**X-Flow™**

**Mass Flow Controller**

Flow Range from 0.8 ml/min to 20 l/min

The Parker X-Flow™ is a new simplified mass flow controller for your instrument, lab, or process needs. X-Flow™ delivers fast, repeatable, and reliable high accuracy flow control through proven Constant Thermal By-Pass Mass Measurement Technology coupled with our most popular digital communication protocols. X-Flow™ is calibrated to your specific conditions and includes the Parker Tracking System that assists with your annual asset calibration needs delivering a new level of productivity, efficiency, and reliability.

### Target Markets

- Laboratory and Process Instrumentation
- Pharma / Bio-Pharma Equipment
- Air Quality Monitoring Systems
- Furnace and Coatings

### Typical Applications

- Gas Control for Laboratory and Process Equipment
- Burner Ratio Control for Ceramics and Metals
- Process and Environmental Analyzers
- Emissions Monitors and Calibrators

### Features

- Fast, Repeatable and Reliable Performance
- Premium Accuracy with Proven Thermal Mass Flow Sensor and Laminar Flow Element
- Easy to integrate into your new or existing systems
- Asset calibration management software included
- Cleaned for Analytical Use
- Fails shut with Normally Closed Valve for safe operation
- CE, REACH and RoHS II

### Physical Properties

**Sensor Technology:**

Thermal Sensor, Bypass Method

**Control Valve Type:**

Normally Closed Proportional Valve

**Media:**

Inert, Oxidizer, Flammable and Corrosive Gasses

**Nominal Dimensions:**

4.5” x 1” x 3”
(11.4 cm x 2.5 cm x 7.6 cm)

**Weight:**

1.1 lbs (0.5 kg)

**Process Connections:**

Standard: 9/16”-18 UNF 2B (in/out)
Optional: 1/8”, 1/4”, and 6mm compression fittings with 325 Mesh (44 Micron) Filter Screen

Sold as Accessories (See accessories section for details)

### Electrical

**Main Voltage:** +15-24 Vdc

**Input Control Signal:**

0-5 Vdc or 4-20 mAdc (Sourcing)

**Monitor Output Signal:**

0-5 Vdc or 4-20 mAdc (Sourcing)

**Max Current Requirement:**

<320 mAdc

**Digital Communication:**

RS232, Modbus-RTU, Modbus-ASCII (RS485)

**Electrical Connection:**

9-pin D-connector (male)

**Wetted Materials**

**Body:**

316 Stainless Steel

**Sensor Assembly:**

316L Stainless Steel

**Valve Components:**

302, 316, 430FR Stainless Steel

**O-Rings and Valve Seat:**

FKM

### Performance Ratings

**Ratings:**

Max operating pressure: 145 PSIG (10 barg)
Max working temperature: 122°F (50°C)

**Minimum Pressure Drop:**

5 psid (0.34 bard) (typical)*

### Performance Characteristics

**Accuracy and Linearity:**

±1.0% Full Scale

**Repeatability:**

<0.2% of Reading

**Response Time:**

1 second (Nominal)

**Rangeability (Turndown):**

50:1

**Temperature Coefficient:**

zero: <0.1% Full Scale/°C; span: <0.1% Reading/°C

**Warm-Up Time:**

±2.0% Full Scale after 2 min; ±1.0% Full Scale after 30 min

*Dependent on application conditions
**X-Flow™ Mass Flow Controller**

**Mechanical Integration**

**Dimensions**

Dimensions subject to change without notice.
X-Flow™ Mass Flow Controller

Hook-up Diagram
X-Flow™ Mass Flow Controller

Accessories

Transition Kit
# A-4541-000
Includes 3/32 Hex Wrench and
two 8-32 x 1/4 Button Head Screws

NOTE:
1. PLATE PART # B-5757-000
2. PLATE THICKNESS - 0.188” (4.76mm) - MOUNTING SCREWS MUST NOT EXTEND BEYOND PLATE THICKNESS.

