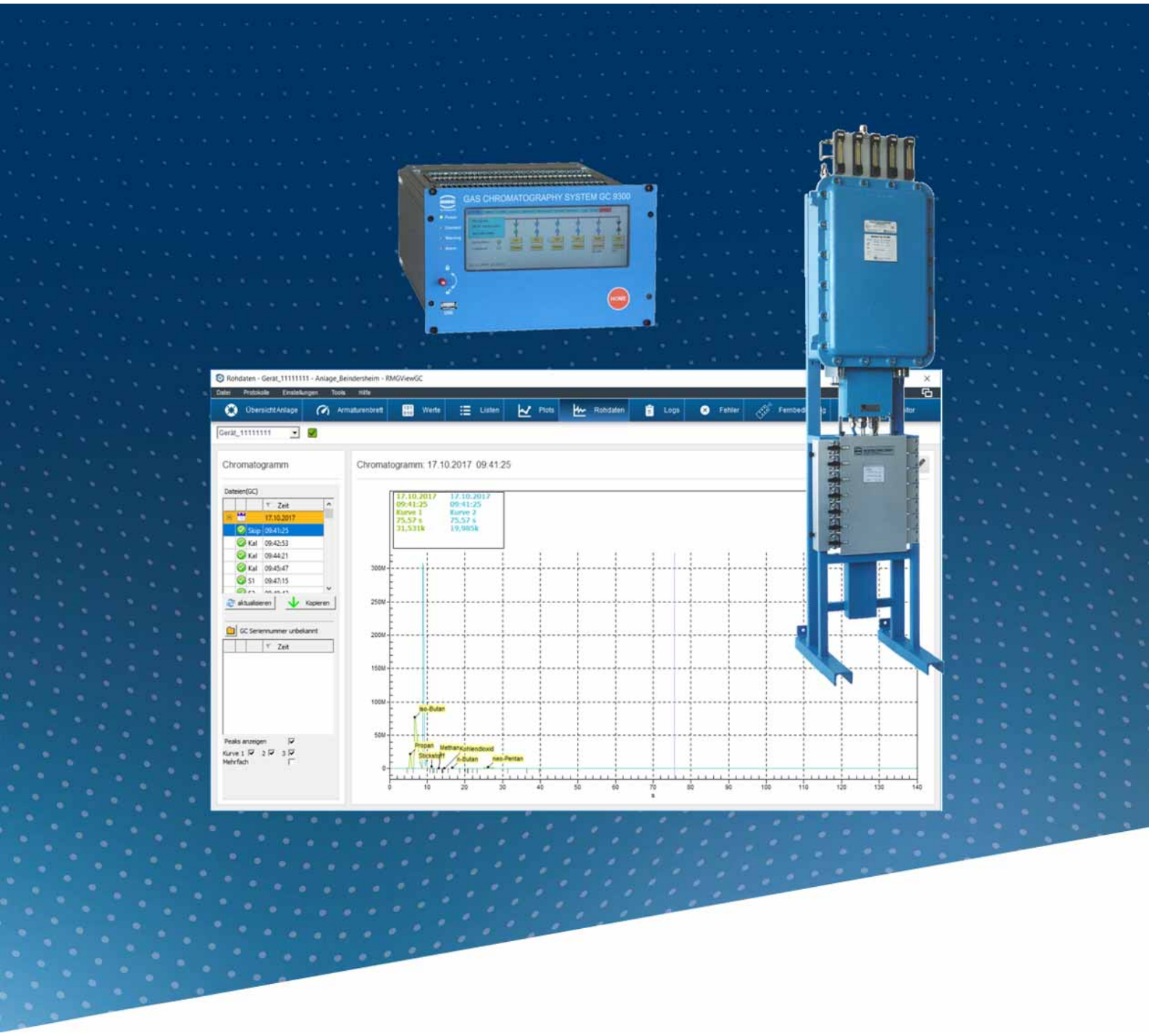
# RMGView$^{GC}$




## OPERATING INSTRUCTION

Reliable Measurement of Gas

Read the instructions before starting work!

**Manufacturer**

Contact our customer service department for technical information:


| | |
|---|---|
| **Address** | RMG Messtechnik GmbH<br>Otto-Hahn-Str. 5<br>D-35510 Butzbach |
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**Original Document**

The RMGView$^{GC}$ operation instruction for the GC-Controller for the gas chromatograph PGC9300 from June, 26$^{th}$ 2018 is a translation of the original German manual. Anyhow, this document may serve as reference for translations into other languages.

**Remark**

Please use in case of any uncertainties the German version as main reference.

**Note**

Unfortunately, paper is not updated automatically, whereas technical development continuously advances. Therefore, we reserve the right to make technical changes in regard to the representations and specifications of these operating instructions. The latest version of this manual (and the one of other devices) can be downloaded at your convenience from our Internet page:

www.rmg.com

| | |
|---|---|
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| | |

**Document version and language**

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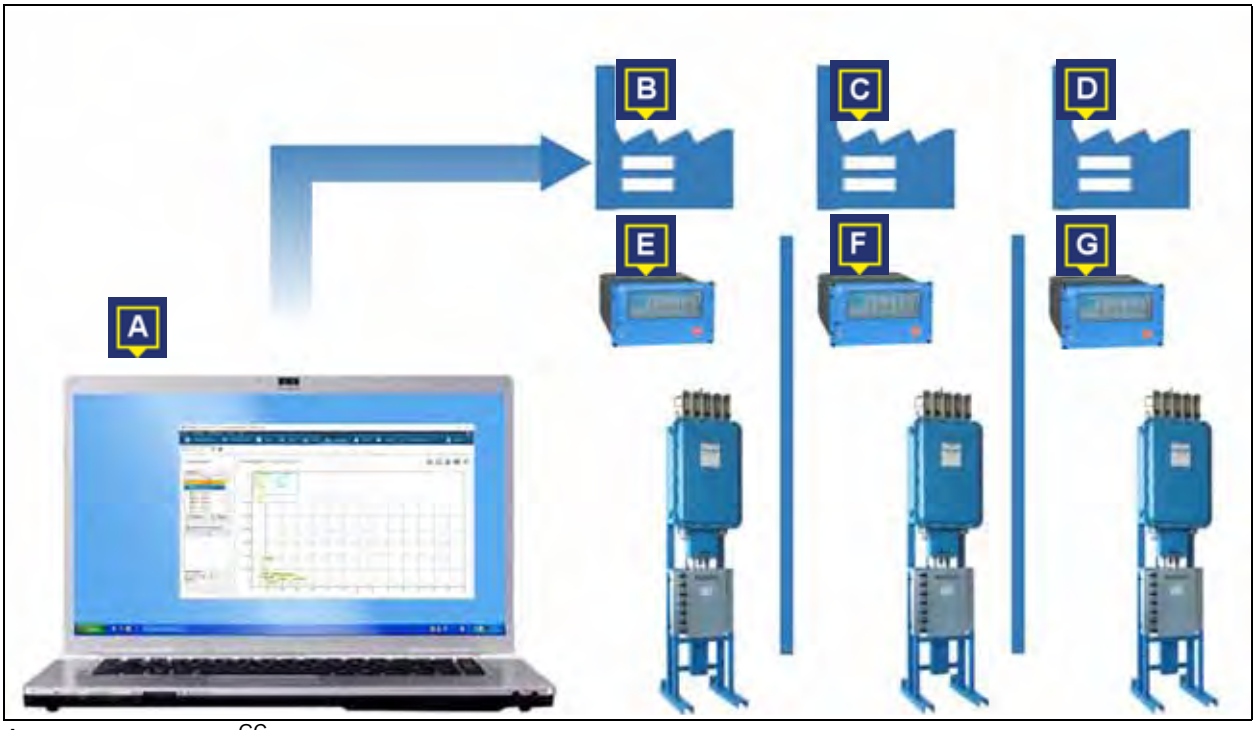
|---|---|
| **Document version** | RMGView$^{GC}$ – 2018 / 06 / 26 |
| **Language** | EN |

# 1 Introduction

In this chapter you will receive general information on the manual and on the device.

**Contents**

# 1.1 Motivation for the software




A PC with RMGView$^{GC}$
B Site 1
C Site 2
D Site 3
E PGC9300 + GC controller for site 1
F PGC9300 + GC controller for site 2
G PGC9300 + GC controller for site 3

*Fig. 1-1: Application example*

You can manage several sites with the RMGView$^{GC}$ software. For every site you can include **one** GC controller with a PGC9300. Using these Modbus addresses, data can be read from the device and data can be transmitted from the PC **(A)** to the device.

The example shows how three sites **(B, C, D)** can be managed with the RMGView$^{GC}$ software. For every site, Modbus addresses **(E, F, G)** are set up using RMGView$^{GC}$ to enable a connection to the devices.

With RMGView$^{GC}$ you can:

- set up and manage several sites.
- assign one device (GC) at a site and manage it.
- read out the actual measured values (actual values) in real time.
- display values in table form, as diagrams, as graphics or in individual fields.
- request predefined lists that read out and show certain parameters from the device.
- request predefined plots that display the parameters in a diagram.
- create user defined lists and output them as reports.
- create user defined plots that display the parameters in a diagram.
- RMGView$^{GC}$ automatically recognizes the firmware of the attached device. Only those parameters that are functional with the attached device are displayed.
- parameterize the attached device.
- create test reports.

# 1.2 About this manual

In this chapter you will receive information regarding the organization and objective of the manual and the knowledge prerequisites needed by the reader.

## 1.2.1 Trademarks

All the hardware and software names used in the manual may also be registered trademarks of third parties or under other brand protection. In this respect, the trade mark rights of third parties are to be respected.

## 1.2.2 Objective of the manual

The manual provides you with the information that is needed for trouble-free and safe operation.

The software is state of the art and conceived and programmed according to the recognized safety standards and guidelines.

However, hazardous situations may arise as a result of their use.

Possible hazards for:

- functions of the connected devices

For this reason, you may only operate the software as intended and in technically defect-free condition.

## 1.2.3 Prerequisite knowledge required

The manual assumes that the users are familiar with Microsoft Windows operating system and the operating elements, e.g. drop-down menus, buttons etc. MS Windows typical screens e.g. **Save As...** and their operating elements are not described in this manual.

## 1.2.4 Structure of information screens

The following information screens are used in the manual.

**Notice**

This warning screen informs you of potentially hazardous situations that can occur as a result of incorrect operation or human error. If these situations are not avoided, they can result in material damage to the machine or in the vicinity.

This information gives you tips on how to simplify your work. With this screen, you additionally receive further information on the product or the work process.

## 1.2.5 Abbreviations used

In this chapter of the manual, the abbreviations used are explained.

| | |
|---|---|
| **ca.** | circa, approximately |
| **as app.** | as applicable |
| **max.** | maximum |
| **min.** | minimum |
| **e.g.** | For example |
| **GC controller** | electronic evaluation device (controller) of the gas chromatograph PGC9300 from RMG<br>Instead of GC controller you may also find only GC as an abbreviation. |

## 1.2.6 Symbols used

The following symbols are used:

| | |
|---|---|
| **1, 2, ...** | Steps within a work operation. |
|  | Marks steps in an illustration that are described in the text. |
| **(A)** | Reference to a component (element) marked with a letter in an illustration. |
|  | Marks elements in an illustration. The arrow points to the element being described. |
| ⇨ | Cross reference to another part in this manual or in another document. |
| **Print Screen** | Switches, regulators, slides, buttons and other terms from the software are marked by bold text. |

## 1.2.7 Validity

This manual describes the software RMGView$^{GC}$.

The softwareRMGView$^{GC}$ is only a part of a complete site system. Please also observe the manuals of the other components of the site in order to guarantee safe operation.

# 2 Installation

In this chapter you will be given information on the system requirements for the PC, on the software installation and on making a connection to the device.

**Contents**

## 2.1 System requirements

The PC must fulfill following specification:

- Operating system Microsoft Windows 7 (32 Bit and 64 Bit) and Windows 2010 (64 Bit)
- Min. screen resolution of 1024 × 768 pixel
- Communication takes place via "Modbus over IP". The connection via a crossover cable. When using a switch, the connection is made via a "normal" patch cable.

## 2.2 Files delivered


*Fig. 2-1: Files delivered*

You will receive various files on delivery of the RMGView$^{GC}$ software. As an example the installation files and the associated rmx files in RMGView$^{GC}$ 2.0.0.1 version are shown.

# 2.3 Preparing devices for connection

During installation, information on the COM port or the IP address will be required in order to make a connection between the software and the ultrasonic electronics.

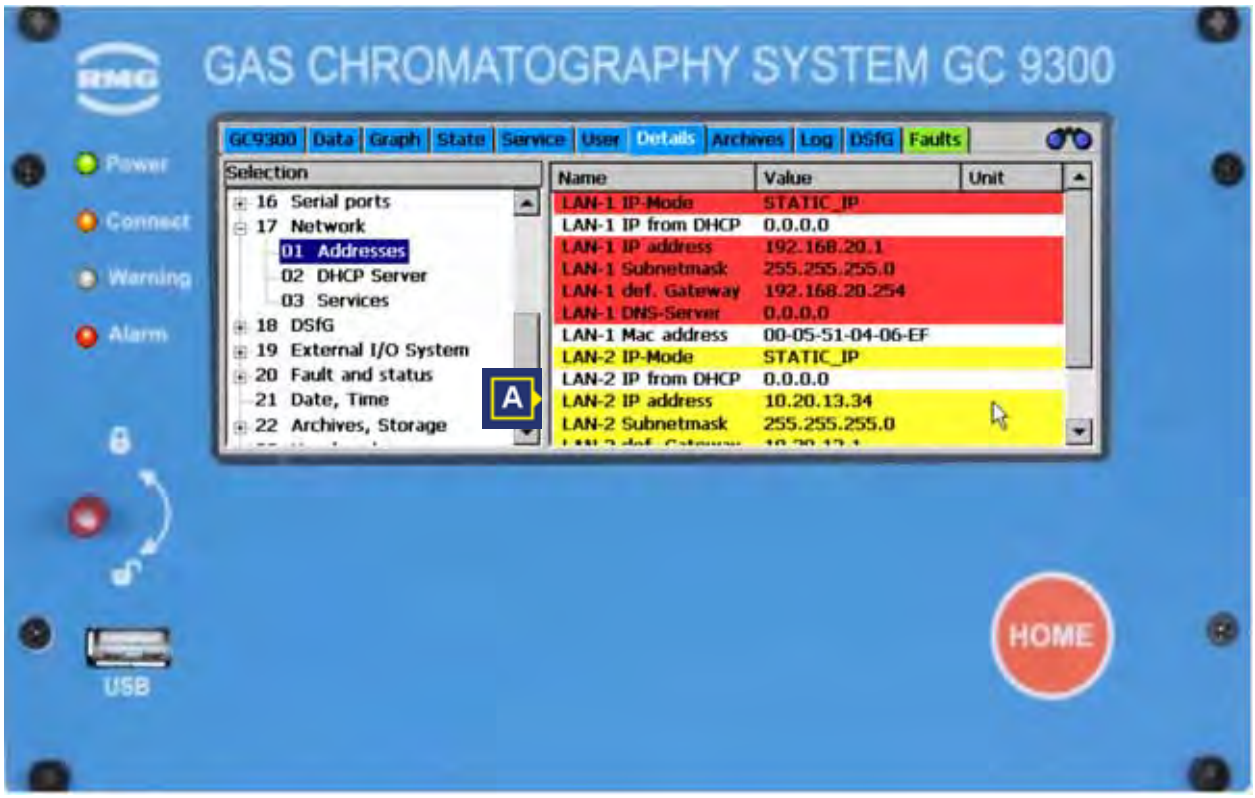

A PC B GC controller with PGC9300

*Fig. 2-2: Connection scheme*

As connection to the GC controller you may use the connestion via IP address. For this the PC is connected to the Internet.

■ **Determine connection data**

**1** The IP address of the GC controller must be determined in position tree on the controller (see next figure). The IP address can be read in position 17.01.10 LAN-2 IP address.




A To the right of A the IP address can be read, here 10.20.13.34

*Fig. 2-3: Reading the IP address on the touch screen of the GC controller*

# 2.4 Installing software

In order to install the new version of RMGView$^{GC}$ it is not necessary to uninstall the older version.

### ■ Starting installation

1 Double click here on the installation file e.g. RMGView$^{GC}$installer xxx.exe.

The window RMGView$^{GC}$ **X.X Setup** opens.


*Fig. 2-4: Agree to license contract*

You must read the license contract and agree to it in order to continue with the installation.

2 Check the box **I agree to the terms and conditions of the license contract**.

3 Click the **Install** button.

The status of the installation is illustrated by an animated time bar.

The successful installation is displayed in the RMGView$^{GC}$ **xxx Setup** window.


*Fig. 2-5: Finish installation*

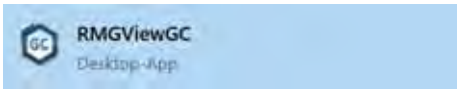
4 Click the **Finish** button.

The installation is then completed.

## ■ Connect PC

1 Connect the PC with the IP address of the device via the network.

# 2.5 Configuring the site and devices




■ **RMGView$^{GC}$** start

**1** Press the **Windows** key on the keyboard.

**2** Click menu entry **RMGView$^{GC}$**.

A start screen will be displayed.


*Fig. 2-6: Start screen*

After the starting sequence the **Select Site** screen will be displayed.

RMGView$^{GC}$ allows you to manage several sites.

You can install and monitor one GC controller at each site.

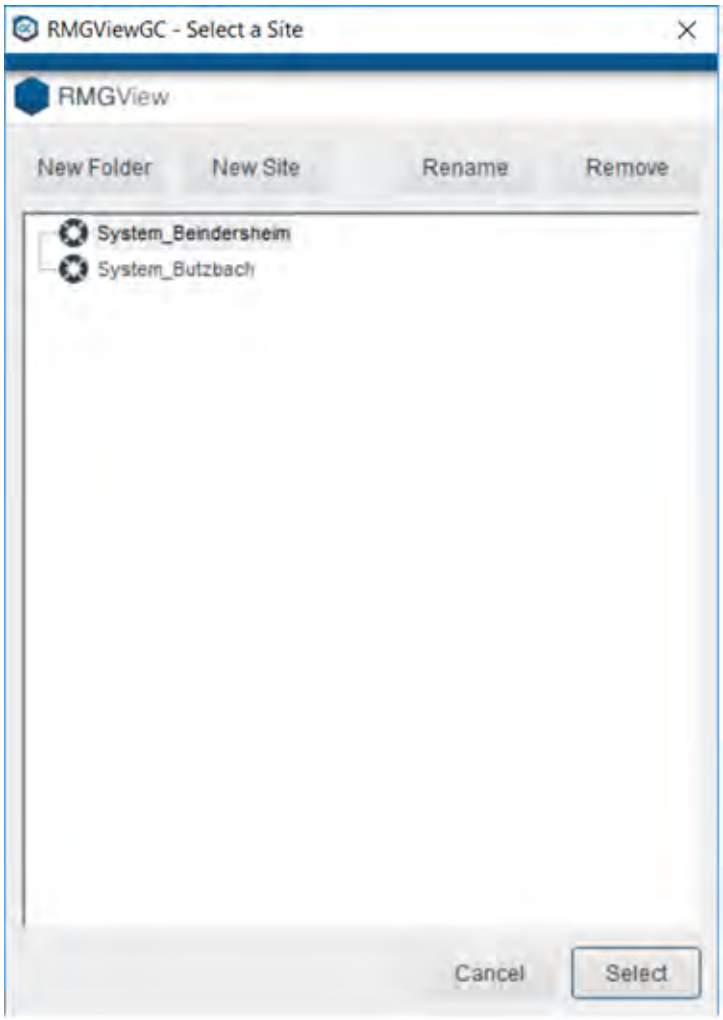



*Fig. 2-7: Select Site screen*

■ **Assigning site names**

After starting the RMGView$^{GC}$ software, a site is shown in the **Select Site** window with the title **New Site 1**.

You can give this site a random name.

**1** Click on **New Site 1** with the right mouse button.

The context menu is opened.

**2** Click on the menu entry **Rename** and assign a name.

**3** Confirm the name with the **Enter** key.

The **Select Site** window closes. The **GC Settings:** window **Modbus** opens.

Using the context menu you can start following actions:

- Menu entry **New Folder**: File sites in folders.
- Menu entry **New Site**: Create further sites.
- Menu entry **Delete Site**: Delete sites. The devices in the site are also deleted.

In this window you can create a first device and set up the connection via IP address.

■ **Setting up a GC controller**

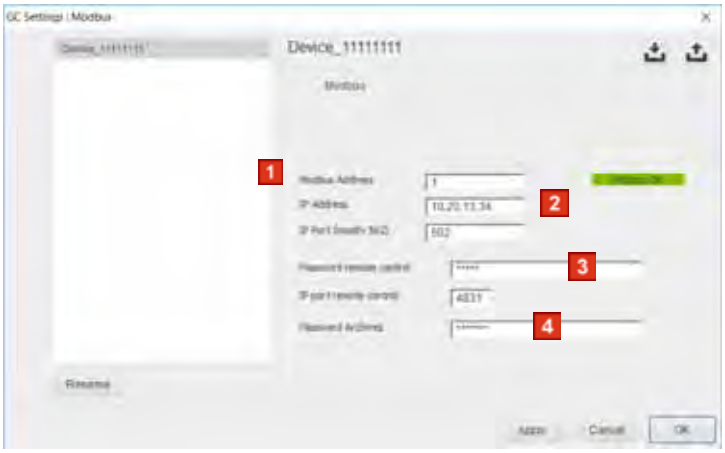



*Fig. 2-8: GC settings window: Modbus*

**1** Enter the Modbus address with which the device should operate.

**2** Enter the IP Address of the GC controller

**3** Password remote control:

**<12345>**

**4** Passwort for archives:

**<>** (password is empty)

**Finish set up**

**5** Click button **Apply**.

The **GC settings window** closes. The **Site Overview - RMGView$^{GC}$** window opens. Location and meter for the device are defined in this window.

## 2.5.1 ISet up-language and start window

■ **Activate the window for user options**

**1** Activate **Dashboard - GC** window.

⇨ *Chapter 4.1, „Site overview“ on page 47*


*Fig. 2-9: Menu entry select user settings*

**2** Click on menu **Settings** in the menu ribbon.

**3** Click on menu entry **User Settings**.

The **User Settings: User Interface** menu bar opens.

## ■ Set language

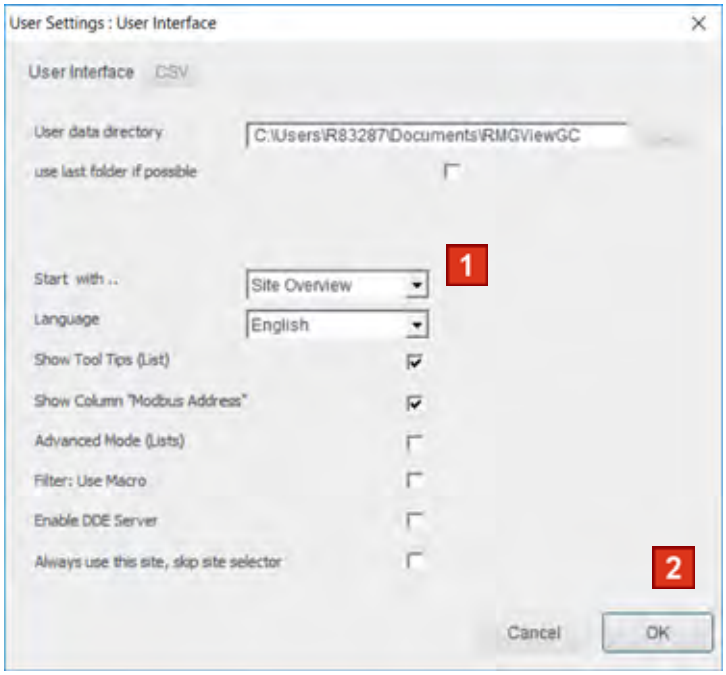



*Fig. 2-10: Set language*

1 Open drop down menu **Language** and select the appropriate entry.

2 Click **OK** button.

The settings are saved.

