

# Flow Measurement

## SITRANS F US Clamp-on

### SITRANS FUH1010 (Oil)

Standard MLFB for quick delivery on SITRANS FUH1010 (Oil)

Selection and Ordering data	Article No.	Order code
<b>SITRANS FUH1010 (Oil)</b>	<b>7ME360</b> - - - - - <b>0</b> - - - - -	<b>K12 + K12 + R12</b>
<b>Design</b>	0	
IP65 (NEMA 4X) wall mount		
<b>Number of ultrasonic paths/meter type</b>	4	
Dual path Standard Volume		
<b>Flowmeter functions and I/O configurations</b>	A	
includes graphic or digital display, IP66 (BNB6665 (NEMA 4X)) and IP66 (NEMA 7) wall mount explosionproof units:		
Standard		
• Graphic display		
• 4 x 4 ... 20 mA analog input		
• 2 x 0 ... 10 V		
• 2 x 4 ... 20 mA		
• 2 x pulse outputs		
• 4 x form C relays		
• 2 x RTD input		
<b>Meter power options</b>	A	
90 ... 240 V AC		
<b>Communication options</b>	0	
RS 232 (standard)		
<b>RTD temperature sensor</b>		0
(includes mounting hardware for pipes above 1.5"/38 mm OD)		1
No RTDs		2
1 x standard clamp-on RTD		3
2 x standard clamp-on RTD		4
1 x submersible clamp-on RTD		
2 x submersible clamp-on RTD		
Notes:		
1. Temperature input is required for SITRANS FUH1010 systems		
2. Only the Interface detector set up as a dual channel can use 2 RTD's		
<b>Sensor for channel 1</b>		
(includes pipe mounting kit and spacer bar for indicated max. outer diam. listed)		
no sensor		A
C2H (high precision) Mounting frame and straps provided up to 1200 mm (48")		N
D1H (high precision) Mounting frame and straps provided up to 1200 mm (48")		P
D4H (high precision) Mounting frame and straps provided up to 1200 mm (48")		R
D1H (high precision) High Temperature to 104 °C/219 °F		Z
		P 1 P
<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		A
C2H (high precision) Mounting frame and straps provided up to 1200 mm (48")		N
D1H (high precision) Mounting frame and straps provided up to 1200 mm (48")		P
D4H (high precision) Mounting frame and straps provided up to 1200 mm (48")		R
D1H (high precision) High Temperature to 104 °C/219 °F		Z
		Q 1 P
<b>Approvals</b>		
FM/CSA/CE (default)		1
ATEX, CE, C-TICK		2
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
<b>SITRANS FUH1010 (Oil)</b>		
<ul style="list-style-type: none"> <li>• IP65 (NEMA 4X) wall mount</li> <li>• IP65 (NEMA 7) compact explosionproof</li> <li>• IP66 (NEMA 7) wall mount explosionproof</li> </ul>	<b>7ME3600-</b> <b>7ME3601-</b> <b>7ME3603-</b>	
0 -		
<b>Number of ultrasonic paths/meter type</b>		
Single path (precision volume)	0	
Single path (interface detector)	1	
Dual channel/Dual path (interface detector)	2	
Dual path (precision volume)	3	
Dual path (standard volume/mass)	4	
Special: Four path (standard volume/mass) only	9	H 1 A
<b>Flowmeter functions and I/O configurations</b>		
Includes graphic or digital display		
<u>IP65 (NEMA 4X) wall mount and IP66 (NEMA 7 wall mount explosionproof) units</u>		
<ul style="list-style-type: none"> <li>• Standard                             <ul style="list-style-type: none"> <li>- Graphic display</li> <li>- 4 x 4 ... 20 mA analog input</li> <li>- 2 x 0 ... 10 V</li> <li>- 2 x 4 ... 20 mA analog output</li> <li>- 2 x pulse output</li> <li>- 4 x form C relay</li> <li>- 2 x RTD input</li> </ul> </li> <li>• Extended I/O option                             <ul style="list-style-type: none"> <li>- additional 2 x 4 ... 20 mA outputs</li> <li>- Form C relays</li> <li>- 4 x digital pulse outputs (2 x open collector and 2 x 0 ... 5 V TTL)</li> </ul> </li> </ul>	A	
<u>IP65 (NEMA 7) compact explosionproof units</u>		
<ul style="list-style-type: none"> <li>• Standard                             <ul style="list-style-type: none"> <li>- Digital display</li> <li>- 2 x 4 ... 20 mA (Loop)</li> <li>- 2 x 4 ... 20 mA analog input</li> <li>- 2 x status (open collector)</li> <li>- 1 x RTD input</li> </ul> </li> <li>• Digital pulse option                             <ul style="list-style-type: none"> <li>- 1 x digital pulse open collector output</li> <li>- 2 x 4 ... 20 mA (Loop)</li> <li>- 2 x 4 ... 20 mA analog input</li> <li>- 1 x status (open collector)</li> <li>- 1 x RTD input</li> </ul> </li> </ul>	C	
<b>Meter power options</b>		
90 ... 240 V AC	A	
9 ... 36 V DC (except compact NEMA 7)	B	
9 ... 36 V DC negative GND (compact only)	J	
9 ... 36 V DC positive GND (compact only)	K	
<b>Communication options</b>		
RS 232 (standard)	0	
Standard MODBUS configurations include Baudrate: 9600, Parity: None, Stop Bits: 1, Data bits: 8, MODBUS data: 16 bit, Data format: word normal, Mode: RTU, and MODBUS format: Gould. For other configurations please select option 9 and L1Y and state requirements in plain text		
MODBUS (excludes NEMA 7 compact)	1	
Other Version, MODBUS, N2, Other Baud Rate, Other Parity, State in Plain Text	9	

