Product Data Sheet

RockFord™ F800 Electromagnetic Flow Meter

R.Accuracy
GOLD SERVICE

Magnetic flow meters provide obstruction free flow measurement and so are suitable for all conductive liquids including: chemicals, food stuffs, pulps, acids, pharmaceuticals, slurries and effluent. Their high accuracy is unaffected by changes in fluid viscosity, line pressure, temperature or density.

The operating principle of the electromagnetic flow meter is based on Faraday 's law of magnetic induction: The voltage induced across any conductor, as it moves at right angles through a magnetic field, is proportional to the velocity of that conductor. The voltage induced within the fluid is measured by two diametrically opposed internally mounted electrodes. The induced signal voltage is proportional to the product of the magnetic flux density, the distance between the electrodes and the average flow velocity of the fluid.

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VIEW PRODUCT

APPROVE SERIAL NUMBER

Contents

APPLICATIONS

- **Waster water industry:**
  Transport networks, sewage treatment plants, sludges measurement
- **Chemical industry:**
  Acids alkalis, dosing applications, abrasive or corrosive mediums
- **Metal & mining industry:**
  Mediums with a high solid content, like ore or excavator mud
- **Water industry:**
  Revenue metering, district metering water abstraction, leakage detection
- **Pulp & paper industry:**
  Pulp, pastes, sludges & other caustic/abrasive mediums, liquors, additives, bleaches, colorants
- **Food & beverage industry:**
  Mixing, dosing and filling of drinks under hygienic conditions filling Systems applications

FEATURES

- High accuracy & wide flow range measurement
- 99.999% pure copper for oil
- No mechanically moving parts
- IP68 Sensor (Remote version) maximum 3-meter immersion in water
- Drinking water approvals including WRAS
- FDA approvals
- Bi-directional measurement
- Wide choice of materials for housing and flanges including SS 304 and SS 316
- Advanced electrode technology, no- drift zero point
- Robust, fully welded and potted construction
- In house wet calibration rig for all diameters (up to DN3000)
- Three electrodes
- >3mm thickness PTFE liner, durable service life (Other liner materials offered)

Technical Data

Diameter	PTFE: DN2.5-DN1000
	Rubber: DN50-DN3000
Flow Direction	Forward
	Reverse
Repeatability Error	±0.1%
Accuracy	±0.5% of rate
	Optionally ±0.2% of rate
Medium Temperature (Max Temp above 80°C refers to Remote display type)	Rubber liner: -2O... +6O°C
	PTFE liner: -20...+120 °C
	PFA: -2O... + 18O°C
	Ceramic: -20...+180 °C
Velocity	0.3 - 10m/s
Ambient Temperature	-20...+60 °C
Relative Humidity	5%~95%
Power Consumption	<20W
Protection	IP 65, IP 68 (Remote Type)
	IP 65, IP 68 (Remote Type)
Medium conductivity	>5 µS/cm
Ambient Temperature	

Electrode Sensor

Electrode Material	Application
SS 316L	Ideal for general water, sewage and non-corrosive chemical mediums. Widely used in general industry
Hastelloy B	Hastelloy® has a high level of all-round corrosion resistance. High resistance to localized corrosion (superior to Stainless Steel) Good for Salt Water / brine solutions
Hastelloy C	Resistant to oxidizing acids such as nitric acid, mixed acids and ideal for sea water
Titanium	Excellent corrosion resistance in many aggressive environments, particularly oxidizing and chloride -containing media. Good for abrasive media.
Tantalum	Strong resistance to corrosive mediums that is akin to glass. Highly Resistant and suitable for a wide variety of challenging applications- Contact us
Platinum-iridium	Highly Resistant and suitable for most challenging applications- Contact us
Ceramic	Highly Resistant to corrosion and wear as well as extreme temperatures

RockFord F800 Electromagnetic Flow meter

Ordering information

The F800 Series is a flange-type electromagnetic flowmeter ideal for conductive liquids. It comes in sizes from 10A to 2000 mm. F800 is widely used for sewage, industrial waste, chemical, solvent, food & beverage, pulp & paper and many other industrial fluids. F800 Series electromagnetic flowmeter can be used in compact or remote model with AMC Series converter of electromagnetic flowmeter.