## ■ Setting the CSV export

This menu offers:

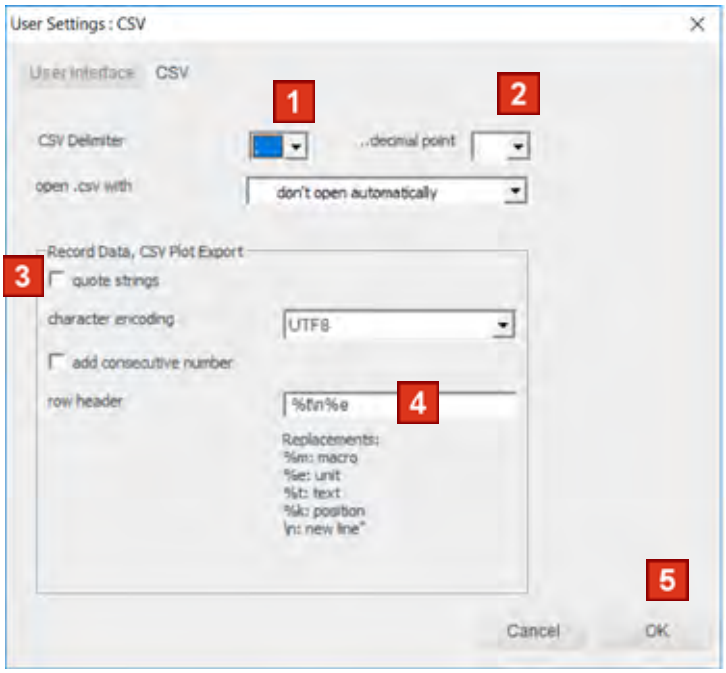



*Fig. 2-11: Setting a CSV file for export*

**1** Set the character for column separation.

**2** Separating the decimal digits with a "." (point) or a "," (comma).

**3** Display text with or without quotes.

**4** The column header can be defined here:

The marking

**%t\n%e**

means (e. g.):

Line 1 presents the text (e. g. pressure), then you have a line break and in line 2 the corresponding unit. (e. g. bar) is displayed.

**5** Press Ok to use the settings.

## ■ Set-up start screen

You can define a window as start screen that is displayed after the software is started. The windows that can be cued via the multifunction bar can be selected.

⇨ *Chapter 3.1„Operating and display elements“ on page 26*

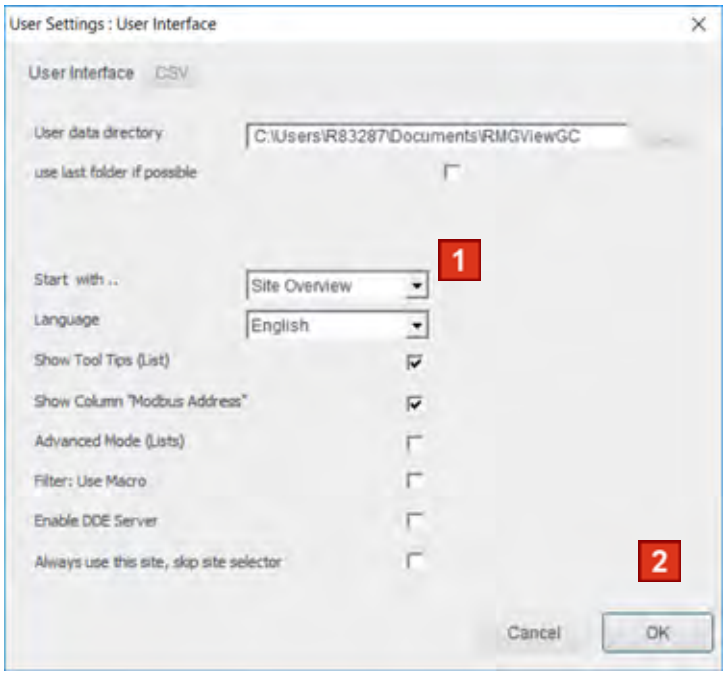



*Fig. 2-12: Set-up start screen*

1 Open drop down menu **Start with..** and select appropriate entry.

2 Click **OK** button.

The settings are saved.

## 2.5.2 Enter user data

■ **Open window for site information**

1 Activate **Dashboard - GC** window.

⇨ *Chapter 4.1, „Site overview“ on page 47*


*Fig. 2-13: Select menu entry Site Information*

2 Click on menu **Settings** in the menu bar.

3 Click menu entry **Site Information**.

The **Site information** window opens.

## ■ Enter values

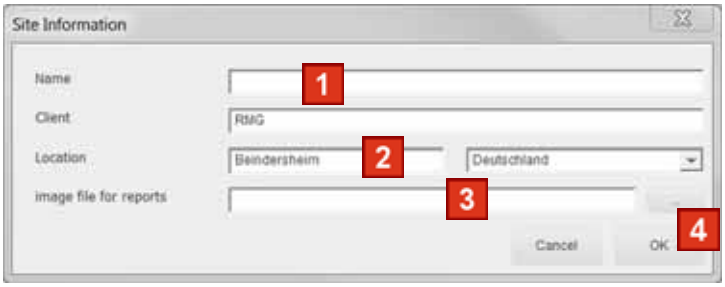



*Fig. 2-14: Select menu entry Site Information*

**1** Complete fields **Name, Client and Location**.

⇨ *Chapter 4.17, „Information on installation“ on page 69*

**2** Open drop down menu **Location** and select appropriate entry.

**3** You may chose an image that will be displayed at the protocol as a logo. Press the button "..." and choose the appropriate image in the directories.

**4** Click **OK** button.

The settings are saved.

# 2.6 Ensuring connection

In the **Site Overview** you can view the connection status for the installed Modbus addresses. Usually the connection can be made without any problems.

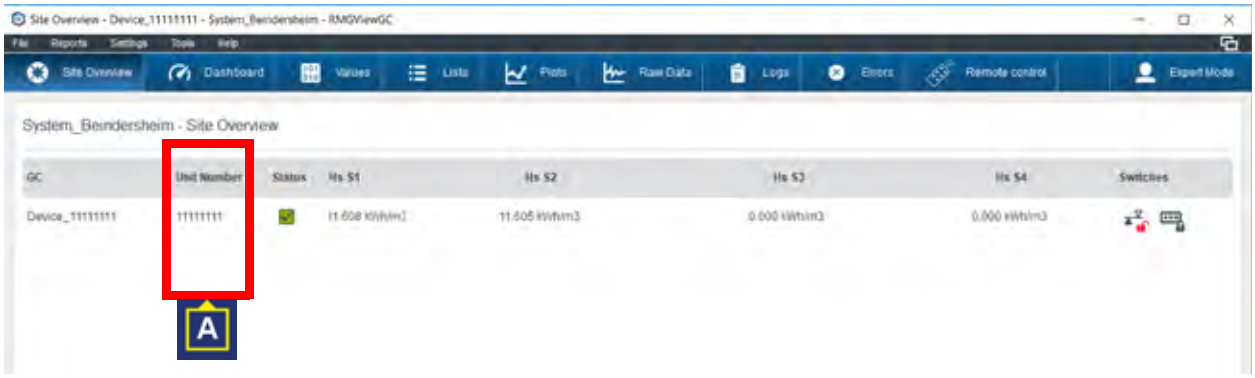



*Fig. 2-15: Overview installation window*

**For a successful connection** The connection status to the device is shown as **(A)**.

The device is operating correctly. There are no errors.

A warning exists.

An alarm is pending.

There is a disconnection between the PC and the device.

■ **Open details on connection problem**

You can find more information on the problem occurring in the **Errors** window.

⇨ *Chapter 4.8, „Errors“ on page 60*

1 Click **Errors** button.

The **Errors** window opens. The list informs you about the actions for setting up connections.

■ **Fix connection problems**

1 Check physical connections.

2 Check the Modbus address settings, if necessary, recreate Modbus address.

3 If the connection problems still exist, contact RMG service.

⇨ *„Manufacturer“ on page I*

# 3 Software overview

In this chapter you will be given detailed information regarding user interface elements as well as functions and operating capabilities of the software.

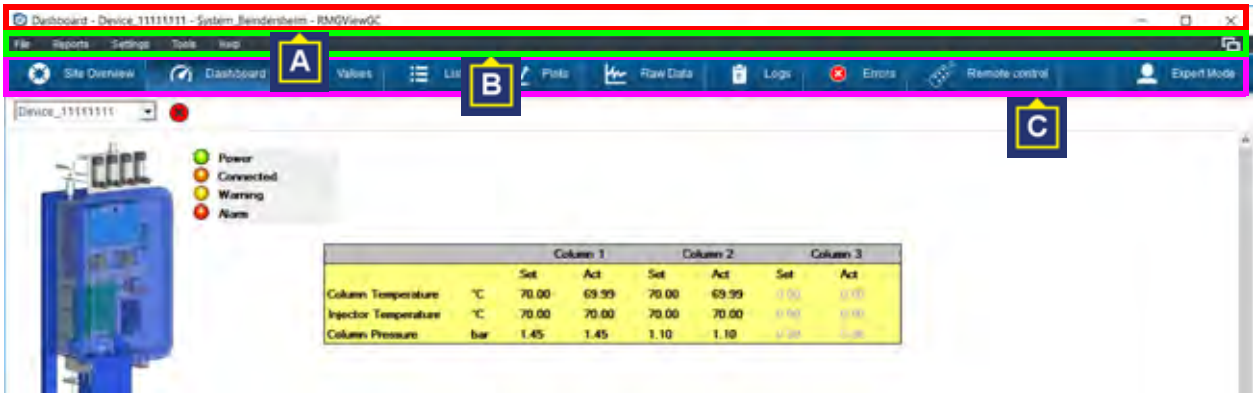
**Contents**

# 3.1 Operating and display elements

In this chapter you get an overview of the user interface for RMGView$^{GC}$.

You will find the description of the individual windows and functions under:

⇨ *Chapter 4, „Software description“ on page 45*




A Header B Menu bar C Multifunction bar

*Fig. 3-1: Dashboard window*

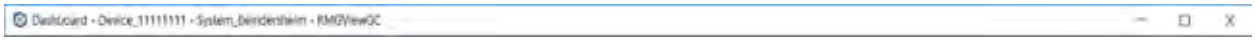


*Fig. 3-2: Header*

**Header** The **header (A)** shows the name of the window opened. The description of the window can be found under this name in chapter "Description of the software". The content of the header for some windows changes depending on the lists, plots or parameters selected.

*Fig. 3-3: Menu bar*

**Menu bar** The **menu bar (B)** contains various menus with which the functions and windows can be called up.

Using the menus you can open following windows/functions:

- **File**

  Clone opened window. Close window for a device. Open and save window arrangement on the desktop. Open folder for APP data user data. Close RMGView$^{GC}$.

- **Reports**

  Conduct device check. Output test reports as log file. Open the parameter list and the list of parameter changes. Depending on the license settings, there is the optional function of creating user-defined logs or changing existing logs.
- **Settings**

  Enter user information for the device. Show or hide **Select Site** window for software start. Set communication settings for the device, change or add a new device for the selected site. Switch software to another language. Set start screen for the software to start. Show or hide tool tips display. Show or hide macro names for filtering certain data. Open the password list for the selected device, change, create and delete. Change current license settings.
- **Tools**

  Setting the GC controller.
- **Help**

  Open the operating instructions as a PDF file. Open the RMG website. Request information on the software.


*Fig. 3-4: Multifunction bar*

**Multifunction bar**

The multifunction bar comprises single buttons.

Using these buttons you can access following data:

- **Site Overview**

  List of devices that are set up for the selected site.

  ⇨ *Chapter 4.1, „Site overview“ on page 47*
- **Dashboard**

  Request values and status of the selected device. The values are displayed in graphic form.

  ⇨ *Chapter 4.2, „Dashboard“ on page 48*
- **Values**

  Display parameter, readings or display values.

  ⇨ *Chapter 4.3, „Values“ on page 50*
- **Lists**

  Request lists for the GC controller.

  ⇨ *Chapter 4.4, „Lists“ on page 52*
- **Plots**

  Request lists for the GC controller.

Open predefined or user defined plots. Create and change user defined plots.

⇨ *Chapter 4.5, „Plots“ on page 54*

- **Raw data**

  Request chromatograms of selected columns. The data is displayed with the help of a plot (graphic illustration of the values). Create an image file of the plots.

  ⇨ *Chapter 4.6, „Raw data (chromatogram)“ on page 55*

- **Logs**

  Request list of actions, ParameterLog and EventLog, that are carried out via the software.

  ⇨ *Chapter 4.7, „Logs“ on page 56*

- **Errors**

  Request list of errors and warning messages that have occurred.

  ⇨ *Chapter 4.8, „Errors“ on page 60*

- **Remote control**

  Activating the button opens a window in which the touch screen of the GC controller is displayed in the window of the RMGView$^{GC}$. With mouse clicks you can make the same changes as on the touch screen of the GC controller when entering with the operating pen.

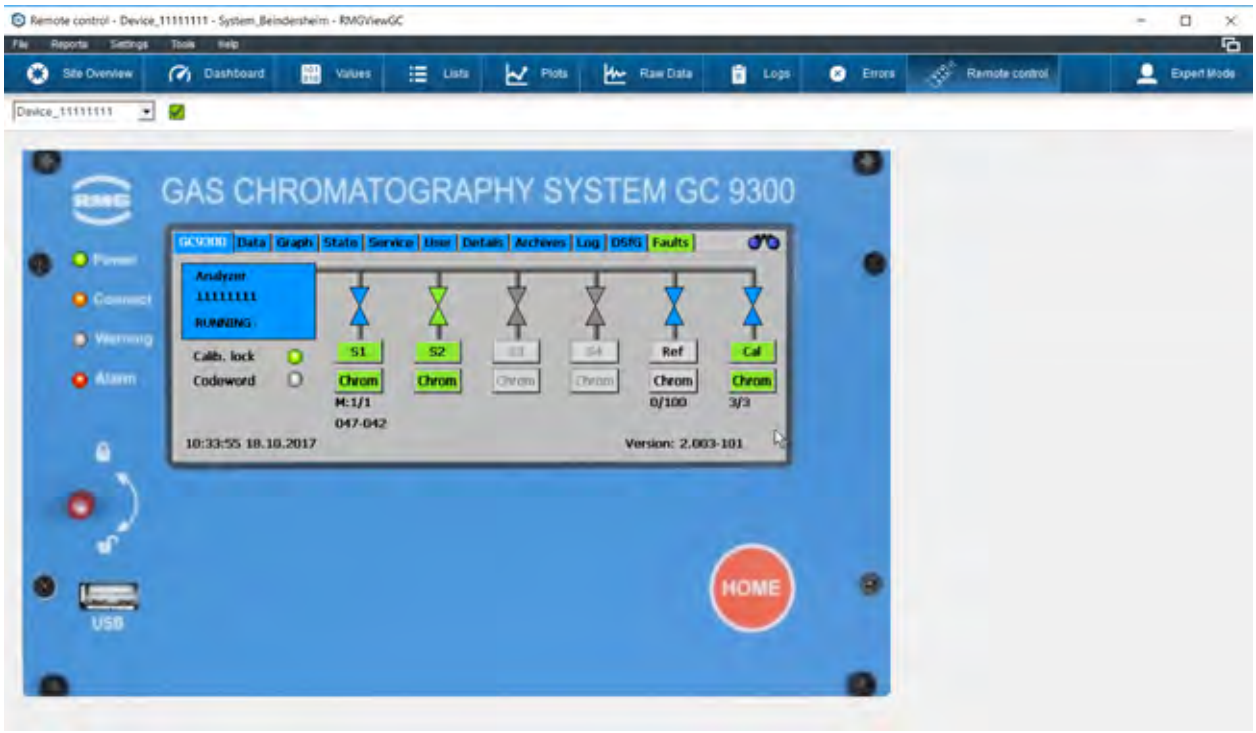
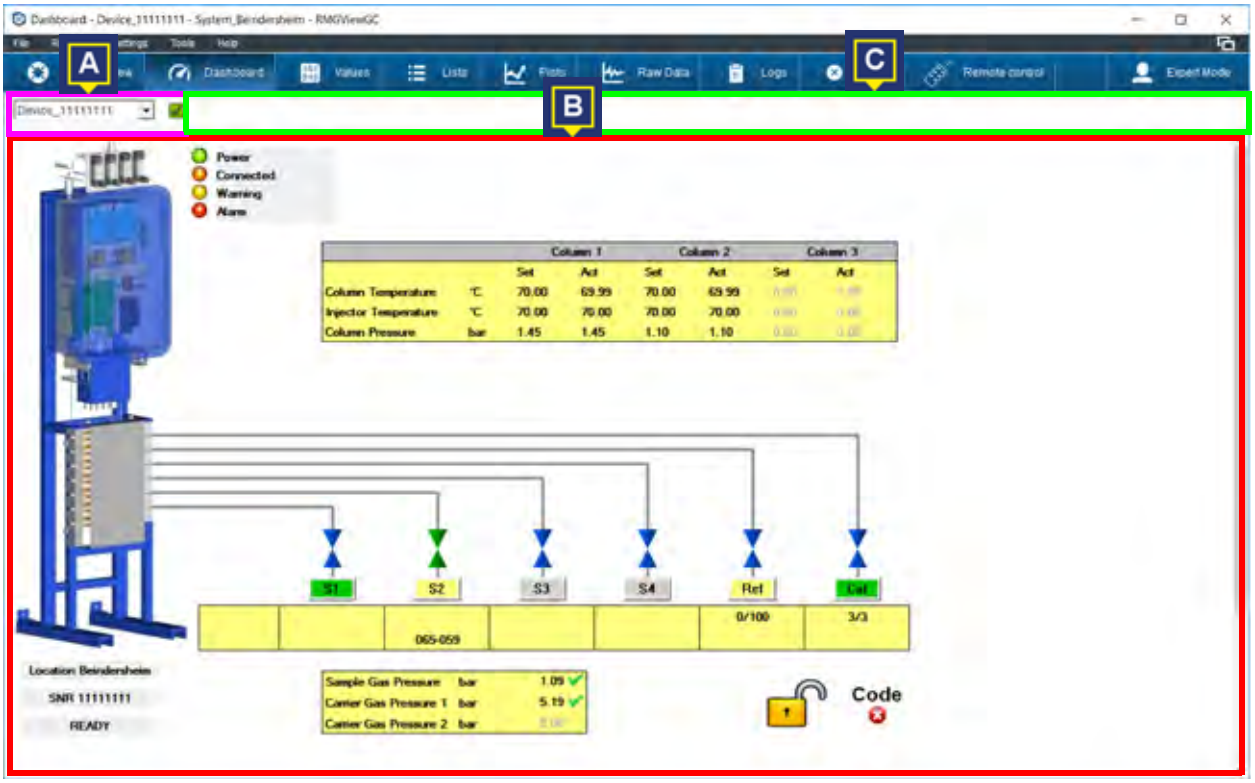



*Fig. 3-5: Remote control*

- **Password Input**

  Log into password-protected user level.

  ⇨ *Chapter ð, „Chapter 3.3, „Status icons“ on page 31“ on page 60*




A GC controller preselection B Display area C Status bar

*Fig. 3-6: Dashboard window*

**GC controller preselection (A)** The information on the selected device such as live values, functions or parameters are shown in the display area.

**Display area (B)** The display area shows the contents of the windows that have been opened using the multifunction bar.

**Status bar (C)** The status bar gives information on the current status of the device. (green = ok; red circle with a cross = error; red cross with blue brackets = not connected).

You will find possible symbols for the actual status here:

⇨ *„Status icons“ on page 31*

# 3.2 Standard buttons

The following buttons are a feature of many windows. Their functions are the same in all windows.


Confirm the entered value. The values will be saved.


Cancel the current entry. The entered values will not be saved.

The current screen will be saved as a jpg file.

Create a new, user-defined list or plot.

Delete user-defined list or plot.

Process user-defined list or plot.

Export data.

Import data

Move an entry down a list.

Move an entry up a list.

Record values or list and stop recording.

Refresh screen.

Clone window. The selected window will be opened a second time.

Enlarge view of plot.

Display plots in original size.

## 3.3 Status icons

The following icons are a feature of many windows. Their functions are the same in all windows.

Calibration switch of the GC controller is closed. The parameters of the GC controller *cannot* be programmed.

Calibration switch of the GC controller is open. The parameters of the GC controller can be programmed.

Connection between PC and the device is OK.

There is a discontinuity between PC and device.

The device is operating correctly. There is no warning.

A warning exists.

There is a defect.

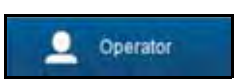
The element (list or plot) is protected and cannot be changed.

No password has been entered. Device is password-protected. Parameters that are protected by the password *cannot* be changed.

The password has been entered. Password-protected parameters can be changed.


The user level **Monitor** is active.

⇨ *„User levels“ on page 33*




The user level **Operator** is active.


The user level **Configurator** is active.


The user level **Expert Mode** is active.

# 3.4 User levels

To avoid incorrect operation the RMGView$^{GC}$ software is divided into different user levels.

These user levels are assigned to certain user groups.

Not all the contents and functions of the RMGView$^{GC}$ are displayed for every user group.

Only after you have entered a password for the user level are the information and functions for this user group displayed and can be operated.

The description of the windows and menus indicates which user level is enabled in the respective windows or menus.

⇨ *„Software description“ on page 45*

The following user groups are assigned to the user level.

**All user groups**

- Monitor

  No password required. This user level serves to display the contents of the windows. The data cannot be processed.

**Operating personnel**

- Operator

  Password for operator required. The operating personnel can create user-defined lists, change parameters and delete user-defined lists.

**Maintenance/setup personnel**

- Configurator

  Password required for Configurator. Set up all access rights and password for operating personnel.

**Service personnel**

- Expert mode

  Password for Expert Mode required. All access rights for operating personnel, maintenance and setup personnel. In addition the licenses can be managed.

# 3.5 Structure of the software

The following chart shows the structure of the RMGView$^{GC}$ software. Every field represents a window.