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<table>
<thead>
<tr>
<th>HOLE</th>
<th>HOLE TYPE</th>
<th>UNITS IN [MM]</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Ø.180 THRU - Ø.344 x .110 DP.</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>8-32 UNF THRU</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>8-32 UNF THRU</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>8-32 UNF THRU</td>
<td></td>
</tr>
</tbody>
</table>
**X-Flow™ Mass Flow Controller**

**Accessories**

- **Fitting 1**
  - B-1562-001V
  - 1/8" Compression Fitting with 325 Mesh (44 Micron) Filter Screen and FKM O-ring (Sold Individually)

- **Fitting 2**
  - B-1562-000V
  - 1/4" Compression Fitting with 325 Mesh (44 Micron) Filter Screen and FKM O-ring (Sold Individually)

- **Fitting 3**
  - B-1562-036V
  - 6mm Compression Fitting with 325 Mesh (44 Micron) Filter Screen and FKM O-ring (Sold Individually)

Fittings sold separately.

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**SAE/MS Straight Thread (ST)**

**Compression Type**

- 9/16-18 UNF

**A**

*) Dimension A is typical finger tight.

<table>
<thead>
<tr>
<th>Compression type</th>
<th>Fitting kit part #</th>
<th>A (inch)</th>
<th>A (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>adapter 1/8&quot; OD</td>
<td>B-1562-001V</td>
<td>0.920</td>
<td>23.4</td>
</tr>
<tr>
<td>adapter 1/4&quot; OD</td>
<td>B-1562-000V</td>
<td>1.010</td>
<td>25.7</td>
</tr>
<tr>
<td>adapter 6mm OD</td>
<td>B-1562-036V</td>
<td>1.010</td>
<td>25.7</td>
</tr>
</tbody>
</table>

**UNITS**

**IN [MM]**

Dimensions subject to change without notice.
X-Flow™ Mass Flow Controller

Accessories
CM-400

Parker Model CM-400 is a high performance microprocessor-based 4-channel power supply/control module designed for use with Parker mass flow meters and controllers. An 8-line, backlit LCD display provides selectable data on the status of the 4 channels simultaneously; low noise, thermal overload protected +15 Vdc device power is provided on each channel.

The CM-400 accepts user selectable current or voltage input signals and supplies a selectable setpoint signal for each channel. In addition to the analog I/O, a digital communication port is included for computer/PLC interface. A programmable multi-channel blend control with totalizer and batch functions allows the CM-400 to precisely interact with MFCs in a versatile and functional gas management system.

Product Features and Options:
- 4 Independent Channels
- Displays in Selectable Engineering Units
- Multiple I/O Configurations
- Programmable Gas Correction Factors
- Programmable Multi-channel Blend Control
- Totalizer and Batch Control
- +15 Vdc MFC Power Output
- 110/240 Vac Operation

Gas Flow Range

<table>
<thead>
<tr>
<th>Gas</th>
<th>F (ml/min)</th>
<th>G</th>
<th>H</th>
<th>I (l/min)</th>
<th>J</th>
<th>K (l/min)</th>
<th>M</th>
<th>N (l/min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N2</td>
<td>0.8 to 100</td>
<td>2 to 200</td>
<td>4 to 500</td>
<td>10 to 1,000</td>
<td>20 to 2,000</td>
<td>0.04 to 5</td>
<td>0.1 to 10</td>
<td>0.2 to 20</td>
</tr>
<tr>
<td>AR</td>
<td>1.1 to 139</td>
<td>2.8 to 277</td>
<td>5.6 to 694</td>
<td>13.9 to 1,388</td>
<td>27.5 to 2,737</td>
<td>0.06 to 7</td>
<td>0.14 to 14</td>
<td>0.3 to 27</td>
</tr>
<tr>
<td>CH4</td>
<td>0.6 to 78</td>
<td>1.6 to 157</td>
<td>3.1 to 392</td>
<td>7.8 to 784</td>
<td>15.7 to 1,580</td>
<td>0.03 to 4</td>
<td>0.08 to 8</td>
<td>0.16 to 16</td>
</tr>
<tr>
<td>CO2</td>
<td>0.6 to 73.7</td>
<td>1.5 to 147.1</td>
<td>2.9 to 368.6</td>
<td>7.3 to 737.2</td>
<td>14.6 to 1,458</td>
<td>0.03 to 3.6</td>
<td>0.07 to 7.3</td>
<td>0.15 to 14.6</td>
</tr>
<tr>
<td>H2</td>
<td>0.8 to 103</td>
<td>2.9 to 205</td>
<td>4.1 to 514</td>
<td>10.2 to 1,027</td>
<td>20.8 to 2,114</td>
<td>0.04 to 5.3</td>
<td>0.1 to 10.6</td>
<td>0.21 to 21.2</td>
</tr>
<tr>
<td>He</td>
<td>1.1 to 142.8</td>
<td>2.8 to 285.7</td>
<td>5.7 to 714.2</td>
<td>14.3 to 1,429</td>
<td>28.9 to 2,936</td>
<td>0.06 to 7.3</td>
<td>0.14 to 14.7</td>
<td>0.29 to 29.4</td>
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<tr>
<td>O2</td>
<td>0.8 to 98.6</td>
<td>2 to 197.1</td>
<td>3.9 to 492.8</td>
<td>9.9 to 985.6</td>
<td>19.7 to 1,973</td>
<td>0.04 to 4.9</td>
<td>0.1 to 9.9</td>
<td>0.2 to 19.7</td>
</tr>
</tbody>
</table>

