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For your flow measurement needs

SMART

SROAT 1002

We are certified with

ISO/IEC 17025:2017 | ISO 9001:2015
ISO 14001:2015 | OHSAS 45001:2018

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Technology. Excellence. Trust.

ELECTROMAGNETIC FLOW METER SROAT - 1002

INTRODUCTION

Manas have now introduced a new type of primary flow sensor and smart flow transmitter in their electromagnatic flowmeter series. This sensor works on the Faraday's law of electromagnatic induction. The meter is true volume mesuring meter. The measurement is independent of Viscosity, Density, Dissolved/Undissolved solids, pressure or temperature of the following liquid as long as it maintains certain minimum conductivity. Various types of Liner and Electrode materials are available as per application requirements. The new sensors are more compact in size and more sensitive. Earth ring or earth electrode, both options are available. Empty tube detection is also provided.

PRINCIPLE OF OPERATION

The SROAT 1002 series Electromagnetic Flowmeters work on the Faraday's law of Electromagnetic Induction. It, in brief, states; when a conductor moves within a magnetic field, voltage is induced in it which is proportional to the velocity of conductor. In this case the conductor is flowing media.

The equation is as below:

$E = B.V.D$

Where,
E - Induced voltage (proportional to velocity)
B - Magnetic flux density
V - Mean velocity of the media
D - Diameter of flow-sensor
(distance between the sensing electrodes)

For a given size of flow tube and compatible amplifier the flux density 'B' is constant, the distance between the electrodes is constant. Hence, the induced voltage is proportional to the flowing media. Thus the meter can be calibrated in terms of volumetric flow rate by knowing the cross-sectional area of the tube.

PRINCIPAL ADVANTAGES

- Robust, rugged, welded steel/stainless steel construction with standing to IP65
- Very much suitable for submerged or buried application
- No Pressure Drop across the sensor, being full bore construction
- Measurement independent of un-dissolved solids
- Long lasting Ebonite rubber lining gives long life of sensor
- End connection flanges as per customer's requirements

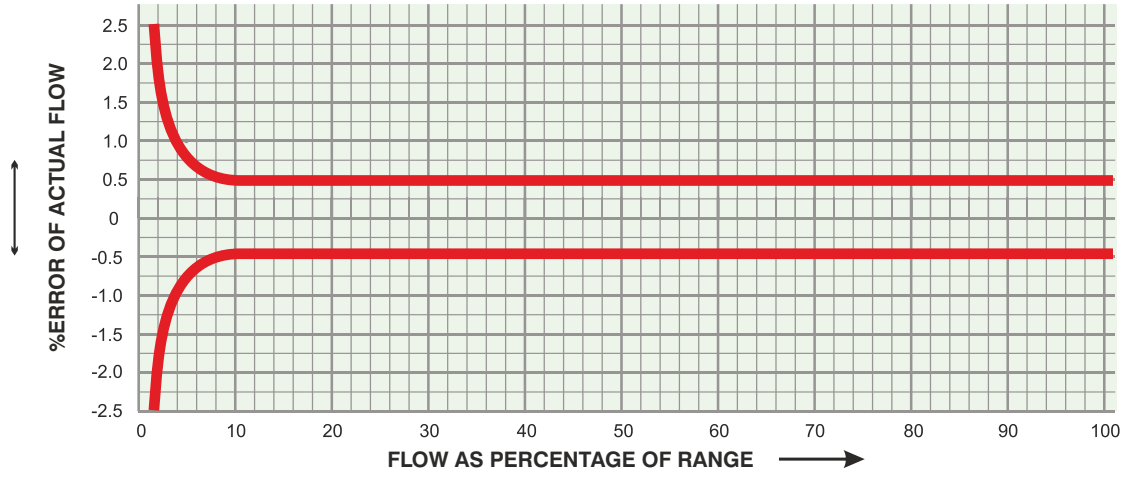
APPLICATIONS

The flow meter can be used to measure various types of fluids which can be found across various industrial processes. The accurate readings of meter keeps the operator always alert about flow rates of Medias of process.

