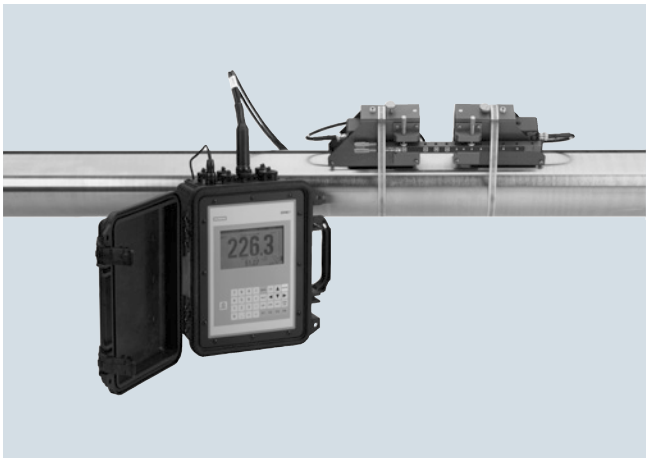
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Overview



SITRANS FUP1010 clamp-on non-intrusive ultrasonic flow transmitter offers maximum versatility plus battery power for portable field use. It can operate in either WideBeam transit time or reflexor (Doppler) mode, making it suitable for virtually any liquid, even those with high aeration or suspended solids.

SITRANS FUP1010 is available in single and dual channel or dual path configurations, with IP67 weatherproof enclosure.

Benefits

- Battery power facilitates field use; the meter is easily transported from one installation to another – saving time for surveys, monitoring and temporary installations
- Weatherproof enclosure can be used outdoors and left in place without concern for rain damage
- Rugged plastic case enables it to withstand rough treatment that would destroy most other meters
- Versatility - there is no need to change meters when operating conditions change
- Easy installation; no need to cut pipe or stop flow
- Minimal maintenance; external sensors do not require periodic cleaning
- No moving parts to wear or foul
- No pressure drop or energy loss
- Wide turn-down ratio
- Choice of single or dual channel models minimizes total cost
- ZeroMatic Path automatically sets zero without stopping flow and reduces zero drift, even at low flow
- Note that the SITRANS FUP1010 flow transmitter is not available with hazardous area approvals

Application

SITRANS FUP1010 is suitable for a wide variety of liquid applications, including the following:

- Water industry
  - Raw water
  - Potable water
  - Chemicals
- Wastewater industry
  - Raw sewage
  - Effluent
  - Sludges
  - Mixed liquor
  - Chemicals
- HVAC industry
  - Chillers
  - Condensers
  - Hot and cold water systems
  - Thermal energy rate and total
- Power industry
  - Nuclear
  - Fossil
  - Hydroelectric
- Processing industry
  - Process control
  - Batching
  - Rate indication
  - Volumetric and mass measurement

Design

- IP67 Weatherproof/Impact resistant enclosure constructed of mineral reinforced copolymer polypropylene
  - Single channel
  - Dual channel/dual path

Function

- Integral 33 button keypad and large (128 x 240 pixel) graphic display visible up to 12 m (40 ft) away
- Current, voltage, frequency and RS 232 outputs (see specification section for details)
- Optional current, voltage and temperature inputs (see specification section for details)
- 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
- VT100 RS 232 communications

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SITRANS FUP1010 (Portable)

Technical specifications

Input	
Flow range	± 12 m/s (± 40 ft/s), bidirectional
Flow sensitivity	0.0003 m/s (0.001 ft/s), flow rate independent
Pipe size	6.4 mm … 9.14 m (0.25“ … 360“)
Inputs, single channel	• Current: 20 mA DC • Temperature: 4 wire 1 kΩ RTD
Output	
Outputs	• Current: 20 mA DC (1 kΩ at 30 V DC) • Voltage: 10 V DC (5 kΩ minimum) • Status Alarm: SPDT Relays • Pulse rate: 5 kHz • VT100 RS 232
Accuracy	
Accuracy	± 0.5 % … 2 % of flow, for velocities greater than 0.3 m/s (1 ft/s) ± 0.0015 … 0.006 m/s (± 0.005 … 0.02 ft/s), for velocities less than 0.3 m/s (1 ft/s)
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)
Rated operation conditions	
Degree of protection	
• Weatherproof/impact resistant	IP67
Liquid temperature	
• Standard	-40 … +120 °C (-40 … +250 °F)
• Optional	-40 … +230 °C (-40 … +450 °F)
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	
Power	Internal rechargeable battery
Battery operation	7 hours
Indication and operation	
Data logger memory	1 MByte
Site storage memory	50 sites minimum
Display	128 x 240 pixel LCD with back-light
Keypad	33 keypad buttons with tactile feedback
Language options	English, Spanish, German, Italian, French
Certificates and approvals	
Unclassified locations	UL ULc
Classified locations	
CE	EMC Directive 2014/30/EU ATEX Directive 2014/34/EU

