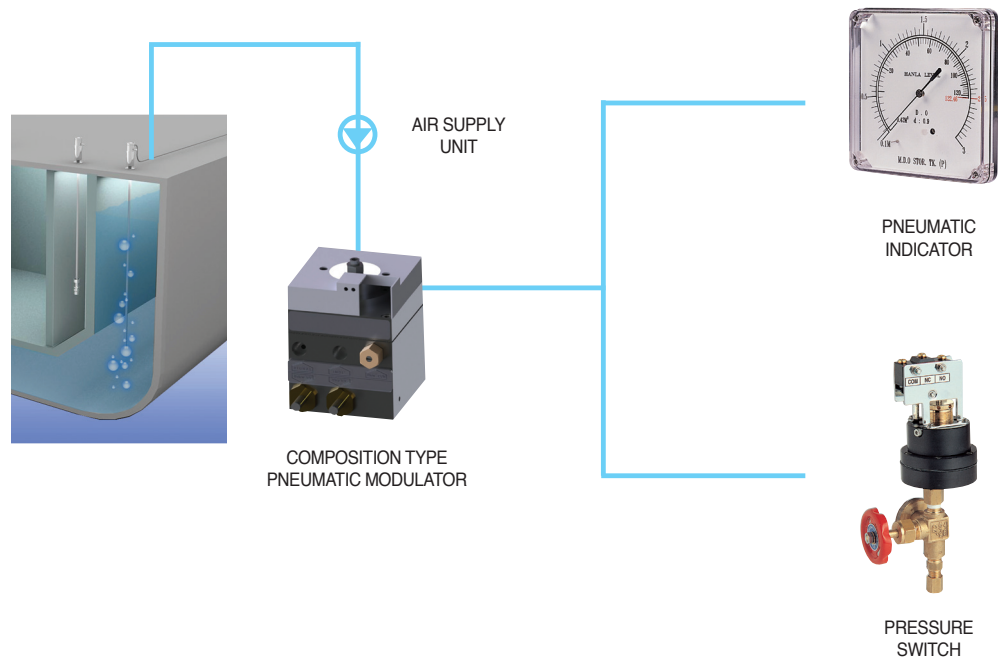


TANK LEVEL MONITORING SYSTEM

Tank Remote Sounding System

* AIR PURGE TYPE REMOTE LEVEL GAUGING SYSTEM(PURE PNEUMATIC TYPE)

MODEL - CT - 180 - OPN



OPERATING PRINCIPLE

- The operating principle is based upon the measurement of the hydrostatic pressure by providing a constant low flow of air or neutral gas into a probe which opens at the tank bottom.
- The flow regulator ensuring a constant pre-set flow at the end of the sounding pipe in the tank irrespective of the supply pressure.
- Gauge saver is used for protecting the level indicator against over pressure.
- The blowing valve is used for sending the full air pressure through the signal line for cleaning purpose.
- The air supply valve is used for isolation from other channel without any influence.
- Principle Diagram

FEATURES

- Liquid level or measuring depth pressure is indicated for direct reading, and then the high precision is achieved.
- The construction is simple and the handling and maintenance is easy.
- Since no electricity is used, the explosion-proof measure is not necessary.
- With use of the pressure type high sensitive level switch, the signal and alarm of the preset liquid level can be transmitted.

APPLICATIONS

《CT-180-OPN》

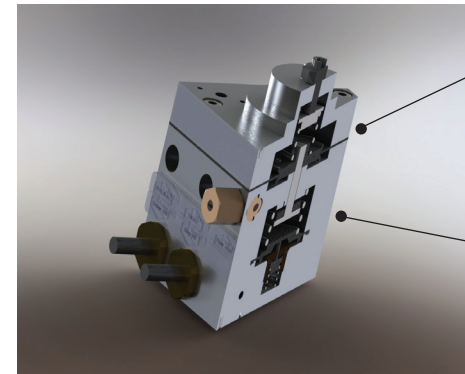
- OPEN TANK-Ballast tank remote reading
 - Draft remote reading
 - Heeling and trim remote reading
 - Fuel oil tank remote reading

STANDARD SPECIFICATION

- System type : One line type air purge system
- Flow rating : 10~80Nl/hour
- Working temp. : -30℃~70℃
- Supply air setting pressure : 4.5kg/cm²

