MID flow transmitter

Type 406010/ ...

Brief description

The flow rate transmitter has a magnetically inductive sensor (MID).
Standardized fittings ensure easy installation of the transmitter into tubes ranging from DN15 to DN400 (see Data Sheet 406090).
The transmitter can be used in liquids with a conductivity of 20 µS/cm or greater.
Flow speeds from 0.2 to 10 m/s can be measured.
The transmitter provides an output signal of 4 to 20 mA.
The measurement is also represented as a frequency pulse signal of 0 to 240 Hz.
Simple control tasks can be implemented with the installed relay.

Example of mounting

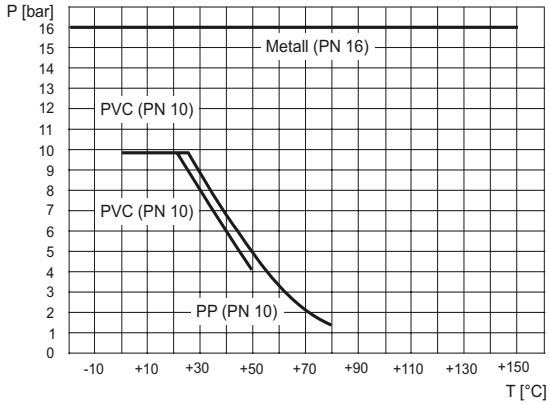
Flow transmitter

Fitting
See Data Sheet 406090

Key features

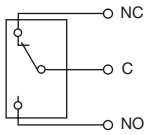
- Stainless steel design.
- Simple mounting.
- For pressures up to PN16 and temperatures up to 150°C.

Technical data

Operating conditions	
Measurement medium	Water or other conductive liquids Minimum conductivity:20 µS/cm
Medium temperature	In combination with a PVC fitting: 0 to +50°C In combination with a PE fitting: 0 to +70°C In combination with a PP fitting: 0 to +80°C In combination with a stainless steel fitting:-15 to +150°C
Ambient temperature	-10 to +60°C operating temperature -20 to +60°C storage temperature
Tube diameter	For diameters DN15 to DN 400. Only in combination with fittings as per Data Sheet 406090.
System pressure	In combination with a PVC or PE fitting: 
Minimum inlet and outlet distances	See illustrations on page 5/5
Relative humidity	< 80%, non-condensing
Enclosure protection	IP65
EMC	EN 50081-1, EN 61000-6-2
Safety	EN 61010-1
Vibration	EN 60068-2-6
Impact	EN 60068-2-27
Measuring range	
Flow speed	0.2 to 10 m/s
Accuracy (With a flow speed of from 1 to 10 m/s and a medium temperature in the range from -15 to 70°C)	With standard K factor: ≤ ± 4% of measured value after teach-in: ≤ ± 2% of measured value
Linearity	≤ ± 1% of measured value + 0.1% of measurement range end
Repeatability	≤ ± 0.25% of measured value
Materials	
Housing, cover, nut	PPA
Screws, seal, cable gland	Sensor: stainless steel, EPDM, PA
Parts in contact with medium	Sensor: stainless steel 1.4404/316L, FKM, PEEK Fitting: see data sheet 406090

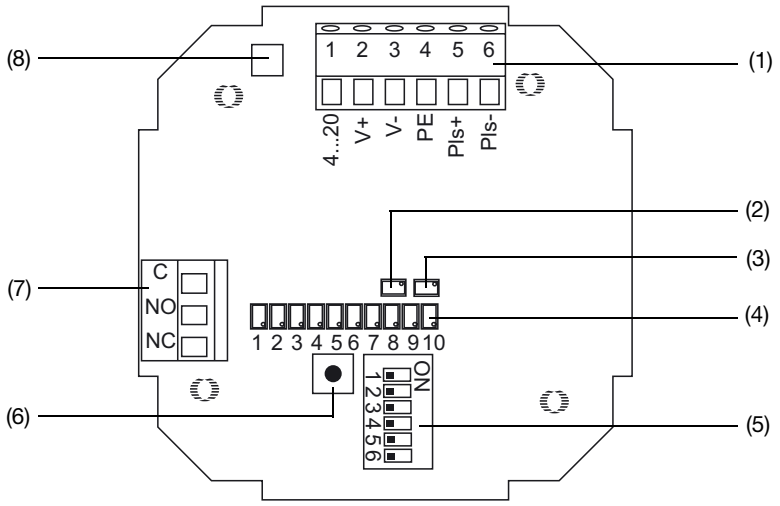
Electrical data		
Power supply voltage	DC 18 to 36 V, reverse polarity protected	
Power consumption	≤ 220 mA	
Output	Current:	4 to 20 mA, three wires Loop resistance: max. 1100 Ω at 36 V DC or max. 330 Ω at 18 V DC
	Frequency pulse:	0 to 240 Hz clock ratio: 50%, ≤ 100 mA, protected against short circuit and reverse polarity
	Relay:	3 A, 250 VAC, changeover contact
	Alarm:	when exceeding scale value: 22 mA or 256 Hz Device error: 22 mA or 0 Hz
Cable gland	M20 x 1.5	
Series terminals	for lines with cross-section up to 0.75 mm^2	

