Tel: 011 795 9500 E-mail: sales@allpronix.com

Electromagnetic flowmeter

Committed to process automation solutions

Datasheet



ALLMAG4000

Introduction

SUP-LDG series of electromagnetic flowmeter was developed on long-cultivated technology for flow measure. LDG family has extended its application range with such model as integrated and remote. Through constant development and improvements, LDG series electromagnetic flow meter has become more accurate and reliable and widely used in the industrial instrumental field. We provides wide range of electromagnetic flow meters, all fulfilling the highest demands in terms of accuracy and reliability in industries such as water and waste water, food and beverage, mining, pulp and paper.

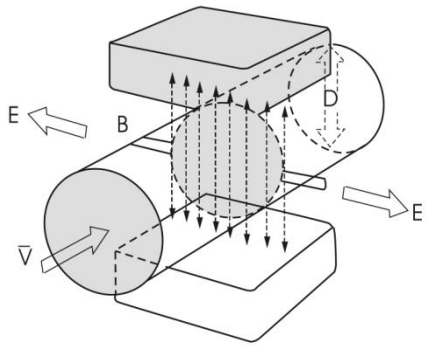
Please note：Electromagnetic flow meter is only applicable to measure the flow of conductive liquid. The fresh supply of equipment is in factory setting condition, and only when manufacturers set the appropriate parameters, can it work well.

Principle

The measurement principle of magnetic flowmeters can be described as follows: when the liquid goes through the pipe at the flow rate of v with a diameter D, within which a magnetic flux density of B is created by an exciting coil, the following electromotive E is generated in proportion to flow speed v:

E=KBVD

E—Induced voltage；
K—Constant；
B—Magnetic induction (magnetic field)；
V—Flow velocity；
D—Pipe Size



Type overview

Compact type		Remote type	

Characteristics

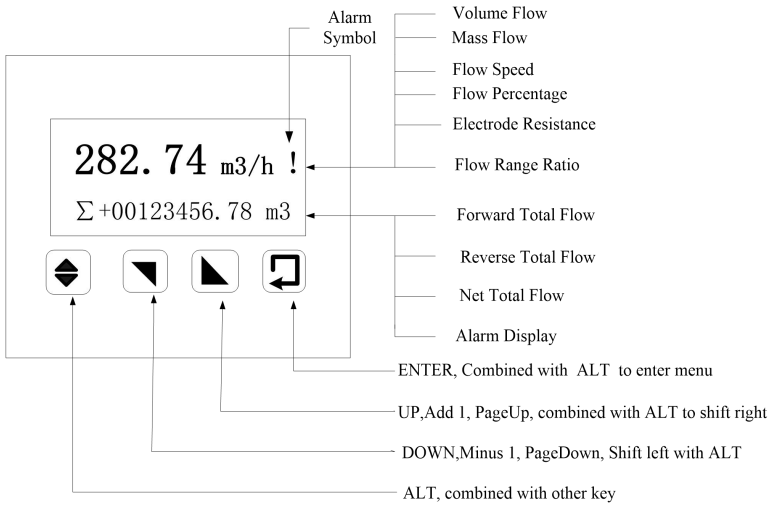
Compact type

- Excellent measurement repeatability and linearity
- Good reliability and anti-interference performance
- Good pressure resistance sealing ability
- Self diagnosis for empty pipe Detection
- Low pressure loss measurement tube
- Extremely simple operation
- High degree of accuracy
- High intelligentization