- Various liners and electrodes satisfy most industrial applications.
- Flow Velocity range: 0-12 m/s, precise in low flow applications.
- It comes in any flanges such as, ANSI, DIN, JIS etc.
- Excellent for high pressure application.
- Protection class: IP68 available; sensor submersible.
- FEP Liner is suitable for vacuum tube.
- High accuracy of +/-0.4% value of reading (or +/-0.2% value of reading).
- With Forward / Reverse flowrate measurement function.
- It has an electrode cleaning function

CONFIGURE VIEW PRODUCT

Online product configurator

Many products are configurable online using our product configurator.
Select the Configure button or visit VIEW PRODUCT > Rockford-inc.com/global to start.
With this tool's built-in logic and continuous validation, you can configure your products more quickly and accurately.

Specifications and options

The purchaser of the equipment must specify and select the product materials, options, and components.

Model codes

Model codes contain the details related to each product. Exact model codes will vary; an example of a typical model code is shown in Figure 1.

Figure 1: Model Code Example

F800	0025-A15-S3-H1-L3-1-I-A5-E1-NG	W3-CTF
1	2	3

1. Required model components (choices available on most)
2. Additional options (variety of features and functions that may be added to products)

Optimizing lead time

The starred offerings (★) represent the most common options and should be selected for the fastest delivery. The non-starred offerings are subject to additional delivery lead time.

Required model components

Model	Suffix Codes	Description				
F800	.....	Compact Electromagnetic Flow Meter				
Pipe Diameter	-xxxx	0006: DN6, 1/8” 0015: DN15, 1/2" 0040: DN40, 1 1/2” 0080: DN80, 3” 0150: DN150, 6” 0300: DN300, 12” 0450: DN450, 18” 0700: DN700, 28” 0900: DN900, 36” 1200: DN1200, 48”	0008: DN8, 1/4” 0025: DN25, 1” 0050: DN50, 2” 0100: DN100, 4” 0200: DN200, 8” 0350: DN350, 14” 0500: DN500, 20” 0750: DN750, 30” 1000:DN1000, 40”	0010: DN10, 3/8” 0032: DN32, 1 1/4” 0065: DN65, 2 1/2” 0125: DN125, 5” 0250: DN250, 10” 0400: DN400, 16” 0600: DN600, 24” 0800: DN800, 32” 1050:DN1050, 42”		★
Process Connection	-Pxx	P10: PN10	P16: PN16	P25: PN25	P40: PN40	★
	-Axx	A15: ANSI 150#	A30: ANSI 300#	A60: ANSI 600#		★
	-Jxx	J10: JIS 10K	J20: JIS 20K	J40: JIS 40K		★
	-OPTIONAL	On request				★
Flange	-S1	Carbon Steel (Standard)				★
	-S2	S.S. 304 Flange				★
	-S3	S.S. 316 Flange				★
Housing	-H1	Aluminum				★
	-H2	Stainless Steel				★
Liner	-L1	Chloroprene Rubber (Neoprene) (100-2000 mm, 4"-80")				★
	-L2	PTFE (25-2000 mm, 1"-80")				★
	-L3	PFA (10A-300 mm, 3/8"A-12")				★
	-L4	Polyurethane (25-400 mm, 1"-16")				★
Power Supply	-1	DC power supply (12 to 42 Vdc)				★
	-2	AC power supply (90 to 250 Vac, 50/60 Hz)				★
	-3	Battery Power Supply				★
Signal output -	-I	4–20 mA with digital HART protocol				★
	-P1	PROFIBUS PA				★
	-P2	PROFIBUS DP				★
	-M	Modbus RS-485				★
	-F	FOUNDATION Fieldbus				★
	-PU	Pulse				★
	-A	Alarm				★
Accuracy	-A5	± 0.5 %				★
	-A2	± 0.2 %				★
Electrode Material	-E1	Stainless Steel 316L				★
	-E2	Titanium				★
	-E3	Tantalum				★
	-E4	Hastelloy B				★
	-E5	Hastelloy C				★
	-E6	Platinum (DN15-DN2000)				★
	-E7	Tungsten Carbide				★
	-E8	Others				★
Grounding	-NG	None				★
	-GA	Grounding Electrode (3 Electrodes)				★
	-GB	Grounding Ring (Stainless Steel 316)				★
	-GC	Grounding & Protection Ring (Stainless Steel 316)				★

