

Operation Instruction

MEAC GHG

PC Software for Greenhouse Gas Emission Reports

Described product

Product name: MEAC GHG

Manufacturer

Endress+Hauser SICK GmbH+Co. KG
Bergener Ring 27
01458 Ottendorf-Okrilla
Germany

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Original document

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Glossary

Installation	Here: Industrial system with gaseous emissions subject to the laws on emission measurement.
Ethernet	Cable-based network technology for data networks. Basis for network protocols (e.g. TCP/IP).
Flag	<i>Here:</i> Coded identification of a value
IP	Internet Protocol (standard for computer addressing in data networks)
MEAC	Product series of emission data evaluation systems from Endress+Hauser
MySQL	Software for database management used worldwide
PC	Personal Computer (any make)
PDF	Portable Document Format (platform-independent file format for finished documents).

Information Symbols



Important technical information for this product



Nice to know



Supplementary information



Link referring to information at another place

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MEAC GHG

1 Important Information

About this document
Intended use
Additional information

1.1 About this document

These Operating Instructions describe the product characteristics and usage of the MEAC GHG software with normal access rights (→ p. 11, §2.4).



These Operating Instructions presume that skilled persons have installed MEAC GHG and made it ready for use, and that it is configured correctly for the planned application.



Installation and configuration → “MEAC GHG Technical Information”

1.2 Intended use

1.2.1 Planned use of the product

The MEAC GHG software only serves processing emission data generated by MEAC systems.



Further information → p. 10, §2.1

1.2.2 Product identification

Product name:	MEAC GHG
Product version:	See information in program → p. 18, §3.3.2)
Manufacturer:	Endress+Hauser SICK GmbH+Co. KG Bergener Ring 27 · 01458 Ottendorf-Okrilla · Germany

1.3 Responsibility of user

Correct use

- ▶ Only use MEAC GHG when the configuration matches the planned application (see also → p. 7, „Individual information“).
- ▶ *If it is not sure whether MEAC GHG corresponds to the state defined during project planning or to the system documentation delivered with the product: Contact Endress+Hauser Customer Service.*
- ▶ The MEAC GHG should only be used as described in these Operating Instructions. The manufacturer bears no responsibility for any other use.

Retention of documents

- ▶ Keep these Operating Instructions and all associated documents available for reference.
- ▶ Convey the documents to a new owner.

1.4

Additional information**MEAC GHG Technical Information**

The “MEAC GHG Technical Information” describes system prerequisites, installation and configuration.

Individual information

The delivery state is described in the documents provided when the MEAC GHG has been adapted individually by the manufacturer.

- *When individual information has been provided:* Observe the individual documents provided in addition to these Operating Instructions.



- Pay primary attention to any individual information provided.

MEAC GHG

2 Product Description

Purpose
Functional principles

2.1 Product purpose

2.1.1 Total emission calculation

MEAC GHG is a PC software that calculates greenhouse gas amounts from emission data. The emission data originate from MEAC systems. The lists created can serve as Emission Reports in accordance with the European Monitoring Directive^[1].



MEAC GHG calculates daily values and emission amounts differently to the software of MEAC systems. Therefore these data cannot be compared directly to each other.

2.1.2 Consideration of substitute values

If emission measurement fails or is interrupted during operation (e.g., during maintenance work), “substitute values” are calculated for “missing” measured values and then used instead of real measured values.

Substitute values are marked as such in the emission data. MEAC GHG can create Emission reports with or without substitute values as required.

2.1.3 Later calculation of substitute values

Advanced access rights (→ p. 11, §2.4) allow marking measured values at a later point in time so that a substitute value is used instead of the real measured value in Emission reports. MEAC GHG calculates the substitute values automatically based on all available measured values for the current year.

2.1.4 Using reprocessed data of the MEAC system

If the MEAC-PC fails, all values measured (raw values) remain stored in the data acquisition units (DAU) of a MEAC system. The data acquisition units then serve as backup system for the emission data. When the MEAC-PC is running again, the emission data can then be downloaded later and “reprocessed”.