Remote type

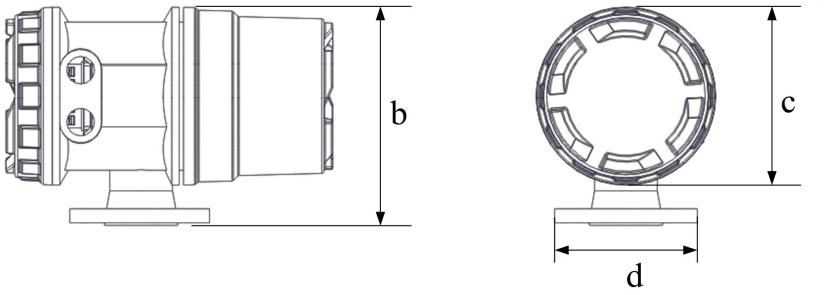
- Measurement is not affected by the variation of flow density, viscosity, temperature, pressure and conductivity. High accuracy measurement is guaranteed according to the linear measurement principle.
- No obstacle in the pipe, no pressure-loss and lower requirement for straight pipeline.
- DN 6 to DN2000 covers a wide range of pipe size. A variety of liners and electrodes are available to satisfy different flow characteristic.
- Programmable low frequency square wave field excitation, improving measurement stability and reducing power consumption.
- Implementing 16 bits MCU, providing high integration and accuracy; Full-digital processing, high noise resistance and reliable measurement; Flow measurement range up to 1500:1.
- High definition LCD display with backlight.
- RS485 or RS232 interface supports digital communication.
- Intelligent empty pipe detection and electrodes resistance measurement diagnosing empty pipe and electrodes contamination accurately.
- SMD component and surface mount technology (SMT) are implemented to improve the reliability.

