

Flow Measurement

SITRANS F US Inline

Flowmeter SITRANS FUS380 standard

Overview



The 2-path flowmeter SITRANS FUS380 comes as battery or mains-powered and is designed to measure water flow in district heating plants, local networks, boiler stations, substations, chiller plants and other general water applications.

The type-approved flowmeter version is named SITRANS FUE380 - see page 3/279.

Technically, the meter types SITRANS FUS380 and SITRANS FUE380 are completely identical, only difference is the calibration limit and the type approval for custody transfer.

Benefits

- Battery-powered up to 6 years
- 115/230 V mains-powered with back-up battery option in case of mains power failure
- Fast measuring frequency 15 Hz/0.5 Hz (230 V AC/Battery)
- Easy one-button straight forward display
- 2-path measuring principle for optimum accuracy
- Compact or remote mounting
- Measures on most district water qualities and water conductivities
- No pressure drop
- Long-term stability
- 2 galvanically isolated digital outputs for easy connection to a calculator (potential-free)
- Bidirectional measurement, with 2 totalizers and outputs
- Dynamic range Q_1 (min) : Q_5 (max) up to 1:400

Application

The main application for SITRANS FUS380 is measurement of water flow or water flow in energy meter systems in district heating networks or chilled water.

Design

The 2-path design of SITRANS FUS380 ensures maximum accuracy under short inlet conditions. The flowmeter consists of a flow sensor pipe, 4 transducers/transducer cables and a transmitter SITRANS FUS080.

The unit is available in a compact or a remote version with up to 30 meter distance from flowmeter to transmitter. When ordering a compact version the transducer cables are pre-mounted and ready for installation.

Compact mounting is only possible up to 120 °C (248 °F). The sensor must be isolated to protect transmitter from heat. The transmitter is available in an IP67/NEMA 4X/6 enclosure.

Integration

The flowmeter digital output is often used as input for an energy meter or as input for digital systems for remote reading.

SITRANS FUS380 has two digital output functions that can be individually selected.

Pulse output rate is defined when ordering. To get optimal benefit the pulse value must be selected as low as possible.

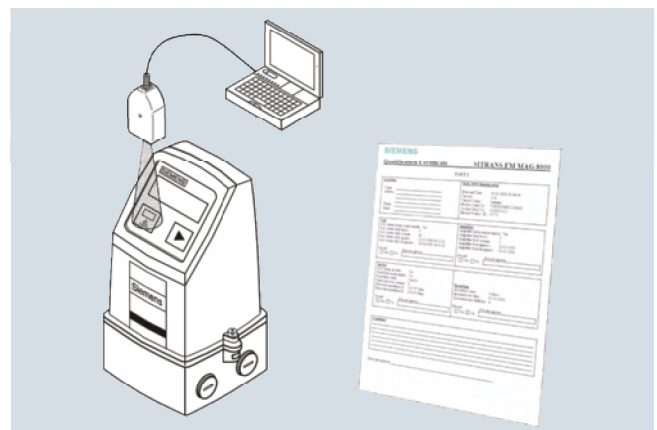
If the flowmeter forms part of an energy meter system for custody transfer, no further approvals are needed, except possible local approvals on the flowmeter.

Function

Together with the SIMATIC PDM tool the FUS380 offers the possibility of testing and verifying the flowmeter on site and creating a printed "Qualification Certificate" with specific data that defines the quality status of the measurement.

The Qualification Certificate shows information about the actual status of the flowmeter:

- General settings, flowmeter and battery information, totalizer values, and pulse output settings
- Detailed information about the transmitter and the sensor functionality, and a main parameter list for evaluating the functionality of the flowmeter



Configuration SITRANS FUS380

Selection guide SITRANS FUS380, standard version

DN	Q _s (m ³ /h)	Q _{max} (m ³ /h) (105 % of Q _s)	Q _p (m ³ /h)	Q _i (m ³ /h) (1:100 of Q _p)	Cut-off (m ³ /h)	Cut-off (% of Q _{max})	Typical pulse value ¹⁾ (l/pulse)
50	15	15.75	15	0.15	0.075	0.48	1
50	45	47.25	15	0.15	0.075	0.16	1
50	45	47.25	30	0.3	0.150	0.32	1
65	25	26.25	25	0.25	0.125	0.48	1
65	72	75.6	25	0.25	0.125	0.17	1
65	72	75.6	50	0.5	0.250	0.33	1
80	40	42	40	0.4	0.200	0.48	2.5
80	120	126	40	0.4	0.200	0.16	2.5
80	120	126	80	0.8	0.400	0.32	2.5
100	60	63	60	0.6	0.300	0.48	2.5
100	180	189	60	0.6	0.300	0.16	2.5
100	240	252	120	1.2	0.600	0.24	2.5
125	10	10.5	100	1	0.500	4.76	2.5
125	280	294	100	1	0.500	0.17	2.5
125	400	420	200	2	1.000	0.24	2.5
150	150	157.5	150	1.5	0.750	0.48	10
150	420	441	150	1.5	0.750	0.17	10
150	560	588	300	3	1.500	0.26	10
200	250	262.5	250	2.5	1.250	0.48	10
200	700	735	250	2.5	1.250	0.17	10
200	900	945	500	5	2.500	0.26	10
250	400	420	400	4	2.000	0.48	10
250	1120	1176	400	4	2.000	0.17	10
250	1400	1470	800	8	4.000	0.27	10
300	560	588	560	5.6	2.800	0.48	50
300	1560	1638	560	5.6	2.800	0.17	50
300	2100	2205	1120	11.2	5.600	0.25	50
350	750	787.5	750	7.5	3.750	0.48	50
350	2100	2205	750	7.5	3.750	0.17	50
350	2800	2940	1500	15	7.500	0.26	50
400	950	997.5	950	9.5	4.750	0.48	50
400	2660	2793	950	9.5	4.750	0.17	50
400	3600	3780	1900	19	9.500	0.25	50
500	1475	1548.75	1475	14.75	7.375	0.48	100
500	4130	4336.5	1475	14.75	7.375	0.17	100
500	5500	5775	2950	29.5	14.750	0.26	100
600	2150	2257.5	2150	21.5	10.750	0.48	100
600	6020	6321	2150	21.5	10.750	0.17	100
600	8000	8400	4300	43	21.500	0.26	100
700	2900	3045	2900	29	14.500	0.48	100
700	8120	8526	2900	29	14.500	0.17	100
700	10 800	11 340	5800	58	29.000	0.26	100
800	3800	3990	3800	38	19.000	0.48	100
800	10 640	11 172	3800	38	19.000	0.17	100
800	14 200	14 910	7600	76	38.000	0.25	100
900	5000	5250	3800	38	19.000	0.36	100
900	14 000	14 700	5000	50	25.000	0.17	100
900	20 000	21 000	5000	50	25.000	0.12	100
1000	6000	6300	3800	38	19.000	0.30	100
1000	16 800	17 640	6000	60	30.000	0.17	100
1000	24 000	25 200	12 000	120	60.000	0.24	100
1200	9000	9450	3800	38	19.000	0.20	100
1200	25 200	26 460	9000	90	45.000	0.17	100
1200	36 000	37 800	18 000	180	90.000	0.24	100

The values Q_i, Q_p and Q_s are shown on the system label of the FUS380. Q_i (Q_{min}) means the minimal and Q_p (Q_{nom}) the nominal flow rate. Q_s is the highest operatable flow rate. The maximum flow rate (Q_{max}) is 105 % of Q_s. The low flow cut-off is 50 % of Q_i.

In order to obtain best pulse output resolution in the range Q_{min} to Q_s of approx. 100 Hz at Q_s, two or three flow values for every dimension can be selected at ordering. Therefore the ordering data table also shows Q_p (Q_n). This flow rate is between Q_i (Q_{min}) and Q_s and indicates the normal or typical flow.

To get optimal benefit of the pulses the pulse value and pulse length shall be selected as low as possible. The following calculation formula can be used for determining the shortest pulse value at a pulse length of 5 ms: L/pulse > Q_s (m³/h) / 360.

