

**We
Measure
Flow**



MAGMETER
Sreast - 1000

INTRODUCTION :

The Manas Make electromagnetic flow meter called as SROAT-1000 virtually approaches the ideal flow meter suitable for wide range of liquid flow measurements even with very low conductivities. The meter offers no resistance to flow hence the pressure drop is almost negligible. The measurement being based on Faraday's law of electromagnetic induction, is independent of viscosity, density, pressure & temperature of flowing medium. The measurement is not affected by solid impurities as long as the min. conductivity of $5\mu\text{s/cm}$ is available. It is a true volumetric flow measurement. We offer various materials of construction for meter lining & electrodes to cover majority of corrosive liquids.

The technique called as " Pulsed DC " is used which offers very high zero stability & accuracy of measurement. The standard current output of 4-20 mA DC is provided which is linearly proportional to volumetric flow rate.

PRINCIPLE OF OPERATION :

The method of flow measurement is based on Faraday's law of electromagnetic induction. 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 = Distance between the sensing electrodes

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

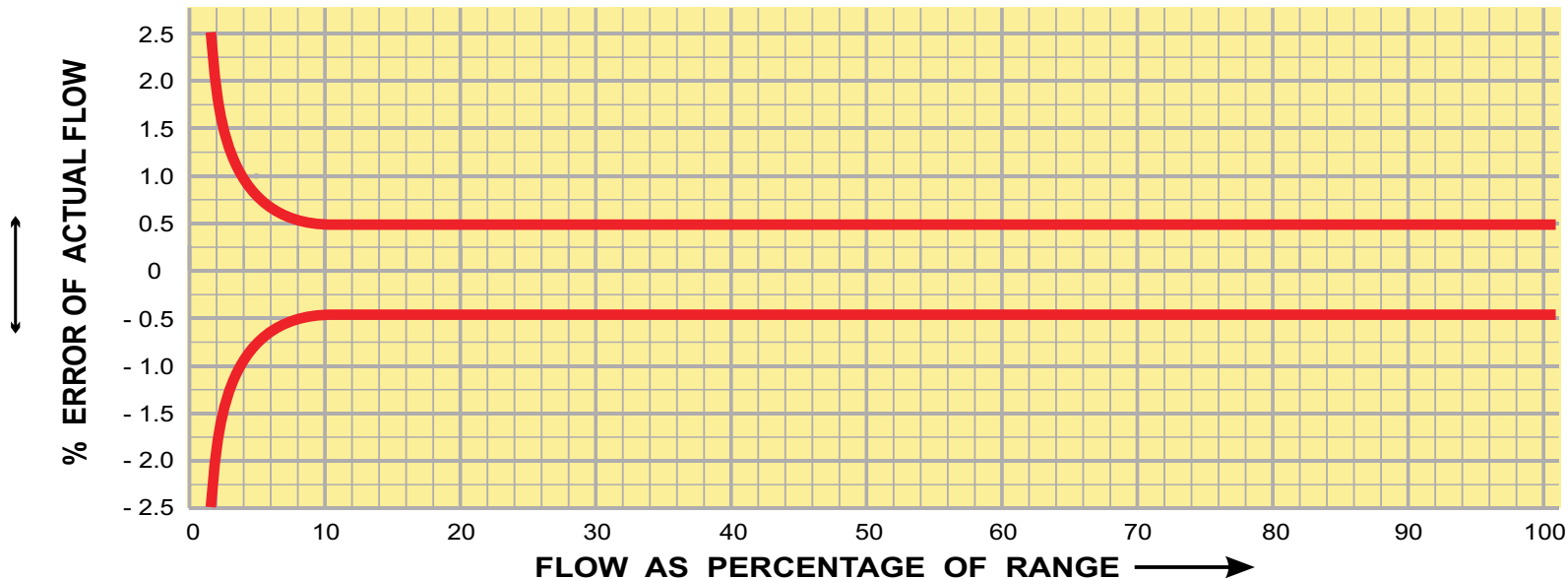
1. Use of pulsed DC magnetisation & auto zero technique offers excellent long term zero stability.
2. Measurement is independent of velocity profile across the diameter of the pipe-line.
3. Measurement results are independent of density, viscosity, pressure, temperature, solid - impurities & conductivity variations [above $5\mu\text{s/cm}$].
4. No additional pressure drop across the meter which relieves the process designer while sizing his pumping requirements. Simple to install as no special precautions of straight pipe lengths required.
5. Compatible with virtually all corrosive / non-corrosive liquids.
6. Protection class offered IP 65.
7. Reasonably higher ratio of Return on Investment to Investment.