- 400m Max. distance of signal line and indicator
- Signal line size : OD8 or OD10
- Range : 1 to 40 meter
- Accuracy : ± 0.5% os F.R(optional)
± 1.0% os F.R

DUAL CHECK TYPE SAFETY CHAMBER(AIR PURGE HEAD)



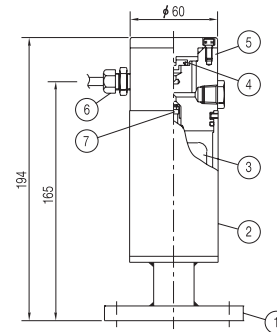
PNEUMATIC MODULATOR Part

- AIR PRESSURE : 4.5kg/cm²
- FLOW PATING : 10-80 Nl/h
- BLOWING PRESSURE : 4.5kg/cm²
- CONNECTION SIZE : -AIR SUPPLY PT 1/8"
-SIGNAL LINE PT 1/8"
- INCLUDING THE FLOW RATE ADJUSTER AND MAIN AIR NON-RETURN CHECK VALVE

GAUGE SAVER Part

- DIFFERENTIAL : 0.01kg/cm²
- INCLUDING THE RANGE ADJUSTER

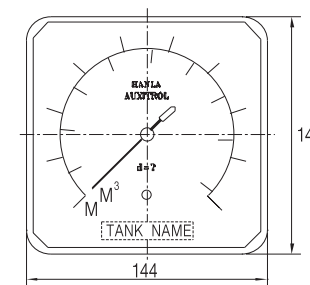
DUAL CHECK TYPE SAFETY CHAMBER(AIR PURGE HEAD)



NO	Description	Material	Q'ty
1	Flange	SUS 304	1
2	Float chamber	SUS 304	1
3	Float	SUS 316	1
4	Upper disc	NAVAL BRASS	1
5	Chamber	NAVAL BRASS	1
6	Connector	BS	1
7	Lower disc	NAVAL BRASS	1

- Avoids entry of liquid inside the device in case of air supply failure.
- Connection size : JIS 5K 25A, or 5K 20A.
- Working pressure : Max. 10kg/cm²
- Connection size of local test device : PT 1/4"
- Material : Naval brass.
- Including local test device for check of actual level.

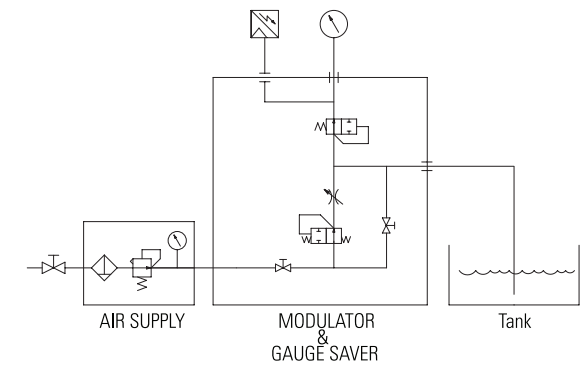
LEVEL INDICATOR WITH GAUGE SAVER



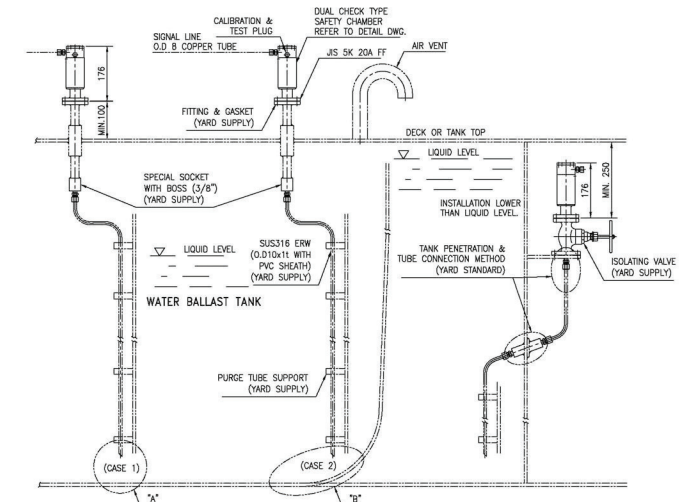
LEVEL INDICATOR

- Size:144×144
- Class 1.5 standard
- Class 1.0 option
- Class 0.5 option
- Graduation : Height or volume
Height and volume
- Including the zero adjuster

