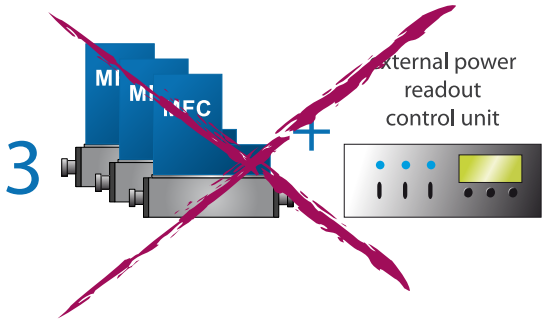

# MCQ Gas Blender 100 Series

## 3 Channels Gas Mixer

Revision 1.8

October 2016

# *Technical Data Sheet*




From this solution…

Lab in a box

… to this solution!



## *Specifications:*

- *Mixing and Blending up to 3 channels for non-aggressive gases.*
- *Ideal to make gas mixture for sensor or analyzer calibration.*
- *Fully digital.*
- *Needs No External Power & Control Unit.*
- *Needs No expensive and cumbersome tubing and fittings.*
- *Compact and transportable structure "Lab in a Box".*
- *Accuracy for each channel:* *1 % of set point (N2, 20°C, 101.325kPa (1 atm))*
- Range of Measurement: (For each channel) 0.01 sccm – 200 sccm (standard) FS: 500 sccm (on request)
- *Repeatability: 0,16% of reading value.*
- *Response Time for change of SetPoint value: 50 ms*
- *USB interface.*
- *Push in connector for inlet gas.*
- *Free Software (Mixing or Blending percentage, Type of Gas, Temperature, Full Scale Value and other functions)*
- *Power Supply: 16 – 36 V DC - Min 1,5A*
- *BUS RS 485 (*)(connect up to 64 Gas Blenders to obtain different mixing and blending solutions).*

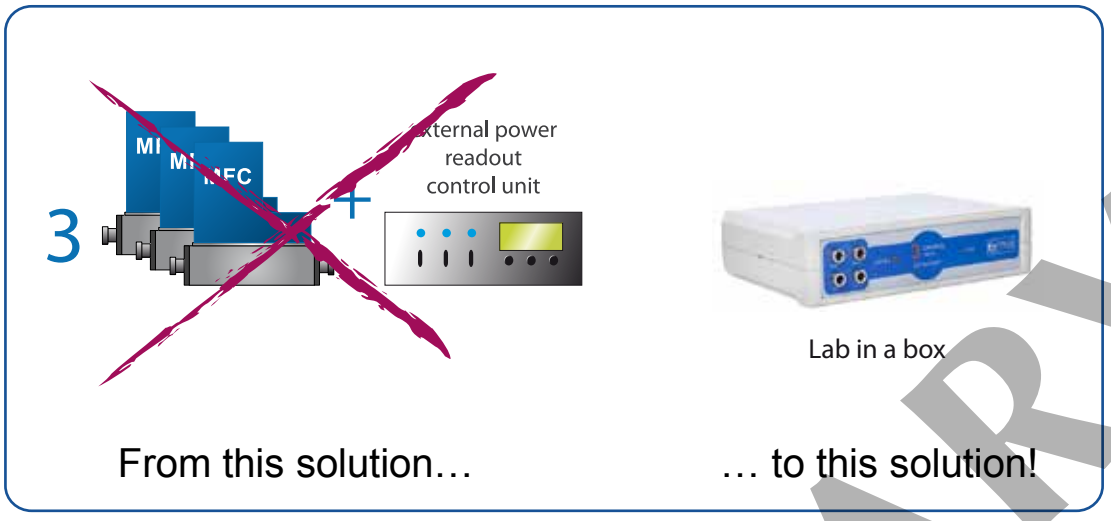
*(*) Function for future use. At the moment not active.*

The MCQ Gas Blender 100 Series is the solution from MCQ Instruments for gas mixing and gas dilution problems. Instead of multi-channel solutions using mass flow controller and external power supply and readout, MCQ Instruments offers a three-channels solution in a compact box at a very convenient price (Lab in a Box).
Through a 485 BUS (*) different Gas Blenders could be connected together allowing user to control up to 64 different devices.