APPLICATION :

This meter is more suitable with those fluids which present difficulties in handling. Fluids such as effluents, slurries, pulps, brines & other highly corrosive liquids, acids & bases, fermenter-wash, molasses etc.

Following industries can find lot of application of this flow measurement technique.

- Effluent Treatment Plants
- Sewage Treatment Plants.
- Water Supply Schemes.
- Steel & Aluminium.
- Sugar Industries & Distilleries.
- Pulp & Paper.
- Chemical / Pharmaceutical.
- Petrochemicals / Fertilizers.
- Food & Drugs.

ERROR DIAGRAM

ELECTROMAGNETIC FLOW-METER (FULL BORE)

SPECIFICATIONS

METERING TUBE : SROAT 1000

- | | | | |
|--------------------------------|--|------------------------------|--|
| 1. Meter Size | : DN 10 to DN 350
for higher sizes consult factory | 4. Coil Excitation Frequency | : Selectable by DIP switch.
a) 25Hz
B) 12.5 Hz
c) 6.25 Hz
d) 3.125 Hz |
| 2. Media Pressure | : Upto DN 80- PN 40
From DN 100 to DN 200 - PN 16
DN 250 to DN 350 - PN 10 | 5. Local Display | : a) 3 ½ digit LCD calibrated in % or
in engineering units for flow rate
indication
b) 8 digit LCD non resettable type
for totalised quantity. |
| 3. Media Temperature | : PFA Liner : 0 - 200°C max.
PTFE Liner : 0 - 150°C max.
Rubber Liner: 0 - 90°C max. | 6. Flow Velocity Range | : 0.1 m/s to 10 m/s |
| 4. Ambient Temperature Range | : 0 - 50°C | 7. Accuracy | : ±0.5% of reading [at ref. conditions]
between 100% to 10% of calibrated
range
±0.75% of reading for flow rate
between 10% to 5%
[refer accuracy graph] |
| 5. Materials : Pipe | : SS 304 [non-magnetic] | 8. Ref. Conditions | : Power supply nominal.
Temperature 27°C ± 2°C |
| Electrode | : SS 316 / SS316L/Hastelloy C / Ta /Ti. | 9. Repeatability | : ±0.2% of reading |
| Liner | : PTFE / Neoprene /Soft Rubber /
Hard Rubber/PFA. | 10. Ambient Temperature | : 0 - 50°C |
| Flanges | : Carbon Steel / SS 316 / SS 316 L /
SS 304. | 11. Temperature Drift | : ±0.015% per °c max. |
| Body Material | : Carbon Steel, P.U.painted./ SS 304/ SS 316 | 12. Humidity | : 90 % R. H. max. non condensing |
| 6. Flange Standard | : ANSI / DIN /BS / SMS / Triclamp | 13. Material of Housing | : Al. Die cast. |
| 7. Power Supply to field coils | : Pulsed DC | 14. Power Supply | : 230 V ac/ 110 V ac, 50 Hz/24 V dc. |
| | | 15. Damping | : Adjustable from 5 to 30 Secs. |
| | | 16. Cable Entries | : 4 no. For Remote Amplifier
2 no. For Integral Amplifier
PG11/ ½" NPT / ½" BSP / [Female] |
| | | 17. Ingress Protection | : IP-65 |

