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Operating Manual

Martens
⟳ Member of GHM GROUP
GHMware

GHMware
Parameterisation Software for Devices of the GHM GROUP

Operating Manual
Version May 2019

PRC Technologies Corp., Ltd. ลาดพร้าว 101 กรุงเทพ 10240
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1 Intended use (areas of application)

Refer to the chapter 'Product description' for detailed specifications for the area of application.

The operational safety of the device is only assured when used as intended in accordance with the specifications in the operating manual. Intervention beyond the actions described in the operating manual may only be carried out by personnel authorised by the manufacturer for safety and warranty reasons. Conversions or modifications made on one's own authority are expressly prohibited. Application-specific dangers can emanate from this device when used improperly or not as intended.

The device is not intended for use in explosion-prone areas and safety-related system parts in accordance with SIL.

General safety instructions, use

This operating manual must be kept in a location such that qualified personnel can refer to it at all times. Any processes described in this operating manual may only be carried out by trained, qualified personnel who are authorised by the owner and wearing protective clothing.

All rights reserved.

1.1 Safety signs and symbols

Warning notices are identified in this document as described under the following table:

⚠️ **DANGER**	Warning! This symbol warns of imminent danger which can result in death, severe bodily injury, or severe property damage in case of non-observance.
☞	Attention! This symbol warns of potential dangers or harmful situations which can cause damage to the device or to the environment in case of non-observance.
ⓘ	Note! This symbol indicates processes which can have a direct influence on operation or can trigger an unforeseen reaction in case of non-observance.

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1.2 Safety instructions

Read the product description before commissioning the device. Ensure that there are no limitations for use of the product for the relevant applications.

⚠️ **DANGER** The owner is responsible for ensuring the fault-free operation of the device. The owner is obligated to ensure compliance and to observe the required work and safety measures of the current applicable regulations for the entire duration of use.

1.3 Product liability and warranty

Exclusion of liability:

The contents of the operating manual have been checked to ensure conformity with the described device. However, deviations cannot be entirely ruled out. Therefore, we cannot assume any guarantee for complete conformity. The specifications in this document are checked regularly and any necessary corrections are incorporated into subsequent versions. This document is subject to technical changes. In addition, all claims are based on the valid 'Standard Terms for the Supply of Products and Services of the Electrical Industry'.

☝️ Unfortunately GHM Messtechnik GmbH cannot inspect or repair any devices without the required form having been filled in completely.

1.4 Standards and directives

Conformity with directive	2004/108/EG
CE Conformity	EN 55022:2011-12
	EN 55024:2011-09

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2   Product description

GHMware is the operating software for parameterisation of devices of GHM Messtechnik GmbH. All device-specific parameters are configured by means of USB connection cables or programming adapters via PC.

GHMware can be installed as software (administrator rights required) or it can be started as an executable program from a data carrier (portable version).

GHMware has no effect on the operating system or the registry.

The connection of sensors, such as a capacitive limit value switch of the type MLC433, to a computer or notebook takes place with a conventional mini-USB cable. Sensors that do not offer direct USB connection (e.g. an MLC420) can be connected to the laptop using the USB programming adapter type EYY120.

Windows identifies the measuring device and/or the USB programming adapter as a USB mass storage device that behaves like a conventional USB flash memory for the operating system. Windows drivers are used.

The GHMware operating software takes the necessary data for the configuration from the self-describing device. For this purpose, the device provides the necessary data record via the file interface. Thanks to this configuration, additional devices from our portfolio with the same software version can work together and be configured.

This arrangement also offers the possibility of storing device and configuration files on your hard disk, wherein you can save the information (local backup).

2.1   Scope of delivery

- GHMware (on CD or for internet download as a ZIP file)
- https://www.ghm-group.de/infothek
- this operating manual
- Programming adapter EYY120, EYY220 or USB connection cable ACI211, if applicable
- Additional documents, if applicable

2.2   System requirements

- Operating system Microsoft Windows 7 or higher, 32 or 64 Bit.
- Graphic card with at least 16 bit colour depth.
- Minimum of 1 GByte RAM.
- Hard disk with at least 512 MByte of free memory.

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3 Controls and functions

GHMware is only the user interface and takes the parameter data directly from the device or from the data stored on the hard disk of the PC.

