Instruction manual GMS_2CH_HP Gas mixer

Intended use

Before operation this instruction manual has to be read. During installation, operation, maintenance and shut-off this instruction manual has to be observed.

The GMS_2CH is designed for use of the following gases :

- Air
- Nitrogen
- Oxygen
- Carbon Dioxide
- other non-corrosive gases

All used gases must be free of particles.
If necessary a particulate filer has to be installed at the gas inlets.

When the GMS_2CH is operated with toxic, ignitable, combustible or explosive substances all safety instruction for these substances have to be observed carefully.
In the event of an accident :

1. turn OFF the power switch.
2. turn OFF all power switches of peripheral units.
3. close all main valves of connected gases.
4. unplug the power cable.




When the GMS_2CH is operated with substances, not listed above, the materials compatibility has to be checked for all sample wetted components.

QCAL Messtechnik GmbH
Guardinistr. 143
81375 München
GERMANY
Email : info@qcal.de
www.qcal.de

Important notice :
For gases the standard volume relates to 0 °C and 1013.25 hPa.
Abbreviations and symbols :

MFC = thermal massflow controller for gases

 WARNING - important notice

information

Technical Data

Mains power :	88 ~ 264 V AC, 47 ~ 63 Hz
Current consumption :	max. 3.15 A, fused (5 x 20 mm)
Ambient conditions :	15 ° C to 40°C, 0 to 95% rH
Gas inlet conditions :	particle-free gases, max. inlet pressure : 8 bar(g)
Dimensions :	250 x 250 x 128 mm
Weight :	3 kg

Installation

Driver installation for USB - RS485 converter - connection to PC

For WINDOWS 64bit operating systems the driver is installed automatically from the setup program.
In all other cases : before connection of GMS_2CH with the PC read the instructions manual from the directory /driver. Connect the USB cable and install the driver according to the WINDOWS operating system.

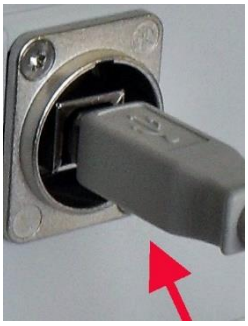


Fig.1: USB connection GMS_2CH - PC

After connection GMS_2CH to PC a new COM (serial) port will be installed. This COM - port number - shown in the WINDOWS device manager - has to be registered in the GMS_2CH software.

Software – Installation

The GMS_2CH software has to be installed by executing setup.exe from the /setup directory.

For operation MS EXCEL® 2016 must be installed on the computer.

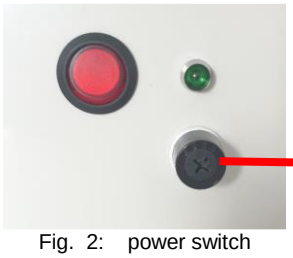
If the error message : ***RegSvr32 – Error loading the module 'files'*** is displayed, it can be ignored.

Installation of GMS_2CH (hardware)

1. Electrical connection

Connect the mains plug to mains voltage : 88 ~ 264 V AC, 47 ~ 63 Hz.

The GMS_2CH is switched ON / OFF by the red mains switch.



Fuse : 3.15 A
For exchange : **Unplug the mains plug !**

Fig. 2: power switch

A green LED indicates the correct power supply voltage (24V DC).

2. Gas connections

For SWAGELOK fittings : For assembly of tube fittings the Swagelok instructions manual has to be observed.

For installation of tubings the bulkhead union has to be fixed according to Fig.3 with a suitable wrench.

Fig. 3: fixing

Maximum inlet pressure : 10 bar(g)

Maximum outlet pressure : 8 bar(g).

When the operation is finished : close all valves at the gas containers !

Startup operations

1. Switch GMS_2CH *ON* - red mains switch. A LED indicates correct power connection.
2. Connect the GMS_2CH to the PC : USB 2.0 or 3.0 port.
3. Start the GMS_2CH software.

Decommission

If the GMS_2CH is not operated for a long time the valves on the gas cylinders must be closed.

Maintenance

The enclosure can be cleaned with a mild detergent.

Avoid any moisture or particles inside the gas tubings - that can lead to serious damage of the MFCs.

Calibration

The (re)calibration can be performed by the user. A reliable reference device is necessary for every gas type.

The calibration data are stored in the MS EXCEL file GMS_2CH.xlsx. For each MFC and for each gas exists a worksheet, that can be edited by the user.

Only the yellow fields are editable – the others are locked. They contain the measurement data from each MFC and the corresponding reference data :
Flow_ref/Ncm³/Minute : gas flow of the reference instrument / reference method
Flow_GMS/Ncm³/Minute : gas flow from the GMS_2CH.
32 calibration points for each gas are required.

All data from the MFCs refer to 0°C and 1013,25 hPa, so the reference data must also refer to these conditions.

File Edit View Insert Format Move or Copy Sheet... Paste Special... Tools Data Save As... Window Hel

100% Arial 8

B2 = ascending values !

	A	B	C	D	E	F	G
1		GAS :	air		Flow = slope_i x Flow_GMS + zero_i		
2		*ascending values !*					
3		Flow_ref/Ncm³/Minute	Flow_GMS/Ncm³/Minute	slope	zero		reference
4	1	0,000	0,000	1	0	1	Zirox
5	2	0,200	0,200	1	0	2	Zirox
6	3	0,400	0,400	1	0	3	Zirox
7	4	0,600	0,600	1	0	4	Zirox

Fig.4 : Calibration data GMS_2CH

When the GMS_2CH is started again the program will automatically read the new calibration data.

Issue : February 2024

QCAL Messtechnik GmbH
Guardinistr. 143
81375 München
Germany

Phone : ++49 (0)89 84060347
email : info@qcal.de

EU Declaration of Conformity

We

QCAL Messtechnik GmbH
Guardinistr. 143
D-81375 München
GERMANY
Phone : ++49 (0) 89 84060347
Fax : ++49 (0) 89 999 64416
eMail : info@qcal.de
http://www.qcal.de/

declare under our sole responsibility that the following products :

Equipment: Gas mixing units
Model/type: GMS_2CH_HP , GMS_3CH_HP, GMS_4CH_HP

are in conformity with the following harmonised standards

Machinery Directive 2006/42 / EG

Electromagnetic compatibility (EMC) legislation , Part 4-2, 4-3, 4-4, 4-5

Munich, Oct / 09 / 2020

QCAL Messtechnik GmbH

Dr. Frank Monshausen, Managing Director