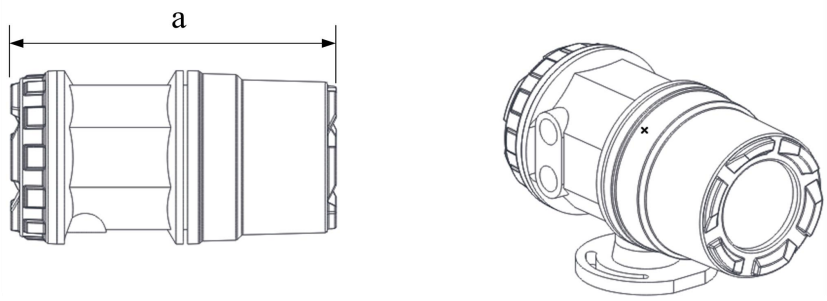
Navigation keys



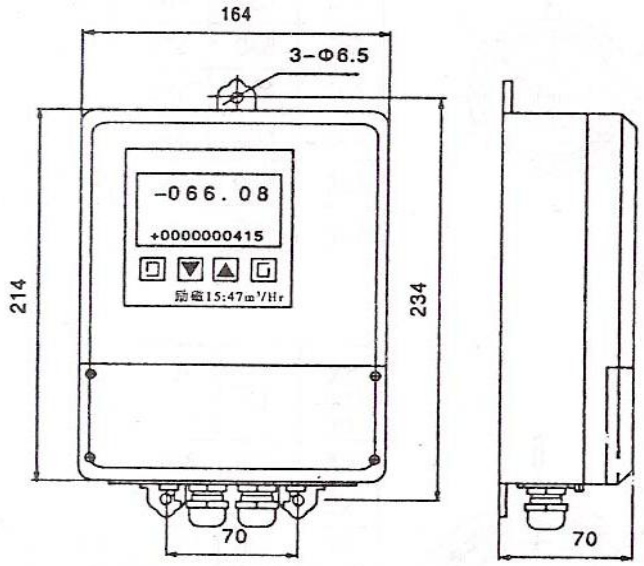
Dimension

Compact converter

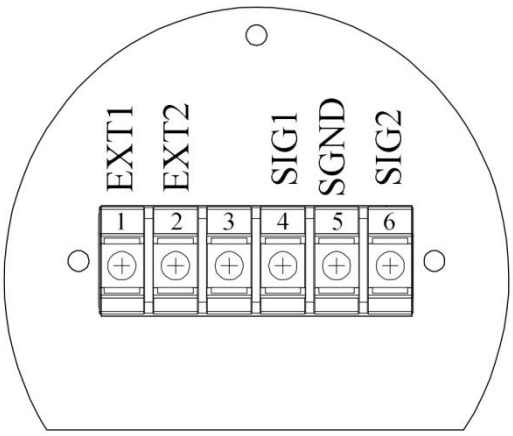




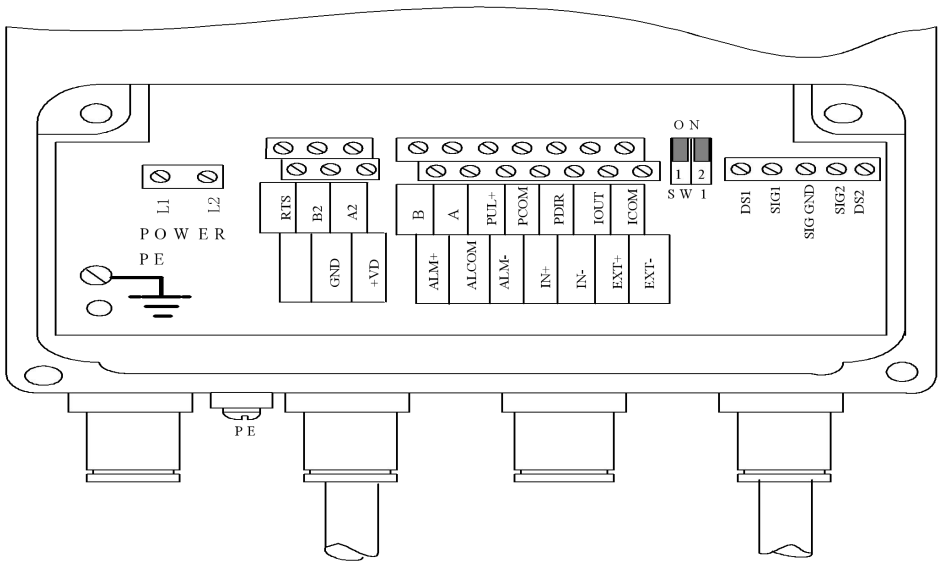
[mm]				[Kg]
a	b	c	d	
219	147	120	90	0.6

Remote **converter**


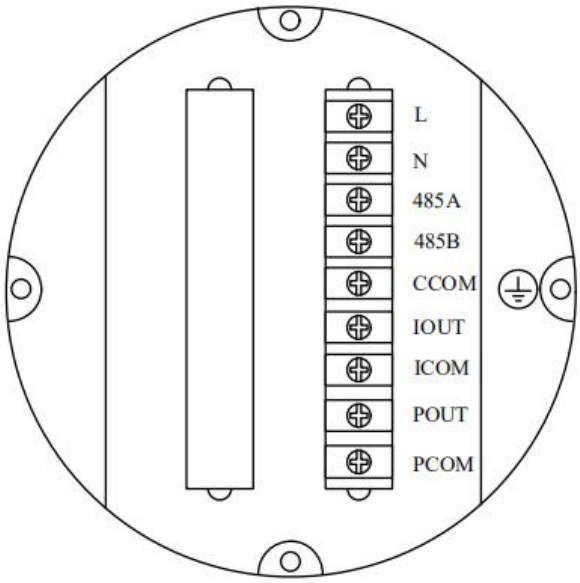
Wiring

Remote type


SIG1，SIG2	Positive signal，negative signal
SGND：	Signal ground
EXT1，EXT2：	Excitation positive，Excitation negative
Excitation signal and sensor signals are connected to the converter via the signal line.	



The definition of terminals and their marks for remote type converter is given as below:	
DS1	Shield drive 1
SIG1	Signal input 1
SIG GND	Signal Ground
SIG2	Signal input 2
DS2	Shield drive 2
EXT+	Coil excitation +
EXT-	Coil excitation -
IOUT	Current output +
ICOM	Current output -
PUL+	Frequency/pulse output +
PCOM	Frequency/pulse output -
PDIR	Flow direction indicator +
ALM-	Low alarm output +
ALM+	High alarm output +
ALCOM	Alarm output -
A	RS485 communication A
B	RS485 communication B
IN+	Input contact +
IN-	Input contact -
L1(+)	220V(24V +) input
L2(-)	220V(24V -) input
Compact type	



L，N	220VAC power supply
IOUT，ICOM	4-20mA output connection
POUT，PCOM	Pulse/Frequency/Relay out
485A，485B	RS485 communication
CCOM	RS485 communication ground
⏚	Converter instrument grounding protection