This approach significantly reduces development costs of the system and its maintenance (Fast Time-to-Market solution) and permits to obtain multi-gas mixing solutions with an high dilution factor at a very convenient price.
All inlet and outlet tube fittings are push-in technology-based.
MCQ Gas Blender 100 Series has digital standard interface RS485 and USB, it can operate at 12/36 V AC/DC and up to 25 psi pressure.

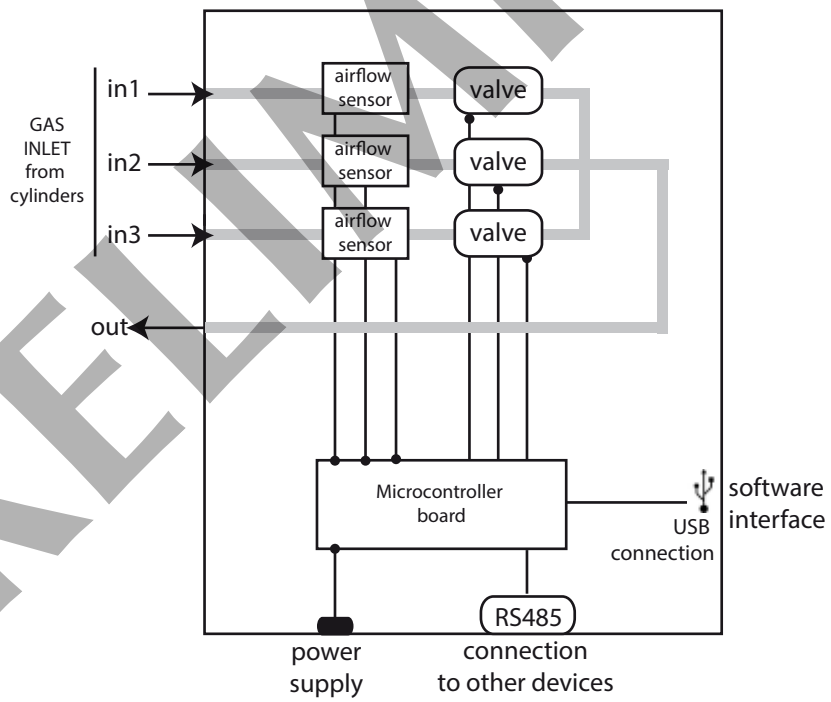
*(*) Function for future use. At the moment not active.*

## *For gas delivery problems:*




The Gas Blender 100 series allows to simplify the common arrangement for gas delivery that usually consists of a control master and a series of Mass Flow Controllers (MFC), substituting the whole setup with a single compact box. The Gas Blender 100 series has three inputs from gas cylinder and a single channel for the blend output.

## *Technical conept:*

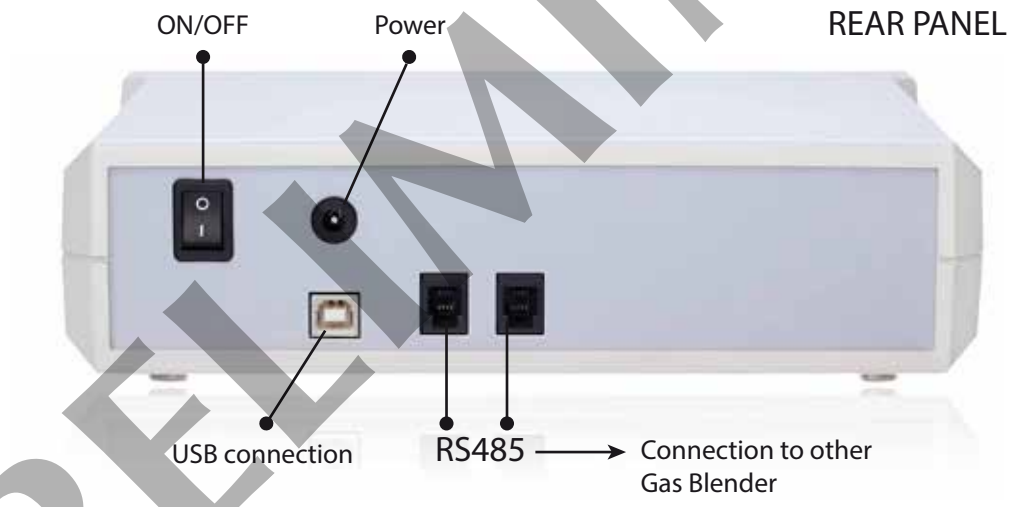



In the Gas Blender 100 series, the input flows are measured by an air flow sensor and regulated through a proportional valve that establishes the proper mass flow through each channel. Gas flow may be set through a PC software that MCQ can provide you, and the actual flow value may be continuously monitored in the software interface.

