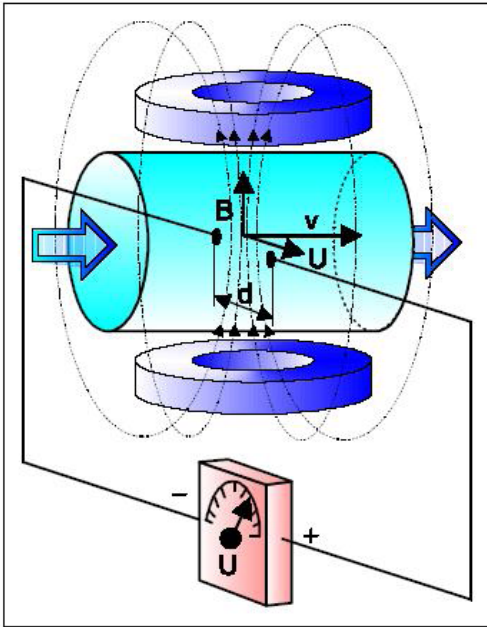


Magnetic Flowmeters

Features

The induction flow meter EMD is a device for measurement of volume flow rates of conductive fluids in a closed pipeline. It allows measurement in both directions, with high accuracy and in wide range of flow rates (0.1 - 10 m/s). The minimum required conductivity of measured medium is 5 $\mu\text{S}/\text{cm}$. The evaluation unit enables displaying of measured values on a two-line alphanumeric display and changing of many measuring device operational parameters from a keypad. It has got two binary outputs available (frequency, pulses, limit states), as well as an active current output and a digital communication feature. User can change all output functions and parameters during operation.



Measurement Principle

An induction flow meter is a device for volume flow measurement of electrically conductive fluids. The measurement principle is based on Faraday's law of electromagnetic induction. A sensor consists of a non-magnetic tube coated internally with non-conductive lining, measuring electrodes and two coils generating an electromagnetic field. Flowing fluid creates a conductor. Magnetic field induces voltage U in this conductor. It is proportional to magnetic induction B , distance of electrodes d (conductor length) and flow rate v . $U = B \times d \times v$. Since magnetic induction and distance of electrodes are fixed, the induced voltage is proportional to the flow rate of fluid in the tube. The flow rate multiplied by the cross-section of the tube gives the volume flow rate. $Q = v \times S$.



REMOTE /EMD-RM..



COMPACT /EMD-CM..



INFRARED CONTROL /EMD-IC..



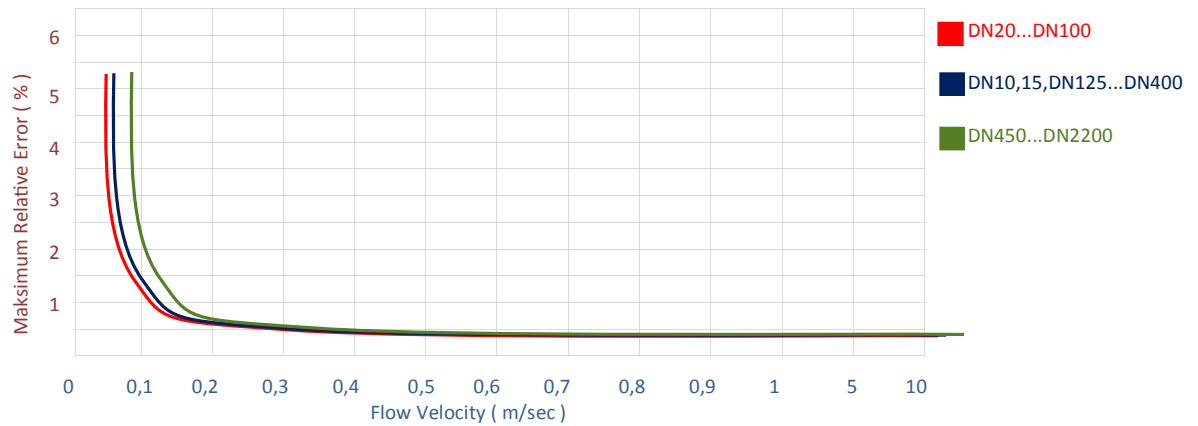
TRANSMITTER/EMD-TR..

Measuring Ranges

*According to 0,1...10 m/sec.

DN		*Flow Range (l/sec)		*Flow Range (m ³ /h)	
mm	inch	Qmin	Qmax	Qmin	Qmax
10	¼"	0,0078	0,785	0,0282	2,827
15	½"	0,0176	1,767	0,0636	6,361
20	¾"	0,0314	3,141	0,1130	11,3
25	1"	0,0490	4,908	0,1767	17,67
32	1 ¼"	0,0804	8,042	0,2895	28,95
40	1 ½"	0,1256	12,65	0,4523	45,23
50	2"	0,1963	19,63	0,7068	70,68
65	2 ½"	0,3318	33,18	1,194	119,4
80	3"	0,5026	50,26	1,809	180,9
100	4"	0,7853	78,53	2,827	282,7
125	5"	1,227	122,7	4,417	441,7
150	6"	1,767	176,6	6,361	636,1
200	8"	3,141	314,1	11,30	1130
250	10"	4,908	490,8	17,67	1767
300	12"	7,068	706,8	25,44	2544
350	14"	9,621	962,1	34,63	3463
400	16"	12,56	1256	45,23	4523
450	18"	15,90	1590	57,25	5725
500	20"	19,63	1963	70,68	7068
600	24"	28,27	2827	101,7	10178
700	28"	38,48	3848	138,5	13854
800	32"	50,26	5026	180,9	18095
900	36"	63,61	6361	229	22902
1000	40"	78,53	7853	282,7	28274
1200	48"	113,09	11309	407,15	40715
1400	56"	153,93	15393	554,17	55417
1600	64"	201,06	20106	723,82	72382
1800	72"	254,46	25446	916,08	91608
2000	80"	314,15	31415	1130,97	113097
2200	88"	380,13	38013	1368,47	136847

