EL 2200
Electromagnetic Flow Meter

Description

The EL 2200 Series of electromagnetic sensors represent the state of the art for the accurate measurement for water cycle and process applications. Flow meters are available in line sizes from 1" through 80". This new generation sensor incorporates improvements to the signal protection as well as the magnetic distribution elements to create a unique electromagnetic field profile that ensures accuracy not only in turbulent flow, but also during the transitional and laminar flow regimes.

An electromagnetic flow meter bases its operation on the Faraday Principle, by which a conductor crossing a magnetic field generates a potential. The resultant potential is directly proportional to the flow velocity. The EL 2200 Series flow meters utilize 304 stainless steel flow tube with carbon or stainless flanges, four Hastelloy C 22 electrodes are standard, with one electrode being used for ground to eliminate the need for costly grounding rings required by other manufactures. The standard liner materials are Ebonite or PTFE, with PTFE available as an option on 4" and larger meters. The flange and sensor exterior surface is coated with acrylic paint, providing excellent resistance to water.

Electronics available for the EL 2200 Series consists of the versatile MC 608 Transmitter that can either be AC or DC powered, or the MC 406 Transmitter that can be battery or DC powered. Electronics can be mounted directly on the flow meter or remotely. When the electronics are remotely mounted, the entire flow meter meets IP68, suitable for permanent immersion in water up to a depth of 1.5 meters.

Features

- No moving parts
- Hastelloy C 22 electrodes standard
- Grounding electrode eliminates ground rings
- Sealed electrode and coil assembly provides immunity to humidity variation and IP68 protection
- Wide rangeability with a single unit
- No pressure drop
- Bidirectional capability

Model EL 2200
Electromagnetic Flow Meter

Specifications

Accuracy	±0.2% of reading plus zero stability
Zero Stability	2 mm/s
Repeatability	±0.1%
Max Fluid Velocity	10 m/s
Tube Material	304 Stainless steel
Line Sizes	1" to 80"
Flange Material	Stainless steel or carbon steel
Electrode Material	Hastelloy C 22 (standard)
Liner Material	Ebonite or PTFE PTFE optional 4" and above
Max Temp Range	Dependent on liner material when electronics remotely mounted Ebonite: -40˚ to 176˚ F PTFE: -40˚ to 356˚ F Note: Please contact factory if temperatures above 266˚ F (130˚ C) are required.
Max Operating Pressure	Dependent on flange rating
Max Cable Length	100 meters
Min Conductivity	5 µS/cm, 20 µS/cm for DI water
Rating	IP68 up to a depth of 1.5 meters
Straight Run	5D upstream and 3D downstream minimum
NSF Certification	Standard 61 Drinking Water System Components
CE Declarations	LVD EN61010-1:2013 EMC EN61326-1:2013

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EL 2200 Electromagnetic Flow Meter

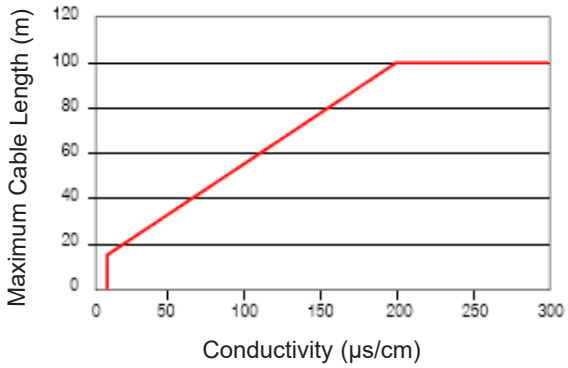
Specifications (cont'd)

Flow Tube Material	Flange Material	Electrode Material
304 stainless steel (std)	Acrylic painted carbon steel (std)	Hastelloy C-22 (std)
	316 stainless steel	Titanium

Lining Material	Temperature Rating
Ebonite	-40˚ to 176˚ F, (-40˚ to 80˚ C)
PTFE	-40˚ to 356˚ F, (-40˚ to 180˚ C) Note 1

Note 1: PTFE standard operating temperature is -40 to 266 ˚F.
Optional high temperature configuration is available for up to 356 ˚F.

