

Slurry Electromagnetic Flowmeter

RF3301-SL



DN15-DN3000 (1/2"-120")



RS485 MODBUS standard, HART, GPRS



Process connection Tri-clamp/ Thread/
Wafer/ Union



Compact/Remote version

**Product
Datasheet**

ROCKSENSOR AT A GLANCE (ABOUT US)

Rocksensor is one of the global leaders specializing in Process Instrumentation, Research and Development and Designing of Industrial Automation Equipment. We provide highly precise pressure sensors and transmitters, flow metres, level transmitters and temperature transmitters with a prime focus to help our clients efficiently, safely and economically run complex industrial processes.

Rocksensor, headquartered in Switzerland, has its footprint in various geographical regions such as the US, Russia, South Korea, Italy, Germany, Singapore, Malaysia, Morocco, China, Taiwan, Australia, UAE, Brazil and India. Our clients come from some of the major industries such as Oil and Gas, Petrochemicals, Pharmaceuticals, FMCG, Automobiles, Water, Cement, Metal & Mining, and mainly from the Power Industry like Nuclear, Thermal, Hydro, and Solar.

Rocksensor deals in a wide range of highly accurate industrial automation instruments ensuring that even the complex industrial processes happen efficiently.

To fulfill the needs of our clients we make sure that our instruments work in even the harsh environmental conditions offering accurate recordings and communication.

We, at Rocksensor, believe in creating bonds that last a lifetime and create a success story for each and every client. Rocksensor aims to achieve a perfect fit in the global market landscape and establish our footprints across the globe.



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1. Description

Noise is common in process fluids containing solid particulates, and it can influence the measurement, our slurry magnetic flow meter adopts square wave excitation and 25Hz/30Hz high excitation, which can eliminate interference between the sharp wave noise generated by solid particles, ensures accurate measurement of viscous medium.

2. Advantages & features

- Special design grouting converter: Special converter can eliminate interference between the sharp wave noise generated by solid particles.
- Medium concentration: the concentration of slurry can reach 30%, and the variation range is usually less than 5%.
- Excitation method: square wave excitation (4 kinds of square waves) improves flow measurement stability.
- Excitation Frequency: 25 Hz/30 Hz excitation frequency for choose. High excitation frequency has high anti-interference ability, ensures accurate measurement of viscous medium.
- LCD backlight display: instantaneous flow, total flow, flow velocity, percentage flow, etc
- Cement Slurry, Sludge, Gypsum Slurry, Paper & Pulp, Juice, Syrup, Ore Slurry, Coal Slurry.

3. Technical data

Parameters	Details	
Size	DN3-DN3000 (1/8"-120")	
Accuracy	±0.5% of reading at flow velocity ≥ 0.5m/s	
Velocity	0.1~15 m/s	
Repeatability	≤0.17%	
Excitation current	125 mA, 187 mA, 250 mA	
Excitation Frequency	25 Hz/30 Hz	
Structure	Compact / remote, cable length 10m standard, 100m max	
Conductivity	> 5 μS/cm, demineralized water > 20 μS/cm	
Protection Grade	Transmitter: IP65 standard, IP67 optional	
	Sensor: IP65 standard, IP68 (submersible, only available for remote type)	
Electrode	SS316L, Hastelloy C, Hastelloy B, Titanium, Tantalum, Platinum-iridium	
Power Supply	85~250 VAC (50/60 Hz), 20~36 VDC	
Power Consumption	<20W	
Signal Output	Analog	4~20mA (load resistor 0~750Ω)
	Frequency	Forward & reverse flow output with a frequency range of 1~5000Hz
	Alarm	Two isolated open collector transistor (OCT) outputs for alarm signals
Communication	RS485 MODBUS standard, HART, GPRS	
Display	LCD Display, 128X128mm, three lines, 4 buttons	
Ambient Temperature	-20°C~60°C	
Fluid Temperature	Compact: -20°C~80°C, Remote: -20°C~120°C	

