

Est. 1988 • 30 Years of Thermal Mass Flow Meter Excellence

## Master-Touch™ 800HPN

### Ultra High Purity Gas Applications

#### 800HPN Ultra High Purity Flow Meters With EPI-Val™ Field Validation

Eldridge Products, Inc. (EPI) manufactures Thermal Mass Flow Meters to measure virtually all gas flows. Product designs come from founders forty years of experience in Thermal Mass Flow Metering. *Accurate-Reliable-Economical.*

Our *Series 800HPN* includes a feature set designed for a variety of *Ultra High Purity* and *High Purity* applications including Semiconductor & Displays, Pharmaceutical, Biotechnology, Food & Beverage, and other processes that require a clean hygienic flow meter.

#### Master-Touch™ 800HPN Features

Master-Touch Series *800HPN* Flow Meters are In-line style instruments with all electronics mounted integrally on the flow section in a Type 4X, IP66 enclosure. All input power and signal output connections are accessible through this double-sided enclosure. The Series features a *VCR* style sensor for easy removal and cleaning. The internal wetted surfaces may be electro-polished to either a *10 Ra* or *25 Ra* surface finish. Inlet flow conditioning plates are optionally available on flow sections from  $\frac{3}{4}$ " to 6". Mounting is via butt weld ends.

Optional end configurations include - Tri-Clamp style ends or male VCR style ends for  $\frac{1}{2}$ ",  $\frac{3}{4}$ " or 1" tubes.

A 2-line, 16-character LCD display with a 4-button keypad, displays the flow rate, totalized flow total, gas temperatures, electronics temperatures, sensor milliwatts, event/alarm relay status. It also provides access to the menuing system for change of user accessible variables. Included are 0-5 VDC and 4-20 mA outputs proportional to flow, as well as RS232; RS485; Modbus RTU; BACnet communications.

Optionally available upgrades - HART and Profibus DP communications.

#### EPI's Flow Technology

Thermal mass flow meters operate on the principle of *convective heat transfer* to directly measure mass flow. EPI's VCR sensors consist of two resistance temperature detectors (RTDs). One RTD is heated; the other RTD is an unheated temperature reference. The process gas flow dissipates heat from the heated RTD, causing an increase in the power required to maintain its operating temperature. This increase is directly related to the gas molecular flow rate.

Our VCR sensors are temperature compensated and insensitive to pressure changes, so the output signal is a true mass flow rate signal which can be directly interfaced with your data acquisition system without the need for further temperature and pressure instrumentation.

For more information about EPI, please visit us at [www.epiflow.com](http://www.epiflow.com).



# Master-Touch™ Advantages

## Included Features -

- EPI-Val™ Field Validation Firmware & Software
- A wide turndown ratio of 100:1 down to 15 SFPM (wider available)
- E-Logger™, EPI's proprietary "Onboard & Remote" (PC) Data-Logging
- Time and date stamping of maximum and minimum flow rates
- Two user-programmable relays for Event or Alarm
- A 2-line, 16-character display- Rate, Total, Gas & PCB Temperature, Milliwatts, Relay Status
- Up to four independent Flow Curves
- RS232, RS485 selectable ASCII or Modbus RTU or BACnet
- Optional- HART or Profibus DP

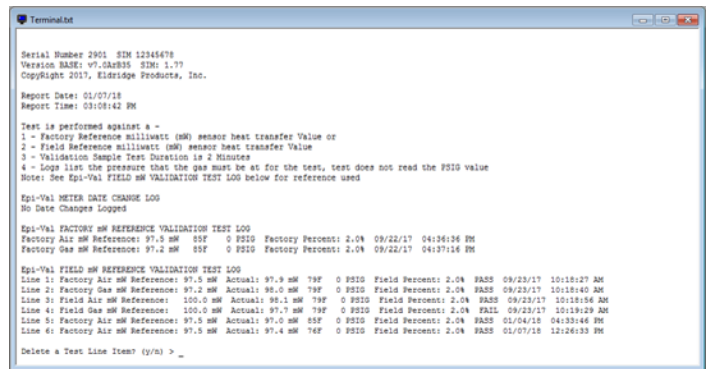
## EPI-Val™ with LiveZero™ Field Validation Firmware & Software for On-Site or In-Situ Flow Meter Validation

**On-Site** & out of pipe: **Validation** of the Flow Meter & Sensor. The Validation is performed against a Factory Established **LiveZero™** (active sensor) mW test-point. This test is performed with the flowmeter removed from the process line. The calibration Validation test is performed in ambient Air at room temperature and pressure, on user's test bench. This process allows user to save time and money in calibration related costs. When the LiveZero™ data point is **Validated**, the flow sensor thermal heat transfer has not drifted and therefore retains its original calibration. Alternately, the User may create user's own Air LiveZero™ mW reference value test-point in Air, for future **Validation**.

**In-Situ** (in place), User Validates the LiveZero™ mW value, against either a Factory Calibration Gas LiveZero™ mW value, or User may create User's own Process Gas LiveZero™ mW value in Users process gas & conditions, to be Validated against in the future.

**Retracted Probe Validation Method:** The test is in the actual Process Gas whereby the Sensor is retracted up into an isolation ball valve to be Validated. The Process Gas continues to flow in the line.

