

## PL20S - Adaptive trigger

Point level detection based on frequency deviation technology for industrial applications

PL20S-1####.11#01####.#2###000#

### 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



### 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
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)	IP 67 IP 69K , with appropriate cable
Humidity	< 98 % RH , condensing

#### Ambient conditions

Vibration (EN 61373:2010)	Category 2 (bogie-mounted) Functional test: 5.4 m/s <sup>2</sup> , 5...250 Hz, 10 min. per axis Life-time: 30.6 m/s <sup>2</sup> , 5...250 Hz, 5 h per axis
Shock (EN 61373:2010)	Category 2 (bogie-mounted) 300 m/s <sup>2</sup> , 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

Version	1.1
Port type	Class A
Transmission rate	38,4 kbaud (COM2)
Min. cycle time	6.4 ms
SIO-mode	Yes

#### Housing

Style	Compact transmitter
Overall size	Refer to section "Dimensional drawings"
Material	Stainless steel

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### Technical data

#### Electrical connection

Connector	M12-A, 4-pin, polycarbonate
	M12-A, 4-pin, stainless steel

#### Power supply

Voltage supply range	8 ... 35 V DC
Current consumption (no load)	25 mA , typ. 53 mA , max.
Power-up time	< 1.5 s
Reverse polarity protection	Yes

#### Factory settings – Adaptive trigger

Switching logic	Normally open (NO)
Advanced setup	Disabled
Set point low	0 %
Set point high	100 %

#### Factory settings – Adaptive trigger

Damping	0 ms
Steady detection	Active

#### Factory settings – Window trigger

Switching logic	Normally open (NO)
Switch window, min.	0 %
Switch window, max.	75.3 %
Switch window, hysteresis	2.4 %
Damping	0.1 s

#### Compliance and approvals

EMC Emission	EN 61326-1 EN 50121-3-2:2016
EMC Immunity	EN 61326-1 EN 50121-3-2:2016
Hygiene	FDA (21 CFR 177.2415)

### 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
A030	G 1/2 A hygienic	A03	-40 ... 115	-1 ... 10	135	-1 ... 5
G510	G 1/2 A DIN 3852-E	G51	-40 ... 115	-1 ... 100	135	-1 ... 100
N020	1/2-14 NPT	N02	-40 ... 115	-1 ... 100	135	-1 ... 100
A031	G 1/2 A hygienic, length 82 mm	A03	-40 ... 115	-1 ... 100	135	-1 ... 100
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.