3.1 Installation of the software

Start the delivered or downloaded file (e.g. iGHMware.4-0-SR1.exe) and follow the instructions on the screen.
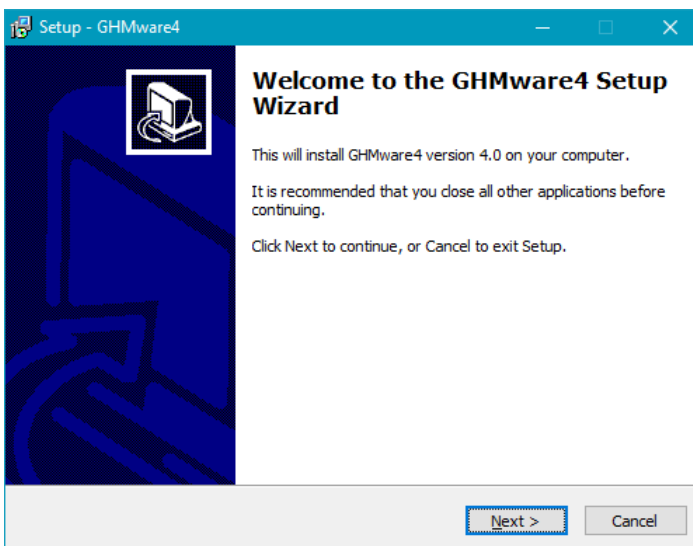

Figure 1 – Installation script

Portable version:

Unpack the delivered or downloaded file GHMware.4-0-SR1.zip on a local data carrier or USB flash memory and start GHMware.exe there.

When connecting a device to a PC for the first time, the operating system automatically installs the necessary drivers and issues drive letters. This process can take up to one minute.

If the drivers have been installed after the initial operation, the device is automatically displayed by the operating system as a portable data carrier in a pop-up window. This window is not needed and can be closed.

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3.2 Initial program start-up

After installation, the program can be opened from the start menu under „GHM Messtechnik – GHMware4".

The communication with a connected device depends on the device type:

- Standard USB cable width mini USB, e.g. MLC430

- Programming adapter EYY120, e.g. MLC420

- Programming adapter EYY220, e.g. CONDIX

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4   Using the software

The operation is based heavily on the menu structure of the current Office programs in order to enable intuitive use of the software in a wide range of applications.
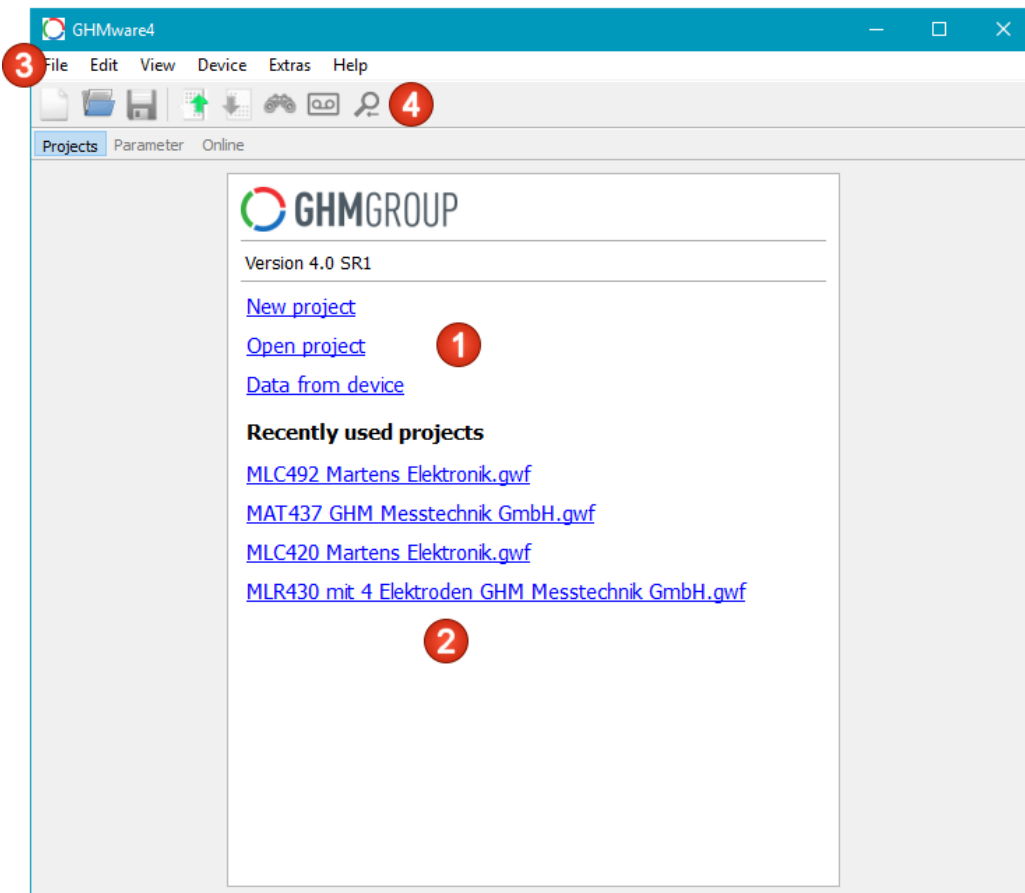
4.1   Starting the software, Project view