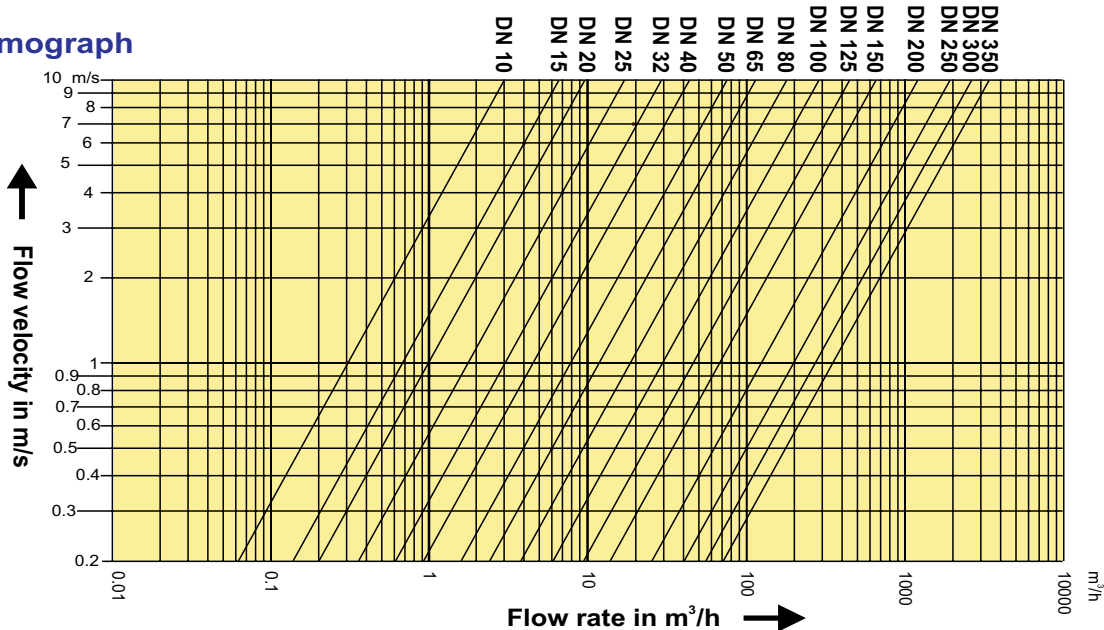
TRANSMITTER SROAT 1000 A

- | | | | |
|----------------------------|--|-------------------------|--|
| 1. Mounting | : Integral mounted [standard]
Remote Mounted [on request] | 11. Temperature Drift | : ±0.015% per °c max. |
| 2. Min. Media Conductivity | : 5 µs /cm [for lower conductivities
consult factory] | 12. Humidity | : 90 % R. H. max. non condensing |
| 3. Signal Output | : 4-20 mA dc isolated in max. 600 ohms | 13. Material of Housing | : Al. Die cast. |
| Additional option | : Pulsed Output With adjustable count
rate from 1 count / Hr to 10 ⁵ Counts/ Hr.
[Open collector with 100 mA/24 V dc
capacity] | 14. Power Supply | : 230 V ac/ 110 V ac, 50 Hz/24 V dc. |
| | | 15. Damping | : Adjustable from 5 to 30 Secs. |
| | | 16. Cable Entries | : 4 no. For Remote Amplifier
2 no. For Integral Amplifier
PG11/ ½" NPT / ½" BSP / [Female] |
| | | 17. Ingress Protection | : IP-65 |

