ABB MEASUREMENT & ANALYTICS | DATA SHEET

ProcessMaster wafer FEM610

Electromagnetic flowmeter

Measurement made easy

The first choice for all industrial applications

Diagnostics for real-life situations

- To keep your process up and running
- Empty pipe detection and sensor temperature monitoring
- Clear text messages for simplified trouble shooting

On board Health Check

- Flowmeter sensor and transmitter integrity check utilizing fingerprint technology

Noise / Grounding Check

- Verify the installation is correct from day one

Service Interval Monitoring

- Receive timed notifications

Backwards Compatibility

- Protect your Investment in ABB flow metering
- Non-hazardous general purpose applications

ProcessMaster series

ProcessMaster is available in two series – ProcessMaster 610 the good fit for everyday applications and ProcessMaster 630 the first choice for all process industry applications delivering best in class functionality and options.

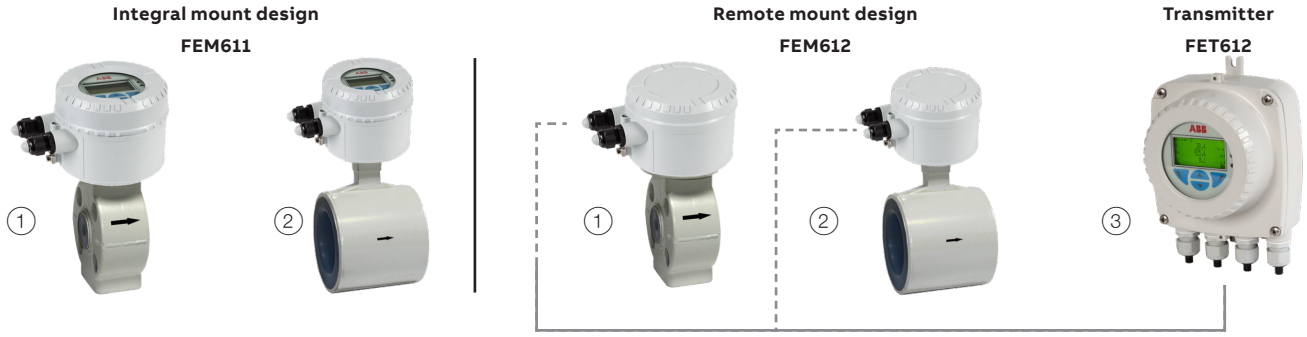
Applicability	FEM610 series	FEM630 series
	Good fit for everyday applications	**The first choice for all industrial applications**
Chemical Industry Corrosive liquids, acids, bases	✓	✓
Power Coal slurry, Lime slurry, Cooling	✓	✓
Mining Abrasive slurries, hydraulic transport	✓	✓
Pulp & Paper Stock Flows, Latex, Clay, Liquor, Chemicals	Up to 2 % Stock	Up to 4 % Stock
Oil & Gas High pressure applications	✓	✓
Food & Beverage Hygienic applications	✓	✓
Measuring medium minimum conductivity	20 µS/cm	5 µS/cm
Measuring medium temperature	-13…266 °F (-25…130 °C)	-13…266 °F (-25…130 °C)
Pressure	ASME CL 150, 300	ASME CL 150, 300
Hazardous area	–	Yes

Features	FEM610 series	FEM630 series
Accuracy	0.5 %	0.4 %
Nominal diameter	1/10” … 4” (DN3 … 100)	1/10” … 4” (DN3 … 100)
Liner material	ETFE	ETFE
I/O’s	1 x analog, 2 x digital	1 x analog, 2 x digital, Option for add-in modules
Communication	High Speed Infrared Port Communication based on HART DTM	HART, PROFIBUS DP, Modbus
Process diagnostics	Empty pipe, grounding check, ambient temperature check	Empty pipe, Gas bubbles, Electrode Impedance, Conductivity
Backwards compatibility	–	Yes [1]

1 For general purpose (non -hazardous) installation areas only.

Overview – models

Flowmeter sensor



① Flowmeter sensor 1/10" ...3/8" (DN3 ... DN10) ② Flowmeter sensor ½"...4" (DN15...DN100) ③ Remote transmitter

Figure 1 Designs

Flowmeter sensor	
Model	ProcessMaster FEM611, FEM612
Housing	Integral mount design, remote mount design
Measuring accuracy for liquids	0.5 % of measured value
Permissible measuring medium temperature T_{medium}	−13 to 266 °F (−25 to 130 °C)
Minimum conductivity	> 20 µS/cm
Nominal pressure rating	ASME CL 150, CL 300
Nominal diameter	1/10“ ... 4“ (DN3 ... DN100)
Process connection	Wafer style connection
Liner material	ETFE
Electrode material	Hastelloy C®, Platinum-Iridium, Tantalum
IP rating	Integral mount design: IP 65 / IP 67; Remote mount design: IP 65 / IP 67 / IP 68 (sensor only)

Approvals for sensor	
CRN (Canadian Reg.Number)	Pending
Further approvals	At www.abb.com/flow or on request.

Transmitter	
Model	FET612
Housing	Integral mount design (see Fig. 1), remote mount design.
IP rating	IP 65 / IP 67
Cable length	Maximum 164 ft (50 m), remote mount design only
Power supply	100 ... 240 V AC (-15 / +10 %), 24 ... 48 V DC (-10% / +10 %)
Outputs	Current output: 4 … 20 mA, active Digital output 1: passive, configurable as pulse, frequency or switch output Digital output 2: passive, configurable as pulse or switch output
Local display	Configurable graphical display (option)

Approvals for transmitter	
Further approvals	At www.abb.com/flow or on request.

...Overview – models

Measuring principle

Measurements performed by the electromagnetic flowmeter are based on Faraday's law of induction. A voltage is generated in a conductor when it moves through a magnetic field.

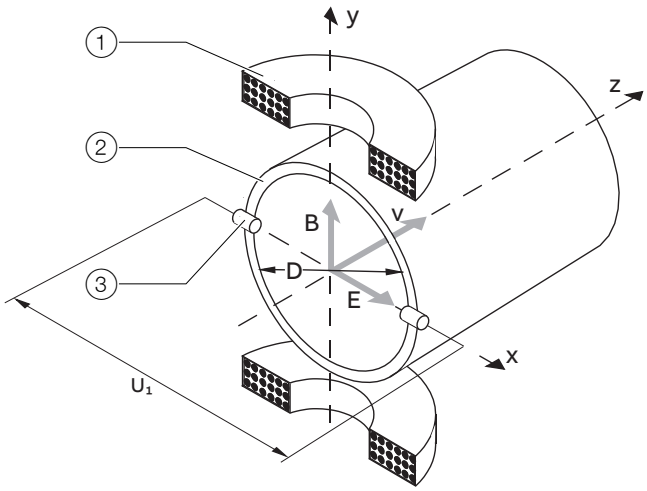


Figure 2 Electromagnetic flowmeter schematic

Pos.	Description
①	Magnet coil
②	Meter tube in electrode plane
③	Signal electrode

