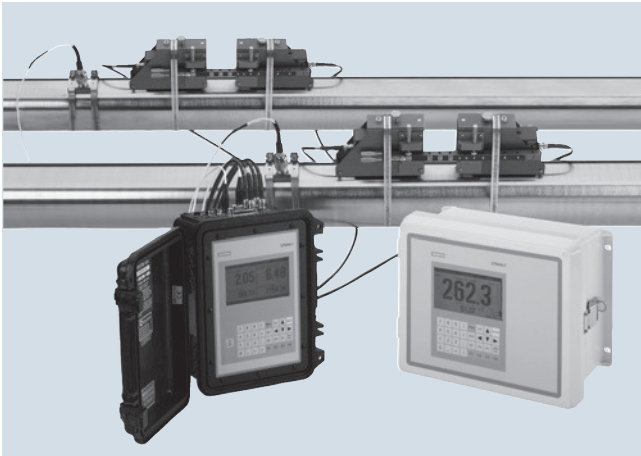


#### Overview



SITRANS FUE1010 is a highly accurate clamp-on non-intrusive ultrasonic flow transmitter for revenue grade thermal energy sub-metering and energy efficiency distribution monitoring, with a real time coefficient of performance (COP) for HVAC systems.

SITRANS FUE1010 is available in single and dual channel or dual path configurations, with your choice of IP65 (NEMA 4X) dedicated wall mount or IP40 (NEMA 1) portable enclosures.

#### Benefits

- Measures energy rate and total consumption with highest accuracy available
- Accurately measures at both low flow rates and low differential temperatures
- Easy installation; no need to cut pipe or stop flow
- Minimal maintenance; external sensors do not require periodic cleaning
- No moving parts to foul or wear
- No pressure drop or energy loss
- Wide turn-down ratio
- Choice of single or dual channel/dual path or dual mode operation:
  - Dual channel operation reduces the cost for the system on a per channel measurement basis and permits measuring hot and chilled water lines at the same time
  - Dual path capability insures high flow measurement accuracy on installations with less than desirable piping runs
- Ability to operate in either Wide-Beam Transit-time or reflexor (Doppler) mode for applications with high aeration
- ZeroMatic Path automatically sets zero without stopping flow and reduces zero drift, even at low flow

#### Application

SITRANS FUE1010 is ideally suited to thermal energy/power industry applications, including:

- Chilled water sub-metering
- Hot water sub-metering
- Condenser water
- Glycol
- Thermal storage
- Lake source cooling

#### Design

SITRANS FUE1010 is available in three configurations:

- IP65 (NEMA 4X) wall mount enclosure constructed of fiber-glass reinforced polyester with stainless steel hardware and polyester keypad
  - Single channel
  - Dual channel/dual path
- IP40 (NEMA 1) Portable impact resistant enclosure constructed of mineral reinforced copolymer polypropylene
  - Dual channel/dual path

#### Function

- Flow transmitter has an integral 33 button keypad and large (128 x 240 pixel) graphic display visible up to 12 m (40 ft) away
- 4-wire 1000  $\Omega$  platinum RTD's for supply and return temperature measurements are precision matched to within 0.01 °C (0.02 °F)
- Temperature is factory calibrated with built-in field calibrator.
- Built-in energy/BTU mode
- Detection of aeration and cavitation caused by worn or damaged impellers, misaligned shafts, etc.
- Reverse flow and empty pipe detection
- Chiller efficiency analysis: accepts an independent analog input representing kW usage for calculation of the following functions which can be selected for data logging or output purposes:
  - Cooling load (kW/ton)
  - Coefficient of performance (COP)
  - Energy efficiency ratio (EER)
- Optional current inputs
- Digital communication options:
  - HART, BACnet MSTP/BACnet IP, Modbus RTU & TCP/IP, Ethernet IP, Johnson N2 (IP65, NEMA 4X only)
  - VT100 RS 232 serial communications (Portable and NEMA 4X)
- ZeroMatic Path automatically sets zero
- Bi-directional flow operation
- 1 MByte data logger with both site and data logger storage
- English, Spanish, German, Italian and French language options

