

The selection is detailed on page 9



LV60

Input Type Level Transmitter

Principle of operation

Using the principle of static pressure measurement:

When the liquid level transmitter is put into a certain depth in the measured liquid, the pressure formula of the sensor facing the liquid level is: $p = \rho \cdot g \cdot h + p_0$.

Where:

P: the pressure on the liquid level of the transmitter.

ρ : density of liquid to be measured

G: local gravity acceleration

Po: atmospheric pressure above the liquid level

H: the depth of liquid input by the transmitter.

At the same time, the pressure of the liquid is introduced into the positive pressure chamber of the sensor through the gas-conducting stainless steel, and then the atmospheric pressure Po on the liquid surface is connected with the negative pressure chamber of the sensor to offset the Po on the back of the sensor, so that the measured pressure of the sensor is $\rho \cdot g \cdot h$. Obviously, the depth of the liquid level can be obtained by measuring the pressure P.

Product description

Input level transmitter LV60 is used for continuous static level measurement of liquid. The water filling height of the ventilation tank can reach 2.5mWS to 25 mWS (water column).

When the liquid level probe is immersed in liquid, a liquid column will appear above the probe. When the probe is immersed in the depth of liquid, the liquid column will increase and generate hydrostatic pressure on the measuring system through its weight. The measured pressure is transmitted as a standard signal. The signal is proportional to the rising liquid.

The external pressure is recognized by a special cable and an integrated pressure balance hose. Automatically compensate for any change in air pressure, and take the external pressure into account.

The liquid level probe has been approved for drinking water.

Functional performance

Liquid level probe for measuring continuous liquid level
 Measuring range: 0.25 bar to 2.5 bar (0.2% MSP 2 can also be provided) (2.50 MWS to 25 mWS).
 Excellent long-term stability
 Welding measurement system with high process reliability (without seal)
 High overload resistance
 Reverse polarity protection
 Suitable for indoor installation

product application

Used in storage tanks or reservoirs.
 Used for wastewater recovery.
 Used for heating oil tanks and diesel tanks.



Technical parameter

Specifications	
Reference condition	DIN 16086 and DIN EN 60770
Measuring principle	Piezoresistive stainless steel separation membrane sensor
Pressure transfer method	Artificial oil
Allowable load change	> 10 million, 0 to 100% measuring range
Installation position	Vertical/suspended on a cable

Measuring range and accuracy						
Measuring range bar	linearity 1 %MSP ⁵	The accuracy is 20°C ³ %MSP	0-50°C ⁴ %MSP	Long-term stability 2 %MSP per year	overload capacity bar	Failure pressure bar
0-0.25bar gauge pressure	0.3	0.5	1.6	≤0.3	0.75	1
0-0.4bar gauge pressure	0.3	0.5	1.6		1.2	1.6
0-0.6bar gauge pressure	0.3	0.5	1.3		1.8	2.4
0-1bar gauge pressure	0.3	0.5	1.1		3	4
0-1.6bar gauge pressure	0.3	0.5	1.1		4.8	6.4
0-2.5bar gauge pressure	0.3	0.5	1.1		7.5	10
0-4bar gauge pressure	0.2	0.3	0.8		12	16
0-6bar gauge pressure	0.2	0.3	0.8		18	24
0-10bar gauge pressure	0.2	0.3	0.8		30	40

1. Set the linearity according to the limit point
2. Reference condition EN 61298-1
3. Including linearity, lag, repeatability, deviation (deviation) of initial value of measuring range and end value of measuring range.
4. Including linearity, lag, repeatability, deviation between the initial value (deviation) and the end value of the measurement range, and the influence of thermal effect on the measurement start range (deviation) and measurement span.
5. MSP = measuring span

Output

Analog output	
Electric current	
▪ output 402	0 to 20 mA, 3-wire system
▪ output 405	4 to 20mA, two-wire system
▪ output 406	4 to 20 mA, three-wire system
Voltage	
▪ output 412	DC 0.5 to 4.5 V, three-wire system, accounting for 10% to 90% of the power supply voltage.
▪ output 415	DC0 to 10V, 3-wire system
▪ output 418	DC1 to 5V, 3-wire system
▪ output 420	DC1 to 6V, three-wire system ≤10 ms
▪ step response T90	
Impedance (current)	$RL \leq (UB - 12 V) \div 0.02 A (\Omega)$
▪ 0 to 20mA, 3-wire system (output 402)	$RL \leq (UB - 10 V) \div 0.02 A (\Omega)$
▪ 4 to 20 mA, two-wire system (output 405)	$RL \leq (UB - 12 V) \div 0.02 A (\Omega)$
▪ 4 to 20 mA, 3-wire system (output 406)	



