

# DIFFERENTIAL PRESSURE TYPE FLOWMETERS/CONTROLLERS

(Insertion type/inline type)

MEMF- SERIES

**MDPFM** series of flowmeter/controllers are available in more than 100 different modes, virtually offering solutions to flow measurement/control for any liquid (preferably electrically conductive/even ultra low conductive) in varied flow range i.e. 1.0 micro gram per minutes to 100 kilograms per minutes. These flow meters are offered in material like SS-316 (ceramic/Teflon coating), etc to make up with corrosion, thermodynamical and other pertinent physical parameters of fluid measurement. On account of above, these flow meters are first choice for any , agro, foods, biomedical, petrochemical, automobile, organic/inorganic chemical, milk plant, sugar, textiles, beverages, water management/treatment, academic and defense etc.

## Operating Principle:

These flowmeters is operates on Bernoulli principle i.e. if an annular restriction is placed in a pipeline, the velocity of the fluid through the restriction is increased. The increase in velocity at restriction causes the static pressure to decrease at this section, and a pressure difference is created across the element. The pressure difference is related to the rate of fluid flowing through the pipe. This differential pressure measured by D.P.transducer which after mathematical manipulation gives correct flow rate. The correct selection and installation of the DP transducer plays an important part in determining the accuracy of the flow rate measurement. Over 40% of all liquid, gas, and steam measurements made in industry are still accomplished using common types of differential pressure flowmeter, that is, the orifice plate, Venturi tube, and nozzle. . In addition, this type of differential pressure flowmeter is simple, has no moving parts, and is therefore reliable. The main disadvantages of these devices are their limited ranges (typically 3:1), the permanent pressure drop they produce in the pipeline (which can results in higher pumping costs), and their sensitivity to installation effects (which can be minimized using straight length of pipe before and after the flowmeter). The combined advantages of this type of flowmeter are still quite hard to beat, and although it has limitations, these have been well investigated and can be compensated for in most circumstances. Unless very high accuracy is required, or unless the application makes a nonintrusive device essential, the differnetial pressure flowmeter should be considered. Numerically flow rate is given as under.....

The average pipe velocity  $v$  may be written as:  $v = k \cdot 2 \cdot (\Delta p/ \rho)^{1/2}$

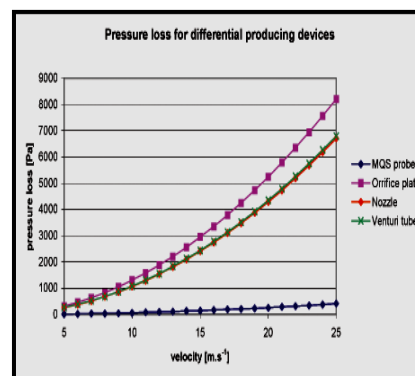
Then the volumetric flow rate is:  $Q = S \cdot v = S \cdot k \cdot 2 \cdot (\Delta p/ \rho)^{1/2}$



MEMF- 5001



MEMF-05002



MEMF-010

ELECTRICAL/MECHANICAL SPECIFICATIONS OF DIFFERENTIAL PRESSURE FLOW METER

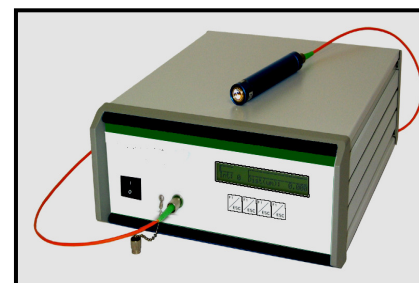
FLOW RANGE &lt;100,000.0 LPM

| model      | Flow range (LPM) | Size(m.m.) | Accuracy<br>Repeatability | Flow tube-<br>Liner | O.D.P. | leak rate             | Output<br>signal |
|------------|------------------|------------|---------------------------|---------------------|--------|-----------------------|------------------|
| MDPFM-0012 | 0 01000.0        | 1.0        | 99.5 100                  | Ceramic/PP          | 2000   | <1.8x10 <sup>-8</sup> | 0.0-5.0/12.0     |
| MDPFM-0022 | 005000.0         | 1.5        | 99.5 100                  | Ceramic/PP          | 2000   | <1.8x10 <sup>-8</sup> | 0.0-5.0/12.0     |
| MDPFM-0102 | 010000.0         | 2.0        | 99.5 100                  | Ceramic/PP          | 2000   | <1.8x10 <sup>-8</sup> | 0.0-5.0/12.0     |
| MDPFM-0202 | 020000.0         | 3.0        | 99.5 100                  | Ceramic/PP          | 2000   | <1.8x10 <sup>-8</sup> | 0.0-5.0/12.0     |
| MDPFM-0502 | 050,000.0        | 4.0        | 99.5 100                  | Ceramic/PP          | 2000   | <1.8x10 <sup>-8</sup> | 0.0-5.0/12.0     |
| MDPFM-1002 | 100,000.0        | 6.0        | 99.5 100                  | Ceramic/PP          | 2000   | <1.8x10 <sup>-8</sup> | 0.0-5.0/12.0     |
| MDPFM-2002 | 200.000.0        | 8.0        | 99.5 100                  | Ceramic/PP          | 2000   | <1.8x10 <sup>-8</sup> | 0.0-5.0/12.0     |
| MDPFM-5002 | 500.000.0        | 10.0       | 99.5 100                  | Ceramic/PP          | 2000   | <1.8x10 <sup>-8</sup> | 0.0-5.0/12.0     |

