

Flow Detection, Switching & Control

Flow switches detect a change in state from flow or no-flow within pipe or ducting. Correspondingly, the sensor inverts a contact to signal an alarm or control a pump or valve.

Flowline general purpose liquid and gas flow switches are offered in sensor and package configurations. Sensors are available in PP-Ryton® or PVDF bodies with a 1A SPST relay and adjustable flow switch set point.

The sensors are also available in packages with compact relay controllers for pump control or junction boxes for wiring termination. Select the appropriate flow switch type based upon your application media, supply, control and installation requirements.



Flow Switches

Sensors



FT10 / GT10

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Packages



AX1X Controller

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AX1X Junction Box

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Relay Controllers

Compact



LC30

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Remote



LC8X

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Thermo-Flo						
	FT10	GT10	AX1X	AX1X	LC30	LC8X
Type	Sensor		Sensor + Controller	Sensor + Junction	Compact Controller	Remote Controller
Class	GP					
Media	Liquid	Gas	Liquid, Gas			
Function	Low-Flow Alarm		Low-Flow Shut Off	Low-Flow Alarm	Low-Flow Shut Off	
Relay(s)	(1) SPST		(1) SPDT	(1) SPST	(1) SPDT	(1-2) SPDT
Stroke Alarm	---		Optional	---	Optional	---
Supply	12-36 VDC		120-240 VAC	12-36 VDC	120-240 VAC	
Temperature	140°F (60°C)				---	
Pressure	150 PSI (10 bar)				---	
Material	PP-Ryton®, PVDF				PP	

Thermo-Flo™ Liquid & Gas Flow Switch

Flow Switch

Application

Offered in liquid and gas sensor types, the general purpose flow switch provides reliable low or no-flow detection of relatively clean, non-coating media with one 1A relay output. Liquid examples include water and acetic acid. Available in Polypropylene-Ryton® and PVDF, the short flow sensor is used in pipe or ducting from 1/2" to 1 1/2", and the long flow sensor is used in 2" and up. The flow switch set point may be adjusted from 0.04 to 3 fps in liquids, or 1 to 90 fps in gases as a low-flow alarm. The flow sensor is best applied in applications with relatively constant temperature.

Features

- ✓ Rugged Polypropylene-Ryton® or PVDF sensor for corrosive liquids and gases
- ✓ Adjustable set point with LED for flow or no-flow status indication
- ✓ 60VA relay selectable NO or NC via power supply wiring polarity
- ✓ Solid state sensor is not damaged by over-ranging flow velocities



FT10-1305

FT10-1405

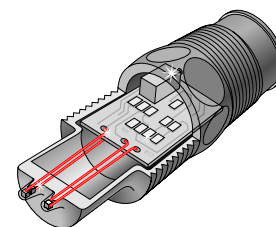
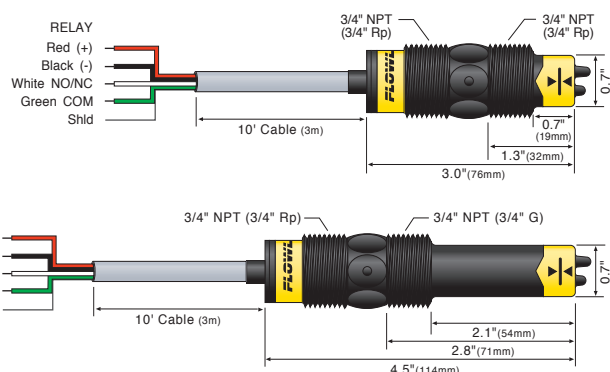
Specifications

Set point range:	FT10: 0.04 to 3 fps (0.012 to 0.91 mps) GT10: 1 to 90 fps (0.3 to 27 mps)
Repeatability:	± 0.5% of set point
Response time:	1-10 seconds
Set point adjust.:	Potentiometer
LED indication:	Flow status
Supply voltage:	14-36 VDC
Consumption:	70 mA maximum
Contact type:	(1) SPST relay
Contact rating:	60 VA, 1A maximum
Contact output:	Selectable NO / NC
Process temp.:	F: 32° to 140° C: 0° to 60°
Ambient temp.:	F: -40° to 140° C: -40° to 60°
Pressure:	150 psi (10 bar) @ 25° C, derated @ 1.667 psi (0.113 bar) per °C above 25° C
Sensor rating:	NEMA 4X (IP65)
Wetted material:	-1XX5: PP-Ryton® -5XX5: PVDF
Cable jack. mat.:	-1XX5: Polypropylene -5XX5: PFA
Cable type:	4-conductor, shielded
Cable length:	10' (3m)
Process mount:	3/4" NPT (3/4" G)
Mount. gasket:	Viton®
Classification:	General purpose
Compliance:	CE



