LBFI

Explosion-proof point level detection for industrial applications

LBFI-21.###.####20.#.###0.0

Overview

- Optionally with adaptive trigger
- Optionally available with Ex certification
- Compact and robust stainless steel housing
- Problem solver for adhesions
- Two adjustable switching outputs
- 360° visible multicolor LED
- IO-Link interface

Picture similar

Technical data

Performance characteristics	
Measuring principle	CleverLevel level switches (Frequency Sweep)
Hysteresis	± 1 mm
Media characteristics	DC > 1.5
Step response time	0.04 s , typ.
Trigger modes	Window trigger Adaptive trigger
Damping	0 … 10 s , adjustable
Repeatability	± 1 mm
Process conditions	
Process temperature	Refer to section "Operating conditions"
Process pressure	Refer to section "Operating conditions"
Process connection	
Connection variants	Refer to section "Dimensional drawings"
Mounting position	Any, top, bottom, side
Wetted parts material	PEEK Natura AISI 316L (1.4404)
Surface roughness wetted parts	Ra ≤ 0.8 µm
Ambient conditions	
Operating temperature range	-40 … 85 °C
Storage temperature range	-40 … 85 °C
Degree of protection (EN 60529)	M12-A connector, polycarbonate and stainless steel: IP67 , with appropriate cable IP69K , with appropriate cable KingCrown M12-A connector (proTect+): IP68 , with appropriate cable IP69K , with appropriate cable
Humidity	< 98 % RH , condensing

Ambient conditions	
Vibration (sinusoidal) (EN 60068-2-6)	1.6 mm p-p (2 … 25 Hz), 4 g (25 … 100 Hz), 1 octave / min.
Output signal	
Output type	Digital (push-pull) NPN PNP
Switching logic	Active high Active low Normally closed (NC) Normally open (NO)
Voltage drop	NPN: (+0.4 V) ± 0.2 V, Rload ≥ 10 kΩ PNP: (+Vs -0.5 V) ± 0.2 V, Rload ≥ 10 kΩ
Current rating	100 mA , max.
Off leak current	100 µA , max.
Short circuit protection	Yes
Interface	IO-Link 1.1
IO-Link interface	
IO-Link version	1.1
IO-Link port type	Class A
Baud rate	38,4 kbaud (COM2)
Cycle time	≥ 6.4 ms
SIO-mode	Yes
Housing	
Style	Compact transmitter
Overall size	Refer to section "Dimensional drawings"
Material	Stainless steel
Electrical connection	
Connector	M12-A, 4-pin, polycarbonate M12-A, 4-pin, stainless steel
Power supply	
Voltage supply range	8 … 36 V DC

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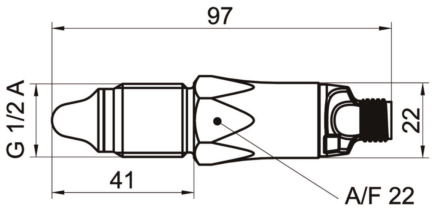
Power supply	
Current consumption (no load)	25 mA , typ. 40 mA , max.
Power-up time	< 3 s
Reverse polarity protection	Yes
Factory settings	
qTeach	Activated
Switching logic SW1	Normally open (NO)
Switching logic SW2	Normally closed (NC)
Switching range (dielectric constant DC)	< 75 % , DC > 2
Range hysteresis	2.4 %
Damping	0.1 s
Factory settings – Adaptive trigger	
Switching logic	Normally open (NO)
Advanced setup	Disabled
Set point high	100 %
Damping	0 ms
Trigger distance	3.0 %
Startup Level	0.0 %
Steady detection	Active
IECEx / ATEX II 1D Ex - ta IIIC T100 °C Da	
Voltage supply range, Un	30 V DC , max.
Current rating, In	100 mA
Degree of protection for cable accessories	IP 67
Temperature class T100 °C	-40 < Tamb < 85 °C

