



Level



Pressure



Flow



Temperature



Liquid
Analysis



Registration



Systems
Components



Services



Solutions

Technical Information

Analog Transmitter AT1000 AT1

Alarm Transmitter for Mechanical Level Gauges



Application

AT1 analog transmitter is designed to be installed to the LT, and LTC series float level gauge. One of the main functions of the transmitter is to transmit the level gauge's signals into voltage, electric current, and resistance output signals.

Because this model has a variety of output signal types, it has an extensive connection compatibility with various level setting devices.

In addition, the alarm and adjustment contact signals are equipped with up to six points, enabling the operator to direct the valves and pumps with this transmitter alone.

This transmitter enhances the capacity of your level gauge by enabling you to operate the device from remote locations.

AT1 transmitter can be utilized in wide range of industries. The dependability of this device has been tested and proven over the years in a variety of uses.

Application includes: water tanks, sewage plants, oil depots, chemical solvent storage tanks, petroleum refineries, foods, paints, and organic chemicals.

Features and Benefits

- Transmits the tank level by analog signals.
- Select between voltage and electric current for the output signal according to the the purpose.
- Easy maintenance due to simple mechanism

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Function and System Design

Operating System

The remote signal is produced by the rotation angle of the brush on the potentiometer, as indicated in the below figure.

The brush rotation corresponds to the tank level. The resistance value is determined and transmitted based on the position of the brush.

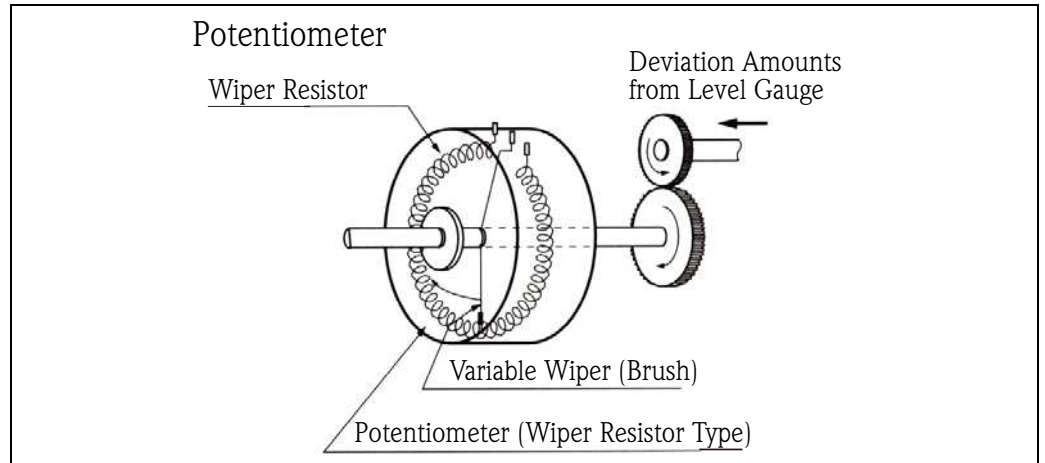


Figure 1: Potentiometer

It is possible to apply a direct current to this potentiometer, as indicated in the figure below. The resistance value is converted to direct current or direct voltage and is output.

