





Inside Diameter of Measuring Tube

It is a flow measurement method based on the electromagnetic field principle. There are 2 coils inside each electromagnetic flowmeter. With the help of metal parts placed on these coils, it creates a continuous magnetic field across the cross-sectional area of the measuring tube. The 2 electrodes that sense the voltage are placed inside the measuring tube perpendicular to each other. The insulating material coated on the inner surface prevents the formation of short circuits between the conductive liquid and the metal measuring tube.

In the absence of flow, no electrical tension occurs between the 2 electrodes, the negatively and positively charged ions in the conductive liquid are equal in the liquid. With the initiation of flow, the magnetic field exerts a force on the charged ion particles in the liquid. As a result, the negatively and positively charged ions in the liquid separate from each other and head to opposite sides of the measuring tube. At the end of this situation, an electrical voltage is formed which is sensed by the electrodes.

This voltage is directly proportional to the flow rate in the line. Instant flow can be calculated with the known volume and velocity information of the measuring tube. As the flow rate increases, the separation of the charged particles will increase and the voltage between the electrodes will also increase. The measuring electrodes can also detect magnetic noise in the environment from time to time, this noise signal must be strictly distinguished from the actual measurement signal. To achieve this, the magnetic field must be created with a pulsed direct current.

By constantly changing the places of the charged ions between the electrodes with a direct pulsed current, the effect of magnetic noise is eliminated and precise and stable flow measurement is made. In the simplest way, the Electromagnetic Measurement principle and the Flow rate information are calculated with the above-simplified formula. **In order to provide sensitivity under ideal conditions, the following conditions must be met.**

- The tested liquid must have electrical conductivity.
- The pipe must be full.
- The components in the liquid must be homogeneously mixed.
- If the liquid is magnetically induced, the magnetic field of the device will change and therefore the device needs to be adjusted again.
- There should be appropriate straight pipe spacing.

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FEATURES						
MEASURING RANGE	0.05m/s 15m/s					
MEASUREMENT FIELD	Conductive Liquids					
BODY MATERIAL	ST37 Black Steel + Corrosion Resistant Paint					
SENSOR MATERIAL	SS316L Ops: S5304, Hastelloy C, Hastelloy B, Titanium, Tantalum, Platinum					
INNER COATING	Teflon (PTFE) or Hard Rubber (Rubber)					
PRECISION	0.5% or 0.25% (Türkak Accredited)					
TEMPERATURE	-10°C +60°C Rubber / -20°C + 150°C Teflon					
MOISTURE	5%-95%					
MEASURABLE MIN. CONDUCTIVITY	20 μs / cm Water 5 μs / cm other Liquid					
CONNECTION	Flange Connection, Ops: Clamb Connection					
PRESSURE	PN 6/10/16/25/40/63/100, Class 150/300					
PROTECTION CLASS	IP67 Compact Type / IP68 Remote Type					
FEED	85-265 VAC 50 Hz or 24VDC, Opt. Battery operated					
GROUND	Grounding Electrode Included					
OUTPUT	Pulse / Frequency / 4-20Ma / RS485 Modbus / 2 X Transistor Alarm (Programmable) / Opt. HART					
INDICATOR	3x16 Backlit LCD Displaying Instant or Total Flow					
ALARMS	Empty Pipe, Sensor Error, Over Limit					
REPORTING	Daily, Weekly, Monthly and Annual total flow (negative / positive / net)					
SAMPLING RATE	It can be selected from 0.2 to 100 seconds.					
ADVANTAGES						

- There are no mechanical parts that prevent the flow or reduce the pressure.
- Measuring scale; 10 times more than other flow meters.
- All measurements and adjustments can be made/displayed via the integrated or wall-mounted LCD display.
- It can be composed according to the process and fluid with the user interface. (Density setting can be Inputed.)
- The menu can be protected with a password.
- Instant and total flow can be observed on the LCD screen at the same time.
- With the report feature, old data can be examined. (Daily, weekly, monthly, yearly.)
- Total flow can only be reset with a password.
- Flow rates between 0.05 and 15 m/s can be measured and the speed can be monitored on the LCD screen.
- Calibration (in a fully filled and stable fluid-filled pipe) can be done with the menu.
- Measurement accuracy can be achieved at 0.2%
- Conductivity measurements can be made and displayed on the LCD screen.
- It can take measurements in all homogeneous conductive liquids above 5 uS.
- It provides resistance to environmental electronic noises through its grounding electrode.
- Thanks to its flange connection, it provides a reliable, easy and long-lasting assembly feature.
- Thanks to its metal body, it is protected against external factors.
- Measurement stability has been significantly increased.
- Even with low conductivity and high density, the measurement response speed is greatly increased.
- Electrode material safety has been increased to the highest level.
- With the DN15-DN2200 production facility, lead times have been minimized.
- The LCD display resolution has been increased.
- The product electronics have been revised to make it better, more stable, and more robust.
- Technical support capacity has been increased and failure support and resolution times have been shortened.
- With our new calibration facility, TÜRKAK accreditation provides a wide range of services from DN15 to DN2200.

