connection	2-wire transmitter (HART):Supply circuit: channel I 1+, 2-, channel II 5+, 6-, channel 9+, 10-, channel IV 13+, 14-3-wire transmitter:Supply circuit: channel I 1+, 4-, channel II 5+, 8-, channel III 9+, 12-, channel IV 13+, 16-Measurement loop: channel I 3+, 4- channel II 7+, 8-, channel III 11+, 12-, channel IV 15+, 16-4-wire transmitter (powere externally):Measurement loop: channel I 3+, 4-, channel II 7+, 8-, channel III 11+, 12 channel IV 15+, 16-
Transmitter supply voltage	min. 15 V at 20 mA; 21.5 V at 4 mA
Input resistance	15 Ω
Conversion time	max. 100 ms
Line fault detection	can be switched on/off for each channel via configuration tool , configurable via configuration tool
Short-circuit	factory setting: > 22 mA configurable between 0 26 mA
Open-circuit	factory setting: < 1 mA configurable between 0 26 mA
HART communication	yes
HART secondary variable	no
ransfer characteristics	
Deviation	
After calibration	0.1 % of the signal range at 20 °C (68 °F)
Influence of ambient temperature	0.1 %/10 K of the signal range
Resolution	12 Bit (0 26 mA)
Refresh time	100 ms
ndicators/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 (1-4) red: line fault (lead breakage or short circuit)
Coding	optional mechanical coding via front socket
Directive conformity	
Electromagnetic compatibility	
Directive 2014/30/EU	EN 61326-1:2013
Conformity	
Electromagnetic compatibility	NE 21:2007
Degree of protection	IEC 60529:2000
Environmental test	EN 60068-2-14:2009
Shock resistance	EN 60068-2-27:2009
Vibration resistance	EN 60068-2-6:2008
Damaging gas	EN 60068-2-42:2003
Relative humidity	EN 60068-2-78:2001
Ambient conditions	
Ambient temperature	-40 60 °C (-40 140 °F) , 70 °C (non-Ex)
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

Technical Data

Vibration resistance

frequency range 10 ... 150 Hz; transition frequency: 57.56 Hz, amplitude/acceleration





HART Transmitter Power Supply LB3006A

- 4-channel
- Power supply for 2-wire transmitters with 4 mA ... 20 mA
- Installation in Zone 2 or safe area
- Supply circuit 21.5 V (4 mA)
- HART communication via field bus or service bus
- Simulation mode for service operations (forcing)
- Line fault detection (LFD): one LED per channel
- Permanently self-monitoring
- Module can be exchanged under voltage

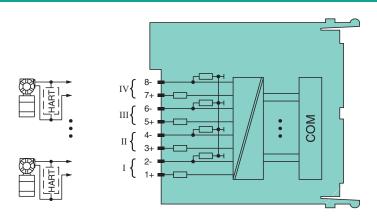




Function

The transmitter power supply feeds 2-wire transmitters. Open and short circuit line faults are detected. The intrinsically safe inputs are galvanically isolated from the bus and the power supply.

Connection



Zone 2

Technical Data

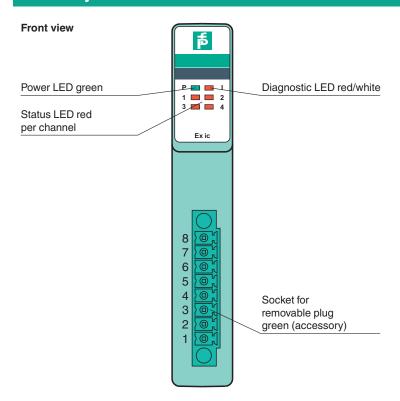
Slots		
Occupied slots		1
Supply		
Connection		backplane bus
Rated voltage	U _r	12 V DC , only in connection with the power supplies LB9***
Power dissipation		1.5 W
Power consumption		2.7 W
Internal bus		
Connection		backplane bus
Interface		manufacturer-specific bus to standard com unit
Analog input		
Number of channels		4
Suitable field devices		

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channel III 5+, 6-, channel IV 7+, 8-
guration tool , configurable via
26 mA
26 mA
g: communication error , white: fixed ored) , white flashing: requests short circuit)
ude 15 g, number of shocks 18
•
cy: 57.56 Hz, amplitude/acceleration: 13.2 Hz amplitude/acceleration ±
v: 13.2 Hz amplitude/acceleration ±

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Release

Connection	removable front connector with screw flange (accessory) wiring connection via spring terminals (0.14 1.5 mm²) or screw terminals (0.08 1.5 mm²)
Mass	approx. 90 g
Dimensions	16 x 100 x 102 mm (0.63 x 3.9 x 4 inch)
Data for application in connection with hazar	,
Certificate	BVS 12 ATEX E 115 X
Marking	© II 3 G Ex nA [ic] IIC T4 Gc
Galvanic isolation	
Input/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
nternational approvals	
ATEX approval	BVS 12 ATEX E 115 X
IECEx approval	
IECEx certificate	IECEx BVS 11.0068X
IECEx marking	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 or Zone 22) the module must be installed in an appropriate enclosure.





HART Transmitter Power Supply, Input Isolator

LB3102A2

- 1-channel
- Input Ex ia
- Mounting in Zone 2, Class I/Div.2 or in the safe area
- Power supply for 2- or 3-wire transmitters with 4 mA ... 20 mA
- Supply circuit 15 V (20 mA)
- Input from active signals of 4-wire transmitters
- HART communication via field bus or service bus
- HART communication also for separately powered devices
- Simulation mode for service operations (forcing)
- Line fault detection (LFD) and Live Zero monitoring
- Permanently self-monitoring
- Module can be exchanged under voltage

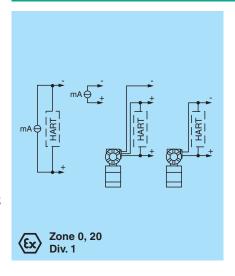


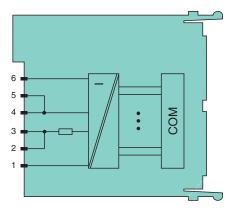


Function

The transmitter power supply feeds 2- and 3-wire transmitters. Active signals from separately powered field devices and 4-wire transmitters can be connected. Open circuit, short circuit, and Live Zero status are detected. The intrinsically safe input is galvanically isolated from the bus and the power supply.

Connection





Zone 2 Div. 2

Technical Data

Slots		
Occupied slots		1
Supply		
Connection		backplane bus
Rated voltage	U _r	12 V DC , only in connection with the power supplies LB9***
Power dissipation		0.75 W
Power consumption		1.1 W
Internal bus		
Connection		backplane bus

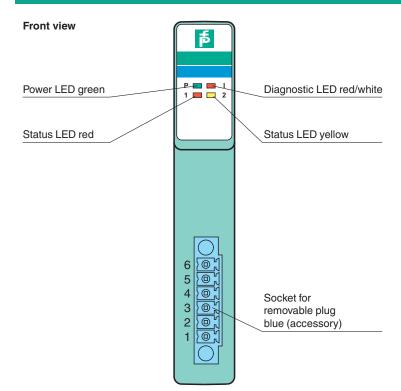
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Technical Data	
Interface	manufacturer-specific bus to standard com unit
Analog input	·
Number of channels	1
Suitable field devices	
Field device	pressure converter
Field device [2]	flow converter
Field device [3]	level converter
Field device [4]	Temperature Converter
Field device interface	
Connection	2-wire transmitter
Connection [2]	3-wire transmitter
Connection [3]	4-wire transmitter
Connection	2-wire transmitter (HART): supply circuit: 2/3+, 4/5- 3-wire transmitter (HART): supply circuit: 2/3+, 6- measuring circuit: 4/5+, 6- 4-wire transmitter (separately powered): measuring circuit: 4/5+, 6- HART measuring circuit: 1+, 6-
Transmitter supply voltage	min. 15 V at 20 mA; 21.5 V at 4 mA
Input resistance	15 Ω (terminals 5, 6) <p></p> 236 Ω (terminals 1, 6) HART
Line fault detection	can be switched on/off for each channel via configuration tool, configurable via configuration tool
Short-circuit	factory setting: > 22 mA configurable between 0 26 mA
Open-circuit	factory setting: < 1 mA configurable between 0 26 mA
HART communication	yes
HART secondary variable	yes
Transfer characteristics	
Deviation	
After calibration	0.1 % of the signal range at 20 °C (68 °F)
Influence of ambient temperature	0.1 %/10 K of the signal range
Resolution	12 Bit (0 26 mA)
Refresh time	100 ms
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) red: line fault (lead breakage or short circuit) Status LED (2) yellow: Live Zero monitoring
Coding	optional mechanical coding via front socket
Directive conformity	
Electromagnetic compatibility	
Directive 2014/30/EU	EN 61326-1:2013
Conformity	
Electromagnetic compatibility	NE 21:2007
Degree of protection	IEC 60529:2000
Environmental test	EN 60068-2-14:2009
Shock resistance	EN 60068-2-27:2009
Vibration resistance	EN 60068-2-6:2008
Damaging gas	EN 60068-2-42:2003
Relative humidity	EN 60068-2-78:2001
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

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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/acceleratio ± 0.075 mm/1 g; 10 cycles frequency range 5 100 Hz; transition frequency: 13.2 Hz amplitude/acceleration ± mm/0.7 g; 90 minutes at each resonance
Damaging gas		designed for operation in environmental conditions acc. to ISA-S71.04-1985, severit 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 mm²) or screw terminals (0.08 1.5 mm²)
Mass		approx. 90 g
Dimensions		16 x 100 x 102 mm (0.63 x 3.9 x 4 inch)
Oata for application in connection with ha	azardous a	reas
EU-type examination certificate		BVS 12 ATEX E 100 X
Marking		© II 3(1) G Ex nA [ia Ga] IIC T4 Gc © I (M1) [Ex ia Ma] I © II (1) D [Ex ia Da] IIIC
Supply		
Voltage	Uo	27 V
Current	Io	92 mA
Power	Po	619 mW (linear characteristic)
Connection 1-6		
Voltage		8.9 V
Current		4 mA
Power		24 mW (trapezoid characteristic curve)
Input		
Voltage	Uo	0.7 V
Current	Io	7 mA
Power	Po	5 mW (trapezoid characteristic curve)
Internal capacitance	C_{i}	242 nF
Internal inductance	Li	0 mH
Galvanic isolation		
Input/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
nternational approvals		
ATEX approval		BVS 12 ATEX E 100X
UL approval		E106378
IECEx approval		BVS 13.0043X
Approved for		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		





HART Transmitter Power Supply, Input Isolator

LB3105A2

- 4-channel
- Inputs Ex ia
- Mounting in Zone 2, Class I/Div.2 or in the safe area
- Power supply for 2-wire transmitters with 4 mA ... 20 mA
- Supply circuit 15 V (20 mA)
- Input from active signals of 4-wire transmitters
- HART communication via field bus or service bus
- Simulation mode for service operations (forcing)
- Line fault detection (LFD): one LED per channel
- Permanently self-monitoring
- Module can be exchanged under voltage





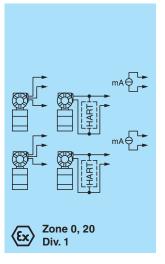
Function

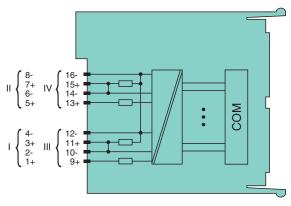
The transmitter power supply feeds 2-wire transmitters.

Active signals from separately powered field devices and 4-wire transmitters can be connected. Open and short-circuit line faults are detected.

The intrinsically safe inputs are galvanically isolated from the bus and the power supply.

Connection





Zone 2 Div. 2

Technical Data

Slots		
Occupied slots		2
Supply		
Connection		backplane bus
Rated voltage	Ur	12 V DC , only in connection with the power supplies LB9***
Power dissipation		1.5 W
Power consumption		2.7 W
Internal bus		
Connection		backplane bus
Interface		manufacturer-specific bus to standard com unit

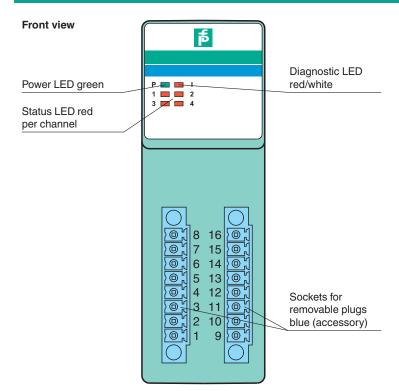
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Analog input	
Number of channels	4
Suitable field devices	
Field device	pressure converter
Field device [2]	flow converter
Field device [3]	level converter
Field device [4]	Temperature Converter
Field device interface	
Connection	2-wire transmitter
Connection [2]	3-wire transmitter
Connection [3]	4-wire transmitter
Connection	2-wire transmitter (HART):Supply circuit: channel I 1+, 2-, channel II 5+, 6-, channel 9+, 10-, channel IV 13+, 14-3-wire transmitter:Supply circuit: channel I 1+, 4-, chann II 5+, 8-, channel III 9+, 12-, channel IV 13+, 16-Measurement loop: channel I 3+, 4-, channel II 7+, 8-, channel III 11+, 12-, channel IV 15+, 16-4-wire transmitter (powere externally):Measurement loop: channel I 3+, 4-, channel II 7+, 8-, channel III 11+, 12 channel IV 15+, 16-
Transmitter supply voltage	min. 15 V at 20 mA; 21.5 V at 4 mA
Input resistance	15 Ω
Conversion time	max. 100 ms
Line fault detection	can be switched on/off for each channel via configuration tool, configurable via configuration tool
Short-circuit	factory setting: > 22 mA configurable between 0 26 mA
Open-circuit	factory setting: < 1 mA configurable between 0 26 mA
HART communication	yes
HART secondary variable	no
ransfer characteristics	
Deviation	
After calibration	0.1 % of the signal range at 20 °C (68 °F)
Influence of ambient temperature	0.1 %/10 K of the signal range
Resolution	12 Bit (0 26 mA)
Refresh time	100 ms
ndicators/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 (1-4) red: line fault (lead breakage or short circuit)
Coding	optional mechanical coding via front socket
Directive conformity	
Electromagnetic compatibility	
Directive 2014/30/EU	EN 61326-1:2013
Conformity	
Electromagnetic compatibility	NE 21:2007
Degree of protection	IEC 60529:2000
Environmental test	EN 60068-2-14:2009
Shock resistance	EN 60068-2-27:2009
Vibration resistance	EN 60068-2-6:2008
Damaging gas	EN 60068-2-42:2003
Relative humidity	EN 60068-2-78:2001
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

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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 ± 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 mm²) or screw terminals (0.08 1.5 mm²)
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 haza	ardous a	reas
EU-type examination certificate		BVS 12 ATEX E 024 X
Marking		 II 3(1) G Ex nA [ia Ga] IIC T4 Gc I (M1) [Ex ia Ma] I II (1) D [Ex ia Da] IIIC
Supply		
Voltage	U _o	27 V
Current	I _o	90 mA
Power	Po	588 mW (linear characteristic)
Input		
Voltage	U _o	0.7 V
Current	I _o	2.78 mA
Power	Po	2 mW (trapezoid characteristic curve)
Internal capacitance	Ci	242 nF
Internal inductance	Li	0 mH
Galvanic isolation		
Input/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
nternational approvals		
ATEX approval		BVS 12 ATEX E 024 X
UL approval		E106378
IECEx approval		IECEx BVS 12.0055X
Approved for		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.





HART Transmitter Power Supply LB3106A

- 4-channel
- Inputs Ex ia
- Mounting in Zone 2, Class I/Div.2 or in the safe area
- Power supply for 2-wire transmitters with 4 mA ... 20 mA
- Supply circuit 15 V (20 mA)
- HART communication via field bus or service bus
- Simulation mode for service operations (forcing)
- Line fault detection (LFD): one LED per channel
- Permanently self-monitoring
- Module can be exchanged under voltage





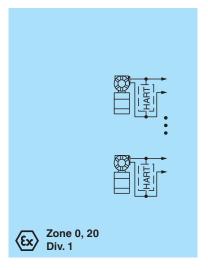
Function

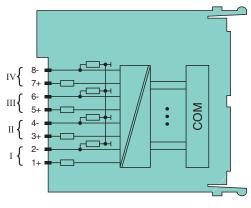
The transmitter power supply feeds 2-wire transmitters.

Open and short circuit line faults are detected.

The intrinsically safe inputs are galvanically isolated from the bus and the power supply.

Connection





Zone 2 Div. 2

Technical Data

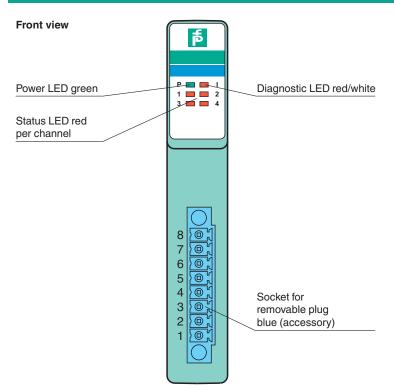
Slots		
Occupied slots		1
Supply		
Connection		backplane bus
Rated voltage	U_{r}	12 V DC , only in connection with the power supplies LB9***
Power dissipation		1.5 W
Power consumption		2.7 W
Internal bus		
Connection		backplane bus
Interface		manufacturer-specific bus to standard com unit
Analog input		
Number of channels		4

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Technical Data	
Suitable field devices	
Field device	pressure converter
Field device [2]	flow converter
Field device [3]	level converter
Field device [4]	Temperature Converter
Field device interface	
Connection	2-wire transmitter
Connection	2-wire transmitter (HART): supply circuit: channel I 1+, 2-, channel II 3+, 4-, channel II 5+, 6-, channel IV 7+, 8-
Transmitter supply voltage	min. 15 V at 20 mA; 21.5 V at 4 mA
Input resistance	15 Ω
Conversion time	max. 100 ms
Line fault detection	can be switched on/off for each channel via configuration tool , configurable via configuration tool
Short-circuit	factory setting: > 22 mA configurable between 0 26 mA
Open-circuit	factory setting: < 1 mA configurable between 0 26 mA
HART communication	yes
HART secondary variable	no
Transfer characteristics	
Deviation	
After calibration	0.1 % of the signal range at 20 °C (68 °F)
Influence of ambient temperature	0.1 %/10 K of the signal range
Resolution	12 Bit (0 26 mA)
Refresh time	100 ms
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 (1-4) red: line fault (lead breakage or short circuit)
Coding	optional mechanical coding via front socket
Directive conformity	
Electromagnetic compatibility	
Directive 2014/30/EU	EN 61326-1:2013
Conformity	
Electromagnetic compatibility	NE 21:2007
Degree of protection	IEC 60529:2000
Environmental test	EN 60068-2-14:2009
Shock resistance	EN 60068-2-27:2009
Vibration resistance	EN 60068-2-6:2008
Damaging gas	EN 60068-2-42:2003
Relative humidity	EN 60068-2-78:2001
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 ± 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
Machaniaalanasifiaatiana	
Mechanical specifications	

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Technical Data		
Connection		removable front connector with screw flange (accessory) wiring connection via spring terminals (0.14 1.5 mm²) or screw terminals (0.08 1.5 mm²)
Mass		approx. 90 g
Dimensions		16 x 100 x 102 mm (0.63 x 3.9 x 4 inch)
Data for application in connection with haz	ardous a	areas
EU-type examination certificate		BVS 11 ATEX E 116 X
Marking		 ⑤ II 3(1) G Ex nA [ia Ga] IIC T4 Gc ⑥ I (M1) [Ex ia Ma] I ⑥ II (1) D [Ex ia Da] IIIC
Supply		
Voltage	Uo	27 V
Current	Io	87 mA
Power	Po	575 mW (linear characteristic)
Galvanic isolation		
Input/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
nternational approvals		
ATEX approval		BVS 11 ATEX E 116X
UL approval		E106378
IECEx approval		
IECEx certificate		IECEx BVS 11.0068X
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 conformit 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		





Universal Input/Output (HART) LB7004A

- 4-channel
- Analog input, digital input, analog output, digital output
- Installation in Zone 2 or safe area
- Supply circuit 21.5 V (4 mA)
- HART communication via field bus or service bus
- Simulation mode for service operations (forcing)
- Line fault detection (LFD): one LED per channel
- Permanently self-monitoring
- Module can be exchanged under voltage





Function

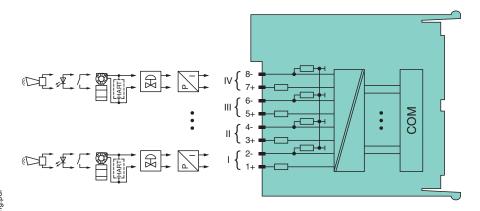
The device is a configurable universal module. Each channel can operate in the following modes:
- As an analog input (AI) it feeds 2-wire transmitters.
- As an analog output (AO) it can drive proportional valves, I/P converters, or local indicators.