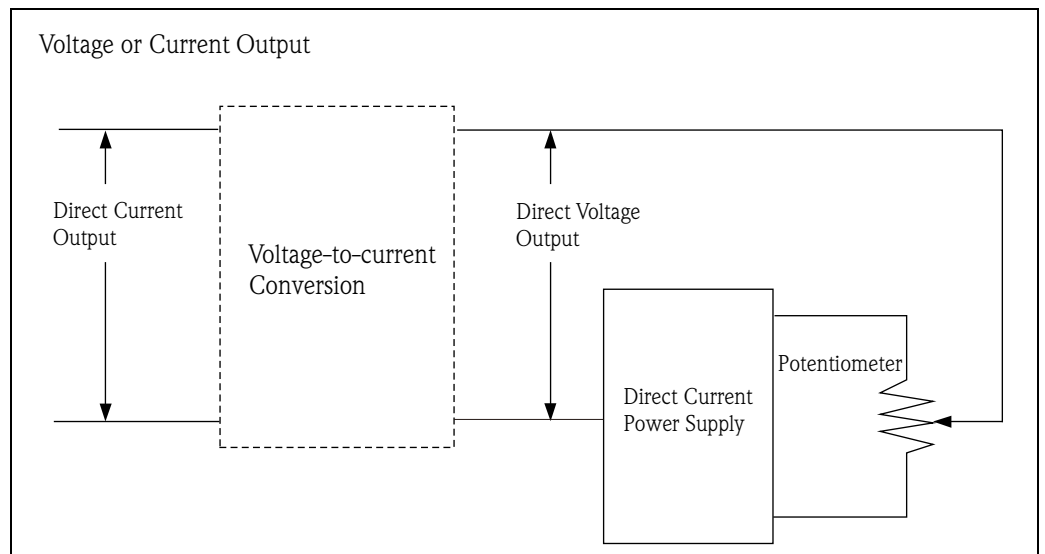


Figure 2: Voltage and Current of Potentiometer

Technical Data

Output 4-20mA, 10-50mA, 0-1mA, 0-20mA, 0-10mV, 0-1V

Accuracy

Accuracy	Analog Output	4 - 20mA, 10 - 50mA Output: Within $\pm 0.5\%$ 0 - 20mA, 0 - 10mV, 0 - 1V Output: Within $\pm 0.7\%$ 0 - 1mA Output: within $\pm 1.5\%$
	Alarm Contact Output	$\pm 0.5\%$ (for full span)

Power Supply DC24V (DC20~40V valid), AC100V/110V/200V/220V $\pm 10\%$, 50/60Hz

Power Consumption Approximately 5VA

Load Impedance

	Voltage Current	20VDC	24VDC	40VDC	100VAC 110VAC 200VAC 220VAC
		Current Output (Max. Impedance)	4~20mA	200 Ω	400 Ω
	10~50mA	80 Ω	160 Ω	440 Ω	250 Ω
	0~1mA	18k Ω	22k Ω	38k Ω	25k Ω
	0~20mA	900 Ω	1100 Ω	1900 Ω	1330 Ω
Voltage Output (Min. Impedance)	0~10mV	$\geq 500\Omega$			
	0~1V	$\geq 30k\Omega$			

Ambient Temperature Weather proof type: -20 ~ +60 °C
Flameproof type: -10 ~ +40 °C (Accuracy coverage : 0 ~ 40 °C)

Storage Temperature -20 ~ +60 °C

Measuring Range 0 - 1.5m, 2.5m, 3m, 3.5m, 4m, 5m, 6m, 8m, 10m, 12m, 14m, 16m, 20m, 25m 30m

Hysteresis Within 2% of measuring range

Cable Entry Flameproof with cable gland (B): G3/4 TF16-11, G1 TF22-15, G1-1/4 TF28-20
Flameproof (E): G3/4 , G1-1/2
Weather proof (W): G3/4 , G1-1/2, NPT3/4, NPT1, M25

Transmission Line (per one contact) DC: two or three lines
AC: four lines

Alarm Contact 2, 4, 6 points, Micro switch (SPDT)
Select any of the following contact: A contact (normal open)
B contact (normal close)
C contact (transfer)

Contact Rating TIIS Ex d rating: 250V 4.2A, 1050VA, 180W
Allowable contact rating: Alarm 2 points (A, B, C contact) 220VAC 2.8A, 125VDC 0.5A
Alarm 4 points (A, B contact) 220VAC 2.8A, 125VDC 0.5A
Alarm 4 points (C contact) 220VAC 2.2A, 125VDC 0.5A
Alarm 6 points (A, B, C contact) 220VAC 2.2A, 125VDC 0.5A

Degree of Protection Weather proof: IP65
Flame proof : d2G4

Color Silver

Weight Weather proof: approximately 7kg
Flame proof: approximately 13kg

Operating Conditions: Wiring

Wire Connection

To ensure the accuracy of the transmitter and receiver, it is important to set the wiring and connection of the circuit to be within the accepted range. Because AT1 transmitter has several output signals, be careful of the impedance that is caused by the circuit resistance as a result of electric output

1. AC: 4 - 20mA or 10 - 50mA Output

(For alarm contact equipped model, refer to 5 also)

