



## LDF300

### Technical Datasheet

## ***Electromagnetic Flowmeter***

- For all water and wastewater applications
- The measuring principle is virtually independent of pressure, density, temperature and viscosity
- Wide range of nominal diameters (DN 4 to 2000)
- No moving parts
- Minimum outlay for maintenance and upkeep
- High degree of measuring reproducibility and longterm stability

## How does the Magnetic Flow Meter work?

The principle of operation for the magnetic flowmeter is based on the Faraday's Law of Electromagnetic Induction.

An electrical current (I) is applied to a coil package inside the flowmeter. As a result, a magnetic field (B) is created across the metering pipe.

When a conductive liquid flows through the magnetic field, a small voltage (u) is induced. This voltage is proportional to the velocity of the flow and is accurately measured by two stainless steel electrodes mounted opposite each other inside the metering pipe. The two electrodes are connected to an advanced electronic input circuitry which processes the signal and in turn feeds it to the a microprocessor inside the electronics module. The microprocessor then calculates the volumetric flow and controls the various outputs on the terminal board.

$$U_i = v * k * B * D$$

in which:

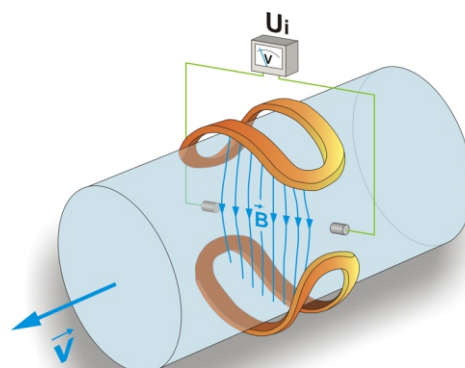
v = mean flow velocity

k = factor correcting for geometry

B = magnetic field strength

D = inner diameter of flow meter

The signal voltage  $U_i$  is picked off by electrodes and is proportional to the mean flow velocity v and thus the flow rate q. A signal converter is used to amplify the signal voltage, filter it and convert it into signals for totalising, recording and output processing.



### Industries

- Water
- Wastewater
- Pulp & Paper
- Minerals & Mining
- Iron, Steel & Metals
- Power

### Applications

- Water abstraction
- Water purification and desalination
- Drinking water distribution networks
- Revenue metering or billing
- Leakage detection
- Irrigation
- Industry water
- Cooling water
- Wastewater
- Sewage and sludge
- Sea water

## Technical data

### Measuring system

Measuring principle	Faraday's law of induction
Application range	Electrically conductive fluids
Measured value	Flow velocity, Volume flow
Measuring accuracy	0.5% of Rate option 0.3% of Rate or 0.2% of Rate

### Operating conditions

Process temperature	Hard rubber liner(Normal temperature type): -20...+60°C
	Hard rubber liner(High temperature type): -20...+90°C
	PTFE,PFA liner(Normal temperature type): -20...+120°C
	PTFE,PFA liner(High temperature type): -20...+160°C
Ambient temperature	-20...+60°C
Relative humidity	5%...95%
Measurement range	0.5...10 m/s

### Performance

Output signal/Protocol	4...20mA current output/pulse output
	4...20mA current output/frequency output
	4...20mA current output/RS485 modbus protocol
	HART protocol or Profibus-DP
Power supply	AC220
	DC24V

### Process connections

Flange	
GB/T9113.1-2000	DN10...3000 in 0.6MPa...4.0MPa
EN 1092-1	DN25...3000 in PN 2.5...40
ASME(ANSI)	1...24" in 150 & 300 lb RF
JIS	DN25...1000 in 10...20 K
Design of gasket surface	RF
Customized	Other sizes or pressure ratings on request.

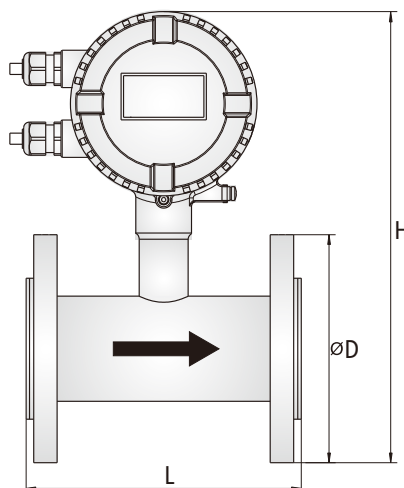
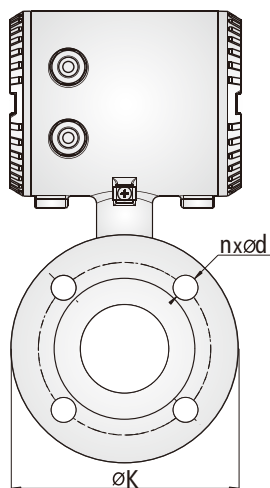
### Materials

