



Glass*Buddy* Plus  
Glass*Buddy* Basic

## Operating Instructions Table of Contents

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# Thank you

for purchasing the GlassBuddy, a top quality, measuring device for analysing flat glass. Regardless of whether you analyse simple single pane glass, laminated or insulated glass units, fitted or not, you deal with monolithic glass, or 1-gap or 2-gap insulating glass - with the press of a button the laser technology in the device will provide you with information about the thickness of the glass, the structure of the pane, the Low-E coating, PVB interlayers and their position all within a few seconds and with an accuracy of 0.1 mm. Please read the operating instructions carefully to familiarise yourself with the operating procedures and allow you to get the most out of your new GlassBuddy.

## 01 Contents of the box

- 1 x GlassBuddy
- 1 x Safety case
- 1 x Brief operating instructions
- 1 x USB stick with operating instructions and PC software
- 1 x USB cable 2.0 A / Micro B



- determination of the coating position
- Recognition of PVB interlayers (up to a max. of 8 interlayers), determination of the number of layers, the thickness and the position
- Memory to store 99 measurement results
- USB interface
- Simple and self-explanatory menu operation
- Top quality Li-ion rechargeable battery

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## 02 Features of the GlassBuddy Basic / GlassBuddy Plus

- Destruction-free analysis of glass, even when installed
- Selection of different glass types for analysis such as
  - "not ISO" (for monolithic glass, monolithic laminated glass or laminated safety glass),
  - "ISO" (1-gap insulating glass except for fire protection glass)
  - "ISO3" (for 2-gap insulating glass except for multi laminated glass and fire protection glass)
  - "not ISO mlg"\* (for monolithic fire protection glass)
  - "ISO mlg"\* (for fire protection glass in 1-gap insulating glass compound).
- Measurement of monolithic glass up to a thickness of 2.6 mm to 19 mm
- Analysis of laminated glass, laminated safety glass, multi laminated glass, 1-gap and 2-gap insulating glass panes up to a total thickness of 50 mm (GlassBuddy Plus up to 100mm\*\* total thickness also with fire protection glass)
- Accuracy: 0.1 mm, tolerance: 1% on measuring range
- Recognition of up to 3 coatings and

## 03 The Keypad

Despite the numerous functions of the GlassBuddy only a few keys are needed. The user interface is intuitive and can be learned quickly and easily. This chapter explains the functions of the individual keys.

### Press



- to switch the GlassBuddy on
- to start measuring



- to save the results after the measurement
- to confirm input



- to delete the current results
- to quit the menus
- to stop the deletion of saved data
- to delete error messages

\* only GlassBuddy Plus, \*\* see graphic, chapter 13 Types of Glass / Measuring Range



- Menu



- to scroll through the results
- to set the date and time
- to scroll through the menu
- to switch on the light

## 04 The Display

### Explanations of the symbols used

4 or 4.2	Glass thickness, film interlayer or air gap in mm or inches.
«	Coating position, the direction of the arrow indicates the position
«	Coating position, the direction of the arrow indicates the position
!	Signal indicating that not all properties could be detected
G1, G2, ...	Glass pane with position
G 1.1, G 1.2	Glass pane with position in laminated compound
SZR1, SZR2, ...	Air gap and its position
Film 0.38	Thickness of the film used within the compound
Gel 1.4	Thickness of the fire protection gel* used within the compound
Film 1.6	Thickness of the interlayer used within the compound

\* only GlassBuddy Plus










## 05 First use of the GlassBuddy

### Setting the language and measuring unit

The GlassBuddy is first supplied with a German menu. If you want to change the language, please proceed as follows:

Connect the GlassBuddy to your PC or laptop using the supplied USB cable. Please only use the supplied USB cable.

The battery is now charging and at the same time you can reprogram the GlassBuddy to the language and measuring unit of your choice (Note: If changes are made without a PC connection, the GlassBuddy settings will return to the default settings once the device is switched off).

1. Press  for approximately 2 seconds. The GlassBuddy will switch on and the display will show **PC-Verbindung .... Akku lädt**
2. Press 
3. The display now shows > **Sprache**
4. Press 
5. Move the arrows > using the keys   to the language of your choice and select by pressing 
6. After around 2-3 seconds, the language will be reprogrammed
7. For changing the measuring unit, move the arrows > < to **Units**, press  and choose the desired measuring unit. Confirm your selection with 
8. The changes are now stored in the GlassBuddy. Quit the menu with  and then disconnect the device from the computer.