Table 1 Legend

$$U_1 \sim B \times D \times v \qquad q_v = \frac{D^2 \times \pi}{4} \times v \qquad U_1 \sim q_v$$

U_1 Signal voltage	v Average flow velocity
B Magnetic induction	q_v Volume flow
D Electrode spacing	

This principle is applied to a conductive fluid in the meter tube through which a magnetic field is generated perpendicular to the flow direction (see Fig. 2).
The voltage induced in the fluid is measured by two electrodes located diametrically opposite each other. This signal voltage is proportional to the magnetic induction, the electrode spacing and the average flow velocity.
Considering that the magnetic induction and the electrode spacing are constant values, a proportionality exists between the signal voltage U1 and the average flow velocity.
From the equation for calculating the volume flowrate, it follows that the signal voltage is linearly proportional to the volume flowrate. The induced voltage is converted by the transmitter to standardized, analog and digital signals.

Flowmeter sensor

Measuring accuracy

Reference conditions

According to EN 29104	Description
Measuring medium temperature	20 °C (68 °F) ±2 K
Ambient temperature	20 °C (68 °F) ±2 K
Power supply	Nominal voltage acc. to name plate U = ±1 %, Frequency f = ±1 %
Installation condition	• Upstream >10 x DN, straight section • Downstream >5 x DN, straight section
Warm-up phase	30 min

Measuring error and repeatability

Measuring error

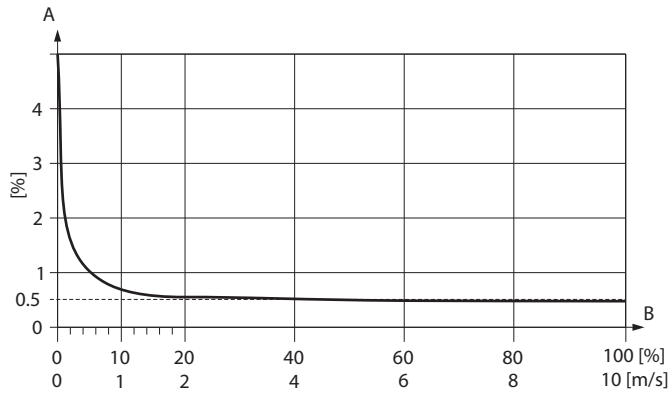


Figure 3 Measuring error

Pos.	Description
(A)	Accuracy ± of measured value in %
(B)	Flow velocity v in m/s, Q / Q_{max}DN in %

Table 2 Legend

Impulse output
± 0.5% of measured value ± 0.02% Q_{max}DN[1]

Table 3 Measuring error impulse output

1. QmaxDN: See table in chapter "Measuring range table" on page 9

Current output
Same as pulse output plus ±0.1 % of measured value ±0.01 mA

Table 4 Measuring error current output

Repeatability, response time	
Repeatability	≤ 0.11 % of measured value, t_{meas} = 100 s, v = 0.5 ... 10 m/s
Response time[1]	As step function 0 ... 99 % 5 t ≥ 200 ms at 25 Hz excitation frequency 5 t ≥ 400 ms at 12.5 Hz excitation frequency 5 t ≥ 500 ms at 6.25 Hz excitation frequency

Table 5 Repeatability, response time

1. Of current output with damping of 0.02 seconds.

...Flowmeter sensor

Permitted pipe vibration

In accordance with EN 60068-2-6.
Applicable to sensors in remote mount design and sensors in integral mount design.
Maximum deflection: 0.15 mm (0.006 inch) in the 10 ... 58 Hz range
Maximum acceleration: 2 g, in the 58 ... 150 Hz range

IP rating

- IP 65 / IP 67 in accordance with EN 60529
- IP 68 in accordance with EN 60529 (for remote mount design only)

Signal cables

For remote mount design only.
The maximum signal cable length between flowmeter sensor and transmitter 164 ft (50M).
A 5 m (16.4 ft) cable is included in the scope of delivery.
If more than 5 m (16.4 ft) is required, the cable can be ordered separately (Part no. 3KQZ407123U0100).

Temperature data

Storage temperature range

-4 … 149 °F (-20 … 65 °C)

The temperature range offered depends on a number of different factors.
These factors include the measuring medium temperature T_{medium}, the ambient temperature T_{amb}., the operating pressure P_{medium}, the liner material and the approvals for the explosion protection.

Maximum permissible cleaning temperature

CIP medium	Liner material	Cleaning temperature
Steam	ETFE	266 °F (130 °C)
Cleaning fluid	ETFE	266 °F (130 °C)

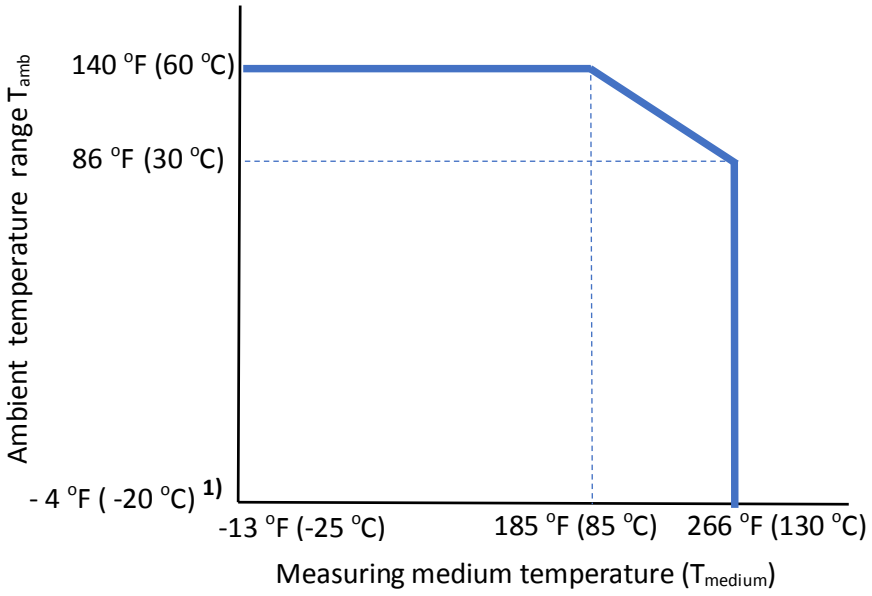
- The specified cleaning temperature applies for a maximum ambient temperature of 77 °F (25 °C).
  If the ambient temperature is > 77 °F (>25 °C), the difference to the actual ambient temperature must be subtracted from the maximum cleaning temperature.
- The specified cleaning temperature may be applied for a maximum of 60 minutes.

