

### Overview



SITRANS FUH1010 clamp-on non-intrusive ultrasonic flowmeter is ideal for applications carrying crude oil, refined petroleum or liquefied gas.

SITRANS FUH1010 has three application areas: Interface detectors, precision volume or standard volume flowmeters.

### Benefits

#### For all SITRANS FUH1010 products

- 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, 30:1
- Choice of single, dual, or optional, three or four path versions.
  - Single path version reduces initial investment
  - Two or optional three and four path versions provide higher accuracy, especially where limited straight run or poor flow profile exists
- WideBeam technology
  - Helps provide improved accuracy over a wide range of liquid conditions and flow rates
  - Accommodates pipelines transporting multiple liquid products
- ZeroMatic Path automatically corrects for zero drift without stopping flow

#### Interface detection

- Outputs liquid density and API as a direct replacement for intrusive densitometers
- Exceptional repeatability is maintained, independent of changes in temperature, pressure or viscosity
- No need for straight run

#### Precision volume

- Moderate cost
- Precise measurement is maintained with automatic "Reynolds Number" compensation for temperature and viscosity changes.

#### Standard volume

- Exceptional repeatability is maintained, independent of changes in temperature, density or viscosity
- Batch interface and product quality diagnostics provided
- Density and API outputs provided
- Scraper („pig“) detection provided

#### Application

##### Interface detection

- Precise identification of interfaces on multi-liquid pipelines
- Rapid and precise scraper "pig" indication
- Product identification
- Density indication

##### Precision volume

- Applications with multiple liquids having a wide viscosity range
- Automatic gross volume compensation due to viscosity changes

##### Standard volume

- Standard (net) volume flow measurement
- Suitable for use in leak detection systems
- Mass flow output measurement
- Interface detection
- "Pig" detection
- Chemical and petrochemical processing

#### Design

SITRANS FUH1010 is available in three enclosures:

- IP65 (NEMA 4X) wall mount enclosure constructed of fiber-glass reinforced polyester with stainless steel hardware and polyester keypad
  - Single path
  - Dual path
  - Optional four path
- IP65 (NEMA 7) compact explosionproof enclosure constructed of cast aluminum with glass window, stainless steel hardware
  - Single path
  - Dual path (option)
- IP66 (NEMA 7) wall mount explosionproof enclosure constructed of cast aluminum, stainless steel hardware, with glass window
  - Single path
  - Dual path
  - Four path (optional)
- There are 2 types of mounting assemblies
  - Aluminum mounting frames (default)
  - Stainless steel weld seal (optional)

#### Function

- IP65 (NEMA 4X) and IP66 (NEMA 7) flowmeters have integral 33 button keypads and large (128 x 240 pixel) graphic displays visible up to 12 m (40 ft) away
- IP65 (NEMA 7) compact explosionproof flowmeter has a 2 x 16 alpha-numeric LCD display
- Current, voltage, status alarm, frequency and RS 232 outputs (see specification section for details)
- Analog inputs (see specification section for details)
- ZeroMatic Path automatically corrects for zero drift
- Bidirectional 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 FUH1010 (Oil)

#### Technical specifications

##### Specifications for interface detectors

###### Accuracy

Accuracy	± 0.05 of API No.
Repeatability	± 0.01 of API No.

##### Specifications for volumetric and mass flowmeters

###### Input

Flow range	± 12 m/s (± 40 ft/s), bidirectional
Flow sensitivity	0.0003 m/s (0.001 ft/s), flow rate independent

###### Accuracy

Typical accuracy	± 0.5 to 1 % of flow
Calibratable accuracy	± 0.15 % ... 0.3 % of flow, depending on version
Batch repeatability	± 0.05 % of flow, maximum

##### Specifications for all SITRANS FUH1010 products

###### Input

Pipe size	6.4 mm ... 9.14 m (0.25" ... 360")
Analog inputs	<ul style="list-style-type: none"> <li>Current: 4 x 4 ... 20 mA (IP65 (NEMA 7) enclosure has (2))</li> </ul>

