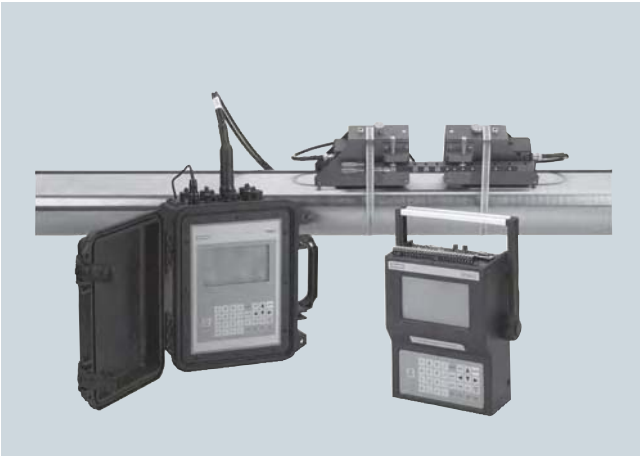


SITRANS F flowmeters

SITRANS F US

SITRANS FUP1010 Portable clamp-on

Overview



SITRANS FUP1010 clamp-on non-intrusive ultrasonic flow display computer 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 your choice of IP67 waterproof or IP40 (NEMA 1) enclosures.

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 model can be used outdoors and left in place without concern for rain damage
- Weatherproof model's 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 transducers 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 FUP1010 flow display computer is not available with hazardous area approvals

Application

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

FUP1010 is available in two configurations:

- IP40 (NEMA 1) Enclosure constructed of flame retardant ABS with polycarbonate display and polyester keypad
 - Single channel
 - Dual channel / dual path
- 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 RS232 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

SITRANS F flowmeters

SITRANS F US

SITRANS FUP1010 Portable clamp-on

Technical specifications

SITRANS FUP1010

Input

Flow range	± 12 m/s (± 40 ft/s), bidirectional
Pipe size	6.4 mm ... 9.14 m (0.25" ... 360")
Optional inputs, single channel	<ul style="list-style-type: none"> • Current: 2 x 4 ... 20 mA DC • Voltage: 2 x 0 ... 10 V DC • Temperature: 2 x 4 wire 1 kΩ RTD

Output

Outputs	<ul style="list-style-type: none"> • Current: 2 x 4 ... 20 mA DC (1 kΩ at 30 V DC) • Voltage: 2 x 0 ... 10 V DC (5 kΩ minimum) • Status Alarm: 4 x SPDT Relays • Frequency: 2 x 0 ... 5000 Hz • RS232
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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	
<ul style="list-style-type: none"> • Standard portable enclosure • Weatherproof/impact resistant 	<ul style="list-style-type: none"> • IP40 (NEMA 1) • IP67
Liquid temperature	
<ul style="list-style-type: none"> • Standard • Optional 	-40 ... +120 °C (-40 ... +250 °F) -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 NiCd battery
Battery operation	4 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 only	UL ULc CE: <ul style="list-style-type: none"> • LVD IEC 61010-1; CB Test Certificate • EMC EN61000-6-2, -4
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SITRANS F flowmeters SITRANS F US

SITRANS FUP1010 Portable clamp-on

Selection and Ordering data	Order No.	Ord. code
SITRANS FUP1010 Portable clamp-on		
• IP67 weather proof battery powered	D) ◆	7ME3510-
• IP40 (NEMA 1) battery powered	D) ◆	7ME3511-
	■ ■ ■ ■ ■	- 0 ■ ■ 0 ■ ■ ■ ■
Number of channels/ultrasonic beams		
Single channel	◆	1
Dual channel / Dual beam	◆	2
Standard flowmeter types and I/O configurations		
• Type 1 Standard	◆	A
- Reflexor capable		
- Graphic display		
- 2 x 0 ... 10 V		
- 2 x 4 ... 20 mA		
- 2 x pulse outputs		
- 4 x status logic		
• Type 3 option adder		C
- 2 x 4 ... 20 mA analog in		
- 2 x RTD		
Transducer cables (select proper quantity for active channels)		
no transducer cable		A
1 x Plenum rated, length 6 m (20 ft) (for NEMA 6) ¹⁾		B
2 x Plenum rated, length 6 m (20 ft) (for NEMA 6) ¹⁾		C
1 x Plenum rated, length 15 m (50 ft) (for NEMA 6) ¹⁾		D
2 x Plenum rated, length 15 m (50 ft) (for NEMA 6) ¹⁾		E
1 x PVC jacket, length 6 m (20 ft) (for NEMA 12) ²⁾	◆	F
2 x PVC jacket, length 6 m (20 ft) (for NEMA 12) ²⁾		G
1 x PVC jacket, length 15 m (50 ft) (for NEMA 12) ²⁾	◆	H
2 x PVC jacket, length 15 m (50 ft) (for NEMA 12) ²⁾		J
Other versions		Z
add Order code and plain text.		K 1 Y
RTD temperature sensor (for type 3 meter only, mounting hardware and cable included)		
No RTDs		0
1 x standard clamp-on RTD (NEMA 12) with 6 m (20 ft) cable ¹⁾		1
2 x standard clamp-on RTD (NEMA 12) with 6 m (20 ft) cable ¹⁾		2
1 x standard clamp-on RTD (NEMA 12) with 15 m (50 ft) cable ¹⁾		3
2 x standard clamp-on RTD (NEMA 12) with 15 m (50 ft) cable ¹⁾		4
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
Approvals: No options (UL, ULc, CE by default)		
1) -40 ... +200 °C (-40 ... +392 °F)		
2) -40 ... +80 °C (-40 ... +176 °F)		
3) Supplied spacer bar supports pipes up to 1050 mm (42 inches). For pipes larger than 1050 mm (42 inches) purchase also, spare part 7ME3960-0MS40 (1012BN-4)		
4) 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 (1012BN-4)		