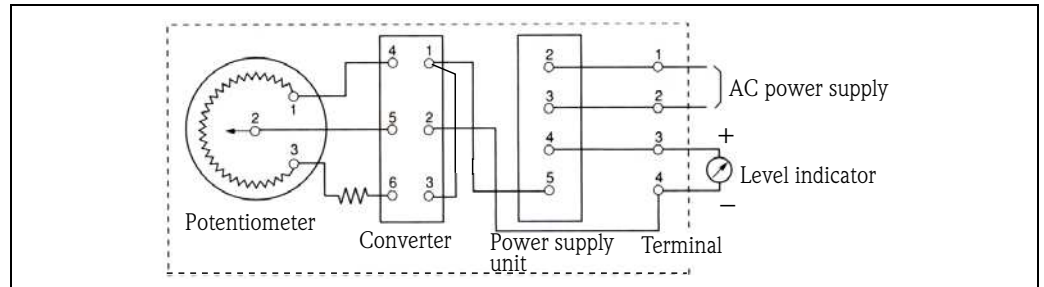


Figure 3: AC Power 1

2. AC: 0 - 1mA, 0 - 20mA, 0 - 10mV or 0 - 1V Output

(For alarm contact equipped model, refer to 5 also)

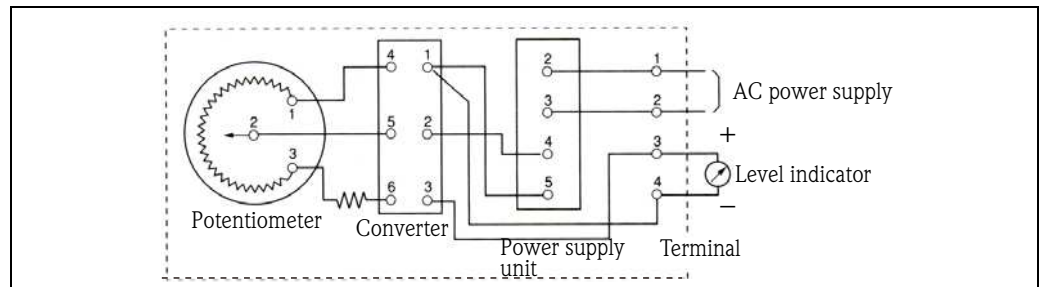


Figure 4: AC Power 2

3. DC: 4 - 20mA or 10 - 50mA Output

(For alarm contact equipped model, refer to 5 also)

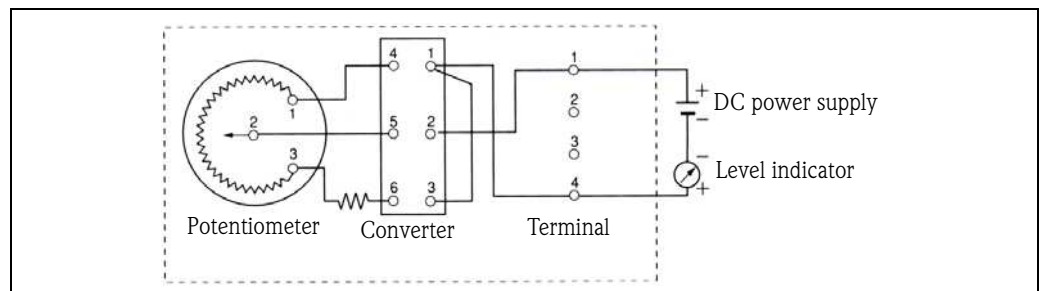


Figure 5: DC Power 1

4. DC: 0 - 10mA, 0 - 20mA, 0 - 10mV or 0 - 1V output

(For alarm contact equipped model, refer to 5 also)

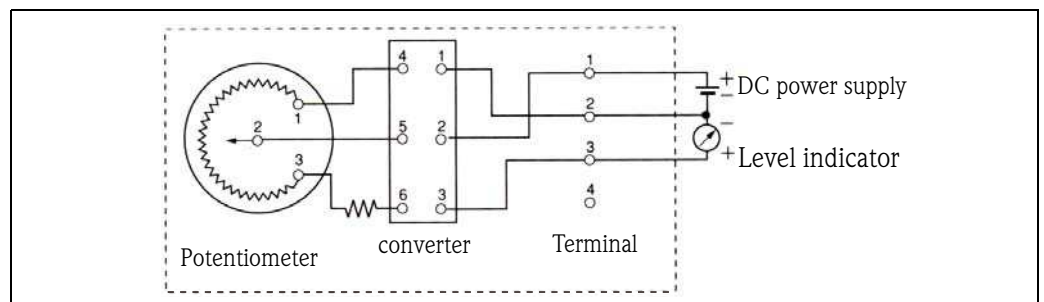


Figure 6: DC Power 2

5. With Alarm Contacts

In case of with contacts in 1, 2, 3, 4, the following circuits are provided.

