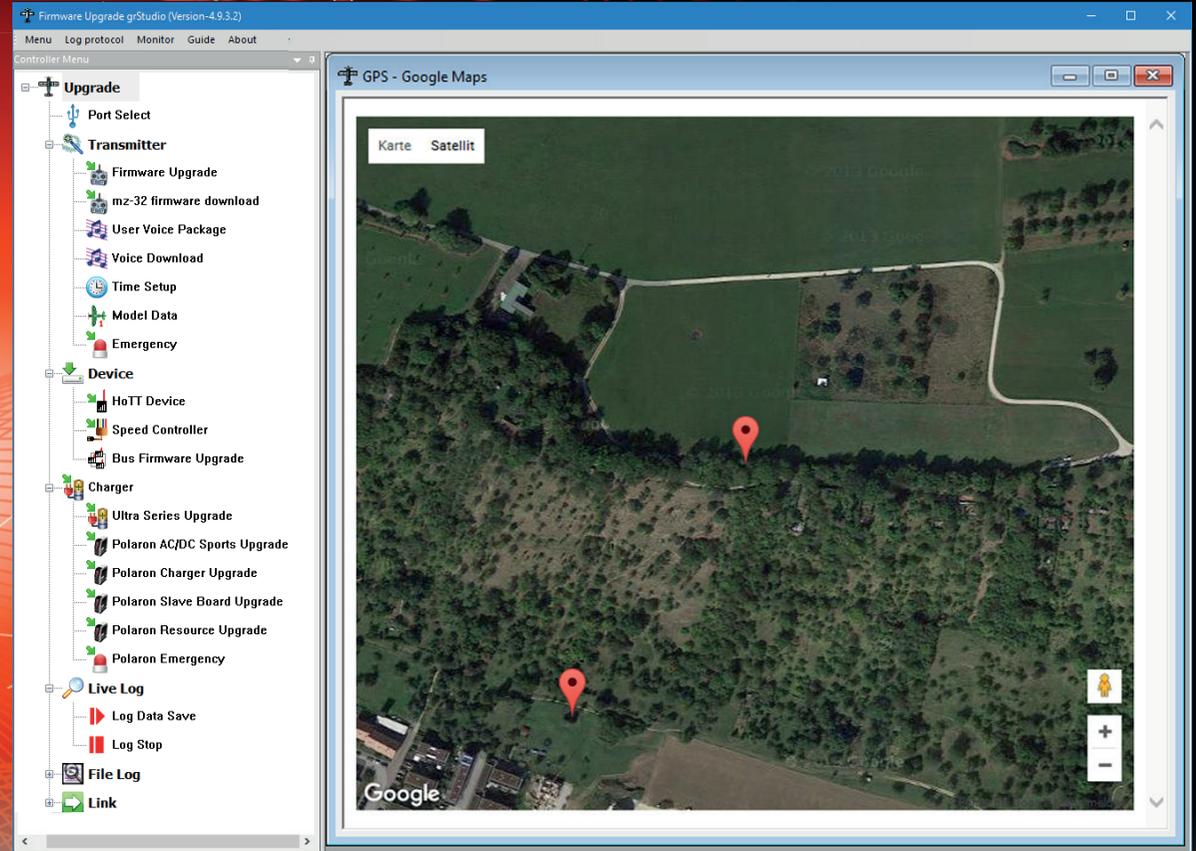


GruppeniS Firmware-Upgrade

With **GruppeniS** products
always up to date



Software-Pakete für **GruppeniS** ...
HoTT transmitter and receiver

SMART Box HoTT sensors

Chargers

Digital servos

Speed controller



Software manual

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Disclaimers

Disclaimer

The software "*Firmware_Upgrade_grStudio*" is free-ware (free software). The software may be used for your own purposes, but in no way modified. A transfer to third parties may only be made with the consent of *Graupner I SJ GmbH*.

Graupner I SJ is liable for the fact that the software is free from third-party property rights and indemnifies the user from any legitimate claims of third parties. If a third party asserts claims against the user because he sees his rights violated as a result of the distribution of the software, *Graupner I SJ GmbH* must be informed immediately in writing. In this case, the user agrees to cease further use immediately.

The company *Graupner I SJ GmbH* assures that the software, if this from the *Graupner I SJ* homepage or the *GRAUPNER | SJ* download page is free of viruses.

The software is in the development stage (beta version) and is not free of errors. Also, not all functions described in the manual are currently available.

For these reasons, the use of the software is the sole responsibility of the user. The user must ensure that the corresponding components to which the software is applied in accordance with this manual function properly before the components are used as intended. Any claims of the user for damages (such as data loss, damage to property or personal injury) are hereby excluded.

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Graupner I SJ Firmware Upgrade grStudio

Graupner's "*Firmware Upgrade grStudio*" program allows all products of the *Graupner HoTT* series to be updated and managed. An update is also possible "*online*" with existing Internet connection, which means that the device connected to the PC is looking for "*automatically*" the firmware suitable for the product and downloads them. This includes HoTT transmitters, HoTT receivers and sensors.

The easiest way to install firmware updates or language packs, to save model memory and receiver settings or to view the LOG FILES stored by the transmitter.

As a special feature, the sensor data of various HoTT sensors or modules, such as the GPS, Vario, General Air module, partially graphically output on the PC.

New is the update integration of the *Graupner I SJ Ultramat* and *Polaron* charger series as well as electronic speed controller (please read the instructions of your charger or travel controller, if your product is updatable). The software for programming the *Graupner* servos from the DES, HVS, HGM and HBS series is now also integrated (exception DES 577).

The present program description is designed in such a way that you only need to read the chapter that is important for you, or you should, if you only want to use one specific option. If necessary, you will be referred to other relevant sections.

But once you have used one or the other of the many possibilities, you will quickly find fun and use the entire program package in its diversity.

You need a laptop or desktop computer with one of the (more current) operating systems Windows WIN 7/8 / 10®. On an Apple® computer, you set up a virtual machine with a Windows® operating system and / or "*Boot Camp*" a Windows partition.

Foreword

Graupner I SJ Firmware Upgrade grStudio

To enable the HoTT product or even the chargers, servos or speed controllers mentioned above to communicate with the PC, you will need the components listed on the next page, depending on the product, in addition to the free "Firmware_Upgrade_grStudio" program package. The required components are listed in the individual programs. Finally, make sure that the used batteries (transmitter and receiver battery) are charged, so that the power supply does not break down during an update and all the trouble was "free" ...

The software package "Firmware Upgrade grStudio" is subject to constant extensions and improvements. This manual will be updated accordingly. Therefore, pay attention to the version number on the front page of this manual.

Incidentally, you will also find Internet video tutorials for many HoTT products. Look at the corresponding product.

The illustration on the next page shows the basic program structure of the "Firmware Upgrade grStudio" software, which is described in detail below.

At the time of writing this manual, not all described options of the program package are active. This concerns in particular the programming of HoTT receivers via the program "Receiver setting".

Telemetry data can also be viewed using the free Data Explorer program. This program can be found in the download area of the respective product. However, it is not part of this manual.

In addition to numerous screenshots of the "Firmware Upgrade grStudio" software, additional screenshots are also included in the manual, whose appearance depends on the operating system used - in this manual WIN 7® or WIN 10®.

Major changes in version 4.9.3.2

This manual has been updated from version 4.6 to version 4.9.3.2. In addition to editorial changes, the following program enhancements and improvements are described above:

- Simplified program and device driver installation through a single .exe installation file.
- The "**mz-32 Firmware Download**" menu has been added to the "Transmitter" program group.
- A "BUS Firmware Upgrade" program has been added in the "Device" group. (Currently for the GPS / Vario Module Alpha Graupner HoTT, No. **S8437**)
- Improvement of model memory backup
- The program group "Link" has been extended by three options:
 - Program for generating QR codes, suitable for Polaron chargers with optional WiFi module No. S8503. With the WiFi app labels for the batteries can be generated in order to then automatically transfer the battery-specific charging parameters on the Polaron charger using the app via the reading of the QR codes.
 - The VDF Editor (Voice Data Files) is a program for editing and creating announcement files of the Graupner HoTT transmitters. (Compatible with Windows®, macOS® and Linux®; requires Java 8™.)
 - "HoTT-TTS" (Text to Speech): you can use this text to create audio files for system and user announcements. (Compatible with Windows®, macOS® and Linux®; requires Java 8™.)
- Firmware Upgrader Slowflyer & Gyro Receiver: This software enables the updating of slowflyer and gyro receivers with macOS® and Linux® operating system if Java 8™ is installed on them. (The macOS® and Linux® version is available as a separate .jar file in the download area.)

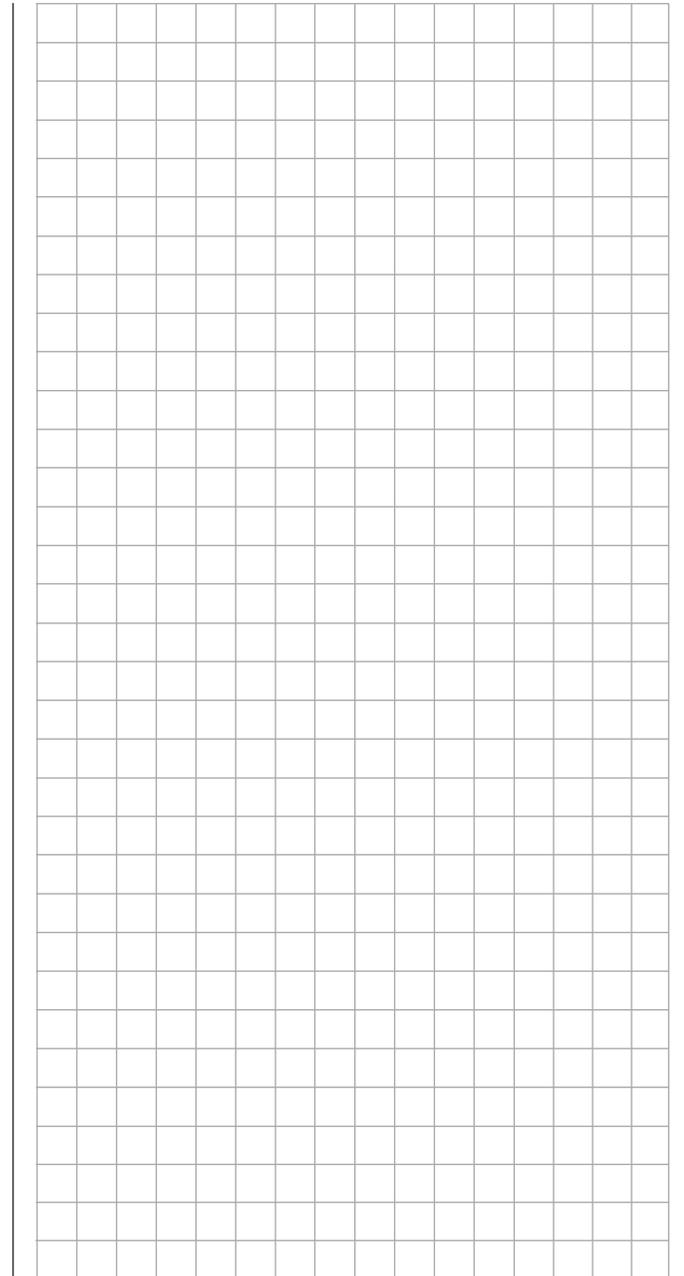
Innovations Version 4.9.3.2

- *mz-32 Downloader 0.9.3.46.jar from 19.06.2018: Beta-Software for Windows®, macOS® and Linux® requires Java 8.*
- *Bug fixes and editorial changes*

Notes:

Java 10 is not yet supported, as some of the libraries used for Java 10 are not yet available. This also applies to the Java programs Data Explorer, Gyro-Receiverupdater, HoTT-TTS and VDF-Editor.

**Your Graupner I SJ team wishes you a lot of fun.
Kirchheim-Teck, August 2018**



Special symbols



Attention!

This symbol calls attention to the following notices which must be observed unconditionally by the user. Any disregard for the accompanying notices can impair safe operation and even endanger the operator.



Warning!

This symbol calls attention to prohibitions which must be observed unconditionally by the user. Any disregard for the accompanying prohibitions can impair functionality of the device and endanger the operator.



Notice(s)!

This symbol calls attention to notices which should be observed by the operator to ensure safe operation of the device.



Tip!

This symbol calls attention to tips and expertise, such as how to avoid potential difficulties or damage, and is an aid in solving potential problems.

⚠ First read, then update ...



The following describes the update procedures in detail. Nevertheless, errors such as incorrect compilation of required components, failure to follow a certain procedure, such for example, selecting the "correct" switch-on time for HoTT components during updating, etc., certainly cannot always be ruled out. Please note the following comments:

- **IMPORTANT:** Be sure to read the descriptions and pay attention to the sequence of specific processes.
- Do not use AC adapters when using the programs described here, but only suitable batteries as specified.
- **Do not turn on the HoTT devices too early.** A progress bar within each of the visible windows will inform you, or the text will indicate when the product to be updated is to be activated.
- **IMPORTANT:** Do not update until the transmitter is ready to use and does not display any warnings such as "Throttle too high" or similar.
- Should an HoTT transmitter and POLARON charger - for whatever reason - repeatedly fail an update, do not "despair" it. A special "**Recovery program**" is available. Pay particular attention to the fact that the transmitter or the charger must first be switched off before the software is restored. In the case of unsuccessful attempts, observe the respective notes in the sections "Error messages".
- All updates require a specific COM port. Nevertheless, it can happen that despite a perfect USB connection between PC and HoTT component this is not recognized. In this case, disconnect the USB connection for a few seconds and restart the program.
- Each program description ends with a list of possible **error messages**. Follow the instructions before repeating the update process.

➤ Also follow the instructions of the respective products.

➤ **IMPORTANT:** After using the programs, carefully inspect the devices for proper operation before commissioning and carry out range tests on the ground.

➤ Before using the software, you should close all other programs, such as mail, Internet, and other communications programs, so that the computer has sufficient resources for the firmware update program.

➤ If an automatic update from the Internet causes repeated error messages, deactivate firewall programs for a short time if necessary. But do not forget to activate them afterwards.

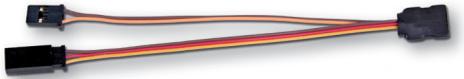
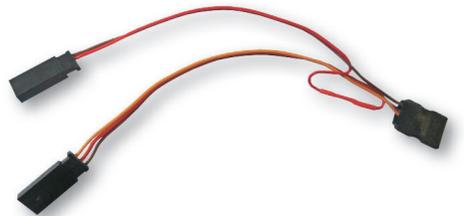
➤ Regulations for 2.4 GHz radio components

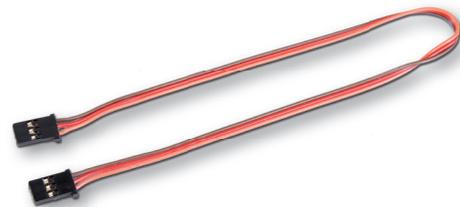
For all HoTT remote control components, which will be placed on the market since 01.01.2015, a new ETSI standard comes into force (EN 300328 1.8.1). The coexistence of radio components is thereby to be improved. For the previous Graupner HoTT radio control system a grandfathering applies. Nevertheless, it is recommended, if already available, to perform firmware updates. For which HoTT components the current updates according to EN 300328 1.8.1 are available, please refer to the link "Update Revision History GRAUPNER | SJ HoTT components" from the homepage www.graupner.de.

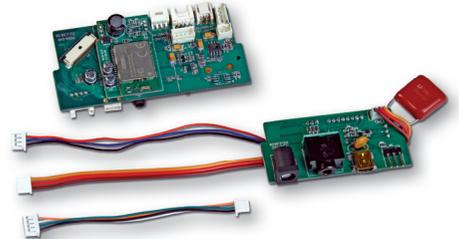
It is recommended to first erase the binding of a HoTT receiver to a HoTT transmitter and then reconnect the receiver to the model memory.

Suggested accessories

The required accessories are indicated in the update instructions

No.	Description
	Interface including USB cable and 5-core connection cable for connecting HoTT components to a PC 
7168.S*	Adapter cable USB interface HoTT receiver / sensors / speed controller 
6466.S**	Adapter cable required only for updates from Graupner servos and certain Graupner chargers 
S8363**	Servo USB programming cable. Replaces the adapter cable No. 6466.S. The positive cable (red) no longer needs to be pulled out. 

No.	Description
3936.11	2 pieces of Y (or V) cable required for updating travel controllers or for the "General Modules" sensors No. 33610/33611 and "Electric Air Module" No. 33620, see footnote (***) at the end of this table. 
No.	Description
	Can replace a Y-cable for the sensors "General-Modules" No. 33610/33611 and "Electric Air Module" No. 33620 can be used if no receiver battery is at hand. One end is connected to the telemetry socket of the module, the other is connected to the socket of the adapter cable order no. 7168.S. But note the footnote (***) at the end of this table. 
23048	Adapter cable for Slowflyer receiver No. 33505, 33566 with ZH connector 

No.	Description
33565.1	Adapter cable for Slowflyer receiver No. 33565/33575 with SH connector 
33002.3	HoTT Bluetooth® V2 Module for No. 33112 (MX-12), 33116 (MX-16), 33124 (MX-20) 
33002.4	HoTT Bluetooth® v2.1 +EDR Module for MC-32 
33002.5	HoTT Bluetooth® v2.1 +EDR Module for MC-16 / MC-20 
S8351	HoTT Bluetooth® v2.1 +EDR Module for MZ-10/12/18/24, XN-8 

Where to find the Firmware updates?

Download firmware updates

Loading the firmware updates

Loading the firmware updates

With the program ...

"Firmware_Upgrade_grStudio_Ver-XX.exe"

... You have the option of "automatically" updating HoTT products with an existing Internet connection. Nevertheless, it makes sense to save the firmware files separately on a PC or laptop, for example, if you want to use a previous version for some reason.

You will find current software packages, update files and information about the HoTT products (!) in the following places:

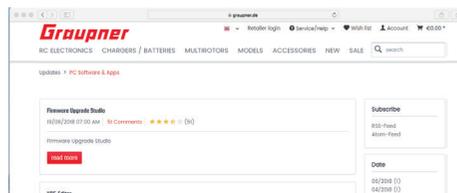
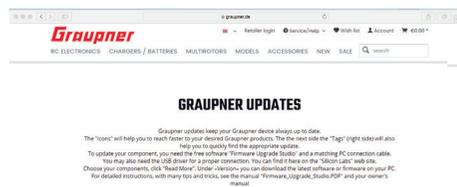
Choose from the homepage www.graupner.de through the button **Service/Hilfe**

"Update". Then click on:

"PC Software & Apps" • Firmware Upgrade Studio • Read More",

to download the software package

"PC-Software_4.9.3.2" or the "HoTT_Software_V4"...



... or select the appropriate product under "Tags" on the right.

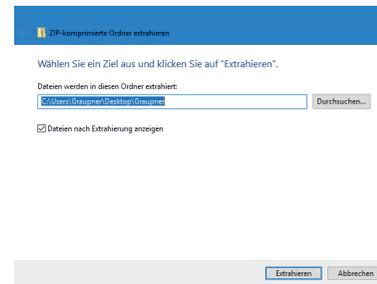
load the program "PC_Software_4.9.3.2"

This file contains the program required to update HoTT products and the device driver.

Click on the link "PC_Software_4.9.3.2" and save the .zip file "grstudio_4-9-3-2_setup-exe.zip" in a directory of your choice on the PC. Unzip the file with a right-click on the mouse and select "Extract all ..."

In the following window you can change the path in your own discretion. Then click on the button

Extrahieren



If you have not cleared the check mark "Show Files After Extraction", you will be immediately guided to the installation file

"grstud-io_4-9-3-2_setup.exe",

The complete installation - including driver installation - is done automatically via this installation file, see below.

Load the firmware files "HoTT_Software_V4"

This package contains current firmware versions (version V4) according to order numbers, which are transferred to the HoTT components via the firmware update program.

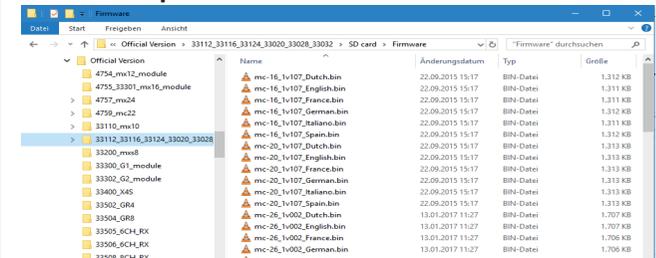
Folder structure

HoTT firmware: At the time of writing this manual, the version "4" is available: "HoTT-Software V4". If the last update applied is still for version "V3" or older, you **MUST** update all components of the remote control system to version "V4". Otherwise, malfunctions of individual components can occur. If individual firmware files change within version V4, it is sufficient to install only the newer firmware version of the corresponding product.

Whether firmware updates are available within this package V4 can be seen on the date of the download file. In addition, the version numbers of the respective V4 firmware files change.

Now save the zip file in a folder of your choice and unpack the file as before by right-clicking with the mouse: "Extract all ...".

In the subfolder "Official Version" you will find the firmware files sorted by article numbers. The directory is clearly structured, so you will quickly find the required files:



You will also find the HoTT firmware updates in the download area of the respective product, which can be accessed via the button **RC ELEKTRONIK** on the Graupner start page, see the following fig.



Software and driver installation

Start installation file

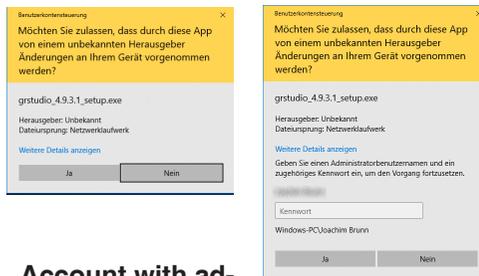
Start the data installation

 Neither the USB interface No. 7168.6 another "HoTT device" may be connected via USB cable to the PC. First, start the installation file as described below.

Click on the installation file

"grstudio_4.9.3.2_setup.exe"

Depending on the settings of the "user account" used, it may happen that one of the following windows is opened when starting the program - shown here using the example of WIN10®:



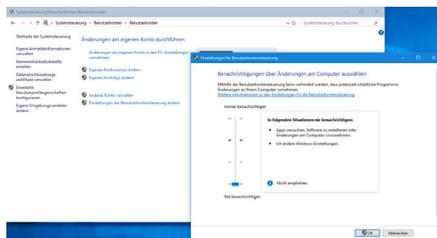
left: Account with administrator rights

right: Account without administrator rights (Admin password required)

 **Note:** You can override this query on the Administrator user account by following the path below ...

"Control Panel • User Accounts • (Re) User Accounts • Change User Account Control Settings"

... change the security settings as follows:



But note the notes  on the settings!

