

## PL20S - Adaptive trigger

Point level detection based on frequency deviation technology for industrial applications

PL20S-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



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

### 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
T110	G 3/4 A ISO 228-1 for reverse assembly (in-shell thread)	T11	-40 ... 85	-1 ... 100	N/A	N/A
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.

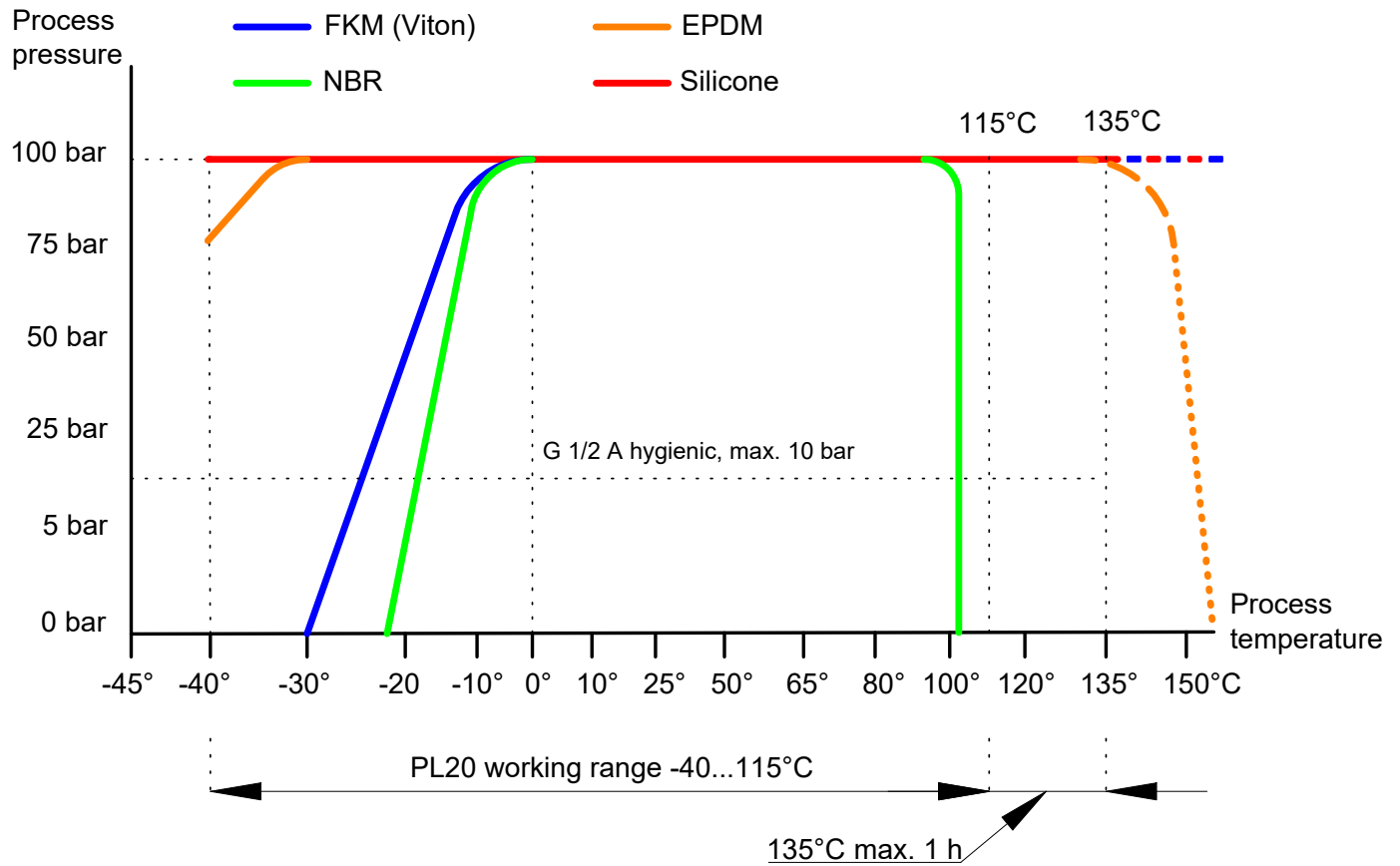
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### Operating conditions

