

SP3850: Flow Computer for Liquid and Gas Applications

Features:

- Supports Pulse Producing Flowmeters
- Rate/Total and Batching Functions
- 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
- Data Logging
- Two Line 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 SP3850 Flow Computer satisfies the instrument requirements for pulse producing 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 SP3850 permits a wide measure of parameters 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 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: vortex, single rotor turbine, magnetic, PD flowmeter
 Linearization: 40 point table, UVC table or Strouhal/Roshko
 Computations: Volume, Corrected Volume & Mass
 Fluid Computations: Density, Viscosity

Environmental

Operating Temperature: 0C to +50C
 Storage Temperature: -40C 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
 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

Water, Argon, Carbon Dioxide, Nitrogen, Oxygen, MIL-C-7024D, Propane, 50/50 Ethylene, Air, Diesel

Real Time Clock

The SP3850 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, Temperature, Pressure, Density 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
- Capabilities: Alarm Delay, Setpoint, Hysteresis, Duration

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 pickup or with dual pickups or quadrature
- Input Impedance: 10 K nominal
- Pullup Resistance: 10 K to 5 VDC (menu selectable)
- Pull Down Resistance: 10 K 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 K
- 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

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: Photo MOS Relay
- Maximum On Current: 100 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

Serial Communication

The serial port can be used for printing, data recording, and/or 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)

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Setup Diskette Capabilities

Capabilities include: View Live Results Configure unit, Upload and Download to unit, Load and Save to file, Print Setup

Data Logging Capabilities

- Capabilities: Permits unit to automatically gather data during use.
- Data Log List: User selectable: includes process variables, totalizers, set points, time and date
- Data Log Event Trigger: Selectable: includes interval, time of day, front key, external contact, end of batch
- Data Log Format: Selectable: Printer format, Database CSV format

Data Transmission:

- Selectable: Output may be transmitted immediately or held in data log for later polling
- Remote Request Capabilities include: Send data log, clear data log

External Modem Support Capabilities:

- Compatibility: Hayes Compatible
- Polling Capabilities: Answers incoming calls, responds to requests for information of action
- Call Out Capabilities: Can initiate call on user selectable event condition, or upon error
- Error Handling: Supports multiple retry, automatic disconnect upon loss of line or remote inactivity

