The Need For Every
Process Industry

SPINK CONTROLS ®

An ISO 9001:2008 Certified Company

ELECTROMAGNETIC FLOWMETER

MODEL: SC / R - 600

FLOW

INTRODUCTION

Spink Controls is offering large sized electromagnetic fowmeters. The sizing ranges from 10 mm diameter to 1600 mm diameter. These fowmeters suitable for measurement of Raw Water containing even abrasive sand and quartz particles, mud etc. and still delivering long life. This series is also suitable for sewage applications.

PRINCIPLE OF OPERATION

The Spink Controls electromagnetic flowmeters work on 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 = 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 velocity of 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 withstanding to IP68
- Very much suitable for submerged or buried applications
- Mesurement independent of un-dissolved solids
- Much better accuracy compared to other types of meters in its class
- No pressure drop accross the sensor, being full bore construction
- Long lasting Ebonite rubber lining gives long life of sensor
- End connection flanges as per customer's requirements

APPLICATIONS

Extremely useful for large water supply schemes Suitable for sewage management

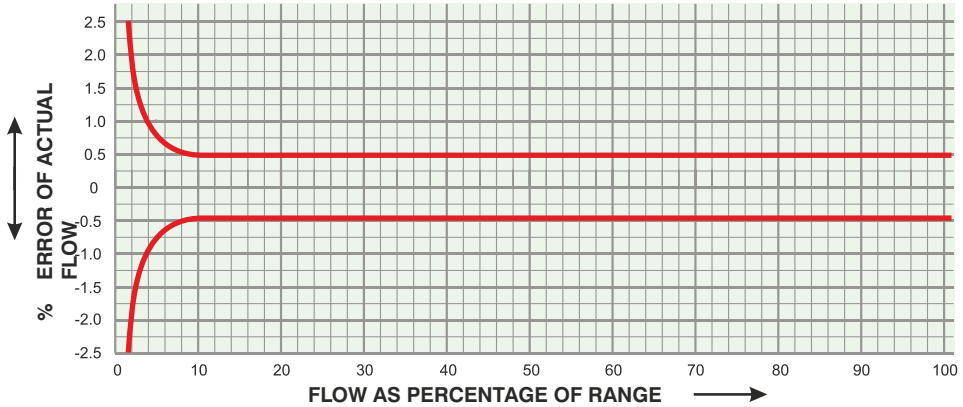
Municipal water measurement schemes

SPECIFICATIONS*

METERING TUBE

Meter Size	: DN 10 to DN 1600
Media Pressure	: PN 10
Media Temperature	: 0 - 80°C
Operating Ambient Temperature	: 0 - 60°C
Material of construction	:
Pipe	: SS 304 (non-magnetic)
Electrode	: SS 316/ SS 316L / or others as per compatibility with service liquid
Liner	: Hard Ebonite Ruber / Neoprene
Flanges	: CS / SS304 / SS316 / SS316L
Coil Housing	: MS / CS Polyurethane Painted / SS 304 without paint / or others as per compatibility with service liquid
Earth Electrodes	: SS 316 / SS 316L / Hastelloy C or others as per compatibility with service liquid
Flange Standard	: IS 1538 / AWWA / DIN or others as per compatibility with service liquid
Power Supply to field coils	: Pulsed DC
Ingress Protection	: IP 68

ERROR DIAGRAM



TRANSMITTER SPECIFICATIONS

SR1010

Mounting	: Remote / Integral
Enclosure	: Aluminium Die-cast for Amplifier/Transmitter)
Dimensions	: 255mm(L)*207mm(W)*90mm(D) (Remoted mounting)
Cable Glands	: PG9, PG 11, PG13. 5 (Note: Other on request) LAN connector for MODBUS IP, BACNET IP (Optional) NA for MODBUS RTU
Power Supply	: 85V to 265V ac, 50Hz, S. P.
Operating Temperature	: 0 - 50°c
Temperature Drift	: 0.015% / °c maximum of Full Scale
Media Conductivity	: ó > 5μS/cm
Operating Velocity Range	: 0.1m/s to 10m/s
Repeatability	: ± 0.2% of reading
Output	: a) Pulsed DC output supply to excite the field coils in the flow sensor. : b) 4 - 20mA dc, in max. 600 Ω load, Isolated, Proportional to flow rate, : c) 1 pulse/0.1unit or 1pulse/unit or 1pulse/10unit or 1pulse/100unit Configurable open collector (Rated for 24Vdc@30mA) : d) Two isolated open collector digital output each of which can be configured as either flow status (Forward/Reverse) OR Emply pipe output OR Alarm Type (High/Low)
PC Communication	: Protocol -MODBUS RTU / OR MODBUS IP/OR BACNET IP Comport : RS232 or RS485 (default) (only for MODBUS RTU) : LAN port for MODBUS IP/BACNET IP (10 or 100 mbps (auto negotiable), Full Duplex
Humidity	: 90% of R.H. maximum non-condensing
Local Display	: 16 characters X 2 rows LCD Display for instantaneous flow rate, Totalizer, Engg. Units, Fault messages etc.
Accuracy (under Reference Condition)	: (±0.5% - ±1 (mm/sec) of Actual Flow Rate between Condition) 100% to 10% of calibrated range
Ingress Protection	: IP 67
Electromagnetic Compatibility	: As per IEC 61326-2-3 & IEC 61000-3-2; 2006
Data Logging	: 5850 Number of logs (one log every hour) For MODBUS RTU -print and view options available For MODBUS IP/BACNet-only view option available

