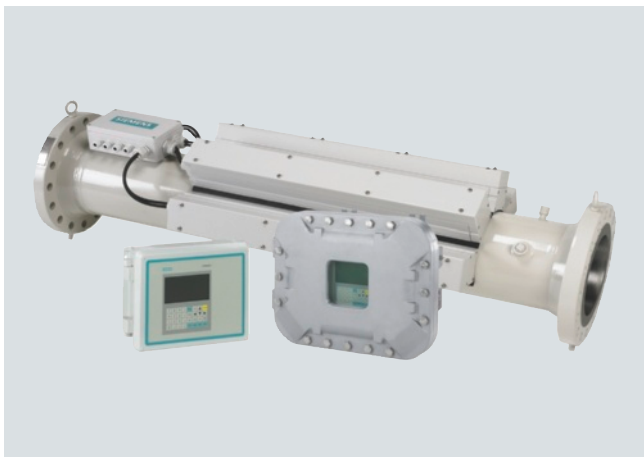


# Flow Measurement

## SITRANS F US Clamp-on

### SITRANS FUT1010 (Liquid and Gas)

#### Overview



SITRANS FUT1010 is the latest ultrasonic flow meter from Siemens. Ideal for applications within the liquid and gas hydrocarbon industry capable of providing custody transfer accuracy. With the newly developed permanent TransLoc™ mounting system, the sensors are permanently mounted on the outside of the pipe, eliminating any contact with the medium.

SITRANS FUT1010 is available in two different configurations; a version for liquid hydrocarbon applications and a version for precise gas measurement. Both versions are offered in pipe sizes ranging from 4 inch to 24 inch (DN 100 to DN 600) with flange ratings of ANSI Class 150/300/600 for liquid and 300/600 for gas.

#### Benefits

- Calibrated performance that meets custody transfer accuracy
- WideBeam® technology allows for precision flow measurement by reducing the meter's sensitivity to changes in the medium's physical properties
- TransLoc™ permanent mounting system ensures sealing and virtually no maintenance
- Available in a wide range of sizes
- High viscosity range (up to 2800 Cst)
- ZeroMatic Path™ capability automatically corrects for zero drift with no interruption of flow
- Completely cavity free design which eliminates any signal degrading buildup or ports to clog
- Large bi-directional flow range
- MODBUS RTU RS232/485 output available
- Dynamic Reynolds Number compensation

#### Application

Liquid applications		Gas applications	
<b>Pipelines</b>	Custody transfer, allocation, line balance, interface/densitometer	<b>Upstream</b>	Production wells, gathering, separation and dehydration
<b>Terminals</b>	Check metering, transmix metering, product identification	<b>Midstream</b>	Underground storage, transmission, compressor stations
<b>Refineries</b>	Process control, blending, tank measurement, ship loading and unloading	<b>Downstream</b>	Electric power generation, industrial use, gas processing plants
<b>Transportation</b>	Crude oil pipelines, LPG pipelines, multiple product pipelines, airport facilities, liquid terminals		
<b>Downstream</b>	Petrochemical and processing plants		

#### Design

SITRANS FUT1010 is available in two different configurations, both featuring the TransLoc mounting system:

- A version for liquid hydrocarbon applications
- A version for precise gas measurement

#### Transmitter

SITRANS FUT1010 is available with two, three or four paths and IP65 (NEMA 4X) wall mount or IP66 (NEMA 7) wall mount explosionproof enclosures.

#### Sensor

Available sizes include 4 to 24 inches (DN 100 to DN 600) with flange ratings of ANSI Class 150, 300 and 600 for the liquid meter and ANSI Class 300 and 600 for gas.

If the installation warrants, SITRANS FUT1010 can be delivered with a ten diameter upstream and five diameter downstream tubes and a flow conditioner.

#### Function

- IP65 (NEMA 4X) and IP66 (NEMA 7) transmitters have integral 33 button keypads and large (128 x 240 pixel) graphic displays readable up to 12 m (40 ft) away
- Current, voltage, status alarm, frequency and RS232 outputs (see specification section for details)
- Analog inputs (see specification section for details)
- 1 MByte data logger with both site and data logger storage
- Standard or actual volume flow outputs
- Standard or actual totalize outputs
- Complete application and operation diagnostics, to ensure operational integrity
- Temperature provided by non-intrusive sensor (3/4" tap available for insert temperature sensor)
- Detection of aeration or contamination

# Flow Measurement

## SITRANS F US Clamp-on

### SITRANS FUT1010 (Liquid and Gas)

#### Technical specifications

##### Input

Flow range (Gas)	± 36.5 m/s (± 120 f/s) for DN 100 ... DN 200 (4" ... 8") pipes bi-directional ± 30.5 m/s (± 100 ft/s) for DN 250 ... DN 600 (10" ... 24") pipes bi-directional
Flow range (Liquid)	± 12 m/s (± 40 f/s) including zero flow, bi-directional
Flow sensitivity	0.0003 m/s (0.001 f/s) flow rate independent
Flow temperature range	-28 ... +93 °C (-20 ... +200°F)
Analog inputs	4 x 4 ... 20 mA, (Programmable to Density, Pressure, viscosity or Temperature)

##### Output

Standard outputs	<ul style="list-style-type: none"> <li>• 4x isolated 4 ... 20 mA, programmable</li> <li>• 2x 0 ... 10 V DC, programmable</li> <li>• 4x Digital Pulse outputs (2x open collector and 2x 0-5V TTL) One each for positive flow, one each for negative flow</li> <li>• Standard RS232 Serial Port or Optional RS485/422</li> </ul>
Status/Alarm I/O	<ul style="list-style-type: none"> <li>• Programmable, 4x Form C Relays</li> <li>• Clear Switch Input Totalizer Hold Switch Input</li> </ul>

##### Calibrated accuracy

<u>Gas</u>	
2-path	0.5 ... 1.0 % (4" ... 6" < 0.25 %)
3-path	< 0.5 %
4-path	< 0.2 %
<u>Liquid</u>	
2-path	0.5 ... 1.0 % (4" ... 6" < 0.25 %)
3-path	< 0.5 %
4-path	< 0.15 %
Repeatability	± 0.05 ... 0.1 %

##### Data refresh rate

	5 Hz
--	------

##### Design

<u>Design Flow transmitter</u>	
Dimensions	see SITRANS F US Clamp-on "System info and selection guide"
Weight	see diagrams

##### Power supply

Power supply	90 ... 240 V AC, 50 ... 60 Hz, 30 VA or 9 ... 36 V DC, 12 W
--------------	-------------------------------------------------------------

##### Indication and operation

Data logger memory	1 MByte, programmable for all available data variables
Display	128 x 240 pixel LCD with backlight
Keypad	33 keypad buttons with tactile feedback
Language options	English, Spanish, German, Italian, French

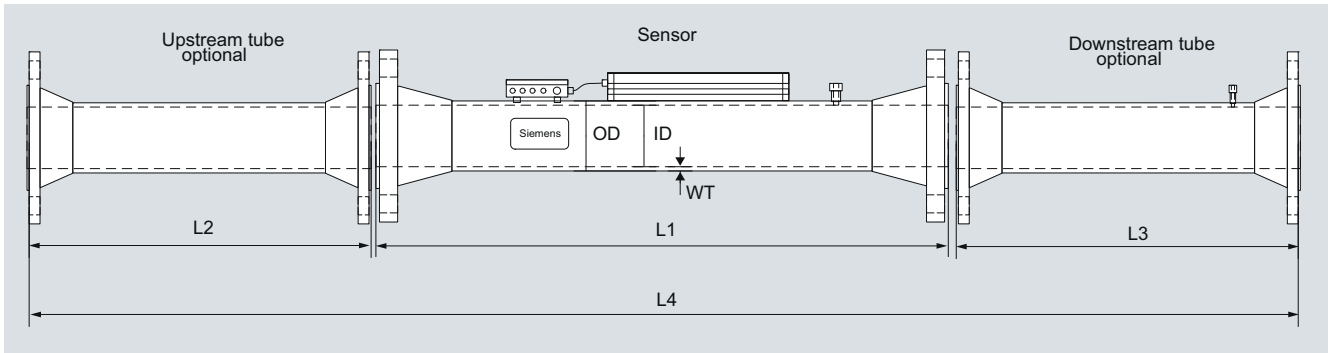
##### Design Flow sensor

Nominal pipe sizes	4" ... 24" (DN 100 ... DN 600)
Pipe material specification	API 5L ERW
Temperature tap	¾"
Pressure tap	¼"
Flange class	<ul style="list-style-type: none"> <li>• Liquid 150, 300, 600</li> <li>• Gas 300, 600</li> </ul>
Flange specification	<ul style="list-style-type: none"> <li>• ASME B16.5</li> <li>• Liquid 150, 300, 600</li> <li>• Gas 300, 600</li> </ul>
Flange facing	Raised face weld neck
Flange material	A105
Flow sensor paths	Two, three, or four
Sensor length	See diagram
Design temperature	-28 ... +93 °C (-20 ... +200 °F)
Exterior finish	Marine/offshore grade per ASTM B117
Optional pipe sections	<ul style="list-style-type: none"> <li>• 10 D upstream (with optional flow conditioner)</li> <li>• 5 D downstream</li> </ul>

