

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
- ▶ Analogue 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, mat. no. 1.4571
Float:	NBR foam
Seals:	FKM, EPDM or NBR
Electronics housing:	Stainless steel (1.4571), polycarbonate, elastomer
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 / 8-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
Accuracy	± 1 digit (without turbulence) including temperature influence and repeatability
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) approx. 80 mA (Output Code 6)

Relay output:	Rel. 1 normally closed, Rel. 2 normally open Load: max. 1A, max. 60V, max. 30 W	
Analog output:	4...20 mA	
Current output:	max. RI = (Ub-12V) / 20 mA	
Load:	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 PNP:		
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	
Delay	0.0 s ... 50 s adjustable	
Status display(s):	LED(s) red	
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 max. 28 V DC

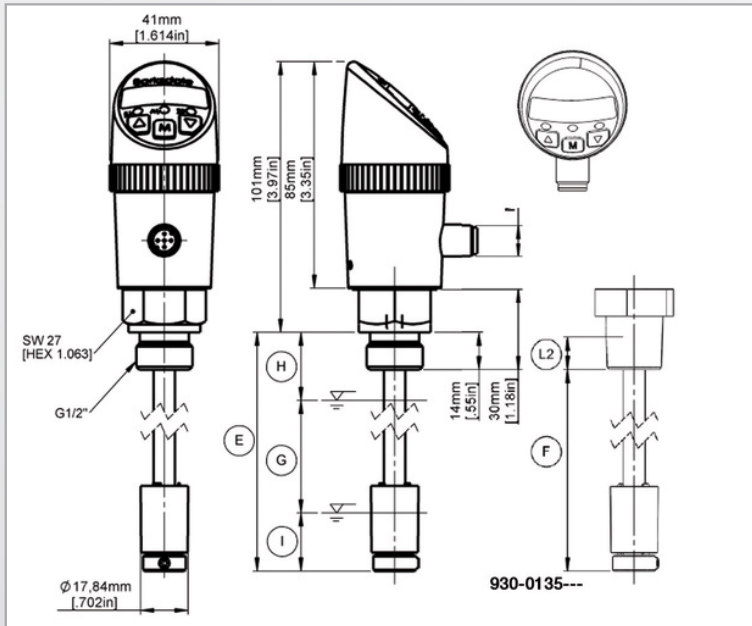
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Accessories

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, angled (IP65)
908-0361	Plug connector M12 x 1, 5-pin, with moulded cable (IP67), 2 m length
908-0544	Plug connector M12 x 1, 8-pin, with moulded cable (IP67), 2 m length

Dimensions (mm / inch)

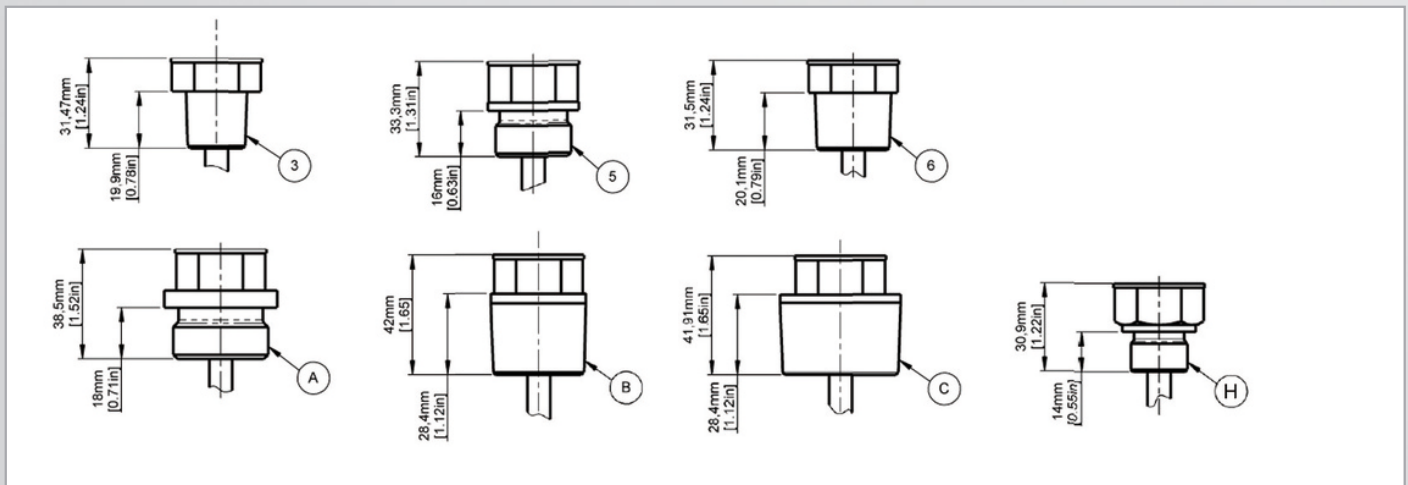


Fitting	Dead band	
	To (top)	Tu (bottom)
G1/2"	27 ±3 [1.06 ±0.12]	27 ±3 [1.06 ±0.12]
G3/4"	29 ±3 [1.14 ±0.12]	
G1"	31 ±3 [1.22 ±0.12]	
M20x1,5 mm	27 ±3 [1.06 ±0.12]	
1/2"NPT	13 ±3 [0.51 ±0.12]	
3/4"NPT		
1"NPT		
1 1/4"NPT		

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

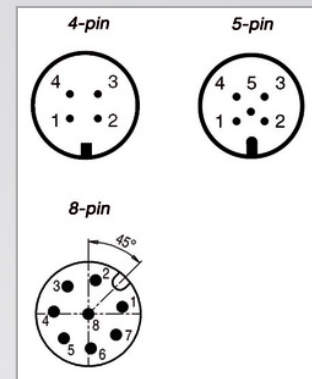
Process connection



Electrical Connection

Pin	Signal Order Code 1	Signal Order Code 2, 3	Signal Order Code 4, 5	Signal Order Code 6	
1	+Ub	+Ub	+Ub	+Ub	
2	SP2	Signal	Signal	SP1a	NC
3	OV	0V	0V	SP1b	
4	SP1	SP1	SP1	0V	
5	-	-	SP2	SP2a	NO
6	-	-	-	SP2b	
7	-	-	-	-	
8	-	-	-	Housing	

Plug



Order Code

BLS3000	
BLS3	Base Model
Output	
1	2 switch points
2	4...20 mA and 1 switch points
3	0...10 V DC and 1 switch points
4	4...20 mA and 2 switch points
5	0...10 V DC and 2 switch points
6	2 relais switch points (1x NO SPST/1x NC SPST), no UL
Process Connection	
2	G1/2" male, with sealing (sealing code V, E or B)
3	1/2"NPT male, without sealing (sealing code X)
5	G3/4" male, with sealing (sealing code V, E or B)
6	3/4"NPT male, without sealing (sealing code X)
A	G1" male, with sealing (sealing code V, E or B)
B	1"NPT male, without sealing (sealing code X)
C	1 1/4"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 and 8 pin)
Total Length L0	
0 2 5 0 M	250 mm (process con. code 2, 5, A and H)
0 3 7 0 M	370 mm (process con. code 2, 5, A and H)
0 4 1 0 M	410 mm (process con. code 2, 5, A and H)
1 0 0 0 M	1000 mm (process con. code 2, 5, A and H)
0 9 . 8 Z	9.8 inch (process con. code 3, 6, B and C)
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:

BLS3 1 2 B M 0 3 7 0 M

Special design on request