

TECHNICAL DATA

GFS dynamic gravimetric mass flow system



Key features

- Delivers a true Primary Mass Flow Standard.; independent metrological support for molblocs
- Range: 0.2 to 200 mg/s in various non-corrosive, non-toxic gases.
- Low flow measurement uncertainty as low as $\pm 0.013\%$ of reading.
- Operate at a maximum outlet pressure of 650 kPa absolute.
- Allows for automated unattended operation.

Product overview: GFS dynamic gravimetric mass flow system

The GFS dynamic gravimetric mass flow calibration system consists of an electronic mass balance, enclosure, and electronic instruments required to make accurate real-time measurements of depleted gas mass in flow control systems, and the time duration over which it has run. In order to improve thermal stability and dampen vibrations, the balance is placed upon a large granite plate and surrounded by a draft enclosure. In this system the test gas is supplied by a pressurized cylinder which rests on the balance and whose mass is measured continuously to determine the quantity and rate of depleted mass during a test. The elapsed time over which this takes place is measured by a high-speed USB counter/timer connected to the system controller. Various non-corrosive gas species can be used with this system, simply by evacuating the reference cylinder and pressurizing with the media of choice.

A dedicated PC-based software program (GFSTools™) has been developed to act as the central control of the instrument and interface to the user. Discrete and averaged values of balance and device under test output are

recorded and the results are calculated and displayed in terms of total mass and mass flow. Compensation of measurements for ambient pressure, temperature, and humidity, and balance drift are all performed by GFSTools. Automated test setup, data reporting and flow control are also handled by the program.

Specifications: GFS dynamic gravimetric mass flow system

| GFS General Specifications | |
|--|---|
| Power Requirements | |
| Balance | 100 to 240 VAC, 50 to 60 Hz, 27 W max. consumption |
| LCM | 100 to 240 VAC, 50 to 60 Hz, 40 W max. consumption |
| MFC-CB | 85 to 264 VAC, 50 to 60 Hz, 36 W max. consumption |
| Operating Temperature Range | 15 to 25 °C |
| Humidity Range | 5 to 70% RH, non-condensing |
| Weight | |
| Granite table and stand | 320 kg (700 lb) approximate |
| Rest of system | 70 kg (150 lb) approximate |
| Dimensions | |
| Enclosure on Granite Table w/stand | 150 cm H x 90 cm W x 60 cm D (58 in. x 36 in. x 24 in.) |
| LCM | 8 cm H x 22.5 cm W x 20 cm D (3.1 in. x 8.9 in. x 7.9 in.) |
| MFC-CB | 8 cm H x 22.5 cm W x 20 cm D (3.1 in. x 8.9 in. x 7.9 in.) |
| GFS-FS | 20 cm H x 41.4 cm W x 20 cm D (7.9 in. x 16.3 in. x 7.9 in.) |
| Supported Gases | Nitrogen (N ₂), Air, Argon (Ar), Carbon Monoxide (CO), Helium (He), Oxygen (O ₂), Carbon Dioxide (CO ₂), Carbon Tetrafluoride (CF ₄), Ethane (C ₂ H ₆), Ethylene (C ₂ H ₄), Fluoroform (CHF ₃), Hexafluoroethane (C ₂ F ₆), Hydrogen (H ₂), Methane (CH ₄), Nitrous Oxide (N ₂ O), Sulfur Hexafluoride (SF ₆), Xenon (Xe) |
| Flow Measurement Range | at least: |
| He, H ₂ | 100 sccm to 10 slm |
| All other gases | 10 sccm to 10 slm |
| Pressure Connections outlet flow path from enclosure | 1/8" Swagelok tube fiing or equivalent, with adaptor to 1/4" Swagelok tube fiing or equivalent |
| Reference Gas Cylinder Pressure Limit | 20 MPa (3000 psi) |
| CE Conformance | Available, must be specified. |

Ordering information

**GFS2102**

Dynamic gravimetric mass flow system

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