Measuring tube	Stainless steel
Flanges	Carbon steel, other materials on request
Liner	DN10...300: PFA
	DN50...2000: CR/Chloroprene Rubber
	DN25...500: PU
	DN25...1600: F4/PTFE
	DN10...200: F46/PEP
Measuring electrodes	Standard: 316L Stainless steel
	Option: Hastelloy C
	Option: Hastelloy B
	Option: Titanium
	Option: Tantalum
	Option: Platinum
	Option: WC
Electrodes form	Standard
	RE

## Technical data

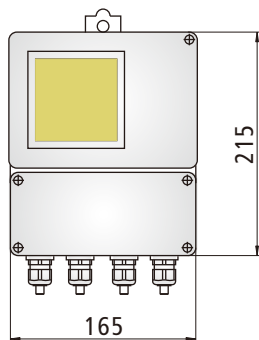
### Compact version

LDF300 Electromagnetic Flowmeter



### Signal converter

For electromagnetic flowmeters



GB/T9113.1-2000

Nominal Dia. [mm]	Dimensions[mm]					
	L	D	K	H	nxØd	Pre.
10	200	90	60	299	4x14	4MPa
15	200	95	65	299	4x14	4MPa
20	200	105	75	304	4x14	4MPa
25	200	115	85	312	4x14	1.6MPa
32	200	140	100	321	4x18	1.6MPa
40	200	150	110	340	4x18	1.6MPa
50	200	165	125	353	4x18	1.6MPa
65	200	185	145	369	4x18	1.6MPa
80	200	200	160	375	8x18	1.6MPa
100	250	220	180	404	8x18	1.6MPa
125	250	250	210	432	8x18	1.6MPa
150	300	285	240	461	8x22	1.6MPa
200	350	340	295	517	12x22	1.6MPa
250	400	395	355	585	12x24	1.6MPa
300	500	445	410	627	12x24	1.6MPa
350	500	505	470	681	16x24	1.6MPa
400	500	565	525	741	16x27	1.6MPa
450	550	615	565	779	20x26	1.0MPa
500	550	670	620	834	20x26	1.0MPa
600	600	780	725	988	20x30	1.0MPa
700	700	860	810	1095	24x30	0.6MPa
800	800	975	920	1208	24x34	0.6MPa
900	900	1075	1020	1310	28x34	0.6MPa
1000	1000	1175	1120	1413	28x36	0.6MPa
1200	1200	1450	1340	1525	32x33	0.6MPa
1400	1400	1630	1560	1735	36x36	0.6MPa
1600	1600	1830	1760	1965	40x36	0.6MPa
1800	1800	2045	1970	2155	44x39	0.6MPa
2000	2000	2265	2180	2365	48x42	0.6MPa

## Installation

### 1.General notes on installation

Inspect the packaging carefully for damages or signs of rough handling. Report damage to the carrier and to the manufacturer. Do a check of the packing list to make sure that you have all the elements given in the order. Look at the device nameplate to ensure that the device is delivered according to your order. Check for the correct supply voltage printed on the nameplate.

This electromagnetic flowmeter is designed exclusively to measure the flow of electrically conductive, liquid media.

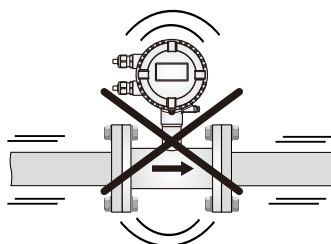
#### 1.1 Vibration

#### 1.2 Magnetic field

Responsibility for the use of the measuring devices with regard to suitability, intended use and corrosion resistance of the used materials against the measured fluid lies solely with the operator. The manufacturer is not liable for any damage resulting from improper use or use for other than the intended purpose. If the device is not used according to the operating conditions (refer to chapter Technical data), the intended protection could be affected.