Emission reports can be created selectively with or without such “reprocessed data”.

2.2 Main functions

- Emission reports based on daily and annual protocols from MEAC systems
- Total emission calculation (CO₂(Äq))
- Manual marking of emission data with automatic substitute value calculation
- Substitute value lists

[1] Directive (EU) No. 601/2012 of the Commission dated 21st June 2012 on monitoring and reporting greenhouse gas emissions.

2.3 Functional principle

MEAC GHG can be installed on an existing MEAC-PC or a separate PC. MEAC GHG is an independent application (EXE). A menu function is available in the MEAC program to start MEAC GHG when it is running on a MEAC-PC.

MEAC GHG uses its own database in which emission data are collected and evaluated. The MEAC systems must be configured so that the emission data involved (data model and grid values) are written automatically to this database. Separate MEAC systems are connected via Ethernet (LAN).

Emission reports can be generated per mouse click and can be stored in various data formats (→ p. 17).

2.4 Access rights

MEAC GHG has graded access rights.

- *Normal access rights:* Include the program functions to create Emission reports covering a certain time period.
- *Advanced access rights:* Allow configuring the program functions and “manual correction” of emission data.



- These Operating Instructions only describe program functions with normal access rights.
- Program functions with advanced access rights (→ p. 14, Fig. 2) are only available when MEAC GHG has been started with these access rights. The separate “MEAC GHG Technical Information” document contains this information.

MEAC GHG

3 Operation

Starting/stopping the program
Creating Emission reports
Help functions

3.1 Starting the program

3.1.1 Starting MEAC GHG

Normal start

- Doubleclick the icon for MEAC GHG on the Windows Desktop.

Start in the MEAC software

Only applicable when MEAC GHG is installed on a MEAC-PC.

- In the MEAC program: Select the menu function to start MEAC GHG.

3.1.2 Access rights recognition

Fig. 1 Program functions with normal access rights

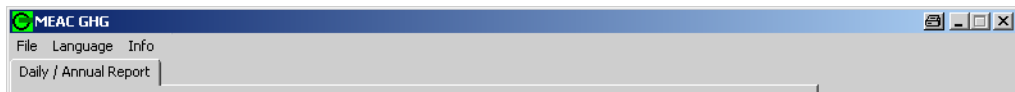


Fig. 2 Program functions with advanced access rights



- These Operating Instructions only describe program function with normal access rights (→ Fig. 1).
- Program functions with advanced access rights (→ Fig. 2) are only available when MEAC GHG has been started with these access rights. The separate “MEAC GHG Technical Information” document contains this information.

3.1.3 Status information

Status information is shown at the bottom of the program window:

Fig. 3 Status information



Pos.	Significance
1	IP address of the PC on which the database used by MEAC GHG is installed.
2	File name of this database.

3.1.4 Stopping MEAC GHG

- Select the function to stop (→ Fig. 4).

Fig. 4 Program end



3.2

Creating an Emission report**Functions**

- Create an Emission report for a certain period of time.
- Create a list of substitute values for a certain period of time.

The period of time can be set within one calendar year in both cases.

Fig. 5

Program section for Emission reports

Pos.	Function
1	Source selection
2	Create an Emission report on daily basis ^[1]
3	Create an Emission report on annual basis ^[2]
4	Create substitute value lists
5	First day in Emission report/list
6	Last day in Emission report/list
7	Create report
8	Option for using backup data (→ p. 10, §2.1.4)

[1] List of hourly values with all hourly values for one day on one page.

[2] List of daily values with all daily values for one month on one page.

Procedure

- 1 Select the program section for Emission reports (→ p. 15, Fig. 5).
- 2 Select the source for which the Emission report is to be created.
- 3 Set the first and last day for the period of time to be covered by the report.



The first and last day must both be within the same calendar year. If this is not the case, the last day is set automatically to the last calendar day (31.12.) of the year of the first day.

