

CNS Series

Submersible Level Transmitters

Description

The CNS Series of submersible transmitters employ the latest micro processor electronics technology together with our proven inductive pressure sensing technique to provide a rugged transmitter for use in both level and hostile pressure measurement applications. All transmitters have stainless steel or Hastelloy wetted parts and are IP68 sealed for immersion up to 200 metres WG.

All CNS transmitter types can have an optional linearised output function which for example can be used to compute the true volume for an odd shaped tank from the level signal.

On site zero and span adjustment may be undertaken by means of the configuration connection input, which also allows the optional non-linear output function to be enabled.

The following transmitter types are available:

1F type:

Submersible level transmitter with a protective cap fitted to the measurement element for use on clean liquids.

2F type:

Submersible level transmitter with a fully exposed measurement diaphragm for low range measurements and difficult applications such as raw sewage, sludges or liquids with large amounts of solids in suspension.

3F type:

Seawater compatible submersible level transmitter similar to the 1F type but manufactured from a combination of Duplex stainless steel and Hastelloy C276.

1G Type:

Gauge pressure transmitter with 1/4" BSP female process connection for use on gasses and low viscosity liquids.

3G Type:

Gauge pressure transmitter with flush diaphragm 1" BSP male process connection for use on gasses, low or high viscosity liquids, slurries and product that is liable to crystallise.

Factory Enabled Options

Customer specified or standard output stage linearisation functions can be programmed into the transmitter during manufacture together with non standard digitally set filter response times and filter jump out settings. These customised options can only be activated on transmitters built to customer order and cannot be modified after manufacture. Our fast delivery stock transmitters cannot be customised.

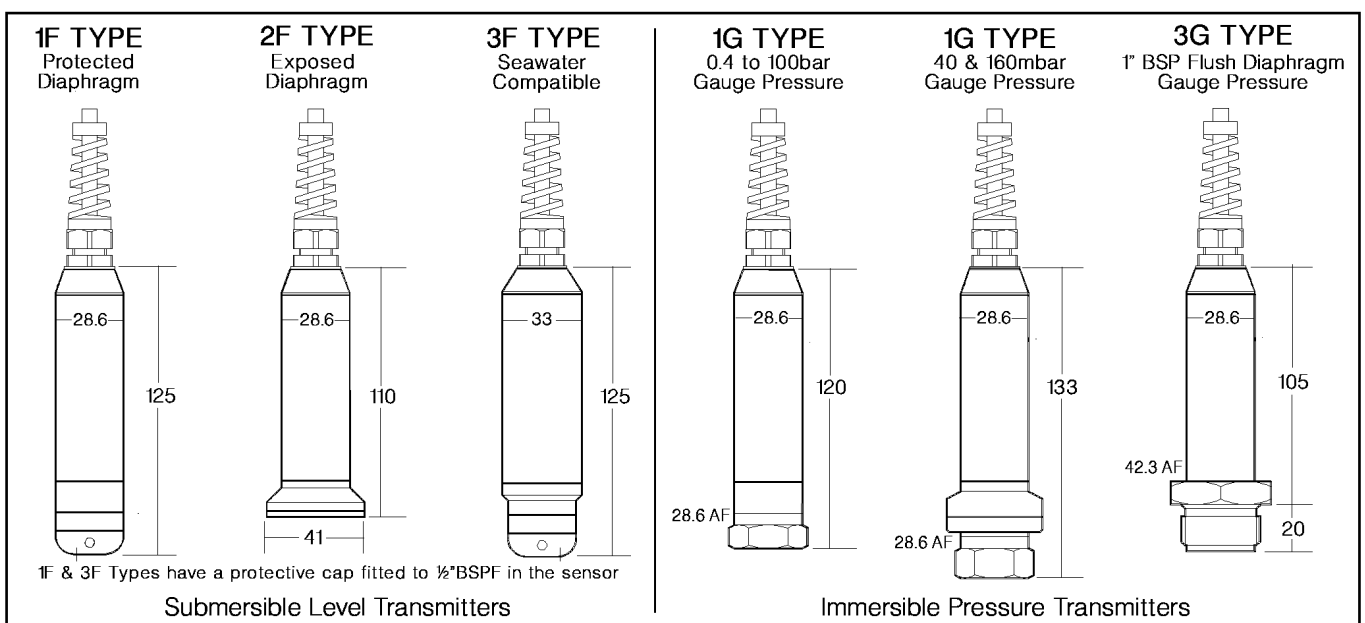


Features

- ◆ Low measurement ranges
- ◆ Over-range protection
- ◆ Simple on site calibration

Applications

- ◆ Bore hole level measurement
- ◆ Reservoir level measurement
- ◆ Dirty and viscous liquids



Outline drawings and dimensions. All dimensions in mm unless otherwise noted.

