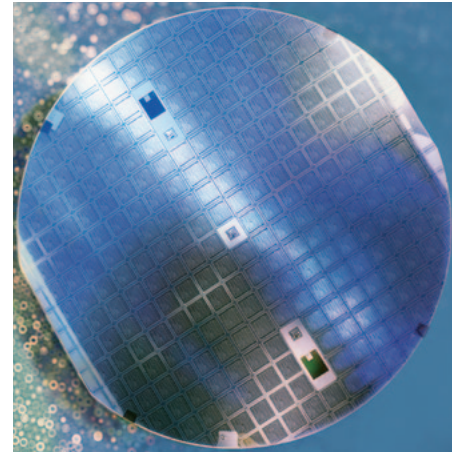


D2000i Series

Mass Flow Controller



Fast Response Liquid Flow Controller

The Porter D2000i Series Liquid Mass Flow Controller is designed to address the need for fast, precise control of liquid precursors in semiconductor manufacturing processes. Closed-loop digital control circuitry, combined with an integral piezoelectric-actuated proportional control valve, offer response times of less than one second and stable control at low flows. A unique laminar bypass and sensor assembly provide accurate measurement with only a 5°C rise in fluid temperature.

Clean room assembly and all metal seal construction ensure high purity and leak integrity. The compact package size of the D2000i Series simplifies system integration. A D2000i Series Liquid Mass Flowmeter is available for applications requiring flow monitoring only.



Contact Information:

Parker Hannifin Corporation
Porter Instrument Division
245 Township Line Road
Hatfield, PA 19440

Phone 215 723 4000
Fax 215 723 2199
industrial@parker.com

www.porterinstrument.com

Product Features:

- < 1 second Response Time
- Piezoelectric Control Valve
- Compact Size
- ±1% of Reading Accuracy
- Metal Seal Construction
- 1/8" Face Seal or Compression Fitting

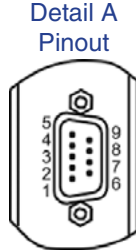
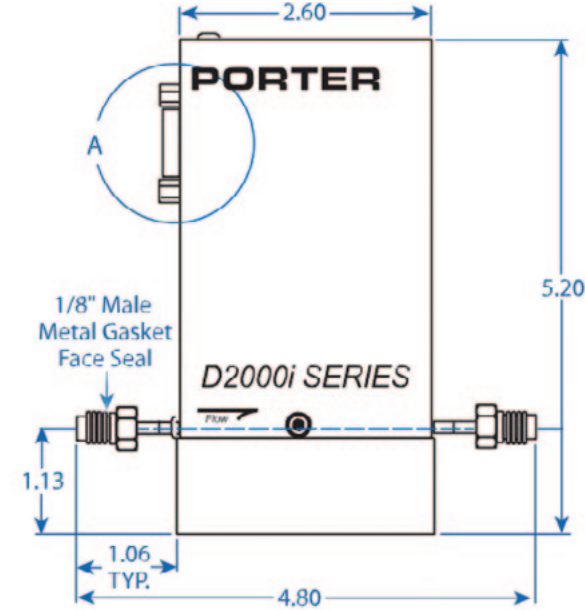


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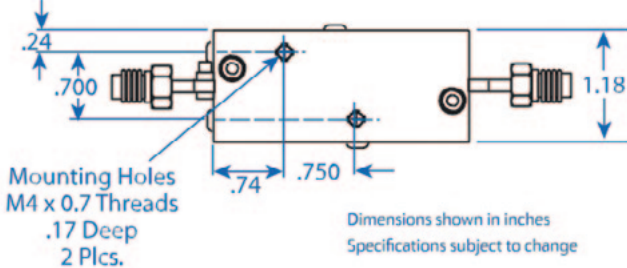
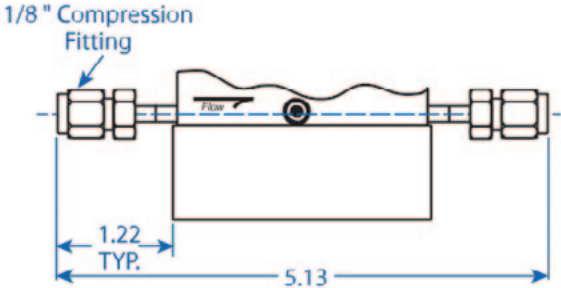
Specifications