Some of the application areas of meter:

- Effluent treatment plants
- Sewage treatment plants
- Water supply schemes
- Steel Industry
- Sugar Industry and distillery
- Pulp and paper
- Chemical and pharmaceutical
- Food and Drug

TYPICAL ERROR DIAGRAM



Specifications

Primary Sensor (SROAT 1000)

Meter	: DN 10 to DN 350
Operating Ambient Temperature	: 0-60°C
Sensing	
Measuring Electrodes	: 2 Nos.
Earth Electrodes	: 1 No.
Empty Tube Electrodes	: 1 No.
Material of Construction	
Pipe	: SS 304 (Non magnetic)
Electrodes	: SS 316 / SS 316 L Hastelloy C or Others as per compatibility with liquid
Liner	: Soft or Hard Rubber / Neoprene / PTFE / PFA / Other (as per requirements)
Flanges	: MS / CS / SS 316 / SS 304 SS 316L
Coil Housing	: MS / Carbon Steel PU Painted / SS 304 / SS 316
Flanges Standard	: ANSI / DIN / BS Flanges (as per requirement)
Power Supply to field coils	: Pulsed DC through Transmitter

Transmitter (SS 1002)

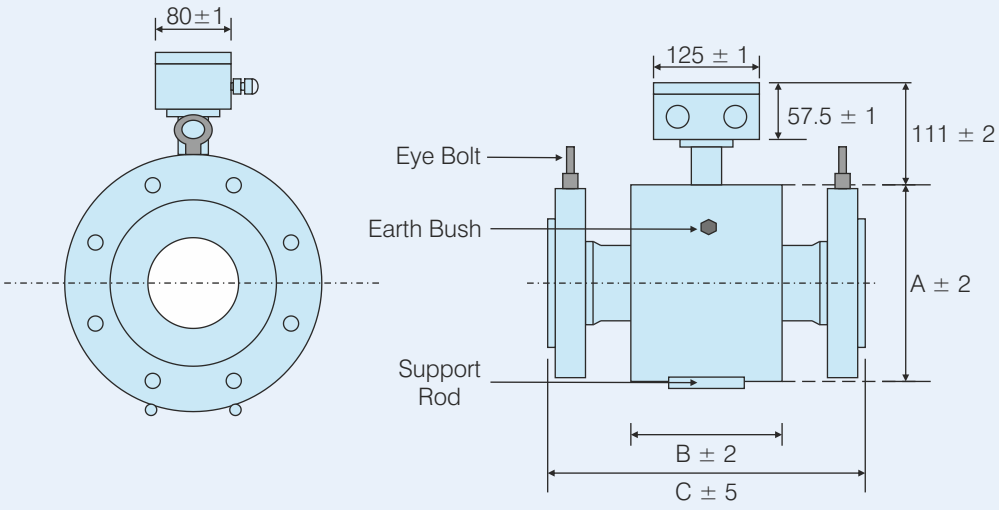
Mounting	: Integral / Remote
Enclosure	: Aluminum Die Cast (For Amplifier or Transmitter)
Dimensions	: 175mm * 100mm * 80mm (Integral mounting) 215mm * 100mm * 95mm (Remoted mounting)
Cable glands	: PG-11 (Standard) (Note: Other on request)
Power Supply	: 85V to 265V ac, 50hz
Operating Temperature	: 0 - 50°C
Temperature drift	: 0.015% / °C maximum of Full Scale
Humidity	: 90% of R.H. maximum non-condensing
Media Conductivity	: ó > 20µS/cm
Local Display	: 16 characters X 2 rows LCD display for instantaneous Flow rate, Totaliser, Eng. Units, Fault messages, etc.
Operating Velocity Range	: Up to 0.3m/sec to 10m/sec
Accuracy	: ±0.5% X (±1 mm/sec) of Actual Flow Rate between 100% to 10% of calibrated range
Reference Conditions	: Power Supply Nominal 230V ac, ±10% Temperature : 25°C ± 2°C
Repeatability	: ± 0.1% of reading
Ingress protection	: For Integral : IP 67 For Remote : IP 68
Keyboard	: 4 magnetically / manually operated keys for parameter programming. (Note : A magnetic pen used to operate the keyboard without opening the cover of transmitter box)
PC communication	: RS232 / Rs485 (Protocol MODBUS RTU)
Electromagnetic Compatibility	: As per IEC 61326-2-3 & IEC 61000-3-2; 2006