A Contact (Normal Open)

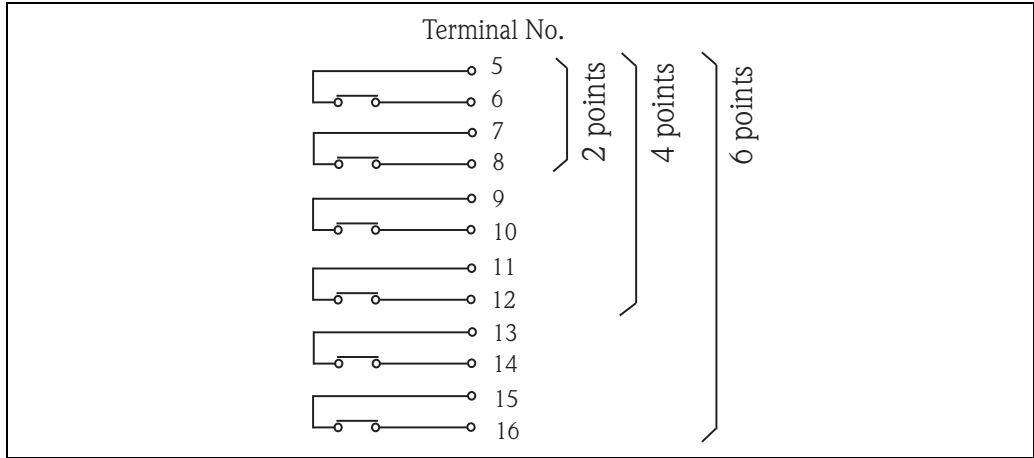


Figure 7: A Contact

B Contact (Normal Close)

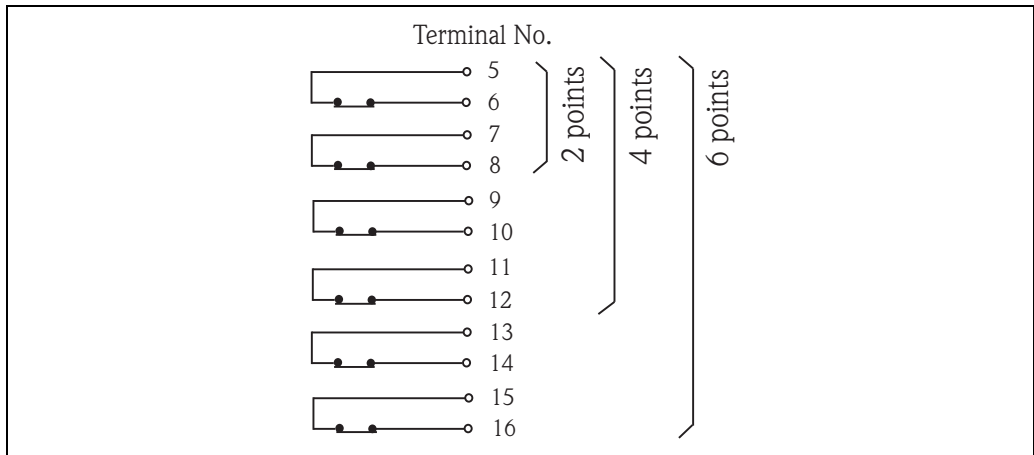


Figure 8: B Contact

C Contact (Transfer Contact)

