

## Product information FMQ

## FOOD

# Magnetic-Inductive Flow Meter FMQ

## Application/Specified usage

- Magnetic-inductive flowmeter for the measurement of flow rate and volume in food applications
- Suitable for liquids, slurries and pastes with a minimum conductivity of  $5 \mu\text{S}/\text{cm}$
- Precise measurement of media containing solids ( $< 5\%$  solid particle content)
- Measurement range from 30 l/h to 280 000 l/h (8 gal/hr to 80 000 gal/hr)
- Suitable for dosing and filling applications

## Hygienic design/Process connection

- Conformity with 3-A standard 28-
- All wetted materials are FDA-conform
- Sensor made entirely of stainless steel
- Meter tube in transmitter with PFA coating
- Vacuum-tight and piggable
- Electrodes made of stainless steel 1.4404 (AISI 316L)
- Sensor available with or without process connections

## Special features/Advantages

- CIP/SIP cleaning up to  $130\text{ }^\circ\text{C}$  /  $266\text{ }^\circ\text{F}$  for max. 30 minutes
- High measurement accuracy even at low flow rates
- Simple, intuitive parameterization
- Switch input for resetting the quantity-/volume counter (option)
- Automatic empty pipe detection
- PFA lining for maximum resistance to aggressive substances such as acids and bases
- Vacuum-tight, rigid flow tube lining
- Rotatable housing with illuminated graphic display
- Operation of device via optical keys without opening the housing
- Minimal maintenance and care requirements
- IO-Link digital communication

## Options/Accessories

- Add-On Instructions are available at [www.anderson-negele.com/aoi](http://www.anderson-negele.com/aoi)

## Functional principle

The principle behind this measurement method is Faraday's law of induction. This law states that a voltage is induced in a conductor that moves in a magnetic field. In the magnetic-inductive measurement method, the flowing, conductive medium acts as the conductor. Two vertically positioned field coils generate a constant magnetic field. The voltage induced in the flowing medium is measured by two stainless steel electrodes that are arranged horizontally. The voltage is directly proportional to the flow rate and can be expressed as the flow volume using the nominal tube width. The determined measurement values are made available as a counting pulse and 4...20 mA standard signal or an optional IO-Link digital communication.

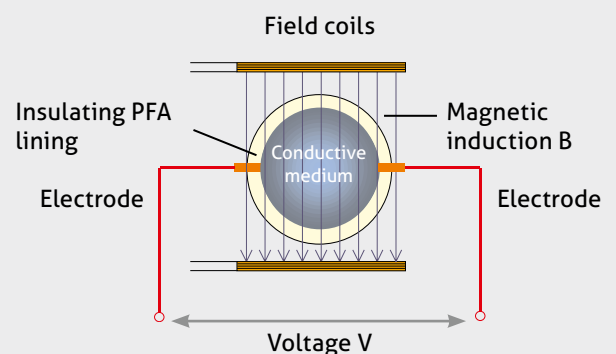
## Communication

 **IO-Link**  **4...20 mA**

## FMQ flowmeter



## Magnetic-inductive measurement



**Display (optional)**

- Integrated graphic display, illuminated
- Display swivels 360°
- Operation via optical keys (housing does not need to be opened)
- User guidance in English/German (switchable)

**Meter tube**

Universal DIN 11864 aseptic flange

Available with buttweld, ASME clamp or DIN clamp process connections

**Electrical connection**

M12 plug

**Communication**

- IO-Link communication

**Outputs**

- 1 digital output for pulse or IO-Link communication
- 1 analog output

**Supply voltage**

Supply voltage  
24 V DC

**Measurement transmitter**

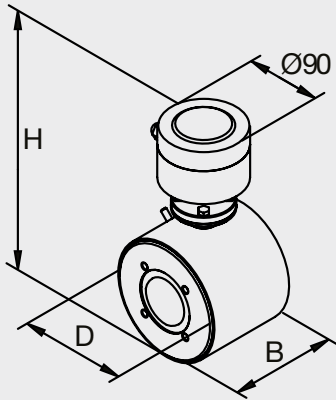
- DN 10...DN 100
- PFA liner, vacuum-tight, piggable, FDA-approved
- Measurement electrodes, 1.4404 (AISI 316L)

