"QUANTIM Coriolis integrated flow controllers give you the power to measure and control precisely, as an element of the PlantWeb digital plant architecture."
Brooks® QUANTIM®
Low Flow Coriolis
Precision Mass Flow Measurement and Control

Brooks QUANTIM family of products are the smallest lowest flow Coriolis meters and controllers available on the market. With a footprint the size of a handheld organizer, you can fit this instrument into any tight space. With a range of 0.001 to 28 kg/hr, you can measure mass or volume flow and density or temperature for drops of liquid, slurries, or gas. QUANTIM offers unsurpassed accuracy and unmatched zero stability in demanding low flow applications.

QUANTIM provides precision mass flow measurement, integral control, on line density and temperature measurement all in one compact package. The heart of the device is a patent pending Coriolis sensor design which measures low flows independent of the fluid type or process variables. This provides you with unsurpassed performance in even the most challenging low flow applications.

Most critical processes require control as well as measurement, therefore QUANTIM offers an optional integrally mounted, in-line control valve. No remote electronics are required as all the transmitting and control electronics are contained within the product housing.

QUANTIM supports HART® Communications Protocol Revision 5. The HART Communications protocol signal is superimposed on the 4-20 mA current output of the device which allows QUANTIM to communicate with any suitable HART network system or a standard 275/375 HART hand held communicator.

Emerson Process Management's PlantWeb architecture also is available to access all the benefits of AMS, Asset Management Solutions, as well as the HART protocol to give unmatched transparency of your controlling equipment.

Available with a variety of options and global approvals the Brooks QUANTIM meters and controllers provide unsurpassed performance, solving specific challenges in demanding low-flow applications.

APPLICATIONS
Available for general purpose, hose down or hazardous area requirements, the Brooks QUANTIM family of products have been designed to accurately measure and control low flow rates for virtually any process fluid, independent of it's characteristics without the need for conversion factors. It has been designed for low flow applications in the demanding specialty chemical, petrochemical, pharmaceutical, semiconductor, analytical, laboratory and OEM markets. Brooks QUANTIM precisely measures and controls process fluids like catalysts, food additives, chemical vapor deposition precursors, hydrocarbons, inhibitors, nutrients, and other critical process fluids.

Brooks Instrument
### BENEFITS

Brooks QUANTIM meets the demands of ultra low flow direct mass measurement and control, where Coriolis flow measurement has never been available before.

One stop shopping and simplified installation.

Provides accurate mass measurement of your fluids in demanding low flow processes, research and pilot plant applications.

Process chemistry and/or process conditions can be altered without the need to change or recalibrate the measurement system, providing the user with maximum flexibility.

Minimizes maintenance requirements, reducing over all cost of ownership.

Easily integrated into the most intricate of process systems.

Multiple outputs from a single device improves and simplifies process monitoring and diagnostics, further reducing cost of ownership.

The ultimate in process flexibility.

The right product for your application.

### FEATURES

- Lowest flow Coriolis meter or controller available.
- Multiple functions including, Coriolis sensor, transmitter and in-line valve with full PID function, in a single package.
- Industry leading mass flow measurement precision.
- Direct (not inferred) mass flow measurement.
- No internal moving parts.
- Small physical size.
- Multivariable output including: Mass Flow or Volumetric Flow and Density or Temperature.
- Gas, liquid and slurry measurement and control capability in one package.
- Variety of options, enclosure types and area classifications available.
## SPECIFICATIONS