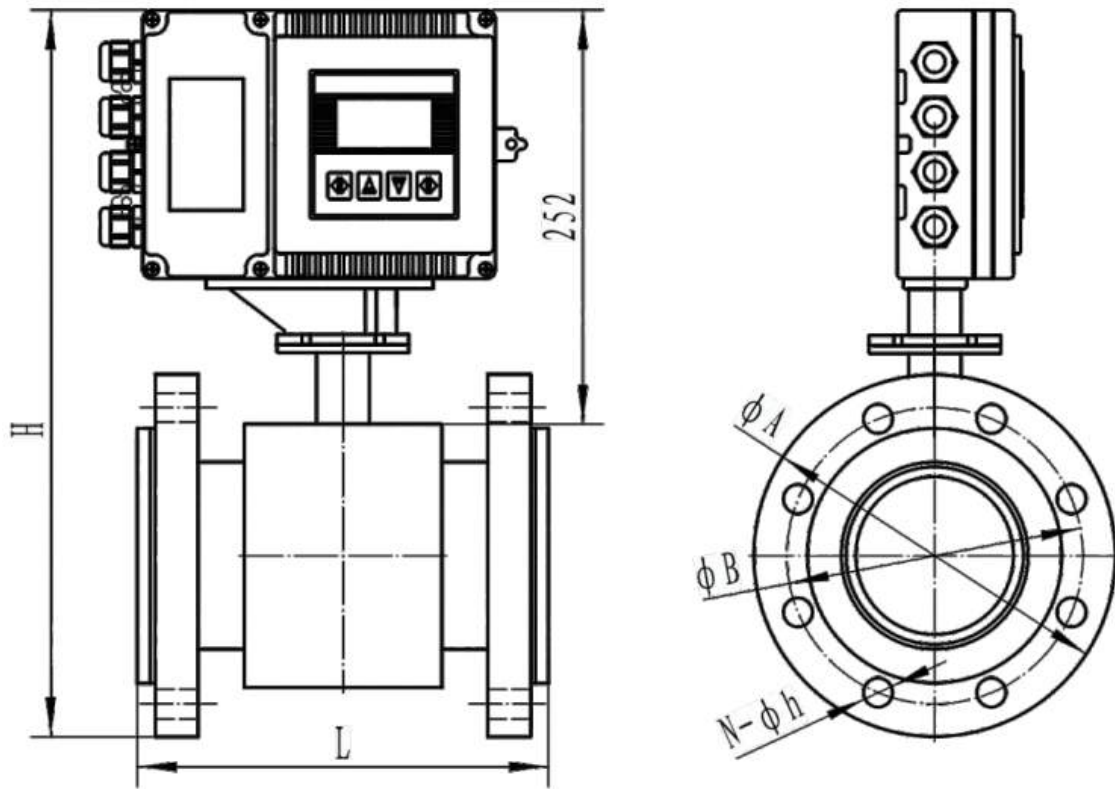
3. Technical data

Parameters	Details	
Liner Material	PTFE (-20°C~150°C, DN15-DN1600)	
	FEP (-20°C~120°C, DN15-DN1800)	
	PFA (-20°C~160°C, DN15-DN800)	
	Polyurethane (-10°C~60°C, DN40-DN1600)	
	Neoprene (-10°C~80°C, DN40-DN3000)	
	Hard Rubber (-10°C~80°C, DN 40-DN3000)	
	Ceramic (-20°C~180°C, DN15-DN200)	
Sensor Material	Measuring tube: SS304	
	Flange & housing: carbon steel (standard), SS304 / SS316 optional	
Transmitter Material	Aluminium alloy with epoxy painting	
Nominal Pressure	Flange	PN10 / PN16 / PN25 / PN40 DIN
		10K / 20K / 30 K JIS
		150# / 300# / 600# ANSI
	Insertion, tri-clamp wafer, thread	PN16
Display	Instantaneous flow, total flow, flow velocity	
Function	High and low alarm, empty pipe alarm, exciting alarm, self-diagnosis	
Totalizer	Three built-in totalizers: forward flow, reverse flow and net flow	
Display Unit	L/s, L/m, L/h, m /s, m /m, m /h, UKG, USG, gal/s, gal/m, gal/h, kg/s, kg/m, kg/h, t/s, t/m, t/h	
Language	English	