**Technical data**

<b>Transmitter</b>	Measuring principle Measurement ranges Nominal width Pipe standard	Magnetic-inductive 0.10...10 m/s DN 10...DN 100 / 1/2"...4" DIN 11850 Series 2
<b>Process connection (optional)</b>	Transmitter Tube standards	Aseptic flange DIN 11864-2, Form A Inside diameter as per DIN 11850 Series 2 Food: DIN 11850 Series 2, OD Tube (ASME BPE)
<b>Materials</b>	Food seal Transmitter housing Transmitter lining Food electrodes Converter housing Sight glass M12 connector	EPDM, FDA number 21 CFR 177.2600 1.4301 / AISI 304, blasted PFA, FDA number 21 CFR 177.1500 1.4404 / AISI 316L 1.4404 / AISI 316L PMMA (acrylic glass) Plastic, optional: 1.4301 / AISI 304
<b>Pipe connection</b>	Food	1.4404 / AISI 316L
<b>Temperature ranges</b>	Ambient Process CIP / SIP cleaning	-13...140 °F / -25...60 °C 32...212 °F / 0...100 °C up to 266 °F / 130 °C max. 30 min
<b>Operating pressure</b>	DN 10...100	0.1...17 bar (PN 16)
<b>Protection class</b>		IP 67
<b>Transmitter</b>	LC display Electrical connection Supply voltage Power consumption	Graphic LCD, 46 mm x 23 mm, back-lit with auto dimming feature M12 plug (DC power supply only) DC: 24 V ±10 % Max. 2.5 W (without display) / Max. 3.0 W (with display)
<b>Measurement accuracy</b>		±0.5 % ±2 mm/s, under reference conditions as per DIN EN 29104 and VDI/VDE 2641
<b>Product conductivity</b>		> 5 µS/cm, for demineralized water > 20 µS/cm
<b>Digital output</b>	Active pulse output IO-Link	1x 24 V / 20 mA, pulse sequence max. 1 kHz IO-Link communication
<b>Analog output (flow rate)</b>	active Load resistance	(0)/4...20 mA Max. 500 Ω

## FMQ Dimensions

## FMQ dimensional drawing

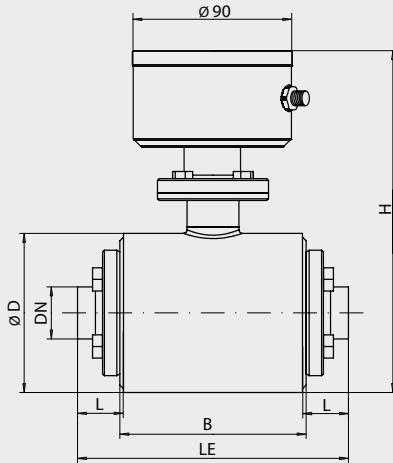


## FMQ dimensions, incl. measurement range and weight

Nominal width DN	B [mm]	D [mm]	H [mm]	Measurement range [l/h]	Weight [kg]
					Transmitter and converter (display unit)
10	104	90	190	30...3 000	4
15	104	90	190	70...7 000	4
25	104	90	190	180...18 000	4
32	104	105	205	300...30 000	5
40	104	105	205	450...45 000	5
50	104	130	230	700...70 000	6
65	160	130	230	1 200...120 000	6
80	160	155	255	1 800...180 000	10
100	200	170	270	2 800...280 000	15

## FMQ dimension equipped with Anderson-Negele process connection

## FMQ dimensional drawing



## Main application area: Food | Material: 1.4404

Transmitter Ø	Pipe DN [mm]	Pipe size OD x WT [mm]	installation length LE		
			Weld flange DIN 11850 Series 2 [mm]	Tri-Clamp ASME [mm] (* Tri-Clamp size)	DIN 32676 Clamp [mm]
10	10	12.7 x 1.65	152	172 (½")*	209
15	15	19.05 x 1.65	152	203 (1")*	209
25	25	25.4 x 1.65	152	203 (1")*	223
32	32	38.1 x 1.65	152	203 (1½")*	223
40	40	38.1 x 1.65	152	203 (1½")*	223
50	50	50.8 x 1.65	152	203 (2")*	223
65	65	63.5 x 1.65	208	229 (2.5")*	303
80	80	76.2 x 1.65	212	251 (3")*	308
100	100	101.6 x 2.11	252	302 (4")*	348

## Main application area: Food | Material: 1.4404 (AISI 316L)

## FMQ Magnetic-Inductive Flow Meter

## Nominal diameter/size

<b>010</b>	10 mm
<b>015</b>	15 mm
<b>025</b>	25 mm
<b>032</b>	32 mm
<b>040</b>	40 mm
<b>050</b>	50 mm
<b>065</b>	65 mm
<b>080</b>	80 mm
<b>100</b>	100 mm

## Certificate

S None

## Display / Cap

L Optical LED status display  
 B Blind stainless steel cap  
 D Graphic display

## M12 Connection / Communication

O M12 connector, 4-pin, plastic  
 K M12 connector IO-Link, 4-pin, stainless steel  
 L M12 connector IO-Link with switch input, 5-pin, stainless steel  
 S M12 connector without switch input, 4-pin, stainless steel  
 M M12 connector with switch input, 5-pin, stainless steel

## Connection

0 Butt-weld  
 1 ASME clamp  
 2 DIN clamp

## Elastomer

A EPDM  
 B Silicone

FMQ 010 S L O O A

## Accessories

<b>42117H0025</b>	5-Conductor w/25' cable
<b>42117H0050</b>	5-Conductor w/50' cable
<b>42117H0100</b>	5-Conductor w/100' cable
<b>57001A0001</b>	Display board kit
<b>57002A0001</b>	Display cap kit
<b>57002B0001</b>	Status Light cap kit
<b>56623D0004</b>	4-pin M12 connector kit

## Graphic Display