### Performance Specifications:

#### Flow

**Liquid Flow Specifications, Metric Units**

<table>
<thead>
<tr>
<th>Product Type</th>
<th>QUANTIM Model(1)</th>
<th>QUANTIM Tube Size</th>
<th>Maximum Flow Rate(2) Kg/hr or l/hr</th>
<th>Nominal Flow Rate(2) Kg/hr or l/hr</th>
<th>Minimum Full Scale Kg/hr or l/hr</th>
<th>Minimum Measurable Flow Kg/hr or l/hr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controller</td>
<td>QMBC</td>
<td>2</td>
<td>0.30</td>
<td>0.15</td>
<td>0.01</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>1.00</td>
<td>0.78</td>
<td>0.10</td>
<td>0.010</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>18.64</td>
<td>9.32</td>
<td>1.00</td>
<td>0.100</td>
</tr>
<tr>
<td>Meter</td>
<td>QMBM</td>
<td>2</td>
<td>0.38</td>
<td>0.19</td>
<td>0.01</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>1.00</td>
<td>1.00</td>
<td>0.10</td>
<td>0.010</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>27.00</td>
<td>13.50</td>
<td>1.00</td>
<td>0.100</td>
</tr>
</tbody>
</table>

**Liquid Flow Specifications, English Units**

<table>
<thead>
<tr>
<th>Product Type</th>
<th>QUANTIM Model(1)</th>
<th>QUANTIM Tube Size</th>
<th>Maximum Flow Rate(2) lb/hr</th>
<th>Nominal Flow Rate(2) lb/hr</th>
<th>Minimum Measurable Flow lb/hr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controller</td>
<td>QMBC</td>
<td>2</td>
<td>0.66</td>
<td>0.08</td>
<td>0.04</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>2.21</td>
<td>0.26</td>
<td>0.21</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>41.10</td>
<td>4.92</td>
<td>2.46</td>
</tr>
<tr>
<td>Meter</td>
<td>QMBM</td>
<td>2</td>
<td>0.84</td>
<td>0.10</td>
<td>0.05</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>2.21</td>
<td>0.26</td>
<td>0.26</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>59.54</td>
<td>7.13</td>
<td>3.57</td>
</tr>
</tbody>
</table>

**Gas Flow Specifications**

Flow rates that produce approximately 14.5 psid (1bar) pressure drop on air at 70°F (21°C) with inlet pressure of 500 psi (35 bar)

<table>
<thead>
<tr>
<th>Product Type</th>
<th>QUANTIM Model(1)</th>
<th>QUANTIM Tube Size</th>
<th>Nominal Mass Flow Rate</th>
<th>Nominal Volume Flow Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>lb/hr</td>
<td>Kg/hr</td>
</tr>
<tr>
<td>Controller</td>
<td>QMBC</td>
<td>2</td>
<td>0.168</td>
<td>0.076</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>0.472</td>
<td>0.214</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>4.653</td>
<td>2.110</td>
</tr>
<tr>
<td>Meter</td>
<td>QMBM</td>
<td>2</td>
<td>0.227</td>
<td>0.103</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>0.893</td>
<td>0.405</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>8.026</td>
<td>3.640</td>
</tr>
</tbody>
</table>
Data Sheet
DS-QmB-eng
April, 2006
QmB Series IP40, IP65, IP65XP

Gas Flow Limits
Air, 70°F (21°C), 14.5 psi (1 bar) pressure drop

Accuracy
± measurement accuracy % of rate or [(zero stability/flowrate) x 100] % of rate, whichever is greater

<table>
<thead>
<tr>
<th>Sensor Tube Material</th>
<th>Fluid Type</th>
<th>Standard Flow Measurement Accuracy (% of rate)</th>
<th>Optional Flow Measurement Accuracy (% of rate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stainless Steel</td>
<td>Liquid</td>
<td>0.2%</td>
<td>0.5%</td>
</tr>
<tr>
<td></td>
<td>Gas</td>
<td>0.5%</td>
<td>1.0%</td>
</tr>
<tr>
<td>Hastelloy</td>
<td>Liquid</td>
<td>0.5%</td>
<td>1.0%</td>
</tr>
<tr>
<td></td>
<td>Gas</td>
<td>0.5%</td>
<td>1.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sensor Tube Material</th>
<th>Tube Size</th>
<th>Zero Stability (Kg/hr)</th>
<th>Zero Stability (Lb/hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stainless Steel</td>
<td>2</td>
<td>0.00013</td>
<td>0.0003</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>0.0010</td>
<td>0.0022</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>0.0040</td>
<td>0.0088</td>
</tr>
<tr>
<td>Hastelloy</td>
<td>2</td>
<td>0.0002</td>
<td>0.0004</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>0.0015</td>
<td>0.0033</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>0.0120</td>
<td>0.0265</td>
</tr>
</tbody>
</table>

