

Water and Wastewater Treatment

The treatment of water and wastewater is a critical element of municipal responsibility. Increased public and private awareness of water quality, availability, and cost is a driving force behind the demands for better efficiency and economy in these processes. Whether local



needs call for new facilities or improvements to existing facilities, the Master-Touch™ series of thermal gas mass flowmeters from Eldridge Products, Inc. (EPI) can help you meet these demands and at the same time eliminate the undesirable system pressure drops and high maintenance costs associated with the older technology of differential flow meters and rotary load meters.

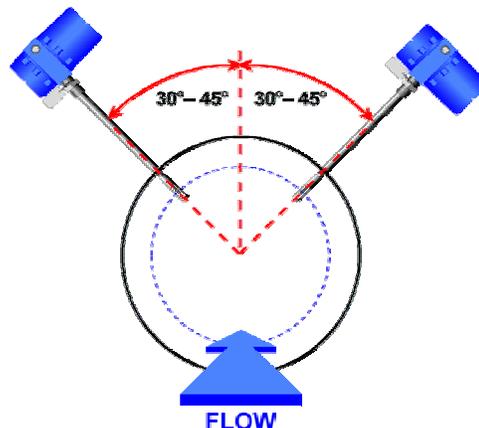
For example, the use of compressed air is necessary to promote optimal bacteria growth in aeration basins. One of the largest expenses incurred in operating these systems is the cost of the compressed air. Closely controlling the aeration process can reduce energy consumption by as much as 25%, and accurate measurement is critical to your success in achieving this goal.

Equally important is the monitoring of Digester Gas (also called Bio Gas) downstream of the aeration basins. Although there are variations, this gas is typically 65% Methane and 35% Carbon Dioxide. The primary objective in monitoring this gas is to achieve an overall system balance. A secondary objective is to monitor the excess gas (waste gas) that is used as a fuel to power onsite generators and pumps, or to create energy for a more widespread power grid. In addition, monitoring is often a requirement of local, state, and Federal environmental guidelines.

Thermal Technology

Master-Touch thermal gas mass flowmeters are easy-to-install solid state instruments that use the principle of convective heat transfer to directly measure mass flow. Our technology offers you significant advantages over Venturi, pitot tube, and orifice type flowmeters because you get a direct mass flow measurement without any need for additional temperature or pressure instrumentation, little or no pressure drop, and a turndown ratio of at least 100:1. The output signal is a true mass flow rate signal which can be directly interfaced with your data acquisition and control system.

Although condensation in the process line raises the potential for erratic readings if water droplets come into contact with thermal sensor elements, EPI has developed a strategy which is usually successful in minimizing or eliminating this potential. When the formation of water droplets in a horizontal process line is unavoidable, it is recommended that the flowmeter be mounted at an angle of 30°–45° from the vertical. This simple adjustment allows any drop-lets that collect on the inner pipe wall to run down the probe assembly and drop off rather than come into contact with the sensors.



Master-Touch™ Advantages

The Master-Touch flowmeter provides you with a powerful set of features that include:

- Continuous, real-time tracking;
- A turndown ratio of at least 100:1;
- Accuracy: $\pm [1\% \text{ of Reading} + (.5\% + .02\%/^{\circ}\text{C of Full Scale})]$;
- Repeatability of 0.2% full scale;
- Time and date stamping of maximum and minimum flow rates;
- A 2-line, 16-character display for rate, total, and relay status; and
- Up to four independent metering ranges, and the ability to switch between the ranges without interrupting your production process.

You can control all of these features with the four button touch keypad or via RS232 and RS485 I/O communications.

The double-sided NEMA 4 enclosure gives you convenient access to all power supply input and sensor signal output connections. Your installation requirements can be easily accommodated by your choice of in-line or insertion models with 115VAC, 230VAC, or 24VDC configurations, and with either integral or remote displays. The remote style AC-powered models only need two conductors from the flow body electronics (5 ohm loop) — no local power is required.

The Master-Touch™ is CE compliant.

Specifications

Linear signal output	0–5 VDC & 4–20 mA
Signal Interface	RS232 & RS485
Accuracy (including linearity)	$\pm [1\% \text{ of Reading} + (.5\% \text{ Full Scale} + .02\%/^{\circ}\text{C})]$
Repeatability	$\pm 0.2\% \text{ of Full Scale}$
Sensor response time (stainless)	1 second
Turn down ratio	100:1 minimum
Electronics temperature range	0–50° C (32–122° F), extended temperature optional
Gas temperature range	0–200° C (32–392° F), extended range available
Gas temperature effect	.01% /° C
Gas pressure effect	Negligible over $\pm 20\%$ of absolute calibration pressure
Pressure rating maximum:	
Inline flowmeters	500 PSI Std., > 500 special
Insertion flowmeters .500 O.D.	125 PSI Std., > 125 special
" " .750 O.D.	55 PSI Std., > 55 special
Transmitter power requirements	5 Watts or less
Flow transmitter enclosure	NEMA 4, Class 1, Div 1, Groups B, C, & D, Std.
Wetted materials	316 Stainless Steel (Hastelloy and Monel optional)
Standard temperature & pressure (STP)	70° F & 29.92" Hg (Air .075 lb./cubic foot)
NIST traceable calibration	Standard

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

EPI warrants its products to be free from defects in materials and workmanship for one year from the date of factory shipment. If there is a defect, the purchaser must notify EPI of the defect within the warranty period. Upon receipt of the defective product, EPI will either repair or replace the defective product at its sole option. EPI MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, AS TO THE PRODUCTS. EPI MAKES NO WARRANTY THAT THE GOODS SOLD TO ANY PURCHASER ARE FIT FOR ANY PARTICULAR PURPOSE. FURTHERMORE, EPI MAKES NO WARRANTY OF MERCHANTABILITY WITH RESPECT TO ANY PRODUCTS SOLD TO ANY PURCHASERS. There are no other warranties that extend beyond the description on any brochure or price quote.

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