For example Q_s = 300 m³/h; L/pulse > 300/360; L/pulse > 0.83; therefore the pulse value must be 1 l/pulse

¹⁾ Typical pulse values for SITRANS FUS380 with pulse length 5 ms. Other values are possible - please see the selections at the 7ME340 Order codes.

Flow Measurement

SITRANS F US Inline

Flowmeter SITRANS FUS380 standard

Technical specifications

Sensor design	2-path sensor with flanges and inline transducers wet-calibrated from factory
Nominal size (DN 50 ... DN 80 in bronze)	DN 50, 65, 80, 100, 125, 150, 200, 250, 300, 350, 400, 500, 600, 700, 800, 900, 1000, 1200
Pressure rate	PN 16, PN 25, PN 40 EN 1092-1
Pipe material	<ul style="list-style-type: none"> DN 100 ... DN 1200: Carbon Steel EN 1.0345/P235 GH, painted in light-gray. DN 50 ... 80: Die-cast bronze G-CuSn10/W2.1050.01 (EN 1982)
Transducer design	<ul style="list-style-type: none"> DN 100 ... DN 1200: In-line version and welded onto the pipe DN 50 ... DN 80: Screwed into the pipe
Transducer material	Stainless steel (AISI 316/1.4404)/brass (CuZn ₃₆ Pb ₂ As)

Sensor operating conditions

Ambient temperature	
• Operation	-10 ... +60 °C (14 ... 140 °F) (MID version: -10 ... +55 °C (14 ... 131 °F))
• Storage	-40 ... +85 °C (-40 ... +185 °F)
Measured media	Heating water, according to VDI-2035 (pH 8.2 - 10.5), industrial VdTUV information sheet 1466 and AGFW information sheet FW 510.
Media/surface temperature	DN 100 ... DN 1200: • Remote: 2 ... 200 °C (35.6 ... 392 °F) DN 50 ... DN 80: • Remote: 2 ... 150 °C (35.6 ... 302 °F) DN 50 ... DN 1200: • Compact: 2 ... 120 °C (35.6 ... 248 °F)
Degree of protection	Sensor connection IP67/NEMA 4X/6
Max. flow velocity	DN 50 ... DN 1200: 9 m/s (29.5 ft/s)
Electromagnetic compatibility	
• Emitted interference	To EN 55011/CSPRI-11
• Noise immunity	To EN/IEC 61236-1 (Industry)

Transmitter

The transmitter related to this system is the SITRANS FUS080. Technical specifications to the FUS080 see page 3/240 ff.

Sensor cable

Cable length	Max. 30 m (98.4 ft) between transmitter and sensor
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Certificates and approvals

Conformity certificate	The devices are supplied as standard with a Siemens Certificate of Conformity on CD
Material certificate	Material certificate according EN 3.1 is optionally available
Calibration report	A standard calibration report is shipped with every flowmeter. Extended accredited ISO/IEC 17025 calibration certificates optionally available
Approvals	No custody transfer approvals

The sensors are approved according to EU directive 97/23/EC dated 29 May 1997 regarding fluid group 1, classified in category III. Design according to EN 13480 (PED Directive).

SITRANS FUS380 uncertainty

	FUS380
Flow value setting	Predefined settings according to dimension
Approval	No approval
Flow rate v_f	0.02 ... 9 m/s (0.065 ... 29.5 ft/s)
Output A	Pulse: forward, reverse, forward net, reverse net (Preset: forward)
Output B	Pulse (forward, reverse, forward net, reverse net, alarm, call-up (Preset: alarm))
Pulse value A & B (depending on DN value)	0.1 l/p, 0.25 l/p, 0.5 l/p, 1 l/p, 2.5 l/p, 10 l/p, 25 l/p, 50 l/p, 100 l/p, 250 l/p, 500 l/p, 1 m ³ /p, 2.5 m ³ /p, 5 m ³ /p, 10 m ³ /p, 25 m ³ /p, 50 m ³ /p, 100 m ³ /p, 250 m ³ /p, 500 m ³ /p, 1000 m ³ /p
Pulse width	5/10/20/50/100/200/500 ms
Flow unit setup	Preset: m ³ /h
Volume unit setup	Preset: m ³

Flowmeter Calibration and traceability

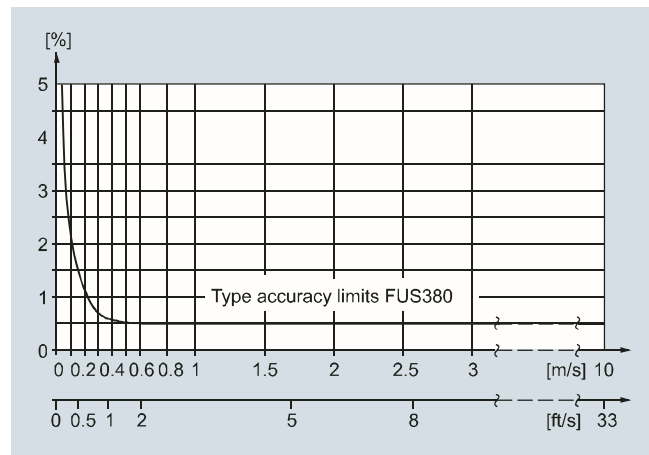
To ensure continuous accurate measurement, flowmeters must be calibrated. The calibration is conducted at Siemens flow facilities with traceable instruments referring directly to the physical unit of measurement according to the International System of Units (SI).

Therefore, the calibration certificate ensures recognition of the test results worldwide, including the US (NIST traceability). Siemens offers accredited calibrations assured to ISO 17025 in the flow range from 0.0001 m³/h to 10 000 m³/h. Siemens Flow Instruments accredited laboratories are recognized by ILAC MRA (International Laboratory Accreditation Corporation - Mutual Recognition Arrangement) ensuring international traceability and recognition of the test results worldwide.

A standard calibration certificate with Q_n as selected flow is shipped with each SITRANS FUS380. This production calibration protocol consists of 2 x 3 points at Q_i , 10 % Q_p and Q_p (max. 4 200 m³/h).

Accuracy SITRANS FUS380:

$\pm 0.5\%$ for $0.5 \text{ m/s} < v < 10 \text{ m/s}$ and $\pm 0.25/\sqrt{v_{\text{act}}}$ [%] below 0.5 m/s



Flow Measurement

SITRANS F US Inline

Flowmeter SITRANS FUS380 standard

Selection and Ordering data		Article-No.	Order code
Flowmeter SITRANS FUS380 (standard)		7ME3400-	
		0 - A	
Diameter	Flow setting [m ³ /h] Q _p (Q _n) ¹ Q _s		
DN 50 (2") ²	15 15	1 A	
DN 50 (2") ²	15 45	1 C	
DN 50 (2") ²	30 45	1 D	
DN 65 (2½") ²	25 25	1 E	
DN 65 (2½") ²	25 72	1 G	
DN 65 (2½") ²	50 72	1 H	
DN 80 (3") ²	40 40	1 J	
DN 80 (3") ²	40 120	1 L	
DN 80 (3") ²	80 120	1 M	
DN 100 (4")	60 60	1 N	
DN 100 (4")	60 180	1 Q	
DN 100 (4")	120 240	1 R	
DN 125 (5")	100 100	1 S	
DN 125 (5")	100 280	1 U	
DN 125 (5")	200 400	1 V	
DN 150 (6")	150 150	2 A	
DN 150 (6")	150 420	2 C	
DN 150 (6")	300 560	2 D	
DN 200 (8")	250 250	2 E	
DN 200 (8")	250 700	2 G	
DN 200 (8")	500 900	2 H	
DN 250 (10")	400 400	2 J	
DN 250 (10")	400 1120	2 L	
DN 250 (10")	800 1400	2 M	
DN 300 (12")	560 560	2 N	
DN 300 (12")	560 1560	2 Q	
DN 300 (12")	1120 2100	2 R	
DN 350 (14")	750 750	2 S	
DN 350 (14")	750 2100	2 U	
DN 350 (14")	1500 2800	2 V	
DN 400 (16")	950 950	3 A	
DN 400 (16")	950 2660	3 C	
DN 400 (16")	1900 3600	3 D	
DN 500 (20")	1475 1475	3 J	
DN 500 (20")	1475 4130	3 L	
DN 500 (20")	2950 5500	3 M	
DN 600 (24")	2150 2150	3 S	
DN 600 (24")	2150 6020	3 U	
DN 600 (24")	4300 8000	3 V	
DN 700 (28")	2900 2900	4 E	
DN 700 (28")	2900 8120	4 G	
DN 700 (28")	5800 10 800	4 H	
DN 800 (32")	3800 3800	4 N	
DN 800 (32")	3800 10 640	4 Q	
DN 800 (32")	7600 14 200	4 R	
DN 900 (36")	5000 5000	5 A	
DN 900 (36")	5000 14 000	5 C	
DN 900 (36")	10000 20 000	5 D	
DN 1000 (40")	6000 6000	5 J	
DN 1000 (40")	6000 16 800	5 L	
DN 1000 (40")	12 000 24 000	5 M	
DN 1200 (48")	9000 9000	5 S	
DN 1200 (48")	9000 25 200	5 U	
DN 1200 (48")	18 000 36 000	5 V	

This device is shipped with a Quick Start guide and the SITRANS F manual CD containing the complete manual library. Printed Operating Instructions are available for purchase via PMD.