Maximum cable length per liquid conductivity



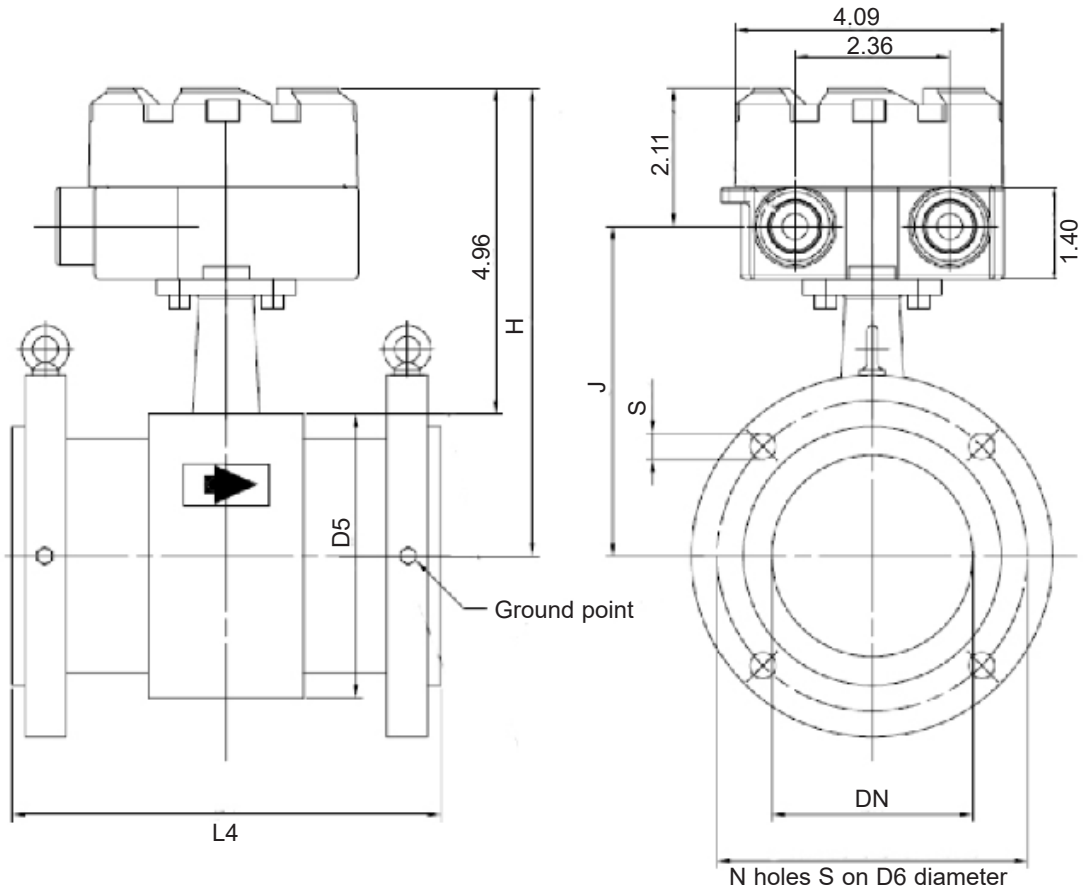
Meter Flow Range

Meter Model	Meter I.D. (inch)	Minimum Flow Rate (GPM)	Maximum Flow Rate (GPM)
EL2200-025	1.00	1.38	69.21
EL2200-032	1.25	2.44	122.22
EL2200-040	1.50	3.48	173.76
EL2200-050	2.00	5.57	278.30
EL2200-065	2.50	9.92	496.23
EL2200-080	3.00	13.96	796.74
EL2200-100	4.00	24.41	1220.70
EL2200-125	5.00	38.29	1914.25
EL2200-150	6.00	57.52	2875.79
EL2200-200	8.00	102.60	5130.19
EL2200-250	10.00	164.45	8222.44
EL2200-300	12.00	236.19	11809.44
EL2200-350	14.00	283.75	14187.54
EL2200-400	16.00	375.58	18778.79

*Flow rate chart based on a velocity range of 0.2 to 10 m/s. The meter will function at a turndown of 1000:1 at reduced accuracy

Note: Flow meter sizes up to 80" are available. Please contact factory for specifications.

