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HollySys

PRODUCT BROCHURE

LEVEL

MAGNETIC LEVEL GAUGE

FLOAT LEVEL (INTERFACE) GAUGE

Intelligence
For Excellence

www.hollysys.com

Profile

Founded in 1993, HollySys is a leading supplier of intelligence solutions with more than 4,700 employees and operates in both China and abroad. HollySys is headquartered in Beijing with R&D, production, and service bases in Beijing, Hangzhou, Xi'an, Singapore, and local branches in major cities in China, as well as offices in India, Malaysia and Indonesia, establishing a comprehensive service network across the world.

HollySys business consists of industrial intelligence, transportation intelligence, and food and pharmaceutical intelligence, covering the main industries for the national economy and the people's livelihood. With years of technological accumulation in various fields and continuous capacity building, we can provide customers with customized integrated solutions, stable and reliable products, and full lifecycle services, helping them improve market competitiveness. Over the past three decades, we have served more than 35,000 clients, successfully completed more than 45,000 projects, and gained more than 1,000 new clients each year, making HollySys a world-renowned brand in automation and intelligence filed.

The HOLLIAS industrial control platform of HollySys features a series of advanced, practical and reliable industrial automation systems and HollySys automation instrumentations products. The system products include MACS-K, MACS-S industrial control system DCS, professional control systems such as DEH, ETS and SIS, and whole-process information-based software for manufacturing enterprises. Instrumentation products include isolated safety barriers, signal isolators, surge protectors, power transmitters, pressure transmitters, electromagnetic flowmeters, metal tube float meters, magnetic level gauges, radar level gauges, throttling elements, thermal elements, and pressure gauges.

The company's products have been successfully applied to major projects and key equipment, including 1000MW ultra-supercritical thermal power units, 1.2 million tons of urea and 5 million tons of oil refining main units, earning a good reputation in the industry.

Specializing in HollySys Instrumentation and control system engineering and integration, the company can provide both new and brown field projects of enterprises with HollySys proprietary products, as well as comprehensive engineering services such as customized design and construction & commissioning.

HollySys has always pursued continuous innovation and R&D while sticking to its vision "create the most valuable intelligent company through stable and sustainable development" to provide more reliable, secure, and intelligent technology and products for our customers.

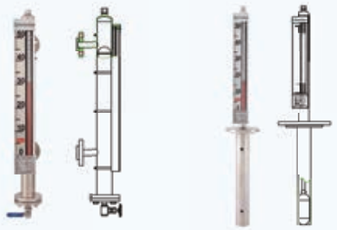
Contents

HollySys

AL2000 Series Magnetic Level Gauge

Overview

Based on the advantages of similar products at home and abroad, and combining with the actual situation in China, AL2000 series magnetic level gauge is a new generation of liquid level measuring instrument, which is produced on the basis of the standard of magnetic level gauge HG/T21584-95 promulgated by the former Ministry of Chemical Industry of The People's Republic of China, and can be used to detect the liquid level (interface) of liquid media in equipment made of various materials. Because the detection part of level gauges in this series is completely isolated from the display part, it has unique advantages in measuring the liquid level of high temperature, high pressure, high viscosity, toxic, harmful and strongly corrosive media, and has better reliability and safety than traditional glass tube and base-type level gauges.



Side-mounted

Top-mounted

Coupled with a level control and alarm switch, the series of level gauges realize level control, alarm, and linkage. Coupled with a built-in integrated level transmitter, it can convert the level (interface) signal into a two-wire 4~20mADC standard signal to achieve long-distance liquid level detection and control. It is widely applied to liquid level measurement and control in the various industries' production processes — electric power, petrochemicals, chemicals, metallurgy, environmental protection, shipping, construction, food, and more.

Feature

- High Accuracy: Provides accurate results, avoiding errors and losses caused by inaccurate measurement.
- High Reliability: Demonstrates good stability and reliability, ensuring stable operation in different working environments with minimal occurrence of faults.
- Interference Resistance: Keep normal operation in harsh environments, including those with magnetic fields or other electromagnetic interferences, high temperature, high pressure, and corrosive environments.
- Applicability: It can be applied to various measurement objects and application scenarios, catering to the diverse needs of users. It offers HART signal for convenient remote configuration and troubleshooting, while also featuring an on-site magnetic column display and LCD digital display.
- Durability: It boats a long service life, extended usage without significant wear or damage.
- Easy Maintenance: Easy to maintain and repair in case of faults, reducing users' maintenance costs and time.
- User-Friendly Operation: With its simple interface and intuitive operating methods, it offers users convenience and comfort during operation.
- High Safety: Takes safety into consideration, preventing abnormal situations such as excessively high or low levels, ensuring the safety of the production process. It is armed with liquid level switch alarm function.
- Cost-Effectiveness: It strikes a balance between performance, quality, and price, offering a high cost-performance ratio. Users can expet favorable economic returns while using it.

