SITRANS FST020 (Basic)

Overview

SITRANS FST020 offers reliable flow measurement at a much lower cost than other clamp-on ultrasonic flowmeters, with flow rate accuracy of ± 0.5 % to 1.0 % for most applications.

Benefits

- 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
- Compact, integral design reduces installation cost
- Wide turn-down ratio
- Optional WideBeam technology ensures high performance.
- ZeroMatic Path automatically sets zero without stopping flow and eliminates zero drift.

Application

SITRANS FST020 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 SITRANS FST020 flowmeter is not available with hazardous areas approval.

Design

- IP65 (NEMA 4X) wall mount constructed of polycarbonate
- Single channel versions only

Function

- 2 x16 integral alphanumeric display and 5 key keypad for installation menu and data display
- Pulse rate output
- Communications include VT100 RS 232 with a DB9 connector, Modbus RTU, BACnet MSTP
- Totalizer start/stop and rest control lines.
- Remote PC installation menu
- ZeroMatic Path automatically sets zero
- Bidirectional flow operation
- 1 MByte data logger with both site & data logger storage
- Menu language in English, Spanish, German, Italian and French

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
Digital Inputs	
Totalizer Hold	Optically isolated diode Input voltage: 2 … 10 V DC
Totalizer Reset	Optically isolated diode Input voltage: 2 … 10 V DC
Output	
Current	• 4 ... 20 mA (Isolated) • externally powered 10 … 30 V DC
Relay	• Programmable Form C 250 mA • 30 V DC • 3 V A max
Pulse rate[1)]	• Optically isolated transistor 10 mA • 30 V DC max
Accuracy	For velocities ≥ 0.3 m/s (1 ft/s)
• 4 ... 20 mA	± 1.0 % of flow
• Pulse, relay output	± 0.5 % ... 1.0 % of flow
Batch repeatability	± 0.15 %
Zero Drift	0.1 % of rate; 0.0003 m/s (0.001 ft/s)
Data refresh rate	5 Hz
Transmitter conditions	
Operating temperature	-10 … +50 °C (14 … +122 °F)
Storage temperature	-20 … +60 °C (-4 … +140 °F)
Degree of protection	IP65 NEMA 4X
Design	
Weight	1.4 kg (3.0 lb)
Dimensions (W x H x D)	175 x 235 x 92 mm (6.89 x 9.25 x 3.62 inch)
Enclosure material	Polycarbonate
Power supply	100 ... 240 V AC @ 20 VA or 11.5 ... 28.5 V DC @ 10 W
Certificates and approvals	
Unclassified locations	UL, UL_C
Classified locations	
CE	EMC Directive 2004/108/EC ATEX Directive 94/9/EC
C-TICK	

[1)] When used to represent flow rate (PGEN) the frequency can reach as high as 5000 Hz. When used to represent flow total it can reach 50 Hz.

Standard MLFB for quick delivery on SITRANS FST020 (Basic)

Selection and Ordering data		Article No.
SITRANS FST020 (Basic)		↗ 7ME357 - 30 - 0
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
Design		
IP65 (NEMA 4X) wall mount		0
Number of channels/ultrasonic paths		
Single channel		1
Flowmeter functions and I/O configurations		
• With display and 1 additional analog output and SPST relay		H
Meter power options		
100 ... 240 V AC		A
11.5 ... 28.5 V DC, 10 W max		B
Sensor (includes pipe mounting kit for indicated max. OD 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[2]	Mounting frame and straps provided up to 300 mm (13")	D
D3 universal[2]	Mounting frame and straps provided up to 600 mm (24")	E
E2 universal[2]	Mounting frame and straps provided up to 1200 mm (48")[1]	F
For the following A1H to C1H sensors, temperature range is -40 ... 65 °C (-41 ... 150 °F), nominal 21 °C (70 °F)		
C1H (high precision)[2]	Mounting frame and straps provided up to 600 mm (24")	M
C2H (high precision)[2]	Mounting frame and straps provided up to 600 mm (24")	N
D1H (high precision)[2]	Mounting frame and straps provided up to 1200 mm (48")[1]	P
D4H (high precision)[2]	Mounting frame and straps provided up to 1200 mm (48")[1]	R
Sensor cables		
No sensor cable		A
6 m (20 ft) PVC Jacket (1 pr)		B
15 m (50 ft) PVC Jacket (1 pr)		C
30 m (100 ft) PVC Jacket		D
46 m (150 ft) PVC Jacket		E
91 m (300 ft) PVC Jacket		G
Approvals		
UL, UL_C, CE, C-TICK		0

Standard MLFB offering represents 2 to 3 weeks delivery time for quantities under 5.

