Resistance thermometer TYPE WLS

Water-level Sensor

- Provides on-line net inventory through continuous measurement of the water / oil interface. Heavy-duty design with no moving parts. Open version. Suitable for crude oil as well.
- Anchor weights can be mounted in the eye bolt.
- For close to bottom operation (16 mm) the eye bolt can be removed. A hollow top weight then needs to be mounted just above the level sensing part.
- The Water Level Sensor is normally supplied with integrated multible-spot thermometer but can be supplied without.

Open model: Suitable for crude oil applications
Closed model: Suitable for lighter fuels such as diesel oil.

Active measuring length of WLS:	Physical length:	Accuracy:
250 mm	390 mm	±1 mm / WLS 250
500 mm	640 mm	±2 mm / WLS 500
1000 mm	1140 mm	±4 mm / WLS 1000
1500 mm	1640 mm	±6 mm / WLS 1500

(without eye bolt at bottom level)

Measuring principle: Capacitive

Output:
HART:
Output analog: 2 wire 4 - 20 mA (with I_{max} = 23 mA)
Resolution output analog: D/A = 16 bit
D/A Converter, linearity: ±0.2% of full-scale
Output digital: HART (SMART) Floating point (32 bit IEEE 754)
Response time: < 1 sec.
Configurable with HART® Configurator.

or

RS-485 Modbus:
Response time measurement: < 3 sec.
Factory calibration: Calibrated under condition: e_r=1 Air (Other calibrations on request)

Storage temperature: -50°C to +85°C
Operating temperature: 0 to 120 °C
(Max. temp. at mounting flange 70°C)

Mechanical dimensions: Connection thread M33x1.5.
Additional length over mounting base 150 mm
Length = Active length + 140 mm
Outer diameter of WLS closed: Ø 38 mm
Outer diameter of WLS open: Ø 48 mm
Immersed materials: 1.4404 (316), FEP, PTFE and PEEK with 30% glass.
Weights are 1.4301 (304)
Max. pressure: 6 bar

EMC (only for Modbus): EN61326-1 and EN61326-2-3
EMC (only for Hart): EN50081-1 and EN50082-2

Approvals/marking: FM08ATEX0060X
IECEx FME 08.0007X
CE 0402 Ex II 1G FM APPROVED
Modbus: Ex ia IIC T4/T6
HART: Ex ia IIB T4

Ordering Form

Type WLS

V3.9

Placement of spots

mm

1. spot		*)
2. spot		
3. spot		
4. spot		
5. spot		
6. spot		
7. spot		
8. spot		
9. spot		
10. spot		
11. spot		
12. spot		
13. spot		
14. spot		
15. spot		
16. spot		
17. spot		
18. spot		
19. spot		
20. spot		

Overall length/LO
Min. 2000 mm
max. 60000 mm ..

Sheath dim.
1" 1

Connection

M33x1.5 (without flange)	1
1½" ANSI 150 psi M33 × 1.5	2
2" ANSI 150 psi M33 × 1.5	3
3" ANSI 150 psi M33 × 1.5	4
4" ANSI 150 psi M33 × 1.5	5
6" ANSI 150 psi M33 × 1.5	6
8" ANSI 150 psi M33 × 1.5	7
10" ANSI 150 psi M33 × 1.5	8
DN100 / PN10 ... M33 × 1.5	9
M33x1.5, no flange, 400 mm	10
1½" ANSI 300 psi M33x1.5 ..	31
2" ANSI 300 psi M33x1.5	32
3" ANSI 300 psi M33x1.5	33
4" ANSI 300 psi M33x1.5	34
6" ANSI 300 psi M33x1.5	35
8" ANSI 300 psi M33x1.5	36
10" ANSI 300 psi M33x1.5 ...	37
DN50 PN16 M33x1.5	41
DN50 PN40 M33x1.5	42
DN65 PN16 M33x1.5	43
DN65 PN40 M33x1.5	44
DN80 PN16 M33x1.5	45
DN80 PN40 M33x1.5	46
DN100 PN16 M33x1.5	47
DN100 PN40 M33x1.5	48

Lead-out wires - LK
Min. 500 mm
Max. 10000 mm
1 ..... J-box, Rose

Temperature range
1 ..... 0 / +120°C

Tolerance class

0	No elements	
1	A	±0.15 °C
2	B	±0.3 °C
3	1/3B	±0.1 °C
4	1/6B	±0.05 °C
5	1/10B	±0.03 °C

Number of elements
0 ..... No elements
..... Number of elements

Number of conductors
0 ..... No wired elements
3 ..... 3 wire
4 ..... 4 wire
5 ..... Common return

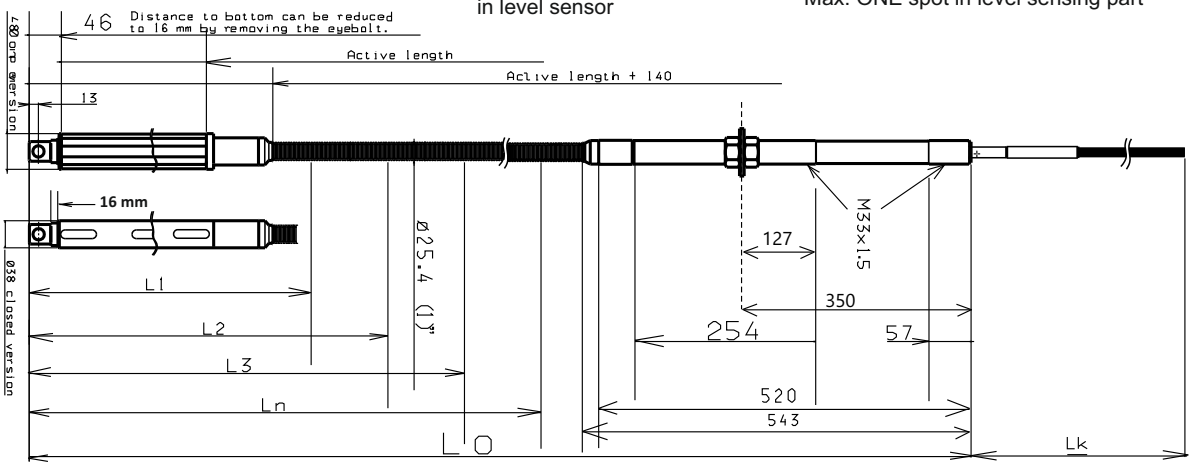
Anchor weight
0 ..... None
1 ..... 1.9" weight - at top of sensor (5 kg)
2 ..... 5 kg AISI 316 ø100×85
3 ..... 10 kg AISI 316 ø95×175

Level Sensor

1	Open 500 mm Hart
2	Open 1000 mm Hart
3	Open 1500 mm Hart
4	Closed 500 mm Hart
5	Closed 1000 mm Hart
6	Closed 1500 mm Hart
A	Open 500 mm RS485
B	Open 1000 mm RS485
C	Open 1500 mm RS485
D	Closed 500 mm RS485
E	Closed 1000 mm RS485
F	Closed 1500 mm RS485
G	Closed 250 mm RS485

***) 1st spot:**
min. 150 mm from eye bolt
in level sensor

2nd spot location above level sensor:
WLS 500 = 650 mm from eye bolt
WLS 1000 = 1150 mm from eye bolt
WLS 1500 = 1650 mm from eye bolt
Max. ONE spot in level sensing part



Senmatic A/S
Industrivej 8, 5471 Søndersø, Denmark
Phone: +45 64 89 22 11
dk@senmatic.com - www.senmatic.com