Parameter

Maximum flow speed	15m/s
Accuracy	0.5%
Reliability	0.2%
Nominal width range	DN 10 to 1200 (3/8 to 48″)
Housing material	Carbon steel
Process connection	Flange
Nominal pressure	DN6-DN50,PN<4.0MPA
	DN65-DN150,PN<1.6MPA
	DN200-DN600,PN<1.0MPA
	DN700-DN2000,PN<0.6MPA
Response time	0.02s
Lining Material	Rubber, F46,PTFE,PU,PFA
Electrode material	stainless steel containing Mo
	stainless steel coated with carbonized tungsten,
	Hastelloy B
	Hastelloy C
	Titanium
	Tantalum
	Platinum-iridium alloy.
Material	stainless steel
Protection type	IP65(compact version), IP68(remote version)
Display	Graphical display
Unit	L、m3、Kg、t/s、min、h
Medium temperature	Rubber (80℃)
	F46 (150℃)
	PTFE（120℃）
	PU （60℃）
	PFA (180℃)
Cable gland	10meters(standard)
Power supply	100-240VAC 24VDC
Transmitter	4-20mA, pulse, RS485, Hart protocol
Conductivity	> 5 μS/cm, (20 μS/cm for demineralized water)
ATEX	NO
Power supply	100-240VAC 24VDC
Transmitter	4-20mA, pulse, RS485, Hart protocol
Conductivity	> 5 μS/cm, (20 μS/cm for demineralized water)

ATEX	NO

Flow rate

Diameter（mm）	Flow range（m3/h）		
10	0.02827-0.25	0.3-1.6	2.0-3.3924
15	0.0636-0.6	0.8-3.0	4.0-7.632
20	0.131-1.0	1.2-5.0	6.0-13.6
25	0.176-1.6	2.0-8.0	10-21
32	0.2895-2.5	3.0-12	16-35
40	0.4524-4.0	5.0-20	25-45
50	0.707-6.0	8.0-40	50-85
65	1.195-10	12-60	80-143
80	1.81-16	20-120	160-217
100	2.83-25	30-160	200-339
125	4.42-40	50-250	300-530
150	6.36-60	80-400	500-763
200	11.3-100	120-600	800-1357
250	17.7-160	200-800	1000-2120
300	25.45-250	300-1200	1600-3054
350	34.6-300	400-1600	2000-4157
400	45.2-400	500-2000	2500-5429
450	57.3-500	600-2500	3000-6871
500	70.7-600	800-3000	4000-8482
600	102-800	1000-4000	5000-12216
700	139-1200	1600-5000	6000-16620
800	181-1600	2000-6000	8000-21720
900	229-1600	2000-8000	10000-27480
1000	283-2000	2500-10000	12000-33924
1200	407-2500	3000-12000	16000-48833
1400	554-3000	4000-16000	20000-66468
1600	723-4000	5000-20000	27000-86815

Instrument Selection

- **Select lining**

Lining material	Main Performance	Applications
Teflon	1. The most steady material in plastics which is irresistible to boiling hydroelectric acid, vitriol aqua fortis as well as strong alkali and organic impregnates. 2. Not be perfect in abrasion resistance.	Strong corrosive mediums such as strong acid and alkali
PFA	1. Having the same abrasion resistance with PTFE. 2. Having strong ability of load pressure resistance.	Applicable in state of load pressure
F46	1.Have the same abrasion resistance with PTFE. 2.Resistible for low abrasion. 3.Having strong resistance to load pressure.	1.The same as PTFE. 2.Applicable in mediums of low abrasion.
Neoprene	1.Be of good elasticity,retractility and abrasion resistance. 2.Be resistant to low acid,alkali and salt but not for oxidation mediums.	Water,sewage and slurry, mineral serosity of low abrasion.
Polyurethane	1.be of good abrasion resistance. 2.Not be perfect in acid/alkali resistance. 3.Can't be used for water mixed with organic impregnate.	Applicable in mineral serosity,slurry and coal slurry of high abrasion.

- **Select electrode**

Electrode material	Applications
Stainless steel SUS316	Applicable in water,sewage and corrosive mediums. Widely used in industries of petrol, chemistry,carbamide,etc
Stainless steel covered with tungsten carbide	Applicable in mediums of no corrosive and low abrasion.

Hastelloy B (HB)	Having strong resistance to hydrochloric acid of any consistance which is below bioling piont. Also resistable againstvitriol,phosphate, hydrofluoricacid,organic acid etc which are oxidable acid,alkali and non-oxidable salt.
Hastelloy C (HC)	Be resistant to oxidable acid such as nitric acid,mixed acid as well as oxidable salt such as Fe+++,Cu++ and sea water
Titanium	Applicable in seawater,and kinds of chloride,hypochlorite salt,oxidable acid(including fuming nitric acid),organic acid,alkali etc.Not resistant to a pure reducing acid(such as sulphuric acid, hydrochloric acid)corrosion. But if acid contains antioxidant(such as Fe3+,Cu2+)is greatly reduce corrosion.
Tantalum	In addition to hydrofluoric acid, fuming sulfuric acid, alkali remaining outside chemicals, including boiling hydrochloric acid
Platinum-iridium	Almost be applicable in all chemical mediums except for aqua fortis,ammonium salt.