...Flowmeter sensor

Ambient temperature as a function of measuring medium temperature

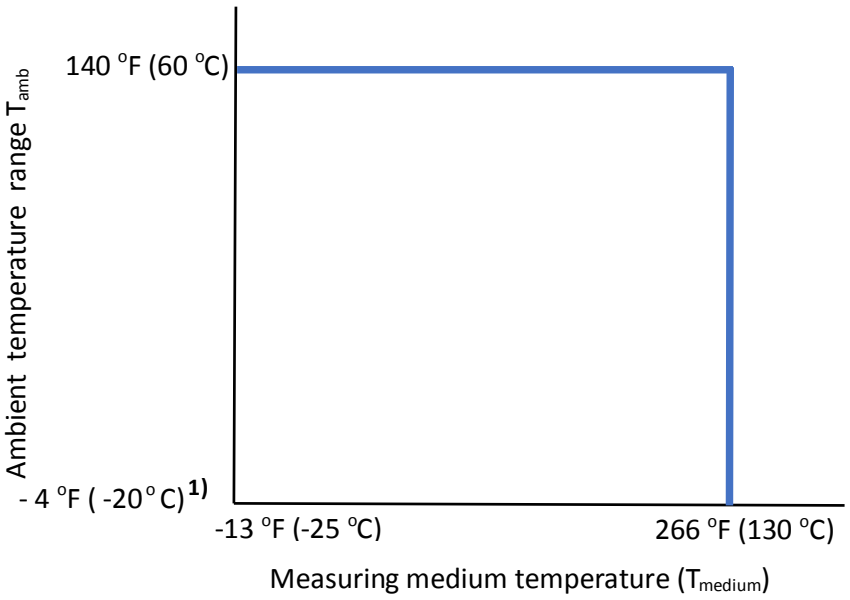
Integral design:

Maximum permissible combination of ambient and medium temperatures (Standard version)



Remote mount design:

Maximum permissible combination of ambient and medium temperatures (Optional high temperature version)



1 **Minimum ambient temperature is 14 °F (-10 °C) with carbon steel mating flanges. Stainless steel mating flanges must be used to reach the - 4 °F (-20 °C) temperature.**

...Flowmeter sensor

Measuring range table

The flow range end value can be set between 0.02 x Q_{max}DN and 2 x Q_{max}DN.

Nominal diameter		Minimum flow range end value	QmaxDN	Maximum flow range end value
DN	**inch**	**0.02 x QmaxDN (≈ 0.66 ft/s or 0.2 m/s)**	**0 ... ≈ 33 ft/s or 10 m/s**	**2 x QmaxDN (≈ 66 ft/s or 20 m/s)**
3	1/10	0.02 US gal/min (0.08 l/min)	1.06 US gal/min (4 l/min)	2.11 US gal/min (8 l/min)
4	5/32	0.04 US gal/min (0.16 l/min)	2.11 US gal/min (8 l/min)	4.23 US gal/min (16 l/min)
6	1/4	0.11 US gal/min (0.4 l/min)	5.28 US gal/min (20 l/min)	10.57 US gal/min (40 l/min)
10	3/8	0.24 US gal/min (0.9 l/min)	11.9 US gal/min (45 l/min)	23.78 US gal/min (90 l/min)
15	1/2	0.53 US gal/min (2 l/min)	26.4 US gal/min (100 l/min)	52.8 US gal/min (200 l/min)
25	1	1.06 US gal/min (4 l/min)	52.8 US gal/min (200 l/min)	106 US gal/min (400 l/min)
40	1 1/2	3.17 US gal/min (12 l/min)	159 US gal/min (600 l/min)	317 US gal/min (1200 l/min)
50	2	5.28 US gal/min (1.2 m3/h)	264 US gal/min (60 m3/h)	528 US gal/min (120 m3/h)
80	3	15.9 US gal/min (3.6 m3/h)	793 US gal/min (180 m3/h)	1585 US gal/min (360 m3/h)
100	4	21.1 US gal/min (4.8 m3/h)	1057 US gal/min (240 m3/h)	2113 US gal/min (480 m3/h)

...Flowmeter sensor

Process connections
Meters are wafer style and clamp between customer's pipeline flanges.

Installation length
For further details, refer to chapter "Dimensions" on page 15.

Materials

Wetted parts		
Part	**Standard**	**Option**
Liner material	ETFE	
Measurement and grounding electrode for liner material		
Electrode material	Hastelloy C-4 (2.4610)	Tantalum, Platinum-Iridium,
Grounding ring	Stainless steel	On request

Flowmeter sensor housing	
	
Component	**Standard**
Housing	Cast aluminum, painted, paint coat > 80 µm thick, light gray, RAL 9002
Terminal Box	Plastic, gray white, RAL 9002
Meter Tube	304 Stainless steel
Cable gland [1]	Polyamide, Stainless steel

1. Cable gland with M 20 x 1.5 or NPT thread, to be selected via the order model number

...Flowmeter sensor

Installation conditions

General information

The following points must be observed during installation:

- The flow direction must correspond to the marking, if present.
- The maximum torque for all flange screws must be complied with.
- Secure the flange screws and nuts against pipe vibration.
- The devices must be installed without mechanical tension (torsion, bending).
- Install flange devices / wafer-type devices with plane parallel counterflanges and use appropriate gaskets only.
- Only gaskets made from a material that is compatible with the measuring medium and measuring medium temperature may be used.
- Gaskets must not extend into the flow area, since possible turbulence could influence the accuracy of the device.
- The piping may not exert any inadmissible forces or torques on the device.
- Make sure temperature limits are not exceeded operating the device.
- Vacuum shocks in the piping should be avoided to prevent damage to the liners. Vacuum shocks can destroy the device.
- Do not remove the sealing plugs in the cable glands until you are ready to install the electrical cable. Make sure the gaskets for the housing cover are seated correctly. Carefully gasket the cover. Tighten the cover fittings.
- The transmitter with a remote mount design must be installed at a largely vibration-free location.
- Do not expose the transmitter and sensor to direct sunlight. Provide appropriate sun protection as necessary.
- When installing the transmitter in a control cabinet, make sure adequate cooling is provided.

Flow direction

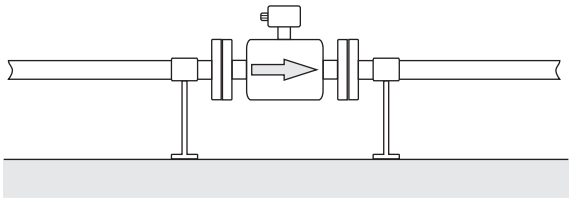


Figure 4 Flow direction

The device measures the flowrate in both directions. Forward flow is the factory setting, as shown in Fig.4.

