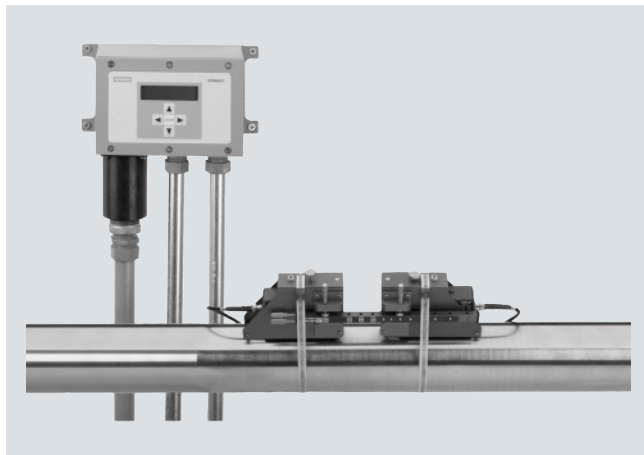# SITRANS F flowmeters
SITRANS F US

SITRANS FUS1020 Basic clamp-on

Overview

SITRANS FUS1020 offers reliable flow measurement at a much lower cost than other clamp-on ultrasonic flowmeters, with flow rate accuracy of 1% or better for most applications.

Benefits

- 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
- Compact, integral design reduces installation cost
- Wide turn-down ratio
- Choice of single or dual channel operation
- Transducers are matched to the pipe material and have menu-driven location.
- Wide-Beam technology ensures high performance.
- Zeromatic Path automatically sets zero without stopping flow and eliminates zero drift.

Application

FUS1020 is suitable for most clean liquid applications, including the following:

- Water & wastewater industry
  - Potable water
  - Wastewater, influent & effluent
  - Processed sewage, sludge
- Chemical feed industry
  - Sodium hypochlorite
  - Sodium hydroxide
- HVAC & power industries
  - Coolant flow
  - Fuel flow
- Process control
  - Chemicals
  - Pharmaceuticals

The FUS1020 flowmeter is not available with hazardous areas approval.

Design

- IP65 (NEMA 4) wall mount constructed of powder coated steel enclosure with powder coated aluminum cover, stainless steel hardware, optional stainless steel housing
- Single and dual channel versions are available

Function

- 2x16 integral alphanumeric display and 5 key keypad for installation menu and data display
- Assignable 4 ... 20 mA isolated loop-powered output
- TTL flow pulse rate output
- RS232 digital communication port
- DB9 connector for PC communication
- Assignable open collector alarm output (40 V DC max)
- Batch totalizer start-stop control line
- Internal calibration security switch
- Remote PC installation menu
- Zeromatic Path automatically sets zero
- Bidirectional flow operation
- 1 MByte data logger with both site & data logger storage

Technical specifications

Input	
Flow range	± 12 m/s (± 40 ft/s), bi-directional
Flow sensitivity	0.0003 m/s (0.001 ft/s) flow rate independent

Output	
Outputs	• Current: 4 ... 20 mA 1 x for single channel 2 x for dual channel • 1 x 0 ... 5 kHz pulse rate, digital isolated, single channel only • RS232 serial port
Optional output	• Current: 1 x 4 ... 20 mA, programmable, single channel only
Status/Alarm I/O	• Programmable form a relays (optional) 1 x for single channel 2 x for dual channel • Optically coupled totalizer hold switch inputs 1 x for single channel 2 x for dual channel • Optically isolated totalizer reset switch, single channel only

Accuracy	
Accuracy	± 0.5 % ... 1.0 % of flow
Batch repeatability	± 0.15%
Zero Drift	0.1% of rate; 0.0003 m/s (0.001 ft/s), with zeromatic path active
Data refresh rate	5 Hz

Rated operation conditions	
Degree of protection	IP65 (NEMA 4)

Design	
Weight	1.4 kg (3.0 lbs)
Dimensions (W x H x D)	197 x 103 x 109 mm (7.77 x 4.06 x 4.3 inches)

Power supply	
	100 ... 240 V AC @ 15 VA or 9 ... 36 V DC @ 10 W

Certificates and approvals	
Unclassified locations only	UL Listing ULc Listing CE: • LVD IEC 61010-1; CB report • EMC EN 61000-6-2, -4

Standard MLFB for quick delivery on SITRANS FUS1020 (Dedicated basic standard)

Selection and Ordering data		Order No.	Order code
SITRANS FUS1020 Basic Clamp-on		D) **7ME357■ - ■■■00 - 0■■■**	**K02 + K02 + ■■■**

Design

IP65 (NEMA 4)	**0**

Number of channels/ultrasonic paths

Single channel	**1**
Dual channel/Dual path	**2**

Flowmeter functions and I/O configurations

With display	**E**

Meter power options

90 ... 240 V AC	**A**

Transducer for channel 1
(includes pipe mounting kit for indicated max. OD listed)
See „Transducer selection charts" for specifications.

no transducer		**A**
A2 universal	Trackmount and straps provided upt to 75 mm (3")	**B**
B3 universal	Trackmount and straps provided upt 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 1200 mm (48")[1]	**F**