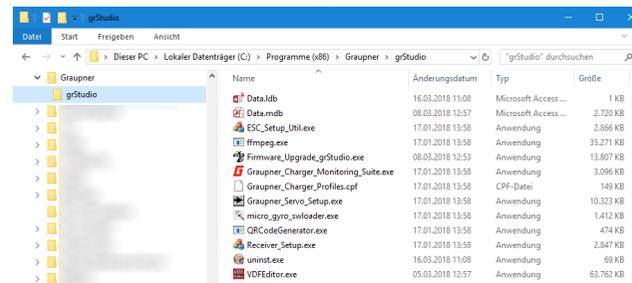
Confirm the installation with "Yes" - if necessary enter the admin password.

Select the program language (German, English, French, Italian) and follow the installation steps.



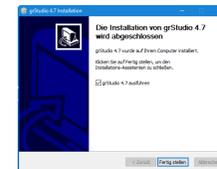
The installation path is:

"Local Disk (C :) • Programs (x86) • Graupner • grStudio"



Afterwards, the CP210 driver required for the

firmware updates will be automatically installed as soon as you click the **Weiter** button. Follow the further installation steps here as well and conclude the grStudio installation with the button **Fertig stellen**.



The "Firmware Upgrade grStudio" program then starts automatically.

 Through **uninst.exe** you can uninstall the program again. The program "Firmware Upgrade grStudio" must be terminated beforehand.

 The program language is hidden in the file "Data.mdb". If you want to change the grStudio program language later, start the setup program again. You do not need to reinstall the driver. If necessary, click on the button for the corresponding queries **Abbrechen**.

Auto update check

Autoupdate Check

After the start of the program

"Firmware_Upgrade_grStudio.exe"

it is automatically searched in the background

for program updates with existing Internet connection.

(Alternatively, select "Check for updates" **Über** via the menu item.)

The update process may take some time, depending on the speed of the Internet access.

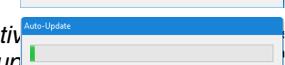
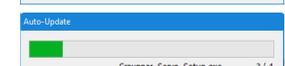
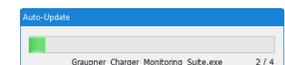
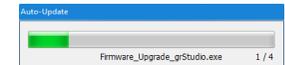
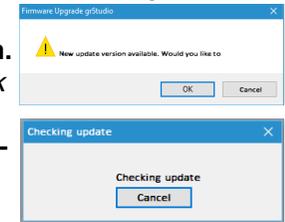
If you terminate the program too quickly, the update check may also fail.

Existing updates are only downloaded when the program is closed. If necessary, confirm the download through **OK**:

New program updates are being downloaded:

If the window appears, then click on **OK**.

If necessary, further subprograms from the program group "Link", see page 102, such as "Graupner_Servo_Setup.exe", if newer versions are available.



 If an error message prevents an auto-update, deactivate on your PC only during the auto-up to activate the firewall afterwards.

 **Graupner ISJ assumes no responsibility for the proper operation of the software.**

General operating notices

Updating device drivers

Device Driver Update

Update device driver

If you have installed the firmware upgrade program using the above installation file, you can skip this section because the installation file also automatically sets up the required device driver. The current driver is also available separately. You can also find it on the download page under USB driver.

Software Firmware Upgrade Studio	
	Version: Firmware Upgrade Studio PC_Software_4.9.3.1 HoTT_Software_V4 OSD_PC_Software VDF-Editor Firmware Upgrader Slowflyer- & Gyroempfänger für OS, Linux
USB Treiber:	https://www.silabs.com/products/mcu/Pages/USBtoUARTBridgeVCPDrivers.aspx

Under the listed link select the appropriate device driver for your operating system. Within the respective zip file there are two installer files:

- ▶ *CP201xVCPInstaller_x64.exe* for 64 Bit systems,
- ▶ *CP201xVCPInstaller_x86.exe* for 32 Bit Systems.

 The USB interface No. 7168.6 may not yet be connected to the PC. First install the driver.

Follow all on-screen instructions during installation.

 After completing the one-time driver installation, the PC MUST be restarted.

Connect the USB interface No. 7168.6 via the supplied USB cable on the PC. If the driver is properly installed, an LED should light up red on the interface board, which may go out after some time, depending on the operating system.

Important notes before startup



General important notes:

- ▶ Please note that compatible firmware is required for reliable communication between the HoTT components. The programs and files that are required to update all HoTT components are therefore combined into a single file that is currently named "HoTT_Software_V4.zip".
- ▶ Only operate your transmitter using the current firmware version.
- ▶ Before each update check the charge status of the connected battery. Before updating the transmitter, back up all used model memories in order to be able to restore them if necessary.
- ▶ Do not disconnect the link to the computer during an update! The corresponding device can thereby also be destroyed. Therefore, make sure you have trouble-free contact between the computer and the HoTT device. In the event of a transmission failure to a HoTT transmitter with integrated voice output, the firmware can be transferred using the "Recovery" program, see page 41.
- ▶ After updating, make sure that all updated components are working correctly before you commission the corresponding device!

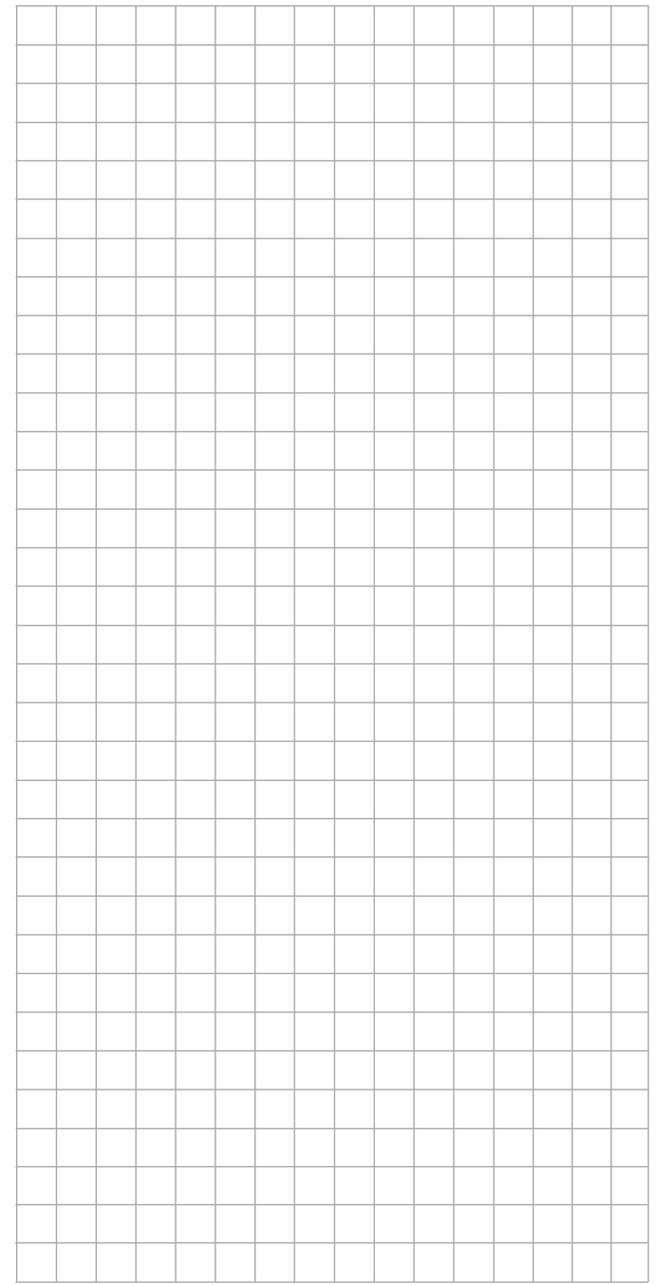
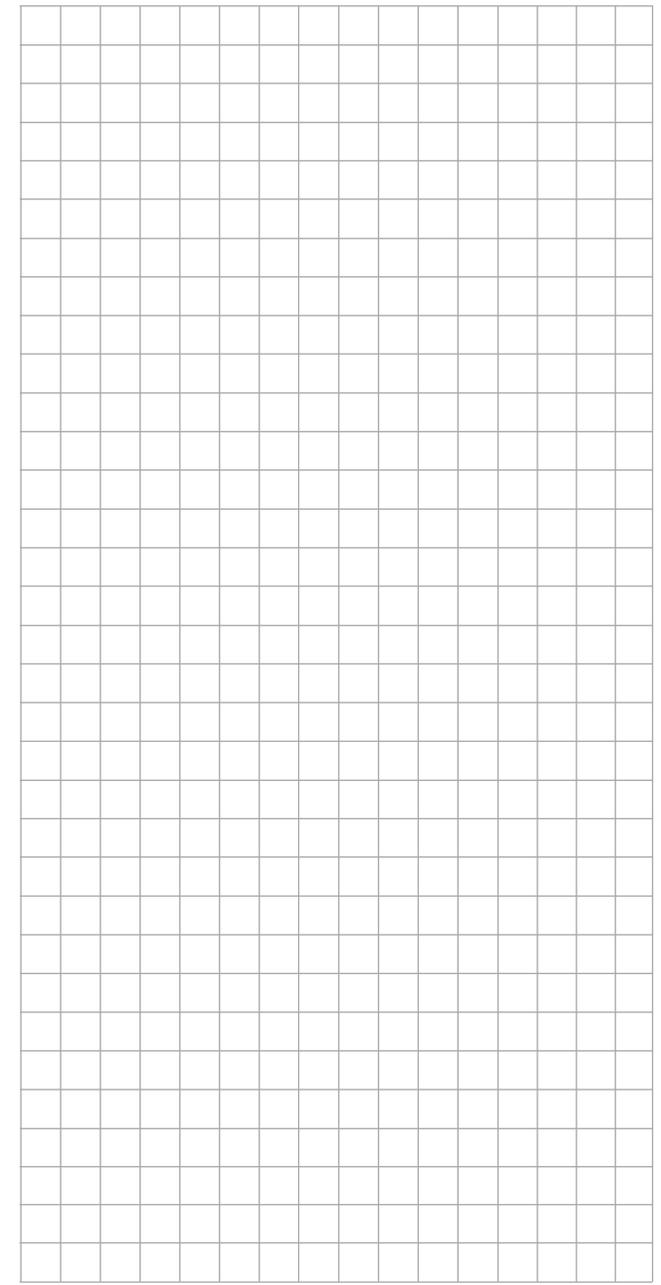
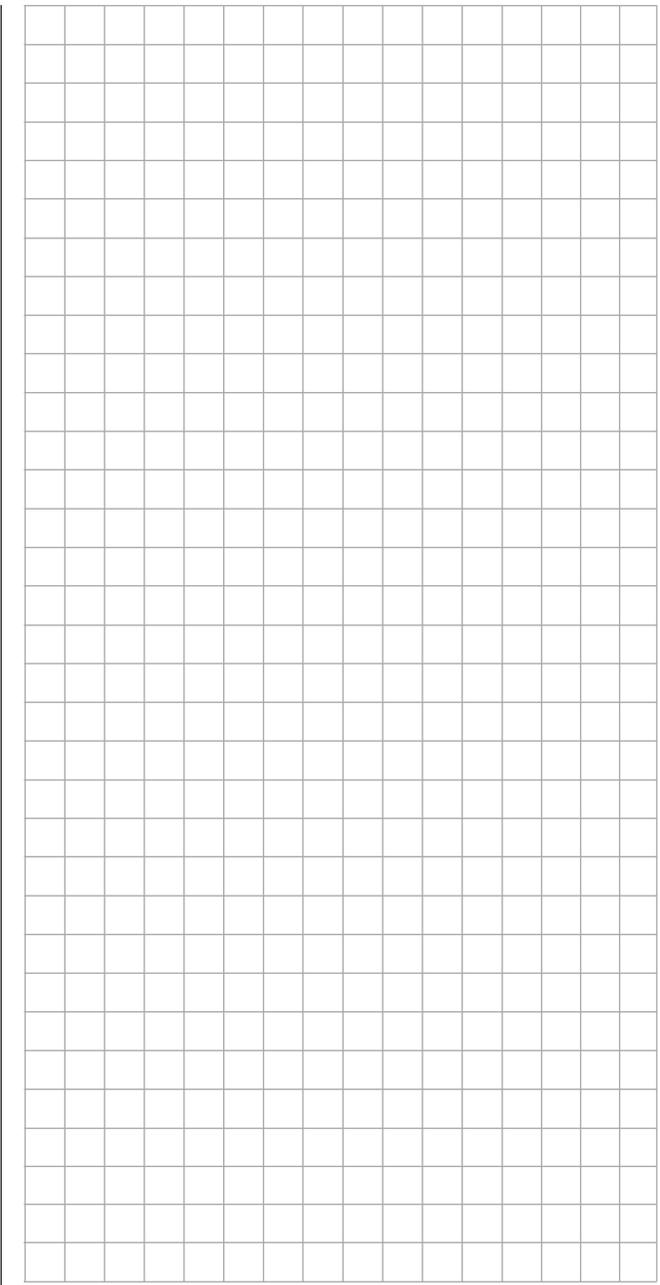


Notes for the operating systems WIN 7/8/10® and Apple® (from version OS X 10.7):

If the program "Firmware_Upgrade_grStudio_Ver-X.Y" cannot be started in a user account without administrator rights, proceed as follows ...

- ▶ Under WIN 7/8 / 10®, right-click on the file "Firmware_Upgrade_grStudio_Ver-X.Y.exe" and select "Run as administrator".
- ▶ Under WIN8® also right-click on the .exe file, select "Properties", then "Compatibility" and check the box "Run program as administrator".
- ▶ The *Firmware_Upgrade_grStudio* program can also be run on an Apple® computer if a Boot-Camp partition with one of the Windows operating systems listed above is installed and / or a virtual machine (VM) has been set up in parallel with the Apple® operating system is.
- ▶ Individual subroutines of the grStudio package can be started under macOS® or LINUX®. The file type is changed from * .exe to * .jar. This is indicated in the appropriate places in this manual.

Since the program requires an active internet connection for some optional update processes, it may be. You may need to change the network setting while running the program under a VM on an Apple® computer. Please refer to the respective instructions of the program, which you will use to set up a VM in parallel to the Apple® operating system.



Bluetooth®

Setup Bluetooth® adapter* under WIN 7/8/10®

Setup Bluetooth® adapter

Set up the Bluetooth® adapter*

The Bluetooth® V2 module transmits the telemetry data of the Graupner-HoTT system via Bluetooth® 2.0 wireless technology to an Android device or PC or voice output via an A2DP / HSP Bluetooth® headset. The required Android programs are separately downloadable.

Depending on the Graupner HoTT remote control system, different Bluetooth® modules are available, see the accessories table on page 8 or on the Internet at www.graupner.de.

Installation and commissioning of the Bluetooth® modules are described in detail in the respective Bluetooth® instructions. FIRST make sure the transmitter has been updated to the latest firmware version.

In combination with the "Firmware_Upgrade_gr-Studio" software, the transmitters with integrated speech output, all new transmitters of the mz series as well as the newer CAR transmitters can be linked to a PC via the Bluetooth® module in order to save the programs of the two program groups "Transmitter" and "Live Log". The transmitter communicates wirelessly with the PC, so you can perform updates or transmit, view and save "live" telemetry data to a PC. Read the appropriate transmitter manuals to find out if the particular transmitter is Bluetooth® enabled.

The connection of the Bluetooth® modules to a PC or laptop depends on the operating system. Check beforehand if the computer you are using is equipped with Bluetooth® technology.

* The Bluetooth word mark and logos are owned by the Bluetooth SIG, Inc. and any use of such marks by Graupner I SJ is under license. Other trademarks and trade names are those of their respective owners.

Setup Bluetooth® adapter under WIN 7/8®

Bluetooth® setup under WIN 7/8® for PCs with integrated Bluetooth® module

If necessary, contact a specialist. The previous instructions for the Bluetooth® modules describe the connection to the Windows® XP® operating system.

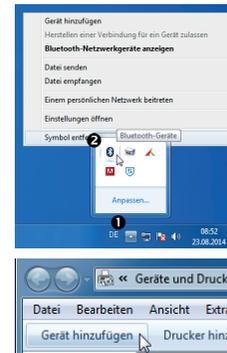
Note that the Bluetooth® module has to be initialized in the transmitter within the "★ SECRET MODE★". Please read the Bluetooth® module and transmitter instructions.

Connection to a PC with WIN 7/8 operating system

Switch on the HoTT transmitter with built-in Bluetooth® module. Click the triangle  on the right side of the taskbar (1), then click the Bluetooth® icon  (2) and select "View Bluetooth network devices • Add device" or directly "Add device".

Alternatively with WIN 7® also through:

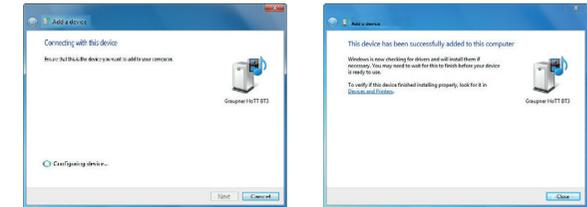
"START • Devices and printers • Add device":



If the connection is successful, the module "Graupner HoTT BT3" will be displayed. (Otherwise repeat the process via "Add device"). Click on the logo with the left mouse button and then go on **Weiter**.

 If a connection to the PC is not possible in this way, you should at the same time "re-initialise" the module in the transmitter according to the module and transmitter instructions when restarting "Add device". To do this, select the line "INITIALIZE BLUETOOTH" in the so-called "SECRET MODE" of the HoTT transmitter, see transmitter instructions. After successful connection, exit "SECRET MODE" before the next step and return to the basic transmitter display.

The device is now "configured".



There is a driver installation in the background, which you can fade in by clicking on  in the lower right corner of the taskbar, then on . The installation can take some time. Wait for the installation.



Close eventually still open windows through the button **Schließen**. The connection is completed.

 The following windows may appear.

In this windows click on **Abbrechen**

...

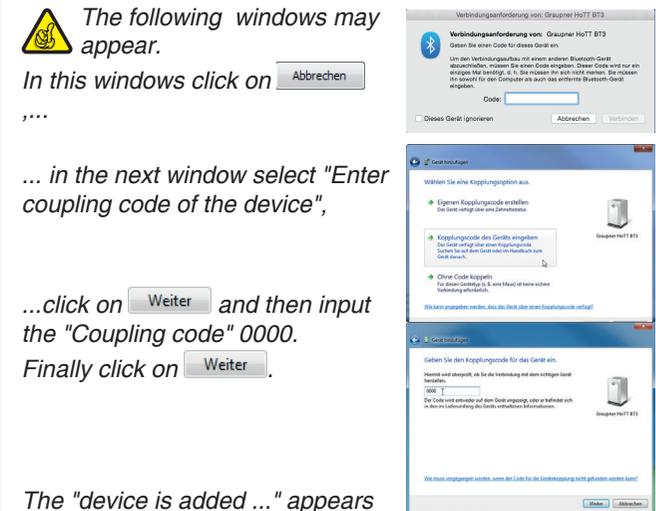
... in the next window select "Enter coupling code of the device",

...click on **Weiter** and then input the "Coupling code" 0000.

Finally click on **Weiter**.

The "device is added ..." appears at the bottom of the window.

Upon successful completion, the "Graupner HoTT BT3" logo will appear in the Control Panel under "Devices and Printers". This window can be



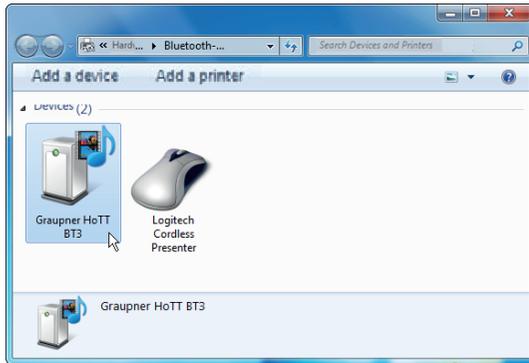
Bluetooth®

Setup Bluetooth® adapter* under WIN 7/8/10®

Setup Bluetooth® adapter under WIN 7/8®

reached with WIN 7® via:

" START • Devices and printers".



The COM port selection is below, see page 17.

 *For safety reasons, the Bluetooth® modules cannot be used in combination with the "Recovery" program, see page 41 in the "Transmitter" program group.*

Bluetooth® setup under WIN 10®

Bluetooth® setup under WIN 10®

Enter "Bluetooth and other devices" in the lower left part of the Windows logo, and then click "Bluetooth Settings - System Settings". Alternatively click on  at the bottom right of the task bar, then on the Bluetooth® icon .

Search Bluetooth® device:

Click on the "+" sign in front of "Bluetooth - add another device" and in the subsequent "Add Device" window on  "Bluetooth". Switch the transmitter on (with integrated Bluetooth® module).

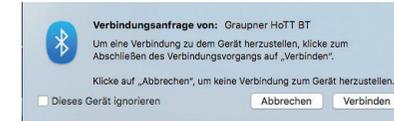
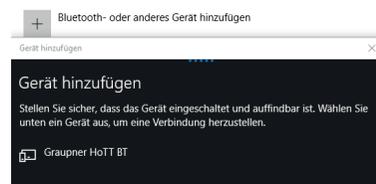
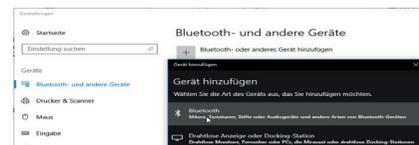
After a while, a Bluetooth® device is detected:

"Unknown device", "Graupner HoTT BT" or also "WT-32A".

 If a connection to the PC is not

possible in this way, you should at the same time "re-initialise" the module in the transmitter according to the module and transmitter instructions when restarting "Add device". To do this, select the line "INITIALIZE BLUETOOTH" in the so-called "SECRET MODE" of the HoTT transmitter, see transmitter instructions. After successful connection, exit "SECRET MODE" before the next step and return to the basic transmitter display.

Wait until the type "Graupner HoTT BT" is displayed. In individual cases, the request is first to establish the connection or immediately the input window for a PIN code, namely "0000"



Click on the button **Verbinden** ("Connect"). The device will then be listed in the "Bluetooth and Other Devices" window.