Selection and Ordering data		Article-No.	Order code
Flowmeter SITRANS FUS380 (standard)		7ME3400-	
		0 - A	
Flange norm and pressure rating			
System without sensor - only a transmitter FUS080 as spare part - settings as defined with this Article No.		A	
EN 1092-1 Flanges			
• PN 16 (DN 100 ... DN 1200)		C	
• PN 25 (DN 200 ... DN 1000)		D	
• PN 40 (DN 50 ... DN 250) ³		E	
Compact/remote connection			
Compact version, max. 120 °C (248 °F)		0	
Remote version, max. 150/200 °C (302/392 °F)			
• 5 m (16.4 ft)		2	
• 10 m (32.8 ft)		3	
• 20 m (65.6 ft)		4	
• 30 m (98.4 ft)		5	
Pulse output value setup ⁵⁾			
0.1 l/p		1	
1 l/p		2	
2.5 l/p		3	
10 l/p		4	
50 l/p		5	
100 l/p		6	
250 l/pulse		7	
1 m ³ /pulse		8	
0.25 l/pulse		9	NOA
0.5 l/pulse		9	NOB
5 l/pulse		9	NOC
25 l/pulse		9	NO D
500 l/pulse		9	NO E
2.5 m ³ /pulse		9	NO F
5 m ³ /pulse		9	NO G
10 m ³ /pulse		9	NO H
25 m ³ /pulse		9	NO J
50 m ³ /pulse		9	NO K
100 m ³ /pulse		9	NO L
250 m ³ /pulse		9	NO M
500 m ³ /pulse		9	NO N
1000 m ³ /pulse		9	NO P
Transmitter version of SITRANS FUS080			
IP67/NEMA 4X/6 115 ... 230 V AC		B	
IP67/NEMA 4X/6 3.6 V battery version, incl. dual battery pack ⁴⁾		D	
IP67/NEMA 4X/6 115 ... 230 V AC, including 3.6 V single battery backup ⁴⁾		E	
IP67/NEMA 4X/6 3.6 V battery version (no battery pack included)		G	
Pulse width setup			
5 ms (standard)		2	
10 ms		3	
20 ms		4	
50 ms		5	
100 ms		6	
200 ms		7	
500 ms		8	

1) Q_p (Q_n) is the normal or typical flow. Q_p and Q_s is shown on the system label.

2) Pipe material bronze brass.

3) PN 40 standard for DN 50 ... DN 80 die-cast bronze pipes.

4) Lithium batteries are subject to special transportation regulations according to United Nations "Regulation of Dangerous Goods, UN 3090 and UN 3091". Special transport documentation is required to observe these regulations. This may influence both transport time and costs.

5) To get optimal benefit of the pulses the pulse value and pulse length shall be selected as low as possible. The following calculation formula can be used for determining the shortest pulse value at a pulse length of 5 ms:
 $L/\text{pulse} > Q_s (\text{m}^3/\text{h}) / 360$
 For example $Q_s = 300 \text{ m}^3/\text{h}$; $L/\text{pulse} > 300/360$;
 $L/\text{pulse} > 0.83$; therefore the pulse value must be 1 l/pulse

Flow Measurement

SITRANS F US Inline

Flowmeter SITRANS FUS380 standard

Selection and Ordering data

Additional information

Please add „-Z“ to Article No. and following add-on code(s) with plain text.

Calibration/certificate FUS380

Production calibration for DN 50 ... DN 1200 with Q_n as selected in diameter. Incl. Calibration protocol: 2 x 3 points, Q_1 , 10 %, Q_p and Q_p (max. 8000 m³/h).

Accredited Siemens ISO/IEC 17025 calibration for DN 50 ... DN 200 with Q_n as selected in diameter. Certificate: 2 x 5 points, Q_1 , 5 %, 10 %, 50 % and 100 % of Q_p (max. 630 m³/h).

Accredited Siemens ISO/IEC 17025 calibration for DN 250 ... DN 600 with Q_n as selected in diameter. Certificate: 2 x 5 points, 5 %, 10 %, 50 % and 100 % of Q_p (max. 2800 m³/h).

Accredited Siemens ISO/IEC 17025 calibration, DN 500 ... DN 1200 with Q_n as selected in diameter. Certificate: 2 x 5 points, Q_1 , 5 %, 10 %, 50 % and 100 % of Q_p (max. 8000 m³/h).

Output B as reverse flow pulses.
No calibration/verification of this function.

Material certificate

EN 10204-3.1 (pipe material)

Tag name plate

Stainless steel TAG plate (1 x 24 x 80 mm), wire fixed. Font size depends on text length: 8 mm for 1 ... 10 characters, 4 mm for 11 ... 20 characters (specify in plain text).

Order code

Included

D20

D21

D22

E21

F10

Y17

Flowmeter SITRANS FUS380 operating instructions, accessories and spare parts

Operating instructions

Description	Article No.
• English	A5E00730100
• German	A5E00740611
• Spanish	A5E00754188
• French	A5E00754173

This device is shipped with a Quick Start guide and a CD containing further SITRANS F US literature.

All literature is also available for free at:
<http://www.siemens.com/flowdocumentation>

For accessories and spare parts see chapter of transmitter SITRANS FUS080/FUE080 on page 3/243.

Please use online Product selector to get latest updates. Product selector link:

www.pia-selector.automation.siemens.com



Flow Measurement

SITRANS F US Inline

Flowmeter SITRANS FUE380 with CT approval

Overview



The 2-path flowmeter SITRANS FUE380 comes as battery or mains-powered and is designed to measure water flow in district heating plants, local networks, boiler stations, substations, chiller plants and other general water applications.

The flowmeter FUE380 is approved according to energy meter standards EN 1434 class 2, OIML R 75 class 2 and MID class 2. Metrological parameters are protected against manipulation. The type-approved flowmeter version is named SITRANS FUE380. For a standard flowmeter type FUS380 without a type approval, see separate FUS380 chapter.

Technically, the meter types SITRANS FUS380 and SITRANS FUE380 are completely identical, only difference is the calibration limit and the type approval for custody transfer.

Benefits

- Battery-powered up to 6 years
- 115/230 V mains-powered with back-up battery option in case of mains power failure
- Fast measuring frequency 15 Hz/0.5 Hz (230 V AC/Battery)
- Easy one-button straight forward display
- 2-path measuring principle for optimum accuracy
- Compact or remote mounting
- Measures on most district water qualities and water conductivities
- No pressure drop
- Long-term stability
- 2 galvanically isolated digital outputs for easy connection to a calculator (potential-free)
- Bidirectional measurement, with 2 totalizers and outputs
- Dynamic range $Q_i:Q_p$ up to 1:50/100 or max. range $Q_i:Q_s$ up to 1:400

Application

The main application for SITRANS FUE380 is measurement of water flow or water flow in energy meter systems for custody transfer in district heating networks or chilled water.

Combined with an energy calculator and a pair of temperature sensors, SITRANS FUE380 can be used as part of an energy meter system. For this purpose Siemens offers energy calculator SITRANS FUE950.

