

MGP-2



Calibration Gas Mixer for Characterising Gas Concentration Measurement Devices



Instrumentation • Calibration • Projects

MGP-2



In both industrial and laboratory settings, there are processes requiring the handling of industrial gases. One of the more frequent operations is the dilution or mixing of two or more input gases. To do this, industries or labs can equip themselves with various gas handling devices or equipment of varying complexity.

The Gometrics solution means that these gases can be handled with just one easy-install and easy-set-up device. With the MGP-2 operators can carry out gas mixing in a truly optimal fashion so that they are ready for use. The MGP-2's modular architecture also ensures real-time system control and communication with its integral computer for diagnostics and remote operation.

Data, test and mixing results can be read from the front touch screen or via the instrument's Ethernet or USB ports, thus facilitating connectivity to any platform or data and control system.

Gometrics has prioritised precision, versatility, ease of use and safety in its design. It has also paid special attention to the user interface to maximise its usefulness and ergonomics. For example, from the user interface operators can directly input mix parameters in terms of desired concentrations and output flows, thus avoiding unnecessary and error-prone calculations on the part of researchers. The device also incorporates protection against various risk factors, including leaks, voltage drops or pressure excesses.

The MGP-2 family of instruments has been designed for use with oxidising and corrosive gases, employing materials and PEEK®, Kalrez® and Viton® elastomers, among others, for this purpose. Each channel can be optionally equipped with this additional protection.

The MGP-2 mixer has been independently tested by the Electronics Department at Barcelona University, confirming its operation and reliability.



APPLICATIONS

- Preparation of binary, ternary, quaternary etc. gas mixtures
- Generation of controlled atmospheres for analysis
- Gas analyser testing
- Gas concentration transmitter analysis
- Gas concentration gauge testing
- Research and Development laboratories

Technical Specification

Physical specification

Dimensions: 43 x 21 x 45 cm
Weight: 21,5 Kg
Connections: 1/8" BSP (Rapid fitting option available)
Standard mains electricity supply

Contact material

AISI 316 stainless steel, Teflon®, Viton®, Kalrez®

Power supply

100-260 VAC, 60/60 Hz, 100W

Supply gases

Calibration gas: Connection to 8 (optionally 10) different gases and/or different concentrations

Mixing: 4 (optionally 5) simultaneous active calibration bottles

Gases: Configurable gas type, configurable components

Inert: Two balance gas inputs: pure clean gas, dry air, N₂ (others user definable)

Supply pressure

600 kPa max. (6 bar)
250 kPa min. (2,5 bar)

Mixture generation capacity

Any setpoint combination possible for active channels

Controllable flow ranges per channel

Maximum Full Scale per channel:
8 to 10.000 sccm FS
(each channel can have its own full scale)

Maximum mixture flow

The sum of the individual flows

Precision and repeatability per channel

Repeatability: <±0.2% of reading

Precision: <±0.7% of reading

Specifications

KEY PERFORMANCE FEATURES

- 4 (optionally 5) calibration gas mixing function
- Direct desired final mixture proportions (ppm or %) input option, thus allowing mixture creation
- Independent controlled inert gas balancing
- Maximum repeatability
- Highly intuitive touch screen user interface
- Circuit cleaning mode (vacuum or inert)
- Mixture cycle temporary pause mode
- Real time display of flow measured in each channel and in mixture output
- Characterisation of MFC channels (gas types)
- Gas type based flow correction (correction coefficients)
- Traceable calibration certificates for each of the mass controllers (optionally by EA accredited laboratory)

MECHANICAL AND FLUID

- AISI 316 stainless steel and PEEK base construction to withstand corrosive gases
- Micro-particle filters for maximum longevity of all mechanical components
- Internal pressure regulation for maximum performance of and protection for the mass flow controllers
- Software controlled outflow

MONITORING AND RELIABILITY

- Monitoring of correct channel input pressure and of MFC flow controller (out-of-range alarm)
- Monitoring of controlled flow in each channel and of flow controller (out-of-range alarm)
- Software developed in a strict quality assurance environment (error detection, integrity management etc.)
- Calibration and adjustment tools for the mass controllers and pressure sensor
- Automatic leak test

ADVANTAGES

• Ease of mixture creation

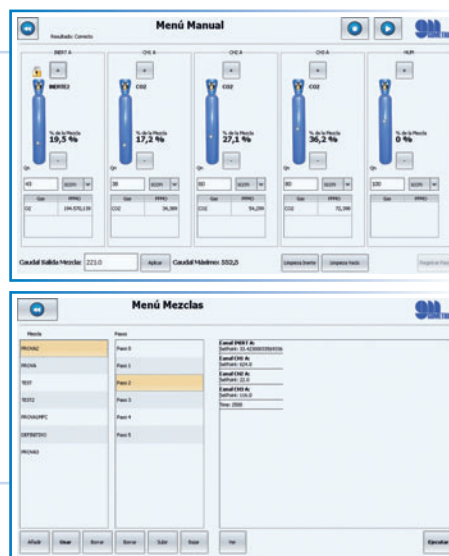
Thanks to its intuitive touch screen interface, users can prepare any mixture in a matter of seconds, with no need for worksheets, since the software already has all the algorithms necessary to create the mixture balance or to calculate maximum flows while maintaining the proportions of output gas.

• Test automation

Along with automatic mixture generation it is possible to specify concentration gradients, which fits perfectly with an automatic sampling system.

• PC, PLC and SCADA interface capability

• Customisable



Options

0.1 Mechanical and Fluid

- 0.1.1 Additional complete channel, including solenoid valves and mass flow controller. Ref. MGP2-1CH
- 0.1.2 Entire construction in AISI 316 stainless steel. Ref. MGP2-AISI316
- 0.1.3 Channel with MFC and connections for oxidising gases. Ref. MGP2-OX
- 0.1.4 Additional channel for calibration gas or inert unmixed input/output. Ref. MGP2-1CH-E/S
- 0.1.5 Increase to 16 calibration gas channels/bottles (8 extra channels). Ref. MGP2-16CH
- 0.1.6 Analog signal input channel (4-20 mA, 0-10V dc). Ref. MGP2-AIHW
- 0.1.7 Rapid input and output plug connections. Ref. MGP2-RR
- 0.1.8 Additional controllable inert gas output channel. Ref. MGP2-HR
- 0.1.9 Ozone generation module. Ref. MGP2-OZ

0.2 Software

- 0.2.1 Test sequencing automation Ref. MGP2-TEST
- 0.2.2 PC application with remote display and control (LabView environment). Ref. MGP2-SWPC
- 0.2.3 Automated channel calibration and adjustment support module. Ref. MGP2-CAL
- 0.2.4 Sensor, detector and transmitter verification and calibration module. Ref. MGP2-AISW

0.3 Maintenance

- 0.3.1 Recalibration with system traceability. Ref. CertGMMGP2R
- 0.3.2 ENAC system recalibration. Ref. ENACMGP2R
- 0.3.3 Seal, valve and filter change. Ref. MGP2-MANT
- 0.3.4 Software updates and improvements. Ref. MGP2-MANT-SW
- 0.3.5 Personalised evolutionary maintenance. Ref. MGP2-MDF

PATENTS PENDING



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