If you want to delete the Bluetooth® connection, Click on the Bluetooth® device "Graupner HoTT BT" and then on **Gerät entfernen** :



After a successful Bluetooth® connection, you must assign the correct COM port within the "Firmware-Ugrade grStudio", see from page 17.

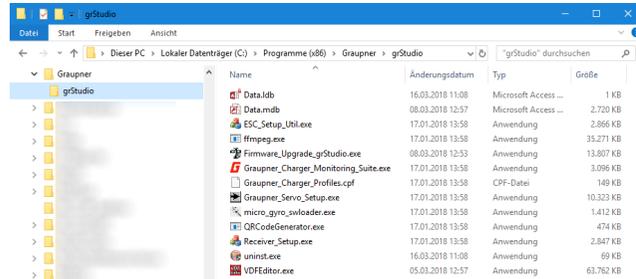
Program overview

Version 4.9.3.2

Program overview

Program overview 4.9.3.2

Start the program "Firmware_Upgrade_grStudio.exe" from the program folder "Local Disk (C :) · Programs (x86) · Graupner · grStudio"



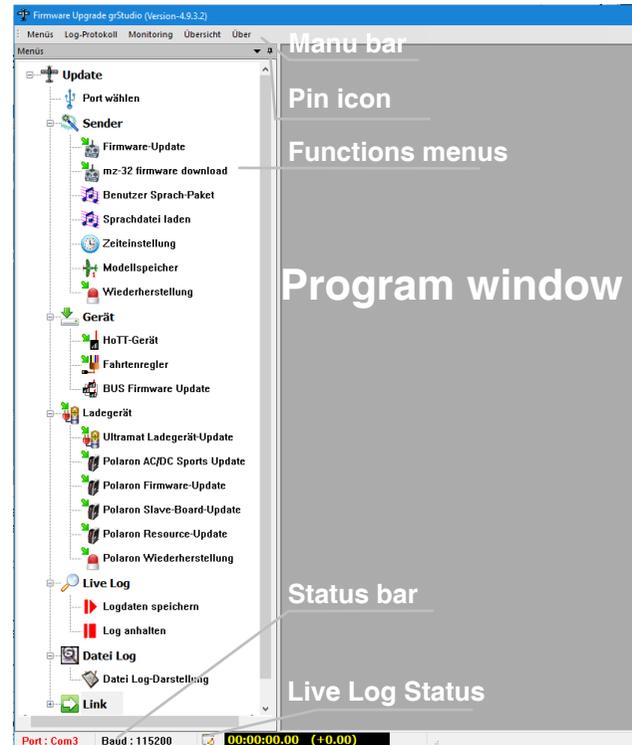
Warning: If you want to copy the program folder "Graupner" to any other location, make sure that all existing files are in the same folder, because subprograms of the "Firmware Upgrade grStudio" program cannot be started otherwise!

Note the "Auto Update" function as described above.

Warning: This manual describes version 4.9.3.2. Like all Windows programs, the Graupner "Firmware Upgrade grStudio" program consists of the typical Windows® window. Some Windows-specific windows may appear slightly different depending on the operating system. This manual refers to the operating systems "Windows 7 or 10".

The following figure lists the individual "program groups" and the subprograms contained therein. In the following sections, the designations shown in the picture are referred again and again.

Program window short description

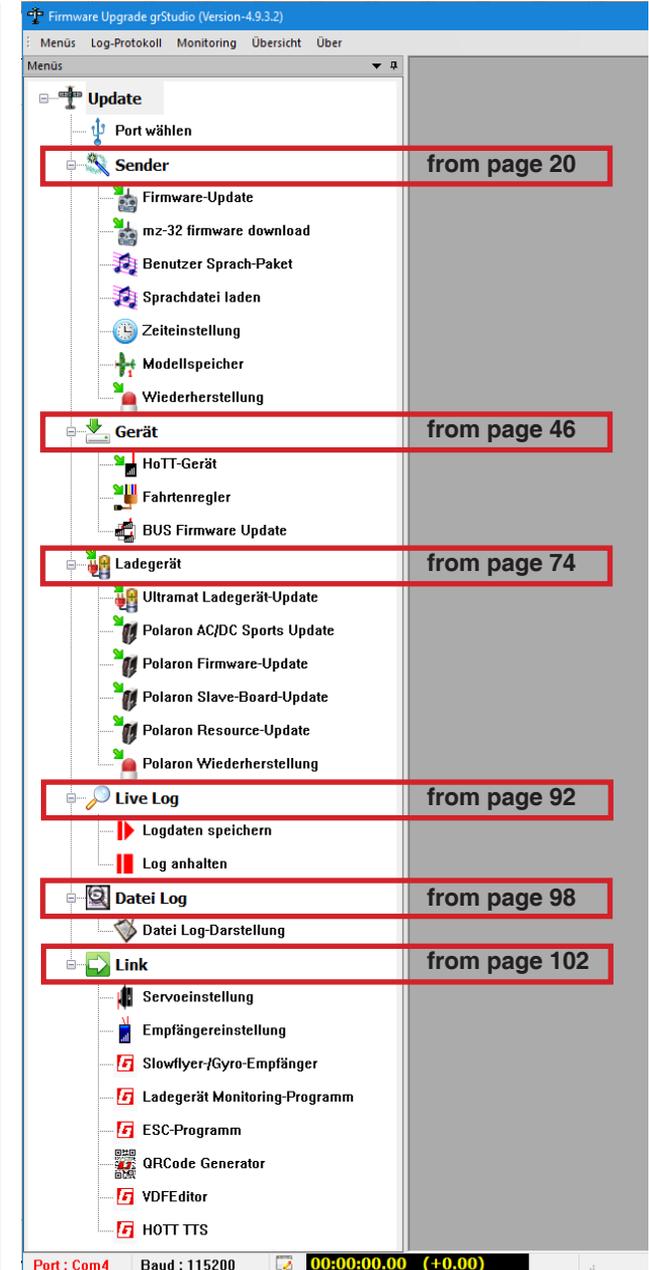


If the function menus are not visible, move the mouse pointer over the vertical "Menus" button in the upper left corner of the program window to expand the menu window. You can then permanently open or close the menu by clicking on the "Pin icon", as shown above.

Warning: You can resize the program window as you like using the mouse. Move the mouse over the edge of the window or into one of the four corners. As soon as the mouse pointer changes into a double arrow, drag the window to the desired size while holding down the left mouse button. Once the size has been set, it will be saved when exiting the program so that the next time the program is restarted, the program window will assume this size.

Program groups

(special MS-DOS program from page 141)



COM port connection with USB or *Bluetooth*[®] pairing

Create a connection via USB and Bluetooth

Select USB or *Bluetooth*[®] connection

If you have completed the program installation or *Bluetooth*[®] connection as described above, you must now select the corresponding COM port within the firmware upgrade grStudio program in order to connect the respective device to the program.

Hardware connection PC - HoTT device ...

... only via USB cable

Connect the USB cable (USB-A to mini-B-USB 5-pin) to the computer, then connect it to the transmitter's or charger's mini-USB socket when the transmitter or charger is turned off, for example on the *MC-32* or the *POLARON* chargers. The interface is automatically detected when the device is switched off. Then turn on the device in question.

... via USB interface No. 7168.6.

If you want to update a HoTT product without a mini USB socket, such as: Eg receiver, sensors or transmitter with retrofitted HoTT module, connect the USB interface, No. 7168.6, and the interface cable, No. 7168.S (or stock code S8363 for servos or 6466.S for servos and certain chargers) with the USB cable, otherwise the COM port will not be recognized.

⚠ Always make sure there is a perfect connection between the individual components. During a subsequent update this must not be interrupted!

Connection via *Bluetooth*[®]

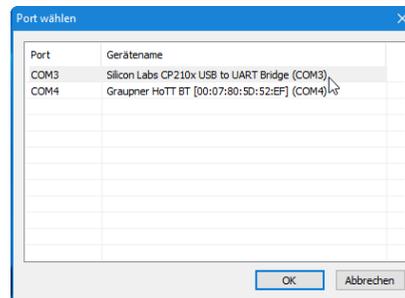
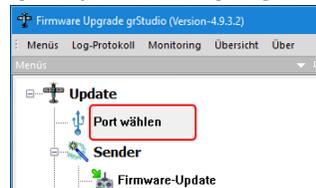
Here, only a functioning wireless connection between PC and HoTT device, as described above, is required.

Start in the program group "Update" the program "Select port". (Alternatively in the menu bar select "Menu" the entry "Select port".)

With connected interface adapter No. 7186.6

"Silicon Labs CP210x USB to UART Bridge" will appear. If a *Bluetooth*[®] connection already exists, see above, the corresponding port will also appear: "Graupner HoTT BT".

The COM port number depends on the constellation of the PC.



Select the desired port with the mouse and click on **OK**.

If no COM port is displayed, check in the Windows Control Panel under "Device Manager" if the driver has been installed correctly.

The selected COM port is then displayed in the status bar at the bottom left.



Error messages

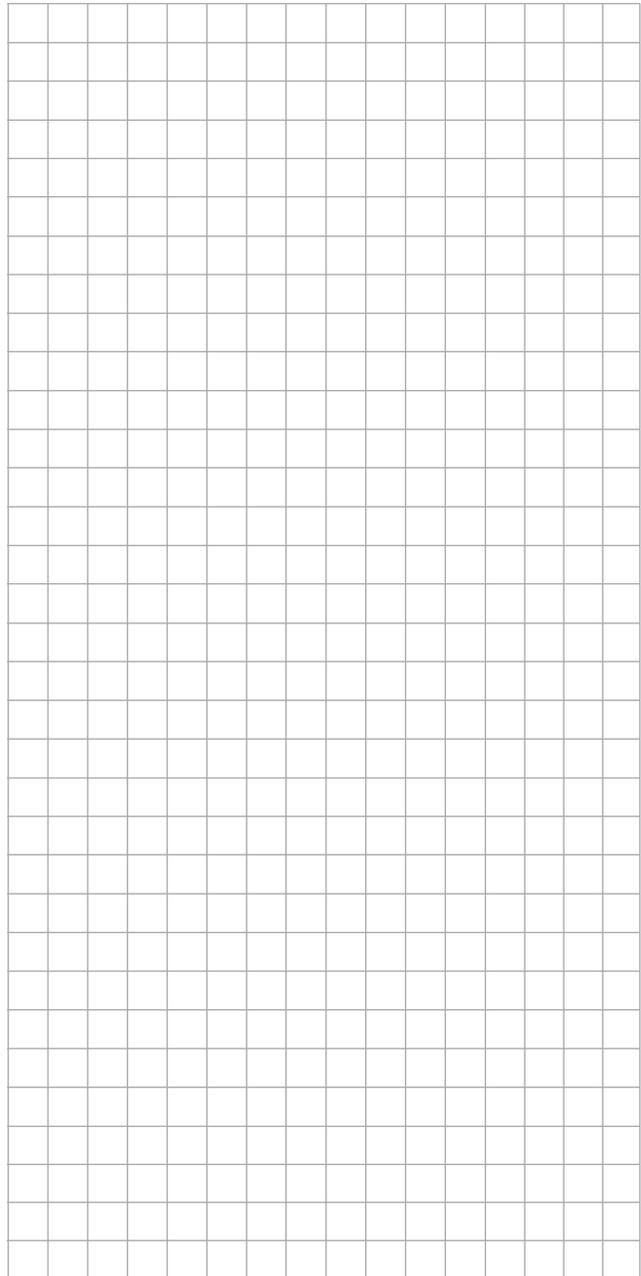
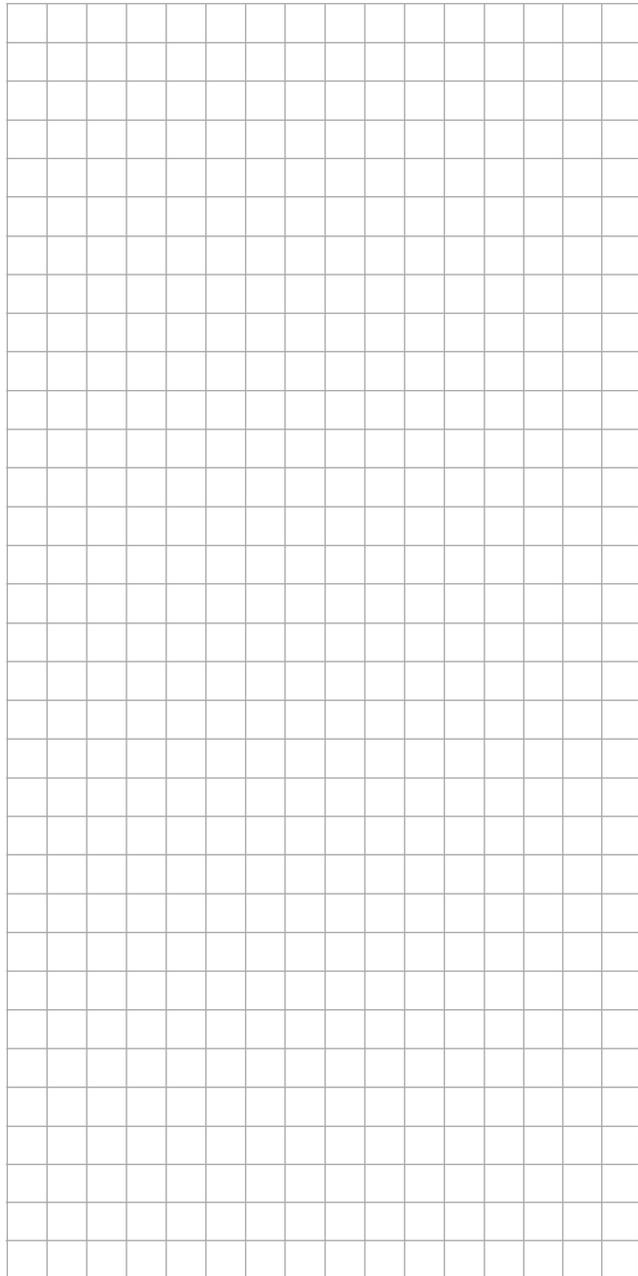
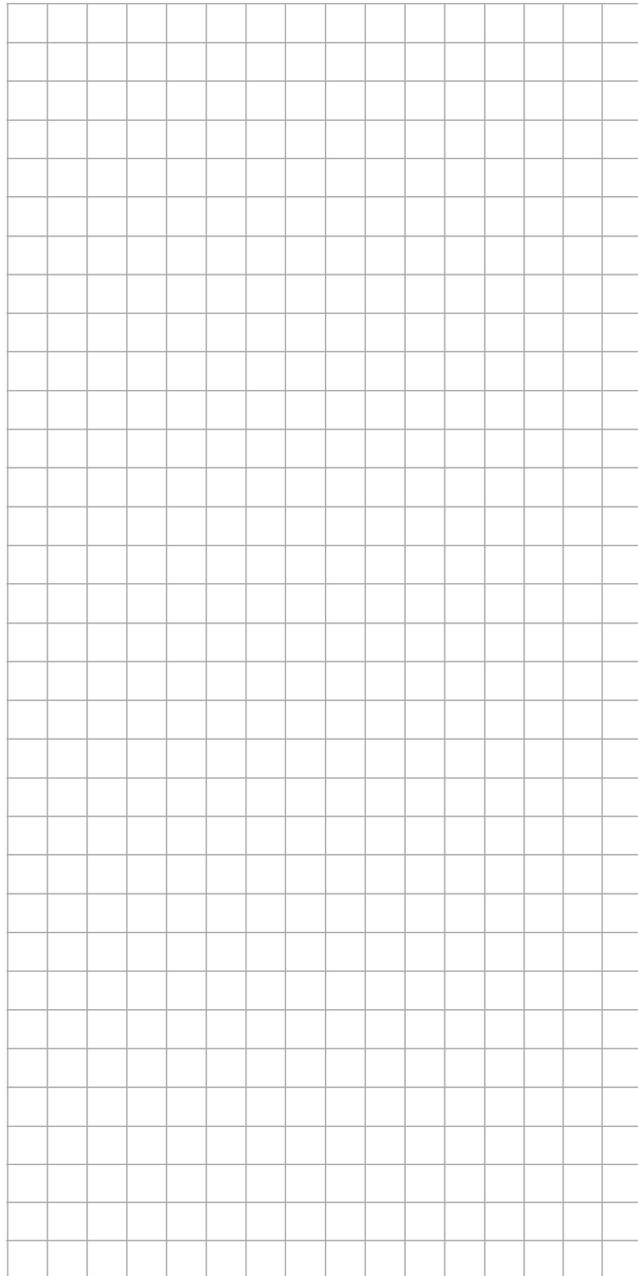
Error messages by USB connection

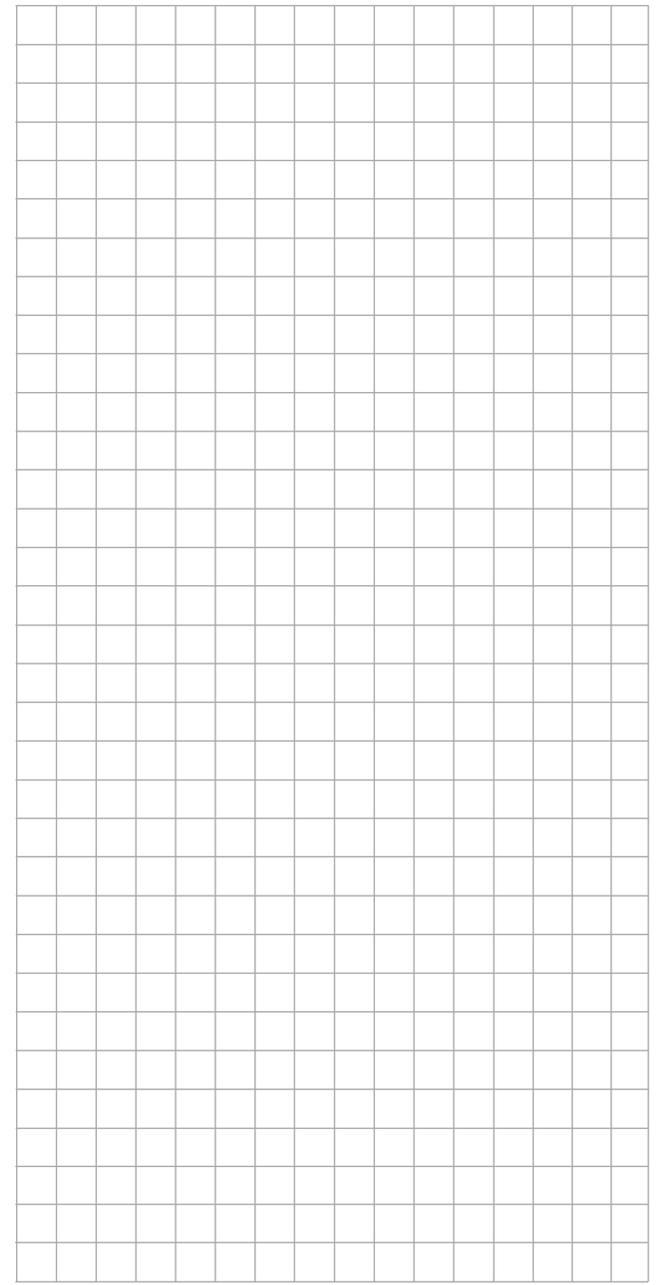
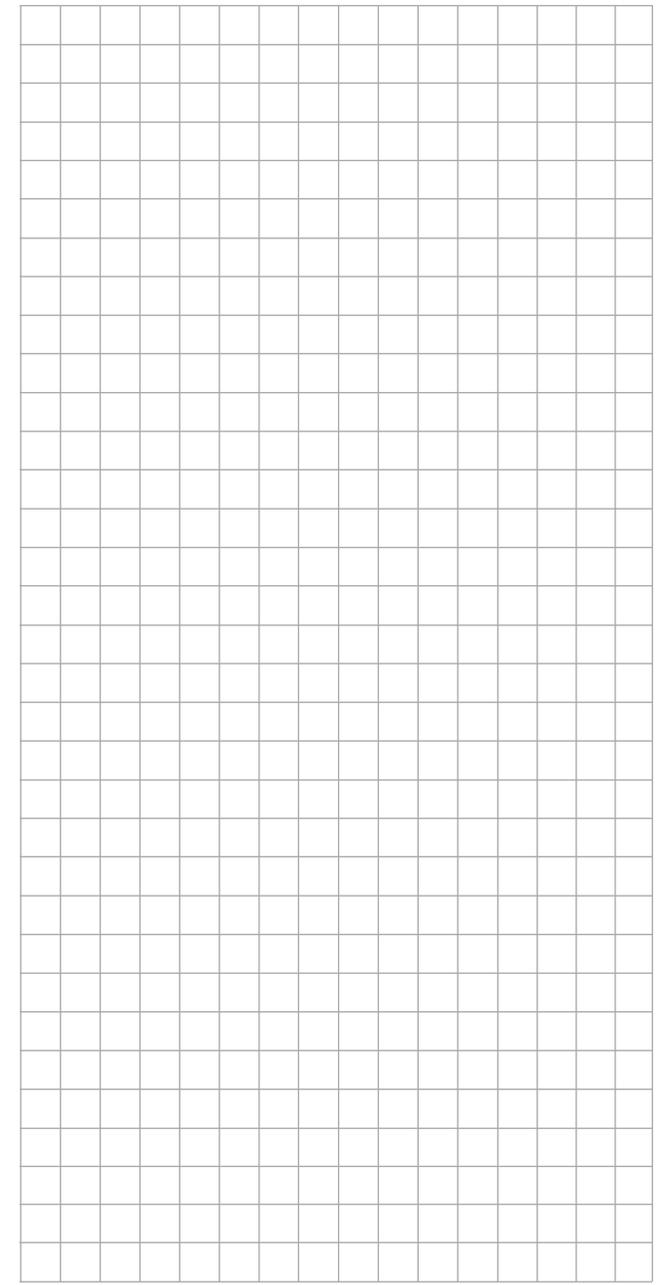
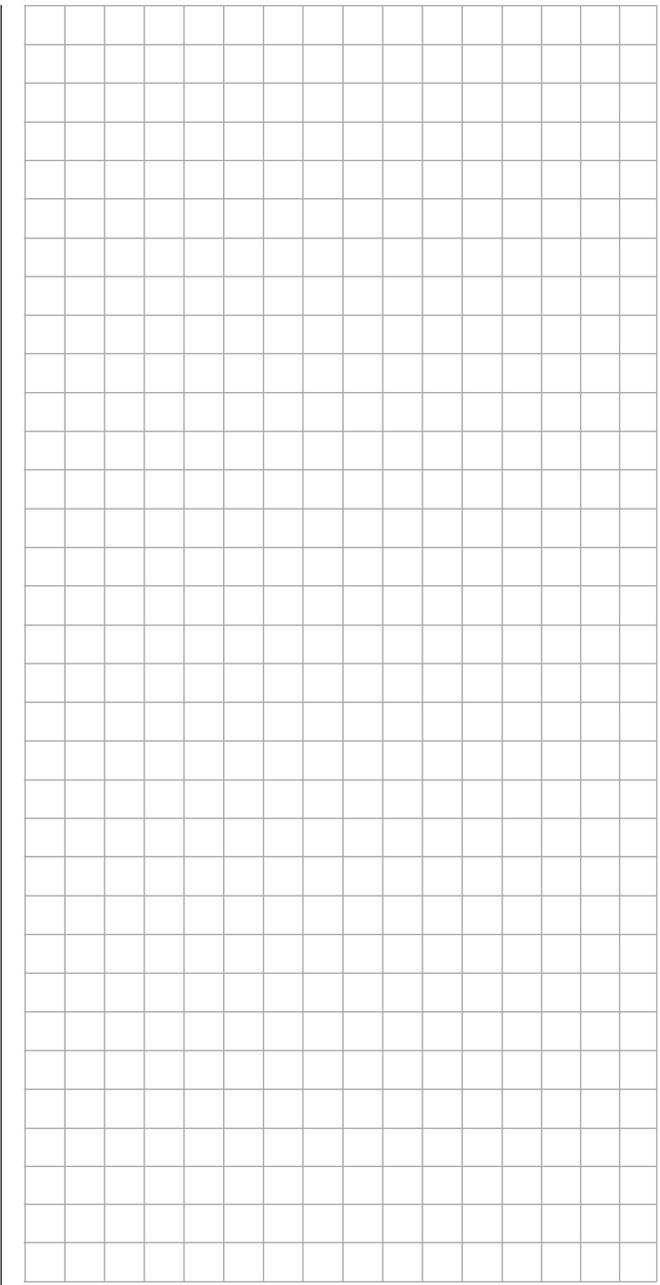
➤ If you have "forgotten" the COM port assignment, the following error messages appear in the firmware updates described below: "Select suitable port" or "Open port failed".

