ProSense® FSC Series Digital Flow Sensors

Part No. FSC75-00-42-6H

Features

- Up to 50 GPM sensing range
- 4-digit, two-color digital display
- Immune to rapid media temperature changes
- Measures media temperature in addition to flow
- Two outputs selectable for switch, frequency, or analog signals
- <10ms response time
- 3/4", 1" or 1-1/2" FNPT process connections
- Suitable for horizontal or vertical mounting orientations
- 4-pin M12 quick-disconnect
- IP65/IP67 protection rating
- 2-year warranty

Overview

ProSense FSC series digital flow sensors monitor liquid media and provides two outputs that can be configured for switching, frequency, or analog signals for either flow rate or temperature.

Output OUT1 selection options:

- Frequency or switching output for flow or temperature

Output OUT2 selection options

- Analog or switching output for flow or temperature

Configuration and process variable monitoring are accomplished with the push buttons and a 4-digit, two-color digital display. The ProSense FSC series sensing principle is based on differential pressure which ensures an extremely fast response time and allows for a precise flow measurement.

The ProSense FSC series flow transmitters are ideal for applications with rapid temperature changes or where fast response time is required, such as:

- Machine tool coolant flow
- HVAC cooling water flow
- Injection molding cooling water flow

See www.AutomationDirect.com for wiring options.

ProSense FSC Series Digital Flow Sensors Technical Specifications				
Model	***FSC75-00-42-6H***	***FSC75-00-42-10H***	***FSC1-00-42-27H***	***FSC15-00-42-50H***
Price	$260.00	$260.00	$270.00	$370.00
Drawing	PDF	PDF	PDF	PDF
Weight	TBA	TBA	TBA	TBA
Range	0 to 6 GPM	0 to 10 GPM	0 to 27 GPM	0 to 50 GPM
Process Connection	3/4" FNPT	3/4" FNPT	1" FNPT	1-1/2" FNPT
Electrical				
Operating Voltage	18 to 30 VDC (SELV/PELV)*			
Electrical Connection	M12 (note: tightening torque <0.6 Nm based on cable)			
Connection Pin Material	Gold-plated			
Current Consumption	<50mA			
Output Functions				
Output Type / Function	OUT1: switch (N.O. or N.C. / PNP or NPN) or frequency OUT2: switch (N.O. or N.C. / PNP or NPN) or analog			
Switch/Pulse/Frequency Outputs	PNP / NPN Selectable; N.O. / N.C. Selectable			
Analog Output	4-20 mA ,max 22mA			
Digital Outputs	2			
Output Function	Normally open / normally closed			
Max. Voltage Drop Switching Output DC	2V			
Current Rating of Switching Output DC	150mA; (per output 2 x 200 (...140 °F); 2 x 250 (...104 °F))			
Switching cycles (mechanical)	10 million			
Analog Outputs	1			
Analog Output	4-20 mA (sourcing)			
Maximum Load	500Ω			
Short-Circuit Protection	Yes			
Overload Protection	Yes			
Output Frequency	0 to 10 kHz			