Selection and Ordering data	Article No.	Ord. code
<b>SITRANS FUH1010 (Oil)</b>		
<ul style="list-style-type: none"> <li>• IP65 (NEMA 4X) wall mount</li> <li>• IP65 (NEMA 7) compact explosionproof</li> <li>• IP66 (NEMA 7) wall mount explosionproof</li> </ul>	<b>7ME3600-</b> <b>7ME3601-</b> <b>7ME3603-</b>	
0 -		
<b>RTD temperature sensor</b> (includes mounting hardware for pipes above 1.5" OD)		
No RTDs (Note: temperature input is required for SITRANS FUH systems)		0
1 x Standard clamp-on RTD		1
2 x Standard clamp-on RTD <sup>2)</sup>		2
1 x Submersible clamp-on RTD		3
2 x Submersible clamp-on RTD <sup>2)</sup>		4
<b>Sensor for channel/path 1</b> (includes standard pipe mounting kit and spacer bar for indicated max. outer diameter listed) See "Sensor selection charts" for specifications.		
no sensor		A
For the following A1H to D4H sensors, temperature range is -40 °C to 65 °C (-41 °F to 150 °F), nominal 21 °C (70 °F):		
A2H (high precision) Trackmount and straps provided up to 75 mm (3")		H
A3H (high precision) Trackmount and straps provided up to 75 mm (3")		J
B1H (high precision) Trackmount and straps provided up to 125 mm (5")		K
B2H (high precision) Trackmount and straps provided up to 125 mm (5")		L
B3H (high precision) Trackmount and straps provided up to 125 mm (5")		T
C1H (high precision) Mounting frame and straps provided up to 1200 mm (48") <sup>1)</sup>		M
C2H (high precision) Mounting frame and straps provided up to 1200 mm (48") <sup>1)</sup>		N
D1H (high precision) Mounting frame and straps provided up to 1200 mm (48") <sup>1)</sup>		P
D2H (high precision) Mounting frame and straps provided up to 1200 mm (48") <sup>1)</sup>		Q
D3H (high precision) Mounting frame and straps provided up to 1200 mm (48") <sup>1)</sup>		U
D4H (high precision) Mounting frame and straps provided up to 1200 mm (48") <sup>1)</sup>		R
<sup>1)</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>2)</sup> Dual channel interface detector only		

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## SITRANS F US Clamp-on

### SITRANS FUH1010 (Oil)

#### Selection and Ordering data

##### SITRANS FUH1010 (Oil)

- IP65 (NEMA 4X) wall mount
- IP65 (NEMA 7) compact explosionproof
- IP66 (NEMA 7) wall mount explosionproof