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Choosing the right product for industrial applications is one of the most important issues.

The correct product selection can be made in light of the information given below. 2/3 of the errors are due to product selection and assembly errors that are not suitable for the process.

The basic information that needs to be obtained and checked is as follows.

- Fluid name and chemical property
- Maximum, minimum and normal flow rate (or velocity information)
- Maximum pressure
- The fluid to be measured must have a minimum conductivity of 5 ps/cm.
- The minimum and maximum flow amounts should be suitable for selecting the product measuring range.
- The actual maximum pressure should be below the maximum compressive strength of the flowmeter.
- The maximum and minimum temperatures must match the flowmeter's temperature range.
- You should even make sure that there is no vacuum. Electromagnetic flowmeters are not suitable for vacuum.
- After making sure that this information is correct, the availability of EM flowmeters is ensured and the selection is made according to the flow amount. If the current line diameter and the selected flow meter line diameter are not the same, it should be adjusted with a reduction. Things to consider in this case:
- It should be evaluated whether the application of the reduction causes a pressure change in the line and whether this change if any, will affect the current flow. To avoid this situation, making large diameter changes in the reductions is not recommended.
- When the reduction is preferred to reduce the cost of the flowmeter, it will not be the right choice if the cost of the reduction application is the same or more than the savings obtained in the selection of the flowmeter.
- In clean water measurements, the most effective measurement is taken at 2-3 m/sec speeds, and in liquids that can easily solidify, crystallize or settle, the flow rate should be above 2 m/sec to avoid contamination or accumulation on the electrodes. This delays the contamination of the electrodes and allows the continued use of contaminated water for long periods without the need for cleaning.

- The product should not be exposed to mechanical vibration in the process in which it is used and should be kept away from impacts and similar factors.
- If the product is exposed to strong vibration, it may affect the flowmeter itself or its measurements.
- The assembly rules specified in the catalog and user manuals must be strictly followed.
- A flow meter should not be installed on the line while welding is being done.
- If it does, the product electronics may be damaged.
- The product should not be exposed to water hammer, even if it is given water for the first time, it should be given gradually.
- The product can even be mounted vertically and horizontally.
- In vertical mounting, the flow must be from bottom to top. Considering that the compact models are IP67, they should be protected from external factors.
- Necessary precautions should be taken as exposure to direct sunlight will damage the product screen in all models. Users are strongly recommended to review the product manual thoroughly.



Avoid Magnetic Field



Avoid Vibration

USAGE AREAS & APPLICATIONS

USAGE AREAS:

- Water and Wastewater Industry
- Food and Beverage Industry

USE FLUIDS:

- Clean Water / Wastewater
- Industrial Water
- Dow well water

APPS:

- Treatment Plants applications
- Wastewater calculation applications

- Pharmaceutical and Cosmetic Industry
- Chemical Industry
- Paper Industry
- Mining and Energy Industry
- Agriculture
- Machinery Manufacturing Industry
- Mining Industry
- Energy Industry
- Oil Industry

- Raw well water
- Urban sewage
- Low corrosive acid, alkali, base, salt solutions
- Organic liquid mixtures
- Paper Pulp
- Liquid mixtures containing solid particles (with conductivity)
- Clean Water distribution applications
- Sludge measurement applications
- Drinking water calculation applications
- Line leakage and costing applications
- Agriculture and irrigation applications
- Drinking Water filling applications