** Voltage Supply According to EN50178 SELV (Safety Extra-Low Voltage) / PELV (Protected Extra-Low Voltage)*

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Measuring / Setting Range				
Measuring Range	0.1 to 6 GPM	0.2 to 10 GPM	0.5 to 27 GPM	1 to 50 GPM
Display Range	0 to 7.2 GPM	0 to 12 GPM	0 to 32.4 GPM	0 to 60 GPM
Resolution	0.05 GPM	0.1 GPM	0.1 GPM	0.2 GPM
Set Point, SP	0.05 to 6 GPM	0.1 to 10 GPM	0.2 to 27 GPM	0.4 to 50 GPM
Reset Point, rP	0 to 5.95 GPM	0 to 9.9 GPM	0 to 26.8 GPM	0 to 49.6 GPM
Frequency End Point, FEP	0.4 to 6 GPM	0.67 to 10 GPM	1.8 to 27 GPM	3.4 to 50 GPM
In Steps Of	0.05 GPM	0.1 GPM	0.1 GPM	0.2 GPM
Frequency at the End Point, FRP	10 to 10,000 Hz			
Measuring Dynamics	1:50			
Temperature Monitoring				
Measuring Range	14 to 212°F (-10 to 100°C)*			
Display Range	-26 to 252°F (-32.3 to 122.2°C)			
Resolution	2°F (-16.7°C)			
Set Point SP	16 to 212°F (-8.9 to 100°C)			
Reset Point rP	14 to 210°F (-10 to 98.9°C)			
In Steps Of	2°F (-16.7°C)			
Frequency Start Point, FSP	14 to 172°F (-10 to 77.8°C)			
Frequency End Point, FEP	54 to 212°F (-12.2 to 100°C)			
Frequency at the End Point, FRP	10 to 10,000 Hz			
Accuracy				
Flow Monitoring (Accuracy)	± (4 % MW + 1 % MEW); (Q > 0.5 l/min; medium and operating temperature: +71.6 °F ± 4K)	± (4 % MW + 1 % MEW); (Q > 1 l/min; medium and operating temperature: +71.6 °F ± 4K)	± (4 % MW + 1 % MEW); (Q > 2 l/min; medium and operating temperature: +71.6 °F ± 4K)	± (4 % MW + 1 % MEW); (Q > 1 l/min; medium and operating temperature: +71.6 °F ± 4K)
Flow Monitoring (Repeatability)	± 1 % MEW			
Temperature Monitoring	Temperature drift	0.9802 °F / K		
	Accuracy	3 K (77 °F; Q > 1 l/min)		
Response Times				
Flow Monitoring	Response time	0.01s		
	Damping process value dAP	0 to 5 s		
	Damping for the analogue output dAA	0 to 5 s		
Temperature Monitoring	Dynamic response T05 / T09	T09 = 120 (Q > 1 l/min)		
Setting / Programming				
Parameter Setting Options	Hysteresis / window; normally open / normally closed; switching logic; current output; medium selection; damping for the switching output / analog output; display can be rotated and switched off; standard unit of measurement; process value color			
Display	Display unit	3 x LED, green		
	Switching status	2 x LED, yellow		
	Measured values	Alphanumeric display, red/green 4-digit		
	Programming	Alphanumeric display, 4-digit		
Operating Conditions				
Ambient Temperature	32 to 140°F (0 to 60°C)			
Medium Temperature	14 to 212°F (-10 to 100°C)			
Storage Temperature	5 to 176°F (-15 to 80°C)			
Protection	IP 65 / IP 67			
Pressure Rating	580psi		360psi	

** Note for ambient temp: 32 to 140°F (0 to 60°C) when medium temp is less than 176°F (80°C). When medium temp is 176 to 212°F (80 to 100°C), the ambient temp is limited to 32 to 104°F (0 to 60°C).*

Note: Check the chemical compatibility of the sensor's wetted parts with the medium to be measured.

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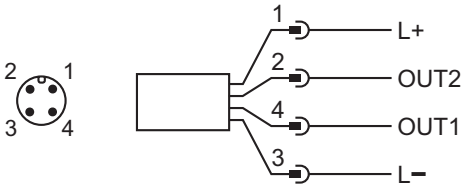
Mechanical Data				
Medium	Liquids (water, glycol solutions, oils), use of 200 micron filter recommended			
Housing Material	Stainless steel (1.4404 / 316L); PBT+PC-GF30;PBT-GF20; PC; brass chemically nickel-plated			
Materials (wetted parts)	Stainless steel (316 / 1.4401); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM			Stainless steel (316 / 1.4401); stainless steel (1.4404 / 316L); brass (2.0371); brass chemically nickel-plated; PPS; O-ring: FKM; Spacer: POM
Process Connection	3/4" FNPT		1" FNPT	1-1/2" FNPT
Tests / Approvals				
EMC	DIN EN 61000-6-2; DIN EN 61000-6-3			
Shock Resistance	DIN EN 60068-2-27: 20g (11ms)			
Vibration Resistance	DIN EN 60068-2-6: 5g (10 to 2000 Hz)			
MTTF	145 Years			170 Years
Agency Approvals	cULus (#E320431), CE			

Wiring Diagrams



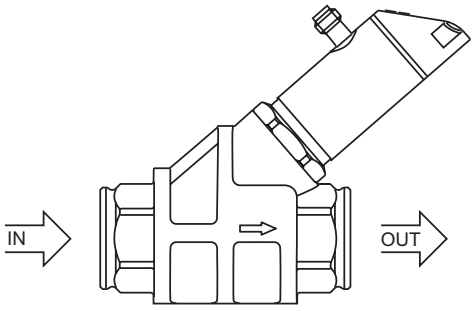
Cable Assembly Wiring Colors:
Pin 1 - Brown
Pin 2 - White
Pin 3 - Blue
Pin 4 - Black

Note: Wiring colors are based on AutomationDirect CD12L and CD12M 4-pole cable assemblies.

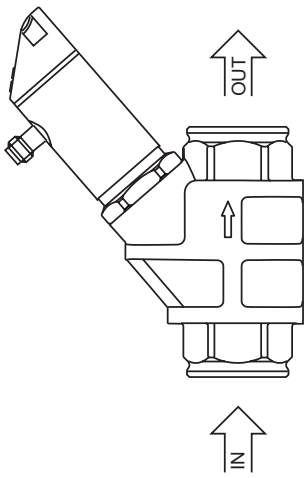
Installation*:

For proper operation, please observe the flow direction arrows on the body of the sensor. The mounting orientation does not effect the operation of the unit.