Article No. Ord. code

7ME3600-

7ME3601-

7ME3603-

0 -

#### Sensor for channel/path 1 (continued)

For the following B1H to D4H sensors, temperature range is -1 °C up to 104 °C (30 °F up to 220 °F), nominal 65 °C (150 °F):

B1H (high temperature range HP)	Z	P 1 K
B2H (high temperature range HP)	Z	P 1 L
B3H (high temperature range HP)	Z	P 1 T
C1H (high temperature range HP)	Z	P 1 M
C2H (high temperature range HP)	Z	P 1 N
D1H (high temperature range HP) <sup>1)</sup>	Z	P 1 P
D2H (high temperature range HP) <sup>1)</sup>	Z	P 1 Q
D3H (high temperature range HP) <sup>1)</sup>	Z	P 1 U
D4H (high temperature range HP) <sup>1)</sup>	Z	P 1 R

#### Sensor for channel/path 2

(includes pipe mounting kit and spacer bar for indicated max. outer diameter listed)  
See "Sensor selection charts" for specifications.

no sensor

A

For the following A1H to D4H sensors, temperature range is -40 °C to 65 °C (-41 °F to 150 °F), nominal 21 °C (70 °F):

A2H (high precision) Trackmount and straps provided up to 75 mm (3")	H	
A3H (high precision) Trackmount and straps provided up to 75 mm (3")	J	
B1H (high precision) Trackmount and straps provided up to 125 mm (5")	K	
B2H (high precision) Trackmount and straps provided up to 125 mm (5")	L	
B3H (high precision) Trackmount and straps provided up to 125 mm (5")	T	
C1H (high precision) Mounting frame and straps provided up to 1200 mm (48") <sup>1)</sup>	M	
C2H (high precision) Mounting frame and straps provided up to 1200 mm (48") <sup>1)</sup>	N	
D1H (high precision) Mounting frame and straps provided up to 1200 mm (48") <sup>1)</sup>	P	
D2H (high precision) Mounting frame and straps provided up to 1200 mm (48") <sup>1)</sup>	Q	
D3H (high precision) Mounting frame and straps provided up to 1200 mm (48") <sup>1)</sup>	U	
D4H (high precision) Mounting frame and straps provided up to 1200 mm (48") <sup>1)</sup>	R	

#### Selection and Ordering data

##### SITRANS FUH1010 (Oil)

- IP65 (NEMA 4X) wall mount
- IP65 (NEMA 7) compact explosionproof
- IP66 (NEMA 7) wall mount explosionproof

Article No. Ord. code

7ME3600-

7ME3601-

7ME3603-

0 -

For the following B1H to D4H sensors, temperature range is -1 °C up to 104 °C (30 °F up to 220 °F), nominal 65 °C (150 °F):

B1H (high temperature range HP)	Z	Q 1 K
B2H (high temperature range HP)	Z	Q 1 L
B3H (high temperature range HP)	Z	Q 1 T
C1H (high temperature range HP)	Z	Q 1 M
C2H (high temperature range HP)	Z	Q 1 N
D1H (high temperature range HP) <sup>1)</sup>	Z	Q 1 P
D2H (high temperature range HP) <sup>1)</sup>	Z	Q 1 Q
D3H (high temperature range HP) <sup>1)</sup>	Z	Q 1 U
D4H (high temperature range HP) <sup>1)</sup>	Z	Q 1 R

#### Approvals

FM/CSA/CE/C-TICK (default), also for non hazardous area

1

ATEX

2

INMETRO (Brazil)

3

- <sup>1)</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).

#### Selection and Ordering data

Order code

##### Further designs

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

Cable assembly for sensors (add for # of paths)

See "Sensor cable selection chart"

K..

Cable assembly for RTDs (add for # of RTDs)

See "RTD cable selection chart"

R..

Cable termination kit (for one cable pair)

- Termination for standard, plenum and armored sensor cable

T01

- Termination for submersible cable

T11

- RTD cable termination kit for standard RTD

T21

- RTD cable termination kit for submersible RTD

T31

Languages (Meter and Documentation), English (default)

- German

B10

- French

B12

- Spanish

B13

- Italian

B14

Tag name plate

- Stainless steel tags with 3.2 mm (0.13 inch) characters (68 characters max.)