Electrode axis

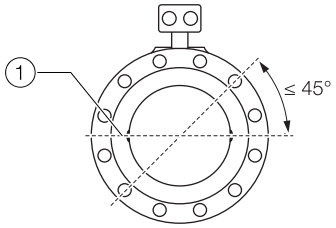


Figure 5 Orientation of the electrode axis

The electrode axis (1) should be horizontal if at all possible or no more than 45° from horizontal as shown in Fig. 5.

Gaskets

The following points must be observed when installing gaskets:

- For achieve the best results, ensure the gaskets fit concentrically with the meter tube
- To ensure that the flow profile is not distorted, the gaskets must not protrude into the piping.
- The use of graphite with the flange or process connection gaskets is prohibited, because an electrically conductive coating may form on the inside of the meter tube.

...Flowmeter sensor

Mounting position

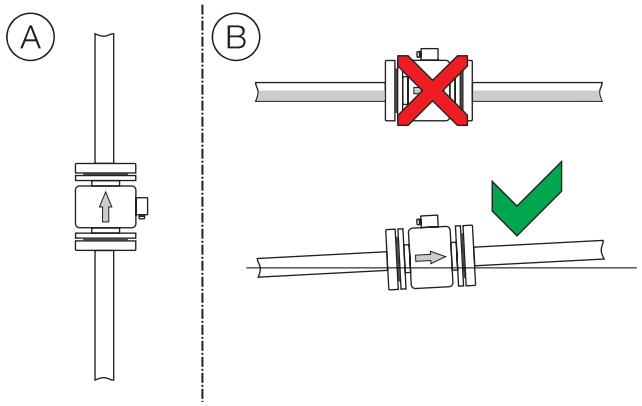


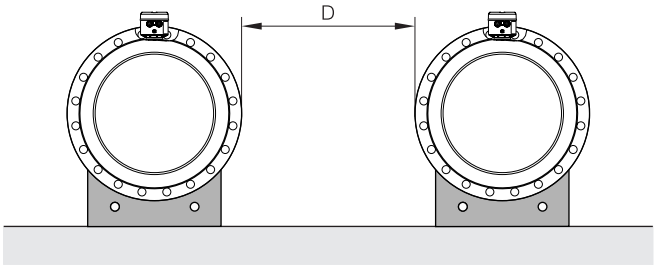
Figure 6 Mounting position

Ⓐ Vertical installation for measuring abrasive fluids, preferably with flow in upward direction.

Ⓑ In case of horizontal installation, the Meter tube must always be completely full. Provide for a slight incline of the connection for degassing.

Minimum distance

ProcessMaster FEMxxx



Distance D: ≥ 1.0 m (3.3 ft)

Figure 7 Minimum distance

- In order to prevent the devices from interfering with each other, a minimum distance as shown in Fig. 7 must be maintained between the devices.
- The flowmeter sensor may not be operated in the vicinity of powerful electromagnetic fields, e.g., motors, pumps, transformers, etc. A minimum spacing of approx. 1 m (3.28 ft) should be maintained.
- For installation on or to steel parts (e.g. steel brackets), a minimum spacing of approx. 100 mm (3.94 inch) should be maintained (based on IEC801-2 and IECTC77B.

Inlet and outlet sections

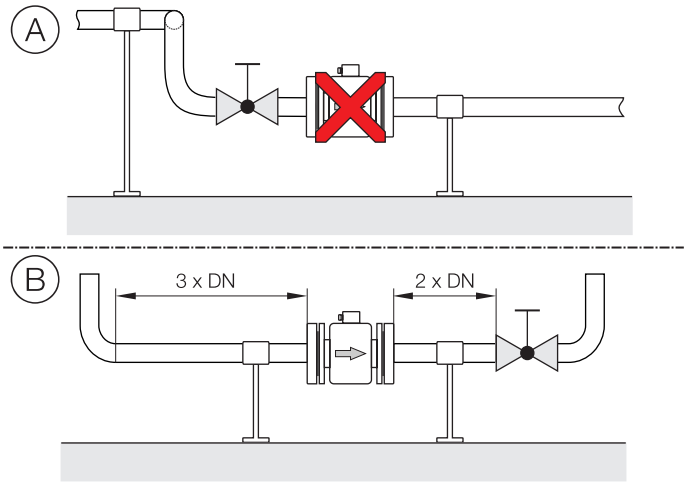


Figure 8 In- and outlet section, turn-off component

Pos.	Description
①	Double elbow
②	Turn-off device

Table 6 Legend

The metering principle is independent of the flow profile as long as standing eddies do not extend into the metering section, such as may occur after double elbows, in the event of tangential inflow, or where half-open gate valves are located upstream of the flowmeter sensor.

In such cases, measures must be put in place to normalize the flow profile.

Ⓐ Do not install fittings, manifolds, valves, etc., directly in front of the flowmeter sensor.

Ⓑ Inlet and outlet section: Length of straight inlet and outlet section of the flowmeter sensor.
Experience has shown that, in most installations, inlet sections 3 x DN long and outlet sections 2 x DN long are sufficient (DN = nominal diameter of the flowmeter sensor).
For test stands, the reference conditions of 10 x DN inlet section and 5 x DN outlet section must be provided, in accordance with EN 29104 / ISO 9104.
Valves or other turn-off components should be installed in the outlet section.
Butterfly valves must be installed so that the valve plate does not extend into the flowmeter sensor.

...Flowmeter sensor

Free inlet or outlet

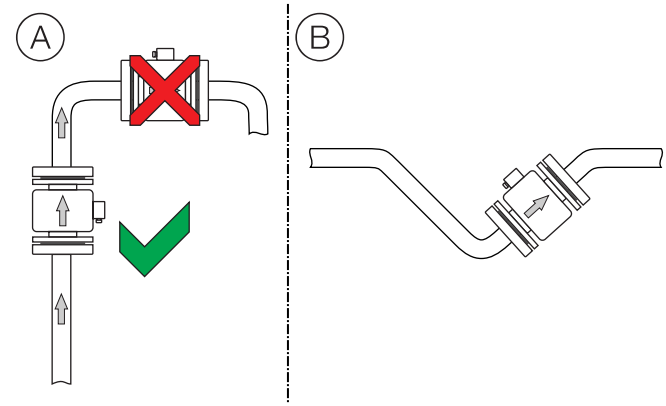


Figure 9 Free inlet or outlet

(A) Do not install the flowmeter at the highest point or in the draining off side of the pipeline, flowmeter runs empty, air bubbles can form.

(B) Provide for a siphon fluid intake for free inlets or outlets so that the pipeline is always full.