- As a digital input (DI) it reads dry contacts.
- As a digital output (DO) it can drive solenoids, sounders, or LED.

A combination of analog and digital I/O is possible.

Channel LEDs indicate the status of each channel. White LEDs indicate whether AI, AO, DI, DO are selected. The signals are galvanically isolated from the bus and the power supply.

Connection



Zone 2

Technical Data

Slots		
Occupied slots		1
Supply		
Connection		backplane bus
Rated voltage	U _r	12 V DC , only in connection with the power supplies LB9***
Power dissipation		2.15 W
Power consumption		3.3 W
Internal bus		
Connection		backplane bus

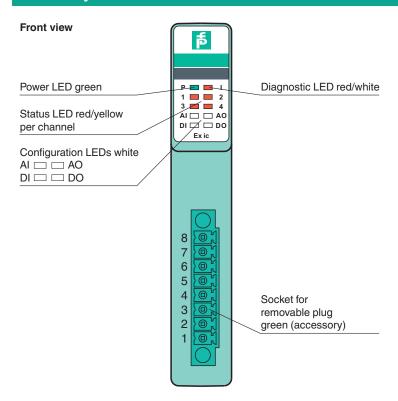
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Interface	manufacturer-specific bus to standard com unit
Analog input	
Number of channels	4
Suitable field devices	
Field device	pressure converter
Field device [2]	flow converter
Field device [3]	level converter
Field device [4]	Temperature Converter
Field device interface	
Connection	2-wire transmitter
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Transmitter supply voltage	min. 15 V at 20 mA; 21.5 V at 4 mA
Input resistance	15 Ω
Line fault detection	can be switched on/off for each channel via configuration tool , configurable via configuration tool
Short-circuit	factory setting: > 21 mA Can be parameterized in the range 0 22 mA
Open-circuit	factory setting: < 3.6 mA Can be parameterized in the range 0 22 mA
HART communication	yes
HART secondary variable	yes
nalog output	
Number of channels	4
Suitable field devices	
Field device	Proportional Valve
Field device [2]	I/P converters
Field device [3]	on-site display
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Current	0 20 mA short-circuit protected
Line fault detection	can be switched on/off for each channel via configuration tool, configurable via configuration tool
Short-circuit	factory setting: $< 50~\Omega$ configurable between 0 26 mA
Open-circuit	deviation of preset output value > 0.5 mA
Load	max. 750 Ω at 20 mA
HART communication	yes
HART secondary variable	yes
Watchdog	output off 0.5 s after serious fault
Digital input	
Number of channels	4
Sensor interface	
Connection [2]	volt-free contact
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Line fault detection	can be switched on/off for each channel via configuration tool
Connection	mechanical switch with additional resistors (see connection diagram)
Short-circuit	> 7 mA
Open-circuit	< 0.1 mA
Digital signals (active)	
Switching point: ON	> 2.1 mA
Switching point: OFF	< 1.2 mA
Digital output	
Number of channels	4
Suitable field devices	
Field device	Solenoid Valve
Field device [2]	audible alarm
Field device [3]	visual alarm
Connection	terminals 1+, 2-, 3+, 4-, 5+, 6-, 7+, 8-

Technical Data		
Drive capability		12 V / 22 mA
Internal resistor	Ri	385 Ω
Current limit	I _{max}	22 mA
Open loop voltage	Us	min. 22.7 V
Line fault detection	- 5	can be switched on/off for each channel via configuration tool
Test current		0.4 mA
Short-circuit		< 50 Ω
Open-circuit		< 0.2 mA
Transfer characteristics		,
Deviation		
After calibration		0.1 % of the signal range at 20 °C (68 °F)
Influence of ambient temperature		0.01 %/K of the signal range
Refresh time		approx. 100 ms (4 channels)
ndicators/settings		applox. 100 H3 (4 Chamlels)
•		Devices I ED (D) cream comply
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 (1-4) red: line fault (lead breakage or short circuit), yellow: state of digital I/O (0/1) Configuration LED (AI, AO, DI, DO) white: selected channel mode
Coding		optional mechanical coding via front socket
Directive conformity		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013
Conformity		EN 010E0 1.E010
Electromagnetic compatibility		NE 21:2007
Degree of protection		IEC 60529:2000
Environmental test		EN 60068-2-14:2009
Shock resistance		EN 60068-2-14.2009 EN 60068-2-27:2009
Vibration resistance		EN 60068-2-6;2008
		EN 60068-2-42:2003
Damaging gas		
Relative humidity		EN 60068-2-78:2001
Ambient conditions		
Ambient temperature		-40 60 °C (-40 140 °F) , 70 °C (non-Ex)
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 ± mm/0.7 g; 90 minutes at each resonance
Damaging gas		designed for operation in environmental conditions acc. to ISA-S71.04-1985, severi level G3
Mechanical specifications		
Degree of protection		IP20 (module), mounted on backplane
Connection		removable front connector with screw flange (accessory) wiring connection via spring terminals (0.14 1.5 mm²) or screw terminals (0.08 1.5 mm²)
Mass		approx. 100 g
Dimensions		16 x 100 x 102 mm (0.63 x 3.9 x 4 inch)
Data for application in connection with haza	rdous a	reas
Certificate		BVS 12 ATEX E 115 X
Marking		© II 3 G Ex nA [ic] IIC T4 Gc
Galvanic isolation		
Rated voltage	U _m	250 V field circuits to control and supply circuits
	- 111	

Technical Data	
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
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	BVS 12 ATEX E 115 X
IECEx approval	
IECEx certificate	IECEx BVS 11.0068X
IECEx marking	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 or Zone 22) the module must be installed in an appropriate enclosure.
Supplementary information	





Universal Input/Output (HART) LB7104A

- 4-channel
- Inputs Ex ia, Outputs Ex ia
- Analog input, digital input, analog output, digital output
- Mounting in Zone 2, Class I/Div.2 or in the safe area
- Supply circuit 15 V (20 mA)
- HART communication via field bus or service bus
- Simulation mode for service operations (forcing)
- Line fault detection (LFD): one LED per channel
- Permanently self-monitoring
- Module can be exchanged under voltage





Function

The device is a configurable universal module. Each channel can operate in the following modes:
- As an analog input (AI) it feeds 2-wire transmitters.
- As an analog output (AO) it can drive proportional valves, I/P converters, or local indicators.
- As a digital input (DI) it reads dry contacts.

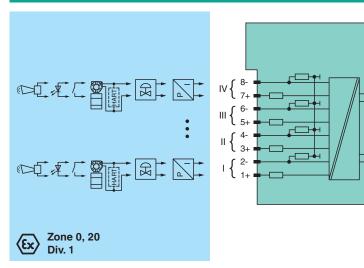
- As a digital output (DO) it can drive solenoids, sounders, or LED.

A combination of analog and digital I/O is possible.

Channel LEDs indicate the status of each channel. White LEDs indicate whether AI, AO, DI, DO are selected.

The intrinsically safe signals are galvanically isolated from the bus and the power supply.

Connection



Technical Data

	1
	backplane bus
Ur	12 V DC , only in connection with the power supplies LB9***
	2 W
	3 W
	backplane bus
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Zone 2

Div. 2

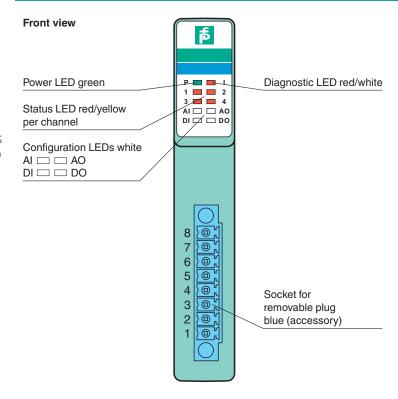
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Interface	manufacturer-specific bus to standard com unit
Analog input	
Number of channels	4
Suitable field devices	
Field device	pressure converter
Field device [2]	flow converter
Field device [3]	level converter
Field device [4]	Temperature Converter
Field device interface	
Connection	2-wire transmitter
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Transmitter supply voltage	min. 15 V at 20 mA; 21.5 V at 4 mA
Input resistance	15 Ω
Line fault detection	can be switched on/off for each channel via configuration tool , configurable via configuration tool
Short-circuit	factory setting: > 21 mA Can be parameterized in the range 0 22 mA
Open-circuit	factory setting: < 3.6 mA Can be parameterized in the range 0 22 mA
HART communication	yes
HART secondary variable	yes
Analog output	
Number of channels	4
Suitable field devices	
Field device	Proportional Valve
Field device [2]	I/P converters
Field device [3]	on-site display
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Current	0 20 mA short-circuit protected
Line fault detection	can be switched on/off for each channel via configuration tool, configurable via configuration tool
Short-circuit	factory setting: $< 50 \Omega$ configurable between 0 26 mA
Open-circuit	deviation of preset output value > 0.5 mA
Load	max. 750 Ω at 20 mA
HART communication	yes
HART secondary variable	yes
Watchdog	output off 0.5 s after serious fault
Digital input	·
Number of channels	4
Sensor interface	
Connection [2]	volt-free contact
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Line fault detection	can be switched on/off for each channel via configuration tool
Connection	mechanical switch with additional resistors (see connection diagram)
Short-circuit	> 7 mA
Open-circuit	< 0.1 mA
Digital signals (active)	
Switching point: ON	> 2.1 mA
Switching point: OFF	< 1.2 mA
Digital output	
Number of channels	4
Suitable field devices	7
Field device	Solenoid Valve
	audible alarm
Field device [2]	audibie alarm visual alarm
Field device [3] Connection	terminals 1+, 2-, 3+, 4-, 5+, 6-, 7+, 8-

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reclinical Data		
Drive capability		12 V / 22 mA
Internal resistor	Ri	385 Ω
Current limit	I _{max}	22 mA
Open loop voltage	Us	min. 22.7 V
Line fault detection		can be switched on/off for each channel via configuration tool
Test current		0.4 mA
Short-circuit		< 50 Ω
Open-circuit		< 0.2 mA
Transfer characteristics		
Deviation		
After calibration		0.1 % of the signal range at 20 °C (68 °F)
Influence of ambient temperature		0.1 %/10 K of the signal range
Refresh time		approx. 100 ms (4 channels)
Indicators/settings		approximate (· commerce)
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 (1-4) red: line fault (lead breakage or short circuit), yellow: state of digita I/O (0/1) Configuration LED (AI, AO, DI, DO) white: selected channel mode
Coding		optional mechanical coding via front socket
Directive conformity		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013
Conformity		
Electromagnetic compatibility		NE 21:2007
Degree of protection		IEC 60529:2000
Environmental test		EN 60068-2-14:2009
Shock resistance		EN 60068-2-27:2009
Vibration resistance		EN 60068-2-6;2008
Damaging gas		EN 60068-2-42:2003
Relative humidity		EN 60068-2-78:2001
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		
Vibration resistance		shock type I, shock duration 11 ms, shock amplitude 15 g, number of shocks 18 frequency range 10 150 Hz; transition frequency: 57.56 Hz, amplitude/acceleration
Vibration resistance		± 0.075 mm/1 g; 10 cycles frequency: 13.2 Hz amplitude/acceleration ± mm/0.7 g; 90 minutes at each resonance
Damaging gas		designed for operation in environmental conditions acc. to ISA-S71.04-1985, severit 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 mm²) or screw terminals (0.08 1.5 mm²)
Mass		approx. 100 g
Dimensions		16 x 100 x 102 mm (0.63 x 3.9 x 4 inch)
Data for application in connection with haza	rdous a	reas
EU-type examination certificate		BVS 11 ATEX E 116 X
Marking		 ⊕ II 3(1) G Ex nA [ia Ga] IIC T4 Gc ⊕ I (M1) [Ex ia Ma] I ⊕ II (1) D [Ex ia Da] IIIC
Input		
•		

Technical Data		
Voltage	U _o	27 V
Current	lo	87 mA
Power	Po	575 mW (linear characteristic)
Output		
Voltage	U_{\circ}	27 V
Current	lo	87 mA
Power	P_o	575 mW (linear characteristic)
Galvanic isolation		
Rated voltage	U_{m}	250 V field circuits to control and supply circuits
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
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		BVS 11 ATEX E 116X
UL approval		E106378
IECEx approval		
IECEx certificate		IECEx BVS 11.0068X
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		





Universal Input/Output LB7104E

- 4-channel
- Inputs Ex ia, Outputs Ex ia
- Analog input, digital input, analog output, digital output
- Mounting in Zone 2, Class I/Div.2 or in the safe area
- Supply circuit 15 V (20 mA)
- HART communication via field bus or service bus
- Simulation mode for service operations (forcing)
- Line fault detection (LFD): one LED per channel
- Permanently self-monitoring
- Output with bus-independent safety shutdown

Universal input/output with HART communication and switch-off input





Function

The device is a configurable universal module. Each channel can operate in the following modes:
- As an analog input (AI) it feeds 2-wire transmitters.
- As an analog output (AO) it can drive proportional valves, I/P converters, or local indicators.

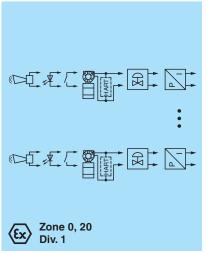
- As a digital input (DI) it reads dry contacts.
- As a digital output (DO) it can drive solenoids, sounders, or LED.

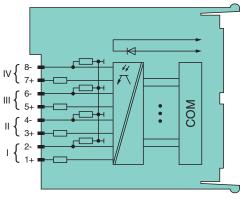
A combination of analog and digital I/O is possible. Channel LEDs indicate the status of each channel. White LEDs indicate whether AI, AO, DI, DO are selected.

The outputs can be switched off via a contact. This can be used for bus independent safety applications.

The intrinsically safe signals are galvanically isolated from the bus and the power supply.

Connection





Zone 2 Div. 2

Technical Data

Slots		
Occupied slots		1
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 2
Supply		
Connection		backplane bus
Rated voltage	Ur	12 V DC , only in connection with the power supplies LB9***
Power dissipation		2 W

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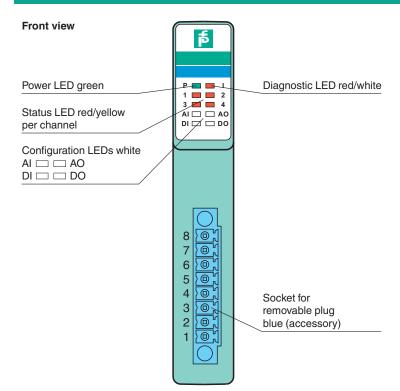
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Technical Data	
Power consumption	3 W
nternal bus	
Connection	backplane bus
Interface	manufacturer-specific bus to standard com unit
Analog input	·
Number of channels	4
Suitable field devices	
Field device	pressure converter
Field device [2]	flow converter
Field device [3]	level converter
Field device [4]	Temperature Converter
Field device interface	
Connection	2-wire transmitter
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Transmitter supply voltage	min. 15 V at 20 mA; 21.5 V at 4 mA
Input resistance	15 Ω
Line fault detection	can be switched on/off for each channel via configuration tool , configurable via configuration tool
Short-circuit	factory setting: > 21 mA Can be parameterized in the range 0 22 mA
Open-circuit	factory setting: < 3.6 mA Can be parameterized in the range 0 22 mA
HART communication	yes
HART secondary variable	yes
Analog output	
Number of channels	4
Suitable field devices	
Field device	Proportional Valve
Field device [2]	I/P converters
Field device [3]	on-site display
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Current	0 20 mA short-circuit protected
Line fault detection	can be switched on/off for each channel via configuration tool, configurable via configuration tool
Short-circuit	factory setting: $<$ 50 Ω configurable between 0 26 mA
Open-circuit	deviation of preset output value > 0.5 mA
Load	max. 750 Ω at 20 mA
HART communication	yes
HART secondary variable	yes
Watchdog	output off 0.5 s after serious fault
Digital input	
Number of channels	4
Sensor interface	
Connection [2]	volt-free contact
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Line fault detection	can be switched on/off for each channel via configuration tool
Connection	mechanical switch with additional resistors (see connection diagram)
Short-circuit	> 7 mA
Open-circuit	< 0.1 mA
Digital signals (active)	
Switching point: ON	> 2.1 mA
Switching point: OFF	< 1.2 mA
Digital output	
Number of channels	4
Suitable field devices	
Field device	Solenoid Valve

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Technical Data		
Field device [2]		audible alarm
Field device [3]		visual alarm
Connection		terminals 1+, 2-, 3+, 4-, 5+, 6-, 7+, 8-
Drive capability		12 V / 22 mA
Internal resistor	R_{i}	385 Ω
Current limit		22 mA
	I _{max} U _s	min. 22.7 V
Open loop voltage Line fault detection	Us	
Test current		can be switched on/off for each channel via configuration tool 0.4 mA
		1 2 7 7 7 7 7
Short-circuit		< 50 Ω
Open-circuit		< 0.2 mA
Fransfer characteristics		
Deviation		0.4.07 of the object to account 00.00 (00.05)
After calibration		0.1 % of the signal range at 20 °C (68 °F)
Influence of ambient temperature		0.1 %/10 K of the signal range
Refresh time		approx. 100 ms (4 channels)
ndicators/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 (1-4) red: line fault (lead breakage or short circuit), yellow: state of digital I/O (0/1) Configuration LED (AI, AO, DI, DO) white: selected channel mode
Coding		optional mechanical coding via front socket
Directive conformity		•
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013
Conformity		
Electromagnetic compatibility		NE 21:2007
Degree of protection		IEC 60529:2000
Environmental test		EN 60068-2-14:2009
Shock resistance		EN 60068-2-27;2009
Vibration resistance		EN 60068-2-6:2008
Damaging gas		EN 60068-2-42:2003
		EN 60068-2-78:2001
Relative humidity		EIN 00000-2-7 8.200 I
Ambient conditions		40 0000 (40 4400)
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 \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
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 mm²) or screw terminals
		(0.08 1.5 mm ²)
Mass		(0.08 1.5 mm ²) approx. 100 g
Mass Dimensions		
		approx. 100 g

BVS 11 ATEX E 116 X B II 3(1) G Ex nA [ia Ga] IIC T4 Gc B I (M1) [Ex ia Ma] I B II (1) D [Ex ia Da] IIIC 27 V 87 mA 575 mW (linear characteristic) 27 V 87 mA 575 mW (linear characteristic) 28 mA 575 mW (linear characteristic)
 ⑤ II 3(1) G Ex nA [ia Ga] IIC T4 Gc ⑥ I (M1) [Ex ia Ma] I ⑥ II (1) D [Ex ia Da] IIIC 27 V 87 mA 575 mW (linear characteristic) 27 V 87 mA 575 mW (linear characteristic) 28 W (linear characteristic) 29 V (linear characteristic) 20 V field circuits to control and supply circuits safe electrical isolation acc. to EN 60079-11, voltage peak value 375 V
© I (M1) [Ex ia Ma] I © II (1) D [Ex ia Da] IIIC 27 V 87 mA 575 mW (linear characteristic) 27 V 87 mA 575 mW (linear characteristic) 28 where the state of the
87 mA 575 mW (linear characteristic) 27 V 87 mA 575 mW (linear characteristic) 250 V field circuits to control and supply circuits safe electrical isolation acc. to EN 60079-11, voltage peak value 375 V
87 mA 575 mW (linear characteristic) 27 V 87 mA 575 mW (linear characteristic) 250 V field circuits to control and supply circuits safe electrical isolation acc. to EN 60079-11, voltage peak value 375 V
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EN IEC 60079-0:2018+AC:2020 EN 60079-11:2012 EN 60079-15:2010
BVS 11 ATEX E 116X
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IECEx BVS 11.0068X
Ex nA [ia Ga] IIC T4 Gc [Ex ia Da] IIIC [Ex ia Ma] I
The module has to be mounted in appropriate backplanes (LB9***) in Zone 2 or outside hazardous areas. Here, observe the corresponding declaration of conformit For use in hazardous areas (e. g. Zone 2, Zone 22 or Div. 2) the module must be installed in an appropriate enclosure.