Figure 2 – Project view

The software starts with Project view. The following functions are available here:

1. In this area

    - a new project can be created

    - an existing locally saved project can be opened

    - data can be read from a connected device

2. An existing project from a list of recently edited projects can be selected in this area.

3. The same functions can be called in the menu.

4. The symbol bar contains the most important functions for quick selection.

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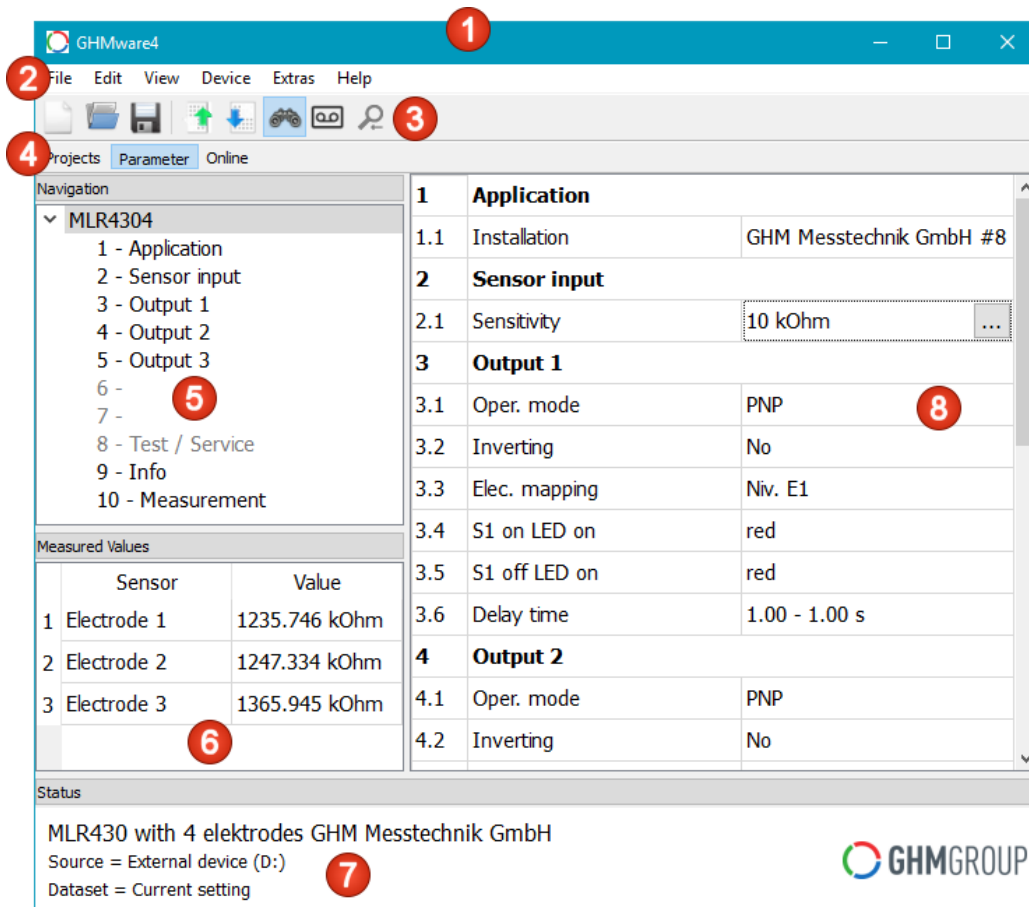**GHMware**

4.2 Parameter view

Figure 3 – Parameter view

After selection of a function in the Project view, the Parameters view where the main functions of the software are found is automatically activated. The title bar displays the name of the software and the current document. A '*' after the name of a document indicates that changes have been made to the parameters.

1. The title bar displays the name of the software and the name of the project file when a project is open. A (*) at the end indicates that the data has been changed.

2. Menu bar, access to all functions. The functions are described in the following chapters.

3. Symbol bar for quick access to the most frequently used functions. When the mouse is moved over the symbol bar, the respective command is displayed as a 'Tool tip' after a wait time. The symbols in this bar are also shown in the menus next to the assigned command.

4. View bar, quick access to the different views. Switching can also take place in the 'View' menu.

5. Navigation area, selection of user level. With selection of the user level, the display in the parameters area is controlled. If, as shown on the screen, the upper node is selected, all parameters available in the parameter range are displayed. If one of the operating levels is

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selected, the display in the parameters area is reduced to the parameters of this operating level.

6. Measurement area, display of selected measurements. The display is only shown if a device is connected and the command Device – Read measurements has been activated. Selection of the displayed measurements takes place in the parameters area in the Measurements operating level.