Structural and Principle

The magnetic level gauge is developed according to the buoyancy principle (Archimedes) combined with the magnetic coupling effect. When the liquid level in the measured container rises and falls, the float in the main pipe of the level gauge also rises and falls, and the permanent magnetic steel in the float is transmitted to the field indicator (ruler) through the magnetic coupling effect to turn the red and white turning columns. When the liquid level rises, the turning column is turned from white to red. When the liquid level drops, the turning column turns from red to white. The red-white junction of the indicator is the actual height of the medium level in the container.

Precautions for Installation and Use

- Please refer to the schematic diagram for the installation of magnetic level gauges of different models and specifications. When being installed, the level gauge shall be vertical. It is recommended to install a bypass valve (root valve) at the joint between the flange of the side-mounted magnetic level gauge and the equipment to facilitate maintenance and commissioning.
- Before installation, please turn the turning columns (plates) on all the magnetic panels into white with calibration magnetic steel.
- Please close the bypass valve (root valve) after installation, and do not open the connecting valve before the formal production or the flushing of the equipment pipeline, to prevent the rust dregs in the equipment from entering the main pipe of the level gauge and being attracted by the magnetic float.
- The main pipe of the magnetic turning column level gauge cannot be close to iron magnetic devices, because the float is magnetic, and it will be attracted when it meets iron objects, which will affect the normal measurement of liquid level.
- When putting the level gauge into use, please open the upper bypass valve first, then open the lower bypass valve, first open the valve by one third, and then fully open it after the liquid level is stable. At the same time, observe whether the turning column (plate) of the magnetic level gauge turns from white to red at the same time. If there is any intersection (red and white turning columns (plates) cross), please use the accompanying calibration magnetic steel to turn the turning column (plate) in the liquid level part into red and that out of the liquid level part into white, then close the lower valve, open the blowdown valve, discharge the material to see if the liquid level drops, and then close the blowdown valve, and open the lower valve to observe the liquid level again.
- According to the medium, clean the main pipe and float irregularly to remove impurities and ensure normal operation.、

Model and Specification Table (I)

Installation form	Series model	Structural features	Wetted part material	Measurement range	Design tempera	Design pressure
Side-mounted	AL2001	Basic type	304, 316L	0-300 ~ 15000mm	0 ~ 150°C	-0.1 ~4.0MPa
	AL2002	Medium-temperature and medium-pressure type	304, 316L	0-300 ~ 6000mm	0 ~200°C	4.0 ~6.3MPa
	AL2003	High-temperature and high-pressure type	304, 316L	0-300 ~ 6000mm	0~420°C	6.4 ~16.0MPa
	AL2004	Sanitary type	316L	0-300 ~ 6000mm	0~150°C	-0.1 ~2.5MPa
	AL2005	Low-density type	304, 316L	0-300 ~ 6000mm	-15~100°C	-0.1 ~6.3MPa
	AL2006	PP corrosion-proof type (304 lined PP)	PP	0-300 ~ 6000mm	0~80°C	0 ~0.6MPa
	AL2007A	PTFE corrosion-proof type (304 lined PTFE)	PTFE	0-500 ~ 6000mm	0~150°C	0 ~2.5MPa
	AL2007B					-0.1 ~0MPa, 0 ~10MPa
	AL2008A	Jacket heating type	304, 316L	0-300 ~ 6000mm	0~200°C	-0.1 ~4.0MPa
	AL2008B	Electric heat tracing type	304, 316L	0-300 ~ 6000mm	0~100°C	-0.1 ~4.0MPa
	AL2009	Vacuum jacket type	304, 316L	0-300 ~ 6000mm	-15~200°C	-0.1 ~6.3MPa
	AL2010	Balanced transmission type	304, 316L	0-300 ~ 15000mm	0~200°C	0MPa(常压)
	AL2011	PP type	PP	0-300 ~ 3000mm	0~80°C	0 ~0.6MPa
	AL2012	Low-temperature and frost-proof type	304, 316L	0-300 ~ 6000mm	-60~0°C	-0.1 ~6.3MPa
Top-mounted	AL2020	Ordinary top-mounted type	304, 316L	0-500 ~ 4000mm	-15~420°C	-0.1 ~2.5MPa
	AL2021	Top-mounted type without protective tube	304, 316L	0-800 ~ 4000mm	-15~420°C	-0.1 ~4.0MPa
	AL2022	PP corrosion-proof and top-mounted type	PP	0-800 ~ 4000mm	0~80°C	0 ~0.6MPa
	AL2023A	PTFE corrosion-proof and top-mounted type	PTFE	0-800 ~ 3500mm	0~150°C	0 ~1.6MPa
	AL2023B					-0.1 ~0MPa, 0 ~1.6MPa
Side-mounted	AL2500	Magnetic sensitive type	304, 316L	0-300 ~ 10000mm	0~200°C	-0.1 ~16.0MPa

Description of Model Selection

During model selection, firstly select the series models according to the main technical parameters listed in the Model and Specification Table (I), and then select the supporting devices and accessories according to the Model and Specification Table (II). The design temperature and design pressure listed in the Model and Specification Table (I) are standard. If the user's working condition requirements are higher than these technical parameters, please indicate the requirements when ordering.