Digital Input LB1109A

- 8-channel Inputs Ex ia
- Mounting in Zone 2, Class I/Div.2 or in the safe area
- Dry contact or NAMUR inputs
- Positive or negative logic selectable
- Simulation mode for service operations (forcing)
- Line fault detection (LFD)
- Permanently self-monitoring
- Module can be exchanged under voltage



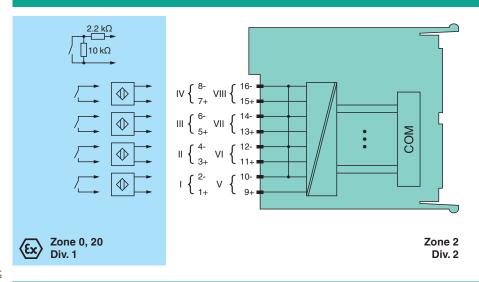


Function

The device accepts digital input signals of NAMUR sensors or mechanical contacts from the hazardous area. Open and short circuit line faults are detected.

The inputs are galvanically isolated from the bus and the power supply.

Connection

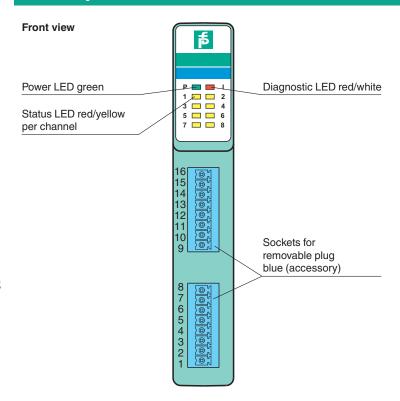


Slots		
Occupied slots		1
Supply		
Connection		backplane bus
Rated voltage	U_{r}	12 V DC , only in connection with the power supplies LB9***
Power dissipation		1.55 W
Power consumption		1.55 W
Internal bus		
Connection		backplane bus
Interface		manufacturer-specific bus to standard com unit
Digital input		
Number of channels		8
Sensor interface		

Connection		NAMUR sensor
Connection [2]		volt-free contact
Connection		Terminals 1+, 2-, 3+, 4-, 5+, 6-, 7+, 8-, 9+, 10-, 11+, 12-, 13+, 14-, 15+, 16-
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 kΩ
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 Ω
Open-circuit		< 0.35 mA
Minimum pulse duration		15 ms
ndicators/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 (1-8) red: line fault (lead breakage or short circuit), yellow: signal (per channel)
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/acceleratio ± 0.075 mm/1 g; 10 cycles frequency range 5 100 Hz; transition frequency: 13.2 Hz amplitude/acceleration ± mm/0.7 g; 90 minutes at each resonance
Damaging gas		designed for operation in environmental conditions acc. to ISA-S71.04-1985, severit level G3
Mechanical specifications		
Degree of protection		IP20 when mounted on backplane
Connection		removable front connector with spring terminal (0.14 0.5 mm²)
Mass		approx. 90 g
Dimensions		16 x 100 x 102 mm (0.63 x 3.9 x 4 inch)
Data for application in connection with ha	zardous a	reas
EU-type examination certificate		EXA 13 ATEX 0036X
Marking		 ⑤ II 3(1) G Ex nA [ia Ga] IIC T4 Gc ⑥ I (M1) [Ex ia Ma] I ⑥ II (1) D [Ex ia Da] IIIC
Input		
Voltage	Uo	10 V
g-	I _o	13 mA

Release date: 2023-11-28 Date of issue: 2023-11-28 Filename: 223078_eng.pdf

Power	Po	33 mW (linear characteristic)
Galvanic isolation	- 0	(
Input/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 13 ATEX 0036X
UL approval		E106378
IECEx approval		
IECEx certificate		IECEx EXA 13.0003X
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.





Digital Input LB1009A

- 8-channel
- Inputs Ex ic
- Installation in Zone 2 or safe area
- Dry contact or NAMUR inputs
- Positive or negative logic selectable
- Simulation mode for service operations (forcing)
- Line fault detection (LFD)
- Permanently self-monitoring
- Module can be exchanged under voltage

Digital Input



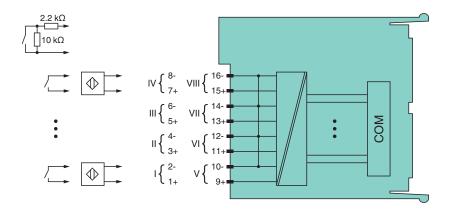


Function

The device accepts digital input signals of NAMUR sensors or mechanical contacts from the field. Furthermore it can accept active signals with 24 V or 5 V DC in the safe area.

Open and short circuit line faults are detected. This does not apply for active signals. The inputs are galvanically isolated from the bus and the power supply.

Connection



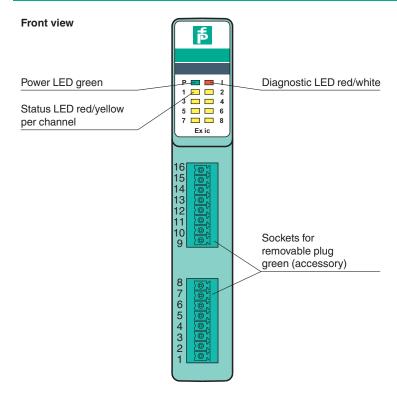
Zone 2

Slots		
Occupied slots		1
Supply		
Connection		backplane bus
Rated voltage	U _r	12 V DC , only in connection with the power supplies LB9***
Power dissipation		1.55 W
Power consumption		1.55 W
Internal bus		
Connection		backplane bus
Interface		manufacturer-specific bus to standard com unit
Digital input		
Number of channels		8

Technical Data		
Companienterfore		
Sensor interface		NAMI ID access
Connection		NAMUR sensor
Connection [2]		volt-free contact
Connection [3]		Usage without connection to areas where there is a risk of explosion: active signals, mechanical contacts, NAMUR proximity switches, 2-wire sensors If the device has been operated in general electrical systems that are <i>not</i> connected to areas where there is a risk of explosion, the device cannot then be used in electrical systems that are connected to areas where there is a risk of explosion. Usage with connection to areas where there is a risk of explosion: mechanical contacts, NAMUR proximity switches
Connection		Terminals 1+, 2-, 3+, 4-, 5+, 6-, 7+, 8-, 9+, 10-, 11+, 12-, 13+,14-, 15+, 16-
Rated values		acc. to EN 60947-5-6 (NAMUR)
Switching point/switching hysteresis		$1.2 2.1 \text{ mA} / \pm 0.2 \text{ mA}$
Voltage		8.2 V
Internal resistor	Ri	1 kΩ
Line fault detection		can be switched on/off for each channel via configuration tool, active signals (24 V, 5
		V) without line fault detection
Connection		mechanical switch with additional resistors (see connection diagram) proximity switches without additional wiring
Short-circuit		< 360 Ω
Open-circuit		< 0.35 mA
Digital signals (active)		Use in safe area: configurable 24 V 5 V
Switching point: ON		> 8 V > 2.7 V
Switching point: OFF		< 3 V < 2.3 V
Minimum pulse duration		15 ms
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 (1-8) red: line fault (lead breakage or short circuit) , yellow: signal (per channel)
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
,		EN 00008-2-78
Ambient conditions		40 60 90 / 40 440 95) 70 90 / 5.3
Ambient temperature		-40 60 °C (-40 140 °F) , 70 °C (non-Ex)
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

Digital Input LB1009A

Technical Data		
Mass		approx. 90 g
Dimensions		16 x 100 x 102 mm (0.63 x 3.9 x 4 inch)
Data for application in connection with haza	ardous a	reas
Input		
Voltage	U _o	10 V
Current	Io	12 mA
Power	Po	30 mW (linear characteristic)
Certificate		EXA 13 ATEX 0037X
Marking		
Galvanic isolation		
Input/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 13 ATEX 0037X
IECEx approval		
IECEx certificate		IECEx EXA 13.0003X
IECEx marking		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 or Zone 22) the module must be installed in an appropriate enclosure.
Supplementary information		



Digital Input LB1001A

- 2 channels
- Dry contact or NAMUR inputs
- Installation in Zone 2 or safe area
- Galvanic isolation between channels and the bus
- Positive or negative logic selectable
- Simulation mode for service operations (forcing)
- Line fault detection (LFD)
- Permanently self-monitoring
- Module can be exchanged under voltage

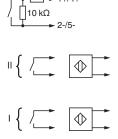


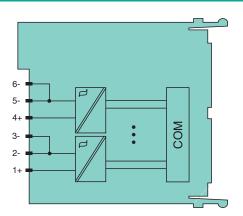


Function

The device accepts up to 2 digital input signals of NAMUR sensors or mechanical contacts from the field. Open or short circuit line fault alarms are detected. The inputs are galvanically isolated from each other, from the bus and the power supply (EN 60079-11).

Connection



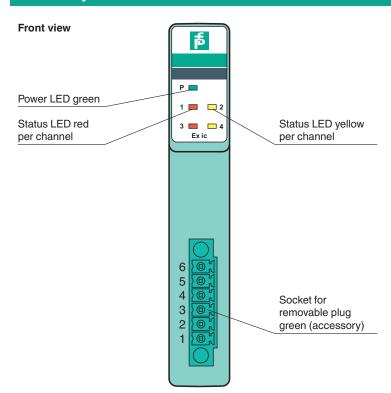


Zone 2

Slots		
Occupied slots		1
Supply		
Connection		backplane bus
Rated voltage	Ur	12 V DC , only in connection with the power supplies LB9***
Power dissipation		0.65 W
Power consumption		0.65 W
Electrical specifications		
Galvanic isolation		Galvanic isolation between channels
Internal bus		
Connection		backplane bus
Interface		manufacturer-specific bus to standard com unit
Digital input		

Number of channels		2
Sensor interface		
Connection		NAMUR sensor
Connection [2]		volt-free contact
Connection		channel I: 1+, 2/3-; channel II: 4+, 5/6-
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	Ri	1 kΩ
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 Ω
Open-circuit		< 0.35 mA
Minimum pulse duration		20 ms
Indicators/settings		
LED indication		Power LED (P) green: supply Status LED (1, 3) red: line fault (per channel) Status LED (2, 4) yellow: signal (per channel)
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) , 70 °C (non-Ex)
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 \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 $\ensuremath{G3}$
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 mm²) or screw terminals (0.08 1.5 mm²)
Mass		approx. 110 g
Dimensions		16 x 100 x 102 mm (0.63 x 3.9 x 4 inch)
Data for application in connection with haza	ardous a	reas
Certificate		PF 08 CERT 1234 X
Marking		© II 3 G Ex nA [ic] IIC T4 Gc
Galvanic isolation		
Input/power supply, internal bus		safe electrical isolation acc. to EN 60079-11, voltage peak value 375 V

Technical Data	
Directive 2014/34/EU	EN IEC 60079-0:2018+AC:2020 EN 60079-11:2012 EN 60079-15:2010
International approvals	
IECEx approval	
IECEx certificate	IECEx BVS 09.0037X
IECEx marking	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 or Zone 22) the module must be installed in an appropriate enclosure.
Supplementary information	





Digital Input

LB1008A

- 8-channel
- Dry contact or NAMUR inputs
- 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
- Module can be exchanged under voltage





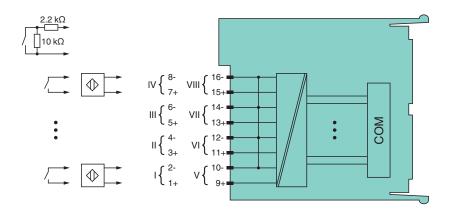
Function

The device accepts digital input signals of NAMUR sensors or mechanical contacts from the field.

Open and short circuit line faults are detected.

The inputs are galvanically isolated from the bus and the power supply.

Connection



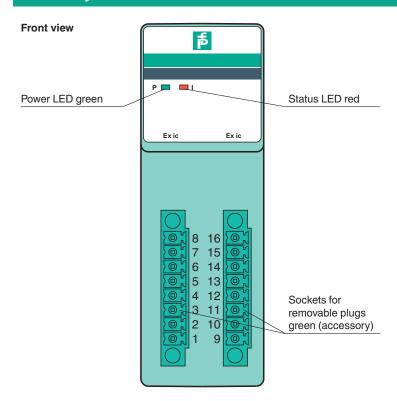
Zone 2

Slots		
Occupied slots		2
Supply		
Connection		backplane bus
Rated voltage	U_{r}	12 V DC , only in connection with the power supplies LB9***
Power dissipation		0.95 W
Power consumption		0.95 W
Internal bus		
Connection		backplane bus
Interface		manufacturer-specific bus to standard com unit
Digital input		
Number of channels		8
Sensor interface		

Digital Input LB1008A

Connection		NAMUR sensor
Connection [2]		volt-free contact
Connection [3]		Usage without connection to areas where there is a risk of explosion: active signals, mechanical contacts, NAMUR proximity switches, 2-wire sensors If the device has been operated in general electrical systems that are <i>not</i> connected to areas where there is a risk of explosion, the device cannot then be used in electrical systems that <i>are</i> connected to areas where there is a risk of explosion. Usage with connection to areas where there is a risk of explosion: mechanical contacts, NAMUR proximity switches
Connection		channel I: 1+, 2-; channel II: 3+, 4-; channel III: 5+, 6-; channel IV: 7+, 8-; channel V: 9+, 10-; channel VI: 11+, 12-; channel VII: 13+, 14-; channel VIII: 15+, 16-
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	Ri	1 kΩ
Line fault detection		can be switched on/off for each channel via configuration tool , active signals (24 V, 5 V) without line fault detection
Connection		mechanical switch with additional resistors (see connection diagram) proximity switches without additional wiring
Short-circuit		< 360 Ω
Open-circuit		< 0.35 mA
Digital signals (active)		Use in safe area: configurable 24 V 5 V
Switching point: ON		> 8 V > 2.7 V
Switching point: OFF		< 3 V < 2.3 V
Minimum pulse duration		1 ms
Indicators/settings		
LED indication		Power LED (P) green: supply Status LED (I) red: line fault
Coding		optional mechanical coding via front socket
Directive conformity		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013
Conformity		NEW
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 EN 60068-2-42
Damaging gas Relative humidity		EN 60068-2-42 EN 60068-2-78
Ambient conditions		EN 00006-2-78
Ambient temperature		-40 60 °C (-40 140 °F) , 70 °C (non-Ex)
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 mm²) or screw terminals (0.08 1.5 mm²)
Mass		approx. 130 g

Data for application in connection with hazard	dous areas
Certificate	PF 08 CERT 1234 X
Marking	
Galvanic isolation	
Input/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	
IECEx approval	
IECEx certificate	IECEx BVS 09.0037X
IECEx marking	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 or Zone 22) the module must be installed in an appropriate enclosure.
Supplementary information	





Digital Input LB1101A

- 2 channels
- Inputs Ex ia
- Mounting in Zone 2, Class I/Div.2 or in the safe area
- Dry contact or NAMUR inputs
- Galvanic isolation between channels and the bus
- Positive or negative logic selectable
- Simulation mode for service operations (forcing)
- Line fault detection (LFD)
- Permanently self-monitoring
- Module can be exchanged under voltage





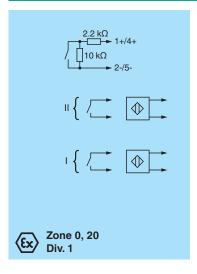


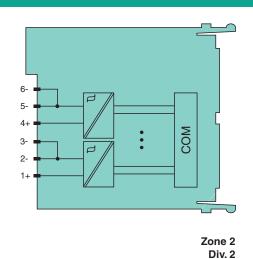
Function

The device accepts digital input signals of NAMUR sensors or mechanical contacts from the hazardous area. Open or short circuit line fault alarms are detected.

The intrinsically safe inputs are galvanically isolated from the bus and the power supply (EN 60079-11).

