

EtherCAT®



## The Fastest and Most Accurate MFCs

Enhanced with the Speed of EtherCAT®

### Performance Perfected for Semiconductor Processes

- Embedded diagnostics leverage real-time EtherCAT data acquisition capabilities
- Ultra-stable flow sensor ( $\leq 0.15\%$  of S.P. drift per year) enables tighter low setpoint accuracy and reduces maintenance requirements
- Improved valve shutdown ( $\leq 0.15\%$  of bin range) reduces valve leak-by to reduce first wafer effects
- Newly enhanced pressure transient insensitivity reduces crosstalk sensitivity for consistent mass flow delivery

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Request a demo device today.  
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**BROOKS®**  
INSTRUMENT

*Beyond Measure*

**GF100 Series**  
**Mass Flow Controllers**

Low-flow Models

High-flow Models

SDS Models

|  | GF100  | GF120      | GF125   | GF101  | GF121      | GF126                             | GF120XSL  | GF120XSD          |
|--|--|------------|---|--|------------|-----------------------------------|---|-------------------|
| <b>PERFORMANCE</b>                       |  |            |   |  |            |                                   |   |                   |
| Full Scale Flow Range                    | 3 sccm - 55 slm  |            |   | 55 slm - 300 slm                                   |            |                                   | 4 - 25 sccm   | >25 sccm - 1 slpm |
| Flow Accuracy                            | ±1% S.P. >20 - 100%, ±0.2% F.S. 2 - 20%  |            |   | ±1% S.P. >35 - 100%, ±0.35% F.S. 2 - 35%           |            |                                   | ±1% S.P. >35 - 100%, ±0.35% F.S. 2 - 35%                      |                   |
| Repeatability & Reproducibility          | <±0.15% S.P.   |            |   |  |            |                                   |   |                   |
| Flow Settling Time <sup>1</sup>          | <1 sec   | 700 ms     | 300 msec (3 - 860 sccm N2 Eq.)<br>400 msec (861 - 7200 sccm N2 Eq.)<br>500 msec (7201 - 30000 sccm N2 Eq.)<br><700 msec (30001 - 55000 sccm N2 Eq.) | <1 sec   |            |                                   | <3 secs   |                   |
| Pressure Insensitivity                   | —  |            | <1% S.P. up to 5 psi/sec upstream pressure spike  | —  |            | Ability to measure inlet pressure | —   |                   |
| Control Range                            | 2 - 100% (normally closed valve)   |            |   | 5 - 100% (normally closed valve)                   |            |                                   | 2 - 100% (normally closed valve)                              |                   |
| MultiFlow™ Gas & Range Configurable      | Standard   |            |   |  |            |                                   |   |                   |
| # of Bins                                | 11 bins  |            |   | 4 bins   |            |                                   | —   |                   |
| Valve Shutdown <sup>1</sup>              | ≤0.15% of bin range  |            |   | <2% of F.S. @ 30 N2 psig/atm out                   |            |                                   | <1% of F.S.   |                   |
| Zero Stability                           | ≤0.15% F.S. per year   |            |   | ≤0.15% F.S. per year                               |            |                                   | ≤0.6% F.S. per year   |                   |
| Temperature Coefficient                  | Span: 0.05% S.P. per °C<br>Zero: 0.005% F.S. per °C  |            |   | Span: 0.05% F.S. per °C<br>Zero: 0.03% F.S. per °C |            |                                   | Span: 0.05% F.S. per °C<br>Zero: 0.03% F.S. per °C            |                   |
| <b>RATINGS</b>                           |  |            |   |  |            |                                   |   |                   |
| Operating Temperature Range              | 10 - 50 °C   |            |   |  |            |                                   |   |                   |
| Differential Pressure Range <sup>2</sup> | 3 - 860 sccm = 7 - 45 psid<br>861 - 7200 sccm = 10 - 45 psid<br>7201 - 55000 sccm = 15 - 45 psid     |            |   | 30 - 90 psic                                       |            |                                   | 10 Torr - 30 psid typical<br>For more details consult factory |                   |
| Maximum Operating Pressure               | 500 psia max   |            | 100 psia max  | Controller: 75 psig, Meter: 150 psig               |            |                                   | Up to 500 psia max  |                   |
| Leak Integrity (external)                | 1x10 <sup>-11</sup> atm. cc/sec He   |            |   |  |            |                                   |   |                   |
| <b>MECHANICAL</b>                        |  |            |   |  |            |                                   |   |                   |
| Valve Type                               | Normally closed, Normally open, Meter (no valve)   |            |   | Normally closed, Meter (no valve)                  |            |                                   | Normally closed   |                   |
| Wetted Materials                         | SEMI F20 compliant, 316L VIM/VAR, Hastelloy C-22, 316L Stainless Steel, 304 Stainless Steel, KM-45   |            |   |  |            |                                   |   |                   |
| Surface Finish                           | 10µ inch Ra  | 5µ inch Ra |   | 10µ inch Ra  | 5µ inch Ra |                                   | 5µ inch Ra  |                   |
| <b>DIAGNOSTICS &amp; DISPLAY</b>         |  |            |   |  |            |                                   |   |                   |
| Status Lights                            | Run, Error, Power, Network Status  |            |   |  |            |                                   |   |                   |
| Alarms                                   | Control Valve Output, Network Interruption, Temperature High/Low, Pressure High/Low, Power Surge/Sag |            |   |  |            |                                   |   |                   |
| Display / Units / Resolution             | Backlit rotatable LCD display / Flow (%), Temp (°C), Pressure (psia, kPa) / Resolution 0.1 (unit)    |            |   |  |            |                                   |   |                   |
| <b>ELECTRICAL</b>                        |  |            |   |  |            |                                   |   |                   |
| Electrical Connection                    | Power via 5-pin M8 Connector, EtherCAT via twin RJ45   |            |   |  |            |                                   |   |                   |
| Digital Communication                    | EtherCAT®  |            |   |  |            |                                   |   |                   |
| Diagnostics / Service Port               | Micro USB  |            |   |  |            |                                   |   |                   |
| Power Supply / Consumption               | 24Vdc, 7 Watts   |            |   |  |            |                                   |   |                   |

For dimensional drawings and electrical connection options, visit [BrooksInstrument.com](http://BrooksInstrument.com)

<sup>1</sup> Normally open valve option available on GF100, GF120, GF125. Typical flow setting time <1.5 sec, valve shutdown 2% F.S.

<sup>2</sup> Certain gas applications may require an additional differential pressure. Contact Brooks Technical support for more information.



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