Strongly contaminated measuring media

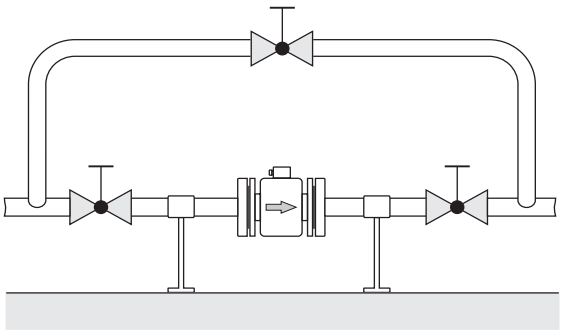


Figure 10 Bypass connection

For strongly contaminated measuring media, a bypass connection according to the figure is recommended so that operation of the system can continue to run without interruption during the mechanical cleaning.

Grounding

The flowmeter sensor must be connected to ground potential. For technical reasons, this potential should be identical to the potential of the measuring medium.
For plastic or insulated lined pipelines, the measuring medium is grounded by installing ground plates.
When there are stray potentials present in the pipeline, a ground plate is recommended on both ends of the flowmeter sensor.

...Flowmeter sensor

Installation in the vicinity of pumps

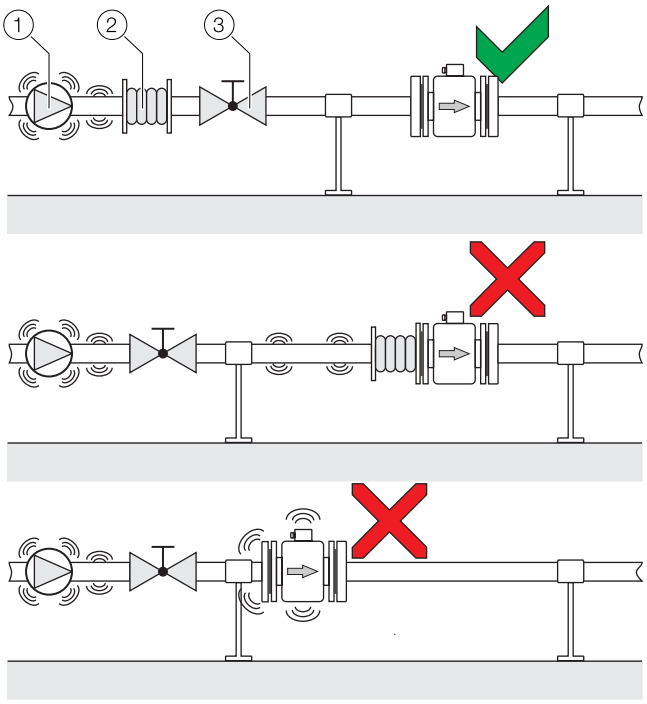


Figure 11 Vibration damping

Pos.	Description
①	Pump
②	Damping device
③	Shut-off device

Table 7 Legend

Strong vibrations in the pipeline must be damped using flexible damping devices.
The damping devices must be installed beyond the supported flowmeter section and outside of the section between the shut-off devices.
Do not connect flexible damping devices directly to the flowmeter sensor.

Installation in pipelines with larger nominal diameters

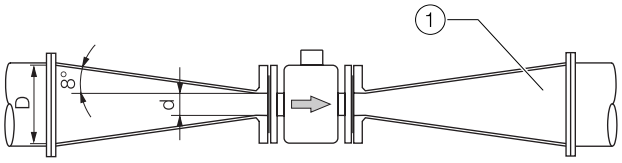


Figure 12 Using reduction pieces

Determine the resulting pressure loss when using transition pieces ①:

1. Calculate the diameter ratio d/D.
2. Determine the flow velocity based on the flow rate nomogram (Fig. 13).
3. Read the pressure drop on the Y-axis in Fig. 13.

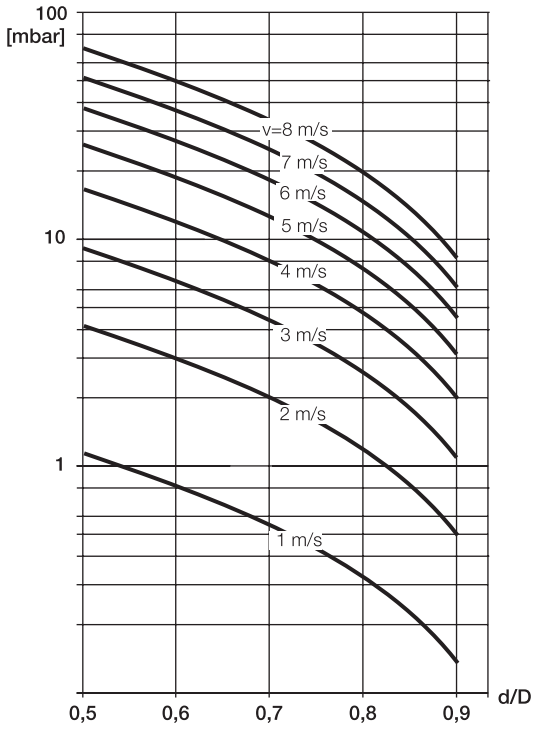
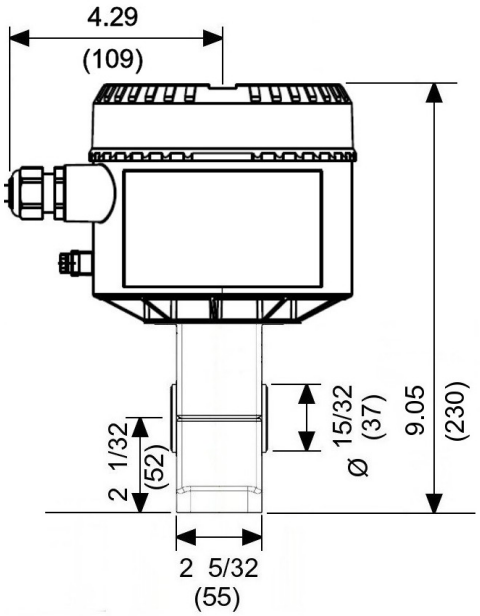
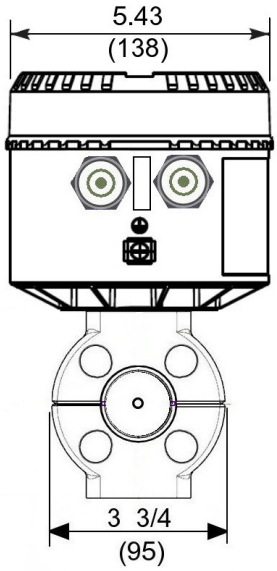


