FC30

Flow Computer for Dual Rotor Turbine Flowmeters

Features

- Supports Single and Dual Rotor Turbine Flowmeters

- Universal Viscosity Curve (UVC) and Strouhal/ Roshko Advanced Linearization Methods

- Gas & Liquid Flow Equations (Volume, Mass, Corrected Volume)

- API 2540, AGA-7 Equations

- 10 Selectable Fluid Tables

- Advanced Batching Features: Overrun Compensation, Print End of Batch

- Menu Selectable Hardware & Software Features

- Two Line LCD or VFD Display

- Isolated Pulse and Analog Outputs Standard

- RS-232 Port Standard, RS-485 Optional

- Windows™ Setup Software

- DDE Server & HMI Software Available

Description:

The FC30 Flow Computer satisfies the instrument requirements for dual rotor turbine flowmeters in liquid and gas applications. Multiple flow equations and instrument functions are available in a single unit with many advanced features.

The alphanumeric display shows measured and calculated parameters in easy to understand format. Single key direct access to measurements and display scrolling is supported

The versatility of the FC30 permits a wide range of flow measurements within the instrument package. The various hardware inputs and outputs can be "soft" assigned to meet a variety of common application needs. The user "soft selects" the usage of each input/output while configuring the instrument.

The isolated analog output can be chosen to follow volume flow, corrected volume flow, mass 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 data recording, transaction printing, or for connection to a computer.

Front panel selection of fluid type is supported.

Linearization options include UVC, Strouhal/Roshko and 40 point flowmeter linearization tables.

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

Specifications:

Flow Meters and Computations

Meter Types: Supports pulse producing meters including: Dual Rotor Turbines, Single Rotor Turbines, Vortex, PD, and Magnetic Flowmeters
Linearization: 40 point table, UVC table or Strouhal/Roshko
Computations: Volume, Corrected Volume & Mass
Fluid Computations: Density, Viscosity

Environmental

Operating Temperature: 0°C to +50°C
Storage Temperature: -40°C to +85 C
Humidity : 0-95% Non-condensing
Materials: U.L. approved

Approvals: CE Compliant, UL/CUL Listed

Display

Type: 2 lines of 20 characters, Blue VFD or Backlit LCD
Character Size: 0.3" nominal
User programmable label descriptors and units of measure

Keypad

Keypad Type: Membrane Keypad with 16 keys
Keypad Rating: Sealed to Nema 4

Enclosure

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

Fluid Types

General Purpose, Water, Skydraul 500B, 50/50 Ethylene, Air, Propane, MIL-C-7024D, MIL-O-5606, MIL-23699, JETA-1, Diesel, Methanol

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Real Time Clock
The FC30 is equipped with a battery backed real time clock with display of time and date.
Format:
  12 or 24 hour time display
  Day, Month, Year date display

Excitation Voltage
Menu Selectable: 5, 12 or 24 VDC @ 100 mA (fault protected)

Relay Outputs
The relay outputs are menu assignable to (Individually for each relay) Low Rate Alarm, Hi Rate Alarm, Prewarn Alarm, Preset Alarm or General purpose warning (security).
Number of relays: 2 (4 optional)
Contact Style: Form C contacts
Contact Ratings: 5 amp, 240 VAC or 30 VDC

Power Input
The factory equipped power option is internally fused. An internal line to line filter capacitor and MOV are provided for added transient suppression.

110 VAC Power: 85 to 127 Vrms, 50/60 Hz (11.0 VA)
220 VAC Power: 170 to 276 Vrms, 50/60 Hz (11.0 VA)
DC Power:
  12 VDC (10 to 14 VDC); 300 mA max.
  24 VDC (14 to 28 VDC); 300 mA max.

Flow Inputs:
  Pulse Inputs:
  Number of Flow Inputs: one input available for single rotor, single rotor with dual pickups or quadrature
  Input Impedance: 10 KΩ nominal
  Pullup Resistance: 10 KΩ to 5 VDC (menu selectable)
  Pull Down Resistance: 10 KΩ to common
  Trigger Level: (menu selectable)
    High Level Input
      Logic On: 3 to 30 VDC
      Logic Off: 0 to 1 VDC
    Low Level Input (mag pickup)
      Sensitivity:
        10 mV or 100 mV
  Minimum Count Speed:
        Menu selectable
  Maximum Count Speed:
        Menu Selectable: 40Hz, 3000Hz or 20 kHz
  Overvoltage Protection: 50 VDC

Control Inputs
Switch Inputs are menu selectable for Start, Stop, Reset, Lock, Inhibit, Alarm Acknowledge, Print or Not Used.
Control Input Specifications
Input Scan Rate: 10 scans per second
Logic 1: 4 - 30 VDC
Logic 0: 0 - 0.8 VDC
Input Impedance: 100 KΩ
Control Activation:
  Positive Edge or Pos. Level based on product definition for switch usage.