Standard Measurement Accuracy vs Flow Rate Chart, Tube Size 2
Repeatability:\(^6\):
\[ \pm 0.05\% \text{ or } \pm [0.5 \times (\text{zero stability}/\text{flowrate}) \times 100]\% \text{ of rate whichever is greater} \]

Device Leak Integrity:
- Elastomer Sealed Device: Outboard 1 \times 10^{-9} \text{ atm. cc/sec.}, helium (maximum)
- Metal Sealed Device: 1 \times 10^{-10} \text{ atm. cc/sec.}, helium (maximum)

Turn Down:
- Controller: 100:1 or down to the minimum measurable flow, whichever flow rate is greater
- Meter: to minimum measurable flow

Settling Time:
- Controller: Less than 2 seconds within 2 \% full scale of final value, \[ \pm [(\text{zero stability}/\text{flowrate}) \times 100]\% \text{ of rate per SEMI Guideline E17-91} \]
- Meter: Less than 0.5 seconds within 2 \% full scale of final value, \[ \pm [(\text{zero stability}/\text{flowrate}) \times 100]\% \text{ of rate per SEMI Guideline E17-91} \]

Maximum Operating Pressure:
- Standard: 3.5 MPa, 35 bar or 500 psi
- Optional: 10 MPa, 100 bar or 1500 psi
- Optional: 30 MPa, 300 bar or 4500 psi

### Differential Pressure Requirements, Controller\(^7\)

<table>
<thead>
<tr>
<th>QUANTIM Model</th>
<th>QUANTIM Tube Size</th>
<th>Liquid</th>
<th>Gas</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>kPa</td>
<td>bar</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min</td>
<td>Max*</td>
</tr>
<tr>
<td>QMBC</td>
<td>2</td>
<td>69</td>
<td>1034</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>69</td>
<td>1379</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>69</td>
<td>1379</td>
</tr>
</tbody>
</table>

\(^*\)Actual maximum pressure drop will depend on process conditions and orifice selection.

### Differential Pressures, Meter\(^7\)

Pressure Drop Liquid - \((H_2O)\)

![Graph](image-url)
Density (8):

- **Range:** 0 to 0.3 and 0.5 to 2.0 grams/cc
- **Accuracy:** ±0.005 grams/cc
- **Repeatability:** ±0.002 grams/cc

Temperature (9)

- **Device Temperature Range:** 0 to 65°C or 32 to 149°F
- **Accuracy:** ±0.5°C or ±1.0°F

Notes

1. QMBC - Brooks QUANTIM controller with integral control valve. QMBM - Brooks QUANTIM meter (no valve).
2. The nominal flow rate is the flow rate at which water at reference conditions causes approximately 1 bar of pressure drop or the laminar to turbulent transition flow whichever is lower. Maximum flow rate is twice nominal flow rate or the laminar to turbulent transition flow whichever is lower.
3. Standard volumetric conditions are 14.696 psia and 70°F.
4. ml/min Reference Conditions 0°C at 1013.25 mbar.
5. Accuracy includes combined repeatability, linearity, and hysteresis. Specifications are based on reference test conditions of water/nitrogen at 68 to 77°F (20 to 25°C) and 15 to 30 psig (1 to 2 bar).
6. Repeatability - The maximum difference between output readings when the same input is applied consecutively; the closeness of agreement among consecutive measurements of an output for the same value of input under the same operating conditions, approaching from the same direction.
7. Differential pressures are based on reference conditions of water and air at 68 to 77°F (20 to 25°C).
8. Contact Brooks for applications with fluid density in the range from 0.3 to 0.5 grams/cc. The density measurement at temperatures other than 21°C (70°F) has an additional error of approximately 0.0005 grams/cc per deg C.
9. A temperature rise of up to 20°C (68°F) from internal heating can occur in an open environment where ambient temperature is 23°C (73°F).
**Certifications and Approvals**