OPTIONAL SPECIFICATIONS

Extended product warranty	-W3	3-year limited warranty	★
	-W5	5-year limited warranty	★
5-Point calibration	- CTF	5-Point calibration	★
Material traceability certification	- CMF	Material traceability certification	★
Max. Temp	-T1	121-150 °C	★
	-T2	151-180 °C	★
Max. Process Pressure	-P06	06 kgf/cm²	★
	-P10	10 kgf/cm²	★
	-P16	16 kgf/cm²	★
	-P20	20 kgf/cm²	★
	-P25	25 kgf/cm²	★
	-P40	40 kgf/cm²	★
Electrode	-EC	Electrode Cleaning Device	★
coil	-C	Low-resistance coil	★
Explosion Proof	-S1	Explosion Proof, Ex d ia [ia] q IIC T6	★

Flow Rate

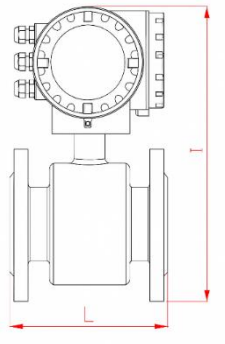
Normal Size		Flow Range & Velocity Table						
mm	Inch	Min. 0-0.25 m/s	1.0 m/s	2.0 m/s	3.0 m/s	5.0 m/s	10.0 m/s	Max. 0-12 m/s
10A	3/8"A	Applicable to 25-500 L/hr and accuracy +/-0.2~0.4% of reading (Depends on converter type)						
10	3/8"	0 to 0.071	0.28	0.57	0.85	1.41	2.83	0 to 3.39
15	1/2"	0 to 0.16	0.64	1.27	1.91	3.18	6.36	0 to 7.63
20	3/4"	0 to 0.28	1.13	2.26	3.39	5.65	11.3	0 to 13.6
25	1"	0 to 0.44	1.77	3.53	5.30	8.84	17.7	0 to 21.2
32	1-1/4"	0 to 0.72	2.90	5.79	8.69	14.5	29.0	0 to 34.7
40	1-1/2"	0 to 1.13	4.52	9.05	13.6	22.6	45.2	0 to 54.3
50	2"	0 to 1.77	7.07	14.1	21.2	35.3	70.7	0 to 84.8
65	2-1/2"	0 to 2.99	11.9	23.9	35.8	59.7	119	0 to 143
80	3"	0 to 4.52	18.1	36.2	54.3	90.5	181	0 to 217
100	4"	0 to 7.07	28.3	56.5	84.8	141.4	283	0 to 339
125	5"	0 to 11.0	44.2	88.4	133	220.9	442	0 to 530
150	6"	0 to 15.9	63.6	127	191	318.1	636	0 to 763
200	8"	0 to 28.3	113	226	339	565.5	1131	0 to 1357
250	10"	0 to 44.2	177	353	530	883.6	1767	0 to 2121
300	12"	0 to 63.6	254	509	763	1272	2545	0 to 3054
350	14"	0 to 86.6	346	693	1039	1732	3464	0 to 4156
400	16"	0 to 113	452	905	1357	2262	4524	0 to 5429
450	18"	0 to 143	573	1145	1718	2863	5725	0 to 6871
500	20"	0 to 177	707	1414	2121	3534	7068	0 to 8482
600	24"	0 to 254	1018	2036	3054	5089	10179	0 to 12214
700	28"	0 to 346	1385	2771	4156	6927	13854	0 to 16625
800	32"	0 to 452	1810	3619	5429	9048	18095	0 to 21714
900	36"	0 to 573	2290	4580	6871	11451	22902	0 to 27482
1000	40"	0 to 707	2827	5655	8482	14137	28274	0 to 33928
1200	48"	0 to 1018	4071	8143	12214	20357	40714	0 to 48857
1400	56"	0 to 1385	5542	11083	16625	27708	55417	0 to 66500
1600	64"	0 to 1810	7238	14476	21714	36190	72381	0 to 86857
1800	72"	0 to 2290	9161	18321	27482	45803	91607	0 to 109928
2000	80"	0 to 2827	11309	22619	33928	56547	113095	0 to 135714

