



## Series ASL-400



RINA



ASL-400 is designed for marine and on-land applications for liquid detection, pump control, water ingress alarm systems, for high and low alarm level, overfilling protection on liquids with or without foam. ASL-400 works on the principle of distributed acoustic waves in a metal rod. If the rod is not covered by the liquid the sound waves are dispersed freely without any interference. If liquid covers the rod the emission of sound waves is muffled and this interference is picked up by the piezoelectric sensor and converted into a current signal in the current loop (on-off). These instruments have no moving parts, no vibration, no optical or capacitive detectors. They are pure static sensors offering the maximum reliability.

### APPLICATION FIELDS

#### Marine applications

Detection of water presence. Detection of level in overflow pipes. Simple system for high and low level detection in all tanks, wells, separators etc. Systems in accordance to IMO and Coast Guard for high & overflow alarms on tankers and for water ingress systems on bulkcarriers.

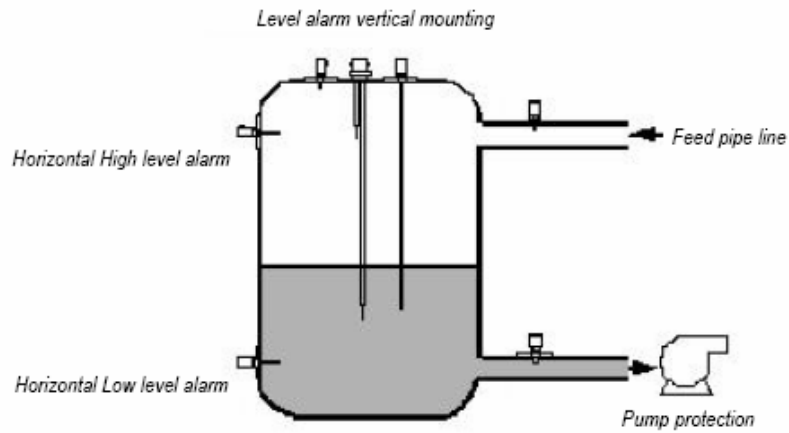
#### Other application fields

Waters and returned waters, light muds, viscous fluids, food fluids, creams and lotions, oils, chemical products, acids, caustic soda, pharmaceutical products.

## TECHNICAL FEATURES

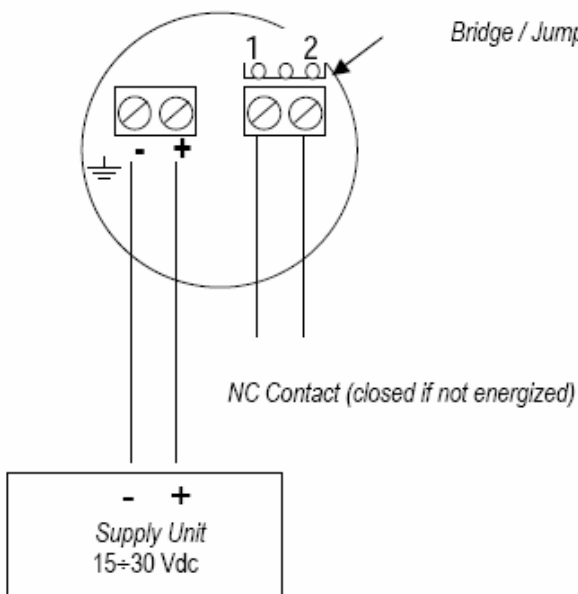
- Current output (2 wires) ON-OFF 5mA / 14mA
  - Frequency output (2 wires) ON/OFF 1,2 kHz / 3,8 kHz
  - Relay output (4 wires) capacity 1A @ 30Vdc; max switching power 33W or 60VA (not available for ATEX version)
  - Repeatability top mounting < 3 mm; side mounting < 1 mm
  - Supply 11÷30Vdc
  - Isolation > 5GOhm at 500 Vac
  - Ambient temperature: -40÷85°C
  - Process medium temperature: -30÷90° C;  
with finned extension: -30÷150°C
  - Storage temperature -50÷90°C
  - Protection rating IP65 or IP68 according to housing type
  - Working pressure 40 bar for process connection G1" M; greater or lower in accordance with process connection (max 400 bar)
  - Direct / Reverse action selectable by jumper
  - Vibration: Shock test 200g peak shock half sine wave 4ms according MIL-STD-202 F method 213B / IEC 68-2-28
  - CE marking
- Contact our technical department for special applications.

