

## ELECTRONIC LEVEL TRANSMITTER

MARINE - WATER  
AND  
PROCESS  
INDUSTRIES  
LIQUID LEVEL AND  
CONTENTS  
APPLICATIONS  
HYDROSTATIC  
OPERATION



### INTRINSICALLY SAFE

### SUBMERSIBLE - SCREWED FLANGED - HYGIENIC MODELS

### MARINE APPROVED

The 200A Series transmitters measures liquid level directly by the hydrostatic head pressure principle. Not subject to the inherent limitations and errors of buoyancy, capacitance change, or reflecting type sensors when applied to foaming, vaporising, or turbulent liquids. Hydrostatic head sensors are also ideally suited to marine and vehicular duties where the tank is subject to pitching and rolling.

The 200A transmitter is based on the well proven Linear Variable Differential Transformer (L.V.D.T.) produced in volume over several years by Measurement Resources. Improved assembly techniques use advanced electron beam fusion welding and temperature aging to ensure long term stability. The transmitter also features:

- ◆ Use of a flush Hastelloy diaphragm
- ◆ Cable outer sheath in Teflon \*
- ◆ Improved temperature coefficient, over a wider range
- ◆ Meeting International requirements for RFI/EMI and surge immunity
- ◆ Reduced sensor mass
- ◆ Optional integral digital indicator
- ◆ Wider choice of process connections

Providing easier installation, improved performance, greater compatibility with corrosive, viscous and sanitary processes over a wider process and ambient temperature, greater surge and lightning immunity.

The 200A Series uses split architecture with a sensor in contact with the liquid, an interconnecting cable to the transmitter which encloses all active electronics. This arrangement improves stability and accuracy by removing the electronics from the process liquid and process temperature. Presenting span, zero and sensor adjustment in an accessible convenient form assisting commissioning and any through life calibration or adjustments.

The sensor can be screwed or flanged to the process tank or vessel, or alternatively submerged within the liquid.

The transmitter produces an industry standard two wire 4-20mA 24V dc output suitable for use with propriety systems or conventional monitors.

\* Teflon® is a registered trademark of Dupont.

# SPECIFICATION

**Accuracy** -  $\pm 0.25\%$  of full range output; includes effects of linearity hysteresis and repeatability. (Optional  $0.1\%$  some models)

**Overload** - 500% of nominal range

**Operating Temperature** - Sensor -  $-10$  to  $95^{\circ}\text{C}$ ; (Optional  $+150^{\circ}\text{C}$ ); Transmitter  $-10$  to  $+55^{\circ}\text{C}$ . (Optional  $60^{\circ}\text{C}$ )

**Temperature Coefficient** -  $\pm 0.05\%/^{\circ}\text{C}$  range and zero. (Optional  $\pm 0.02\%/^{\circ}\text{C}$ )

**Weatherproof Protection** - Transmitter - IP65  
Sensor - Submersible

**Span Adjustment** - 0-30% to 0-100% of nominal range

**Zero Adjustment** -  $\pm 10\%$  of span

**Power Supply** - 12 to 30 Volts DC loop powered

**Output** - 2 wire 4-20mA DC

**Maximum Load**

Supply voltage - 10 = OHMS  
0.02

**Construction**

**Sensor** - Stainless steel 316L body, Hastelloy C376 diaphragm. (Nylon protection. end cap on IS sensor installation), (Optional Monel 400 diaphragm or all inconel construction). Support pole and flanges stainless steel