**IP40 Series**
Non Incendive/ Non Sparking  
United States and Canada- UL Recognized E73889, Vol. 3, Sect. 3.

Non Incendive , Class I, Division 2, Groups A, B, C and D; T4  
Per UL 1604 and CSA 213

Ex nC IIC T4  
Per CSA E79-15

Class I, Zone 2, AEx nC IIC T4  
Per ANSI/ISA 12.12.02- 2003 and ANSI/UL 60079-15

Ambient Temperature: 0° C to 65° C  
Enclosure: Type 1/ IP40

Europe - KEMA 04ATEX1241 X  

II 3 G EEx nA II T4  
Per EN 50021

Ambient Temperature: 0° C to 65° C  
Enclosure: IP40

**IP65 Series**
Non Incendive/ Non Sparking  
United States and Canada- UL Recognized E73889, Vol. 1, Sect. 26. (conduit entry)  
United States and Canada Recognized, UL E73889, Vol. 3, Sect. 3. (cable gland entry)

Non Incendive , Class I, Division 2, Groups A, B, C and D;  
Dust Ignition Proof, Class II, Division 2, Groups F and G; Suitable for Class III, Division 2; T4  
Per UL 1604 and CSA 213

Ex nC IIC T4  
Per CSA E79-15

Class I, Zone 2, AEx nC IIC T4  
Per ANSI/ISA 12.12.02- 2003 and ANSI/UL 60079-15

Ambient Temperature: 0° C to 65° C  
Enclosure: Type 4X/ IP65

Europe - KEMA 05ATEX1068 X  

II 3 G EEx nA II T4  
II 3 D T 135 C  
Per EN 50021(EN 60079-15)

Ambient Temperature: 0° C to 65° C  
Enclosure: IP65
Certifications and Approvals

IP65XP Series Explosion-proof/Flame-proof

- Explosion-proof, Class I, Division 1, Groups C and D;
- Dust Ignition-proof, Class II, Division 1 Groups E, F, and G;
- Suitable for Class III, Division 1; T4
- Per UL 1203 and CSA 22.2 No. 30

- Ex nC IIC T4
- Per CSA E79-1

- Class I, Zone 2, AEx nC IIC T4
- Per ANSI/ISA 12.22.01 (IEC 60079-1 Mod) and UL 60079-15

Ambient Temperature: 0° C to 65° C
Enclosure: Type 4/ IP65

Europe - KEMA 05ATEX2052 X

- II 2 G EEx d IIB T
- II 2 D T 85° C
- Per EN 50014, EN 50018 and EN 50281-1-1

Ambient Temperature: 0° C to 65° C
Enclosure: IP65

Environmental effects

EMC effects: The Brooks QUANTIM series meets the requirements of the EMC directive 89/336EEC per EN 50081-2 and EN 61326-1. To meet these specifications, the Brooks QUANTIM device must be directly connected to a low impedance (less than 1 Ohm) earth ground. Signals must use a standard twisted-pair, shielded instrument wire.

Pressure effects: The Brooks QUANTIM series meets the requirements of the Pressure Equipment Directive 97/23/EC. The unit falls into the category "Sound Equipment Practice".
Physical Specifications

Materials of construction:
- Process Wetted: 316L, 316L VAR, High Alloy Ferritic Stainless and 17-7PH
- Optional: Hastelloy sensor tube.

