

# Electromagnetic Flow Meter

FM-13  
FM-15  
FM-15-R

## Introduction:-

Electromagnetic flowmeters from **FEDREL** are designed to measure the volumetric flow rates of liquid (with and without solid contents) pulps, pastes and slurries in practically all industrial sectors. The only requirement is that the process product should have a defined minimum electrical conductivity.

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:

- Measurement is independent of density, viscosity, temperature and pressure.
- High accuracy is guaranteed according to the linear measurement principle.
- Simple Installation and start-up
- Large backlit graphic display with intuitive operation.
- A variety of operating languages integrated as standard.
- Full bore type
- Empty pipe, low & high flow and excitation alarm indication
- High degree of reliability and measuring stability.
- Maintenance Free
- Extremely quick Signal Ratio
- No obstruction to the flow

## Applications:

- Effluent Treatment Plants
- Sewage Treatment Plants
- Pulp & Paper Industry
- Chemicals & Fertilizers
- Food & Drug Industry
- Pumps & Valve Calibration Lab
- Power Plants
- Corrosive Liquids
- Sugar Industry



FM-15

FM-13

**FEDREL**

## Transmitter Technical Data

**Display:** 3 lines x 12 character alpha- numeric backlit LCD.

Displays rate of flow, total flow, alarms, analog outputs and relay annunciators.

Displays text prompts in programming mode.

**Outputs:** Pulse Output; 4-20 Ma output fully isolated.

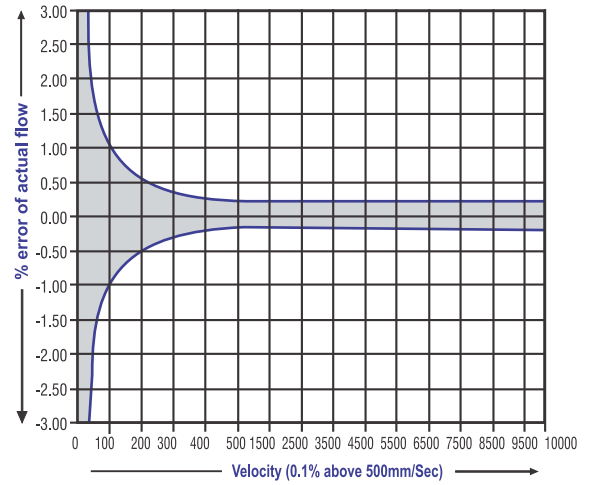
High/Low alarms relay output RS 485/HART (optional)

## Installation Method

All electromagnetic flow meters are delivered ready for operation. Install the flow meter in the pipeline. Make the electrical connection, that's it. Install directly into the process pipeline can be installed in horizontal, vertical or slopped pipelines.

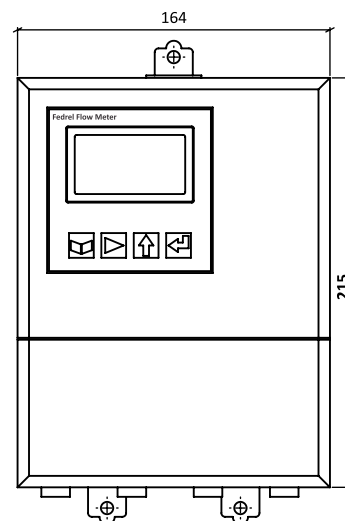
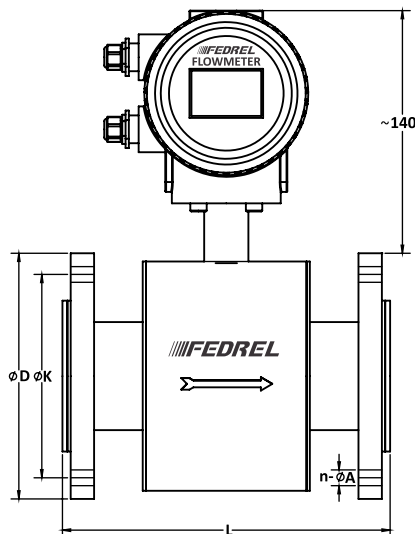
**Note:** For accurate flow measurement the flow detector must always be full.

Recommended installations requirements are 5 diameters of straight pipe section upstream and 3 diameters downstream.