Comparison Table between Sinking Distance C and Medium Density

Liquid medium density	Sinking distance	Examples of typical liquid media
0.38 ~0.60g/cm^3	450~300mm	LPG, liquid ammonia, ethylene, hydrocyanic acid, and ethane
0.61 ~0.74g/cm^3	300~200mm	Gasoline and butadiene
0.75 ~0.85g/cm^3	300~250mm	Methanol, epoxy (propane), xylene, light oil, and ethanol
0.86 ~0.99g/cm^3	250~200mm	Acetone, ammonia water, crude benzene, beer, heavy oil, tallow, and ethylbenzene
1.00 ~1.10g/cm^3	220~200mm	Water, acetic acid, and camphor oil
1.11 ~1.25g/cm^3	200~170mm	Hydrochloric acid, tar, chlorosulfonic acid, nitrobenzene, and FR-22
1.26 ~1.39g/cm^3	170~160mm	Caustic soda liquid, maltose, 20% dilute sulfuric acid, and dimethyl sulfate
1.40 ~1.59g/cm^3	160~140mm	Liquid chlorine, dilute sulfuric acid, concentrated nitric acid, FR-12, and chloroform
1.60 ~2.00g/cm^3	150~120mm	98% sulfuric acid, oleum, perchloric acid, bromohydrate phosphoric acid, and fluorine oil

Comparison Table of Common Stainless Steel Material Code

Germany	The United States	Japan	China
1.4783	321	SUS321	1Cr18Ni9Ti
1.4571	316Ti	--	0Cr18Ni2Mo2Ti
1.4401	316	SUS316	0Cr17Ni12Mo2
1.4435	316L	SUS316L	00Cr17Ni14Mo2
1.4301	304	SUS304	0Cr18Ni9

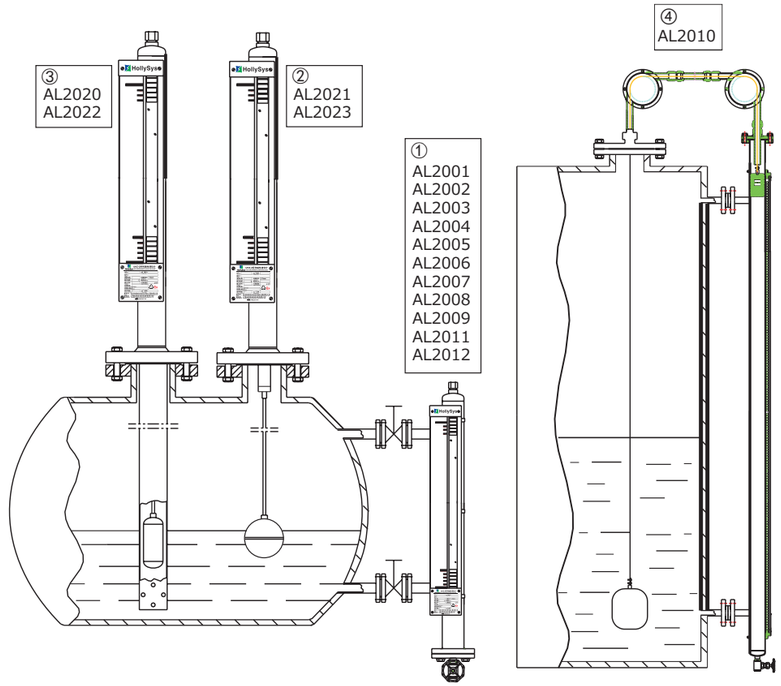
Note: 1. For the medium with a density of 0.38~0.74, the sinking distance listed in this table is from the titanium float, and the other floats are made of 316L.
2. The sinking distance listed in this table may change according to the working conditions (pressure and temperature).

Model and Specification Table (II)

