

Product Information L3**FOOD**

L3 Pressure and Level transmitter

**Range of applications**

- Hydrostatic Level measurement in dynamic temperature environments
- Pressure measurement in pipes and vessels up to 110 °C (230 °F)
- Hydrostatic Level measurement in inventory silo's

Application examples

- Hygienic pressure and level monitoring for brewing, dairy, and food and beverage processing

Hygienic design/Process connection

- Front flush, 3-A installation for silos by Anderson flush fitting, E&H universal, or tank spud connections
- Conforming to 3-A Sanitary Standard 74-06 with Tri-Clamp® DIRECTadapt
- EHEDG compliant hygienic design with CLEANadapt process connection
- CIP/SIP and continuous process up to 110 °C (230 °F)
- Available with over 20 integral hygienic connections, more available through CLEANadapt adapters

Features

- Intuitive user interface makes set-up and configuration easy
- Field repairable and reconfigurable through modular design
- State of the art temperature compensation allows temperature resistant pressure and level measurement
- On board interface allows reconfiguration including 10:1 turndown in any units
- Integrated tank tables allows volume and mass output when tank and product information are input
- Patented dual o-ring seals provide IP69K ingress protection
- Standard Hart 7.0 communication and graphical LCD display

Options/Accessories

- Optional digital remote kit making display easier to view
- Optional M12 molded cordset available
- Wide range of ranges and fittings available

Measuring principle of the pressure sensor

This unit utilizes an internal piezoelectric transducer and an RTD temperature element to measure the pressure and temperature of the internal actuating fluid. The mV signal of the transducer and resistance of the RTD are measured and converted to a compensated pressure value by way of the signal acquisition board in the stem. This signal is digitally communicated to the head where the signal is converted to industry standard 4...20mA and Hart 7.0 signals.

For relative sensors the back of the diaphragm is vented and the output is relative to the atmospheric conditions.

Authorizations**Pressure and level sensor L3****Pressure and level sensor L3**

Specification		
Measuring range URL [bar] Measuring range URL [psi]	Relative Relative	0...0.4 / -1...2 / -1...7 / -1...35 0...6 / -14.7...30 / -14.7...100 / -14.7...500
Turndown	max. 10:1	of upper range limit (see also measurement accuracy)
Overpressure strength	Factor	1.5 x nominal pressure of measuring element
Measurement accuracy	Turndown to 5:1 Turndown over 5:1 Repeatability Long-term stability	≤ 0.10 % in calibrated measuring range ≤ 0.15 % in calibrated measuring range 0.05 % 0.2 % URL every 2 years
Temperature effect	Process Ambient	< 0.016 % of calibrated measuring range / 5.5 °C (10 °F) < 0.016 % of calibrated measuring range / 5.5 °C (10 °F)
Temperature range	Process Ambient	-18...110 °C (0...230 °F) at ambient temperature below 71 °C (160 °F) 0...71 °C (32...160 °F)
Response time		< 0.1 seconds
Sample rate		< 0.05 seconds
Materials	Connection head Metal cover Plastic cover Threaded connector Wetted parts Diaphragm Diaphragm seal/oil filling	Stainless steel, AISI 304 (1.4301), $R_a \leq 0.8 \mu\text{m}$ (32 microinch) Stainless steel, AISI 304 (1.4301), $R_a \leq 0.8 \mu\text{m}$ (32 microinch) Polycarbonate Stainless steel, AISI 304 (1.4301), $R_a \leq 0.8 \mu\text{m}$ (32 microinch) Stainless steel, AISI 316L, $R_a \leq 0.64 \mu\text{m}$ (25 microinch) Stainless steel, AISI 316L, $R_a \leq 0.64 \mu\text{m}$ (25 microinch) Medical white oil / mineral oil / paraffin oil FDA approval number 21CFR172.878, 21CFR178.3620, 21CFR573.680 Neobee M20 (optional)
Process connection	3-A compliant not 3-A compliant	1-1/2" Tri-Clamp® 2" Tri-Clamp® 2½" Tri-Clamp® 3" Tri-Clamp® AIC CPM Flush Mount Anderson Flush Mount Short (71060-A4, A6, A8) Anderson Flush Mount Long (71060-A3, A5, A7, A9) Rosemount/Foxboro Sanitary Spud - Short and Long Endress & Hauser Universal Adaptor - Short and Long M38x1.5 G1" 1-1/2" NPT 2 G1" Fixed Thread 38mm SMS Liner (female) 51mm SMS Liner (female) 40mm DIN 11851 (Milk Coupling) 50mm DIN 11851 (Milk Coupling) DRD
Electric connection	Cable gland Plug-in connection	M16x1.5 M12 plug, 5-pin, 1.4305
Protection class		IP 67 (with cable fitting) / NEMA 4X IP 69 K (with plug-in connection)
Auxiliary voltage		18...36 V DC
Output	Current loop	analog 4...20mA and Hart 7.0
Tightening torque	For assembly all L3 components	27 Nm (20 ft-lbs)
Weight		approx. 780 g

