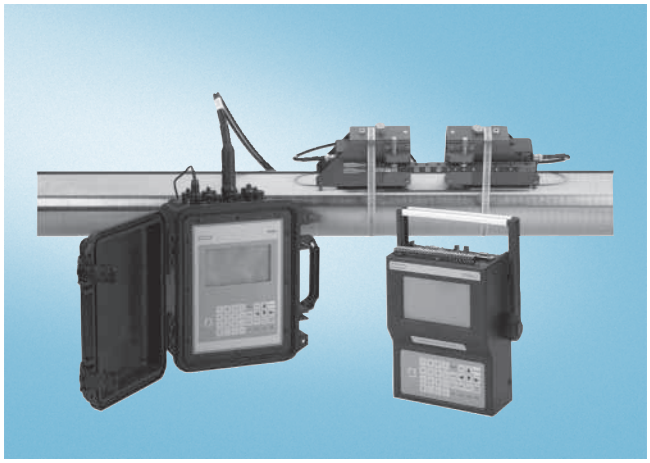
SITRANS FUP1010 Portable clamp-on

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
  - 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 1) Enclosure
  - Single channel
  - Dual channel / dual path
- IP67 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

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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	• Current: 2x 4 … 20 mA DC • Voltage: 2x 0 … 10 V DC • Temperature: 2x 4 wire 1 kΩ RTD
Output	
Outputs, single channel	• 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	
• Standard portable enclosure	• IP40 (NEMA 1)
• 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 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: • LVD IEC 61010-1 • EMC EN61000-6-2, -4

SITRANS FUP1010 Portable clamp-on

Selection and Ordering data		Order-No.	Ord. code
SITRANS FUP1010 Portable clamp-on			
• IP67 weather proof battery powered	F) ◆	**7ME3510-**	
• IP40 (NEMA 1) battery powered	F) ◆	**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

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

1) -40 ... +200 °C (-40 ... +392 °F)
2) -40 ... +80 °C (-40 ... +176 °F)

Selection and Ordering data		Order-No.	Ord. code
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• IP40 (NEMA 1) battery powered	F) ◆	**7ME3511-**	
		■■■■■ - 0 ■■ 0	■■■
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	M 1 Y
External 4 hours battery with US plug for IP40 (NEMA 12) Portable		9	M 1 A
External 4 hours battery with US plug for IP67 (NEMA 6) Portable		9	M 1 B
External 4 hours battery with European plug for IP40 (NEMA 1) Portable		9	M 1 C
External 4 hours battery with European plug for IP67 Portable		9	M 1 D
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, mount, type or pipe larger than DN 1200 (48“), or corrosion resistant), add Order code and plain text.			Z P 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 P 1 A
High temperature transducer 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 transducer 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
High temperature range HP transducer size B1H for temperatures up to 104 °C (220 °F)			Z P 1 K
High temperature range HP transducer size B2H for temperatures up to 104 °C (220 °F)			Z P 1 L
High temperature range HP transducer size C1H for temperatures up to 104 °C (220 °F)			Z P 1 M
High temperature range HP transducer size C2H for temperatures up to 104 °C (220 °F)			Z P 1 N

◆ Mainstream products (delivery time 4 to 6 weeks)

F) Subject to export regulations AL: 9I999, ECCN: N.

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• IP67 weather proof battery powered	F) ◆	**7ME3510-**	
• IP40 (NEMA 1) battery powered	F) ◆	**7ME3511-**	
		■■■■ - 0 ■■ 0	■■■
Transducer for channel 1 (continued)			
High temperature range HP transducer size D1H for temperatures up to 104 °C (220 °F)			Z P 1 P
High temperature range HP transducer size D2H for temperatures up to 104 °C (220 °F)			Z P 1 Q
High temperature range HP transducer size D4H for temperatures up to 104 °C (220 °F)			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 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, 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
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
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
High temperature range HP transducer size B1H for temperatures up to 104 °C (220 °F)			Z Q 1 K
High temperature range HP transducer size B2H for temperatures up to 104 °C (220 °F)			Z Q 1 L
High temperature range HP transducer size C1H for temperatures up to 104 °C (220 °F)			Z Q 1 M
High temperature range HP transducer size C2H for temperatures up to 104 °C (220 °F)			Z Q 1 N
High temperature range HP transducer size D1H for temperatures up to 104 °C (220 °F)			Z Q 1 P
High temperature range HP transducer size D2H for temperatures up to 104 °C (220 °F)			Z Q 1 Q
High temperature range HP transducer size D4H for temperatures up to 104 °C (220 °F)			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, Labels and Documentation), English (default)		
• 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 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)

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
FUP1010 meter family	7 M E 3 5 1 ■ - ■■■■ - 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

F) Subject to export regulations AL: 9I999, ECCN: N.

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