IECEx / ATEX II 1G - Ex ia IIC T4 Ga	
Maximum values for barrier selection, Ui	30 V DC , max.
Maximum values for barrier selection, Ii	100 mA
Maximum values for barrier selection, Pi	750 mW
Internal capacitance, Ci	63 nF
Internal inductance, Li	617 µH
Temperature class, T1 ... T4	-40 < Tamb < 85 °C
ATEX II 3G - Ex ec IIC T4 Gc	
Voltage supply range, Un	30 V DC , max.
Current rating, In	100 mA
Degree of protection for cable accessories	IP 67
Temperature class T1 ... T4	-40 < Tamb < 85 °C
Compliance and approvals	
EMC Emission	EN 61326, installed in a closed metal tank
EMC Immunity	EN 61326, installed in a closed metal tank
Hygiene	FDA (21 CFR 177.2415)
Safety	cULus listed, E365692 WHG (overfill, leakage)
Explosion protection	IECEx / ATEX II 1D Ex - ta IIIC T100 °C Da IECEx / ATEX II 1G - Ex ia IIC T4 Ga ATEX II 3G - Ex ec IIC T4 Gc
Pharma	USP Class VI (PEEK material)

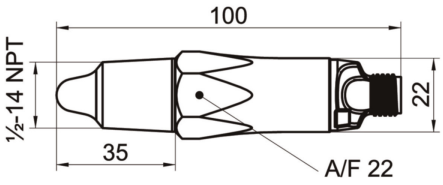
Operating conditions

Ordering key	Process connection	BCID	Continuous		Temporary (t < 1 h)	
			Process temperature @ Tamb < 50 °C	Process pressure	Process temperature max. @ Tamb < 50 °C	Process pressure @ Process temperature max.
			(° C)	(bar)	(° C)	(bar)
G070	G 1/2 A ISO 228-1 BSC	G07	-40 … 115	-1 … 100	135	-1 … 100
N020	1/2-14 NPT	N02	-40 … 115	-1 … 100	135	-1 … 100
T110	G 3/4 A ISO 228-1 for reverse assembly (in-shell thread)	T11	-40 … 85	-1 … 100	N/A	N/A
A030	G 1/2 A hygienic	A03	-40 … 115	-1 … 10	135	-1 … 5
A031	G 1/2 A hygienic, length 82 mm	A03	-40 … 115	-1 … 100	135	-1 … 100

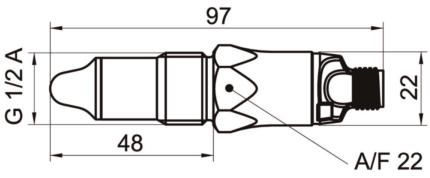
Dimensional drawings (mm)



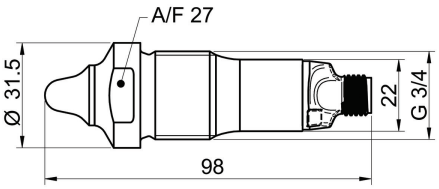
G 1/2 A ISO 228-1 BSC (BCID: G07)



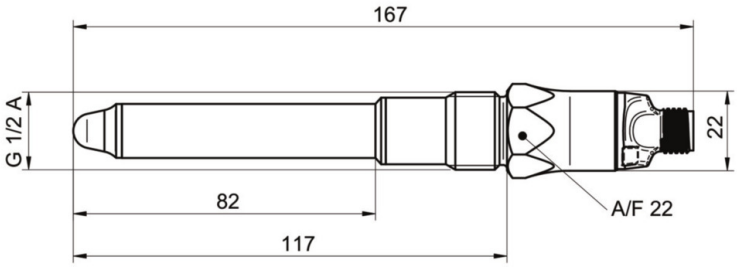
1/2-14 NPT (BCID: N02)



G 1/2 A hygienic (BCID: A03)

