

## 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
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

#### Ambient conditions

Shock (EN 61373:2010)	Category 2 (bogie-mounted) 300 m/s <sup>2</sup> , 18 ms, 3 impulses per axis and direction
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#### 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
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Current rating	100 mA , max.
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Off leak current	< 100 µA , max.
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Short circuit protection	Yes
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Interface	IO-Link 1.1
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#### 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

#### Electrical connection

Connector	M12-A, 4-pin, polycarbonate M12-A, 4-pin, stainless steel
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#### Power supply

Voltage supply range	8 ... 35 V DC
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### Technical data

#### Power supply

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 %
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 61326-1:2013 EN 50121-3-2:2016
EMC Immunity	EN 61326-1:2013 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.

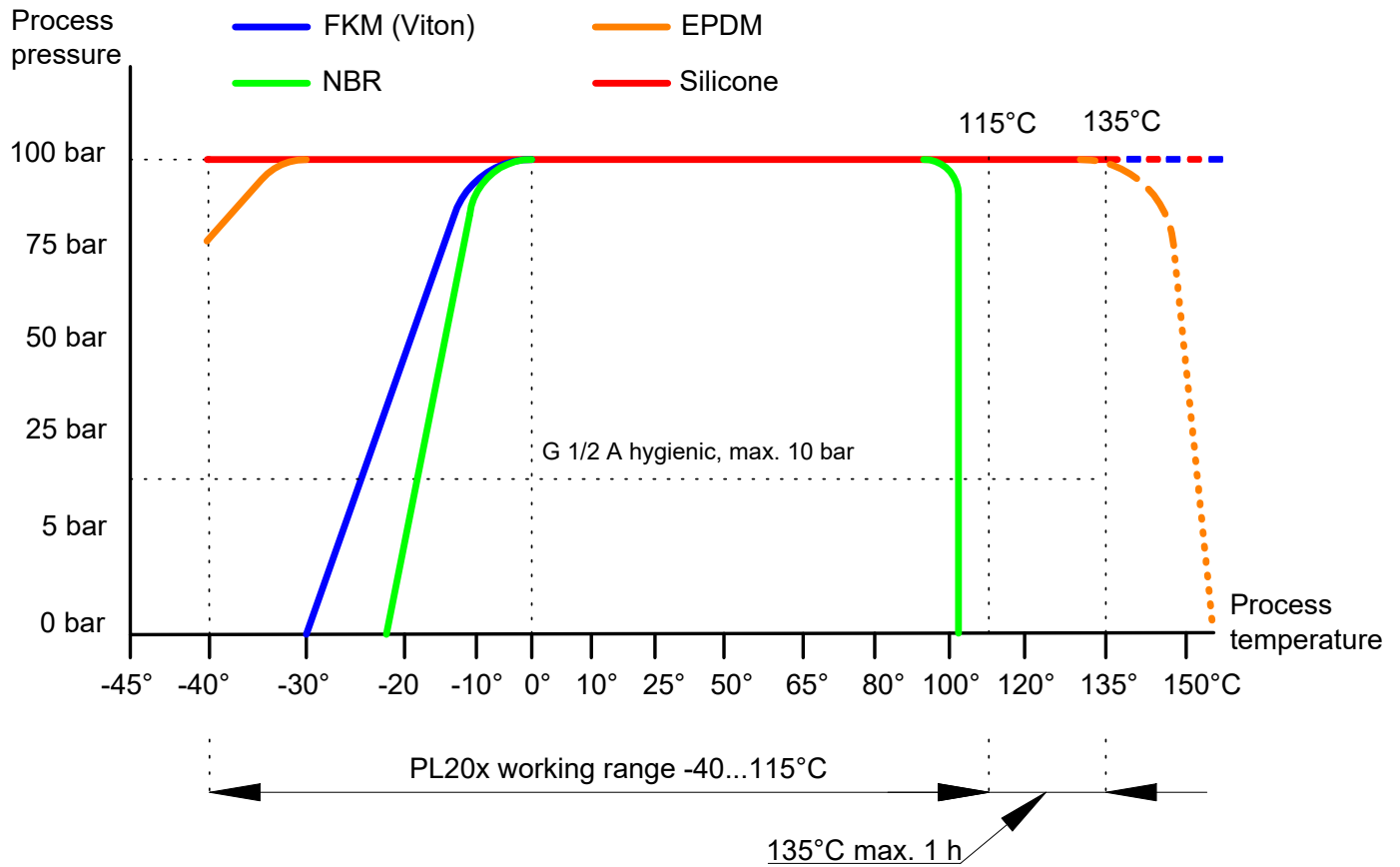
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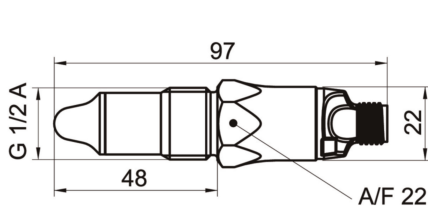
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## Operating conditions