Y19

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## SITRANS FUH1010 (Oil)

Selection and Ordering data	Article No.
<b>Operating Instructions for SITRANS FUH1010</b>	
English NEMA 4X & NEMA 7 wall mount Standard Volume	<b>A5E02951449</b>
German NEMA 4X & NEMA 7 wall mount Standard Volume	<b>A5E02951529</b>
English NEMA 4X & NEMA 7 wall mount explosionproof Precision Volume	<b>CQO:1010PVNFM-3</b>
English NEMA 4X & NEMA 7 wall mount explosionproof Interface Detector	<b>A5E02951504</b>
English NEMA 7 compact explosionproof Standard Volume	<b>CQO:1010DVXFM-3</b>
English NEMA 7 compact explosionproof Precision Volume	<b>CQO:1010PVXFM-3</b>
English NEMA 7 compact explosionproof Interface Detector	<b>CQO:1010BXXFM-3</b>
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: <a href="http://www.siemens.com/flowdocumentation">http://www.siemens.com/flowdocumentation</a>	

**MLFB example**

**Application example**

A clamp-on meter is required for a 12" carbon steel hydrocarbon line flowing multiple products, with a wall thickness of 12.7 mm (0.5"). Meter electronics are to be located in a Class I Div 2 area only 60 ft from the pipeline. 12 V DC power is available at the site.

Dual path operation is desired for improved accuracy and redundant measurement. Pulse output will be primary flow data source.

MLFB Article No.: **7ME3600-3CB00-3QQ1-Z**  
**K03 + K03 + R03**

Selection and Ordering data	Article No.	Ord. code
<b>SITRANS FUH1010 meter family</b>	<b>7 ME 3 6 0 -</b>	<b>0 -</b>
IP65 (NEMA 4X) enclosure	0	
Dual path precision volume	3	
Custody Transfer option with digital pulse	C	
9 ... 36 V DC power option	B	
RS 232 Standard	0	
RTD required for viscosity comp	3	
Sensor code for path 1	Q	
Sensor code for path 2	Q	
FM approval required	1	
30 m (100 ft) sensor cable for path 1		<b>K 0 3</b>
30 m (100 ft) sensor cable for path 2		<b>K 0 3</b>
30 m (100 ft) cable for RTD		<b>R 0 3</b>

### High precision sensor selection chart IP68

Based on pipe wall thickness (steel pipes only)					
Sensor Pipe wall	Order Code	Pipe wall (mm)		Pipe wall (inch)	
		min.	max.	min.	max.
A1H	G	0.64	1.02	0.025	0.04
A2H	H	1.02	1.52	0.04	0.06
A3H	J	1.52	2.03	0.06	0.08
B1H	K	2.03	3.05	0.08	0.12
B2H	L	3.05	4.06	0.12	0.16
C1H	M	4.06	5.84	0.16	0.23
C2H	N	5.84	8.13	0.23	0.32
D1H	P	8.13	11.18	0.32	0.44
D2H	Q	11.18	15.75	0.44	0.62
D4H	R	15.75	31.75	0.62	1.25
B3H	T	2.7	3.3	0.106	0.128
D3H	U	7.4	9.0	0.293	0.354

### Sensor Cable Selection Chart

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

### RTD Cable Selection Chart

RTD cable codes for length and type		
Cable length m (ft)	Standard (teflon wrapped) -40 ... +200 °C (-40 ... +392 °F)	Submersible (extruded jacket) -40 ... +200 °C (-40 ... +392 °F)
Order code		
6 (20)	<b>R01<sup>1)</sup></b>	<b>R11</b>
15 (50)	<b>R02<sup>1)</sup></b>	<b>R12</b>
30 (100)	<b>R03<sup>1)</sup></b>	<b>R13</b>
46 (150)	<b>R04</b>	<b>R14</b>
61 (200)	<b>R05</b>	<b>R15</b>
91 (300)	<b>R06</b>	<b>R16</b>

<sup>1)</sup> Standard MLFB for quick delivery