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Output

Voltage	
▪ DC 0.5 to 4.5V, three-wire system (output 412)	RL≥50kΩ
▪ DC 0 to 10V, 3-wire system (output 415)	RL≥10kΩ
▪ DC 1 to 5V, three-wire system (output 418)	RL≥10 kΩ
▪ DC 1 to 6V, 3-wire system (output 420)	RL≥10 kΩ

Texture of wood

Process connection material	Stainless steel 316 Ti
Measuring thin film material	Stainless steel 316 L
Container material	Stainless steel 316 Ti
Conical sealing material	FPM
	EPDM
Cable material	PUR
	PE
	FEP
	EPR
Weight	200 g (without cable)
Diameter	25mm

Environmental conditions

Temperature medium/ environment is not allowed.	0 to 50°C
	Equipment must not freeze in the medium!
	Depending on the medium, restrictions may be required.
Store	-20 to +80 ° C, dry
Electromagnetic compatibility	
Hyper jammer ¹⁾	level B ³⁾
Interference immunity ²⁾	Industrial requirements
Protection type ⁴⁾	IP68, dive to 60m.

1) Reference EN61326-1

2) This product is suitable for industries, houses and small enterprises.

3) Refer to EN 61326-2-3.

4) Refer to EN 60529.

Auxiliary power

Power supply voltage UB ¹⁾	
▪ 0 to 20 mA, 3-wire system (output 402)	DC 11.5V to 30V, rated voltage DC 24 v.
▪ 4 to 20 mA, two-wire system (output 405)	DC 10V to 30V, rated voltage DC 24 v.
▪ 4 to 20 mA, 3-wire system (output 406)	DC 11.5V to 30V, rated voltage DC 24 v.
▪ DC 0.5 to 4.5 V, 3-wire system (output 412)	DC 5V
▪ DC 0 to 10 V, 3-wire system (output 415)	DC 11.5V to 30V, rated voltage DC 24 v.
▪ DC1 to 5V, 3-wire system (output 418)	DC 10V to 30V, rated voltage DC 24V.
▪ DC1 to 6 V, 3-wire system (output 420)	DC 10V to 30V, rated voltage DC 24 v.

1) Residual pulsation: the peak voltage cannot exceed or fall below the specified power supply voltage!

Reverse voltage protection	Yes (except DC 0.5 to 4.5 V, three-wire system [output 412])
Maximum current consumption	≤25 mA
circuit	SELV
ask	The equipment must be equipped with a circuit that meets the requirements of EN 61010-1 on "energy limiting circuit".

electrical connection

6-core shielded cable with integrated pressure compensation hose, AWG24 with sealing ring

material	
▪ outer sheath	PE, PUR, FEP ¹⁾
▪ Pressure compensation hose	PA
colour	
▪ PE and FEP cables	black
▪ PUR cable	Pebble ash
outside diameter	About 8.4 mm
Conductor cross section	0.25 mm ²
Bending radius ²⁾	
▪ mobile	160 mm
▪ stationary	120 mm
Tension	Up to 400 N
Weight	
▪ PE, PUR cable	About 115 g/m
▪ FEP cable	About 90 g/m
Permissible medium temperature	-20 to +60°C (depending on the medium)
Ultraviolet resistance	PE and PUR cables refer to VDE0207. FEP cables refer to DIN ISO 4892-2.

1) Depending on the selection version

2) It should be considered that if the protective hose is twisted or pinched, it will hinder the environmental pressure compensation.