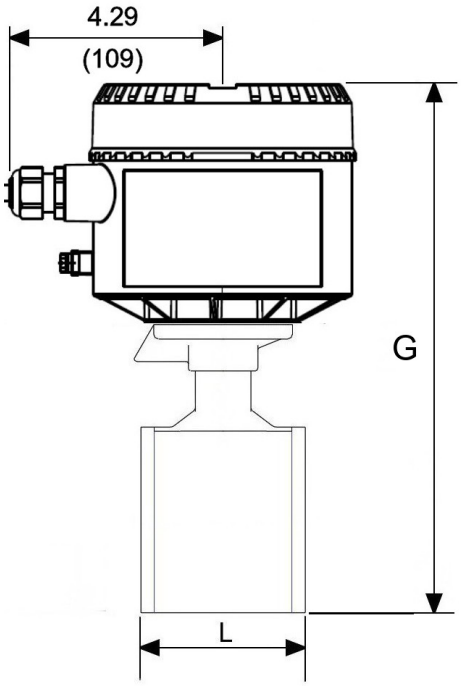
Figure 13 Flow rate nomogram for pressure drop calculations for flange transition piece with α/2 = 8°

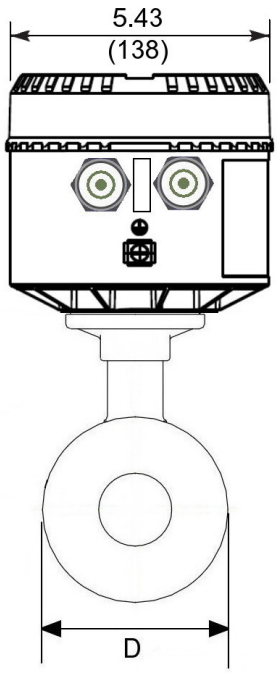
Dimensions





Flow Sensor Sizes
1/10" ... 3/8" (DN3 ..10)





Flow Sensor Sizes
1/2" ... 4" (DN 15 ... 100)

	Dimensions - inches / (mm)			Approximate weight lb / (kg)	
Size Inch / (DN)	**D**	**L**	**G**	**Integral mount design**	**Remote mount design**
1/2 (15)	1-7/8 (48)	2-5/32 (55)	9-1/16 (230)	10.5 (4.8)	6 (2.7)
1 (25)	2-5/8 (67)	2-5/32 (55)	9-27/32 (250)	11.5 (5.2)	7 (2.7)
1-1/2 (40)	3-3/8 (86)	2-3/4 (70)	10-1/2 (268)	12.5 (5.7)	7 (3.2)
2 (50)	4 (102)	3-11/32 (85)	11-3/16 (284)	13.5 (6.1)	9 (4.1)
3 (80)	5-1/4 (133)	4-23/32 (120)	12-13/32 (315)	17.5 (7.7)	12 (5.5)
4 (100)	6-1/2 (165)	5-29/32 (150)	13-21/32 (347)	23.5 (10.7)	18 (8.2)

Transmitter

Features

- 4 ... 20 mA current output
- Current output in the event of an alarm can be configured to 21 ... 22.6 mA (NAMUR NE43)
- Measuring range: Can be configured between 0.02 ... 2 x QmaxDN
- Operating mode for flow measurement can be configured
- Programmable digital output. Can be configured as frequency output, pulse output or binary output.
- Empty pipe detection [1]
- Simulation of current and binary output (manual process execution)

1 Requirements for Empty Pipe detector function:
The conductivity of the fluid must be ≥ 20 µS/cm
Nominal diameter must be ≥ DN 10

LCD indicator (option)

- High-contrast LCD indicator
- Display of the current flow rate as well as the total flow rate
- Application-specific visualizations which the user can select. Two operator pages can be configured to display multiple values in parallel.
- Plain text fault diagnostics
- Menu-guided parameterization with four buttons
- "Easy Set-up" function for fast commissioning
- Parameterization of the device through the front glass with the housing closed

Isolation of outputs

The current output and the digital outputs are electrically isolated from each other.

...Transmitter

IP rating

In accordance with EN60529: IP 65 / IP 67

Vibration

In accordance with EN 60068-2

- In the 10 ... 58 Hz range, max. deflection 0.15 mm (0.006 inch)[1]
- In the range of 58 ... 150 Hz, max. acceleration 2 g[1])

1) Peak load

Temperature data

	Standard
Ambient temperature	-22 °F ... 140 °F (-30 °C ... 60 °C)
Storage temperature	-22 °F ... 158 °F (-30 °C ... 70 °C)

NOTICE
When operating below -4 °F (-20 °C), the LCD display can no longer be read. Full functionality is assured at temperatures above -4 °F (-20 °C).

Housing design

Integral mount design	
Housing	Plastic, RAL 9002 (light gray)
Cable gland[1]	Polyamide

Remote mount design	
Housing	Cast aluminum, painted
Paint	≥ 80 µm thick, RAL 9002 (gray white)
Cable gland [1]	Polyamide
Weight	Stainless steel
	3.97 lb (1.8 kg)

1. Cable gland with M 20 x 1.5 or NPT thread, to be selected via the order number.

...Transmitter

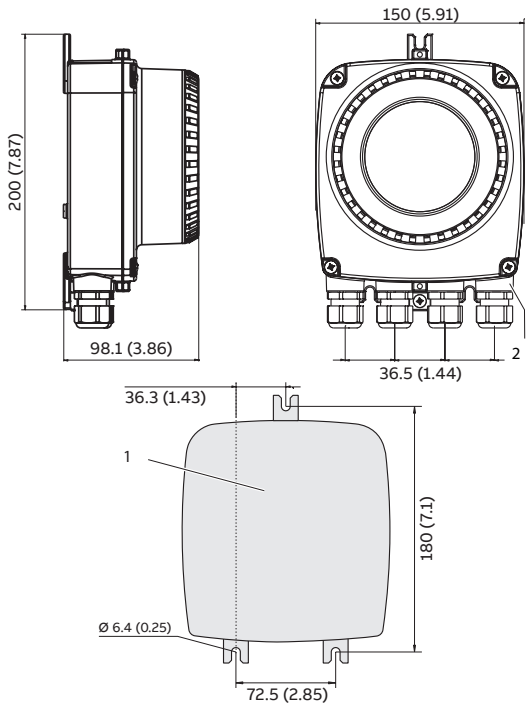


Figure 14 Mounting dimensions single-compartment housing

Pos.	Description
①	Hole pattern for mounting holes
②	Female thread (either 1/2" NPT or M20 x 1.5) refer to model coding. With 1/2" NPT there will be a plug instead of the PG cable inlet

