

SUPERtrol-I

Multi-Function Flow Totalizer, Ratemeter and Batcher

Features

- "EZ Setup" Guided Setup for First Time Users
- Rate/Total and Batching Functions
- Menu Selectable Hardware & Software Features
- Environmental Compliance Monitoring and Report Generation
- Universal Viscosity Curve (UVC) and API Eq.
- Advanced Batching Features: Overrun Compensation, Autobatch Start, Print End of Batch, Slow Fill, 2 Stage Batching
- Isolated Outputs Standard
- RS-232 Port Standard, RS-485 Optional
- Advanced Printing Capabilities
- Windows™ Setup Software
- DIN Enclosure with Two Piece Connectors
- On Board Data Logging
- DDE Server & HMI Software Available
- Enhanced Modem Features for Remote Metering
- NEW! - Attractive Wall Mount Enclosure

Description:

The SUPERtrol-I Flow Computer satisfies the instrument requirements for a variety of flowmeter types in liquid applications. Multiple flow equations and instrument functions are available in a single unit with many advanced features.

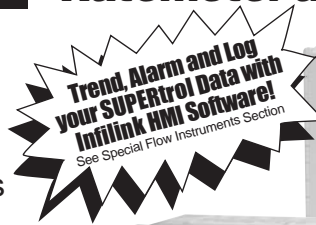
The alphanumeric display shows measured and calculated parameters in easy to understand format. Single key direct access to measurements and display scrolling is supported

The versatility of the SUPERtrol-I permits a wide measure of versatility 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, 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 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 and printing system setup.



Specifications:

Flow Meters and Computations

Meter Types: All linear and square law meters supported including: vortex, turbine, magnetic, PD, target, orifice, venturi, v-cone and many others
Linearization: Square root, 16 point table or UVC table
Computations: Volume, Corrected Volume & Mass
Fluid Computations: Temperature, Density, Viscosity and API 2540 for petroleum.

Environmental

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

Listing: UL/C-UL Listed (File No. E192404), CE Compliant

Display

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

Keypad

Keypad Type: Membrane Keypad with 16 keys

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

Real Time Clock

The SUPERtrol-I 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

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
220 VAC Power: 170 to 276 Vrms, 50/60 Hz
DC Power: 12 VDC (10 to 14 VDC)
24 VDC (14 to 28 VDC)

Power Consumption:

AC: 11.0 VA (11W)
DC: 300 mA max.

Flow Inputs:

Analog Input:

Accuracy: 0.01% FS at 20° C
 Ranges
 Voltage: 0-10 VDC, 0-5 VDC, 1-5 VDC
 Current: 4-20 mA, 0-20 mA
 Basic Measurement Resolution:
 16 bit
 Update Rate: 4 updates/sec
 Automatic Fault detection: Signal over/under-range,
 Current Loop Broken
 Calibration: Software Calibration (no trimmers) and Auto-
 zero Continuously
 Extended calibration:
 Learns Zero and Full Scale of each range using special
 test mode.
 Fault Protection:
 Reverse Polarity: No ill effects
 Over-Voltage Limit: 50 VDC Over voltage protection
 Over-Current Protection: Internally current limited
 protected to 24VDC

Pulse Inputs:

Number of Flow Inputs: one with or without quadrature or
 pulse security checking
 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

Auxiliary / Compensation Input

The auxiliary/compensation input is menu selectable for
 temperature, density or not used. This input is used for the
 compensated input when performing compensated flow
 calculations. It can also be used as a general purpose input
 for display and alarming.

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

 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: 0.01 C

Control Inputs

Switch Inputs are menu selectable for Start, Stop, Reset,
 Lock, Inhibit, Alarm Acknowledge, Print or Not Used.
 Number of Control Inputs: 3
 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.

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), low
 temperature/high temperature.

Number of relays: 2 (4 optional)
 Contact Style: Form C contacts
 Contact Ratings: 5 amp, 240 VAC or 30 VDC

Serial Communication

The serial port can be used for printing, datalogging, modem
 connection 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.
 Print Out: Custom form length, print headers,
 print list items.
 Print Initialization: Print on end of batch, key depression,
 interval, time of day, control input or
 serial request.
 RS-485: (optional 2nd COM port)
 Device ID: 01-247
 Baud Rates: 2400, 4800, 9600, 19200
 Parity: None, Odd, Even
 Protocol: Modbus RTU (Half Duplex)

Data Logging

The data logger captures print list information to internal storage
 for approximately 1000 transactions. This information can be
 used for later uploading or printing. Storage format is selectable
 for Comma-Carriage Return or Printer formats.