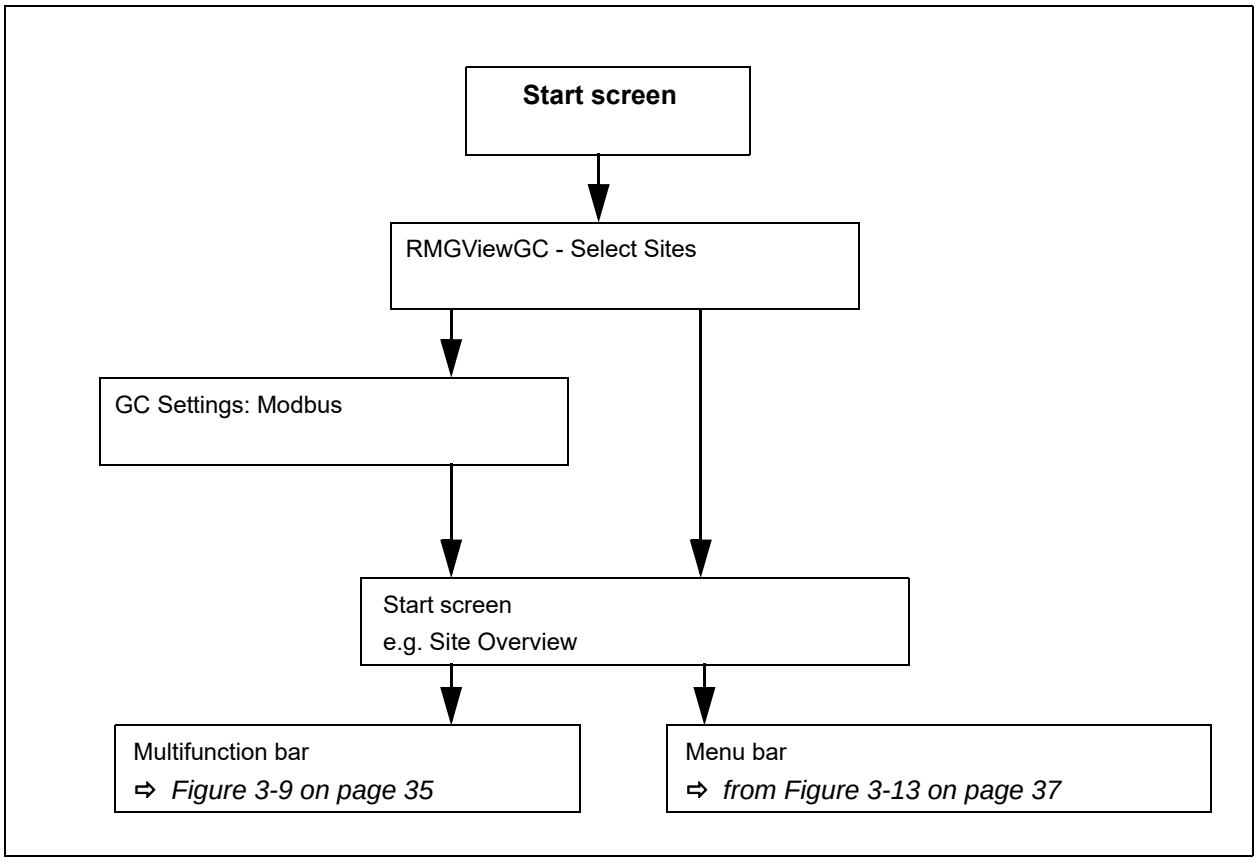



*Fig. 3-7: Structure of the software*

The start screen can be specified. The following windows can be selected as start screen:

- Site Overview
- Dashboard
- Lists
- Plots
- Raw data
- Logs
- Errors
- Remote control
- Input Password

⇨ *Chapter 2.5.1, „ISet up-language and start window“ on page 16*

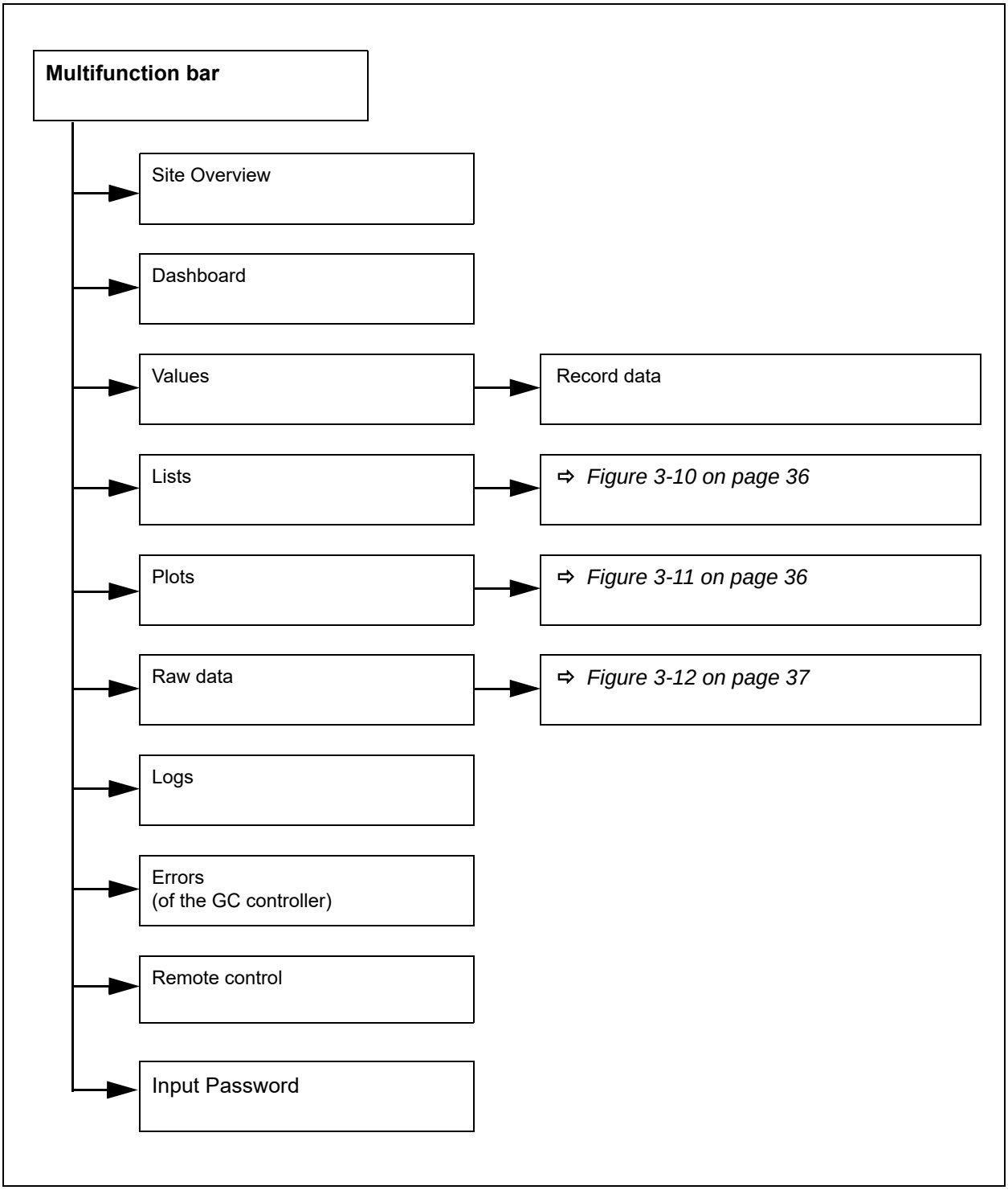



*Fig. 3-9: Structure of multifunction bar*

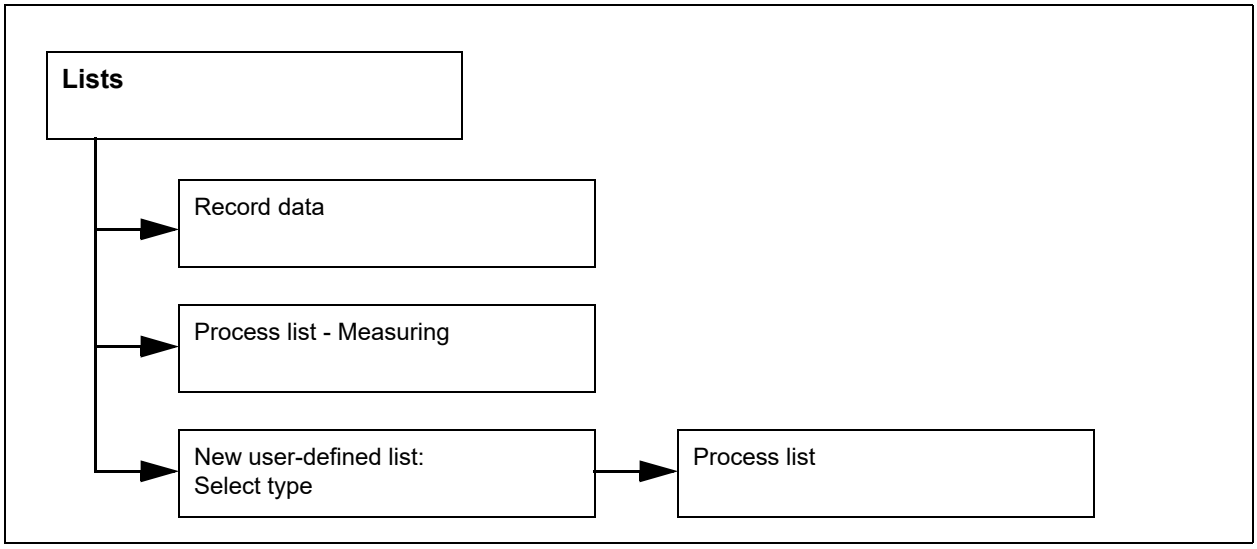



*Fig. 3-10: Structure of lists*

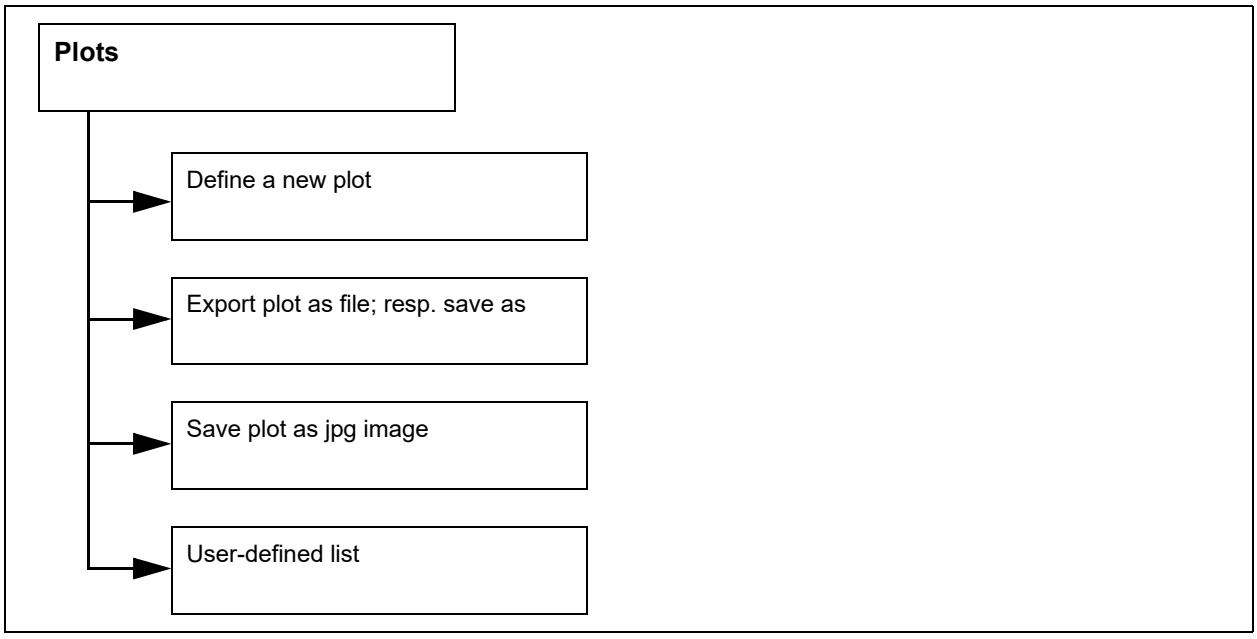



*Fig. 3-11: Structure of plots*

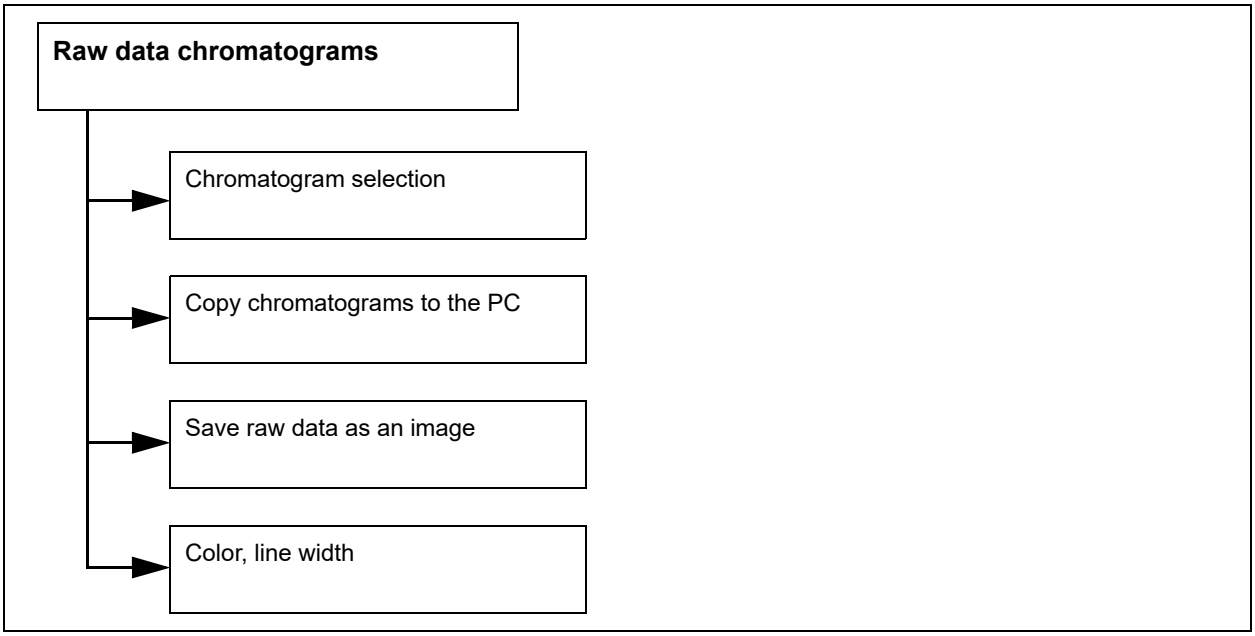



*Fig. 3-12: Structure of raw data*

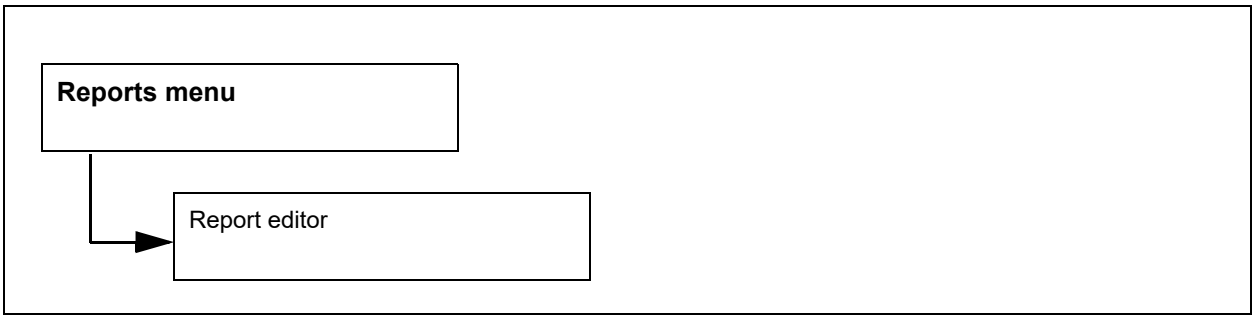



*Fig. 3-13: Structure of reports menu*

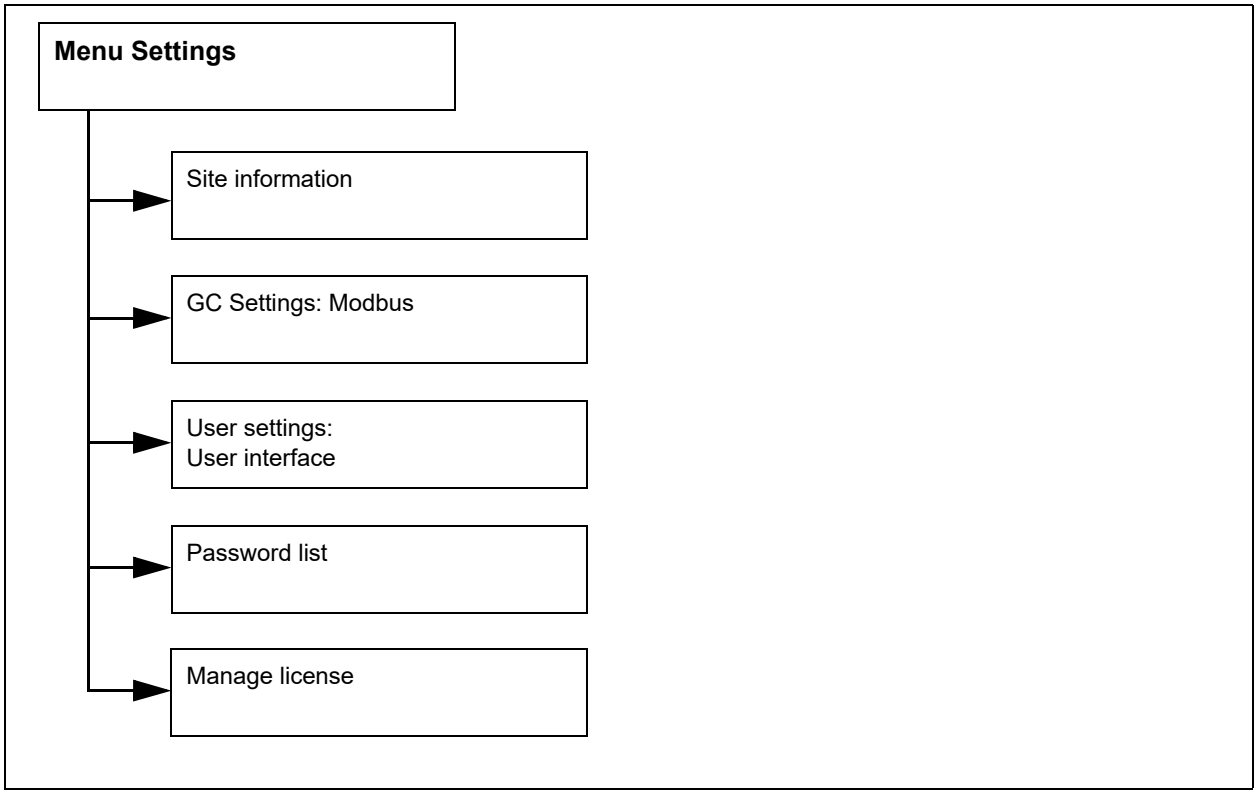



*Fig. 3-14: Structure of menu settings*

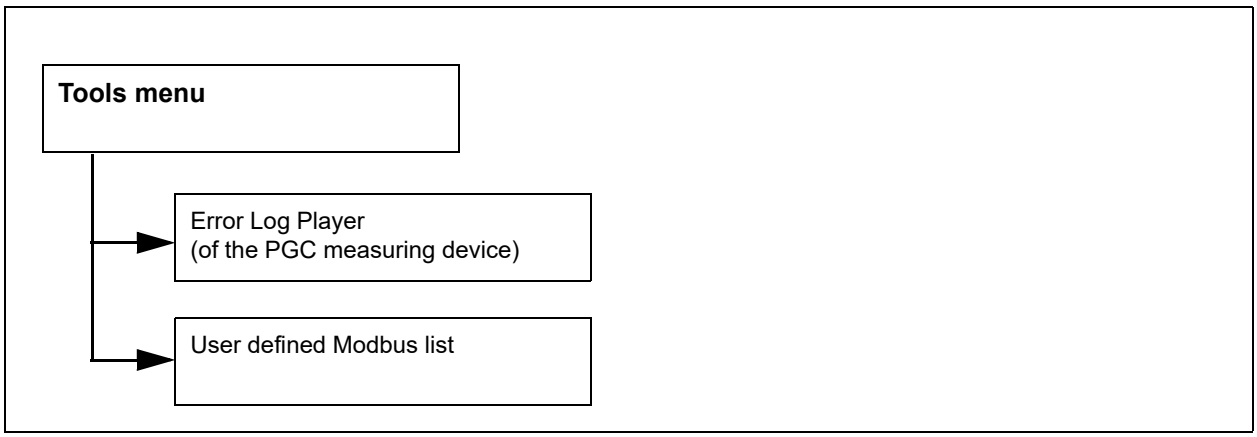



*Fig. 3-15: Structure of tools menu*

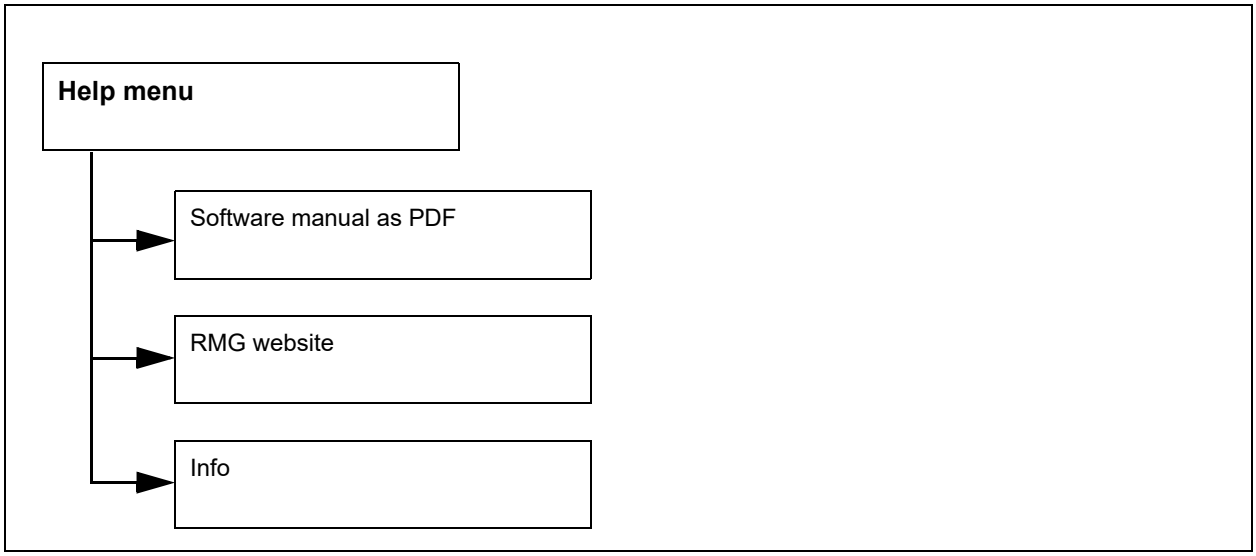



*Fig. 3-16: Structure of help menu*

# 3.6 Data / readings / parameters

The data / readings / parameters are stored in a position tree. Via the position (numbers, separated by dots, are indicating the chapters) data / readings / parameters can be addressed.

The data / readings / parameters can be addressed using the display of the GC controller or via the RMGView$^{GC}$ software and can be selected for tasks such as user-defined lists.

⇨ *Chapter 4.14, „Site Specific, User-Defined List (plot)“ on page 66*

**Example Parameter structure**

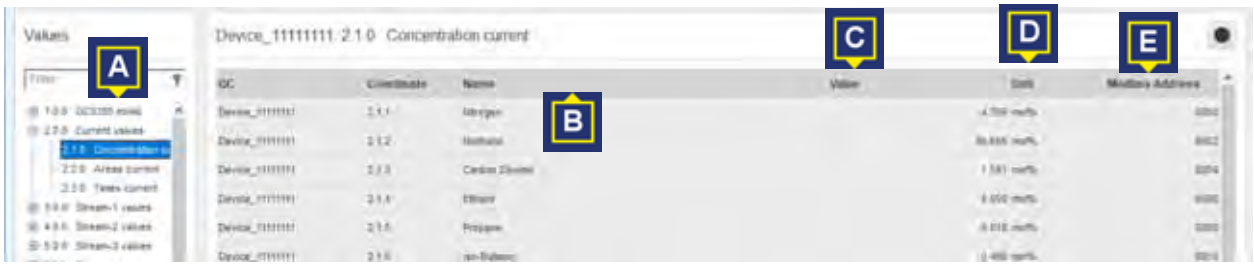



*Fig. 3-17: Structure of a parameter*

Parameters are usually structured as follows:

- Position tree of parameters 2.1.1 (A)
- Name of the parameter (B), e. g. nitrogen.
- Value that the parameter is to query or determine (C), e. g. volume part.
- Assignment of the unit (D), e. g. here: mol %.
- Assignment to the Modbus address (E), e. g. 8000

# 3.7 Help function

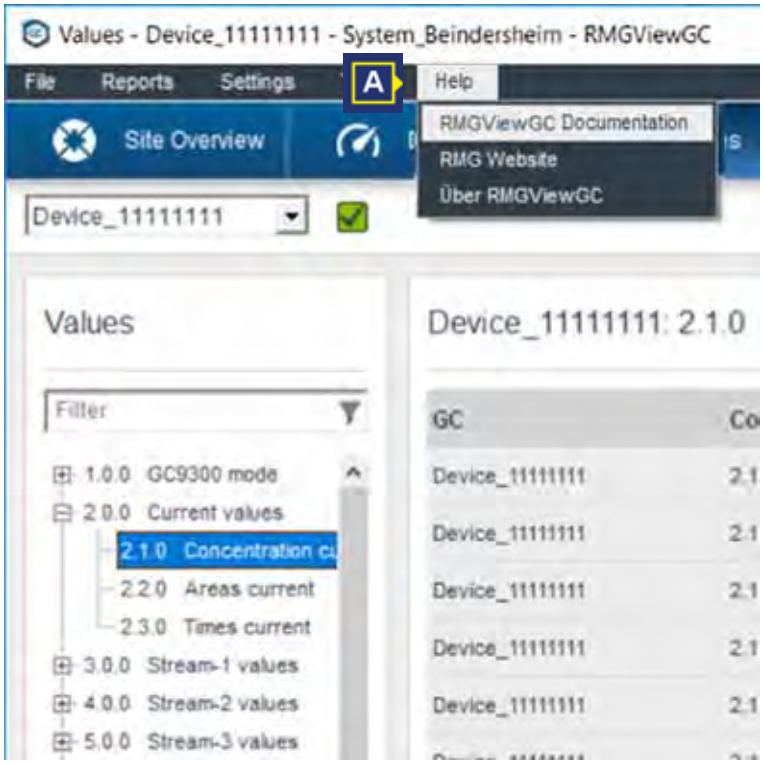



*Fig. 3-18: Help menu*

Using the **Help** menu, you receive following information:

- details of the software version and the license number
  ⇨ *Chapter 4.21, „License Info“ on page 75*
- Software manual as a PDF file
- Website www.rmg.com

# 3.8 File types

The following table describes the file types (file suffixes) that are needed to work with the RMGView$^{GC}$ software.

| | |
|---|---|
| **CSV** | List with recorded values of parameters, events or plots: The list can be imported for processing in a spreadsheet program. |
| **RPR** | File contains a template for generating PDF files. |
| **RMX** | Software system files RMGView$^{GC}$. |
| **EXE** | Executable files. |
| **HTML** | Output format for a RPR file, can be opened in any browser. |
| **PDF** | Output format for a RPR file, reports, graphic representation of readings (plots) or test certificate. This file can be opened by every PDF viewer. |
| **JPG** | Image file for graphics of readings (plots). |
| **BIN** | Output file of chromatograms of the GCs. |
| **XML** | File stores the RMGView$^{GC}$ settings, e.g. language settings, screen configuration. |

## 3.9 Password

With a password you will be given access to protected user levels in the RMGView$^{GC}$ software. On delivery of the RMGView$^{GC}$ software, you will have received a password from RMG for every protected user level.