A COM port assignment is only possible if the associated driver is installed (page 12) and the PC with the interface adapter order no. 7186.6 or connected directly to the HoTT device via a USB cable.

➤ If the above error message appears repeatedly despite a proper USB connection, disconnect the USB connection between the HoTT device or interface adapter and PC for a few seconds and reconnect. In individual cases, it may be necessary to stop and restart the grStudio program.







1 Program group "Transmitter"

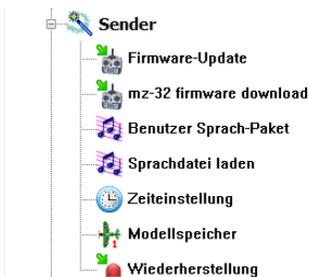
Only for transmitters with integrated voice output

Overview Program group "Transmitter"

Program group "Transmitter"

 This program group is only intended for new generation transmitters with *integrated* voice output (without mz-32 transmitter). For transmitters that have been retrofitted with a HoTT module and HoTT transmitters without integrated voice output (eg mxs-8 (No. 33200), mz-10 (No. S1001), mx-10 (No. 33110), X-4S (No. 33400), X-8N (No. S1018)) 33200, please select the program "HoTT device", see page 46. For the mz-32 transmitter please select the program  "mz-32 Firmware Download" (see page 27) or the program "Beta_mz-32 Downloader 0.0.3.46.jar", macOS® and Linux®, see from page 30.

The program group "Transmitter" contains the programs that are needed to update the transmitter or the data backup or model memory backup of the transmitter.



The following describes how to update via a USB-to-cable connection between the HoTT transmitter and PC or laptop. Alternatively, updates within this program group can also be performed wireless via the optional *Bluetooth*® module. In this case, first read the sections "Setup *Bluetooth*® adapter" on page 14 and COM Port *Bluetooth*® page 17.

 **Updates for new CE standard EN300328 1.8.1**
If you are using the current HoTT transmitter updates in accordance with this standard, it is recommended that you first delete the receiver's binding and then reconnect the receiver to the model memory.

Firmware update HoTT transmitter

Firmware update transmitter (without transmitter mz-32)

Please also read the transmitter's instructions for additional information!

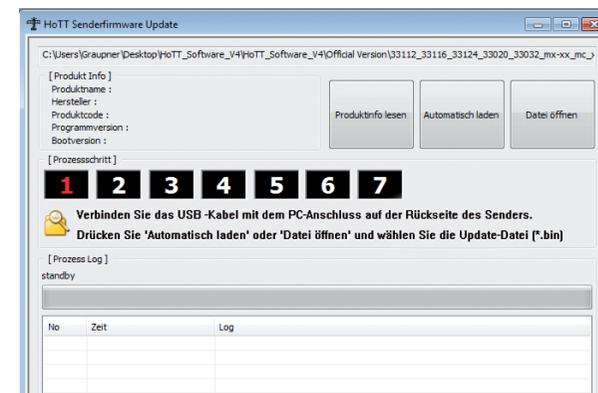
You can also transfer the firmware to the HoTT transmitter via an SD card. First save the current firmware version in the desired language to the SD card in the directory "Firmware". Further information can be found in the respective transmitter manual.

Suggested accessories:

- USB cable supplied with the interface set, No. 7168.6 or similar USB cable from type USB A to mini B USB, 5-pin,
- alternatively: *Bluetooth*® adapter, see page 14.

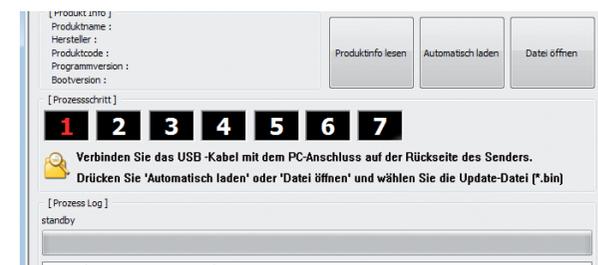
General preparations

1. Start the "Firmware Update" program
Start the program "Firmware Update" in the program group "Transmitter".
(Alternatively, select the appropriate entry under "Menus" in the menu bar.)



After the program has been called, the flashing red "1" of the number series 1 ... 7 in the head of the opening new window indicates that the program is currently in "[process step] 1".

The meaning of the currently flashing step is displayed immediately below the row of numbers:



For example, as shown in Step 1: "Connect the USB cable to the PC port on the back of the transmitter.

Press "Auto Load" or "Open File" and select the update file (*.bin).

General preparations

 You can also call up the explanation of each individual step at any time in the form of a tooltip by placing the mouse pointer over a number.

The two options mentioned below are explained below in the section "Loading firmware".

2. Connect transmitter to PC

Connect the USB cable to the computer and then connect it to the mini USB socket of the transmitter that is still **switched off**.

3. Select COM port via "Select port"

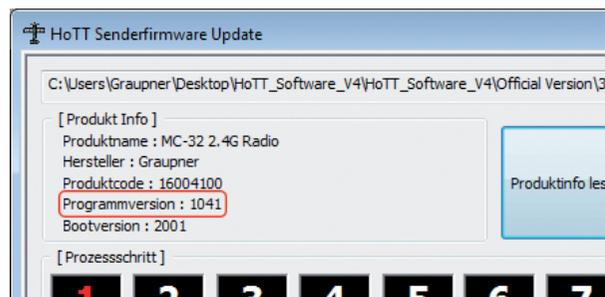
Then select - if you have not already done so - the COM port (USB port on the PC) as described on page 17.

Read firmware version: "Product information"

4. Switch on the transmitter.

5. Read out the firmware version

 If you click on the "Read product info" button when the transmitter is switched on, the currently saved version number of the firmware appears in the "Program version" line in the program window - in the example shown, version "1 (v) 041".



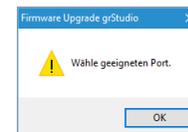
 If there is a communication error between the PC and the transmitter, a corresponding message appears after some time. Do not stop the process prematurely.

Error messages

Error messages

Open port failed

If an incorrect COM port has been assigned or the driver has not yet been installed, the error message "Select a suitable port" or "The connection with the device has failed. ...". Incidentally, the Silicon Labs COM port is only displayed with a connected transmitter because the USB interface is located in the transmitter. Without the transmitter connected, the correct COM port cannot be selected at all.

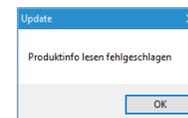


Read product info failed

If you have not activated the transmitter in due time after clicking on "Read product info", the error message "Read product info failed" appears in the program table.

No	Time	Log
1	2012-10-04 (17:03:03)	Produktinfo lesen Start
2	2012-10-04 (17:03:12)	Produktinfo lesen fehlgeschlagen

If a pop-up window with the same text appears, click on  and repeat the process as described above.



Transmitter (display) cannot be switched off

If you have not switched on the transmitter in time, the display may light up even if the transmitter is switched off. In this case, unplug the transmitter battery plug for a few seconds and plug it in again with the transmitter off. Then repeat the reading of the product info.

Only for transmitters with integrated voice output

Options for a firmware update

Firmware loading

You now have two ways of loading the firmware file:

A) "Automatically load"

In this case, the *.bin file matching the transmitter is automatically downloaded when the internet connection is active.



 Update files downloaded via the Internet are always stored in an automatically generated subdirectory named "FTP_Download" in the firmware upgrade grStudio main directory, so that you can repeat the update manually at a later time, if necessary, via "Open file".

B) "Open file"

If you downloaded the "HoTT_Software_VX" file as described above and saved it on a hard disk, you can also load the required *.bin file from the corresponding subdirectory.



 **Note:**

Model memories are automatically taken over or also converted directly from older firmware versions. **However, it is recommended to create a backup copy of the model memory beforehand, see section Model memory, page 39.** The company Graupner / SJ assumes no responsibility for any loss of data.

If you update from version "V3" or an older version to "V4" (or a later newer version "V5", ...), the program "Recovery" (see page 41) is automatically started. Also use this if the update fails here and the transmitter does not start "normally".

Suggested accessories

- USB cable supplied with the interface set, No. 7168.6 included or similar USB cable (USB-A to mini-B-USB, 5-pin),
- alternatively: Bluetooth® adapter, see page 14.

Firmware update via Internet

to A) Firmware update via "Automatically load"

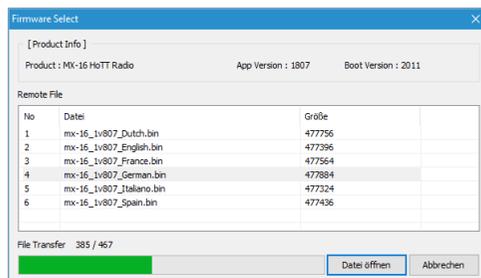
(1 ... 3 see above.)

4. Switch on the transmitter.
5. Update on Internet

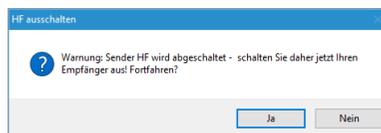


While the Internet connection is active, press the *Auto-load* button.

Depending on the speed of the connection, it will take some time for another window, "Firmware Select", to open. In it are listed the current firmware versions of the respective transmitter in different languages. Click on the desired update file (*.bin-file) - in the following example files for an MC-32:



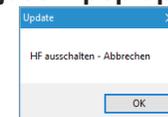
As soon as you click on the "Open File" button, the data is first downloaded from the Internet - recognizable by the progressing bar. After downloading, a warning follows that the RF radiation is switched off and the receiver is to be switched off.



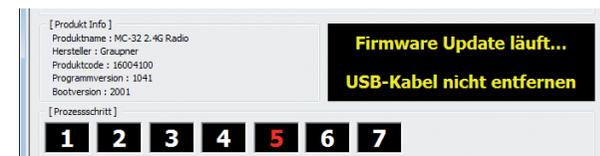
 You must never update during model operation!

Click on ("Yes").

If you cancel the process, the adjacent pop-up window will appear.



 Make sure that the USB connection is not interrupted during transmission, otherwise see the chapter "Error messages" below.

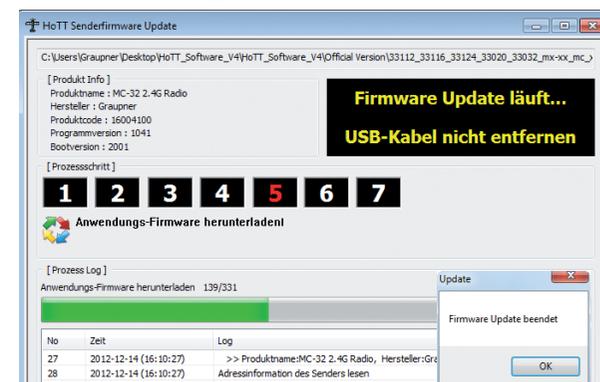


Otherwise, the transmitter software may "hang up" and / or the following message appears on the transmitter display:

"Miss match product number".

In this case, read on in the section "Recovery", page 41.

Proper data transmission to the transmitter indicates a progress bar ...



... when it arrives at the end, a confirmation of the transmission follows: "Firmware update completed".

 It is imperative that you check the operability of the updated HoTT device BEFORE restarting it!

Troubles

6. What to do in the event of a failure?

If the binding has not been followed properly or if the result is not as desired, then repeat the process. Note any error messages that appear, see next section. If an update repeatedly fails, see the "Recovery" section.

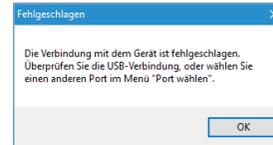
 **Nevertheless: When updating always make sure that the USB connection is not interrupted.**

Error messages

Error messages about "automatically load"

Open port failed

If an incorrect COM port has been assigned or the driver has not yet been installed, the error message "The connection to the device has failed. ...". Incidentally, the Silicon Labs COM port is only recognized when the transmitter is connected. If the USB port is not recognized repeatedly, disconnect the USB connection to the transmitter for a few seconds.



Transmitter not switched on

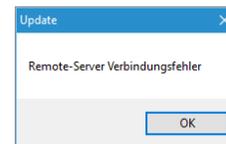
The transmitter must be switched on before "Automatically load", otherwise the error message "Read product info failed" appears.

Transmitter (display) cannot be switched off

If you have not switched on the transmitter in time, the display may light up even if the transmitter is switched off. In this case, unplug the transmitter battery plug for a few seconds and plug it in again with the transmitter off. Then repeat the update process.

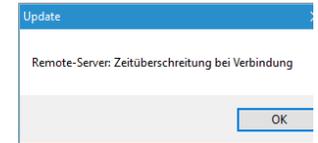
Missing server connection at autom. update

If the server connection does not work, the pop-up window will appear. A firewall may prevent the connection. Disable them temporarily. Do not forget to turn them back on!



Timeout with automatic update

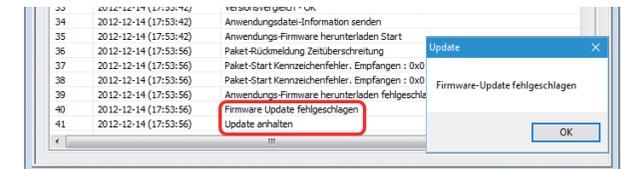
While you have plenty of time to select files from a list downloaded from the Internet, if you wait too long to make the decision, the update process will stop and must be repeated.



A firewall may also prevent the connection, see above.

USB connection PC - transmitter interrupted

If the connection between PC and transmitter is interrupted during the updates, "[process step] 5" changes to "[process step] 7". In the table entry it is called after repeated error entry "packet response timeout": "firmware update failed, update hangs up".



 **Close the program only after the pop-up window "Firmware update failed" appears!**

In this case, it may be that the transmitter, such as the $\Omega C-32$, not even turns off. For other HoTT transmitters the error message appears in the transmitter display ...

"Miss match product number".

In these cases, read the chapter "Recovery". Using this program, you can transfer a firmware stored on the hard disk of the PC to the transmitter and restore the functionality of the HoTT transmitter. However, if a "recovery" is not possible, please contact the GRAUPNER | SJ Service.

Only for transmitters with integrated voice output

Manual firmware update

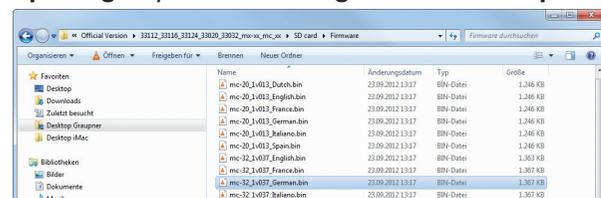
to B) Firmware update via "Open file".

As an alternative to the update method described above, select the update file that you have downloaded to your PC with the complete package "HoTT_Software_VX".

Proceed as follows (1 ... 3 see above):

4. Switch the transmitter on
5. Open file

Click on the button "Open File" and find in the opening "Open File" dialog the firmware up-



The **MC-32** files shown here are located in the subfolder "Official Version \ 33112_ ... _33032_mx-xx_mc-xx \ SD card \ Firmware".

6. Start transmission

If the transmitter is not yet switched on, the display changes to "[process step] 2": "Make sure that the transmitter is switched on":



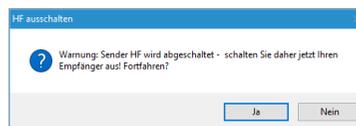
Firmware transmission

7. Transfer firmware

After selecting the "correct file" the program changes to "[process step] 4" ...

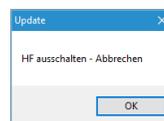


... and a warning appears that the RF radiation is switched off.

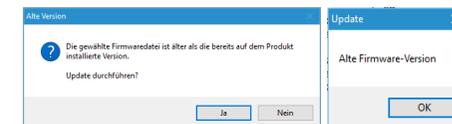


⚠ You must never update during model operation!

If you confirm with ("Yes"), the firmware version is first determined in the transmitter, otherwise the pop-up window "Switch off HF - Cancel" appears:



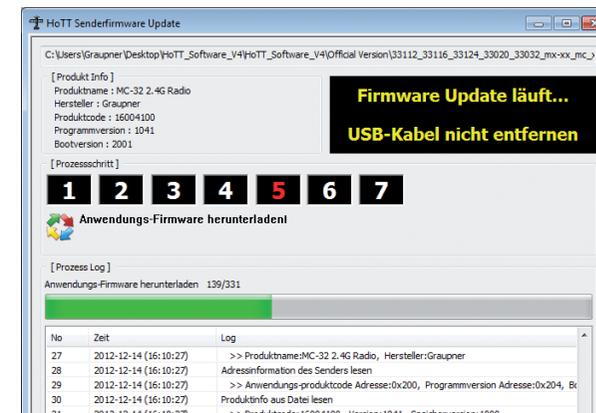
If the firmware file in the transmitter is more up-to-date than the selected firmware, you will be notified ...



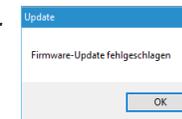
You can return with ("No") and in the next window you can select another file.

If you click instead , the transmission to the transmitter begins.

Under "[process step] 5", a progress bar indicates the proper transmission to the transmitter.



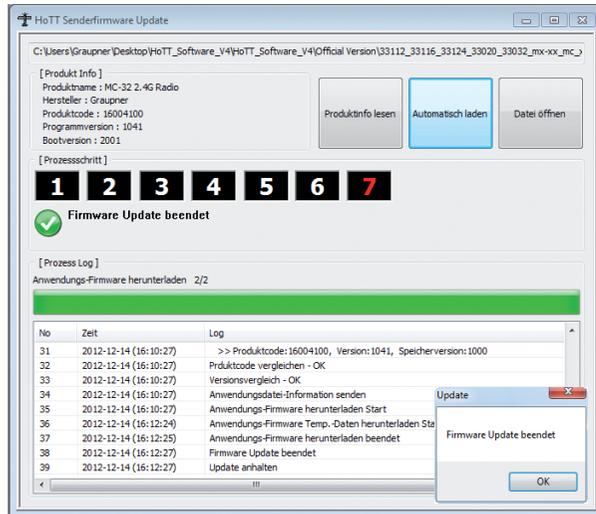
⚠ During the update process, the USB connection must not be interrupted. Also make sure that the USB connectors on the transmitter and PC are in good contact and do not wobble. Otherwise, the transmitter software may "hang up". In this case, read on in the section "Recovery", page 41.



8. Ending the transmission

A signal melody of the transmitter and the message "Firmware update completed - stop update" in the table indicate the successful end of the update process.

Troubles



In addition, the start display in the transmitter display - in this case "MC-32 HoTT Graupner / SJ" with the current firmware version is displayed.

In the pop-up window "Firmware update finished" confirm the successful firmware update with **OK** ("OK").

9. Disconnect from PC

Turn off the transmitter and remove the USB cable.

10. What to do in the event of a failure?

If the update process aborts, repeat the previous steps. Note any error messages that appear, see also next column. If an update repeatedly fails, see the "Recovery" section.



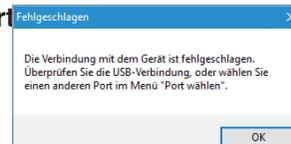
It is imperative that you check the operability of the updated HoTT device BEFORE restarting it!

Error messages

Error messages about "Open File"

Open port failed

If an incorrect COM port the driver has not yet been installed, the error message "The connection to the device has failed. Incidentally, the Silicon Labs COM port is only recognized when the transmitter is connected. If the USB port is not recognized repeatedly, disconnect the USB connection to the transmitter for a few seconds.



Transmitter not switched on

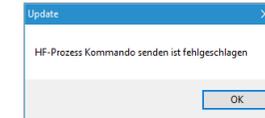
If you have forgotten to switch on the transmitter "in time", you will be reminded of this in "[process step] 2".



Subsequently, the update process is aborted. After some time you will find in the "[process step] 4" the message "Package Confirmation Timeout" ...



... and then the message "Send RF process command failed":

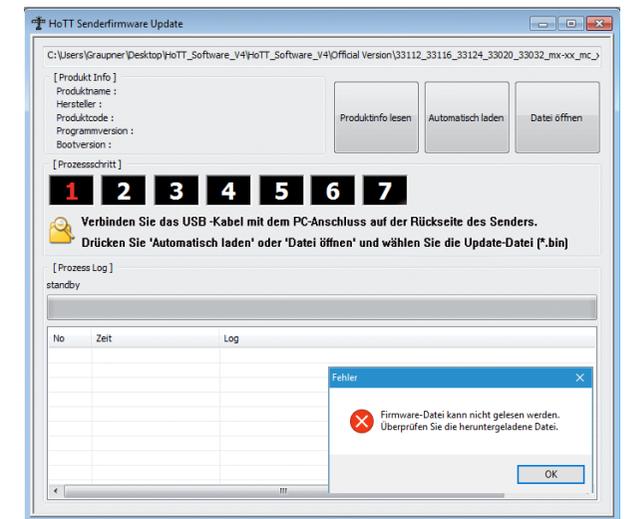


Wait until this message appears. Do not stop the process beforehand.