Process Seals:
- Elastomer Seal: Stainless Steel or Nickel and Viton® fluoroelastomers, Buna, Kalrez® or EPDM
- Metal Seal: Stainless Steel or Nickel

Housing:
- IP40: Polyurethane painted Aluminum
- IP65: Epoxy painted Aluminum
- IP65XP: Aluminum

Inlet Filter:
- Tube Size 2 Controller: 1 micron or 10 micron inlet filter recommended
- Tube Size 3 or 4: 10, 20, 30 & 40 micron filters available

Weight:
- Housing: IP40: 1.6 kg or 3.5 Lbs.
- Housing IP65: 1.9 kg or 4.2 Lbs.
- Housing IP65XP: 24 kg or 52 Lbs.

Moisture content:
Purged to exhaust dew point less than -40°C (-40°F) prior to shipment to remove calibration liquid, to prevent process contamination. Then vacuum bagged at ambient room conditions.

Process fitting options:
- 1/8", 1/4" or 6mm tube compression, VCR or NPT(F), Down Port ANSI/ISA 76.00.02 (See Ordering Information table).

Electrical connections:
- IP40: 15 pin D-Type connector.
- IP65: Unpluggable Terminal Block 28-16 Awg.
- IP65XP: ¾” NPT wiring access to IP40 Device with 15 pin D-Type connector.

Dimensions:
See Figures 1, 2, and 3.

Functional Specifications

Output signals:
- 4-20 mA or 0-5 Vdc active outputs represent mass flow or volume flow.
- And simultaneously available 4-20 mA active output, represents on-line density or temperature information.

Input signals:
- Command (setpoint) that drives the (internally) installed control valve, either 4-20 mA or 0-5 Vdc input signals.
- Valve Override Function:
  Left floating/unconnected - instrument controls flow at setpoint
  Connected to signal at or above 5.0 Volts - valve is forced open
  Connected to signal at or below 0.0 Volts - valve is forced closed

Power Requirements:
- Voltage: +14 to 27 Vdc.
- Current: Controller: 300 mA to 400 mA
- Meter: 100 mA to 150 mA
Additional Functions and Outputs

Damping: Factory set time constant from 0 to 10 seconds.

Alarms: Alarms accessed via HART or the Brooks Service Tool can be configured to monitor the following variables:
- Mass Flow
- Density
- Volumetric Flow
- Temperature
- Slug Flow
- Diagnostic Failure

LED’s: (11) 'STAT'
- solid green: system operative.
- solid red: system fault.

'AL'
- 7 red flashes: diagnostic failure.

Pushbutton: (12) 'ZERO' setting pushbutton.

Notes

(10) If QUANTIM is configured for HART® communication protocol, only 4-20 mA I/O option is available.

(11) IP65 and IP65XP Series external housing cover must be removed to gain access to status LED’s.

(12) IP65XP series external housing cover must be removed to gain access to zero push button.
Figure 1 Dimensional Drawing QmB IP40

<table>
<thead>
<tr>
<th>FITTING</th>
<th>&quot;X&quot; DIMENSION</th>
<th>&quot;Y&quot; DIMENSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/16&quot; Tube Compression</td>
<td>164.1 [7.28]&quot;</td>
<td>157.9 [6.22]&quot;</td>
</tr>
<tr>
<td>1/8&quot; Tube Compression</td>
<td>192.7 [7.59]&quot;</td>
<td>160.5 [6.32]&quot;</td>
</tr>
<tr>
<td>1/4&quot; Tube Compression</td>
<td>197.3 [7.77]&quot;</td>
<td>165.1 [6.50]&quot;</td>
</tr>
<tr>
<td>6 mm Tube Compression</td>
<td>197.6 [7.78]&quot;</td>
<td>165.4 [6.51]&quot;</td>
</tr>
<tr>
<td>1/8&quot; NPT (F)</td>
<td>179.8 [7.08]&quot;</td>
<td>147.7 [5.81]&quot;</td>
</tr>
<tr>
<td>1/4&quot; NPT (F)</td>
<td>189.3 [7.46]&quot;</td>
<td>157.1 [6.18]&quot;</td>
</tr>
<tr>
<td>1/8&quot; VCR</td>
<td>160.6 [6.32]&quot;</td>
<td>150.4 [5.92]&quot;</td>
</tr>
<tr>
<td>1/4&quot; VCR</td>
<td>200.9 [7.91]&quot;</td>
<td>188.7 [7.44]&quot;</td>
</tr>
<tr>
<td>1/4&quot; VCO</td>
<td>168.2 [6.64]&quot;</td>
<td>166.0 [6.54]&quot;</td>
</tr>
</tbody>
</table>