Connection





Slots		
Occupied slots		1
Supply		
Connection		backplane bus
Rated voltage	U _r	12 V DC , only in connection with the power supplies LB9***
Power dissipation		0.65 W
Power consumption		0.65 W
Electrical specifications		
Galvanic isolation		Galvanic isolation between channels
Internal bus		
Connection		backplane bus
Interface		manufacturer-specific bus to standard com unit

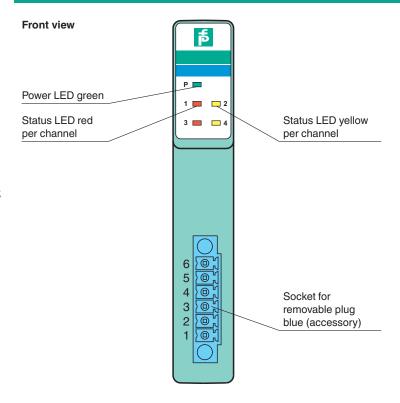
Digital Input LB1101A

Technical Data

No week an of all and the		0
Number of channels		2
Sensor interface		
Connection		NAMUR sensor
Connection [2]		volt-free contact
Connection [3]		active binary signal 24 V DC
Connection		channel I: 1+, 2/3-; channel II: 4+, 5/6-
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	Ri	1 kΩ
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 Ω
Open-circuit		< 0.35 mA
Minimum pulse duration		20 ms
Indicators/settings		Device LED (D) record const.
LED indication		Power LED (P) green: supply Status LED (1, 3) red: line fault (per channel) Status LED (2, 4) yellow: signal (per channel)
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 \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 $\mbox{G3}$
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 mm²) or screw terminals (0.08 1.5 mm²)
Mass		approx. 110 g
Dimensions		16 x 100 x 102 mm (0.63 x 3.9 x 4 inch)
Data for application in connection with haza	rdous a	reas
EU-type examination certificate		PTB 03 ATEX 2042 X
Marking		© II (1)G [Ex ia Ga] IIC © II (1)D [Ex ia Da] IIIC

Release date: 2023-10-19 Date of issue: 2023-10-19 Filename: 254620_eng.pdf

Technical Data		
Input		
Voltage	Uo	12.6 V
Current	Io	12.8 mA
Power	Po	40.1 mW (linear characteristic)
Certificate		PF 08 CERT 1234 X
Marking		⊕ II 3 G Ex nA IIC T4 Gc
Galvanic isolation		
Input/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
UL approval		E106378
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		





Digital Input LB1108A

- 8-channel
- Inputs Ex ia
- Mounting in Zone 2, Class I/Div.2 or in the safe area
- Dry contact or NAMUR inputs
- Positive or negative logic selectable
- Simulation mode for service operations (forcing)
- Line fault detection (LFD)
- Permanently self-monitoring
- Module can be exchanged under voltage



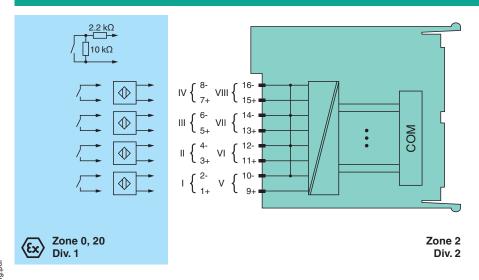


Function

The device accepts digital input signals of NAMUR sensors or mechanical contacts from the hazardous area. Open or short circuit line fault alarms are detected.

The inputs are galvanically isolated from the bus and the power supply (EN 60079-11).

Connection



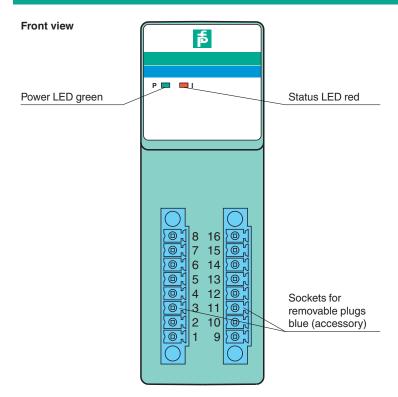
Technical Data

Slots		
Occupied slots		2
Supply		
Connection		backplane bus
Rated voltage	U _r	12 V DC , only in connection with the power supplies LB9***
Power dissipation		0.95 W
Power consumption		0.95 W
Internal bus		
Connection		backplane bus
Interface		manufacturer-specific bus to standard com unit
Digital input		
Number of channels		8
Sensor interface		

Release date: 2023-10-19 Date of issue: 2023-10-19 Filename: 254631_eng.pdf

Connection		NAMUR sensor
Connection [2]		volt-free contact
Connection		channel I: 1+, 2-; channel II: 3+, 4-; channel III: 5+, 6-; channel IV: 7+, 8-; channel V: 9+, 10-; channel VI: 11+, 12-; channel VII: 13+, 14-; channel VIII: 15+, 16-
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 kΩ
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 Ω
Open-circuit		< 0.35 mA
Minimum pulse duration		1 ms
Indicators/settings		
LED indication		Power LED (P) green: supply Status LED (I) red: line fault
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		211 30000 2 70
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 mm²) or screw terminals (0.08 1.5 mm²)
Mass		approx. 130 g
Dimensions		32.5 x 100 x 102 mm (1.28 x 3.9 x 4 inch)
Data for application in connection with haza	rdous a	· · · · · · · · · · · · · · · · · · ·
EU-type examination certificate		PTB 03 ATEX 2042 X
Marking		 II (1)G [Ex ia Ga] IIC II (1)D [Ex ia Da] IIIC I (M1) [Ex ia Ma] I
Input		
Voltage	Uo	14.9 V
Current	I _o	15.7 mA
Power	Po	58.2 mW (linear characteristic)
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Technical Data	
Certificate	PF 08 CERT 1234 X
Marking	© II 3 G Ex nA IIC T4 Gc
Galvanic isolation	
Input/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
UL approval	E106378
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	





Universal Input/Output (HART) LB7004A

- 4-channel
- Analog input, digital input, analog output, digital output
- Installation in Zone 2 or safe area
- Supply circuit 21.5 V (4 mA)
- HART communication via field bus or service bus
- Simulation mode for service operations (forcing)
- Line fault detection (LFD): one LED per channel
- Permanently self-monitoring
- Module can be exchanged under voltage





Function

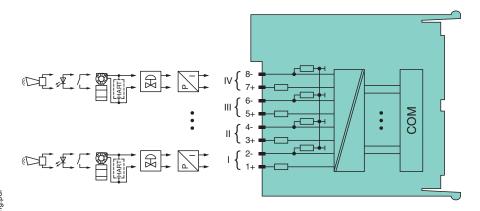
The device is a configurable universal module. Each channel can operate in the following modes:
- As an analog input (AI) it feeds 2-wire transmitters.
- As an analog output (AO) it can drive proportional valves, I/P converters, or local indicators.

- As a digital input (DI) it reads dry contacts.
- As a digital output (DO) it can drive solenoids, sounders, or LED.

A combination of analog and digital I/O is possible.

Channel LEDs indicate the status of each channel. White LEDs indicate whether AI, AO, DI, DO are selected. The signals are galvanically isolated from the bus and the power supply.

Connection



Zone 2

Technical Data

Slots		
Occupied slots		1
Supply		
Connection		backplane bus
Rated voltage	U _r	12 V DC , only in connection with the power supplies LB9***
Power dissipation		2.15 W
Power consumption		3.3 W
Internal bus		
Connection		backplane bus

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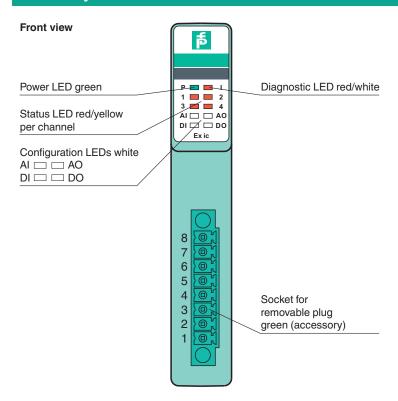
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Interface	manufacturer-specific bus to standard com unit
Analog input	
Number of channels	4
Suitable field devices	
Field device	pressure converter
Field device [2]	flow converter
Field device [3]	level converter
Field device [4]	Temperature Converter
Field device interface	
Connection	2-wire transmitter
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Transmitter supply voltage	min. 15 V at 20 mA; 21.5 V at 4 mA
Input resistance	15 Ω
Line fault detection	can be switched on/off for each channel via configuration tool , configurable via configuration tool
Short-circuit	factory setting: > 21 mA Can be parameterized in the range 0 22 mA
Open-circuit	factory setting: < 3.6 mA Can be parameterized in the range 0 22 mA
HART communication	yes
HART secondary variable	yes
analog output	
Number of channels	4
Suitable field devices	
Field device	Proportional Valve
Field device [2]	I/P converters
Field device [3]	on-site display
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Current	0 20 mA short-circuit protected
Line fault detection	can be switched on/off for each channel via configuration tool, configurable via configuration tool
Short-circuit	factory setting: $< 50~\Omega$ configurable between 0 26 mA
Open-circuit	deviation of preset output value > 0.5 mA
Load	max. 750 Ω at 20 mA
HART communication	yes
HART secondary variable	yes
Watchdog	output off 0.5 s after serious fault
igital input	
Number of channels	4
Sensor interface	
Connection [2]	volt-free contact
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Line fault detection	can be switched on/off for each channel via configuration tool
Connection	mechanical switch with additional resistors (see connection diagram)
Short-circuit	> 7 mA
Open-circuit	< 0.1 mA
Digital signals (active)	
Switching point: ON	> 2.1 mA
Switching point: OFF	< 1.2 mA
Pigital output	
Number of channels	4
Suitable field devices	
Field device	Solenoid Valve
Field device [2]	audible alarm
Field device [3]	visual alarm
Connection	terminals 1+, 2-, 3+, 4-, 5+, 6-, 7+, 8-

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Technical Data		
Drive capability		12 V / 22 mA
Internal resistor	Ri	385 Ω
Current limit	I_{max}	22 mA
Open loop voltage	Us	min. 22.7 V
Line fault detection		can be switched on/off for each channel via configuration tool
Test current		0.4 mA
Short-circuit		< 50 Ω
Open-circuit		< 0.2 mA
ransfer characteristics		
Deviation		
After calibration		0.1 % of the signal range at 20 °C (68 °F)
Influence of ambient temperature		0.01 %/K of the signal range
Refresh time		approx. 100 ms (4 channels)
ndicators/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 (1-4) red: line fault (lead breakage or short circuit), yellow: state of digital I/O (0/1) Configuration LED (AI, AO, DI, DO) white: selected channel mode
Coding		optional mechanical coding via front socket
Directive conformity		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013
Conformity		
Electromagnetic compatibility		NE 21:2007
Degree of protection		IEC 60529:2000
Environmental test		EN 60068-2-14:2009
Shock resistance		EN 60068-2-27:2009
Vibration resistance		EN 60068-2-6:2008
Damaging gas		EN 60068-2-42:2003
Relative humidity		EN 60068-2-78:2001
Ambient conditions		L14 00000 Z 70.2001
		-40 60 °C (-40 140 °F) , 70 °C (non-Ex)
Ambient temperature		-40 85 °C (-40 185 °F)
Storage temperature		
Relative humidity		95 % non-condensing
Altitude		max. 2000 m
Shock resistance Vibration resistance		shock type I, shock duration 11 ms, shock amplitude 15 g, number of shocks 18 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 ± 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 (module), mounted on backplane
Connection		removable front connector with screw flange (accessory) wiring connection via spring terminals (0.14 1.5 mm²) or screw terminals (0.08 1.5 mm²)
Mass		approx. 100 g
Dimensions		16 x 100 x 102 mm (0.63 x 3.9 x 4 inch)
Data for application in connection with haza	rdous a	reas
Certificate		BVS 12 ATEX E 115 X
Marking		ⓑ II 3 G Ex nA [ic] IIC T4 Gc
Galvanic isolation		
Rated voltage	U _m	250 V field circuits to control and supply circuits

Technical Data	
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
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	BVS 12 ATEX E 115 X
IECEx approval	
IECEx certificate	IECEx BVS 11.0068X
IECEx marking	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 or Zone 22) the module must be installed in an appropriate enclosure.
Supplementary information	





Universal Input/Output (HART) LB7104A

- 4-channel
- Inputs Ex ia, Outputs Ex ia
- Analog input, digital input, analog output, digital output
- Mounting in Zone 2, Class I/Div.2 or in the safe area
- Supply circuit 15 V (20 mA)
- HART communication via field bus or service bus
- Simulation mode for service operations (forcing)
- Line fault detection (LFD): one LED per channel
- Permanently self-monitoring
- Module can be exchanged under voltage





Function

The device is a configurable universal module. Each channel can operate in the following modes:
- As an analog input (AI) it feeds 2-wire transmitters.
- As an analog output (AO) it can drive proportional valves, I/P converters, or local indicators.
- As a digital input (DI) it reads dry contacts.

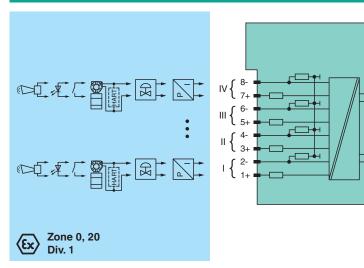
- As a digital output (DO) it can drive solenoids, sounders, or LED.

A combination of analog and digital I/O is possible.

Channel LEDs indicate the status of each channel. White LEDs indicate whether AI, AO, DI, DO are selected.

The intrinsically safe signals are galvanically isolated from the bus and the power supply.

Connection



Technical Data

	1
	backplane bus
Ur	12 V DC , only in connection with the power supplies LB9***
	2 W
	3 W
	backplane bus
	Ur

Zone 2

Div. 2

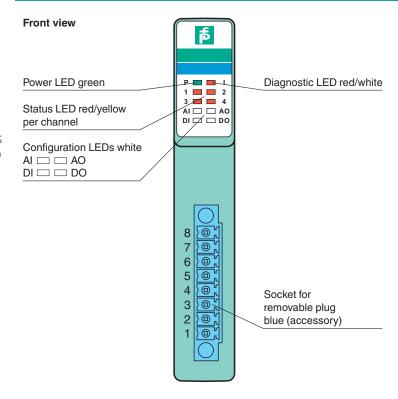
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Interface	manufacturer-specific bus to standard com unit
Analog input	
Number of channels	4
Suitable field devices	
Field device	pressure converter
Field device [2]	flow converter
Field device [3]	level converter
Field device [4]	Temperature Converter
Field device interface	
Connection	2-wire transmitter
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Transmitter supply voltage	min. 15 V at 20 mA; 21.5 V at 4 mA
Input resistance	15 Ω
Line fault detection	can be switched on/off for each channel via configuration tool , configurable via configuration tool
Short-circuit	factory setting: > 21 mA Can be parameterized in the range 0 22 mA
Open-circuit	factory setting: < 3.6 mA Can be parameterized in the range 0 22 mA
HART communication	yes
HART secondary variable	yes
Analog output	
Number of channels	4
Suitable field devices	
Field device	Proportional Valve
Field device [2]	I/P converters
Field device [3]	on-site display
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Current	0 20 mA short-circuit protected
Line fault detection	can be switched on/off for each channel via configuration tool, configurable via configuration tool
Short-circuit	factory setting: $< 50 \Omega$ configurable between 0 26 mA
Open-circuit	deviation of preset output value > 0.5 mA
Load	max. 750 Ω at 20 mA
HART communication	yes
HART secondary variable	yes
Watchdog	output off 0.5 s after serious fault
Digital input	
Number of channels	4
Sensor interface	
Connection [2]	volt-free contact
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Line fault detection	can be switched on/off for each channel via configuration tool
Connection	mechanical switch with additional resistors (see connection diagram)
Short-circuit	> 7 mA
Open-circuit	< 0.1 mA
Digital signals (active)	
Switching point: ON	> 2.1 mA
Switching point: OFF	< 1.2 mA
Digital output	
Number of channels	4
Suitable field devices	
Field device	Solenoid Valve
Field device [2]	audible alarm
Field device [2]	visual alarm
Connection	terminals 1+, 2-, 3+, 4-, 5+, 6-, 7+, 8-

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reclinical Data		
Drive capability		12 V / 22 mA
Internal resistor	Ri	385 Ω
Current limit	I _{max}	22 mA
Open loop voltage	Us	min. 22.7 V
Line fault detection		can be switched on/off for each channel via configuration tool
Test current		0.4 mA
Short-circuit		< 50 Ω
Open-circuit		< 0.2 mA
Transfer characteristics		
Deviation		
After calibration		0.1 % of the signal range at 20 °C (68 °F)
Influence of ambient temperature		0.1 %/10 K of the signal range
Refresh time		approx. 100 ms (4 channels)
Indicators/settings		approximate (· anamico)
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 (1-4) red: line fault (lead breakage or short circuit), yellow: state of digita I/O (0/1) Configuration LED (AI, AO, DI, DO) white: selected channel mode
Coding		optional mechanical coding via front socket
Directive conformity		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013
Conformity		
Electromagnetic compatibility		NE 21:2007
Degree of protection		IEC 60529:2000
Environmental test		EN 60068-2-14:2009
Shock resistance		EN 60068-2-27:2009
Vibration resistance		EN 60068-2-6;2008
Damaging gas		EN 60068-2-42:2003
Relative humidity		EN 60068-2-78:2001
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		
Vibration resistance		shock type I, shock duration 11 ms, shock amplitude 15 g, number of shocks 18 frequency range 10 150 Hz; transition frequency: 57.56 Hz, amplitude/acceleration
Vibration resistance		± 0.075 mm/1 g; 10 cycles frequency: 13.2 Hz amplitude/acceleration ± mm/0.7 g; 90 minutes at each resonance
Damaging gas		designed for operation in environmental conditions acc. to ISA-S71.04-1985, severit 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 mm²) or screw terminals (0.08 1.5 mm²)
Mass		approx. 100 g
Dimensions		16 x 100 x 102 mm (0.63 x 3.9 x 4 inch)
Data for application in connection with haza	rdous a	reas
EU-type examination certificate		BVS 11 ATEX E 116 X
Marking		 ⊕ II 3(1) G Ex nA [ia Ga] IIC T4 Gc ⊕ I (M1) [Ex ia Ma] I ⊕ II (1) D [Ex ia Da] IIIC
Input		
•		

Technical Data		
Voltage	U _o	27 V
Current	lo	87 mA
Power	Po	575 mW (linear characteristic)
Output		
Voltage	U_{\circ}	27 V
Current	lo	87 mA
Power	P_o	575 mW (linear characteristic)
Galvanic isolation		
Rated voltage	U_{m}	250 V field circuits to control and supply circuits
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
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		BVS 11 ATEX E 116X
UL approval		E106378
IECEx approval		
IECEx certificate		IECEx BVS 11.0068X
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		





Universal Input/Output LB7104E

- 4-channel
- Inputs Ex ia, Outputs Ex ia
- Analog input, digital input, analog output, digital output
- Mounting in Zone 2, Class I/Div.2 or in the safe area
- Supply circuit 15 V (20 mA)
- HART communication via field bus or service bus
- Simulation mode for service operations (forcing)
- Line fault detection (LFD): one LED per channel
- Permanently self-monitoring
- Output with bus-independent safety shutdown

Universal input/output with HART communication and switch-off input





Function

The device is a configurable universal module. Each channel can operate in the following modes:
- As an analog input (AI) it feeds 2-wire transmitters.
- As an analog output (AO) it can drive proportional valves, I/P converters, or local indicators.

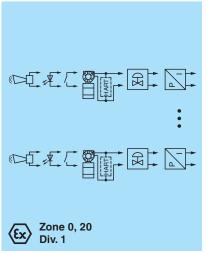
- As a digital input (DI) it reads dry contacts.
- As a digital output (DO) it can drive solenoids, sounders, or LED.

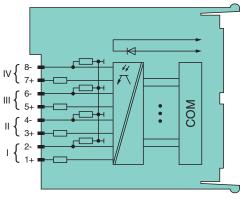
A combination of analog and digital I/O is possible. Channel LEDs indicate the status of each channel. White LEDs indicate whether AI, AO, DI, DO are selected.

The outputs can be switched off via a contact. This can be used for bus independent safety applications.

The intrinsically safe signals are galvanically isolated from the bus and the power supply.