PNEUMATIC DIAGRAM



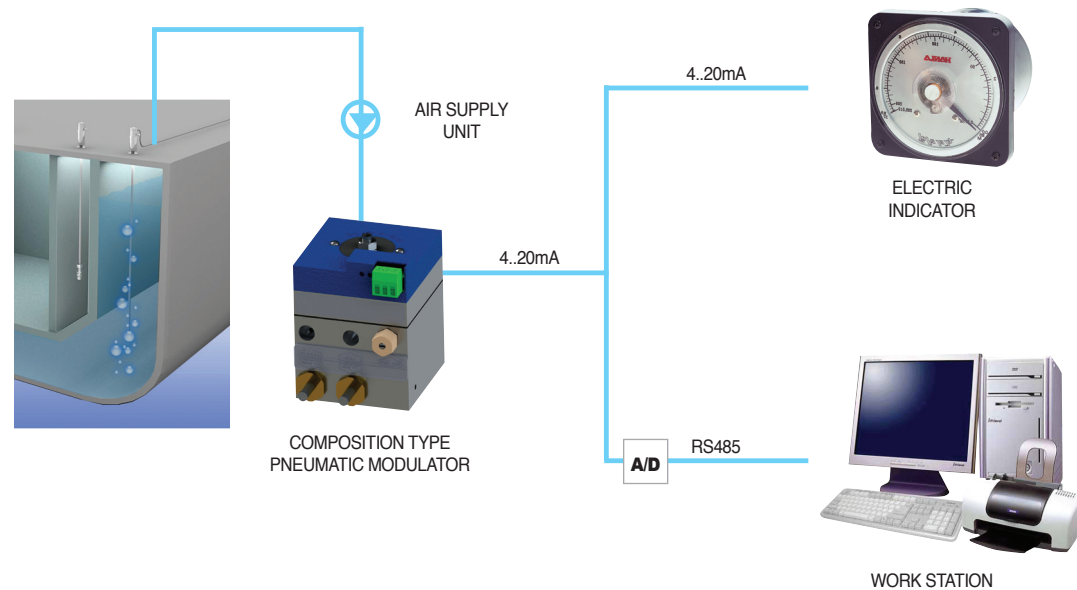
LEVEL INDICATOR GAUGE SAVER



Tank Remote Sounding System

* AIR PURGE TYPE REMOTE LEVEL GAUGING SYSTEM(ELECTRO PNEUMATIC TYPE)

MODEL - CT - 180 - EPN



OPERATING PRINCIPLE

The operating principle is based upon the measurement of the hydrostatic pressure by providing a constant low flow of air or neutral gas into a probe which opens at the tank bottom. The output pneumatic signal of the modulator is fed into P/I converter and is changed to electric signal(4~20mA) in 2 wire by P/I converter. The electric output signal(4~20mA) can be connected to C.R.T display cargo system, Digital indicator, analogue type indicators, etc. or a combination of these systems.

The flow is produced by means of an automatic air flow modulator, type which includes:

- An air supply filter
- An air flow regulator ensuring a constant pre-set flow at the end of the bubble pipe in the tank irrespective of the supply pressure.
- A safety valve protecting the indicator and pressure transmitter against over pressure.
- The air supply valve is used for isolation from other channel without any influence.
- The blowing valve is used for sending the full air pressure through the signal line for cleaning purposes.

FEATURES

- Liquid level of measuring depth pressure is indicated for direct reading, and then the high precision is achieved.

APPLICATIONS

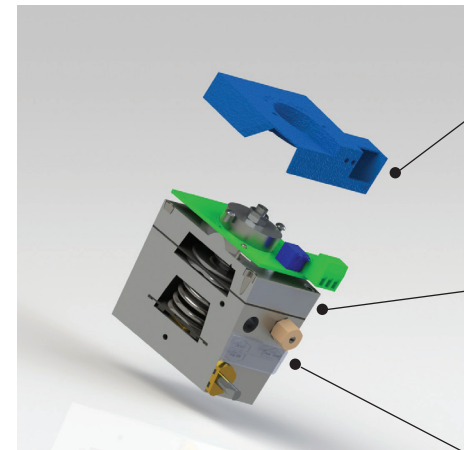
- Ballast tank remote reading
- Draft remote reading
- Fuel oil tank remote reading
- All liquids even viscous ones (molasses, bitumen etc...)