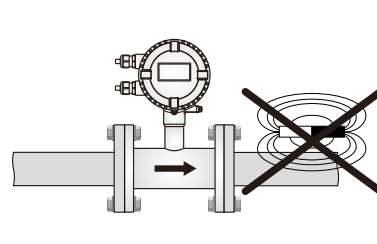
#### 1.1 Vibration

Avoid vibrations



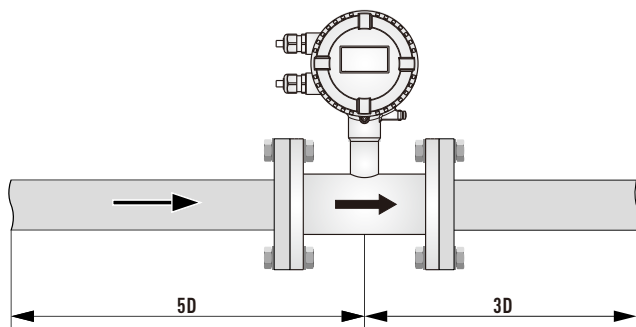
#### 1.2 Magnetic field

Avoid magnetic fields



## 2. Installation conditions

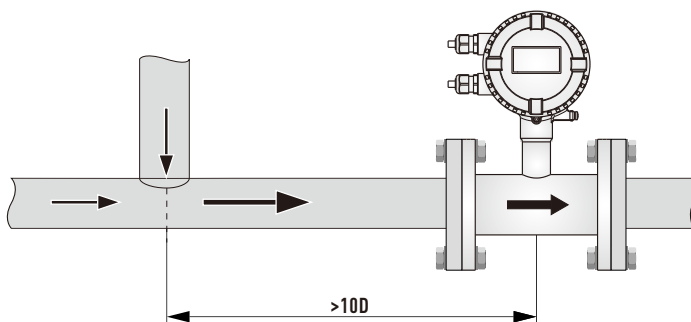
### 2.1 Inlet and outlet



**NOTE:**

Straight length should be at least 5D upstream and 3D downstream. In order to convenient installation and disassembly, expansion joint of pipe can be installed behind the flowmeter.