- 4 *When the emission data of the MEAC system contain reprocessed data:*^[1] Select whether the reprocessed data should be used in the Emission report (→ Table 1).

Table 1

Option for reprocessed data

Option	Effect
Activated	The protocol pages contain the note "The protocol contains reprocessed data".
Not activated	A substitute value is calculated automatically for each "missing" measured value and entered in the protocol.

- 5 Click a button (→ Table 2).

Table 2

Alternatives for Emission report from daily protocols

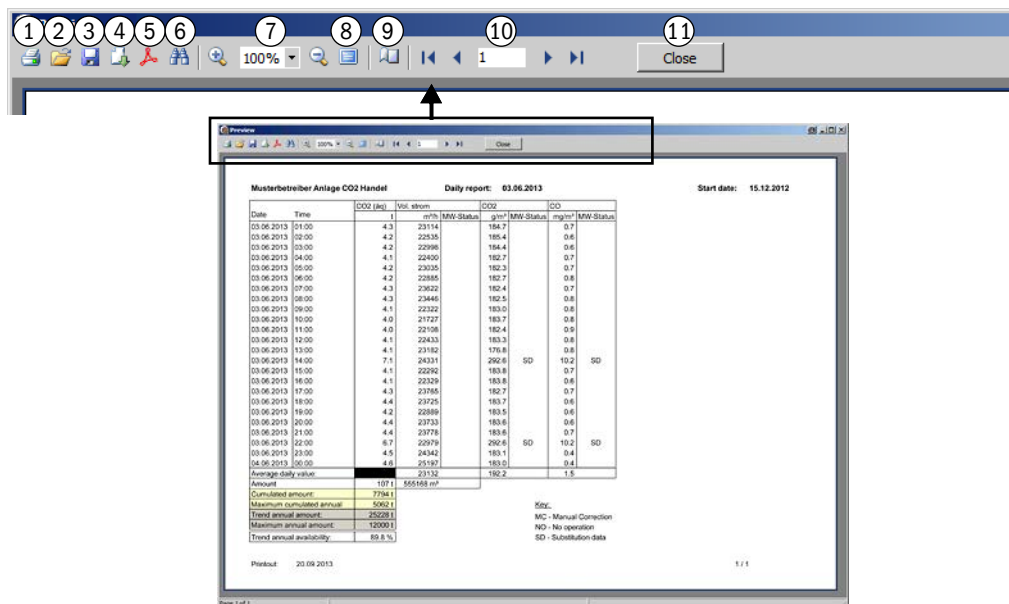
Button	Function
First button:	Create a daily report with substitute values in accordance with the Monitoring Directive. ^[1]
Second button:	Create a daily report without substitute values, including original flags. ^[1]

[1] Key to symbols → p. 20, § 4.2.1; example → p. 21, § 4.2.2.

- 6 Wait until the report is displayed (→ p. 17, Fig. 6).
- 7 *As required:* Print, export or convert (as PDF) the displayed Emission report (→ Legend for Fig. 6).
- 8 Exit the display

[1] See the configuration of the MEAC system involved.

Fig. 6 Functions for creating Emission reports



Pos.	Function
1	Print
2	Open
3	Save
4	Export (PDF, Excel)
5	Save as PDF file
6	Search
7	Select view size / zoom
8	View as full screen
9	Set page size
10	Select page/scroll
11	Terminate function



- Emission report examples → p. 20, §4.2.
- The contents of Emission reports can be specified at the advanced user level (→ “MEAC GHG” Technical Information”).
- Emission values are rounded up to one decimal place.
- MEAC GHG calculates daily values and emission amounts differently to the software of MEAC systems. Therefore these data cannot be compared directly to each other.

3.3 Help functions

3.3.1 Selecting the language

Function

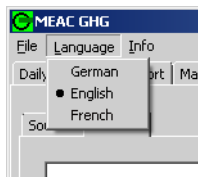
Menu texts can be displayed in different languages. Available languages are shown in the menu.

Procedure

- Select the desired language in the selection menu (→ Fig. 7).