STANDARD SPECIFICATION

- System type : One line type air purge system
- Flow rating : 10~80NI/h
- Working Temp. : -30℃~70℃
- Supply air setting pressure : 4.5kg/cm²
- 400m Max. distance of signal line and indicator
- Signal line size : OD 8 or OD 10
- Range : 1 to 40 meter
- Output : 4~20mA 2wire system
- Power supply : 16 to 32V DC
- Accuracy : ± 0.5% of F.R
± 0.2% of F.R(optional)

- The construction is simple and the handling, and maintenance is easy.
- 4~20mA output signal/Two wires.

COMPOSITION TYPE MODULATOR



P/I CONVERTER Part.

- THE TRANSMITTER IS LINKED TO AN INTEGRAL AIR REGULATOR AND CONSISTS OF :
 - A SENSYN PIEZORESISTANT TYPE SENSOR
 - AN ELECTRONIC UNIT WHICH CONVERTS THE SIGNAL FROM THE SENSOR INTO A STANDARD 2 WIRE, 4-20mA SIGNAL
- POWER SUPPLY FROM 18 TO 38V/DC
- OUTPUT SIGNAL : STANDARD 4-20mA (WIRE)

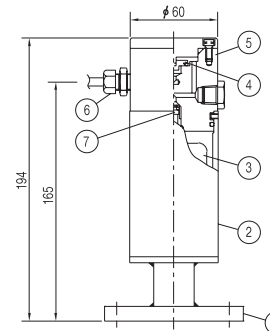
PNEUMATIC MODULATOR Part.

- AIR PRESSURE : 4.5kg/cm²
- FLOW RATING : 10-80 NI/h
- BLOWING PRESSURE : 4.5kg/cm²
- CONNECTION SIZE : -AIR SUPPLY PT 1/8"
- SIGNAL LINE PT 1/8"
- INCLUDING THE FLOW RATE ADJUSTER AND MAIN AIR NON-RETURN CHECK VALVE

GAUGE SAVER Part.

- DIFFERENTIAL : 0.01kg/cm²
- INCLUDING THE RANGE ADJUSTER

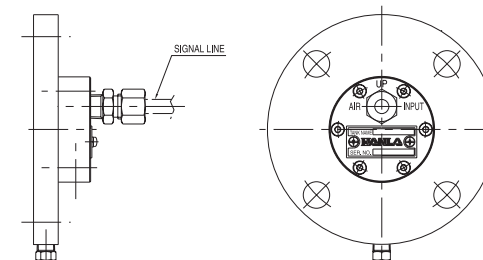
DUAL CHECK TYPE SAFETY CHAMBER(AIR PURGE HEAD)



NO	Description	Material	Q'ty
1	Flange	SUS 304	1
2	Float chamber	SUS 304	1
3	Float	SUS 316	1
4	Upper disc	NAVAL BRASS	1
5	Chamber	NAVAL BRASS	1
6	Connector	BS	1
7	Lower disc	NAVAL BRASS	1

- Avoids entry of liquid inside the device in case of air supply failure.
- Connection size : JIS 5K 25A, or 5K 20A.
- Working pressure : Max. 10kg/cm².
- Connection size of local test device : PT 1/4".
- Material : Naval brass.
- Including local test device for check of actual level.