# 06 Installation and Operation of the GlassBuddy Software

Installation of the GlassBuddy software must be done with full administrative rights to the computer. The enclosed software, suitable for PC and laptop with an operating system starting from Windows 2000 or later, allows you to comfortably store your measuring results.

## Installation

To install the software, connect the supplied USB to your computer and start the program setup.exe in the Explorer. The program will then be installed onto your computer. After installation you will need to restart your computer.

## Program Start

To start the GlassBuddy program, double-click the program icon GlassBuddy on your desktop.

## Program Description

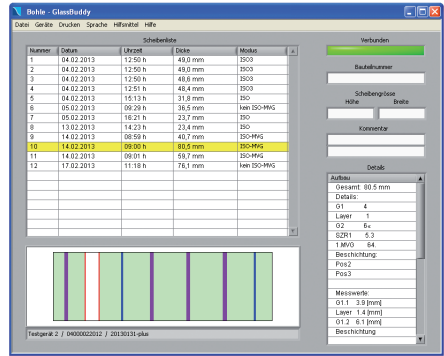
This program allows you to transfer data from the memory of the GlassBuddy to your computer. To do this, the device needs to be connected to your PC via the supplied USB cable. In addition, you can also call up any previously imported data using the program without a connection to the GlassBuddy.

## Program Screen

Once the program has started, you will see the empty program screen with the following areas:

### Pane list:

The measurements transferred from the GlassBuddy are listed here according to the sequential number. The date of the measurement, the time, the total thickness of the glass structure as well as the measuring mode are also shown.



The graphic shows you the pane compound of the selected glass in the corresponding list. The results for glass (green), film (blue), fire protection gel (yellow) and layer (purple) are highlighted in different colours.

The field below the graphic shows the following information about the device: Name (if applicable), serial number and model number of the software.

### Connected:

This field is dark green if the GlassBuddy is not connected to the program and light green if the GlassBuddy is connected to the program.

### Component number:

Here you can assign a component number for the selected measurement.

### Pane size:

Here you can indicate pane width and height for the selected measurement.

### Comments:

If you have selected a measurement from the pane list, you can add an individual comment to this measurement.

### Details:

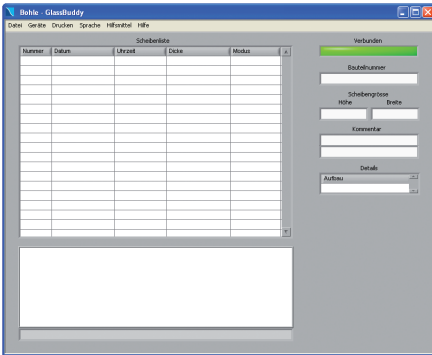
If you have selected a measurement from the pane list, all the results will be shown in detail here.



## Data transfer for the GlassBuddy

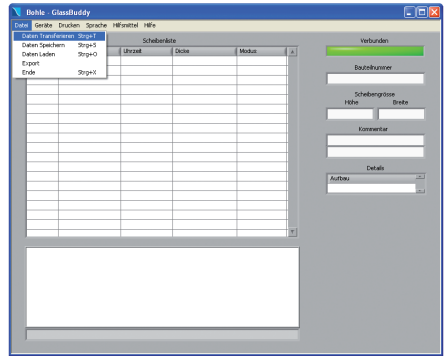
To transfer the data stored on your GlassBuddy to your computer, first connect the device to your computer using the supplied USB cable. Use the micro USB slot on the GlassBuddy and a free USB slot on your PC. Now switch the GlassBuddy on. The display on the GlassBuddy will show **PC connection**. The GlassBuddy is now connected to your PC.

Now start the GlassBuddy PC application. In the program screen you will see the field **Connected**, which is shown in dark green. The program is not yet connected to the GlassBuddy. To connect, click the menu item **Devices** and then select **Update** in the drop down menu.

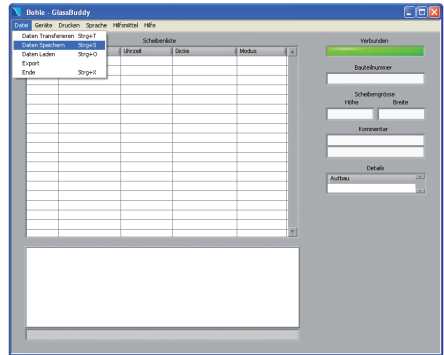


The program is now connected to the GlassBuddy. Once the connection has been established, the field in the program screen below **Connected** will turn light green. If this field does not turn light green, click **Devices - Update** again.