* Overall length: finger tight
** Overall length dimension 1 is to the internal tube locating shoulder

D-CONNECTOR CONNECTIONS

<table>
<thead>
<tr>
<th>PIN</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SUPPLY VOLTAGE</td>
</tr>
<tr>
<td>2</td>
<td>0.5 VDC SIGNAL OUTPUT</td>
</tr>
<tr>
<td>3</td>
<td>(TTL) OPEN COLLECTOR ALARM OUTPUT</td>
</tr>
<tr>
<td>4</td>
<td>4.20 MA OUTPUT SIGNAL OUTPUT</td>
</tr>
<tr>
<td>5</td>
<td>13.5 VDC TO +27 VDC POWER SUPPLY</td>
</tr>
<tr>
<td>6</td>
<td>NOT USED</td>
</tr>
<tr>
<td>7</td>
<td>4.20 MA SETPOINT INPUT (+)</td>
</tr>
<tr>
<td>8</td>
<td>0.5 VDC SETPOINT INPUT (+)</td>
</tr>
<tr>
<td>9</td>
<td>POWER SUPPLY COMMON</td>
</tr>
<tr>
<td>10</td>
<td>SIGNAL OUTPUT COMMON</td>
</tr>
<tr>
<td>11</td>
<td>+5 VDC REFERENCE OUTPUT</td>
</tr>
<tr>
<td>12</td>
<td>VACUUM OVERBRIDGE INPUT</td>
</tr>
<tr>
<td>13</td>
<td>4.20 MA DENY OVER TEMPERATURE</td>
</tr>
<tr>
<td>14</td>
<td>NOT USED</td>
</tr>
<tr>
<td>15</td>
<td>NOT USED</td>
</tr>
</tbody>
</table>

LAYOUT DIMENSIONS

BOTTOM VIEW (MOUNTING PLATE NOT SHOWN)
Figure 2 Dimensional Drawing QmB IP65
<table>
<thead>
<tr>
<th>FITTING</th>
<th>&quot;X&quot; DIMENSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/8 TUBE COMP</td>
<td>442 (17.4) *</td>
</tr>
<tr>
<td>1/4 TUBE COMP</td>
<td>448.5 (17.58) *</td>
</tr>
</tbody>
</table>

* OVERALL LENGTH FINGER TIGHT

3/4 NPT FOR WIRING ACCESS, TYP BOTH SIDES

Figure 3 Dimensional Drawing QmB IP65XP
## Model: QM Series
### MULTIVARIABLE PRECISION MASS FLOW MEASUREMENT AND CONTROL

#### BASE MODEL NUMBER, REVISION AND PRIMARY DEVICE DESCRIPTION

<table>
<thead>
<tr>
<th>Model Code for QmB</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>QMBC</td>
<td>FLOW CONTROLLER</td>
</tr>
<tr>
<td>QMBM</td>
<td>FLOW METER</td>
</tr>
</tbody>
</table>

#### TUBE SIZE

<table>
<thead>
<tr>
<th>Tube Size</th>
<th>Liquid Nominal Flow Rate</th>
<th>Gas Nominal Flow Rate</th>
<th>Controller Nominal Flow Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMALL</td>
<td>190 grams/hour</td>
<td>1432 sccm</td>
<td>150 grams/hour</td>
</tr>
<tr>
<td>MEDIUM</td>
<td>1.00 Kg/hour</td>
<td>5,595 SLPM</td>
<td>780 grams/hour</td>
</tr>
<tr>
<td>LARGE</td>
<td>13.5 Kg/hour</td>
<td>50.35 SLPM</td>
<td>9.32 Kg/hour</td>
</tr>
</tbody>
</table>