## Flow Measurement

### SITRANS F US Clamp-on

#### SITRANS FUE1010 (Energy)

#### Technical specifications

<b>Input</b>		<b>Indication and operation</b>	
Flow range	0 ... 12 m/s (0 ... 40 ft/s), bi-directional	Data logger memory	1 Mbyte of storage
Flow sensitivity	0.0003 m/s (0.001 ft/s)	Display	128 x 240 pixel LCD with back-light
Pipe size	6.4 mm ... 9.14 m (0.25" ... 360")	Keypad	33 keypad buttons with tactile feedback
Inputs per channel	<ul style="list-style-type: none"> <li>• Current: 20 mA</li> <li>• Temperature: 4 wire 1 kΩ RTD</li> <li>• Totalizer commands (clear/hold)</li> </ul>	Language options	English, Spanish, German, Italian, French
<b>Output</b>		<b>Certificates and approvals</b>	
Standard outputs	<ul style="list-style-type: none"> <li>• Current: 20 mA DC (1 kΩ at 30 V DC)</li> <li>• Voltage: 10 V DC (5 kΩ minimum)</li> <li>• Status Alarm: SPDT Relays</li> <li>• Form C relays</li> <li>• Pulse rate: 5 kHz</li> <li>• VT100 RS 232</li> </ul>	Dedicated enclosures	<ul style="list-style-type: none"> <li>• Transmitter NI Class I, Div 2 S Class II, Div 2</li> <li>• Sensor I.S. Class I, II, Div 1</li> </ul>
Optional outputs	<ul style="list-style-type: none"> <li>• Expanded I/Os (4 additional 4 ... 20 mA outputs) with form C relays</li> <li>• HART, BACnet MSTP/BACnet IP, Modbus RTU &amp; TCP/IP, Ethernet IP, Johnson N2 (IP65, NEMA 4X only)</li> </ul>	FM and CSA ratings	
Accuracy	± 0.5 % ... 1.0 % of flow, for velocities greater than 0.3 m/s (1 ft/s) ± 0.0015 ... 0.003 m/s (± 0.005 ... 0.01 ft/s), for velocities less than 0.3 m/s (1 ft/s)	CE	
Batch repeatability		± 0.15 % of flow, for velocities greater than 0.3 m/s (1 ft/s) ± 0.0005 m/s (± 0.0015 ft/s), for velocities less than 0.3 m/s (1 ft/s)	
<b>Rated operation conditions</b>			
Degree of protection	Wall mount enclosure: IP65 (NEMA 4X) Portable enclosure: IP40 (NEMA 1)		
Liquid temperature			
• Standard	-40 ... +120 °C (-40 ... +250 °F)		
• Optional	-40 ... +230 °C (-40 ... +450 °F)		
Sensor temperature			
• Standard	-40 ... +120 °C (-40 ... +250 °F)		
• Optional	-40 ... +232 °C (-80 ... +450 °F)		
Ambient temperature	-18 ... +60 °C (0 ... 140 °F)		
<b>Design</b>			
Dimensions	see SITRANS F US Clamp-on "System info and selection guide"		
Weight	see diagrams		
<b>Power supply</b>			
Dedicated	90 ... 240 V AC, 50 ... 60 Hz, 30 VA or 9 ... 36 V DC		
Portable enclosure	Rechargeable battery		