## MOUNTING

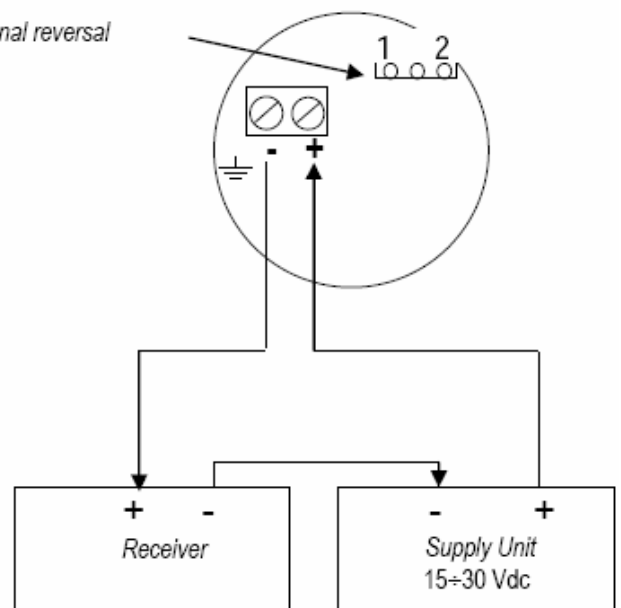


## ELECTRICAL WIRING

4 wires connection: Output mA + Relay



2 wires connection: Output mA / Hz



## APPROVALS

ATEX Ex II 1 GD EEx ia IIC T5/T6 (Housing code A/F version only)

R.I.N.A.

GERMANISCHER LLOYD

KOREAN REGISTER

## ORDERING CODE

**Tab. 1 - General characteristics**

CODE	DESCRIPTION
	<b>VERSION:</b>
D	Double (two rods)
S	Single (one rod)
T	Triple (three rods)
	<b>HOUSING MATERIAL:</b>
A	-AISI 316 St.St single version Ø55
A1	-AISI 316 St.St double version Ø55
B	-Painted aluminium (single version-No ATX)
C	-Painted aluminium GU type (single vers.-No ATX)
D	-Painted aluminium (double version-No ATX)
E	-Painted aluminium (ATX3 only)
F	-AISI 316 with screwed cap (double/triple vers.)
F1	-AISI 316 with flanged cap (double/triple vers.)
G	-Painted aluminium SB type (ATX3 only)
	<b>LENGTH UNDER CONNECTION:</b>
1	- L=114mm
2	- L=27 mm
3	- Probe Ø 12 < 250 mm
4	- Probe Ø12 < 600 mm
5	- Probe Ø12 600<L<1200 mm
L10	- With extension cable
L2C	- With extension capillary L>27<2000mm
L2T	- With extension tube L=>27<2000
L4C	- With extension capillary L>2000<4000mm
L4T	- With extension tube L>2000<4000mm
L6T	- With extension tube L>4000<6000mm
	<b>OUTPUT SIGNAL:</b>
A	- Current output 2 wires on-off
B	- Relay and current on-off( Jumper )
C	- Relay and current on-off( welded )
F	- Frequency output 2 wires on-off
	* <b>PROCESS CONNECTION</b> (see tables 2a, b, c)
	** <b>OPTIONS ACCESSORIES</b> (see table 3)
	<b>ELECTRICAL CONNECTIONS:</b>
P65	- Nylon cable gland (housing code B/D)
P65I	- Nylon cable gland EEx ia (housing code B/D)
PG13	- Cable gland PG13 (housing code A/F)
PG13f	- Cable gland OT 1/2"NPTM (housing code B/C)
PG16T	- Nipple PG16F with plug 1/8" (housing code A/F)
PG1816	- Cable gland 1816 (housing code A/F)
PG9A	- Axial cable gland AISI 316
PG9B	- Cable gland PG9 (housing code A)
PG9C	- Cable gland PG9 (housing code A) (IP68, with Ø7 cable)
R12	- Nipple G 1/2"F (housing code A)
R20	- Nipple M20 x 1,5F (housing code A/F)
R24	- Nipple M24x1,5F (housing code A/F)
R34	- Nipple M 3/4"GF (housing code A/F)