Should the passwords no longer be available, then request these from the RMG service.

⇨ *„Manufacturer“ on page I*

The user with the password to the user level **Configurator** can generate passwords with user level assignment.

⇨ *Chapter 4.19, „Password List“ on page 72*

## 3.10 License

With the help of the license you can enable the functions of the report editor, characteristic curve correction and header data for the raw data. With the report editor you can compile reports according to your requirements.

Training by RMG is required for working with the report editor.

As an alternative RMG offers the service of creating customer-specific reports.

# 4 Software description

This chapter contains information on fields, sectors and other contents of the windows.

Operating system windows, e.g. **Save as** are not described.

You will find following information with respect to the windows:

- Name of the window.
- Details on the window path.
- Illustration of the window.
- General description of the window's functions.
- Field elements in the window.

Depending on the user level certain contents and functions of RMGView$^{GC}$ are displayed or hidden.

⇨ *Chapter 3.4, „User levels“ on page 33*

**Notice**

The RMGView$^{GC}$ software offers the possibility to create, organize and present data and parameters (and additionally calculated parameters) of the GC controller for the gas chromatograph PGC9300.

- **Note that certain parameter settings may change the measuring behavior of the GC.**
- **Since usually GC controllers and RMGView$^{GC}$ are used together it will not be distinguished between individual parameters of these units.**

Contents

# 4.1 Site overview

*RMGView$^{GC}$ > Select Site > Site Overview*

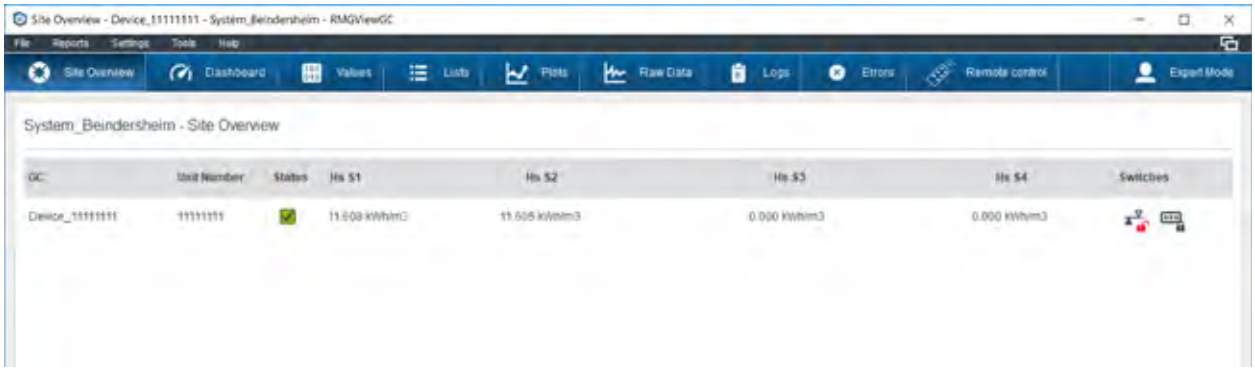



*Fig. 4-1: Site Overview*

In the **Site Overview** window you can manage the GC controller.

**GC** Name of the GC controller. By clicking on an entry, you can switch to the **dashboard** of the GC.

⇨ *„Dashboard“ on page 48*

**Status** Connection status between GC and RMGView$^{GC}$.

⇨ *Chapter 3.3, „Status icons“ on page 31*

**Calorific value** Calorific value of the actual gas.

**Switches** Configuration options for following switches:

- Calibration switch
- Password for the PC

⇨ *Chapter 3.3, „Status icons“ on page 31*

# 4.2 Dashboard

*RMGViewGC > Select Site> Dashboard*

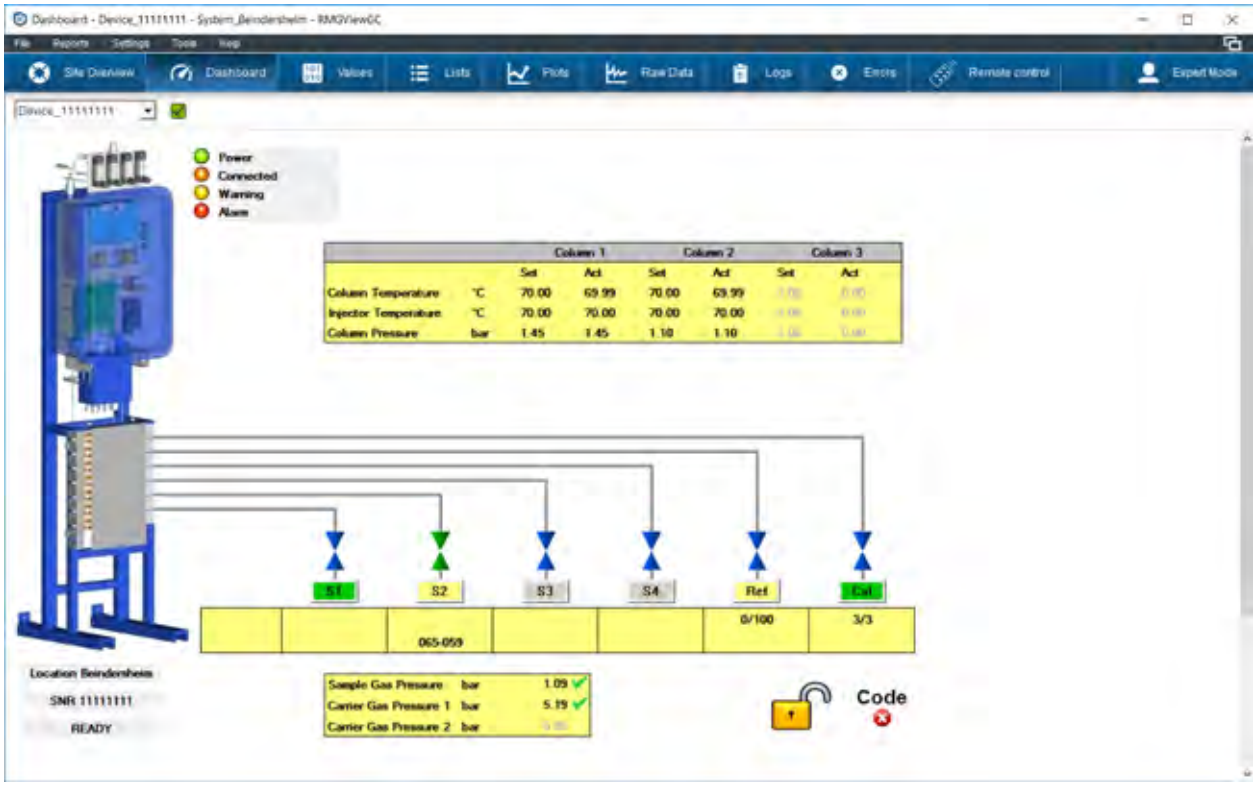



*Fig. 4-2: Dashboard*

In the window **Dashboard** you can display the current measurement values of the GC.

**Status Display**

Symbols for the user-defined warning and alarm signals.

- Power
- Connect
- Warning
- Alarm

**PGC measuring element**

Display for operating states of the GC:

- Column temperature
- Injector temperature
- Column pressure

**Valve control**

Status of the valves of the individual streams (there might be up to 4 different measuring positions / gases), the calibration and reference gas

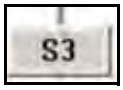
Valves:

- green = open

- blue = closed

Gases:


- green = gas to be analyzed




- gray = not active


- yellow = measurable, but isn't analyzed permanently (external check)

**Pressure**

Pressure of the gas is controlled and displayed.

**Site information**

Site position, number of the measuring element, operating status of the GC.

**Status calibration switch**

Displays the status of the calibration switch.

**Codeword**

The GC allows further setting options, which can be selected after being enabled via code words (see GC manual).

# 4.3 Values

*RMGView$^{GC}$ > Select Site> Values*

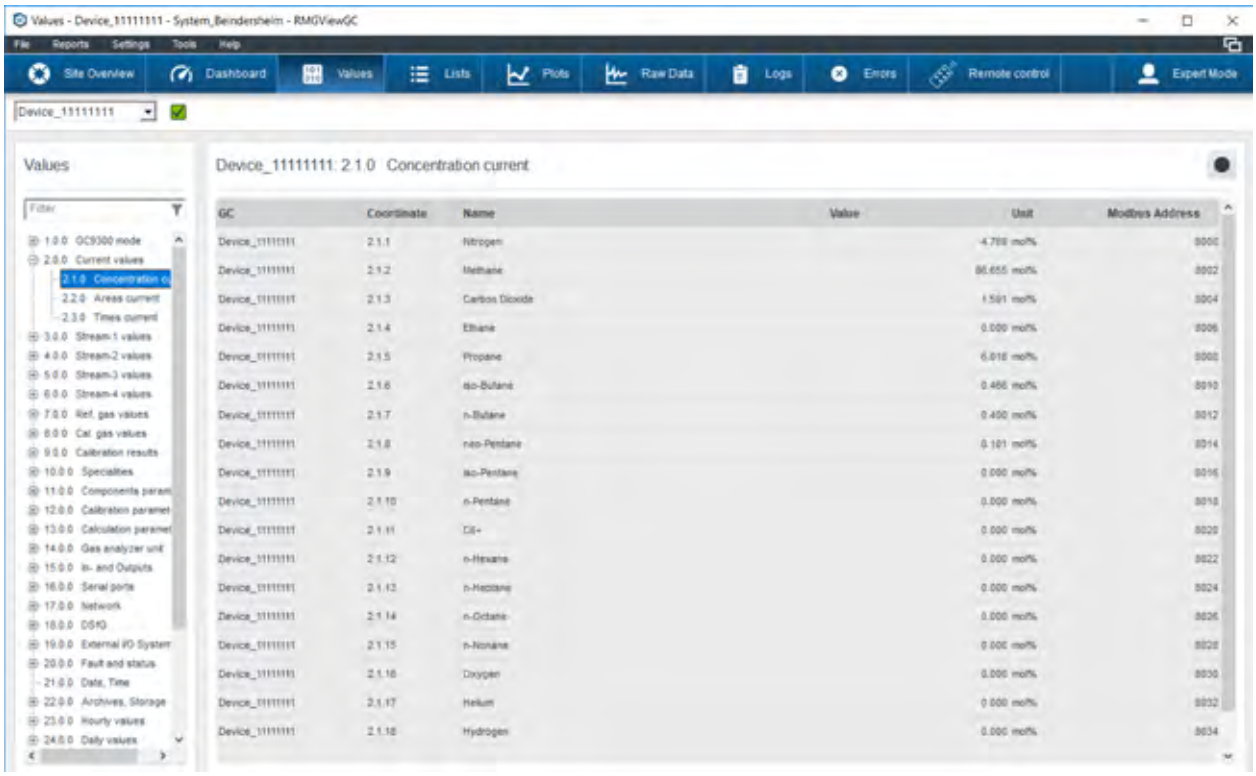



*Fig. 4-3: Values*

In the **Values** window you can have the actual data, measured values and parameter displayed. The data, measured values and parameter are read out via the RMGView$^{GC}$ from the GC.

**Values** List with predefined data, measured values or parameter lists. The parameters associated can be displayed in the right-hand window area.

**Filter** Filter panel for searching for data, measured values or parameters, e.g. temperature. For the search you can enter keywords or parts of keywords but no wildcards (*, ?).

**GC** Name of the GC controller of the gas chromatograph.

**Position** Memory cell for the parameter in the device. The parameter is stored in a directory tree. A parameter can be addressed using numbers (see above).

The parameter can be called up using the **Lists** window and selected for tasks e.g. creating user-defined lists.

⇨ *„Lists“ on page 52*

**Name** Description of the parameter to be measured.

**Value, unit** Numerical value and unit of the parameter to be measured.

**Modbus address** Address of the communication protocol between PC and GC.

# 4.4 Lists

*RMGViewGC > Select Site > Lists*

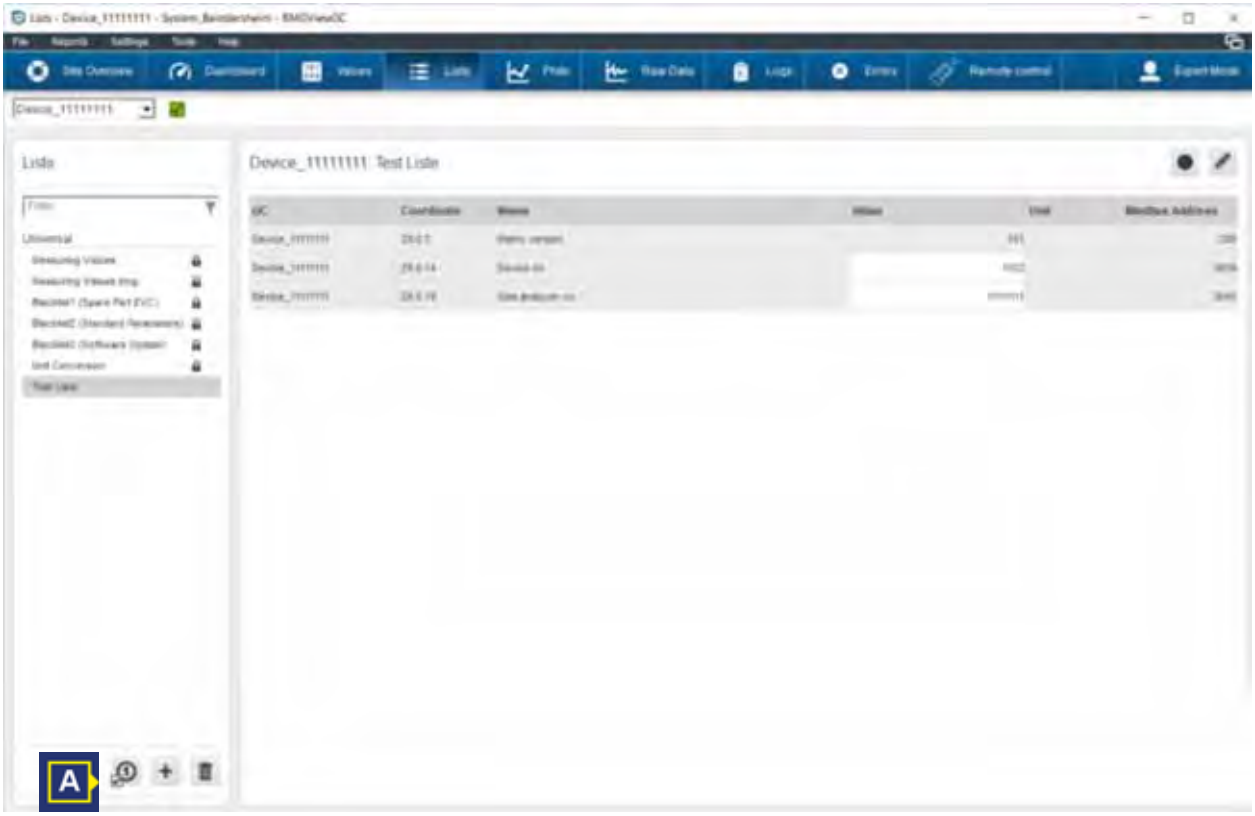



*Fig. 4-4: Lists*

In the Lists window, you can manage the predefined and user-defined lists with the system parameters in the left-hand window area. One of the lists can be selected with a check mark at the bottom at (1) **(A)**, this list is displayed by default the next time you open RMGView$^{GC}$.

In the right pane, you can view the parameters of the selected list. Use lists to compile the parameters to be read from the device.

Site specific list. A list can contain predefined or user-defined system parameters:

**Lists** Site specific list. A list can contain predefined or user-defined system parameter:

- Site-specific = Site-specific lists are configured with parameters for a selection of certain types of a GC in a site.

- Predefined lists are marked with the symbol of a locked padlock and cannot be changed or deleted.
- User-defined lists are shown without a symbol and can be changed or deleted.

**Filter** Filter panel for searching for data, measured values or parameters, e.g. temperature. For the search you enter keywords or parts of a keyword. You cannot use wildcards.

The columns are described in following position:

⇨ *„Values“ on page 50*

# 4.5 Plots

*RMGViewGC > Select Site > Plots*

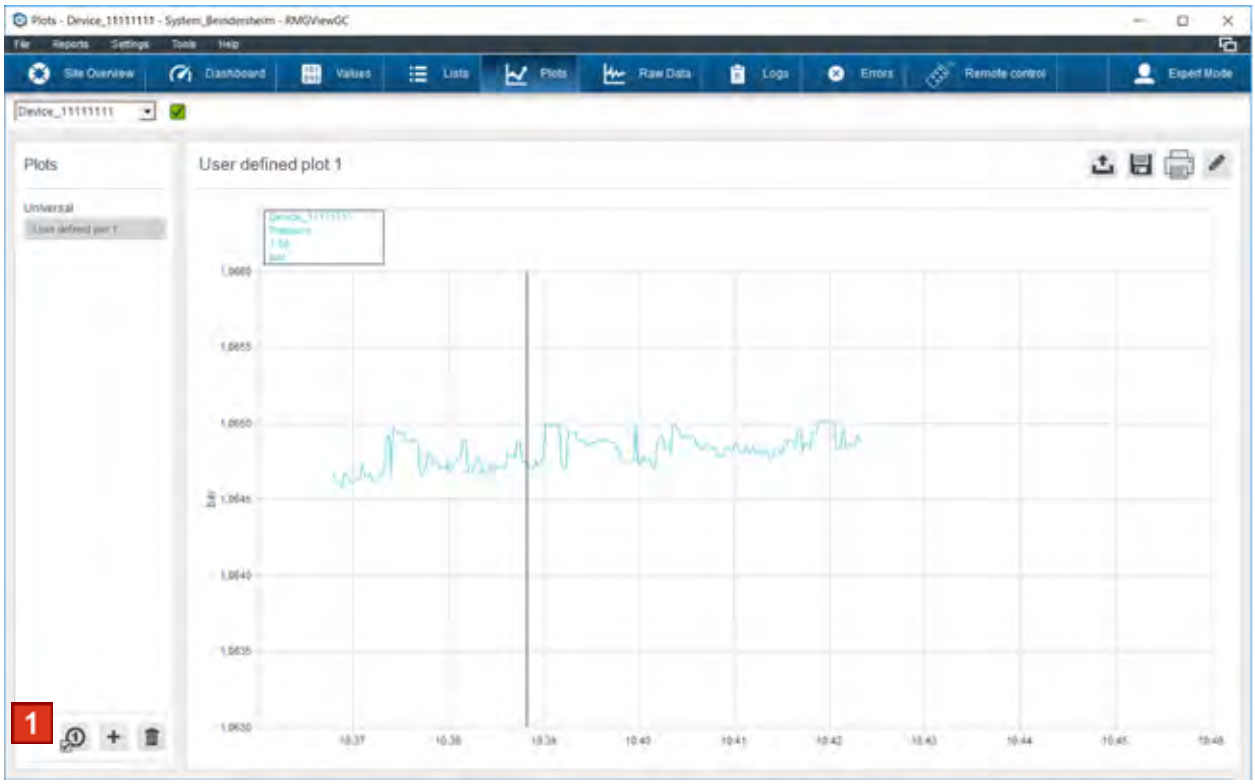



*Fig. 4-5: Plots*

In the **Plots** window you can show the trend as a graphic of the readings listed. Using the drop-down menu you must first select the device for the measurements.

In the left window you can select a parameter, e.g. temperature. In the right hand window sector the values measured for the parameter can be listed and displayed in a trend graphic. The button at the bottom left (1) allows you to set the plot as default during startup.

Using the diskette symbol you can export a screen shot of the graphic displayed, as a jpg file.

⇨ *„Save Plot as jpg Image“ on page 68*

# 4.6 Raw data (chromatogram)

*RMGView$^{GC}$ > Select Site > Raw Data*

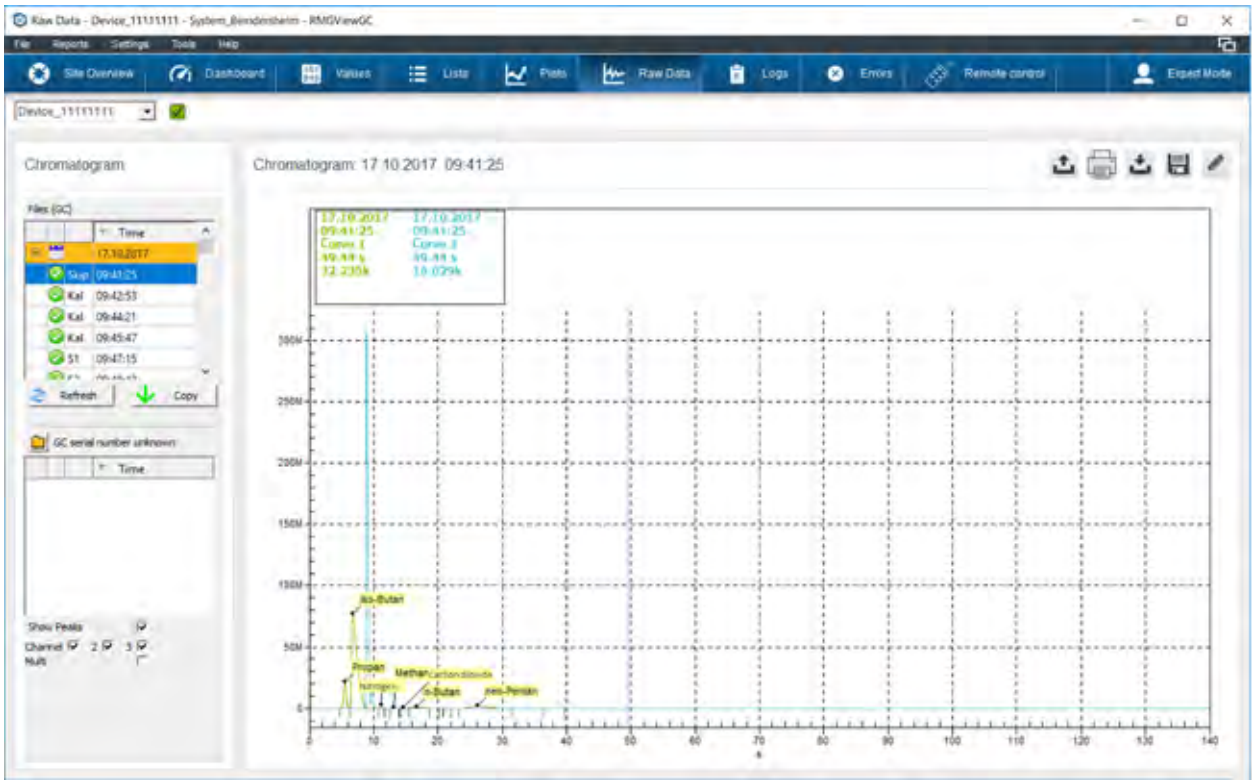



*Fig. 4-6: Raw data*

In the **Raw Data** window you can see chromatograms of the different streams.

# 4.7 Logs

*RMGViewGC > Select Site > Logs*

In the **Logs** window you can manage all RMGView$^{GC}$ reports.