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

DN	M3/Hr.	LPM	LPS	MLD
400	452.389	7539.816	125.664	10.8
450	572.555	9542.580	159.043	13.7
500	706.858	11780.960	196.349	16.9
600	1017.875	16964.590	282.743	24.4
700	1385.441	23090.690	384.845	33.2
750	1590.430	26507.430	441.786	38.1
800	1809.556	30159.26	502.654	43.429
900	2290.219	38170.32	636.172	54.965
1000	2827.431	47123.85	785.398	67.858
1200	4071.501	67858.34	1130.972	133.002
1400	5541.765	92362.75	1539.379	133.002
1600	7238.223	120637.1	2010.678	173.717

HOW TO CALCULATE VELOCITY

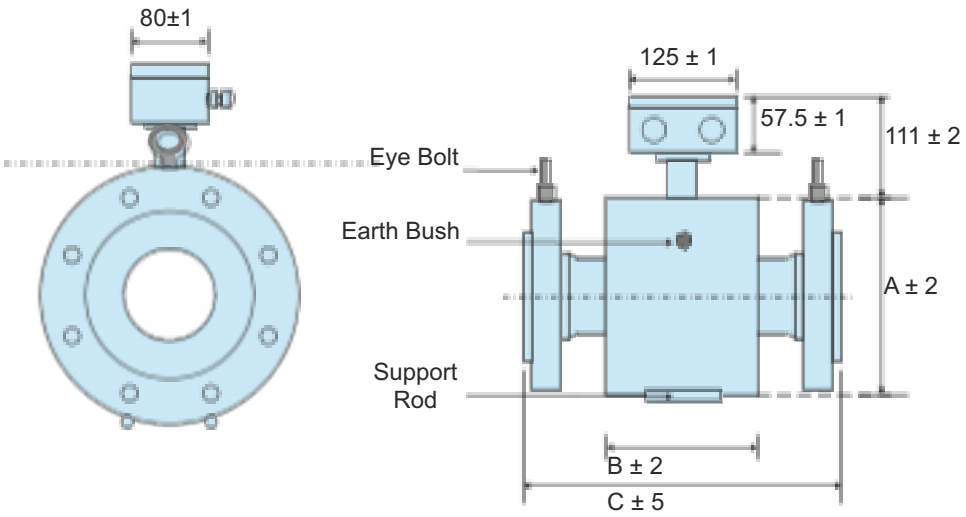
Please refer the velocity table where flow rates at 1 meter/sec.velocity through different sizes of flow meter are given. In general through large size of meters the velocity taken is between 1 to 3 meters/sec. This also is suitable velocity range because Manas meters work confortable up to 1m/sec. full scale velocity.

SAMPLE CALCULATION FOR VELOCITY IN FLOW TUBE

Please refer the velocity table where flow rates at 1 meter/sec.velocity through different sizes of flow meter are given. In general through large size of meters the velocity taken is between 2 to 3 meters/sec. Given flow rate by customer : 3000 m3/hr (Say) Expected velocity through flow meter : 2.5m/sec. (Approx.) Flow rate at 1 mete/sec. velocity : 3000/2.5 = 1200 m3/hr. Referring velocity table, DN700 is having 1385.441 m3/hr flow rate at 1 m/sec. velocity

We get celocity for given flow rate through
DN700 : 3000 / 1385.441 = 2.165 m/sec.

This is suitable velocity. Thus in this case DN700 is sutaible meter.
Alternately, suppose the given line size is 800 NB. Flow rate is 3000 m3/hr. Velocity through DN800 flow meter, V=3000m3/hr / 1809.556 = 1.658,/s. Where, 1809.556 is the Flow rate in m3/hr., specified for 1 meter velocity through DN800 meter as per the above velocity table. This is near to our requirement of 1.5 meters/sec. This way you may find the velocity in the given line/flow meter for given flow rate.Or you may find sutaible line size / or flow meter size for given flow rate.