Table 8 Legend

Electrical connections

Connection diagram

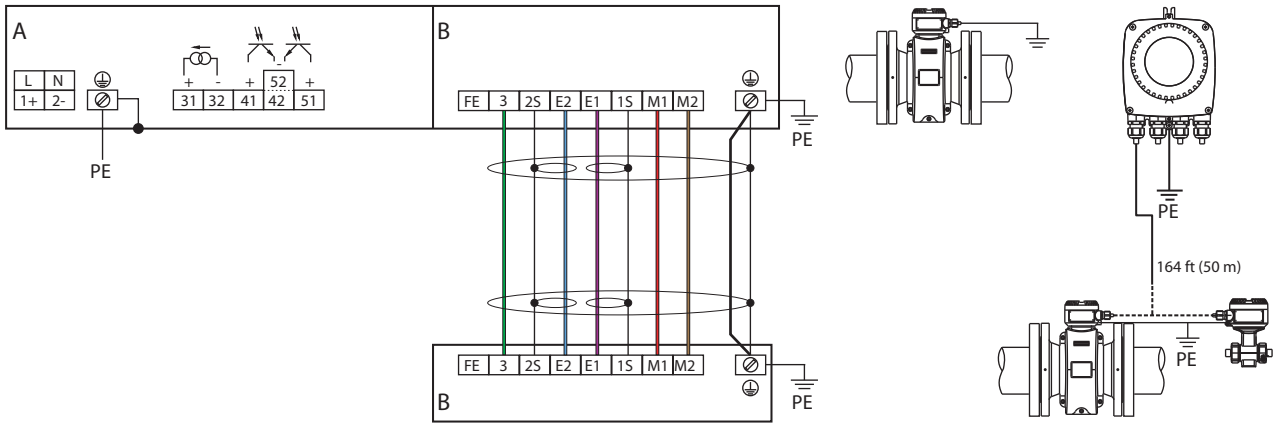


Figure 15 Electrical Connections

Pos.	Description
(A)	Connections for power supply and outputs
(B)	Connections for signal cable (remote mount design only)

Table 9 Legend

NOTICE
For detailed information about grounding the transmitter and the flowmeter sensor, please refer to chapter "Grounding" in the operating instruction.

Connections for the power supply

AC voltage	
Terminal	**Function / comments**
L	Phase
N	Neutral conductor
PE / ⏚	Protective earth (PE)

DC voltage	
Terminal	**Function / comments**
1+	+
2-	-
PE / ⏚	Protective earth (PE)

Connections for inputs and outputs

Terminal	Function / comments
31 / 32	**Active current output** The current output is "active" mode. The source to drive the 20mA loop is in-built in the transmitter.
41 / 42	**Passive digital output DO1** The output can be configured as a pulse output, frequency output or switch output on site.
51 / 52	**Passive digital output DO2** The output can be configured as a pulse output, frequency output or switch output on site.
	Functional earth

Connecting the signal cable

Only for remote mount design.

Terminal	Function / comments	Color
FE	Not connected	-
3	Measurement potential	green
2S	Signal line	-
E2	Signal line	blue
E1	Signal line	violet
1S	Shield for E1	-
M1	Magnet coil	brown
M2	Magnet coil	red
⏚	Shield	-
-	Not connected	orange/yellow

...Electrical connections

Electrical data for inputs and outputs
Power supply L / N, 1+ / 2-

AC power supply	
Terminals	L / N
Operating voltage	100 ... 240 V AC (-15 % / +10 %), 47 ... 64 Hz
Power consumption	Smax: < 20 VA
Switch-on current	18.4 A, t < 3 ms

DC voltage supply	
Terminals	1+ / 2-
Operating voltage	24 ... 48 V DC (-10 % / +10 %)
Ripple	< 5 %
Power consumption	10 W
Inrush current	5.6 A

Current output 31 / 32
Can be configured for outputting mass flow and volume flow.

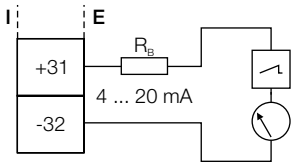


Figure 16 Connection example active current output (I = internal, E = external, R_B = load)

Current output	Active
Terminals	31/32
Output signal	4...20 mA
Load R_B	0 Ω ≤ RB ≤ 650 Ω

Digital output 41 / 42, 51 / 52
Can be configured as pulse, frequency or binary output.

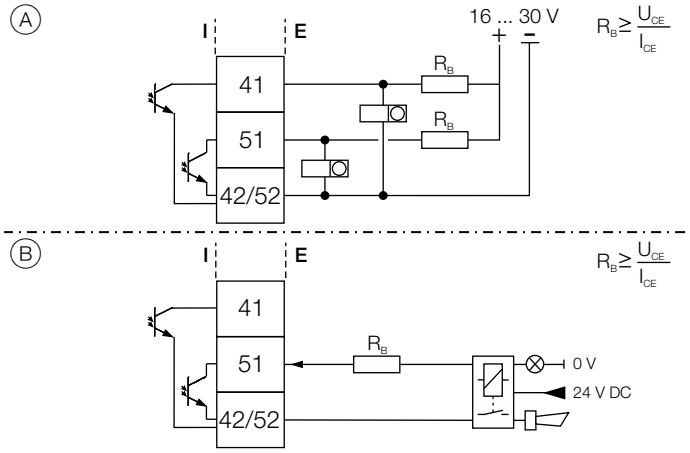


Figure 17 Connection example (I = internal, E = external, R_B = load)

(A) Passive digital output 41 / 42, 51 / 52 as pulse or frequency output

(B) Passive digital output 51 / 52 as binary output

NOTICE

- Terminals 42 / 52 have the same ground potential. Digital outputs 41 / 42 and 51 / 52 are not electrically isolated from each other.
- If you are using a mechanical counter, we recommend setting a pulse width of ≥ 30 ms and a maximum frequency of f_{max} ≤ 3 kHz.

Pulse / frequency output (passive)	
Terminals	41 / 42, 51 / 52
U_{max}	30 V DC
I_{max}	25mA
f_{max}	10.5 kHz
Pulse width	0.1 ... 2000 ms

Binary output, pasive	
Terminals	41 / 42, 51 / 52
U_{max}	30 V DC
I_{max}	25mA
Switching function	Can be configured using software as: System alarm, empty pipe alarm, max. / min. alarm, flow direction signaling, others

Ordering information

ProcessMaster FEM611

Electromagnetic Flowmeter system, integral mount

ProcessMaster Wafer FEM611	7,8	9,10	11	12,13,14,15	16,17	18,19	20	21	22	23	...	45,46
Explosion Protection Certification												
Without	Y0											
Housing Type / Housing Material / Cable Glands												
Integral / Single compartment / Plastic / M20 x 1.5		V1										
Integral / Single compartment / Plastic / NPT 1/2 in.		V2										
Sensor Style												
Standard sensor housing			F									
Meter size												
DN 3 (1/10 in.)				0003								
DN 4 (5/32 in.)				0004								
DN 6 (1/4 in.)				0006								
DN 10 (3/8 in.)				0010								
DN 15 (1/2 in.)				0015								
DN 25 (1 in.)				0025								
DN 40 (1-1/2 in.)				0040								
DN 50 (2 in.)				0050								
DN 80 (3 in.)				0080								
DN 100 (4 in.)				0100								
Process Connection Type												
Wafer Style					W1							
Liner Material												
ETFE						E1						
Process Connection Material												
Without process connection, without gasket and without mounting bracket							Y					
Electrode Design												
Standard								1				
Measuring Electrodes Material												
Hast. C-4 (2.4610)									D			
Tantalum									G			
Platinum-Iridium									J			
Grounding Electrode / Full Pipe Detection												
No grounding electrode / No full pipe detection										0		