To transfer the data stored in the GlassBuddy, click on the menu item **File** and then on **Transfer Data** in the drop down menu. After the data has been successfully transferred, the measurement results will appear in the pane list.

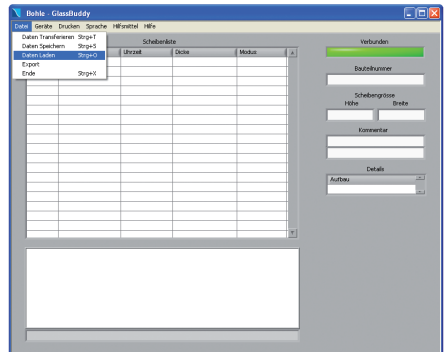


The transferred measurements can be stored on your PC. To do this, click on the menu item **File** and then on **Save Data** in the drop down menu. You can then save the measurements under a file name of your choice, then confirm with OK to save the data.



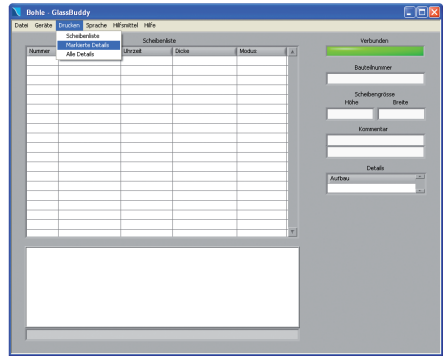
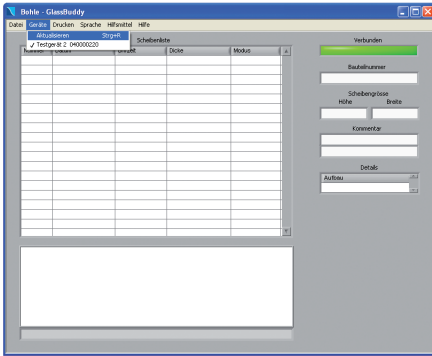
## Calling up saved data

You can call up the data saved on the PC. To do this, click on the menu item **File** and then on **Open Data**. Select a saved series of measurements and confirm with OK.



## Devices

Under the menu item **Devices** you find the sub-menu "Update". If you are using several devices, this is a way of switching between the different *GlassBuddys*. Only one *GlassBuddy* can communicate with the program at a time.



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## All Details:

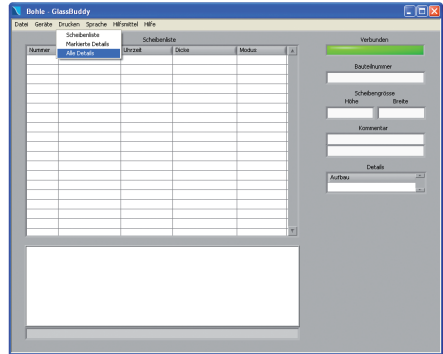
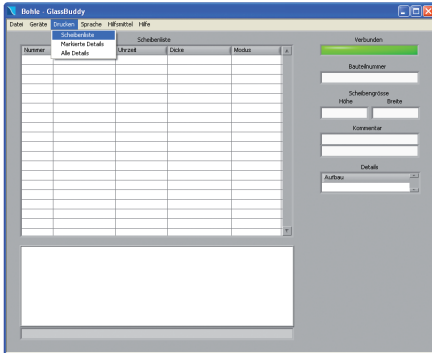
This option allows you to print out all measurements stated in the pane list including the respective details. One page with details and comments is printed per measurement.

## Print

You have a number of options for printing out the data.

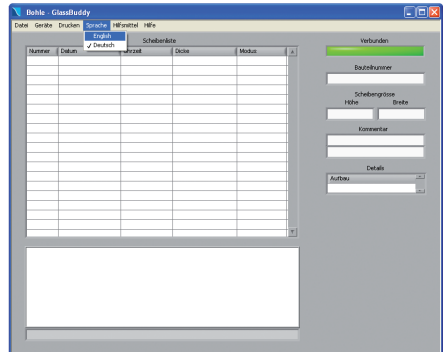
### Print Pane List:

Here, all listed measurements from the pane list will be printed as a list.