#### Internal O-ring type



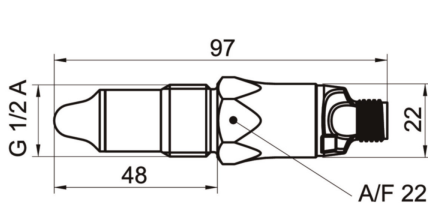
Material	Resistance
NBR	High resistance to petroleum, dilute acid, ethylene glycol, lye, mineral oils, aliphatic hydrocarbons and water. NBR is not suitable for CIP cleaning.
FKM/Viton®	High resistance to mineral oils, acid, aliphatic hydrocarbons and chlorinated hydrocarbons. FKM is not suitable for 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.

## PL20S - Adaptive trigger

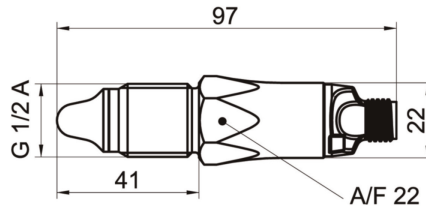
Point level detection based on frequency deviation technology for industrial applications

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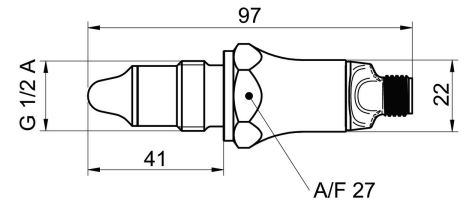
### Dimensional drawings (mm)



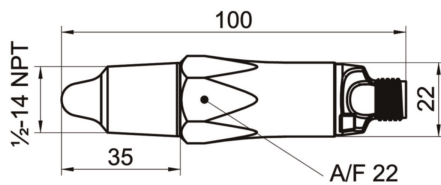
G 1/2 A hygienic (BCID: A03)



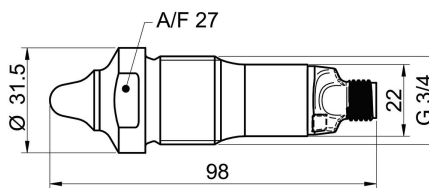
G 1/2 A ISO 228-1 BSC (BCID: G07)



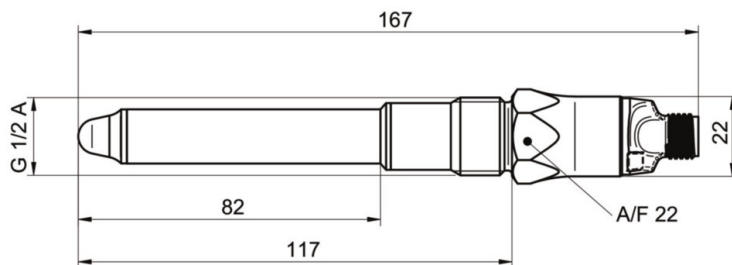
G 1/2 A DIN 3852-E (BCID: G51)



1/2-14 NPT (BCID: N02)



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



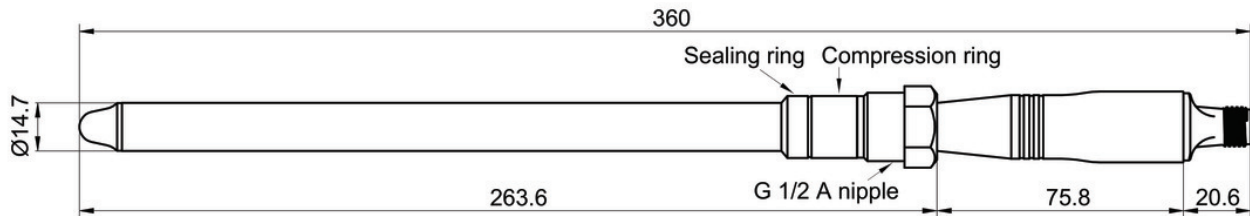
G 1/2 A hygienic, L82 mm (A03)