Design

The 2-path design of SITRANS FUE380 ensures maximum accuracy under short inlet conditions. The approved flowmeter con-

sists of a flow sensor pipe, 4 transducers/transducer cables and a transmitter SITRANS FUE080.

The unit is available in a compact or a remote version with up to 30 meter distance from flowmeter to transmitter. When ordering a compact version the transducer cables are pre-mounted and ready for installation.

Compact mounting is only possible up to 120 °C (248 °F). The sensor must be isolated to protect transmitter from heat. The transmitter is available in an IP67/NEMA 4X/6 enclosure.

FUE380 MI-004 approval

The SITRANS FUE380 program is type-approved according to international energy meter standard EN 1434. On 1 November 2006 the MI-004 energy meter directive became effective providing that all energy meters with a MI-004 verification label can be sold across the EU borders.

The FUE380 are MI-004 verified and labeled products according to Directive 2004/22/EC of the European Parliament and Council of March 31, 2004 on measuring instruments (MID), Annex MI-004, in sizes from DN 50 to DN 1200.

The MID certification is obtained as module B + module D approvals according to the above-mentioned directive.

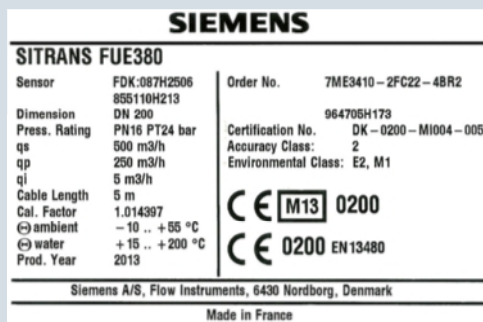
Module B: MI-004 Type MID approval according to EN 1434: 2007

Module D: Quality insurance MID approval of production

The MID system label with the approval information is placed on the side of the transmitter and on the sensor. An example of the product label is shown below:



FUE380 transmitter label (with MID first verification)



FUE380 sensor label (with MID first verification)

Flow Measurement

SITRANS F US Inline

Flowmeter SITRANS FUE380 with CT approval

Integration

The flowmeter digital output is often used as input for an energy meter or as input for digital systems for remote reading.

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Pulse output rate is defined when ordering. To get optimal benefit the pulse value must be selected as low as possible.

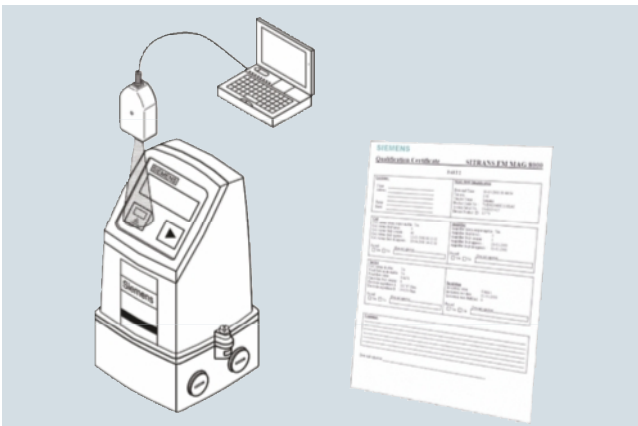
If the flowmeter forms part of an energy meter system for custody transfer, no further approvals are needed, except possible local approvals on the flowmeter.

Function

Together with the SIMATIC PDM tool the FUE380 offers the possibility of testing and verifying the flowmeter on site and creating a printed "Qualification Certificate" with specific data that defines the quality status of the measurement.

The Qualification Certificate shows information about the actual status of the flowmeter:

- general settings, flowmeter and battery information, totalizer values, and pulse output settings
- detailed information about the transmitter and the sensor functionality, and a main parameter list for evaluating the functionality of the flowmeter



Configuration SITRANS FUE380 type-approved

Selection guide SITRANS FUE380, type-approved flowmeter

DN	Q _s (m ³ /h)	Q _{max} (m ³ /h) (105 % of Q _s)	Q _p (m ³ /h)	Q _i (m ³ /h) (1:50 of Q _p) ⁴⁾	Q _i (m ³ /h) (1:100 of Q _p) ⁴⁾	Cut-off (m ³ /h)	Cut-off (% of Q _{max})	Typical pulse value ⁵⁾ (l/pulse)
50	30	31.5	15 ²⁾	0.3	0.15	0.075	0.24	1
50	45	47.25	15 ²⁾	0.3	0.15	0.075	0.16	1
50	45	47.25	30 ³⁾	-	0.30	0.150	0.32	1
65	50	52.5	25 ²⁾	0.5	0.25	0.125	0.24	1
65	72	75.6	25 ²⁾	0.5	0.25	0.125	0.17	1
65	72	75.6	50 ³⁾	-	0.50	0.250	0.33	1
80	80	84	40 ²⁾	0.8	0.40	0.200	0.24	2.5
80	120	126	40 ²⁾	0.8	0.40	0.200	0.16	2.5
80	120	126	80 ³⁾	-	0.80	0.400	0.32	2.5
100	120	126	60 ²⁾	1.2	0.60	0.300	0.24	2.5
100	180	189	60 ²⁾	1.2	0.60	0.300	0.16	2.5
100	180	189	120 ³⁾	-	1.20	0.600	0.32	2.5
125	200	210	100 ²⁾	2.0	1.00	0.500	0.24	2.5
125	280	294	100 ²⁾	2.0	1.00	0.500	0.17	2.5
125	280	294	200 ³⁾	-	2.00	1.000	0.34	2.5
150	300	315	150 ²⁾	3.0	1.50	0.750	0.24	10
150	420	441	150 ²⁾	3.0	1.50	0.750	0.17	10
150	420	441	300 ³⁾	-	3.00	1.500	0.34	10
200	500	525	250 ²⁾	5.0	2.50	1.250	0.24	10
200	700	735	250 ²⁾	5.0	2.50	1.250	0.17	10
200	700	735	500 ³⁾	-	5.00	2.500	0.34	10
250	800	840	400 ²⁾	8.0	4.00	2.000	0.24	10
250	1120	1176	400 ²⁾	8.0	4.00	2.000	0.17	10
250	1120	1176	800 ³⁾	-	8.00	4.000	0.34	10
300	1120	1176	560 ²⁾	11.2	5.60	2.800	0.24	50
300	1560	1638	560 ²⁾	11.2	5.60	2.800	0.17	50
300	1560	1638	1120 ³⁾	-	11.20	5.600	0.34	50
350	1500	1575	750 ²⁾	15.0	7.50	3.750	0.24	50
350	2100	2205	750 ²⁾	15.0	7.50	3.750	0.17	50
350	2100	2205	1500 ³⁾	-	15.00	7.500	0.34	50
400	1900	1995	950 ²⁾	19.0	9.50	4.750	0.24	50
400	2660	2793	950 ²⁾	19.0	9.50	4.750	0.17	50
400	2660	2793	1900 ³⁾	-	19.00	9.500	0.34	50
500	2950	3097.5	1475 ²⁾	29.5	14.75	7.375	0.24	100
500	4130	4336.5	1475 ²⁾	29.5	14.75	7.375	0.17	100
500	4130	4336.5	2950 ³⁾	-	29.50	14.750	0.34	100
600	4300	4515	2150 ²⁾	43.0	21.50	10.750	0.24	100
600	6020	6321	2150 ²⁾	43.0	21.50	10.750	0.17	100
600	6020	6321	4300 ³⁾	-	43.00	21.500	0.34	100
700	5800	6090	2900 ²⁾	58.0	29.00	14.500	0.24	100
700	8120	8526	2900 ²⁾	58.0	29.00	14.500	0.17	100
700	8120	8526	5800 ³⁾	-	58.00	29.000	0.34	100
800	7600	7980	3800 ²⁾	76.0	38.00	19.000	0.24	100
800	10 640	11 172	3800 ²⁾	76.0	38.00	19.000	0.17	100
800	10 640	11 172	7600 ³⁾	-	76.00	38.000	0.34	100
900	10 000	10 500	5000 ²⁾	100.0	50.00	25.000	0.24	100
900	14 000	14 700	5000 ²⁾	100.0	50.00	25.000	0.17	100
900	14 000	14 700	10 000 ³⁾	-	100.00	50.000	0.34	100