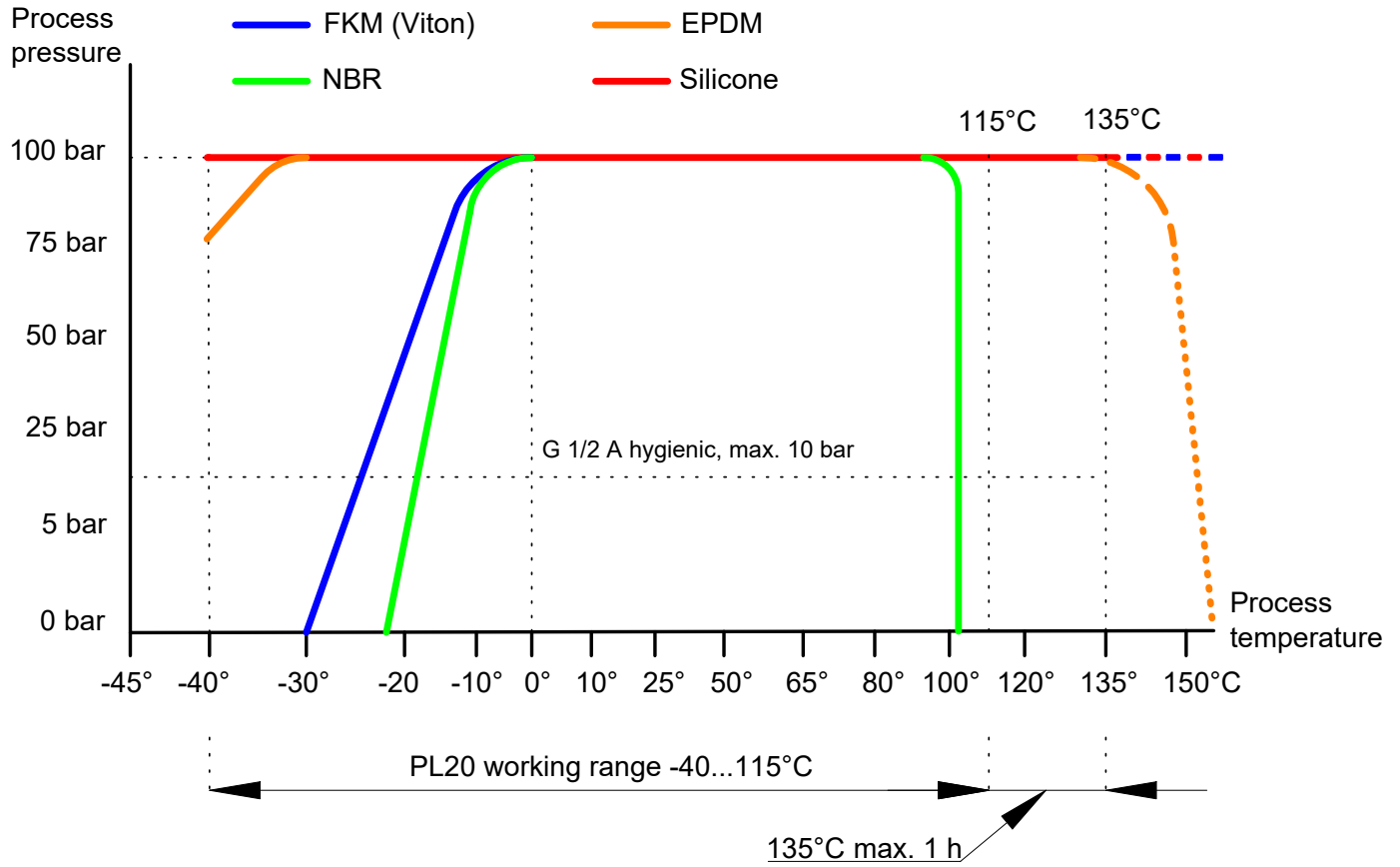
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## Operating conditions

### 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.

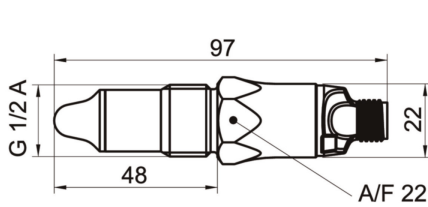
2020-08-07 The product features and technical data specified do not express or imply any warranty. Technical modifications subject to change.

# PL20S - Adaptive trigger

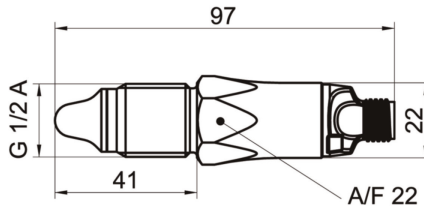
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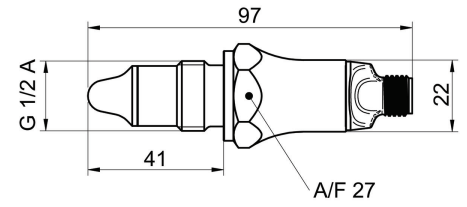
## Dimensional drawings (mm)



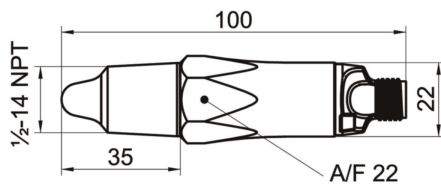
G 1/2 A hygienic (BCID: A03)