Dimensions



EL 2200 with ANSI 150 RFF

DN	D5	L4	J	D6	N	S	H
Inch	Inch	Inch	Inch	Inch	#	Inch	Inch
1.00	2.52	7.87 0/-.12	4.11	3.12	4	0.626	6.22
1.25	3.03	7.87 0/-.12	4.37	3.50	4	0.626	6.48
1.50	3.23	7.87 0/-.12	4.47	3.87	4	0.626	6.57
2.00	3.86	7.87 0/-.12	4.78	4.75	4	0.748	6.89
2.50	4.49	7.87 0/-.12	5.10	5.50	4	0.748	7.20
3.00	5.00	7.87 0/-.12	5.35	6.00	4	0.748	7.46
4.00	5.98	9.84 0/-.12	5.85	7.50	8	0.748	7.95
5.00	7.01	9.84 0/-.12	6.36	8.50	8	0.874	8.46
6.00	8.11	11.81 0/-.12	6.91	9.50	8	0.874	9.02
8.00	10.12	13.78 0/-.12	7.91	11.75	8	0.874	10.02
10.00	12.24	17.72 0/-.19	8.98	14.24	12	1.000	11.08
12.00	14.25	19.69 0/-.19	9.98	17.00	12	1.004	12.09
14.00	15.51	21.65 0/-.19	10.61	18.75	12	1.126	12.72
16.00	17.48	23.62 0/-.19	11.59	21.25	16	1.126	13.70

EL 2200 with ANSI 300 RFF

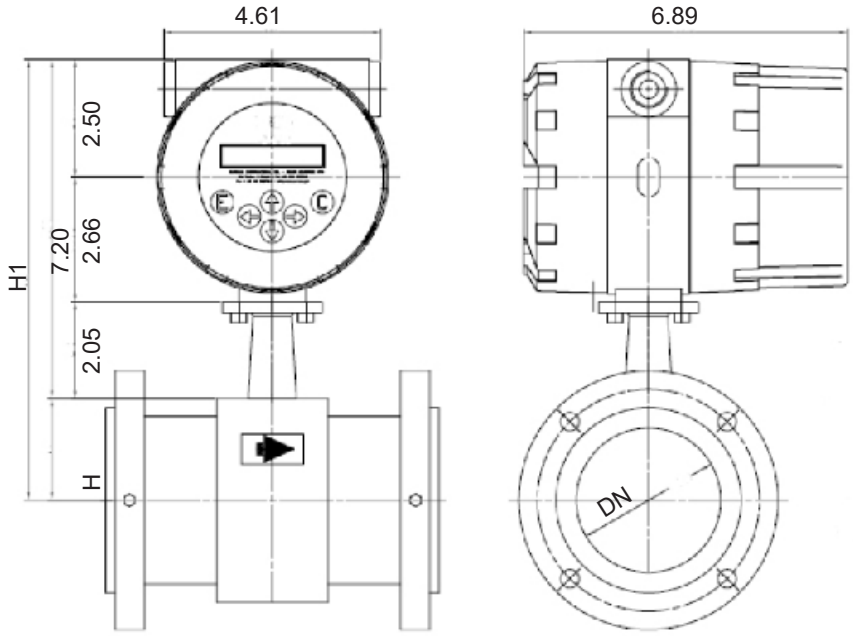
DN	D5	L4	J	D6	N	S	H
Inch	Inch	Inch	Inch	Inch	#	Inch	Inch
1.00	2.52	7.87 0/-.12	4.11	3.50	4	0.748	6.22
1.25	3.03	7.87 0/-.12	4.37	3.87	4	0.748	6.48
1.50	3.23	7.87 0/-.12	4.47	4.50	4	0.748	6.57
2.00	3.86	7.87 0/-.12	4.78	5.00	8	0.874	6.89
2.50	4.49	7.87 0/-.12	5.10	5.87	8	0.874	7.20
3.00	5.00	7.87 0/-.12	5.35	6.63	8	0.874	7.46
4.00	5.98	9.84 0/-.12	5.85	7.87	8	0.874	7.95
5.00	7.01	9.84 0/-.12	6.36	9.25	8	0.874	8.46
6.00	8.11	11.81 0/-.12	6.91	10.63	12	0.874	9.02
8.00	10.12	13.78 0/-.12	7.91	13.00	12	1.000	10.02
10.00	12.24	17.72 0/-.19	8.98	15.25	16	1.126	11.08
12.00	14.25	19.69 0/-.19	9.98	17.75	16	1.248	12.09
14.00	15.51	21.65 0/-.19	10.61	20.25	20	1.248	12.72
16.00	17.48	23.62 0/-.19	11.59	22.50	20	1.374	13.70