AL20**	Magnetic Level Gauge		Serial No.
	P0	Not provided with blowdown valve	Drain valve
	P1	Provided with blowdown valve (ball valve)	
	P2	Provided with blowdown valve (stop valve)	
	P3	Provided with blowdown valve (special for polypropylene ball valve AL2006/2011)	
	P4	Provided with blowdown valve (fluorine-lined diaphragm ball valve)	
	M0	Not provided with 4~20-m ADC remote transmitter	Transmitter If HART protocol is required, add the suffix H (e.g. M1H, M2H, M3H, M4H)
	M1	Provided with waterproof 4 - 20mADC remote transmitter	
	M2	Provided with intrinsically safe 4 - 20mADC remote transmitter	
	M3	Provided with explosion-proof 4 - 20mADC remote transmitter	
	M4	Provided with YC200 magnetostrictive level transmitter with output of 4~20mADC	
	K0	Not provided with the level switch	Optional level switch YK01 for linkage YK02 for alarm
	K1	Provided with YK01 regional level switch. If the level gauge needs to be equipped with 2 YK01 switches, the selecting type shall be 2K1	
	K1B	Provided with YK01 regional level switch (Exd), with the same selecting type as above	
	K2	Provided with YK02 reed memory type level switch, with the same selecting type as above	
	K2B	Provided with YK02 reed memory type level switch (Exd), with the same selecting type as above	
	X0	Without LCD	LCD
	X1	With LCD	
	F1	Wetted part material: stainless steel 304	Wetted part material
	F2	Wetted part material: stainless steel 316L	
	F3	Wetted part material: pp/pvc	
	F4	Wetted part material: 304 + PTFE	
	F5	Others	
	L	Panel material: aluminum alloy	Panel material
	S	Panel material: stainless steel	
	□	Flange specification (nominal diameter, nominal pressure and sealing surface)	Flange specification
	□	Measurement range (mm)	Processing parameter
	□	Installation height (mm) (Note: side-mounted level gauge does not include this item)	
	C	Atmospheric pressure vessel	
	□	Actual operating pressure (MPa)	
	□	Medium density g/cm^3	
	L	Liquid level (can be omitted)	Measurement method
	J	Interface level	
AL20**	□ □ □ □ □ □ □ □ □ □ □ □		

★ Other special requirements can be indicated at the time of ordering!

Schematic Diagram of Installation



① Side-mounted magnetic level gauge	② Top-mounted level gauge without protective tube	③ Top-mounted level gauge with protective tube	④ Balanced transmission type level gauge
AL2001 ~ 2012 side-mounted level gauge is suitable for the medium under the status of room temperature, atmospheric pressure, high temperature, high pressure, low temperature, and high viscosity, low density and strong corrosiveness.	AL2021 top-mounted level gauge without protective tube is suitable for liquid level measurement of heavy oil, crude oil, resin and other high viscosity medium. AL2023 top-mounted corrosion-proof level gauge is suitable for liquid level measurement of low-level hydrochloric acid tank and other liquid levels.	AL2020/2022 top-mounted level gauge with protective tube is suitable for liquid level measurement of underground storage tanks, such as buried oil tanks and low-level acid tanks.	AL2010 balanced transmission type level gauge is specially designed for storage tanks with high viscosity medium and large measurement range. Typical examples include heavy oil storage tanks and oil storage tanks.

This type of level gauge is equipped with built-in remote transmitter and YK01 and YK02 level switches to realize remote measurement or control alarm of liquid level.

※The following technical parameters must be accurately provided for the model selection of level gauge:

(1) Measurement range (that of side-mounted level gauge is the center distance between upper and lower flanges, and that of top-mounted level gauge is the height of equipment)
(2) Flange standard and specification
(3) Operating temperature and pressure
(4) Medium name and density
(5) Wetted part material
(6) Short-circuit length of mounting flange of top-mounted level gauge

AL2001 Side-mounted Magnetic Level Gauge (Ordinary)

Key Technical Specifications

- Measurement range: 0~15000mm
- Measurement accuracy: ±10mm
- Design pressure: -0.1~4.0MPa
- Design temperature: 0~150° C
- Wetted part material: 304, 316L (Other special materials shall be indicated at the time of ordering)

AL2002 Side-mounted Magnetic Level Gauge (Medium-temperature Type and Medium-pressure Type)

Key Technical Specifications

- Measurement range: 0~6000mm
- Measurement accuracy: ±10mm
- Design pressure: 4.0~6.3MPa
- Design temperature: 150~200° C
- Wetted part material: 304, 316L (Other special materials shall be indicated at the time of ordering)

AL2003 Side-mounted Magnetic Level Gauge (High-temperature Type and High-pressure Type)

Key Technical Specifications

- Measurement range: 0~6000mm
- Measurement accuracy: ±10mm
- Design pressure: 6.4~16.0MPa
- Design temperature: ≥ 200° C
- Wetted part material: 304, 316L (Other special materials shall be indicated at the time of ordering)

AL2004 Side-mounted Magnetic Level Gauge (Sanitary Type)

Key Technical Specifications

- Measurement range: 0~6000mm
- Measurement accuracy: ±10mm
- Design pressure: 0~1.0MPa
- Design temperature: 0~150° C
- Wetted part material: 304 and 316L

AL2005 Side-mounted Magnetic Level Gauge
(Low-density Type)

Key Technical Specifications

- Measurement range: 0~6000mm
- Measurement accuracy: ±10mm
- Design pressure: -0.1~6.3MPa
- Design temperature: -20~150° C
- Wetted part material: 304, 316L (Other special materials shall be indicated at the time of ordering)

AL2006 Side-mounted Magnetic Level Gauge
(Stainless Steel Lined PP Type)

Key Technical Specifications

- Measurement range: 0~6000mm
- Measurement accuracy: ±10mm
- Design pressure: 0~0.6MPa
- Design temperature: 0~80° C
- Wetted part material: 304+PP