**Standard MLFB for quick delivery on SITRANS FUE1010 (Energy system)**

Selection and Ordering data	Article No.	Order code
<b>SITRANS FUE1010 (Energy)</b>	7ME350 - - 0	
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
<b>Design</b>		
Dedicated		
IP65 (NEMA 4X) wall mount	0	K02 + K02 + R02
Portable		
IP40 (NEMA 1) Battery powered	2	K01 + K01 + R01
<b>Number of channels/ultrasonic paths</b>		
Dedicated meters		
Single channel	1	
Portable meters		
Dual channel/Dual path	4	
<b>Flowmeter functions and I/O configurations</b>		
<ul style="list-style-type: none"> <li>Portable Standard I/O                             <ul style="list-style-type: none"> <li>Reflexor capability</li> <li>Graphic display</li> <li>2 x 0 ... 10 V</li> <li>2 x 4 ... 20 mA (active)</li> <li>2 x 0 ... 5 kHz pulse output (TTL)</li> <li>4 x status logic (TTL)</li> <li>Energy efficiency COP/EER output</li> <li>4 x logic inputs (totalizer control, TTL)</li> <li>2 x 4 ... 20 mA analog input</li> <li>2 x Pt100 RTD per channel</li> </ul> </li> <li>Dedicated Standard I/O                             <ul style="list-style-type: none"> <li>Reflexor capability</li> <li>Graphic display</li> <li>2 x 0 ... 10 V</li> <li>2 x 4 ... 20 mA (active)</li> <li>2 x 0 ... 5 kHz pulse output (TTL)</li> <li>4 x relay form C type</li> <li>Energy efficiency COP/EER output</li> <li>4 x logic inputs (totalizer control, TTL)</li> <li>4 x 4 ... 20 mA analog input (Single channel only)</li> <li>2 x 4 ... 20 mA analog input (Dual channel only)</li> <li>2 x Pt100 RTD per channel</li> </ul> </li> </ul>	C	
	F	
<b>Meter power options</b>		
90 ... 240 V AC (Dedicated only)		
Charger Type A for Europe (CEE7/7)	A	
Charger Type K for U.S. (NEMA 5-15P)	C	
No charger	G	
	J	
<b>Communication options</b>		
VT100 RS 232	0	
<b>RTD temperature sensor pair</b>		
(includes mounting hardware for pipes above 1.5" outer diameter)		
No RTDs (Note: Temperature input is required for Energy systems)	0	
1 x Pair Std clamp-on RTD (NEMA 4X only) <sup>3)</sup>	1	
2 x Pair Std clamp-on RTD (For Dual Channel NEMA 4X only) <sup>3)</sup>	2	
1 x Pair Std clamp-on RTD (For NEMA 12 Portable) <sup>3)</sup>	3	
2 x Pair Std clamp-on RTD (For Dual Channel NEMA 1 Portable) <sup>3)</sup>	4	
1 x Insertion RTD with Thermowell and Lagging <sup>3)</sup>	9	M1 A
2 x Insertion RTD with Thermowell and Lagging <sup>3)</sup>	9	M1 B
<b>Sensor for channel 1</b>		
(includes pipe mounting kit and spacer bar for indicated max. OD listed)		
See "Sensor selection charts" for specifications.		
no sensor		
A2 universal		A
B3 universal	Trackmount and straps provided up to 75 mm (3")	B
C3 universal <sup>5)</sup>	Trackmount and straps provided up to 125 mm (5")	C
D3 universal <sup>5)</sup>	Mounting frame and straps provided up to 300 mm (13")	D
E2 universal <sup>5)</sup>	Mounting frame and straps provided up to 600 mm (24")	E
E2 universal <sup>5)</sup>	Mounting frame and straps provided up to 1200 mm (48") <sup>1)4)</sup>	F
C1H (high precision) <sup>5)</sup>	Mounting frame and straps provided up to 600 mm (24") <sup>4)</sup>	M
C2H (high precision) <sup>5)</sup>	Mounting frame and straps provided up to 600 mm (24") <sup>4)</sup>	N
D1H (high precision) <sup>5)</sup>	Mounting frame and straps provided up to 1200 mm (48") <sup>4)</sup>	P
D2H (high precision) <sup>5)</sup>	Mounting frame and straps provided up to 1200 mm (48") <sup>4)</sup>	Q
Doppler	to 12" with strap kit (not for IP65 (NEMA7)), for up to 121 °C (250 °F)	S
D1H <sup>5)</sup>	High temperature range 104 °C/220 °F HP <sup>2)</sup>	Z
		P1 P

# Flow Measurement

## SITRANS F US Clamp-on

### SITRANS FUE1010 (Energy)

Selection and Ordering data		Article No.	Order code
<b>SITRANS FUE1010 (Energy)</b>		<b>7ME350</b>	<b>- 0</b>
<b>Sensor for channel 2</b> (includes pipe mounting kit and spacer bar for indicated max. OD listed) See "Sensor selection charts" for specifications.			
no sensor			
A2 universal	Trackmount and straps provided up to 75 mm (3")		<b>A</b>
B3 universal	Trackmount and straps provided up to 125 mm (5")		<b>B</b>
C3 universal <sup>5)</sup>	Mounting frame and straps provided up to 300 mm (13")		<b>C</b>
D3 universal <sup>5)</sup>	Mounting frame and straps provided up to 600 mm (24")		<b>D</b>
E2 universal <sup>5)</sup>	Mounting frame and straps provided up to 1200 mm (48") <sup>1)4)</sup>		<b>E</b>
C1H (high precision) <sup>5)</sup>	Mounting frame and straps provided up to 600 mm (24") <sup>4)</sup>		<b>F</b>
C2H (high precision) <sup>5)</sup>	Mounting frame and straps provided up to 600 mm (24") <sup>4)</sup>		<b>M</b>
D1H (high precision) <sup>5)</sup>	Mounting frame and straps provided up to 1200 mm (48") <sup>4)</sup>		<b>N</b>
D4H (high precision) <sup>5)</sup>	Mounting frame and straps provided up to 1200 mm (48") <sup>4)</sup>		<b>P</b>
Doppler	to 12" with strap kit (not for IP65 (NEMA7)), for up to 121 °C (250 °F)		<b>R</b>
D1H <sup>5)</sup>	High temperature range 104 °C/220 °F HP <sup>2)</sup>		<b>S</b>
			<b>Z</b>
<b>Approvals</b>	UL/Portable FM, CSA, CE, Dedicated		<b>Q1P</b>
			<b>0</b>
			<b>1</b>