Transducer for channel 2
(includes pipe mounting kit for indicated max. OD listed)
See „Transducer selection charts" for specifications.

no transducer		**A**
A2 universal	Trackmount and straps provided upt to 75 mm (3")	**B**
B3 universal	Trackmount and straps provided upt 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 1200 mm (48")[1]	**F**

Approvals

No approval options	**0**

Languages (Meter, Labels and Documentation)

German, English (default)	**B10**

Standard MLFB offering represents 4 to 6 weeks delivery time

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

SITRANS FUS1020 Basic clamp-on

Selection and Ordering data	Order No.	Ord. code
SITRANS FUS1020 Basic clamp-on, IP65 (NEMA 4)	D) **7ME3570-**	
	▣▣▣**00 - 0**▣▣▣ ▣▣▣	

Number of channels/ultrasonic paths

Single channel	**1**	
Dual channel / Dual path	**2**	

Flowmeter functions and I/O configurations

• Blind system - 1 x 4 ... 20 mA **per channel** - 1 x pulse out (for single channel only)	**A**	
• With display	**E**	
• With display and 1 x additional analog output (single channel only)	**F**	
• With display and with SPST relay	**G**	
• With display and 1 x additional analog output and SPST relay (single channel only)	**H**	

Meter power options

90 ... 240 V AC	**A**	
9 ... 36 V DC	**B**	

Transducer for channel 1

Including pipe mounting tracks for Sizes A & B transducers indented for pipe with a OD less than 125 mm (5") and mounting frame/spacer bars for sizes C, D & E transducers. 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 "Transducer Selection Charts" for the transducer suitability of pipe size and wall thickness

no transducer		**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 1200 mm (48")[1]	**F**
A1H (high precision)	Trackmount and straps provided up to 75 mm (3")	**G**
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)	Mounting frame and straps provided up to 1200 mm (48")	**M**
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")[2]	**P**
D2H (high precision)	Mounting frame and straps provided up to 1200 mm (48")[2]	**Q**

Selection and Ordering data	Order No.	Ord. code
SITRANS FUS1020 Basic clamp-on, IP65 (NEMA 4)	D) **7ME3570-**	
	▣▣▣**00 - 0**▣▣▣ ▣▣▣	

Transducer for channel 1 (continued)

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**

Transducer for channel 2
(includes pipe mounting kit for indicated max. outer diameter listed)
See „Transducer selection charts" for specifications.

no transducer		**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 1200 mm (48")[1]	**F**
A1H (high precision)	Trackmount and straps provided up to 75 mm (3")	**G**
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)	Mounting frame and straps provided up to 1200 mm (48")	**M**
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")[2]	**P**
D2H (high precision)	Mounting frame and straps provided up to 1200 mm (48")[2]	**Q**
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**

Approvals

no approval options (UL, ULc, CE by default)		**0**

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

SITRANS FUS1020 Basic clamp-on

Selection and Ordering data	Order code
Further designs	
Please add „-Z" to Order No. and specify Order code(s).	
Cable assembly for transducers (add for # of channels) See „Transducer cable selection chart"	**K..**
Cable termination kit (for one cable pair)	
• Transducer cable termination for standard and plenum cable	**T01**
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 tags with 3.2 mm (0.13 inch) character size (26 characters max.)	**Y17**
• Stainless steel tags with 3.2 mm (0.13 inch) character size (68 characters max.)	**Y19**

[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 basic clamp-on meter is required for a DN 150 (6" schedule 40) carbon steel waste water line, with a pipe wall thickness of 7.1 mm (0.28"). Meter electronics are to be located in an instrumentation shed with available AC power. 36 m (120 ft) of transducer cable is needed to reach pipe location.

MLFB Order No.: **7ME3570-1EA00-0NA0-Z K04**

Selection and Ordering data	Order No.		Ord. code
FUS1020 meter family	D) **7 M E 3 5 7** ▢ - ▢▢▢ 0 0 - 0 ▢▢ 0 ▢▢▢		
IP65 (NEMA 4) enclosure	**0**		
Single channel	**1**		
Standard I/O option	**E**		
90 ... 240 V AC power option	**A**		
Transducer code for channel 1	**N**		
Second transducer not required	**A**		
46 m (150 ft) transducer cable			**K 0 4**

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

Transducer selection charts

Universal transducers for any pipe material

Transducer type (universal)	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	249

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

Transducer type (high precision)	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	11.18	0.32	0.44
D2H	**Q**	11.18	15.75	0.44	0.62

Transducer cable selection chart

Transducer cable codes for length and type options

Cable length [m (ft)]	Standard (PVC jacket) -40 ... + 80 °C (-40 ... +176 °F)	Plenum rated (Teflon jacket) -40 ... + 200 °C (-40 ... +392 °F)
	Order Code	
6 (20)	**K01**	K21
15 (50)	**K02**	K22
30 (100)	**K03**	K23
46 (150)	**K04**	K24
61 (200)	**K05**	K25
91 (300)	**K06**	K26