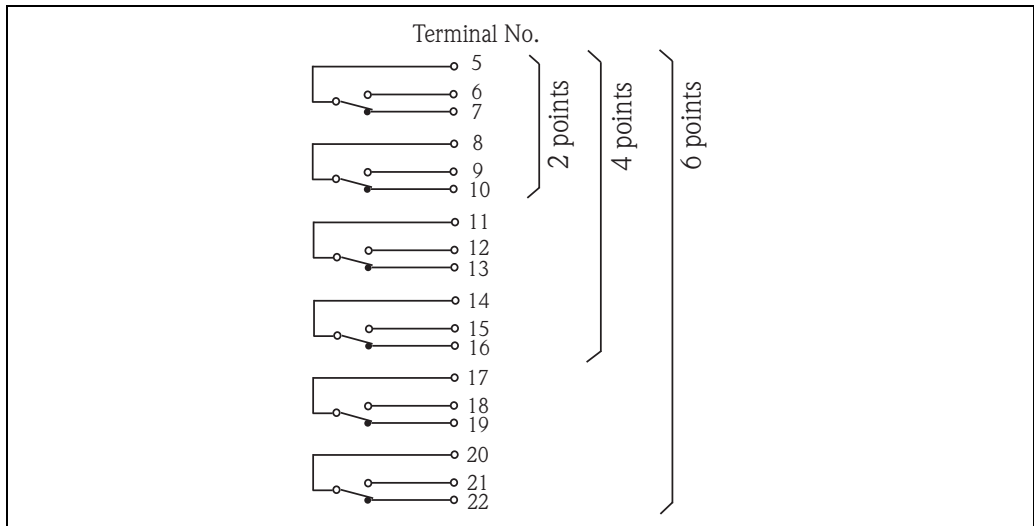


Figure 9: C Contact

External Dimensions

Flame Proof

Alarm Contacts: 0, 2, 4, 6

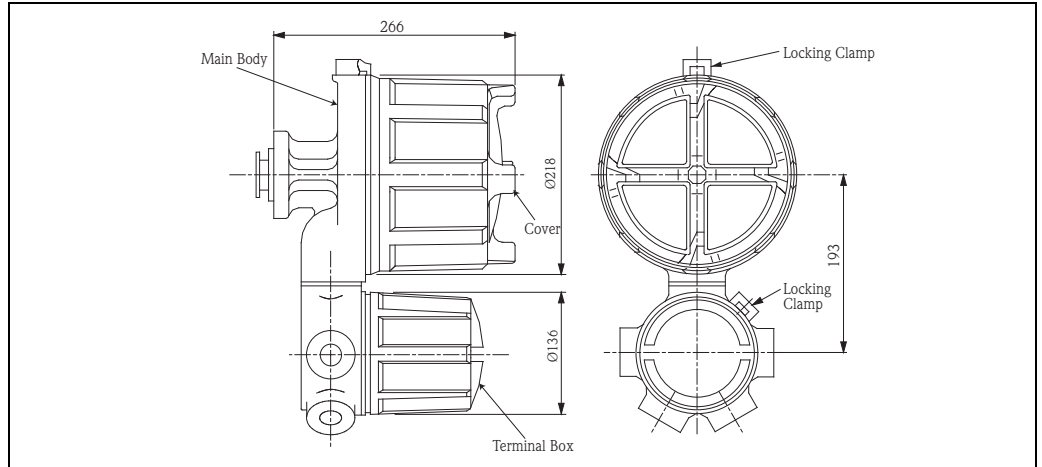


Figure 10: Flame Proof

Weather Proof

Alarm contacts: 0, 2 In case of Cable Entry G3/4,NPT3/4

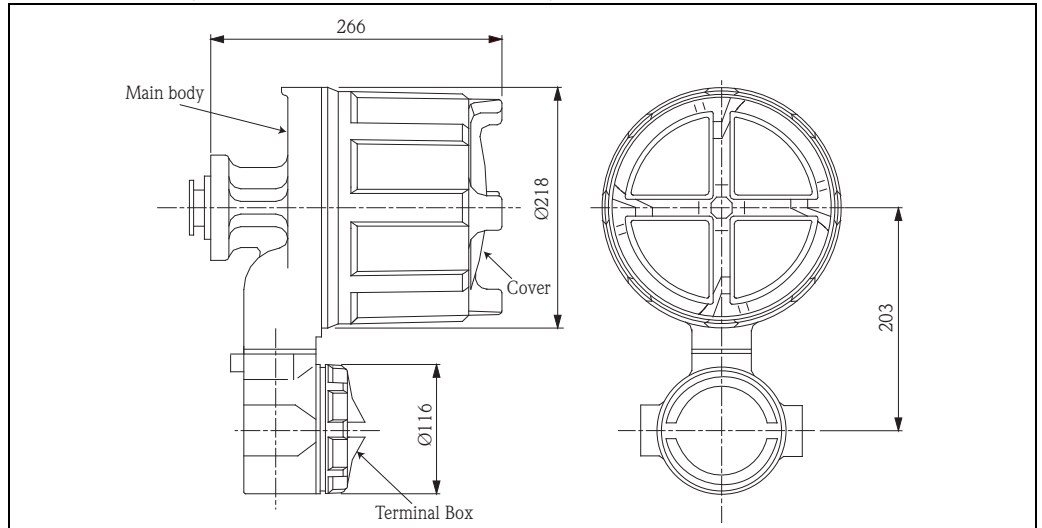


Figure 11: Weather Proof 1

Alarm contacts: 0, 2, 4, 6