Auxiliary / Compensation Inputs
The auxiliary/compensation inputs are menu selectable for temperature, pressure, density or not used. These inputs are used for the compensated input when performing compensated flow calculations. It can also be used as a general purpose input for display and alarming.
Number of inputs: 2

Operation: Ratiometric
Accuracy: 0.01% FS at 20$°$ C
Basic Measurement Resolution:
    16 bit
Update Rate: 1 update/sec minimum
Automatic Fault detection:
    Signal Over-range/under-range
    Current Loop Broken
    RTD short
    RTD open
    Fault mode to user defined default settings

Fault Protection:
    Reverse Polarity: No ill effects
    Over-Voltage Limit (Voltage Input): 50 VDC

Available Input Ranges
    Voltage: 0-10 VDC, 0-5 VDC, 1-5 VDC
    Current: 4-20 mA, 0-20 mA
    Resistance: 100 Ohms DIN RTD
                Proprietary Thermistor

100 Ohm DIN RTD (liquid equations only)
(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: 0.01 C

Serial Communication
The serial port can be used for printing, data recording, and communication with a computer.
RS-232:
    Device ID: 01-99
    Baud Rates: 300, 600, 1200, 2400, 4800, 9600, 19200
    Parity: None, Odd, Even
    Handshaking: None, Software, Hardware
    Print Setup: Configurable print list and formatting
RS-485:
    Device ID: 01-247
    Baud Rates: 2400, 4800, 9600, 19200
    Parity: None, Odd, Even
    Protocol: Modbus RTU (Half Duplex)

Isolated Analog Output

The analog output is menu assignable to correspond to the Uncompensated Volume Rate, Corrected Volume Rate, Mass Rate, Temperature, Pressure, Density, Volume Total, Corrected Volume Total or Mass Total.

Type: Isolated Current Sourcing
Available Ranges: 4-20 mA, 0-20 mA
Resolution: 12 bit
Accuracy: 0.05% FS at 20° C
Update Rate: 1 update/sec minimum
Temperature Drift: Less than 200 ppm/C
Maximum Load: 1000 ohms (at nominal line voltage)
Compliance Effect: Less than .05% Span
60 Hz rejection: 40 dB minimum
Calibration: Operator assisted Learn Mode
Averaging: User entry of damping constant to cause a smooth control action

Isolated Pulse output

The isolated pulse output is menu assignable to Uncompensated Volume Total, Compensated Volume Total or Mass Total

Pulse Output Form: Open Collector
Maximum On Current: 25 mA
Maximum Off Voltage: 30 VDC
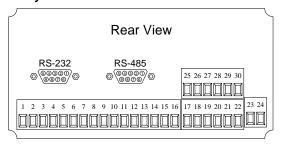Saturation Voltage: 1.0 VDC
Maximum Off Current: 0.1 mA
Pulse Duration: 10 mSec or 100 mSec (user selectable)
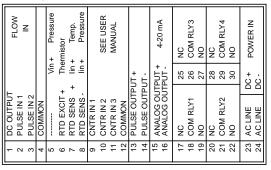Pulse output buffer: 256

Fault Protection
    Reverse polarity: Shunt Diode
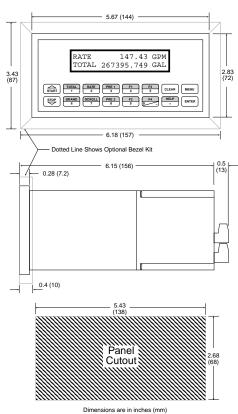
Terminal Layout

Rear View

Terminal Designations

Dimensions

Dotted Line Shows Optional Bezel Kit

Panel Cutout

Dimensions are in inches (mm)

Ordering Information

Example	FC30	L	1	A	0	P

Series:
    FC30= FC30

Display Type:
    L= LCD
    V= VFD

Input Type:
    1= 110 VAC
    2= 220 VAC
    3= 12 VDC (10 to 14 VDC)
    4= 24 VDC (14 to 28 VDC)

Relays:
    A= 2 SPDT Relays
    B= 4 SPDT Relays
    C= 2 Form A Solid State Relays

Network Card:
    0= None (STD)
    2= RS485/Modbus (available soon)

Mounting:
    P= Panel Mount
    N= NEMA 4 Wall Mount
    W= NEMA 12/13 Wall Mount w/ Clear Cover
    E= Explosion Proof (No Button Access)
    X= Explosion Proof (with Button Access)

Options:
    ET= Extended Tempertaure .... (consult factory)
        -4°F to 131°F (-20°C to 55°C)
    CSA: CSA Approved Unit (pending) .... (consult factory)

Accessories:
KEPS-KEP1-32 = 32 Bit OPC/DDE Server
P1000 Printer
MPP2400 = Port Powered Modem
MPP2400N = Port Powered Modem in NEMA4 enclosure