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 LCD, OLED 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 925-ES747 Flow Computer satisfies the instrument requirements for pulse producing 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 925-ES747 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, 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: 0°C to +50°C
• Storage Temperature: -40°C to +85°C
• Humidity: 0-95% Non-condensing
• Materials: U.L. approved

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, Skydrol 500B, 50/50 Ethylene, Air, Propane, MIL-C-7024D, MIL-O-5606, MIL-23699, JETA-1, Diesel, Methanol
**Real Time Clock**
The 925-ES747 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 with self resetting fuse)

**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
- 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:**
**Pulse Inputs:**
- Number of Flow Inputs: one input available for single pickup or 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: 1-99 seconds
- 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**
- Number of Control Inputs: 3
- 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 inputs when performing compensated flow calculations. They can also be used as a general purpose input for display and alarming.
- Number of inputs: 2
- 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 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: 0.1°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: (optional 2nd COM port)
  Device ID: 01-247
  Baud Rates: 2400, 4800, 9600, 19200
  Parity: None, Odd, Even
  Protocol: Modbus RTU (Half Duplex)

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
Fig. 1: Standard Dimensions

![Standard Dimensions Diagram]

Dimensions are in inches [mm]

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

![Wall Mount Dimensions Diagram]

Dimensions are in inches [mm]

Terminal Designations

<table>
<thead>
<tr>
<th>Terminal Designation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 DC OUTPUT</td>
<td>Pulse Output +</td>
</tr>
<tr>
<td>2 DC OUTPUT</td>
<td>Pulse Output -</td>
</tr>
<tr>
<td>3 ANALOG OUTPUT</td>
<td>Analog Output +</td>
</tr>
<tr>
<td>4 ANALOG OUTPUT</td>
<td>Analog Output -</td>
</tr>
<tr>
<td>5 PULSE IN 1</td>
<td>Pulse Input 1</td>
</tr>
<tr>
<td>6 PULSE IN 2</td>
<td>Pulse Input 2</td>
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<tr>
<td>7 DC OUTPUT</td>
<td>Common</td>
</tr>
<tr>
<td>8 COMMON</td>
<td>Common</td>
</tr>
<tr>
<td>9 COMMON</td>
<td>Common</td>
</tr>
<tr>
<td>10 COMMON</td>
<td>Common</td>
</tr>
<tr>
<td>11 RL Y1</td>
<td>Relay Y1</td>
</tr>
<tr>
<td>12 RL Y2</td>
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<td>13 AC LINE</td>
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<tr>
<td>14 AC LINE</td>
<td>AC Line</td>
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<tr>
<td>15 NO</td>
<td>Normally Open</td>
</tr>
<tr>
<td>16 NC</td>
<td>Normally Closed</td>
</tr>
<tr>
<td>17 NO</td>
<td>Normally Open</td>
</tr>
<tr>
<td>18 COM</td>
<td>Common</td>
</tr>
<tr>
<td>19 COM</td>
<td>Common</td>
</tr>
<tr>
<td>20 COM</td>
<td>Common</td>
</tr>
<tr>
<td>21 NO</td>
<td>Normally Open</td>
</tr>
<tr>
<td>22 NC</td>
<td>Normally Closed</td>
</tr>
<tr>
<td>23 NO</td>
<td>Normally Open</td>
</tr>
<tr>
<td>24 DC -</td>
<td>DC Negative</td>
</tr>
<tr>
<td>25 DC +</td>
<td>DC Positive</td>
</tr>
<tr>
<td>26 POWER IN</td>
<td>Power In</td>
</tr>
<tr>
<td>27 POWER IN</td>
<td>Power In</td>
</tr>
<tr>
<td>28 DC +</td>
<td>DC Positive</td>
</tr>
<tr>
<td>29 DC -</td>
<td>DC Negative</td>
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<tr>
<td>30</td>
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