

# EA403

## Multi-Function Flow Computer

- "EZ Setup"- Guided Setup for First Time Users
- Liquid, Gas, Steam and Heat Flow Equations
- Utility Metering
- Menu Selectable 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 Consumption  
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**

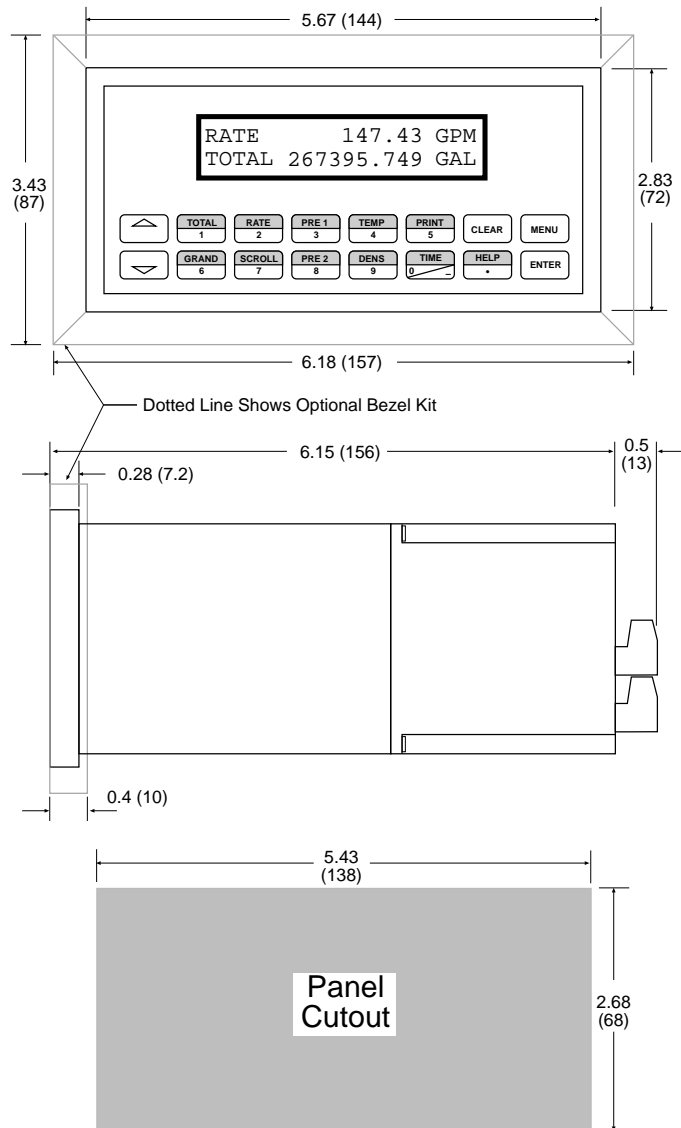
The Flow Computer is equipped with a non-volatile real time clock with display of time and date.

Format:

24 hour format for time

Day, Month, Year for date

## Dimensions

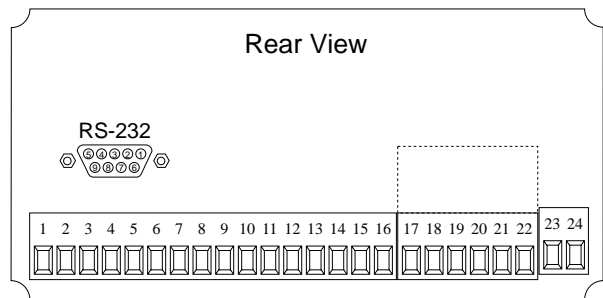


Dimensions are in inches (mm)

## Terminal Designations

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

## Terminal Layout



## 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