Notes
The selected orifice of the control valve may limit the rangeability.
Standard accuracy (based on actual calibration): +/- 1% FS.
Factors for gas not in the above table are available from the factory.
All flow ranges are standard conditions of 14.7 PSIA and 0°C.
**X-Flow™ Mass Flow Controller**

**Ordering Information**

<table>
<thead>
<tr>
<th>Base Model</th>
<th>601XF</th>
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<tbody>
<tr>
<td><strong>Elastomers</strong></td>
<td>V</td>
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<tr>
<td><strong>Connection</strong></td>
<td>00</td>
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<tr>
<td><strong>Supply Voltage</strong></td>
<td>D</td>
</tr>
<tr>
<td><strong>Analog I/O</strong></td>
<td>A</td>
</tr>
<tr>
<td></td>
<td>G</td>
</tr>
<tr>
<td><strong>Communication (I/O)</strong></td>
<td>A</td>
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</tbody>
</table>

**Nitrogen Full Scale Equivalent Flow Range**

<table>
<thead>
<tr>
<th>Letter</th>
<th>Flow Range</th>
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<tbody>
<tr>
<td>F</td>
<td>40-100 ml/min</td>
</tr>
<tr>
<td>G</td>
<td>100-200 ml/min</td>
</tr>
<tr>
<td>H</td>
<td>200-500 ml/min</td>
</tr>
<tr>
<td>I</td>
<td>500-1000 ml/min</td>
</tr>
<tr>
<td>J</td>
<td>1000-2000 ml/min</td>
</tr>
<tr>
<td>K</td>
<td>2-5 l/min</td>
</tr>
<tr>
<td>M</td>
<td>5-10 l/min</td>
</tr>
<tr>
<td>N</td>
<td>10-20 l/min</td>
</tr>
</tbody>
</table>

*Standard conditions of 14.7 PSIA and 0°C

**Accessories**

- B-1562-039V: 1/8" Compression Fitting with 325 Mesh (44 Micron) Filter Screen and FKM O-ring
- B-1562-025V: 1/4" Compression Fitting with 325 Mesh (44 Micron) Filter Screen and FKM O-ring
- B-1562-040V: 6mm Compression Fitting with 325 Mesh (44 Micron) Filter Screen and FKM O-ring
- B-1562-038V: 1/8" NPT Adapter with 325 Mesh (44 Micron) Filter Screen and FKM O-ring
- B-5757-000: Transition Plate for Increased Mounting Options
- A-4541-000: Transition Kit with Transition Plate, 2 Screws and Hex Wrench
- C-700-002: Interface cable with flying leads on one end
- C-1739-010: CM-400 Interface Cable
- 7.03.366: Digital Interface T Cable

**Electrical Adapter / Connector (Contact Factory for Details)**

**NOTE:** In order to provide the best possible solution for your application, please provide the following requirements when contacting Applications Engineering:

1. Gas Type
2. Flow Rate
3. Inlet Pressure
4. Outlet Pressure
5. Operating Temperature
6. Standard Calibration Condition
7. Connection Fitting Size and Type
8. Set point / Output signal

For more detailed information, visit us on the web or call Applications Engineering.

To learn more about the Parker X-Flow™, CAD models and detailed information, please visit us on the Web (www.parker.com/precisionfluidics/x-flow), call (+1.603.595.1500) or email at ppfinfo@parker.com.

Parker Hannifin Precision Fluidics Division reserves the right to make changes. Drawings are for reference only.