\* Tables 2a,2b, 2c list codes of standard process connections.

\*\* Table 3 shows options and accessories available for the different instrument versions

**Tab. 2a: SCREWED process connections**

CODE	DESCRIPTION
02	1/2" G-M
03	1" G-M
03a	1" NPT-M
04	1/2" NPT-M
05	3/4" G-M
06	3/4" NPT-M
07	1 1/2" G-M
08	2" G-M
09	M27 x 1,5
09a	M20 x 1,5

**Tab. 2b: FLANGED process connections**

CODE	DESCRIPTION
64	Flange ND 4" ANSI 150 RF
66	Flange ND 150 NP 16
68	Flange ND 100 NP 16
68a	Flange ND 100 NP 40
70	Flange ND 80 NP 10-16
74	Flange ND 50 NP 10-16/40
740	Flange ND 2" ANSI 150 RF
741	Flange ND 2" ANSI 300 RF
742	Flange ND 2" ANSI 600 RF
76	Flange ND 40 NP 10-16/40
76a	Flange ND 40 NP 40 UNI EN 1092-SM
77	Flange ND 1 1/2" ANSI 150 RF sp.
77a	Flange ND 1 1/2" ANSI 150 RF
78	Flange ND 25 NP 10-16/40
97	Flange ADM 401-1
98	Flange ADM 401

Flanges with lower and higher ratings are available.

For special versions contact our technical office.