Repeat the update steps.

Wrong firmware file

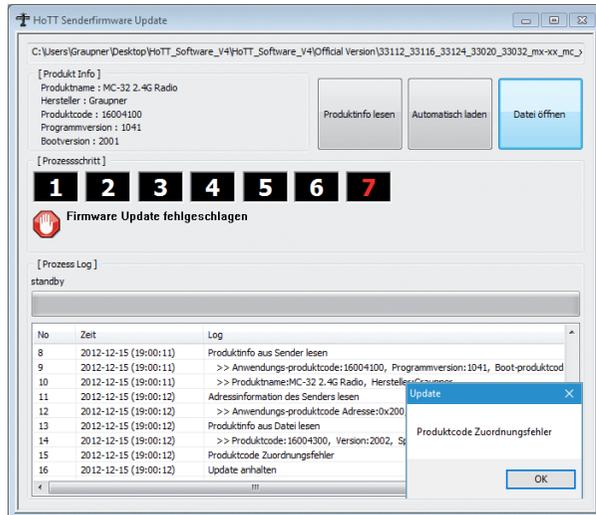
The firmware files are product-specific coded, which means that if you accidentally select a file that is not suitable for the product, the error messages "Firmware file cannot be read" appears. Check the downloaded file "...



... or under "[process step] 7" the message "Firmware update failed" or the pop-up window "Product code assignment error".

Only for transmitters with integrated voice output

Error messages



The update process cannot be started in these cases and it must be repeated with the correct file.

Only for transmitter mz-32

mz-32 Firmware download

Firmware update mz-32

Separate from the previously described update process for HoTT transmitters, please use the following update program from the grStudio package for the transmitter mz-32:  mz-32 firmware download.

In the download section under the heading "*Firmware Upgrade Studio*" for the transmitter mz-32 there is an mz-32 update program that is separated from the grStudio program: "*Beta_mz-32 Downloader 0.0.3.46.jar*", which can be started under the operating systems WIN®, macOS® and Linux®. This * .jar program currently requires (as of 06/2018) Java 8™.

Instructions are given after the update program implemented in the grStudio program.

General preparations

Firmware update transmitter (only for transmitter mz-32)

Please also read the transmitter's instructions for additional information!

You can also wirelessly transfer the firmware to the HoTT transmitter via Wi-Fi, but a WLAN update takes considerably longer and the so-called mz-32 "*resource files*" are not updated. These are additional files that are required in addition to the actual firmware update file, such as configuration files, voice files, help texts, ... but also the mz-32 manual and more.

 The current mz-32 firmware version is not available as a separate file for download prior to an update. Instead, it is first transferred to the transmitter mz-32 when the update process starts, and then installed in a second step, see Section 5 ,

Suggested accessories:

- The micro USB cable included with the transmitter

Start update program

1. Start the "*Firmware Update*" program
Start the program "mz-32 Firmware download" in the program group "Transmitter".
(Alternatively, select the appropriate entry under "Menus" in the menu bar.)



After the program has been called, the flashing red "1" of the number series 1 ... 7 in the head of the opening new window indicates that the program is currently in "[process step] 1".

The meaning of the currently flashing step is displayed immediately below the row of numbers. For example, in Step 1 shown here:

"Connect the device to the PC via the USB port. Turn on the device. The firmware download will start as soon as the "Download" button is clicked.

 You can also call up the explanation of each individual step at any time in the form of a tooltip by placing the mouse pointer in a number field.

2. Connect transmitter to PC

Connect the micro USB cable to the computer and then connect it to the mini USB socket of the transmitter that is still switched off. (Depending on the charging state of the transmitter battery, the framing of the ON / OFF switch

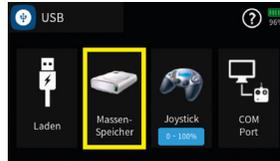
Only for transmitter mz-32

Switch on transmitter mz-32

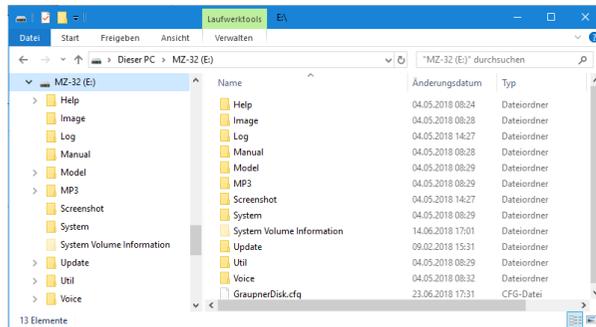
flashes in different colors and different sequence (constant green means: "Battery fully charged").

3. Switch the transmitter on

Switch on the transmitter now. The base display changes to the "USB" menu when the USB cable is properly connected. Select here "mass storage" with your fingertip.



Now you can open the mz-32 memory as an external storage medium in the file manager or click on the button "Open directory" in the window "mz-32 firmware download":



 To be on the safe side, save the contents of the mass storage on your PC, in particular the model memory data located in the directory "MZ-32(X:) • Model • mz-32".

 **Note:**

- A message from the operating system "Would you like to check and repair MZ-32 (X :)" on the PC or laptop? Can either be ignored or optionally confirmed.
- Under "Port select" in this case no port is displayed and is not required.

Firmware and resources files download

• In the directory "MZ-32 (X :) • Util • there is the grStudio installation program and you can use it, if you have not already installed it elsewhere on your PC.

4. Download the firmware and resource data

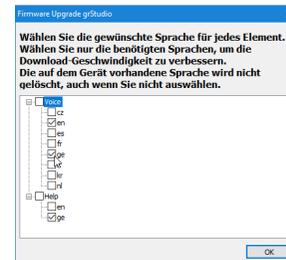
If not only a firmware update is to take place, but also the resource files should be updated, put a check mark on "Download including resource files".



Do not interrupt the download. The progress bar indicates how far the download has progressed.

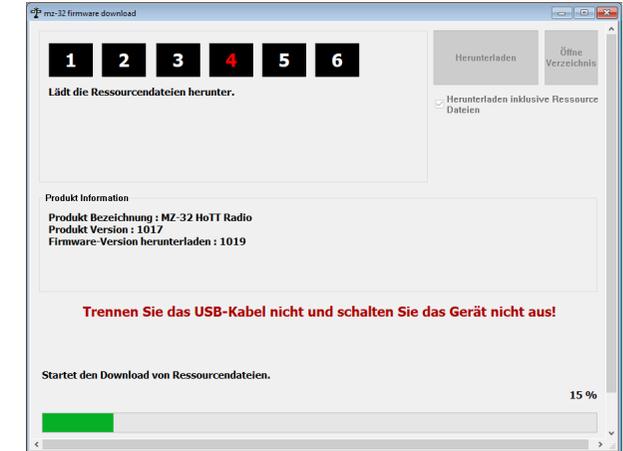
Under "Product Information" the connected transmitter type, the currently installed version number as well as the version number to be installed are listed.

In the adjacent window, select the desired language (s) under "Voice" and "Help".



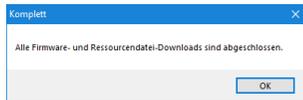
The download starts after a click on .

In the following two process steps 4 and 5, resource files are successively downloaded and stored on the mass memory of the transmitter mz-32. The storage path is displayed above the progress bar.



Wait until both process steps have been completed. Another window indicates the end.

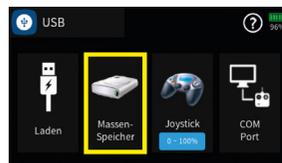
mz-32 Firmware installation



Finally, the download window changes to process step 6:



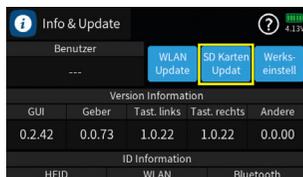
In the transmitter display, tap "Mass storage", in the following window "Exit mass storage mode" tap on "OK" and exit the menu



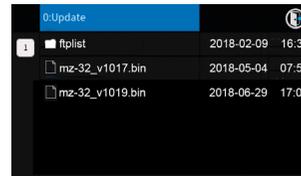
by tapping "USB" in the top left corner. The display returns to the basic display. You can disconnect the USB cable from the transmitter (if necessary).

5. Firmware installation

The firmware update must now be installed on the transmitter side of the mass storage. Click on the "Menu button", select "System" and tap on "Info & Update" in the list. The display changes to the following display:

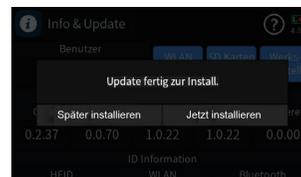


Touch the middle, blue button "SD card update" ...



... and select the desired firmware version. Now confirm the selection by tapping on the symbol ☑. The logo will be replaced by ☒. Tap ☒ to change the selection or cancel the subsequent installation process. (The installation can also be done later.)

To continue the installation, tap the door icon ☑ in the upper right corner of the display. In the following display window, the installation is confirmed "Install now" or delayed "Install Later":



Tap on "Install now", the transmitter switches off, switches to the installation routine ...



... and then turns back on.

If the installation is postponed and the transmitter has been turned off in between, repeat the procedure as described in this section.

6. Update fails

If a firmware update of the transmitter fails or the transmitter software "hangs up" in the

Update fails

course of this and the transmitter can no longer be switched off via the central ON / OFF switch, then unplug the transmitter battery, wait a few times seconds and then reconnect the removed battery.

Proceed as described in the manual of the transmitter mz-32 under "Forced Update":

1. Press and hold the top two buttons on the left and right of the display while turning on the transmitter.
2. As soon as the surround of the central ON / OFF switch lights up orange, press and hold the two middle buttons on the left and right of the display. If the fence of the central ON / OFF switch turns green, the keys can be released.
3. Shortly thereafter, the forced update starts with the latest available firmware version in the "Update" directory of the transmitter.

- As soon as the update is successfully completed, the transmitter restarts and it can be used again.
- If the forced update fails due to a missing update file, then proceed as described further in the mz-32 manual.

Only for transmitter mz-32: Update under macOS® and Linux®

Beta_mz-32 Downloader 0.0.3.46.jar

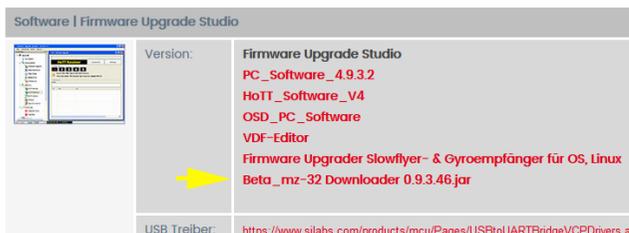
separate firmware update transmitter for mz-32

With a separate mz-32 update program, firmware installation and update of the resource files is also possible outside of the "Firmware Upgrade grStudio" package, which is also executable under the operating systems "WIN®, macOS® and Linux®".

Currently there is a beta version available in the download area called "Beta_mz-32 Downloader 0.0.3.46.jar". This *.jar program requires (however) Java 8™ (as of 08/2018).

Firmware Upgrade Studio

19.06.18 07:00 | 51 Kommentare | ★★☆☆☆ (51)

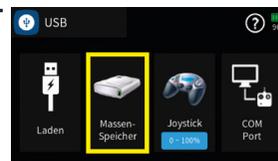


The program is downloaded as a *.zip file (mz32-Downloader-0-9-3-46.zip) and must first be unpacked by right-clicking with the mouse on "Extract all". Save the *.jar file to the hard disk (for example, in the grStudio directory "Program (x86) • Graupner • grStudio").

Switch the transmitter on and start the program

1. Connect the transmitter to the PC and switch it on

Connect the micro USB cable to the computer and then connect it to the mini USB socket of the transmitter. Switch on the transmitter now. The base display changes to the "USB" menu when the USB cable is properly connected. Select here "mass storage" with your fingertip.

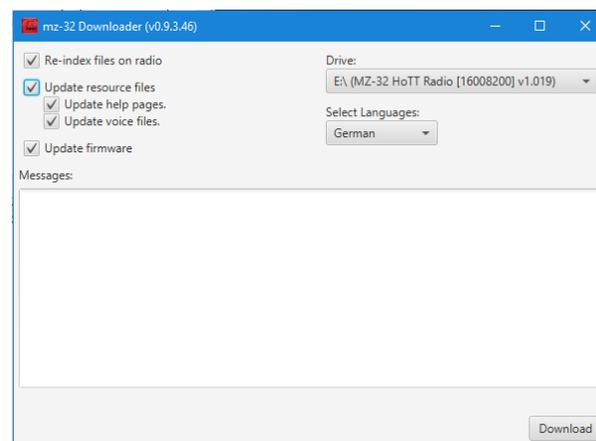


2. Start the program "Beta_mz-32 Downloader 0.0.3.46.jar"

Start the program by double-clicking.

If "mass memory" has been selected in the transmitter display, the mz-32 transmitter appears as a drive in the header of the program window.

Select the desired language under "Select Languages" and tick the left of the files to be updated.

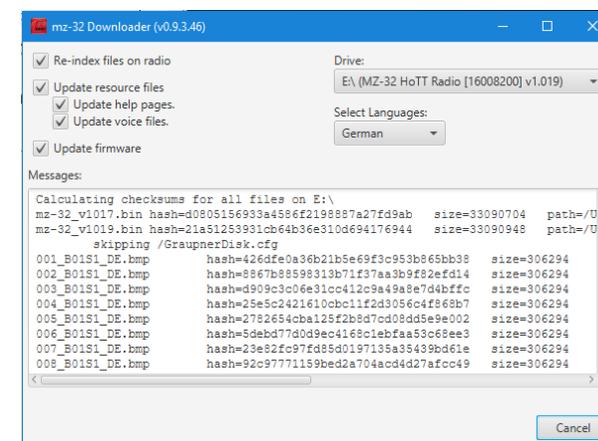


A checkmark next to "Re-index files on radio" determines the checksum and size of each individual file according to a specific algorithm (Message-Digest Algorithm 5). Later, only the

files that have changed will be updated, while the grStudio program always performs a complete update when "resource files" is clicked. Creating this "re-index" file takes some time, but it saves time. For later updates, uncheck the box before starting the download.

 If an update has been made in the meantime via the grStudio program, the re-index file must be recreated.

Click on the button . First the checksums are determined ...



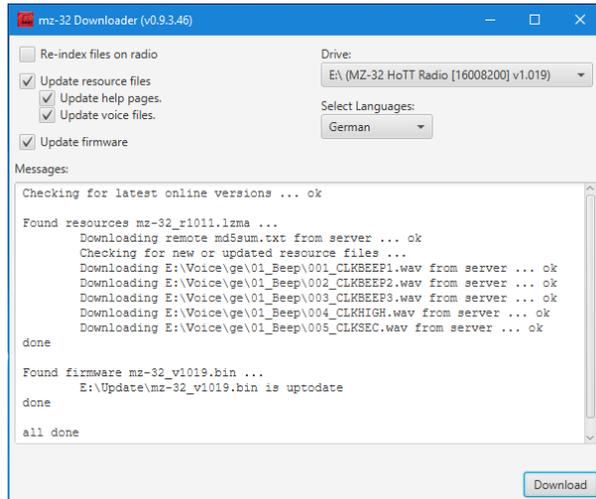
... then the files are downloaded. (With a mouse click on the button  you can cancel the process.)

As soon as the directly following download of the files is completed, this will be indicated in the window in the last line with "all done" (if necessary, drag the vertical scroll bar downwards), and the button  will change again to .

When updating again, clear the checkmark next to "Re-index files on radio". Checksums checks which files need to be refreshed and just downloads them. In the example below, some voice files were deleted from mass stor-

Firmware installation

age. When downloading again, only these files will be downloaded:



3. Firmware installation

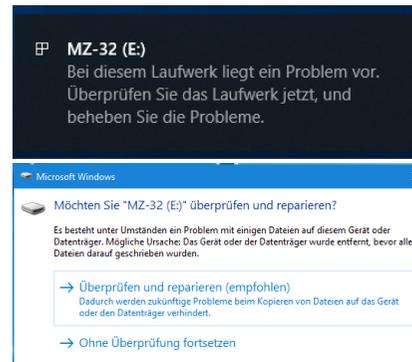
Subsequent installation of the firmware from the mz-32 transmitter mass storage is done as described in Section 5 "Firmware Installation", page29.

Error messages

Error messages

❗ Error "mass storage"

If the transmitter mz-32 is connected to the PC and is tapped in the transmitter display to "mass memory", an error message can appear. Under WIN10® e.g.:

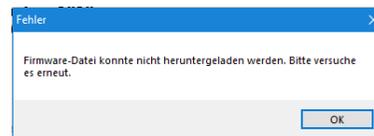


The error messages can be ignored. Close the bottom window or click "Continue without review".

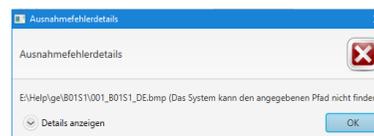
❗ Download error

If the USB connection is interrupted during a download, the following error messages will appear depending on the update program used:

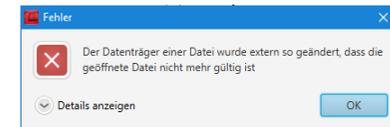
- mz-32 firmware download (within grStudio)



- mz-32 Downloader (separate downloader)



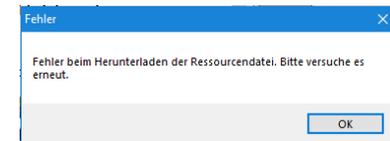
If the transmitter was switched off during a download, an error message is also output here



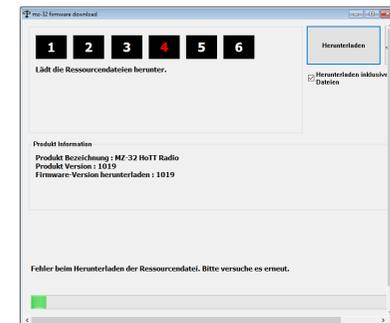
Close the respective update program and restart it.

In the following case, the Internet connection may have been interrupted for other reasons:

- mz-32 firmware download (within grStudio)



The error is also displayed in the download window in process step 4.



- mz-32 Downloader (separate downloader)



Check if you are connected to the internet.

Only for transmitters with integrated voice output

User voice packs

Install user-specific language files

Transfer ready-made language files, such as for trucks or similar: high beam on / off, handbrake on / off, horn on / off, hydraulic pressure low, ..., from the transmitter included SD card to the transmitter or generate your own, short (!) Audio files of the format *.wav, *.wma, *.mp3, *.ogg. You can then assign these files to specific (switch) functions and output them via the internal loudspeaker. Please read the instructions of your transmitter. A number of ready-made audio files can be found in the download area of the transmitter mz-24 PRO or in the update directory under "Voice Files HoTT Viewer App".

You can create your own audio files within the grStudio program via the option "HoTT-TTS", see page 139.

This menu is currently planned for the following stations, see selection window in the menu "User voice pack":

- mx-12 HoTT, mx-16 HoTT, mx-20 HoTT,
- mc-16 HoTT, mc-20 HoTT, mc-28 HoTT, mc-32 HoTT,
- mz-12 Pro, mz-18 Pro, mz-24 Pro..

This requires the latest update of the transmitter, which is not yet available for all transmitters at the time of writing.

The available storage capacity is transmitter-dependent and is displayed in the "User voice pack". displayed under "System available". The voice output of ready-made files is typically between 1 s and 3 s.

Suggested accessories:

- USB cable supplied with the interface set, No. 7168.6 included or similar USB cable (USB-A to mini-B-USB, 5-pin),
- alternatively: Bluetooth® adapter, see page 14.

General preparations

1. Connect transmitter to PC

Connect the USB cable to the computer and connect the other end to the transmitter mini USB port.

2. USB drivers installed?

Have you already installed the USB driver? Then move on to the next step. Otherwise read the section "Driver installation" on page 12.

3. Select COM port via "Select port"

Then select - if you have not already done so - the COM port (USB port on the PC) as described on page 17.

4. Switch on the transmitter.

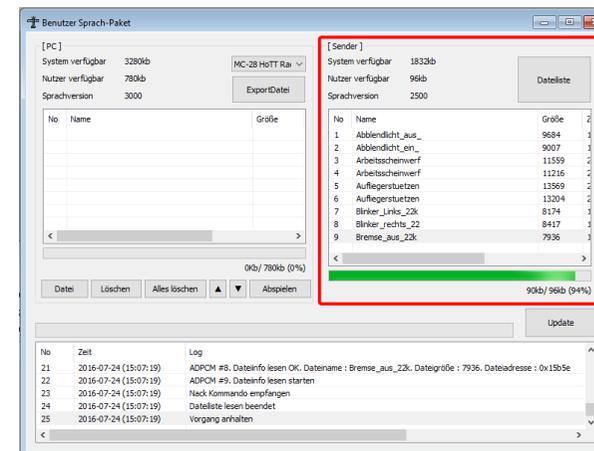
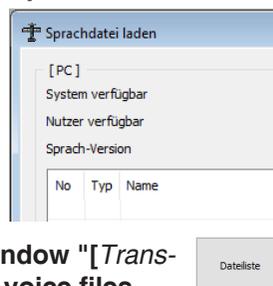
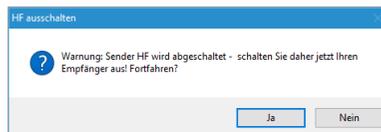
5. Start program "User voice pack"

Start the program "User voice pack" in the program group "Transmitter". (Alternatively select in "menu" the related entry.)

6. Read user voice pack

In the right part of the window "[Transmitter]" the user-specific voice files saved on the transmitter are read out by clicking on the button ("File list"). As soon as the file is completely read out, the pop-up window "Read file list completed" appears.

⊘ Even when reading the voice file, the RF radiation is switched off, which means that the read-out must never take place during model operation.



At the top of the window under "[Transmitter]" next to the available storage space ("System available"), the remaining free space ("User available") and the language version number under "Language version" are displayed.

If this menu does not support the connected transmitter, the adjacent message appears.

