

PL20S - Adaptive trigger

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



reddot winner 2021
industrial design

Picture similar



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
--------------------------------	-------------

Surface roughness (in contact with medium)

Sensor tip (PEEK)	Not defined Ra ≤ 0.8 µm, optional Ra ≤ 0.4 µm, optional
Smooth metal surface	Not defined Ra ≤ 0.8 µm, optional Ra ≤ 0.4 µm, optional Ra ≤ 0.8 µm, electropolished, optional Ra ≤ 0.4 µm, electropolished, optional
Thread	Ra ≤ 1.6 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
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)	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.

PL20S - Adaptive trigger

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

Technical data

Output signal

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 ... 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 high	100 %
Steady detection	Active
Damping	0 ms
Trigger distance	3.0 %
Startup Level	0.0 %

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)
Safety	cULus listed, E365692

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 EN ISO 1179-2 (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

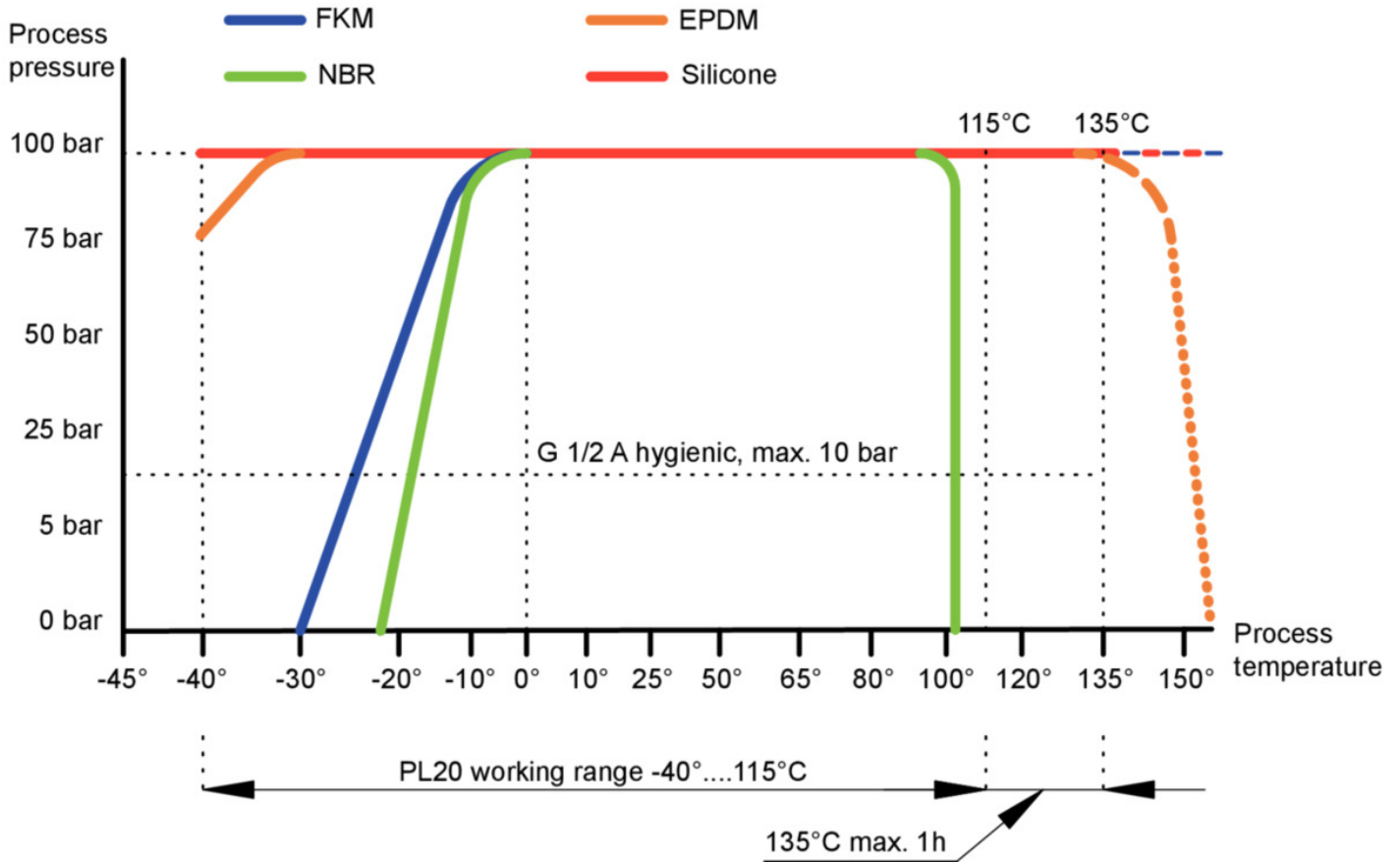
For further information regarding operating conditions please see the graph of the different types of internal O-rings.