Measured Values		
	Sensor	Value
1	Elektrode 1	1212,973 kOhm
2	Elektrode 2	1226,749 kOhm
3	Elektrode 3	1344,534 kOhm

Figure 4 – Measurement area

7. Status area, display of device name, origin and selection of the data record. The screen above is for a device of the type 'MLR430...', the data record was read from a connected device (drive letter F:) and the parameter set 'Current setting' is currently active (see Edit – Select parameter set command).

8. Parameter area, display and editing of parameters. All parameters that belong to the operating level selected in the navigation area are displayed in this area. A parameter is selected by clicking on a cell in the right column. A small button appears at the right edge of the cell (top of the screen in the line 2.1 Sensitivity = 50 kOhm). By clicking of the button (or pressing the space bar, enter key or F2 key on the keyboard), a dialogue is displayed with which the value of the parameter can be changed.

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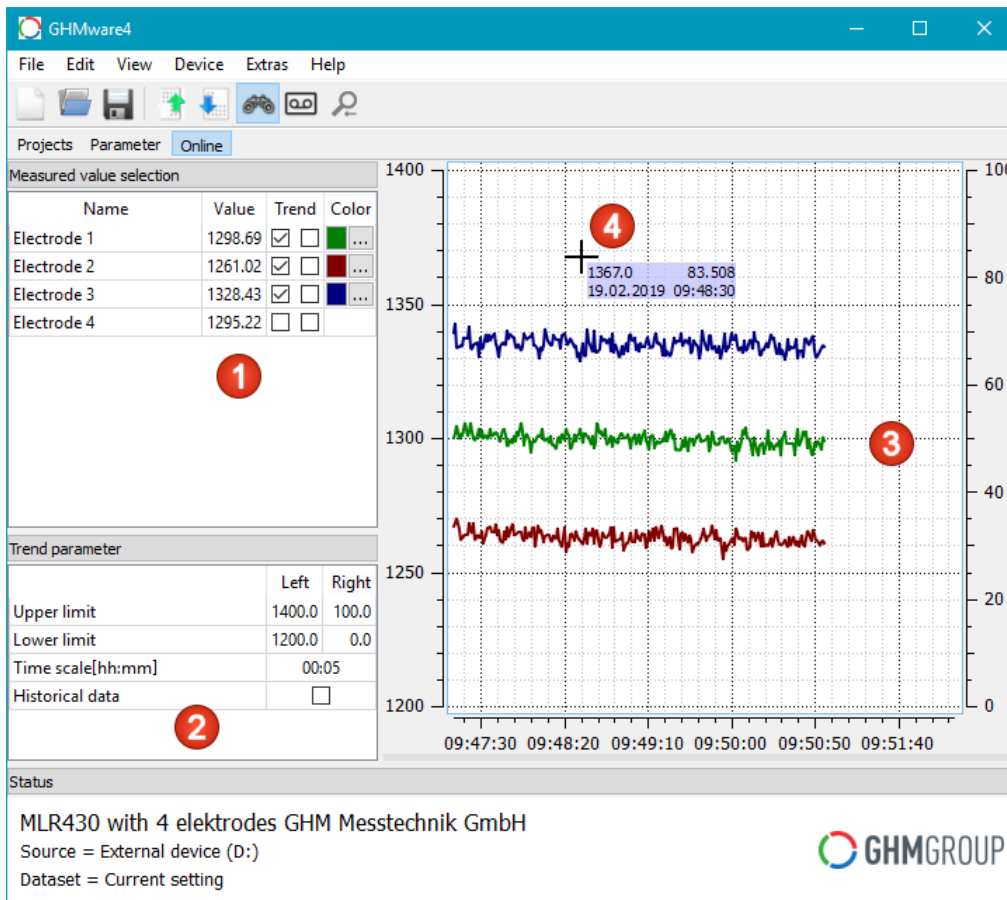
4.3 Online view

Figure 5 – Online view

If the software is connected to a device and the 'Measurements' function has been activated (description in the following chapters), Online view is enabled.

1. The measurements can be selected here.

   - All measurements delivered by the connected device are listed in the 'Name' column.

   - The current measurement is displayed in the 'Value' column. If the mouse pointer is in the area of the trend curve, this column is highlighted and the value that was active for the respective time within the trend curve is displayed.

   - A value can be selected for display in the 'Trend' column. By placing a check mark, the value is assigned to the right or lend trend axis.

   - The colours of the individual values can be individually set in the 'Colour' column.

2. The trend is parameterised here.

   - The upper and lower limit can be adjusted separately for the left and right axis. By assigning the curves to the left or right axis, the curves can be scaled in two

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different ranges. This is advantageous when measurements have different value ranges or units.

- The 'Time axis' field can be used to adjust how large the displayed time window is. The value can be changed at any time without loss of data.

