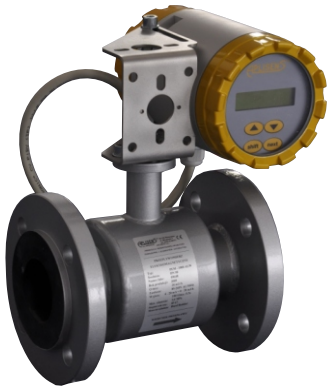
Electromagnetic flowmeter type PEM-1000

- **Nominal size: DN 10 ....DN1000**
- **Accuracy: +/-0.5%**
- **Analog outputs: 0/4...20mA, 0..5mA**
- **Communication protocol: RS 485, RS 232C**
- **Max static pressure: 40bar**

Application

Electromagnetic flowmeter for bidirectional measurement of liquids with a minimum conductivity of ≥ 5 µS/cm:

- Acid, alkalis
- Paints
- Pastes
- Water, wastewater, etc.



PEM-1000ALW

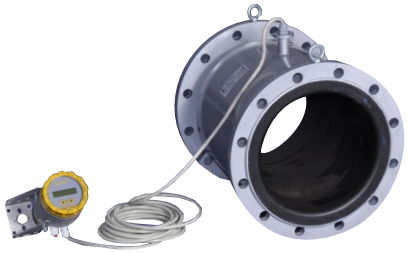
Measuring principle:

Following Faraday's law of magnetic induction, a voltage is induced in a conductor moving through a magnetic field. In the electromagnetic measuring principle, the flowing medium is the moving conductor. The voltage induced is proportional to the flow velocity and is supplied to the amplifier by means of two measuring electrodes. The flow volume is calculated by means of the pipe cross-sectional area.The DC magnetic field is created through a switched direct current of alternating polarity.

Measuring system

The measuring system consists of a transmitter and a sensor. Two versions are available:

- Compact version: Transmitter and sensor form a mechanical unit PEM-1000ALW
- Remote version: Sensor is mounted separate from the transmitter PEM-1000NW



PEM-1000NW

Advantages

- Flexible and clever assembling system
- Easy and fast-moving change from compact to remote version
- Innovative and high-power transmitter for every aplication
- Robust and resistant cover of sensor and transmitter

Flow value table in [m^3/h]						
DN	V = 0,3 m/s	V = 1 m/s	V = 3 m/s	V = 5 m/s	V = 8 m/s	V = 10 m/s
10	0,085	0,283	0,848	1,414	2,262	2,827
20	0,339	1,131	3,393	5,655	9,048	11,310
25	0,530	1,767	5,301	8,836	14,137	17,671
32	0,869	2,895	8,686	14,476	23,162	28,953
40	1,357	4,524	13,572	22,619	36,191	45,239
50	2,121	7,069	21,206	35,343	56,549	70,686
65	3,584	11,946	35,838	59,729	95,567	119,46
80	5,429	18,096	54,287	90,478	144,76	180,96
100	8,482	28,274	84,823	141,37	226,19	282,74
125	13,254	44,179	132,54	220,89	353,43	441,787
150	19,085	63,617	190,85	318,087	508,94	636,17
200	33,929	113,10	339,30	565,49	904,78	1130,0
250	53,014	176,71	530,14	883,57	1413,7	1767,1
300	76,341	254,47	763,41	1272,3	2035,7	2544,7
350	103,90	346,36	1039,1	1731,8	2770,9	3463,6
400	135,72	452,39	1357,2	2261,9	3619,1	4523,9
500	212,06	706,86	2120,6	3534,3	5654,9	7068,6
600	305,36	1017,9	3053,6	5089,4	8143,0	10178,7
800	542,87	1809,6	5428,7	9047,8	14476,4	18095,5
1000	848,23	2827,4	8482,3	14137,1	22619,4	28274,3

Optimal flow speed – to 5m/s

Technical data*

Specification for PEM-1000 control unit	
Medium electrical conductivity	≥ 5μS/cm
Inpur resistence	≥ $10^{10}\Omega$
accuracy	±0,5% of reading while flow in 10÷100% Q_{max}
Low flow rejection	adjustable in steps of 0,1%
Resume flow	2-side (m^3)
Empty pipe detection	on request
Analog output (active)	4 (0)÷20mA/500Ω0÷5mA/2kΩ
Impulse output	programmable 1imp./l, 1 imp./m^3
Binar outputs	multifunctional, non-voltage contact 3A/50V AC/DC
Frequency output	0÷1 kHz / 0÷100% Q, TTL
Communication output	RS 232C, RS 485
Power supply (AC/DC)	AC85÷260V/ 50Hz / 15VA DC24V/<0,5A
Protection standard	IP 67
Ambient temperature	-20 ÷50°C
Dimensions	135x170x192 mm
Display	LCD, alphanumeric, with backlight

Specification for PEM-1000 sensor	
Nominal size	DN 10÷1000
Control principle	pulse DC
Excitation coils supply	from the transmitter
Excitation of coils isolation Class	E
Connection flange	flange DIN (ANSI, BS)
Max static pressure	standard 1,6MPa (0,6/1,0/2,5/4,0MPa)
Protection standard	standard IP 67, (special versionIP 68)
Material of lining	Hard or soft rubber DN10÷DN1000 Teflon PTFE DN10÷DN500
Line temperatur range	Rubber: -5÷90°C Teflon: -25÷150°C
Electrods	316Ti, L (Hastelloy/Tantalum/Tytanium/Platyna)
Casing and flange material	standard : carbon steel (stainles steel 304, 321)
Flow tube	stainles steel 321
Ambient temp.	-20÷60°C

Electrical connection*

		STANDARD	OPTION	
Sensor	1 2 3 4 5 6	yellow field green field braiding function ground and screen E2 brown signal braiding screen E1 white signal compact version – cable lenght 0,5 m remote version – cable lenght 8 m	cable lenght for remote version 16, 24, 32, 40, 48 m	
Communication	7 8 9		RS 232 RxD TxD GND cable max. 10 m	RS 485 A B cable max. 500 m
Outputs	10 11 12 13 14 15	analog output **active output** unwired contact unwired contact frequency output 0 ÷ 1 kHz **pasive free optocoupler**		
Power supply	16 17 L N PE	**85 ~ 260 VAC/10VA** do not connect do not connect mains L mains N mains PE	9 ~ 36 VDC/10W do not connect do not connect + 9 ~ 36 V 0 V protective wire	24 VDC/10W + 24 V 0 V do not connect do not connect protective wire
Relay	21,22 31,32 41,42 51,52	relay 1 / <250 VAC, <30 VDC/<3A totalizer, comparators, failure, etc.	relay 2 / <250 VAC, <30 VDC/<3A relay 3 / <250 VAC, <30 VDC/<3A relay 4 / <250 VAC, <30 VDC/<3A totalizer, comparators, failure, etc.	

* more information about technical data and electrical parameters available in user's manual.

Ordering procedure

PEM-1000___/___/___/___/___/___

Version: **ALW, NW**

Nominal diameter: **DN10...1000**

Elektrode material: **316Ti, L, Platinium Hasteloy, Tantalum, Tytanium**

Material of lining: **Hard, soft rubber Teflon**

Communication protoco:l **RS 232C, RS 485**

Cable length: **L=....** Only version NW