Multi-Function Flow Computer

**EA403**

- "EZ Setup"- Guided Setup for First Time Users
- Liquid, Gas, Steam and Heat Flow Equations
- Utility Metering
- MenuSelectable Hardware & Software Features
- Isolated Pulse and Analog Outputs
- RS-232 Port
- NX19 Gas Equations (Optional)
- Stacked DP Transmitters (Optional)

**Description:**
The EA403 Flow Computer satisfies the instrument requirements for a variety of flow meter types in liquid, gas, steam and heat applications. Multiple flow equations are available in a single instrument with many advanced features.

The alphanumeric display offers measured parameters in easy to understand format. Manual access to measurements and display scrolling is supported.

The Flow Computer 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. Consider the following illustrative examples.

The isolated analog output can be chosen to follow the 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 external 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. The system setup can also be printed.

**Specifications:**

**Environmental**
- Operating Temperature: 0 to +50 C
- Storage Temperature: -40 to +85 C
- Humidity: 0-95% Non-condensing
- Materials: UL, CSA, VDE approved

**Display**
- Type: 2 lines of 20 characters
- Type: Backlit LCD
- Character Size: 0.3" nominal
- User selectable label descriptors and units of measure

**Keypad**
- Keypad Type: Membrane Keypad
- Keypad Rating: Sealed to Nema 4
- Number of keys: 16

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

**Power Input**
- The factory equipped power option is internally fused. An internal line to line filter capacitor is provided for added transient suppression. MOV protection for surge transient is also supported
- Universal AC Power: 85 to 276 Vrms, 50/60 Hz
- Power Cosumption
- AC Power: 6.5 V/A

**Flow Meter Types:**
- Linear: V-Cone, UltraMag, Magnetic
- Multi-Point Linearization: May be used with all flowmeter types. Including: 16 point, UVC and dynamic compensation.
Flow Inputs:

Analog Input:
Accuracy: 0.01% FS at 20° C
Ranges
Current: 4-20 mA, 4-20 mA stacked(optional),
Linear or Square Law
Basic Measurement Resolution: 16 bit
Update Rate: 4 updates/sec
Automatic Fault detection: Signal over/under-range,
Current Loop Broken
Calibration: Operator assisted learn mode
Extended Calibration: Learns Zero and Full
Scale of each range
Fault Protection:
Fast Transient: 500 V Protection (capacitive clamp)
Reverse Polarity: No ill effects
Over-Voltage Limit: 50 VDC Over voltage
protection
Over-Current Protection: Internally current limited
protected to 24VDC

Temperature, Pressure, Density Inputs
The compensation inputs usage are menu selectable
for temperature, temperature 2, pressure, density or
not used.
Calibration: Operator assisted learn mode
Operation: Ratiometric
Accuracy: 0.01% FS at 20° C
Basic Measurement Resolution: 16 bit
Update Rate: 2 updates/sec minimum
Automatic Fault detection:
Signal Over-range/under-range
Current Loop Broken
RTD short
RTD open
Reverse Polarity: No ill effects
Over-Current Limit
(current input)Internally limited to protect input to
24 VDC

Available Input Ranges
Current: 4-20 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

Stored Information (ROM)
Steam Tables (saturated & superheated),
Fluid Properties: Water, Air, Natural Gas or Generic

User Entered Stored Information (EEPROM /
Nonvolatile RAM)
Transmitter Ranges, Signal Types
Fluid Properties
(specific gravity, expansion factor, specific heat,
viscosity, isentropic exponent, combustion heating
value, Z factor)
Units Selections (English/Metric)
Language Translations (optional)

Excitation Voltage
24 VDC @ 100 mA (fault protected)

Relay Outputs
The relay outputs usage is menu assignable to
(Individually for each relay) Hi/Lo Rate Alarm, Hi/Lo
Temperature Alarm, Hi/Lo Pressure Alarm, Pulse Output
(pulse options), Wet Steam or General purpose warning
(security).
Number of relays: 2
Contact Style: Form C contacts
Contact Ratings: 240 V, 5 amp
**Analog Outputs**
The analog outputs are menu assignable to correspond to the Uncompensated Volume Rate, Corrected Volume Rate, Mass Rate, Heat Rate, Temperature, Density, or Pressure.

- **Number of Outputs:** 2
- **Type:** Isolated Current Sourcing (shared common)
- **Available Ranges:** 0-20 mA, 4-20 mA (menu selectable)
- **Resolution:** 16 bit
- **Accuracy:** 0.05% FS at 20 Degrees C
- **Update Rate:** 5 updates/sec
- **Temperature Drift:** Less than 200 ppm/C
- **Maximum Load:** 1000 ohms
- **Compliance Effect:** Less than .05% Span
- **60 Hz rejection:** 40 dB minimum
- **EMI:** No effect at 3 V/M
- **Calibration:** Operator assisted Learn Mode
- **Averaging:** User entry of DSP Averaging constant to cause a smooth control action

**Listing:** CE Approved, UL/CSA Pending

**Serial Communication**
The serial port can be used for printing, datalogging, modem connection, two way paging 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

**Isolated Pulse output**
The isolated pulse output is menu assignable to Uncompensated Volume Total, Compensated Volume Total, Heat Total or Mass Total.

- **Pulse Output Form (menu selectable):** Open Collector NPN or 24 VDC voltage pulse
- **Nominal On Voltage:** 24 VDC
- **Maximum Sink Current:** 25 mA
- **Maximum Source Current:** 25 mA
- **Maximum Off Voltage:** 30 VDC
- **Saturation Voltage:** 0.4 VDC
- **Pulse Duration:** User selectable
- **Pulse output buffer:** 8 bit
- **Fault Protection**
  - **Reverse polarity:**
    - Shunt Diodes
  - **Over-current Protected**
  - **Over-voltage Protected**

**Real Time Clock**
The Flow Computer is equipped with a non-volatile real time clock with display of time and date.

- **Format:**
  - 24 hour format for time
  - Day, Month, Year for date
Dimensions

Dotted Line Shows Optional Bezel Kit

Panel Cutout

Dimensions are in inches (mm)

Terminal Designations

Terminal Layout

Rear View

Ordering Information

Series:
EA403-00 Flow Computer
- Display Type: LCD
- Power Input: 85 to 276 VAC
- Flow Input: 4-20 mA Analog
- Analog Outputs: Two isolated 4-20 mA
- Mounting: Panel Mount NEMA 4 (Bezel Kit Included)

EA403-02 Flow Computer
- ADD: NX-19 Gas Equations and Stacked DP Transmitters