Flow Measurement

SITRANS F US Inline

Flowmeter SITRANS FUE380 with CT approval

DN	Q _s (m ³ /h)	Q _{max} (m ³ /h) (105 % of Q _s)	Q _p (m ³ /h)	Q _i (m ³ /h) (1:50 of Q _p) ⁴⁾	Q _i (m ³ /h) (1:100 of Q _p) ⁴⁾	Cut-off (m ³ /h)	Cut-off (% of Q _{max})	Typical pulse value ⁵⁾ (l/pulse)
1000	12 000	12 600	6000 ²⁾	120.0	60.00	30.000	0.24	100
1000	16 800	17 640	6000 ²⁾	120.0	60.00	30.000	0.17	100
1000	16 800	17 640	12 000 ³⁾	-	120.00	60.000	0.34	100
1200	18 000	18 900	9000 ²⁾	180.0	90.00	45.000	0.24	100
1200	25 200	26 460	9000 ²⁾	180.0	90.00	45.000	0.17	100
1200	25 200	26 460	18 000 ³⁾	-	180.00	90.000	0.34	100

Dynamic range Q_i:Q_p: better than 1:100 or 1:50 according to OIML R 75 class 2 and MID EN 1434 class 2.

Q_i (Q_{min}) means the minimal and Q_p (Q_{nom}) the nominal flow rate according to the approval requirements.

Q_s is the highest operatable flow rate. The maximum flow rate (Q_{max}) is 105 % of Q_s. The low flow cut-off is 50 % of Q_i.

Q_i, Q_p and Q_s are shown on the system nameplate of the FUE380.

In order to obtain best pulse output resolution in the range Q_{min} to Q_s of approx. 100 Hz at Q_s, two or three flow values for every dimension can be selected at ordering. Therefore the ordering data table also shows Q_p (Q_n). This flow rate is between Q_i (Q_{min}) and Q_s and indicates the normal or typical flow according to the approval requirements.

- 1) Typical pulse values with a pulse length of 5 ms in connection with SITRANS FUE950. Other values are possible, please see the selections at the 7ME341 Order code.
- 2) EN 1434 and MID flow values
- 3) OIML R 75 and MID flow values
- 4) The minimum flow (Q_i) should be checked in the PIA-selector or product master data base (PMD)
- 5) To get optimal benefit of the pulses the pulse value and pulse length shall be selected as low as possible. The following calculation formula can be used for determining the shortest pulse value at a pulse length of 5 ms: $L/pulse > Q_s (m^3/h) / 360$.
For example Q_s = 300 m³/h; $L/pulse > 300/360$; $L/pulse > 0.83$; therefore the pulse value must be 1 l/pulse

Flow Measurement SITRANS F US Inline

Flowmeter SITRANS FUE380 with CT approval

Technical specifications

Pipe design	2-path sensor with flanges and inline transducers wet-calibrated from factory
Nominal size welded version (DN 50 ... DN 80 in bronze)	DN 50, 65, 80, 100, 125, 150, 200, 250, 300, 350, 400, 500, 600, 700, 800, 900, 1000, 1200
Pressure rate	PN 16, PN 25, PN 40 EN 1092-1
Pipe material	<ul style="list-style-type: none"> DN 100 ... DN 1200: Carbon Steel EN 1.0345/P235 GH, painted in light-gray. DN 50 ... DN 80: Die-cast bronze G-CuSn10/W2.1050.01 (EN 1982)
Transducer design	<ul style="list-style-type: none"> DN 100 ... DN 1200: Inline version and welded onto the pipe DN 50 ... DN 80: Screwed into the pipe
Transducer material	Stainless steel (AISI 316/1.4404)/brass (CuZn ₃₆ Pb ₂ As)
Sensor operating conditions	
Ambient temperature	
• Operation	-10 ... +60 °C (14 ... 140 °F) (MID version: -10 ... +55 °C (14 ... 131 °F))
• Storage	-40 ... +85 °C (-40 ... +185 °F)
Measured media	Heating water, according to VDI-2035 (pH 8.2 - 10.5), industrial VdTUV information sheet 1466 and AGFW information sheet FW 510.
Media/surface temperature	DN 100 ... DN 1200: • Remote: 2 ... 200 °C (35.6 ... 392 °F) MID: min. +15 °C/+59 °F DN 50 ... DN 80: • Remote: 2 ... 150 °C (35.6 ... 302 °F) MID: min. +15 °C/+59 °F DN 50 ... DN 1200: • Compact: 2 ... 120 °C (35.6 ... 248 °F) MID: min. +15 °C/+59 °F
Degree of protection	Sensor connection IP67/NEMA 4X/6
Electromagnetic compatibility	
• Emitted interference	To EN 55011/CISPR-11
• Noise immunity	To EN/IEC 61326-1 (Industry)
• MID	Environment class E2 and M1
Max. flow velocity at Q _s	DN 50 ... DN 1200: 9 m/s (29.5 ft/s)

Transmitter

The transmitter related to this system is the SITRANS FUE080.
Technical specifications to the FUE080 see page 3/240 ff.

Sensor cable

Cable length	Max. 30 m (98.4 ft) between transmitter and sensor
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Certificates and approvals

Conformity certificate	The devices are supplied as standard with a Siemens Certificate of Conformity on CD
Material certificate	Material certificate according EN 10204-3.1 is optionally available
Calibration report	A standard calibration report is shipped with every flowmeter. Extended accredited ISO/IEC 17025 calibration certificates optionally available

Approvals

- Approval standards: EN 1434 and OIML R 75 Class 2
- Type approval: MID, MI-004, class 2 approval and certification (according to EN 1434)

The sensors are approved according to EU directive 97/23/EC dated 29 May 1997 regarding fluid group 1, classified in category III. Design according to EN 13480 (PED Directive).

Type-dependent settings

Flow value	Predefined according to EN 1434/OIML R 75/MID
Approval	Country specific
Flow rate v _f	0.02 ... 9 m/s (0.065 ... 29.5 ft/s)
Output A	Preset: Forward pulses
Output B	Preset: Alarm
Pulse value A & B (depending on DN value)	Preset: See scheme - previous page Preset for SITRANS FUE950 or free selectable depending on flow rate (Q _s)
Pulse width	Preset: 5 ms
Flow unit setup	Preset: m ³ /h
Volume unit setup	Preset: m ³

Flowmeter Calibration and traceability

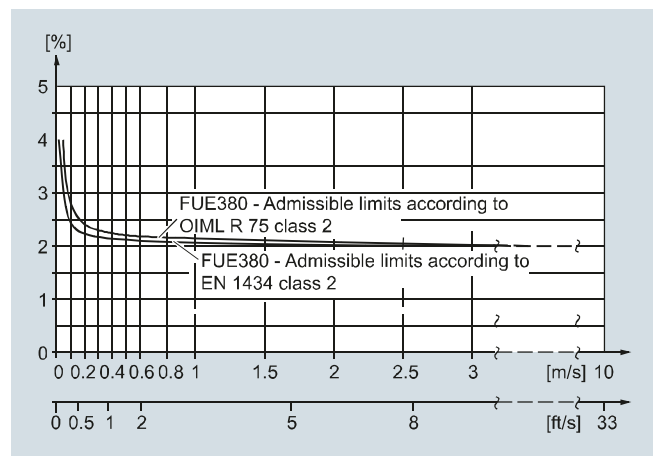
To ensure continuous accurate measurement, flowmeters must be calibrated. The calibration is conducted at Siemens flow facilities with traceable instruments referring directly to the physical unit of measurement according to the International System of Units (SI).

Therefore, the calibration certificate ensures recognition of the test results worldwide, including the US (NIST traceability). Siemens offers accredited calibrations assured to ISO 17025 in the flow range from 0.0001 m³/h to 10 000 m³/h. Siemens Flow Instruments accredited laboratories are recognized by ILAC MRA (International Laboratory Accreditation Corporation - Mutual Recognition Arrangement) ensuring international traceability and recognition of the test results worldwide.