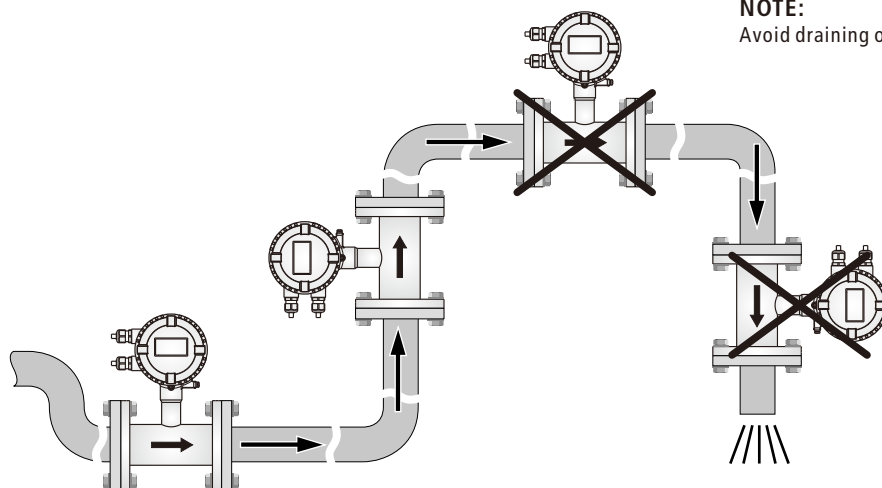
### 2.1 T-section



**NOTE:**

Distance behind a T-section >10D

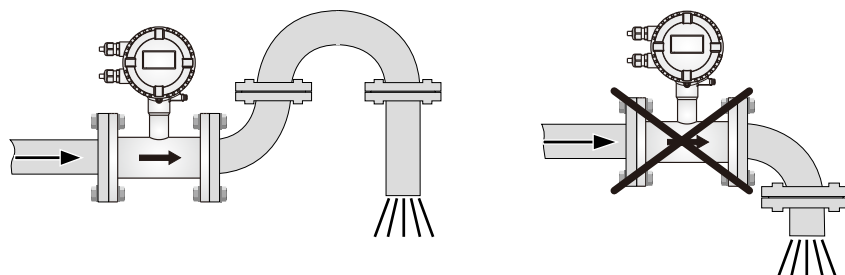
### 2.3 Bends



**NOTE:**

Avoid draining or partial filling of the flow sensor

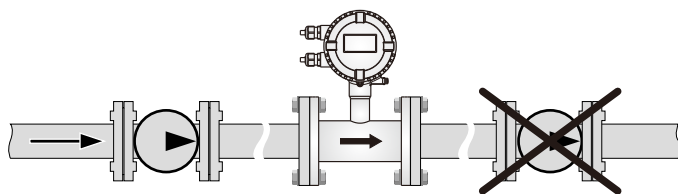
### 2.4 Open feed or discharge



**NOTE:**

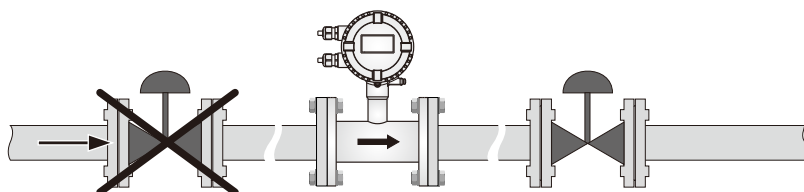
Installation in front of an open discharge

## 2.5 Pump

**NOTE:**

Flowmeter can be installed behind the pump

## 2.6 Control valve

**NOTE:**

Flowmeter can be installation in front of a control valve

## 2.7 Grounding

Transducer must be separate grounding (general grounding resistor  $< 100\Omega$  ; for explosion proof products and lightningproof installation, grounding resistor  $< 10\Omega$  ). In principle, remote type grounding should be on the side of transducer, converter grounding should be on the same point. If transducer installed in the pipe which has cathodic corrosion protection, apart from grounding together of transducer and grounding ring, the thick copper wire (16mm<sup>2</sup>) should be used around the transducer to connect two connection flanges on the pipe, which isolates transducer from current of cathodic protection. Sometimes stray current is heavy, e.g., leakage current along electrolyte in electrolytic tank affects normal measurement of electromagnetic flowmeter, so electrical isolation could be used between flow transducer and process pipe. Likewise, when the current of cathodic protection affects measurement, also could adopt the same way.

## Ordering Code

Option1: Model														
LDF300	Electromagnetic Flowmeter													
	Option2: Nominal Diameter													
	DNxxx	DN10...DN2000												
		Option3: Liner												
		A PFA												
		C CR/Chloroprene Rubber												
		P PU												
		T F4/PTFE												
		F F46/PEP												
		Option4: Measuring Electrodes												
		S Standard: 316L Stainless steel												
		C Hastelloy C												
		B Hastelloy B												
		T Titanium												
		M Tantalum												
		P Platinum												
		W WC												
		Option5: Process Connection												
		G GB/T9113.1-2000 DN10...3000 in 0.6MPa...4.0MPa												
		E EN 1092-1 DN25...3000 in PN 2.5...40												
		A ASME(ANSI) 1...24" in 150 & 300 lb RF												
		J JIS DN25...1000 in 10...20 K												
		X Other sizes or pressure ratings on request.												
		Option6: Flanges Materials												
		C Carbon steel												
		S Stainless Steel												
		Option7: Output signal/Protocol												
		0 4...20mA current output												
		1 4...20mA current output/pulse output												
		2 4...20mA current output/frequency output												
		3 4...20mA current output/RS485 modbus protocol												
		4 HART protocol												
		5 Profibus-DP protocol												
		Option8: Accuracy												
		10 1.0%Rate												
		05 0.5%Rate												
		03 0.3%Rate												
		Option9: IP Rating												
		65 IP65												
		67 IP67												
		Option10: Housing Materials												
		0 Carbon steel												
		1 Stainless Steel												
		Option11: Companion Flange												
		0 No												
		1 With												
		Option12: Medium Temperature												
		T1 <60°C												
		T2 <90°C												
		T3 <120°C												
		T4 <160°C												
		Option13: Grounding Ring												
		0 Without Grounding Ring												
		1 With Grounding Ring												
		Option14: Explosion Protection												
		0 Without												
		Ex	Ex d(ia) II CT 5											
		Option15 Customized												
		Cx	On request											
LDF300	DN40	A	S	G	C	0	05	65	0	0	T1	1	0	Examples of Ordering Code: LDF300-DN40-A-S-G-C-0-05-65-0-0-T1-1-0