

FMF 2301

Electromagnetic Flowmeter

Flow Monitoring

*The Best Got
Even Better !*



The same reliability,
now with best in class
performance!



FREHNIG

ELECTROMAGNETIC FLOWMETER

TECHNICAL DATA

Transmitter

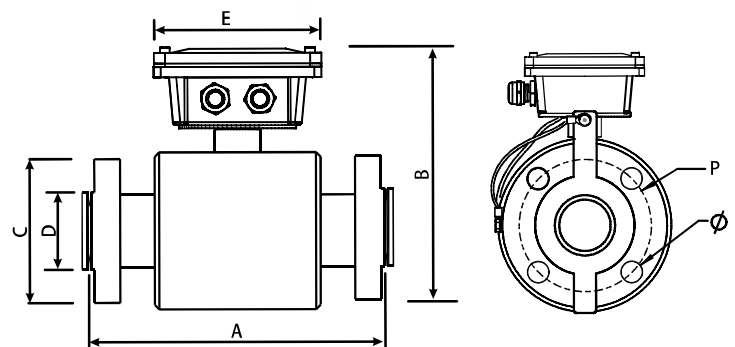
Flow Range	0.03 to 10 m/s
Accuracy	± 0.5% of M.V within range
Minimum Conductivity	> 10 µs / cm
Flow Range	0.03 to 10 m/s
Display	Backlit 2 Line alphanumeric LCD
Flow Rate Units	LPS,LPM,LPH,M3/Hr -programmable
Totalizer Units	Liter, M3 -programmable
Communication	Rs232/ RS-485 selectable
Analog Output	4-20 mA -programmable
Digital Pulse Output	Passive Open Collector
Empty Pipe Detection	Liter, M3 -programmable
Transmitter Enclosure	Aluminum Die Cast. Powder coated
Enclosure Protection	IP-65
Power Supply	220V A/C 50Hz ± 10% -15 Watts

Flow rate details

Pipe Size		Max Flow	Nominal Flow	Min Flow	Creep (Cut-off)
		10 m/s	5 m/s	0.3 m/s	0.04m/s
Inch	Mm	Lps	Lps	Lps	Lps
1	25	5.09	2.50	0.15	0.016
1 ¼	32	8.00	4.0	0.25	0.03
1 ½	40	12.00	6.0	0.41	0.05
2	50	19.80	10.0	0.58	0.08
2 ½	65	33.18	16.0	1.00	0.13
3	80	43.61	22.0	1.50	0.20
4	100	75.10	38.0	2.41	0.33
6	150	170.43	85.0	5.50	0.69
8	200	295.11	147.0	9.70	1.38
10	250	465.18	232.0	15.20	2.08
12	300	667.18	333.0	22.0	2.77
14	350	798.18	399.0	23.95	3.20
16	400	1166	583	38.0	5.55
18	450	1500	750	50.0	7.0

Sensor

Flanges	ANSI-B 16.5
Coil Housing	Carbon Steel Fully Welded
Measuring Tube	Seamless Stainless Steel 304
Other MOC	SS-304 , SS-316
Electrode	SS-316L , Hastelloy-C
Terminal enclosure	Die Cast Aluminium
Pressure Rating	10 bar
Liner	PTFE , Hard Rubber
Grounding Ring	3mm SS304
Operating temp	PTFE- 120° C Hard Rubber - 50° C
Ingress Protection	IP-67 / IP-68
Cable Entry	M16 cable gland



Dimensions

Pipe Size	Flow tube Length*	Height	Flange O.D	Liner Face Dia	P.Circle Dia PCD	Bolt Hole Dia	Size/ No of Bolts
	A	B	C	D	P	Ø	
Inch	mm	mm	mm	mm	mm	mm	mm
½	15	200	170	89	35	60.3	16 12 4
1	25	200	190	108	51	79.4	16 12 4
1 ½	40	200	208	127	73	98.4	16 12 4
2	50	200	233	152	92	120.6	19 16 4
2 ½	65	200	260	177	105	139.7	19 16 4
3	80	200	272	191	127	152.4	19 16 4
4	100	250	300	218	157	177.8	19 16 8
6	150	300	360	279	216	241.3	22 19 8
8	200	350	418	342	270	298.4	22 19 8
10	250	381	482	406	324	362.0	25 19 12
12	300	457	558	482	381	431.8	25 19 12
14	350	533	610	534	413	476.2	29 19 12
16	400	610	672	596	470	540.0	29 25 16
18	450	686	712	636	533	578.0	32 256 16

Thickness of Lining + Grounding Rings not included

For Sizes above 18" (450mm) , contact FREHNIG

THE TECHNOLOGY

Electromagnetic Flowmeters are the most accurate flowmeters for conductive liquids. FREHNIG was one of the earliest manufacturers in INDIA to develop indigenous technology for electromagnetic flowmeters since 1999. Frehnik is the first and foremost manufacturer in SOUTH INDIA. With around 30000 installed meters, a wealth of experience from the large installed base in almost all fields of application, the FMF-2301 has been designed in mind all the challenges in flow measurement

Single Board



The FMF 2301, consists of a single measurement and output board, which vastly improves the reliability of the system. The interconnects are minimized and the accuracy is improved.