- 1) Supplied spacer bar supports pipes up to 1050 mm (42 inch). For pipes larger than 1050 mm (42 inch) purchase also, spare part 7ME3960-OMS40 (1012BN-4)
- 2) Supplied spacer bar supports pipes up to 750 mm (30 inch). For pipes larger than 750 mm (30 inch) purchase also, spare part 7ME3960-OMS40 (1012BN-4)
- 3) Requires two R\*\* cables per one RTD pair
- 4) 600 mm (24") for portable systems only
- 5) Made with stainless steel constructions.

Standard MLFB product offering represents 4 to 6 weeks delivery time  
For sensor and RTD cables for quick delivery see tables at end of section

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Selection and Ordering data	Article No.	Ord. code	Selection and Ordering data	Article No.	Ord. code
<b>SITRANS FUE1010 (Energy)</b>			<b>SITRANS FUE1010 (Energy)</b>		
<ul style="list-style-type: none"> <li>Dedicated IP65 (NEMA 4X) wall mount</li> <li>Portable IP40 (NEMA 1) Battery powered</li> </ul>	7ME3500-		<ul style="list-style-type: none"> <li>Dedicated IP65 (NEMA 4X) wall mount</li> <li>Portable IP40 (NEMA 1) Battery powered</li> </ul>	7ME3500-	
	7ME3502-			7ME3502-	
<p>Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</p>					
<b>Number of channels/ultrasonic paths</b>			<b>RTD temperature sensor</b>		
<b>Dedicated meter</b>			(includes mounting hardware for pipes above 1.5" outer diameter)		
Dedicated meter			No RTDs (Note: temperature input is required for energy system)		
Single channel	1		1 x pair standard clamp-on RTD (NEMA 4X only) <sup>3)</sup>	1	
Dual channel/Dual path	2		2 x pair standard clamp-on RTD (for dual channel NEMA 4X only) <sup>3)</sup>	2	
<b>Portables</b>			1 x pair standard clamp-on RTD (NEMA 1 Portable) <sup>3)</sup>	3	
Dual channel/Dual path	4		2 x pair standard clamp-on RTD (for dual channel NEMA 1 Portable) <sup>3)</sup>	4	
<b>Flowmeter functions and I/O configurations</b>			1 x Insertion style RTD with thermowell and lagging <sup>3)</sup>	9	M 1 A
<ul style="list-style-type: none"> <li>Portable Standard I/O                             <ul style="list-style-type: none"> <li>Reflexor capability</li> <li>Graphic display</li> <li>2 x 0 ... 10 V</li> <li>2 x 4 ... 20 mA (active)</li> <li>2 x 0 ... 5 kHz pulse output (TTL)</li> <li>4 x status logic (TTL)</li> <li>Energy efficiency COP/EER output</li> <li>4 x logic inputs (totalizer control, TTL)</li> <li>2 x 4 ... 20 mA analog input</li> <li>2 x Pt100 RTD per channel</li> </ul> </li> </ul>	C		2 x Insertion style RTD with thermowell and lagging <sup>3)</sup>	9	M 1 B
<ul style="list-style-type: none"> <li>Dedicated Standard I/O                             <ul style="list-style-type: none"> <li>Reflexor capability</li> <li>Graphic display</li> <li>2 x 0 ... 10 V</li> <li>2 x 4 ... 20 mA (active)</li> <li>2 x 0 ... 5 kHz pulse output (TTL)</li> <li>4 x relay C type</li> <li>Energy efficiency COP/EER output</li> <li>4 x logic inputs (totalizer control, TTL)</li> <li>4 x 4 ... 20 mA analog input (Single channel only)</li> <li>2 x 4 ... 20 mA analog input (Dual channel only)</li> <li>2 x Pt100 RTD per channel</li> </ul> </li> </ul>	F		<b>Sensor for channel 1</b>		
<ul style="list-style-type: none"> <li>Dedicated extended I/O includes Standard I/O plus                             <ul style="list-style-type: none"> <li>4 x 4 ... 20 mA outputs (passive)</li> </ul> </li> </ul>	Z	J 1 B	Including pipe mounting tracks for sizes A & B sensors indented for pipe with a OD less than 125 mm (5") and mounting frame/spacer bars for sizes C, D & E sensors. Straps provided are for the indicated maximum OD listed below. Strap kits are available to accommodate larger pipes (refer to spare part list). Refer to "Sensor Selection Charts" for the sensor suitability of pipe size and wall thickness.		
<b>Meter power options</b>			No sensor		A
90 ... 240 V AC (Dedicated only)	A		A2 universal	Trackmount and straps provided up to 75 mm (3")	B
9 ... 36 V DC (Dedicated only)	B		B3 universal	Trackmount and straps provided up to 125 mm (5")	C
Charger Type A for Europe (CEE7/7)	C		C3 universal <sup>5)</sup>	Mounting frame and straps provided up to 300 mm (13")	D
Charger Type C for Australia (AS3112)	D		D3 universal <sup>5)</sup>	Mounting frame and straps provided up to 600 mm (24")	E
Charger Type D for U.K. (BS1363)	E		E2 universal <sup>5)</sup>	Mounting frame and straps provided up to 1200 mm (48") <sup>1)4)</sup>	F
Charger Type J for Japan (JIS8303)	F		For the following High Precision sensors, temperature range is -40 °C to +120 °C (-40 °F to +248 °F), nominal 21 °C (70 °F):		
Charger Type K for U.S. (NEMA 5-15P)	G		For other temperature ranges please see spare parts list.		
Charger Type L for Switzerland (SEV1011)	H		A2H (high precision)	Trackmount and straps provided up to 75 mm (3")	H
No Charger	J		A3H (high precision)	Trackmount and straps provided up to 75 mm (3")	J
External 4 hours battery with US plug for Portable	Z	K 1 A	B1H (high precision)	Trackmount and straps provided up to 125 mm (5")	K
External 4 hours battery with European plug for Portable	Z	K 1 B			
<b>Communication options</b>					
VT100 RS 232	0				
7ME3500 only;	3				
HART, BACnet MSTP/BACnet IP, Modbus RTU/TCPIP, Ethernet IP, Johnson N2					

