

PL20H - Adaptive trigger

Point level detection based on frequency deviation technology in the hygiene sector

PL20H-1####.1##0#####.2#0#0###

Overview

- Adaptive trigger
- Problem solver for adhesions
- Two adjustable switching outputs
- Possibility for analog output
- Applicable for use in open tanks
- 360° visible multicolor LED
- IO-Link interface



reddot winner 2021
industrial design



Technical data

Performance characteristics

Trigger modes	Adaptive trigger Window trigger Analog output
Measuring principle	CleverLevel level switches (Frequency Sweep)
Hysteresis	± 1 mm
Repeatability	± 1 mm
Media characteristics	DC > 1.5
Step response time	< 150 ms
Damping	0 ... 10 s , adjustable

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 -40 ... 60 °C , with 4 ... 20 mA output signal
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

Ambient conditions

Humidity	< 98 % RH , condensing
Vibration (EN 61373:2010)	Category 2 (bogie-mounted) Functional test: 5.4 m/s², 5...250 Hz, 10 min. per axis Life-time: 30.6 m/s², 5...250 Hz, 5 h per axis
Shock (EN 61373:2010)	Category 2 (bogie-mounted) 300 m/s², 18 ms, 3 impulses per axis and direction

Output signal

Output type	PNP NPN Digital (push-pull) 4...20 mA
Switching logic	Normally open (NO) Normally closed (NC) Active high Active low
Voltage drop	PNP: (+Vs -1.4 V) ± 0.5 V, Rload ≥ 10 kΩ NPN: (-Vs +0.6 V) ± 0.3 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"

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Technical data

Housing		Factory settings – Adaptive trigger	
Material	Stainless steel	Startup Level	0.0 %
Electrical connection		Factory settings – Window trigger	
Connector	M12-A, 4-pin, polycarbonate M12-A, 4-pin, stainless steel	Switching logic	Normally open (NO)
Power supply		Switch window, min.	0 %
Voltage supply range	8 ... 35 V DC	Switch window, max.	75.3 %
Current consumption (no load)	25 mA , typ. 53 mA , max.	Switch window, hysteresis	2.4 %
Power-up time	< 1.5 s	Damping	0.1 s
Reverse polarity protection	Yes	Compliance and approvals	
Factory settings – Adaptive trigger		EMC Emission	EN 61326-1 EN 50121-3-2:2016
Switching logic	Normally open (NO)	EMC Immunity	EN 61326-1 EN 50121-3-2:2016
Advanced setup	Disabled	Hygiene	3-A (74-07) EHEDG EL Class I FDA (21 CFR 177.2415)
Set point high	100 %	Safety	cULus listed, E365692
Steady detection	Active		
Damping	0 ms		
Trigger distance	3.0 %		

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)
A030	G 1/2 A hygienic	A03	-40 ... 115	-1 ... 10	135	-1 ... 5
A032	G 1/2 A hygienic, sliding connection, length 250 mm	A03	-40 ... 150	-1 ... 5	N/A	N/A

For further information regarding operating conditions please see the graph of the different types of internal O-rings.