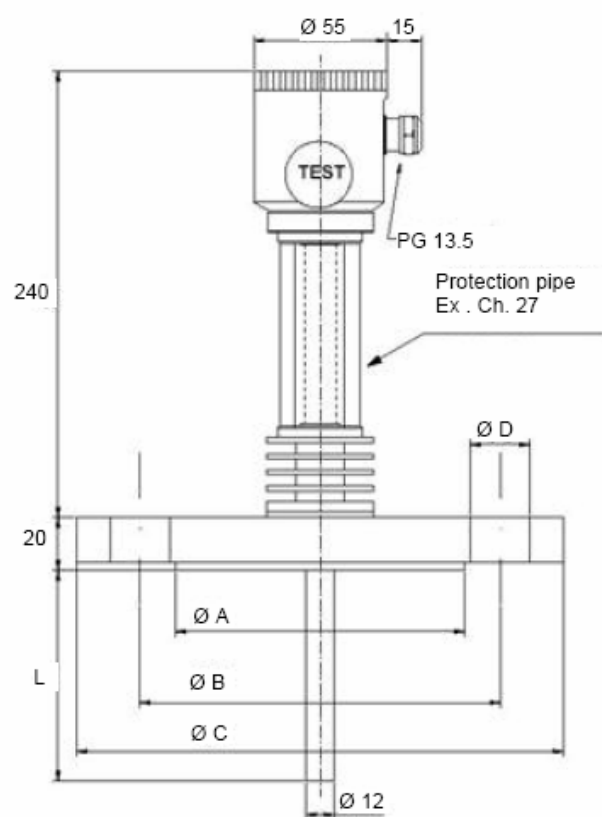
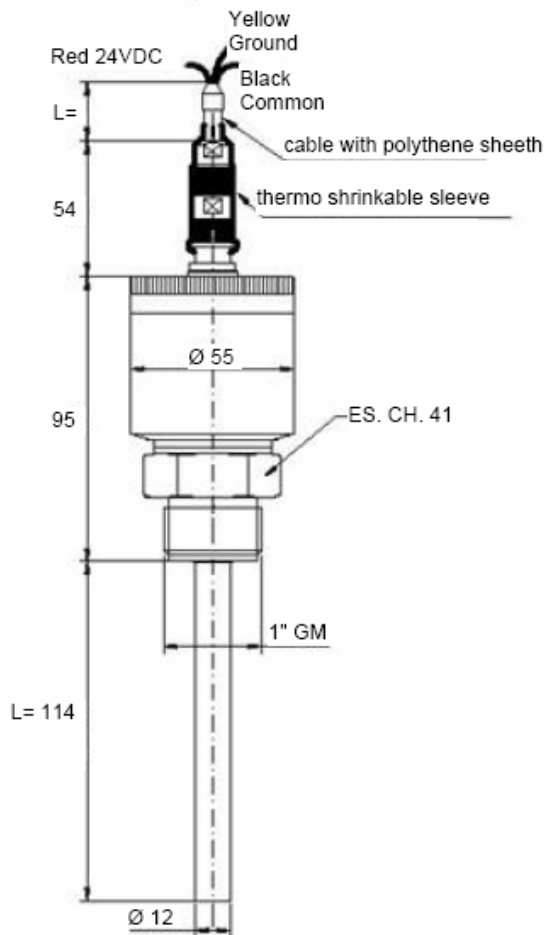