Installation

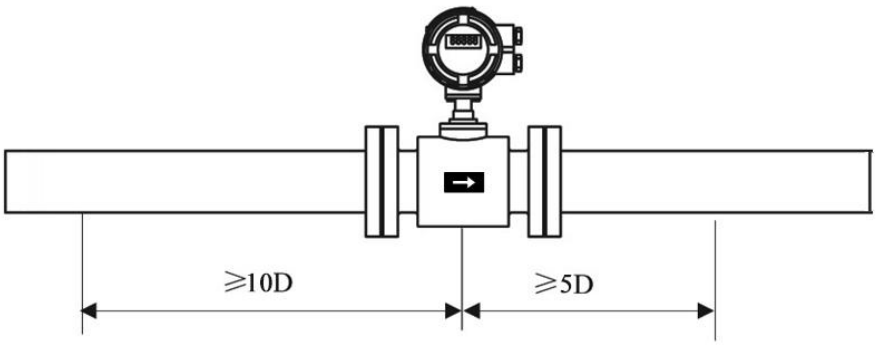
- The measuring pipe must always be full.
- The flow direction must match the identification marking
- Install the devices without any mechanical tension (torsion, bending).
- Use a flange seal made from a material that is compatible with the medium and the medium temperature.
- Seals should not extend into the flow area, since any turbulence affects the device accuracy.
- The pipeline must not exert any inadmissible forces or torque on the device.
- Install remote mount transmitters at a location that is largely free of vibration.
- Do not expose the transmitter to direct sunlight; provide sun protection if necessary.

Inlet and outlet runs

The following inlet and outlet runs must be observed in order to meet accuracy specifications:

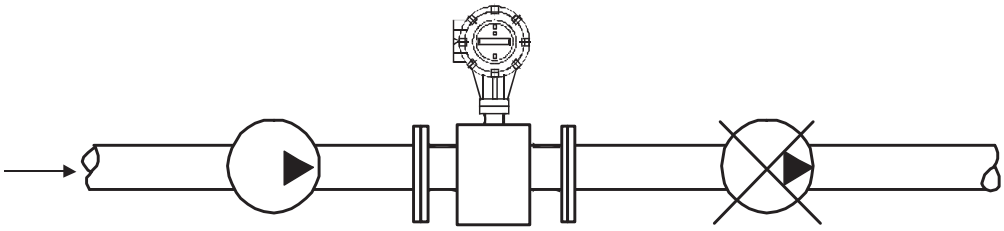
· Inlet run ≥ 10 × DN

· Outlet run ≥ 5 × DN



Installation with pumps

The sensor should only be installed behind the pump.

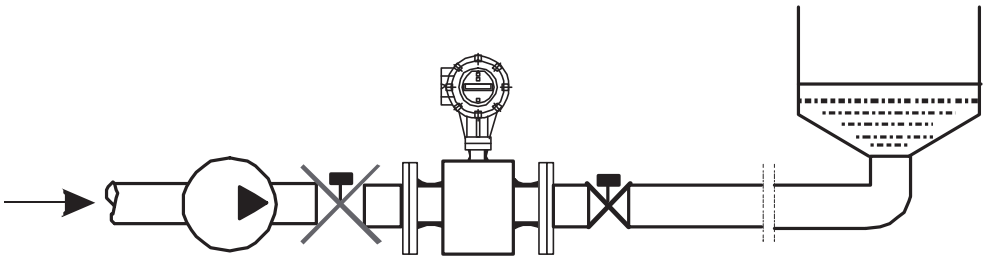


Note!

· The sensor should never be installed in front of the pump in order to avoid the risk of low pressure, and thus damage to the measuring tube.

