



LOW COST TWO WIRE LOOP POWERED
PERMANENT OR PORTABLE SUBMERSIBLE
LEVEL MEASURING

PCS

ADJUSTABLE RANGE HYDROSTATIC PRESSURE
SYSTEM WITH CAPILLARY COMPENSATION

Liquid Level

FUNCTION

Continuous level measurement of liquids in various ranges to a maximum equivalent of 350 metres of hydrostatic water pressure.

TYPICAL USES

- Submersible sewage pump and lift station control
- Water filtration plants and waste water treatment
- Water table monitoring
- Municipal water systems
- Floor washdown sumps
- Screen differential measurement
- Canal lock differential measurement
- Reservoir, canal and river level monitoring
- Tank liquid level monitoring

PRIMARY AREA OF APPLICATION

Any environment where reliable 4-20 mA continuous level measurement in slurries, pump stations, sumps, liquid storage vessels, deep wells, or bore holes must be performed.



General Description

The **Hawk PC series** pressure system is a loop powered (4-20mA) system designed primarily for use in the water treatment and irrigation industries. The transducer is designed to be directly submerged in liquids that are compatible with 316 stainless steel. The span can be easily adjusted via the potentiometers on the PCB. The transducer can be suspended in the vessel or fitted to the vessel using either a flange or thread mounting. The transducer housing used to enclose the pressure cell is only 22.2mm (0.87in) diameter housing allowing it to be inserted in places many transducers cannot, and is specially designed to allow serviceability and protect against leaks, including ingress of moisture through the cable. The transducer is temperature compensated and therefore provides a high level of accuracy. The system incorporates three levels of surge suppression to protect against electrical spikes induced by lightning strikes. High quality shielded cable is used to provide additional protection against induced electrical noise.

Principal of Operation

The **Hawk PC series** pressure system utilises a strain gauge pressure cell with a stainless steel diaphragm. The cell provides a voltage proportional to the pressure applied to the diaphragm, which is converted to a 4 to 20mA loop current dependant on measured pressure. The pressure cell is temperature compensated to give greater accuracy over the operating temperature range of the sensor. A capillary tube is used to provide compensation for changes in pressure due to atmospheric variations.

Features

- Loop Powered
- Improved stability
- Operates down to 9vdc
- Stainless Steel diaphragm
- Small diameter transducer
- Flexible mounting options
- User adjustable span
- Easy to set up
- Simple calibration
- Built in temperature compensation
- 316 stainless steel transducer housing
- Simple installation
- Pre calibrated, pressure tested and temperature cycled
- Triple redundancy surge protected

PRESSURE CONVERSION CHART

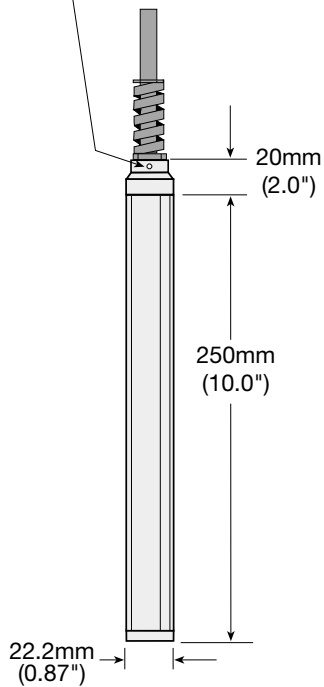
KPA	PSIG Range	Metres	Feet	Bar
34.47	5	3.5	11.6	0.345
103.43	*15	10.6	34.6	1.034
206.85	*30	21.1	69.3	2.067
344.75	50	35.2	115.5	3.445
689.50	*100	70.4	230.9	6.89
1379.0	200	140.8	461.8	13.78
2068.0	300	211.3	693.0	20.67
3447.0	500	352.0	1155.0	34.5

* Standard available range.