#### FLUID TYPE

- **L**: LIQUID
- **G**: GAS

**NOTE:** SELECT PRIMARY FLUID TYPE. USER CAN SWITCH FROM LIQUID TO GAS AND VISA-VERSA. REZEROING IS REQUIRED.

#### PRESSURE TRANSDUCER

- **1**: NO TRANSDUCER

#### VALVE TYPE

- **A**: NO VALVE
- **B**: NORMALY CLOSED VALVE

#### ACCURACY

<table>
<thead>
<tr>
<th>LIQUID AND STAINLESS STEEL</th>
<th>GAS OR HASTELLOY</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 STANDARD 0.2% OF RATE</td>
<td>3 STANDARD 0.5% OF RATE</td>
</tr>
<tr>
<td>3 OPTIONAL 0.5% OF RATE</td>
<td>4 OPTIONAL 1.0% OF RATE</td>
</tr>
</tbody>
</table>

#### ENCLOSURE TYPE AND AREA CLASSIFICATION

- **A**: NEMA 1 / IP 40
- **B**: NEMA 1 / IP 40 CLASS 1 DIV 2 / ZONE 2
- **C**: NEMA 4X / IP 65
- **D**: NEMA 4X / IP 65 CLASS 1 DIV 2 / ZONE 2
- **E**: EXPLOSION PROOF DIVISION 1 / ZONE 1

#### SURFACE FINISH

- **1**: STANDARD SURFACE FINISH (32 Ra)

#### SENSOR TUBE MATERIAL

- **A**: STAINLESS STEEL, 316L
- **B**: HASTELLOY, C22 (TUBES ONLY)

#### MAXIMUM BODY PRESSURE RATING

<table>
<thead>
<tr>
<th>Rating</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>35 BAR OR 500 PSI</td>
</tr>
<tr>
<td>2</td>
<td>100 BAR OR 1500 PSI</td>
</tr>
<tr>
<td>3</td>
<td>300 BAR OR 4500 PSI</td>
</tr>
</tbody>
</table>

#### MAXIMUM TEMPERATURE RATING

- **A**: 65 DEG C

#### PROCESS CONNECTIONS

- **1A**: STANDARD BODY CONNECTIONS - 5/16"-24 UNF
- **1B**: 1/16" - TUBE COMPRESSION FITTINGS
- **1C**: 1/4" TUBE COMPRESSION FITTINGS
- **1D**: 1/8" TUBE COMPRESSION FITTINGS
- **1G**: 6mm TUBE COMPRESSION FITTINGS
- **1J**: 1/8" NPT(F)
- **1K**: 1/4" NPT(F)
- **1L**: 1/8" VCR
- **1M**: 1/4" VCR
- **1P**: 1/4" VCO
- **1Y**: DOWN PORT ANSI/ISA-76.00.02

#### ELECTRICAL I/O - COMMUNICATIONS

- **A**: 0-5 VDC
- **B**: 4-20 mA
- **H**: HART / 4-20 mA

#### ELECTRICAL CONNECTION

- **1**: 15 PIN D - CONNECTOR
- **3**: PG11 CABLE GLAND
- **4**: 1/2" FNPT CONDUIT, 2 ENTRY
- **5**: 1/2" FNPT CONDUIT, 4 ENTRY
- **6**: M20 CONDUIT, 2 ENTRY
- **7**: M20 CONDUIT, 4 ENTRY
- **8**: 3/4" FNPT CONDUIT
## Model Code for QmB (continued)