Pulse-point fitting
for metering pump
applications

FT50-5000



Thermo-Flo

T10- 5

Application media

F Liquid
G Gas

Sensor material (1)

1 PP / Ryton
5 PVDF

Sensor length (2)

3 Short
4 Long

Process mount (3)

0 NPT (US)
2 G / Rp (Metric)

Ordering Notes

- 1) To special order a 25' (7.6m) or 50' (15.2 m) flow sensor cable, place the cable length at the end of the part number (ie: FT10-1305-25'). For PP, add \$20 for 25' (7.6m) or \$40 for 50' (15.2m) to the price. For PFA, add \$75 for 25' (7.6m) or \$150 for 50' (15.2m) to the price.
- 2) Order the short flow sensor for use with pipe sizes from 3/4"-1 1/2" (D25-D50) and the long sensor for 2" and higher (D63 up).
- 3) The metric sensor is offered with straight G threads on the sensing side and conical Rp threads on the cable side of the wrench flat.

Thermo-Flo™ with Compact Flow Controller

Application

Offered in liquid and gas sensor types, the general purpose flow switch package provides reliable no or low-flow detection of relatively clean non-coating media with a 16A compact flow controller for pump or process protection. Liquid examples includes water and sulfuric acid. The optional flash alarm brings attention to low-flow alarm conditions. Available in Polypropylene-Ryton® and PVDF, the short flow sensor is used in pipe or ducting from 1/2" to 1 1/2", and the long flow sensor is used in 2" and up. The flow switch set point may be adjusted from 0.04 to 3 fps in liquids, or 1 to 90 fps in gases for low-flow control. The flow sensor is best applied in applications with relatively constant temperature.

Features

- ✓ Rugged Polypropylene-Ryton® or PVDF sensor for corrosive liquids and gases
- ✓ Fail-safe relay control of pumps or valves with 0-60 second delay
- ✓ Polypropylene enclosure rated NEMA 4X with swivel base for conduit alignment
- ✓ Optional strobe brings immediate attention to flow alarm conditions
- ✓ Invert switch changes relay state from NO to NC without rewiring
- ✓ Solid state sensor is not damaged by over-ranging flow velocities

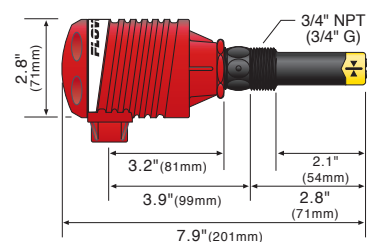
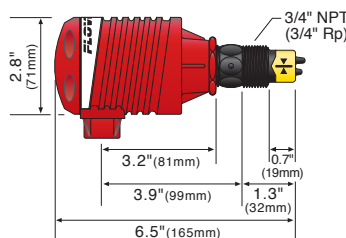


AT12-1620

Shown with
FT50-1000
fitting

Specifications

Set point range:	AT1X: 0.04 to 3 fps (0.012 to 0.91 mps) AG1X: 1 to 90 fps (0.3 to 27 mps)
Repeatability:	± 0.5% of set point
Response time:	1-10 seconds
Set point adjust.:	Potentiometer
LED indication:	Sensor, power & relay
Supply voltage:	120 / 240 VAC, 50-60 Hz.
Consumption:	0.25A maximum
Strobe type:	-X61X: Xenon tube -X62X: N/A
Strobe flash:	-X61X: 1 per second -X62X: N/A
Contact type:	(1) SPDT relay
Contact rating:	250 VAC @ 16A
Contact output:	Selectable NO / NC
Contact delay:	0-60 seconds
Process temp.:	F: 32° to 140° C: 0° to 60°
Ambient temp.:	F: -40° to 140° C: -40° to 60°
Pressure:	150 psi (10 bar) @ 25° C, derated @ 1.667 psi (0.113 bar) per °C above 25° C
Enclosure rating:	NEMA 4X (IP65)
Enclosure mat.:	-X61X: PP, UL94VO & PC -X62X: PP, UL94VO
Conduit entrance:	1/2" NPT
Wetted material:	-16XX: PP-Ryton® -36XX: PVDF
Process mount:	3/4" NPT (3/4" G)
Mount. gasket:	Viton®
Classification:	General purpose
Compliance:	CE



Thermo-Flo

Application media

T Liquid
G Gas

Sensor length (1)

2 Short
4 Long

Sensor material

1 PP / Ryton
3 PVDF

Configuration

1 Controller with Strobe Alert
2 Controller only

Process mount

0 NPT (US)
4 G (Metric)

A 1 - 6

Ordering Notes

- 1) Select the short sensor for use with pipe sizes from 3/4"-1 1/2" (D25-D50) and the long sensor for 2" and higher (D63 up).