Note: DIN flanges are available, please contact factory for information.

EL 2200 Electromagnetic Flow Meter

Dimensions & Weights

EL 2200 with MC 608A mounted



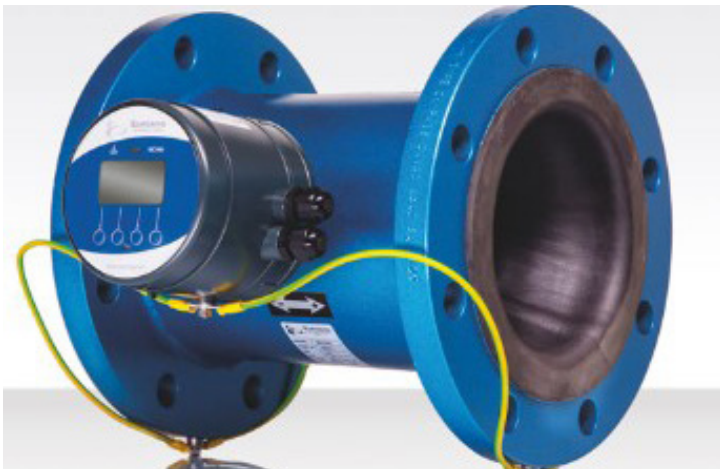
Meter Model	Size	ANSI 150	ANSI 300	H	H1
	Inch	lb	lb	Inch	Inch
EL2200-025	1.00	15	18	1.26	8.46
EL2200-032	1.25	10	22	1.52	8.72
EL2200-040	1.50	22	29	1.61	8.82
EL2200-050	2.00	22	29	1.93	9.13
EL2200-065	2.50	33	37	2.24	9.45
EL2200-080	3.00	35	49	2.50	9.70
EL2200-100	4.00	46	66	2.99	10.20
EL2200-125	5.00	64	88	3.50	10.71
EL2200-150	6.00	71	123	4.06	11.26
EL2200-200	8.00	154	176	5.06	12.26
EL2200-250	10.00	159	240	6.12	13.33
EL2200-300	12.00	223	320	7.13	14.33
EL2200-350	14.00	249	399	7.76	14.96
EL2200-400	16.00	309	556	8.74	15.94

MC 608 Electronics

The MC 608A Transmitter is our most versatile transmitter, capable of displaying rate and total flows as well as providing multiple digital and analog outputs. The unit can be configured either directly using the 4 programming buttons on the front of the display, or using the Windows®-based programming software interfacing via MODBUS RTU on RS485. The new generation transmitter extends the use of electromagnetic flow meters, allowing better control of liquid flow at every point of installation.

