Sitron's Line of Flow Switch and Transmitters

Models:
- CF12AC
- CF12DC
- CF420
- F420 - RCF420

Introduction

Sitron's versatile and intelligent line of Thermal Dispersion Flow Switch are compact switches and transmitters, with no moving parts, that can monitor and control the flow of liquid and gas in pipes and ducts. They can also be used for single point level detection for liquids. Sitron's series of flow switches and transmitters are available in different models that provide for different power supply, output and connection requirements.

All models are manufactured using 316 S.S. and can be coated when necessary for aggressive mediums. All of the CF12 and CF420 models can operate in temperatures up to 248°F (120°C) and have a maximum working pressure of 4350 PSI (300 bar). A display chain of 8 LED's is available for all models to indicate flow rate (CF420) and to help the set point adjustment (CF12 series). Sitron also offers the option of sanitary connections such as Tri-Clamp as well as the standard threaded and flanged connections. In addition, the orientation of the enclosure can be rotated so that the LED display can be best viewed, after the process connection has been tightened.

Sitron's line of flow switch monitors are highly reliable industrial instruments that provide the durability and speed required for today's general as well as harsh process environments for flow and level.
Technology

Sitron's line of thermal flow switch is based on the principle of thermal dispersion. A typical configuration uses two platinum Resistance Temperature Detectors (RTD's) set within the tip of the sensor. One RTD is heated a few degrees above the temperature of the medium and the other RTD is used as a reference, sensing the actual process temperature. The second RTD also monitors the temperature of the medium, as any changes in temperature must be compensated for in the first RTD. As the process medium flows over the tip of the sensor it disperses some of the heat from the first RTD. The temperature change between the two RTDs signals the probe's electronics and the switch changes state once the set point has been reached. For the CF420, the microprocessor-based electronics constantly updates and reviews the signals received, in return putting out a 4-20mA analog output signal, which is proportional to the flow rate.

Features

➤ Simple to install & low in cost
➤ No moving parts-maintenance free reliability
➤ Optimal temperature compensation
➤ Can operate in temperatures up to 248ºF (120ºC)
➤ Have a maximum working pressure of 4350PSI (300 bar).
➤ Choice of output signal
➤ Chain of 8 LED’s-Integrated flow rate/set point indication
➤ Fast response time for flow or level
➤ Excellent low flow sensitivity
➤ Can be coated for aggressive mediums
➤ Insensitive to dirt and most particles
➤ Available in threaded, sanitary and adjustable insertion length connections
➤ approved
The **CF12AC** is a thermal flow switch designed to monitor flow status of liquids and gas and can also be used to detect level.

A chain of 8 LED’s gives the user a visual indication to help the set point adjustment. In addition, there is also a di-chromatic LED, which shows the switch point status of the unit. The sensing element and connection of the CF12AC is made with 316 S.S., can be coated when necessary and the enclosure is glass filled nylon. The CF12AC can be made with a great variety of process connections such as threaded, flange, or sanitary.

For PTFE coating we recommend that the switches are made with flanged connections.

The CF12AC flow switches come with a NO(normaly open) contact. It is necessary to specify when a NC (normally closed) contact is needed.
The **CF12DC** is a thermal flow switch designed to monitor flow status of liquids and gas and can also be used to detect level.

A chain of 8 LED's gives the user a visual indication to help the set point adjustment. In addition, there is also a di-chromatic LED, which shows the switch point status of the unit. The sensing element and connection of the CF12DC is made with 316 S.S., can be coated when necessary and the enclosure is glass filled nylon. The CF12DC can be made with a great variety of process connections such as threaded, flange, or sanitary.