##### Certificates and approvals

<u>Flow transmitter IP65 (NEMA 4X)</u>	
FM and CSA	<ul style="list-style-type: none"> <li>• Transmitter N-I Class I, Div 2 S Class II, Div 2</li> <li>• Sensor I.S. Class I, II, Div 1</li> </ul>
ATEX	Ex II (1) G [Ex ia] IIC Ex II 3 (1) G Ex nC [ia] IIC T5
CE markings	EMC 2004/108/EC ATEX 94/9/EC
INMETRO (Brazil)	[BR-Ex ia] IIC BR-Ex nC [ia] IIC T5
IECEX	Pending
<u>Flow Transmitter - IP66 (NEMA 7)</u>	
FM and CSA	<ul style="list-style-type: none"> <li>• Transmitter Ex Class I, Div 1 D-I Class II, Div 1 N-I Class I, Div 2 S Class II, Div 2</li> <li>• Sensor I.S. Class I, II, Div 1</li> </ul>
ATEX	Ex II (1) G [Ex ia] IIC Ex II 3 (1) G Ex nC [ia] IIC T5 Ex II 2 (1) G Ex d [ia IIC] IIB + H2 T5
CE markings	EMC 2004/108/EC ATEX 94/9/EC
INMETRO (Brazil)	[BR-Ex ia] IIC BR-Ex d [ia IIC] IIB T5
IECEX	Pending
<u>Sensor</u>	
FM and CSA	I.S. Class I, Div 1 N-I Class I, Div 2 S Class II, Div 2
ATEX	Ex II 1 G Ex ia IIC T5
CE markings	EMC 2004/108/EC PED 97/23/EEC ATEX 94/9/EC

## Dimensional drawings



Liquid Class 150		Nominal O.D.		Nominal I.D.		Max operating pressure (psi)		Mat. Grade	Length L1		Length L2		Length L3		Length L4	
mm	inch	mm	inch	mm	inch	bar	psi		mm	inch	mm	inch	mm	inch	mm	inch
101.6	4.0	114.3	4.5	102.3	4.026	19.7	285.0	B	1828.8	72.0	1023.6	40.3	510.5	20.1	3369.3	132.65
152.4	6.0	168.3	6.625	154.1	6.065	19.7	285.0	B	1828.8	72.0	1541.8	60.7	769.6	30.3	4146.6	163.25
203.2	8.0	219.1	8.625	202.7	7.981	19.7	285.0	B	1828.8	72.0	2026.9	79.8	1013.5	39.9	4875.5	191.95
254.0	10.0	273.1	10.75	254.5	10.02	19.7	285.0	B	2184.4	86.0	2545.1	100.2	1272.5	50.1	6008.4	236.55
304.8	12.0	323.9	12.75	304.8	12.0	19.7	285.0	B	2184.4	86.0	3048.0	120.0	1524.0	60.0	6762.8	266.25
406.4	16.0	406.4	16.0	387.4	15.25	19.7	285.0	B	2184.4	86.0	3873.5	152.5	1938.0	76.3	8002.3	315.05
457.2	18.0	457.2	18.0	438.2	17.25	19.7	285.0	B	2501.9	98.5	4381.5	172.5	2192.0	86.3	9081.8	357.55
508.0	20.0	508.0	20.0	489.0	19.25	19.7	285.0	B	2501.9	98.5	4889.5	192.5	2446.0	96.3	9843.8	387.55
609.6	24.0	609.6	24.0	590.6	23.25	19.7	285.0	B	2501.9	98.5	5905.5	232.5	2954.0	116.3	11367.8	447.55

Liquid Class 300		Nominal O.D.		Nominal I.D.		Max operating pressure (psi)		Mat. Grade	Length L1		Length L2		Length L3		Length L4	
mm	inch	mm	inch	mm	inch	bar	psi		mm	inch	mm	inch	mm	inch	mm	inch
101.6	4.0	114.3	4.5	102.3	4.026	51.0	740.0	B	1828.8	72.0	1023.6	40.3	510.5	20.1	3369.3	132.65
152.4	6.0	168.3	6.625	154.1	6.065	51.0	740.0	B	1828.8	72.0	1541.8	60.7	769.6	30.3	4146.6	163.25
203.2	8.0	219.1	8.625	202.7	7.981	51.0	740.0	B	1828.8	72.0	2026.9	79.8	1013.5	39.9	4875.5	191.95
254.0	10.0	273.1	10.75	254.5	10.020	51.0	740.0	B	2184.4	86.0	2544.1	100.2	1272.5	50.1	6008.4	236.55
304.8	12.0	323.9	12.75	304.8	12.0	51.0	740.0	B	2184.4	86.0	3048.0	120.0	1524.0	60.0	6762.8	266.25
406.4	16.0	406.4	16.0	381.0	15.0	51.0	740.0	B	2184.4	86.0	3810.0	150.0	1905.0	75.0	7905.8	311.25
457.2	18.0	457.2	18.0	428.7	16.876	51.0	740.0	B	2501.9	98.5	4287.5	168.8	2143.8	84.4	8939.5	351.95
508.0	20.0	508.0	20.0	477.9	18.814	51.0	740.0	X42	2501.9	98.5	4777.7	188.1	2390.1	94.1	9676.1	380.95
609.6	24.0	609.6	24.0	574.7	22.626	51.0	740.0	X42	2501.9	98.5	5748.0	226.3	2872.7	113.1	11129.0	438.15

Liquid Class 600		Nominal O.D.		Nominal I.D.		Max operating pressure (psi)		Mat. Grade	Length L1		Length L2		Length L3		Length L4	
mm	inch	mm	inch	mm	inch	bar	psi		mm	inch	mm	inch	mm	inch	mm	inch
101.6	4.0	114.3	4.5	102.3	4.026	96.6	1400.0	B	1828.8	72.0	1023.6	40.3	510.5	20.1	3369.3	132.65
152.4	6.0	168.3	6.625	154.1	6.065	81.0	1175.0	B	1828.8	72.0	1541.8	60.7	769.6	30.3	4146.6	163.25
203.2	8.0	219.1	8.625	193.7	7.625	102.1	1480.0	B	1828.8	72.0	1938.0	76.3	967.7	38.1	4740.9	186.65
254.0	10.0	273.1	10.75	247.7	9.75	82.8	1200.0	B	2184.4	86.0	2476.5	97.5	1239.5	48.8	5906.8	232.55
304.8	12.0	323.9	12.75	298.5	11.75	79.3	1150.0	B	2184.4	86.0	2984.5	117.5	1493.5	58.8	6668.8	262.55
406.4	16.0	406.4	16.0	373.1	14.688	82.8	1200.0	B	2184.4	86.0	3731.3	146.9	1864.4	73.4	7786.4	306.55
457.2	18.0	457.2	18.0	419.1	16.5	86.2	1250.0	B	2501.9	98.5	4191.0	165.0	2095.5	82.5	8794.8	346.25
508.0	20.0	508.0	20.0	466.8	18.376	82.8	1200.0	X42	2501.9	98.5	4668.5	183.8	2334.3	91.9	9511.0	374.45
609.6	24.0	609.6	24.0	560.4	22.064	77.6	1125.0	X42	2501.9	98.5	5603.2	220.6	2801.6	110.3	10913.1	429.65