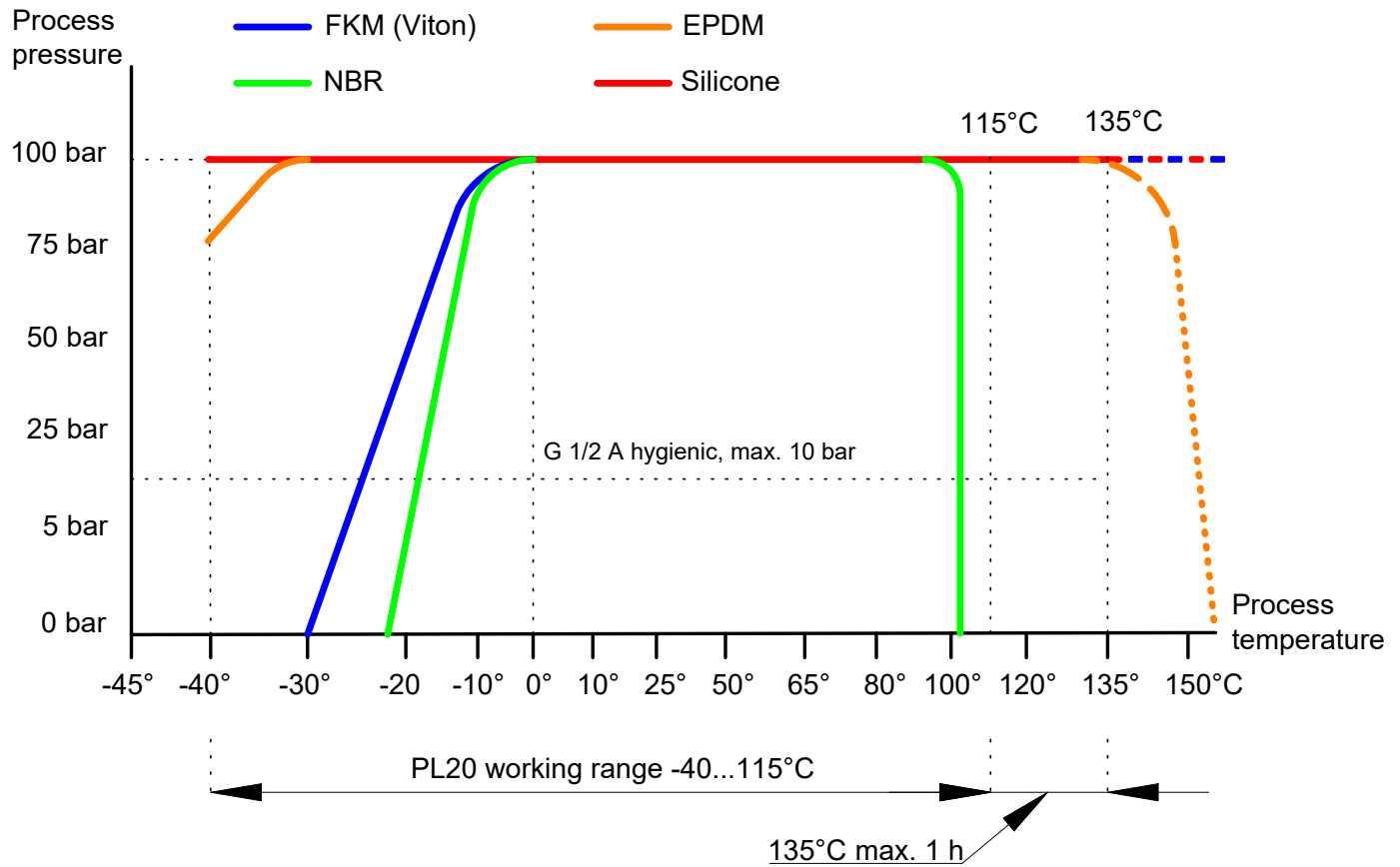
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Operating conditions

Internal O-ring type



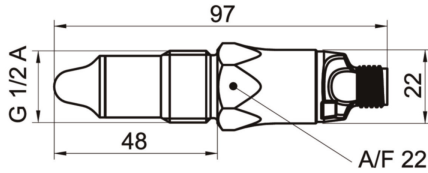
Material	Resistance
NBR	High resistance to petroleum, dilute acid, ethylene glycol, lye, mineral oils, aliphatic hydrocarbons and water. NBR is not suitable for CIP cleaning.
FKM/Viton®	High resistance to mineral oils, acid, aliphatic hydrocarbons and chlorinated hydrocarbons. FKM is not suitable for steam and lye.
EPDM	High resistance to water, steam, glycol, alcohols, acid, lye and solvents and chemicals used in the Food & Beverage production. EPDM is not suitable for mineral oils.
Silicone	High resistance to water, alcohols and dilute acid. Silicone is not suitable for steam and concentrated acids and bases.