## Minimum - Maximum Flow Table:-

Meter Size		Drawing Size				Standard Pressure Rating PN	Min. Flow Range Flow Velocity (0.1 m/s)	Max. Flow Range Flow Velocity (10 m/s)	Weight (kg)
(mm)	Inch	D	L	K	n-øA				
25	1	110	200	79.4	4- ø15.87	40	0.02 m³/h	20 m³/h	7
32	1-1/4	115	200	88.9	4- ø15.87	40	0.03 m³/h	30 m³/h	8
40	1-1/2	125	200	98.4	4- ø15.87	40	0.04 m³/h	40 m³/h	8
50	2	150	200	120.7	4- ø19.05	40	0.06 m³/h	60 m³/h	9
65	2-1/2	180	200	139.7	4- ø19.05	40	0.12 m³/h	120 m³/h	10
80	3	190	200	152.4	4- ø19.05	40	0.18 m³/h	180 m³/h	12
100	4	230	250	190.5	8- ø19.05	16	0.24 m³/h	240 m³/h	21
125	5	255	250	215.9	8- ø22.22	16	0.42 m³/h	420 m³/h	23
150	6	280	300	241.3	8- ø22.22	16	0.60 m³/h	600 m³/h	26
200	8	345	350	298.5	8- ø22.22	10	1.08 m³/h	1080 m³/h	42
250	10	405	400	362.0	12- ø25.40	10	1.80 m³/h	1800 m³/h	64
300	12	485	500	431.8	12- ø25.40	10	2.40 m³/h	2400 m³/h	94
350	14	535	500	476.3	12- ø28.57	10	3.30 m³/h	3300 m³/h	Flanges to ANSI: weights and dimensions on request
400	16	595	600	539.8	16- ø28.57	10	4.50 m³/h	4500 m³/h	
450	18	635	600	577.9	16- ø31.75	10	6.00 m³/h	6000 m³/h	
500	20	700	600	635.0	20- ø31.75	10	6.60 m³/h	6600 m³/h	
600	24	815	600	749.3	20- ø34.92	10	9.60 m³/h	9600 m³/h	
700	28	927	700	863.5	28- ø35.0	10	13.2 m³/h	13200 m³/h	
800	32	1060	800	978.0	28- ø41.0	10	18.0 m³/h	18000 m³/h	
900	36	1168	900	1086.0	32- ø41.0	10	24.0 m³/h	24000 m³/h	
1000	40	1289	1000	1200.0	36- ø41.0	10	27.0 m³/h	27000 m³/h	



## Technical Specifications: Series FM- 13/15/15-R

Parameters	FM-13	FM-15	FM-15-R
Nominal Diameter (mm)	25 to 1000 mm	25 to 1000 mm	25 to 600 mm
Working Pressure	10,16,25 ,40*	10,16,25 ,40*	10,16,25 ,40*
Working Temperature	-10°C to 150°C	-10°C to 150°C	-10°C to 150°C
Electrode Material	SS 316 L Std*	SS 316 L Std*	SS 316 L Std*
Sensor Lining	PTFE*	PTFE*	PTFE*
Display Version	Divided	Integral	Divided
Measuring Tube Material	SS 316 Std*	SS 316 Std*	SS 316 Std*
Sensor housing material	Std. CS*	Std. CS*	Std. CS*
End Connection	Flange	Flange	Flange
Flange - Standard	ANSI #150*	ANSI #150*	ANSI #150*
Measuring Range	0.1 to 10 m/sec.	0.1 to 10 m/sec.	0.1 to 10 m/sec.
Accuracy %	±0.5 % (±0.2% consult factory)	±0.5 % (±0.2% consult factory)	±0.5 % (±0.2% consult factory)
Repeatability	±0.2 % span	±0.2 % span	±0.2 % span
Display	2 line LED	2 line LED	2 line LED
Display Units	All standards units in m <sup>3</sup> , Litre, gallon,ft <sup>3</sup>	All standards units in m <sup>3</sup> , Litre, gallon,ft <sup>3</sup>	All standards units in m <sup>3</sup> , Litre, gallon,ft <sup>3</sup>
Output	Std 4-20 mA*	Std 4-20 mA*	Std 4-20 mA*
Power Supply	Std. 220 V AC Option of 24 V DC, Battery	Std. 220 V AC Option of 24 V DC, Battery	Std. 220 V AC Option of 24 V DC, Battery
Protection Class for sensor	Std. IP-65*	Std. IP-65*	Std. IP-65*
Protection class for transmitter	IP-65	IP-65	IP-65
Cable length for remote	Std. 5 m*	NA	Std. 5 m*
Installation	Inline flanged Type	Inline flanged Type	Inline flanged Type

Note: 1. FM-13 is Remote Type Meter which has 5 meter long wire and advanced data logging feature which can save data for last 3 Years.

2. \*Please refer to order code for options



FM-13



FM-15



FM-15-R

## Ordering Information

Example: FM-13/15-AISR-050D11SSR

FM-13/15		A	1S	R	050	D1	1	S	S	R	Description
Transmitter	POWER	D A									220-260 V AC 24 V DC (Optional)
	OUTPUT		1S/ 2A/								4-20mA and pulse (STD) High and Low alarm(Optional)
	COMMUNICATION			N H R							NO COMMUNICATION HART RS-485 (MODBUS)
Detector	SIZE				010 ... 050 ... 100 ... 300 ... 1000						10 mm 50mm 100mm 300mm 1000mm
	FLANGE					D1 A2 J3 T4					DIN ANSI JIS Others
	LINING MATERIAL						1 2				PTFE Chloroprene Rubber
	ELECTRODES							S H			316L (STD) Hastelloy 'C'
	COIL HOUSING								S H		Carbon Steel (STD) SS 304 (Optional)
	MOUNTING										Remote Intergral

### WARRANTY

All meters are warranted against any manufacturing defect for a period of 12 months from date of supply, provided the meter has not been misused, damaged, installed for services it is not recommended or the seal has been tampered with. The company shall be liable to furnish part/ parts thereof or full water meter as the company may deem fit.

## V.A. VALVES

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