**Cable** - Teflon sheathed screened integral vent

**Transmitter** - GRP internal screen and breather

**Optional Indicator** - Digital integral with transmitter. Linear display hydrostatic head or mA output

**Weight** - Depends on flange/connection. Typical IS sensor, 3M cable, transmitter - 2kg.

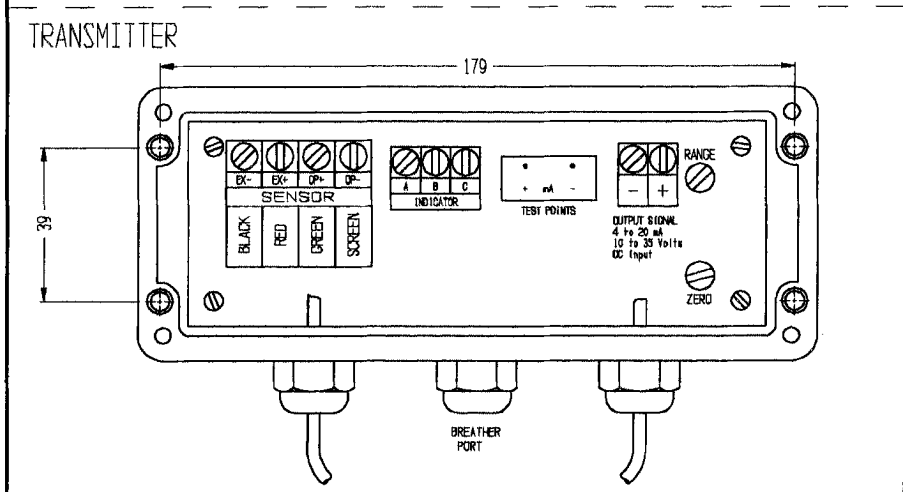
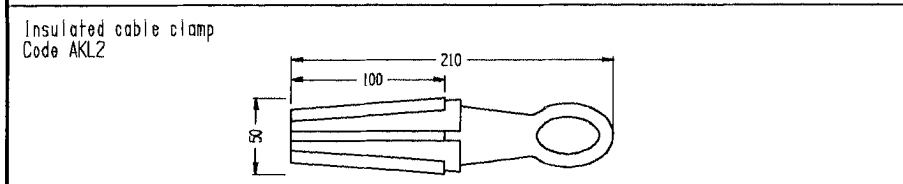
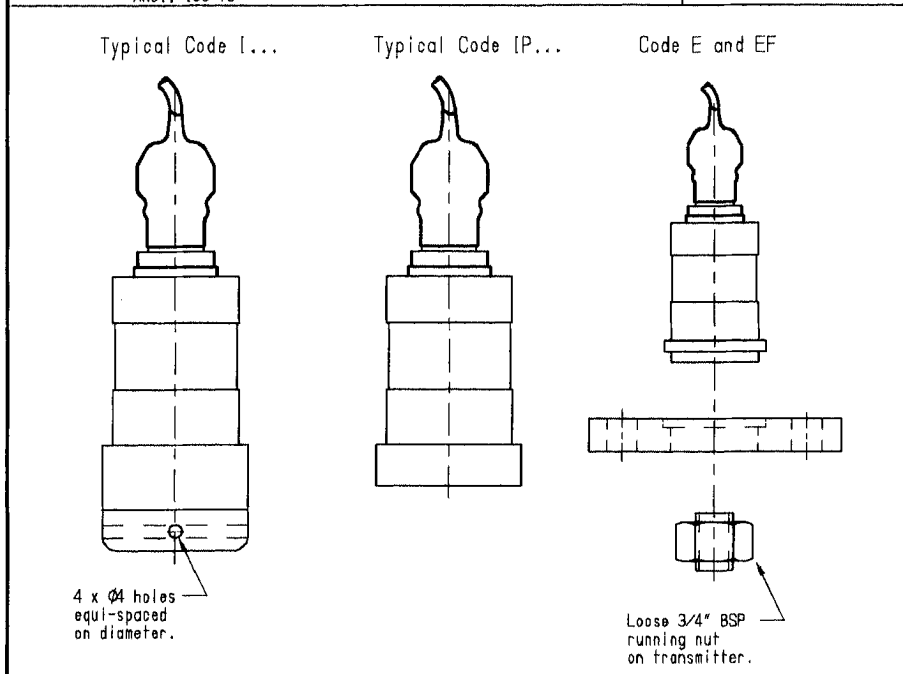
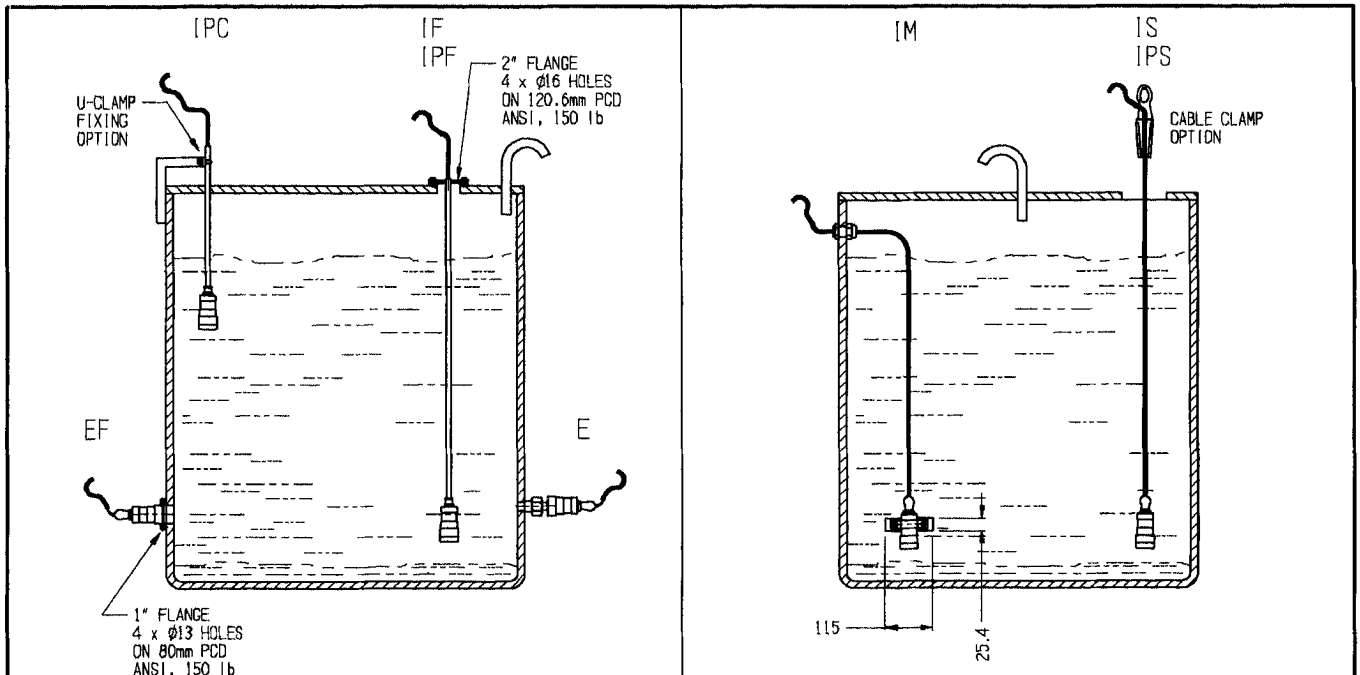
200A	CODE	SENSOR INSTALLATION ARRANGEMENT					
	IS	Submersible sensor suspended by cable (Optional cable clamp)					
	IM	Internally mounted via tank fixing clamp (included in price)					
	IF	Internally mounted via stainless steel pipe with 2" 150lb ANSI stainless steel flange connection through tank top (up to 2m pipe in price)					
	EF	Externally flanged to tank 1" 150lb ANSI stainless steel flange connection					
	E	Externally screwed 3/4" BSP stainless steel running nut connection					
	IPF	Internally mounted submersible sensor secured via stainless steel pipe (sensor diaphragm totally open to process fluid), used on sanitary duties 2" 150lb ANSI stainless steel flange.					