Thermo-Flo™ with Compact Junction Box

Flow Switch

Application

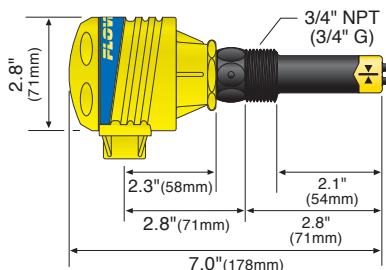
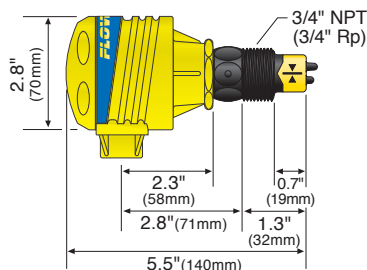
Offered in liquid and gas sensor types, the general purpose flow switch package provides reliable no or low-flow detection of relatively clean non-coating media with a 1A relay output and compact junction box for wiring termination. Liquid examples includes water and acetic acid. Available in PP-Ryton® and PVDF, the short flow sensor is used in pipe or ducting from 1/2" to 1 1/2", and the long flow sensor is used in 2" and up. The flow switch set point may be adjusted from 0.04 to 3 fps in liquids, or 1 to 90 fps in gases as a low-flow alarm. The flow sensor is best applied in applications with relatively constant temperature.

Features

- ✓ Rugged Polypropylene-Ryton® or PVDF sensor for corrosive liquids and gases
- ✓ Adjustable set point with LED for flow or no-flow status indication
- ✓ Polypropylene enclosure rated NEMA 4X with swivel base and terminal strip
- ✓ 60VA relay selectable NO or NC via power supply wiring polarity
- ✓ Solid state sensor is not damaged by over-ranging flow velocities



AT17-1630

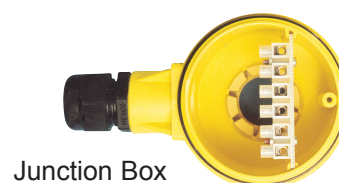


Specifications

Set point range:	AT1X: 0.04 to 3 fps (0.012 to 0.91 mps) AG1X: 1 to 90 fps (0.3 to 27 mps)
Repeatability:	±0.5% of set point
Response time:	1-10 seconds
Set point adjust.:	Potentiometer
LED indication:	Flow status
Supply voltage:	14-36 VDC
Consumption:	70 mA maximum
Contact type:	(1) SPST relay
Contact rating:	60 VA, 1A maximum
Contact output:	Selectable NO / NC
Process temp.:	F: 32° to 140° C: 0° to 60°
Ambient temp.:	F: -40° to 140° C: -40° to 60°
Pressure:	150 psi (10 bar) @ 25° C, derated @ 1.667 psi (0.113 bar) per °C above 25° C
Enclosure rating:	NEMA 4X (IP65)
Enclosure mat.:	PP, UL94VO
Terminal strip:	6-pole, socket
Conduit entrance:	1/2" NPT
Wetted material:	-163X: PP-Ryton® -363X: PVDF
Process mount:	3/4" NPT (3/4" G)
Mount gasket:	Viton®
Classification:	General purpose
Compliance:	CE



AT17-3630



Junction Box

Thermo-Flo

A 1 - 63

Application media

T Liquid
G Gas

Sensor length (1)

7 Short
8 Long

Sensor material

1 PP
3 PVDF

Process mount

0 NPT (US)
4 G (Metric)

Ordering Notes

- 1) Select the short sensor for use with pipe sizes from 3/4"-1 1/2" (D25-D50) and the long sensor for 2" and higher (D63 up).



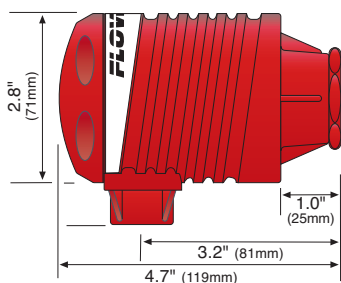
Thermo-Flo™ Compact Flow Controller

Application

The general purpose flow controller accepts one flow sensor input, and provides one 16A relay for low-flow pump or process protection. The optional flash alarm brings attention to low-flow alarm conditions. Package this flow controller with our liquid or gas flow switch sensors.

