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. A 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-condensing
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

Flow Inputs:
Analog Input:
Accuracy: 0.02% FS at 20° C
Ranges
Pulse Inputs:
Number of Flow Inputs: one
Input Impedance: 10 kΩ 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
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
Temperature RTD linearization learns ice point resistance
1 mA Excitation current with reverse polarity protection
Temperature Resolution: 0.1°C
Temperature Accuracy: ± 0.5°C

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

Data Logging
Serial Communication: RS232

04/16/12
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

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