<table>
<thead>
<tr>
<th>SEALS SENSOR</th>
<th>VALVE STEM</th>
<th>FITTING</th>
<th>ORIFICE SEAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>VITON</td>
<td>VITON</td>
<td>STAINLESS STEEL</td>
</tr>
<tr>
<td>B</td>
<td>BUNA</td>
<td>BUNA</td>
<td>STAINLESS STEEL</td>
</tr>
<tr>
<td>C</td>
<td>KALREZ</td>
<td>KALREZ</td>
<td>STAINLESS STEEL</td>
</tr>
<tr>
<td>D</td>
<td>EPDM</td>
<td>EPDM</td>
<td>STAINLESS STEEL</td>
</tr>
<tr>
<td>E</td>
<td>NICKEL</td>
<td>NICKEL</td>
<td>STAINLESS STEEL</td>
</tr>
<tr>
<td>F</td>
<td>KALREZ</td>
<td>KALREZ</td>
<td>STAINLESS STEEL</td>
</tr>
<tr>
<td>G</td>
<td>NICKEL</td>
<td>NICKEL</td>
<td>STAINLESS STEEL</td>
</tr>
<tr>
<td>H</td>
<td>NICKEL</td>
<td>NICKEL</td>
<td>STAINLESS STEEL</td>
</tr>
<tr>
<td>I</td>
<td>NICKEL</td>
<td>NICKEL</td>
<td>STAINLESS STEEL</td>
</tr>
<tr>
<td>J</td>
<td>NICKEL</td>
<td>NICKEL</td>
<td>STAINLESS STEEL</td>
</tr>
<tr>
<td>K</td>
<td>NICKEL</td>
<td>NICKEL</td>
<td>STAINLESS STEEL</td>
</tr>
</tbody>
</table>

### Valve Seat Material

- **A** - NONE (METER)
- **B** - METAL 17-7PH STAINLESS STEEL (CONTROLLER)

### Special Processing

- **A** - NONE
- **B** - CERTIFIED MATERIALS 2.2 EN 10204
- **C** - CERTIFIED MATERIALS 3.1B EN 10204
- **D** - CLEANING FOR OXYGEN SERVICE
- **E** - CLEANING FOR OXYGEN SERVICE AND CERTIFIED MATERIALS 2.2 EN 10204
- **F** - CLEANING FOR OXYGEN SERVICE AND CERTIFIED MATERIALS 3.1B EN 10204

### Quality Certifications

- 1 - CALIBRATION CERTIFICATION - TRACEABLE TO NIST
- 2 - CERTIFICATE OF CONFORMANCE
- 3 - CALIBRATION CERTIFICATION - TRACEABLE TO NIST AND CERTIFICATE OF CONFORMANCE

### In Line Filter

- **A** - NONE
- **B** - IN LINE CARTRIDGE FILTER, 10 MICRON
- **C** - IN LINE CARTRIDGE FILTER, 20 MICRON
- **D** - IN LINE CARTRIDGE FILTER, 30 MICRON
- **E** - IN LINE CARTRIDGE FILTER, 40 MICRON
- **F** - IN LINE CARTRIDGE FILTER, 1 MICRON

### OEM Code

- **A** - BROOKS

---

**BROOKS LOCAL AND WORLDWIDE SUPPORT**

- Brooks Instrument provides sales and service facilities around the world.
- Calibration facilities are available in local sales and service offices. Certified by our local Weights and Measures Authorities and traceable to the relevant international standards.

**START-UP SERVICE AND IN-SITU CALIBRATION**

- Brooks Instrument can provide start-up service prior to operation when required, if necessary under in-situ conditions, and the results will be traceable to the relevant international quality standards.

**CUSTOMER SEMINARS AND TRAINING**

- Brooks® can provide customer seminars and dedicated training to engineers, end users and maintenance persons.

**HELP DESK**

In case you need technical assistance:

- Americas: 1-888-554-FLOW
- Europe: +31 318 549265
- Asia: +011-81-3-5633-7105

Due to Brooks Instrument’s commitment to continuous improvement of our products, all specifications are subject to change without notice.