Cleaning/Maintenance

- In case of using pressure washers, do not point nozzle directly to electrical connections!

Reshipment

- Sensors shall be clean and must not be contaminated with dangerous media! Note the advice for cleaning!
- Use suitable transport packaging only to avoid damage of the equipment!

Advice to conformity

- Applicable guidelines:
Electromagnetic compatibility 2004/108/EC
- The accordance with applicable EC-guidelines is confirmed with CE-labeling of the device.
- You have to guarantee the compliance of all guidelines applicable for the entire equipment.

Transport/Storage

- No outdoor storage
- Dry and dust free
- Not exposed to corrosive media
- Protected against solar radiation
- Avoiding mechanical shock and vibration
- Storage temperature -55...+90 °C
- Relative humidity max. 95 %

Standards and guidelines

- You have to comply with applicable regulations and directives.

Disposal

- This instrument is not subject to the WEEE directive 2002/96/EC and the respective national laws.
- Pass the instrument directly on to a specialised recycling company and do not use the municipal collecting points.



Order code of fully assembled sensor

L3A (Sensor assembled)

S (Stem)

URL

- 5 (0...6 PSI; 0...0.4 Bar G)
- 6 (30/0/30 PSI; -1...2 Bar C)
- 7 (30/0/100 PSI; -1...7 Bar C)
- 8 (30/0/500 PSI; -1...35 Bar C)

3-A compliant fittings

- 004 (1-1/2" Tri-Clamp®)
- 005 (2" Tri-Clamp®)
- 006 (2½" Tri-Clamp®)
- 007 (3" Tri-Clamp®)
- 123 (AIC CPM Flush Mount)
- 088 (Anderson Flush Mount Short (71060-A4, A6, A8))
- 089 (Anderson Flush Mount Long (71060-A3, A5, A7, A9))
- 141 (Rosemount/Foxboro Sanitary Spud - Short)
- 142 (Rosemount/Foxboro Sanitary Spud - Long)
- 154 (Endress & Hauser Universal Adaptor - Short)
- 155 (Endress & Hauser Universal Adaptor - Long)

Fittings not 3-A compliant

- 160 (G1" Cleanadapt)
- 059 (1-1/2" NPT 2)
- 182 (G1" Fixed Thread)
- 109 (38mm SMS Liner (female))
- 110 (51mm SMS Liner (female))
- 115 (40mm DIN 11851 (Milk Coupling))
- 124 (50mm DIN 11851 (Milk Coupling))
- 180 (M38x1.5)
- 189 (DRD)

Capillary fill

- 1 (Mineral oil)
- 5 (Neobee)

Remote cable

- O (Integral)
- A (5' Cable)
- B (10' Cable)
- C (15' Cable)
- D (20' Cable)
- E (25' Cable)

E (Enclosure)

Cap

- 2 (Clear)
- 3 (Stainless steel)

Enclosure orientation

- 1 (Vertical)
- 2 (Horizontal)

Electrical connection

- A (M12)
- C (Cable gland)
- N (NPT)

Engineering units

- P (PSI)
- B (Bar)
- W (inches of water)
- L (millibar)

