

FLOW SWITCHES FOR LIQUIDS

FST-200 Series



- ✓ High Reliability—No Moving Parts
- ✓ Very Low Flow Detection—Down to 0.04 FPS Liquids
- ✓ Use in 1/8 to 12" Pipe or Tubing
- ✓ SPST Relay Standard
- ✓ Excellent for Pump and Valve Monitoring of Critical Flows

OMEGA® FST-200 Series flow switches use thermal dispersion technology to create a very accurate and economical method of sensing flow. Monitor fluids from 0.4 to 1.2 specific gravity, 1 to 300 cp, and pulsating flow from 10 to 100 pulses per minute. The sensors incorporate two temperature probes, one of which is heated. The flow of liquid reduces the temperature of the heated probe, decreasing the temperature differential with the non-heated probe. OMEGA's LVCN Series of controllers can easily be interfaced to perform a variety of control functions.

SPECIFICATIONS

Range: 0.04 to 3 fps (liquids)

Accuracy: ±5% of setpoint at constant temperature and flowrate

Response Time: 10 sec after initial 30 sec warm up

Setpoint Drift With Fluid

Temperature: 0.5% per °C

Voltage Input: 12 to 36 Vdc @ 70 mA

Contact Output Mode:

Selectable, NO or NC states

Fluid Temperature: 0 to 60°C

(32 to 140°F)

Maximum Fluid Pressure: PP or PVDF: 150 psi @ 25°C (77°F) derated @ 1.667 psi per °C above 25°C (77°F)

Wetted Materials: PP and PVDF

Cable Specifications: 3 m (10')

Maximum Cable Length: 305 m (1000')

Dimensions:

76.2 or 114.3 L x 26.7 mm diameter
(3.0 or 4.5 x 1.05")

FST-221-SPST
shown actual size.



FST-211-SPST
shown actual size.

To Order

Model No.	Description	Material	Size	Use With Pipe Size
FST-211-SPST	Thermal dispersion flow switch	PP/PVDF	3.0 x 3/4 NPT	3/4 to 1 1/2"
FST-212-SPST	Thermal dispersion flow switch	PVDF	3.0 x 3/4 NPT	3/4 to 1 1/2"
FST-221-SPST	Thermal dispersion flow switch	PP/PVDF	4.5 x 3/4 NPT	2 to 12"
FST-222-SPST	Thermal dispersion flow switch	PVDF	4.5 x 3/4 NPT	2 to 12"

Flow Switch Fittings For Use with 76 mm (3") Sensor Only (Also For Pulsating Flow Applications)

Model No.	Wetted Material	Range (GPM)	Use With Pipe/Tube ID
FT-51	PP	0.05 to 1.53	1/8 to 1/2"
FT-52	PVDF	0.05 to 1.53	1/8 to 1/2"

Comes complete with operator's manual.

Two extended cable lengths available: for 7.62 m (25') add suffix "-25" for PP/PVDF, or PVDF; for 15.24 m (50') add suffix "-50" for PP/PVDF or PVDF, for additional cost.

Note: Sizes above 1/2" fit into 3/4 NPT fitting adaptor.

Ordering Examples: FST-211-SPST, flow switch, 3.0 x 3/4 NPT size, plus FT-51, fitting.

FST-221-SPST, flow switch, 4.5 x 3/4 NPT.

