

Description:

The FC Flow Computer satisfies the instrument requirements for a variety of flowmeter types in liquid, gas, steam and heat applications. Multiple flow equations are available in a single instrument with many advanced features. Includes equations for most flow meter types.

The alphanumeric display offers measured parameters in easy to understand format. Manual access to measurements and display scrolling is supported

The various hardware inputs and outputs can be "soft" assigned to meet a variety of common application needs. The user "soft selects" the flowmeter type and the usage of each input/output while configuring the instrument. Consider the following illustrative examples.

The isolated analog output can be chosen to follow the volume flow, corrected volume flow, mass flow, heat flow, temperature, pressure, or density by means of a menu selection. Most hardware features are assignable by this method.

The user can assign the standard RS-232 Serial Port for external data logging, transaction printing, or for connection to a modem for remote meter reading.

A Service or Test mode is provided to assist the user during start-up system check out by monitoring inputs and exercising outputs. The system setup can also be printed.

Specifications:

Environmental

Operating Temperature: 32°F to 120°F (0°C to +50°C)
 Storage Temperature: -40°F to 185°F (-40°C to +85°C)
 Humidity : 0-95% Non-condensin°
 Materials: UL, CSA, VDE approved

Display

Type: 2 lines of 20 characters
 Types: Backlit LCD and VFD ordering options
 Character Size: 0.3" nominal
 User selectable label descriptors and units of measure

Keypad

Keypad Type: Membrane Keypad
 Keypad Rating: Sealed to NEMA 4
 Number of keys: 16

Enclosure

Depth behind panel: 6.5" including mating connector
 Type: DIN
 Materials: Plastic, UL94V-0, Flame retardant
 Bezel: Textured per matt finish

Power Input

The factory equipped power option is internally fused. An internal line to line filter capacitor is provided for added transient suppression. MOV protection for surge transient is also supported
 Universal AC Power: 85 to 276 Vrms, 50/60 Hz
 Power Consumption
 AC Power: 6.5 V/A (6.5W)
 DC Power: 300 mA max.

Flow Meter Types:

Linear: Turbine, Positive Displacement, Magnetic

Approvals: CE Compliant, UL/C-UL Pending

Data Logging

Serial Communication: RS232



Flow Inputs:

Analog Input:

Accuracy: 0.02% FS at 20° C
 Ranges

Pulse Inputs:

Number of Flow Inputs: one
 Input Impedance: 10 k Ω nominal
 Trigger Level: (menu selectable)
 High Level Input
 Logic On: 2.5 to 30 VDC
 Logic Off: 0 to 2 VDC
 Low Level Input (mag pickup)
 Selectable sensitivity: 10 mV and 100 mV
 Minimum Count Speed: 0.25 Hz (to maintain rate display)
 Maximum Count Speed: Selectable: 0 to 50 kHz
 Overvoltage Protection: 50 VDC
 Update Speed: 1 update/sec.

Temperature, Pressure, Density Inputs

The compensation inputs usage are menu selectable for temperature, temperature 2, pressure, density or not used.
 Calibration: Operator assisted learn mode
 Operation: Ratiometric
 Basic Measurement Resolution: 16 bit
 Update Rate: 2 updates/sec minimum
 Automatic Fault detection:
 Signal Over-range/under-range
 Current Loop Broken
 RTD short
 RTD open
 Reverse Polarity: No ill effects
 Over-Current Limit
 (current input) Internally limited to protect input to 24 VDC

Available Input Ranges

Current: 4-20 mA, 0-20 mA
 Resistance: 100 Ohms DIN RTD
 Accuracy: 0.02% FS at 20° C
 100 Ohm DIN RTD (DIN 43-760, BS 1904):
 Three Wire Lead Compensation
 Internal RTD linearization learns ice point resistance
 1 mA Excitation current with reverse polarity protection
 Temperature Resolution: 0.1°C
 Temperature Accuracy: $\pm 0.5^\circ\text{C}$

Stored Information (ROM)

Steam Tables (saturated & superheated),
 Fluid Properties: Water, Air, Natural Gas, A Variety of User Entered Industrial Fluids or Generic

User Entered Stored Information (EEPROM / Nonvolatile RAM)

- Transmitter Ranges, Signal Types
- Fluid Properties
 - (reference density, expansion factor, specific heat, viscosity, isentropic exponent, combustion heating value, Z factor)
- Units Selections (English/Metric)
- Language Translations (optional)

Excitation Voltage

24 VDC @ 100 mA (fault protected with self resetting fuse)

Relay Outputs

The relay outputs usage is menu assignable to (Individually for each relay) Hi/Lo Rate Alarm, Hi/Lo Temperature Alarm, Hi/Lo Pressure Alarm, Pulse Output (pulse options), Wet Steam or General purpose warning (security).
 Number of relays: 2 (3 optional)
 Contact Style: Form C contacts (Form A with 3 relay option)
 Contact Ratings: 240 V, 5 amp