# Flow Measurement

## SITRANS F US Clamp-on

### SITRANS FUT1010 (Liquid and Gas)

Length																
Gas Class 300		Nominal O.D.		Nominal I.D.		Max operating pressure (psi)		Mat. Grade	Length L1		Length L2		Length L3		Length L4	
mm	inch	mm	inch	mm	inch	bar	psi		mm	inch	mm	inch	mm	inch	mm	inch
101.6	4.0	114.3	4.5	102.3	4.026	51.0	740.0	B	1828.8	72.0	1023.6	40.3	510.5	20.1	3369.3	132.65
152.4	6.0	168.3	6.625	154.1	6.065	51.0	740.0	B	1828.8	72.0	1541.8	60.7	769.6	30.3	4146.6	163.25
203.2	8.0	219.1	8.625	202.7	7.981	51.0	740.0	X42	1828.8	72.0	2026.9	79.8	1013.5	39.9	4875.5	191.95
254.0	10.0	273.1	10.75	254.5	10.020	51.0	740.0	X42	1828.8	72.0	2545.1	100.2	1272.5	50.1	5652.8	222.55
304.8	12.0	323.9	12.75	303.2	11.938	51.0	740.0	X42	1828.8	72.0	3032.8	119.4	1516.4	59.7	6384.3	251.35
406.4	16.0	406.4	16.0	381.0	15.0	51.0	740.0	X42	1981.2	78.0	3810.0	150.0	1905.0	75.0	7702.6	303.25
457.2	18.0	457.2	18.0	428.7	16.876	51.0	740.0	X42	1981.2	78.0	4287.5	168.8	2143.8	84.4	8418.8	331.45
508.0	20.0	508.0	20.0	477.9	18.814	51.0	740.0	B	1981.2	78.0	4777.7	188.1	2390.1	94.1	9155.4	360.45
609.6	24.0	609.6	24.0	574.7	22.626	51.0	740.0	B	1981.2	78.0	5748.0	226.3	2872.7	113.1	10608.3	417.65

Length																
Gas Class 600		Nominal O.D.		Nominal I.D.		Max operating pressure (psi)		Mat. Grade	Length L1		Length L2		Length L3		Length L4	
mm	inch	mm	inch	mm	inch	bar	psi		mm	inch	mm	inch	mm	inch	mm	inch
101.6	4.0	114.3	4.5	102.3	4.026	102.1	1480.0	X42	1828.8	72.0	1023.6	40.3	510.5	20.1	3369.3	132.65
152.4	6.0	168.3	6.625	154.1	6.065	96.6	1400.0	X42	1828.8	72.0	1541.8	60.7	769.9	30.3	4146.6	163.25
203.2	8.0	219.1	8.625	202.7	7.981	87.9	1275.0	X42	1828.8	72.0	2026.9	79.8	1013.5	39.9	4875.5	191.95
254.0	10.0	273.1	10.75	247.7	9.75	102.1	1480.0	X42	1981.2	78.0	2476.5	97.5	1239.5	48.8	5703.6	224.55
304.8	12.0	323.9	12.75	298.5	11.75	94.8	1375.0	X42	1981.2	78.0	2984.5	117.5	1493.5	58.8	6465.6	254.55
406.4	16.0	406.4	16.0	381.0	15.0	75.9	1100.0	X42	1981.2	78.0	3810.0	150.0	1905.0	75.0	7702.6	303.25
457.2	18.0	457.2	18.0	428.7	16.876	75.9	1100.0	X42	1981.2	78.0	4287.5	168.8	2143.8	84.4	8418.8	331.45
508.0	20.0	508.0	20.0	477.9	18.814	75.9	1100.0	X42	1981.2	78.0	4777.7	188.1	2390.1	94.1	9155.4	360.45
609.6	24.0	609.6	24.0	574.7	22.626	72.4	1050.0	X42	1981.2	78.0	5748.0	226.3	2872.7	113.1	10608.3	417.65

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### SITRANS FUT1010 Liquid sizing chart

Nominal diameter		Q <sub>min</sub>	Q <sub>max</sub>	Q <sub>min</sub>	Q <sub>max</sub>
mm	inch	[m <sup>3</sup> /h]	[m <sup>3</sup> /h]	[42 GAL BBL/h]	[42 GAL BBL/h]
100	4	14	360	85	2267
150	6	29	818	180	5146
200	8	46	1417	290	8910
250	10	67	2233	421	14045
300	12	80	3203	504	20143
400	16	103	5172	651	32532
450	18	116	6618	728	41625
500	20	124	8241	778	51836
600	24	150	12022	945	75617

### SITRANS FUT1010 Gas sizing chart

Pressure (psig)	SITRANS FUT1010 maximum flow rate (MMSCFD) [Millions of standard cubic feet per day]							
	Meter size and maximum velocity							
	4" 135 ft/s	6" 126 ft/s	8" 117 ft/s	10" 144 ft/s	12" 126 ft/s	16" 99 ft/s	20" 81 ft/s	24" 90 ft/s
100	8.2	17.3	27.9	54.1	67.1	83.3	107.1	174.9
200	15.5	32.9	52.9	102.7	127.6	158.2	203.4	332.3
300	23.1	49.0	78.7	152.8	189.8	235.4	302.6	494.5
400	30.9	65.5	105.3	204.4	253.9	315.0	404.8	661.5
500	39.0	82.6	132.8	257.6	320.0	396.9	510.1	833.6
600	47.3	100.1	161.0	312.4	388.0	481.2	618.5	1010.8
700	55.8	118.2	190.0	368.7	457.9	568.1	730.1	1193.1
800	64.6	136.8	219.8	426.6	529.9	657.3	844.8	1380.5
900	73.6	155.8	250.5	486.1	603.8	749.0	962.6	1573.1
1000	82.8	175.4	282.0	547.2	679.6	843.0	1083.5	1770.6
1100	92.3	195.4	314.1	609.6	757.1	939.2	1207.1	1972.7
1200	101.9	215.9	347.0	673.3	836.3	1037.4	1333.3	2178.9

Pressure (psig)	SITRANS FUT1010 maximum flow rate (MMSCFD) [Millions of standard cubic feet per day]							
	Meter size and maximum velocity							
	[Minimum flow rate above which 0.2 % accuracy can be maintained]							
4" 1.55 ft/s	6" 1.4 ft/s	8" 1.3 ft/s	10" 1.65 ft/s	12" 1.35 ft/s	16" 1.1 ft/s	20" 0.85 ft/s	24" 1 ft/s	
100	0.1	0.2	0.3	0.6	0.7	0.9	1.1	1.9
200	0.2	0.4	0.6	1.2	1.4	1.8	2.1	3.7
300	0.3	0.5	0.9	1.8	2.0	2.6	3.2	5.5
400	0.4	0.7	1.2	2.3	2.7	3.5	4.2	7.4
500	0.4	0.9	1.5	3.0	3.4	4.4	5.4	9.3
600	0.5	1.1	1.8	3.6	4.2	5.3	6.5	11.2
700	0.6	1.3	2.1	4.2	4.9	6.3	7.7	13.3
800	0.7	1.5	2.4	4.9	5.7	7.3	8.9	15.3
900	0.8	1.7	2.8	5.6	6.5	8.3	10.1	17.5
1000	1.0	1.9	3.1	6.3	7.3	9.4	11.4	19.7
1100	1.1	2.2	3.5	7.0	8.1	10.4	12.7	21.9
1200	1.2	2.4	3.9	7.7	9.0	11.5	14.0	24.2

# Flow Measurement

## SITRANS F US Clamp-on

### SITRANS FUT1010 (Liquid and Gas)

Pressure (barg)	SITRANS FUT1010 Maximum Flow Rate (Nm <sup>3</sup> /h x 1000)							
	[Thousands of normal cubic meters per hour]							
	DIN meter size and maximum velocity							
	100 mm	150 mm	200 mm	250 mm	300 mm	400 mm	500 mm	600 mm
	41.1 m/s	38.4 m/s	35.6 m/s	43.9 m/s	38.4 m/s	30.1 m/s	24.6 m/s	27.4 m/s
10	13.5	28.7	46.1	89.5	111.2	137.9	177.2	289.6
20	26.4	55.9	89.9	174.5	216.7	268.8	345.5	564.6
30	39.8	84.4	135.6	263.2	326.9	405.5	521.2	851.8
40	53.9	114.1	183.4	355.8	441.9	548.2	704.6	1151.4
50	68.5	145.0	233.1	452.4	561.9	697.0	895.9	1464.0
60	83.7	177.2	284.9	552.9	686.7	851.9	1094.8	1789.2
70	99.5	210.7	338.7	657.2	816.3	1012.6	1301.5	2126.9
80	115.8	245.3	394.3	765.1	950.2	1178.7	1514.9	2475.8
90	132.6	280.8	451.4	875.9	1087.8	1349.4	1734.3	2834.3
100	149.7	317.1	509.7	989.1	1228.5	1523.9	1958.6	3200.8
110	167.1	353.8	568.8	1103.8	1370.9	1700.6	2185.7	3571.9
120	184.5	390.8	628.2	1218.9	1514.0	1878.0	2413.7	3944.5

