Operating Manual

Windows™ - Configuration Software
GMHKonfig

as of version 2.2

Contents:

This manual is subject to being changed

1 General Information

1.1 Software Operation

It is necessary that the user of this manual has a basic knowledge of how to handle a personal computer and work with the operating system Windows™. We recommend to acquire the main knowledge of Windows™ before installing this software (operating manuals, specialised literature, introductory courses etc.).

1.2 System Requirements

- IBM compatible PC (Pentium™)
- At least 20 MB free hard disk space
- CD-ROM drive
- At least 32 MB main memory
- Windows™ 95, 98, 2000, XP, NT 4.0 (with Service Pack 3.0) or later
- Mouse
- One unassigned serial interface
- Interface adapter

1.3 Software Installation

- Download the software – Click on download and save the setup-file on your PC.
- Double-click the icon *GMHKonfig_Setup_V1_5.EXE*
- Follow the instructions given by the installation program.
- A new program group with the following program icon will be created:
  The software will be started by double-clicking on this symbol.
- Select under *Configuration* your preferred language and the interface to which you connected your interface adapter.

1.4 Significance of Computer Time

Each instrument with a logger function includes a real time clock which can be adjusted to the computer time. To adjust the device time correctly it is absolutely necessary to prove the computer time. When needed, this time can be corrected by changing the referring system settings. The correct time is also required for the functions of the characteristic curves of the Pt100- and material moisture devices!

2 GMHKonfig Software

The GMHKonfig software is used for the configuration of the GMH 3000 portable measuring devices. It detects the correct type of the connected device and provides the appropriate functions.
Possibly not all functions of the device can be configured by this software. Please also refer to the operating manual of your device.

2.1 Screen Elements

2.1.1 Menu bar
The main functions are available in the menu bar.

File   Instrument   Configuration   Window   About

2.1.2 Toolbar
To ensure comfortable software operation selected software functions were put together at the toolbar:

1.   2.   3.

1. Search instrument   2. Choose interface   3. Program info

When the mouse pointer is moved over a symbol, a brief description of the function is shown after a short time.

2.2 Working with the GMHKonfig Software

2.2.1 Open Instruments

- Connect the instrument to the interface adapter and switch it on.
- In case of connecting more than one instrument to the same interface:
  Adjust the basic address of an instrument (only supported by instruments of the new generation) by using the menu (please read the operating manual of the instrument) in order that each instrument gets a different address.
- Choose menu *Instrument / Open...* or click at the corresponding toolbar symbol.
- GMHKonfig is now searching for connected measure instruments.
- The devices found will be displayed as follows:

Open Instruments

☑ Address 01 GMH 3180
☑ Address 11 GMH 3750
☑ Address 21 GMH 3850

Ok   Cancel

New Search
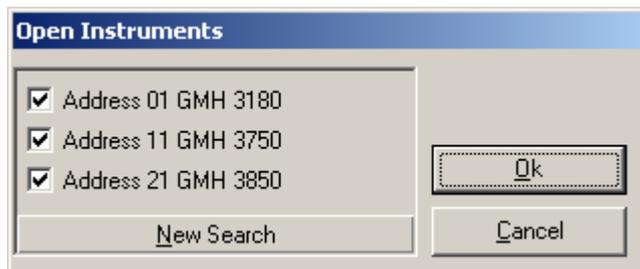
Please check the following points if no instrument was found:
- Are the instruments switched on and connected to the interface adapter?
- Did you choose the correct interface? (*configuration / interface*)
- Did you connect the interface cable with the correct connector of the PC?
- In case of interfaces with power supply: Is the provided tension voltage OK?
- Using more than one instrument: Are the base addresses different?