Connection





Zone 2 Div. 2

Technical Data

Slots		
Occupied slots		1
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 2
Supply		
Connection		backplane bus
Rated voltage	Ur	12 V DC , only in connection with the power supplies LB9***
Power dissipation		2 W

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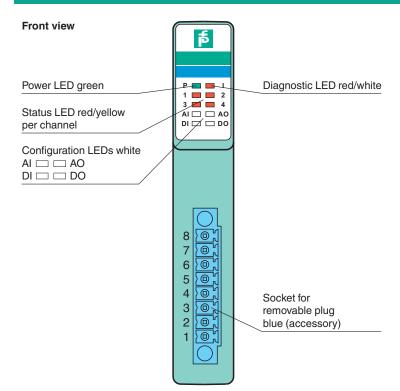
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Technical Data	
Power consumption	3 W
nternal bus	
Connection	backplane bus
Interface	manufacturer-specific bus to standard com unit
Analog input	·
Number of channels	4
Suitable field devices	
Field device	pressure converter
Field device [2]	flow converter
Field device [3]	level converter
Field device [4]	Temperature Converter
Field device interface	
Connection	2-wire transmitter
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Transmitter supply voltage	min. 15 V at 20 mA; 21.5 V at 4 mA
Input resistance	15 Ω
Line fault detection	can be switched on/off for each channel via configuration tool , configurable via configuration tool
Short-circuit	factory setting: > 21 mA Can be parameterized in the range 0 22 mA
Open-circuit	factory setting: < 3.6 mA Can be parameterized in the range 0 22 mA
HART communication	yes
HART secondary variable	yes
Analog output	
Number of channels	4
Suitable field devices	
Field device	Proportional Valve
Field device [2]	I/P converters
Field device [3]	on-site display
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Current	0 20 mA short-circuit protected
Line fault detection	can be switched on/off for each channel via configuration tool, configurable via configuration tool
Short-circuit	factory setting: $<$ 50 Ω configurable between 0 26 mA
Open-circuit	deviation of preset output value > 0.5 mA
Load	max. 750 Ω at 20 mA
HART communication	yes
HART secondary variable	yes
Watchdog	output off 0.5 s after serious fault
Digital input	
Number of channels	4
Sensor interface	
Connection [2]	volt-free contact
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Line fault detection	can be switched on/off for each channel via configuration tool
Connection	mechanical switch with additional resistors (see connection diagram)
Short-circuit	> 7 mA
Open-circuit	< 0.1 mA
Digital signals (active)	
Switching point: ON	> 2.1 mA
Switching point: OFF	< 1.2 mA
Digital output	
Number of channels	4
Suitable field devices	
Field device	Solenoid Valve

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Technical Data		
Field device [2]		audible alarm
Field device [3]		visual alarm
Connection		terminals 1+, 2-, 3+, 4-, 5+, 6-, 7+, 8-
Drive capability		12 V / 22 mA
Internal resistor	Ri	385 Ω
Current limit		22 mA
	I _{max} U _s	min. 22.7 V
Open loop voltage Line fault detection	Us	
Test current		can be switched on/off for each channel via configuration tool 0.4 mA
		1 2 7 7 7 7 7
Short-circuit		< 50 Ω
Open-circuit		< 0.2 mA
Fransfer characteristics		
Deviation		0.4.07 of the object to account 00.00 (00.05)
After calibration		0.1 % of the signal range at 20 °C (68 °F)
Influence of ambient temperature		0.1 %/10 K of the signal range
Refresh time		approx. 100 ms (4 channels)
ndicators/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 (1-4) red: line fault (lead breakage or short circuit), yellow: state of digital I/O (0/1) Configuration LED (AI, AO, DI, DO) white: selected channel mode
Coding		optional mechanical coding via front socket
Directive conformity		•
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013
Conformity		
Electromagnetic compatibility		NE 21:2007
Degree of protection		IEC 60529:2000
Environmental test		EN 60068-2-14:2009
Shock resistance		EN 60068-2-27;2009
Vibration resistance		EN 60068-2-6:2008
Damaging gas		EN 60068-2-42:2003
		EN 60068-2-78:2001
Relative humidity		EIN 00000-2-7 8.200 I
Ambient conditions		40 0000 (40 4400)
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 \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
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 mm²) or screw terminals
		(0.08 1.5 mm ²)
Mass		(0.08 1.5 mm ²) approx. 100 g
Mass Dimensions		
		approx. 100 g

BVS 11 ATEX E 116 X B II 3(1) G Ex nA [ia Ga] IIC T4 Gc B I (M1) [Ex ia Ma] I B II (1) D [Ex ia Da] IIIC 27 V 87 mA 575 mW (linear characteristic) 27 V 87 mA 575 mW (linear characteristic) 28 mA 575 mW (linear characteristic)
 ⑤ II 3(1) G Ex nA [ia Ga] IIC T4 Gc ⑥ I (M1) [Ex ia Ma] I ⑥ II (1) D [Ex ia Da] IIIC 27 V 87 mA 575 mW (linear characteristic) 27 V 87 mA 575 mW (linear characteristic) 28 W (linear characteristic) 29 V (linear characteristic) 20 V field circuits to control and supply circuits safe electrical isolation acc. to EN 60079-11, voltage peak value 375 V
© I (M1) [Ex ia Ma] I © II (1) D [Ex ia Da] IIIC 27 V 87 mA 575 mW (linear characteristic) 27 V 87 mA 575 mW (linear characteristic) 28 where the state of the
87 mA 575 mW (linear characteristic) 27 V 87 mA 575 mW (linear characteristic) 250 V field circuits to control and supply circuits safe electrical isolation acc. to EN 60079-11, voltage peak value 375 V
87 mA 575 mW (linear characteristic) 27 V 87 mA 575 mW (linear characteristic) 250 V field circuits to control and supply circuits safe electrical isolation acc. to EN 60079-11, voltage peak value 375 V
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87 mA 575 mW (linear characteristic) 250 V field circuits to control and supply circuits safe electrical isolation acc. to EN 60079-11, voltage peak value 375 V
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The module has to be mounted in appropriate backplanes (LB9***) in Zone 2 or outside hazardous areas. Here, observe the corresponding declaration of conformit For use in hazardous areas (e. g. Zone 2, Zone 22 or Div. 2) the module must be installed in an appropriate enclosure.





Frequency / Counter Input LB1003A

- 1-channel
- Input for frequency, counter, direction of rotation
- Installation in Zone 2 or safe area
- Digital input max. 15 kHz
- Positive or negative logic selectable
- Simulation mode for service operations (forcing)
- Line fault detection (LFD)
- Permanently self-monitoring
- Module can be exchanged under voltage

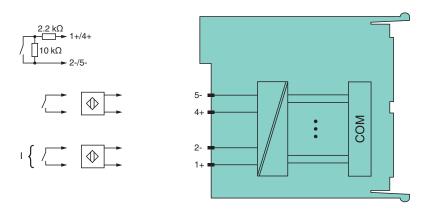




Function

The device accepts digital input signals of NAMUR sensors or mechanical contacts from the field. Open and short circuit line faults are detected. The inputs are galvanically isolated from the bus and the power supply.

Connection



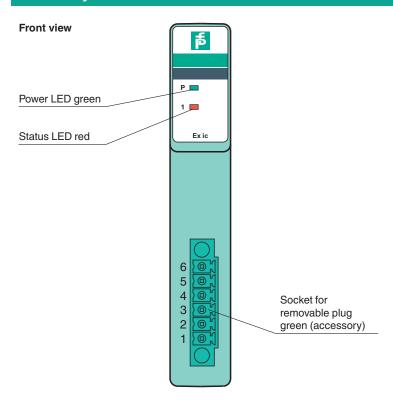
Zone 2

Slots		
Occupied slots		1
Supply		
Connection		backplane bus
Rated voltage	U_{r}	12 V DC , only in connection with the power supplies LB9***
Power dissipation		0.65 W
Power consumption		0.65 W
Internal bus		
Connection		backplane bus
Interface		manufacturer-specific bus to standard com unit
Digital input		
Number of channels		1
Function		

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Technical Data		
Function		Counter
Function [2]		frequency
Function [3]		direction of rotation
Sensor interface		
Connection		NAMUR sensor
Connection [2]		volt-free contact
Connection		channel I: 1+, 2-; direction: 4+, 5-
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 kΩ
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 Ω
Open-circuit		< 0.35 mA
Minimum pulse duration		; in frequency + counter mode: 12.5 ms ; otherwise 20 μs
Operating frequency		0 15 kHz ; in frequency + counter mode 40 Hz
ndicators/settings		
LED indication		Power LED (P) green: supply Status LED (1) red: line fault
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) , 70 °C (non-Ex)
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 ± mm/0.7 g; 90 minutes at each resonance
Damaging gas		designed for operation in environmental conditions acc. to ISA-S71.04-1985, severilevel G3
lechanical 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 mm²) or screw terminals (0.08 1.5 mm²)
Mass		approx. 90 g
Dimensions		16 x 100 x 102 mm (0.63 x 3.9 x 4 inch)
Oata for application in connection with h	azardous a	
Certificate		PF 08 CERT 1234 X
Marking		© II 3 G Ex nA [ic] IIC T4 Gc
Galvanic isolation		

Technical Data	
Input/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 [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 or Zone 22) the module must be installed in an appropriate enclosure.
Supplementary information	





Frequency / Counter Input LB1103A

- 1-channel
- Input Ex ia
- Mounting in Zone 2, Class I/Div.2 or in the safe area
- Input for frequency, counter, direction of rotation
- Digital input max. 15 kHz
- Positive or negative logic selectable
- Simulation mode for service operations (forcing)
- Line fault detection (LFD)
- Permanently self-monitoring
- Module can be exchanged under voltage







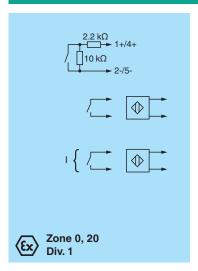
Function

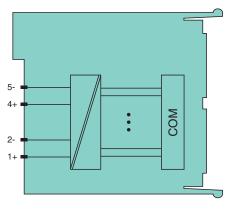
The device accepts digital input signals of NAMUR sensors or mechanical contacts from the hazardous area.

Open and short-circuit line faults are detected.

The intrinsically safe input is galvanically isolated from the bus and the power supply.

Connection





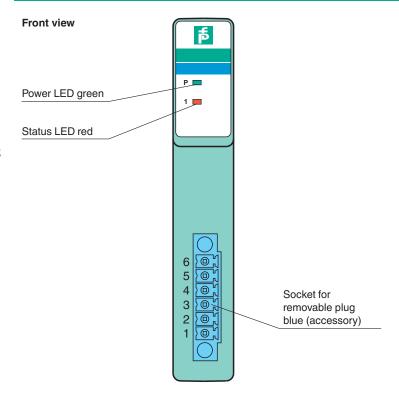
Zone 2 Div. 2

Slots		
Occupied slots		1
Supply		
Connection		backplane bus
Rated voltage	U_{r}	12 V DC , only in connection with the power supplies LB9***
Power dissipation		0.65 W
Power consumption		0.65 W
Internal bus		
Connection		backplane bus
Interface		manufacturer-specific bus to standard com unit
Digital input		
Number of channels		1

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Technical Data		
Function		
Function		Counter
Function [2]		frequency
Function [3]		direction of rotation
Sensor interface		4.00.01.01.04.40.1
Connection		NAMUR sensor
Connection [2]		volt-free contact
Connection		channel I: 1+, 2/3-; direction: 4+, 5/6-
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	Ri	1 kΩ
Line fault detection	Πį	can be switched on/off for each channel via configuration tool
Connection		mechanical switch with additional resistors (see connection diagram) proximity
20,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		switches without additional wiring
Short-circuit		< 360 Ω
Open-circuit		< 0.35 mA
Minimum pulse duration		; in frequency + counter mode: 12.5 ms; otherwise 20 µs
Operating frequency		0 15 kHz ; in frequency + counter mode 40 Hz
Indicators/settings		
LED indication		Power LED (P) green: supply Status LED (1) red: line fault
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 ± 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 mm²) or screw terminals (0.08 1.5 mm²)
Mass		approx. 90 g
Dimensions		16 x 100 x 102 mm (0.63 x 3.9 x 4 inch)
Data for application in connection with hazar	dous a	reas

Technical Data		
Marking		 ⑤ II (1)G [Ex ia Ga] IIC ⑥ II (1)D [Ex ia Da] IIIC ⑥ I (M1) [Ex ia Ma] I
Input		
Voltage	U_{o}	10.5 V
Current	Io	23.3 mA
Power	P_{o}	61.2 mW (linear characteristic)
Certificate		PF 08 CERT 1234 X
Marking		
Galvanic isolation		
Input/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
UL approval		E106378
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		





RTD Converter LB5004A

- 4 channels
- Converter for 2-, 3- and 4-wire RTDs (Pt100 ... Pt1000), slide wire sensors etc.
- Installation in Zone 2 or safe area
- Simulation mode for service operations (forcing)
- Line fault detection (LFD)
- Permanently self-monitoring
- Module can be exchanged under voltage





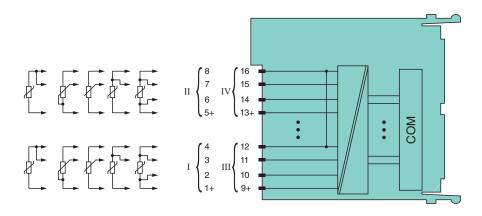
Function

The RTD converter accepts 2-, 3-, 4-wire RTD signals (Pt100 ... Pt1000) and slide-wire sensors from the field. Ni100 through Ni1000 can also be connected.

Open and short-circuit line faults are detected.

The inputs are galvanically isolated from the bus and the power supply.

Connection



Zone 2

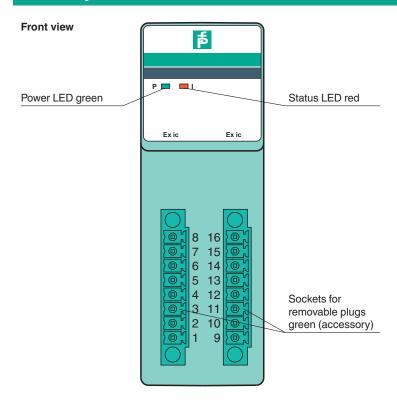
Technical Data

Slots		
Occupied slots		2
Supply		
Connection		backplane bus
Rated voltage	Ur	12 V DC , only in connection with the power supplies LB9***
Power dissipation		0.35 W
Power consumption		0.35 W
Internal bus		
Connection		backplane bus
Interface		manufacturer-specific bus to standard com unit
temperature input		
Number of channels		4

Release date: 2023-10-19 Date of issue: 2023-10-19 Filename: 254741_eng.pdf

Technical Data Suitable field devices Field device resistance thermometer Field device [3] slide-wire sensors Field device [5] potentiometer Field device interface Connection 2-wire sensor Connection [2] 3-wire sensor Connection [3] 4-wire sensor channel I: resistance/potentiometer input 1 ... 4 channel II: resistance/potentiometer input 5 ... 8 channel III: resistance/potentiometer input 9 ... 12 channel IV: resistance/potentiometer input 13 ... 16 Connection Measurement range Pt100 (18-390 Ω) (500 Ω incl. line resistance) Pt100 (18-390 Ω) (500 Pt200 (37-780 Ω) Pt500 (92-1952 Ω) Pt1000 (185-3905 Ω) Ni100 (69-270 Ω) Ni500 (345-1350 Ω) Ni1000 (690-2700 Ω) Slide-wire sensor $0 \dots 10 k\Omega$ Measuring current 200 μΑ 50 Ω for 0.1 % accuracy Smallest span Linearity error Conversion time max. 500 ms (4 channels) max. 1 s (for 4x 3-wire Pt100) Busy after download 5...15 s max. 50 Ω per strand Lead resistance Line fault detection can be switched on/off for each channel via configuration tool Short-circuit $< 10 \Omega$ Open-circuit $> 1 k\Omega$ **Transfer characteristics** Deviation Influence of ambient temperature max. 0,1 %/10 K Indicators/settings Power LED (P) green: supply Status LED (I) red: line fault (collective alarm) , red flashing: communication error LED indication Coding optional mechanical coding via front socket **Directive conformity** Electromagnetic compatibility Directive 2014/30/EU EN 61326-1:2013 Conformity NE 21 Electromagnetic compatibility Degree of protection IEC 60529 Environmental test EN 60068-2-14 EN 60068-2-27 Shock resistance Vibration resistance EN 60068-2-6 Damaging gas EN 60068-2-42 Relative humidity EN 60068-2-78 **Ambient conditions** -40 ... 60 °C (-40 ... 140 °F) , 70 °C (non-Ex) Ambient temperature 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 \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

Technical Data			
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 mm²) or screw terminals (0.08 1.5 mm²)		
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			
Certificate	PF 08 CERT 1234 X		
Marking			
Galvanic isolation			
Input/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			
IECEx approval			
IECEx certificate	IECEx BVS 09.0037X		
IECEx marking	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 or Zone 22) the module must be installed in an appropriate enclosure.		
Supplementary information			





Thermocouple Converter

LB5005A

- 4 channels
- Converter for thermocouples and mV-signals
- Installation in Zone 2 or safe area
- Simulation mode for service operations (forcing)
- Line fault detection (LFD)
- Permanently self-monitoring
- Module can be exchanged under voltage





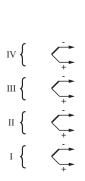
Function

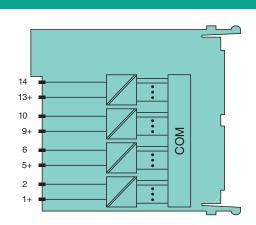
The thermocouple converter accepts thermocouple or mV signals from the field.

Open circuit line fault alarms are detected.

The inputs are galvanically isolated from the bus and the power supply (EN 60079-11). There is a functional isolation between the channels.