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Standard MLFB for quick delivery on SITRANS FUP1010 Portable (excluding energy)

Selection and Ordering data		Article No. Order Code
SITRANS FUP1010 (Portable)		
• IP67 weatherproof battery powered ↗		**7ME3510-**
		- 0 0
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
Number of channels/ultrasonic paths		
Single channel		**1**
Dual channel/Dual path		**2**
Standard flowmeter types and I/O configurations		
• Standard I/O - 2 x 4 ... 20 mA analog in - 2 x RTD input		**C**
Sensor cables		
No sensor cable		**A**
1 x PVC Jacket cable, length 6 m/20 ft[2)]		**B**
2 x PVC Jacket cable, length 6 m/20 ft[2)]		**C**
1 x PVC Jacket cable, length 15 m/50 ft[2)]		**D**
2 x PVC Jacket cable, length 15 m/50 ft[2)]		**E**
RTD temperature Sensor (Mounting hardware & cable included)		
No RTDs		**0**
1 x standard clamp-on RTD, 6 m/20 ft cable[1)]		**5**
2 x standard clamp-on RTD with 6 m/20 ft cable[1)]		**6**
1 x standard clamp-on RTD with 15 m/50 ft cable[1)]		**7**
2 x standard clamp-on RTD with 15 m/50 ft cable[1)]		**8**
Battery charger options		
No battery charger		**0**
Charger Type A for Europe (CEE7/7)		**1**
Charger Type G for U.S. (NEMA 5-15P)		**5**
Sensor for channel 1 (includes pipe mounting kit and spacer bar for indicated max. outer diameter listed) See "Sensor selection charts" for specifications.		
no sensor		**A**
A2 universal	Trackmount and straps provided up to 75 mm (3")	**B**
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**
D3 universal	Mounting frame and straps provided up to 600 mm (24")	**E**
E2 universal	Mounting frame and straps provided up to 600 mm (24")	**F**
C1H (high precision)[3)]	Mounting frame and straps provided up to 600 mm (24")	**M**
C2H (high precision)[3)]	Mounting frame and straps provided up to 600 mm (24")	**N**
D1H (high precision)[3)]	Mounting frame and straps provided up to 600 mm (24")	**P**
D4H (high precision)[3)]	Mounting frame and straps provided up to 600 mm (24")	**R**
Doppler	to 12" with strap kit (not for IP65 (NEMA 7))	**S**
D1H[3)]	High temperature range 104 °C/220 °F HP	**Z P 1 P**

Selection and Ordering data		Article No. Order Code
SITRANS FUP1010 (Portable)		
• IP67 weatherproof battery powered		**7ME3510-**
		- 0 0
Sensor for channel 2 (includes pipe mounting kit and spacer bar for indicated max. outer diameter listed) See "Sensor selection charts" for specifications.		
no sensor		**A**
A2 universal	Trackmount and straps provided up to 75 mm (3")	**B**
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**
D3 universal	Mounting frame and straps provided up to 600 mm (24")	**E**
E2 universal	Mounting frame and straps provided up to 600 mm (24")	**F**
C1H (high precision)[3)]	Mounting frame and straps provided up to 600 mm (24")	**M**
C2H (high precision)[3)]	Mounting frame and straps provided up to 600 mm (24")	**N**
D1H (high precision)[3)]	Mounting frame and straps provided up to 600 mm (24")	**P**
D2H (high precision)[3)]	Mounting frame and straps provided up to 600 mm (24")	**Q**
Doppler	to 12" with strap kit (not for IP65 (NEMA 7))	**S**
D1H[3)]	High temperature range 104 °C/220 °F HP	**Z Q 1 P**

Approvals: No options (UL, ULc, CE by default)

Standard MLFB product offering represents 4 to 6 weeks delivery time

[1)] -40 ... +200 °C (-40 ... +392 °F)
[2)] -40 ... +80 °C (-40 ... +176 °F)
[3)] Made of stainless steel constructions.