## Language

You can select the program language in the menu **Language**.



### Marked Detail:

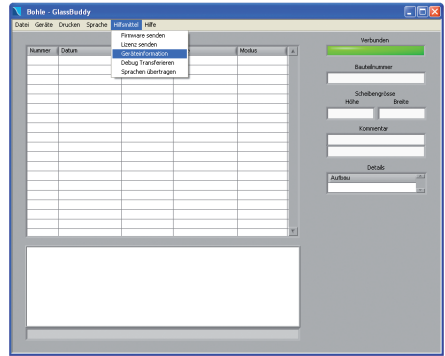
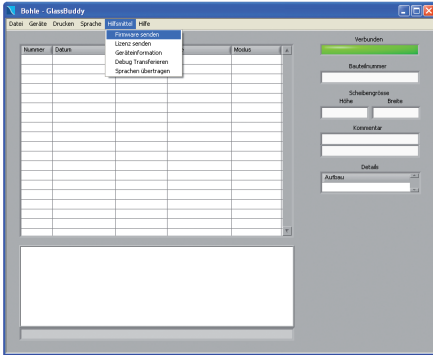
If you have selected a measurement from the pane list, you can print out the details relating to the measurement with any comments you have added.

## Auxiliary options

Under the menu item Auxiliary options, you can now find the following entries:

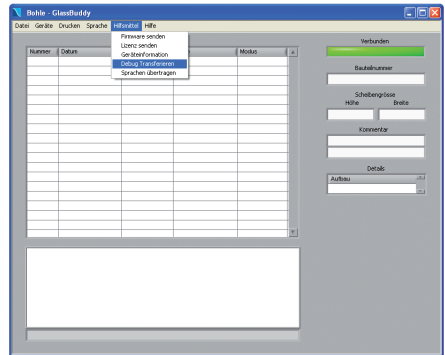
### Send firmware

In this way, the software of the connected GlassBuddy can be updated (see point 14).



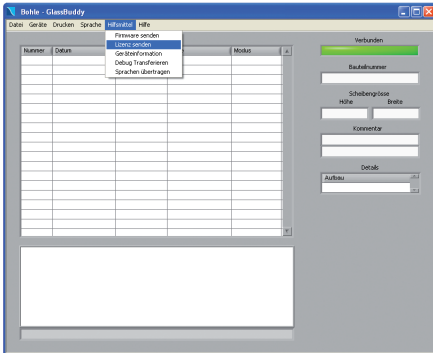
### Transfer Debug

The option has not yet been activated, no changes can be made here.



### Send licence

The option has not yet been activated, no changes can be made here.




## 07 First Steps

### Basic information about working with the GlassBuddy

### Device information

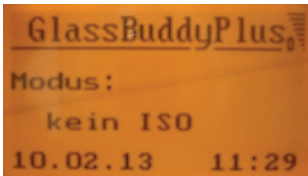
Here the user can customise the settings of the GlassBuddy.

To switch on the GlassBuddy press  for about 2 seconds.

On the four-line illuminated display you can now select the glass type that you would like to analyse (See the following information under "GLASS TYPE").

After the selection, the GlassBuddy will now inform you about the current date, time and the selected glass type.





For energy-saving reasons, the display lighting will switch off after approximately 60 seconds; however, it can be switched on again by pressing or . The GlassBuddy will switch off automatically after about 10 minutes if no keys have been pressed.

## Explanation of the Menu Items

The menu can be accessed via ; allow you to select between the various menu items:

### SWITCH OFF

If the arrow > is in front of the menu item **Switch off**, you can switch off the GlassBuddy by pressing .

### GLASS TYPE

If the arrows > < are in front of the menu item **Glass type**, press after selecting in order to reach the submenu. Here you can select the type of glass you wish to analyse by pressing the keys . Confirm your selection with .