# Flow Measurement

## SITRANS F US Clamp-on

### SITRANS FUE1010 (Energy)

3

Selection and Ordering data		Article No.	Ord. code	Selection and Ordering data		Article No.	Ord. code
<b>SITRANS FUE1010 (Energy)</b>				<b>SITRANS FUE1010 (Energy)</b>			
<ul style="list-style-type: none"> <li>Dedicated IP65 (NEMA 4X) wall mount</li> <li>Portable IP40 (NEMA 1) Battery powered</li> </ul>		<b>7ME3500-</b>		<ul style="list-style-type: none"> <li>Dedicated IP65 (NEMA 4X) wall mount</li> <li>Portable IP40 (NEMA 1) Battery powered</li> </ul>		<b>7ME3500-</b>	
<b>Sensor for channel 1 (continued)</b>				<b>Sensor for channel 2 (continued)</b>			
B2H (high precision)	Trackmount and straps provided up to 125 mm (5")		L	For the following High Precision sensors, temperature range is -40 °C to +120 °C (-40 °F to +248 °F), nominal 21 °C (70 °F):			
C1H (high precision) <sup>5)</sup>	Mounting frame and straps provided up to 600 mm (24") <sup>4)</sup>		M	A2H (high precision)	Trackmount and straps provided up to 75 mm (3")		H
C2H (high precision) <sup>5)</sup>	Mounting frame and straps provided up to 600 mm (24") <sup>4)</sup>		N	A3H (high precision)	Trackmount and straps provided up to 75 mm (3")		J
D1H (high precision) <sup>5)</sup>	Mounting frame and straps provided up to 1200 mm (48") <sup>2)4)</sup>		P	B1H (high precision)	Trackmount and straps provided up to 125 mm (5")		K
D2H (high precision) <sup>5)</sup>	Mounting frame and straps provided up to 1200 mm (48") <sup>2)4)</sup>		Q	B2H (high precision)	Trackmount and straps provided up to 125 mm (5")		L
D4H (high precision) <sup>5)</sup>	Mounting frame and straps provided up to 1200 mm (48") <sup>2)4)</sup>		R	C1H (high precision) <sup>5)</sup>	Mounting frame and straps provided up to 600 mm (24") <sup>4)</sup>		M
Doppler	to 12" with strap kit, for up to 121 °C (250 °F)		S	C2H (high precision) <sup>5)</sup>	Mounting frame and straps provided up to 600 mm (24") <sup>4)</sup>		N
High temperature sensor size 2 for up to 230 °C (446 °F) (30 ... 200 mm diam. (1.18 ... 7.67 inch diam.))		Z	P 1 A	D1H (high precision) <sup>5)</sup>	Mounting frame and straps provided up to 1200 mm (48") <sup>2)4)</sup>		P
High temperature sensor size 3 for up to 230 °C (446 °F) (150 ... 610 mm diam. (5.90 ... 24 inch diam.))		Z	P 1 B	D2H (high precision) <sup>5)</sup>	Mounting frame and straps provided up to 1200 mm (48") <sup>2)4)</sup>		Q
High temperature sensor size 4 for up to 230 °C (446 °F) (400 ... 1200 mm diam. (15.75 ... 47.25 inch diam.))		Z	P 1 C	D4H (high precision) <sup>5)</sup>	Mounting frame and straps provided up to 1200 mm (48") <sup>2)4)</sup>		R