First three numeral after product code indicay flow rangex1000 L.P.M., last digit indicate inline-01/insertion type-02.

## DIFFERENTIAL PRESSURE FLOWMETER SECIFICATIONS:

|                      |   |
|----------------------|---|
| Operating voltage    | 220 volts/28 volts D.C.   |
| Excitation frequency | 2.5/7.5/15.0/25.0 Hz  |
| Accuracy             | 95.5% of set point  |
| Repeatability        | 100 percent   |
| Response time        | 0.5 –1.1 seconds  |
| Interface Signal     | 0.0-12.0 volts D.C.(proportional to flow range)   |
| Flow range           | 10.0 milli-LPM – 100.0 kilo LPM   |
| Step down ratio      | 1:8(1:50)   |
| Flow tube material   | SS-316/Brass/DERELIN with option of flange coupling   |
| Control option       | Flow rate/totalization control against set point<br>Multi flow synchronized control (interactively) |
| Display              | 4½ & 5½ digit red glow LED/LCD display  |
| Controller size      | 5X5X8/8X8X12 INCHES/ Interface:RS-232   |



FLOW INDICATOR (MEMF- 5001)

## MOTORON SEMICONDUCTORS CORPORATION

11, Shri nagar colony, Shakti nagar extension, DELHI-110052. Tel:011-23655454/236548181

[motoronenergy@hotmail.com](mailto:motoronenergy@hotmail.com)

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(Insertion type/inline type)

MEMF- SERIES

ELECTRICAL/MECHANICAL SPECIFICATIONS OF DIFFERENTIAL PRESSURE FLOW METER

FLOW RANGE &lt;100,000.0 LPM

| Model      | Flow range (LPM) | Size(m.m.) | Accuracy Repeatability |     | Flow tube-Liner | O.D.P. | leak rate             | Output signal |
|------------|------------------|------------|------------------------|-----|-----------------|--------|-----------------------|---------------|
| MDPFM-0012 | 1000.0           | 12.0       | 99.5                   | 100 | Ceramic/PP      | 2000   | <1.8x10 <sup>-8</sup> | 0.0-5.0/12.0  |
| MDPFM-0022 | 0800.0           | 10.0       | 99.5                   | 100 | Ceramic/PP      | 2000   | <1.8x10 <sup>-8</sup> | 0.0-5.0/12.0  |
| MDPFM-0102 | 0500.0           | 08.0       | 99.5                   | 100 | Ceramic/PP      | 2000   | <1.8x10 <sup>-8</sup> | 0.0-5.0/12.0  |
| MDPFM-0202 | 0250.0           | 06.0       | 99.5                   | 100 | Ceramic/PP      | 2000   | <1.8x10 <sup>-8</sup> | 0.0-5.0/12.0  |
| MDPFM-0502 | 080.0            | 04.0       | 99.5                   | 100 | Ceramic/PP      | 2000   | <1.8x10 <sup>-8</sup> | 0.0-5.0/12.0  |
| MDPFM-1002 | 040.0            | 03.0       | 99.5                   | 100 | Ceramic/PP      | 2000   | <1.8x10 <sup>-8</sup> | 0.0-5.0/12.0  |
| MDPFM-2002 | 020.0            | 02.0       | 99.5                   | 100 | Ceramic/PP      | 2000   | <1.8x10 <sup>-8</sup> | 0.0-5.0/12.0  |
| MDPFM-5002 | 0.005            | 01.0       | 99.5                   | 100 | Ceramic/PP      | 2000   | <1.8x10 <sup>-8</sup> | 0.0-5.0/12.0  |

First three numeral after product code indicaye flow rangex1000 L.P.M., last digit indicate inline-01/insertion type-02.

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