Electrical connection

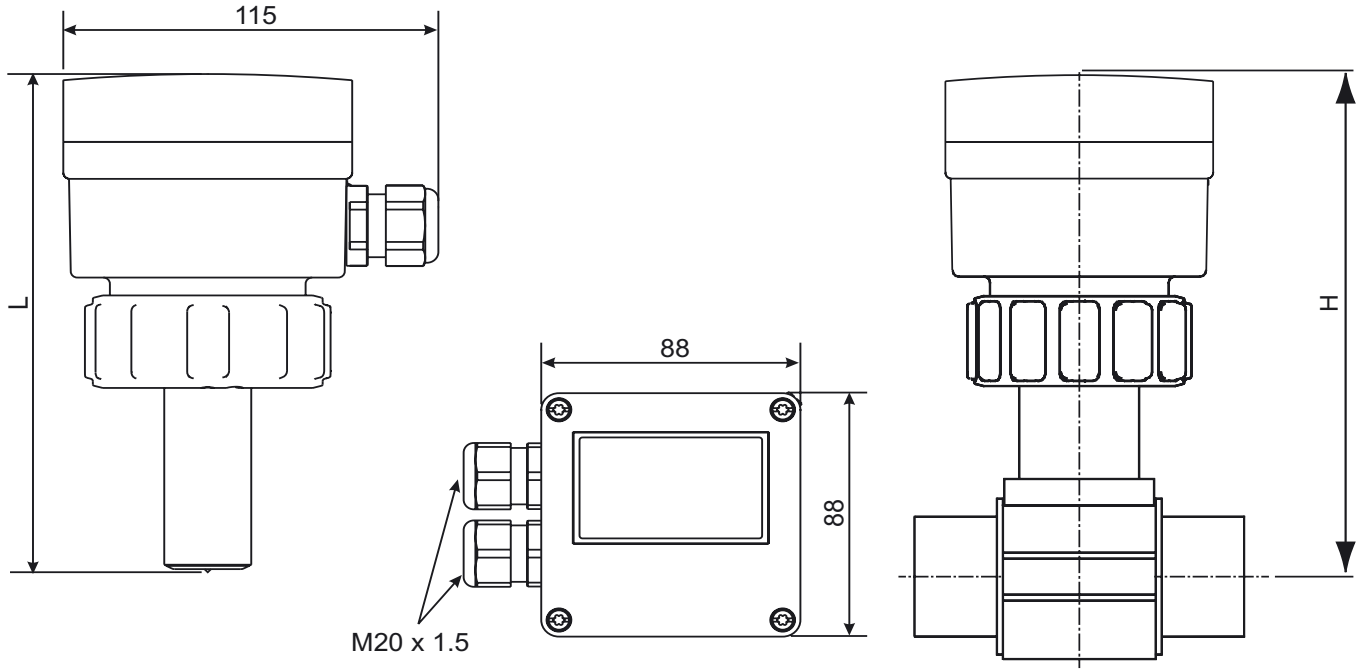
Connection	**Terminal assignment**
Supply voltage DC 11.5 to 36 V	2 L+ 3 L-
Output 4 to 20 mA, three wires	1 L+ max. 1100 Ω at 36 V DC 3 L- max. 330 Ω at 18 V DC
Output Frequency pulse	5 Pls+ 6 Pls-
Equipotential bonding PE	4
Screen	4
Relay	