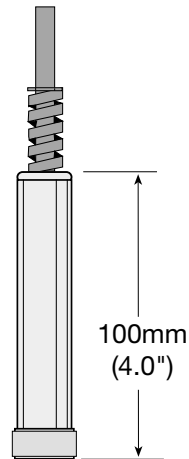
DIMENSIONS

PCX - Transducer

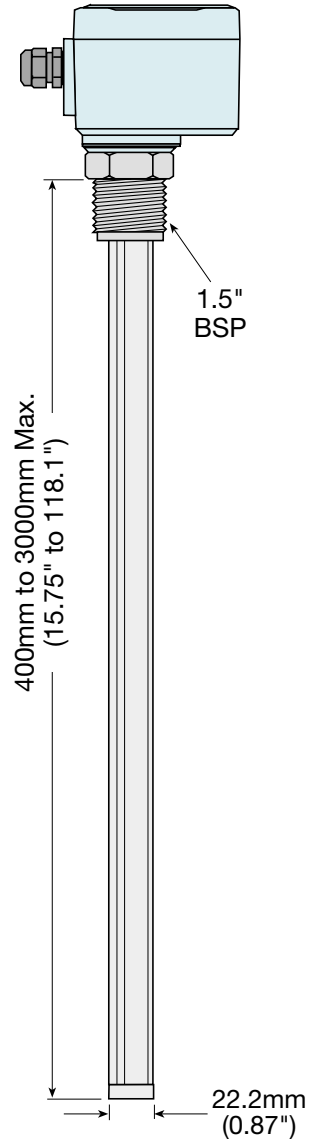
Cable Suspension Version
(with 3x lugs for stainless steel support cable)



Thread Mounted Version

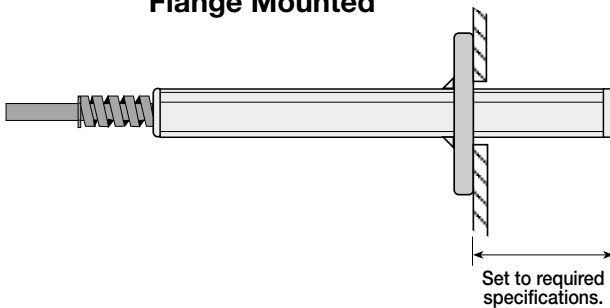


Stainless Steel (Extension Pipe Version)

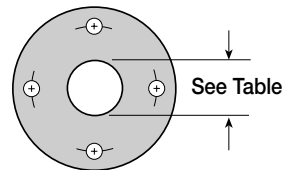


Standard Thread Sizes*
1", 1.5", 2" BSP or NPT

Flange Mounted



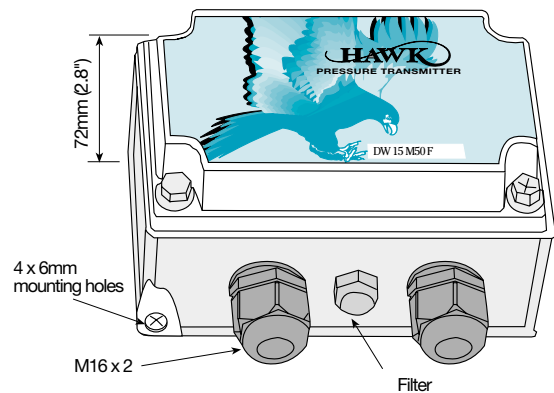
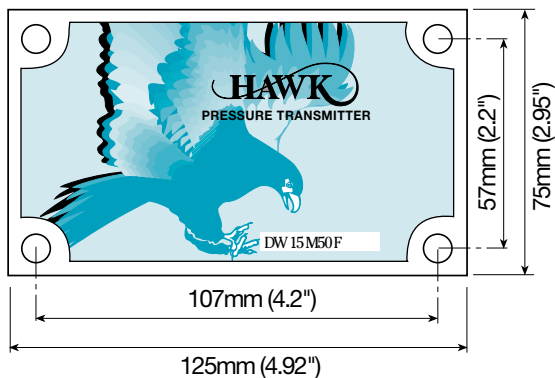
Standard Flange Sizes *



ANSI	1"	2"	3"	4"
JIS	25mm	50mm	80mm	100mm
DIN	25mm	50mm	80mm	100mm

* Other sizes available

PCT - Transmitter

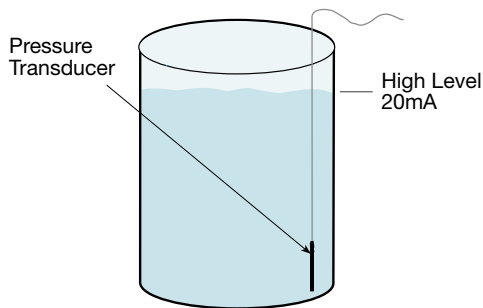


CALIBRATION

Calabration Adjustments

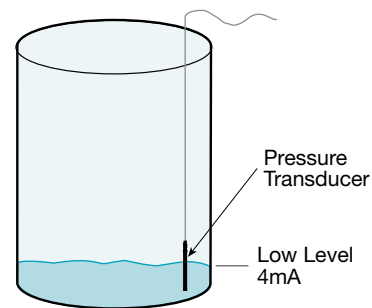
High Span (20mA) Adjustment

- 1) Apply the required pressure for the High span to the transducer.
- 2) Connect a current meter as shown in the diagrams below.
- 3) Rotate the 20mA coarse adjustment until the current is just below 20mA.
- 4) Adjust the 20mA fine adjustment potentiometer until the meter reads 20mA.