Pressure (barg)	SITRANS FUT1010 Transition Flow Rate (Nm <sup>3</sup> /h x 1000)							
	[Thousands of normal cubic meters per hour]							
	DIN meter size and maximum velocity							
	100 mm	150 mm	200 mm	250 mm	300 mm	400 mm	500 mm	600 mm
	0.47 m/s	0.42 m/s	0.39 m/s	0.50 m/s	0.41 m/s	0.33 m/s	0.25 m/s	0.30 m/s
10	0.2	0.3	0.5	1.0	1.2	1.5	1.9	3.2
20	0.3	0.6	1.0	2.0	2.3	3.0	3.6	6.3
30	0.5	0.9	1.5	3.0	3.5	4.5	5.5	9.5
40	0.6	1.3	2.0	4.1	4.7	6.1	7.4	12.8
50	0.8	1.6	2.6	5.2	6.0	7.7	9.4	16.3
60	1.0	2.0	3.2	6.3	7.4	9.5	11.5	19.9
70	1.1	2.3	3.8	7.5	8.7	11.3	13.7	23.6
80	1.3	2.7	4.4	8.8	10.2	13.1	15.9	27.5
90	1.5	3.1	5.0	10.0	11.7	15.0	18.2	31.5
100	1.7	3.5	5.7	11.3	13.2	16.9	20.6	35.6
110	1.9	3.9	6.3	12.6	14.7	18.9	22.9	39.7
120	2.1	4.3	7.0	14.0	16.2	20.9	25.3	43.8

# Flow Measurement

## SITRANS F US Clamp-on

### SITRANS FUT1010 (Liquid and Gas)

Selection and Ordering data	Order No.	Order Code
<b>SITRANS FUT1010 (Liquid)</b>	K) 7 ME3 62 - - - - - 0	
<b>Transmitter type</b>		
No Transmitter	0	
IP65 NEMA 4X (2 path)	1	
IP65 NEMA 4X (2 path) with MODBUS	2	
IP65 NEMA 4X (3 or 4 path)	3	
IP65 NEMA 4X (3 or 4 path) with MODBUS	4	
IP66 NEMA 7 wall mount/explosionproof (2 Path)	5	
P66 NEMA 7 wall mount/explosionproof (2 Path) with MODBUS	6	
P66 NEMA 7 wall mount/explosionproof (3 or 4 Path)	7	
P66 NEMA 7 wall mount/explosionproof (3 or 4 Path) lwith MODBUS	8	
<b>Input power</b>		
90 ... 240 V AC	1	
9 ... 36 V DC	2	
<b>Number of ultrasonic paths</b>		
2 path	B	
3 path	C	
4 path	D	
<b>Pipe size</b>		
DN 100 (4") (Dual Path only)	A	
DN 150 (6")(Dual Path only)	B	
DN 200 (8")	C	
DN 250 (10")	D	
DN 300 (12")	E	
DN 400 (16")	B	
DN 450 (18")	G	
DN 500 (20")	H	
DN 600 (24")	J	
<b>Flange rating</b>		
Class 150 (Raised Face)	0	
Class 300 (Raised Face)	1	
Class 600 (Raised Face)	2	
<b>Upstream/downstream meter run</b>		
None	0	
10 pipe diameter upstream Tube only	1	
10 pipe diameter upstream Tube with flow conditioner	2	
5 pipe diameter downstream tube only	3	
10D up <u>and</u> 5D downstream tubes	4	
10D up <u>and</u> 5D downstream tubes with flow conditioner	5	
<b>Liquid type range (select closest match)</b>		
Water	A	
Multiple Crude Oils	B	
Light Crude only	C	
Heavy Crude only	D	
Multiple Finished Products	E	
Gasolines Only	F	
Kerosene	G	
Jet Fuel	H	
Diesel	J	
Multiple Fuel Oils	K	
Heavy Fuel Oils	L	
Liquified Gases	M	
<b>Liquid temperature range</b>		
-28 ... +65 °C (-20 ... +150 °F)	A	
1 ... 93 °C (30 ... 200 °F)	B	
<b>Transmitter and sensor approval</b>		
FM/CSA, CE	1	
ATEX and PED, CE, C-TICK	2	
INMETRO	3	
K) Subject to export regulations AL: N, ECCN: 5A991X.		

# Flow Measurement

## SITRANS F US Clamp-on

### SITRANS FUT1010 (Liquid and Gas)

Selection and Ordering data	Order code
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#### Further designs

Please add "-Z" to Order No. and specify Order code(s).

Cable assembly for flow sensor (add one K.. per flow path)

- Cable and termination for one sensor path (see "Sensor cable chart for options") **K..**
- Termination for user supplied cable **T01**

Cable assembly for temperature sensor (only 1 required)

- Cable and termination for temperature sensor (see "Transducer cable chart for options"). **R..**
- Termination for user supplied RTD cable **T31**

Wet flow transfer calibration (priced for 1 pipe calibration)  
Requires completion of calibration form

- 6 point for DN 100 (4 inch) **D10**
- 6 point for DN 125 to DN 200 (5 to 8 inch) **D11**
- 6 point for DN 250 to DN 300 (10 to 12 inch) **D12**
- 6 point for DN 350 to DN 400 (14 to 16 inch) **D13**
- 6 point for DN 450 to DN 500 (18 to 20 inch) **D14**
- 6 point for DN 550 to DN 600 (22 to 24 inch) **D15**

Tag name plate

- Stainless steel tags with 3.2 mm (0.13 inch) character size (68 characters max.) **Y19**

Selection and Ordering data	Order No.
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#### Operating Instructions for SITRANS FUT1010 (Liquid)

English NEMA 4X wall mount & NEMA 7 wall mount explosionproof **A5E02639184**

German NEMA 4X wall mount & NEMA 7 wall mount explosionproof **A5E03086468**

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

All literature is also available for free at:

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

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# Flow Measurement

## SITRANS F US Clamp-on

### SITRANS FUT1010 (Liquid and Gas)

Selection and Ordering data	Order No.	Order Code
<b>SITRANS FUT1010 (Gas)</b>	K) 7 ME363 - - - - - 0 - - - - -	
<b>Transmitter type</b>		
No meter	0	
IP65 NEMA 4X (2 path)	1	
IP65 NEMA 4X (2 path) with MODBUS	2	
IP65 NEMA 4X (3 or 4 path)	3	
IP65 NEMA 4X (3 or 4 path) with MODBUS	4	
IP66 NEMA 7 wall mount flame/explosion proof (2 Path)	5	
IP66 NEMA 7 wall mount flame/explosion proof (2 Path) with MODBUS	6	
IP66 NEMA 7 wall mount flame/explosion proof (3 or 4 Path)	7	
IP66 NEMA 7 wall mount flame/explosion proof (3 or 4 Path) with MODBUS	8	
<b>Input power</b>		
90 ... 240 V AC	1	
9 ... 36 V DC	2	
<b>Number of ultrasonic paths</b>		
2 path (standard enclosure material)	B	
3 path (standard material)	C	
4 path (standard material)	D	
<b>Pipe size</b>		
DN 100 (4") (Dual Path only)	A	
DN 150 (6")(Dual Path only)	B	
DN 200 (8")	C	
DN 250 (10")	D	
DN 300 (12")	E	
DN 400 (16")	B	
DN 450 (18")	G	
DN 500 (20")	H	
DN 600 (24")	J	
<b>Flange rating</b>		
Class 300 (Raised Face)	1	
Class 600 (Raised Face)	2	
<b>Upstream/downstream meter run</b>		
None	0	
10 pipe diameter upstream Tube only	1	
10 pipe diameter upstream Tube with flow conditioner	2	
5 pipe diameter downstream tube only	3	
10D up and 5D downstream tubes	4	
10D up and 5D downstream tubes with flow conditioner	5	
<b>Gas type range (select closest match)</b>		
Natural Gas (mostly CH <sub>4</sub> )	A	
Process Gases (N <sub>2</sub> , O <sub>2</sub> , CO, Ar)	B	
Helium	C	
Hydrogen	D	
<b>Gas temperature range</b>		
-28 ... +65 °C (-20 ... +150 °F)	A	
1 ... 93 °C (30 ... 200 °F)	B	
<b>Transmitter and sensor approval</b>		
FM/CSA, CE	1	
ATEX and PED, CE, C-TICK	2	
INMETRO	3	

K) Subject to export regulations AL: N, ECCN: 5A991X.

# Flow Measurement

## SITRANS F US Clamp-on

### SITRANS FUT1010 (Liquid and Gas)

Selection and Ordering data	Order code
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#### Further designs

Please add "-Z" to Order No. and specify Order code(s).

