

Electr. Dual Level Switch

BLS3000

Features

- ▶ Resolution: 5 mm
- ▶ Redundant measurement system
- ▶ Direct measurement
- ▶ Capable of measuring media of density > 0.6g/cm³ that is compatible with float material e.g. hydraulic oils, water, coolants even with foaming
- ▶ Total length (L0): 250 - 1000 mm
- ▶ Max. 2 switch points
- ▶ Analog output 4 - 20 mA or 0 - 10 V
- ▶ Rotatable 320° display & electrical connection
- ▶ Menu navigation refers to VDMA standard

Applications

- ▶ Level control for
 - Hydraulics
 - Lubrication system
 - Cooling



Technical Data

Sensor element:	Reed switch
Materials:	
Wetted parts:	
Stem (Fitting, Tube):	Stainless steel
Float:	NBR foam
Seals:	FKM, EPDM or NBR
Electronics housing:	Stainless steel, PBT
Operating elements:	3 easy-response pushbuttons
System of protection:	IP65/IP67
Protection class:	III
Electrical connection:	Plug M12 x 1 mm, 4-pin / 5-pin (depending on output code)
Process connection:	see order code
Float BN17	
Density Medium:	min. 0.60 g/cm ³
Depth of immersion:	15 ± 2 mm (water), 19 ± 2 mm (oil 0.75) Ø17.8 mm, height 25 mm
Dimension:	110 x 41 mm (without plug connector and probe)
Weight:	approx. 350 g
Total length (L0):	250 mm, 370 mm, 410 mm, 1000 mm others on request
Repeatability:	± 1 digit (without turbulence) including temperature influence
Resolution:	5 mm
Max. pressure:	3 bar
Temperature range:	
Medium:	-25 °C... +80 °C
Ambient:	-20 °C... +70 °C (1)
Storage:	-30 °C... +80 °C
Power supply:	15... 32 V DC, reversed polarity protected (SELV, PELV)
Digital display:	4-digit 14-segment LED display, red, digit height 9 mm
Error display:	LED red and alphanumeric display
Power consumption:	approx. 50 mA (without load)
Analog output:	
Current output:	4...20 mA
Load:	max. RI = (Ub-12V) / 20 mA RI = 600 Ohm at Ub = 24 V DC
Scanning rate:	2 ms
Voltage output:	0...10 V DC
Rating:	max. 10 mA
Adjustment range:	25 %... 100 % f. s.

Units:		
Distance:	%, mm, cm, m, inch, feet,	
Volume:	liter, m ³ , gallon	
Transistor switching outputs / IO-Link:		
Switching function:	Normally open/normally closed, standard / window mode and diagnosis function adjustable	
Adjustment range for switching point and hysteresis:	0 %... 125 % f. s.	
Switching frequency:	max. 100 Hz	
Load	max. 500 mA, short-circuit proof IO-Link: max. 250 mA	
Delay	0.0 s ... 50 s adjustable	
Status display(s):	LED(s) red	
Interfaces		
Communication interface:	IO-Link	
Transmission type:	COM2 (38,4 kBaud)	
IO-Link revision:	1.1	
SDCI standard:	IEC 61131-9	
Profiles:	Smart Sensor	
SIO mode:	yes	
Device type:	Class A	
Process data variable:	1	
Binary data channel:	2	
Min. process cycle time [ms]	2.5	
Device ID:	0x051 ...	
EMV	EN 61000-4-2 ESD	4 kV CD/8 kV AD
	EN 61000-4-3 HF radiated	10 V/m
	EN 61000-4-4 Burst	2 kV
	EN 61000-4-5-Surge	1/2 kV
	EN 61000-4-6 HF conducted	10 V
Shock resistance	DIN EN 60028-2-27	50 g (11 ms)
Vibrations resistance	DIN EN 60028-2-26	20 g (10...2000 Hz)
Approvals:	cULus ⁽¹⁾ - E302981	

1) Conditions of use with cULus: 60 °C max. ambient, power supply 28 V DC

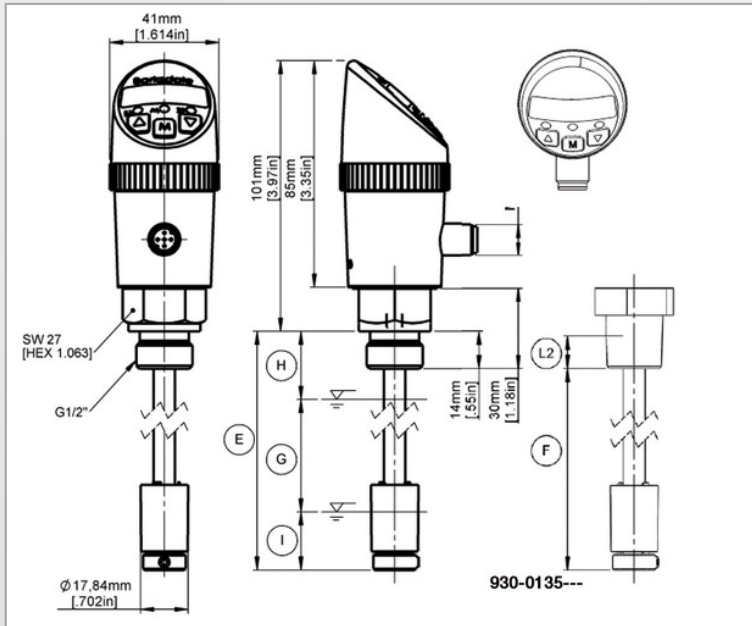
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Accessories