A standard calibration certificate with Q_n as selected flow is shipped with each SITRANS FUE380. This production calibration protocol consists of 2 x 3 points at Q_i, 10 % Q_p and Q_p (max. 4 200 m³/h).

Typical accuracy SITRANS FUE380:

±(0.5 + 0.02 Q_p/Q) [%]
Q_p according to EN 1434/OIML requirements.
Example: DN 100, Q_p = 60 m³/h at Q = 1.2 m³/h:
Accuracy at 1.2 m³/h = typical 1.5 %



SITRANS FUE380 fulfils the requirements
E_f = ± (2 + 0.02 Q_p/Q_i) max. ± 5 %, according to EN 1434 and OIML R 75, class 2 or MID class 2 requirements.

Flow Measurement

SITRANS F US Inline

Flowmeter SITRANS FUE380 with CT approval

Selection and Ordering data

Article No. Order code

Flowmeter SITRANS FUE380
 (type-approved)

7ME 3 4 1 0 -

Diameter

Flow setting [m³/h]
Qp[m³/h]¹⁾ Qs [m³/h]

DN 50 (2") ²⁾	15 ³⁾	30	1 B
DN 50 (2") ²⁾	15 ³⁾	45	1 C
DN 50 (2") ²⁾	30 ⁴⁾	45	1 D
DN 65 (2½") ²⁾	25 ³⁾	50	1 F
DN 65 (2½") ²⁾	25 ³⁾	72	1 G
DN 65 (2½") ²⁾	50 ⁴⁾	72	1 H
DN 80 (3") ²⁾	40 ³⁾	80	1 K
DN 80 (3") ²⁾	40 ³⁾	120	1 L
DN 80 (3") ²⁾	80 ⁴⁾	120	1 M
DN 100 (4")	60 ³⁾	120	1 P
DN 100 (4")	60 ³⁾	180	1 Q
DN 100 (4")	120 ⁴⁾	180	1 R
DN 125 (5")	100 ³⁾	200	1 T
DN 125 (5")	100 ³⁾	280	1 U
DN 125 (5")	200 ⁴⁾	280	1 V
DN 150 (6")	150 ³⁾	300	2 B
DN 150 (6")	150 ³⁾	420	2 C
DN 150 (6")	300 ⁴⁾	420	2 D
DN 200 (8")	250 ³⁾	500	2 F
DN 200 (8")	250 ³⁾	700	2 G
DN 200 (8")	500 ⁴⁾	700	2 H
DN 250 (10")	400 ³⁾	800	2 K
DN 250 (10")	400 ³⁾	1120	2 L
DN 250 (10")	800 ⁴⁾	1120	2 M
DN 300 (12")	560 ³⁾	1120	2 P
DN 300 (12")	560 ³⁾	1560	2 Q
DN 300 (12")	1120 ⁴⁾	1560	2 R
DN 350 (14")	750 ³⁾	1500	2 T
DN 350 (14")	750 ³⁾	2100	2 U
DN 350 (14")	1500 ⁴⁾	2100	2 V
DN 400 (16")	950 ³⁾	1900	3 B
DN 400 (16")	950 ³⁾	2660	3 C
DN 400 (16")	1900 ⁴⁾	2660	3 D
DN 500 (20")	1475 ³⁾	2950	3 K
DN 500 (20")	1475 ³⁾	4130	3 L
DN 500 (20")	2950 ⁴⁾	4130	3 M
DN 600 (24")	2150 ³⁾	4300	3 T
DN 600 (24")	2150 ³⁾	6020	3 U
DN 600 (24")	4300 ⁴⁾	6020	3 V
DN 700 (28")	2900 ³⁾	5800	4 F
DN 700 (28")	2900 ³⁾	8120	4 G
DN 700 (28")	5800 ⁴⁾	8120	4 H
DN 800 (32")	3800 ³⁾	7600	4 P
DN 800 (32")	3800 ³⁾	10 640	4 Q
DN 800 (32")	7600 ⁴⁾	10 640	4 R
DN 900 (36")	5000 ³⁾	10 000	5 B
DN 900 (36")	5000 ³⁾	14 000	5 C
DN 900 (36")	10 000 ⁴⁾	14 000	5 D
DN 1000 (40")	6000 ³⁾	12 000	5 K
DN 1000 (40")	6000 ³⁾	16 800	5 L
DN 1000 (40")	12 000 ⁴⁾	16 800	5 M
DN 1200 (48")	9000 ³⁾	18 000	5 T
DN 1200 (48")	9000 ³⁾	25 200	5 U
DN 1200 (48")	18 000 ⁴⁾	25 200	5 V

Selection and Ordering data

Article No. Order code

Flowmeter SITRANS FUE380
 (type-approved)

7ME 3 4 1 0 -

Flange norm and pressure rating

System without sensor - only a transmitter

EN 1092-1

PN 16 (DN 100 ... DN 1200)

PN 25 (DN 200 ... DN 1000)

PN 40 (DN 50 ... DN 250)⁵⁾

Compact/remote connection

Compact version, max. 120 °C (248 °F)

Remote version, max. 150/200 °C (302/392 °F)

5 m (16.4 ft)

10 m (32.8 ft)

20 m (65.6 ft)

30 m (98.4 ft)

Approvals/pulse output

Without approval (neutral)

Selectable pulse output

With approval marks

Selectable pulse output

With approval marks and seal

Selectable pulse output

Pulse output value setup⁸⁾

0.1 l/p

1 l/p

2.5 l/p

10 l/p

50 l/p

100 l/p

250 l/pulse

1 m³/pulse

0.25 l/pulse

0.5 l/pulse

5 l/pulse

25 l/pulse

500 l/pulse

2.5 m³/pulse5 m³/pulse10 m³/pulse25 m³/pulse50 m³/pulse100 m³/pulse250 m³/pulse500 m³/pulse1000 m³/pulseC
D
E

0

2

3

4

5

0

1

2

1

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9

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NOA

NOB

NOC

NOD

NOE

NOF

NOG

NOH

NOJ

NOK

NOL

NOM

NON

NOP

This device is shipped with a Quick Start guide and the SITRANS F manual CD containing the complete manual library. Printed Operating Instructions are available for purchase via PMD.

For notes 1) to 8) see next page

Flowmeter SITRANS FUE380 with CT approval

Selection and Ordering data	Article No.	Order code
Flowmeter SITRANS FUE380 (type-approved)	7ME 3 4 1 0 -	
Transmitter SITRANS FUE080		
IP67/NEMA 4X/6 115 ... 230 V AC	B	
IP67/NEMA 4X/6 3.6 V battery version, incl. dual battery pack ⁶⁾	D	
IP67/NEMA 4X/6 115 ... 230 V AC, including 3.6 V single battery backup ⁶⁾	E	
IP67/NEMA 4X/6 3.6 V battery version (no battery pack included)	G	
Country/approval type⁷⁾		
Neutral, no approval mark	A	
China	C	
Russia, EN 1434/OIML R 75	M	
MID-Approval, (EN 1434/OIML R 75), English	R	
MID-Approval, (EN 1434/OIML R 75), German	S	
MID-Approval, (EN 1434/OIML R 75), Polish	T	
MID-Approval, (EN 1434/OIML R 75), French	U	
Pulse width setup		
5 ms (standard)	2	
10 ms	3	
20 ms	4	
50 ms	5	
100 ms	6	
200 ms	7	
500 ms	8	

¹⁾ Q_p (Q_n) is the normal flow according to the approval requirements. Q_p and Q_s is shown on the system label.

²⁾ Pipe material bronze brass

³⁾ EN 1434 flow values. The minimum flow (Q_i) should be checked in the PIA-selector or product master data base (PMD).

⁴⁾ OIML R 75/EN1434 flow values without PTB approval

⁵⁾ PN 40 standard for DN 50 ... DN 80 die-cast bronze pipes

⁶⁾ Lithium batteries are subject to special transportation regulations according to United Nations "Regulation of Dangerous Goods, UN 3090 and UN 3091". Special transport documentation is required to observe these regulations. This may influence both transport time and costs.