Connection





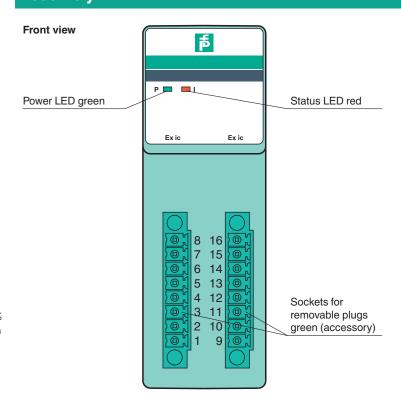
Zone 2

Slots		
Occupied slots		2
Supply		
Connection		backplane bus
Rated voltage	U _r	12 V DC , only in connection with the power supplies LB9***
Power dissipation		0.75 W
Power consumption		0.75 W
Internal bus		
Connection		backplane bus
Interface		manufacturer-specific bus to standard com unit
Input		
Compensation (reference junction CJC)		internal cold junction compensation or external cold junction
temperature input		

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Technical Data	
Number of channels	4
Suitable field devices	
Field device [2]	Thermocouple
Field device [4]	mV source
Suitable sensors	
Sensor	thermocouples U, B, E, T, K, S, R, L, J, N, Pallaplat and mV sources
Connection	channel I: 1+, 2-; channel II: 5+, 6-; channel III: 9+, 10-; channel IV: 13+, 14-
Measurement range	-65 75 mV with LFD , -75 75 mV without LFD
Smallest span	5 mV for 0.1 % accuracy
Linearity error	0.1 %
Conversion time	max. 300 ms (4 channels) without LFD max. 600 ms (4-channel) with LFD
Compensation (reference junction CJC)	internal cold junction compensation or external cold junction
Test voltage	1.5 kV input - input 1.5 kV input - bus and auxiliary power
Line fault detection	can be switched on/off for each channel via configuration tool,
Open-circuit	> 1 kΩ
Fransfer characteristics	
Deviation	
Influence of ambient temperature	max. 0,1 %/10 K
ndicators/settings	
LED indication	Power LED (P) green: supply Status LED (I) red: line fault (collective alarm), 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	-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 \pm 0.075 mm/1 g; 10 cycles frequency range 5 100 Hz; transition frequency: 13.2 Hz amplitude/acceleration \pm 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 mm²) or screw terminals (0.08 1.5 mm²)
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 hazardo	·

Technical Data	
Marking	□ II 3 G Ex nA [ic] IIC T4 Gc
Galvanic isolation	
Input/input	functional insulation acc. to IEC 60664-1:2007, rated insulation voltage 50 V, testing voltage 500 V $$
Input/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	
IECEx approval	
IECEx certificate	IECEx BVS 09.0037X
IECEx marking	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 or Zone 22) the module must be installed in an appropriate enclosure.
Supplementary information	





RTD Converter LB5101A

- 1-channel
- Input Ex ia
- Mounting in Zone 2, Class I/Div.2 or in the safe area
- Converter for 2-, 3- and 4-wire Pt100, slide wire sensors
- Simulation mode for service operations (forcing)
- Line fault detection (LFD)
- Permanently self-monitoring
- Module can be exchanged under voltage



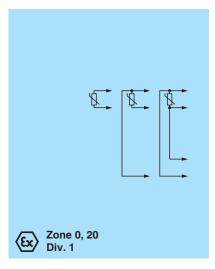


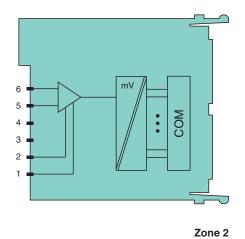
Function

The RTD converter accepts 2-, 3-, 4-wire RTD signals (Pt100) from the hazardous area. Open and short-circuit line faults are detected.

The intrinsically safe input is galvanically isolated from the bus and the power supply.

Connection





Div. 2

Technical Data

Slots		
Occupied slots		1
Supply		
Connection		backplane bus
Rated voltage	U _r	12 V DC, only in connection with the power supplies LB9***
Power dissipation		0.4 W
Power consumption		0.4 W
Internal bus		
Connection		backplane bus
Interface		manufacturer-specific bus to standard com unit
temperature input		
Number of channels		1
Suitable field devices		

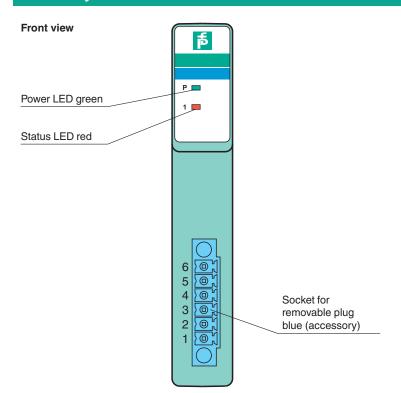
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RTD Converter LB5101A

Technical Data

Field device	resistance thermometer
Field device [3]	slide-wire sensors
Field device interface	
Connection	2-wire sensor
Connection [2]	3-wire sensor
Connection [3]	4-wire sensor
Connection	2-wire connection: 5, 6 3-wire connection: 1, 5, 6 4-wire connection: 1, 2, 5, 6
Measurement range	10 400 Ω (500 Ω incl. line resistance)
Slide-wire sensor	10 400 Ω
Measuring current	200 μΑ
Smallest span	20 Ω for 0.1 % accuracy
Linearity error	0.1 %
Conversion time	max, 20 ms without LFD max, 150 ms with LFD
Lead resistance	max. 50 Ω per strand
Line fault detection	can be switched on/off for each channel via configuration tool
Short-circuit	$< 10 \Omega$
Open-circuit	> 1 kΩ
Transfer characteristics	7 1 102
Deviation	
Influence of ambient temperature	max. 0,1 %/10 K
Indicators/settings	111dA. 0,1 70/10 K
LED indication	Power LED /D) green; cumby
LED Indication	Power LED (P) green: supply Status LED (1) red: line fault
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/acceleratio ± 0.075 mm/1 g; 10 cycles frequency range 5 100 Hz; transition frequency: 13.2 Hz amplitude/acceleration ± mm/0.7 g; 90 minutes at each resonance
Damaging gas	designed for operation in environmental conditions acc. to ISA-S71.04-1985, severil 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 mm²) or screw terminals (0.08 1.5 mm²)
Mass	approx. 90 g
Dimensions	16 x 100 x 102 mm (0.63 x 3.9 x 4 inch)
	approx. 90 g

Data for application in connection with ha	zardous a	reas
EU-type examination certificate		PTB 03 ATEX 2042 X
Marking		 ⊕ II (1)G [Ex ia Ga] IIC ⊕ II (1)D [Ex ia Da] IIIC ⊕ I (M1) [Ex ia Ma] I
Input		
Voltage	Uo	2.7 V
Current	I_{o}	43 mA
Power	Po	93 mW (trapezoid characteristic curve)
Certificate		PF 08 CERT 1234 X
Marking		
Galvanic isolation		
Input/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
nternational approvals		
ATEX approval		PTB 03 ATEX 2042 X
UL approval		E106378
Control drawing		116-0322
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		





Thermocouple Converter LB5102A

- 1-channel
- Input Ex ia
- Mounting in Zone 2, Class I/Div.2 or in the safe area
- Converter for thermocouples and mV-signals
- Simulation mode for service operations (forcing)
- Line fault detection (LFD)
- Permanently self-monitoring
- Module can be exchanged under voltage





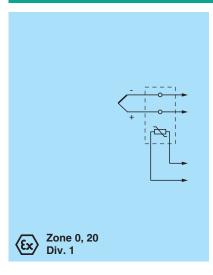
Function

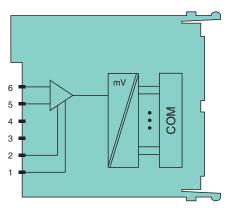
The mV input accepts thermocouple or mV signals from the hazardous area.

Open circuit line fault alarms are detected.

The input is galvanically isolated from the bus and the power supply (EN 60079-11).

Connection





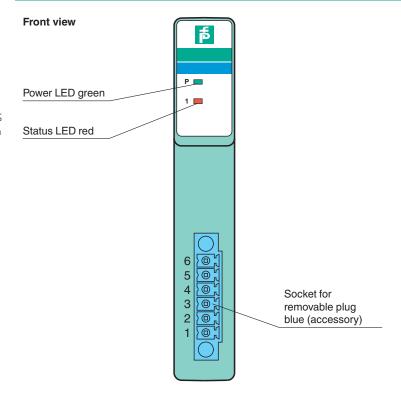
Zone 2 Div. 2

Slots		
Occupied slots		1
Supply		
Connection		backplane bus
Rated voltage	U _r	12 V DC , only in connection with the power supplies LB9***
Power dissipation		0.45 W
Power consumption		0.45 W
Internal bus		
Connection		backplane bus
Interface		manufacturer-specific bus to standard com unit
Input		
Compensation (reference junction CJC)		internal cold junction compensation or external cold junction
temperature input		

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Technical Data	
Number of channels	1
Suitable field devices	
Field device [2]	Thermocouple
Field device [4]	mV source
Suitable sensors	
Sensor	thermocouples U, B, E, T, K, S, R, L, J, N, Pallaplat and mV sources
Connection	cold junction: 1, 2 thermocouple: 5+, 6-
Measurement range	-75 mV 75 mV
Smallest span	5 mV for 0.1 % accuracy
Linearity error	0.1 %
Conversion time	internal cold junction: max. 120 ms without LFD max. 240 ms with LFD external cold junction: max. 20 ms without LFD max. 80 ms with LFD
Compensation (reference junction CJC)	internal cold junction compensation or external cold junction
Line fault detection	can be switched on/off for each channel via configuration tool,
Open-circuit	> 1 kΩ
Transfer characteristics	
Deviation	
Influence of ambient temperature	max. 0,1 %/10 K
Indicators/settings	
LED indication	Power LED (P) green: supply Status LED (1) red: line fault
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 ± 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 mm²) or screw terminals (0.08 1.5 mm²)
Mass	approx. 90 g
Dimensions	16 x 100 x 102 mm (0.63 x 3.9 x 4 inch)
Data for application in connection with hazard	lous areas

Technical Data		
EU-type examination certificate		PTB 03 ATEX 2042 X
Marking		© II (1)G [Ex ia Ga] IIC © II (1)D [Ex ia Da] IIIC © I (M1) [Ex ia Ma] I
Input		
Voltage	U _o	1.8 V
Current	Io	43 mA
Power	Po	67 mW (trapezoid characteristic curve)
Certificate		PF 08 CERT 1234 X
Marking		© II 3 G Ex nA IIC T4 Gc
Galvanic isolation		
Input/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
UL approval		E106378
Control drawing		116-0322
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		





RTD Converter LB5104A

- 4 channels
- Inputs Ex ia
- Mounting in Zone 2, Class I/Div.2 or in the safe area
- Converter for 2-, 3- and 4-wire RTDs (Pt100 ... Pt1000), slide wire sensors etc.
- Simulation mode for service operations (forcing)
- Line fault detection (LFD)
- Permanently self-monitoring
- Module can be exchanged under voltage





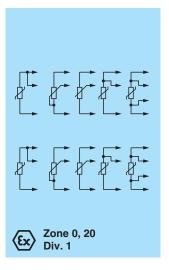
Function

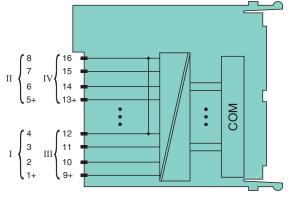
The RTD converter accepts 2-, 3-, 4-wire RTD signals (Pt100 ... Pt1000) and slide-wire sensors from the field. Ni100 through Ni1000 can also be connected.

Open and short-circuit line faults are detected.

The intrinsically safe inputs are galvanically isolated from the bus and the power supply.

Connection





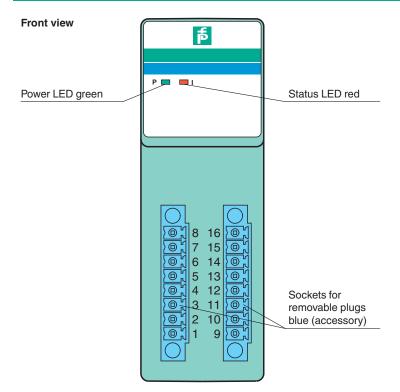
Zone 2 Div. 2

Slots		
Occupied slots		2
Supply		
Connection		backplane bus
Rated voltage	U_{r}	12 V DC, only in connection with the power supplies LB9***
Power dissipation		0.35 W
Power consumption		0.35 W
Internal bus		
Connection		backplane bus
Interface		manufacturer-specific bus to standard com unit
temperature input		
Number of channels		4

RTD Converter LB5104A

Suitable field devices	
Field device	resistance thermometer
Field device [2]	slide-wire sensors
Field device [3]	potentiometer
Field device interface	
Connection	2-wire sensor
Connection [2]	3-wire sensor
Connection [3]	4-wire sensor
Connection	channel I: resistance/potentiometer input 1 4 channel II: resistance/potentiometer input 5 8 channel III: resistance/potentiometer input 9 12 channel IV: resistance/potentiometer input 13 16
Measurement range	Pt100 (18-390 Ω) (500 Ω incl. line resistance) Pt200 (37-780 Ω) Pt500 (92-1952 Ω) Pt1000 (185-3905 Ω) Ni100 (69-270 Ω) Ni500 (345-1350 Ω) Ni1000 (690-2700 Ω)
Slide-wire sensor	0 10 kΩ
Measuring current	200 μΑ
Smallest span	50 Ω for 0.1 % accuracy
Linearity error	0.1 %
Conversion time	max. 500 ms (4 channels) max. 1 s (for 4x 3-wire Pt100)
Busy after download	5 15 s
Lead resistance	max. 50 Ω per strand
Line fault detection	can be switched on/off for each channel via configuration tool
Short-circuit	< 10 Ω
Open-circuit	> 1 kΩ
Fransfer characteristics	
Deviation	
Influence of ambient temperature	max. 0,1 %/10 K
ndicators/settings	
LED indication	Power LED (P) green: supply Status LED (I) red: line fault (collective alarm) , 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	-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 ± mm/0.7 g; 90 minutes at each resonance

Technical Data		
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 mm²) or screw terminals (0.08 1.5 mm²)
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 haza	rdous a	reas
EU-type examination certificate		PTB 03 ATEX 2042 X
Marking		 ☑ II (1)G [Ex ia Ga] IIC ☑ II (1)D [Ex ia Da] IIIC ☑ I (M1) [Ex ia Ma] I
Input		
Voltage	Uo	7.14 V
Current	Io	70 mA
Power	Po	123 mW (linear characteristic)
Certificate		PF 08 CERT 1234 X
Marking		© II 3 G Ex nA IIC T4 Gc
Galvanic isolation		
Input/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
UL approval		E106378
Control drawing		116-0322
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		





Thermocouple Converter LB5105A

- 4 channels
- Inputs Ex ia
- Mounting in Zone 2, Class I/Div.2 or in the safe area
- Converter for thermocouples and mV-signals
- Simulation mode for service operations (forcing)
- Line fault detection (LFD)
- Permanently self-monitoring
- Module can be exchanged under voltage





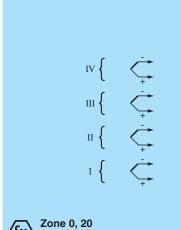
Function

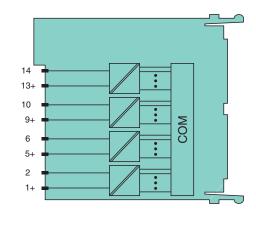
The thermocouple converter accepts thermocouple or mV signals from hazardous area.

Open circuit line fault alarms are detected.

The intrinsically safe inputs are galvanically isolated from the bus and the power supply (EN 60079-11). There is a functional isolation between the channels.

Connection





Zone 2 Div. 2

Technical Data

Div. 1

Slots		
Occupied slots		2
Supply		
Connection		backplane bus
Rated voltage	Ur	12 V DC, only in connection with the power supplies LB9***
Power dissipation		0.75 W
Power consumption		0.75 W
Internal bus		
Connection		backplane bus
Interface		manufacturer-specific bus to standard com unit
Input		
Compensation (reference junction CJC)		internal cold junction compensation or external cold junction

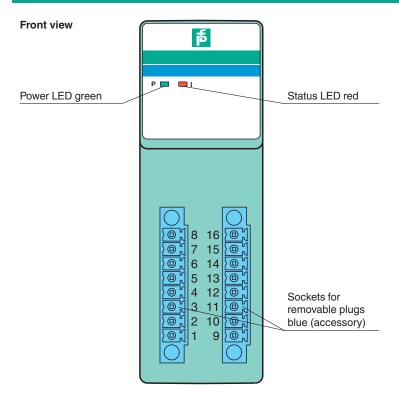
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temperature input	
Number of channels	4
Suitable field devices	
Field device [2]	Thermocouple
Field device [4]	mV source
Suitable sensors	
Sensor	thermocouples U, B, E, T, K, S, R, L, J, N, Pallaplat and mV sources
Connection	channel I: 1+, 2-; channel II: 5+, 6-; channel III: 9+, 10-; channel IV: 13+, 14-
Measurement range	-65 75 mV with LFD , -75 75 mV without LFD
Smallest span	5 mV for 0.1 % accuracy
Linearity error	0.1 %
Conversion time	max. 300 ms (4 channels) without LFD max. 600 ms (4-channel) with LFD
Compensation (reference junction CJC)	internal cold junction compensation or external cold junction
Line fault detection	can be switched on/off for each channel via configuration tool,
Open-circuit	> 1 kΩ
Transfer characteristics	
Deviation	
Influence of ambient temperature	max. 0,1 %/10 K
Indicators/settings	
LED indication	Power LED (P) green: supply Status LED (I) red: line fault (collective alarm), 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	<u> </u>
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/acceleratio ± 0.075 mm/1 g; 10 cycles frequency range 5 100 Hz; transition frequency: 13.2 Hz amplitude/acceleration ± mm/0.7 g; 90 minutes at each resonance
Damaging gas	designed for operation in environmental conditions acc. to ISA-S71.04-1985, severit 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 mm²) or screw terminals (0.08 1.5 mm²)
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 hazardou	,

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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
Input		
Voltage	U_{\circ}	1 V
Current	Io	71 mA
Power	P_o	62 mW (trapezoid characteristic curve)
Certificate		PF 08 CERT 1234 X
Marking		
Galvanic isolation		
Input/input		functional insulation acc. to IEC 60664-1:2007, rated insulation voltage 50 V, testing voltage 500 V $$
Input/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
nternational approvals		
ATEX approval		PTB 03 ATEX 2042 X
UL approval		E106378
Control drawing		116-0322
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		





HART Output Isolator LB4002A2

- 1-channel
- Analog output module for 0/4 mA ... 20 mA
- Installation in Zone 2 or safe area
- HART communication via field bus or service bus
- Simulation mode for service operations (forcing)
- Line fault detection (LFD)
- Permanently self-monitoring
- Module can be exchanged under voltage





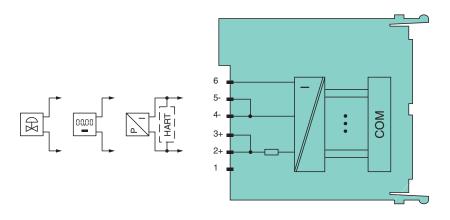
Function

The device drives positioners, proportional valves, I/P converters, or local indicators.

Open and short circuit line faults are detected.

The output is galvanically isolated from the bus and the power supply.