PL20S - Adaptive trigger

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

Operating conditions

Internal O-ring-typ

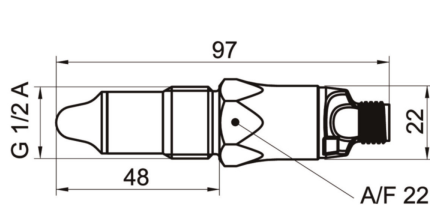


Material	Resistance
NBR	High resistance to petroleum, dilute acid, ethylene glycol, lye, mineral oils, aliphatic hydrocarbons and water. NBR is not suitable for CIP cleaning.
FKM	High resistance to mineral oils, acid, aliphatic hydrocarbons and chlorinated hydrocarbons. FKM is not suitable for steam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

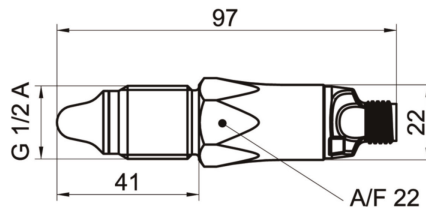
PL20S - Adaptive trigger

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

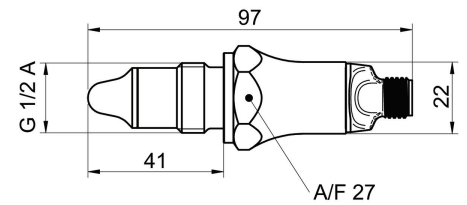
Dimensional drawings (mm)



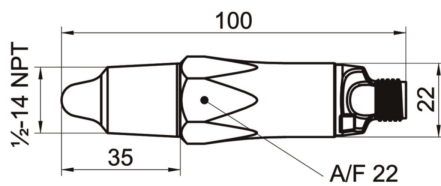
G 1/2 A hygienic (BCID: A03)



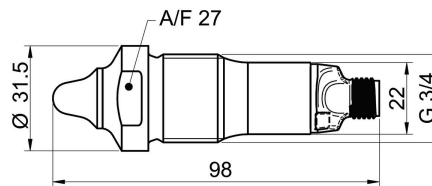
G 1/2 A ISO 228-1 BSC (BCID: G07)



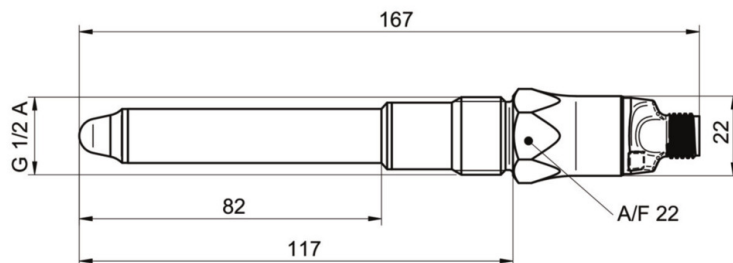
G 1/2 A DIN EN ISO 1179-2 (3852-E), (BCID: G51)



1/2-14 NPT (BCID: N02)