Marked instruments will be opened by *OK*. Each device will be shown by a different window.
It is also possible to add belatedly connected devices. Simply click on *Search Instrument* and mark the device which shall be added. Click *OK*.
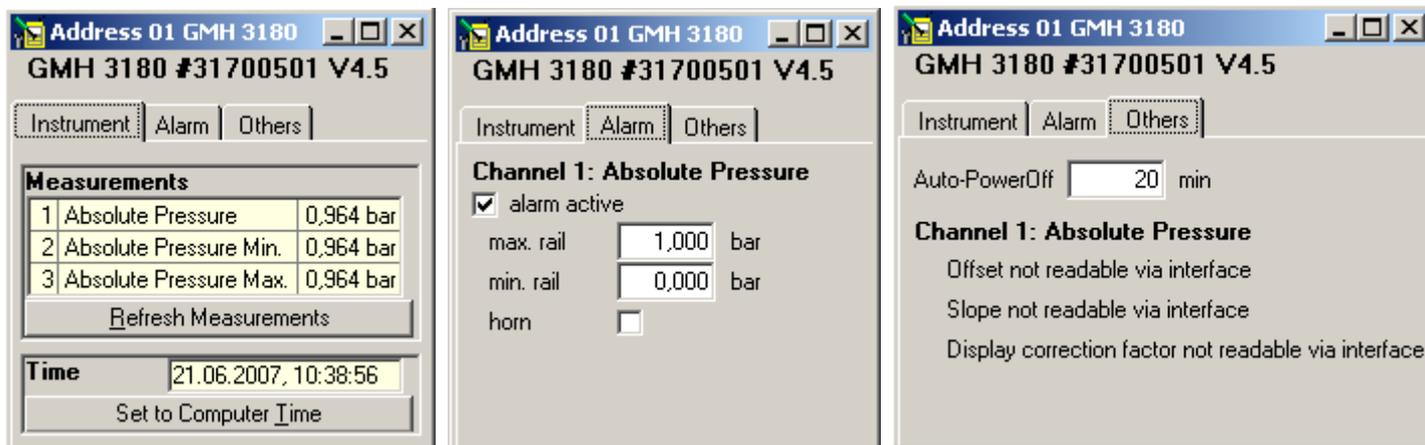
2.2.2 Instrument Data Window

The content of the instrument data window depends on the connected device. It is possible to select different registers in the instrument data window where settings are accessible.

Register *Instrument*: Besides the measurand, the device-time can be set to the computer-time in this register. (recommended)
Register *Alarm*[1]: Here you can activate or deactivate the alarm for different channels, you can set the alarm boundaries and you can switch the horn on or off.
Register *Others*: With Auto-PowerOff[1] you choose how long it takes the device to turns off when no button is pushed. Depending on which device is connected, it is possible to set the offset, slope and display correction factor for different channels.

Address 01 GMH 3180
GMH 3180 #31700501 V4.5

Instrument | Alarm | Others

Measurements

1	Absolute Pressure	0,964 bar
2	Absolute Pressure Min.	0,964 bar
3	Absolute Pressure Max.	0,964 bar

Refresh Measurements

Time   21.06.2007, 10:38:56
Set to Computer Time

Address 01 GMH 3180
GMH 3180 #31700501 V4.5

Instrument | Alarm | Others

Channel 1: Absolute Pressure
☑ alarm active
max. rail   1,000   bar
min. rail   0,000   bar
horn   ☐

Address 01 GMH 3180
GMH 3180 #31700501 V4.5

Instrument | Alarm | Others

Auto-PowerOff   20   min

Channel 1: Absolute Pressure
Offset not readable via interface
Slope not readable via interface
Display correction factor not readable via interface

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[1] as far as this is possible with the device interface

2.3 Working with the GMH 3750

2.3.1 Enhanced Function in the Instrument Data Window

Open the GMH 3750 as described in chapter 2.2.1. The Instrument Data Window with the registers *Instrument, Alarm* and *Others* is visible now. Marginal alterations at the display are possible depending on the connected device.
Register *User Defined Curve*: Here either the device can be calibrated to a sensor (2) or the standard Pt100 curve EN60751 (1) may be chosen.

ATTENTION: If the device is equipped with a calibration certificate, the calibration was done by means of the User Defined Sensor Curve. You have to choose (2). If the user changes this curve, the calibration certificate is not valid anymore. If the device is switched to the standard curve, the device does not measure with the calibration data of the certificate!

2.3.2 Device Adjustment with the User Defined Curve

Procedure:
1. Choose (2): The actual user defined curve of the device will be loaded into the window.
2. Write the standard curve into the device (3), (4).
3. Enter the points of calibration in the calibration table (left): With *Get Actual Value* reference values, e.g. from calibration baths or blocs, can be entered. A nominal value (bath's real value) must be allocated to these values. By clicking on *Accept Reference Input*, the values will be stored in the program.
   Please pay attention that the measured reference values are far enough apart.
4. In the next step the user defined curve will be calculated from the calculation table by the functions available. With one value in the table a 1-point-adjustment is possible, with two values a 2-point-adjustment.[2] For a second order regression a minimum of three values is necessary. In practice the second order regression is recommended as it contains the best possible precision with comparatively low effort. Third or fourth order

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[2] At the 1- and 2-point-adjustment the present user defined curve will be displaced or displaced and „toppled" appropriately. Recommendation: Write the EN60751 curve (3) in the user defined curve first.

       regressions (four or five measured values) are usually not recommended and should only be used by qualified personnel.
5.   Single values of the user defined curve can be changed by the input fields (5) (generally not necessary).

With the **function *limiting regression*** (recommended) the metering range will be reduced because there could be an error of measuring beyond the lowest and highest reference value. Activate the standard curve EN60751 (2) for measurements beyond these boundaries.