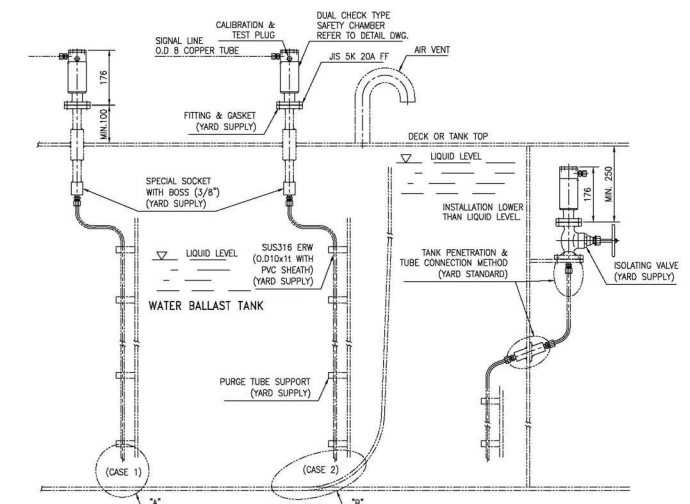
SPECIAL PURGE UNIT



TRANSMITTER PANEL



SYSTEM DIAGRAM



Tank Remote Sounding System

* ELECTRO-PNEUMATIC TYPE REMOTE LEVEL GAUGING SYSTEM

MODEL : PL-40P

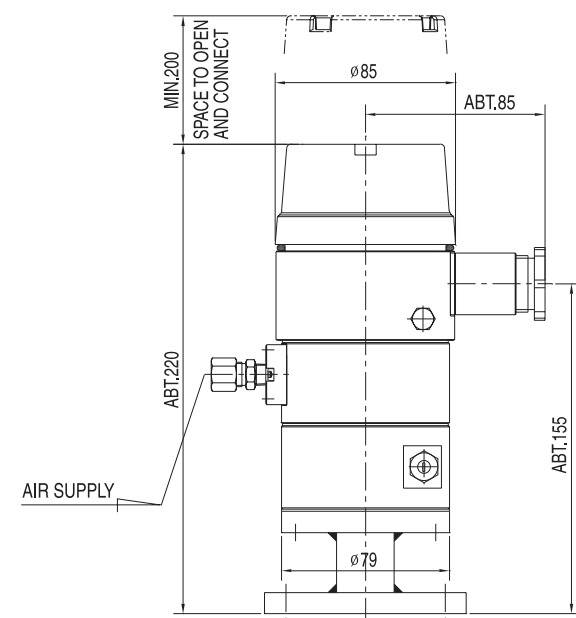


The PL-40P transmitter is designed to be mounted on the top of the tanks.
The PL-40P transmitter allows a remote level measurement using a 4~20mA analog output, while keeping the principle of bubbling.

TECHNICAL FEATURES

- Transmitter : 2 wire 4~20mA
- Pressure scale : from 40 up to 4000 mbar.
- Pressure of supply : 4 to 10 bar.
- Accuracy : 0.2% of the measured scale.
- Power supply : 18 to 36VDC.
- Operating temperature : -20°C~70°C
- Automatic bubbling line clearing.
- Protection category.
- Ex ia IIC T5

DIMENSION

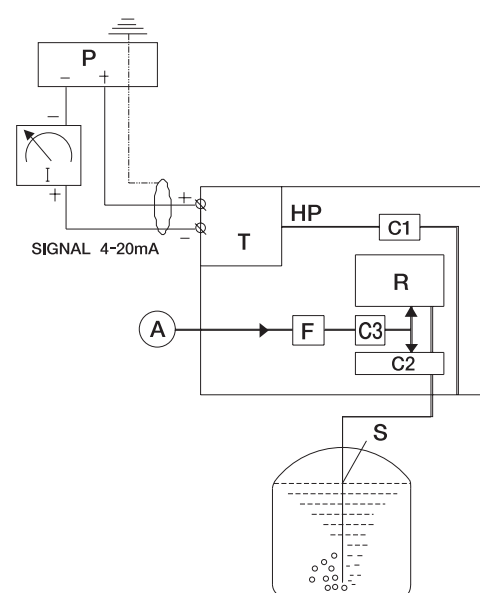


Data acquisition and display from analog signal(4-20mADC) with completely compatible PC(color screen)