AL2007A Side-mounted Magnetic Level Gauge
(Stainless Steel Lined PTFE Pipe Lining Process)
AL2007B Side-mounted Magnetic Level Gauge
(Stainless Steel Lined PTFE Roller Coating Process)

Key Technical Specifications

- Measurement range: 0~6000mm
- Measurement accuracy: ±10mm
- Applicable pressure of pipe lining structure: 0~2.5MPa
- Applicable pressure of roller coating structure: -0.1~0MPa, 0~10MPa
- Applicable temperature: -50~150° C
- Materials of cylinder and flange: 304 and 316L
- Wetted part material: PTFE
- Note: When the level gauge leaves the factory, it is not provided with blowdown valve.

AL2008A Side-mounted Magnetic Level Gauge
(Jacket Heating Type)

Key Technical Specifications

- Measurement range: 0~6000mm
- Measurement accuracy: ±10mm
- Design pressure: -0.1~4.0MPa (Special requirements shall be indicated at the time of ordering)
- Design temperature: 0~200° C
- Wetted part material: 304 and 316L (Other materials shall be indicated at the time of ordering)
- Jacket interface: 1/2" external thread (Other specifications shall be indicated at the time of ordering)
- Jacket pressure resistance: ≤ 1.0MPa

AL2008B Side-mounted Magnetic Level Gauge
(Electric Heat Tracing Type)

Key Technical Specifications

- Measurement range: 0~6000mm
- Measurement accuracy: ±10mm
- Design pressure: -0.1~4.0MPa
- Design temperature: 0~150° C (medium temperature)
- Wetted part material: 304 and 316L
- Power supply: 220VAC, 36VAC, 24VAC (optional)
- Power: 35W/m

AL2009 Side-mounted Magnetic Level Gauge
(Vacuum Jacket Type)

Key Technical Specifications

- Measurement range: 0~6000mm
- Measurement accuracy: ±10mm
- Design pressure: -0.1~6.3MPa
- Design temperature: -30~150° C
- Wetted part material: 304 and 316L

AL2010A/B Side-mounted Magnetic Level Gauge
(Balanced Transmission Type)

Key Technical Specifications

- Measurement range: 0~15000mm
- Measurement accuracy: ±10mm
- Design pressure: atmospheric pressure
- Design temperature: 0~150° C
- Wetted part material: 304 and 316L
- Specification of top-mounted flange: DN150 PN1.0 (standard)
- Type: 210A positive reading, 210B reverse reading (standard)

AL2011 Side-mounted Magnetic Level Gauge
(PP Corrosion-proof Type)

Key Technical Specifications

- Measurement range: 0~3000mm
- Measurement accuracy: ±10mm
- Design pressure: 0~0.6MPa
- Design temperature: 0~80° C
- Wetted part material: PP and PVC
- Not suitable for organic medium (such as benzene, toluene, and acetone)

PP material PVC material

AL2012 Side-mounted Magnetic Level Gauge
(Low Temperature and Frost-proof type)

Key Technical Specifications

- Measurement range: 0~6000mm
- Measurement accuracy: ±10mm
- Design pressure: -0.1~6.3MPa
- Design temperature: -100 ~ 0° C (Ultra-low temperature shall be indicated at the time of ordering)
- Wetted part material: 304 and 316L

AL2020 Magnetic Level Gauge
(Ordinary Top-mounted Type)

Key Technical Specifications

- Measurement range: 0~4000mm
- Measurement accuracy: ±l0mm
- Design pressure: -0.1~2.5MPa
- Design temperature: 0~150° C (Other temperatures shall be indicated in the time of ordering)
- Wetted part material: 304 and 316L
- Process connection: greater than DN80

AL2021 Magnetic Level Gauge
(Top-mounted Without Protective Tube)

Key Technical Specifications

- Measurement range: 0~4000mm
- Measurement accuracy: ±10mm
- Design pressure: -0.1~2.5MPa
- Design temperature: 0~150° C (Other temperatures shall be indicated in the time of ordering)
- Wetted part material: 304 and 316L
- Process connection: greater than DN150 (standard), and other configurations shall be indicated in the time of ordering
- A pipe with diameter greater than DN150 is recommended

AL2022 Magnetic Level Gauge
(PP Top-mounted Corrosion-proof Type)

Key Technical Specifications

- Measurement range: 0~4000mm
- Measurement accuracy: ±10mm
- Design pressure: 0~0.6MPa
- Design temperature: 0~80° C
- Wetted part material: PP and PVC (UPVC)

AL2023A Magnetic Level Gauge
(PTFE Top-mounted Corrosion-proof Pipe Lining Process)
AL2023B Magnetic Level Gauge
(PTFE Top-mounted Corrosion-proof Roller Coating Process)