Continued on next page

...Ordering information

ProcessMaster Wafer FEM611	7,8	...	24	25,26	27	28	29,30	31	32,33	34,35,36	37,38,39	40,41	42,43, 44	45,46
									Additional ordering codes					
Grounding Accessories														
Without			A											
Grounding ring (2)			E											
Protection Class Transmitter / Protection Class Sensor														
Standard / IP 67				70										
Power Supply														
100 ... 240 AC, 24...48 V DC, 50 Hz					F									
100 ... 240 AC, 24...48 V DC, 60 Hz					G									
Display														
Without						0								
Display with Keypad						2								
Outputs														
Current output (active), 2 Digital outputs (passive)							A6							
Design Level														
Specified by ABB								A						
Documentation Language														
English									M5					
Configuration Type														
Parameters set customer specific										NCC				
Calibration type														
0.5% factory cailbration [1]											RCC			
Device identification plate														
Adhesive label												TC		
Others												TZ		
Number of testpoints														
2 points													TV2	
3 points													TV3	
5 points													TV5	
Hardware kits														
ANSI 150 hardware kit [2]														AH

Notes for ProcessMaster FEM631

1 2 points calibration will be done. If more than 2 testpoints are required, please specify 3 or 5 points with option "Number of testpoints".

2 Meters are wafer style and clamp between customer's pipeline flanges. Mounting hardware kits are available and include: studbolts, nuts, KLINGERSIL gaskets and adaptor.

...Ordering information

ProcessMaster FEM612

Electromagnetic Flowmeter system, remote mount design

ProcessMaster Wafer FEM612	7,8	9,10	11	12,13,14,15	16,17	18,19	20	21	22	23	...	50,51
Explosion Protection Certification												
Without	Y0											
Housing Type / Housing Material / Cable Glands												
Remote / Plastic / M20 x 1.5		P1										
Remote / Plastic / NPT 1/2 in.		P2										
Sensor Style												
Standard sensor housing			F									
Meter size												
DN 3 (1/10 in.)				0003								
DN 4 (5/32 in.)				0004								
DN 6 (1/4 in.)				0006								
DN 10 (3/8 in.)				0010								
DN 15 (1/2 in.)				0015								
DN 25 (1 in.)				0025								
DN 40 (1-1/2 in.)				0040								
DN 50 (2 in.)				0050								
DN 80 (3 in.)				0080								
DN 100 (4 in.)				0100								
Process Connection Type												
Wafer Style					W1							
Liner Material												
ETFE						E1						
Process Connection Material												
Without process connection, without gasket and without mounting bracket							Y					
Electrode Design												
Standard								1				
Measuring Electrodes Material												
Hast. C-4 (2.4610)									D			
Tantalum									G			
Platinum-Iridium									J			
Grounding Electrode / Full Pipe Detection												
No grounding electrode / No full pipe detection										0		

Continued on next page

...Ordering information

ProcessMaster Wafer FEM612	7,8	...	24	25,26	27	28	29,30	31	32,33	34,35	36,37,38	39,40,41	...	50,51
Grounding Accessories									Additional ordering codes					
Without			A											
Grounding ring (2)			E											
Protection Class Transmitter / Protection Class Sensor														
IP 67				70										
IP 67 / IP 68				76										
IP 67 / IP 68, signal cable fitted and potted				77										
Power Supply														
Without					Y									
Display														
Without						0								
Outputs														
Without							Y0							
Design Level														
Specified by ABB								A						
Power Supply Line Frequency														
50 Hz (to be specified in case no Tx is ordered) [1]									F5					
60 Hz (to be specified in case no Tx is ordered) [1]									F6					
Documentation Language														
English										M5				
Configuration type														
Parameters set customer specific											NCC			
Calibration type														
0.5% factory calibration [2]												RCC		

Continued on next page

...Ordering information

ProcessMaster Wafer FEM612	7,8	...	42,43,44	45,46	47,48,49	50,51
Signal Cable			Additional ordering codes			
Without			SC0			
5 m (approx. 15 ft)			SC1			
10 m (approx. 30 ft)			SC2			
15 m (approx. 49 ft)			SC3			
20 m (approx. 66 ft)			SC4			
25 m (approx. 82 ft)			SC5			
30 m (approx. 98 ft)			SC6			
35 m (approx. 115 ft)			SC7			
40 m (approx. 131 ft)			SC8			
50 m (approx. 164 ft)			SCA			
Device Identification Plate						
Adhesive label				TC		
Others				TZ		
Number of Testpoints						
2 Points					TV2	
3 Points					TV3	
5 Points					TV5	
Hardware Kits						
ANSI 150 Hardware Kit [3]						AH

Notes for ProcessMaster FEM612

1 60 Hz (to be specified in case no transmitter is ordered).

2 2 points calibration will be done. If more than 2 testpoints are required, please specify 3 or 5 points with option "Number of testpoints".

3 Meters are wafer style and clamp between customer's pipeline flanges. Mounting hardware kits are available and include: studbolts, nuts, KLINGERSIL gaskets and adaptor.

...Ordering information

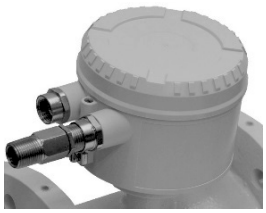
Remote transmitter FET612

FET612 Electromagnetic Flowmeter, remote transmitter for ProcessMaster FEM610

Remote transmitter FET612	7,8	9,10	11,12	13	14	15,16	17,18	19, 20
Explosion Protection Certification							Additional ordering codes	
Without	Y0							
Housing Type / Housing Material / Cable Glands								
Field-mount / Single compartment / Aluminum / 4 x M20 x 1.5		F1						
Field-mount / Single compartment / Aluminum / 4 x NPT 1/2 in.		F2						
Protection Class Transmitter / Protection Class Sensor								
IP 67			70					
Power Supply								
100-240 AC, 24...48 V DC, 50 Hz				F				
100-240 AC, 24...48 V DC, 60 Hz				G				
Display								
Without					0			
Display with Keypad					2			
Outputs								
Current output (active), 2 Digital Outputs (passive)						A6		
Documentation language								
English							M5	
Device identification plate								
Adhesive label								TC
Others								TZ

...Ordering information

Accessories

Description	Order code
Infrared service port adapter FZA100	
	FZA100
Installation set for NPT 1/2" cable gland. For sealing the cable conduit during outdoor installation.	
	3KXF081300L0001
Adapter M20x1.5 to 1/2"NPT	
	D365B269U01
Signal cable	D173D031U01

Sales

Service

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™ Hastelloy C is a trademark of Haynes International

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