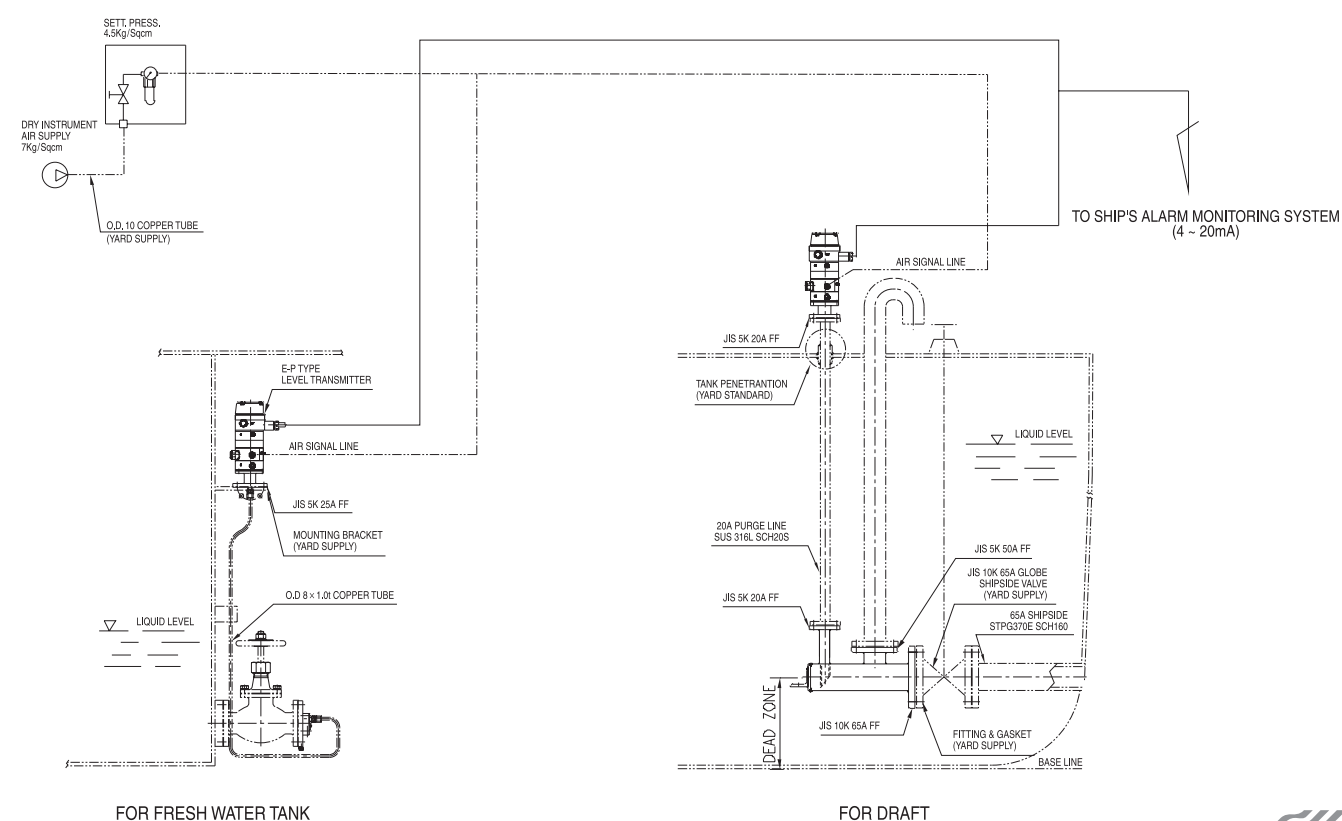
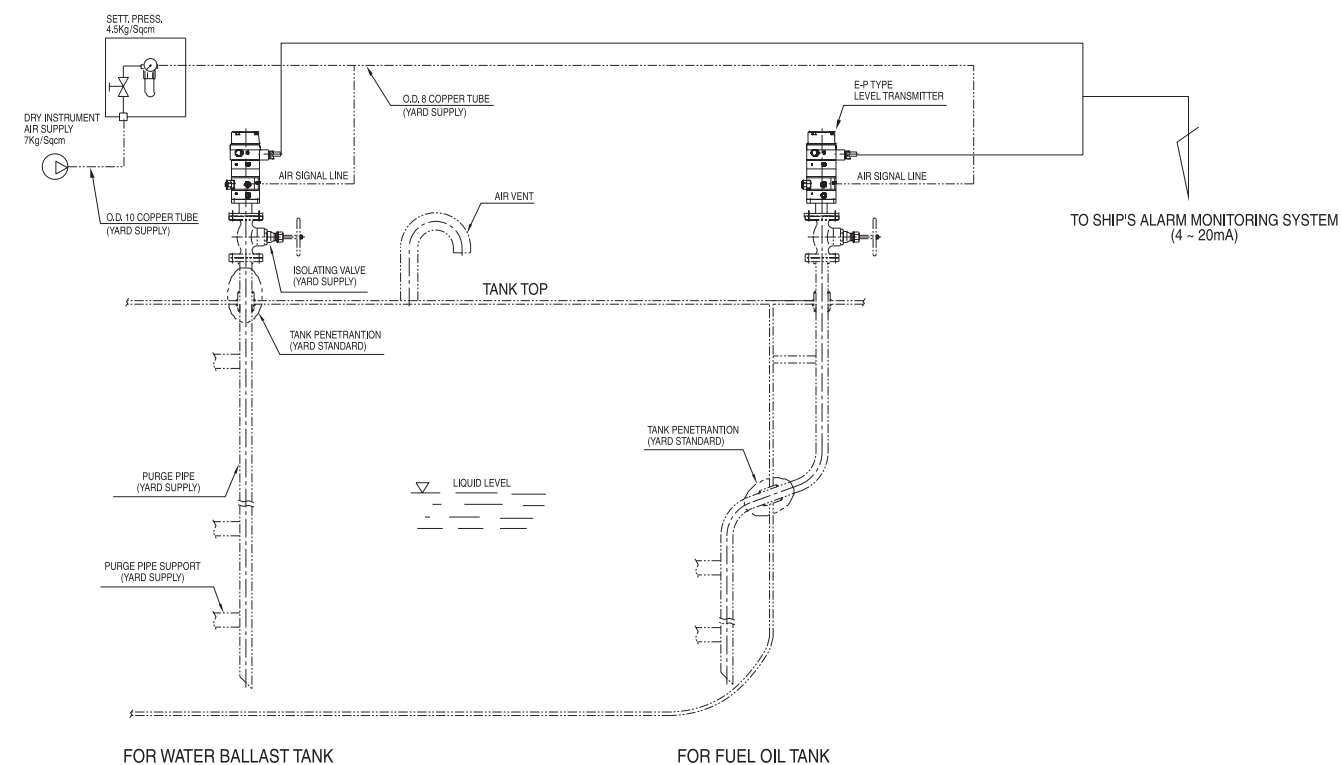
- Analog(bargraph) and numeric level display.
- Volume(tank table) display.
- Temperature display.
- Alarm status and warning signal.
- Analog or RS 485 transmission.