** Integral check valve design allows the sensor to be mounted in any position.*



Horizontal Mounting



Vertical Mounting

1. *Ferromagnetic materials in the surrounding environment should be at least 50mm from the housing of the unit.*
2. *Ferromagnetic piping may be used on the inlet and outlet connections.*
3. *Do not operate the unit in the vicinity of magnetic constant and alternating fields (e.g. welding systems).*
4. *If the sensors are installed side by side, observe a minimum distance of 50mm between the sensor axes.*
5. *Avoid downward flow in unpressurized pipes.*

ProSense® FSC Series Digital Flow Sensors

Operation

The flow sensor utilizes a spring-supported piston that is lifted by the flowing medium. The flow rate is determined by monitoring the piston position and converting it to an analog output signal. The spring resistance forces the piston to return to its original position with decreasing flow, preventing backflow. This allows the sensor to be mounted in any position (horizontally or vertically) and function as a check valve.

Part Number	*Flow Measuring Range (Gallons/Minute)*
FSC75-00-42-6H	0 to 6
FSC75-00-42-10H	0 to 10
FSC1-00-42-27H	0 to 27
FSC15-00-42-50H	0 to 50

Cutaway View

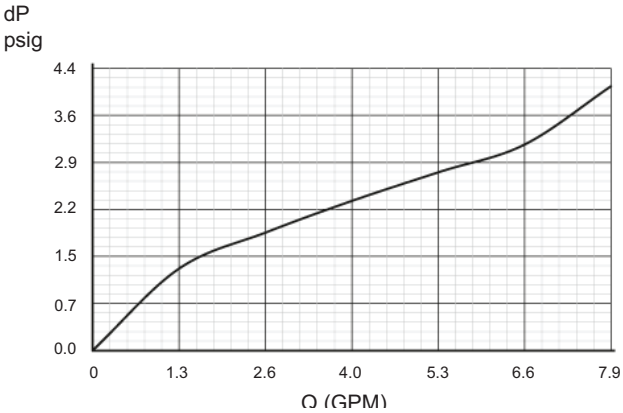
Function

The analog signal for water (20ºC [68˚F]) is linear from 4.3 mA to 20mA (4mA = no flow). For an output signal >20mA the flow rate is above the final value of the measuring range.

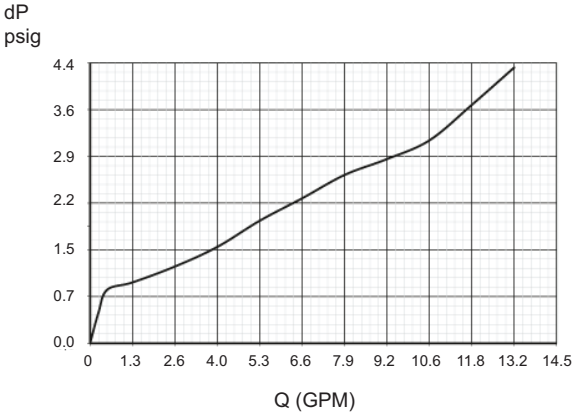
Click or scan the above QR code to be taken to the installation insert for the FSA Series Flow Transmitters

Pressure Loss/Flow Rate*

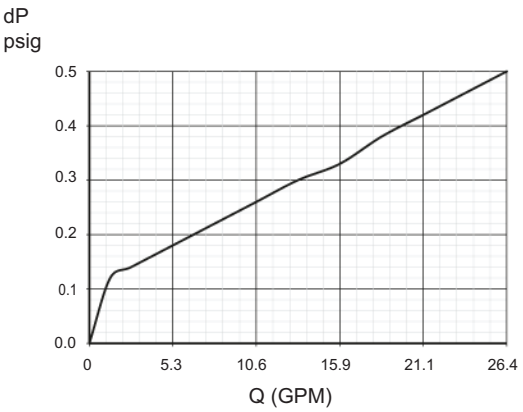
FSC75-00-42-6H



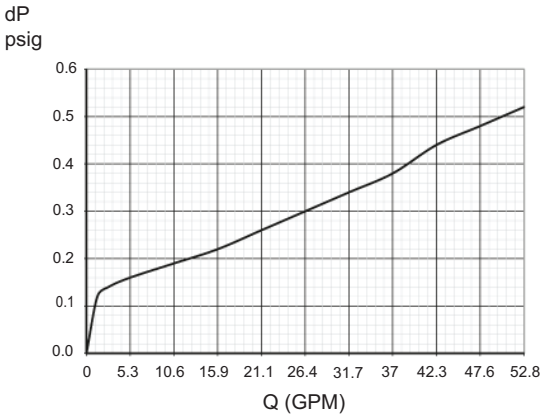
FSC75-00-42-10H



FSC1-00-42-27H



FSC15-00-42-50H



** when used with water @ 20˚C [68˚F]*