Accuracy



Sensor Specifications

Sensor Variant	Spesification	Types			
		EMD-RM	EMD-CM	EMD-IC	EMD-TR
Control principle	DC Pulse	•	•	•	•
Excitation coil insulation cl.	E	•	•	•	•
Inner diameter	DN10...DN2200	•	•	•	•
Mounting joint	Flanged DIN	•	•	•	•
	Flanged ANSI	o	o	o	o
	BS	o	o	o	o
	DIN 11 851 for Food	o	o	o	o
Enclosure	IP67	•	•	•	•
	IP68	o	o	o	o
Measuring tube material	Stainless Steel	•	•	•	•
Sensor cover material	Carbon Steel	•	•	•	•
	Stainless Steel	o	o	o	o
Flange material	Carbon Steel	•	•	•	•
	Stainless Steel	o	o	o	o
Sensing electrode material	Stainless Steel AISI316L	•	•	•	•
	Titanium	o	o	o	o
	Hastelloy-B	o	o	o	o
	Hastelloy-C	o	o	o	o
	Platinum	o	o	o	o
	Tantalum	o	o	o	o
Lining material	Hard Rubber	•	•	•	•
	Soft Rubber	o	o	o	o
	PTFE	o	o	o	o
	PE	o	o	o	o
Medium temp. max. *	0°C...+60°C	•	•	•	•
	-20°C...+120°C	o	o	o	o
Ambient Temperature	-30°C...+60°C	•	•	•	•
Standard pressure load Pressure range	PN6,PN10,PN16,PN40	•	•	•	•
Special Design	Unit for explosion hazard environment—ZONE 2	o	o	o	o

o : optional

Electronic Controller Specifications

Controller Variant	Specification	Types			
		EMD-RM	EMD-CM	EMD-IC	EMD-TR
Medium electric conductivity	≥5 µS/cm / ≥20 µS/cm for de-mineralised water	•	•	•	•
Input resistance	10 ¹⁰ Ohms	•	•	•	•
Measuring accuracy	±0,5 % of measured value between 0,3 and 10 m/sec	•	•	•	•
Measuring filtration	Adjustable in multiple modes	•	•	•	
Elimination of small flows	Adjustable by 0.1 %	•	•	•	
Instant flow	Bi-directional (l/sec, l/min, cu. m ³ /h, gallon/min)	•	•	•	
Total flow	Bi-directional (m3,l, gallons)	•	•	•	
Zero flow	Automatic zero point set-up	•	•	•	
Values display	Graphic display, 132 × 64 pixels			•	
	Alphanumeric LCD, 2 × 16 characters, with backlight	•	•		
Set-up	Infrared contactless/Data			•	
Optional modes	Empty pipeline detection/Dosing			•	
Analogue output (active)	4(0) to 20 mA/500 Ohms	•	•	•	•
Impulse output or Frequency output selectable	Flow volume (x-cu.m) per impulse	•	•	•	•
	Standard 0 to 1 kHz/0 to 10 kHz max. (30 V/20 mA/DC)	•	•	•	•
Alarm output 1	selectable	•	•	•	
Alarm output 2	selectable	•	•	•	
Power supply (AC ^ DC)	90 to 250V/50 to 60Hz/10 VA 24 V/ > 0,5 A/DC	•	•	•	•
Data communication	RS 232	o	o	o	o
	RS 485	o	o	o	o
	HART	o	o	o	o
	Modbus – RTU	o	o	o	o
	Profibus	o	o	o	o
Power supply (AC ^ DC)	90 to 250V/50 to 60Hz/10 VA 24 V/ > 0,5 A/DC	•	•	•	•
Enclosure	IP 67 (NEMA 5)		•	•	
	IP65 (NEMA 3)	•			•
Ambient temperature	-20°C ... +60°C	•	•	•	•
Accessories on request	Infrared remote control			•	

o : optional

Ordering

EMD.					Description
Transmitter	TR				Blind Transmitter, no display
	CM				Compact Design
	IC				Compact Design and Infrared control
	RM				Remote Type (Please specify cable length)
Line Size	0010				DN10
	0015				DN15
	0020				DN20
	0025				DN25
	0032				DN32
	0040				DN40
	0050				DN50
	0065				DN65
	0080				DN80
	0100				DN100
	0125				DN125
	0150				DN150
	0200				DN200
	0250				DN250
	0300				DN300
	0350				DN350
	0400				DN400
	0450				DN450
	0500				DN500
	0600				DN600
	0700				DN700
	0800				DN800
0900				DN900	
1000				DN1000	
1200				DN1200	
1400				DN1400	
1600				DN1600	
1800				DN1800	
2000				DN2000	
2200				DN2200	
Flange Rating	06				PN06 DIN
	10				PN10 DIN
	16				PN16 DIN
	40				PN40 DIN
	XX				Please specify
Electrode Material	00				AISI 316 L
	01				Titanium
	02				Tantalum
	03				Hastelloy – C
	04				Hastelloy – B
	05				Platinum
Lining	01				Hard Rubber
	02				PTFE
	03				PE
Power Supply	AC				85...250V AC
	DC				20 36V DC

												Description	
Communication	+												None
		NN											RS-232
		01											RS-485
		02											Modbus-RTU
		03											HART
		04											Profibus
Enclosure			01										IP67
			02										Flameproof "ex d"
Grounding Ring				NN									None
				01									Steel
				02									Stainless Steel
				XX									Please Specify
Body Material					CS								Carbon Steel
					SS								Stainless Steel