Key Technical Specifications

- Measurement range: 0~3500mm
- Measurement accuracy: ±10mm
- Applicable pressure of pipe lining structure: 0~1.6MPa
- Applicable pressure of roller coating structure: -0.1~0MPa, 0~1.6MPa
- Applicable temperature: -50~150° C
- Materials of cylinder and flange: 304 and 316L
- Wetted part material: PTFE

AL2500 Magnetic Sensitive Level Gauge with LED Two-color Light Column

Key Technical Specifications

- Measurement range: 0~10000mm
- Measurement accuracy: ±10mm
- Design pressure: -0.1~16MPa
- Design temperature: 0~200° C (Special requirements shall be indicated at the time of ordering)
- Wetted part material: 304 and 316L
- Power supply voltage: 24VDC (standard), 220VAC
- Power consumption: 50W/m
- Wetted part material: 304 and 316L
- Power supply voltage: 24VDC (standard), 220VAC
- Power consumption: 50W/m

Supporting Device of Magnetic Level Gauge:
AL2000-B200 Series Remote Level Transmitter

Built-in Remote Transmitter

- Measurement range: 0~8000mm (single piece), and segmented connection is for overlength.
- Measurement accuracy: 2.5% for H ≤ 1000mm and 1.5% for H>1000mm.
- Resolution: 10mm (max. 5mm)
- Output signal: 4~20mADC two-wire
- Explosion-proof type: explosion-proof Exd IIC T4~T6
  intrinsically safe Exia IIC T4~T6
- Power supply voltage: 24VDC
- Communication protocol: HART (optional)
- Supporting panel (indicator) material: aluminum alloy.

Bundled Remote Transmitter

- Measurement range: 0~8000mm (single piece), and segmented connection is for overlength.
- Measurement accuracy: 2.5% for H ≤ 1000mm and 1.5% for H>1000mm.
- Resolution: 10mm (max. 5mm)
- Output signal: 4~20mADC two-wire
- Explosion-proof type: explosion-proof Exd IIC T4~T6
  intrinsically safe Exia IIC T4~T6
- Power supply voltage: 24VDC
- Communication protocol: HART (optional)
- Supporting panel (indicator) material: stainless steel 304.

AL2300 Series Magnetic Float Level Transmitter

Overview

AL2300 series magnetic float level transmitter mainly consists of level sensor and current converter. It uses the magnetic float change of rising and dropping along the guide rod of the level sensor, so that the resistance signal in the sensor changes linearly, and then the current converter converts this resistance signal into a two-wire 4~20mADC current signal to realize the remote transmission of the level signal.

The float level transmitter can be directly used with all kinds of display instruments produced by the company, and can also be used with upper computer PLC, to realize remote display, alarm and control of liquid level. According to the requirements of users, the float level transmitter (digital) with on-site instructions can also be provided. The signal changes linearly, and then the resistance signal is converted into a two-wire 4~20mADC current signal by the current converter, to realize the remote transmission of the level signal.

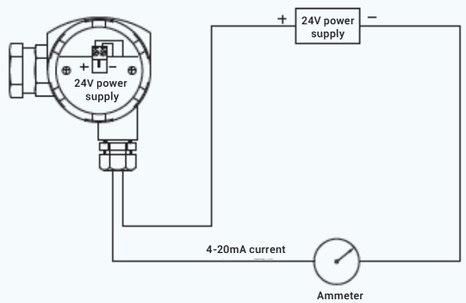
Key Technical Specifications

- Measurement range: 0~300mm to 6000mm
- Measurement accuracy: ±10mm
- Output signal: two-wire 4~20mA
- Electrical interface: M20×1.5 internal thread
- Operating temperature: -15° C~120° C
- Medium density: ≥ 0.64g/cm^3
- Operating pressure: -0.1MPa~4.0MPa
- Medium viscosity: ≤ 0.02PaS
- Wetted part material: 304, 316L, PTFE and PP (positioned according to medium and working conditions)
- Transmitter power consumption: ≤ 1W
- Transmitter power supply: 24VDC (the company's instruments comes with a 24VDC feed output)
- Ambient temperature: -40°C ~60°C
- Load impedance: ≤ 600Ω
- Protection grade: IP65
- Explosion-proof grade: intrinsically safe Exia IIC T4~T6Ga
  flameproof Exd IIC T4~T6
- Connecting flange standard: HG20592-20635-97. Other standards (such as GB, JB, ANSI, and JIS) used by the user shall be indicated at the time of ordering.

Commissioning Method

The level transmitter has been strictly commissioned before leaving the factory, and users generally do not need to readjust it. If it needs to be calibrated for some reason, please commission it according to the following methods.

- Open the transmitter junction box, and the wiring method is shown in the right figure.
- Move the magnetic float of the level transmitter to the lower retainer ring position (i.e., the zero position), and the reading of the ammeter should be 4mA. If the deviation from 4mA is beyond the accuracy range, adjust the zero potentiometer of the conversion module in the junction box.
- The float slowly moves along the guide rod to the measurement range (i.e. at full scale), and the starting point is from zero position. At this time, the reading of the ammeter should be 20mA. If the deviation from 20mA is beyond the accuracy range, adjust the range potentiometer of the conversion module in the junction box.