Liquid level probe with EPR cable

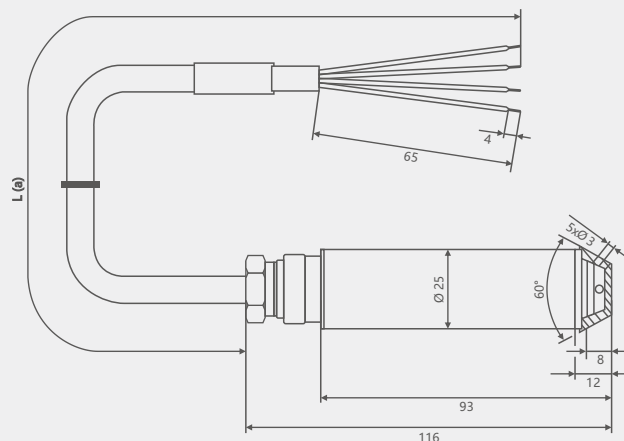
Double-core cable with ferrule without pressure compensation

material	
▪ outer sheath	EPR
Colour	
▪ EPR cable	blue
outside diameter	About 8.3mm
Conductor cross section	1mm ²
bend radius	
▪ mobile	40mm
▪ stationary	30mm
tension	Up to 400 N
weight	
▪ EPR cable outer sheath	About 92 g/m
Permissible medium temperature	-40 to +60 c

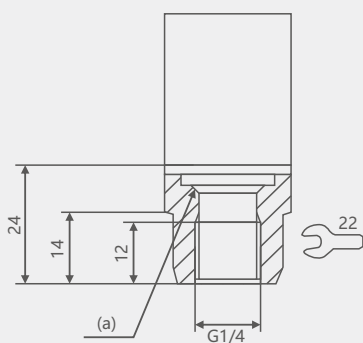
Size mm

The connection is closed at the bottom

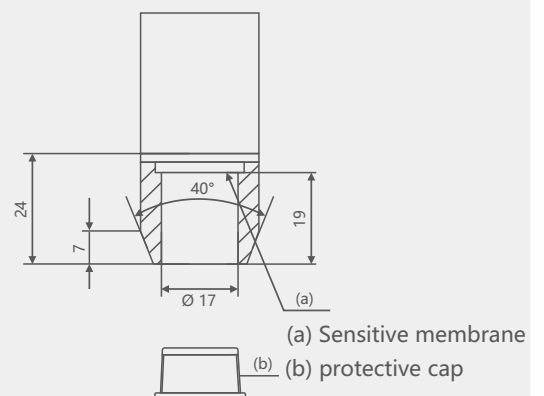
L (a) Cable length is determined according to customer's customization