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

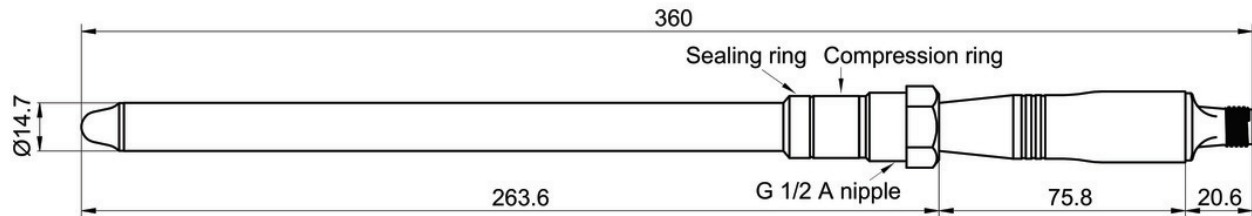


G 1/2 A hygienic, L82 mm (A03)

PL20S - Adaptive trigger

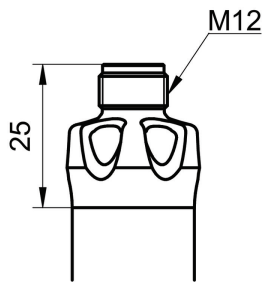
PL20S-1####.1##0##.####2###0#0#

Dimensional drawings (mm)

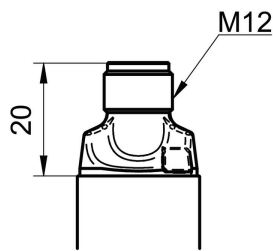


G 1/2 A hygienic, sliding connection, L250 mm (A03)

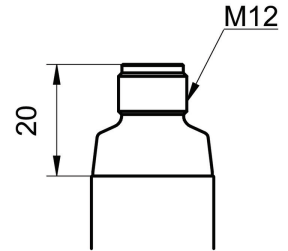
Housing



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



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



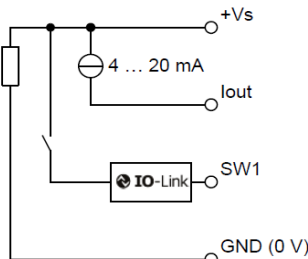
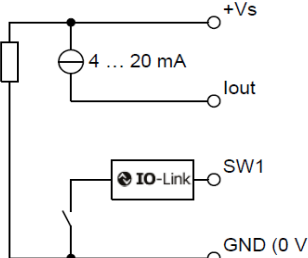
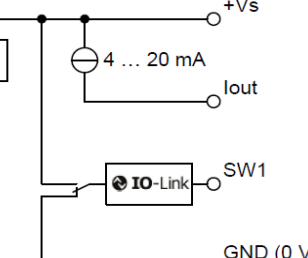
Connector M12-A, 4-pin, stainless steel (without LED)

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

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

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

PL20S - Adaptive trigger

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

Ordering information

Ordering key - Configuration possibilities see website

PL20S		-	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												
-40...85 °C												3												
Max. process pressure																								
5 bar													1											
10 bar													2											
100 bar													3											
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 DIN EN ISO 1179-2 (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							
G 3/4 A ISO 228-1 for reverse assembly (in-shell thread) (T11) ⁽¹⁾																	T110							
Process connection material																								
AISI 316L (1.4404)																	2							
Surface roughness																								
Standard																					0			
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		
NBR																						1		
FKM																						2		
EPDM																						3		
Glass / aramide fiber with NBR																						4		

Ordering information

Ordering key - Configuration possibilities see website

	PL20S	-	1	#	#	#	#	.	1	#	#	0	#	#	.	####	2	#	#	#	0	####	0	#
Sealing-/ O-ring (internal)																								
NBR																					1			
FKM																					2			
EPDM																					3			
Silicone																					4			
Explosion protection																								
Without																					0			
Industrial approvals																								
Standard																					0			
WHG																					1			
Special approvals																								
Standard																						0		
Configuration																								
Factory settings																								0
Customer-specific																								1

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