Isolated Analog Output

The analog output is menu assignable to correspond to the
 Uncompensated Volume Rate, Corrected Volume Rate, Mass
 Rate, Temperature, 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: Phomatos Relay

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 Designations

1	DC OUTPUT																																					
2	PULSE IN 1	Vin +	lin +																																			
3	PULSE IN 2	lin +																																				
4	COMMON																																					
5	*****																																					
6	RTD EXCIT +	Vin +																																				
7	RTD SENS +	lin +																																				
8	RTD SENS -																																					
9	CNTR IN 1																																					
10	CNTR IN 2																																					
11	CNTR IN 3																																					
12	COMMON																																					
13	PULSE OUTPUT +																																					
14	PULSE OUTPUT -																																					
15	ANALOG OUTPUT +																																					
16	ANALOG OUTPUT -																																					
17	NC																																					
18	COM RLY1																																					
19	NO																																					
20	NC																																					
21	COM RLY2																																					
22	NO																																					
23	AC LINE																																					
24	AC LINE	DC +	DC -																																			

Fig. 1: Standard Dimensions

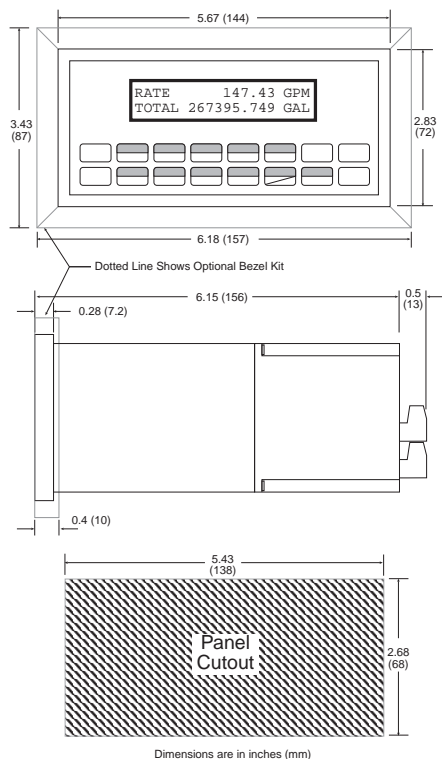
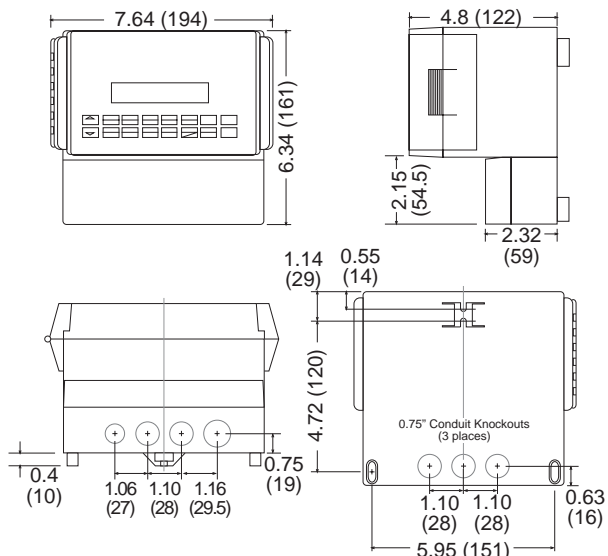


Fig. 2: Wall Mount ("W" mounting option) Dimensions



Ordering Information

Example ST1 L 1 A 0 P TB

Series: ST1
ST1= Supertrol-1

Display Type: L
L= LCD
V= VFD

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

Relays: A
A= 2 SPDT Relays
B= 4 SPDT Relays

Network Card: 0
0= None (STD)
2= RS485/Modbus (optional 2nd COM port)

Mounting: P
P= Panel Mount (see Fig. 1)
N= NEMA 4 Wall Mount (see NEMAtrolST4X)
W= NEMA 12/13 Wall Mount w/ Clear Cover (see Fig.2)
E= Explosion Proof (No Button Access) (see XHVD 7/4)
X= Explosion Proof (with Button Access) ... (see XTROL 7/4)

Options: TB
TB= RS485 Terminal Block for Panel Mount Enclosure
ET= Extended Temperature
-4°F to 131°F (-20°C to 55°C)
IM = Internal Modem
M = Modem Power Option

Accessories:
KEPS-KEP1-32
KEP RS232 for SUPERtrol 1, SUPERtrol 1LE,
SUPERtrol 2 and LEVELtrol 2 • 32 Bit OPC/DDE Server
KEPS-MBS32
Supports RS485 for ST1, ST1LE, ST2,
LT2, MRT, DRT & MB2 (Modbus RTU)

Modem Available, see MPP-2400 and MPP-2400N (requires M option)
Serial printer available, see P1000, P295
Ethernet Port Server available, see IEPS
RS-422/485 to RS-232 Communication Adaptor available, see CA285
Remote metering and data collection software available, see TROLLink