For the following High Precision sensors, temperature range is -40 °C to +120 °C (-40 °F to +248 °F), nominal 65 °C (150 °F):				Doppler	to 12" with strap kit, for up to 121 °C (250 °F)		S
B1H (high temperature range HP)		Z	P 1 K	High temperature sensor size 2 for up to 230 °C (446 °F) (30 ... 200 mm diam. (1.18 ... 7.67 inch diam.))		Z	Q 1 A
B2H (high temperature range HP)		Z	P 1 L	High temperature sensor size 3 for up to 230 °C (446 °F) (150 to 610 mm diam. (5.90 to 24 inch diam.))		Z	Q 1 B
C1H (high temperature range HP) <sup>5)</sup>		Z	P 1 M	High temperature sensor size 4 for up to 230 °C (446 °F) (400 to 1200 mm diam. (15.75 to 47.25 inch diam.))		Z	Q 1 C
C2H (high temperature range HP) <sup>5)</sup>		Z	P 1 N	For the following High Precision sensors, temperature range is -40 °C to +120 °C (-40 °F to +248 °F), nominal 65 °C (150 °F):			
D1H (high temperature range HP) <sup>2)5)</sup>		Z	P 1 P	B1H (high temperature range HP)		Z	Q 1 K
D2H (high temperature range HP) <sup>2)5)</sup>		Z	P 1 Q	B2H (high temperature range HP)		Z	Q 1 L
D4H (high temperature range HP) <sup>2)5)</sup>		Z	P 1 R	C1H (high temperature range HP) <sup>5)</sup>		Z	Q 1 M
<b>Sensor for channel 2</b>				C2H (high temperature range HP) <sup>5)</sup>		Z	Q 1 N
(includes pipe mounting kit for indicated max. outer diameter listed) See "Sensor selection charts" for specifications.				D1H (high temperature range HP) <sup>2)5)</sup>		Z	Q 1 P
no sensor			A	D2H (high temperature range HP) <sup>2)5)</sup>		Z	Q 1 Q
A2 universal	Trackmount and straps provided up to 75 mm (3")		B	D4H (high temperature range HP) <sup>2)5)</sup>		Z	Q 1 R
B3 universal	Trackmount and straps provided up to 125 mm (5")		C				
C3 universal	Mounting frame and straps provided up to 300 mm (13")		D	<b>Approvals</b>			
D3 universal	Mounting frame and straps provided up to 600 mm (24")		E	FM/CSA/CE Dedicated		1	
E2 universal	Mounting frame and straps provided up to 1200 mm (48") <sup>1)4)</sup>		F	UL/ULc/CE Portable		0	

<sup>1)</sup> Supplied spacer bar supports pipes up to 1050 mm (42 inch). For pipes larger than 1050 mm (42 inch) purchase also, spare part 7ME3960-0MS40 (1012BN-4).  
<sup>2)</sup> Supplied spacer bar supports pipes up to 750 mm (30 inch). For pipes larger than 750 mm (30 inch) purchase also, spare part 7ME3960-0MS40 (1012BN-4).  
<sup>3)</sup> Requires two R\*\* cables per one RTD pair  
<sup>4)</sup> 600 mm (24") for portable systems only  
<sup>5)</sup> Made with stainless steel construction.