In the left window sector you can select a protocol type:

- GC History = Overview of all reports created.
- GC Parameter Log = Reports of all changes of parameters.
- GC Event Log = Reports of all events that have occurred.
- Modbus Messages = Reports of the connection status.

In the right-hand window sector the reports in the report types can be displayed.

## 4.7.1 GC History

The **GC History** window all reports, changes and modifications created since the last login can be displayed.

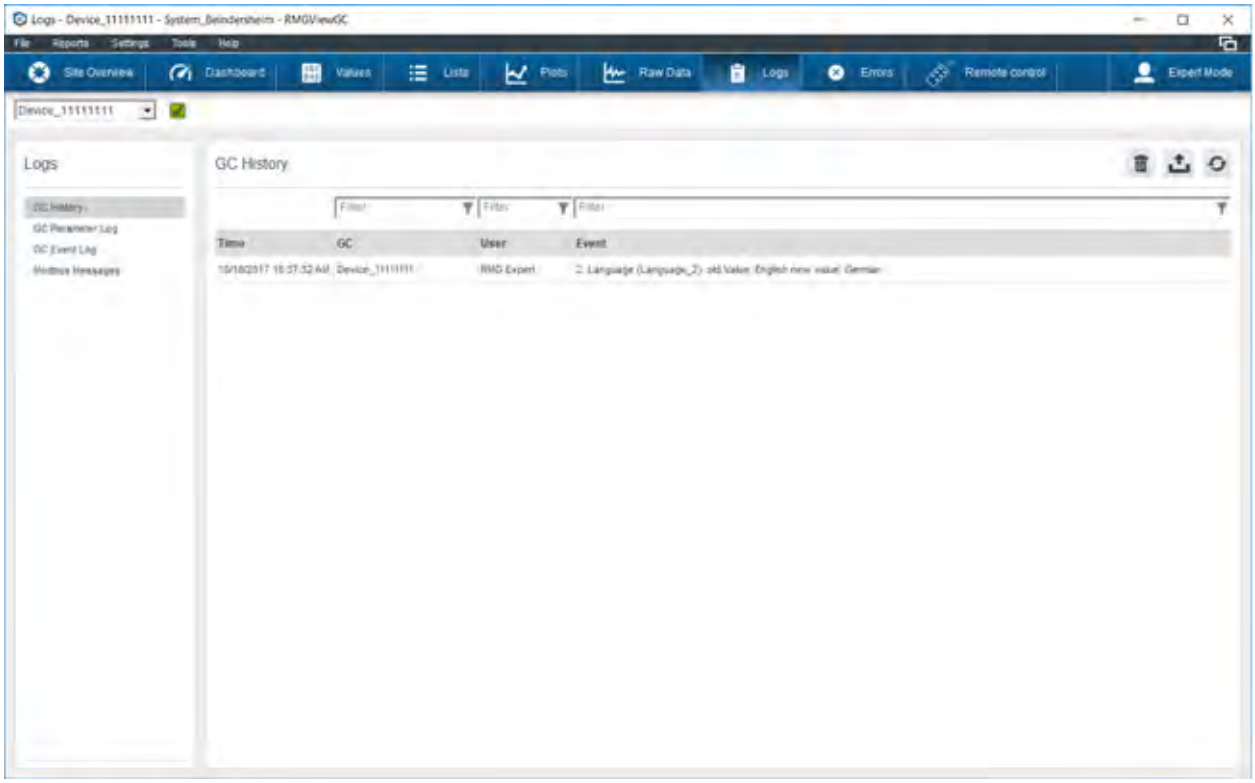



*Fig. 4-7: GC History*

**Time** Time stamp of the device for which a protocol entry was created.

**Operator** Name of the user who caused an event.

**Event** Message for which a protocol entry was created.

## 4.7.2 GC Parameter Log

In the **GC Parameter Log** window you can display the reports for all parameters.

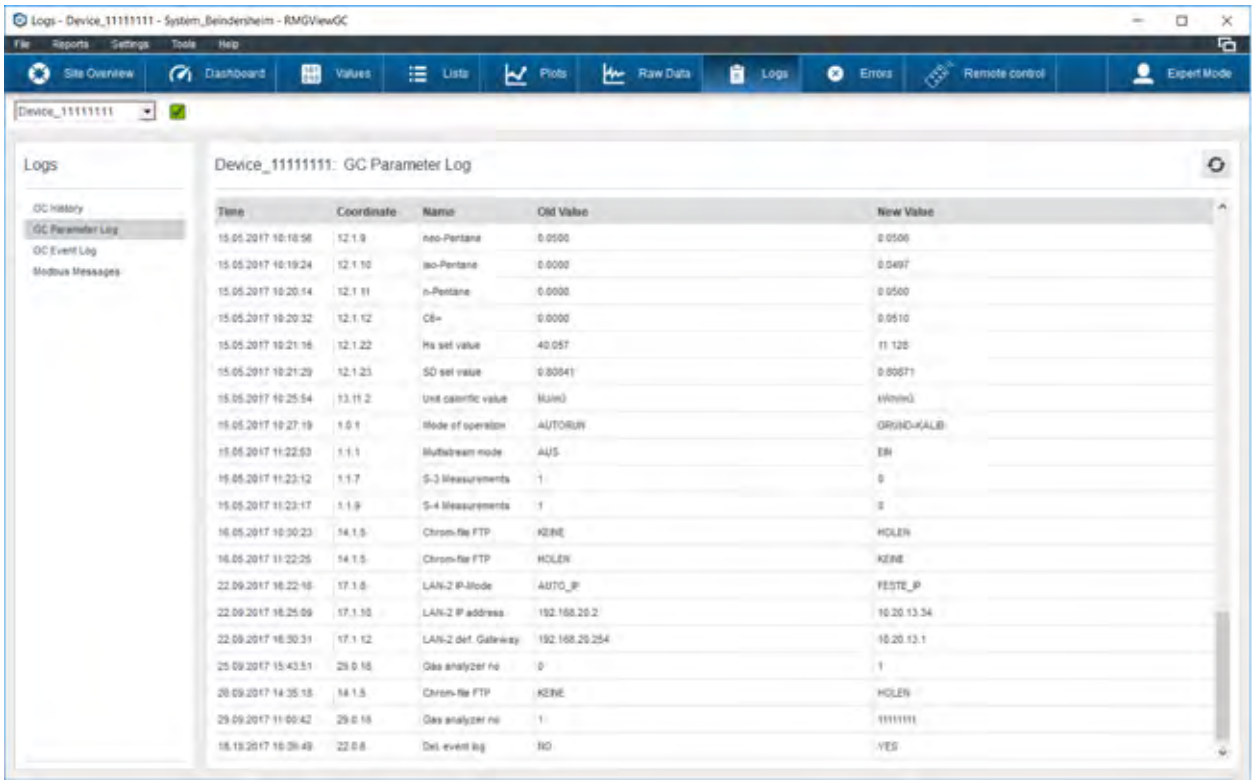



*Fig. 4-8: Protocols of the parameters of the selected device*

**Time** Time stamp when a parameter change was logged.

**Position (Coordinate)** Memory cell for the parameters in the device.

**Name** Identifier of the parameter.

**Old value** Value no longer currently valid.

**New value** Currently valid value.

## 4.7.3 GC event log

In the **GC Event Log** window you can display the reports for all occurring events.

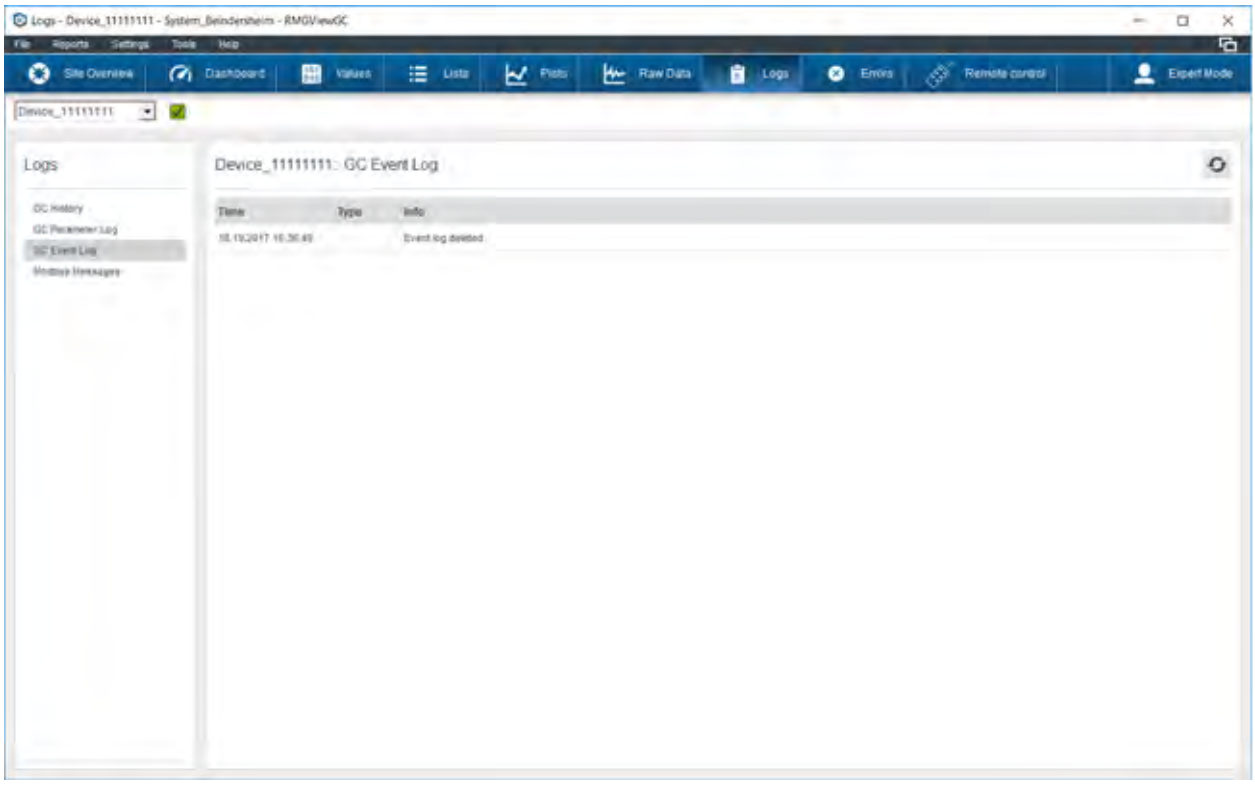



*Fig. 4-9: Protocols of the parameters of the selected device*

**Time** Time stamp when an event was logged.

**Type** Type of event,

e.g. error:

**+** coming error (this error is actual active)

**-** going error (this error happened since the last activation but isn‘t active in the meantime)

**Info** Additional information on the event.

## 4.7.4 Modbus messages

In the **Modbus Messages** window you can display the messages of the status of the communication protocol.

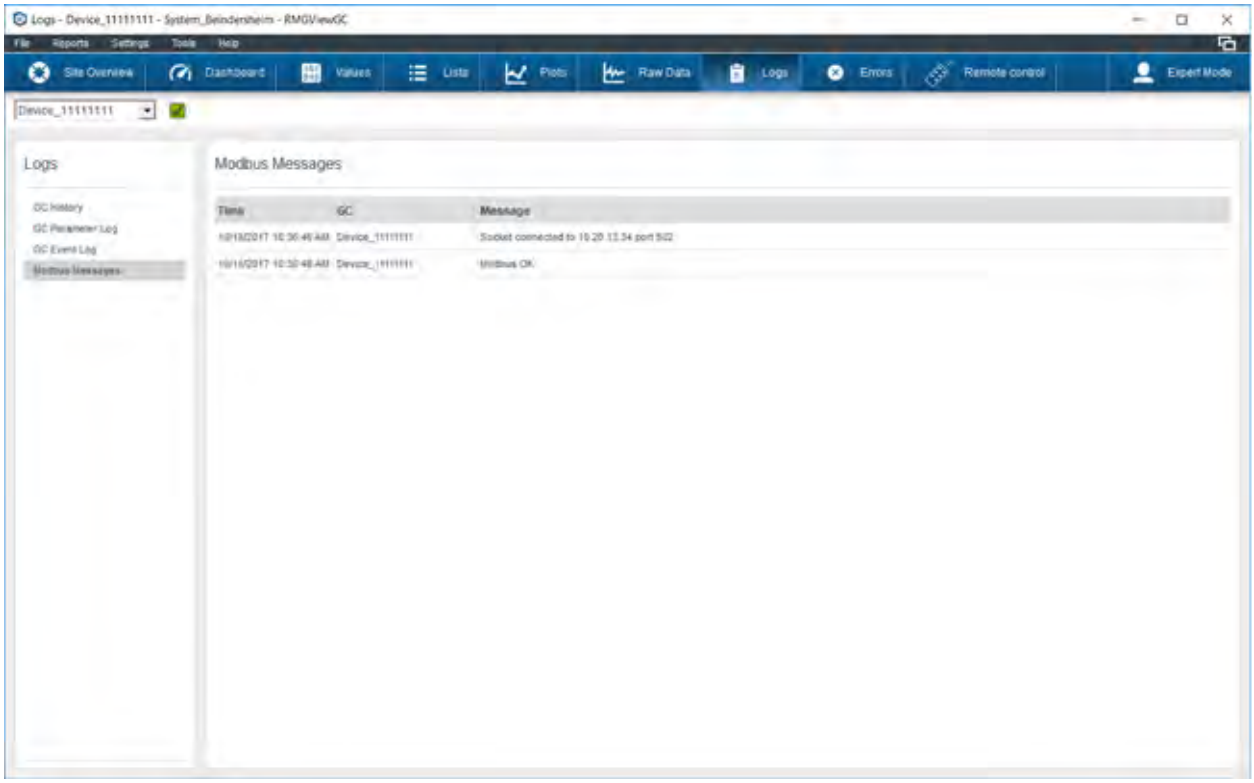



*Fig. 4-10: Messages to the status of the communication protocol*

**Time** Time stamp of the device for which a protocol was created.

**Message** Messages on the status of the communication protocol.

# 4.8 Errors

*RMGViewGC > Select Site > Errors*

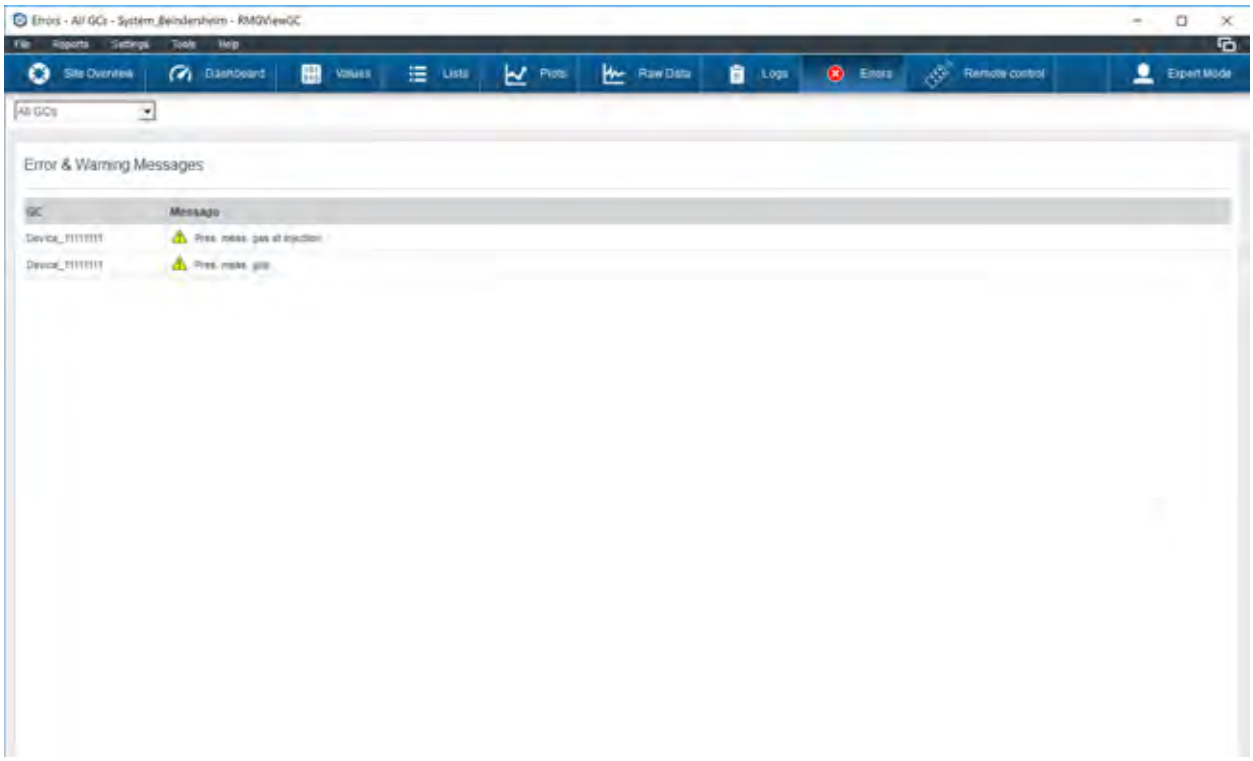



*Fig. 4-11: Errors*

In the **Errors** window you can display the warnings and error messages.

**Message** Status display with messages about warnings and errors.

⇨ *Chapter 3.3, „Status icons“ on page 31*

# 4.9 Remote control

Activating the "Remote control" button opens a window in which the GC controller's touch screen is displayed in the RMGView$^{GC}$ window.

In addition, the illuminated LED on the front panel is also displayed.

**Notice**

With mouse clicks, the same changes can be made as on the touch screen of the GC controller when entered with the stylus pen.

The GC-Controller can thus be operated conveniently on the screen!

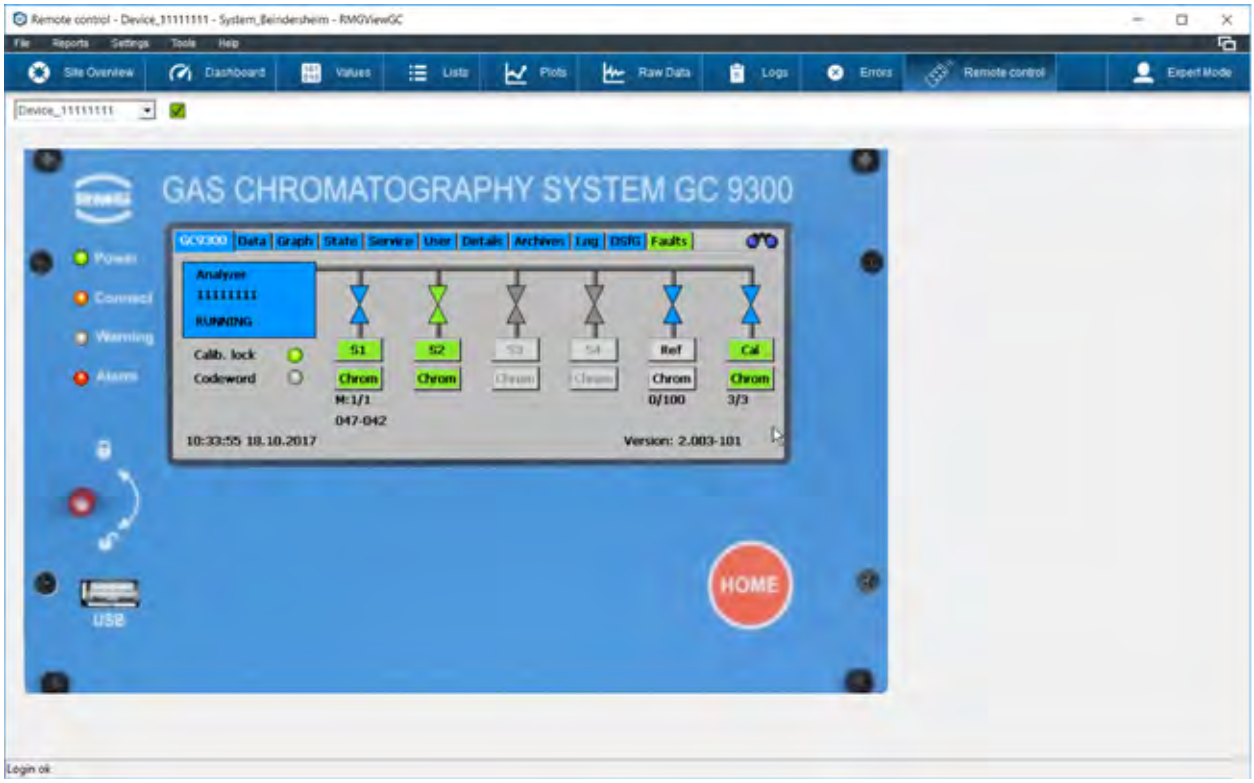



*Fig. 4-12: Remote control*

# 4.10 Password Input

*RMGViewGC > Select Site > Multi-function Ribbon > User Symbol*

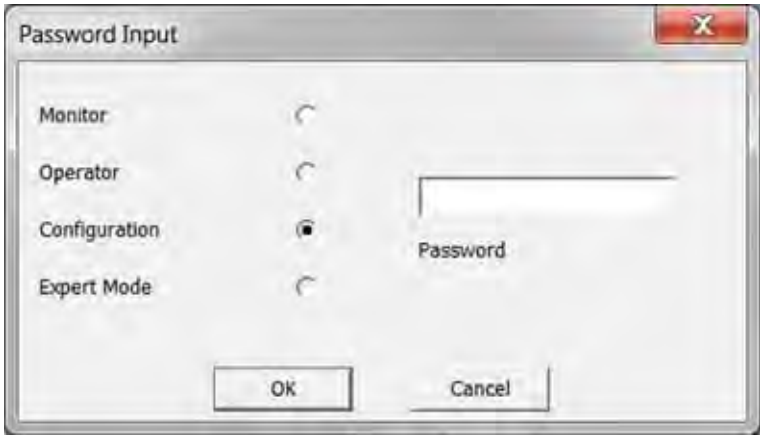



*Fig. 4-13: Password Input*

In the **Password Input** window you can log-in for a user level. Depending on the user level you have extended access to RMGView$^{GC}$.

Depending on the user level certain contents and functions of RMGView$^{GC}$ are displayed or hidden.

**Radio button user groups**

Radio button for selecting the user groups.

- Monitor
- Operator
- Configuration
- Expert mode

Further information on the possibilities of the user groups can be found here:

⇨ *Chapter 3.4, „User levels“ on page 33*

**Password**

Entry field for the password.

As a default setting you may use the following passwords:

- configurator: **RMGGC-P**
- expert: **RMGGC-E**

# 4.11 Record data

*RMGViewGC > Select Site > Lists > Filled Circle*

*RMGViewGC > Select Site > Values > Filled Circle*

In the figures, which you may see if you activate one of two links above, a small black circle on a light-grey square can be seen in the upper right corner. If you click on it with the mouse, the following window is opening.

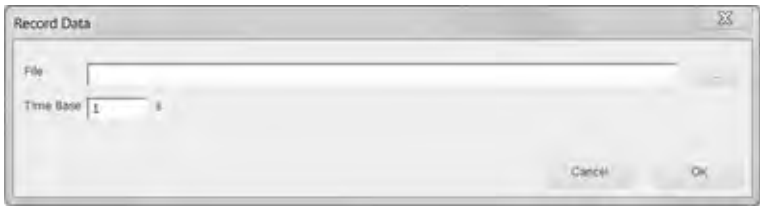



*Fig. 4-14: Record data*

In the **Record Data** window you can record the trend data and save it in a file.

**File** Storage location and name of the file.

**Time Base** Recording intervals of the trend values.

As soon as the entries in this field are confirmed with "OK", the recording starts. This is indicated by changing the circle to a square. At the same time, a clock is running, which indicates the duration of the recording.

By clicking on the square the recording ends.

