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Series 400 - Liquid Level Transmitter

4...20 mA

Sea Water, Oil and Chemical Resistant

Marine Type Approvals (LRS, others pending)

Global Engineering Support (44 locations)

Active compensation for temperature drifts

ATEX II 1G, II 2G and II 1D



Description

The Series 400 is a pressure transmitter suitable for hydrostatic depth measurement in a 4...20 mA current loop. This transmitter offers a very high accuracy over a wide temperature range, an excellent repeatability and very long term stability.

The piezo-resistive silicon sensor is anodic bonded on a very stable glass base, which is attached to a stainless steel construction. This assembly guarantees an excellent thermal isolation.

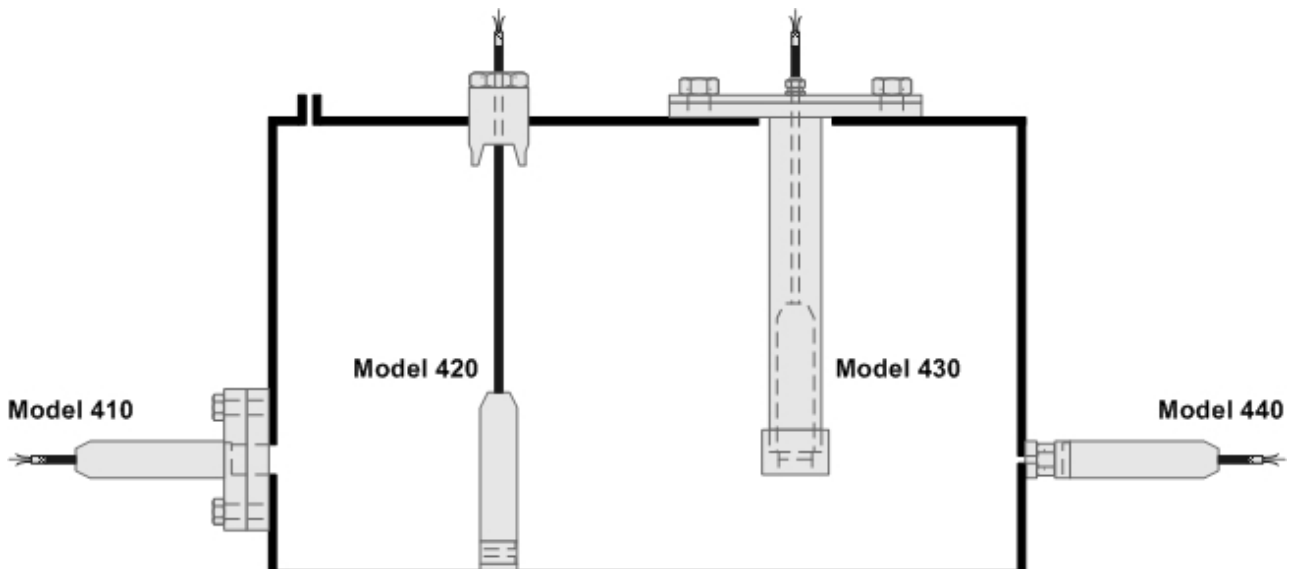
The sensor is isolated from the process by a stainless steel or Hastelloy C (for sea water & chemicals) diaphragm and a filling liquid. The electronics is located within the hermetically sealed transmitter housing which gives the Series 400 an excellent resistance to shock and vibration. Protection class IP 68.

The electronics is a state-of-the-art signal processing unit fitted with a fast micro-controller allowing the compensation of drift effects due to temperature on the sensor signal, over a wide temperature range with a fast response time. The device is protected against lightning.

The mounting adaptability of the Series 400 makes it ideally suited for use in all tanks onboard ship, and for a wide range of industrial applications from Water to stringent Chemical processes.

The Series 400 is available with various membrane protections.

Installation – Mounting Options



Technical Data

Measurement characteristics

Pressure range	0...1 to 0...100 mH ₂ O
Overpressure	At least 3 times nominal value
Accuracy	0.2% FS
Hysteresis & Repeatability	± 0.05% FS
Long term stability	± 0.20% FS/year
Response time (10...90%)	25 ms

Temperature influence (in compensated range)

Zero	TC ± 0.15% FS/10K
Span	TC ± 0.10% FS/10K

Temperature characteristics

External Mount	Operating Temp	-30°C...125°C
	Storage Temp	-30°C...125°C
Internal Mount	Operating Temp	-10°C...80°C
	Storage Temp	-10°C...80°C

Materials specification

Fitting Body	Stainless Steel W.1.4435, Hastelloy C
Diaphragm	Stainless Steel W.1.4404, Hastelloy C
Housing	Stainless Steel W.1.4301
Cable	PTFE

Electrical specification

Supply voltage	10...30 V DC (4...20 mA) 10...28 V DC (4...20 mA EEX)
Insulation Resistance	>1 GOhm, 500 V DC
Load	RL < 50 x U _B - 450
Protected against reverse signal polarity	

Oil filling

Silicon Oil	Temperature range from -30°C to +125°C
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Switch ON time

5 sec.

EMC

Influence of EMC	Less than 0.15% FS
Conformity	EN 50081-1, EN 50082-2, EN 61326, EN 50121-4

ATEX Data

Intrinsically safe conforming to EN 50020 and EN 50281-1-1

Applications: II 1G II 1D Device located in zone 0/zone 20
II 2G II 1D Device located in zone 1/zone 20

Intrinsically safety EEx ia IIC. The device can only be connected to an approved intrinsically safe current loop with the following boundary values:

U₀ = 28V, I_k = 100mA, P = 1.5W

The device internal capacity and inductivity values are:

C_i = 1nF, L_i = 0.1mH

Environmental specification

Vibrations	According to EN 60068-2-6
Shocks	According to EN 60068-2-6

Protection class

IP 68

Physical characteristics

Weight	140g, without adaptor
Dimensions	See schematics

Ordering Details

Please specify the following information when requesting a quotation or placing an order:

Tank Name	Tank Text	Example - MarineTank	Example - Ind. Tank
Model	410, 420, 430, 440	410	420
Cable Length	m	3m	5m
Tank Height	m	5m	-
Sensor Height	mm	150mm	-
Range	mmH ₂ O	-	3250 mmH ₂ O
Liquid	Water, Fuel Oil, etc.	Fuel Oil	Fresh Water
Specific Gravity	Fresh Water = 1.00	0.85	1.00
Temperature	°C	20°C	20°C
Optional Extras	Indicator, Skotten Gland	Digital Indicator	Digital Indicator
Type Approval	LR, GL, BV, DNV, etc.	LR	-