The Need For Every
Process Industry

SPINK CONTROLS®

An ISO 9001:2015 Certified Company

ELECTROMAGNETIC FLOWMETER

MODEL: SC / R - 601-e

FLOW

ELECTROMAGNETIC FLOWMETER

ELMAG 200

MODEL : SC / R - 601-e

SC / R - 601-e are micro-controller based full bore type electromagnetic flow meters specially used for various industrial applications. These flow meters accurately measure the flow rate of conductive liquids and slurries in closed pipes. Due to its simple and rigid design, the flow meter is an obstruction less and maintenance-free instrument in place of conventional mechanical flow measuring devices. The use of 'Pulsed DC' technology offers highest ability and better measuring accuracy in the form of electrical signal 4-20 mA DC linearly proportional to volumetric flow. The instrument is based on Faraday's law of electromagnetic induction. A magnetic field is generated by the instrument in the flow tube. The fluid flowing through this magnetic field generates a voltage that is proportional to the flow velocity. Corresponding electrical output is provided with respect to measuring flow range.

SALIENT FEATURES

- Universal Power Supply 90 to 250V AC / 24V DC / Solar Powered
- Suitable for conductive liquids
- Full bore type
- Empty pipe indication
- Material of construction in accordance to process parameters
- Local Indication through LCD Display
- Inbuilt Relay Status output (High / Low / Batch)
- HART Compatible
- Optional pressure measurement along with flow
- Optional in built pressure measurement

ASSEMBLY OVERVIEW - INTEGRAL

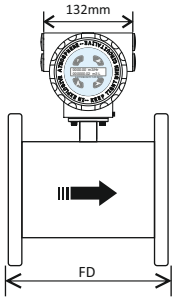

Fig. 1 Front View

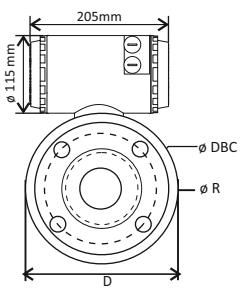

Fig. 2 Side View

ASSEMBLY OVERVIEW - REMOTE

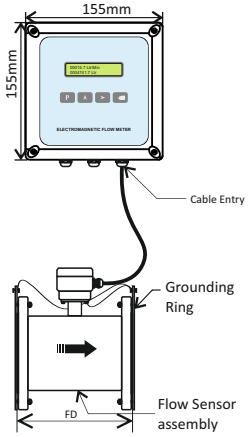

Fig. 3 Front View

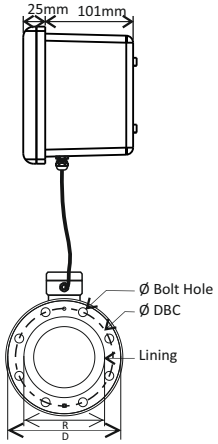

Fig. 4 Side View

ENGINEERING SPECIFICATION

Media	:	Liquid (Conductive)
Conductivity	:	> 5 µS/cm
Viscosity	:	200 cp max
Line Size	:	15 NB to 1000 NB
Excitation	:	Pulsed DC
Type of Output	:	Output : 1 (Any one) 1) 4 to 20mA DC 2) 4 to 20mA DC with HART (Generic) Output : 2 Pulse (Open Collector Type) Output : 3 2 Relay Outputs
Communication Output	:	Output : (Any one) RS 485 supporting MODBUS RTU Protocol / GSM / GPRS / Dual SIM GPRS / Ethernet MODBUS TCP
Display	:	LCD Display - 6 Digit for Flow Rate & 8 Digit for Totalizer Flow
Velocity	:	0.3 m/s - 2.5m/s upto Max. 10m/s
Engineering Unit	:	User Programmable (m^3/hr by default)
Calibration	:	Wet Calibrated at IEC/ISO/EN17025 Accredited Calibration Laboratory.
Accuracy	:	< ± 0.5% of M.V. +(± 5mm /sec) for Velocity Range 0.3 m/s to 6 or 12 m/s
Linearity	:	± 0.5% of M.V.
Repeatability	:	± 0.2% of M.V.
Temperature Coefficient	:	± 0.05% per °C
Process Temperature	:	-20 to 85°C max for Rubber Lining & -20 to 220°C for PTFE & PFA Lining
Process Pressure	:	16 kg/cm^2 max (Higher on request)
Material of Construction	:	1) Lining - Neoprene / Ebonite Rubber, PFA, PTFE, PU, CERAMIC 2) Flange - MS, CS, SS 316, SS304 3) Electrode - SS316L, Hastelloy C, Platinum, Tantalum, Titanium 4) Coil Housing - SS304
Power Supply	:	**Option 1** : 90 - 250 V AC, 50 Hz **Option 2** : 24 V DC (+/- 10%)
Power Consumption	:	< 10 VA
Inline Pressure Sensor	:	Pressure Sensor 20 Kg
Isolation	:	1.4 KV between Input, Output & Power Supply
Response Time	:	Less than 1 Sec.
Electronics	:	Integral (Local) / Remote
Electronic Protection Class	:	Field Mount Weather Proof IP-67 (NEMA 6), Field Mount Weather Proof IP-68 (NEMA 6P), DIN Standard (IP 54) (NEMA 3), Flameproof (CMRI IIA IIB Certified), ATEX Ex d
Sensor / Flow Tube Protection class	:	Weather Proof IP-67, IP-68
Process Connections	:	ANSI150 flanged, as per table B 16.5 (Other On Request)
Mounting	:	In-Line Horizontal / Vertical
Ambient Conditions	:	Temperature -20 to 75°C / Humidity 5 to 95% non condensing
Certification	:	CE