# 4.12 Edit list (Creating a new list)

*RMGViewGC >Select Site > Lists > Select List > Pencil Symbol*

*RMGViewGC > Select Site > Lists > Plus Symbol > Select Type > OK Button*

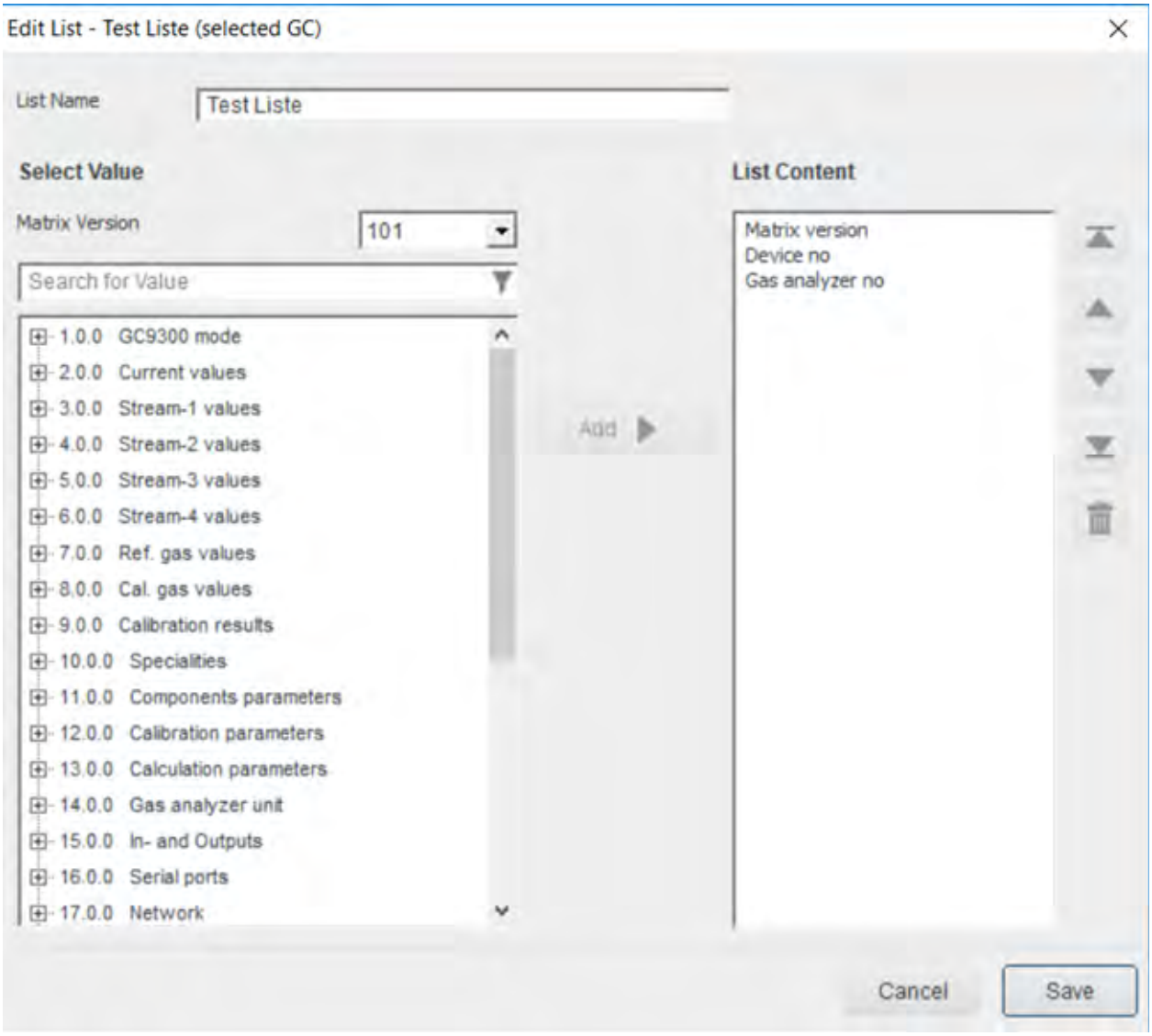



*Fig. 4-15: Edit list*

In the **Edit List** window you can process the parameter lists for the ultrasonic gas meters or create new ones. Using the parameter readings reports and maintenance reports can be created. You can reuse the parameter lists for devices of the same type.

The elements of the window are shown in the following position.
⇨ *„Site Specific, User-Defined List (plot)“ on page 66*

In addition following fields are displayed:

**List Name** Identifier for self-defined list.

**Select Value** Select parameters for the self-defined list.

# 4.13 New User-Defined List: Select Type

*RMGViewGC > Select Site > Lists > Plus Symbol*

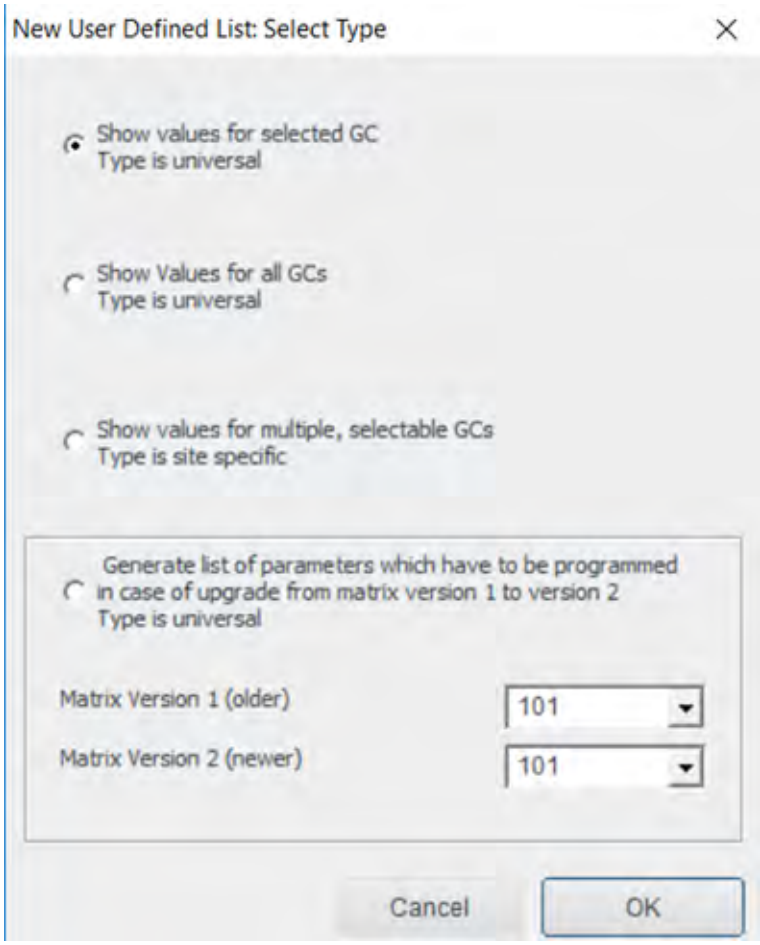



*Fig. 4-16: New User-Defined List: Select Type*

In the **New User-Defined List: Select Type** window you can create a new parameter list. Using parameter lists the values measured in the device can be read out.

- Framed field:
  Is only available for user level service personnel.

# 4.14 Site Specific, User-Defined List (plot)

*RMGViewGC > Select Site > Lists / Plots > Plus Symbol > Select Type > OK*

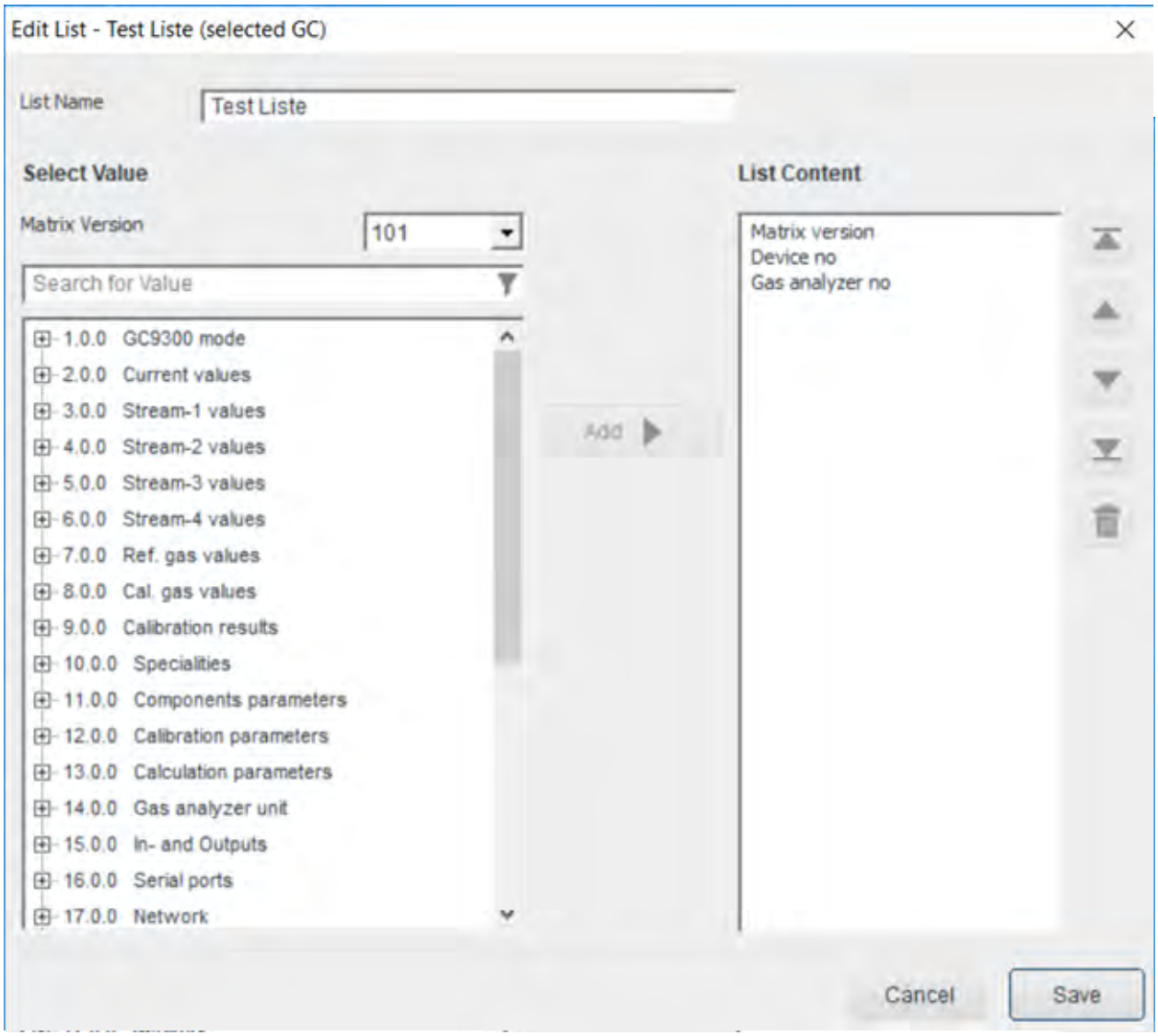



*Fig. 4-17: User-defined list*

In the **Edit List** window you can compile self-defined lists of parameters or measurements or self-defined lists of parameter

plots Trend overviews are created using the values read out for the parameters or the values measured. You can reuse the parameter lists and parameter plots for devices of the same type.

**Name of the plot** Label for plot.

**Select value** Select parameters for the plot graphic.

**Filter panel (search for values)** Text panel to filter the list of parameters.

### Values in the plot / list

**Name** Parameter label for the plot.

**Minimum** Minimum value for the parameter in the plot.

**Maximum** Maximum value for the parameter in the plot.

**Color** Name of the color for the graphic in the plot.

**Line Thickness** Line thickness in pixels.

**Text** Parameter in the self-defined list.

## 4.15 Color, Line Thickness

*RMGViewGC > Select Site > Raw Data > Pencil Symbol*

In the **Color, Line Thickness** window you can configure the graphic display of the trend curves for individual ultrasonic paths.


*Fig. 4-18: Color and line size selection*

**Name** Name of the chromatogram.
**Color** Specification of color.
**Line Thickness** Line thickness in pixel.

# 4.16 Save Plot as jpg Image

*RMGViewGC > Select Site> Raw data > Diskette Symbol*

*RMGViewGC > Select Site > Plots > Diskette Symbol*


*Fig. 4-19: Save Plot as a jpg Image*

In the **Save Plot as jpg Image** window you can export the current display as a jpg image.

**x Pixels** Width x height of the image in pixels.

# 4.17 Information on installation

*RMGViewGC > Select Site > Settings > Site Information*


*Fig. 4-20: Site information*

In the **Site Information** window you can manage the information on the client and the location of his site.

**Name** Station name of the site.

**Customer** Name of the customer.

**Location** Location of the site.

# 4.18 GC settings

*RMGViewGC > Select Site > Settings > GC Settings*

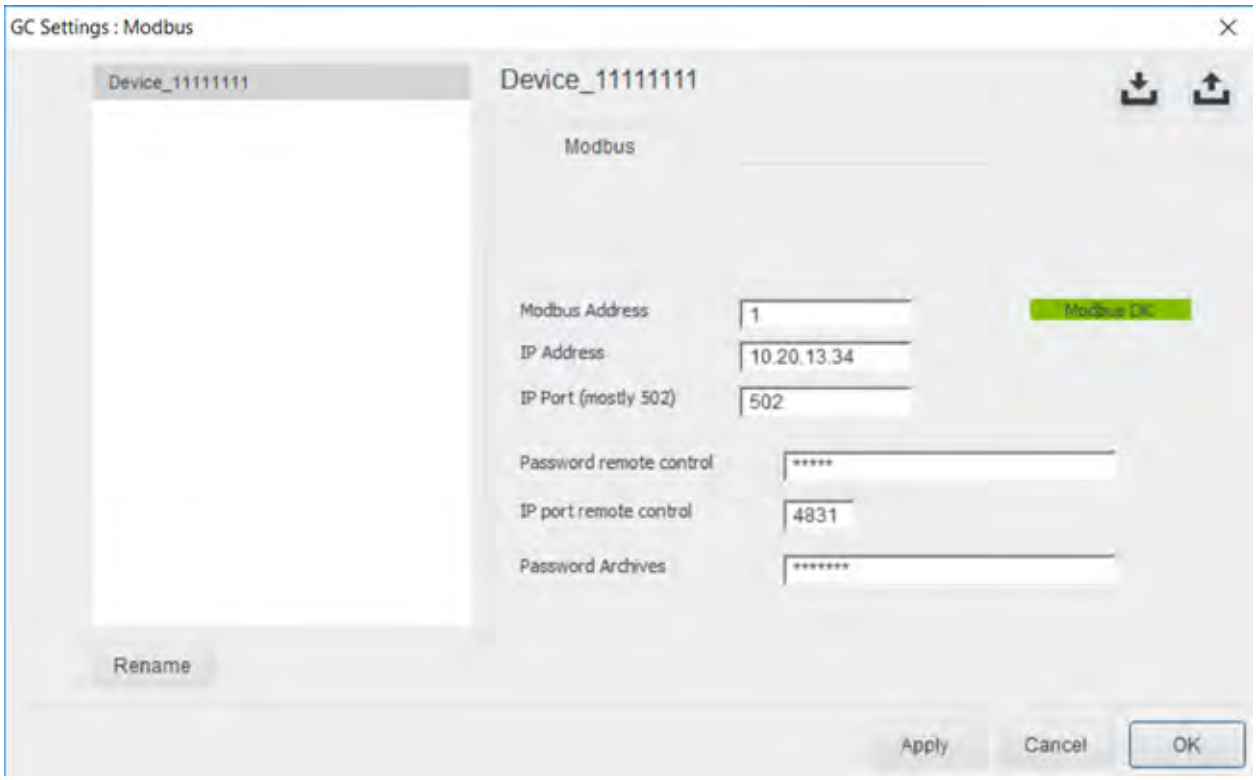



*Fig. 4-21: GC Settings*

In the **GC Settings: Modbus** window you can configure the GC‘s in the site using the tabs.

In the left window sector you set the GC (the site) that you intend to configure. Here you may also rename it.

In the right window sector you may find the tabs with the configuration setting of the GC.

The tabs for the configuration settings for the ultrasonic gas meters and an overview of the limit values for warning and alarm signals are in the right window sector.

⇨ *„Modbus tab“ on page 71*

**Import** This button can be used to import the configurations from a file.

**Export** This button can be used to export the configurations to a file.

## 4.18.1 Modbus tab

*RMGViewGC > Select Site > Settings > GC Settings*

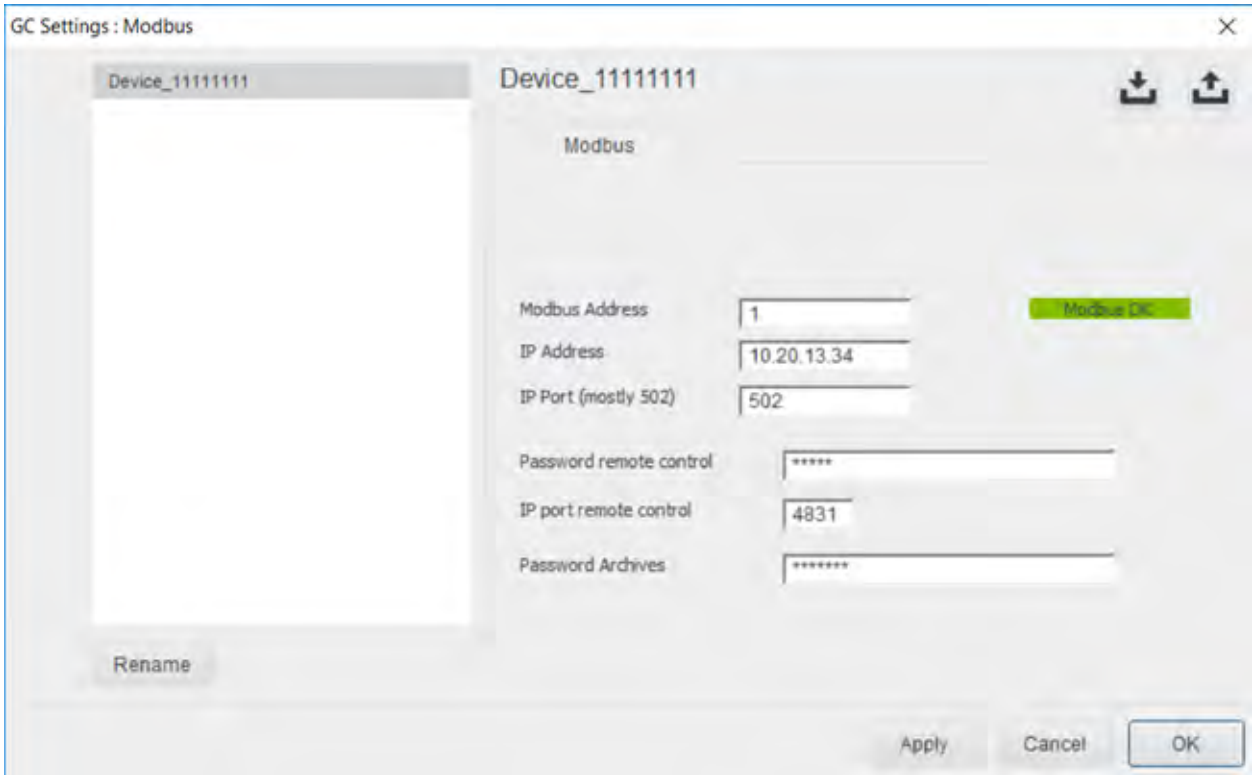



*Fig. 4-22: GC Settings – Modbus*

In this tab you configure the communications connection between RMGView$^{GC}$ and GC.

**Modbus Address** Address of the GC controller at the bus.

**IP Address** IP address, for the connection between ultrasonic gas meter and RMGView$^{GC}$, e.g. 10.20.13.34

**IP Port (mostly 502)** Port number of the RMGView$^{GC}$ service for the connection via the IP Address.

# 4.19 Password List

*RMGViewGC > Select Site > Settings > Manage Passwords*


*Fig. 4-23: Password List*

In the **Password List** window you can manage the user and passwords.

**Name** User's name.

**Password** Password character sequence.

**Unnamed column** User level selection

# 4.20 User Settings

*RMGViewGC > Select Site > Settings > User Settings*

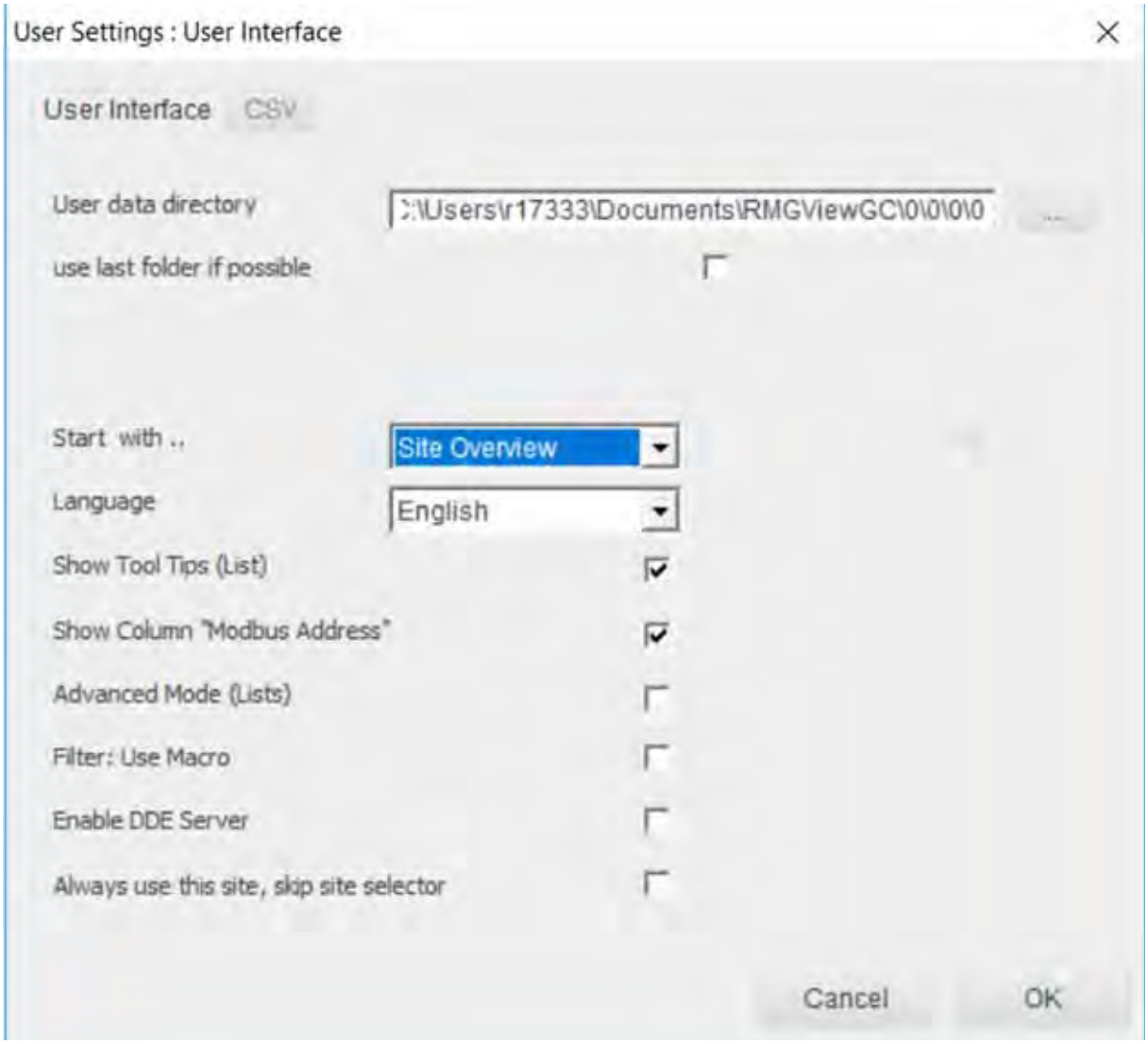



*Fig. 4-24: User Settings: User Interface*

In the **User Settings: User Interface** window **User Interface**you can maintain the user-defined settings in RMGView$^{GC}$ for the graphic interface.

**User data directory** Source path for user interface configuration file.

**Use last folder if possible folder as standard** Use last default setting:

☑ Use the lastly selected directory path.

☐ Do not use default setting.

**CSV Delimiter** Selection of the delimiter used in CSV files.

- ; = use semicolon separator.
- TAB = Use tabulator separator.

**..decimal point** Select the indicator for the decimal place for values.

- . = Use point, e.g. 15.0 bar.
- , = Use comma, e.g. 15,0 bar.

**Start with..** Select the window with which RMGView$^{GC}$ is started:

- Site Overview
- Dashboard
- Values
- Lists
- Plots
- Raw data
- Reports
- Errors
- Remote control

**Language** Language to be used for the user interface.

**Display tool tips (list)** Display information on list elements in tool tips.

☑ Display tool tips for list elements.

☐ Do not display tool tips for list elements.