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SITRANS FUP1010 (Portable)

Selection and Ordering data	Article No.	Ord. code
SITRANS FUP1010 (Portable)		
• IP67 weatherproof battery powered ↗	**7ME3510-**	■■■■■ - 0 ■■ 0 ■■■
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
Number of channels/ultrasonic paths		
Single channel	**1**	
Dual channel/Dual path	**2**	
Standard flowmeter types and I/O configurations		
• Standard I/O - Reflexor capable - Graphic display - 2 x 0 ... 10 V - 2 x 4 ... 20 mA - 2 x pulse outputs - 4 x status logic - 2 x 4 ... 20 mA analog in - 1 x RTD per channel	**C**	
Sensor cables (select proper quantity of active channels)		
No sensor cable	**A**	
IP67 (weatherproof) only		
1 x PVC-jacket, length 6 m (20 ft) (for IP67 NEMA 6)[2]	**B**	
2 x PVC-jacket, length 6 m (20 ft) (for IP67 NEMA 6)[2]	**C**	
1 x PVC-jacket, length 15 m (50 ft) (for IP67 NEMA 6)[2]	**D**	
2 x PVC-jacket, length 15 m (50 ft) (for IP67 NEMA 6)[2]	**E**	
RTD temperature sensor (for type 3 meter only, mounting hardware and cable included)		
No RTDs	**0**	
IP67 (weatherproof) only		
1 x standard clamp-on RTD (NEMA 6) with 6 m (20 ft) cable[1]	**5**	
2 x standard clamp-on RTD (NEMA 6) with 6 m (20 ft) cable[1]	**6**	
1 x standard clamp-on RTD (NEMA 6) with 15 m (50 ft) cable[1]	**7**	
2 x standard clamp-on RTD (NEMA 6) with 15 m (50 ft) cable[1]	**8**	
Battery charger options		
no battery charger	**0**	
Charger Type A for Europe (CEE7/7)	**1**	
Charger Type C for Australia (AS3112)	**2**	
Charger Type D for U.K. (BS1363)	**3**	
Charger Type J for Japan (JIS8303)	**4**	
Charger Type G for U.S. (NEMA 5-15P)	**5**	
Charger Type L for Switzerland (SEV1011)	**6**	

Selection and Ordering data		Article No.	Ord. code
SITRANS FUP1010 (Portable)			
• IP67 weatherproof battery powered		**7ME3510-**	■■■■■ - 0 ■■ 0 ■■■
Sensor for channel 1 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.			
no sensor			**A**
A2 universal	Trackmount and straps provided up to 75 mm (3")		**B**
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**
D3 universal	Mounting frame and straps provided up to 600 mm (24")		**E**
E2 universal	Mounting frame and straps provided up to 600 mm (24")		**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):			
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**
C1H (high precision)[3]	Mounting frame and straps provided up to 600 mm (24")		**M**
C2H (high precision)[3]	Mounting frame and straps provided up to 600 mm (24")		**N**
D1H (high precision)[3]	Mounting frame and straps provided up to 600 mm (24")		**P**
D2H (high precision)[3]	Mounting frame and straps provided up to 600 mm (24")		**Q**
D4H (high precision)[3]	Mounting frame and straps provided up to 600 mm (24")		**R**
Doppler	to 12" with chain kit		**S**
High temperature sensor size 2 for up to 230 °C (446 °F) (30 to 200 mm diam. (1.18 to 7.67 inch diam.))			**Z P 1 A**
High temperature sensor size 3 for up to 230 °C (446 °F) (150 to 610 mm diam. (5.90 to 24 inch diam.))			**Z P 1 B**
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 P 1 C**

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Selection and Ordering data		Article No.	Ord. code
SITRANS FUP1010 (Portable)			
• IP67 weatherproof battery powered		**7ME3510-**	
			- 0 0
Sensor for channel 1 (continued)			
For the following High Precision sensors, temperature range is -40 °C to +120 °C (-40 °F to +248 °F), nominal 65 °C (150 °F):			
B1H (high temperature range HP)			Z P 1 K
B2H (high temperature range HP)			Z P 1 L
C1H (high temperature range HP)			Z P 1 M
C2H (high temperature range HP)			Z P 1 N
D1H (high temperature range HP)			Z P 1 P
D2H (high temperature range HP)			Z P 1 Q
D4H (high temperature range HP)			Z P 1 R
Sensor for channel 2 (includes pipe mounting kit and spacer bar for indicated max. outer diameter listed) See "Sensor selection charts" for specifications.			
no sensor			A
A2 universal	Trackmount and straps provided up to 75 mm (3")		B
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
D3 universal	Mounting frame and straps provided up to 600 mm (24")		E
E2 universal	Mounting frame and straps provided up to 600 mm (24")		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):			
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
C1H (high precision)[3]	Mounting frame and straps provided up to 600 mm (24")		M
C2H (high precision)[3]	Mounting frame and straps provided up to 600 mm (24")		N
D1H (high precision)[3]	Mounting frame and straps provided up to 600 mm (24")		P
D2H (high precision)[3]	Mounting frame and straps provided up to 600 mm (24")		Q
D4H (high precision)[3]	Mounting frame and straps provided up to 600 mm (24")		R
Doppler	to 12" with chain kit		S