Cable assembly for flow sensor (Add one K.. per flow path)

- Cable and termination for one sensor path (see "Transducer cable chart for options") **K..**
- Termination for user supplied cable **T01**

Cable assembly for temperature sensor (only 1 required)

- Cable and termination for temperature sensor (see "Transducer cable chart for options"). **R..**
- Termination for user supplied RTD cable **T31**

Wet flow transfer calibration (priced for 1 pipe calibration)  
Requires completion of calibration form

- 6 point for DN 100 (4 inch) **D10**
- 6 point for DN 125 to DN 200 (5 to 8 inch) **D11**
- 6 point for DN 250 to DN 300 (10 to 12 inch) **D12**
- 6 point for DN 350 to DN 400 (14 to 16 inch) **D13**
- 6 point for DN 450 to DN 500 (18 to 20 inch) **D14**
- 6 point for DN 550 to DN 600 (22 to 24 inch) **D15**

Tag name plate

- Stainless steel tags with 3.2 mm (0.13 inch) character size (68 characters max.) **Y19**

Selection and Ordering data	Order No.
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#### Operating Instructions for SITRANS FUG1010

English NEMA 4X wall mount & NEMA 7 wall mount explosionproof **A5E02639185**

German NEMA 4X wall mount & NEMA 7 wall mount explosionproof **A5E03086485**

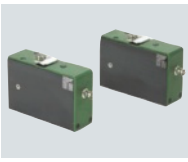










This device is shipped with a Quick Start Guide and a CD containing further SITRANS F literature.

All literature is also available for free at:

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

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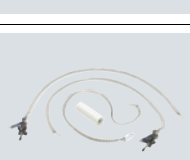


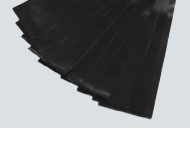
### Accessories/Spare parts for clamp-on ultrasonic flowmeters

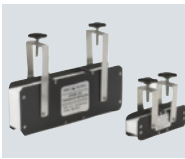

Description	Order No.		Description	Order No.	
<b>Universal Portable Sensors</b> Selected generally for portable systems where a wide variety of pipes are to be measured. Since they are selected based on diameter only, a wide range of pipe sizes and materials can be covered with a minimum number of sensors. These can also be selected as a cost savings on applications where standard accuracy is sufficient.	D) 7ME3951-...		<b>Mounting Frames</b> These items are useful in simplifying sensor installation. They are strapped to the pipe first then the sensors are installed, making the installation less cumbersome and more precise. They also enable easy repeated mounting of the sensors assuring conformation to the original sensor positioning. They may be left in place at each measurement location where periodic flow surveys are conducted to simplify subsequent installations and ensure repeatable results.	D) 7ME3960-...	
<b>High Precision Sensors</b> Selected generally for dedicated meters since the need to cover a range of pipes is not a requirement. They provide the highest accuracy achievable by the meters and therefore should be selected whenever higher accuracy/repeatability is required. They are only applicable to steel pipes but no other metals, and are selected solely by wall thickness.	D) 7ME3950-...		<b>Spacer Bars</b> Sensors are required to be mounted at a set distance from each other as determined by pipe size and medium being measured. The spacer bar simplifies this requirement by eliminating the need to undertake a precise dimensional measurement. The flowmeter will specify a specific spacing index which is easily accommodated with the marked indices on the bar.	D) 7ME3960-...	
<b>High Temperature Sensors</b> Are selected whenever pipe temperature will exceed 250 °F (120 °C) up to a maximum of 450 °F (232 °C). They are universal type and can therefore be used on any pipe material and are selected by pipe diameter.	D) 7ME3950-...		<b>Clamp-On RTD's</b> 1000 Ω platinum RTD's for use where temperature is required. Used with Energy Meters to record supply/return temperature. For this purpose precision matched pairs (to 0.02 °C) are supplied. Single RTD's are also used with SITRANS FUH and SITRANS FUG meters to enable live calculations of "Liquid" and Standard Volume Correction.	D) 7ME3950-...	
<b>Weld Seal Mount</b> These provide the most secure and strongest mounting of the flow sensors. They are generally selected for "High End" meter types where maximum performance criteria applies. They accommodate high precision sensors designed to mount inside these enclosures. May be welded to the pipe if so desired by the customer. They come in 2-piece or 1-piece configurations depending upon the application pipe size and type (Liquid/Gas).	D) 7ME3960-...		<b>Insert RTD's</b> Are identical to clamp-on RTD's as described above except that they are inserted into the pipe (In a Thermowell). They provide more precise and quicker responding temperature measurement. They are selected when precise temperature measurement of the actual liquid or gas is required as opposed to pipe "skin temperature". Since they project into the pipe they cannot be used in pipeline that undergo periodic "pigging".	D) 7ME3950-...	
<b>Mounting tracks</b> Typically used on smaller pipes for easier and more stable mounting for dedicated universal style sensor size A or B, also available for dedicated high precision sensor size A or B.	D) 7ME3960-...		<b>Standard Cable (Flow Sensor or RTD)</b> Selected for general purpose installations where no special application requirements exist.	D) 7ME3960-...	
			<b>Submersible Cable (Flow Sensor)</b> Polyethylene jacketed, for locations that experience periodic or continual submersion of the flow sensors.	D) 7ME3960-...	

# Flow Measurement

## SITRANS F US Clamp-on

### Accessories/Spare parts

Description	Order No.	
<b>Plenum Cable (Flow Sensor or RTD)</b> For temperatures above 180 °F. Teflon jacketed to withstand high temperatures, is used when high temp sensors are specified.	D) 7ME3960-...	
<b>Armored Cable (Flow Sensor)</b> Double shielded cable, selected when cable will not be installed in conduit between meter and sensors.	D) 7ME3960-...	
<b>Temperature sensor cable</b> Cable to connect field installed RTD to flow meter, available in Teflon wrapped, plenum or submersible grade. Typically used for SITRANS FUE, FUH and FUG series meters where a temperature sensor is employed.	D) 7ME3960-...	
<b>Straps</b> Used to fasten sensors or mounting frames to pipe for dedicated meter installations. Stainless steel construction for corrosion resistance.	D) 7ME3960-...	
<b>Chains (EZ clamps)</b> Used to fasten portable sensors or mounting frames to pipe. Thumbscrews eliminate need for hand tools when mounting sensors, and allow for easy on/off operations.	D) 7ME3960-...	
<b>Ultrasonic Couplant</b> Fills any voids between sensor emitting surface and pipe wall to allow maximum energy transfer between sensor and pipe. Several different types of couplants are employed as determined by the application conditions and type of installation (Temporary or permanent).	D) 7ME3960-...	
<b>Dry Couplant</b> The dry coupling pad is intended for use in any liquid, clamp-on transit time or Doppler applications that require a more durable coupling material. Installation is easy by simply placing one strip of material between sensor and pipe. Not intended for clamp-on gas where damping material is used. The temperature range is -34 to +200 °C (-30 to +392 °F).	D) 7ME3960-...	
<b>Damping Material</b> Used with gas meters, and required as part of their sensor installation. This material absorbs excess ultrasonic energy from the pipe wall to enable the meter to detect and operate with low amplitude sensor signals normally associated with Clamp-on Gas applications.	D) 7ME3960-...	

Description	Order No.	
<b>Test Block</b> Used for checking operation of a meter and sensors prior to a field installation, or as a troubleshooting tool. Selected by sensor size, each block accommodates 2 sensor sizes. Available only for universal sensors.	D) 7ME3960-...	
<b>Termination Kit (Flow Sensor or RTD)</b> Provides the connectors, labels and shrink tubing or other associated hardware to complete the termination of a specific cable type. These can be provided in cases where users will be purchasing bulk cable directly and cutting to length at their site, or when existing cable length is to be altered. Selected by cable type.	D) 7ME3960-...	