[1] Supplied spacer bar suppports pipes up to 750 mm (30 inch). For pipes larger than 750 nn (30 inch) purchase also, spare part 7ME3960-0MS40 (1012BN-4).

[2] Made of stainless steel construction.

SITRANS FST020 (Basic)

Selection and Ordering data	Article No.	Ord. code
SITRANS FST020 (Basic) IP65 (NEMA 4x) ↗	**7ME3570-**	
		3 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**	
Flowmeter functions and I/O configurations		
• With display, keypad, 1x 4 ... 20 mA, 1x relay, 1x pulse/frequency, 2x digital input, VT100 RS232, Modbus RTU, BACnet MSTP	**H**	
Meter power options		
100 ... 240 V AC	**A**	
11.5 ... 28.5 V DC	**B**	
Sensor for channel 1[1] Including pipe mounting tracks for Sizes A & B universal sensors indented for pipe with a OD less than 125 mm (5") and mounting frame/spacer bars for sizes C, D & E universal 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[2] — Mounting frame and straps provided up to 330 mm (13")		**D**
D3 universal[2] — Mounting frame and straps provided up to 600 mm (24")		**E**
E2 universal[2] — Mounting frame and straps provided up to 1200 mm (48")		**F**
For the following A2H to D4H transducers, temperature range is -40 ... 65 °C (-41 ... 150 °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 (5")		**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)[2] — up to 600 min (24") with mounting hardware		**M**
C2H (high precision)[2] — up to 600 min (24") with mounting hardware		**N**
D1H (high precision)[2] — Mounting frame and straps provided up to 1200 mm (48")[1]		**P**
D2H (high precision)[2] — Mounting frame and straps provided up to 1200 mm (48")[1]		**Q**
D4H (high precision)[2] — Mounting frame and straps provided up to 1200 mm (48")[1]		**R**

Selection and Ordering data	Article No.	Ord. code
SITRANS FST020 (Basic) IP65 (NEMA 4x)	**7ME3570-**	
	3 0 - 0	
High temperature sensor size 2 for up to 230 °C (446 °F) (30 to 200 mm diam. (1 to 8 inch diam.))	**Z**	**P 1 A**
High temperature sensor size 3 for up to 230 °C (446 °F) (150 to 610 mm diam. 6 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. (16 to 48 inch diam.))	**Z**	**P 1 C**
Sensor cables (pair)		
No sensor cable		**A**
6 m (20 ft) PVC Jacket		**B**
15 m (50 ft) PVC Jacket		**C**
30 m (100 ft) PVC Jacket		**D**
46 m (150 ft) PVC Jacket		**E**
61 m (200 ft) PVC Jacket		**F**
91 m (300 ft) PVC Jacket		**G**
6 m (20 ft) Plenum rated (Teflon jacket)		**H**
15 m (50 ft) Plenum rated (Teflon jacket)		**J**
30 m (100 ft) Plenum rated (Teflon jacket)		**K**
46 m (150 ft) Plenum rated (Teflon jacket)		**L**
61 m (200 ft) Plenum rated (Teflon jacket)		**M**
91 m (300 ft) Plenum rated (Teflon jacket)		**N**
Approvals		
UL, UL_C, CE, C-TiCK		**0**

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

[2] Made of stainless steel construction.

Selection and Ordering data	Order code
Further designs Please add "**-Z**" to Article No. and specify Order code(s).	
Cable termination kit (for one cable pair) • Sensor cable termination for standard and plenum cable	**T01**
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**
Tag name plate • Stainless steel tags with 3.2 mm (0.13 inch) character size (68 characters max.)	**Y19**

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 sensor cable is needed to reach pipe location.

MLFB Article No.: **7ME3570-1HA30-0NE0**

Selection and Ordering data	Article No.	Ord. code
SITRANS FST020 meter family	**7ME357** - **30** - **0**	**0**
IP65 (NEMA 4X) enclosure	**0**	
Single channel	**1**	
Standard I/O option	**H**	
100 ... 240 V AC power option	**A**	
Sensor code for channel 1	**N**	
46 m (150 ft) sensor cable	**E**	

Selection and Ordering data	Order code
Operating Instructions for SITRANS FST020	
English NEMA 4X	**A5E03086487**
German NEMA 4X	**A5E03086488**

This device is shipped with a Quick Start Guide and a CD containing further SITRANS F literature.

All literature is also available for free at:
http://www.siemens.com/flowdocumentation

Universal sensor selection chart IP68

Based on pipe size (pipes other than steel)					
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[1)]	**D**	51	305	2	12
D3[1)]	**E**	203	610	8	24
E2[1)]	**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 construction.