MC 406 Electronics

The MC 406 Transmitter is a high-efficiency technologically advanced battery-powered electronic transmitter, combining high performance and low cost of ownership. Up to 10 years of battery life allows for maintenance-free operation. The battery pack can be easily replaced in the field, and all data is automatically stored in the internal EEPROM memory, ensuring that no data will be lost.



MC 406 shown in vertical orientation

EL 2200 Electromagnetic Flow Meter

EL 2200 System Model Number Interfaced to the MC 608 Transmitter

01-		–				–			A

Size	Code
1"	68701
1.25"	68702
1.5"	68703
2"	68704
2.5"	68705
3"	68706
4"	68707
5"	68708
6"	68709
8"	68710
10"	68711
12"	68712
14"	68713
16"	68714

Special	Code
1.5 Meters, std.	A
High Temp Configuration	B[1]

Liner & Electrode Material	Code
PTFE / Hastelloy C	A
PTFE / Titanium	C
Ebonite / Hastelloy C	G
Ebonite / Titanium	J
PTFE / Hastelloy C, NSF Certified	N
Ebonite / Hastelloy C, NSF Certified	P

Fitting	Code
CS 150# Flange	A
CS 300# Flange	B
CS 600# Flange	C
CS UNI PN10	D
CS UNI PN16	E
CS UNI PN25	F
CS UNI PN40	G
SS 150# Flange	H
SS 300# Flange	J
SS 600# Flange	K
SS UNI PN10	L
SS UNI PN16	M
SS UNI PN25	N
SS UNI PN40	P

Transmitter & Power	Code
MC608A 90-264VAC	A
MC608A 24VAC-DC	B

Integral or Remote	Code
Integral	A
Remote, 5m	B
Remote, 10m	D
Remote, 15m	E
Remote, 20m	F
Remote, 30m	G
Remote, 40m	H
Remote, 50m	J
Remote, 75m	K

1: High temperature configuration only available with PTFE liner.

Note: Flow meter sizes up to 80" are available. Please contact factory for specifications.

EL 2200 Electromagnetic Flow Meter

EL 2200 System Model Number Interfaced to the MC 406 Transmitter

01-		–				–			5		N	

Size	Code
1"	68701
1.25"	68702
1.5"	68703
2"	68704
2.5"	68705
3"	68706
4"	68707
5"	68708
6"	68709
8"	68710
10"	68711
12"	68712
14"	68713
16"	68714

Special	Code
1.5 Meters, std.	A
High Temp Configuration	B[1]

Liner & Electrode Material Note 1	Code
PTFE / Hastelloy C	A
PTFE / Titanium	C
Ebonite / Hastelloy C	G
Ebonite / Titanium	J
PTFE / Hastelloy C, NSF Certified	N
Ebonite / Hastelloy C, NSF Certified	P

Outputs	Code
Standard pulse outputs only	2
Pulse outputs & 4-20mA[2]	4

Fitting	Code
CS 150# Flange	A
CS 300# Flange	B
CS 600# Flange	C
CS UNI PN10	D
CS UNI PN16	E
CS UNI PN25	F
CS UNI PN40	G
SS 150# Flange	H
SS 300# Flange	J
SS 600# Flange	K
SS UNI PN10	L
SS UNI PN16	M
SS UNI PN25	N
SS UNI PN40	P

Power Supply	Code
Battery powered (excluding batteries - ordered separately)	F
12-24VDC	A

Mounting	Code
Integral horizontal	C
Integral vertical	V
Remote	S

Cable Length	Code
Integral	A
5M	B
10M	D
15M	E
20M	F
30M	G

1. High temperature configuration only available with PTFE liner.
2. Only available when powered with 12-24VDC

Battery Packs for "F" Version (Ordered Separately)

Battery Pack Description	Model
Standard performance (up to 6 years)	EM-PB900018
High performance (up to 10 years)	EM-PB900013

Specifications are for reference only and are subject to change without notice.

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