Response Time	<1 second to within 5% of rate (up to 6 stored valve jump voltages)
Accuracy and Linearity	± 1% of reading
Repeatability	<±0.2% of rate at any constant temperature within operating temperature range
Rangeability (Control Range)	20:1 (5%-100% full scale) (accuracy & control)
Ambient and Operating Temperature Range	-10 to 40°C (+14 to 104°F)
Maximum Allowable Operating Pressure	125 psig
Temperature Coefficient	< 0.1%/°C
Setpoint Input/ Flow Signal Output	0-5 Vdc (2k ohm minimum load resistance for flow output signal)
Power Supply Requirements	(Current Consumption < 200 mAdc) +15 (±10%) Vdc
Leak Integrity	1 x 10 ⁻⁹ atm. cc/sec.He
Warm-up Time	20 minutes
Materials of Construction (wetted surfaces)	Body – 316L stainless steel Sensor Assembly – 316L stainless steel Valve Components – 316L stainless steel O-rings – 316L stainless steel
Control Valve	Normally open piezoelectric-actuated
External Electrical Connector	Nine (9)-pin D-connector
Process Connections	1/8" male metal gasket face seal or 1/8" compression fitting
Internal Volume	< 1 ml
Mounting Orientation	Horizontal (±5°)
Weight	<1.5 lbs.

Dimensional Drawing



Pin No.	Function
1	Transmit RS232
2	Flow Signal
3	Setpoint
4	Signal Common
5	Valve Voltage Monitor
6	Receive RS232
7	Power In
8	Power Common
9	Cable Shield



Flow Capacity

The tables at the right identify the available flow ranges based on isopropyl alcohol (IPA). To determine the flow range for process fluids other than IPA, multiply the IPA flow range by the appropriate correction factor.

Contact Porter to size fluids not listed or when operating parameters are questionable.

IPA Flow Ranges (in ml/min)	Correction Factors for Process Fluids other than IPA	
	Liquid	Correction Factor
0.007 - 0.14	Hexane	1.492
0.020 - 0.40	Octane	1.532
0.050 - 1.00	OMCTS	1.927
0.175 - 3.50	TEOS	1.583
0.375 - 7.50	TMB	1.156
	TMP	1.413
0.650 - 13.00	Water	Consult Factory

Ordering Information

Model Number and Description

Example: **D2000i C B A 3 E A**

Basic Model

D2000iC (Flow Controller)
D2000iM (Flowmeter)

Model Revision

Factory Assigned

Input/Output Signal

A - 0-5 Vdc/0-5 Vdc

Fitting Size & Type

2 - 1/8" Compression Fitting
3 - 1/8" Male Metal Gasket Face Seal

Flow Designator –

ml/min Isopropyl Alcohol

A - 0.14 C - 1.00 E - 7.50
B - 0.40 D - 3.50 G - 13.0

Assembly/Test Procedures

A - Factory Standard

Example – Model D2000iCAA3EA

D2000i = Model D200i Flow Controller

A = Production Release

A = 0-5 Vdc/0-5 Vdc

3 = 1/8" Male Face Seal

E = 7.50 ml/min Isopropyl Alcohol Flow Designator

A = Factory Standard Assembly/Test Procedures

To order, specify:

- Model Number
- Fitting Type
- Flow Capacity
- Liquid Type – Include: Density, Heat Capacity, Thermal Conductivity, Viscosity and Boiling Point
- Operating Temperature
- Upstream Pressure
- Downstream Pressure (not required for flowmeters)
- Additional Accessories Required

WARNING – USER RESPONSIBILITY

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

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