GENERAL WIRING DIAGRAM



- A : Air pressure
C1 : Over pressure safety valve
C2 : Safety valve through air supply pressure
C3 : Non return shut-off valve
F : Filter
T : Transmitter(4~20mA)
R : Automatic flow regulator
S : Probe
P : Power supply (18~36V DC)
I : Indicator

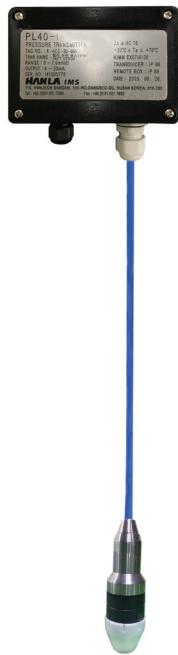
PRINCIPAL PIPING DIAGRAM & INSTALLATION MOUNTING



Tank Remote Sounding System

* ELECTRIC PRESSURE TYPE TANK REMOTE SOUNDING SYSTEM

MODEL : PL-40



APPLICATIONS

- Ballast tank remote reading
- Draft remote reading
- Heeling and trim remote reading
- Fuel oil tank remote reading
- Waste waters, wells, locks, rivers etc.

MODEL NUMBER CODE SYSTEM

PL - 40

-

-

Type

I

:

Inside mounting type

O

:

Outside mounting type

U

:

Utility type

P

:

Pneumatic type

Measuring range

A

:

0.1 bar

B

:

0.2 bar

C

:

0.4 bar

D

:

1 bar

E

:

2 bar

F

:

4 bar

Symbol of electric pressure type level transmitter

OPERATING PRINCIPLE

The Hanla Level Transmitter is for continuously measuring the liquid level of ballast tank, draft and fuel oil tank in the marine ships as well as tanks containing media.

The PL-40 is a 2-wire, 4~20mA level transmitter consisting of a transducer and an amplifier connected via a submersible vented cable.

Pressure change in the front of the diaphragm will bring about a capacitance change in the cell of the transducer.

This change will be transmitted to amplifier as a change in the electrical signal.

The PL-40 is manufactured in several ranges, and available. Especially the electro pressure type level transmitter can be connected to C.R.T. display cargo system, loading computer, indicator, and analogue type indicator to measure the actual level.