FLOW RATE TABLE : Flow rate at v = 1m/s

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

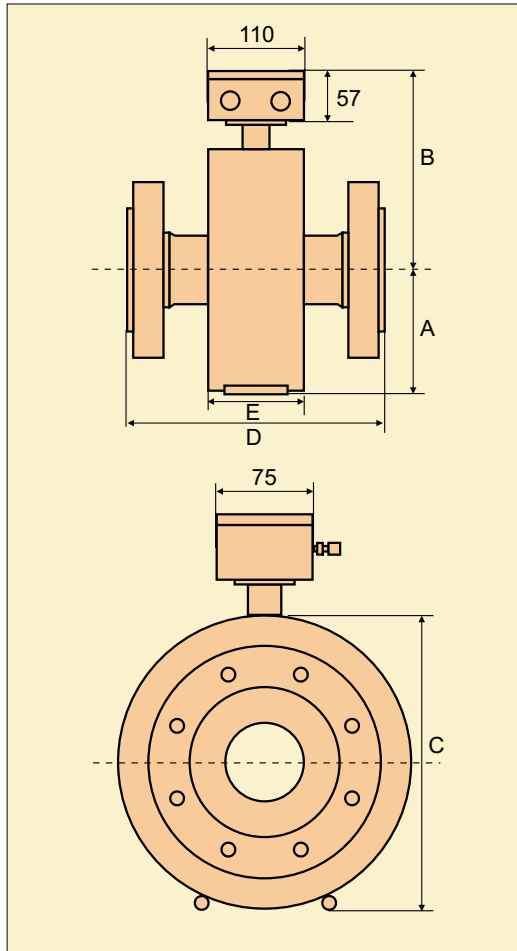
Flow Nomograph



Meter Dimensions (mm)

DN(mm)	A	B	C	D	E
10, 15, 20	60	180	115	200	76
25, 32	80	197	150	200	96
40, 50	115	232	220	200	102
65, 80	122	239	233	200	102
100,125	170	287	330	250	132
150	180	297	350	300	172
200	235	352	460	350	207
250	290	407	570	400	242
300	335	452	660	500	292
350	355	467	690	550	292

Dimensions are with ANSI 150 Flanges, with terminal box.
(for other flange rating consult factory)
Dimension 'D' is without earthing rings.
Standard flanges ANSI 150 up to DN 150
Bs10, Table F : DN 200 & onwards.



ORDERING INFORMATION

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

LINER MATERIAL
LM01 : PTFE
LM02 : Neoprene
LM03 : Soft Rubber
LM04 : Hard Rubber
LM05 : PFA
LM06 : Any Other

ELECTRODE MATERIAL
EM01 : Stainless Steel 316
EM02 : Stainless Steel 316L
EM03 : Hastelloy C
EM04 : Tantalum
EM05 : Titanium
EM06 : Any Other

FLANGE/END CONNECTION STANDARDS
FS 01 : DIN PN 40
FS 02 : DIN PN 16
FS 03 : DIN PN 10
FS 04 : ANSI 300
FS 05 : ANSI 150
FS 06 : BS 10, Table F
FS 07 : BS 10, Table D
FS 08 : SMS union coupling
FS 09 : Tri-clamp
FS 10 : Any Other

FLANGE/END CONNECTION MATERIAL
FM01 : Carbon Steel
FM02 : Stainless Steel 304
FM03 : Stainless Steel 316
FM04 : Stainless Steel 316L

BODY MATERIAL
BM01 : Mild Steel
BM02 : SS 304
BM03 : SS 316
BM04 : SS 316 L

FLOW TRANSMITTER
FT 01 : Integral
FT 02 : Remote

POWER SUPPLY
01 : 110 V AC ± 10%, 50 Hz
02 : 230 V AC ± 10%, 50 Hz
03 : 24 V DC ± 10%

DN 25 LM 01 EM 01 FS 05 FM 01 BM 01 FT 01 02 Sample Order Code

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

Manufactured By



Manas Microsystems Pvt. Ltd.
Pune.

Authorised Distributor



Managing Technology & Services

MTS ENGINEERS PVT. LTD.

B/408, Wall Street-II, Opp. Orient Club, Near Gujarat College,
Ellisbridge, Ahmedabad-380 006, Gujarat, INDIA.
T : +91 79 2640 0063 / 3016 0063 • F : +91 79 4004 7430
www.mtsengrs.com