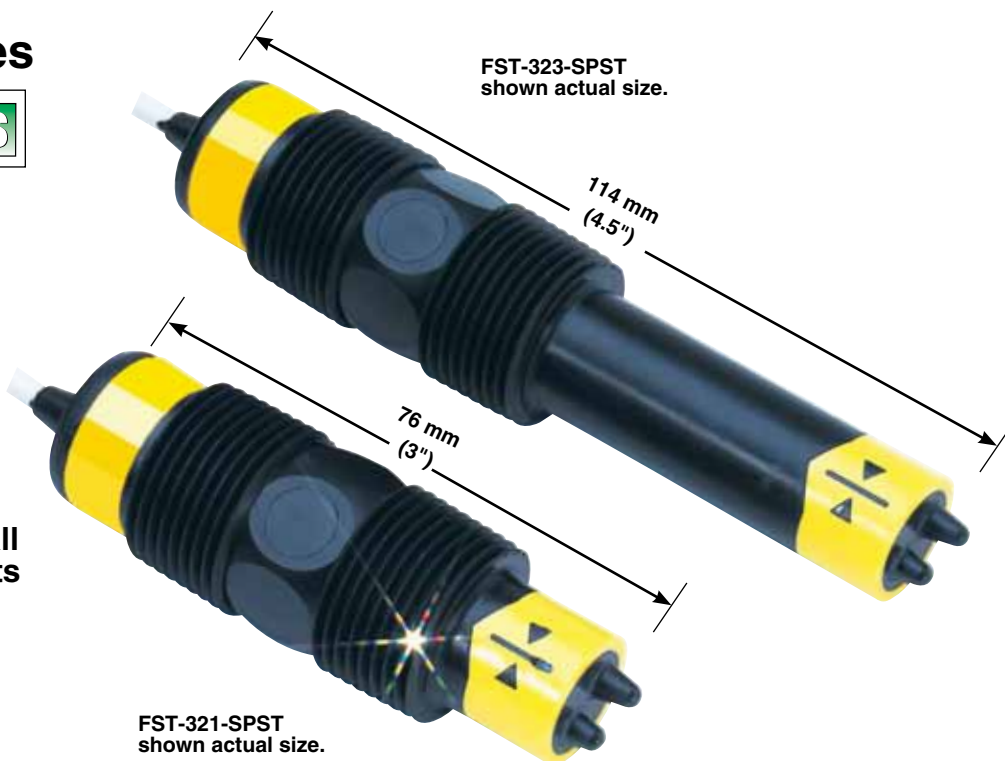
SWITCHES FOR USE WITH GASES

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FST-320 Series



- ✓ Measure Mass Flow of Gases
- ✓ High Reliability, No Moving Parts
- ✓ Effectively Monitor Critical Gas Flows
- ✓ May Be Used in Small Piping or Large Ducts
- ✓ Standard with SPST Relay

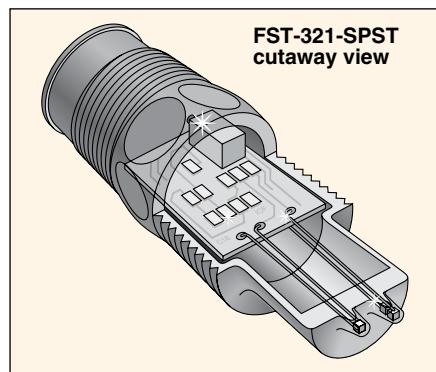


OMEGA's FST-320 Series thermal dispersion flow switches, especially designed for use with gases, sense changes in the heat transfer characteristics of the gases. Flow velocities from 1 to 90 fps are effectively monitored. The flow switch incorporates a standard SPST Relay switch output for control flexibility. OMEGA® controllers can easily be interfaced to perform a variety of control functions. The FST-320 family of sensors can be easily installed in line sizes ranging from 3/4 to 12".

SPECIFICATIONS

Range: 1 to 90 fps
Accuracy: ±5% of setpoint at constant temperature and flow rate
Response Time (Approx.): 10 sec, after initial 30 sec warm up
Set Point Drift with Fluid Temperature: 0.5% per °C
Voltage Input: 12 to 36 Vdc @ 70 mA
Contact Output: Selectable, NO or NC states

Fluid Temp. Rating: 0 to 60°C (32 to 140°F)
Maximum Fluid Pressure: PP: 150 psi @ 25°C (77°F) derated @ 1.667 psi per °C above 25°C (77°F)
Contact Materials: Polypropylene (PP) with PVDF
Cable Length: 3 m (10')
Maximum Cable Run: 305 m (1000')
Dimensions: 76.2 or 114.3 x 26.7 mm (3.0 or 4.5 x 1.05"), 3/4 NPT



To Order

Model No.	Material	Size	Use with Pipe Size
FST-321-SPST	PP/PVDF	3" x 3/4 NPT	3/4 to 1 1/2"
FST-322-SPST	PVDF	3" x 3/4 NPT	3/4 to 1 1/2"
FST-323-SPST	PP/PVDF	4.5" x 3/4 NPT	2 to 12"
FST-324-SPST	PVDF	4.5" x 3/4 NPT	2 to 12"

Comes complete with operator's manual.

Two extended cable lengths available: for 7.62 m (25') add suffix "-25" for additional cost PP/PVDF, or PVDF; for 15.24 m (50') add suffix "-50" for additional cost, for PP/PVDF or for PVDF.

Ordering Examples: FST-321-SPST, polypropylene flow switch.

FST-323-SPST, polypropylene flowswitch, 4.5 x 3/4 NPT.

RELAY CONTROLLER

FST-211-R



- ✓ Offered in Liquid and Gas Configurations
- ✓ All-Plastic Construction with PP or PVDF Materials for Corrosive Environments
- ✓ Invert Switch Provides Simple NO or NC Relay Operation
- ✓ LED Indicators for Fluid, Relay, and Power Status
- ✓ 0 to 60 Second Time Delay Dampens Out Relay Chatter
- ✓ Fail-Safe Controller Provides Direct Actuation of Pumps, Valves, and Blowers

SPECIFICATIONS

Relay Controller

Supply Voltage: 120/240 Vac 50/60 Hz

Consumption: 0.25 A

Relay Type: (1) SPDT

Relay Current: 10 A, 250 Vac, ½ hp

Relay Mode: NO or NC selectable

Time Delay: 0 to 60 s

Temp Range: -40 to 70°C (-40 to 158°F)

Enclosure Rating: NEMA 4X (IP66)

Enclosure Material:

Polypropylene (UL 94VO)

Enclosure Rotation: 300° swivel base

Conduit Connection: ½ NPT

Sensor

Range: 0.04 to 3 ft/s (liquids)

Accuracy: ±5% of setpoint at constant temperature and flow rate

Response Time: 10 s (approx.)