Terminal assignment

(1) Connection terminals
(2) Green display
(3) Red display
(4) Bar graph
(5) DIP switch for configuration
(6) Button
(7) Relay connection
(9) Switch: Sink / source



Dimensions



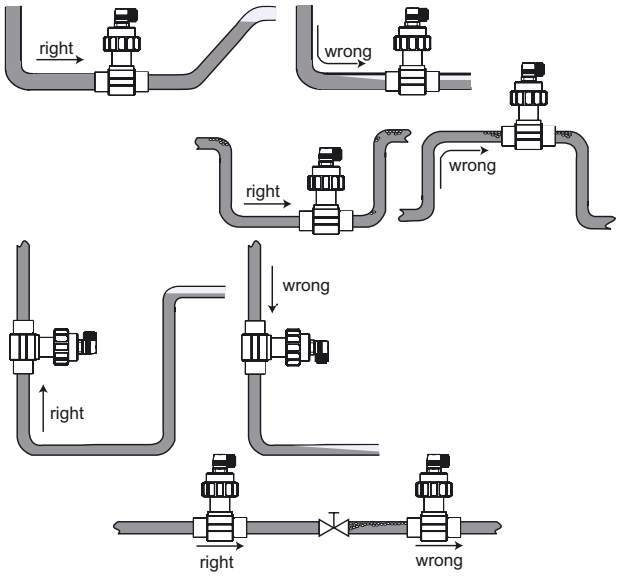
Tube diameter DN	L	H Built into T fitting	Tube diameter DN	L	H Built into welded adapter
15	162	168	65	199	187
20		166	80		193
25		166	100		200
32		169	125		235
40		173	150		242
50		179	200		263
			250		281
			300		293
			350		306
			400		321

Note: suitable fittings can be found in Data Sheet 406090.

Mounting

Installation

To ensure accurate flow measurements, the flow transmitter of type 406010 must be installed in vertical or horizontal tubing.

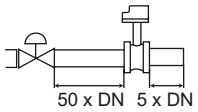


Minimum inlet and outlet distances

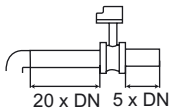
To eliminate turbulence in the tubing, the minimum inlet and outlet distances must be observed.
To ensure greater accuracy, the length of these zones for eliminating turbulence can be increased.
For additional information see EN ISO 5167-1.

The direction of flow is from left to right.

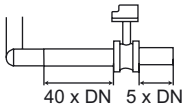
DN = Nominal tube width.



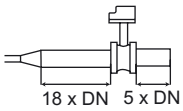
Control valve



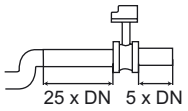
1 x 90° elbow or T piece



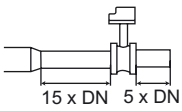
2 x 90° elbow Three-dimensional



Extension



2 x 90° elbow

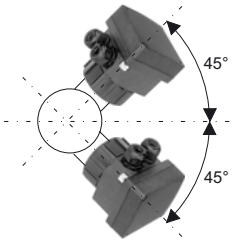


Reduction

Note: 45° angle installation position

We recommend installing the flow rate transmitter at an angle of 45° to the central axis of the tube!

This will largely prevent accumulation from forming on the electrodes and measurement errors due to air bubbles.



Mounting recommendation

Fittings for flow rate sensors - see Data Sheet 406090

PVC and stainless steel T fitting 	**Nominal flow rate width** DN15 to DN50	**Sensor version (basic type extension)** Short sensor
PE welded adapter 	**Nominal flow rate width** DN65 to DN100 DN125 to DN400	**Sensor version (basic type extension)** Short sensor Long sensor
Stainless steel welded adapter with radius 	**Nominal flow rate width** DN50 to DN200 DN250 to DN350	**Sensor version (basic type extension)** Short sensor Long sensor
PP connecting clamps 	**Nominal flow rate width** DN50 to DN200	**Sensor version (basic type extension)** Long sensor

Information for ordering: MID flow transmitter

(1) Basic type
406010 MID flow transmitter

(2) Basic type extension
001 Short sensor[1]
002 Long sensor[1]

(3) Output
406 4 to 20 mA, three wires

(4) Electrical connection
82 Cable gland

(5) Extra codes
000 None

	(1)		(2)		(3)		(4)		(5)
Order code		/		-		-		/	
Sample order	406010	/	001	-	406	-	82	/	000

[1] See "Mounting recommendation" table above.