**Filter: Use Macro** Filter macro and display.

☑ Filter for macros and list.

☐ Do not filter for macros.

In addition to these user settings, data for an Excel export can be set up on a further page, the CSV settings.

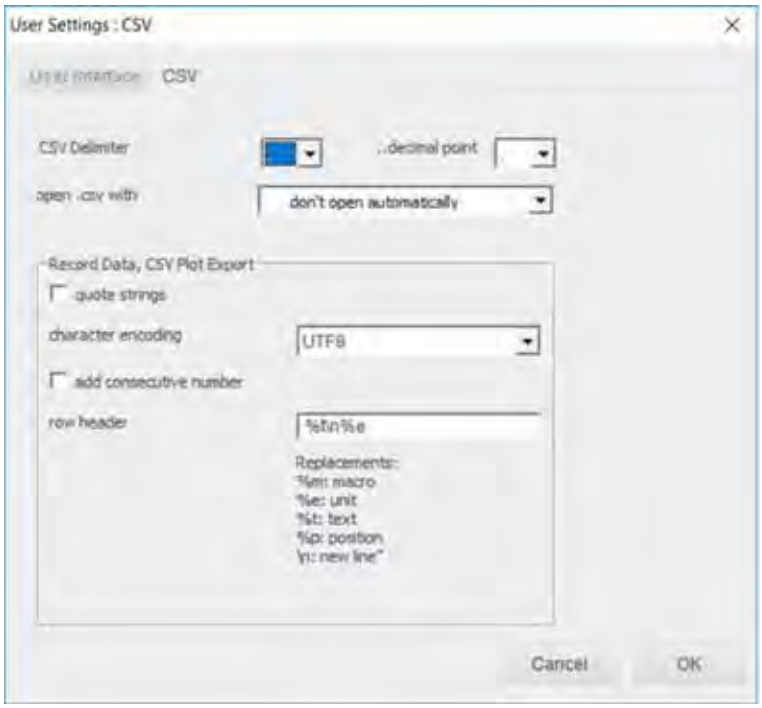



*Fig. 4-25: CSV Settings*

You can set the indicator for column separation here and define the separation of the decimal places with a dot "." Text can be displayed with or without quotation marks and the display of the column header can be defined here.

# 4.21 License Info

*RMGViewGC > Select Site > Help > About RMGViewGC*

In the **License Info** window, information on the software license is displayed: If you have any questions or queries please contact the RMG service personnel.

**Notice**

Till today the RMGView$^{GC}$ software is available without any license fee. Therefore, no information window is opening actually.

⇨ *„Manufacturer“ on page I*

### 4.21.1 Process License

*RMGViewGC > Select Site > Settings > RMGViewGC Process License*


*Fig. 4-26: Manage License*

*On this page you may set a license user and the license code.*

## 4.22 Report Editor

*RMGViewGC > Select Site > Reports > User-Defined Reports > Report Editor*

In the **Report Editor** window you can compile protocols according to your requirements. A training by RMG is required before working with the Protocol Editor.

As an alternative RMG offers the service of creating client-specific reports.

If you have any questions or queries please contact the RMG service personnel.

⇨ *„Manufacturer“ on page I*

# 5 Operation

In this chapter you will receive information on carrying out operations with the software.

**Contents**

# 5.1 User settings

In this chapter you will receive information on logging in and out of a user level.

## 5.1.1 Login users

The users are assigned the access rights for the user level by logging in with their password.

- **Logging users in at a protected user level**

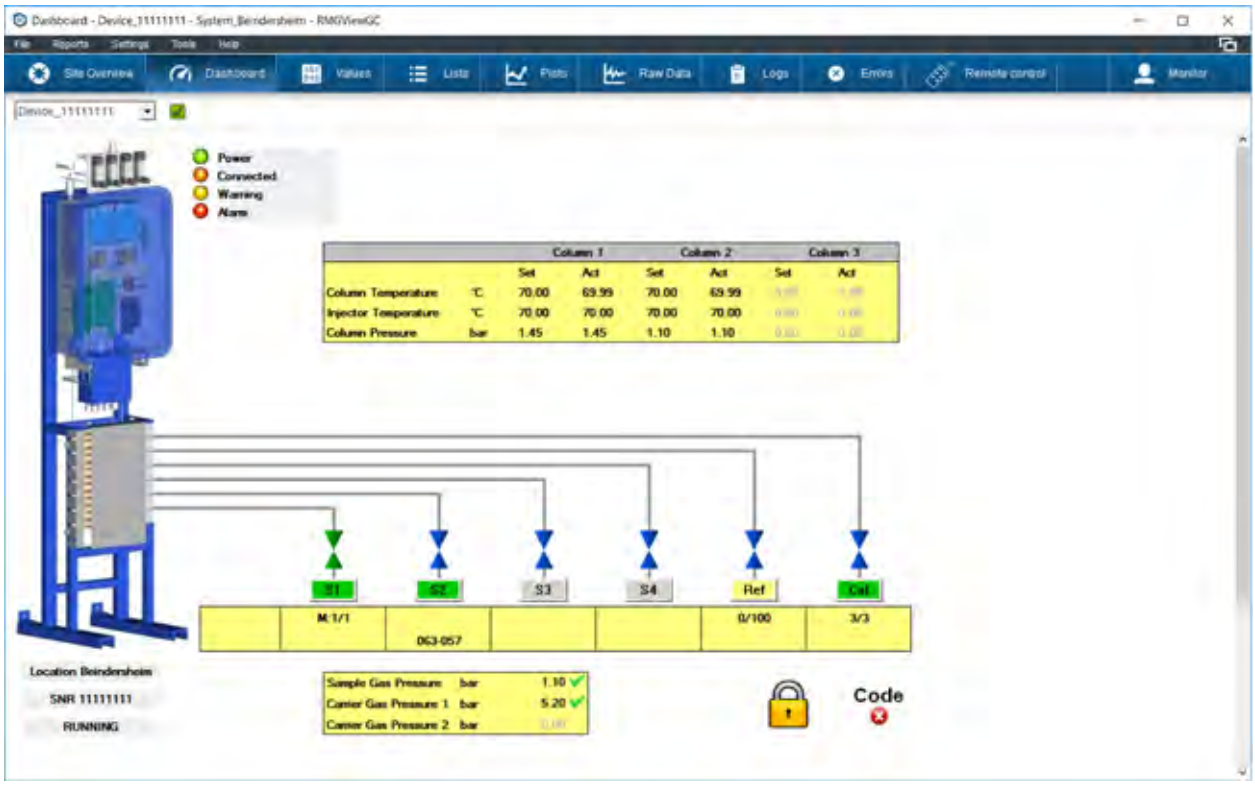



*Fig. 5-1: Opening Password Input window*

The following steps are conducted from the **Dashboard - Site Overview** RMGView$^{GC}$ window.

⇨ *Chapter 4.1, „Site overview“ on page 47*

1 Click the **Password Input** button.

The **Password Input** window opens.

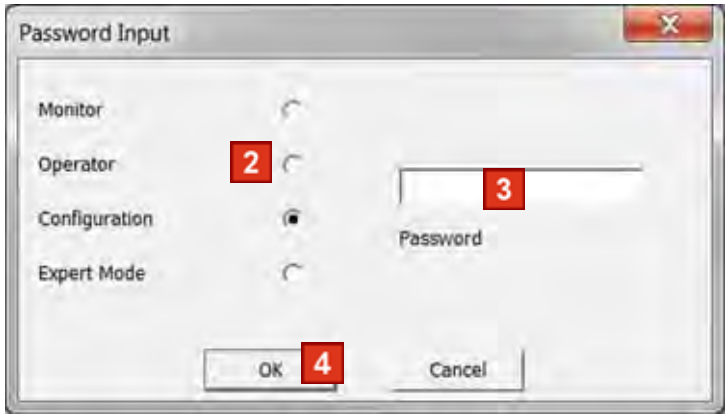
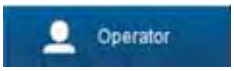



*Fig. 5-2: Login user*

2 Click the radio button for the user level e.g. **Configurator**.

3 Enter the password in the **Password** field.

4 Click the **OK** button.




If the password was entered correctly, the button on the **Password Input** field changes to the name of the user e.g. **Operator**.

If the password was not entered correctly “Wrong password“ appears in red characters.

The number of login attempts is not limited.

## 5.1.2 Log out users

For security reasons you must make sure that you log out of the protected user level before you leave the PC.

■ **Logging out users from a protected user level**

1 Open the **Password Input** window.

For this you carry out following steps:

⇨ *Step 1, „Logging users in at a protected user level“ on page 78*

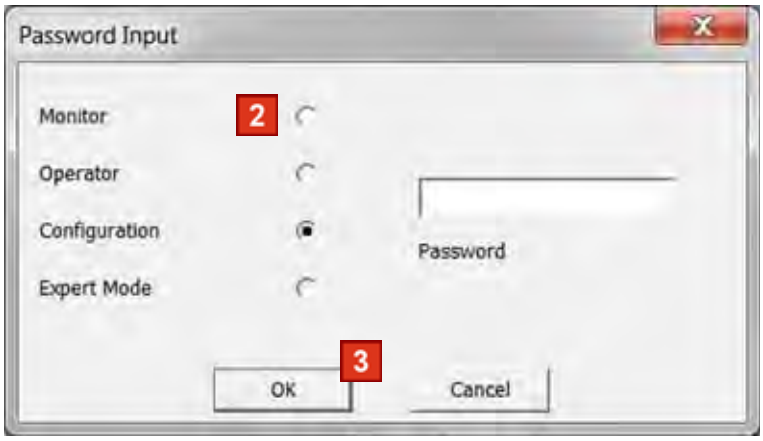



*Fig. 5-3: Login users*

2 Click the **Monitor** radio button.

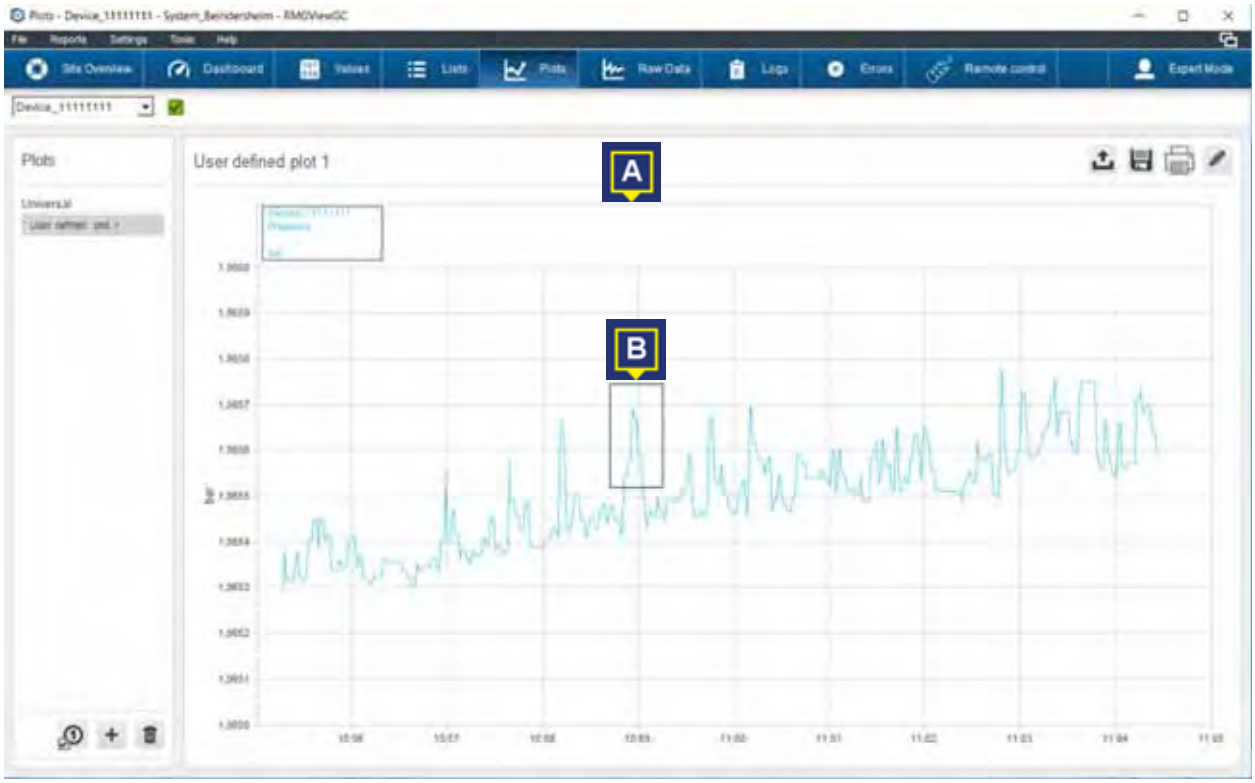
3 Click the **OK** button.

Access to the previously opened user level is disabled.

# 5.2 Adjusting the size of graphic contents

In order to enhance your view, you can enlarge or shrink areas of diagrams (plot).

■ **Enlarging areas**




A A display area of the plot. B Area marked for enlargement

*Fig. 5-4: Enlarging*

1 With left mouse button pressed mark the desired area **(B)** of the plot **(A)**.

2 After releasing the left mouse button the view of the marked frame is enlarged.

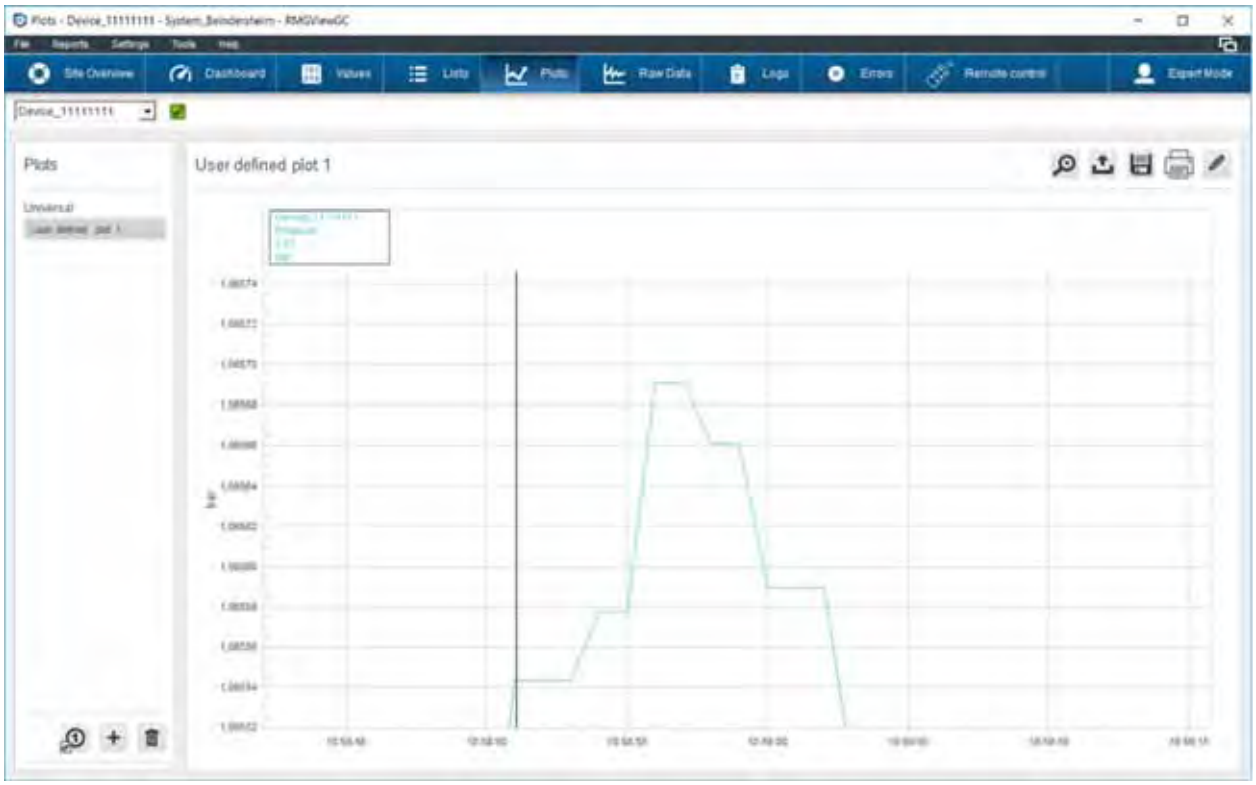



*Fig. 5-5: Enlarged area*

■ **Reset areas**

**1** Press the **Z** key on the keyboard.

The previously enlarged view is set back to the original size.

# 5.3 Working with windows

In this chapter you will receive information on organizing the windows.

## 5.3.1 User defined window configurations

You can arrange the windows on your desktop and save the configuration under a desired name. This configuration can be opened again any time.

■ **Save Window Configuration**

1 Open the **Site Overview** window.

⇨ *Chapter 4.1, „Site overview“ on page 47*

2 Arrange the windows on the desktop to your requirements.

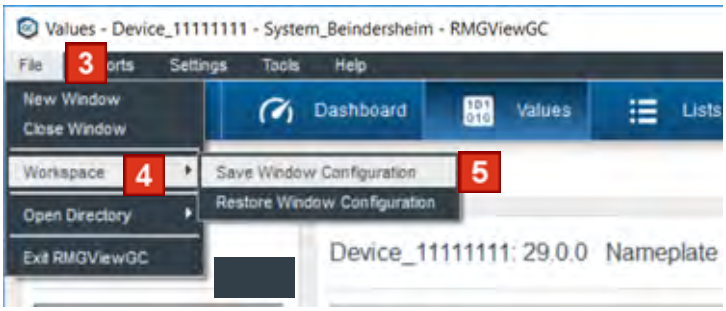



*Fig. 5-6: Save window configurations*

3 Click menu item **File** in the menu bar.

4 Click menu item **Workspace**.

5 Click menu item **Save Window Configuration**.

The arrangement of the opened windows is saved as a RMW file.

**Tip!**

Give the RMW file a name that you can easily recognize as being your configuration.

■ **Opening window configurations**

1 Open the **Site Overview** window.

⇨ *Chapter 4.1, „Site overview“ on page 47*

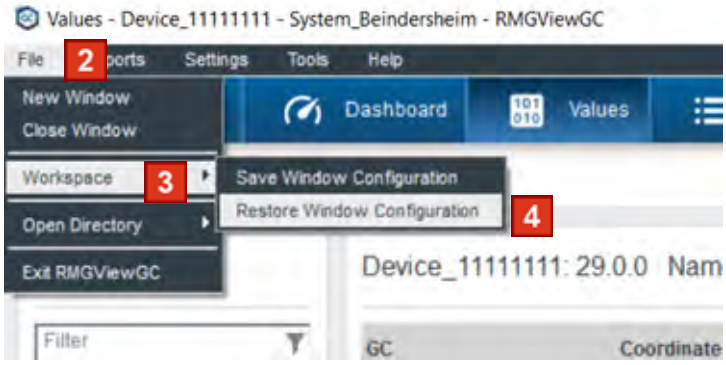



*Fig. 5-7: Save Window Configuration*

2 Click menu item **File** in the menu bar.

3 Click menu item **Workspace**.

4 Click menu item **Restore Window Configuration**.

Windows are opened automatically and arranged according to the configuration on the desktop.

## 5.3.2 Cloning windows

■ **Cloning windows**

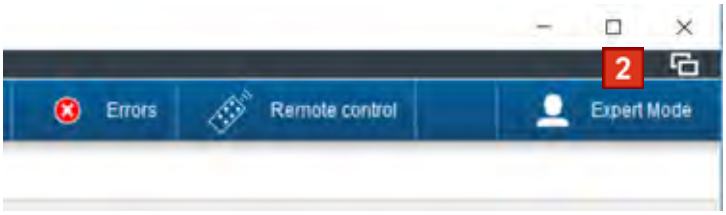



*Fig. 5-8: Cloning buttons*

**1** Open window that is to be opened again.

**2** Click the **Clone window** button.

The current window is opened once again.

## 5.3.3 Closing RMGView$^{GC}$

You can close all RMGView$^{GC}$ windows with just a few mouse clicks.

■ **Exiting the software**

1 Open the **Site Overview** window.

⇨ *Chapter 4.1, „Site overview“ on page 47*


*Fig. 5-9: Menu item RMGView*

2 Click menu item **File** in the menu bar.

3 Click menu item **Exit RMGView $^{GC}$**.

All windows of the software are closed.

## 5.3.4 Close windows for a device

■ **Close windows**

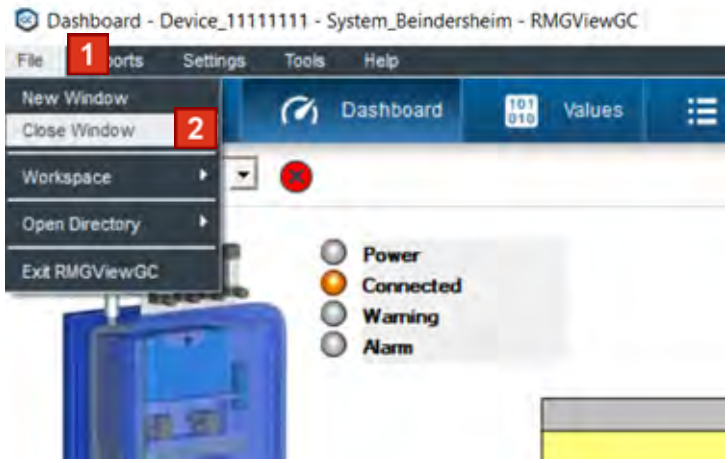



*Fig. 5-10: Menu item RMGView*

**1** Click menu item **File** in the menu bar.

**2** Click menu item **Close Window**.

The current window is closed.

# 5.4 Parametrize GC controller

To use this function you have to login as a configurator user (at minimum).

To transfer values to the GC controller, you must first open the calibration switch of the Controller. Note that the seal must be broken for this work. The GC must not be operated with a broken seal; the device no longer has the status "Calibrated".

- Only carry out these tasks if you are authorized.

  ⇨ *Please observe the "Operating instructions for the GC controller".*

### ■ Create a CSV file for parameterizing

**1** Create a CSV file.

**2** Remove the seal from the calibration switch.

**3** Turn the calibration switch clockwise.

If the calibration switch is not correctly set to the switch position **"Calibration switcvh open"**, then following message is displayed:

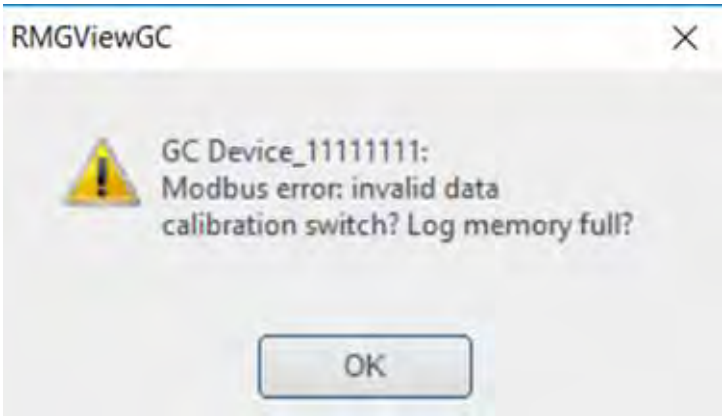



*Fig. 5-11: Message*

If this message is displayed, check the setting of the calibration switch.

■ **Transfer CSV file to GC**

1 Login user in at user level **Configurator**.

⇨ *„Login users“ on page 78*


*Fig. 5-12: Menu item Parameterize GC*

2 Click menu item **Tools** in the menu bar.

3 Click menu item **Parameterize GC**.

A Windows screen for selecting a CSV file will be displayed.

4 Select CSV file and confirm selection.

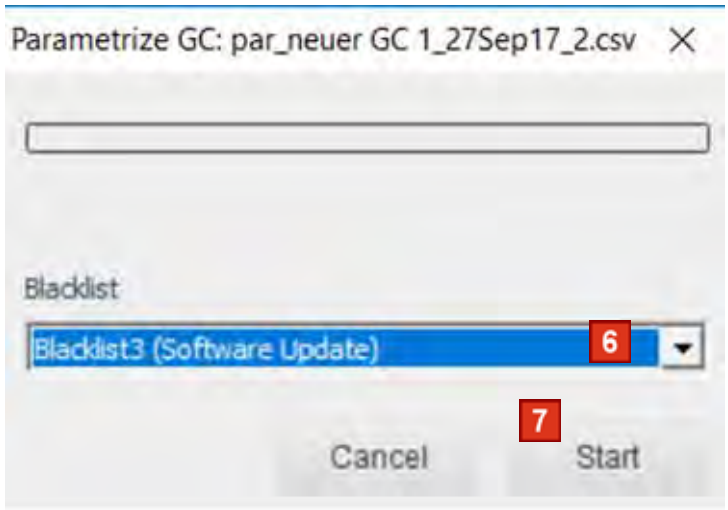



*Fig. 5-13: Select Blacklist and start process*

Collect all the parameters that are not to be transferred to the GC in a list. Ready-made lists (blacklists) are available.