2.3.3   Load and Save Characteristic Curves

The two buttons *File* (6) allow to save the characteristic curve in a file or to write it from a file into the device. Hence, for example, characteristic curves of different sensors can be managed.

The date in the line "last change" is set automatically when saving a characteristic curve into the device and can be used e.g. for checking or inspecting the measuring device.

2.4 Working with the GMH 3830 / 3850

2.4.1   Enhanced Functions in the Instrument Data Window

Open the GMH 38xx as described in chapter 2.2.1. The Instrument Data Window with the registers *Instrument, User Defined Curve* (only GMH 3850), *Choice of Material, Alarm* and *Others* is visible now.
The registers *Instrument, Alarm* and *Others* were already described in chapter 2.2.2. Marginal alterations at the display are possible depending on the connected device.

2.4.2   Register „User Defined Curve"

Here you can write the custom-designed curves which you have acquired unaffiliated or which you have in data form into the device. For calculation of the material moisture *u* please check the operating manual of your GMH 38xx. All moisture settings are meant to be set in % material moisture *u*.

Procedure:

1. First, you have to read out the saved curves from the device by simply clicking on the button load user *defined curves from* device. Thereafter, four curves with 20 value pairs each are listed.
2. Now the actual and the desired value must be typed in the field *Adjust*. For this you have to calculate the material moisture *u* of your probation.
    $\rightarrow$ Please note: 2.4.2.4 *Addendum:* Calculation of the Material Moisture *u* by Kiln Drying
    Transfer the actual and the desired value in the adjust-table by clicking *Accept Reference Input*.
3. Click *Interpolation*. The values are now being transferred in the opened curve. Changes are displayed in red.
4. The curve's name which is shown in the lower display can be typed in the field *name* individually. Characters which cannot be displayed are replaced with blank characters. Not usable characters are (not presentable at the seven-segment display): K, M, N, Q, R, T, V, W, X, Z, a, e, f, j, k, l, m, p, s, w, x, y, z). A total of four characters can be displayed.
5. Edit the accordant settings for temperature compensation and moisture evaluation (see following chapters).

When all declarations are done, you finally have to push *Write Curve To Device*. All four curves will be written into the device.

The date in the line "last change" is set automatically when saving a characteristic curve into the device and can be used e.g. for checking or inspecting the measuring device.

2.4.2.1 Temperature Compensation (1)

For temperature compensation you can choose between the standard wood-compensation and a linear self-adjustable compensation. If you wish no compensation at all you have to activate the linear compensation and type in a coefficient of 0.

2.4.2.2 Moisture Evaluation (2)

There are evaluation boundaries for wet and dry for each curve, too. Based on these boundaries the moisture evaluation by the arrowheads in the upper display-edge is done.

2.4.2.3 Load and Save Characteristic Curves

The two buttons *File* (3) allow to save the characteristic curve in a file or to write it from a file into the device. Hence, for example, characteristic curves of different sensors can be managed.

2.4.2.4 *Addendum:* Calculation of the Material Moisture *u* by Kiln Drying

Kiln drying is a method to create a moisture curve by measuring and weighing a material sample at different moisture stages.
You have to proceed as follows:
First, turn your device to the curve *.ref* (see operating manual). Note the weight and the reference value (moisture measurement with an appropriate sensor) of your appropriate sample in the moist state and dry the sample (in a kiln with air-ventilation at 103 °C) as long as there is no measurable weight loss any more. Now dry weight has been reached. More reference measurings can be collected by samples of different moistures. Alternatively, a single sample can be dried step by step with each step giving a new reference point. In this case appropriate adjusting times should be considered because otherwise moisture gradients within the sample are likely to appear. While waiting for adjustment, the sample should be stored appropriately (surrounding air would dry or moist the sample!).
It is advisable to record as much values as possible, spread over the measuring range of interest, because the curve will be the source of the instruments' interpolation. The drying intervals depend on the material and its weight. Choose appropriate intervals.
The calculation of the material moisture *u* is possible by following formula:

Material moisture $u[\%] = (\text{weight}_{wet} - \text{weight}_{dry}) / \text{weight}_{dry} * 100$

Alternative method:

Material moisture $u[\%] = \text{weight}_{water} / \text{weight}_{dry} * 100$

weight $_{wet}$:   *weight of the probation (= total weight: weight $_{water}$ + weight $_{dry}$)*
weight $_{water}$:   *weight of the water which is in the material*
weight $_{dry}$:   *weight of the material probation after the kiln drying (water was evaporated)*

Example: 1kg wet wood which has 500g water in it has a material moisture *u* of 100%.