Accessing the board for service is now much easier and convenient

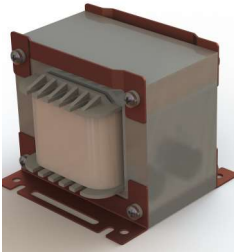
Moreover this has resulted in improved performance of the whole system.

High Resolution

The FMF-2301 incorporates a very high resolution state of the art 24 bit ADC and the latest microcontroller for an accurate and high resolution measurement system. The analog front end is capable of processing signals with high noise due to process noise. The analog output of 4-20 mA now has an higher resolution and sensitivity. The digital pulse output is now fully programmable with wide options. The pulse width is also programmable, which makes interlacing with PLC, counters and other equipment very easy.

Reliability

Process Instruments are subject to severe electrical and environmental disturbances. FREHNIG flowmeters are known for their long life and performing under adverse conditions.



The FMF-2302 features a heavy duty transformer based power supply which can withstand wide supply fluctuations. Unlike SMPS designs which are cheaper but are prone to failures transformer supplies are inherently more reliable.

An Industrial Grade Electronics is combined with extreme quality control and a battery of tests including power cycling is conducted before the meter is sent for wet calibration

Separate Version

Separate version electronics is the most preferred for installation, since a) it is much easier to see the readings, b) is inherently safe since the electronics can be mounted in an environmentally safe area and c) process temperature and vibration are not transferred to the electronics. The new enclosure is also IP67 certified for more safety.

Durable Sensor

The sensors are 100% quality checked in every step of the manufacturing process. The sensors are made to last with extra thick PTFE lining and the coil housing is also made with extra thick steel for long life. 3mm grounding rings are provided for good ground contact for improving accuracy. They also act as excellent lining protectors. The sensor is fully welded for ingress protection.

100% Wet Calibration

Every meter is wet calibrated for performance in a state of the art flow calibration lab, which confirms to the gravimetric ISO-4185 standard.

HIGHLIGHTS

The COMPANY

Frehnig has been in the business of manufacturing Flowmeters for more than 25 years. The parent company was in operation for more than 40 years. The trust Frehnig has built over the years is a testament to the commitment to its customers.

With nearly 30,000 installed flowmeters in operation successfully all over the country, FREHNIG is one of the most successful companies in flow measurement.

With around 10000 sqft of electronics manufacturing-office space and 10,000 sq ft of sensor manufacturing space and a proposed new facility, in the industrial city of Coimbatore, FREHNIG is well equipped to serve its customers.

Research & Development

Frehnig is one of the earliest manufacturers of Electromagnetic flowmeter in INDIA with 100% indigenous technology. Every part of the design is conceived and manufactured in house. The strong design capabilities enable us to deliver quality products at affordable prices. A considerable investment goes into development of new technology and upgrading existing technology. State of the art equipments are added to aid the design process.

Calibration Lab

An ultra- modern state of the art Flow Calibration lab has been set up to aid in the wet calibration of all flowmeters.



The Flow lab consists of two state of the art stainless steel rigs with the state of the art instrumentation, data acquisition and calibration software. The rig conforms to ISO-4185 standards and has been designed fabricated and commissioned 100% in-house.

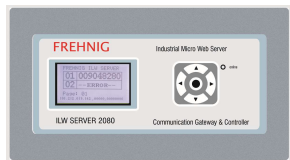
The calibration lab will enable FREHNIG to support all its customers with a Nationally traceable calibration and detailed performance reports. Because of the fully automatic rig calibration can be done in a shorter time.

The rig also supports comparison calibration method for faster calibration time. FREHNIG is committed to providing reliable, repeatable and traceable calibration which is also affordable to all its customers.

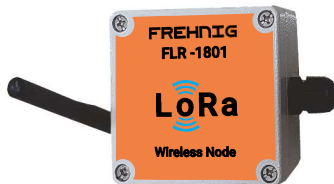
Frehnig has maintained Testing/Calibration records for all meters manufactured since the very first meter

Supporting Products

GPRS-IOT Hardware



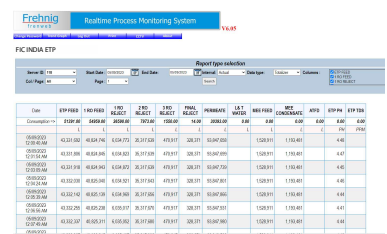
LORA-wireless



MODBUS



DATALOGGING SOFTWARE



All supporting hardware for Frehnig products are available. These include IOT devices for transfer of data to cloud via GPRS and interconnection of devices using wireless LoRa nodes. External modbus adapters are available for safety. Datalogging software of offline and online application with database is also available. All products are manufactured 100% in-house and carry the same FREHNIG reliability.



ISO 9001 : 2008