5. Process Connection



6. Dimensional Drawings



Diameter		Flange	Pressure	H(mm)	L(mm)	ϕA (mm)	ϕB (mm)	ϕH (mm)	ϕN (mm)
mm	Inch								
DN15	1/2"	ANSI	150#	343	200	88.9	60.45	4	15.7
DN20	3/4"	ANSI	150#	348	200	98.6	69.85	4	15.7
DN25	1"	ANSI	150#	353	200	108	79.25	4	15.7
DN32	1 1/4"	ANSI	150#	358	200	117.3	88.9	4	15.7
DN40	1 1/2"	ANSI	150#	368	200	127	98.6	4	15.7
DN50	2"	ANSI	150#	388	200	152.4	120.7	4	19.1
DN65	2 1/2"	ANSI	150#	408	200	177.8	139.7	4	19.1
DN80	3"	ANSI	150#	423	200	190.5	152.4	4	19.1
DN100	4"	ANSI	150#	451	250	228.6	190.5	8	19.1
DN125	5"	ANSI	150#	474	250	254	215.9	8	22.4
DN150	6"	ANSI	150#	502	300	279.4	241.3	8	22.4
DN200	8"	ANSI	150#	563	350	342.9	241.3	8	22.4
DN250	10"	ANSI	150#	638	450	406.4	241.3	12	25.4
DN300	12"	ANSI	150#	701	500	482.6	431.8	12	25.4
DN350	14"	ANSI	150#	753	550	533.4	476.3	12	28.4
DN400	16"	ANSI	150#	809	600	596.9	539.8	16	28.4
DN450	18"	ANSI	150#	855	600	635	577.9	16	31.75
DN500	20"	ANSI	150#	912	600	698.5	635	20	31.75
DN600	24"	ANSI	150#	1024	600	812.8	749.3	20	35.1

7. Main Performance of Electrode Material

Electrode Material	Application
SS316L	Applicable to industrial and municipal water, wastewater and low corrosive mediums. Widely used in petroleum, chemical industries.
Hastelloy B	Strong resistance to hydrochloric acids below the boiling point. Resist against oxidable acids, alkali and non-oxidable salts, like vitriol, phosphate, hydrofluoric acids and organic acids.
Hastelloy C	Exceptional resistance to strong solutions of oxidizing salts and acids, like Fe ⁺⁺⁺ , Cu ⁺⁺ , Nitric acids, mixed acids.
Titanium	Titanium can withstand corrosive mediums such as seawater, chloride salt solutions, hypochlorite salts, oxidable acids (including fuming nitric acids), organic acids, and alkali. Not resistant to high purity reducing acids such as sulphuric acids, hydrochloric acids.
Tantalum	Highly resistant to corrosive mediums. Applicable to all chemical mediums except Hydrofluoric Acids, Oleum and Alkali.
Platinum-iridium	Applicable to all chemical mediums except for Ammonium salts and Fortis.

8. Main Performance of Liner Material

PTFE	Best chemical resistance, withstand boiling hydrochloric acid, sulfuric acid, nitric acid, alkali and a variety of organic solvents. Poor wear resistance and poor adhesion.
PFA	Highly resistant to chemicals Performance well under vacuum pressure condition.
Neoprene	Excellent elasticity, good abrasion resistance. Withstand the corrosion of low-concentration acid, alkali, salt and other media. Not resistant to corrosion by oxidizing medium.
Polyurethane	Strong abrasion resistant, applicable for slurries and muds. Poor corrosion resistance, can't be used for corrosive medium.
Hard Rubber	Withstand the corrosion of hydrochloric acid, acetic acid, oxalic acid, ammonia water, phosphoric acid and 50% sulfuric acid, sodium hydroxide, potassium hydroxide. Use for general acid, alkali, and salt solutions, not resistant to the corrosion of strong oxidants.
Ceramic	Withstands high temperature, corrosion and wear. Totally vacuum resistant.