For PTFE coating we recommend that the switches are made with flanged connections.
EXAMPLES OF APPLICATIONS

Fig. 1
Flow Switches in level and flow applications

Fig. 2
Flow Switch monitor for air

Fig. 3
Sensor part must be fully inversed in the pipe

Fig. 4
Pipe with flow

Fig. 5
Pipe full with no flow

Fig. 6
Intelligent flow transmitter with a controller

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# Technical Specifications

**CF12AC**

<table>
<thead>
<tr>
<th>Application</th>
<th>Flow for liquids and gas level for liquids only</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Voltage</td>
<td>85-240Vac (50/60hz) &amp; 125Vdc</td>
</tr>
<tr>
<td>Current Consumption</td>
<td>+/- 100mA</td>
</tr>
<tr>
<td>Output</td>
<td>Relay(SPDT) 5A - 250Vac (1 SPDT N1/G1/G3) (2 SPDT - G2 or GX) aluminum enclosure</td>
</tr>
<tr>
<td>Set Point Range</td>
<td>Liquid: 3 cm/s to 3 m/s - Gas: 5 cm/s to 5 m/s</td>
</tr>
<tr>
<td>Accuracy</td>
<td>+/- 1% setpoint</td>
</tr>
<tr>
<td>Response Time</td>
<td>1 to 10s</td>
</tr>
<tr>
<td>Gradient Temperature</td>
<td>15ºC/min</td>
</tr>
<tr>
<td>Flow Rate Indication</td>
<td>Red led - flow is below setpoint Yellow led - flow is at setpoint Green led - flow is above setpoint</td>
</tr>
<tr>
<td>Enclosure Material</td>
<td>Glass filled nylon (option - Aluminium)</td>
</tr>
<tr>
<td>Electrical Connection</td>
<td>Cable gland w/ 2000mm cable, M12 connector or ½” NPT</td>
</tr>
<tr>
<td>Process Connection</td>
<td>½” to 1 ½” BSP or NPT, adjustable, sanitary or flanged connections</td>
</tr>
<tr>
<td>Wetted Material</td>
<td>316 Stainless Steel</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>14 to 176º F (-10 to 80ºC) sanitary option to 248ºF (120ºC)</td>
</tr>
<tr>
<td>Max Pressure</td>
<td>1450 PSI (100 Bar)</td>
</tr>
<tr>
<td>Class Protection</td>
<td>IP65 (IEC 60529) NEMA 4X (G1 / G2)</td>
</tr>
</tbody>
</table>
## Technical Specifications

**CF12DC**

### Application
- Flow for liquids and gas level for liquids only

### Operating Voltage
- 24Vdc (+/- 10%)

### Current Consumption
- +/- 100mA

### Output
- Relay (SPDT) 5A - 250Vac (1 SPDT G1)
- (2 SPDT - G2 or GX) aluminum enclosure

### Set Point Range
- Liquid: 3 cm/s to 3 m/s - Gas: 5 cm/s to 5 m/s

### Accuracy
- +/- 1%

### Repeatability
- +/- 1% setpoint

### Response Time
- 1 to 10s

### Gradient Temperature
- 15ºC/min

### Flow Rate Indication
- Red led - flow is below setpoint
- Yellow led - flow is at setpoint
- Green led - flow is above setpoint