Selection and Ordering data	Order No.
<i>Spare parts (System)</i>	
<b>SITRANS F US clamp-on</b>	<b>7ME 3 9 4 0 -</b>
<b>Power supplies, batteries and chargers</b>	
Power supply 90 ... 240 V AC	
• for IP65 (NEMA 4X) wall mount or IP66 (NEMA 7) wall mount explosionproof	D) <b>0 PA 0 0</b>
• for IP65 (NEMA 7) compact explosionproof	D) <b>2 PA 0 0</b>
Power supply 9 ... 36 V DC	
• for IP65 (NEMA 4X) wall mount or IP66 (NEMA7) wall mount explosionproof	K) <b>0 PB 0 0</b>
• negative ground for NEMA 7 compact explosionproof	D) <b>2 PJ 0 0</b>
• positive ground for NEMA 7 compact explosionproof	D) <b>2 PK 0 0</b>
Portable meter batteries and accessories	
• Internal battery (Portable meters only)	D) <b>3 PP 0 0</b>
IP67 Portable meter charger	
• Type A for Europe (CEE7/7)	D) <b>3 PC 0 0</b>
• Type C for Australia (AS3112)	D) <b>3 PD 0 0</b>
• Type D for UK (BS1363)	D) <b>3 PE 0 0</b>
• Type J for Japan (JIS8303)	D) <b>3 PF 0 0</b>
• Type K for US (NEMA 5-15P)	D) <b>3 PG 0 0</b>
• Type L for Switzerland (SEV1011)	D) <b>3 PH 0 0</b>
IP40 Portable meter charger	
• Type A for Europe (CEE7/7)	D) <b>4 PC 0 0</b>
• Type C for Australia (AS3112)	D) <b>4 PD 0 0</b>
• Type D for UK (BS1363)	D) <b>4 PE 0 0</b>
• Type J for Japan (JIS8303)	D) <b>4 PF 0 0</b>
• Type K for US (NEMA 5-15P)	D) <b>4 PG 0 0</b>
• Type L for Switzerland (SEV1011)	D) <b>4 PH 0 0</b>
<b>MODBUS system computer modules</b>	
MODBUS converter module	D) <b>CQO-1015N-5M</b>
Mounting kit (type 1) for MODBUS converter module	D) <b>CQO-1015N-5M-MK1</b>
Mounting kit (type 2) for MODBUS converter module	D) <b>CQO-1015N-5M-MK2</b>
Mounting kit (type 3) for MODBUS converter module	D) <b>CQO-1015N-5M-MK3</b>
Field configuration kit with manual, for MODBUS converter module	D) <b>CQO-1015N-5M-FK1</b>
<b>Pipe mounting brackets</b>	
2 inch pipe mounting bracket for IP65 (NEMA 7) compact explosionproof	D) <b>CQO-1012XMB-1</b>
2 inch pipe mounting bracket for IP65 (NEMA 4X) wall mount	D) <b>CQO-1012NMB-1</b>

D) Subject to export regulations AL: N, ECCN: EAR99H.

K) Subject to export regulations AL: N, ECCN: 5A991X.

# Flow Measurement

## SITRANS F US Clamp-on

### Accessories/Spare parts

Selection and Ordering data	Order No.
<i>Spare parts (Sensors)</i>	
<b>SITRANS F US clamp-on</b>	
<b>Meter type</b>	
Dedicated (SITRANS FUS1010, FUG1010, FUH1010, FUE1010)	D) <b>7ME3950</b> - ■■■■
Portable (SITRANS FUP1010 or FUE1010)	D) <b>7ME3951-0</b> ■■■■
<b>Approvals</b>	
UL, ULc, CE (Portable only)	<b>0</b>
FM/CSA hazardous (classified) locations	<b>1</b>
ATEX Ex II 1G Ex ia IIC T5 (not for RTDs)	<b>2</b>
INMETRO (not for RTDs)	<b>3</b>
<b>Spare sensor code</b>	
<u>For liquid flow sensors pipe ranges please refer to sensor selection chart in the SITRANS FUS1010 section</u>	
<u>Liquid flow sensors for use with mounting frames or tracks (including portable)</u>	
A2 universal	<b>LB00</b>
B3 universal	<b>LC00</b>
C3 universal	<b>LD00</b>
D3 universal	<b>LE00</b>
E2 universal	<b>LF00</b>
A1H (high precision)	<b>LG00</b>
A2H (high precision)	<b>LH00</b>
A3H (high precision)	<b>LJ00</b>
B1H (high precision)	<b>LK00</b>
B2H (high precision)	<b>LL00</b>
B3H (high precision)	<b>LT00</b>
C1H (high precision)	<b>LM00</b>
C2H (high precision)	<b>LN00</b>
D1H (high precision)	<b>LP00</b>
D2H (high precision)	<b>LQ00</b>
D3H (high precision)	<b>LU00</b>
D4H (high precision)	<b>LR00</b>
Doppler	<b>LS00</b>
<u>High precision liquid sensor for weld seal enclosures</u>	
C1H (high precision, weld seal)	<b>SM00</b>
C2H (high precision, weld seal)	<b>SN00</b>
D1H (high precision, weld seal)	<b>SP00</b>
D2H (high precision, weld seal)	<b>SQ00</b>
D3H (high precision, weld seal)	<b>SU00</b>
D4H (high precision, weld seal)	<b>SR00</b>

Selection and Ordering data	Order No.
<i>Spare parts (Sensors)</i>	
<b>SITRANS F US clamp-on</b>	
<b>Meter type</b>	
Dedicated (SITRANS FUS1010, FUG1010, FUH1010, FUE1010)	D) <b>7ME3950</b> - ■■■■
Portable (SITRANS FUP1010 or FUE1010)	D) <b>7ME3951-0</b> ■■■■
<u>High temperature universal liquid sensors</u>	
Note: not available with INMETRO approval	
High temp. sensor size 1 for up to 230 °C (12.7 to 100 mm diam.)	<b>LA10</b>
High temp. sensor size 2 for up to 230 °C (30 to 200 mm diam.)	<b>LA20</b>
High temp. sensor size 3 for up to 230 °C (150 to 600 diam.)	<b>LA30</b>
High temp. sensor size 4 for up to 230 °C (400 to 1200 diam.)	<b>LA40</b>
<u>For gas flow sensors pipe ranges please refer to sensor selection chart in the SITRANS FUG1010 section</u>	
<u>High precision gas flow sensors for use with mounting frames or tracks</u>	
B1H (high precision)	<b>GK00</b>
B2H (high precision)	<b>GL00</b>
B3H (high precision)	<b>GT00</b>
C1H (high precision)	<b>GM00</b>
C2H (high precision)	<b>GN00</b>
D1H (high precision)	<b>GP00</b>
D2H (high precision)	<b>GQ00</b>
D3H (high precision)	<b>GU00</b>
D4H (high precision)	<b>GR00</b>
<u>High precision gas sensor for weld seal enclosures</u>	
C1H (high precision, weld seal)	<b>HM00</b>
C2H (high precision, weld seal)	<b>HN00</b>
D1H (high precision, weld seal)	<b>HP00</b>
D2H (high precision, weld seal)	<b>HQ00</b>
D3H (high precision, weld seal)	<b>HU00</b>
D4H (high precision, weld seal)	<b>HR00</b>
D) Subject to export regulations AL: N, ECCN: EAR99H	

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Selection and Ordering data	Order No.	Selection and Ordering data	Order No.
<b>Spare parts (Sensors)</b>		<b>Spare parts (Miscellaneous)</b>	
<b>SITRANS F US clamp-on</b>		<b>SITRANS F US clamp-on</b>	D) <b>7ME3960 -</b> ■■■■
<b>Meter type</b>		<b>Meter design</b>	
Dedicated (SITRANS FUS1010, FUG1010, FUH1010, FUE1010)	D) <b>7ME3950 -</b> ■■■■	IP65 (NEMA 4X) wall mount or IP66 (NEMA 7) wall mount explosionproof	<b>0</b>
Portable (SITRANS FUP1010 or FUE1010)	D) <b>7ME3951 - 0</b> ■■■■	IP65 (NEMA 7) compact	<b>2</b>
<b>Standard RTD sensors (not for energy systems)</b>		IP67 weatherproof portable	<b>3</b>
Standard clamp-on RTD	<b>1TA00</b>	IP40 (NEMA 1) Portable	<b>4</b>
Submersible clamp-on RTD (not for Portable)	<b>1TB00</b>	<b>Dedicated sensor mounting hardware</b>	
Insertion style RTD pair (size 1), 140 mm (5.5 inch)	<b>1TJ00</b>	Sensor mounting tracks (aluminium with mounting straps) for pipes < 125 mm (5 inch)	
Insertion style RTD pair (size 2), 216 mm (8.5 inch)	<b>1TJ01</b>	• Universal sensor size A or B	<b>0MA00</b>
Insertion style RTD pair (size 3), 292 mm (11.5 inch)	<b>1TJ02</b>	• High precision sensor size A or B	<b>0MB00</b>
Insertion style RTD pair (size 4), 368 mm (14.5 inch)	<b>1TJ03</b>	Sensor mounting frames for	
<b>Standard for energy system (matched pair)</b>		• Universal sensor size B (for pipes > 125 mm (5 inch))	D) <b>CQO-1012FN-PB</b>
Standard clamp-on RTD	<b>1TA10</b>	• Universal sensor size C	<b>0MC00</b>
Insertion style RTD pair (size 1) for SITRANS FUE1010, 140 mm (5.5 inch)	<b>1TJ10</b>	• Universal sensor size D	<b>0MC01</b>
Insertion style RTD pair (size 2) for SITRANS FUE1010, 216 mm (8.5 inch)	<b>1TJ11</b>	• Universal sensor size E	<b>0MC02</b>
Insertion style RTD pair (size 3) for SITRANS FUE1010, 292 mm (11.5 inch)	<b>1TJ12</b>	• High precision sensor size B (for pipes > 125 mm (5 inch))	D) <b>CQO-1012FNH-PB</b>
Insertion style RTD pair (size 4) for SITRANS FUE1010, 368 mm (14.5 inch)	<b>1TJ13</b>	• High precision sensor size C	<b>0MD00</b>
1) Supplied spacer bar supports pipes up to 750 mm (30 inches). For pipes larger than 750 mm (30 inches) purchase also, spare part 7ME3960-0MS40 (1012-BN-4)		• High precision sensor size D	<b>0MD01</b>
D) Subject to export regulations AL: N, ECCN: EAR99H.		Mounting straps for mounting frames (slotted stainless steel)	
		• For pipes from DN 50 to DN 150	<b>0SM00</b>
		• For pipes from DN 50 to DN 300	<b>0SM10</b>
		• For pipes from DN 300 to DN 600	<b>0SM20</b>
		• For pipes from DN 600 to DN 1200	<b>0SM30</b>
		• For pipes from DN 1200 to DN 1500	<b>0SM40</b>
		• For pipes from DN 1500 to DN 2100	<b>0SM50</b>
		• For pipes from DN 2100 to DN 3000	<b>0SM60</b>
		Spacer bars (for indexing sensors on pipe)	
		• Spacer bars for pipes to 200 mm/8 inch (liquid), 600 mm / 24 inch (gas)	<b>0MS10</b>
		• Spacer bars for pipes to 500 mm/20 inch (liquid), DN 1200 / 48 inch (gas)	<b>0MS20</b>
		• Spacer bars for pipes to 800 mm/32 inch (liquid)	<b>0MS30</b>
		• Spacer bars for pipes to 1200 mm/48 inch (liquid) Only use in conjunction with 7ME3960-0MS30	<b>0MS40</b>
		Weld seal mounting enclosures for liquid and gas sensors	
		• Single enclosure for size C high precision	<b>0WS20</b>
		• Single enclosure for size D high precision	<b>0WS30</b>
		• Single enclosure for size E universal	<b>0WS40</b>
		• Dual enclosure for size C high precision	<b>0WD20</b>
		• Dual enclosure for size D high precision	<b>0WD30</b>
		• Dual enclosure for size E universal	<b>0WD40</b>