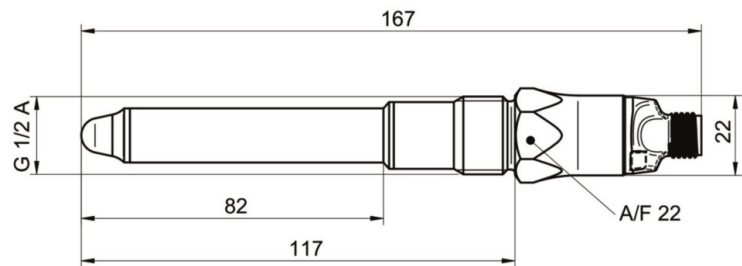
G 1/2 A ISO 228-1 BSC (BCID: G07)



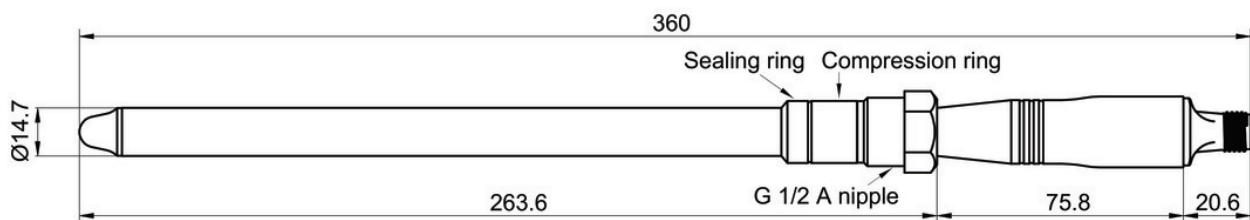
G 1/2 A DIN 3852-E (BCID: G51)



1/2-14 NPT (BCID: N02)



G 1/2 A hygienic, L82 mm (A03)



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

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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

	PL20S	-	1	#	#	#	#	.	1	1	#	0	1	#	####	2	#	#	#	0	0	0	#
<b>Product</b>	Level switches	PL20S																					
<b>Version</b>	Adaptive trigger		1																				
<b>Trigger mode Switch 1</b>	Adaptive trigger			1																			
	Window trigger				3																		
<b>Trigger mode Switch 2</b>	Adaptive trigger					1																	
	Window trigger						3																
	Analog (4...20 mA)							5															
<b>Output type switch 1</b>	PNP																					1	
	NPN																						2
	Digital (push-pull)																						3

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## Ordering information

Ordering key - Configuration possibilities see website

	PL20S	-	1	#	#	#	#	.	1	1	#	0	1	#	####	2	#	#	#	0	0	0	#		
<b>Output type switch 2</b>																									
PNP																								1	
NPN																									2
Digital (push-pull)																									3
Analog (4...20 mA)																									4
<b>Interface</b>																									
I/O-link																									1
<b>Protection class</b>																									
IP 67, IP69K																									1
<b>Electrical connection</b>																									
M12-A, 4-pin, polycarbonate (with LED)																									1
M12-A, 4-pin, stainless steel (without LED)																									2
<b>Cable length</b>																									
Without cable																									0
<b>Process temperature</b>																									
-40...115 °C																									1
<b>Max. process pressure</b>																									
5 bar																									1
10 bar																									2
100 bar																									3
<b>Process connection</b>																									
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 DIN 3852-E (G51)																									G510
G 1/2 A hygienic, length 82 mm (A03)																									A031
G 1/2 A hygienic, sliding connection, length 250 mm. (A03)																									A032
<b>Wetted parts material</b>																									
AISI 316L (1.4404)																									2
<b>Surface roughness</b>																									
Standard																									0
Ra ≤ 0,8 µm																									1
Ra ≤ 0,4 µm																									2
<b>Gasket material (external)</b>																									
Without																									0
NBR																									1
FKM /Viton																									2
EPDM																									3
<b>Sealing-/ O-ring (internal)</b>																									
NBR																									1
FKM /Viton																									2
EPDM																									3
Silicone																									4
<b>Explosion protection</b>																									
Without																									0
<b>Industrial approvals</b>																									
Standard																									0
<b>Special approvals</b>																									
Standard																									0

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### Ordering information

Ordering key - Configuration possibilities see website

PL20S - 1 # # # # . 1 1 # 0 1 # #### 2 # # # 0 0 0 #

### Configuration

Factory settings	0
Customer-specific	1