	IPC	Similar to IPF, but pipe U bolt mounting					
	IPS	Similar to IPF, but sensor suspended on cable					
	EH	External hygienic 2" BSM/RJT connection					
	EHT	External hygienic 2" Triclover connection					
	EHA	External hygienic 2" 3A standard connection					
		CODE	SENSOR MATERIALS IN CONTACT WITH PROCESS				
		SC	Stainless steel type 316L body Hastelloy diaphragm		Stainless steel support pipe and flanges		
		SM	Stainless steel type 316L body Monel diaphragm		nylon cap on IS sensor		
		CODE	ACCURACY, LINEARITY, HYSTERESIS AND REPEATABILITY				
		S	0.25% of nominal range				
		H	0.1% of nominal range				
		CODE	NORMAL RANGE				
		1	0-1 metres hydrostatic head at SG 1.0				
		2	0-2 metres hydrostatic head at SG 1.0				
		4	0-4 metres hydrostatic head at SG 1.0				
		8	0-8 metres hydrostatic head at SG 1.0				
		16	0-16 meters hydrostatic head at SG 1.0				
		32	0-32 metres hydrostatic head at SG 1.0				
		50	0-50 metres hydrostatic head at SG 1.0				
		CODE	SPAN				
		XX	Specify actual span in mm				
		CODE	CABLE INTERCONNECTING SENSOR TO TRANSMITTER				
		X	Cable length in metres (3m included in base price)				
200A	IS	SC	S	2	1700	7	TYPICAL ORDER CODE