Selection and Ordering data	Order No.	Ord. code
SITRANS FUP1010 Portable clamp-on		
• IP67 weather proof battery powered	D) ◆	7ME3510-
• IP40 (NEMA 1) battery powered	D) ◆	7ME3511-
	■ ■ ■ ■ ■	- 0 ■ ■ 0 ■ ■ ■ ■
RTD temperature sensor (continued)		
2 x standard clamp-on RTD (NEMA 6) with 15 m (50 ft) cable ¹⁾		8
Other versions		9
add Order code and plain text.		L 1 Y
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 K for U.S. (NEMA 5-15P)	◆	5
Charger Type L for Switzerland (SEV1011)		6
Special: External battery for extended service, add Order code and plain text.		9
External 4 hours battery with US plug for IP40 (NEMA 1) Portable		9
External 4 hours battery with US plug for IP67 (NEMA 6) Portable		9
External 4 hours battery with European plug for IP40 (NEMA 1) Portable		9
External 4 hours battery with European plug for IP67 Portable		9
Transducer for channel 1 (includes pipe mounting kit and spacer bar for indicated max. outer diameter listed) See „Transducer selection charts“ for specifications.		
no transducer		A
A2 universal to 2"/track mount		B
B3 universal to 5"/track mount	◆	C
C3 universal to 13"/mounting frame	◆	D
D3 universal to 24"/mounting frame	◆	E
E2 universal to 48"/mounting frame ³⁾	◆	F
For the following A1H to D4H transducers, temperature range is -40 °C to 65 °C (-41 °F to 150 °F), nominal 21 °C (70 °F):		
A1H (high precision) to 3"/track mount		G
A2H (high precision) to 3"/track mount		H
A3H (high precision) to 3"/track mount		J
B1H (high precision) to 5"/track mount		K
B2H (high precision) to 5"/track mount		L
C1H (high precision) to 24"/mounting frame	◆	M
C2H (high precision) to 24"/mounting frame	◆	N
D1H (high precision) to 48"/mounting frame ⁴⁾	◆	P
D2H (high precision) to 48"/mounting frame ⁴⁾	◆	Q
D4H (high precision) to 48"/mounting frame ⁴⁾		R
Doppler to 12" with chain kit		S
Other versions (different size, mount, type or pipe larger than DN 1200 (48"), or corrosion resistant), add Order code and plain text.		Z
High temperature transducer size 2 for up to 230 °C (446 °F) (30 to 200 mm diam. (1.18 to 7.67 inch diam.))		Z
High temperature transducer size 3 for up to 230 °C (446 °F) (150 to 610 mm diam. (5.90 to 24 inch diam.))		Z
High temperature transducer size 4 for up to 230 °C (446 °F) (400 to 1200 mm diam. (15.75 to 47.25 inch diam.))		Z
◆ Mainstream products (delivery time 4 to 6 weeks)		

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



SITRANS F flowmeters

SITRANS F US

SITRANS FUP1010 Portable clamp-on

Selection and Ordering data Order No. Ord. code

SITRANS FUP1010 Portable clamp-on

- IP67 weather proof battery powered D) ♦ **7ME3510-**
- IP40 (NEMA 1) battery powered D) ♦ **7ME3511-**