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INSTALLATION RULES



CONNECTION DIMENSIONS









	PRESSURE CLASS	DEVICE OUTER DIAMETERS			FLANGE CONNECTION DIMENSIONS		
		а	bf	С	D	D0	n x a
10		150	322	82	90	60	4-Ø14
15		150	322	82	95	65	4-Ø14
20		150	322	78	105	75	4-Ø14
25		150	312	78	115	85	4-Ø14
32	40 Bar	150	327	74	135	100	4-Ø18
40		150	335	74	145	110	4-Ø18
50		200	354	86	160	125	4-Ø18
65		200	366	92	180	145	8-Ø18
80		200	385	92	195	160	8-Ø18
100		250	406	114	215	180	8-Ø18
125	16 Bar	250	436	114	245	210	8-Ø18
150		300	465	136	280	240	8-Ø23
200		350	518	156	335	295	8-Ø23
250		400	570	202	390	350	12-Ø23
300		500	620	230	440	400	12-Ø23
350		500	675	278	500	460	16-Ø23
400		600	733	320	565	515	16-Ø25
450	10 5-1	600	782	374	615	565	20-Ø25
500	10 Bar	600	835	388	670	620	20-Ø25
600		600	940	408	780	725	20-Ø30
700		700	1048	520	895	840	24-Ø30
800		800	1160	580	1010	950	24-Ø34
900		900	1260	660	1110	1050	28-Ø34
1000		1000	1370	720	1220	1160	28-Ø34
1200		1200	1585	1130	1405	1340	32-Ø34
1400		1400	1810	1260	1630	1560	36-Ø36
1600	(Dec	1600	2040	1450	1830	1760	40-Ø36
1800	6 Bar	1800	2250	1640	2045	1970	44-Ø39
2000		2000	2460	1820	2265	2180	48-Ø42
2200		2200	2670	1990	2510	2390	52-Ø45
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rate information, which diameter products are suitable can be selected. 2-According to the speed information, which diameter products are suitable can be selected. 3-Flow measurement range can be selected according to the diameter information. 4-1-3 m/sec should be considered as the most stable range tor measurement.

FLOW / DIA / SPEED CHART

1-According to the flow

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ELECTROMAGNETIC FLOWMETER

TECHNICAL SPECIFICATIONS

ELECTRONIC UNIT				
SUPPLY	220VAC, 24VDC, Battery Supply			
OUTPUT	Standard (4-20 mA, Frequency, Pulse, RS485)			
COMMUNICATION	HART (Optional)			
IGNITION	2 pieces			
PROTECTION CLASS/INDICATOR	IP67 3*10 LCD Display			
CABLE CONNECTION	M18*1,5			
WARNING	Coil Warning, Empty Line Warning, Electrode Warning			
MATERIAL				
SENSOR BODY	Carbon Steel			
FLANGES	Carbon Steel			
ELECTRODES	Standard Stainless Steel, Option Hastelloy, Platinum, Titanium and Tantalum			
INNER COATING	Ebonit (Hard Rubber), Teflon			
JUNCTION BOX	Stainless Steel (Separated Models Only)			
CONVERTER BOX	Cast Aluminum			
LINE OCCUPANCY	It must be ensured that the line is full.			
INPUT-OUTPUT DISTANCE	It does not require a straight pipe distance.			
GROUNDING RING	If the pipe on which the flowmeter will be mounted is electrically insulating, a grounding ring should be used.			





INSERTION ELECTROMAGNETIC FLOWMETER

DESCRIPTION

Insertion Type electromagnetic flowmeters are an economic alternative to full bore flowmeters. They comprise an electromagnetic sensing head mounted on the end of a support rod. Insertion Type electromagnetic flowmeter finds application in existing water distribution systems where provision for flow metering was not originally made and where a full bore flow meter would be uneconomic. The assembly can be installed in existing pipelines without the need for major excavations or alterations to pipe work normally associated with the installation of full bore meters.

TECHNICAL SPECIFICATIONS

APPLICABLE PIPE DIAMETER	200~2000mm		
FLOW RATE MEASURING RANGE	$0\sim$ 1 to $0\sim$ 10m/s, the full scale is continuously adjustable in the range of $1\sim$ 10m/s.		
MEASUREMENT ACCURACY	When the full-scale flow rate is 1 m/s, the accuracy is ± 5%		
THE MEASURED MEDIUM CONDUCTIVITY	50 μS/cm		
WORKING PRESSURE	16Bar		
ELECTRODE MATERIALS	Molybdenum-containing stainless steel 0Cr118Ni12Mo2Ti, Hastelloyc-276, titanium Ti, and the like.		
MEASURING TUBE (HEAD) MATERIAL	ABS		
MAXIMUM TEMPERATURE OF MEASURED MEDIUM	ABS60°C		
ENCLOSURE PROTECTION CLASS	It complies with the relevant provisions of IP68 of GB-08-84 standard.		
SENSOR OUTPUT SIGNAL	0.209mVp-p/1m/s.		
	DC current: $0 \sim 10$ mA, load resistance is $0 \sim 1$ k Ω		
FLOWMETER OUTPUT SIGNAL	$4 \sim 20$ mA, load resistance is $0 \sim 500 \Omega$		
	Frequency: 1~5KHz, load resistance is 250~1.2k Ω		