# Flow Measurement

## SITRANS F US Clamp-on

### Accessories/Spare parts

Selection and Ordering data	Order No.
<i>Spare parts (Miscellaneous)</i>	
<b>SITRANS F US clamp-on</b>	D) <b>7ME3960 -</b>
Stainless steel straps for weld seal enclosure mounting	
• Mounting strap for pipe diameter to 300 mm (13 inch)	<b>0SM01</b>
• Mounting strap for pipe diameter to 600 mm (24 inch)	<b>0SM11</b>
• Mounting strap for pipe diameter to 1200 mm (48 inch)	<b>0SM21</b>
• Mounting strap for pipe diameter to 1500 mm (60 inch)	<b>0SM31</b>
• Mounting strap for pipe diameter to 2130 mm (84 inch)	<b>0SM41</b>
• Mounting strap for pipe diameter to 3050 mm (120 inch)	<b>0SM51</b>
Stainless mounting tracks for high temp 991 sensors	
• Size 1 high temp sensor pair	D) <b>CQO-992MTNHMSH-1</b>
• Size 2 high temp sensor pair	D) <b>CQO-992MTNHMSH-2</b>
• Size 3 high temp sensor pair	D) <b>CQO-992MTNHMSH-3</b>
• Size 4 high temp sensor pair	D) <b>CQO-992MTNHMSH-4</b>
Clamp-on RTD mounting hardware for dedicated systems	
• RTD mounting hardware for dedicated system: 152 to 610 mm (6 to 24 inch)	<b>0MR00</b>
• RTD mounting hardware for dedicated system: 12.7 to 50.8 mm (0.5 to 2 inch)	<b>0MR01</b>
• RTD mounting hardware for dedicated system: 31.8 to 203.2 mm (1.25 to 8 inch)	<b>0MR02</b>
• RTD mounting hardware for dedicated system: 508 to 1219 mm (20 to 48 inch)	<b>0MR04</b>
• Junction box for clamp on RTD's	D) <b>CQO-992ECJ</b>
<b>Portable sensor mounting hardware</b>	
Sensor mounting tracks for portable sensors (aluminum with mounting chains) for pipes < 125 mm (5 inch) for	
• Universal sensor size A or B	<b>3MA00</b>
• High precision sensor size A or B	<b>3MB00</b>
Sensor mounting frames	
• Universal sensor size B (for pipes >125 mm (5 inch))	D) <b>CQO-1012FP-PB</b>
• Universal sensor size C	<b>3MC00</b>
• Universal sensor size D	<b>3MC01</b>
• Universal sensor size E	<b>3MC02</b>
• High precision sensor size B (for pipes > 125 mm (5 inch))	D) <b>CQO-1012FPH-PB</b>
• High precision sensor size C	<b>3MD00</b>
• High precision sensor size D	<b>3MD01</b>
Spacer bar (for indexing portable sensors)	<b>3MS00</b>
Mounting chain and EZ clamp hardware	
• EZ clamp hardware set for DN 25 to DN 600 (1 to 24 inch); handles all transducers except "D" size HP and "E" size univ.	D) <b>CQO-1012Z-1</b>
• EZ clamp hardware set for DN 25 to DN 600 (1 to 24 inch) for "D" size HP and "E" size universal	D) <b>CQO-1012Z-2</b>
• Mounting chain for portable sensors: 4 x 760 mm lengths	<b>3CM10</b>
• Mounting chain for portable sensors: 2 x 760 mm and 2 x 1500 mm lengths	<b>3CM20</b>

Selection and Ordering data	Order No.
<i>Spare parts (Miscellaneous)</i>	
<b>SITRANS F US clamp-on</b>	D) <b>7ME3960 -</b>
RTD mounting hardware for portable system	<b>3MR00</b>
Sensor connector adaptors	
• "F" connector to BNC adapter (order 2 per sensor set)	D) <b>CQO-1012NFPA</b>
SITRANS FST020 Sensor trackmounts	
• Single enclosure mounting track for "A" size Xdcr pair, Reflect	D) <b>CQO-1022A1R</b>
• Single enclosure mounting track for "B" size Xdcr pair, Reflect	D) <b>CQO-1022B1R</b>
• Dual enclosure mounting track for "B" size Xdcr pair, Reflect/Direct	D) <b>CQO-1022B2R</b>
• Single enclosure mounting track for "C" size Xdcr pair, Reflect	D) <b>CQO-1022C1R</b>
• Dual enclosure mounting track for "C" size Xdcr pair, Reflect/Direct	D) <b>CQO-1022C2R</b>
• Dual enclosure mounting track for "D" size Xdcr pair, Reflect/Direct	D) <b>CQO-1022D2R</b>
D) Subject to export regulations AL: N, ECCN: EAR99H.	