Connection



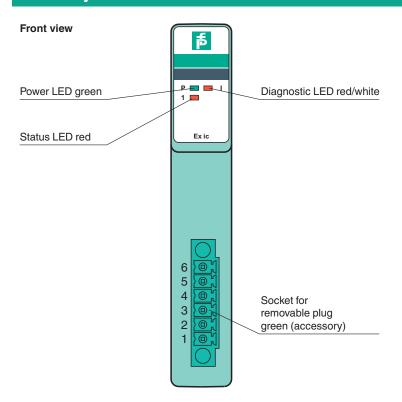
Zone 2

Slots		
Occupied slots		1
Supply		
Connection		backplane bus
Rated voltage	U _r	12 V DC , only in connection with the power supplies LB9***
Power dissipation		0.8 W
Power consumption		0.95 W
Internal bus		
Connection		backplane bus
Interface		manufacturer-specific bus to standard com unit
Analog output		
Number of channels		1
Suitable field devices		

'	
Technical Data	
Field device	Dranastianal Value
	Proportional Valve I/P converters
Field device [2]	
Field device [3]	on-site display
Connection	channel I: 2/3+, 4/5-
Current	0 25 mA short-circuit protected
Line fault detection	can be switched on/off for each channel via configuration tool, configurable via configuration tool
Short-circuit	No
Open-circuit	deviation of preset output value > 0.5 mA
Load	750Ω max.
HART communication	yes
HART secondary variable	MODBUS: yes; all other bus systems: no
Watchdog	within 0.5 s the device goes in safe state, e.g. after loss of communication
Transfer characteristics	
Deviation	
After calibration	0.1 % of the signal range at 20 °C (68 °F)
Influence of ambient temperature	0.1 %/10 K of the signal range
Refresh time	100 ms
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) red: line fault (lead breakage or short circuit)
Coding	optional mechanical coding via front socket
Directive conformity	
Electromagnetic compatibility	
Directive 2014/30/EU	EN 61326-1:2013
Conformity	
Electromagnetic compatibility	NE 21:2007
Degree of protection	IEC 60529:2000
Environmental test	EN 60068-2-14:2009
Shock resistance	EN 60068-2-27:2009
Vibration resistance	EN 60068-2-6:2008
Damaging gas	EN 60068-2-42:2003
Relative humidity	EN 60068-2-78:2001
Ambient conditions	
Ambient temperature	-40 60 °C (-40 140 °F) , 70 °C (non-Ex)
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 ± 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 mm²) or screw terminals (0.08 1.5 mm²)
Mass	approx. 90 g
Dimensions	16 x 100 x 102 mm (0.63 x 3.9 x 4 inch)
Data for application in connection with hazar	dous areas
Certificate	BVS 12 ATEX E 115 X

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Technical Data	
Marking	
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	BVS 12 ATEX E 115 X
IECEx approval	
IECEx certificate	IECEx BVS 11.0068X
IECEx marking	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 or Zone 22) the module must be installed in an appropriate enclosure.
Supplementary information	





LB4005C2

- 4-channel
- Analog output module for 0/4 mA ... 20 mA
- Installation in Zone 2 or safe area
- Module can be exchanged under voltage
- HART communication via field bus or service bus
- Simulation mode for service operations (forcing)
- Line fault detection (LFD): one LED per channel
- Permanently self-monitoring
- Output with bus-independent safety shutdown



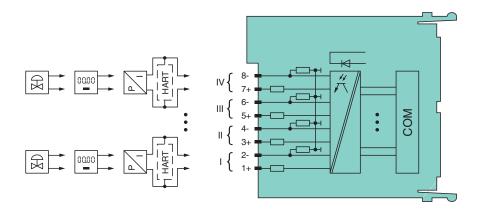
Function

The device drives positioners, proportional valves, I/P converters, or local indicators.

Open and short circuit line faults are detected.

The outputs can be switched off via a contact. This can be used for bus-independent safety applications. The outputs are galvanically isolated from the bus and the power supply.

Connection



Zone 2

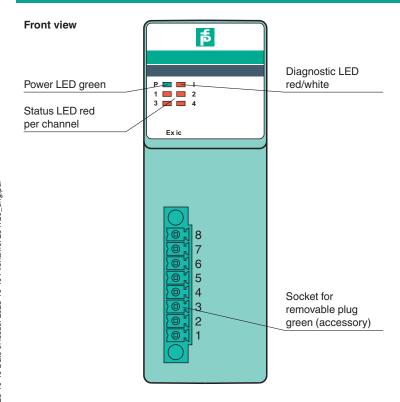
Technical Data

Slots		
Occupied slots		2
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 2
Supply		
Connection		backplane bus
Rated voltage	Ur	12 V DC , only in connection with the power supplies LB9***
Power dissipation		2.15 W
Power consumption		3.3 W
Internal bus		
Connection		backplane bus

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Analog input HART communication HART secondary variable	
HAPT socondary variable	yes
TIANT Secondary variable	no
Analog output	
Number of channels	4
Suitable field devices	
Field device	Proportional Valve
Field device [2]	I/P converters
Field device [3]	on-site display
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Current	0 25 mA short-circuit protected
Line fault detection	can be switched on/off for each channel via configuration tool, configurable via configuration tool
Short-circuit	No
Open-circuit	deviation of preset output value > 0.5 mA
Load	750 Ω max.
HART communication	yes
HART secondary variable	yes
Watchdog	within 0.5 s the device goes in safe state, e.g. after loss of communication
ransfer characteristics	Midili 0.0 5 the device goes in sale state, e.g. and 1055 of continuitication
Deviation	
After calibration	0.1 % of the signal range at 20 °C (69 °E)
	0.1 % of the signal range at 20 °C (68 °F)
Influence of ambient temperature	0.1 %/10 K of the signal range
Refresh time	100 ms
ndicators/settings	D 150 (D)
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 (1-4) red: line fault (lead breakage or short circuit)
Coding	optional mechanical coding via front socket
Directive conformity	
Electromagnetic compatibility	
Directive 2014/30/EU	EN 61326-1:2013
Conformity	
Electromagnetic compatibility	NE 21:2007
Degree of protection	IEC 60529:2000
Environmental test	EN 60068-2-14:2009
Shock resistance	EN 60068-2-27:2009
Vibration resistance	EN 60068-2-6:2008
Damaging gas	EN 60068-2-42:2003
Relative humidity	EN 60068-2-78:2001
Ambient conditions	
Ambient temperature	-40 60 °C (-40 140 °F) , 70 °C (non-Ex)
Storage temperature	-40 85 °C (-40 185 °F)
Relative humidity	95 % non-condensing
Altitude	max, 2000 m
Shock resistance Vibration resistance	shock type I, shock duration 11 ms, shock amplitude 15 g, number of shocks 18 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 ± mm/0.7 g; 90 minutes at each resonance
Damaging gas	designed for operation in environmental conditions acc. to ISA-S71.04-1985, severi level G3

Technical Data	
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 mm²) or screw terminals (0.08 1.5 mm²)
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 haza	rdous areas
Certificate	BVS 12 ATEX E 115 X
Marking	
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	BVS 12 ATEX E 115 X
IECEx approval	
IECEx certificate	IECEx BVS 11.0068X
IECEx marking	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 or Zone 22) the module must be installed in an appropriate enclosure.
Supplementary information	





LB4102C2

- 1-channel
- Output Ex ia
- Mounting in Zone 2, Class I/Div.2 or in the safe area
- Module can be exchanged under voltage
- Analog output module for 0/4 mA ... 20 mA
- HART communication via field bus or service bus
- Simulation mode for service operations (forcing)
- Line fault detection (LFD)
- Permanently self-monitoring
- Output with bus-independent safety shutdown



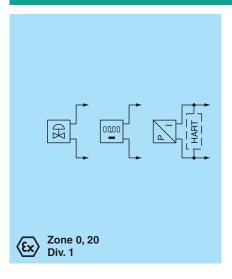
Function

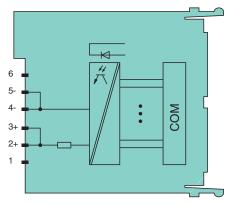
The device drives positioners, proportional valves, I/P converters, or local indicators.

Open and short circuit line faults are detected.

The output can be switched off via a contact. This can be used for bus-independent safety applications. The output is galvanically isolated from the bus and the power supply.

Connection





Zone 2 Div. 2

Technical Data

Slots		
Occupied slots		1
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 2
Supply		
Connection		backplane bus
Rated voltage	Ur	12 V DC , only in connection with the power supplies LB9***
Power dissipation		0.8 W
Power consumption		0.95 W
Internal bus		

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Connection	backplane bus
Interface	manufacturer-specific bus to standard com unit
Analog output	
Number of channels	1
Suitable field devices	
Field device	Proportional Valve
Field device [2]	I/P converters
Field device [3]	on-site display
Connection	channel I: 2/3+, 4/5-
Current	0 25 mA short-circuit protected
Line fault detection	can be switched on/off for each channel via configuration tool , configurable via configuration tool
Short-circuit	No
Open-circuit	deviation of preset output value > 0.5 mA
Load	$750~\Omega$ max.
HART communication	yes
HART secondary variable	MODBUS: yes; all other bus systems: no
Watchdog	within 0.5 s the device goes in safe state, e.g. after loss of communication
Fransfer characteristics	
Deviation	
After calibration	0.1 % of the signal range at 20 °C (68 °F)
Influence of ambient temperature	0.1 %/10 K of the signal range
Refresh time	100 ms
ndicators/settings	
LED indication	Power LED (P) green: supply Diagnostic LED (I) red: module fault, red flashing: communication error, white: fixe parameter set (parameters from com unit are ignored), white flashing: requests parameters from com unit Status LED (1) red: line fault (lead breakage or short circuit)
Coding	optional mechanical coding via front socket
Directive conformity	
Electromagnetic compatibility	
Directive 2014/30/EU	EN 61326-1:2013
Conformity	
Electromagnetic compatibility	NE 21:2007
Degree of protection	IEC 60529:2000
Environmental test	EN 60068-2-14:2009
Shock resistance	EN 60068-2-27:2009
Vibration resistance	EN 60068-2-6:2008
Damaging gas	EN 60068-2-42:2003
Relative humidity	EN 60068-2-78:2001
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 mm/0.7 g; 90 minutes at each resonance
Damaging gas	designed for operation in environmental conditions acc. to ISA-S71.04-1985, severilevel G3
Mechanical specifications	
Degree of protection	IP20 when mounted on backplane

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Technical Data		
Connection		removable front connector with screw flange (accessory) wiring connection via spring terminals (0.14 1.5 mm²) or screw terminals (0.08 1.5 mm²)
Mass		approx. 90 g
Dimensions		16 x 100 x 102 mm (0.63 x 3.9 x 4 inch)
Oata for application in connection with haza	ardous a	ıreas
EU-type examination certificate		BVS 11 ATEX E 116 X
Marking		 ⊕ II 3(1) G Ex nA [ia Ga] IIC T4 Gc ⊕ I (M1) [Ex ia Ma] I ⊕ II (1) D [Ex ia Da] IIIC
Output		
Voltage	U_{\circ}	27 V
Current	Io	87 mA
Power	Po	575 mW (linear characteristic)
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
nternational approvals		
ATEX approval		BVS 11 ATEX E 116X
UL approval		E106378
IECEx approval		
IECEx certificate		IECEx BVS 11.0068X
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		

LB4105C2

- 4-channel
- Outputs Ex ia
- Mounting in Zone 2, Class I/Div.2 or in the safe area
- Module can be exchanged under voltage
- Analog output module for 0/4 mA ... 20 mA
- HART communication via field bus or service bus
- Simulation mode for service operations (forcing)
- Line fault detection (LFD): one LED per channel
- Permanently self-monitoring
- Output with bus-independent safety shutdown



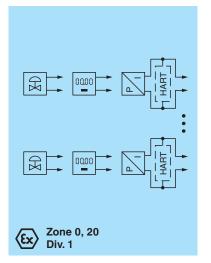
Function

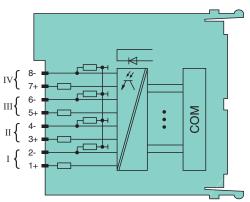
The device drives positioners, proportional valves, I/P converters, or local indicators.

Open and short circuit line faults are detected.

The outputs can be switched off via a contact. This can be used for bus-independent safety applications. The outputs are galvanically isolated from the bus and the power supply.

Connection





Zone 2 Div. 2

Technical Data

Slots		
Occupied slots		2
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 2
Supply		
Connection		backplane bus
Rated voltage	U_{r}	12 V DC , only in connection with the power supplies LB9***
Power dissipation		2.15 W
Power consumption		3.3 W
Internal bus		

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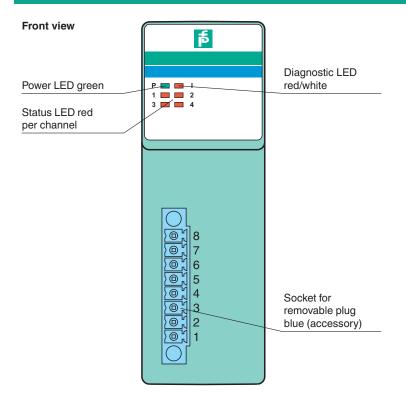
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Technical Data	
Connection	backplane bus
Interface	manufacturer-specific bus to standard com unit
Analog input	
HART communication	yes
HART secondary variable	no
Analog output	TIO TIO
Number of channels	4
Suitable field devices	
Field device	Proportional Valvo
	Proportional Valve I/P converters
Field device [2]	
Field device [3]	on-site display
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Current	0 20 mA short-circuit protected
Line fault detection	can be switched on/off for each channel via configuration tool, configurable via configuration tool
Short-circuit	No
Open-circuit	deviation of preset output value > 0.5 mA
Load	max. 750 Ω at 20 mA
HART communication	yes
HART secondary variable	yes
Watchdog	within 0.5 s the device goes in safe state, e.g. after loss of communication
Fransfer characteristics	
Deviation	
After calibration	0.1 % of the signal range at 20 °C (68 °F)
Influence of ambient temperature	0.1 %/10 K of the signal range
Refresh time	100 ms
ndicators/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 (1-4) red: line fault (lead breakage or short circuit)
Coding	optional mechanical coding via front socket
Directive conformity	•
Electromagnetic compatibility	
Directive 2014/30/EU	EN 61326-1:2013
Conformity	
Electromagnetic compatibility	NE 21:2007
Degree of protection	IEC 60529:2000
Environmental test	EN 60068-2-14:2009
Shock resistance	EN 60068-2-27:2009
Vibration resistance	EN 60068-2-6:2008
Damaging gas	
0 00	EN 60068-2-42:2003
Relative humidity	EN 60068-2-78:2001
Ambient conditions	40 0000/40 44005
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/acceleratio ± 0.075 mm/1 g; 10 cycles frequency range 5 100 Hz; transition frequency: 13.2 Hz amplitude/acceleration ± mm/0.7 g; 90 minutes at each resonance
Damaging gas	designed for operation in environmental conditions acc. to ISA-S71.04-1985, severilevel G3

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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 mm²) or screw terminals (0.08 1.5 mm²)
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 haza	rdous a	reas
EU-type examination certificate		BVS 11 ATEX E 116 X
Marking		 II 3(1) G Ex nA [ia Ga] IIC T4 Gc I (M1) [Ex ia Ma] I II (1) D [Ex ia Da] IIIC
Output		
Voltage	Uo	27 V
Current	Io	87 mA
Power	Po	575 mW (linear characteristic)
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		BVS 11 ATEX E 116X
UL approval		E106378
IECEx approval		
IECEx certificate		IECEx BVS 11.0068X
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		





LB4106C

- 4-channel
- Outputs Ex ia
- Mounting in Zone 2, Class I/Div.2 or in the safe area
- Module can be exchanged under voltage
- Analog output module for 0/4 mA ... 20 mA
- HART communication via field bus or service bus
- Simulation mode for service operations (forcing)
- Line fault detection (LFD): one LED per channel
- Permanently self-monitoring
- Output with bus-independent safety shutdown



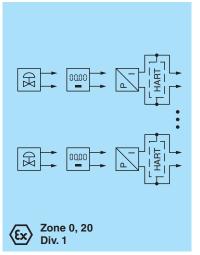
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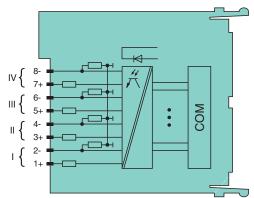
The device drives positioners, proportional valves, I/P converters, or local indicators.

Open and short circuit line faults are detected.

The outputs can be switched off via a contact. This can be used for bus-independent safety applications. The outputs are galvanically isolated from the bus and the power supply.

Connection





Zone 2 Div. 2

Technical Data

Slots		
Occupied slots		1
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 2
Supply		
Connection		backplane bus
Rated voltage	Ur	12 V DC , only in connection with the power supplies LB9***
Power dissipation		2.15 W
Power consumption		3.3 W
Internal bus		

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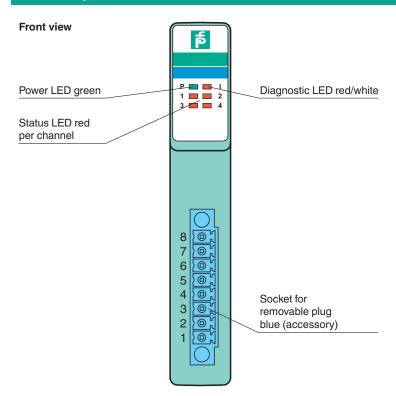
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Technical Data	
Connection	backplane bus
Interface	manufacturer-specific bus to standard com unit
Analog input	
HART communication	yes
HART secondary variable	no
Analog output	
Number of channels	4
Suitable field devices	
Field device	Proportional Valvo
	Proportional Valve I/P converters
Field device [2]	
Field device [3]	on-site display
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Current	0 26 mA short-circuit protected
Line fault detection	can be switched on/off for each channel via configuration tool, configurable via configuration tool
Short-circuit	factory setting: $<$ 50 Ω configurable between 0 26 mA
Open-circuit	deviation of preset output value > 0.5 mA
Load	$750~\Omega$ max.
HART communication	yes
HART secondary variable	yes
Watchdog	within 0.5 s the device goes in safe state, e.g. after loss of communication
Fransfer characteristics	
Deviation	
After calibration	0.1 % of the signal range at 20 °C (68 °F)
Influence of ambient temperature	0.1 %/10 K of the signal range
Refresh time	100 ms
ndicators/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 (1-4) red: line fault (lead breakage or short circuit)
Coding	optional mechanical coding via front socket
Directive conformity	•
Electromagnetic compatibility	
Directive 2014/30/EU	EN 61326-1:2013
Conformity	
Electromagnetic compatibility	NE 21:2007
Degree of protection	IEC 60529:2000
Environmental test	EN 60068-2-14:2009
Shock resistance	EN 60068-2-14.2009 EN 60068-2-27:2009
Vibration resistance	EN 60068-2-57.2009 EN 60068-2-6:2008
Damaging gas	EN 60068-2-42:2003
Relative humidity	EN 60068-2-78:2001
Ambient conditions	40 0000 (40 44005)
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/acceleratio ± 0.075 mm/1 g; 10 cycles frequency range 5 100 Hz; transition frequency: 13.2 Hz amplitude/acceleration ± mm/0.7 g; 90 minutes at each resonance
Damaging gas	designed for operation in environmental conditions acc. to ISA-S71.04-1985, severilevel G3

Technical Data

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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 mm²) or screw terminals (0.08 1.5 mm²)
Mass		approx. 90 g
Dimensions		16 x 100 x 102 mm (0.63 x 3.9 x 4 inch)
Data for application in connection with haza	ardous a	ireas
EU-type examination certificate		BVS 11 ATEX E 116 X
Marking		 ⊕ II 3(1) G Ex nA [ia Ga] IIC T4 Gc ⊕ I (M1) [Ex ia Ma] I ⊕ II (1) D [Ex ia Da] IIIC
Output		
Voltage	Uo	27 V
Current	Io	87 mA
Power	Po	575 mW (linear characteristic)
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		BVS 11 ATEX E 116X
UL approval		E106378
IECEx approval		
IECEx certificate		IECEx BVS 11.0068X
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 conformit For use in hazardous areas (e. g. Zone 2, Zone 22 or Div. 2) the module must be installed in an appropriate enclosure.





Universal Input/Output (HART) LB7004A

- 4-channel
- Analog input, digital input, analog output, digital output
- Installation in Zone 2 or safe area
- Supply circuit 21.5 V (4 mA)
- HART communication via field bus or service bus
- Simulation mode for service operations (forcing)
- Line fault detection (LFD): one LED per channel
- Permanently self-monitoring
- Module can be exchanged under voltage





Function

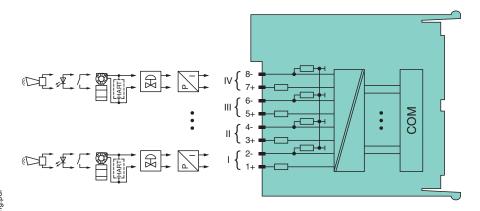
The device is a configurable universal module. Each channel can operate in the following modes:
- As an analog input (AI) it feeds 2-wire transmitters.
- As an analog output (AO) it can drive proportional valves, I/P converters, or local indicators.