###### Output

Standard outputs	<ul style="list-style-type: none"> <li>Current: 4 x 4 ... 20 mA (1 kΩ at 30 VDC)</li> <li>Voltage: 2 x 0 ... 10 V DC (5 kΩ minimum) (None for IP65 (NEMA 7) enclosure)</li> <li>1 x 0 ... 5 kHz Pulse Rate, Digital Quad. (None for IP65 (NEMA 7) enclosure)</li> <li>RS 232 Serial Port</li> </ul>
Extended outputs	<ul style="list-style-type: none"> <li>MODBUS (not for IP65 (NEMA 7) enclosure)</li> <li>Up to 4 x additional 4 ... 20 mA (not for IP65 (NEMA 7) enclosure)</li> <li>4 x form C relays (not for IP65 (NEMA 7) enclosure)</li> <li>Up to 4 x digital pulse (not for IP65 (NEMA 7) enclosure)</li> </ul>
Status/Alarm I/O	<ul style="list-style-type: none"> <li>4 x Programmable relays (not for IP65 (NEMA 7) enclosure)</li> <li>2 x Optically coupled output logic gates (for IP65 (NEMA 7) enclosure, only)</li> <li>1 x Totalizer clear switch input (not for IP65 (NEMA 4X) enclosure)<sup>1)</sup></li> <li>1 x Totalizer hold switch input (not for IP65 (NEMA 7) enclosure)<sup>1)</sup></li> <li>1 x Opto iso. totalizer clear switch input (for IP65 (NEMA 7) enclosure, only)<sup>1)</sup></li> <li>1 x Opto iso. totalizer hold switch input (for IP65 (NEMA 7) enclosure, only)<sup>1)</sup></li> </ul>

###### Accuracy

Zero Drift	0.0003 m/s (0.001 ft/s), with ZeroMatic Path active (not provided for interface detector)
Data refresh rate	5 Hz

###### Rated operation conditions

Degree of protection	<ul style="list-style-type: none"> <li>Wall mount IP65 (NEMA 4X)</li> <li>Compact explosionproof IP65 (NEMA 7)</li> <li>Wall mount explosionproof IP66 (NEMA 7)</li> </ul>
Liquid temperature	<ul style="list-style-type: none"> <li>Standard -40 ... +120 °C (-40 ... +250 °F)</li> <li>Optional -40 ... +230 °C (-40 ... +450 °F)</li> </ul>
Ambient temperature	-18 ... +60 °C (0 ... 140 °F)

###### Design

Dimensions	see SITRANS F US Clamp-on "System info and selection guide"
Weight	see diagrams

###### Power supply

<ul style="list-style-type: none"> <li>IP65 (NEMA 4X) wall mount and IP66 (NEMA 7) wall mount explosionproof</li> </ul>	90 ... 240 V AC, 50 ... 60 Hz, 30 VA or 9 ... 36 V DC, 12 W
<ul style="list-style-type: none"> <li>IP65 (NEMA 7) compact explosionproof</li> </ul>	90 ... 240 V AC, 50 ... 60 Hz, 15 VA or 9 ... 36 V DC, 10 W

###### Indication and operation

Data logger memory	1 MByte
Display	<ul style="list-style-type: none"> <li>IP65 (NEMA 4X) and IP66 (NEMA 7) Enclosures 128 x 240 pixel LCD with backlight</li> <li>IP65 (NEMA 7) Enclosure 2 x 16 Alphanumeric LCD Display</li> </ul>
Keypad	<ul style="list-style-type: none"> <li>IP65 (NEMA 4X) and IP66 (NEMA 7) Enclosures 33 keypad buttons with tactile feedback</li> <li>IP65 (NEMA 7) Enclosure 5 Magnetic hall effect switches</li> </ul>
Language options	English, Spanish, German, Italian, French

<sup>1)</sup> Totalizer switch inputs are not provided for the interface detector.