- By placing a check mark in the 'Historical data' field, the display of the continuous recording is interrupted and the display switches to all data recorded thus far. The recording continues in the background. When the check mark is removed, the display switches back to the continuous recording.

3. The trend curves of the selected measurements are displayed here. In 'Historical data' mode, the mouse can be used to select and zoom in on an area within the curve (left-click and hold on a corner of the area, move the mouse to the other corner and release the button). The process can be repeated as often as desired. By pressing the Backspace key, the last zoom process is undone. Zoom mode is exited by pressing the Backspace key repeatedly. Alternatively, the zoom can also be undone with the button in the symbol bar.

4. If the mouse pointer is in the area of the trend curves, the scale values are displayed in a highlighted area next to the mouse pointer. In doing so, the measurement values below the mouse pointer can be read very easily. At the same time, the measurements are reflected in the table in the area (1). Once the mouse pointer leaves the area of the trend curves, the current measurements are displayed in the area (1) again.

4.4 Adjustment of parameters

All parameters are adjusted in dialogue windows after selection in the Parameters view. Depending on the data type, lists, input fields and selection boxes are displayed in the windows. The data is adopted by selecting 'OK'.
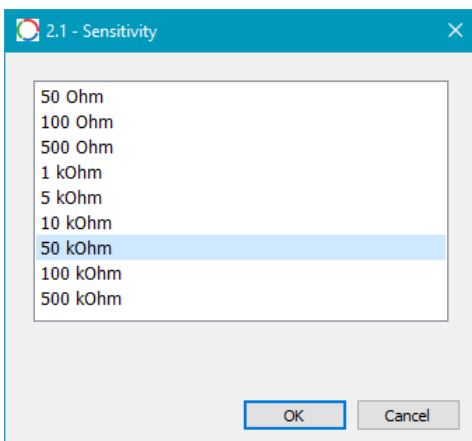

Figure 6 – Parameter dialog

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Parameter with dependencies

Some parameters have two values that are interdependent. The rule for this is displayed and checked in the dialog.
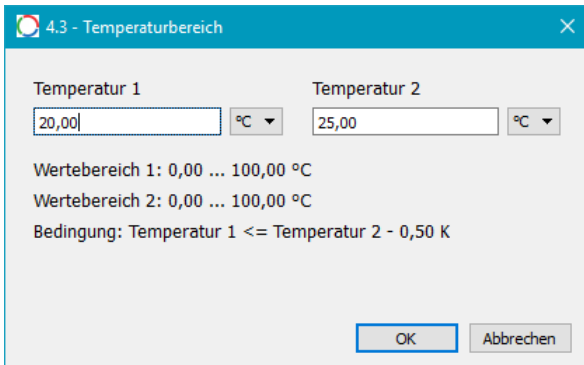

Figure 7 - Parameter mit dependencies

Parameters with variable units

Some devices have the possibility of changing the physical unit for parameters. For these parameters, the numerical value and displayed value range are re-calculated automatically when the unit is selected. The internal storage always takes place in a fixed base unit.
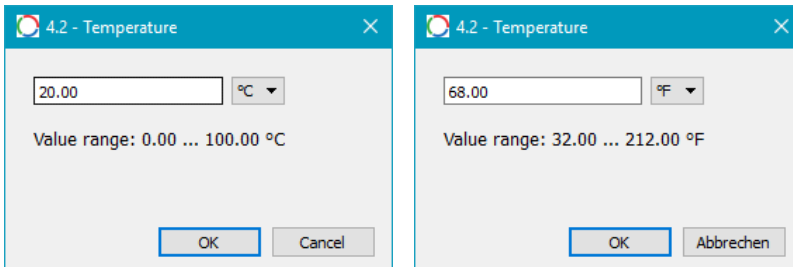

Figure 8 - Parameter with variable units

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Table input

Some devices have the possibility of linearising measurements. This takes place with input of a table by the user.
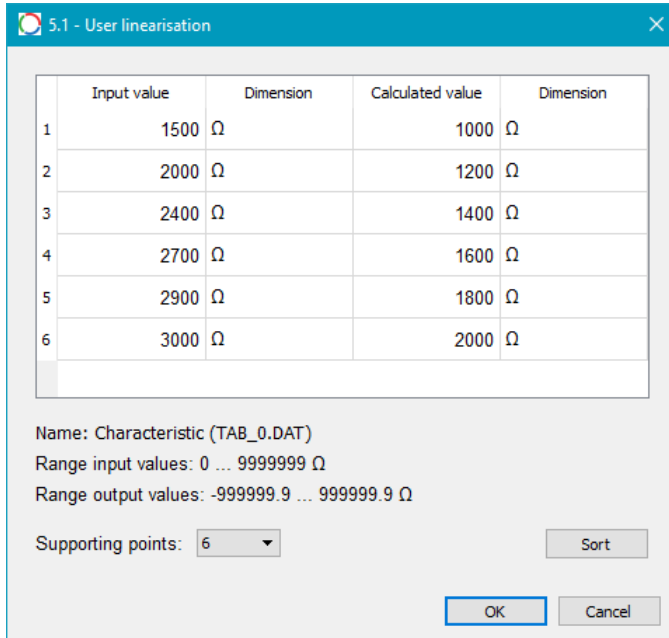
Figure 9 – Table input