- Not ISO glass (menu display: **not ISO**)
  - for the analysis of single-pane glass up to 2.6 mm to 19 mm thick
  - for the analysis of monolithic laminated and laminated safety glass (lam and lam-safety)
  - for the analysis of monolithic laminated glass (multi-lam), with the exception of fire protection glass

*Note: If you measure other glass types with this setting, this can lead to erroneous measuring results.*

- ISO glass (menu display: **ISO**)
  - for the analysis of 1-gap insulating glass made of 2 x monolithic glass
  - for the analysis of 1-gap insulating glass with laminated glass
  - for the analysis of 1-gap insulating glass with

- laminated safety glass
- for the analysis of 1-gap insulating glass with multi laminated glass, with the exception of fire protection glass

*Note: If you measure other glass types with this setting, this can lead to erroneous measuring results.*

- ISO3 glass (menu display: **ISO3**)
  - for the analysis of 2-gap insulating glass made of 3 x monolithic glass
  - for the analysis of 2-gap insulating glass with laminated glass
  - for the analysis of 2-gap insulating glass with laminated safety glass

*Note: If you measure other glass types with this setting, this can lead to erroneous measuring results.*

- Not ISO fire protection glass\* (Menu display: **not ISO multi-lam**)
  - for the analysis of monolithic multi laminated glass (multi-lam) as fire protection glass

*Note: If you measure other glass types with this setting, this can lead to erroneous measuring results.*



- ISO with fire protection glass\* (Menu display: **ISO multi-lam**)
  - for the analysis of 1-gap insulating glass with multi laminated glass as fire protection glass

*Note: If you measure other glass types with this setting, this can lead to erroneous measuring results.*

The selected glass type setting is displayed in the menu.

*Note: The GlassBuddy will return to the default settings once the device is switched off. When switching it on again, you can analyse the glass type again.*

## AVERAGE

First of all, select the right mode. Once the mode is selected, you can activate the average measurement under the menu item "Average". The Ø sign in the display indicates that the right mode has been selected for carrying out an average measurement. Up to 19 individual measurements can be used in order to generate an average measuring result. The individual measurements are carried out one by one by repeatedly pressing  and sorted alphabetically. After completing 2 to 19 individual measurements, the arithmetic mean is calculated by pressing . For distinguishing the average measuring results from the individual measuring results, the number displayed for the average measurement in the mode "Display data" has an underscore only (instead of a letter) after the first two numbers. The individual measurements are named consecutively beginning with "a".

Example:

03a310113\_14:15

03b310113\_14:16


03c310113\_14:17

03\_310113\_14:18





The first two numbers stand for the number of the measurement. The third item is a letter which indicates the sequence of individual measurements. The following numbers indicate date and time. If instead of a letter an underscore "\_" appears, this indicates that the measurement is an average measurement.

As all individual and average measurements can be saved if desired, unrealistic measured values can still be detected ahead of time.

## SETTINGS

If the arrows > < are moved to the menu item **Settings**, you can reach the submenu by pressing  after making a selection. You can adjust the following settings here:





### Language

If the arrows > < are moved to the menu item **Language**, you can reach the submenu by pressing  after making a selection. Here you can change the settings using the keys  . Confirm your changes with .

*Note:* After it is switched off, the GlassBuddy automatically switches back to the default settings.

To permanently change the language, connect the GlassBuddy to your PC via the USB cable (see section 5).

### Units (Metric/Imperial)





If the arrows > < are moved to the menu item **Units**, you can reach the submenu by pressing  after making a selection. Here you can change the settings using the keys  . Confirm your changes with .

*Note:* After it is switched off, the GlassBuddy automatically switches back to the default settings. To permanently change the units, connect the GlassBuddy to your PC via the USB cable (see section 5).





### Version

Shows the version and serial number of the device.





### Date

If the arrows > < are moved to the menu item **Date**, you can reach the submenu by pressing  after making a selection. Here you can change the settings using the keys  . Confirm your changes with .

### Time

If the arrows > < are moved to the menu item **Time**, you can reach the submenu by pressing  after making a selection. Here you can change the settings using the keys  . Confirm your changes with .

### Font size

If the arrows > < are moved to the menu item **Font size**, you can reach the submenu by pressing  after making a selection. Here you can change the settings using the keys  . Confirm your changes with .

*Note:* After it is switched off, the GlassBuddy automatically switches back to the default setting. To permanently change the language, connect the GlassBuddy to your PC via the USB cable (see section 5).

*Note:* For Chinese, Japanese, Korean and Russian, making the font size smaller is not possible.

### Information about the device

Display of information which can be saved in the

device as customised entries such as company name and address. For this purpose connect the GlassBuddy to your PC with the USB cable (see point 5).

### DELETE DATA

If the arrows > < are in front of the menu item **Delete data**, you can delete all the data entries by pressing . You will be asked if you really want to delete all measuring results.