### Enclosure Material
- Glass filled nylon (option - Aluminium)

### Electrical Connection
- Cable gland - 1/2" NPT conduit entry or M12 connector

### Process Connection
- 1/2" to 1 1/2" BSP or NPT, adjustable, sanitary or flanged connections

### Wetted Material
- 316 Stainless Steel

### Operating Temperature
- 14 to 176º F (-10 to 80ºC) sanitary option to 248ºF (120ºC)

### Max Pressure
- 1450 PSI (100 Bar)

### Class Protection
- IP65 (IEC 60529)
- NEMA 4X (G1 / G2)
## Technical Specifications

### F12 + CF12RM

<table>
<thead>
<tr>
<th>Application</th>
<th>Flow for liquids and gas level for liquids only</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Voltage</td>
<td>DC - 24Vdc (+/- 10%)</td>
</tr>
<tr>
<td></td>
<td>AC - 85-240Vac &amp; 125Vdc</td>
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<tr>
<td>Current Consumption</td>
<td>+/- 100mA</td>
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<tr>
<td>Output</td>
<td>Relay (No + NC)</td>
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<tr>
<td>Set Point Range</td>
<td>Liquid: 3 cm/s to 3 m/s</td>
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<tr>
<td></td>
<td>Gas: 5 cm/s to 5 m/s</td>
</tr>
<tr>
<td>Accuracy</td>
<td>+/- 10%</td>
</tr>
<tr>
<td>Response Time</td>
<td>1 to 10s</td>
</tr>
<tr>
<td>Gradient Temperature</td>
<td>15ºC/min</td>
</tr>
<tr>
<td>Flow Rate Indication</td>
<td>Red led - flow is below setpoint</td>
</tr>
<tr>
<td></td>
<td>Yellow led - flow is at setpoint</td>
</tr>
<tr>
<td></td>
<td>Green led - flow is above setpoint</td>
</tr>
<tr>
<td>Enclosure Material</td>
<td>Without Enlosure (standard) or nylon (optional)</td>
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<tr>
<td></td>
<td>Controller: ABS</td>
</tr>
<tr>
<td>Electrical Connection</td>
<td>M12 Connector</td>
</tr>
<tr>
<td>Process Connection</td>
<td>½&quot; to 1 ½&quot; BSP or NPT, adjustable, sanitary or flanged connections</td>
</tr>
<tr>
<td>Wetted Material</td>
<td>316 Stainless Steel</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>14 to 176º F (-10 to 80ºC)</td>
</tr>
<tr>
<td></td>
<td>Sanitary option to 248ºF (120ºC)</td>
</tr>
<tr>
<td>Max Pressure</td>
<td>1450 PSI (100 Bar)</td>
</tr>
<tr>
<td>Class Protection</td>
<td>Sensor: IP 65</td>
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<td></td>
<td>Controller: IP 40</td>
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</table>

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## Ordering Information

### CF12AC

<table>
<thead>
<tr>
<th>MODEL</th>
<th>CF12AC</th>
<th>CF12DC</th>
<th>CF12RM AC</th>
<th>CF12RM DC</th>
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</thead>
<tbody>
<tr>
<td>SIZE</td>
<td>1/2&quot;</td>
<td>1/4&quot;</td>
<td>1/8&quot;</td>
<td>1&quot;</td>
</tr>
<tr>
<td>THREAD</td>
<td>NPT</td>
<td>NPT</td>
<td>NPT</td>
<td>NPT</td>
</tr>
<tr>
<td>MATERIAL</td>
<td>Carbon Steel Painted</td>
<td>316 Stainless Steel</td>
<td>PVC</td>
<td>Carbon Steel Painted</td>
</tr>
</tbody>
</table>

### PROCESS CONNECTION TYPE

- 1/2" BSP
- 1/4" BSP
- 3/8" NPT
- 1/2" NPT

### PROCESS CONNECTION LENGTH

- 100mm
- 200mm
- 300mm
- 400mm

### HOUSING

- NO ENCLOSURE
- SMALL NYLON
- SMALL NYLON w/ ACYLIC WINDOW (1SPDT)
- OTHER - SPECIFY

### ELECTRICAL CONNECTION

- NONE
- 1/2" BSP (N1/N2/G1/G2)
- CABLE GLAND W/ 1/2" BSP - 2m Cable (N1)
- CABLE GLAND W/ 3/4" NPT - 2m Cable (G1)
- CABLE GLAND W/ 1/2" MPT - 2m Cable (N1)
- M15 Connector (9 Pins) (N2/G2/G1)

### OPTIONS

- Medium Temp - 50mm
- High Temp - 90mm
- Heat Dissipating Coils

### CF12RM DC

- Relay for F12 remote / switch supply V: 95-240 VAC or 125 VDC
- Relay for F12 remote / switch supply V: 24 VDC (+/- 10%)

### CF12RM AC

- Relay for F12 remote / switch supply V: 85-240 VAC or 125 VDC