Order Number	Description
907-0357	Plug connector M12 x 1, 4-pin, with screw terminals, angled (IP65)
907-0185	Plug connector M12 x 1, 5-pin, with screw terminals (IP65)
908-0361	Plug connector M12 x 1, 5-pin, with moulded cable (IP67), 2 m length

Dimensions (mm / inch)

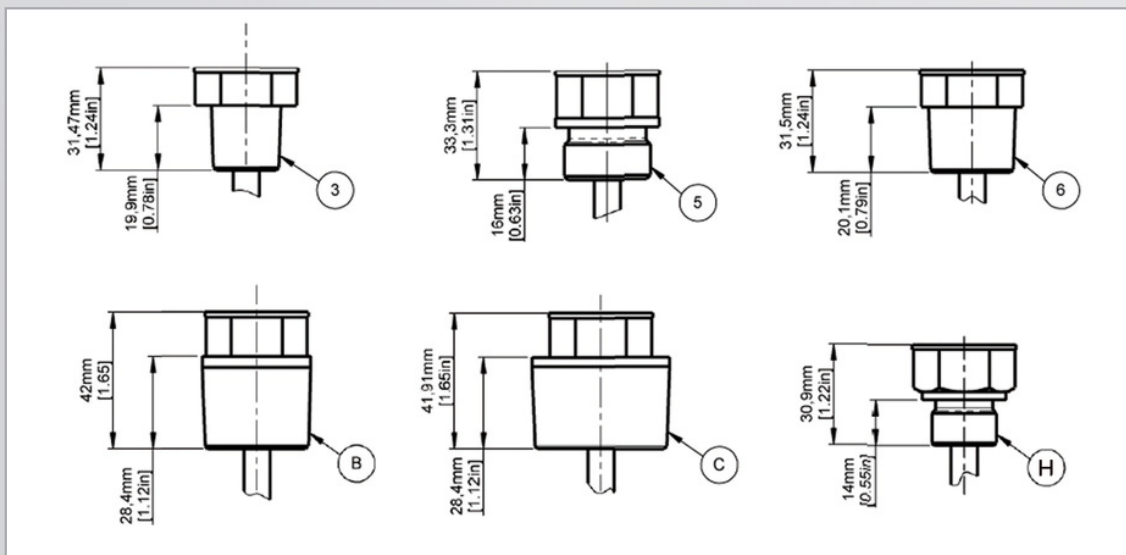


Fitting	Dead band	
	To (top)	Tu (bottom)
G1/2"	27 ±3 [1.06 ±0.12]	27 ±3 [1.06 ±0.12]
G3/4"	29 ±3 [1.14 ±0.12]	
G1"	31 ±3 [1.22 ±0.12]	
M20x1,5 mm	27 ±3 [1.06 ±0.12]	
1/2"NPT	13 ±3 [0.51 ±0.12]	
3/4"NPT		
1"NPT		
1 1/4"NPT		

Legend

E	L0 = total length for G&M threads
F	L0 = total length for NPT threads
L2	the effective length of 1/2" NPT, 3/4" NPT, 1"NPT and 1 1/4" NPT thread
G	LM = L0-(To+Tu)
H	To = dead band top
I	Tu = dead band bottom

Process connection

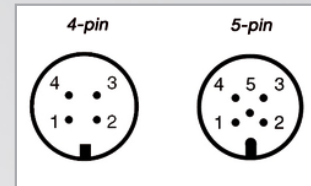


Electrical Connection

Pin	Signal Order Code 1, 7	Signal Order Code 2, 3	Signal Order Code 4, 5, 8
1	+Ub	+Ub	+Ub
2	SP2	Signal	Signal
3	0V	0V	0V
4	SP1 / IO-Link*	SP1	SP1 IO-Link*
5	-	-	SP2

* only code 7 and 8

Plug



Order Code

BLS3000

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Base Model*

Output

5-mm resolution

1	2 switch points
2	4...20 mA and 1 switch point
3	0...10 V DC and 1 switch point
4	4...20 mA and 2 switch points
5	0...10 V DC and 2 switch points
7	IO-Link / 2 switch points (PNP, NPN, PP)
8	IO-Link / 2 switch points (PNP, NPN, PP) / Analog Output

Process Connection

2	G½" male, with sealing (sealing code V, E or B)
3	½"NPT male, without sealing (sealing code X)
5	G¾" male, with sealing (sealing code V, E or B)
6	¾"NPT male, without sealing (sealing code X)
B	1"NPT male, without sealing (sealing code X)
C	1¼"NPT male, without sealing (sealing code X)
H	M20 x 1,5 mm male, with sealing (sealing code V, E or B)

Sealing

X	without sealing (NPT process connection only)
V	FKM (DIN 3869)
E	EPDM (DIN 3869)
B	NBR (DIN 3869)

Electrical Connection

M M12 x 1 mm (4, 5 pin)

Total Length L0

0	2 5 0	M 250 mm (process con. code 2, 5 and H)
0	3 7 0	M 370 mm (process con. code 2, 5 and H)
0	4 1 0	M 410 mm (process con. code 2, 5 and H)
1	0 0 0	M 1000 mm (process con. code 2, 5 and H)
0	9 . 8 Z	9.8 inch (process con. code 3, 6, B and H)
1	4 . 6 Z	14.6 inch (process con. code 3, 6, B and C)
1	6 . 1 Z	16.1 inch (process con. code 3, 6, B and C)
3	9 . 4 Z	39.4 inch (process con. code 3, 6, B and C)

Example:

BLS3000 **1** **2** **B** **M** **0** **3 7 0 M**

*Special design on request