- After adjusting the zero position and range, slowly move the float to 1/2 of the range. At this time, the reading of the ammeter should be 12 mA.
- Repeat the commissioning for two to three times according to the above steps to complete the calibration of the transmitter.

Model and Specification Table

AL2300	Magnetic float level transmitter
1	Basic type, output two-wire system 4~20mADC, guide rod material: stainless steel
2	With on-site pointer indication, output two-wire system 4~20mADC, guide rod material: stainless steel
3	With on-site digital indication, output two-wire system 4~20mADC, guide rod material: stainless steel
4	Corrosion-proof type, output two-wire system 4~20mADC, guide rod material: stainless steel, case material: PP
5	Corrosion-proof type, with on-site pointer indication, output two-wire system 4~20mADC, guide rod material: stainless steel, case material: PP
6	Corrosion-proof type, with on-site digital indication, output two-wire system 4~20mADC, guide rod material: stainless steel, case material: PP
7	Corrosion-proof type, output two-wire system 4~20mADC, guide rod material: stainless steel, case material: PTFE (polytetrafluoroethylene)
8	Corrosion-proof type, with on-site pointer indication, output two-wire system 4~20mADC, guide rod material: stainless steel, case material: PTFE (polytetrafluoroethylene)
9	Anti-corrosion type, with on-site digital indication, output two-wire system 4~20mADC, guide rod material: stainless steel, case: PTFE (polytetrafluoroethylene)
T	Flange connection (flange material: carbon steel)
S	Flange connection (flange material: stainless steel)
J	Bracket installation
L	Threaded connection
☐	Flange specification (nominal diameter/nominal pressure and sealing face
P	Ordinary
D	Explosion-proof type
B	Intrinsically safe
☐	Installation height (mm)
☐	Measurement range (mm)
☐	Density g/cm^3
○	Operating pressure: normal pressure
☐	Actual operating pressure (MPa)
AL2300	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Selection Examples

The liquid level of the buried oil tank needs to be measured. The installation form is flange connection, the flange specification is DN50 PN1.0, the flameproof level transmitter with on-site digital display is used for 4~20mA output, the guide rod is made of stainless steel, the measurement range is 1800mm, the installation height is 2100mm (that is, the flange short-circuit height is 300mm), and at normal temperature and pressure, the medium is light diesel oil with a density of 0.85g/cm^3.

Model: AL2303-T50/1.0D-2100-1800-0.85-O

HL3010 Series Float Level (Interface) Gauge

Overview

HL3010 series float level (interface) gauge is a product assembled by an international brand intelligent level controller. The instrument can be used to measure liquid level, interface level or density, and can output 4-20mA standard DC signals. The intelligent level controllers using HART communication protocol can also access information that is critical to process operation. With a 375 or 475 Handhold HART communicator compatible with the intelligent level controller, information from the process, intelligent level controller, or float measurement chamber can be obtained. The HART communicator can be connected to the on-site junction box of the intelligent level controller. With the HART communicator, users can query, configure, calibrate, or test intelligent level controllers. With the HART protocol, information from the site can be downloaded into the control system or received as information in a single loop.

HL3010 series float level gauge (boundary meter) consists of imported DLC3000 intelligent level controller with original packaging, float measurement chamber, measurement mechanism, and torque tube. The float is immersed in the fluid level in the measurement chamber and is rigidly connected to the torque tube system. The force borne by the torque tube system is the net value of the dead weight of the float minus the liquid buoyancy borne by the float, and the torque tube is twisted at a certain angle by this resultant force. Changes in the position, density, or interface level of the measured liquid cause a change of the float position, which is transmitted to the torque tube component to rotate the product. The rotating motion of the torsion tube is transmitted to the lever of the intelligent level controller, so that the magnet fixed on the lever component is displaced and the magnetic field detected by the Hall sensor is changed. The sensor converts the magnetic field signal into an electrical signal. The color microcontroller of DLC3000 series intelligent level controller and relevant electronic circuits measure process variables provide current output, drive liquid crystal display (LCD) and provide HART communication capability. The microcontroller receives the signal compensated and linearized by the ambient temperature, and also compensates for the change of liquid density caused by the change of process temperature. The digital-to-analog (D/A) output line receives the output of the microcontroller and provides a 4~20mA current output signal. LCD can display analog output, process variables (liquid level, interface level or density), process temperature (if RTD is installed), torque tube rotation, angle and percentage range of displayed variables.