Analog Outputs

The analog outputs are menu assignable to correspond to the Uncompensated Volume Rate, Corrected Volume Rate, Mass Rate, Heat Rate, Temperature, Density, Pressure or Delta Temperature.
 Number of Outputs: 2
 Type: Isolated Current Sourcing (shared common)
 Available Ranges: 0-20 mA, 4-20 mA (menu selectable)
 Resolution: 16 bit
 Accuracy: 0.05% FS at 20 Degrees C
 Update Rate: 5 updates/sec
 Temperature Drift: Less than 200 ppm/C
 Maximum Load: 1000 ohms
 Compliance Effect: Less than .05% Span
 60 Hz rejection: 40 dB minimum
 EMI: No effect at 3 V/M
 Calibration: Operator assisted Learn Mode
 Averaging: User entry of DSP Averaging constant to cause a smooth control action

Isolated Pulse output

The isolated pulse output is menu assignable to Uncompensated Volume Total, Compensated Volume Total, Heat Total or Mass Total.
 Pulse Output Form (menu selectable): Open Collector NPN or 24 VDC voltage pulse
 Nominal On Voltage: 24 VDC
 Maximum Sink Current: 25 mA
 Maximum Source Current: 25 mA
 Maximum Off Voltage: 30 VDC
 Saturation Voltage: 0.4 VDC
 Pulse Duration: User selectable
 Pulse output buffer: 8 bit
 Fault Protection

- Reverse polarity:
 - Shunt Diodes
- Over-current Protected
- Over-voltage Protected

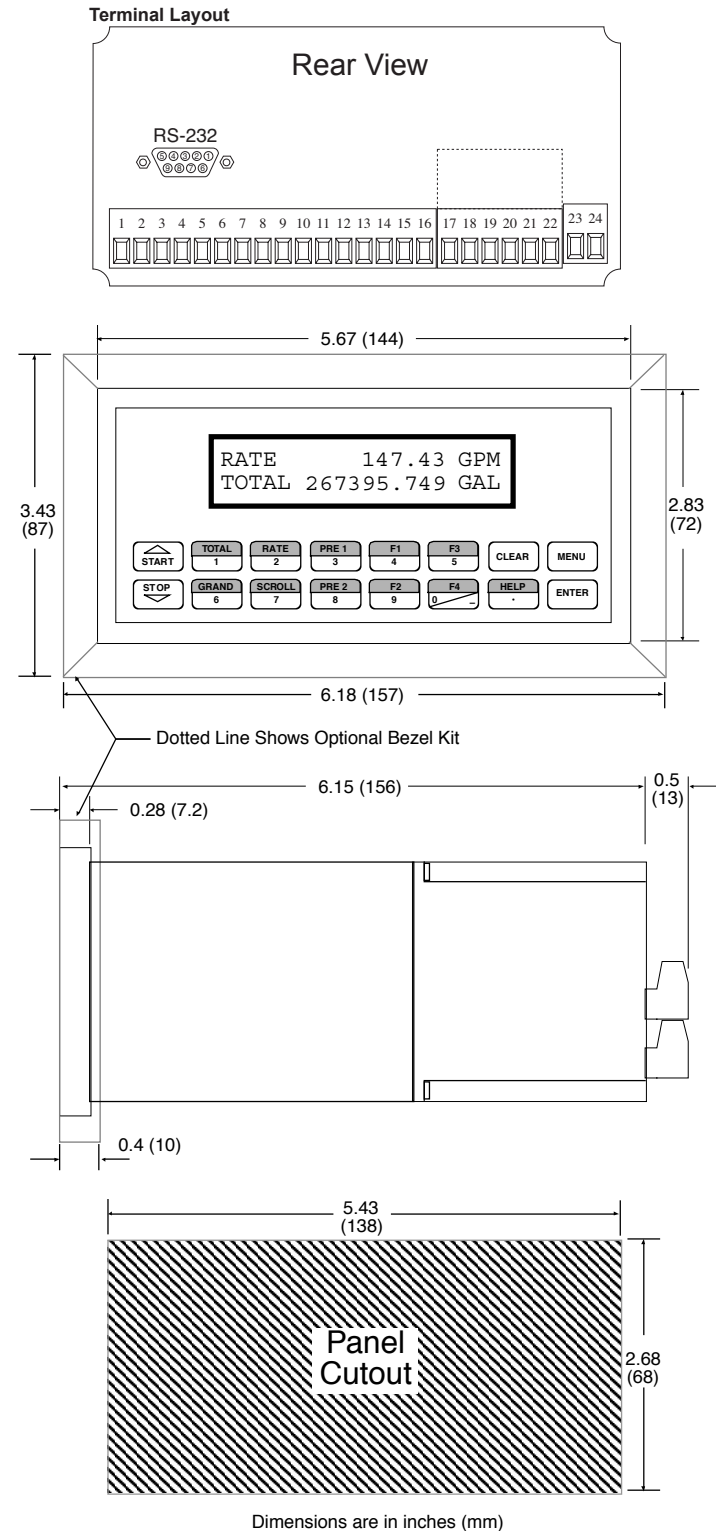
Real Time Clock

The Flow Computer is equipped with a pseudo nonvolatile real time clock with display of time and date.

Format:

- 24 hour format for time
- Day, Month, Year for date
- Optional Daylight Savings Time
- Voltage: 0-10 VDC, 0-5 VDC, 1-5 VDC
- Current: 4-20 mA, 0-20 mA, 4-20 mA stacked, 0-20 mA stacked

Standard Dimensions



Ordering Information

Model	Description
FCL1-P	Mass Flow Computer Panel Mount
FCL1-W	Mass Flow Computer Wall Mount