9. Model Selection Table

RF3301-SL	Slurry Electromagnetic Flowmeter																															
Code	1	2	3	4	5	6	7	8	9	10																						
Caliber size		DN15-DN3000 (1/2"-120")																														
Structure		<table border="1"> <tr><td>Compact</td><td>C</td></tr> <tr><td>Remote</td><td>R</td></tr> <tr><td>Compact with explosion proof</td><td>CX</td></tr> <tr><td>Remote with explosion proof</td><td>RX</td></tr> </table>										Compact	C	Remote	R	Compact with explosion proof	CX	Remote with explosion proof	RX													
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Accuracy		<table border="1"> <tr><td>±0.5%</td><td>1</td></tr> <tr><td>±0.2%</td><td>2</td></tr> <tr><td>±0.3%</td><td>3</td></tr> </table>										±0.5%	1	±0.2%	2	±0.3%	3															
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Body Material		<table border="1"> <tr><td>C</td><td>Carbon Steel</td></tr> <tr><td>S1</td><td>SS304</td></tr> <tr><td>S2</td><td>SS316</td></tr> </table>										C	Carbon Steel	S1	SS304	S2	SS316															
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Power Supply		<table border="1"> <tr><td>DC</td><td>20~36 VDC</td></tr> <tr><td>AC</td><td>85~265 VAC</td></tr> <tr><td>SD</td><td>9~36 VDC solar power</td></tr> </table>										DC	20~36 VDC	AC	85~265 VAC	SD	9~36 VDC solar power															
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Protection Grade		<table border="1"> <tr><td>1</td><td>IP65 Transmitter + IP65 sensor</td></tr> <tr><td>2</td><td>IP65 Transmitter + IP68 sensor (remote)</td></tr> </table>										1	IP65 Transmitter + IP65 sensor	2	IP65 Transmitter + IP68 sensor (remote)																	
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Example: RF3301-SL-015C1AM1A15BDCC