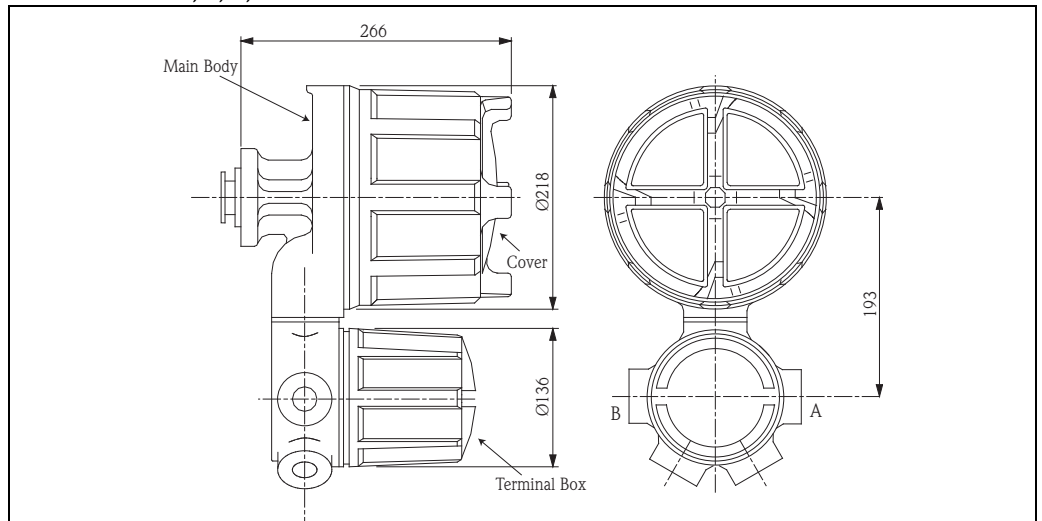


Figure 12: Weather Proof 2

Cable Entry

070:Cable Entry	A	B
A	Thread G 3/4	
B	Thread G 3/4	Thread G 3/4
C	Thread G 1-1/2	
D	Thread G 1-1/2	Thread G 3/4
E	Gland G 3/4 TF16-11	
F	Gland G 3/4 TF16-11	Gland G 3/4 TF16-11
G	Gland G1 TF 22-15	
H	Thread NPT1	
K	Thread M25	
M	Gland G1-1/4 TF28-20	Gland G 3/4 TF16-11
Q	Thread NPT3/4	
R	Thread NPT 3/4	Thread NPT 3/4