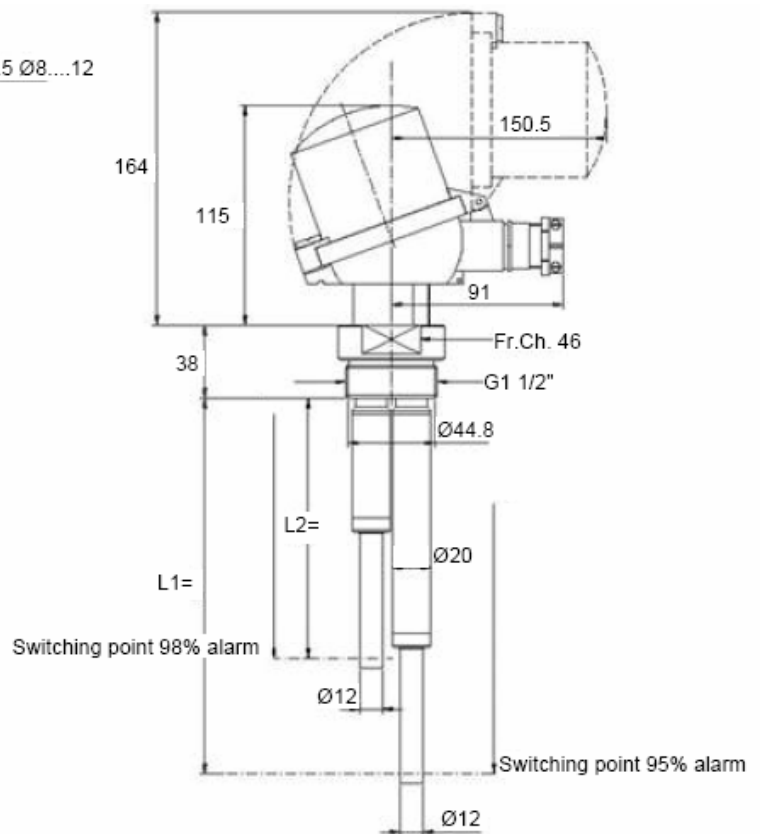
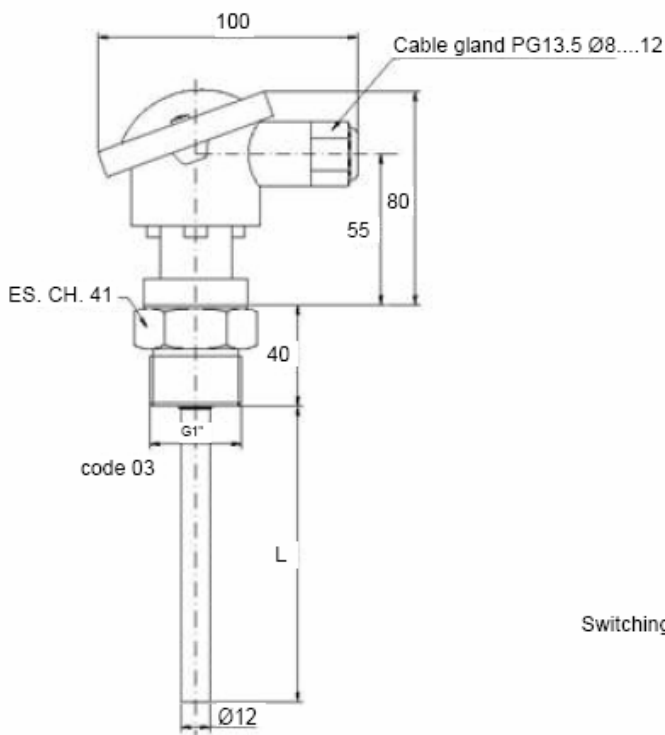
**Tab. 2c: SANITARY connections**