Low Span (4mA) Adjustment

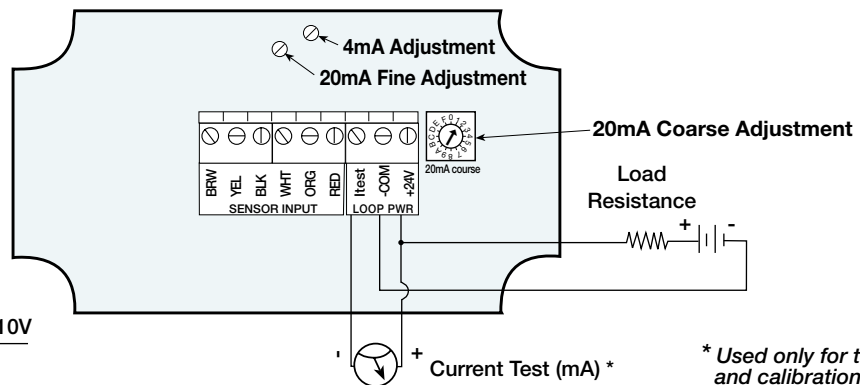
- 1) Apply the required pressure for the Low span to the transducer.
- 2) Connect a current meter as shown in the diagrams below.
- 3) Rotate the 4mA coarse adjustment until the current is just below 4mA.



Standard 24V Connection

Note 1. Rotating the switch or potentiometers clockwise will increase the current.

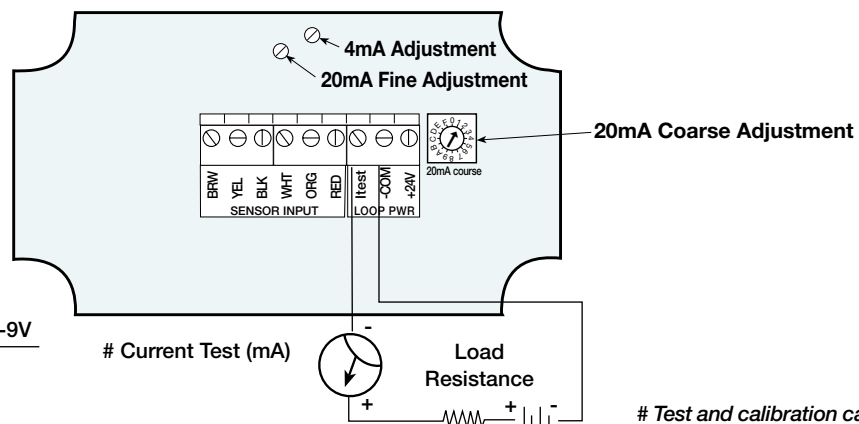
Note 2. Maximum accuracy is achieved if this procedure is repeated.



Maximum
Load Resistance = $\frac{\text{Supply Voltage} - 10V}{20mA}$

* Used only for test and calibration.

Low Voltage Connection 9-12V



Maximum
Load Resistance = $\frac{\text{Supply Voltage} - 9V}{20mA}$

Use only for test and Calibration

Test and calibration can only be done in series with load.

SPECIFICATIONS

Transducer

Length

- 250mm (10in) - Custom lengths available

Diameter

- 22.2mm (0.87in)

Standard Ranges

- 5, 15, 30, 100, 200, 300, 500 PSIG

Over Pressure Protection

- 2 x for 15 to 200 PSIG
- 1.5 x for 300 to 500 PSIG

Operating temperature

- -5°C (23°F) to 105°C (221°F)

Body material

- 316 stainless steel

Diaphragm

- Stainless Steel

Barometric Compensation

- Capillary Desiccant Package
- Standard DP-1 (1year life)

Electronic settling time

- 1mS

Protection

- Triple redundancy surge protection

Transmitter

Input Voltage

- 9 to 30Vdc

Input Current

- 4-20mA (Loop powered)

Maximum Load

- 750 ohms @ 24Vdc
- 100 ohms @ 12Vdc

Full Scale Output

- 20mA (user adjustable)

Zero Pressure Output

- 4mA (user adjustable)