By pressing again, all the saved measuring results will be deleted. Press to return to the menu without deleting the data.

### SHOW DATA

If the arrows > < are in front of the menu item **Show data**, you can display a list of your previously saved measurements by pressing . Use the arrow > to select the measurement result of your choice and display it by pressing .

## 08 Glass Analysis with the GlassBuddy

The glass must always be clean and dry. Even a fingerprint can cause unwanted refraction and consequently incorrect measurement results.

Glass that is laid flat should always be placed on a dark, non-reflecting base (e.g. a black felt cloth) for analysis, as incorrect results can occur on reflective bases.

Already installed insulated glass panes should be preferably analysed in the marginal areas.

Switch on the GlassBuddy, select the glass type (see point 5) and place it on top of the glass surface in a way that all plastic feet touch the glass and keep the device from slipping.

Press . The light turns off and **Measuring -- please wait ...** is shown on the display of the GlassBuddy.

*Note:* The GlassBuddy should not be moved during the measuring procedure as this could lead to inaccurate measuring results.

After 1-2 seconds, the light will turn on again and you can remove the GlassBuddy from the glass.

The measurement result is shown on the display.

Use to scroll through the measuring results. After the rounded individual measurements, the single values (accurate to 0.1 mm) are displayed. Afterwards the structure of the glass pane is shown graphically. The graphical display shows the structure from left to right as analysed by the GlassBuddy. The measuring results are shown in a scrolling display.

The measuring result can be rejected with .

When pressing , you can choose between the following options:

### Save

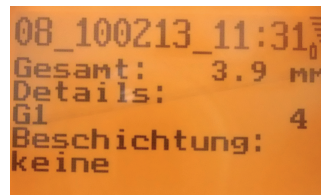
If the arrows > < are moved to the menu item **Save**, the current measuring result can be saved in the GlassBuddy by pressing . The result is saved under the number shown in the top left of the GlassBuddy display with the result.

### Reject

If the arrows > < are moved to the menu item **Reject**, you can delete the current measuring result by pressing . You can always directly delete the result by pressing .

## 09 Reading the Measurement Results

After the measuring procedure described above, the GlassBuddy shows the result on the illuminated display. You can page up and down the measuring results row-by-row with the keys.



### Row 1

In the first row, the GlassBuddy shows the position under which the measuring result is saved (here position 08; there are a total of 99 memory slots available). After this you can see the date and the


time of the measurement.

## Row 2

In the second row, the Glass*Buddy* shows the actual measured total thickness of the measured object.

From the third row downwards the individual results are displayed, followed by the graphical display of the glass structure. The measuring results are shown in a scrolling display.

## 10 Error and Warning Messages

The Glass*Buddy* uses a number of messages to notify you of errors or warn you about the battery status. All information is shown in plain text and can be deleted by pressing .

### ■ "Measurement not possible"

- This message appears if the object you are measuring does not generate any reflections which the Glass*Buddy* can convert into a reading.
- This message also appears if the total thickness of a glass pane is less than 2.6 mm
- This message appears if the Glass*Buddy* receives an odd number of reflections from the measuring procedure.

**Reason:** e.g. a tinted pane, where only the surface gives off a reflection and the laser cannot penetrate to the underneath of the pane

**Reason:** a very light coloured base on which the glass is lying can give off an additional reflection

**Solution:** Place the glass for analysis on a dark non-reflecting base.

### ■ Not "ISO glass"

- This message can appear for the setting "not ISO" if you try to analyse a glass structure other than "not ISO".

**Solution:** Please check the settings and change them if necessary.

### ■ Not "ISO glass"

- This message can appear for the setting "ISO" if you try to analyse a glass structure other than "ISO".

**Solution:** Please check the settings and change them if necessary.

### ■ Not "ISO3"

- This message can appear for the setting for glass type ISO3 if you try to analyse a glass structure other than 2-gap insulating glass.

**Solution:** Please check the settings and change them if necessary.

### ■ Battery empty

- This message appears if the battery charging status is below 5%.

**Solution:** Please charge the battery. To be able to continue measuring, charging for 5 to 10 minutes will suffice.

### ■ „Glass too highly reflective“

- This message can appear when analysing highly reflective glass.

**Solution:** Not all highly reflective or mirrored glasses can be measured.  
The measurement might be successful from the rear side of the glass.

### ■ Memory full

- This error message appears when all 99 memory slots are full.