Fig. 7

Language selection



Menu texts can be modified or translated with a separate Editor program (→ "MEAC GHG Technical Information").

3.3.2 Displaying information

Function

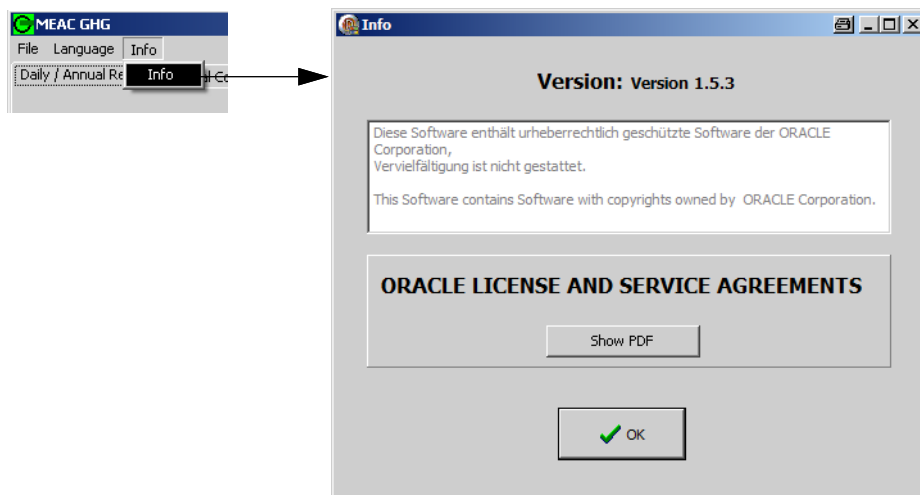
- Display the MEAC GHG program version.
- Display the MySQL Oracle license information.

Procedure

- 1 Call up the program information (→ Fig. 8).
- 2 To view the license information for MySQL: Click the top button.
 >>> The PDF display program starts and shows the license information.
- 3 To terminate the function: Click the bottom button.

Fig. 8

Product information (example)



MEAC GHG

4 Annex

Compliance
Approval
Emission report examples

4.1 Compliances and approvals

4.1.1 Directives and regulations

MEAC GHG complies with the following EC guidelines and EN standards.

- Guideline 2003/87/EG (System for trading with greenhouse gas emission certificates)
- Directive (EU) No. 601/2012 (Monitoring Directive, MVO)

4.1.2 TÜV test

TÜV Rheinland AG 2013-09-03



The Test report can be requested from the manufacturer.

4.2 Emission report format

4.2.1 Identification (flags) in Emission reports

Flags for original data

Identification of emission value	Significance	
<i>Without</i>		Valid value
ID	Invalid Data	Invalid value [1]
ND	No Data	No value [1]
NO	No Operation	Installation not in operation

[1] Only for daily reports without substitute values.

Flags for GHG data

Identification of emission value	Significance	
<i>Without</i>		Valid value
MC	Manual Correction	Manual correction (substitute value) [1]
NO	No Operation	Installation not in operation
SD	Substitution Data	Substitute value [2]

[1] Replacement of measured value from the original data with calculated substitute value (adjustable with advanced access rights, see "MEAC GHG Technical Information").

[2] "ID" or "ND" value from original data.

4.2.2 Emission report contents (examples)

Fig. 9 Daily report with substitute values (example)