Operating Conditions: Installation

Installation of Transmitter

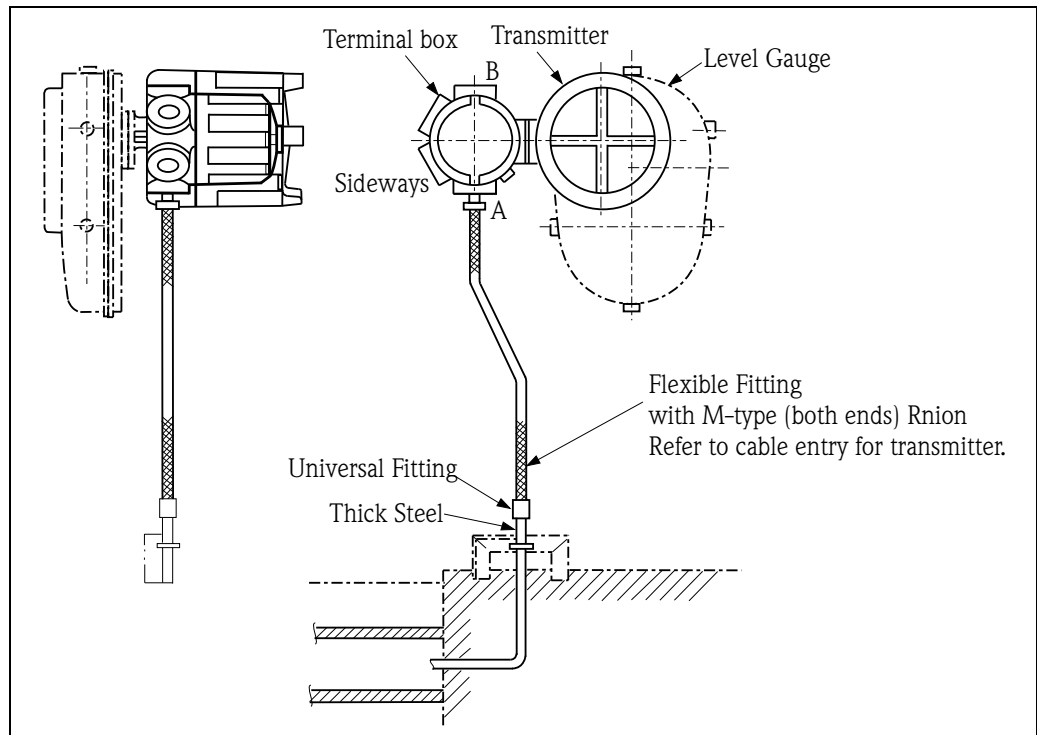


Figure 13: Transmitter and Float Tank Gauge



Caution!

When installing the transmitter with cable glands, ensure to use cable glands which are attached to the transmitter. Select an option for cable glands in the feature 070 of the order structure (refer to "2.2 Ordering Information").

Certificates and Approval

Ex Approval	TIIS, with cable gland TIIS d2G4
	TIIS, (Cable entry) TIIS d2G4

Protection Class	IP65
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Ordering Information

AT1

010	Output:	1	4 - 20mA
		2	10 - 50mA
		3	0 - 1mA
		4	0 - 20mA
		5	0 - 10mVDC
		6	0 - 1VDC
		9	Special version, TSP-no. to be spec.
020	Power Type:	1	AC
		2	DC
030	Alarm Output:	0	Not used
		2	2 - point
		4	4 - point
		6	6 - point
040	Approval:	B	Flame proof d2G4, TIS + cable gland
		E	Flame proof d2G4, TIS
		W	Weather proof IP65
		Y	Special version, TSP-no. to be spec.
050	Function:	0	Basic version
		9	Special version, TSP-no. to be spec.
060	Power Supply :	1	100VAC, 50/60Hz
		2	110VAC, 50/60Hz
		3	200ACV, 50/60Hz
		4	220VAC, 50/60Hz
		5	24VDC
		Y	Special version, TSP-no. to be spec.
070	Cable Entry:	A	1 x thread G 3/4
		B	2 x thread G 3/4
		C	1 x thread G 1-1/2
		D	1 x thread G 1-1/2, 1x G 3/4
		E	1 x gland G 3/4, TF16-11
		F	2 x gland G 3/4, TF16-11
		G	1 x gland G 1, TF22-15
		H	1 x thread NPT1
		K	1 x thread M25
		M	1 x gland G 1-1/4, TF28-20, 1x gland G 3/4, TF16-11
		Q	1 x thread NPT3/4
		R	2 x thread NPT3/4
		Y	Special version, TSP-no. to be spec.
080	Installation gauge:	1	LT1100/LT1200/LT3100/LT3200 R:300mm low pressure LT version
		2	LT1400/LT1600/LT3400/LT3600 R:300mm high pressure LT version
		3	LTC2100 L:600mm
		4	LTC2230/LTC2240 R:600mm
		9	Special version, TSP-no. to be spec.
090	Measuring Range	A	1.5m
		1	2.5m
		C	3m
		D	3.5m
		E	4m
		2	5m
		F	6m
		G	8m
		3	10m

090	Measuring Range
	H 12m J 14m 4 16m 5 20m K 25m 6 30m 9 Special version, TSP-no. to be spec.
100	Alarm Contact
	0 Not used 1 A= normal open 2 B= normal closed 3 C= transfer contact
110	Color
	0 Silver 9 Special version, TSP-no. to be spec.
AT1-	

Documentation

Technical Information

TI00458G

Float Gauge LT11/LT12/LT14/LT16

TI1121G

Float Gauge LTC2230/LTC2240

Operating Instructions

BA00414G

Analog Transmitter AT10000 AT1

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