Selection and Ordering data	Order code
<b>Further designs</b>	
Please add "-Z" to Article No. and specify Order code(s).	
Cable assembly for sensors (add for # of channels) See "Sensor cable selection chart"	<b>K..</b>
Cable assembly for RTDs (add for # of RTDs) See "RTD cable selection chart"	<b>R..</b>
Cable termination kit (for one cable pair) dedicated only	
• Termination for standard, plenum and armored sensor cable	<b>T01</b>
• Termination for submersible sensor cable	<b>T11</b>
• RTD cable termination kit for standard RTD	<b>T21</b>
• RTD cable termination kit for submersible RTD	<b>T31</b>
• Insert RTD cable termination kit	<b>T41</b>
• Cable gland kit	<b>T51</b>
Wet flow transfer calibration (priced on request)	
6 point calibration 2/water (Price per channel)	
• 2SS40 pipe	<b>D01</b>
• 3CS40 pipe	<b>D02</b>
• 4CS40 pipe	<b>D03</b>
• 4SS40 pipe	<b>D04</b>
• 6CS40 pipe	<b>D05</b>
• 6SS40 pipe	<b>D06</b>
• 6CS120 pipe	<b>D07</b>
• 8CS40 pipe	<b>D08</b>
• 8SS40 pipe	<b>D09</b>
• 8CS120 pipe	<b>D10</b>
• 10CS Standard pipe	<b>D11</b>
• 10CS40 pipe	<b>D12</b>
• 10SS40 pipe	<b>D13</b>
• 12CS Standard pipe	<b>D14</b>
• 12CS40 pipe	<b>D15</b>
• 14CS30 pipe	<b>D16</b>
• 14CS40 pipe	<b>D17</b>
• 16CS Standard pipe	<b>D18</b>
• 16CS40 pipe	<b>D19</b>
• 18CS Standard pipe	<b>D20</b>
• 20CS20 pipe	<b>D21</b>
• 20CS30 pipe	<b>D22</b>
• 24CS Standard pipe	<b>D23</b>
• 24CS20 pipe	<b>D24</b>
• 24CS30 pipe	<b>D25</b>
• 30CS Standard pipe	<b>D26</b>
• 36CS Standard pipe	<b>D27</b>
• Other pipe, other liquid, additional points, witness	<b>Y28</b>
Tag name plate	
• Stainless steel tag with 3.2 mm (0.13 inch) character size (68 characters max.)	<b>Y19</b>

**MLFB example**

**Application example**

A dedicated clamp-on energy meter is required for two separate return lines. Both will use clamp-on RTDs for the supply and return lines. AC power is available and data access will be via Modbus communication.

Pipe 1 is a DN150 (6") schedule 40 carbon steel line  
Pipe 2 is a DN 300 (12") ductile iron line

MLFB Article No.: **7ME3500-2FA30-2NE0-Z  
K03 + K05 + R03 + R05 + R02 + R03**

Selection and Ordering data	Article No.	Ord. code
<b>SITRANS FUE1010 meter family</b>	<b>7ME3500-2FA30-2NE0-Z</b>	
IP65 (NEMA 4X) enclosure	0	
Dual channel	2	
Dedicated Type 1 I/O option	F	
90 ... 230 V AC power option	A	
Modbus option	3	
2 pairs of clamp-on RTDs	2	
Sensor code for 6" pipe	N	
Sensor code for 12" pipe	E	
No approval required	0	
30 m (100 ft) sensor cable for channel 1		<b>K03</b>
61 m (200 ft) sensor cable for channel 1		<b>K05</b>
30 m (100 ft) cable for RTD 1		<b>R03</b>
61 m (200 ft) cable for RTD 2		<b>R05</b>
15 m (50 ft) cable for RTD 3		<b>R02</b>
30 m (100 ft) cable for RTD 4		<b>R03</b>