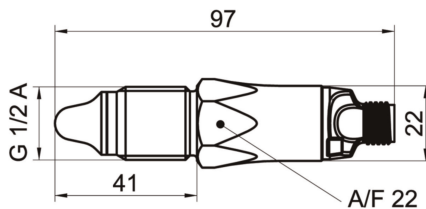
### Internal O-ring type



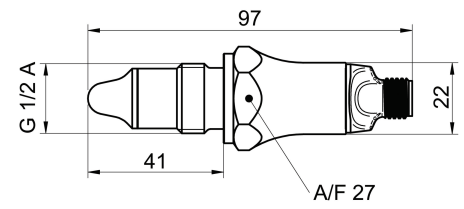
## Dimensional drawings (mm)



G 1/2 A hygienic (BCID: A03)



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



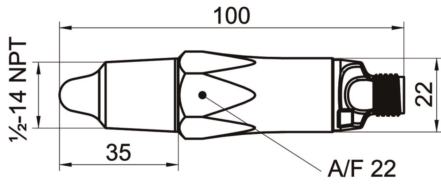
G 1/2 A DIN 3852-E (BCID: G51)

## PL20S - Adaptive trigger

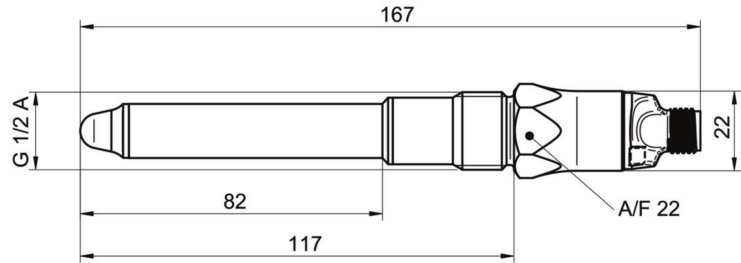
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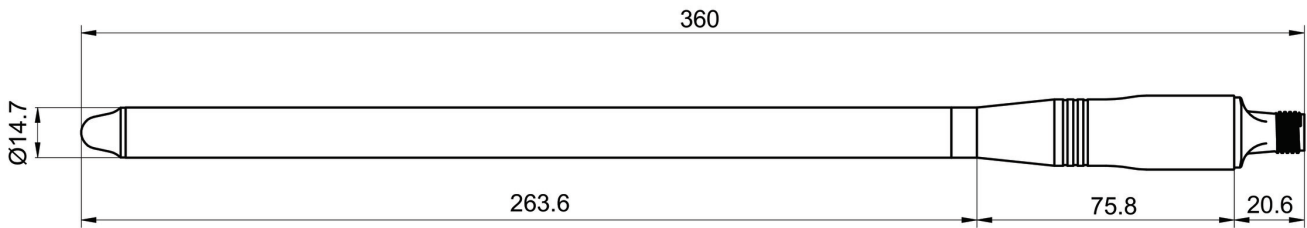
### Dimensional drawings (mm)



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																						
<b>Version</b>	Adaptive trigger																						
<b>Trigger mode Switch 1</b>	Adaptive trigger																						
	Window trigger																						
<b>Trigger mode Switch 2</b>	Adaptive trigger																						
	Window trigger																						
	Analog (4...20 mA)																						
<b>Output type switch 1</b>	PNP																						
	NPN																						
	Digital (push-pull)																						

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

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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 L82 mm (A03)																									A031
G 1/2 A hygienic, sliding connection, L250 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