Service Conditions

Service Liquid	: Compatible with Liner & Electrode ó > 20µS/cm	
Media Pressure	: Up to DN80	- PN 40
	From DN100 to DN200	- PN 16
	From DN250 to DN350	- PN 10
Media Temp.	: From Hard Rubber	- 0 - 90°C
	For Neoprene	- 0 - 90°C
	For Soft Rubber	- 0 - 90°C
	For PTFE	- 0 - 150°C
	For PFA	- 0 - 200°C

FLOW RATE TABLE (Flow rate at v = m/s)

DN	M3/Hr.	LPM	LPS
10	0.282	4.712	0.078
15	0.636	10.602	0.176
20	1.130	18.849	0.314
25	1.767	29.452	0.490
32	2.895	48.254	0.804
40	4.523	75.398	1.256
50	7.068	117.809	1.963
65	11.945	199.098	3.318
80	18.095	301.592	5.026
100	28.274	471.238	7.853
125	44.178	736.310	12.271
150	63.617	1060.287	17.671
200	113.097	1884.955	31.415
250	176.714	2945.243	49.087
300	254.469	4241.150	70.685
350	346.356	5772.608	96.210



Meter Dimensions (mm)

DN (mm)	A	B	C
10, 15, 20	134	78	200
25	112	110	200
32	121	100	200
40	131	105	200
50	156	99	200
65	181	92	200
80	194	89	200
100	232	135	250
125	258	135	250
150	283	170	300
200	347	205	350
250	410	240	400
300	486	290	500
350	539	290	550

Note:
- All dimensions are in mm
- Dimensions are with ANSI B 16.5, class 150 flanges, with terminal box

- Production standard flanges: ANSI B 16.5, class150 upto DN350

ORDERING INFORMATION

Sample code explained: DN25-PTFE-SS316L-ANSI 150-MS/CS-SS304-B-RS4-RMT-U

DN 25 — Flow Meter Size

DN 10 : 3/8"		DN 80	: 3"
DN 15 : ½"		DN 100	: 4"
DN 20 : ¾"		DN 125	: 5"
DN 25 : 1"		DN 150	: 6"
DN 32 : 1 ¼"		DN 200	: 8"
DN 40 : 11/2"		DN 250	: 10"
DN 50 : 2 "		DN 300	: 12"
DN 65 : 2 ½"		DN 350	: 14"

PTFE — Liner Material

PTFE	: PTFE
Neoprene	: NE
Soft Rubber	: SR
Hard Rubber	: HR
PFA	: PFA
Any Other	: ZZ

SS316L — Elecrode Material

SS316	: SS316
SS316L	: SS316L
Hastelloy B	: HAST B
Hastelloy C 276	: HAST C 276
Tantalum	: TAN
Titanium	: TIT
Any Other	: ZZ

ANSI 150 — Flange / End Connection Standards

DIN	: DIN
ANSI 150	: ANSI 150
AS 4087	: AS 4087
IS1538	: IS1538
Any Other	: ZZ

MS/CS — Flange / End Connection Material

Mild/Carbon Steel	: MS/CS
Stainless Steel 304	: SS304
Stainless Steel 316	: SS316
Stainless Steel 316L	: SS316L

SS304 — Body Material

Mild / Carbon Steel	: MS/CS
Stainless Steel 304	: SS304
Stainless Steel 316	: SS316
Stainless Steel 316L	: SS316L

B — Flow Transmitter

Blind	: B
Indication Display	: 1 D
Indication & Totalization	: 2 D

RS4 — Communication Facility

No Communication	: NA
RS 232	: RS2
RS 485	: RS4

RMT — Transmitter Mounting

Integral	: INT
Remote	: RMT
Remote 2	: Pipe Mounting - RMT P

U — Power Supply

110 V AC ± 10%, 50 Hz	: 1
230 V AC ± 10%, 50 Hz	: 2
24 V DC	: 3
85-265 V AC, 50 Hz	: U
Any Other	: Z

Due to continuous development specifications are subject to change without prior notice.

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