

ZEST ENGINEERING

Introduction:

MTMC series of thermal mass flow meter/controllers are available in more than 100 different modes, virtually offering solution to flow measurement/control for any gas and liquid in varied flow range i.e. 1.0 micro grams per minutes to 100 kilo grams per minutes. These flow meters are offered in material like SS-316 (ceramic/Teflon coating), polypropylene, derlin etc to make up with corrosional, rheological, thermodynamical and other pertinent physical parameters of fluid/gas under measurement. On account of above, these flow meters are first choice for any medical diagnostic, agro, biomedical, petrochemical, organic/inorganic chemical, I, microelectronics, thin film deposition, moms, piezoelectric, super conductivity, Gas blending, leak detection, many other for academic and defense industries.

Operating Principle and benefits:

Thermal mass flow meter measures true mass flow on thermodynamics principle where any gas or liquid passing through asymmetrically heated sensor tube sets up a directional thermal gradient along the flow direction, which is proportional to true mass flow rate of gas. This thermal gradient is measured and converted into electrical signal. Mass flow measurement is not effected by any pressure or temperature of gas/liquid over specified measurement range. These flow meter can be calibrated on-site by feeding multiplication factor. The mass flow meters displays critically damped precise flow measurement with negligible zero drift under high/low flow pressure) either for liquid/gas with high degree of accuracy and repeatability without any leakage, pressure drop and any corrosion problems.



MMFM-00501



MMFM-09991



MMFC-02001

ELECTRICAL/MECHANICAL SPECIFICATION OF MASS FLOW METER MMFC SERIES

FLOW RANGE <999mg/min

model	Flow range	Size(inch)	Accuracy	Repeatability	Valve type	O.D.P.	leak rate	O/P D.C volts signal
MMFC-00101	10.0X10 ⁻³	1/4	99.5	100	Option	2000	<1.8x10 ⁻⁸	0.0-5.0/12.0
MMFC-00201	20.0X10 ⁻³	1/4	99.5	100	Option	2000	<1.8x10 ⁻⁸	0.0-5.0/12.0
MMFC-00301	30.0X10 ⁻³	3/8	99.5	100	Option	2000	<1.8x10 ⁻⁸	0.0-5.0/12.0
MMFC-00501	50.0X10 ⁻³	3/8	99.5	100	Optio	2000	<1.8x10 ⁻⁸	0.0-5.0/12.0
MMFC-01001	100.X10 ⁻³	3/8	99.5	100	Option	2000	<1.8x10 ⁻⁸	0.0-5.0/12.0
MMFC-02001	200.0X10 ⁻³	1/2	99.5	100	Option	2000	<1.8x10 ⁻⁸	0.0-5.0/12.0
MMFC-05001	500.0X10 ⁻³	1/2	99.5	100	Option	2000	<1.8x10 ⁻⁸	0.0-5.0/12.0
MMFC-09991	999.0.X10 ⁻³	1/2	99.5	100	Option	2000	<1.8x10 ⁻⁸	0.0-5.0/12.0

First four digit after product MMFC indicate flow-rate in mili-grams per minutes and last digit indicates either gas (01) /liquid (02).

ELECEICAL/MECHANICAL SPECIFICATIONS OF MASS FLOW CONTROLLER:

- Operating voltage 220 volts/28 volts D.C.
- Accuracy 95.5% of set point
- Repeatability 100 percent
- Responce time 0.5 –1.1 seconds
- Interface Signal 0.0-12.0 volts D.C.(proportional to flow range)
- Flow range 1000.0 mg/minute – 100.0 kilograms/min(max)
- Step down ratio 1:50(1:100)
- Constructional materail SS-316/Brass/Derelin
- Control option Flow rate/totalization control against set point
- Display 3 ½ & 4 ½ digit red glow LED/LCD display
- Controller size 48x48x96,72x72x96,96x96x192



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THERMAL MASS FLOWMETERS/CONTROLLERS

GAS/LIQUID-MMFC SERIES

ELECTRICAL/MECHANICAL SPECIFICATIONS OF MASS FLOW METER/CONTROLLER MMFC SERIES FLOW RANGE <1000,000.0 microgram/min

model	Flow range (micro-gram)	Size(inch)	Accuracy	Repeatability	Flow tube-Liner	O.D.P.	leak rate	Output signal
MMFC-001_3	1000.0	1/4	99.9	100	OPTION	2000	<1.8x10	0.0
MMFC-002_3	2000.0	1/4	99.9	100	OPTION	2000	<1.8x10	0.0
MMFC-004_3	4800.0	1/4	99.9	100	OPTION	2000	<1.8x10	0.0
MMFC-007_3	7000.0	1/4	99.9	100	OPTION	2000	<1.8x10	0.0
MMFC-010_3	10,000.0	1/4	99.9	100	OPTION	2000	<1.8x10	0.0
MMFC-020_3	20,000.0	1/4	99.9	100	OPTION	2000	<1.8x10	0.0
MMFC-050_3	50,000.0	1/4	99.9	100	OPTION	2000	<1.8x10	0.0
MMFC-000_3	100,000.0	1/4	99.9	100	OPTION	2000	<1.8x10	0.0
MMFC-020_3	200,000.0	1/4	99.9	100	OPTION	2000	<1.8x10	0.0
MMFC-050_3	500,000.0	1/4	99.9	100	OPTION	2000	<1.8x10	0.0
MMFC-080_3	800,000.0	1/4	99.9	100	OPTION	2000	<1.8x10	0.0
MMFC-100_3	1000,000.0	1/4	99.9	100	OPTION	2000	<1.8x10	0.0

ELECTRICAL/MECHANICAL SPECIFICATIONS OF MASS FLOW METER/CONTROLLER MMFC SERIES FLOW RANGE <1000,000.0 mili-gm/min

model	Flow range (mili.gram)	Size(inch)	Accuracy	Repeatability	Flow tube-Liner	O.D.P.	leak rate	Output signal
MMFC-001_2	1000.0	1/2	99.9	100	OPTION	2000	<1.8x10	0.0
MMFC-002_2	2000.0	3/4	99.9	100	OPTION	2000	<1.8x10	0.0
MMFC-004_2	4800.0	1.0	99.9	100	OPTION	2000	<1.8x10	0.0
MMFC-007_2	7000.0	1.5	99.9	100	OPTION	2000	<1.8x10	0.0
MMFC-010_2	10,000.0	2.0	99.9	100	OPTION	2000	<1.8x10	0.0
MMFC-020_2	20,000.0	3.0	99.9	100	OPTION	2000	<1.8x10	0.0
MMFC-050_2	50,000.0	4.0	99.9	100	OPTION	2000	<1.8x10	0.0
MMFC-000_2	100,000.0	6.0	99.9	100	OPTION	2000	<1.8x10	0.0
MMFC-020_2	200,000.0	8.0	99.9	100	OPTION	2000	<1.8x10	0.0
MMFC-050_2	500,000.0	10.0	99.9	100	OPTION	2000	<1.8x10	0.0
MMFC-080_2	800,000.0	12.0	99.9	100	OPTION	2000	<1.8x10	0.0
MMFC-100_2	1000,000.0	14.0	99.9	100	OPTION	2000	<1.8x10	0.0

Note: First three numeral after MMFC indicate flow rate in mili gram/min and Fourth numeral after MMFC (1/2, 1-gas/2-liquid) indicate medium nature and last numeral indicate range(1-mili gram, 2-mili-gram, 3-micro-gram)

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