In doing so, it is possible to specify the (effective) number of support points (the device specifies a maximum number, e.g. 32). The table is expanded or reduced by changing the number. Once support points have been entered, they remain in place even if the number is reduced.

The physical unit can be selected for each input and output value. The software automatically recalculates the numerical values.

By selecting the Sort function, the table is automatically sorted ascending according to the input values.

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Table input with 'TeachIn'

If the 'Read measurements' mode is activated, an additional 'Measurements' column is displayed in the table. The current measurement is displayed in the respective selected line in this column. With selection of the 'Adopt measurement' button, the measurement is adopted as an input value for the selected line.
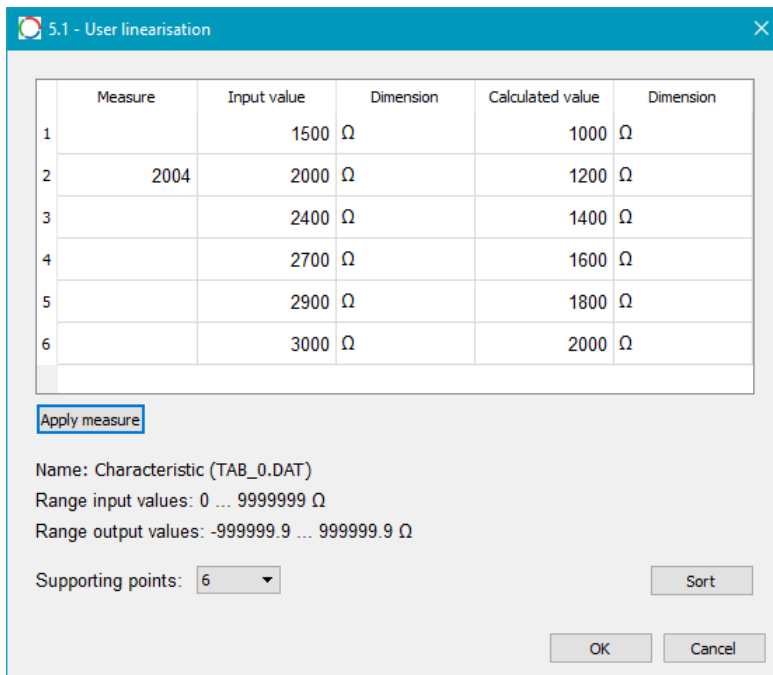

Figure 10 – Table input with 'TeachIn'

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4.5 File menu

New

A new project is created. For devices of the type MXX, the GHMware contains ready-made templates. Devices with a serial interface are only offered after the corresponding device has been read out.

Open

This command opens a data record from a local data carrier that was created earlier with the Save function.

Save

This command saves the current data record on a local data carrier. When using this function for the first time, a file name is requested.

Save as

This command saves the current data record on a local data carrier. A file name is always requested.

Send mail

This command makes it possible to send the current data record directly with the installed email program. The data record is automatically copied as a file attachment to the mail. It can be opened by the recipient directly in an installed version of GHMware by double-clicking on the attachment.

Close

This command closes the current data record, the user interface is then 'empty' like after the start-up of the software.

Recently used documents

This menu item shows a list of up to 8 recently opened or saved data records and provides quick access to these documents.

Save summary

This command generates a text file with all of the parameter settings of the data record. The text file can be opened and printed with any text editor.

Export device files

This command is not normally needed. It is available for purposes of compatibility with GHMware Version 2. The current device files of the current data record are copied locally to the data carrier.

Import device files

This command is not normally needed. It is available for purposes of compatibility with GHMware Version 2. The selected device files are imported to the current data record.

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Exit

This command closes GHMware. Once a current data record has been changed, the software asks whether the data record should be saved.

4.6 Edit menu

Select data record

Some devices offer the possibility of saving a customer data record that can be activated as necessary in the device, in addition to saving the current setting.

This command makes it possible to switch between processing the standard data record 'Current setting' and the customer data record. The currently active data record is displayed in the status area.

Copy data record

Some devices offer the possibility of saving a customer data record, a factory condition and manufacturer data record, in addition to the current setting.