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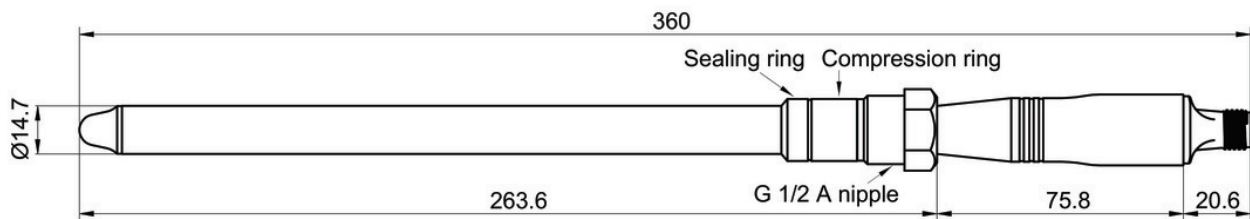
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Dimensional drawings (mm)

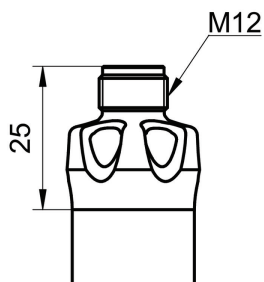


G 1/2 A hygienic (BCID: A03)

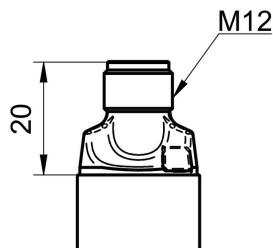


G 1/2 A hygienic, sliding connection, L250 mm (A03)

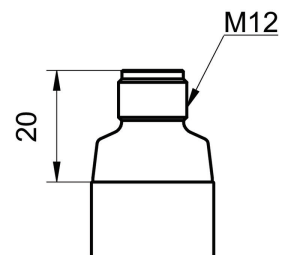
Housing



Connector M12-A, 4-pin, stainless steel (with LED), KingCrown



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

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Electrical connection

Output type	Equivalent circuit	Electrical connection	Function	Pin assignment
Programmable output IO-Link + Analog 4...20 mA PNP			+Vs	1
			SW1 (IO-Link)	4
			Iout	2
Programmable output IO-Link + Analog 4...20 mA NPN			+Vs	1
			SW1 (IO-Link)	4
			Iout	2
Programmable output IO-Link + Analog 4...20 mA Digital (push-pull)			+Vs	1
			SW1 (IO-Link)	4
			Iout	2
			GND (0 V)	3
			Frame Ground	Plug thread

Ordering information

Ordering key - Configuration possibilities see website

	PL20H	-	1	#	#	#	#	.	1	#	#	0	#	#	####	2	#	0	#	0	####	#	#
Product	PL20H																						
Level switches	PL20H																						
Version																							
Adaptive trigger									1														
Trigger mode Switch 1																							
Adaptive trigger																							
Window trigger																							
Trigger mode Switch 2																							
Adaptive trigger																							
Window trigger																							
Analog (4...20 mA)																							
Output type switch 1																							
PNP																							
NPN																							
Digital (push-pull)																							

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Ordering information

Ordering key - Configuration possibilities see website

PL20H - 1 # # # # . 1 # # 0 # # #### 2 # 0 # 0 #### # #	
Output type switch 2	
PNP	1
NPN	2
Digital (push-pull)	3
Analog (4...20 mA)	4
Interface	
I/O-link	1
Protection class	
IP67, IP69K	1
Baumer proTect+ (IP68, IP69K)	3
Electrical connection	
M12-A, 4-pin, polycarbonate (with LED)	1
M12-A, 4-pin, stainless steel (without LED)	2
M12-A, 4-pin, stainless steel KingCrown (with LED)	3
Cable length	
Without cable	0
Process temperature	
-40...115 °C	1
-40...150 °C	2
Max. process pressure	
5 bar	1
10 bar	2
Process connection	
G 1/2 A hygienic (A03)	A030
G 1/2 A hygienic, sliding connection, length 250 mm. (A03)	A032
Process connection material	
AISI 316L (1.4404)	2
Surface roughness	
Ra < 0,8 µm	1
Ra < 0,4 µm	2
Electropolished, Ra < 0,8 µm	3
Electropolished, Ra < 0,4 µm	4
Gasket material (external)	
Without	0
Sealing-/ O-ring (internal)	
NBR	1
FKM /Viton	2
EPDM	3
Silicone	4
Explosion protection	
Without	0
Industrial approvals	
Standard	0
WHG	1
Special approvals	
EHEDG	2
3-A / EHEDG	3
Configuration	
Factory settings	0
Customer-specific	1