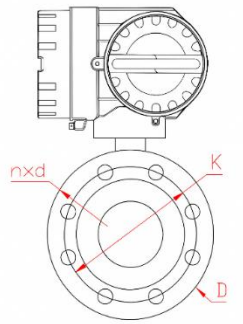
Instrument Connection

Local Converter Connection:

A: Wiring diagram below
B: Power cable
C: Signal cable or comms cable
D: Optional

DIMENSIONS

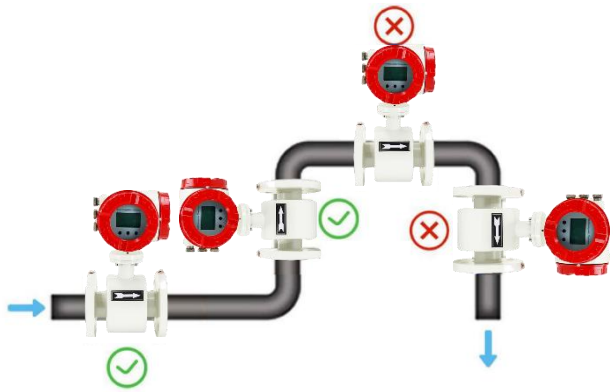




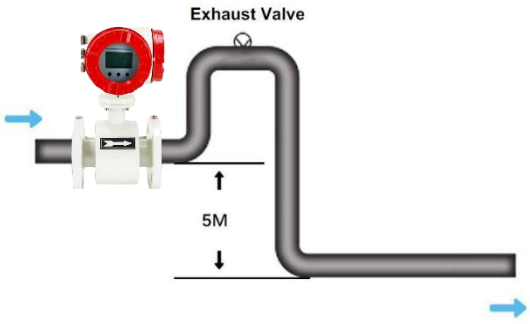
Note 1: ◎ Standard
Note 2: Weight & Dimension D & H only for DIN flange
Note 3: **The maximum process pressure** is dependent on the lowest value of **flange pressure** and **sensor tube pressure**

Diameter (mm)	L (mm)	D (mm)	K(mm)	H (mm)	Bolt	n*d (mm)
15	200	95	65	301.5	M12*50	4*ø14
20	200	105	75	308.5	M12*50	4*ø14
25	200	115	85	318	M12*50	4*ø14
32	200	140	100	333	M16*70	4*ø18
40	200	150	110	339.5	M16*70	4*ø18
50	200	165	125	353	M16*70	4*ø18
65	200	185	145	368.5	M16*70	4*ø18
80	200	200	160	383.5	M16*70	8*ø18
100	250	220	180	404	M16*70	8*ø18
125	250	250	210	432	M16*70	8*ø18
150	300	285	240	458.5	M20*90	8*ø22
200	350	340	295	515.5	M20*90	12*ø22
250	450	405	355	584	M24*110	12*ø26
300	500	460	410	626.5	M24*110	12*ø26
350	550	520	470	681	M24*110	16*ø26
400	600	580	525	741	M27*130	16*ø30
450	600	640	585	791	M27*130	20*ø30
500	600	715	650	856.5	M30*140	20*ø33
600	600	840	770	972	M33*170	20*ø36
700	700	910	840	1058	M33*180	24*ø36
800	800	1025	950	1166.5	M36*210	24*ø39
900	900	1125	1050	1266.5	M36*220	28*ø39
1000	1000	1255	1170	1381.5	M39*250	28*ø42

Installation



The flow meter should be installed at a lower system level and vertically upwards of the horizontal pipe. Avoid installation at the highest system point and vertically downwards the pipe. (To reduce the effects of entrained air)



When drop is more than 5m, install Anti-drain valve downstream.

Install at the lowest point when used in an open drain to maintain a full pipe.

Needs 10D of upstream and 5D of downstream straight pipe

Do not install it at the inlet of a pump, install it at the exit

Install in the rising section

All statements concerning scope of delivery, application, practical use and operating conditions of the sensors and processing systems correspond to the information available at the time of printing.
Subject to change without prior notice

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