CODE	DESCRIPTION
20	DIN nut DN 40
21	DIN nut DN 50
22	DIN nut DN 25
40	Triclamp 2"
41	Triclamp 2 1/2"
42	Triclamp 1 1/2"

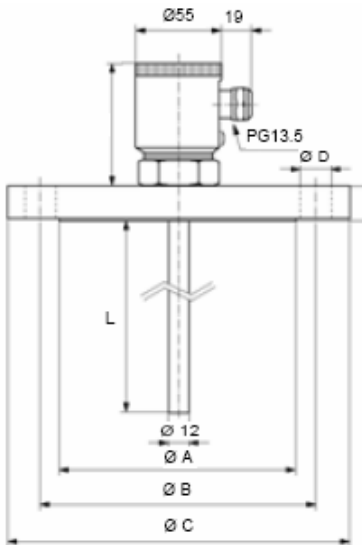
**Tab. 3- OPTIONS / ACCESSORIES**

CODE	DESCRIPTION
ATX2	- Version ATEX Ex II 1 GD EEx ia IIC T5/T6 (st.st. housing)
ATX3	- Version ATEX Ex II 1/2 G EExia IIC T5/T6 (aluminium housing)
C2RI	- RILSAN cable up to 2000 mm
C2TE	- PTFE cable up to 2000 mm
C6RI	- RILSAN cable from 2000 up to 6000 mm
C6TE	- PTFE cable from 2000 up to 6000 mm
CAB	- Shielded cable
DFS	- Fixing nut for bracket (STASL)
E	- TAG transcription
HB03	- Wetted parts Hastelloy B 3 (Screwed 1"G M) (
HB1	- Antenna material Hastelloy B 3 (L=114 mm)
HB2	- Antenna material Hastelloy B 3 (L=27 mm)
HB3	- Antenna material Hastelloy B 3 (L=<250 mm)
HB4	- Antenna material Hastelloy B 3 (L=>250 mm, max 600 mm)
HB76	- Wetted parts Hastelloy B 3 (Flange ND40)
HB78	- Wetted parts Hastelloy B 3 (Flange ND25)
HC03	- Wetted parts Hastelloy C276 (screwed 1"G M)
HC1	- Antenna material Hastelloy C 276 (L=114 mm)
HC2	- Antenna material Hastelloy C 276 (L=27 mm)
HC3	- Antenna material Hastelloy C 276 (L=<250 mm)
HC4	- Antenna material Hastelloy C 276 (L=>250 mm, max 600 mm)
HC5	- Antenna material Hastelloy C 276 (L=>600 mm, max 1200 mm)
HC740	- Wetted parts Hastelloy C 276 (Flange ND2")
HC76	- Wetted parts Hastelloy C 276 (Flange ND40)
HC78	- Wetted parts Hastelloy C 276(Flange ND25)
HLT	- Finned extension (-40°C...+150°C)
HP	- High pressure version up to 400 bar
L1=	- Probe 1 length under connection
L2=	- Probe 2 length under connection
L3=	- Probe 3 length under connection
M2	- With AISI 316 tube Ø20
M4	- With AISI 316 tube Ø 22
M6	- With AISI 316 tube Ø 28
N	- Certificates R.I.NA./German Lloyd (to specify)
PPT	- External button for pneumatic remote Testing (2,5...6 bar)
PT	- External testing button
PT2	- 2 external testing buttons (D version)
STASL	- Fixing bracket
TI03	- Wetted parts Ti II B (Screwed 1" G Male)
TI1	- Antenna material Ti II B (L=114 mm)
TI2	- Antenna material Ti II B (L=27 mm)
TI3	- Antenna material Ti II B (L<250 mm)
TI4	- Antenna material Ti II B (L>250 mm, max 600 mm)
TI76	- Wetted parts Ti II B (Flange ND 40)
TI78	- Wetted parts in Ti II B (Flange ND 25)
VHLTR	- Finned extension
WHG	- TUV Certification



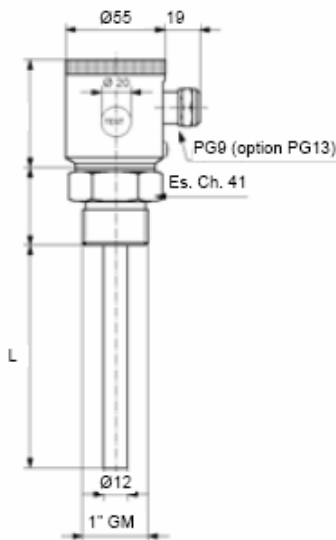


## CODIFICATION EXAMPLES



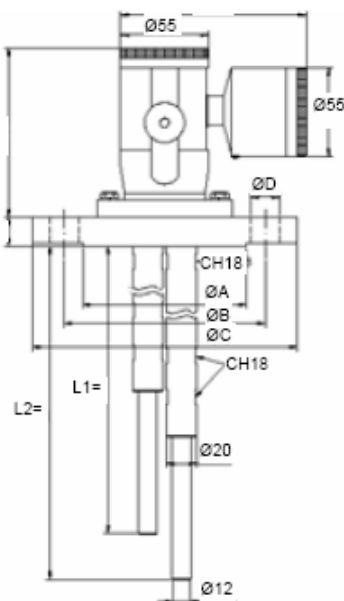
A) Single rod switch, AISI 316 st. st. housing, rod length =114mm, ON-OFF current output, connection flange ND25, st.st. cable gland PG13, Version ATEX Ex II 1 GD EEx ia IIC T5/T6

Code = **ASL400 S A 1 A 78 PG13 ATX**



B) Single rod switch, AISI 316 st. st. housing, rod length =114mm, ON-OFF current output, connection 1"G-M, st.st. cable gland PG13, test button.

Code = **ASL400 S A 1 A 03 PG13 PT**



C) Double rod switch, AISI 316 st. st. housing, with two extension tube  $L \Rightarrow 27 < 2000$ , frequency output, connection flange ND50, complete with 2 AISI 316 tubes Ø20, n°2 test buttons, cable gland PG13

Length probe 1 = 860 mm, Length probe 2 = 790 mm, Marine approval

Code = **ASL400 D F L2T(2) F 74 M2(2) PT(2) PG13 L1=860 L2=790 N**