Flow Velocity

FLOW CHART

Line Size		Flange To Flange Distance	Flow Range (m^3/Hr)				
Inch	NB		Velocity 0.3m/s	Velocity 2.5m/s	Velocity 6m/s	Velocity 10m/s	A
½"	15	200	0.19	1.59	3.81	6.36	B
¾"	20	200	0.34	2.83	6.785	11.31	C
1"	25	200	0.53	4.42	10.602	17.67	D
1¼"	32	200	0.87	7.24	17.371	28.95	E
1½"	40	200	1.36	11.31	27.143	45.24	F
2"	50	200	2.12	17.67	42.4115	70.69	G
2½"	65	200	3.58	29.86	71.675	119.46	H
3"	80	200	5.43	45.24	108.573	180.96	I
4"	100	250	8.48	70.69	169.646	282.74	J
5"	125	250	13.25	110.45	265.071	441.79	K
6"	150	300	19.09	159.04	381.703	636.17	L
8"	200	350	33.93	282.74	678.584	1130.97	M
10"	250	450	53.01	441.79	1060.28	1767.15	N
12"	300	500	76.34	636.17	1526.81	2544.69	O
14"	350	550	103.91	865.9	2078.16	3463.61	P
16"	400	600	135.72	1130.97	2714.33	4523.89	Q
18"	450	600	171.77	1431.39	3435.33	5725.55	R
20"	500	600	212.06	1767.15	4241.15	7068.58	S
24"	600	600	305.36	2544.69	6107.25	10178.76	T
28"	700	700	415.63	3463.61	6650.12	13854.42	U
32"	800	800	542.87	4523.89	7481.39	18095.47	V
36"	900	900	687.07	5725.55	8312.65	22902.21	W
40"	1000	1000	848.23	7068.58	16964.6	28274.33	X

Note : Flange to flange distance (FD) Tolerance : **1)** 1/2"(15NB) to 6"(150NB) : ±3mm **2)** 8"(200NB) to 40"(1000NB) : ±5mm

- All dimensions are in 'mm'
- For dimensions of line size above 1000NB, please consult factory.
- Typical mounting dimensions ae for reference only.

- Wet Calibrated at IEC/ISO/EN17025 Accredited Calibration Rig.
- Flow meter should be selected with the help of Nomograph (recommended full scale velocity).

MODEL SELECTION

Suffix Code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Parameters
Model Code	SC/R-601-e															Electromagnetic flowmeter
Line size		XX														From 15 - 1000 NB (Refer flow chart)
			I													Integral
Transmitter type			R													Remote
				AL												Aluminum Die Cast
Enclosure MOC				SS												SS 316
					P1											24 V DC
					P2											230 V AC
					P3											Battery Powered
Power Supply					P4											Solar Powered
						O1										4 - 20 mA
						O2										4 - 20 mA + HART
Output - 1 (Electric)						OX										N/A
							P1									Pulse (OC)
Output - 2 (Pulse)							PX									N/A
								R1								1 alarm
								R2								2 alarm
Output - 3 (Alarm / Relay)								RX								N/A
									C1							RS 485 (Modbus RTU)
									C2							GPRS
									C3							GSM
									C4							MBUS
Communication Interface									CX							Not Applicable
										F						Flange
										T						Tri Clover
										B						BSP Threaded
										W						Wafer
										S						SMS
Process connection										XX						Other on request
											S4					SS 304
											S6					SS 316
											SL					SS 316L
											CS					CS
Process connection MOC											HP					MS
												S1				Hard / Ebonite Rubber
												S2				Neoprene
												S3				PTFE
												S4				PFA
												S5				Ceramic
Sensor lining MOC												S6				PEEK (upto 50 NB)
													E1			SS 316
													E2			SS 316L
													E3			Hastelloy C
													E4			Titanium
													E5			Platnium
Electrode MOC													EX			Other on request
														XX		5,10,15,25 mtr.
Remote Signal Cable Length														NA		Not Applicable
															67	IP 67
Protection Class for Sensor															68	IP 68

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Email : rupa.thakkar@spinkcontrols.com

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