G1/4 Inside

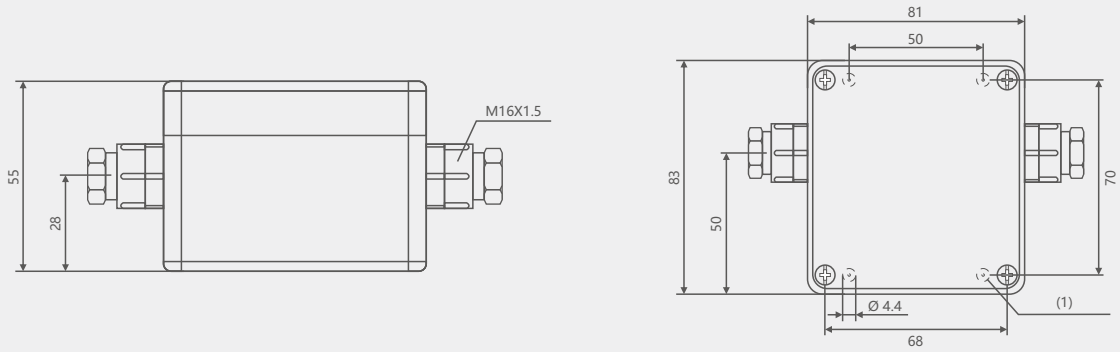


The connection is open at the bottom

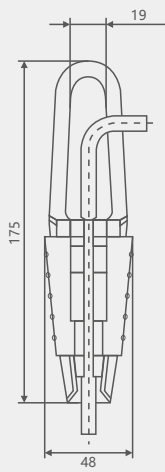


Attachment

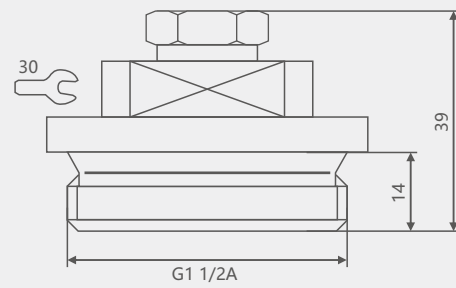
Junction box with pressure compensation



Cable clip




Sealing screw



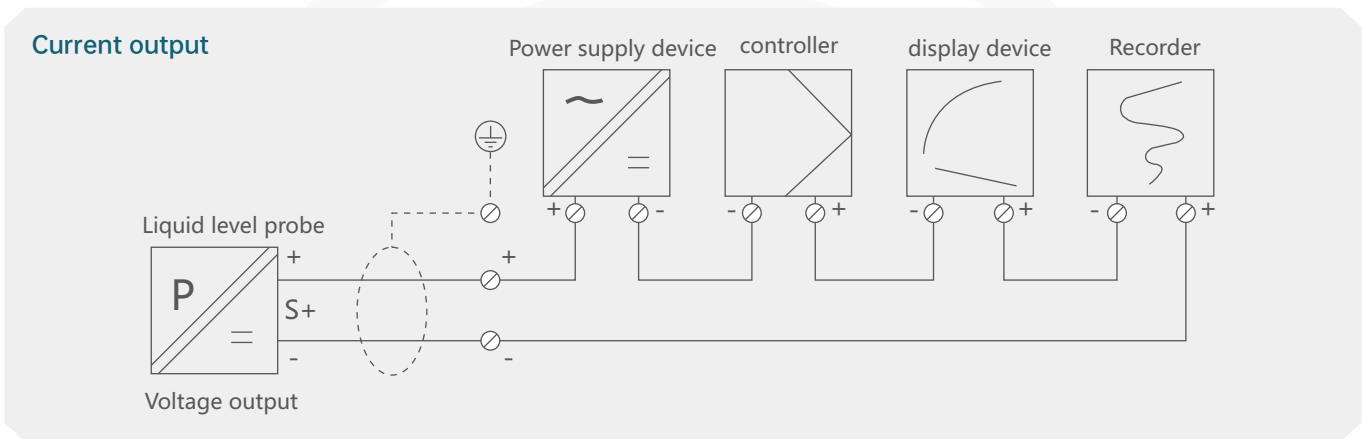
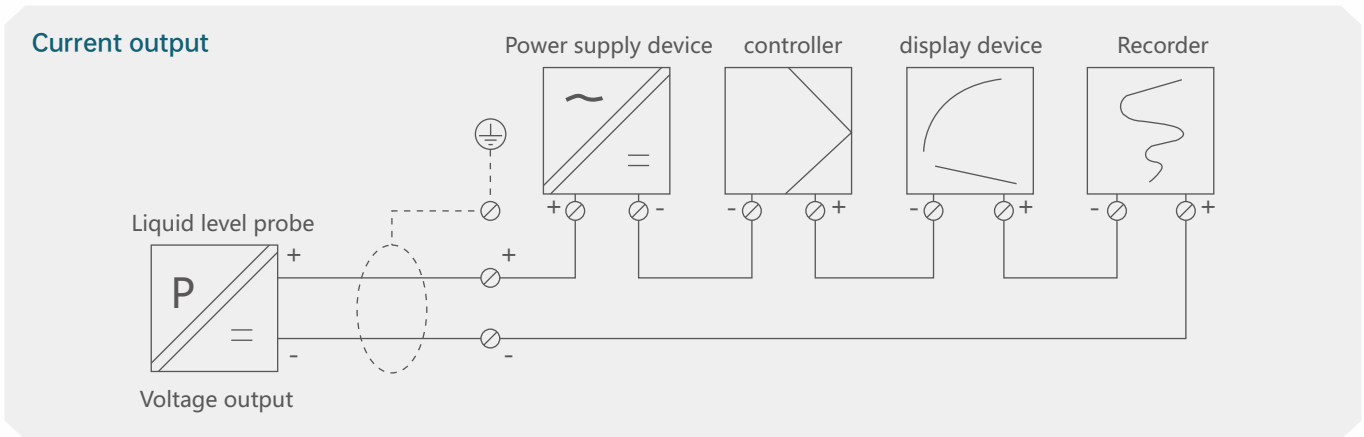
Liquid level probe with EPR cable

The connection diagram in the data table provides preliminary information about the connection options. For electrical connections, only installation instructions or operation manuals can be used. During installation, electrical connection, start-up and operation, it must be




Correctly follow the technical contents of safety information and warnings in the document.