Note:

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

Meter Dimensions (mm)

DN	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

ORDERING INFORMATION

Sample code explained: DN25-PTFE-SS316L-ANSI 150-SR1010-CS-CS-2D-RS4-RMT-U

DN 25 — 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 : 11/2"	DN 250 : 10"
DN 50 : 2 "	DN 300 : 12"
DN 65 : 2 1/2"	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

CS — Flange / End Connection Material

Mild Steel	: MS
Carbon Steel	: CS
Stainless Steel 304	: SS304
Stainless Steel 316	: SS316

CS — Body Material

Mild Steel	: MS
Carbon Steel	: CS
Stainless Steel 304	: SS304
Stainless Steel 316	: SS316

SR 1010 — Transmitter Model

SR 1010	: SR 1010

2D — Flow Transmitter

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

RS4 — Communication Facility

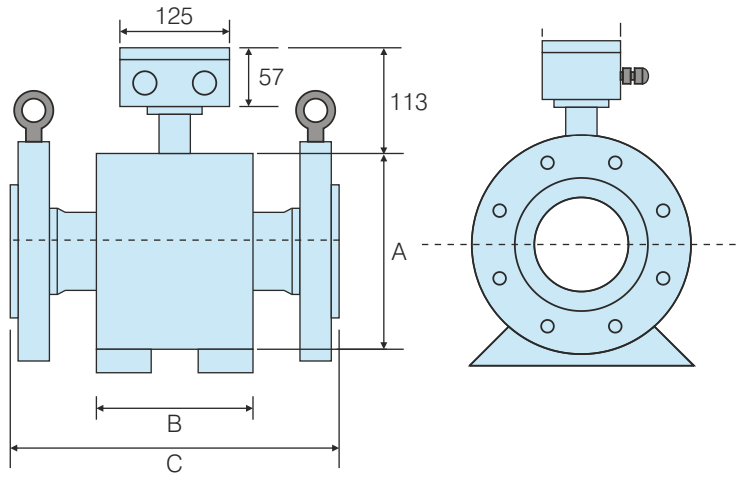
RS232	: RS2
RS485	: RS4
Modbus IP	: Modbus IP
BACNET IP	: BACNET IP
Any Other	: ZZ

RMT — Transmitter Mounting

Remote	: RMT

U — Power Supply

85-265 V AC, 50 Hz	: U
24 V DC	: 3
Any Other	: Z



Meter Dimensions (mm)

DN (mm)	A	B	C
400	600	325	600
450	635	325	600
500	670	325	600
600	780	325	600
700	895	400	700
750	960	400	750
800	1015	400	800
900	1170	450	900
1000	1290	450	1000
1200	1510	500	1200
1400	1630	600	1400
1600	1830	800	1600

ORDERING INFORMATION

Sample code explained: DN600-HR-SS316-IS1538-CS-CS-SR1010-2D-0L-RS4-RMT-U

DN 600

DN 400 : 16"	DN 800 : 32"
DN 450 : 18"	DN 900 : 36"
DN 500 : 20"	DN 1000 : 40"
DN 600 : 24"	DN 1200 : 48"
DN 700 : 28"	DN 1400 : 56"
DN 750 : 30"	DN 1600 : 64"

HR — Liner Material

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

SS316L — Elecrode Material

SS316L	: SS316L
Hastelloy C	: HAST C
Any Other	: ZZ

IS1538 — Flange / End Connection Standards

IS1538	: IS1538
AWWA Class B	: AWWA
DIN EN 1092-1	: DIN EN
Any Other	: ZZ

CS — Flange / End Connection Material

Carbon Steel	: CS
Stainless Steel 304	: SS304
Any Other	: ZZ

CS — Body Material

Carbon Steel	: CS
Stainless Steel 304	: SS304
Stainless Steel 316	: SS316
Any Other	: ZZ

SR 1010 — Flow Transmitter Type

SR 1010	: SR 1010

2D — Flow Tranmitter

Blind	: B
Indication Dislpay	: 1D
Indication and Totalisation	: 2D

0L — Logging

Normal Logging	: 1L
Extended Logging	: 2L
No Logging	: 0L

RS4 — Communication Facility

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

RMT — Flow Transmitter Mounting

Integral	: INT
Remote	: RMT

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

SPINK CONTROLS®

Head Office

303, SIDDHARTH TOWER, G.P. PAI ROAD,
KOPRI, THANE(E) - 400 603
MAHARASHTRA, INDIA
Fax : +91 22 2532 4845
Phone : +91 22 2532 8223
+91 22 2532 8224
Email : info@spinkcontrolsindia.com

Plant

GALA No. F-4 A WING, UDYOG BHAVAN-2
ADDITIONAL AMBERNATH, INDUSTRIAL
AREA, ANAND NAGAR MIDC AMBERNATH,
Dist - THANE 421501
Phone : +91 9594991196
Email : rupa.thakkar@spinkcontrols.com

एन एस आई सी NSIC ISO 9001 : 2008 | UDYOG AADHAR आधार MSME | CERTIFIED ISO 9001:2015 COMPANY | CERTIFIED ISO 14001:2015 COMPANY