- As a digital input (DI) it reads dry contacts.
- As a digital output (DO) it can drive solenoids, sounders, or LED.

A combination of analog and digital I/O is possible.

Channel LEDs indicate the status of each channel. White LEDs indicate whether AI, AO, DI, DO are selected. The signals are galvanically isolated from the bus and the power supply.

Connection



Zone 2

Technical Data

Slots		
Occupied slots		1
Supply		
Connection		backplane bus
Rated voltage	U _r	12 V DC , only in connection with the power supplies LB9***
Power dissipation		2.15 W
Power consumption		3.3 W
Internal bus		
Connection		backplane bus

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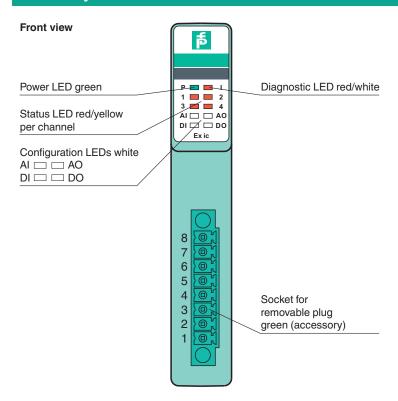
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Interface	manufacturer-specific bus to standard com unit
Analog input	
Number of channels	4
Suitable field devices	
Field device	pressure converter
Field device [2]	flow converter
Field device [3]	level converter
Field device [4]	Temperature Converter
Field device interface	
Connection	2-wire transmitter
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Transmitter supply voltage	min. 15 V at 20 mA; 21.5 V at 4 mA
Input resistance	15 Ω
Line fault detection	can be switched on/off for each channel via configuration tool , configurable via configuration tool
Short-circuit	factory setting: > 21 mA Can be parameterized in the range 0 22 mA
Open-circuit	factory setting: < 3.6 mA Can be parameterized in the range 0 22 mA
HART communication	yes
HART secondary variable	yes
nalog output	
Number of channels	4
Suitable field devices	
Field device	Proportional Valve
Field device [2]	I/P converters
Field device [3]	on-site display
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Current	0 20 mA short-circuit protected
Line fault detection	can be switched on/off for each channel via configuration tool, configurable via configuration tool
Short-circuit	factory setting: $< 50~\Omega$ configurable between 0 26 mA
Open-circuit	deviation of preset output value > 0.5 mA
Load	max. 750 Ω at 20 mA
HART communication	yes
HART secondary variable	yes
Watchdog	output off 0.5 s after serious fault
Digital input	
Number of channels	4
Sensor interface	
Connection [2]	volt-free contact
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Line fault detection	can be switched on/off for each channel via configuration tool
Connection	mechanical switch with additional resistors (see connection diagram)
Short-circuit	> 7 mA
Open-circuit	< 0.1 mA
Digital signals (active)	
Switching point: ON	> 2.1 mA
Switching point: OFF	< 1.2 mA
Digital output	
Number of channels	4
Suitable field devices	
Field device	Solenoid Valve
Field device [2]	audible alarm
Field device [3]	visual alarm
Connection	terminals 1+, 2-, 3+, 4-, 5+, 6-, 7+, 8-

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Technical Data		
Drive capability		12 V / 22 mA
Internal resistor	Ri	385 Ω
Current limit	I_{max}	22 mA
Open loop voltage	Us	min. 22.7 V
Line fault detection		can be switched on/off for each channel via configuration tool
Test current		0.4 mA
Short-circuit		< 50 Ω
Open-circuit		< 0.2 mA
ransfer characteristics		
Deviation		
After calibration		0.1 % of the signal range at 20 °C (68 °F)
Influence of ambient temperature		0.01 %/K of the signal range
Refresh time		approx. 100 ms (4 channels)
ndicators/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 (1-4) red: line fault (lead breakage or short circuit), yellow: state of digital I/O (0/1) Configuration LED (AI, AO, DI, DO) white: selected channel mode
Coding		optional mechanical coding via front socket
Directive conformity		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013
Conformity		
Electromagnetic compatibility		NE 21:2007
Degree of protection		IEC 60529:2000
Environmental test		EN 60068-2-14:2009
Shock resistance		EN 60068-2-27:2009
Vibration resistance		EN 60068-2-6:2008
		EN 60068-2-42:2003
Damaging gas		EN 60068-2-42.2003 EN 60068-2-78:2001
Relative humidity		EN 60006-2-76:2001
Ambient conditions		40 0000 (40 4400) 7000 (55 7000)
Ambient temperature		-40 60 °C (-40 140 °F) , 70 °C (non-Ex)
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/acceleratior \pm 0.075 mm/1 g; 10 cycles frequency range 5 100 Hz; transition frequency: 13.2 Hz amplitude/acceleration \pm 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
lechanical specifications		
Degree of protection		IP20 (module), mounted on backplane
Connection		removable front connector with screw flange (accessory) wiring connection via spring terminals (0.14 1.5 mm²) or screw terminals (0.08 1.5 mm²)
Mass		approx. 100 g
Dimensions		16 x 100 x 102 mm (0.63 x 3.9 x 4 inch)
Data for application in connection with haza	rdous a	reas
Certificate		BVS 12 ATEX E 115 X
Marking		
Galvanic isolation		
Rated voltage	U_{m}	250 V field circuits to control and supply circuits

Technical Data	
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
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	BVS 12 ATEX E 115 X
IECEx approval	
IECEx certificate	IECEx BVS 11.0068X
IECEx marking	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 or Zone 22) the module must be installed in an appropriate enclosure.
Supplementary information	





Universal Input/Output (HART) LB7104A

- 4-channel
- Inputs Ex ia, Outputs Ex ia
- Analog input, digital input, analog output, digital output
- Mounting in Zone 2, Class I/Div.2 or in the safe area
- Supply circuit 15 V (20 mA)
- HART communication via field bus or service bus
- Simulation mode for service operations (forcing)
- Line fault detection (LFD): one LED per channel
- Permanently self-monitoring
- Module can be exchanged under voltage





Function

The device is a configurable universal module. Each channel can operate in the following modes:
- As an analog input (AI) it feeds 2-wire transmitters.
- As an analog output (AO) it can drive proportional valves, I/P converters, or local indicators.
- As a digital input (DI) it reads dry contacts.

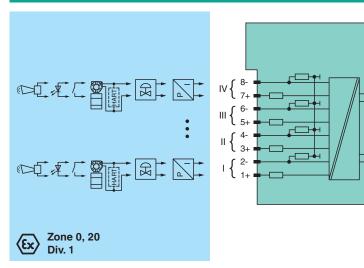
- As a digital output (DO) it can drive solenoids, sounders, or LED.

A combination of analog and digital I/O is possible.

Channel LEDs indicate the status of each channel. White LEDs indicate whether AI, AO, DI, DO are selected.

The intrinsically safe signals are galvanically isolated from the bus and the power supply.

Connection



Technical Data

	1
	backplane bus
Ur	12 V DC , only in connection with the power supplies LB9***
	2 W
	3 W
	backplane bus
	Ur

Zone 2

Div. 2

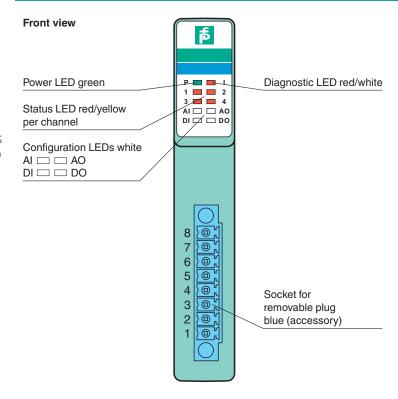
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Interface	manufacturer-specific bus to standard com unit
Analog input	
Number of channels	4
Suitable field devices	
Field device	pressure converter
Field device [2]	flow converter
Field device [3]	level converter
Field device [4]	Temperature Converter
Field device interface	
Connection	2-wire transmitter
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Transmitter supply voltage	min. 15 V at 20 mA; 21.5 V at 4 mA
Input resistance	15 Ω
Line fault detection	can be switched on/off for each channel via configuration tool , configurable via configuration tool
Short-circuit	factory setting: > 21 mA Can be parameterized in the range 0 22 mA
Open-circuit	factory setting: < 3.6 mA Can be parameterized in the range 0 22 mA
HART communication	yes
HART secondary variable	yes
Analog output	
Number of channels	4
Suitable field devices	
Field device	Proportional Valve
Field device [2]	I/P converters
Field device [3]	on-site display
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Current	0 20 mA short-circuit protected
Line fault detection	can be switched on/off for each channel via configuration tool, configurable via configuration tool
Short-circuit	factory setting: $< 50 \Omega$ configurable between 0 26 mA
Open-circuit	deviation of preset output value > 0.5 mA
Load	max. 750 Ω at 20 mA
HART communication	yes
HART secondary variable	yes
Watchdog	output off 0.5 s after serious fault
Digital input	·
Number of channels	4
Sensor interface	
Connection [2]	volt-free contact
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Line fault detection	can be switched on/off for each channel via configuration tool
Connection	mechanical switch with additional resistors (see connection diagram)
Short-circuit	> 7 mA
Open-circuit	< 0.1 mA
Digital signals (active)	
Switching point: ON	> 2.1 mA
Switching point: OFF	< 1.2 mA
Digital output	
Number of channels	4
Suitable field devices	7
Field devices	Solenoid Valve
	audible alarm
Field device [2]	audibie alarm visual alarm
Field device [3] Connection	terminals 1+, 2-, 3+, 4-, 5+, 6-, 7+, 8-

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Technical Data		
Drive capability	_	12 V / 22 mA
Internal resistor	Ri	385 Ω
Current limit	I _{max}	22 mA
Open loop voltage	Us	min. 22.7 V
Line fault detection		can be switched on/off for each channel via configuration tool
Test current		0.4 mA
Short-circuit		<50 Ω
Open-circuit		< 0.2 mA
ransfer characteristics		
Deviation		
After calibration		0.1 % of the signal range at 20 °C (68 °F)
Influence of ambient temperature		0.1 %/10 K of the signal range
Refresh time		approx. 100 ms (4 channels)
ndicators/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 (1-4) red: line fault (lead breakage or short circuit), yellow: state of digital I/O (0/1) Configuration LED (AI, AO, DI, DO) white: selected channel mode
Coding		optional mechanical coding via front socket
Pirective conformity		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013
onformity		
Electromagnetic compatibility		NE 21:2007
Degree of protection		IEC 60529:2000
Environmental test		EN 60068-2-14:2009
Shock resistance		EN 60068-2-27:2009
Vibration resistance		EN 60068-2-6:2008
Damaging gas		EN 60068-2-42:2003
Relative humidity		EN 60068-2-78:2001
mbient 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 ± mm/0.7 g; 90 minutes at each resonance
Damaging gas		designed for operation in environmental conditions acc. to ISA-S71.04-1985, severi level G3
lechanical 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 mm²) or screw terminals (0.08 1.5 mm²)
Mass		approx. 100 g
Dimensions		16 x 100 x 102 mm (0.63 x 3.9 x 4 inch)
ata for application in connection with hazar	rdous a	ireas
EU-type examination certificate		BVS 11 ATEX E 116 X
Marking		 ⊕ II 3(1) G Ex nA [ia Ga] IIC T4 Gc ⊕ I (M1) [Ex ia Ma] I ⊕ II (1) D [Ex ia Da] IIIC
Input		
r ·		

Technical Data		
Voltage	U _o	27 V
Current	lo	87 mA
Power	Po	575 mW (linear characteristic)
Output		
Voltage	U_{\circ}	27 V
Current	lo	87 mA
Power	P_o	575 mW (linear characteristic)
Galvanic isolation		
Rated voltage	U_{m}	250 V field circuits to control and supply circuits
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
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		BVS 11 ATEX E 116X
UL approval		E106378
IECEx approval		
IECEx certificate		IECEx BVS 11.0068X
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		





Universal Input/Output LB7104E

- 4-channel
- Inputs Ex ia, Outputs Ex ia
- Analog input, digital input, analog output, digital output
- Mounting in Zone 2, Class I/Div.2 or in the safe area
- Supply circuit 15 V (20 mA)
- HART communication via field bus or service bus
- Simulation mode for service operations (forcing)
- Line fault detection (LFD): one LED per channel
- Permanently self-monitoring
- Output with bus-independent safety shutdown

Universal input/output with HART communication and switch-off input





Function

The device is a configurable universal module. Each channel can operate in the following modes:
- As an analog input (AI) it feeds 2-wire transmitters.
- As an analog output (AO) it can drive proportional valves, I/P converters, or local indicators.

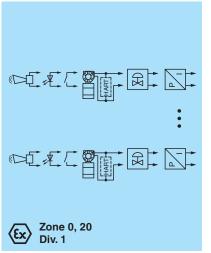
- As a digital input (DI) it reads dry contacts.
- As a digital output (DO) it can drive solenoids, sounders, or LED.

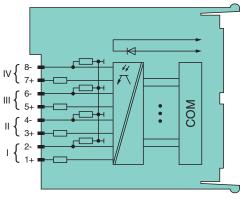
A combination of analog and digital I/O is possible. Channel LEDs indicate the status of each channel. White LEDs indicate whether AI, AO, DI, DO are selected.

The outputs can be switched off via a contact. This can be used for bus independent safety applications.

The intrinsically safe signals are galvanically isolated from the bus and the power supply.

Connection





Zone 2 Div. 2

Technical Data

Slots		
Occupied slots		1
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 2
Supply		
Connection		backplane bus
Rated voltage	Ur	12 V DC , only in connection with the power supplies LB9***
Power dissipation		2 W

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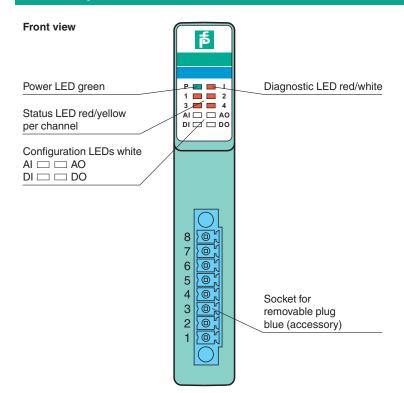
Technical Data	
Power consumption	3 W
nternal bus	
Connection	backplane bus
Interface	manufacturer-specific bus to standard com unit
Analog input	·
Number of channels	4
Suitable field devices	
Field device	pressure converter
Field device [2]	flow converter
Field device [3]	level converter
Field device [4]	Temperature Converter
Field device interface	
Connection	2-wire transmitter
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Transmitter supply voltage	min. 15 V at 20 mA; 21.5 V at 4 mA
Input resistance	15 Ω
Line fault detection	can be switched on/off for each channel via configuration tool , configurable via configuration tool
Short-circuit	factory setting: > 21 mA Can be parameterized in the range 0 22 mA
Open-circuit	factory setting: < 3.6 mA Can be parameterized in the range 0 22 mA
HART communication	yes
HART secondary variable	yes
Analog output	
Number of channels	4
Suitable field devices	
Field device	Proportional Valve
Field device [2]	I/P converters
Field device [3]	on-site display
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Current	0 20 mA short-circuit protected
Line fault detection	can be switched on/off for each channel via configuration tool, configurable via configuration tool
Short-circuit	factory setting: $<$ 50 Ω configurable between 0 26 mA
Open-circuit	deviation of preset output value > 0.5 mA
Load	max. 750 Ω at 20 mA
HART communication	yes
HART secondary variable	yes
Watchdog	output off 0.5 s after serious fault
Digital input	
Number of channels	4
Sensor interface	
Connection [2]	volt-free contact
Connection	terminals 1+, 2-; 3+, 4-; 5+, 6-; 7+, 8-
Line fault detection	can be switched on/off for each channel via configuration tool
Connection	mechanical switch with additional resistors (see connection diagram)
Short-circuit	> 7 mA
Open-circuit	< 0.1 mA
Digital signals (active)	
Switching point: ON	> 2.1 mA
Switching point: OFF	< 1.2 mA
Digital output	
Number of channels	4
Suitable field devices	
Field device	Solenoid Valve

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Technical Data		
Field device [2]		audible alarm
Field device [3]		visual alarm
Connection		terminals 1+, 2-, 3+, 4-, 5+, 6-, 7+, 8-
Drive capability		12 V / 22 mA
Internal resistor	Ri	385 Ω
Current limit	I _{max}	22 mA
Open loop voltage	U _s	min. 22.7 V
Line fault detection	O _S	can be switched on/off for each channel via configuration tool
Test current		0.4 mA
Short-circuit		< 50 Ω
Open-circuit		< 0.2 mA
Transfer characteristics		NO.E HIM
Deviation		
After calibration		0.1 % of the signal range at 20 °C (68 °F)
		, , ,
Influence of ambient temperature Refresh time		0.1 %/10 K of the signal range
		approx. 100 ms (4 channels)
Indicators/settings		Downel ED (D) events avents
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 (1-4) red: line fault (lead breakage or short circuit), yellow: state of digital I/O (0/1) Configuration LED (AI, AO, DI, DO) white: selected channel mode
Coding		optional mechanical coding via front socket
Directive conformity		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013
Conformity		
Electromagnetic compatibility		NE 21:2007
Degree of protection		IEC 60529:2000
Environmental test		EN 60068-2-14:2009
Shock resistance		EN 60068-2-27:2009
Vibration resistance		EN 60068-2-6:2008
Damaging gas		EN 60068-2-42:2003
Relative humidity		EN 60068-2-78:2001
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 mm²) or screw terminals (0.08 1.5 mm²)
Mass		approx. 100 g
Dimensions		16 x 100 x 102 mm (0.63 x 3.9 x 4 inch)
Height		100 mm
Width		16 mm

Technical Data

Length		103 mm
ata for application in connection with haza	rdous a	reas
EU-type examination certificate		BVS 11 ATEX E 116 X
Marking		 I 3(1) G Ex nA [ia Ga] IIC T4 Gc I (M1) [Ex ia Ma] I II (1) D [Ex ia Da] IIIC
Input		
Voltage	Uo	27 V
Current	Io	87 mA
Power	Po	575 mW (linear characteristic)
Output		
Voltage	Uo	27 V
Current	Io	87 mA
Power	Po	575 mW (linear characteristic)
Galvanic isolation		
Rated voltage	U_{m}	250 V field circuits to control and supply circuits
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
Directive conformity		
Directive 2014/34/EU		EN IEC 60079-0:2018+AC:2020 EN 60079-11:2012 EN 60079-15:2010
ternational approvals		
ATEX approval		BVS 11 ATEX E 116X
UL approval		E106378
IECEx approval		
IECEx certificate		IECEx BVS 11.0068X
IECEx marking		Ex nA [ia Ga] IIC T4 Gc [Ex ia Da] IIIC [Ex ia Ma] I
eneral 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 conformit For use in hazardous areas (e. g. Zone 2, Zone 22 or Div. 2) the module must be installed in an appropriate enclosure.



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