Musterbetreiber Anlage CO2 Handel				Daily report: 03.06.2013				Start date: 15.12.2012	
Date	Time	CO2 (äq) t	Vol. strom m³/h	MW-Status	CO2 g/m³	MW-Status	CO mg/m³	MW-Status	
03.06.2013	01:00	4.3	23114		184.7		0.7		
03.06.2013	02:00	4.2	22535		185.4		0.6		
03.06.2013	03:00	4.2	22998		184.4		0.6		
03.06.2013	04:00	4.1	22400		182.7		0.7		
03.06.2013	05:00	4.2	23035		182.3		0.7		
03.06.2013	06:00	4.2	22885		182.7		0.8		
03.06.2013	07:00	4.3	23622		182.4		0.7		
03.06.2013	08:00	4.3	23446		182.5		0.8		
03.06.2013	09:00	4.1	22322		183.0		0.8		
03.06.2013	10:00	4.0	21727		183.7		0.8		
03.06.2013	11:00	4.0	22108		182.4		0.9		
03.06.2013	12:00	4.1	22433		183.3		0.8		
03.06.2013	13:00	4.1	23182		176.8		0.8		
03.06.2013	14:00	7.1	24331		292.6	SD	10.2	SD	
03.06.2013	15:00	4.1	22292		183.8		0.7		
03.06.2013	16:00	4.1	22329		183.8		0.6		
03.06.2013	17:00	4.3	23765		182.7		0.7		
03.06.2013	18:00	4.4	23725		183.7		0.6		
03.06.2013	19:00	4.2	22889		183.5		0.6		
03.06.2013	20:00	4.4	23733		183.6		0.6		
03.06.2013	21:00	4.4	23778		183.6		0.7		
03.06.2013	22:00	6.7	22979		292.6	SD	10.2	SD	
03.06.2013	23:00	4.5	24342		183.1		0.4		
04.06.2013	00:00	4.6	25197		183.0		0.4		
Average daily value:			23132		192.2		1.5		
Amount		107 t	555168 m³						
Cumulated amount:		7794 t							
Maximum cumulated annual		5062 t							
Trend annual amount:		25228 t							
Maximum annual amount:		12000 t							
Trend annual availability:		89.8 %							

Key:
MC - Manual Correction
NO - No operation
SD - Substitution data

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Pos.	Significance
1	Amount
2	Cumulated amount
3	Maximum cumulated annual
4	Trend annual amount
5	Maximum annual amount

[1] Extrapolation from the cumulated emission amounts.

[2] See "MEAC GHG Technical Information".

Fig. 10 Daily report without substitute values (example)

Musterbetreiber Anlage		Daily report original:		03.06.2013		Start date:		15.12.2012	
Date	Time	CO2 (aq)	Vol.strom	CO2		CO			
		t	m³/h	MW	Status	g/m³	MW-Status	mg/m³	MW-Status
03.06.2013	01:00	4.3	23114			184.7		0.7	
03.06.2013	02:00	4.2	22535			185.4		0.6	
03.06.2013	03:00	4.2	22998			184.4		0.6	
03.06.2013	04:00	4.1	22400			182.7		0.7	
03.06.2013	05:00	4.2	23035			182.3		0.7	
03.06.2013	06:00	4.2	22885			182.7		0.8	
03.06.2013	07:00	4.3	23622			182.4		0.7	
03.06.2013	08:00	4.3	23446			182.5		0.8	
03.06.2013	09:00	4.1	22322			183.0		0.8	
03.06.2013	10:00	4.0	21727			183.7		0.8	
03.06.2013	11:00	4.0	22108			182.4		0.9	
03.06.2013	12:00	4.1	22433			183.3		0.8	
03.06.2013	13:00	4.1	23182			176.8		0.8	
03.06.2013	14:00	0.0	24331			0.0	ID	0.0	ID
03.06.2013	15:00	4.1	22292			183.8		0.7	
03.06.2013	16:00	4.1	22329			183.8		0.6	
03.06.2013	17:00	4.3	23765			182.7		0.7	
03.06.2013	18:00	4.4	23725			183.7		0.6	
03.06.2013	19:00	4.2	22889			183.5		0.6	
03.06.2013	20:00	4.4	23733			183.6		0.6	
03.06.2013	21:00	4.4	23778			183.6		0.7	
03.06.2013	22:00	0.0	22979			0.0	ID	0.0	ID
03.06.2013	23:00	4.5	24342			183.1		0.4	
04.06.2013	00:00	4.6	25197			183.0		0.4	

Key:
ID - Invalid data
ND - No data
NO - No operation

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Fig. 11 Annual report (example)