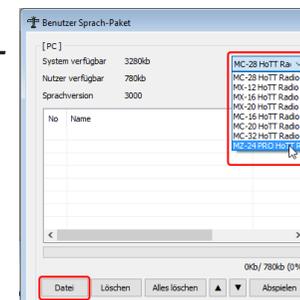


7. Load user voice pack from PC

You can download *.wav sample voice files from the mz-24 Pro transmitter download page or create your own. The files must be in *.wav, *.wma, *.mp3, *.ogg format.

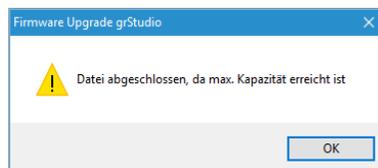
⚠ First select the respective transmitter.

Then click **Datei**. Afterwards, change to the directory in which the (user-specific) voice files are stored. Select one or more

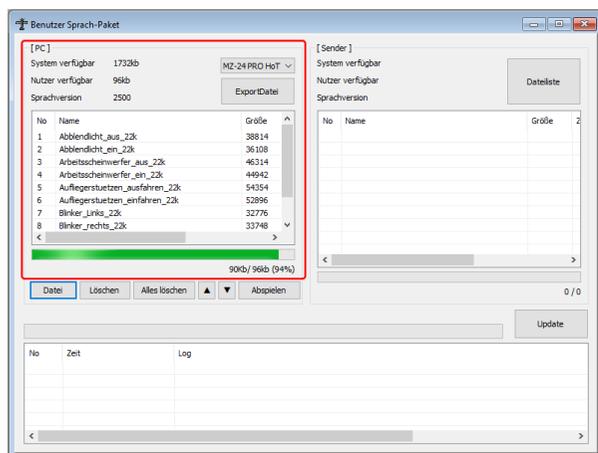


Play voice files

files. Since the storage capacity is limited to a specific transmitter, you should not select more than about 10 files, otherwise you will get the message:



The selected files are listed in a table in the left part of the menu:

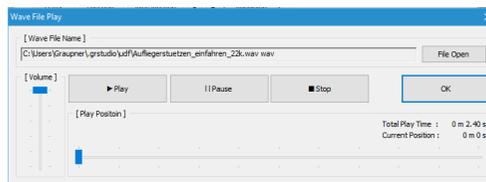


 As you zoom in the window, more columns become visible: length of the audio file in seconds ("time") and sample rate.

8. Play voice files

If you want to play the language files before transferring them to the station, use the mouse or the arrow keys   to select the appropriate file and click on the button . The following window opens:

Transfer voice files to transmitter



Click on  ("Play"),  ("Pause") or  ("Stop"), to play, pause or stop playing the file.

You can also use the button  to select uploaded files.

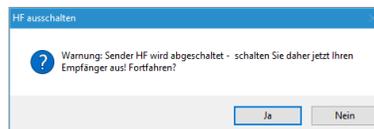
The playback volume can be adjusted via the slider "[Volume]" on the side, the playback position via the horizontal slider if necessary. "Total Play Time" stands for the total length and "Current Position" for the current position of the lower slider.

 The original user voice files are converted from the formats mentioned above during upload (conversion to the *.wav format, adjustment of the sampling rate) and in a separate directory named "... \.GrStudio \ udf \ [name] .wav" cached on the hard disk. Once the "User voice pack" menu is exited, the files within that folder will be deleted.

9. Transfer voice files to transmitter

Now click on the  button ("Update"). For safety's sake, the message ...

"Warning: transmitter RF is switched off - switch off your receiver now! Continue?"



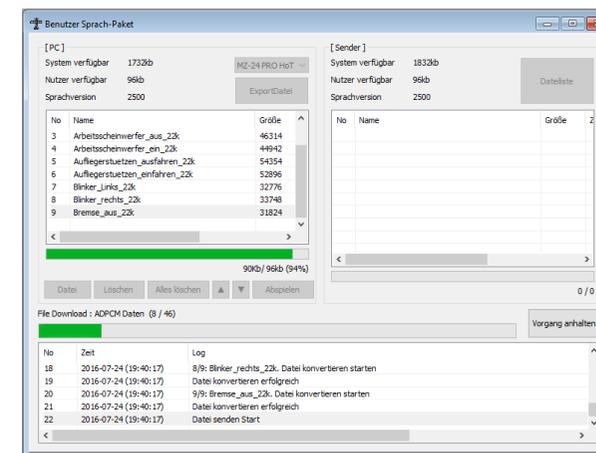
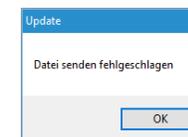
... is displayed to remind you once again that the RF unit of the transmitter will be switched off during the update. Unless already done, turn off the receiver.

Copy voice package to SD card

 You must never update during model operation!

Then click , to transfer the files to the transmitter.

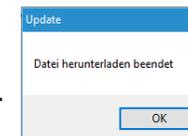
The update progress is indicated by the progress bar and the log entries in the "Start file send" table.



Via the button  ("Stop process"), which is displayed after the start of the transmission, the transmission can be aborted prematurely.

10. Ending transmission

The message "Operation halted" in the lower table and a pop-up window signal the successful end of the update process. Wait for this message before turning off the transmitter and removing the USB cable.



11. Alternatively: Copy voice pack to SD card
Alternatively, copy the voice file (s) to the Micro SD card to install them from there (see the transmitter manual for details).

Only for transmitters with integrated voice output

Export language package

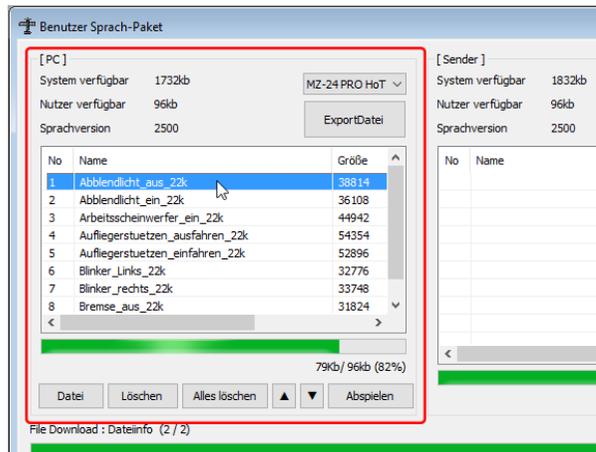
12. Export voice pack

If you have uploaded your own voice files for certain functions, you can also "bundle" them into a package and save them in a new *.vdf file on the PC.

Click on the button  ("Export (language pack)") and save the file with its own name as a vdf file in a freely selectable directory. This vdf voice pack file can be uploaded via the "Open file" button in the "Load voice file" menu and loaded onto the transmitter as a User voice pack separate from the system audio files. 

13. Delete voice files from the "[PC]" list

To upload new audio files, first delete files in the left window "[PC]". Click on the file to be deleted with the mouse or select it using the arrow keys  . Then click the button .



Overwrite voice files in the transmitter

You can also delete all language files in the list at the same time by clicking the button .



The language files in the transmitter memory are not deleted. These can (only) be overwritten as described below.

14. Overwrite voice files in the transmitter

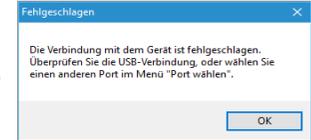
As described above, delete individual or all language files from the "[PC]" list and upload new language files via the button . If you only want to retransmit individual language files and the memory space is already occupied on the transmitter side, files stored there will be overwritten beginning with "No 1".

Error messages

Error messages

Open port failed

If an incorrect COM port has been assigned or the driver has not yet been installed, the error message "The connection to the device has failed. Incidentally, the Silicon Labs COM port is only recognized when the transmitter is connected. If the USB port is not recognized repeatedly, disconnect the USB connection to the transmitter for a few seconds.

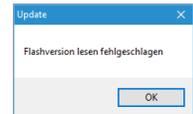


Transmitter not switched on

If you have forgotten to switch on the transmitter before reading out the audio files via the "File list" button or before transmitting to the transmitter via the "Update" button , the table will appear in the table after some time (between 1 ... 2 min) in the table with a final error message (3x).

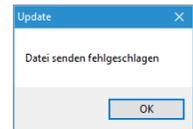


 Be sure to wait until this error message appears before exiting the program.



USB connection PC - transmitter disturbed

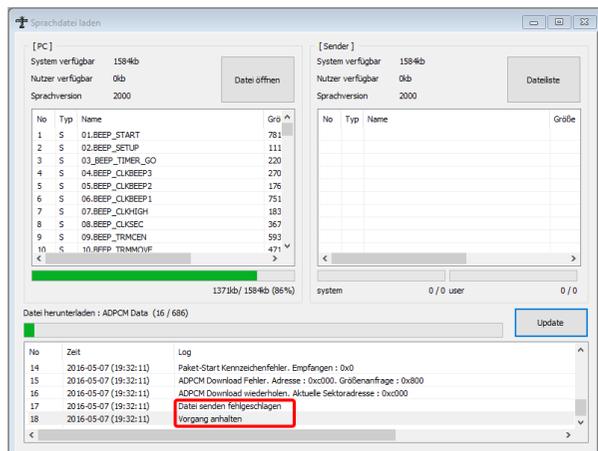
If the update process aborts, for example due to an interruption of the USB connection, the log entry "Failed to send file" appears in the lower table.



The program tries to repeat the transmission: "Repeat ADPCM download".

Pay attention to the error messages in the table below:

Error messages

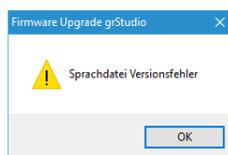


Wait until the "Send file failed" pop-up appears and repeat the above transfer.

! In the event of premature termination of the data transmission, the "Voice" file **MUST** be re-recorded in any case, since otherwise not only all voice information, but also all beeps of the transmitter are deleted. Check the USB connection first.

Wrong transmitter selection

Before updating the user voice pack, you must make the transmitter selection. If you select the wrong transmitter, you will receive the following error message.



Announcements (Change language)

Voice output (change language) - "load voice data"

With this program you load the system language file named "VoiceX_[voice].vdf" (for example "Voice2_German.vdf" or "Voice3_II_mz24_EN.vdf" for the mz-24) from the PC, eg. if you do not have a Micro SD card on hand.

The system voice files can be found on the SD card supplied with the transmitter. Current voice files can be found in the download area of the transmitter or in the "HoTT Software Updates VX" pack (currently "V4"), see page 10. Typically, system voice files are available in several languages.

However, only one voice file can be stored in the transmitter at a time, which means the existing voice file is overwritten and must then be re-recorded on the software or SD card in the transmitter if necessary.

Transferring the voice file via an SD card is much faster. That's why you should go that way. The language files must be located on the SD card in the "VoiceFile" directory. Copy current voice files to this directory. For details, refer to the manual of the respective transmitter.

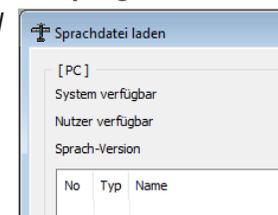
Suggested accessories:

- USB cable supplied with the interface set, No. 7168.6 included or similar USB cable (USB-A to mini-B-USB, 5-pin),
- alternatively: Bluetooth® adapter, see page 14.

General preparations

1. Connect transmitter to PC
Connect the USB cable to the computer and connect the other end to the transmitter mini USB port.
2. USB drivers installed?
Have you already installed the USB driver? Then move on to the next step. Otherwise read the section "Driver installation" on page 12.
3. Select COM port via "Select port"
Then select - if you have not already done so - the COM port (USB port on the PC) as described on page 17.
4. Switch on the transmitter.
5. Starting the "Load voice file" program

Start the program "Load voice file" in the program group "Transmitter". (Alternatively select in "menu" the related entry.)

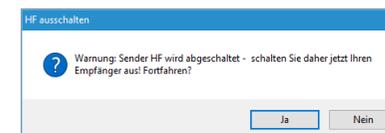


6. Read voice file

In the right part of the window "[Transmitter]", the language file stored on the transmitter can be read out by clicking on the button ("File list"). As soon as the file is completely read out, the pop-up window "Read file list completed" appears.



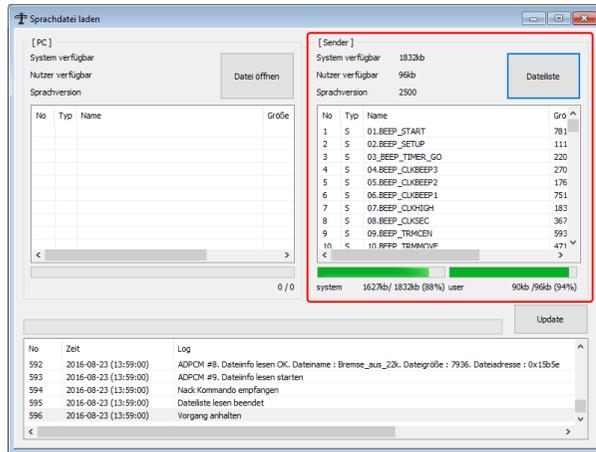
! Even when reading the voice file, the RF radiation is switched off, which means that the read-out must never take place during model operation.



Only for transmitters with integrated voice output

Load voice files from PC

Start transmission



In the header of the window under "[Transmitter]" beside the file size under "System available" and "User available" also the voice version number stored in the transmitter are shown under "Voice version". The table contains, in addition to the sequential numbering ("No"), the file type "S" for system audio files or "U" (User) for user-specific language files, see menu "User voice pack", the file name, the size, the length the audio file in seconds and the sample rate. The window may need to be enlarged if all columns are to be visible.



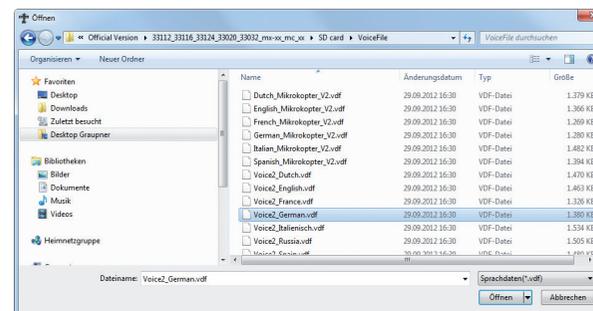
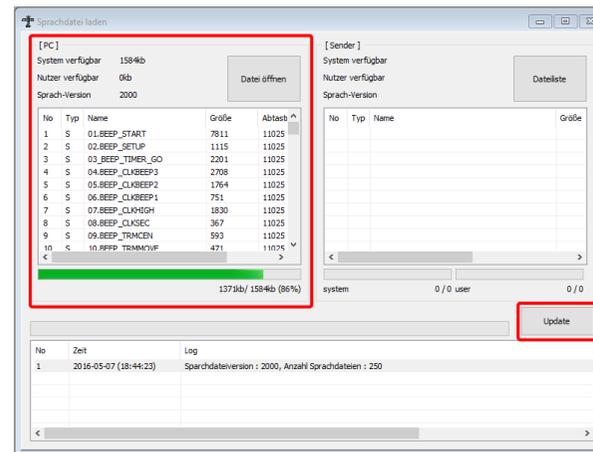
The two green bar graphs below the table stand for the "System files" ("system", left) and "User voice files" ("right") stored in the transmitter, indicating the occupied and available storage space, each in kb. In the meantime, you can also stop the readout process via the button that changes from "File

list" to "Stop operation".

7. Load voice file from PC

In the left part of the "[PC]" window, press the "Open file" button and look for the desired language file "VoiceX_[Language].vdf" in the "Open" window. You can find this file in the directory of the respective channel under "Official Version \ ... \ SD \ VoiceFile".

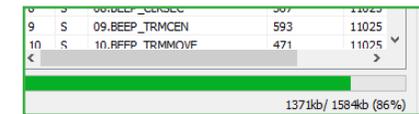
(The "[language]_Mikrokoetter_VX.vdf" files with special language outputs are only suitable for operation with a "Mikrokoetter", see under www.mikrokoetter.de.)



The progress bar shows the reading of the "VoiceX.vdf" file from the PC.

The file is not yet transferred to the transmitter!

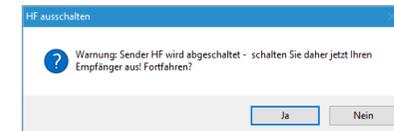
 Depending on the file size, the progress bar may not always move to the right end: 86% in this example. This means that 86% of the available storage capacity is needed - here: 1371 kb from 1584 kb.



7. Start transmission

Now press the "Update" button ("Update") to start the transmission to the transmitter. A pop-up window ...

"Warning: transmitter RF is switched off - switch off your receiver now! Continue?"



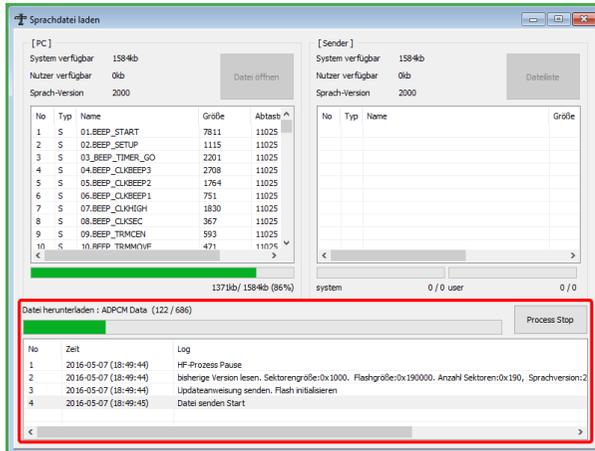
... opens to remind you once again that the RF unit of the transmitter will be switched off during the update.

Unless already done, turn off the receiver.

Then click .

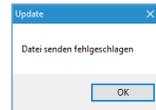
 You must never update during model operation!

End transmission



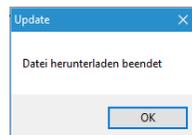
The download progress is indicated by the progress bar and the log entries in the "Start file send" table.

Via the button **Vorgang anhalten** ("Stop process"), which is displayed after the start of the transmission, the transmission can be aborted prematurely with the following message: "Send file failed". You run the "risk" of deleting existing voice information and beeps on the transmitter. You will need to reinstall the voice file.



8. Ending transmission

The message "Operation halted" in the lower table and a pop-up window signal the successful end of the update process. Wait for this message before turning off the transmitter and removing the USB cable.



Copy voice files on the SD card

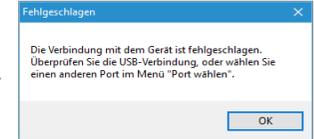
9. Alternatively: Copy voice file to SD card

Alternatively, copy the voice file (s) to the Micro SD card to install them from there (see the transmitter manual for details). This process is much faster.

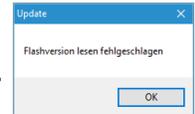
Error messages

Error messages

- Open port failed**
 If an incorrect COM port has been assigned or the driver has not yet been installed, the error message "The connection to the device has failed. Incidentally, the Silicon Labs COM port is only recognized when the transmitter is connected. If the USB port is not recognized repeatedly, disconnect the USB connection to the transmitter for a few seconds.



- Transmitter not switched on**
 If you have forgotten to switch on the transmitter before reading the voice file from the transmitter or before transmitting it to the transmitter, the pop-up window "Read flash version failed" or "Flash size unknown" appears and the process is aborted. Switch the transmitter on and repeat the process.

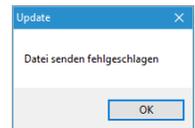


If you have not switched on the transmitter when reading the voice data, the entry "Error - packet data response timeout" appears repeatedly (definitely 1 ... 2 min) in the table with a final error message (3x).

! Be sure to wait until this error message appears before exiting the program.

- USB connection PC - transmitter disturbed**

If the update process aborts, for example due to an interruption of the USB connection, the log entry "Failed to send file" appears in the lower table.

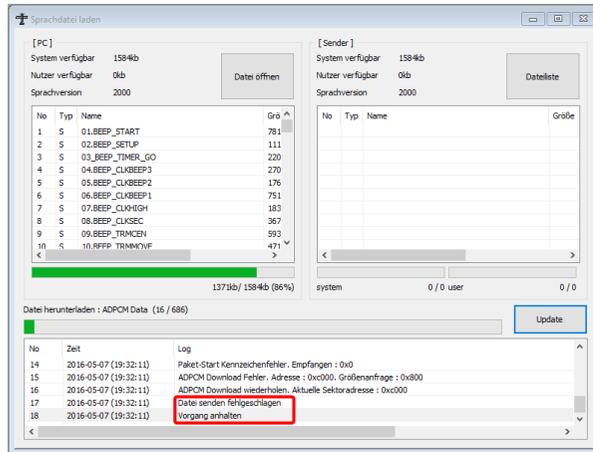


Only for transmitters with integrated voice output

Error messages

The program tries to repeat the transmission:
"Repeat ADPCM download".

Pay attention to the error messages in the table below:



Wait until the "Send file failed" pop-up appears and repeat the above transfer.

 In the event of premature termination of the data transmission, the "Voice" file MUST be re-recorded in any case, since otherwise not only all voice information, but also all beeps of the transmitter are deleted. Check the USB connection first.

Set date and time

Set time and date - "Time setting"

With the "Time setting" program, the transmitter's time and date can be easily set by computer.

Suggested accessories:

- USB cable supplied with the interface set, No. **7168.6** included or similar USB cable (USB-A to mini-B-USB, 5-pin),
- alternatively: Bluetooth® adapter, see page 14.

General preparations

1. USB drivers installed?

Have you already installed the USB driver? Otherwise read the section "Driver installation" on page 12.

2. Select COM port

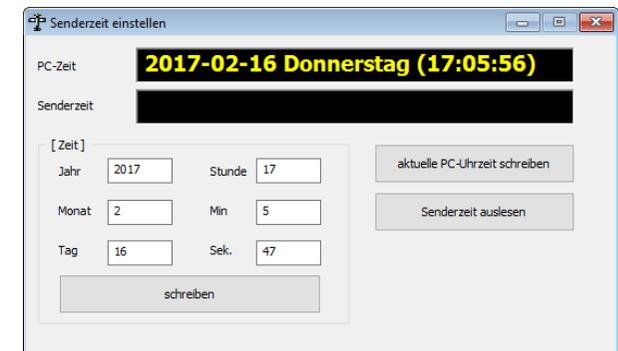
Then select - if you have not already done so - the COM port (USB port on the PC) as described on page 17.

3. Connect transmitter to PC

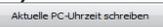
Connect the USB cable to the computer and then connect it to the mini USB socket of the transmitter. Then switch on the transmitter.

4. Start the "Time setting" program

Start the program "Time setting" in the program group "Transmitter". (Alternatively select in "menu" the related entry.)