⁷⁾ Other countries in progress

⁸⁾ To get optimal benefit of the pulses the pulse value and pulse length shall be selected as low as possible. The following calculation formula can be used for determining the shortest pulse value at a pulse length of 5 ms:
 $L/pulse > Q_s (m^3/h) / 360$
 For example $Q_s = 300 m^3/h$; $L/pulse > 300/360$; $L/pulse > 0.83$; therefore the pulse value must be 1 l/pulse

Selection and Ordering data	Order code
Additional information	
Please add „-Z“ to Article No. and following add-on code(s) with plain text.	
Calibration/certificate FUE380	
Approval, verification and approval sealing as defined with the article number. See Order code.	
Production calibration for DN 50 ... DN 1200 with Q_n as selected in diameter Incl. Calibration protocol: 2 x 3 points, Q_i , 10 % Q_p and Q_p (max. 8000 m ³ /h).	Included
Accredited Siemens ISO/IEC 17025 calibration for DN 50 ... DN 200 with Q_n as selected in diameter. Certificate: 2 x 5 points, Q_i , 5 %, 10 %, 25 %, 50 % and 100 % of Q_p (max. 630 m ³ /h).	D20
Accredited Siemens ISO/IEC 17025 calibration for DN 250 ... DN 600 with Q_n as selected in diameter. Certificate: 2 x 5 points, Q_i , 5 %, 10 %, 25 %, 50 % and 100 % of Q_p (max. 2800 m ³ /h).	D21
Accredited Siemens ISO/IEC 17025 calibration, DN 500 ... DN 1200 with Q_n as selected in diameter. Certificate: 2 x 5 points, Q_i , 5 %, 10 %, 25 %, 50 % and 100 % of Q_p (max. 8000 m ³ /h).	D22
Output B as reverse flow pulses. No calibration/verification of this function.	E21
Material certificate	
EN 10204-3.1 (pipe material)	F10
Tag name plate	
Stainless steel TAG plate (1 x 24 x 80 mm), wire fixed. Font size depends on text length: 8 mm for 1 ... 10 characters, 4 mm for 11 ... 20 characters (specify in plain text).	Y17

Flowmeter SITRANS FUE380 operating instructions, accessories and spare parts

Operating instructions

Description	Article No.
• English	A5E00730100
• German	A5E00740611
• Spanish	A5E00754188
• French	A5E00754173

This device is shipped with a Quick Start guide and a CD containing further SITRANS F US literature.

All literature is also available for free at:

<http://www.siemens.com/flowdocumentation>

For accessories and spare parts on page 3/243 see chapter of transmitter FUS080/FUE080.



Please use online Product selector to get latest updates.

Product selector link:

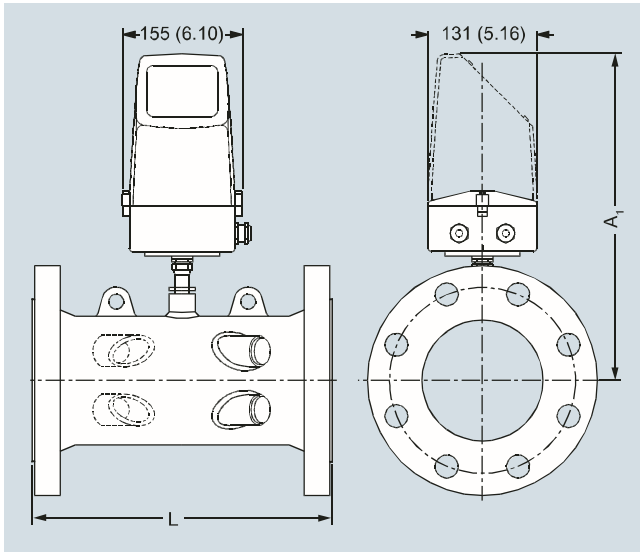
www.pia-selector.automation.siemens.com

Flow Measurement

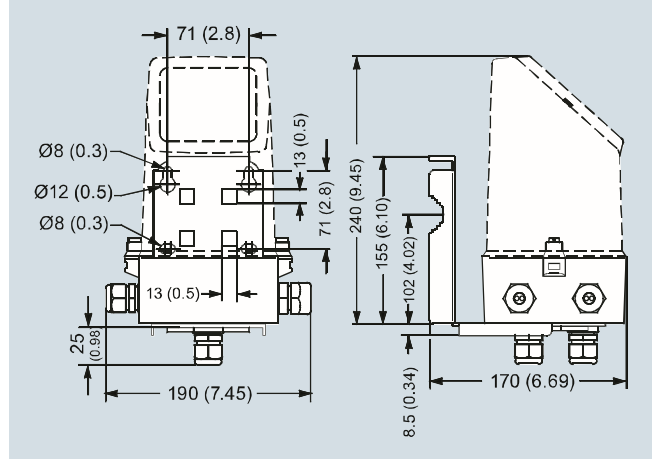
SITRANS F US Inline

Flowmeter SITRANS FUS380 and FUE380

Dimensional drawings



Transmitter IP67/NEMA 4X/6, wall mounting



Dimensions in mm (inch)

Sensor dimensions for FUS380 and FUE380

Size DN	PN 16		PN 25		PN 40		A1 mm	Lift hug
	L mm	Weight kg	L mm	Weight kg	L mm	Weight kg		
50	-	-	-	-	300 +0/-2	10	350	No
65	-	-	-	-	300 +0/-2	15	360	No
80	-	-	-	-	350 +0/-3	18	370	No
100	350 +0/-2	15	-	-	350 +0/-3	18	375	No
125	350 +0/-2	18	-	-	350 +0/-3	24	380	No
150	500 +0/-3	28	-	-	500 +0/-3	34	390	No
200	500 +0/-3	38	500 +0/-3	47	500 +0/-3	55	414	No
250	600 +0/-3	60	600 +0/-3	76	600 +0/-3	91	440	No
300	500 +0/-3	66	500 +0/-3	81	-	-	466	Yes
350	550 +0/-3	94	550 +0/-3	121	-	-	495	Yes
400	600 +0/-3	124	600 +0/-3	153	-	-	507	Yes
500	625 +0/-3	194	625 +0/-3	231	-	-	558	Yes
600	750 +0/-3	303	750 +0/-3	365	-	-	609	Yes
700	875 +0/-3	361	875 +0/-3	553	-	-	660	Yes
800	1000 +0/-3	494	1000 +0/-3	770	-	-	710	Yes
900	1230 +6/-6	475	1300 +6/-6	835	-	-	810	Yes
1000	1300 +6/-6	594	1370 +6/-6	1000	-	-	910	Yes
1200	1360 +6/-6	732	-	-	-	-	1110	Yes

Notes:

- Weight for transmitter/electronics 1.5 kg (compact version) or approximately 5 kg (remote version including 10 m cable set)
- - Means not available
- All weights are **approximate**
- For flange values - see norm EN 1092-1

Flow Measurement SITRANS F US Inline

Flowmeter SITRANS FUS380 and FUE380

Size inch	PN 16		PN 25		PN 40		A1 inch	Lift hug
	L inch	Weight lb	L inch	Weight lb	L inch	Weight lb		
2	-	-	-	-	11.81 +0/-0.08	22	13.78	No
2½	-	-	-	-	11.81 +0/-0.08	33	14.17	No
3	-	-	-	-	13.78 +0/-0.08	40	14.57	No
4	13.78 +0/-0.08	33	-	-	13.78 +0/-0.12	40	14.76	No
5	13.78 +0/-0.08	40	-	-	13.78 +0/-0.12	53	14.96	No
6	19.68 +0/-0.12	62	-	-	19.68 +0/-0.12	75	15.35	No
8	19.68 +0/-0.12	84	19.68 +0/-0.12	104	19.68 +0/-0.12	121	16.30	No
10	23.62 +0/-0.12	132	23.62 +0/-0.12	168	23.62 +0/-0.12	201	17.32	No
12	19.68 +0/-0.12	146	19.68 +0/-0.12	179	-	-	18.35	Yes
14	21.65 +0/-0.12	207	21.65 +0/-0.12	267	-	-	19.49	Yes
16	23.62 +0/-0.12	273	23.62 +0/-0.12	337	-	-	19.96	Yes
20	24.61 +0/-0.12	428	24.61 +0/-0.12	509	-	-	21.97	Yes
24	29.53 +0/-0.12	668	29.53 +0/-0.12	805	-	-	23.98	Yes
28	34.45 +0/-0.12	796	34.45 +0/-0.12	1246	-	-	25.98	Yes
32	39.37 +0/-0.12	1089	39.37 +0/-0.12	1698	-	-	27.95	Yes
36	48.43 +0/-0.24	1047	51.18 +0/-0.24	1841	-	-	31.89	Yes
40	51.18 +0/-0.24	1310	53.94 +0/-0.24	2205	-	-	35.83	Yes
48	53.54 +0/-0.24	1614	-	-	-	-	43.70	Yes