Musterbetreiber Anlage CO2 Handel

Start date: 15.12.2012

Annual Report: 01.01.2013 - 03.06.2013

Day	CO2 (kg)	CO2 (kg) kumuliert	Vol.strom	CO2	CO
	t	t	E3 * m³/h	g/m³	mg/m³
01.01.2013	7.2	7	1.5	195.6	0.0
02.01.2013	7.8	15	1.6	196.8	0.0
03.01.2013	8.2	23	1.7	196.1	0.0
04.01.2013	5.3	28	1.1	195.4	0.0
05.01.2013	6.6	35	1.4	200.5	0.0
06.01.2013	12.4	47	2.6	200.7	0.0
07.01.2013	10.0	57	2.1	199.2	0.0
08.01.2013	9.9	67	1.6	203.7	0.4
09.01.2013	9.8	77	2.1	197.0	0.0
10.01.2013	9.5	87	2.0	196.2	0.0
11.01.2013	13.9	101	3.0	192.5	0.0
12.01.2013	18.3	119	4.0	190.3	0.0
13.01.2013	0.8	120	0.2	190.4	0.0
14.01.2013	4.2	124	0.9	189.9	0.0
15.01.2013	9.3	133	2.0	191.8	0.0
16.01.2013	3.7	137	0.8	193.5	0.0
17.01.2013	1.9	139	0.4	207.9	0.0
18.01.2013	5.0	144	0.9	230.9	0.4
19.01.2013	11.1	155	2.0	230.3	1.7
20.01.2013	6.9	162	1.3	221.9	0.0
21.01.2013	4.9	167	0.9	219.0	0.0
22.01.2013	1.8	168	0.3	219.3	0.0
23.01.2013	2.5	171	0.5	218.6	0.0
24.01.2013	3.7	175	0.7	212.7	0.0
25.01.2013	57.8	232	8.4	246.2	3.0
26.01.2013	4.7	237	1.8	204.5	7.5
27.01.2013	9.9	247	1.6	254.1	0.0
28.01.2013	8.5	256	1.4	253.1	0.0
29.01.2013	5.2	261	0.9	239.7	0.9
30.01.2013	13.5	274	2.2	253.9	0.0
31.01.2013	8.7	283	1.4	255.4	0.0

...

Musterbetreiber Anlage CO2 Handel

Start date: 15.12.2012

Annual Report: 01.01.2013 - 03.06.2013

Day	CO2 (kg)	CO2 (kg) kumuliert	Vol.strom	CO2	CO
	t	t	E3 * m³/h	g/m³	mg/m³
01.06.2013	96.5	7589	21.2	190.2	1.4
02.06.2013	98.1	7687	21.9	186.6	0.8
03.06.2013	106.8	7794	23.1	192.2	1.5
Average:			10.7	187.5	1.0
Amount:	7794		1653.5		
Availability:	89.8				

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Musterbetreiber Anlage CO2 Handel

Start date: 15.12.2012

Annual Report: 01.01.2013 - 03.06.2013

Day	CO2 (lit)	CO2 (lit) kumuliert	Vol.strom	CO2	CO
	t	t	E3 * m³/h	g/m³	mg/m³
01.06.2013	96.5	7589	21.2	190.2	1.4
02.06.2013	98.1	7687	21.9	186.6	0.8
03.06.2013	106.8	7794	23.1	192.2	1.5
Average:			10.7	187.5	1.0
Amount:	7794		1653.5		
Availability:	89.8				

...

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Fig. 12 Substitute value list (example)

Musterbetreiber Anlage		Substitute Values				03.06.2013 - 03.06.2013			
Date	Time	CO ₂ (aq)	Vol.strom	MW_Status	CO ₂	MW-Status	CO	MW-Status	
		t	m ³ /h		g/m ³		mg/m ³		
03.06.2013	14:00	7.1	24331		292.6	SD	10.2	SD	
03.06.2013	22:00	6.7	22979		292.6	SD	10.2	SD	

Key:
 ID - Invalid data
 ND - No data

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