connect	wiring	
		
	electric cable	
0 to 20mA, 3-wire system		
▪ Power supply voltage DC 11.5 to 30 V.	UB	white
▪ Rated power supply voltage DC 24 V	0 V/S-	ash
	S+	yellow
0 to 20 mA, two-wire system		
▪ Power supply voltage DC 10 to 30 V	UB/S+	white
▪ Rated power supply voltage DC 24 V	0 V/S-	ash
0 to 20 mA, two-wire system		
▪ Power supply voltage DC 10 to 30 V	UB/S+	palm
▪ Rated power supply voltage DC 24 V	0 V/S-	blue
0 to 20 mA, 3-wire system		
▪ Power supply voltage DC 11.5 to 30 V.	UB	white
▪ Rated power supply voltage DC 24 V	0 V/S-	ash
	S+	yellow
DC 0.5 to 4.5 V, three-wire system		
▪ Power supply voltage DC 5 V	UB	white
▪ Rated power supply voltage DC 5 V	0 V/S-	ash
	S+	yellow
DC 0 to 10V, three-wire system		
▪ Power supply voltage DC 11.5 to 30 V.	UB	white
▪ Rated power supply voltage DC 24 V	0 V/S-	ash
	S+	yellow
DC 1 to 5V, three-wire system		
DC 1 to 6V, three-wire system		
▪ Power supply voltage DC 11.5 to 30 V.	UB	white
▪ Rated power supply voltage DC 24 V	0 V/S-	ash
	S+	yellow
block		
▪ Warning: the equipment is grounded!	black	
▪ All connected devices (such as pumps and valves) are grounded to the same potential!		

Connection example



Attachment

Project	Detail description
electrical connector With pressure compensation element 	The junction box is used for the safe installation of the liquid level probe cable. The end of the pressure balance hose is always protected against sedimentation and condensation (IP65). The rest Power distribution can be carried out by cable without pressure balancing hose. The junction box should be as close to the surface of the medium as possible, while still outside the medium, so as to ensure that the system is implemented in the most economical and effective way.
cable clip 	The cable clamp fixes the probe in the specified depth of liquid and provides tension. Use cable clamps to ensure that cables are not easily deformed. The cable clamp is compatible with all liquid level probes. The clamping range is 5.5mm to 10.5 mm. The maximum tensile strength is 2.5 kN. The container is made of hot-dip galvanized steel plate. The clamping jaw and guide clamp are made of glass fiber reinforced polyamide. Stainless steel transformer Body can also be determined according to requirements.
Sealing threa 	For closed containers or wells with wellhead, cables should be guided through and fastened by sealing screws. The sealing screw consists of G 1 /2 "thread and is used for cable routing.
Cable pressure compensation filter	The pressure compensation filter is a kind of breathable filter, which ensures that the ventilation and exhaust ventilation are not permeated with moisture. It is installed at the end of a special cable.

LV60-Selection composition

Selection example **LV60**

1	A	2	H	3	N	4	S	5	V	6	Z	7	-	8	A
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1.Measuring range m	A	0-1
	B	0-5
	C	0-10
	D	0-15
	T ()	Other measuring ranges
2.Instrument type	G	Cable type
	H	Intelligent digital display
3.Working power supply	N	9-24V
	T ()	Other voltage types
4.Output signal	S	4-20mA
	R	4-20mA+HART
	T ()	Other output types
5.Material	V	304 stainless steel
	W	316 stainless steel
	T ()	Other material types
6.Threaded connection (Flange connection not optional)	Z	G1/2
	Y	G1/4
	X	1/4NPT
	W	1/2NPT
	T ()	Other threaded connections
7.Flange connection (Threaded connection not optional)	O	DN20
	P	DN25
	Q	DN32
	R	DN40
	S	DN65
	U	DN80
	V	DN100
	T ()	Other flange connection
8.precision	A	0.1%
	B	0.25%
	C	1.0%
	T ()	Other accuracy
9.Explosion-proof option	G	Intrinsically safe explosion-proof
	H	Flameproof
	N	No explosion-proof

Instructions:

LV60 input liquid level transmitter measuring range 0-1m, display as intelligent digital display type, voltage 24V, output 4-20mA, material is 304 stainless steel, connection is (6,6.1) binary choice, accuracy 0.1%, no explosion proof.

Product Certification

Compliance and approval; Rodweig level gauges meet key standards and certifications for process measurement technology; Thus guaranteeing the highest reliability in such Settings;