Accuracy

- $\pm 0.20\%$ of range

Linearity

- $\pm 0.15\%$ of range @ 25°C (78°F)

Repeatability and Hysteresis

- $\pm 0.15\%$ of range @ 25°C (78°F)

Operating temperature

- -20°C (-4°F) to 80°C (176°F)

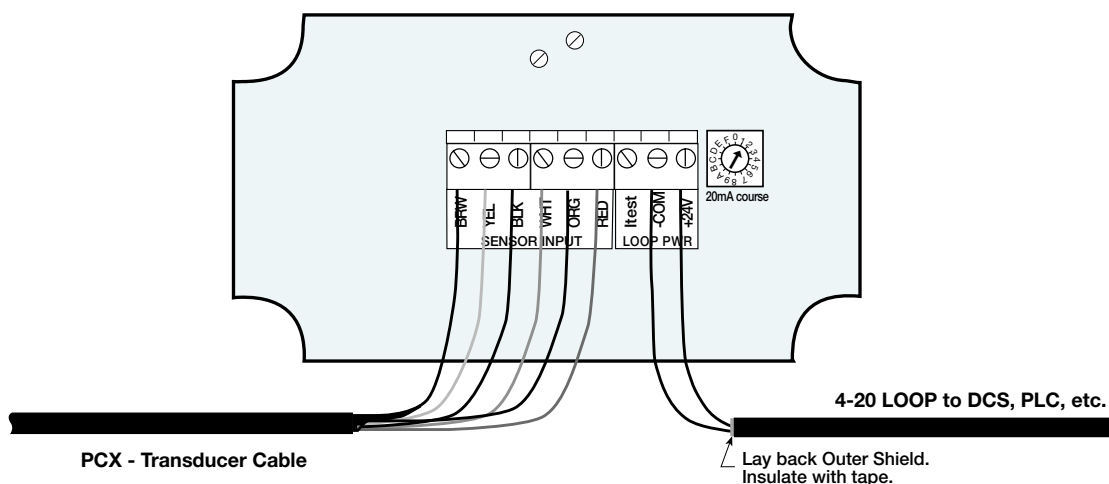
Compensated Temperature Range

- 0°C (32°F) to 70°C (158°F)

Turn Down Ratio

- 5:1 Typical - *User adjustable*

ELECTRICAL CONNECTION - PCT



PART NUMBERING

MODEL

PC S = Pressure System - Transducer-PCX and Transmitter-PCT
PC X = Transducer only
PC T = Transmitter only

PRESSURE RANGE

5 PSIG
 15 PSIG
 30 PSIG
 50 PSIG
100 PSIG
 200 PSIG
 300 PSIG
 500 PSIG

DIAPHRAGM MATERIAL

S = Stainless Steel

UNITS

M = Metric i.e. metres and centimetres
U = Imperial i.e. feet and inches

CABLE or PIPE LENGTH # (see below)

Cxxx = Cable Length (specify in m or ft)
Pxxx = Pipe Length (specify in cm or ft)

MOUNTING STYLE

S = Stainless Steel Suspension Cable
A = ANSI Flange
D = DIN Flange
J = JIS Flange
B = BSP Thead
N = NPT Thread
Z = Special Request
X = Not Required

MOUNTING SIZE

Flange	BSP	NPT
E 1"/25mm	1"	1"
F 1.5"/38mm	1.5"	1.5"
G 2"/50mm	2"	2"
H 4"/100mm	N/A	N/A
X	Not Required	
Z	Special Request	

FLANGE POSITION (If required)

Specify in mm/in from face of transducer
X = Not Required

MODEL

PC T = Pressure Transmitter
 (For use with PCX Transducer only)

PRESSURE RANGE

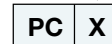
5 PISG
 15 PISG
 30 PISG
 50 PISG
100 PISG
 200 PISG
 300 PISG
 500 PISG



Accessories - DP-1 Desiccant

MODEL

PC X = Pressure Transducer only



STANDARD CABLE LENGTHS

5m (16ft)
 15m (50ft)
 23m (75ft)
 75m (246ft)
 110m (360ft)
 220m (720ft)
 360m (1180ft)
 *Custom Length

* Note: Custom length cables will have a longer delivery time.



Accessories

PCX-BS Stainless Steel bracket for cable suspension

Cable options & accessories



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Represented by:

ADDITIONAL PRODUCT WARRANTY AND APPLICATION GUARANTEES UPON REQUEST.
 TECHNICAL DATA SUBJECT TO CHANGE WITHOUT NOTICE.