Smart Submersible Transmitters

Specifications

Over-Pressure Limits

The over-pressure limit is defined as the maximum over or suction pressure that will cause no permanent transducer damage, the typical zero shift following an over-pressure condition is less than $\pm 5\%$ of transducer FSD range.

NOTE: All transmitters are despatched from the works having been over-pressured. To recover from an accidental over pressure in suction (vacuum), apply a positive over-pressure to the transducer.

The following limits apply:

Over-pressure: Up to 2.4bar FSD range, 10x FSD
6bar FSD range and above, 4x FSD
Suction: Up to 1bar FSD range, 50% FSD
All other ranges, full vacuum

Operating Temperature Limits

Process Temperature Limits: -10°C to $+75^{\circ}\text{C}$ continuous

Transmitter Performance

Non-Linearity including Hysteresis ± 0.25
Zero Stability over 6 months ± 0.25

Note: The figures quoted are typical values as %age of maximum span at a constant temperature (20°C nominal).

Thermal Performance

Zero: ± 0.03
Span: ± 0.03

Specified over the compensated temperature range of 0°C to $+50^{\circ}\text{C}$. Typical figures as %age of maximum span per $^{\circ}\text{C}$.

Analogue Signal Output

See Product Order Code, Output over-current limit set at a nominal 28mA.

Power Supply

Two-wire Type: Min operating voltage: 8Vdc.
Max operating voltage: 30Vdc.

Zero and Span Adjustment

Zero: -100% FSD suppression to $+100\%$ FSD elevation.
Span: 10:1 max to min span range. The transmitter may be calibrated to give zero to full scale output for inputs to the transducer from -100% to $+100\%$ of full scale range (max) to any 20% segment of the full scale range (min).

Damping

Fixed approx. 0.4 sec analogue RC time constant. 1 Second digitally set RC response time set as standard with 10% Filter Jump out. Other digital filter time constants and jump out to order.

Cable Details

PUR outer sheath Submersible Cable with 4 off stranded polyethylene insulated conductors laid up with a Kevlar strainer and 1.5mm nominal bore vent tube. Overall foil screen with drain wire. Operating temperature limits, -40°C to $+85^{\circ}\text{C}$

Connection details:

Two-wire Type: Red, Loop positive.
Blue, Loop negative.
Yellow, Configuration Input.
White, No connection

Ordering Information:

Code	Description
	Transmitter Type
CNS	Smart Pressure Transmitter 0.25% FSD
	Electronics Type
D0	Two-wire (4-20mA output)
	Transducer Type
1F	Submersible level, protected diaphragm
2F	Submersible level, exposed diaphragm
3F	Submersible level, seawater compatible
1G	Gauge pressure $\frac{1}{4}$ " BSP female
3G	Gauge pressure 1" BSP male Flush diaphragm
	FSD Range
840	400mmWG [2F] 40mbar [1G]
851	1.6mWG [1F 2F] 160mbar [1G 3G]
860	4mWG [1F 2F 3F] 400mbar [1G 3G]
870	10mWG [1F 3F] 1000mbar [1G 3G]
872	24mWG [1F 3F] 2.4bar [1G 3G]
881	60mWG [1F 3F] 6bar [1G 3G]
891	160mWG [1F 3F] 16bar [1G 3G]
900	40bar [1G 3G]
910	100bar [1G]
920	400bar [1G]
	Transmitter Cable
/U(nn)	Submersible vented cable (Length in metres)
	Process Adaptors (1G types only)
/N2N	$\frac{1}{4}$ " NPT male
/N4N	$\frac{1}{2}$ " NPT male
/N2	$\frac{1}{4}$ " BSP male taper
/N4	$\frac{1}{2}$ " BSP male taper
/P2	$\frac{1}{4}$ " BSP male parallel with 60° cone
/P4	$\frac{1}{2}$ " BSP male parallel with 60° cone
	Factory Configuration Options
/NL2	3/2 law output (Open channel flow)
/NL3	5/2 law output (Open channel flow)
/NL4	Customer Specified Non-Linear output
/Rxx	xx Filter response time in Secs
/Jnn	nn Filter Jump out in %FSD