This command makes it possible to overwrite a data record with the values from one of the additional data records.

4.7 View menu

Projects

Switches to the Project view.

Parameter

Switches to the Parameters view.

Online

Switches to the Online view.

Zoom back

Undo the last zoom step. This command is only enabled when you are in Online view and the trend curve is zoomed.

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4.8 Device menu

Data from device

This command reads the data record from a connected device. A dialogue with the drive letter and the name of the device or devices to be connected is displayed.

For devices with serial Modbus interface the name of the COM port is displayed.

If the device is connected via an EYY220 programming adapter, the hook of the box "RS485" should be removed. Communication takes place with standard settings for the interface.

If the device is connected via an RS485 adapter, the checkbox of the box "RS485" must be set. Now the interface parameters (address, baud rate, parity) can be set.

After selection of the device, the data record of the connected device is displayed and can be edited.
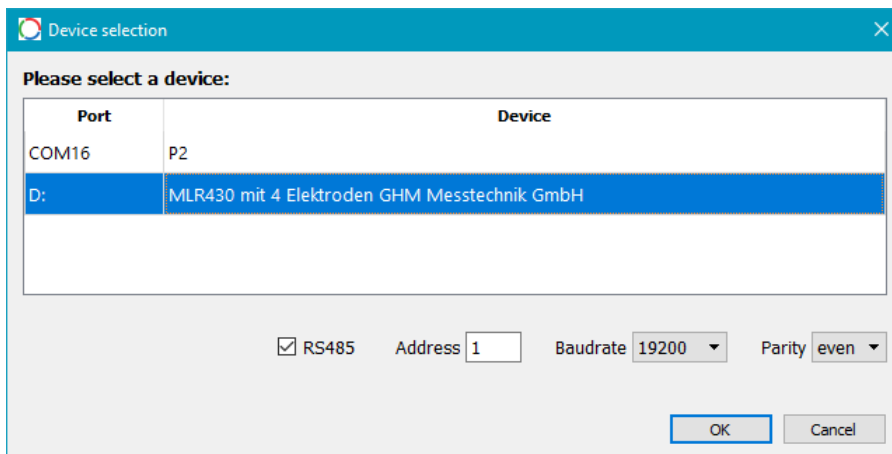

Figure 11 – Device selection

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Data to device

This command writes the data record to a connected device. After this command is invoked, an initial check takes place to determine whether the data in the software and in the device are identical. Then a write process is only started if the data has changed. The device must not be disconnected from the PC during the write process, which only takes a few seconds. The current progress of the write process is displayed in a window..
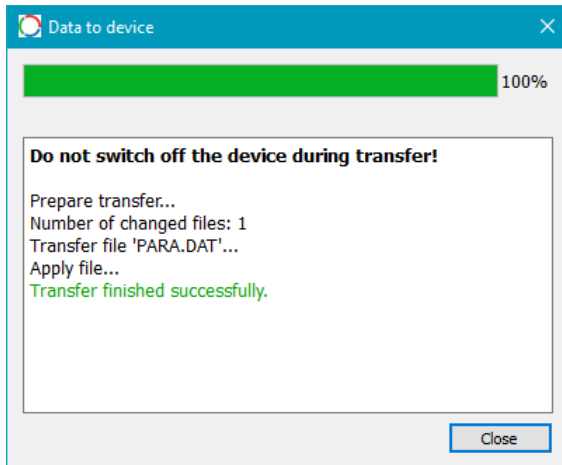

Figure 12 – Data transfer

Read measurements

If a device is connected and a data record of this device is loaded in the software, the continuous display of selected measurements can be started with this command. By repeatedly invoking this command, the display of measurements is ended.

Recording

If the 'Read measurements' mode is active, this command can be used to record the measurements in a standard CSV file. When this command is invoked, a file dialogue in which the CSV file can be selected is displayed. The data recording is stopped by invoking the command again.

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Simulate measurements

This command simulates the display of measurements in case no device is connected. After the command is invoked, the measurements to be displayed can be entered in a window. They are then displayed in the measurement range with simulated noise.
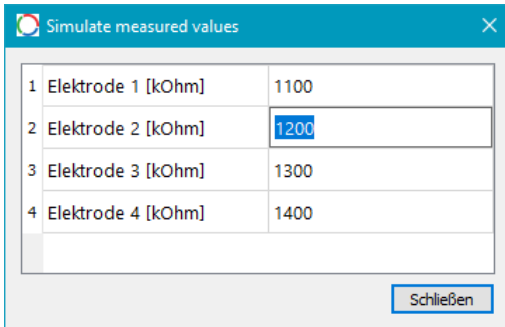

Figure 13 – Simulate measurements

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4.9 Extras menu

Language

The language of the user interface can be changed here. German and English are currently supported. The software must be restarted after the language is changed.