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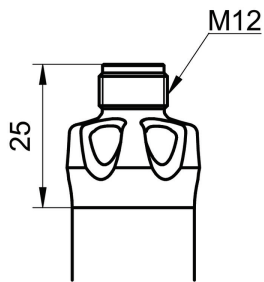
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### Dimensional drawings (mm)

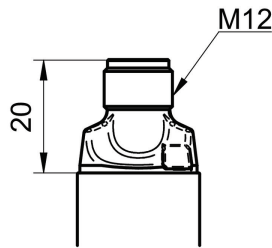


G 1/2 A hygienic, sliding connection, L250 mm (A03)

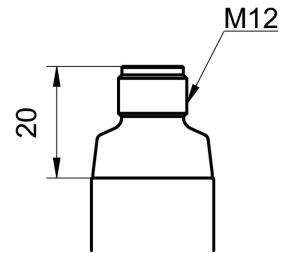
### Housing



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
			GND (0 V)	3
Programmable output IO-Link + Analog 4...20 mA NPN			+Vs	1
			SW1 (IO-Link)	4
			Iout	2
			GND (0 V)	3
			Frame Ground	Plug thread
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	#	#	0	#	#	.	####	2	#	#	#	0	####	0	#
<b>Product</b>	PL20S																							
Level switches	PL20S																							
<b>Version</b>																								
Adaptive trigger									1															
<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)																								

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### Ordering information

Ordering key - Configuration possibilities see website

PL20S		-	1	#	#	#	#	.	1	#	#	0	#	#	.	####	2	#	#	#	0	####	0	#
<b>Output type switch 2</b>																								
PNP																								
NPN																								
Digital (push-pull)																								
Analog (4...20 mA)																								
<b>Interface</b>																								
I/O-link																								
<b>Protection class</b>																								
IP67, IP69K																								
Baumer proTect+ (IP68, IP69K)																								
<b>Electrical connection</b>																								
M12-A, 4-pin, polycarbonate (with LED)																								
M12-A, 4-pin, stainless steel (without LED)																								
M12-A, 4-pin, stainless steel KingCrown (with LED)																								
<b>Cable length</b>																								
Without cable																								
<b>Process temperature</b>																								
-40...115 °C																								
-40...150 °C																								
<b>Max. process pressure</b>																								
5 bar																								
10 bar																								
100 bar																								
<b>Process connection</b>																								
G 1/2 A ISO 228-1 (G07)																								
1/2-14 NPT (N02)																								
G 1/2 A hygienic (A03)																								
G 1/2 A DIN 3852-E (G51)																								
G 1/2 A hygienic, length 82 mm (A03)																								
G 1/2 A hygienic, sliding connection, length 250 mm. (A03)																								
G 3/4 A ISO 228-1 for reverse assembly (in-shell thread) (T11)																								
<b>Process connection material</b>																								
AISI 316L (1.4404)																								
<b>Surface roughness</b>																								
Standard																								
Ra < 0,8 µm																								
Ra < 0,4 µm																								
Electropolished, Ra < 0,8 µm																								
Electropolished, Ra < 0,4 µm																								
<b>Gasket material (external)</b>																								
Without																								
NBR																								
FKM /Viton																								
EPDM																								
Glass / aramide fiber with NBR																								



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### Ordering information

Ordering key - Configuration possibilities see website

	PL20S	-	1	#	#	#	#	.	1	#	#	0	#	#	.	####	2	#	#	#	0	####	0	#
<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
WHG																								1
<b>Special approvals</b>																								
Standard																								0
<b>Configuration</b>																								
Factory settings																								0
Customer-specific																								1

(1) Including gasket ZPX3-14C0 (glass/aramide fiber with NBR)