2.4.3 Register Choice of Material

There are two possibilities for entering the material at the instrument: You can either choose the curve on the device directly without limitation by pushing the buttons *up* and *down* (consider the operating manual) or you can make a preselection with up to 8 curves which can be set separately.
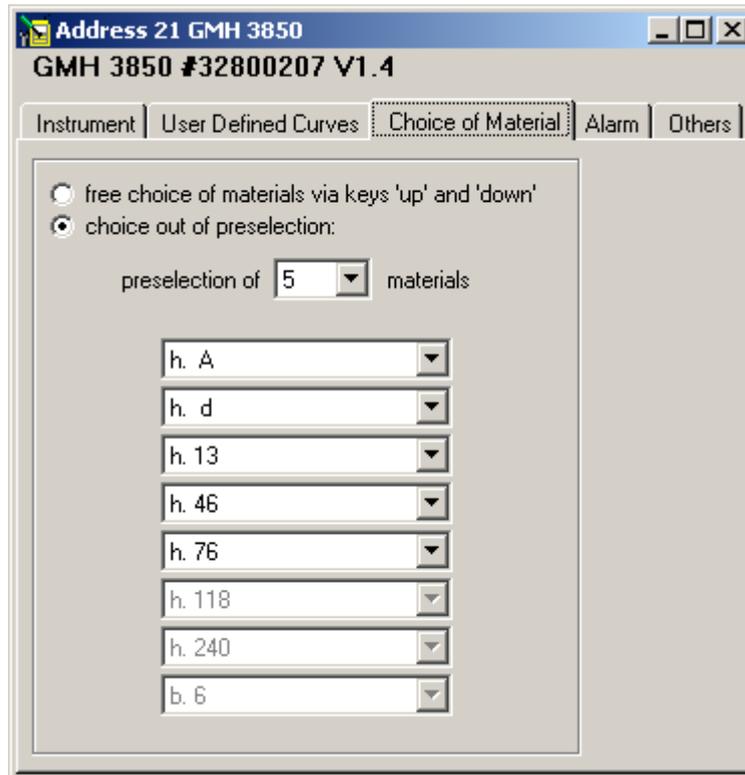
If the preselection is set to one material, the device only uses this curve. This is helpful when the material which shall be measured is always the same. Faulty measurements by wrong chosen curves are impossible in this way.

3 Working with the GMH 54x0 / 55x0: Calibration History

In the register *Calibration history* the former calibrations of the instrument can be viewed.
You can do so by pressing *load calibration from device* (1). Calibration records are then displayed in tabular form (3).
They include, depending on the connected device e.g. date, calibration data and rating.
For further processing these data can be saved into a text file (4).

Additionally, a calibration interval (2) can be set. After the time interval passed, the instrument indicates a warning that the unit requires a new calibration (consider the operating manual).

4 Working with the GMH 5150 / 5155: Register „Pressure"

Open the GMH 51xx as described in chapter 2.2.1. The instrument window with the registers *Instrument, Alarm*, L-*ID's, Pressure* and *Others* is now visible. Marginal alterations at the display are possible depending on the connected device.

First, read the settings saved in the device. To do this press *load configuration.* Depending on the settings, different selectable parameters will appear.

1	**Backlight**	Here the settings for the backlight can be made.
2	**Measuring rate**	Here the settings for the different measurement speeds can be made.
3	**Averaging filter**	Here the averaging filter function can be activated and the refering filter time can be set (mean value).
4	**Display unit**	Depending on the plugged sensor, different units are available here. If the unit *USER* is selected, additional parameters appear which are required to dispay units that are not covered by the ones printed on the display. (consider the operating manual)
5	**Calculation function**	These settings display calculated values. Depending on the setting (e.g. *pressure change per time*), the refering parameters are shown. (consider the operating manual)

6   If all parameters are set, they will be transferred to the device with Write *Configuration to Device.*

7   With the button *Save to File* setting can be stored in a file. These can then preset if required with *Load from File* by simply transferring them to the device (6)

5 Logger-ID's – Measurement Identification (for GMH 5xxx Logger)

For devices of the GMH 5x5x series there is the availabiliy of Logger- ID's.
Using the Logger-ID number, measuring points can be marked by numbers or texts (note the representability of the 7-segment display). In this way, up to 40 measuring points can be named or alternativley marked with a number from 0 to 19999.
First, click *Load Logger-ID's from Device* (1) to read out the stored data.
Then mark the position to be changed (2) and click *Change Logger-ID* (4). You can edit the desired ID in the dialog box. The setting is transferred to the device by clicking *Save Logger-ID's to Device* (5).
Existing settings can be loaded into the program with *Load LID-File* (3) and then sent to the device.
If you need the settings on several occasions, you can use *save to LID-file* (3). The settings will be saved for other devices.