5 Select blacklist.

6 Click the **Start** button.

The status of parameterization is illustrated by an animated time bar.

The CSV file is transferred to the GC and the GC is parameterized with the values from the CSV file.

Successful parameterization is displayed in the **Parameterize GC.csv** window.

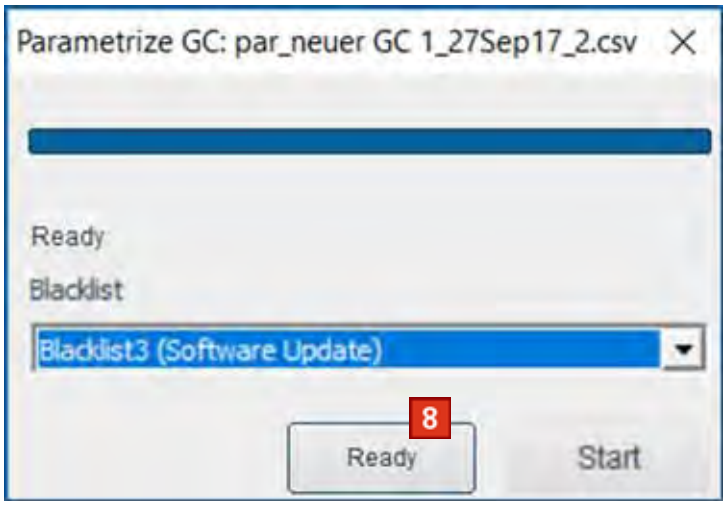



*Fig. 5-14: Parameterization successfully completed*

7 Click the **Ready** button.

Parameterization is completed.

■ **Complete work on the GC**

8 Turn the calibration switch counterclockwise.

9 Have the seal on the calibration switch replaced by an authorized body.

# 5.5 Open Folder User Data

You can open the folder User Data using the RMGView$^{GC}$ software.

■ **Open Folder User Data**

1 Open the **Site Overview** window.

⇨ *Chapter 4.1, „Site overview“ on page 47*

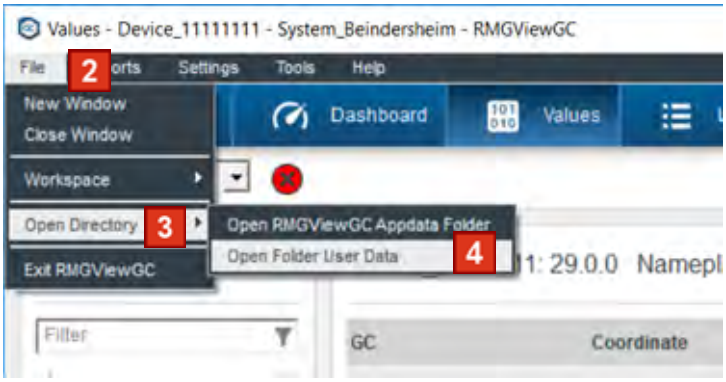



*Fig. 5-15: Menu item Open Folder User Data*

2 Click menu item **File** in the menu bar.

3 Click menu item **Open Directory**.

4 Click menu item **Open Folder User Data**.

Windows Explorer opens. The filing location is displayed.

# 5.6 Open Appdata Folder

You can open the AppdataFolder using the RMGView$^{GC}$ software.

■ **Opening the APPDATA Folder**

1 Open the **Site Overview** window.

⇨ *Chapter 4.1, „Site overview“ on page 47*

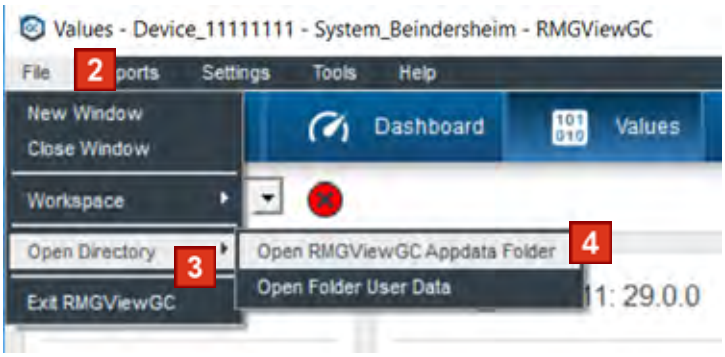



*Fig. 5-16: Menu item APPDATA Folder*

2 Click menu item **File** in the menu bar.

3 Click menu item **Open Directory** .

4 Click menu item **Open RMGView$^{GC}$ Appdata Folder**.

The Windows explorer opens. The filing location of the APP data is displayed.

# 5.7 Screen dump in jpg format

You can create a jpg file of the **Plots** and **Raw Data**.

The JPG file is created in the same manner for both windows.

■ **Creating the jpg file**

**1** Open the **Raw Data** window.

⇨ *Chapter 4.6, „Raw data (chromatogram)“ on page 55*

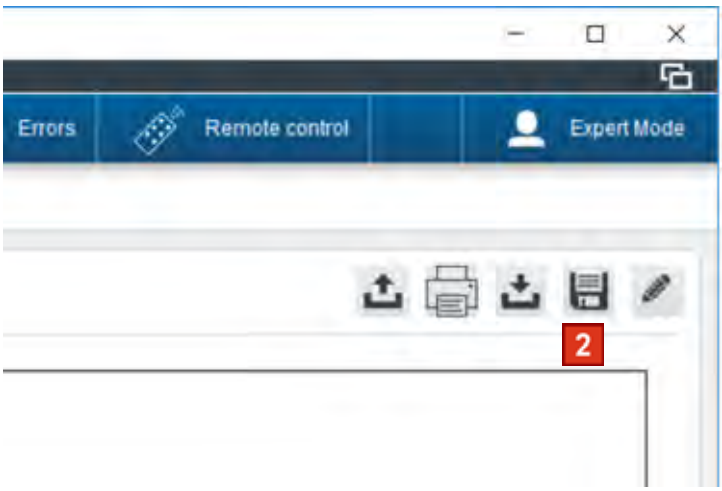



*Fig. 5-17: Button save as jpg image*

**2** Click the button **Save as jpg image**.

Windows Explorer opens. The jpg file is created. .

# 5.8 Reading error and warning messages

The RMGView$^{GC}$ software stores error and warning messages from the GC controller. For analysis purposes, the error and warning messages can be called up.

■ **Retrieving error and warning messages**

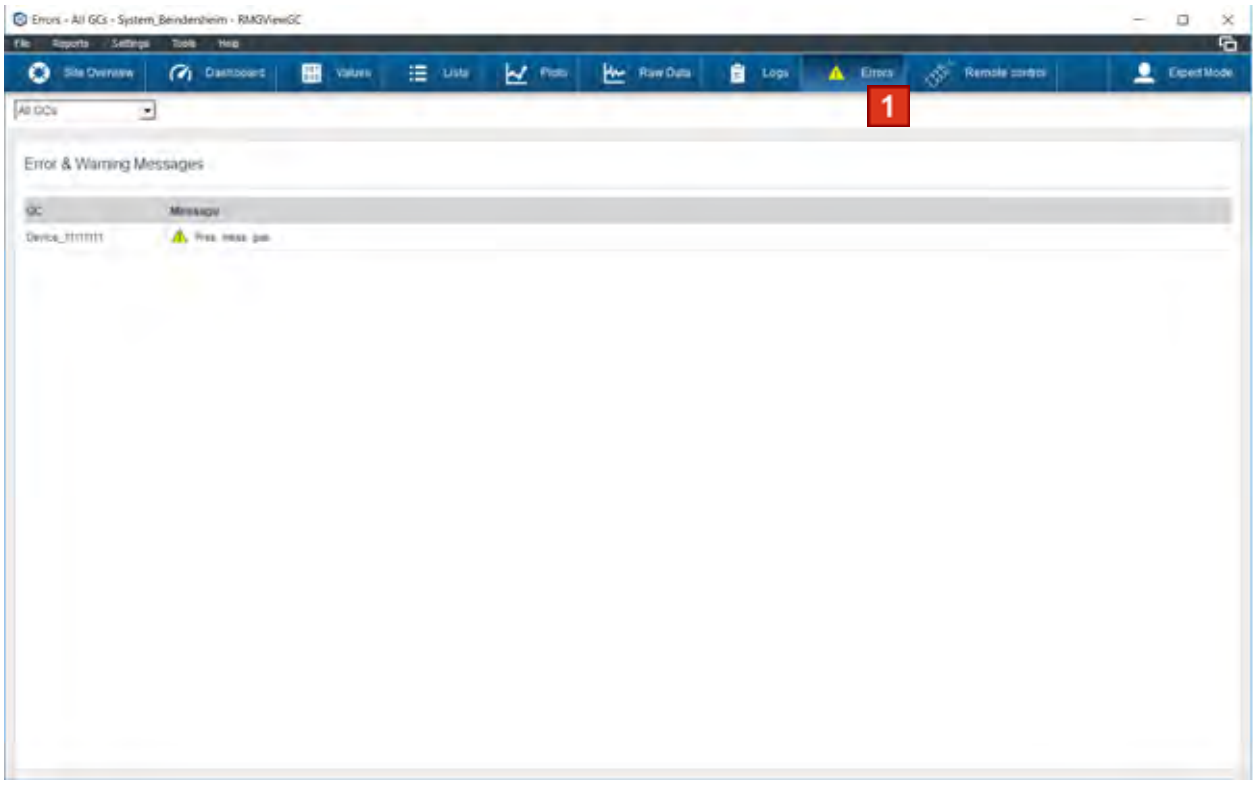



*Fig. 5-18: Errors window*

**1** Open **Errors** window

⇨ *Chapter 4.8, „Errors“ on page 60*

## Measurement element errors

Under Tools you can also display errors of the PGC9300 measurement element.

See also the PGC9300 manual.

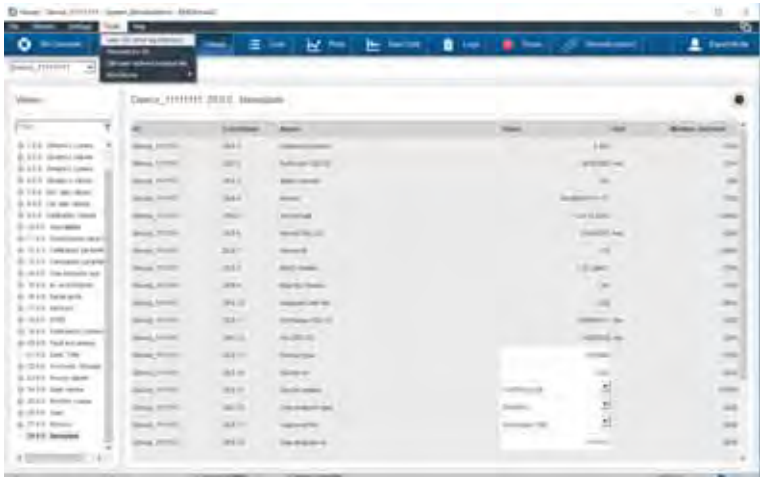


*Fig. 5-19: Errors of the PGC9300*

# 5.9 Creating a log of user actions

Every user action executed by the user is recorded by the RMGView$^{GC}$ software. You can open this list as a window. It is also possible to export this list as a PDF file.

■ **Display log**

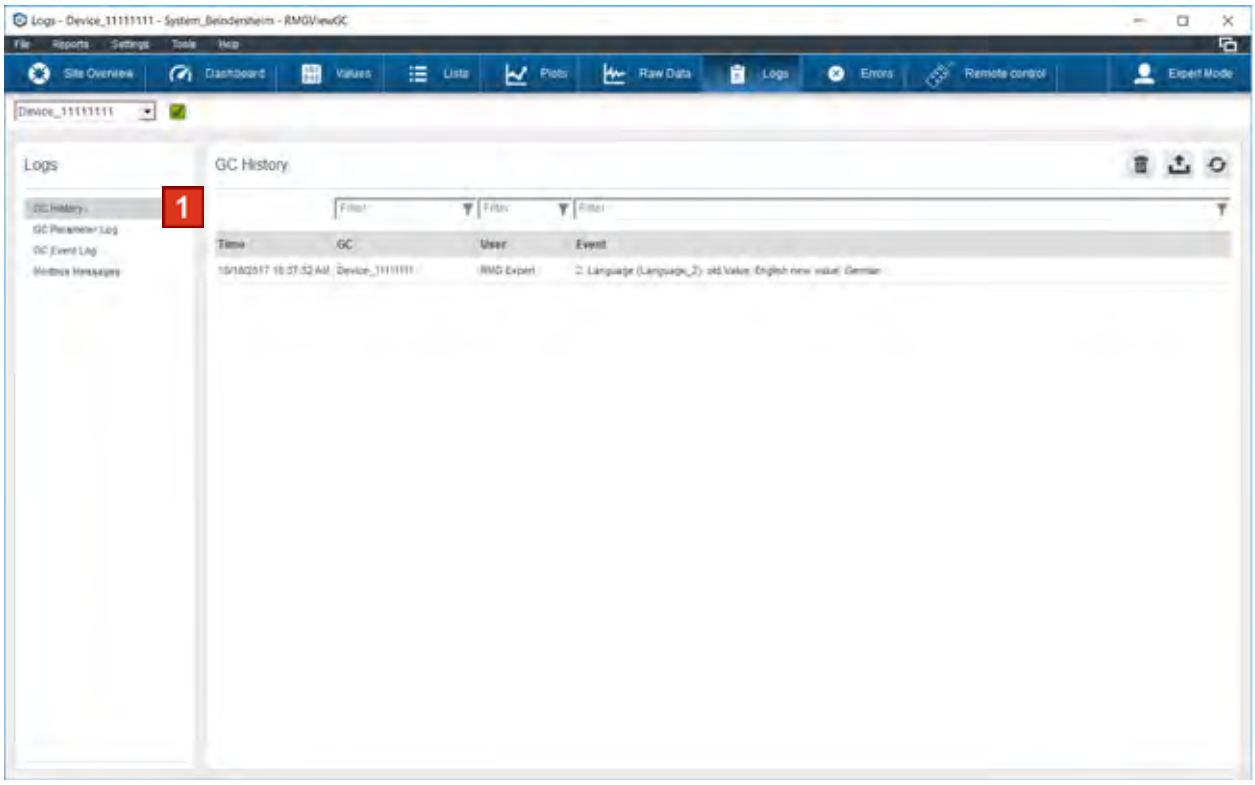



*Fig. 5-20: GC History*

1 Click the **GC History** entry.

The **GC History** window opens. All the actions taken are listed.

The contents of the list can be filtered for a user or for a message.

⇨ *Chapter 4.7, „Logs“ on page 56*

## ■ Creating a log file as a PDF


*Fig. 5-21: Exporting a list as a PDF file*

**1** Click the **Export** button.

The **Save as...** dialog box opens. The filing location must be selected. The PDF file is created.

# 5.10 Creating a log on parameter changes

Every parameter change that can have an impact on the accuracy of measurement is recorded by the GC controller. You can open this list as a window. In addition it is possible to export this list as a PDF.

■ **Display log**

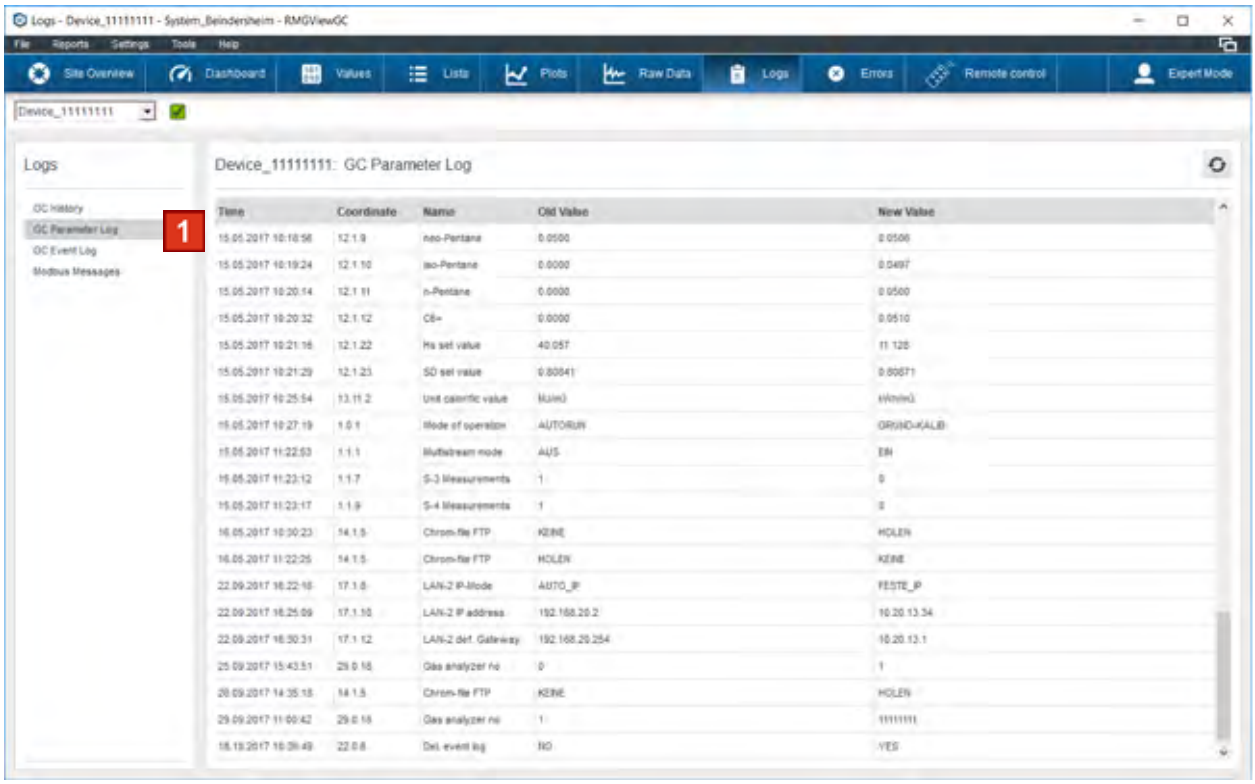



*Fig. 5-22: List of changed parameters*

1 Click the **GC Log** button.

The list opens. All the actions taken are listed.

# 5.11 Event log

*RMgview$^{GC}$ > site selction > logs > GC event log*

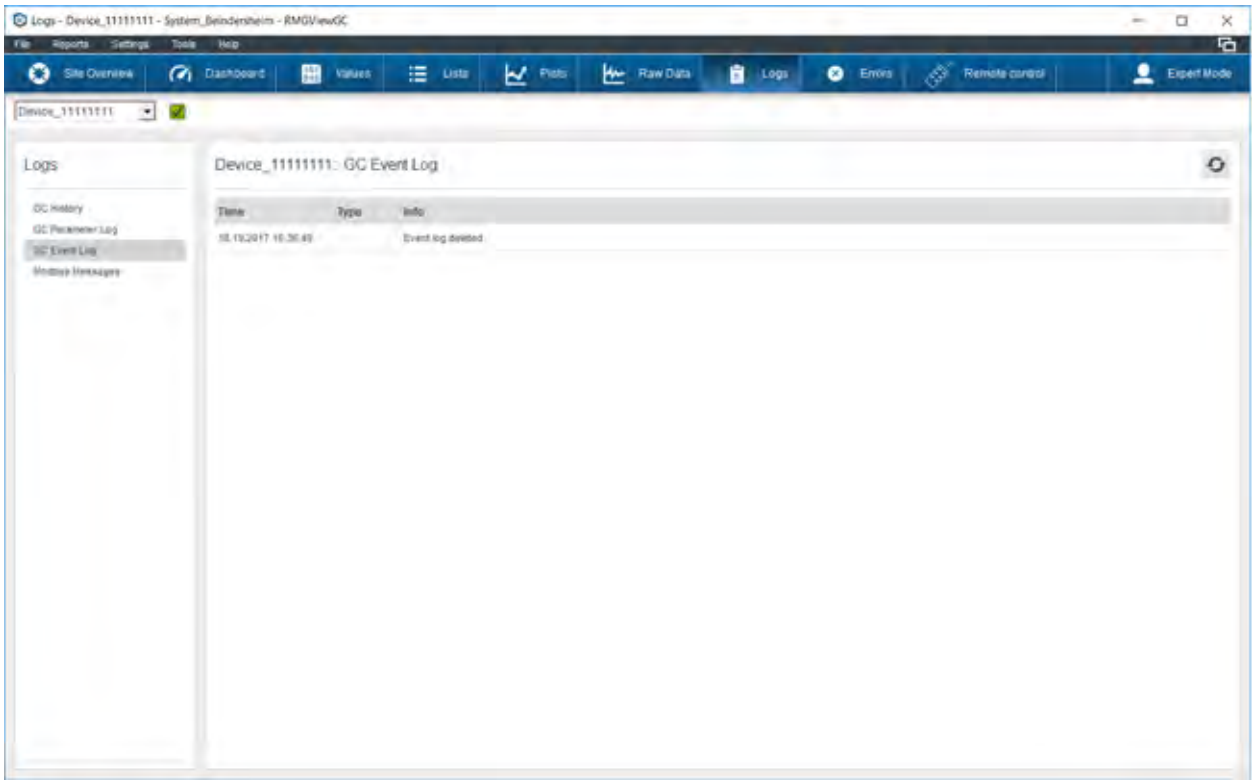



*Fig. 5-23: Event log*

In the GC Event window, you can display the logs for all events that have occurred. These contain a time stamp for which an event has been logged and the type of event. For example the error is listed and generally there is additional information about the event.

# 6 Troubleshooting

In this chapter you will receive information on possible problems and how you solve the problems.

If you cannot find a solution to your problem with the RMG component, then please contact the RMG service.

⇨ *„Manufacturer“ on page I*

**Contents**

## 6.1 Display„RMGView$^{GC}$ is already running…“

The following message will be displayed: „RMGView$^{GC}$ is already running.“

This means that one RMGView$^{GC}$ is already running. It cannot be started a second time.

**Fix**

1. Close RMGView$^{GC}$ or, if this doesn't work, use the Windows Task Manager, (right mouse key on the Windows task bar -> Start Task Manager) end the RMGView$^{GC}$.exe process in the processes tab.

## 6.2 Display „The file USE_112c.rmx …“

…could not be found. Get in touch with RMG in order to receive a GC_xxx.rmx file that is suitable for your GC.

1. Procure an .rmx file suitable for the firmware of your GC controller. Disconnect your GC controller. Start RMGView$^{GC}$. Select the menu item Tools->RMGView$^{GC}$. Open RMG APPDATA folder, copy the .rmx file into the folder displayed.
2. Close RMGView$^{GC}$.
3. Reconnect the GC controller. Start RMGView$^{GC}$.

# 7 Index

# U



# V



# W

# 8 Glossary

This chapter provides information on terms.

## Gas chromatograph (PGC)

A gas chromatograph is used to analyse the components of a gas to be measured. The measuring principle can be read in the relevant literature. The process results in chromatograms in which the individual gas components are identified by a deflection, a peek under a (measurement) curve. This area is representative for the volume fraction of the corresponding gas.

In order to achieve a high-precision measurement, the chromatograms must be calibrated regularly.

## GC-Controller (GC)

A controller operates the PGC. It switches valves to allow the desired gas to enter the measuring cell, e. g. controls pressures and temperature to define stable, reproducible measuring conditions. The controller defines the entire measurement process. After the measurement, the controller

records the data, calculates the required parameters according to prescribed standards and ensures further communication.

## chromatogram

Graphical representation of the measurement of a gas chromatograph. The further calculation and calibration allows the determination of the different gas components in a gas mixture, e. g. natural gas.

## stream

The PGC can operate serially up to four different measuring points and determine the gas compositions present there. The individual measuring points are called stream.

*Subject to technical modification.*

**For further information**
If you would like to learn more about the products and solutions from RMG, please visit our website:

**www.rmg.com**

or your local support office
or contact your local sales representative.

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