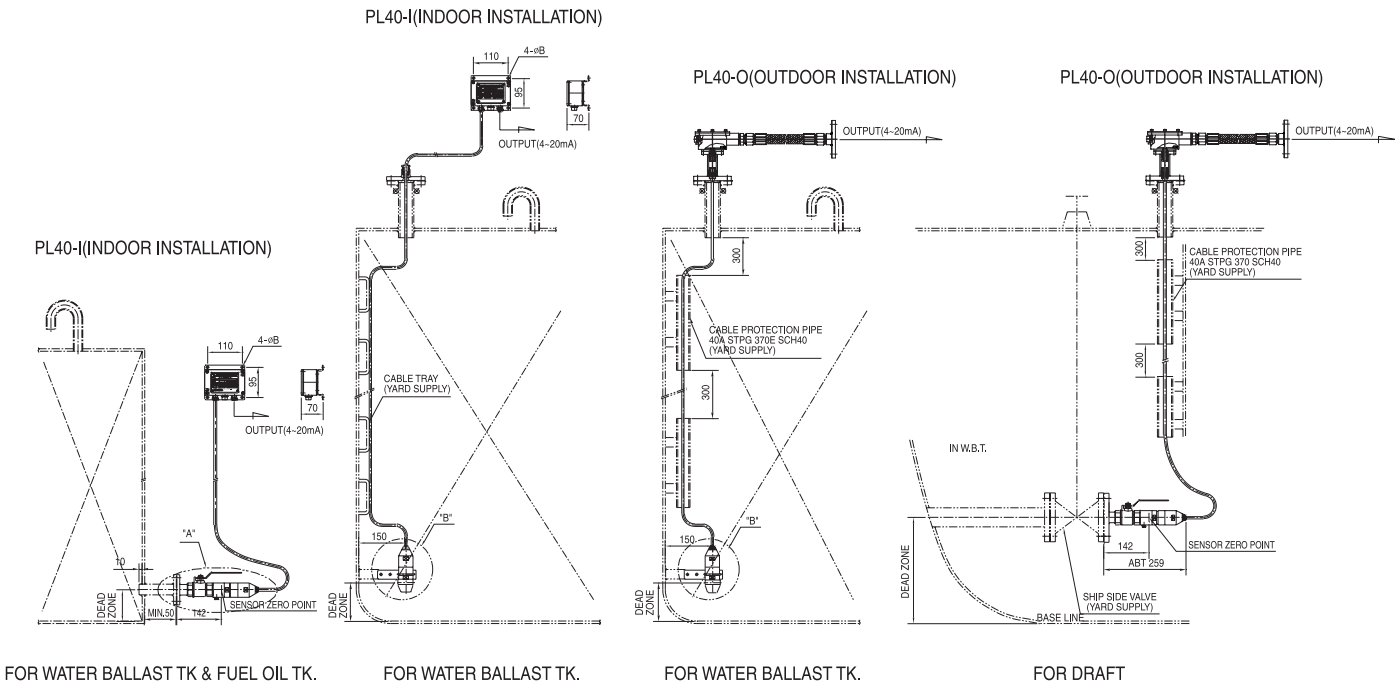
TECHNICAL SPECIFICATION

- Output : 4 ~ 20mA adjustable
- Accuracy : $\pm 0.2\%$ F.S at 20℃
- Supply voltage : 12 ~ 28VDC
- Range : Gauge 175mbar to 4bar
Absolute 1400mbar to 4bar
- Overpressure : Gauge 6bar to 25bar
Absolute 10bar to 25bar
- Diaphragm cell : Capacitive transmitter with ceramic diaphragm
- Materials
 - Diaphragm : Ceramic
 - Sensor Body : Stainless steel 316L
 - Amplifier box : SCS 13(Indoor) / SCS 14(Outdoor)
 - Special cable : Sheathed polyethylene cable
- Operating temperature range
 - Transducer : -40~125℃
 - Amplifier : -25~85℃
- Protection class
 - Transducer : IP68/submersible
 - Amplifier : IP66(Indoor) / IP67(Outdoor)
- Intrinsic safety : Ex ia II c T6 (Max. 50m cable between transducer and amplifier box)
- Cable length : 3m in standard(option : up to 50m)

FEATURES

- High measuring accuracy
- Excellent stability
- Capacitive transmitter with Ceramic diaphragm
- High overload limit
- High temperature stability
- Corrosion resistance
- No hysteresis
- Marine class approval

INSTALLATION METHOD



GENERAL WIRING DIAGRAM