**ADVISE DETAILS OF TANK SHAPE AND SIZE WHEN USED WITH MONITOR FOR CONTENTS GAUGE APPLICATIONS.**

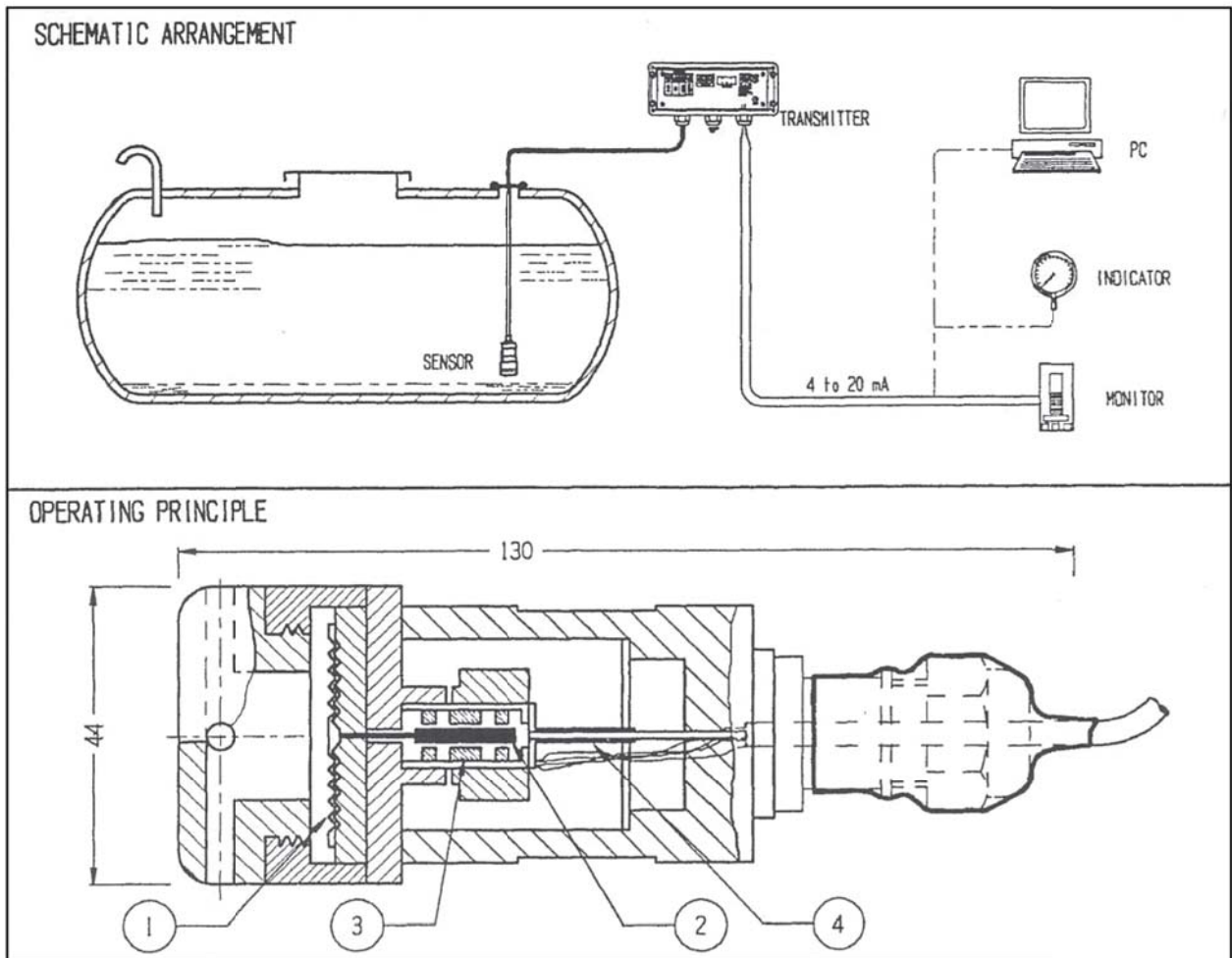
## Optional Extras

- Integral digital indicator
- All inconel construction
- Reference port for sealed tanks
- Special ranges
- Remote analogue and digital indicators
- Intrinsically safe barriers
- Mains to 28 volt D.C. power supply
- Cable clamp ALK2 for suspended version
- Spring loaded dry break (non-return valve) and spigot
- Extended temperature range.

# SENSOR INSTALLATION



- TYPICAL MODEL APPLICATION**
- IS** Water, diesel tanks, wells and reservoirs.
  - IM** Low viscosity liquids; marine and vehicular restricted headroom tank access.
  - IF** Water, diesel, inground tanks.
  - EF** Chemical and viscous products; storage and process tanks.
  - E** Water, fuel low viscosity liquids; storage and process tanks.
  - IPF** Sanitary and viscous products; storages and process tanks.
  - IPC** Sanitary and viscous products; clamp U bolt fixing pit, well and open channel flow.
  - IPS** Paint, ink, sewage wells.
  - EH** } Food, beverage; storage and process tanks.
  - EHT** }
  - EHA** }



The rated diaphragm 1 converts hydrostatic head pressure to linear movement. Deflecting the core 2 within the matched windings of a hollow cylindrical Linear Variable Differential Transformer (L.V.D.T.) 3. A breather tube 4 references the inside of the diaphragm to atmosphere for depth or vented tank duties, on sealed tanks the breather is connected to tank top. The L.V.D.T generates high level linear output enabling active electronics to be remote from the sensor with improved stability, reliability and accessibility.

## ALTERNATIVE LEVEL TRANSMITTERS AND INDICATORS

Self Powered Contents Gauge, stainless steel sensor and indicator with flame retardant capillary.



Magnetic Level Indicators with local and international approvals covering intrinsically safe marine applications.



**Measurement Resources Pty Ltd**  
A.B.N. 62 003 247 738

13 Sirius Road, Lane Cove NSW 2066 Australia  
Tel: +61 (0)2 9428 7377  
Fax: +61 (0)2 9428 7379  
Email: sydney@hmagroup.com.au  
Website: www.measurement-resources.com.au



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