RF3301-SL - Slurry Electromagnetic Flowmeter

015 : Size : DN15

C : Structure : Compact

1 : Accuracy : 0.5%

A : Lining Material : PFA

M : Electrode material : SS316L

1 : Protection Grade : IP65 Transmitter + IP65 Sensor

A15 : Flange Process Connection : ANSI 150#

B : Signal output / communication : 4~20 mA + HART

DC : Power Supply : 20~36 VDC

C : Body Material : Carbon Steel

*For any customisation, contact our sales team

10. Flow Range Table

Size		Flow Range & Velocity Table							
mm	Inch	0.1 m/s	0.2 m/s	0.5 m/s	1 m/s	4 m/s	10 m/s	12 m/s	15 m/s
DN3	1/8"	0.003	0.005	0.013	0.025	0.102	0.254	0.305	0.382
DN6	1/4"	0.01	0.02	0.051	0.102	0.407	1.017	1.221	1.526
DN10	3/8"	0.028	0.057	0.141	0.283	1.13	2.826	3.391	4.239
DN15	1/2"	0.064	0.127	0.318	0.636	2.543	6.359	7.63	9.538
DN20	3/4"	0.113	0.226	0.565	1.13	4.522	11.304	13.56	16.956
DN25	1"	0.177	0.353	0.883	1.766	7.065	17.663	21.2	26.494
DN32	1¼"	0.289	0.579	1.447	2.894	11.575	28.938	34.73	43.407
DN40	1½"	0.452	0.904	2.261	4.522	18.086	45.216	54.26	67.824
DN50	2"	0.707	1.413	3.533	7.065	28.26	70.65	84.78	10.598
DN65	2½"	1.19	2.39	5.97	11.94	47.76	119.4	143.3	179.1
DN80	3"	1.81	3.62	9.04	18.09	72.35	180.86	217	271.3
DN100	4"	2.83	5.65	14.13	28.26	113.04	282.6	339.1	423.9
DN125	5"	4.42	8.83	22.08	44.16	176.63	441.56	529.9	662.34
DN150	6"	6.36	12.72	31.79	63.59	254.34	635.85	763	953.78
DN200	8"	11.3	22.61	56.52	113.04	452.16	1130.4	1356	1696
DN250	10"	17.66	35.33	88.31	176.53	706.5	1766.25	2120	2649
DN300	12"	25.43	50.87	127.2	254.34	1017	2543.4	3052	3815
DN350	14"	34.62	69.24	1731	3461.9	1385	3461.85	4154	5193
DN400	16"	45	90	2261	452	1809	4522	5426	6782
DN450	18"	57	114	2861	572	2289	5723	6867	8584
DN500	20"	71	141	3533	707	2826	7065	8478	10598
DN600	24"	102	203	5087	1017	4069	10174	12208	15260
DN700	28"	138	277	6924	1385	5539	13847	16617	20771
DN800	32"	181	362	9043	1809	7235	18086	21704	27130
DN900	36"	229	458	1145	2289	9156	22891	27469	34336
DN1000	40"	283	565	1413	2826	11304	28260	33912	42390
DN1200	48"	407	814	2035	4069	16278	40694	48833	61042
DN1400	56"	554	1108	2769	5539	22156	55390	66468	83084
DN1600	64"	723	1447	3617	7235	28938	72346	86815	108518
DN1800	72"	916	1831	4578	9156	36625	91562	109875	137344
DN2000	80"	1130	2261	5652	11304	45216	113040	135648	169560
DN2200	88"	1368	2736	6839	13678	54711	136778	164134	205168
DN2400	96"	1628	3256	8139	16278	65111	162778	195333	244166
DN2600	104"	1910	3821	9552	19104	76415	191038	229245	286556
DN2800	112"	2216	4431	11078	22156	88623	221558	265870	332338
DN3000	120"	2543	5087	12717	25434	101736	254340	305208	381510
Remark: Recommend flow velocity range 0.5~15 m/s									

Field Instrumentation Range



Pressure Measurement

- Smart Differential Pressure Transmitter
- Smart Gauge Pressure Transmitter
- Smart Absolute Pressure Transmitter
- Miniature Pressure Transducer without display
- Sanitary Gauge/ Absolute Pressure Transmitter

- Submersible Pressure Transmitter
- Remote Seal Differential P.T. with capillary
- Remote Seal Differential P.T. Direct Mount
- Remote Seal Gauge/Absolute P.T. with capillary
- Remote Seal Gauge/Absolute P.T. Direct Mount



Flow Measurement

- Coriolis Mass Flowmeter
- Thermal Gas Mass Flowmeter
- Positive Displacement Flowmeter
- Electromagnetic Flowmeter
- Vortex Flowmeter

- Turbine Flowmeter
- Variable Area Flowmeter
- Clamp On Ultrasonic Flowmeter
- Inline Ultrasonic Flowmeter
- Portable Ultrasonic Flowmeter



Level Measurement

- RADAR Level Transmitter Horn Antenna
- Compact RADAR Level Transmitter
- RADAR Level Transmitter Sanitary
- RADAR Level Transmitter
- Guided Wave RADAR Level Transmitter
- Guided Wave RADAR Level Transmitter
- RADAR Level Transmitter Lens Antenna

- RADAR Level Transmitter Rod Antenna
- Ultrasonic Level Transmitter
- Microwave Barrier Level Switch
- Admittance Level Switch Series
- Vibrating Rod Level Switch Series
- Tuning Fork Level Switch Series



Temperature Measurement

- Head Mount Temperature Transmitter
- Temperature Transmitter for Sanitary Applications

- DIN Rail Temperature Transmitter
- Field Mount Temperature Transmitter

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