

Overview



SITRANS FUP1010 clamp-on non-intrusive ultrasonic flowmeter 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 IP67/63 (NEMA 6/3R) waterproof or IP40 (NEMA 12) 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

Application

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

- Water industry
 - Raw water
 - Potable water
 - Sludges
 - 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 12) Enclosure
 - Single channel
 - Dual channel / dual path
- IP67/63 (NEMA 6/3R) Weatherproof / Impact resistant enclosure
 - 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
- Optional pipe wall thickness gauge

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: 2x 4 ... 20 mA DC • Voltage: 2x 0 ... 10 V DC • Temperature: 2x 4 wire 1 kΩ RTD

Output

Outputs, single channel	<ul style="list-style-type: none"> • Current: 2x 4 ... 20 mA DC (1 kΩ at 30 V DC) • Voltage: 2x 0 ... 10 V DC (5 kΩ minimum) • Status Alarm: 4x SPDT Relays • Frequency: 2x 0 ... 5000 Hz • RS232
-------------------------	--

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 12) • IP67/63 (NEMA 6/3R)
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

Safety ratings	UL ULc CE: <ul style="list-style-type: none"> • LVD IEC 61010-1 • EMC EN61000-6-2, -4
----------------	---

Selection and Ordering data	Order-No.	Ord. code
SITRANS FUP1010 Portable clamp-on		
• IP67 (NEMA 6) weather proof battery powered	7ME3510-	
• IP40 (NEMA 12) battery powered	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 - Reflexor capable - Graphic display - 2x 0 ... 10 V - 2x 4 ... 20 mA - 2x pulse outputs - 4x status logic	A	
• Type 3 option adder - 2x 4 ... 20 mA analog in - 2x RTD	C	
Transducer cables (select proper quantity for active channels)		
no transducer cable	A	
1x Plenum rated, length 6 m (20 ft) (for NEMA 6) ¹⁾	B	
2x Plenum rated, length 6 m (20 ft) (for NEMA 6) ¹⁾	C	
1x Plenum rated, length 15 m (50 ft) (for NEMA 6) ¹⁾	D	
2x Plenum rated, length 15 m (50 ft) (for NEMA 6) ¹⁾	E	
1x PVC jacket, length 6 m (20 ft) (for NEMA 12) ²⁾	F	
2x PVC jacket, length 6 m (20 ft) (for NEMA 12) ²⁾	G	
1x PVC jacket, length 15 m (50 ft) (for NEMA 12) ²⁾	H	
2x PVC jacket, length 15 m (50 ft) (for NEMA 12) ²⁾	J	
Other versions add Order code and plain text.	Z	K 1 Y
RTD temperature sensor (for type 3 meter only, mounting hardware and cable included)		
No RTDs	0	
1x standard clamp-on RTD (NEMA 12) with 6 m (20 ft) cable ¹⁾	1	
2x standard clamp-on RTD (NEMA 12) with 6 m (20 ft) cable ¹⁾	2	
1x standard clamp-on RTD (NEMA 12) with 15 m (50 ft) cable ¹⁾	3	
2x standard clamp-on RTD (NEMA 12) with 15 m (50 ft) cable ¹⁾	4	
1x standard clamp-on RTD (NEMA 6) with 6 m (20 ft) cable ¹⁾	5	
2x standard clamp-on RTD (NEMA 6) with 6 m (20 ft) cable ¹⁾	6	
1x standard clamp-on RTD (NEMA 6) with 15 m (50 ft) cable ¹⁾	7	
2x standard clamp-on RTD (NEMA 6) with 15 m (50 ft) cable ¹⁾	8	
Other versions add Order code and plain text.	9	L 1 Y

¹⁾ -40 ... +200 °C (-40 ... +392 °F)

²⁾ -40 ... +80 °C (-40 ... +176 °F)

Selection and Ordering data	Order-No.	Ord. code
SITRANS FUP1010 Portable clamp-on		
• IP67 (NEMA 6) weather proof battery powered	7ME3510-	
• IP40 (NEMA 12) battery powered	7ME3511-	
	■ ■ ■ ■ - 0 ■ ■ 0 ■ ■ ■	
Battery charger options		
no battery charger	0	
Charger Type A for Europe (CEE77)	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	M 1 Y
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 3"/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		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		P
D2H (high precision) to 48"/mounting frame		Q
D4H (high precision) to 48"/mounting frame		R
Doppler to 12" with chain kit		S
Other versions (different size, type, mount, temperature range, or corrosion resistant), add Order code and plain text.		Z P 1 Y
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 3"/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		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		P
D2H (high precision) to 48"/mounting frame		Q
D4H (high precision) to 48"/mounting frame		R
Doppler to 12" with chain kit		S
Other versions (different size, type, mount, temperature range, or corrosion resistant), add Order code and plain text.		Z Q 1 Y

SITRANS F flowmeters

SITRANS F US

SITRANS FUP1010 Portable clamp-on

Selection and Ordering data Order code

Further designs

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

Languages (Meter, Labels and Documentation)

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

Wet flow transfer calibration

- Standard In-house 6-point calibration (up to DN 150 or 6") **D10**

Tag name plate

- Stainless steel with 12 mm characters (max. 15 characters) **Y17**
- Stainless steel with 8 mm characters (max. 15 characters) **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 Order No.: **7ME3510-2AB01-0DE0-Z
B10**

Selection and Ordering data Order-No. Ord. code

Selection and Ordering data	Order-No.	Ord. code
FUP1010 meter family	7ME351	- 0 0
IP67 (NEMA 6) 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 10

Transducer Selection Charts

Universal transducers for any pipe material

Transducer	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	Order Code	Pipe wall (mm)		Pipe wall (inches)	
		min	max	min	max
A1H	G	0.635	1.016	0.025	0.04
A2H	H	1.016	1.524	0.04	0.06
A3H	J	1.524	2.032	0.06	0.08
B1H	K	2.032	3.048	0.08	0.12
B2H	L	3.048	4.064	0.12	0.16
C1H	M	4.064	5.842	0.16	0.23
C2H	N	5.842	8.128	0.23	0.32
D1H	P	8.128	11.176	0.32	0.44
D2H	Q	11.176	15.748	0.44	0.62
D4H	R	15.748	31.75	0.62	1.25