Features

- ✓ Fail-safe relay control of pumps or valves with 0-60 second delay
- ✓ Optional strobe brings immediate attention to flow alarm conditions
- ✓ Polypropylene enclosure rated NEMA 4X with swivel base for conduit alignment
- ✓ Easy setup with LED indicators for sensor, power and relay status
- ✓ Invert switch changes relay state from NO to NC without rewiring
- ✓ Compatible with Flowline liquid and gas flow switch sensors



LC30-1002



LC30-1001



Specifications

Supply voltage:	120 / 240 VAC, 50-60 Hz.
Consumption:	0.25A maximum
Sensor input:	(1) flow switch
Sensor supply:	24 VDC @ 50 mA
LED indication:	Sensor, power & relay
Strobe type:	-10X1: N/A -10X2: Xenon tube
Strobe flash:	-10X1: N/A -10X2: (1) per second
Contact type:	(1) SPDT relay
Contact rating:	250 VAC @ 16A
Contact output:	Selectable NO / NC
Contact delay:	0-60 seconds
Ambient temp.:	F: -40° to 140° C: -40° to 60°
Enclosure rating:	NEMA 4X (IP65)
Enclosure mat.:	10X1: PP, UL94VO 10X2: PP, UL94VO & PC
Conduit entrance:	1/2" NPT
Enclosure mount:	3/4" NPT (3/4" Rp)
Classification:	General purpose
Compliance:	CE
Approvals:	CSA, LR 79326

Tech Tip

The AC powered relay controller has a 16A relay, adjustable time delay, LED indicators and NO or NC invert switch. The rugged NEMA 4X enclosure is made of UL approved fire retardant polypropylene with a swivel base for easy conduit alignment.

Controller



NRTL/C

Thermo-Flo

LC30-10

Enclosure mount

- 0 NPT (US)
- 5 Rp (Metric)

Configuration (1)

- 1 Controller only
- 2 Controller with Strobe Alert

Ordering Notes

- 1) For a liquid tight cable connection, order the LM90-1001 connector.

Thermo-Flo™ Remote Flow Controller

Flow Switch



LC80-1001

Specifications

Supply voltage:	120 / 240 VAC, 50-60 Hz.
Consumption:	5 watts maximum
Sensor inputs:	LC80: (1) flow switch LC82: (2) flow switches
Sensor supply:	24 VDC @ 50 mA
LED indication:	Sensor, power & relay
Contact type:	LC80: (1) SPDT relay LC82: (2) SPDT relays
Contact rating:	250 VAC @ 10A
Contact output:	Selectable NO / NC
Contact latch:	LC80: N/A LC82: Selectable ON / OFF
Contact delay:	0-60 seconds
Ambient temp:	F: -40° to 140° C: -40° to 60°
Enclosure type:	35mm DIN rail
Enclosure mat.:	PP, UL94VO
Classification:	General purpose
Compliance:	CE
Approvals:	CSA, LR 79326

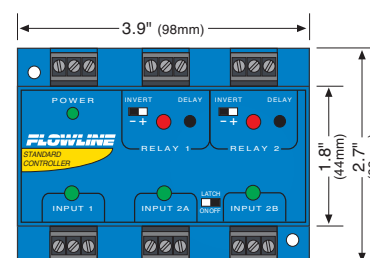
Application

The general purpose flow controller is offered in two configurations for low-flow pump and process protection. The LC80 accepts one flow sensor input and provides one 10A relay for low flow control. The LC82 accepts two flow sensor inputs and provides two 10A relays for dual low flow control. Package this flow controller with our liquid or gas flow switch sensors. For field mount installation, add a single or dual controller NEMA box.

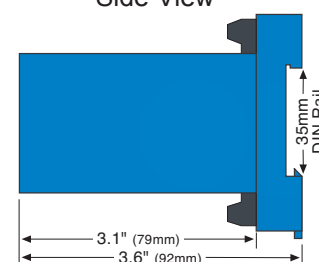
Features

- ✓ Fail-safe relay control of pumps or valves with 0-60 second delay
- ✓ Easy setup with LED indicators for sensor, power and relay status
- ✓ 35 mm DIN rail mount polypropylene enclosure with removable terminal strips
- ✓ Invert switch changes relay state from NO to NC without rewiring

Top View

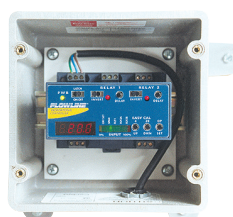


Side View



Flow Switches

Package the controller with our liquid or gas flow switch sensors. See pages 77 and 79 for more details.



LM94-1001



Thermo-Flo

LC80-1001

Contact(s) / input(s) (1) (2)

- 0 1 Relay / 1 sensor
- 2 2 Relays / 2 sensors

Ordering Notes

- 1) The flow controller is compatible with Thermo-Flo liquid and gas flow sensors.
- 2) For field mount installation in a NEMA 4X polycarbonate enclosure, order the LM94-1001 (single controller box) or the LM95-1001 (two controller box).