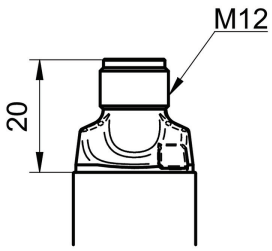


G 3/4 A ISO 228-1 for reverse assembly (in-shell thread) (BCID: T11)

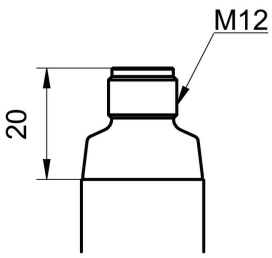


G 1/2 A hygienic, 82 mm length (BCID: A03)

Housing



Connector M12-A, 4-pin, polycarbonate (with LED)



Connector M12-A, 4-pin, stainless steel (without LED)

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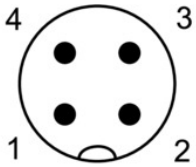
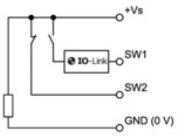
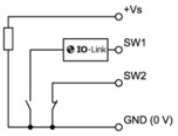
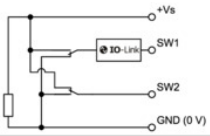
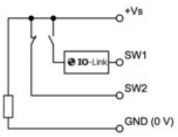
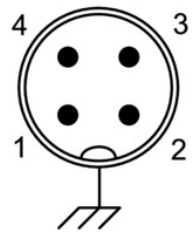
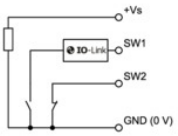
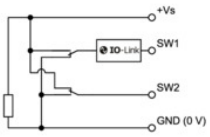
Electrical connection

Output type	Electrical connection	Equivalent circuit	Function	Pin assignment
Programmable output IO-Link PNP			+Vs SW1 (IO-Link) SW2 GND (0 V)	1 4 2 3
Programmable output IO-Link NPN			+Vs SW1 (IO-Link) SW2 GND (0 V)	1 4 2 3
Programmable output IO-Link Digital (push-pull)			+Vs SW1 (IO-Link) SW2 GND (0 V)	1 4 2 3
Programmable output IO-Link PNP			+Vs SW1 (IO-Link) SW2 GND (0 V) Frame Ground	1 4 2 3 Plug thread
Programmable output IO-Link NPN			+Vs SW1 (IO-Link) SW2 GND (0 V) Frame Ground	1 4 2 3 Plug thread
Programmable output IO-Link Digital (push-pull)			+Vs SW1 (IO-Link) SW2 GND (0 V) Frame Ground	1 4 2 3 Plug thread

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Ordering information

Ordering key - Configuration possibilities see website

	LBFI	-	2	1	.	###	.	####	2	0	.	#	.	#	##	0	.	#
Product																		
Level switches	LBFI																	
Version																		
Programmable output, IO-Link			2															
Housing																		
AISI 316L (1.4404)				1														
Electrical connection																		
M12-A, 4-pin, polycarbonate (with LED)						010												
M12-A, 4-pin, stainless steel (without LED)						020												
Process connection																		
G 1/2 A ISO 228-1 (G07)								G070										
1/2-14 NPT (N02)								N020										
G 1/2 A hygienic (A03)								A030										
G 1/2 A hygienic, length 82 mm (A03)								A031										
G 3/4 A ISO 228-1 for reverse assembly (in-shell thread) (T11)[1]								T110										
Process connection material																		
AISI 316L (1.4404)									2									
Gasket																		
Without										0								
Output type																		
PNP												1						
NPN												2						
Digital (push-pull)												3						
Explosion protection																		
Without														0				
ATEX ec														3				
IECEx / ATEX ia + ta														4				
Industrial approvals																		
Standard															00			
WHG															11			
Special approvals																		
Standard																0		
Configuration																		
Factory settings																		0
Customer-specific																		1

Remarks orderkey /9271: Upgrade to adaptive trigger