Notes:

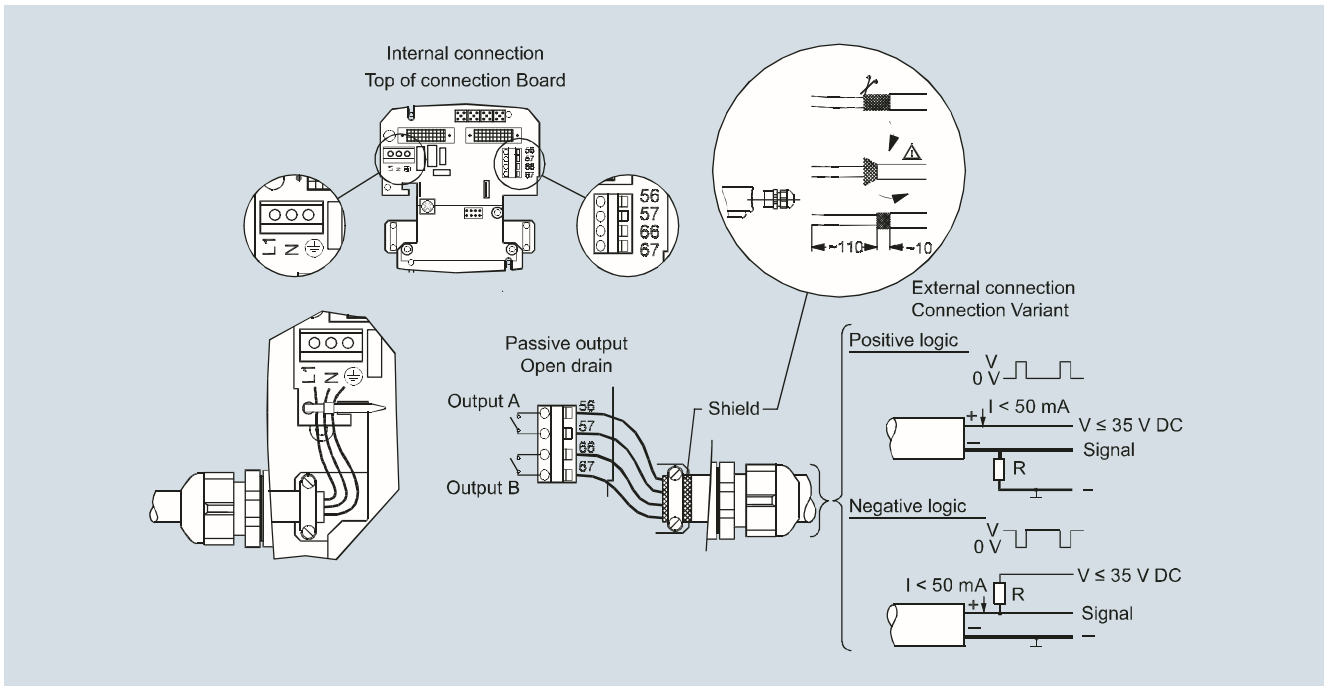
- Weight for transmitter/electronics 3.3 lb (compact version) or approximately 11 lb (remote version including 32.8 ft cable set)
- - Means not available
- All weights are **approximate**
- For flange values - see norm EN 1092-1

Flow Measurement SITRANS F US Inline

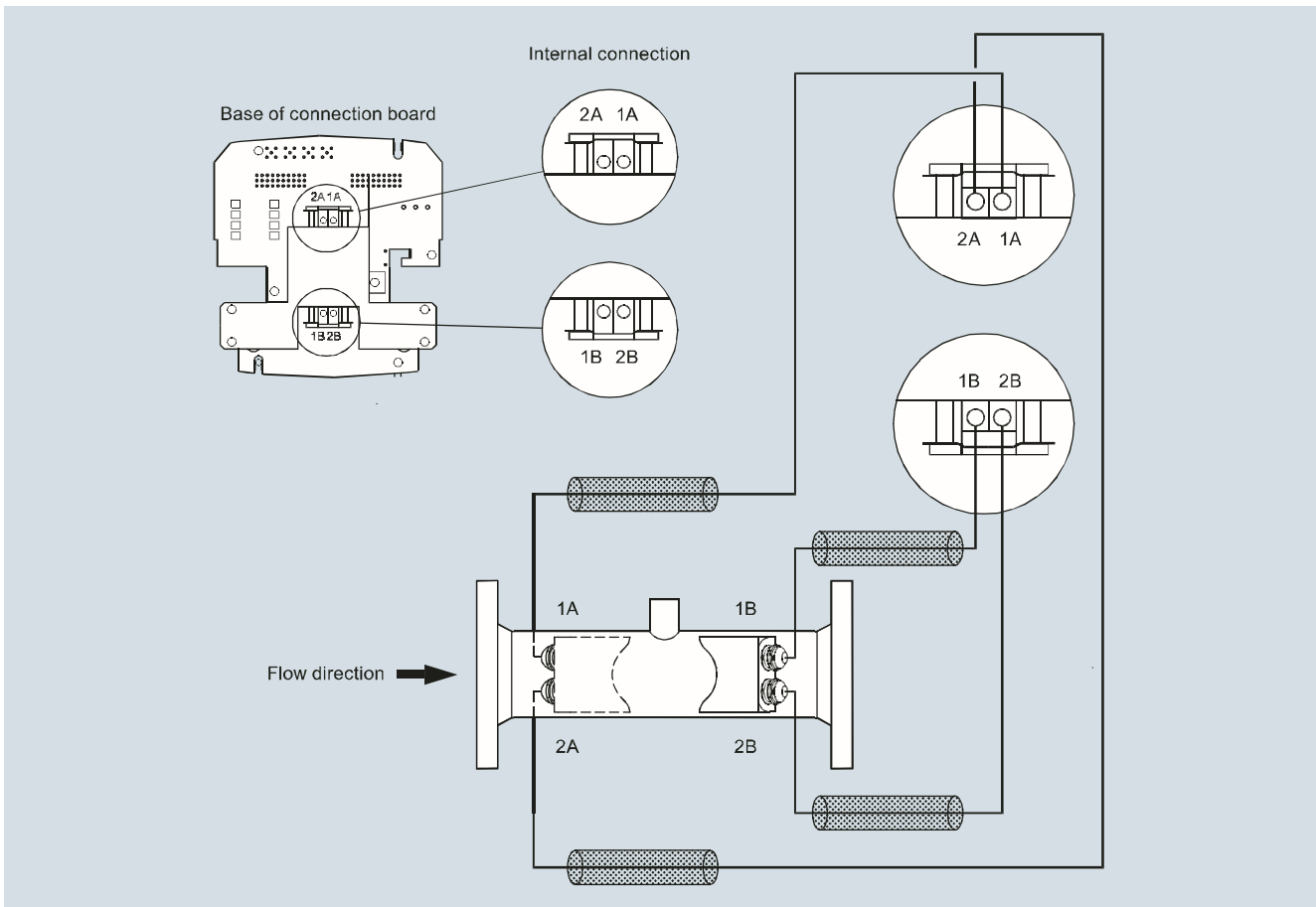
Flowmeter SITRANS FUS380 and FUE380

Schematics

3



Electrical connection of transmitter SITRANS FUS/FUE380



Electrical connection of sensor SITRANS FUS/FUE380