## *Front Panel:*

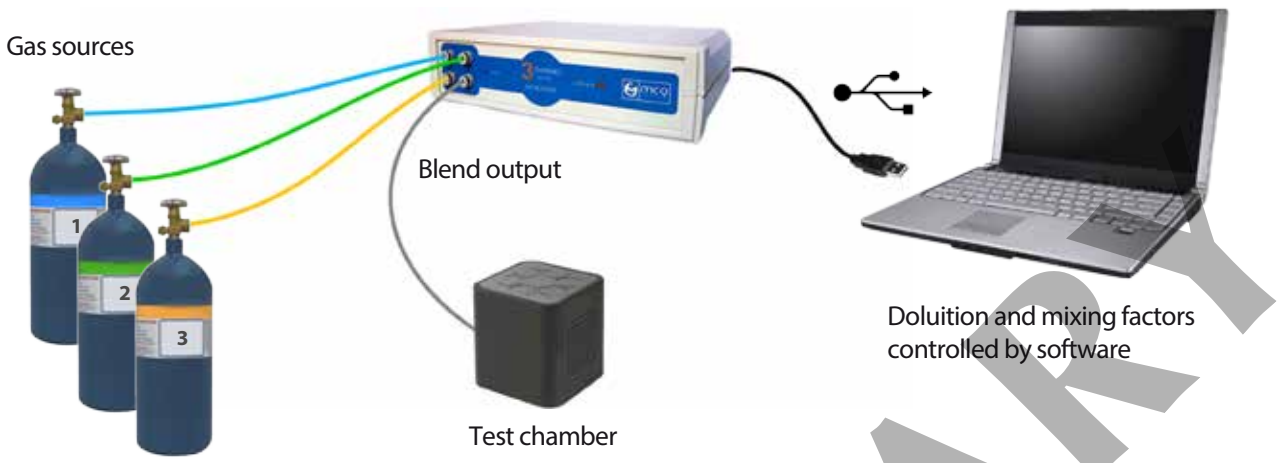

The front panel of the Gas Blender 100 series contains four quick connector for the insertion of input tubes and for the output of the blend. Tubes with an external diameter of 6 mm can be inserted in the push-in connector. MCQ suggest to use tubes made of Tygon/Viton/PTFE/Stainless Steel/Polyurethane.