Selection and Ordering data		Article No.	Ord. code
SITRANS FUP1010 (Portable)			
• IP67 weatherproof battery powered		**7ME3510-**	
			- 0 0
Sensor for channel 2 (continued)			
High temperature sensor size 2 for up to 230 °C (446 °F) (30 to 200 mm diam. (1.18 to 7.67 inch diam.))			Z Q 1 A
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
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
For the following High Precision sensors, temperature range is -40 °C to +120 °C (-40 °F to +248 °F), nominal 65 °C (150 °F):			
B1H (high temperature range HP)			Z Q 1 K
B2H (high temperature range HP)			Z Q 1 L
C1H (high temperature range HP)			Z Q 1 M
C2H (high temperature range HP)			Z Q 1 N
D1H (high temperature range HP)			Z Q 1 P
D2H (high temperature range HP)			Z Q 1 Q
D4H (high temperature range HP)			Z Q 1 R

Approvals: No options (UL, ULc, CE by default)

[1] -40 ... +200 °C (-40 ... +392 °F)
[2] -40 ... +80 °C (-40 ... +176 °F)
[3] Made of stainless steel constructions.

Selection and Ordering data	Article No.
Operating Instructions for SITRANS FUP1010	
English IP67 Weatherproof	**A5E02951522**
German IP67 Weatherproof	**A5E02951534**

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 www.siemens.com/processinstrumentation/documentation

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SITRANS FUP1010 (Portable)

Selection and Ordering data	Order code
Further designs	
Please add "**-Z**" to Article No. and specify Order code(s).	
Languages (Meter and Documentation), English (default). All languages now come standard in all flow-meters	
Wet flow transfer calibration (priced on request)	
6 point calibration 2/water (Price per channel)	
• 2SS40 pipe	**D01**
• 3CS40 pipe	**D02**
• 4CS40 pipe	**D03**
• 4SS40 pipe	**D04**
• 6CS40 pipe	**D05**
• 6SS40 pipe	**D06**
• 6CS120 pipe	**D07**
• 8CS40 pipe	**D08**
• 8SS40 pipe	**D09**
• 8CS120 pipe	**D10**
• 10CS Standard pipe	**D11**
• 10CS40 pipe	**D12**
• 10SS40 pipe	**D13**
• 12CS Standard pipe	**D14**
• 12CS40 pipe	**D15**
• 14CS30 pipe	**D16**
• 14CS40 pipe	**D17**
• 16CS Standard pipe	**D18**
• 16CS40 pipe	**D19**
• 18CS Standard pipe	**D20**
• 20CS20 pipe	**D21**
• 20CS30 pipe	**D22**
• 24CS Standard pipe	**D23**
• 24CS20 pipe	**D24**
• 24CS30 pipe	**D25**
• 30CS Standard pipe	**D26**
• 36CS Standard pipe	**D27**
• Other pipe, other liquid, additional points, witness	**Y28**
1x Insertion RTD with thermowell and lagging	**M1A**
2x Insertion RTD with thermowell and lagging	**M1B**
Tag name plate	
• Stainless steel tag with 3.2 mm (0.13 inch) character size (68 characters max.)	**Y19**

MLFB example

Application example

A general survey portable flowmeter is required for pipes sizes ranging from 76 ... 500 mm (3" ... 20") with both cast iron and steel material. Doppler may be required as liquid may be moderately aerated.

Requires language support for German.

MLFB Article No.: **7ME3510-2CB01-0DE0-Z**
B10

Selection and Ordering data	Article No.	Ord. code
SITRANS FUP1010 meter family	**7 M E 3 5 1 - - - 0**	**0**
IP67 weatherproof	**0**	
Dual channel	**2**	
Portable I/O with Doppler capable, temperature	**C**	
1 x PVC-Jacket, length 6 m (20 ft)	**B**	
No RTDs required	**0**	
Charger Type A for Europe (CEE7/7)	**1**	
Sensor for DN 50 ... DN 300 (2“ ... 12“) pipes	**D**	
Sensor for DN 200 ... DN 600 (8“ ... 24“) pipes	**E**	

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**	12.7	50.8	0.5	2
B3	**C**	19	127	0.75	5
C3	**D**	51	305	2	12
D3	**E**	203	610	8	24
E2	**F**	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	**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[1)]	**M**	4.06	5.84	0.16	0.23
C2H[1)]	**N**	5.84	8.13	0.23	0.32
D1H[1)]	**P**	8.13	11.18	0.32	0.44
D2H[1)]	**Q**	11.18	15.75	0.44	0.62
D4H[1)]	**R**	15.75	31.75	0.62	1.25

[1)] Made of stainless steel constructions.