5. Setting date and time

You can either manually set the time and date under "[Time]" and then click on the button  ("write") to load the station or right via the button  ("Take over current PC time") on the computer transmit the set time directly to the transmitter. The transmitter time can be read out with the button .

Set date and time

In general, time, the day of the week and the date are displayed in the upper part of the window:

- above the computer time "PC time",
- below the transmitter time stored in the transmitter "Transmitter time".

This is the "English" date format used, so year-month-day.

The time, however, is displayed in the usual 24-hour format.

Error messages

Error messages (see also sections before)

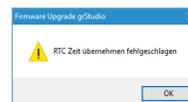
Read error

Of course, no transmitter data can be read out when the transmitter is switched off. The display will show "Read Fail"



Write error

When the transmitter is switched off, the time cannot be transmitted to the transmitter any more. Again, it alerts you to an error message.



Save model memory

Save model memory - "Model memory"

With this program you can save the model memory of the HoTT transmitter on a PC.

 This program is not intended for the transmitter mz-32. The model memory of the mz-32 can be found on the mass storage in the folder "Model".

Suggested accessories:

- USB cable supplied with the interface set, No. 7168.6 included or similar USB cable (USB-A to mini-B-USB, 5-pin),
- alternatively: Bluetooth® adapter, see page 14.

Only for transmitters with integrated voice output

general preparations, Read model memory

Save model memory on the PC

1. USB drivers installed?

Have you already installed the USB driver?
Otherwise read the section "*Driver installation*"
on page 12.

2. Select COM port

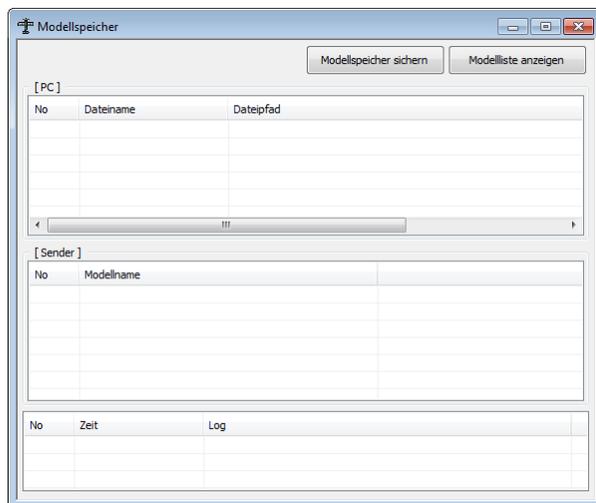
Then select - if you have not already done so
- the COM port (USB port on the PC) as de-
scribed on page 17.

3. Connect the transmitter to the PC and turn it on

Connect the USB cable to the computer and
then connect it to the mini USB socket of the
transmitter. Switch on the transmitter.

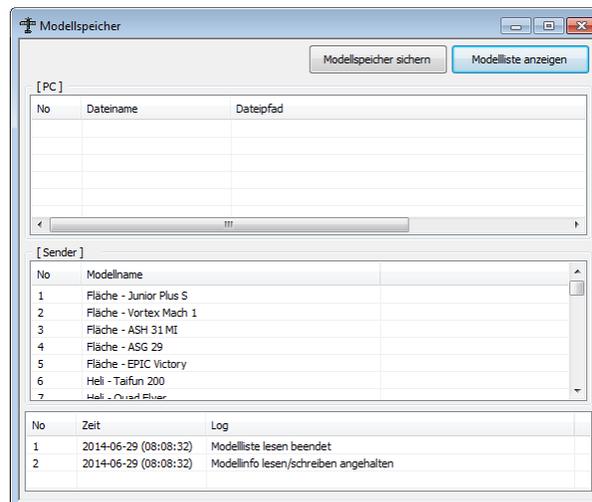
4. Start program "Model memory"

Start the program "*Model memory*" in the pro-
gram group "*Transmitter*". (Alternatively select
in "*menu*" the related entry.)



5. Read model memory

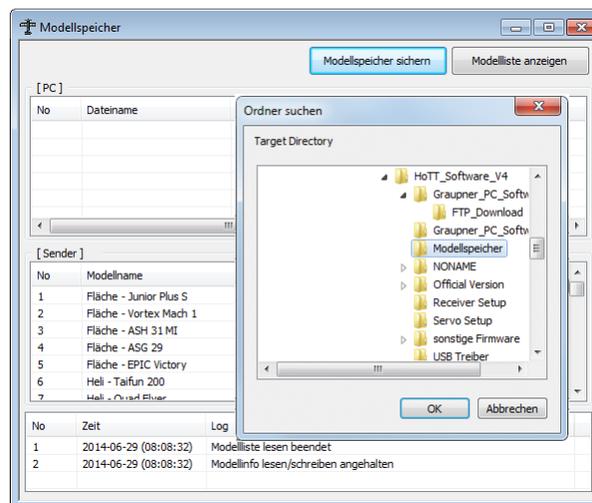
Press the button "*Show model list*" on the top
right. The model memories of the
transmitter are read out and listed in the mid-
dle window "*[Transmitter]*":



6. Save model memory on PC

Now press the button "*Save model memory*"

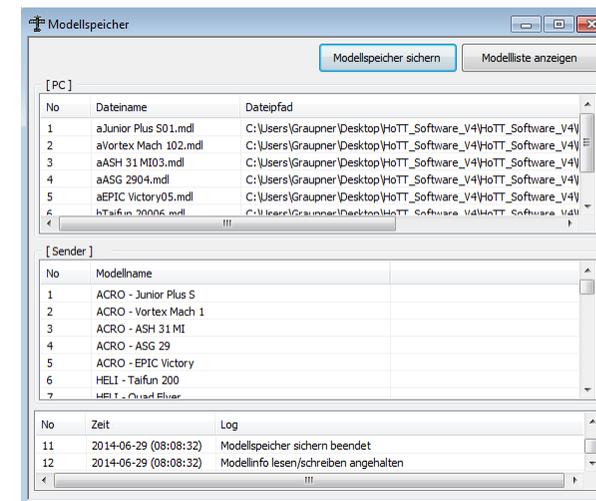
to start the backup process. First, se-
lect the desired location on your PC in the win-
dow that opens and click on **OK**.



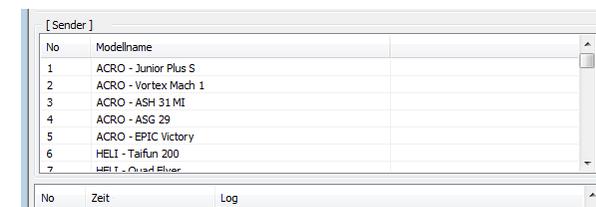
The model memory files created on the hard
disk are displayed in the upper window "*[PC]*",

see next figure.

The naming is done automatically. The pro-
gram assigns the model name to each mod-
el memory file - starting with "*a*" (*ACRO*) for
airplane models and "*h*" (*HELI*) for helicopter
models and ending with model memory loca-
tion number *XX* in the transmitter, ie "*a[model
name]XX.mdl*" or "*h[model name]XX.mdl*".



In the middle window "*[Transmitter]*" the mod-
el memories of the transmitter are listed again,
where "*ACRO*" stands for airplane models,
"*HELI*" for helicopter models and "*None*" for a
free model memory location.



Program actions are listed in the lower win-
dow, for example:

Transmit model memory from PC to transmitter

No	Zeit	Log
1	2014-06-29 (08:44:18)	Modellinfo lesen/schreiben angehalten
2	2014-06-29 (08:44:19)	Modellinfo lesen Start
3	2014-06-29 (08:44:20)	Modellspeicher auslesen Start
4	2014-06-29 (08:44:21)	Modellspeicher auslesen - OK :#1
5	2014-06-29 (08:44:22)	Modellspeicher auslesen - OK :#2
6	2014-06-29 (08:44:23)	Modellspeicher auslesen - OK :#3
7	2014-06-29 (08:44:23)	Modellspeicher sichern beendet
8	2014-06-29 (08:44:23)	Modellinfo lesen/schreiben angehalten

7. Copy model memory from the PC to the transmitter

To transfer the model memory data back to the transmitter, they must be copied to a micro SD card. For details, see the manual of the transmitter.

⚠ BEFORE re-commissioning, make sure that all settings have been correctly applied!

Error messages

Error messages (see also sections before)

Transmitter turned off by clicking on "Show model list"

If you have forgotten to switch on the transmitter, the log entry "Failed to read product info" appears in the lower window and the process is aborted.

No	Zeit	Log
1	2016-05-08 (09:55:13)	Produktinfo lesen fehlgeschlagen

Switch the transmitter on and repeat the process.

Transmitter switched off when backing up model memory to PC

If the transmitter is not activated when clicking on the button "Save model memory", there is an analog error message:

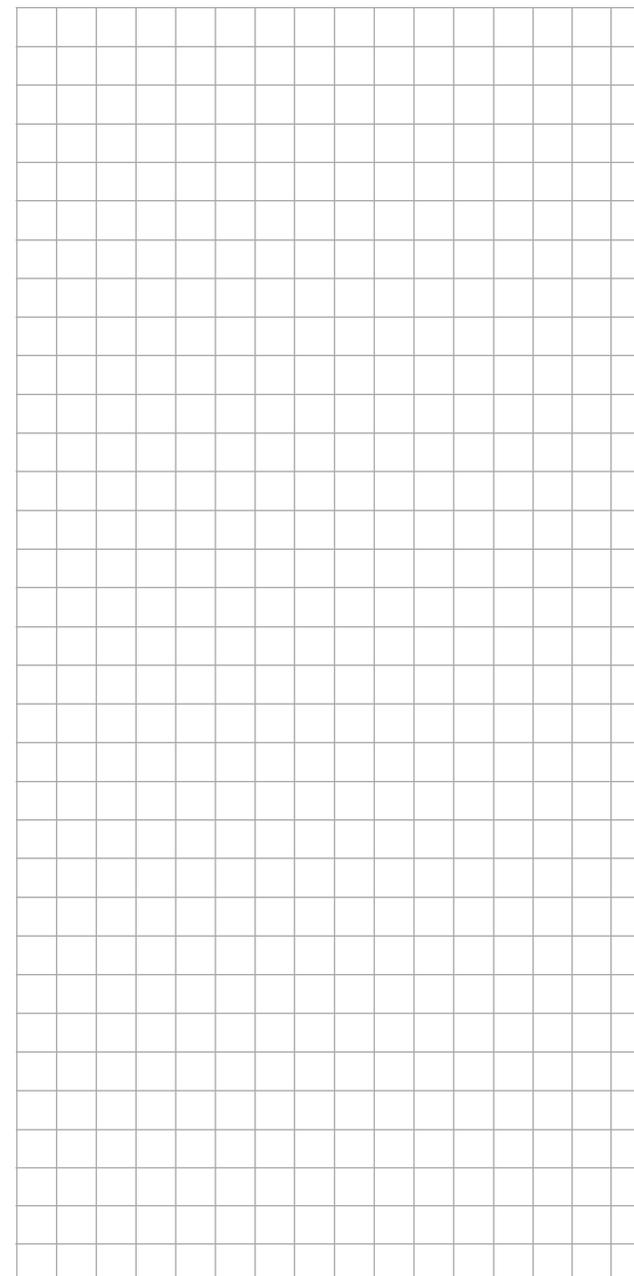
No	Zeit	Log
5	2016-05-08 (09:57:39)	LCD-Display Daten senden fehlgeschlagen
6	2016-05-08 (09:57:39)	Modellspeicher sichern fehlgeschlagen
7	2016-05-08 (09:57:39)	Modellinfo lesen/schreiben angehalten

USB connection interrupted

If the USB connection is lost while reading or saving model memories, the following error messages are displayed in the lower table.

No	Zeit	Log
3	2016-05-08 (10:00:35)	Serieller Flash belegt. Wiederholen
4	2016-05-08 (10:00:45)	Serieller Flash belegt. Wiederholen
5	2016-05-08 (10:00:46)	Serieller Flash belegt. Wiederholen
6	2016-05-08 (10:00:56)	Serieller Flash belegt. Wiederholen
7	2016-05-08 (10:01:06)	Serieller Flash belegt. Wiederholen
8	2016-05-08 (10:01:14)	Produktinfo lesen fehlgeschlagen
9	2016-05-08 (10:01:14)	Modellspeicher sichern fehlgeschlagen
10	2016-05-08 (10:01:14)	Modellinfo lesen/schreiben angehalten

Switch off the transmitter and check the USB connection.



Only for transmitters with integrated voice output

Restore transmitter software

Restore station software - "Restore"

If a firmware update of the transmitter via the program "Firmware Update" failed, eg. by interrupting the USB connection, and / or the transmitter software "hang" or the transmitter may not even turn off via the "POWER" switch or in the transmitter display the message

"Miss match product number"

appear, then you can restore the firmware with this program.

 If, despite the supposedly switched off transmitter, the transmitter display is still switched on, please remove the transmitter battery plug in the switch position "POWER = OFF", plug it back in after a minimum of five seconds and leave the POWER switch in the "OFF" position!

 The "Recovery" program can NOT be used with a Bluetooth® wireless connection, but only via a USB cable connection.

 The "Restore" program is not intended for the mz-32 HoTT transmitter.

Suggested accessories:

- USB cable supplied with the interface set, No. 7168.6 included or similar USB cable (USB-A to mini-B-USB, 5-pin),

general preparations

1. USB drivers installed?

Have you already installed the USB driver? Otherwise read the section "Driver installation" on page 12.

2. Select COM port

Then select - if you have not already done so - the COM port (USB port on the PC) as described on page 17.

3. Start the "Recovery" program

Start the program "Restore" in the program group "Transmitter".

(Alternatively select in "menu" the related entry.)



After the program has been called, the flashing red "1" of the number series 1 ... 5 in the head of the window indicates that the program is currently in "[process step] 1".

 You can also call up the explanation of each individual step at any time in the form of a tooltip by placing the mouse pointer over a number.

4. Connect transmitter to PC

It is essential to switch off the HoTT transmitter first!

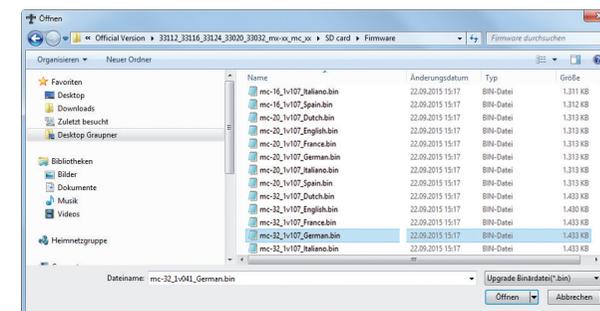
Connect the USB cable to the PC and connect the other end to the transmitter's USB port.

5. Firmware loading

Press the "Open file" button and search for the current firmware in the opening program window.

"Restore" with incorrect update

These can be found, as already mentioned above, in the "Official Version" directory under the respective article number - in the example of the ㄩㄥ-ㄅㄛ under "Official Version\33112_..._33032_mx-xx_mc-xx\SD card\Firmware" of the unzipped file "HoTT_Software_VX":



The file matching the transmitter ㄩㄥ-ㄅㄛ is: "mc-32_1VXXX_English.bin" (or "...German.bin" etc.).

6. Restore

After selecting the *.bin file "[Process step] 2" blinks.

 Make sure that the transmitter is switched off!



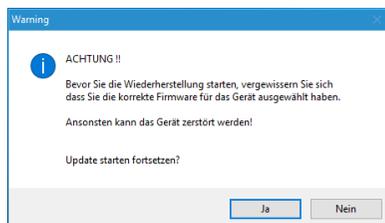
Now click the button ("Start update") to start the recovery process.

 Beforehand, a confirmation prompt appears. Please check again if the "correct" file was selected. An automatic file check as in the regular update case is not possible with "recovery". In the worst case, a restore attempt is no longer possible in a transmission attempt of a not matching to the

Switch on transmitter

transmitter firmware file. Please contact the GRAUPNER / SJ Service.

Read the notes in the section "Error messages" on the next page.



Only if you are sure that you have selected the correct file, click on .

7. Switch the transmitter on

Wait until the status bar has started, and switch on the transmitter only now.

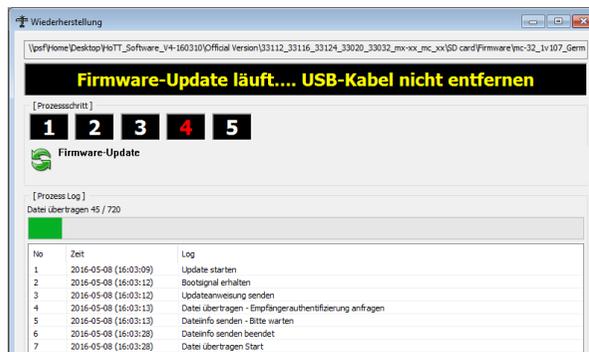
You have time until the progress bar in the "[process step] 3" has reached the right end.



After switching on the transmitter, the data is transmitted. The progress bar indicates the proper transmission in "[process step] 4".

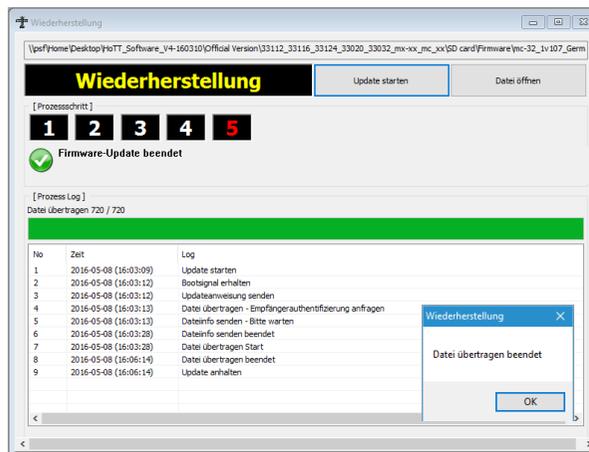
(For example, in the case of a $\text{NFC-}\beta\text{2}$, however, do not be irritated if only the upper display is lit without lit while the lower one remains dark.)

End transmission



⚠ During the update process, the USB cable must not be removed: "Firmware update is running ... Do not remove the USB cable! Also make sure that the USB connectors on the transmitter or PC are in good contact and do not wobble. See also section "Error messages".

8. Ending the transmission



The firmware transfer is completed as soon as the progress bar has reached the right end, and the message "Firmware update completed" in the "[process step] 5" signals the successful transfer.

In the case of the $\text{NFC-}\beta\text{2}$, a signal melody sounds. In addition, the startup display with

the currently loaded firmware version is displayed again in the transmitter display. Finally, click on the pop-up window "Transfer File Completed" . Switch off the transmitter and interrupt the USB connection to the PC or laptop.

⚠ Make sure that the "recovered" HoTT transmitter software is functioning BEFORE restarting!

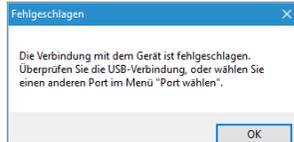
Only for transmitters with integrated voice output

Error messages

Error messages

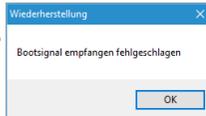
Open port failed

If an incorrect COM port has been assigned or the driver has not yet been installed, the error message "The connection to the device has failed. Incidentally, the Silicon Labs COM port is only recognized when the transmitter is connected. If the USB port is not recognized repeatedly, disconnect the USB connection to the transmitter for a few seconds.



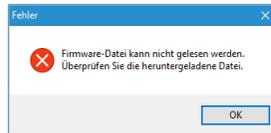
Transmitter not switched on in time

While the progress bar starts in "[process step] 3", the transmitter should be turned on. Otherwise, the following error message appears: "Boot signal failed to receive".



Wrong file directory selected

If you accidentally load a *.bin file from a "wrong" directory, the following error message appears: "Firmware file cannot be read". Return to the Windows® selection window and select the appropriate subdirectory and, of course, only the file matching the transmitter.