Installation with pumps

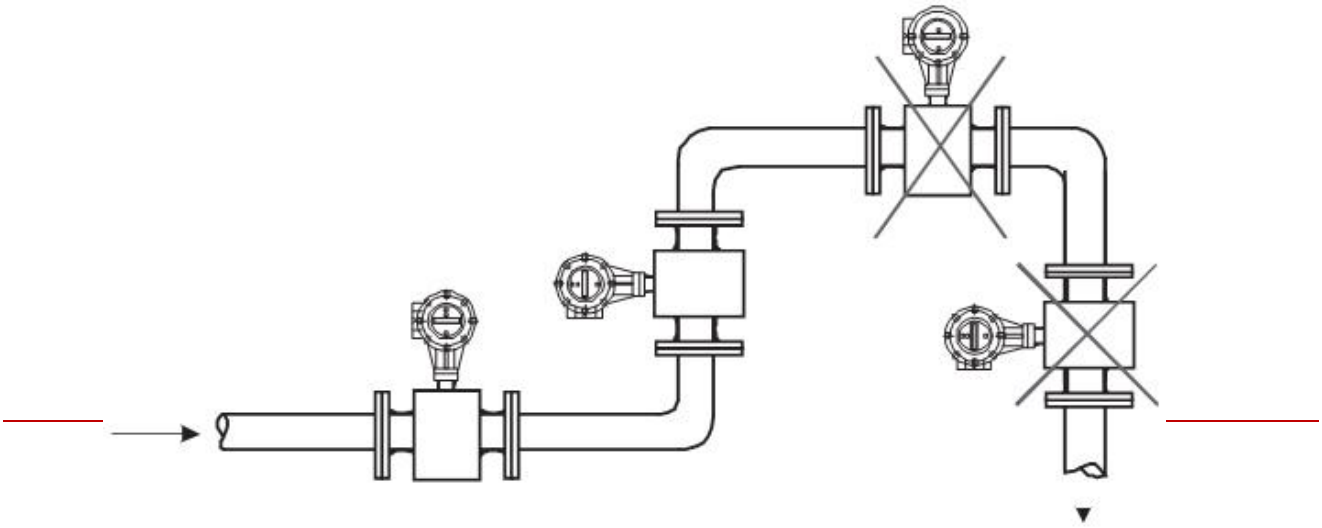
The sensor should only be installed in front of a control valve



Note!

• The sensor should never be installed behind the valve in order to avoid the risk of low pressure, and thus damage to the measuring tube.

Bends



Note!

En-trained air bubble formation in the measuring tube can result in an increase in measuring errors. For this reason, the following mounting locations should be avoided:

- Highest point of a pipeline. Risk of air accumulating!
- Directly upstream from a free pipe outlet in a vertical pipeline. Risk of pipe not filling correctly!

Ordering Code

Electromagnetic flowmeter																
Model																Description
ALLMAG4000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Type		M1														Compact type
		M2														Remote type
Pipe size			DNXX													DN10 - DN2000
Accuracy				J1												1.00%
				J2												0.50%
Output					O0											No output
					O1											Pulse output
					O2											4-20mA output
Communication						D0										No
						D1										RS232
						D2										RS485
						D3										HART
Installation							I1									Thread installation
							I2									Flange installation
							I3									Clamp mounting
							I4									Clamp installation
Power supply								V1								220VAC
								V2								24VDC
								V3								Battery powered
Pressure rating									P1							0.6MPa
									P2							1.0MPa
									P3							1.6MPa

	P4						2.5MPa
	P5						4.0MPa
	PZ						Others
Temperature rating		T1					≤60℃(CR/PU)
		T2					≤120℃(F4/F46)
		T3					≤150℃（PFA）
Electrode material			E1				316L stainless steel
			E2				Titanium
			E3				Tantalum
			E4				Hastelloy B
			E5				Hastelloy C
			E6				Platinum
			E7				Tungsten carbide
Lining material				L1			Neoprene（CR）
				L2			Polyurethane（PU）
				L3			F4/PTFE
				L4			Teflon（F46/FEP）
				L5			Tetrafluoroethylene（PFA）
Grounding					G0		No grounding
					G1		Grounding ring
					G2		Grounding electrode
					G3		Grounding screw
Body material						B1	Carbon steel
						B2	304 stainless steel
						B3	316 stainless steel
Ingress protection						IP1	IP65
						IP2	IP67
						IP3	IP68