**Solution:** Before saving more data, you should transfer the saved measurement results onto your PC and then delete all data saved in the Glass*Buddy* (see section 7).

### ■ Glass outside measuring range

- This error message appears if the complete structure of the pane exceeds the measuring range of 50 mm.  
(This message will only appear on the Glass*Buddy* Basic version.)

**Solution:** Software Upgrade to Glass*Buddy* Plus

- **Error**
  - This error message appears if there is an internal error in the *GlassBuddy*.  
**Solution:** If the message **Error** is repeated, the *GlassBuddy* should be returned to the manufacturer for inspection.
- **No Data**
  - This message appears if there is no data in the memory that can be shown.
- **"Measurement in Basic mode not possible"**
  - This error message appears if types of glass are being analysed which can only be measured with *GlassBuddy* Plus.  
**Solution:** Software Upgrade to *GlassBuddy* Plus

## 11 Charge battery

When the battery is fully charged, the device can **work permanently** for 8 hours. When charged, the battery usually lasts for one to two weeks under normal conditions of use. At a battery status of approximately 10% you will be shown the message **Charge battery**. Measurements can still be taken but the *GlassBuddy* should be charged as soon as possible to ensure problem-free operation.

Connect the *GlassBuddy* to your PC or laptop using the supplied USB cable. To charge the battery at the mains supply or in the car, we also have a USB power set available as an accessory (BO 5164751); this contains interchangeable plugs for a number of countries (EU/US/UK/AU).

Using the car adapter you can charge the *GlassBuddy* whilst driving from one building site to the next.

When the battery is almost empty, it takes approximately 120 minutes to charge it to 100% again (if the *GlassBuddy* remains switched on during charging, the charging time is longer). The *GlassBuddy* will indicate when the charging process is over. The display will then show **PC connection - battery is charged**. Nevertheless the *GlassBuddy* has to be switched on for displaying this message.

The *GlassBuddy* contains a permanently installed top quality Li-ion rechargeable battery with a very long service life. If the performance of the battery diminishes over the years, Bohle can replace the battery.

## 12 Care and Maintenance

To avoid damage or malfunctions of your *GlassBuddy*, please strictly observe the following:

- The *GlassBuddy* must always be stored in the supplied safety case as this is the only way to effectively prevent damage.
- To avoid damage, the *GlassBuddy* must only be operated and/or stored at temperatures between 0° C and +40° C.
- The *GlassBuddy* must not be exposed to vibrations or impacts.
- Only clean the display window and casing with a dry, clean and soft cloth. Never use cleaning liquids or thinning agents.

The laser opening and the sensor slit may only be cleaned with a dry, clean and soft brush and/or with clean compressed air.

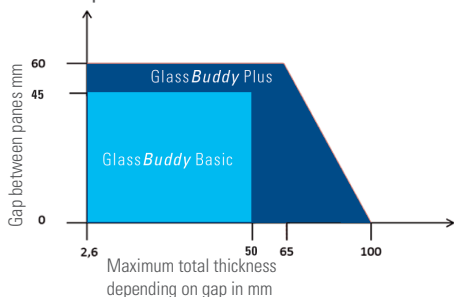
- Repairs may only be performed by the manufacturer; please contact your dealer.

Measuring range depending on the gap between panes (gap).

# 13 Types of Glass / Measuring Range

Specification	Glass <i>Buddy</i> Basic	Glass <i>Buddy</i> Plus
Monolithic glass	yes	yes
Monolithic laminated glass (lam)	yes	yes
Monolithic laminated safety glass (lam-safety)	yes	yes
Monolithic multi laminated glass (multi-lam)	yes	yes
Monolithic multi laminated glass for fire protection	no	yes
1-gap insulating glass with monolithic glass	yes	yes
1-gap insulating glass with laminated glass	yes	yes
1-gap insulating glass with laminated safety glass	yes	yes
1-gap insulating glass with multi laminated glass	no	yes
1-gap insulating glass with multi laminated glass as fire protection glass	no	yes
2-gap insulating glass with monolithic glass	yes	yes
2-gap insulating glass with laminated glass	yes	yes
2-gap insulating glass with laminated safety glass	yes	yes
Detection of interlayers	yes	yes
Identification of position and thickness of the interlayer	yes	yes
Graphic display of measured results	yes	yes
PC software with display	yes	yes
Software update online	yes	yes
Multiple languages	yes	yes
Art. no.	BO 51 647 60	BO 51 647 55

## Measuring range depending on gap between panes



The following glass types or structures cannot be measured or only to a limited extent:

- Strongly dispersing glass like e.g. satin-finished or sandblasted glass, cast glass

- Strongly absorbing glass such as e.g. laminated glass with matt or coloured interlayers, entirely coloured glass
- Glass with interference coating
- Highly reflective glass like e.g. solar control glass
- All basic glass products deviating from DIN EN 572 part 2

### Notes:

For making reliable analysis of the structure of the measured object, we recommend taking several measurements at different points and from both sides.