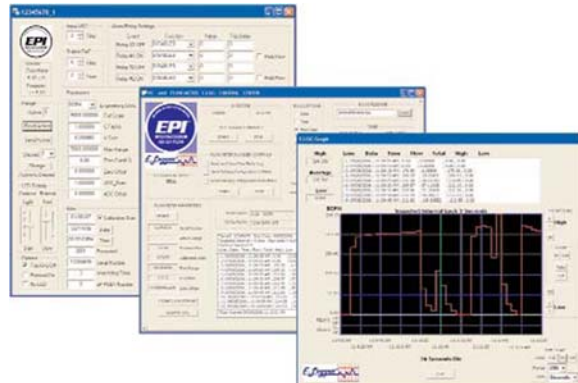
**Bypassed Process Gas Method:** When Validating the Flow Meter, the User bypasses the process gas flow around the Flow Meter assembly in a parallel path, utilizing four isolation valves. The Process Gas continues to flow in the line.



EPI-Val™ with LiveZero™ Validation report



The **E-Logger™** module of the free EPICommunicator™ software is a fully functional, PC-based data logger that works in conjunction with Master-Touch™ flowmeters. The user can select from a set of categories for the data collection, the time interval for each data "snapshot" and, if necessary, programmed start and stop times. The data is stored onboard within the flow meter or on a PC. E-Logger will also graph the data, and it provides tools for analysis of the data. Data files stored on a PC can be accessed by most common spreadsheet applications.



<b>INCH SIZE TUBE DIMENSIONS FOR ULTRA HIGH PURITY FLOWMETERS</b>						
<b>Tube Size Inch O.D. / Wall</b>	<b>Butt Weld (BW) Body Length Inch / mm</b>	<b>Body &amp; Screens Length Inch / mm</b>	<b>Body &amp; Tri-Clamp™ Ends Length Inch / mm</b>	<b>Body &amp; Screens &amp; Tri-Clamp™ Ends Length Inch / mm</b>	<b>Body &amp; VCR™ Ends Length Inch / mm</b>	<b>Body &amp; Screens &amp; VCR™ Ends Length Inch / mm</b>
<b>0.500</b> 0.065	4.3 109	NA	NA	NA	6.3 160	NA
<b>0.750</b>	4.3 108	6.3 160	NA	NA	6.3 160	8.3 211
<b>1.000</b>	5.00 127	7.0 178	7.3 185	9.3 236	7.0 178	9.0 229
<b>1.500</b>	5.50 140	8.5 216	7.8 198	10.8 274	NA	NA
<b>2.000</b>	6.50 165	10.5 267	8.8 224	12.8 325	NA	NA
<b>3.000</b>	7.50 191	13.5 343	9.8 249	15.8 401	NA	NA
<b>4.000</b>	8.50 216	16.5 419	10.8 274	18.8 478	NA	NA

Check with factory for larger sizes.

<b>JIS Sch 5 PIPE DIMENSIONS FOR ULTRA HIGH PURITY FLOWMETERS</b>		
<b>Pipe Sizes JIS Sch 5 Inch</b>	<b>Butt Weld (BW) Only Length Inch / mm</b>	<b>BW &amp; Screens Length Inch / mm</b>
<b>15A</b> ½"	4.8 122	6.8 173
<b>20A</b> ¾"	5.0 127	7.0 178
<b>25A</b> 1"	5.0 127	8.0 203
<b>32A</b> 1-1/4"	6.0 152	9.0 229
<b>40A</b> 1-1/2"	6.0 152	10.0 254
<b>50A</b> 2"	6.8 173	10.8 274
<b>65A</b> 2-1/2"	7.3 185	13.3 338
<b>80A</b> 3"	8.0 203	15.0 381
<b>100A</b> 4"	10.0 254	19.0 483

Check with factory for larger sizes.

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## Specifications

Linear signal output	0-5 VDC & 4-20 mA
Event/Alarm relays	2 one-amp SPDT relays
Communication protocols	RS232 & (RS485 ASCII or Modbus RTU or BACNet)
Optional communication protocols	HART or Profibus DP (24Vdc power only)
Display & Keypad	2-line 16-character LCD with 4 tactile buttons
Accuracy (including linearity)	$\pm [1.0\% \text{ of Reading} + (0.5\% \text{ Full Scale} + 0.02\%/^{\circ}\text{C})]$
Repeatability	0.2% Full Scale
Sensor response time (stainless)	$\pm 0.2\% \text{ of Full Scale} \setminus 1 \text{ second (time constant per step change)}$
Turn down ratio	100:1 down to 15 SFPM (0.076 Nm/S), wider available
Electronics temperature range	-40°C TO +70°C
Gas temperature range	-40°C to 66°C (-40° to 150°F), extended ranges available
Gas pressure effect	Negligible over $\pm 20\%$ of absolute calibration pressure
Maximum flow body rating	500 PSIG
Power supply	24 Vdc; optional 115VAC or 230VAC 50/60Hz
Transmitter power requirements	5 Watts
Wetted materials	316 Stainless Steel
Internal Flow Body Surface Finish	Internal finish - Typical $\leq 25\text{Ra Max.}$ ; Optional $\leq 10\text{Ra Max}$
Standard temperature & pressure (STP)	70°F & 29.92" Hg (Density Air @ STP = 0.075 lb/cubic foot)
NIST traceable calibration	Standard
Enclosure Certifications by manufacturer	Type 4X



### **SPECIFICATION NOTICE**

The specifications contained herein are subject to change without notice. *EPI* cannot guarantee the applicability or suitability of our products in all situations since it is impossible to anticipate or control every condition under which our products and specifications may be used.

### **LIMITED WARRANTY**

The product limited warranty is governed by our "Terms & Conditions" document posted on our website.

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