Model and Specification Table

HL3010-	Intelligent electric float level (interface) transmitter (Fisher header)		Serial No.
HL3010G-	Intelligent electric float level (interface) transmitter (domestic header)		
H	HART communication protocol (only optional for HL3010)		Communication protocol
1	Carbon steel		Material
2	321(1Cr18Ni9Ti)		
3	316Ti(0Cr18Ni12Mo2Ti)		
4	304(0Cr18Ni9)		
5	316L(00Cr14Ni12Mo2)		
6	Special material (to be specified)		
H	Side-mounted type on outer float side		Installation form
C	Base-mounted type on outer float side		
F	Top-mounted type on outer float side		
G	Base-mounted type at the top of outer float		
N	Top-mounted type of inner float		
1	Measured liquid level		Measured object
2	Measured interface level		
3	Measured density		
□	Flange specification		Flange specification
4	2.5MPa		Operating pressure
5	4.0MPa		
6	6.3MPa		
7	16.0MPa		
8	32.0MPa		
9	40.0MPa		
T1	Normal temperature type: -40~50° C		Operating temperature
T2	High-temperature type: 150~400° C		
T3	Low-temperature type: -196~40° C		
D	Flameproof Exd IIC T4~T6		Ex mark
B	Intrinsically safe Exia IIC T4~T6		
K1	Steam jacket		Additional device (optional)
K2	Electric heat tracing		
□□□□	Measurement range (mm)		Measurement range
HL3010 HL3010G	□ □ □ □ □ □ □ □ □ □ □		

★ Other special requirements can be indicated at the time of ordering!

HL3010 Float Level Gauge

Key Technical Specifications

- Measurement range: 0~4000mm
- Measurement accuracy: 0.5%FS
- Design pressure: -0.1~40MPa
- Design temperature: -100~400° C
- Power supply: 24VDC
- Output signal: 4-20mADC+HART
- On-site display: LCD
- Electrical interface: NPT1/2"
- Wetted part material: carbon steel, stainless steel 304, and 316L
  (Other special materials shall be indicated at the time of ordering)
- Torque tube material: Inconel 600
- Installation method of controller (header): adjustable angle within 270 degree
- Controller (header) brand: Fisher
- Explosion-proof type: explosion-proof Exd IIC T4~T6
  intrinsically safe Exia IIC T4~T6

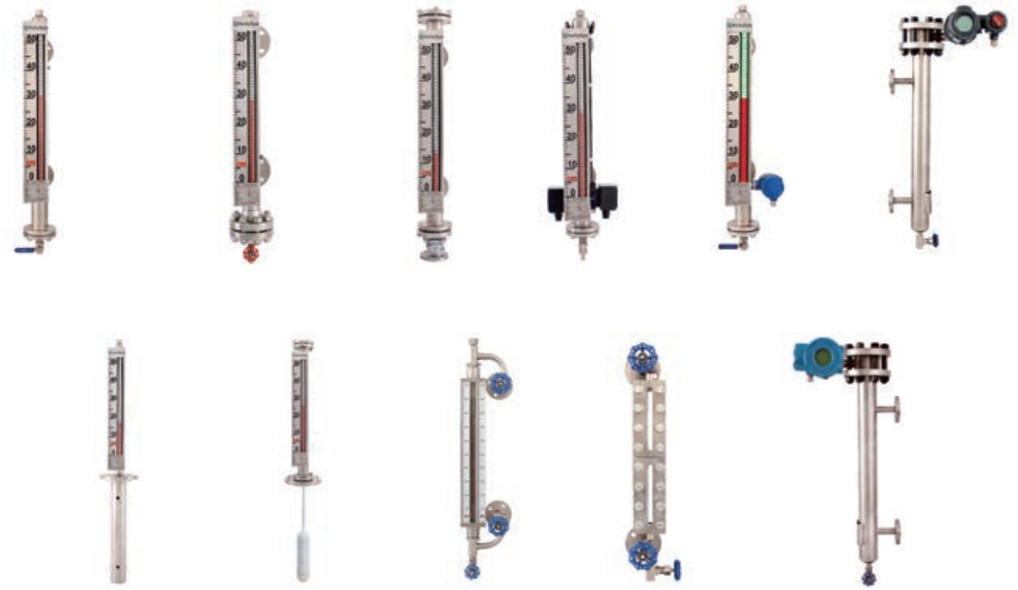
HL3010G Float Level Gauge

Key Technical Specifications

- Measurement range: 0~4000mm
- Measurement accuracy: 0.5%FS
- Design pressure: -0.1~40MPa
- Design temperature: -100~400° C
- Power supply: 24VDC
- Output signal: 4-20mADC
- On-site display: LCD
- Electrical interface: M20×1.5
- Wetted part material: carbon steel, stainless steel 304, and 316L
  (Other special materials shall be indicated at the time of ordering)
- Torque tube material: Inconel 600
- Installation method of controller (header): adjustable angle within 270 degree
- Controller (header) brand: domestic
- Explosion-proof type: explosion-proof Exd IIC T4~T6
  intrinsically safe Exia IIC T4~T6

Product Series

Level Gauges



Level Switches

Offshore Side Mounted Type

Standard Side Mounted Type

Standard Top Mounted Type

Adjustable Side Mounted Type

High Temperature Side Mounted Type