# Flow Measurement

## SITRANS F US Clamp-on

### Accessories/Spare parts

Selection and Ordering data	Order No.	Selection and Ordering data	Order No.
<i>Spare parts (Miscellaneous)</i>		<i>Spare parts (Miscellaneous)</i>	
<b>SITRANS F US clamp-on</b>	D) <b>7ME3960 -</b>	<b>SITRANS F US clamp-on</b>	D) <b>7ME3960 -</b>
<b>Insert RTD Thermowells</b>		<b>Ultrasonic couplants</b>	
• Thermowell std. duty uninsulated pipe 140 mm (5.5 inch)	D) <b>CQO-1012TW-1</b>	• Temporary water based for portable systems: 350 ml (12 oz): -34 ... +38 °C (-30 ... +100 °F)	<b>0UC10</b>
• Thermowell std. duty uninsulated pipe 216 mm (8.5 inch)	D) <b>CQO-1012TW-2</b>	• Permanent synthetic polymer based: 90 ml (3 oz) -40 ... +190 °C (-40 ... +375 °F)	<b>0UC20</b>
• Thermowell std. duty uninsulated pipe 292 mm (11.5 inch)	D) <b>CQO-1012TW-3</b>	• Permanent high temp fluoroether: 12 ml (0.4 oz): -40 ... +230 °C (-40 ... +450 °F)	<b>0UC30</b>
• Thermowell std. duty with lagging 140 mm (5.5 inch)	D) <b>CQO-1012TW-1L</b>	• Permanent high temp fluoroether: 163 ml (5.5 oz): -40 ... +230 °C (-40 ... +450 °F)	<b>0UC50</b>
• Thermowell std. duty with lagging 216 mm (8.5 inch)	D) <b>CQO-1012TW-2L</b>	• Permanent vulcanizing silicone rubber couplant: 90 ml (3 oz): -40 ... +120 °C (-40 ... +250 °F)	D) <b>CQO-CC112</b>
• Thermowell std. duty with lagging 292 mm (11.5 inch)	D) <b>CQO-1012TW-3L</b>	• Permanent high temp silicone grease: 12 ml (0.4 oz): -40 ... +230 °C (-40 ... +450 °F)	D) <b>CQO-CC117</b>
<b>Sensor cables for</b> (Use "Sensor cable selection chart" to complete Order No. with ##)		• Permanent high temp silicone grease: 150 ml (5 oz): -40 ... +230 °C (-40 ... +450 °F)	D) <b>CQO-CC117A</b>
• IP65 (NEMA 4X) wall mount or IP 66 (NEMA 7) wall mount explosionproof	<b>0CK##</b>	• Couplant for submersible sensor applications	D) <b>CQO-CC120</b>
• IP65 (NEMA 7) compact explosionproof	<b>2CK##</b>	• Dry coupling pads (qty of 10): -34 to +200 °C (-30 to +392 °F)	<b>0UC40</b>
• IP67 Weatherproof portable	<b>3CK##</b>	<b>Pipe damping films for SITRANS FUG gas systems</b>	
• IP40 (NEMA 1) Portable	<b>4CK##</b>	• B1, B2, B3, C1 and C2 sensors	<b>0DM10</b>
<b>RTD cables for</b> (Use "Sensor cable selection chart" to complete Order No. with ##)		• D1 and D3 sensors	<b>0DM20</b>
• All dedicated systems	<b>0CR##</b>	• D2 sensor	<b>0DM30</b>
• IP67 Weatherproof portable	<b>3CR##</b>	• D4 sensor	<b>0DM40</b>
• IP40 (NEMA 1) Portable	<b>4CR##</b>	<b>Serial RS232 Cables and I/O Adapters</b>	
<b>Dedicated cable termination kits</b>		• RS232 Cable for all dedicated meters	<b>0CS00</b>
• Standard, plenum and armored sensor cable (NEMA 4X wall mount and NEMA 7 wall mount explosionproof)	<b>0CT01</b>	• RS232 Cable for IP66 weatherproof portable meter	<b>3CS00</b>
• Submersible sensor cable (NEMA 4X wall mount and NEMA 7 wall mount explosionproof)	<b>0CT11</b>	• RS232 Cable for IP40 Portable meter	<b>4CS00</b>
• Standard and plenum sensor cable (SITRANS FST020)	<b>1CT01</b>	• I/O adapter for IP66 Weatherproof portable meter	<b>3AD00</b>
• Standard, plenum and armored sensor cable (NEMA 7 compact explosionproof)	<b>2CT01</b>	<b>Universal Sensor Test Blocks</b>	
• Submersible sensor cable (NEMA 7 compact explosionproof)	<b>2CT11</b>	• Test block for size A and B universal sensors	<b>0TB10</b>
• Clamp-on RTD cable termination kit for standard RTD	<b>0CT21</b>	• Test block for size C and D universal sensors	<b>0TB20</b>
• Clamp-on RTD cable termination kit for submersible RTD	<b>0CT31</b>	<b>Field Manuals</b>	
• Insert RTD cable termination kit	<b>0CT41</b>	• CD with documentation for SITRANS F US Clamp-on ultrasonic flowmeters (English)	D) <b>A5E02830664-03</b>

D) Subject to export regulations AL: N, ECCN: EAR99H.

# Flow Measurement

## SITRANS F US Clamp-on

### Accessories/Spare parts

#### Sensor cable selection chart (Dedicated, pair)

Sensor cable codes for length and type options				
Cable length m (ft)	Standard -40...+80 °C (-40...+176 °F)	Submersible -40...+80 °C (-40...+176 °F)	Plenum -40...+200 °C (-40...+392 °F)	Armored -40...+80 °C (-40...+176 °F)
Order code				
6 (20)	<b>K01</b>	<b>K11</b>	<b>K21</b>	<b>K31</b>
15 (50)	<b>K02</b>	<b>K12</b>	<b>K22</b>	<b>K32</b>
30 (100)	<b>K03</b>	<b>K13</b>	<b>K23</b>	<b>K33</b>
46 (150)	<b>K04</b>	<b>K14</b>	<b>K24</b>	<b>K34</b>
61 (200)	<b>K05</b>	<b>K15</b>	<b>K25</b>	<b>K35</b>
91 (300)	<b>K06</b>	<b>K16</b>	<b>K26</b>	<b>K36</b>

#### Sensor cable selection chart (SITRANS FUP1010, FUE1010 Portable, pair)

Sensor cable codes for length and type options		
Cable length m (ft)	Standard -40 ... + 80 °C (-40 ... +176 °F)	Plenum -40 ... + 200 °C (-40 ... +392 °F)
Order Code		
6 (20)	<b>K01</b>	<b>K21</b>
15 (50)	<b>K02</b>	<b>K22</b>
30 (100)	<b>K03</b>	<b>K23</b>

#### RTD cable selection chart (Dedicated, each)

RTD cable codes for length and type				
Cable length m (ft)	Standard -40 ... +200 °C (-40 ... +392 °F)	Submersible -40 ... +200 °C (-40 ... +392 °F)	for insert RTD -40 ... +200 °C (-40 ... 392 °F)	for submersible insert RTD -40 ... +200 °C (-40 ... 392 °F)
Order code				
6 (20)	<b>R01</b>	<b>R11</b>	<b>R21</b>	<b>R31</b>
15 (50)	<b>R02</b>	<b>R12</b>	<b>R22</b>	<b>R32</b>
30 (100)	<b>R03</b>	<b>R13</b>	<b>R23</b>	<b>R33</b>
46 (150)	<b>R04</b>	<b>R14</b>	<b>R24</b>	<b>R34</b>
61 (200)	<b>R05</b>	<b>R15</b>	<b>R25</b>	<b>R35</b>
91 (300)	<b>R06</b>	<b>R16</b>	<b>R26</b>	<b>R36</b>

#### RTD cable selection chart (SITRANS FUP1010, FUE1010 Portable, each)

RTD cable codes for length and type options	
Cable length m (ft)	IP67 -40 ... + 200 °C (-40 ... +392 °F)
Order Code	
6 (20)	<b>R11</b>
15 (50)	<b>R12</b>
30 (100)	<b>R13</b>

#### Accessories - Standard MLFB offering

Description	Order No.
Insert RTD size 1	D) <b>7ME3950-1TJ10</b>
Thermowell size 1 w/lagging	D) <b>CQO:1012TW-1L</b>
EZ Clamp 1 ... 24 inch	D) <b>CQO:1012Z-1</b>
Junction Box for Clamp RTD	D) <b>CQO:992ECJ</b>
Term kit standard, Plenum, Armored sensor cable	D) <b>7ME3960-0CT01</b>
Term kit Submersible sensor cable	D) <b>7ME3960-0CT11</b>
C1 Weld seal	D) <b>7ME3960-0WS20</b>
D1 Weld Seal	D) <b>7ME3960-0WS30</b>
C2 Weld Seal	D) <b>7ME3960-0WD20</b>
D2 Weld Seal	D) <b>7ME3960-0WD30</b>
Straps size 2	D) <b>7ME3960-0SM11</b>
Straps size 3	D) <b>7ME3960-0SM21</b>
Straps size 4	D) <b>7ME3960-0SM31</b>
Weld seal sensors C2 FM	D) <b>7ME3950-1SN00</b>
Weld seal sensors D1 FM	D) <b>7ME3950-1SP00</b>
Weld seal sensors D2 FM	D) <b>7ME3950-1SQ00</b>
Weld seal sensors D4 FM	D) <b>7ME3950-1SR00</b>
Weld seal sensors C2 ATEX	D) <b>7ME3950-2SN00</b>
Weld seal sensors D1 ATEX	D) <b>7ME3950-2SP00</b>
Weld seal sensors D2 ATEX	D) <b>7ME3950-2SQ00</b>
Weld seal sensors D4 ATEX	D) <b>7ME3950-2SR00</b>
Weld seal sensors Gas C2 FM	D) <b>7ME3950-1HN00</b>
Weld seal sensors Gas D1 FM	D) <b>7ME3950-1HP00</b>
Weld seal sensors Gas D2 FM	D) <b>7ME3950-1HQ00</b>
Weld seal sensors Gas D4 FM	D) <b>7ME3950-1HR00</b>
Weld seal sensors Gas C2 ATEX	D) <b>7ME3950-2HN00</b>
Weld seal sensors Gas D1 ATEX	D) <b>7ME3950-2HP00</b>
Weld seal sensors Gas D2 ATEX	D) <b>7ME3950-2HQ00</b>
Weld seal sensors Gas D4 ATEX	D) <b>7ME3950-2HR00</b>

Standard MLFB product offering represents 4 to 6 weeks delivery time.

D) Subject to export regulations AL: N, ECCN: EAR99H.