In case of dealing with very large measuring units or if the results obtained are very unreliable, we recommend carrying out average measurements on at least 4 spots distributed over the whole surface of the glass pane.

The analysis of glass with additional coatings (Solar reflective films or splinter protection films) can lead to incorrect results.

In the case of insulated glass units, measurements should always be taken 5 cm away from the edge, as the panes tend to “bend” depending on the surface and air pressure, which means that measurements taken from the centre may be inaccurate.

When analysing resin laminated glass, where the resin has the same refraction index as the glass, the *GlassBuddy* will measure the total thickness.

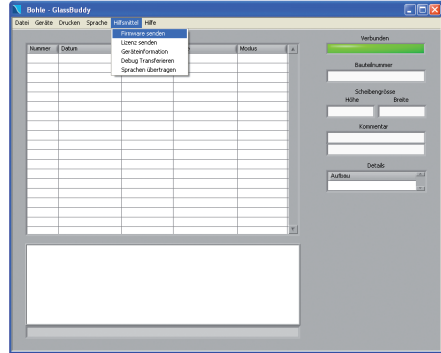
In a very small number of cases, detailed analysis of laminated safety glass is not possible. In this event, the *GlassBuddy* displays an exclamation mark in front of the individual result. In the graphic display of the *GlassBuddy* and in the PC software, results of this kind are indicated by two horizontal lines in the bottom part of the respective pane. To achieve better measuring results, we recommend a new analysis on the opposite side.

## 14 Software Update

A software update is available both for *GlassBuddy* Basic and *GlassBuddy* Plus.

Troubleshooting updates can be carried out by the user. They can be found on our website [www.bohle-group.com](http://www.bohle-group.com) with the article numbers BO 51 647 60 for *GlassBuddy* Basic and BO 51 647 55 for *GlassBuddy* Plus. For this purpose, the updated version found under Downloads must be saved on your PC. Please connect your *GlassBuddy* Basic or *GlassBuddy* Plus to your PC or laptop and connect the



device to the PC software (see point 6). Click on “auxiliary options” for installing the update and choose the submenu “send firmware”.

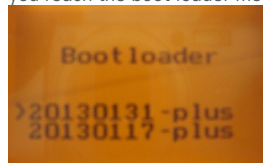



Now you have to choose the previously stored software version.

Confirm the completed download of the *GlassBuddy* update with “OK”.

To activate the updated version on your *GlassBuddy*, first switch off the device.

Afterwards press keys  and  at the same time for approximately 4 seconds. In this way you reach the boot loader menu.



You can choose between two software versions. The newer one can be recognised via the date. Press  key to load the chosen version.

## 15 Software Upgrade

It is possible to upgrade *GlassBuddy* Basic to *GlassBuddy* Plus. This can not be done by the user. Please send your *GlassBuddy* Basic to BOHLE AG. These upgrades are not free of charge.

## 16 Technical Data

Type	V4.0
Power supply	Lithium - ion - rechargeable battery
Laser	< 1 mW; class 2M
Laser wavelength	650 nm
Measuring range	Glass <i>Buddy</i> Plus up to 100 mm Glass <i>Buddy</i> Basic up to 50 mm
Accuracy	0.1 mm,
Measuring tolerance	1% on measuring range
Display	64x128 Pixel
Dimensions	180 x 83 x 42mm
Weight	350 g
Working temperature	0°C to +40°C

## 17 Safety Information

The Glass*Buddy* is a product of the 2M laser class. Therefore no additional laser protection measures need to be taken before the device is used. Despite this, the device should not be used by untrained persons or be allowed to fall into children's hands. You should not look directly into the beam or look at the beam using optical instruments.

## 19 Technical Support

Please address any technical questions, comments or suggestions by e-mail to [glassBuddy@bohle.de](mailto:glassBuddy@bohle.de).