Calibration range

see table "Calibrated range" on page 5

L3A S 5 004 1 0 E 2 1 A P 025

Calibrated Range					
range code	range	compatible stems units			
		P	B	W	L
025	full vac-0	6	X	X	X
028	full vac-0-15	6, 7	X	X	X
029	full vac-0-30	6, 7	X	X	X
031	full vac-0-60	7, 8	X	X	X
032	full vac-0-100	7, 8	X	X	X
314	full vac-0-200	8	X	X	X
066	0-30	6, 7	8	5	X
068	0-50	7, 8	X	5	5
069	0-60	7, 8	X	5	5
071	0-100	7, 8	X	5, 6	5
073	0-150	8	X	5, 6	5
074	0-160	8	X	6	5
075	0-200	8	X	6	5, 6
077	0-300	8	X	6, 7	5, 6
081	0-500	8	X	6, 7	6
084	0-1000	X	X	7	6, 7
251	-1-0-1	5	6, 7	X	X
286	-1-0-2.5	5	7	X	X
217	-1-0-3	5	7	X	X
056	-1-0-4	5	7, 8	X	X
304	-1-0-7	6	7, 8	X	X
057	0-2	5	6, 7	X	X
235	0-3	5	7	X	X
192	0-4	5	7, 8	X	X
060	0-6	5, 6	7, 8	X	X
309	0-7	6	7, 8	X	X

Calibrated Range					
range code	range	compatible stems units			
		P	B	W	L
061	0-10	6, 7	8	X	X
065	0-20	6, 7	8	5	X
224	0-35	7	8	5	5
206	0-70	7, 8	X	5	5
294	0-140	8	X	5, 6	5
503	0-415	8	X	6, 7	6
505	0-830	X	X	6, 7	6, 7
506	0-1385	X	X	7, 8	6, 7
078	0-350	8	X	6, 7	5
086	0-2000	X	X	7, 8	6, 7
508	0-3300	X	X	8	7
089	0-4000	X	X	8	7, 8
428	0-1.5	5	6, 7	X	X
067	0-40	7	X	5	5
079	0-400	8	X	6, 7	5, 6
501	0-1.2	5	6, 7	X	X
499	0-1200	X	X	7	6, 7
502	0-18	6, 7	8	5	X
504	0-480	8	X	6, 7	6
507	0-1600	X	X	7, 8	6, 7
000	stem range	5, 6, 7, 8	5, 6, 7, 8	5, 6, 7, 8	5, 6, 7, 8
999	custom range (must specify)	5, 6, 7, 8	5, 6, 7, 8	5, 6, 7, 8	5, 6, 7, 8



Order code of sensor head

L3E (Sensor head)

Cap

2 (Clear)

3 (Stainless steel)

Enclosure orientation

1 (Vertical)

2 (Horizontal)

Electrical connection

A (M12)

C (Cable gland)

N (NPT)

Engineering units

P (PSI)

B (Bar)

W (inches of water)

L (millibar)

Calibration range

see table "Calibrated range" on page 5

L3E 2 1 A P 025



CSI 417.831.1411
csidesigns.com

Order code of sensor stem

L3S (Sensor stem)

URL

- 5 (0...6 PSI; 0...0.4 Bar G)
- 6 (30/0/30 PSI; -1...2 Bar C)
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Capillary fill

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Remote cable

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- B (10' Cable)
- C (15' Cable)
- D (20' Cable)
- E (25' Cable)

L3S 5 004 1 0

Accessories

Cord Sets

Shielded Molded w/25' cable	42117H0025
Shielded Molded w/50' cable	42117H0050
Shielded Molded w/100' cable	42117H0100

Clear Cap w/gaskets	5632800001
Stainless Steel Cap w/gaskets	5632900001
M12 Quick Disconnect Receptacle	SP56726A0004
Cord Grip	SP5633100000
1/2" NPTF adaptor	SP5633200000
Seal Kit (6) gaskets	5633000001
Field Wireable Connector-Straight	42119B0000
Field Wireable Connector-90°	42119A0000
5' Remote Kit	SP73228A0005
10' Remote Kit	SP73228A0010
25' Remote Kit	SP73228A0025