Settings

The behaviour of GHMware can be adjusted in this dialogue. If you move the mouse pointer over one of the settings, a 'Tool tip' is shown as a help text.
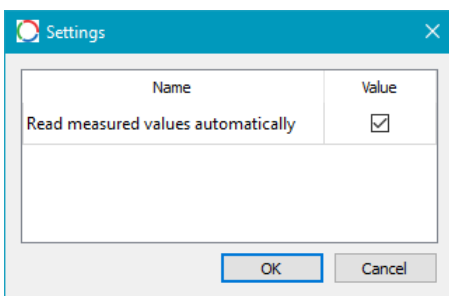

Figure 14 – Settings

4.10 Help menu

Operating manual

This command opens the operating manual of the software as a PDF file.

About

This command displays the version number and the copyright information for the software.

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4.11 Operating statuses of the programming adapter EYY120

LED operating states	Description
Continuous green light	Error-free operation
Red blinking light	1. The device is in its initialisation phase. 2. Data is being transmitted. 3. For error messages (see Troubleshooting).

4.12 Closing the parameterisation and removing the USB mass storage device

After completion of parameterisation, the GHMware operating software can be closed.

In the File menu, select the option Exit in order to close the program.

Click on Safely remove hardware in the task bar on your screen in order to remove the hardware and safely disconnect the programming adapter from the computer or laptop.

5 Service

The programming adapter EYY120 is maintenance-free. Any necessary repairs can only take place at the factory.

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6 Technical data

Accessories: Programmer adapter EYY120

Auxiliary voltage:	Supply from the USB bus
Power consumption:	1.5 W
Working temperature:	-10 to +55 °C
Storage temperature:	-40 to +60 °C
Relative air humidity:	< 95 %
Condensation:	not permitted
CE Conformity:	EN 55022:2011-12
	EN 55024:2011-09
Electrical connection:	USB 2.0
Sensor connection:	5-pin round plug
Connection cable:	1.5 m PUR cable
Housing:	ABS, grey

Mechanical design / dimensions

Type	Order number
Programming adapter for MLX42X	EYY120
Programming adapter for Modbus devices	EYY220
USB connection cable for MLX43X	ACI211
5-pin plug adapter ==> 8-pin for MLT42X	ACI112

Figure 15 - EYY120

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7   Troubleshooting

Error	Cause	Remedy
Blinking: 1 x green, 1 x red	USB is installing	Please wait.
Blinking: 1 x green, 2 x red	USB interface disconnected.	Device can be removed from the PC. Re-insert if necessary.
Blinking: 1 x green, 3 x red	USB device is connected.	Initialisation phase -> Please wait.
Blinking: 1 x green, 4 x red	USB device was recognised by the operating system.	Initialisation phase -> Please wait.
Blinking: 1 x green, 5 x red	USB device was not recognised.	Disconnect the device and re-insert.
Blinking: 2 x green, 1 x red	Connected device power consumption is too high.	Check the connected device or the connection.
Blinking: 2 x green, 2 x red	Connected device power consumption is too low.	Check the connected device or the connection.
Blinking: 2 x green, 3 x red	The voltage at the output of the EYY is too high.	Check the connected device or the connection.
Blinking: 2 x green, 4 x red	The voltage at the output of the EYY is too low.	Check the connected device or the connection.
Blinking: 3 x green, 1 x red	Error transmission connected device on the EYY.	Pull out the EYY and completely re-connect everything.
Blinking: 3 x green, 2 x red	Data was edited.	No errors, data transferring, if applicable. Wait and do not pull out the device.

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8 Device transport and storage

Gentle and tension-free packaging of the housing must be ensured for transport (no machine wrapping of the package).

The device must be stored in the environmental conditions specified in the technical data.

9 Return to manufacturer

GEFAHR ⚠️ The legal regulations for environmental protection and our personnel require that devices which are sent back which have come into contact with liquid are handled without risk to people or the environment.

If you send a device back to us for inspection or repair, we must request that you strictly observe the following requirements.

On the GHM homepage under: 'Downloads/forms' a return shipment form can be downloaded.

The repair can be performed quickly and without call-back questions if:

1. A filled-in form is provided for each device.
2. The device has been cleaned and packaging which prevents damage to the device is used.
3. The filled-in form and any necessary safety data sheet for the measured medium are affixed on the outside of the packaging.

10 Disposal

Separation by material and recycling of device components and packaging must take place when the device is disposed of. The valid legal regulations and directives applicable at the time must be observed.

The device may not be disposed of with household waste. If the device should be disposed of, return it to us with the return shipment form filled in under section 8. We will then arrange for the proper disposal.

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11 Imprint

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Place of fulfilment and jurisdiction: Erolzheim

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