0 0

Transducer for channel 1 (continued)

For the following B1H to D4H transducers, 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
C1H (high temperature range HP)	Z	P 1 M
C2H (high temperature range HP)	Z	P 1 N
D1H (high temperature range HP) ²⁾	Z	P 1 P
D2H (high temperature range HP) ²⁾	Z	P 1 Q
D4H (high temperature range HP) ²⁾	Z	P 1 R

Transducer for channel 2

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

no transducer	A
A2 universal to 2"/track mount	B
B3 universal to 5"/track mount	C
C3 universal to 13"/mounting frame	D
D3 universal to 24"/mounting frame	E
E2 universal to 48"/mounting frame ¹⁾	F

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

A1H (high precision) to 3"/track mount	G
A2H (high precision) to 3"/track mount	H
A3H (high precision) to 3"/track mount	J
B1H (high precision) to 5"/track mount	K
B2H (high precision) to 5"/track mount	L
C1H (high precision) to 24"/mounting frame	M
C2H (high precision) to 24"/mounting frame	N
D1H (high precision) to 48"/mounting frame ²⁾	P
D2H (high precision) to 48"/mounting frame ²⁾	Q
D4H (high precision) to 48"/mounting frame ²⁾	R

Doppler to 12" with chain kit	S
Other versions (different size, mount, type or pipe larger than DN 1200 (48"), or corrosion resistant), add Order code and plain text.	Z Q 1 Y

High temperature transducer 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
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High temperature transducer size 3 for up to 230 °C (446 °F) (150 to 610 mm diam. (5.90 to 24 inch diam.))	Z Q 1 B
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High temperature transducer 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
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For the following B1H to D4H transducers, 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
C1H (high temperature range HP)	Z	Q 1 M
C2H (high temperature range HP)	Z	Q 1 N
D1H (high temperature range HP) ²⁾	Z	Q 1 P
D2H (high temperature range HP) ²⁾	Z	Q 1 Q
D4H (high temperature range HP) ²⁾	Z	Q 1 R

Selection and Ordering data Order code

Further designs

Please add „Z“ to Order No. and specify Order code(s).

Languages (Meter and Documentation), English (default)

- German ♦ **B10**
- French **B12**
- Spanish **B13**
- Italian **B14**

Wet flow transfer calibration (priced on request)

- 6 point up to DN 100 (4 inch) **D10**
- 6 point up to DN 125 to DN 200 (5 to 8 inch) **D11**
- 6 point up to DN 250 to DN 300 (10 to 12 inch) **D12**
- 6 point up to DN 350 to DN 400 (14 to 16 inch) **D13**
- 6 point up to DN 450 to DN 500 (18 to 20 inch) **D14**
- 6 point up to DN 550 to DN 600 (22 to 24 inch) **D15**
- 6 point up to DN 650 to DN 750 (26 to 30 inch) **D16**
- 6 point up to DN 800 to DN 900 (32 to 36 inch) **D17**

Tag name plate

- Stainless steel tag with 3.2 mm (0.13 inch) character size (26 characters max.) **Y17**
- Stainless steel tag with 3.2 mm (0.13 inch) character size (68 characters max.) **Y19**

♦ Mainstream products (delivery time 4 to 6 weeks)

- 1) Supplied spacer bar supports pipes up to 1050 mm (42 inches). For pipes larger than 1050 mm (42 inches) purchase also, spare part 7ME3960-0MS40 (1012BN-4)
- 2) 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 (1012BN-4)

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 Order No.: **7ME3510-2AB01-ODE0-Z B10**

Selection and Ordering data Order No. Ord. code

FUP1010 meter family 7 ME 3 5 1 - 0 0 0 0

IP67 weather proof	0
Dual channel	2
Portable Type 1 I/O with Doppler capable	A
2 Plenum rated transducer cables 20 ft	B
No RTDs required	0
Charger Type A for Europe (CEE7/7)	1
Transducer for DN 50 ... DN 300 (2" ... 12") pipes	D
Transducer for DN 200 ... DN 600 (8" ... 24") pipes	E
German language support	B 1 0

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

Transducer Selection Charts

Universal transducers for any pipe material

Transducer Size Code	Order Code	Outer diameter range (mm)		Outer diameter range (inches)	
		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	240

High precision transducers for steel pipe with outer diameter/wall thickness ratio > 10

Transducer Size Code	Order Code	Pipe wall (mm)		Pipe wall (inches)	
		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	11.17	0.32	0.44
D2H	Q	11.18	15.75	0.44	0.62
D4H	R	15.75	31.75	0.62	1.25