Setpoint Drift with Fluid Temperature: 0.5%/°C

Fluid Temperature: 60°C (140°F)

Maximum Fluid Pressure: PP or PVDF:

150 psi @ 25°C (77°F) derated @

1.7 psi/°C above 25°C (77°F)

Process Connection: ¾ MNPT

Dimensions: 208 L x 71 mm Dia (8.2 x 2.8")

Application

This switch package offers a complete solution for flow or no-flow switching in pipes or ducting up to 0.3 m (12"). The compact relay controller reliably actuates valves, pumps, or blowers rated up to ½ hp. Common applications include low-flow pump or process protection. To complete the instrumentation package, simply select the switch configuration in accordance with the liquid or gas used in your application.

LIQUID APPLICATION VARIABLES

Variable		Yes	No
Liquid	Clean	☒	☐
	Slurry	☒	☐
	Bubbles	☐	☒
	Coating	☐	☒
	Non-Coating	☒	☐
	Low Viscosity	☒	☐
	Med. Viscosity	☒	☐
	High Viscosity	☐	☒
	Low Temperature	☒	☐
	Med. Temperature	☐	☒
	High Temperature	☐	☒
	Δ Temperature	☐	☒
	Low Velocity	☒	☐
	High Velocity	☐	☒



FST-211-R shown smaller than actual size.

GAS APPLICATION VARIABLES

Variable		Yes	No
Gas	Low Temperature	☒	☐
	Med. Temperature	☒	☐
	High Temperature	☐	☒
	Δ Temperature	☐	☒
	Coating	☐	☒
	Non-Coating	☒	☐
	Low Velocity	☒	☐
	High Velocity	☐	☒

To Order

Model No.	Description	Material	Wetted Pipe Size
FST-211-R	Liquid flow switch with relay	PP/PVDF	¾ to 1½"
FST-212-R	Liquid flow switch with relay	PVDF	¾ to 1½"
FST-221-R	Liquid flow switch with relay	PP/PVDF	2 to 12"
FST-222-R	Liquid flow switch with relay	PVDF	2 to 12"
FST-321-R	Gas flow switch with relay	PP/PVDF	¾ to 1½"
FST-322-R	Gas flow switch with relay	PVDF	¾ to 1½"
FST-323-R	Gas flow switch with relay	PP/PVDF	2 to 12"
FST-324-R	Gas flow switch with relay	PVDF	2 to 12"
Flow Switch Fittings, Use with 3" Sensor Only (⅛ - ½" Pipe and Tubing)			
FT-51	Use with 0.05 to 1.53 GPM range	PP	⅛ to ½"
FT-52	Use with 0.10 to 6.53 GPM range	PVDF	⅛ to ½"

Comes complete with operator's manual.

Ordering Examples: FST-211-R, CE-approved polypropylene liquid flow switch with relay.

FST-321-R, PP/PVDF gas flow switch.

FLCN-101



- ✓ **Calls Immediate Attention to Alarm Conditions**
- ✓ **High Intensity Strobe Light Reduces Operator Error**
- ✓ **Adjustable Time Delay Relay**
- ✓ **Controls Pumps, Valves and Alarms**
- ✓ **LED Displays Switch, Sensor and Relay Status**

OMEGA's flow alert calls attention to alarm conditions. For operator alert to low flow conditions, the flow alert offers an excellent solution to this problem. An amber lens distributes the high intensity strobe light in a pattern which calls immediate attention to alarm conditions. The visual alert combined with a controller makes it both cost effective and easy to install.

SPECIFICATIONS

Voltage Input: Selectable, 120 or 240 Vac, 50 to 60 Hz

Maximum Consumption: 5 watts

Lighting Element: High intensity lamp

Brightness: Greater than 50,000 CP

Relay Output:

Isolated and sealed single pole double throw (SPDT) relay, Form C

Switching Mode:

Selectable, NO or NC states

Maximum Relay Switching Voltage:

120 Vdc or 240 Vac

Maximum Switched Current: 10 amps

Time Delay: Adjustable from 0.15 to 60 seconds

Strobe Type: Xenotube

Strobe Flash: 1 per second

Maximum Temp. Rating: 70°C (158°F)

Sensor Voltage Supply:

13.5 Vdc @100 mA

FLCN-101
shown larger
than actual size.



Mounting Connection: $\frac{3}{4}$ NPT

Conduit Connection: $\frac{1}{2}$ NPT

Enclosure Rating: NEMA-4X (IP65)

Enclosure Material:

Polypropylene (PP), flame retardant

Dimensions: 7.1 D x 16.2 cm H

(2.8 x 6.4") x $\frac{3}{4}$ NPT

To Order

Model No.	Description	Mat'l	Size
FLCN-101	Level alert single sensor controller	PP	2.8 x 6.4" x $\frac{3}{4}$ NPT

Comes complete with operator's manual.

Ordering Example: FLCN-101, level alert single sensor controller.