Selection and Ordering data	Order code
<b>Operating Instructions for SITRANS FUE1010</b>	
English NEMA 4X Wall mount	<b>A5E03086491</b>
German NEMA 4X Wall mount	<b>A5E03086492</b>
English IP40 NEMA 1 Battery powered	<b>A5E02951524</b>
German IP40 NEMA 1 Battery powered	<b>A5E02951536</b>
This device is shipped with a Quick Start Guide and a CD containing further SITRANS F literature.	
All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">www.siemens.com/processinstrumentation/documentation</a>	

## Flow Measurement

### SITRANS F US Clamp-on

#### SITRANS FUE1010 (Energy)

##### Universal sensor selection chart IP68

Based on pipe size (all pipe materials)					
Pipe size	Order Code	Outer diameter range (mm)		Outer diameter range (inch)	
		min.	max.	min.	max.
A2	<b>B</b>	12.7	50.8	0.5	2
B3	<b>C</b>	19	127	0.75	5
C3	<b>D</b>	51	305	2	12
D3	<b>E</b>	203	610	8	24
E2	<b>F</b>	254	6096	10	249

##### High precision sensor selection chart IP68

Based on pipe wall thickness (steel pipes only)					
Pipe Wall	Order Code	Pipe Wall [mm]		Pipe Wall [inch]	
		min.	max.	min.	max.
A1H	<b>G</b>	0.64	1.02	0.025	0.04
A2H	<b>H</b>	1.02	1.52	0.04	0.06
A3H	<b>J</b>	1.52	2.03	0.06	0.08
B1H	<b>K</b>	2.03	3.05	0.08	0.12
B2H	<b>L</b>	3.05	4.06	0.12	0.16
C1H <sup>1)</sup>	<b>M</b>	4.06	5.84	0.16	0.23
C2H <sup>1)</sup>	<b>N</b>	5.84	8.13	0.23	0.32
D1H <sup>1)</sup>	<b>P</b>	8.13	11.18	0.32	0.44
D2H <sup>1)</sup>	<b>Q</b>	11.18	15.75	0.44	0.62
D4H <sup>1)</sup>	<b>R</b>	15.75	31.75	0.62	1.25

<sup>1)</sup> Made with stainless steel construction.

##### Sensor cable (single pair) selection chart

Sensor cable codes for length and type options				
Cable length m (ft)	Standard (PVC jacket)	Submersible <sup>1)</sup> (polyethylene jacket)	Plenum Rated (teflon jacket)	Armored <sup>1)</sup>
	-40...+80 °C (-40...+176 °F)	-40...+80 °C (-40...+176 °F)	-40...+200 °C (-40...+392 °F)	-40...+80 °C (-40...+176 °F)
Order code				
6 (20)	<b>K01<sup>2)</sup></b>	<b>K11</b>	<b>K21</b>	<b>K31</b>
15 (50)	<b>K02</b>	<b>K12<sup>2)</sup></b>	<b>K22</b>	<b>K32<sup>2)</sup></b>
30 (100)	<b>K03<sup>2)</sup></b>	<b>K13<sup>2)</sup></b>	<b>K23</b>	<b>K33</b>
46 (150)	<b>K04<sup>2)</sup></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<sup>2)</sup></b>	<b>K16</b>	<b>K26</b>	<b>K36</b>

<sup>1)</sup> Submersible and armored sensor cable is not available for portable versions.

<sup>2)</sup> Standard MLFB for quick delivery

##### RTD cable (single) selection chart

RTD cable codes for length and type		
Cable length m (ft)	Standard (teflon wrapped)	Insert <sup>1)</sup>
	-40 ... +200 °C (-40 ... +392 °F)	-40 ... +200 °C (-40 ... +392 °F)
Order code		
6 (20)	<b>R01<sup>2)</sup></b>	<b>R21</b>
15 (50)	<b>R02<sup>2)</sup></b>	<b>R22</b>
30 (100)	<b>R03<sup>2)</sup></b>	<b>R23</b>
46 (150)	<b>R04</b>	<b>R24</b>
61 (200)	<b>R05</b>	<b>R25</b>
91 (300)	<b>R06</b>	<b>R26</b>

<sup>1)</sup> Submersible RTD cable is not available for portable versions.

<sup>2)</sup> Standard MLFB for quick delivery