# Flow Measurement SITRANS F US Clamp-on

## SITRANS FUH1010 (Oil)

### Certificates and approvals

#### IP65 (NEMA 4X) wall mount enclosure

FM and CSA

- Transmitter  
N-I Class I, Div 2  
S Class II, Div 2
- Sensor
- I.S. Class I, II, Div 1
- EMC Directive 2004/108/EC  
ATEX Directive 94/9/EC

CE

C-TICK

ATEX

- Transmitter:  
Ex II (1) G [Ex ia] IIC  
Ex II 3 (1) G Ex nC [ia] IIC T5
- Sensors:  
Ex II 1 G Ex ia IIC T5

INMETRO (Brazil)

- Transmitter:  
[BR-Ex ia] IIC  
BR-Ex nC [ia] IIC T5
- Sensors:  
BR-Ex ia IIC T5

IECEX

Pending

#### IP65 (NEMA 7) compact explosion-proof enclosure ratings

FM and CSA

- Transmitter  
XP Class I, Div 1  
D-I Class II, Div 1  
N-I Class I, Div 2  
S Class II, Div 2
- Sensor
- I.S. Class I, II, Div 1

CE

- EMC Directive 2004/108/EC
- ATEX Directive 94/9/EC

C-TICK

ATEX

- Transmitter:  
Ex II 2 (1) G Ex d [ia] IIB + H2 T5
- Sensors:  
Ex II 1 G Ex ia IIC T5

INMETRO (Brazil)

- Transmitter:  
BR-Ex d [ia] IIC T5
- Sensors:  
BR-Ex ia IIC T5

IECEX

Pending

#### IP66 (NEMA 7) wall mount explosionproof enclosure ratings

FM and CSA

- Transmitter  
XP Class I, Div 1  
D-I Class II, Div 1  
N-I Class I, Div 2  
S Class II, Div 2
- Sensor
- I.S. Class I, II, Div 1

CE

EMC Directive 2004/108/EC  
ATEX Directive 94/9/EC

ATEX

- Transmitter:  
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

INMETRO (Brazil)

- Sensors:  
Ex II 1 G Ex ia IIC T5

- Transmitter:  
[BR-Ex ia] IIC  
BR-Ex d [ia IIC] IIB T5

IECEX

Pending

# 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 - - - - - 0 - - - - -</b>	<b>K 1 2 + K 1 2 + R 1 2</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		
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.		

# Flow Measurement SITRANS F US Clamp-on

## SITRANS FUH1010 (Oil)

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Selection and Ordering data	Article No.	Ord. code
<b>SITRANS FUH1010 (Oil)</b>		
• IP65 (NEMA 4X) wall mount	<b>7ME3600-</b>	
• IP65 (NEMA 7) compact explosionproof	<b>7ME3601-</b>	
• IP66 (NEMA 7) wall mount explosionproof	<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>		
• Standard	A	
- Graphic display		
- 4 x 4 ... 20 mA analog input		
- 2 x 0 ... 10 V		
- 2 x 4 ... 20 mA analog output		
- 2 x pulse output		
- 4 x form C relay		
- 2 x RTD input		
• Extended I/O option	C	
- additional 2 x 4 ... 20 mA outputs		
- Form C relays		
- 4 x digital pulse outputs (2 x open collector and 2 x 0 ... 5 V TTL)		
<u>IP65 (NEMA 7) compact explosionproof units</u>		
• Standard	D	
- Digital display		
- 2 x 4 ... 20 mA (Loop)		
- 2 x 4 ... 20 mA analog input		
- 2 x status (open collector)		
- 1 x RTD input		
• Digital pulse option	F	
- 1 x digital pulse open collector output		
- 2 x 4 ... 20 mA (Loop)		
- 2 x 4 ... 20 mA analog input		
- 1 x status (open collector)		
- 1 x RTD input		
<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>		
• IP65 (NEMA 4X) wall mount	<b>7ME3600-</b>	
• IP65 (NEMA 7) compact explosionproof	<b>7ME3601-</b>	
• IP66 (NEMA 7) wall mount explosionproof	<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		

# Flow Measurement

## 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

# Flow Measurement

## SITRANS F US Clamp-on

### 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 - 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	<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	<b>M</b>	4.06	5.84	0.16	0.23
C2H	<b>N</b>	5.84	8.13	0.23	0.32
D1H	<b>P</b>	8.13	11.18	0.32	0.44
D2H	<b>Q</b>	11.18	15.75	0.44	0.62
D4H	<b>R</b>	15.75	31.75	0.62	1.25
B3H	<b>T</b>	2.7	3.3	0.106	0.128
D3H	<b>U</b>	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