SUPERTrol-X

Features

• Explosion Proof Enclosure with LCD Display
• Rate/Total and Batching Functions
• Advanced Batching Features: Overrun Compensation, Print End of Batch, Slow Start of Batch Fill, Slow End of Batch Fill, 2 Stage Batching or Digital Control Valve
• Advanced Printing Capabilities
• “EZ Setup” Guided Setup for First Time Users
• Menu Selectable Hardware & Software Features
• Isolated Pulse, Analog and Relay Outputs Standard on AC Powered Models
• RS-232 Port Standard, Modbus RTU RS-485 Optional
• Windows™ Setup Software
• On Board Data Logging
• DDE Server & HMI Software Available
• User Definable Units of Measure
• Enhanced Modem Features for Remote Metering

Description:
The SUPERTrol-X (STX) Flow Computer offers advanced batching features for all types of flow batching systems. The STX is compatible with 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 an easy to understand format. Single key direct access to measurements and display scrolling is supported.

The versatility of the SUPERTrol-X 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. Remote metering software available.

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.

Explosion Proof, Multi-Function Flow Totalizer, Ratemeter & Batcher

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 (standard)
Extended Temperature: -20°C to +55°C (ET option)
Storage Temperature: -40°C to +85°C
Humidity: 0-95% Non-condensing
Materials: U.L. approved

Display
Type: 2 lines of 20 characters
Types: Backlit LCD, VFD & OLED (Yellow LED) options
Character Size: 0.2” nominal
User programmable label descriptors and units of measure

Keypad
Keypad Type: Explosion Proof Switches (8)

Enclosure
Size: See Dimensions
Weight: 60 lbs. (27.5 kg)
For use in Class 1, Division 1, Groups C & D
For use in Class 2 & 3, Division 1, Groups E, F & G
UL: FTRV.E81696
UL Canada: FTRV7.E81696

Real Time Clock
The SUPERTrol-X 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

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Power Input
The factory equipped power option is internally fused. An internal filter 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)

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

Flow Inputs:
Analog Input:
Accuracy: 0.02% 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: 1 sec. to 99 sec.
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: 0.02% 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 setting
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 Accuracy: ± 0.25°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 Specification
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, Digital Control Valve 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

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Serial Communication
The serial port can be used for printing, datalogging, modern 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: Photomos 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

Example STX-ST1 L 1 A 0 X ET
Series: STX-ST1= Supertrol-1 Explosion Proof
Display Type:
  O= OLED (STD)
  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 Relays (consult factory)
Network Card:
  0= None (STD)
  2= RS485/Modbus (optional 2nd COM port)
Mounting:
  X= Explosion Proof
Options:
  ET= Extended Temperature LCD Display
    -4°F to 131°F (-20°C to 55°C)
  IM = Internal Modem
  M = Modem Power Option

Accessories:
  OPC/DDE Server for RS232 Port
  OPC/DDE Server for Modbus Suite
  Modem Available, see MPP-2400N (requires M option)
  Serial printer available, see P1000, P295
  Ethernet Port Server available, see IEPS for RS232 port
  Ethernet Port Server Modbus TCP available, see ADAM4572
  RS-422/485 to RS-232 Communication Adaptor available, see CA285
  Remote metering and data collection software available, see TROLlink
  Quencharc 32145 - Relay Contact Protection

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Dimensions are in inches (mm)