## *Rear Panel:*



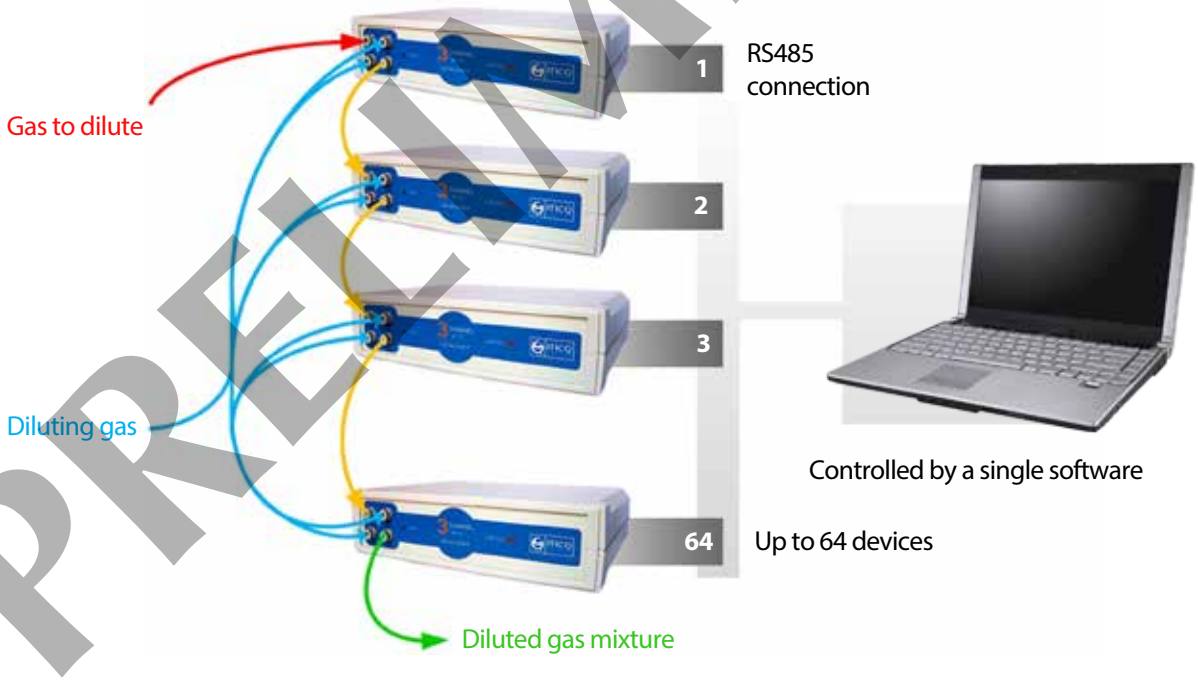

On the rear panel the are located the switch, the line power connection, the USB connection for the communication with a PC, and the RS485 (*) connection that could be used for create a cascade of gas blenders to obtain strong dilution factors.
*(*) Function for future use. At the moment not active.*

## *Experimental arrangement:*




The gas cylinders can be simply connected to the push-in connectors through appropriate tubes, the output of the device must be connected to the test chamber or to the environment for custom applications where the blend is delivered. The mixing and dilution factors can be controlled by software, where the desired flow in each channel can be set and the actual gas flow is continuously displayed in a plot.

## *Set-up for strong dilutions (*):*



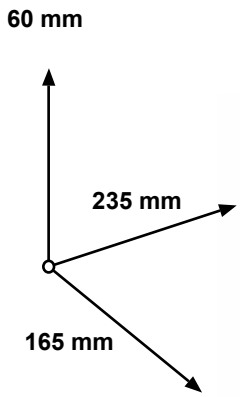

Up to 64 gas blenders can be connected through the RS485 port (*) to obtain strong dilution. In a suggested arrangement the diluting gas (for instance air or nitrogen)must be connected to two of the input of the first device, while the gas to dilute goes in the third channel. The output must be then connected as input in the subsequent gas blender, while the other two inputs receive the diluting gas, and so on up to the desired dilution. In this way an high dilutions factor can be obtained. All the devices must be connected through the RS485 (*) and can be controlled through a single PC software.

*(*) Function for future use. At the moment not active.*

| | | |
|---|---|---|
| PERFORMANCE SPECIFICATION | Accuracy (For each Channel) | N2, 20°C, 101.325 kPa (1 atm)<br>Range 0-20 sccm - 1% of FS<br>Range 20-200 sccm - 1% of Set Point<br>Range 20-500 sccm - 1% of Set Point |
| | Repeatability | 0,16% of reading |
| | Response Time for change of SetPoint (For each Channel) | 50 ms |
| | Power Supply | 16 - 36 V DC - min 1,5A |
| | Operation Pressure | Max 25 psi |
| | Working Temperature | 0 - 50° C |
| MASS FLOW CONFIGURATION | Materials Valve | Steel/Brass, Viton |
| | Materials Tubes | Viton/Tygon/Polyurethane |
| OPERATING SPECIFICATION | Mass Flow Rates | 5 sccm – 200 sccm (standard)<br>FS: 5 sccm - 500 sccm (on request) |
| | Gases | All non-aggressive gases |
| | Input channel | USB PC interface<br>485 BUS with open proprietary protocol<br>*Function for future use. At the moment not active.* |
| | Output Channel | 0 - 5 V, Max 80 mA |
| | Output Signals | Digital: BUS RS 485 with open proprietary protocol<br>*Function for future use. At the moment not active.* |
| | Fittings | Push-in fittings for 6 mm O.D. Tubes |
| | Inlet Gas Channel | 3 Input |
| | Outlet Gas Channel | 1 Output of Mixed Gas |
| Interface | User Interface | Software interface<br>1 LED signal interface |

## *3D Views:*

Inside Gas Blender:







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