

In-Line Electronic Flow Switches



IX Series

Ameritrol, Inc.
Instruments and Controls

Industries

Petrochemical

Refining

Oil Production

Water Treatment

Pharmaceutical

Food and Beverage

Pulp and Paper

Power Production

Gas Processing

Mining

Biotechnology

Semiconductor

Ships/Marine

Defense Contractors

Pipelines

Features

- No Moving Parts
- 316L Stainless Steel, Optional Hastelloy C-276
- Temperatures to 350F
- Pressures to 10,000 PSIG
- Field Programmable for Flow or Temperature
- Explosion Proof Enclosures
- Low Flow Rate Detection
- Threaded or Flanged Connections
- Adapts to 1/8" Tubing thru 3/4" Pipes
- Reliable and Cost Effective



Optional GP Housing



Remote Mounted Electronics

Applications

Pump Related Applications

- Low Flow Shutoff of Pumps
- Seal Water Leakage
- Bearing Lubrication Monitor
- Metering Pump Flow
- Chemical Feeder Pump Sensor

General Applications

- Flow Indication/Verification
- Vent Lines Flow
- Odorant/Chemical Injection Flow
- Drain Line Sensor
- Rupture Disc/Relief Valve Monitor

Specifications

Sensor Head

Material of Construction:	316L SS Standard, Hastelloy C-276
Operating Temperature:	-50 to 350F (-46 to 177C) Standard
Operating Pressure:	Vacuum to 2000 PSIG (275 Bar)
Option Pressure:	Option to 10,000 PSIG (689 Bar)
Response Time:	From 1 Second
Repeatability	+/-0.5% of Range at Constant Conditions
Process Connection:	3/4" FNPT Inlet and Outlet, 1/4" FNPT Inlet and 3/4" Outlet with Optional Range Tube
Body Length:	2.5", 3.25" With Range Tube. Option Customer Specified on Flanged Units

Electronics

Housing:	Powder Coated Explosion Proof, UL/CSA Rated to Class I, Div. 1 & 2; Group B,C,D; Class II, Div. 1 & 2; Group E,F,G; Class III. Option FM: General Purpose (GP)
Temperature:	-50 to 150F (-46 to 65C)
Power Input:	90-135 VAC, 50/60 Hz, 4 Watts Option 24 VDC/VAC, 200-240VAC
Relay Output:	SPDT 3 Amps Resistive Option DPDT and 10 Amps Res.
Electrical Connection:	1" FNPT
Shipping Weight:	5 lbs

Operation

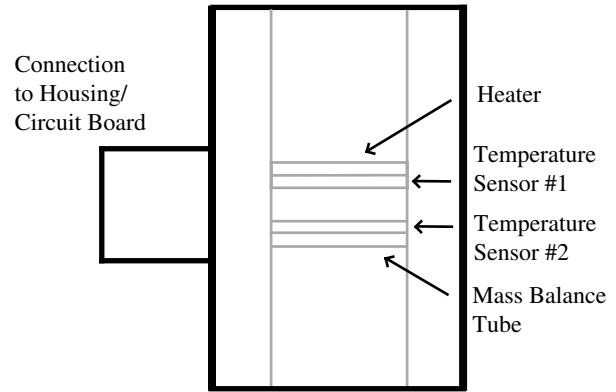
The IX series in-line flow switch is designed to easily adapt to line sizes from 1/8" tubing to 3/4" pipe. Please refer to the FX series for larger line sizes. These switches offer an extremely reliable and repeatable instrument for industrial process control and feature no moving parts exposed to the product being monitored.

The device operates by measuring a temperature differential between a heated and a reference temperature sensor. Within the body of the sensor head are the four tubes as shown in figure 1. The temperature differential is greatest at no flow and changes as flow is achieved across the sensor. This allows use in applications requiring a simple flow/no flow detection and for set-points at a predetermined flow rate. Many different flow ranges are shown in the set-point range section. A conversion table is also provided to convert different engineering units.

Extremely low flow rates can be detected with a typical turn down ratio of 300:1. The principle of operation allows this flow switch to be used in practically all liquids, gases and slurries.

The electronics are available with single or dual switch points. The instrument can be easily field programmed to detect flow or temperature.

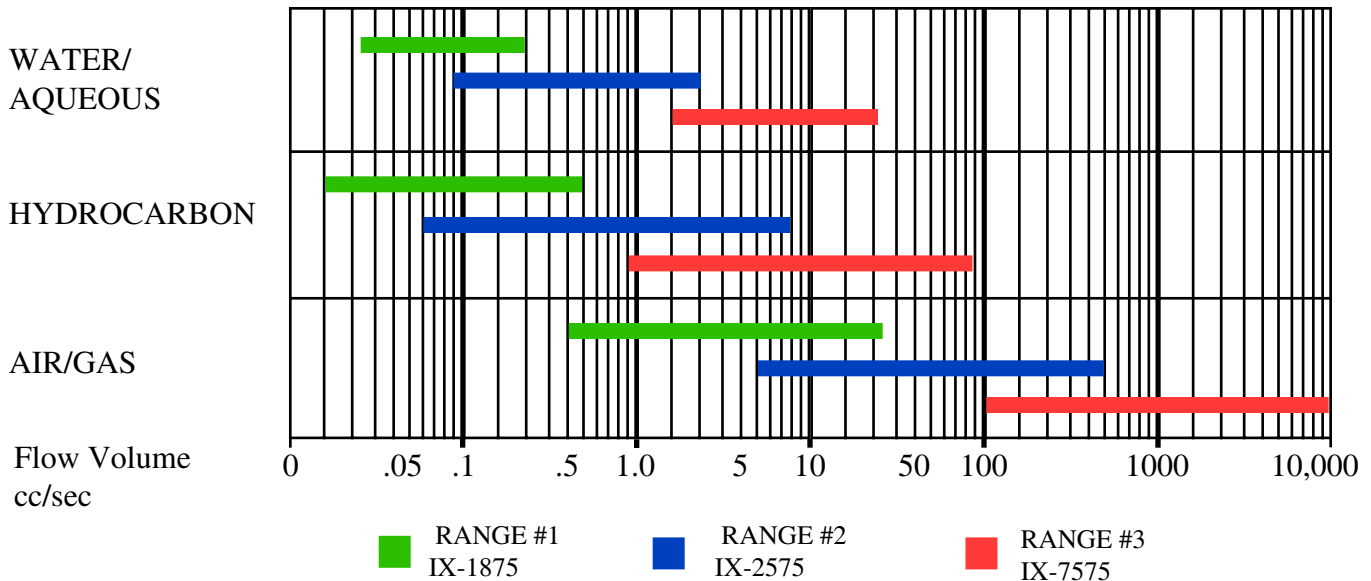
Relay outputs are standard and are offered with several different configurations and contact ratings. Remote mounting of the electronics is available.



$$\text{Temperature Differential} = \text{Temperature Sensor \#1} \text{ Minus Temperature Sensor \#2}$$

Figure 1

Flow Switch Set-Point Range



Conversion Table

Convert to cc/sec on above chart

FROM	MULTIPLY BY:	FROM	MULTIPLY BY:
GAL/MIN	63.1	LITERS/HR	0.278
GAL/HR	1.05	LITERS/DAY	0.0116
GAL/DAY	0.0438	CUBIC FT/MIN	471.95
LITERS/MIN	16.7	CUBIC MTR/HR	277.8

Example: To convert .5 GPM to cc/sec multiply .5 x 63.1 = 31.55 cc/sec.