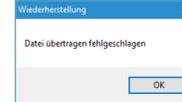


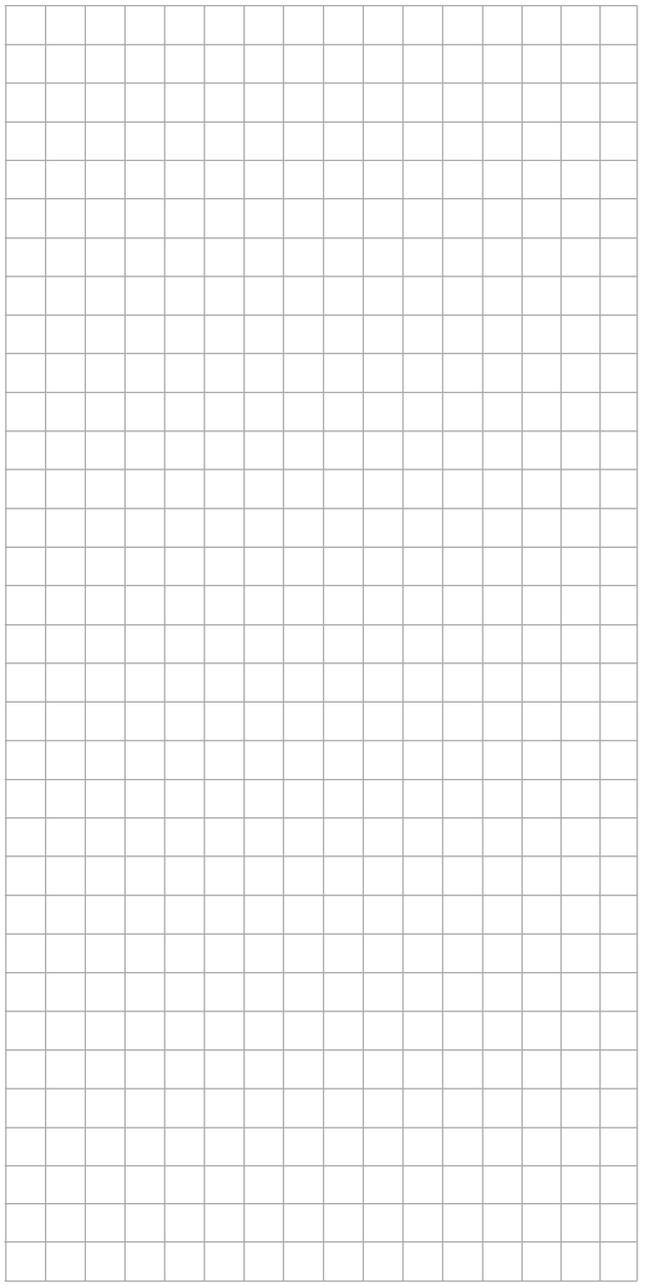
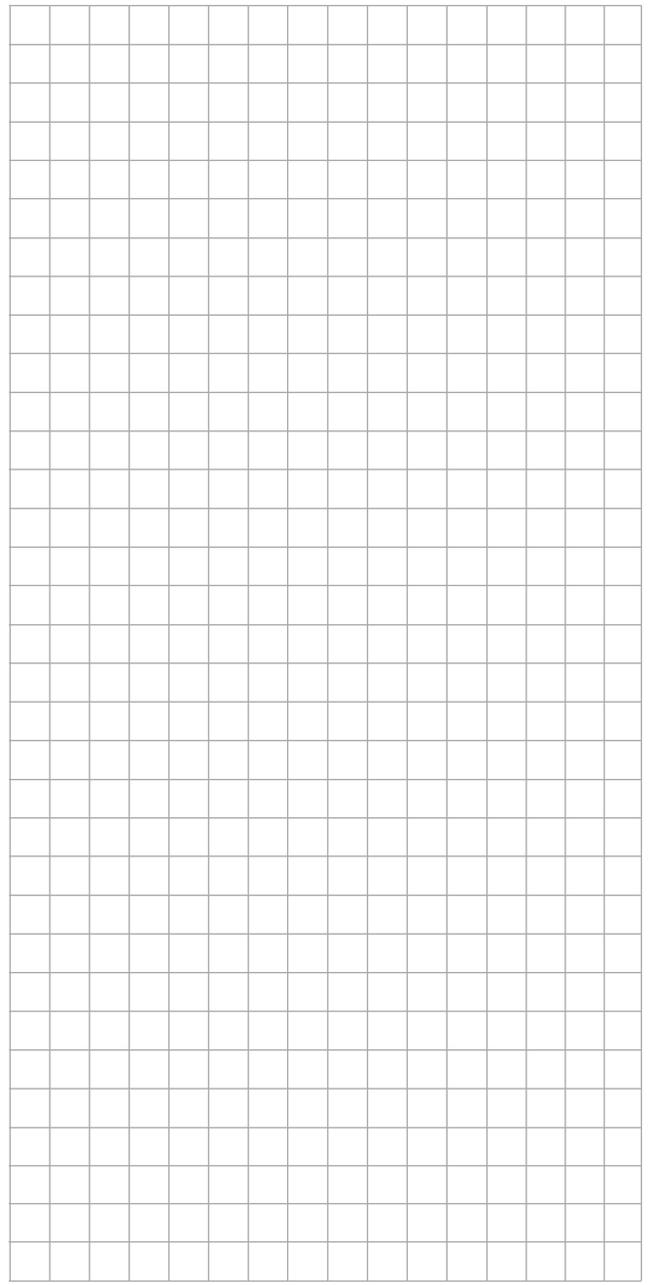
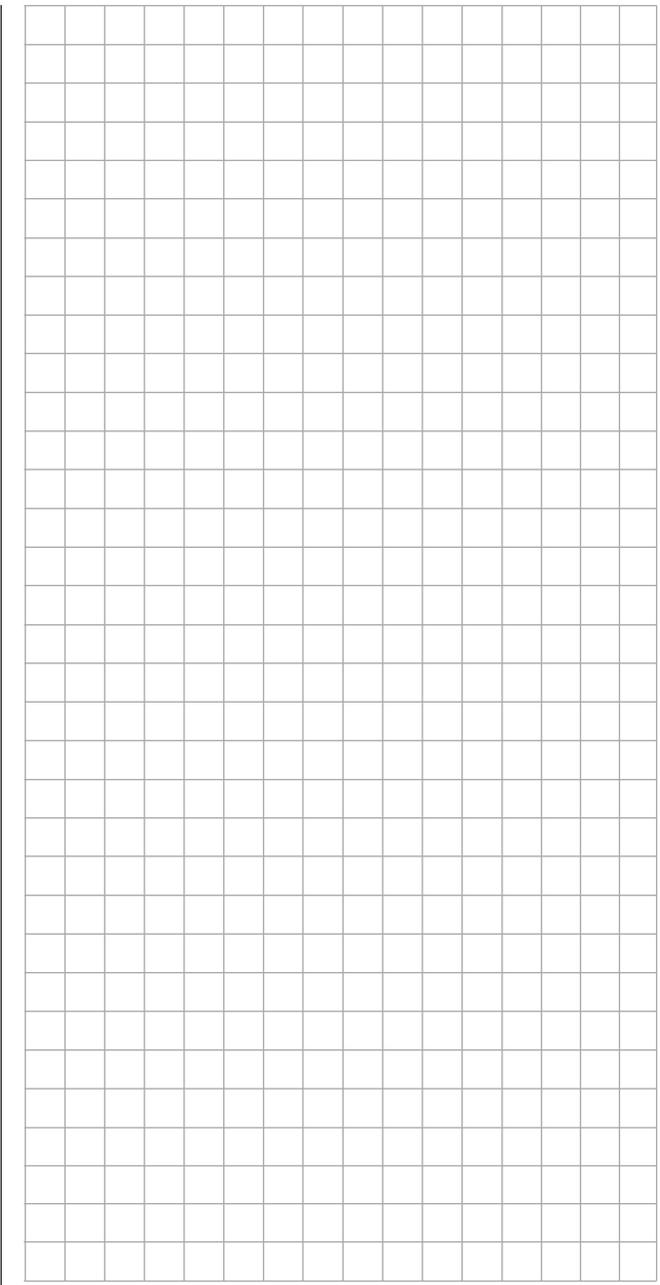
! If you have chosen an improper transmitter file from the "correct" directory, for example an **MC-20** file for the **MC-32**, then do not stop the "restore" but wait until the transfer ends then repeat the restore with the "correct" file.

In the worst case, however, you must contact the Graupner / SJ service and send in the transmitter if a subsequent restoration with the "correct" file should no longer be possible.

USB connection between PC and transmitter interrupted

If the transfer from the PC to the transmitter is interrupted during recovery (contrary to expectations), you will see the error message "File transfer failed". In this case, repeat the "Recovery" as described above.





2 Program group "Devices"

HoTT module, HoTT receiver, HoTT sensor, servos, speed controller, Bus systems

General preliminary remarks

accessories
Program group "Device"

In this program group the option "HoTT device" is listed first. This program is used for updating ...



- all transmitters equipped with a separate HoTT module (M-G1 (No. **33300** for mc-19 (s), mc-22 (s)), M-G2 (No. **33302** for mx-22, mx-24, mc-24)),
- the transmitter without integrated voice output (mx-12 HoTT (No. **4754**), mx-16 HoTT (No. **4755**), mx-10 HoTT (No. **33110**), mxs-8 (No. **33200**), mz-10 (No. **S1001**), mx-10 (No. **33110**), X-4S (No. **33400**), X-8N (No. **S1018**)). (For transmitters with integrated voice output see page 20.),
- all HoTT receivers, except for the current Slowflyer receivers GR-12SH + HoTT No. **33565**, GR-12SC + HoTT No. **33566** and the gyro receivers with the type designation "3xG HoTT". Their firmware is updated via the program "Slowflyer, Gyro receiver" in the program group "Link". The slow flyer receiver GR-12S HoTT (No. **33505**), on the other hand, is updated with the program described here. For an update, the adapter cable No. **23048** is required.
- the SMART Box, No. **33700**,
- all HoTT sensors.
- the digital servos type HGM, HBS, HVS, HBM

With the "ESC" program, you have the option of updating the firmware of certain electronic speed controllers from the Graupner program. Please read the instructions of your speed controller to see if your product is updateable.

A wireless update via a Bluetooth® module is not possible.

Under "🔌" "BUS Firmware Update" the firmware of future components with BUS system is updated. This currently includes the GPS module, No. S8437 (as of 04/2018).

Update of an HoTT device– Suggested

Firmware update HoTT devices

... to update the HoTT devices listed on the left.



Please also read the manual of the corresponding product for additional information!

For transmitters with internal telemetry (eg MC-19 HoTT, MC-22 HoTT or retrofitting the MC-19s, MC-22s, and MC-22), the internal connection cable module - transmitter board ("Module T-DATA", recognizable by the three-pin JR plug) must be removed before updating!

Suggested accessories

For an update of the HoTT devices are needed ...

- the USB interface No. **7168.6**,
- the interface adapter cable No. **7168.S**, (if not included, also No. **7168.6A**).
- For the Slowflyer receiver GR-12S HoTT (No. **33505**) the adapter cable No. **23048** is required.
- Updating of HoTT receivers **WITH** separate receiver power supply:
Preferably use a separate power supply (receiver battery). In this case you only need the two aforementioned components. Continue reading in section (3b).
- Updating receivers **WITHOUT** separate power supply:
Without a separate power supply you also need the 3-pole cable No. **33700.1**. Continue reading in section (3b).
- Updating HoTT sensors and the SMART box without separate power supply:
In addition, a 3-pin cable - if not included e.g. No. **33700.1** - for the General modules No. **33610/33611**, the Electric Air module No. **33620** and the SMART box No. **33700** is required. (This 3-pin cable is connected to the 3-pin socket of the interface cable, No. **7168.S**). Continue reading in section (3c) or (3d).

Firmware update HoTT devices

- *Updating HoTT sensors and the SMART box WITH separate power supply (receiver battery): Use instead of the adapter cable No. 7168.6A the interface adapter cable No. 7168.S. Instead of the 3-pole cable No. 33700.1, as mentioned in the section above, you also need a Y (or V) cable for the General or Electric Air module No. 3936.11, to connect one end of the receiver battery. For the SMART box, the 2-pin connector of the interface adapter cable, No. 7168.S is connected to the connector "S + -" on the right side seen from above and the battery is connected to the "+ -" connector on the left side. For details on the SMART box, see section (3d).*
- *Firmware update of certain digital servos*
In addition to the USB interface No. 7168.S you need the Servo USB programming adapter cable No. S8363 and a receiver battery.

Double update

Some receivers may require a double update followed by a reset. Eg for the HoTT receivers:

- GR-4 (No. 33502),
- GR-12 (No. 33506),
- GR-12s (No. 33505),
- GR-16 (No. 33508),
- GR-24 (No. 33512),
- GR-32 (No. 33516).

Please observe the respective receiver instructions or the notes on the receiver updates under:

"? • Updates •  Receiver".

You can see more about the update procedure 53 and 58.

Important notes



Important notes:

- *You must never update during model operation!*
- *Please note that compatible firmware is required for reliable communication between the HoTT components. The programs and files required for updating all HoTT components are combined into one file, which at the time of writing of this manual has the version number "V4": "HoTT_Software_V4.zip". At the latest with the version number "V5" all HoTT components must be updated again. Use the "automatic update" regularly.*
- *Before each update, be sure to check the charge status of the transmitter or receiver battery. If necessary, charge it before starting an update. Do not use power supply units.*
- *Before updating the HoTT receiver firmware, it is recommended that you create a backup copy of the receiver data with the "Receiver setting" program in the "Link" program group. The company Graupner I SJ assumes no responsibility for any loss of data.*
- *Servos connected to the receivers can start uncontrolled during an update until their end point and overload the power supply via the USB interface! In order not to damage your model and the PC, all components connected to the receivers must be disconnected before updating.*
- *When updating a HoTT module in the transmitter, any bound receiver must be switched off beforehand.*
- *For safety reasons, an initialization must be performed before the receiver is used again. A pop-up window at the end of the successful update will alert you, see below.*
- *Do not disconnect the link to the computer during an update! Make sure that the link between the receiver and computer is operational.*
- *BEFORE re-commissioning, make sure that all settings have been correctly applied!*
- *Please also read the manual of the corresponding product for additional information!*

General preparations

1. **USB drivers installed?**
Have you already installed the USB driver? (Otherwise see page 12.)
2. **Select COM port**
Then select - if you have not already done so - the COM port (USB port on the PC) as described on page 17.
3. **Preparation: Connecting HoTT device / PC**
Connect the USB cable incl. USB interface, the included 5-core cable and interface cable No. 7168.S to the computer. When properly connected, an LED on the interface board should light up red, which may turn off after a few seconds, depending on the operating system.

HoTT module, HoTT receiver, HoTT sensor, speed controller

Connect the transmitter or the HoTT module

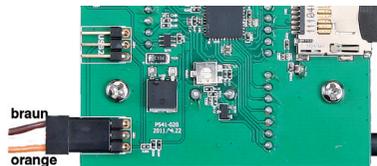
a) Connect transmitter or HoTT module

Connect the 2-pin end of the interface cable, No. 7168.S with the DATA socket of the module or transmitter.

The transmitter remains switched off.

For transmitters with internal telemetry (eg MC-19 (s) / 22 (s) / 24 and MX-22/24 HoTT), unplug the cable labeled "Module T-DATA" from the HoTT's open circuit board M-G1 module. For the M-G2 module, disconnect the internal telemetry by pulling the 3-pin cable "Module" next to the module in the transmitter.

To update, insert the 2-wire end of the interface cable for the M-G1 module, No. 7168.S with the same orientation:



For the M-G2 module, use the DATA socket on the M-G2 housing for updating.

Connect the HoTT receiver

b) Connect the HoTT receiver

! *Disconnect all components connected to the receiver, such as servos, speed controller etc.!*

Update WITH separate power supply:

When updating HoTT receivers, this variant is preferable to the alternative option "Updating without separate power supply", see next section.

Connect the 2-pin end of the adapter cable No. 7168.S to the "- + T" port of the HoTT receiver. In this case, you need a receiver battery, which may not yet be connected or may not be switched on when using a switch cable.



Update mit Empfänger-akku: 2-poliges Ende des Adapterkabels Best.-Nr. 7168.6S

Connect the USB interface to the PC or laptop via the supplied USB cable (PC-USB / mini-USB). When properly connected, an LED on the interface board should light up red. (Depending on the operating system, this will disappear after some time.)

The plug-in systems are largely reverse polarity protected. Note the small chamfers on the sides. Never use force, the plugs should click easily into place.

Now read on under point (4.).

Update WITHOUT separate power supply:

First, connect the 3-pin socket of the adapter cable, No. 7168.6S with the 3-pin plug of the cable No. 33700.1.

Immediately before the update, the other end is connected to the "- + T" port of the HoTT receiver, see sections (4.) and (5.).

! *In this case, no separate power supply may be connected to the receiver.*

! *If possible, use a primary USB interface on the PC or laptop. If you have several devices connected to a USB interface, do not turn off the power of the USB port. In this case, a receiver battery is required in addition. See section "Update WITH separate power supply" previously.*



Update ohne Empfänger-akku: 3-poliges Kabel Best.-Nr. 33700.1 mit Adapterkabel Best.-Nr. 7168.S verbinden.

Example: Connection to the HoTT receiver GR-32 with 3-pin plug (No. 33700.1) for updating without separate receiver battery.

Now read on under point (4.).

Connect the HoTT sensor

c) Connect the HoTT sensor

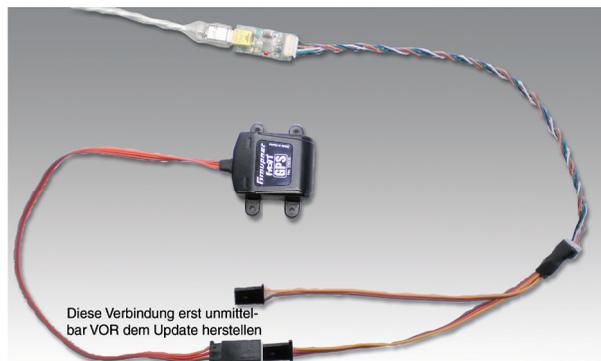
Prepare the connection of the sensors according to the two following illustrations.



If possible, use a primary USB interface on the PC or laptop. If you have several devices connected to a USB interface, do not turn off the power of the USB port. In this case, a receiver battery is required in addition. See "Required Accessories" at the beginning of this chapter (page 46) and read the associated manual for the HoTT sensor.

Update **WITHOUT** separate power supply:

Do not yet connect the sensors to the 3-pin socket of the adapter cable No. 7168.S.

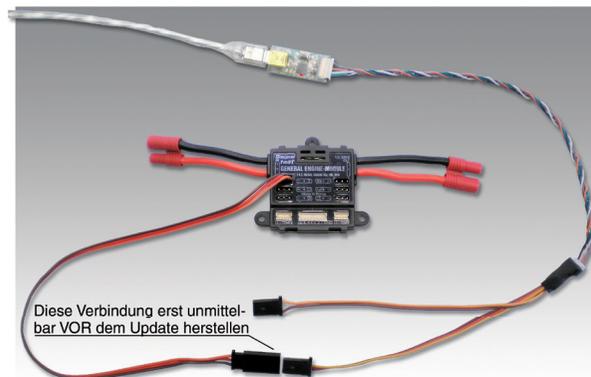


The Vario or the GPS module - the latter module is shown in the picture - will be plugged later, just before the actual update start, see sections (4.) and (5.), directly into the 3-pin socket of the Adapter cable No. 7168.S.



The newer GPS module with the No. S8437 must be updated via the "BUS Firmware Update" program, see below.

The sensors "General module" No. 33610/33611 and "Electric Air Module" No. 33620 are connected via the 3-pole cable No. 33700.1 on one side with the telemetry socket of the module and on the other side - but only just before the start of the update - it is connected to the socket of the adapter cable.



(If later updates do not work with this configuration, you will need a separate battery power supply, see "Required Accessories" above and read the Sensor manual.)

Connect the SMART box

d) Connect the SMART Box

Connect to the right-hand socket ("S + -") as seen from above. The 3-core cable supplied with the SMART-Box or the 3-core cable No. 33700.1. The other end is connected with the 3-pin socket of the adapter cable No. 7168.S only shortly before the actual update, see below. A separate power supply is usually not required to update the SMART-Box. Otherwise, pay attention to the accompanying instructions.



If possible, use a primary USB interface on the PC or laptop. If you have several devices connected to a USB interface, do not turn off the power of the USB port. In this case, a receiver battery is required in addition. See earlier in this section under "Required Accessories," page 46.

HoTT module, HoTT receiver, HoTT sensor, servo, speed controller

Connect digital servo

e) Connect digital servo

Firmware update possibilities for certain servos of the series HGM, HBS and HVS are in preparation. If necessary, look in the download area of the respective servo for firmware updates (*.bin).

Connect the servo as shown in the picture.

However, the connection to the servo or to the battery is only made as soon as you are prompted to do so after starting the "HoTT device" update program.



Start "HoTT device"

4. Start the "HoTT device" program

Start the "HoTT Device" program in the program group "Device". (Alternatively select in "menu" the related entry.)

After the program has been called, the flashing red "1" of the number series 1 ... 5 in the head of the window indicates that the program is currently in "[process step] 1". The meaning of the currently flashing step is displayed immediately below the row of numbers, e.g. "[Process step] 1: Connect the USB cable to the HoTT device. Click "Open File" or "Auto Load" to select the update file (*.bin file)", see point (5.).



First read the section (5.) before connecting a HoTT device or switching it on via a receiver battery.

Options for a firmware update

5. Firmware download

You now have two ways of loading the firmware file:

A) "Automatically load"

In this case, the *.bin file matching the HoTT device is automatically downloaded when the internet connection is active.



Update files downloaded via the Internet are always stored in an automatically generated subdirectory named "FTP_Download" in the firmware upgrade grStudio main directory, so that you can repeat the update manually at a later time, if necessary, via "Open file".

If an "automatic update" does not work, you have to load the firmware file manually.

B) "Open file"

If you downloaded the "HoTT_Software_VX" file as described above and saved it on a hard disk, you can also load the required *.bin file from the corresponding subdirectory.



Since the HoTT receiver must be reset to the factory settings after updating, the receiver data, which may have been changed via the transmitter's "Telemetry" menu, such as servo settings, Fail Safe, etc., should be saved in advance. In this case, before updating, use the "Receiver setting" program in the "Link" program group, see page 108. This saves you from reprogramming the receiver via the "Telemetry" menu. The binding information between transmitter and receiver is retained. This backup is not required if you have made all settings outside of the "Telemetry" menu, since such settings are not stored in the receiver but in the transmitter.

Product related updates

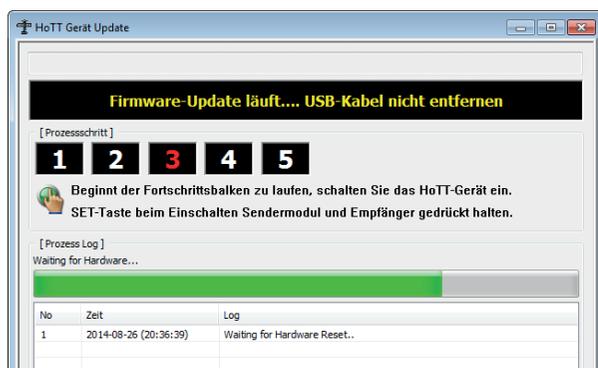
Firmware update from Internet

to A) Firmware update via "Automatically load"

Follow steps 1 to 5 previously. It continues with ...

6. Update automatic download

While the Internet connection is active, press the *Auto-load* button . The flashing digit changes to "[Process step] 3".



Wait until the progress bar has started, then turn on the HoTT device (a) to (d) as follows:

Transmitter update

a) Transmitter update

When updating the HoTT module MG-1 (No. 33300), it must be switched on with the BIND / RANGE button *pressed* on the module board.



BIND/RANGE button on the MG-1 module

For the module MG2 (No. 33302), this button is located on the back of the module and on the transmitter MX-10 (No. 33110) on the front of the transmitter. Also read the corresponding module or transmitter instructions.

As soon as the HoTT module is detected, the progress bar stops. The BIND / RANGE button can be released. Do not release the button prematurely!

Continue with section (7.).

Receiver update

b) Update receiver

When updating a HoTT receiver, depending on whether you are transferring the update with or without a separate power supply, proceed as follows:

Update WITH receiver battery:

This method is preferable to the option "update without receiver battery".

Connect the 2-pin end of the adapter cable No. 7168.S to the "- + T" port of the switched off HoTT receiver.

Now connect a receiver battery - preferably via a switch - while keeping the SET button pressed when switching on the power supply. Release the SET button only when the progress bar has stopped. If you release the SET button too soon, the error message "Target device ID not found" will follow, see the error messages section.

Update WITHOUT receiver battery:

A receiver battery may NOT be additionally connected.

Insert the 3-core cable (No. 33700.1), which is connected to the 3-pin socket of the adapter cable (No. 7168.S), into the socket marked "- + T" of the receiver, hold down the SET button on the HoTT receiver. Release the SET button as soon as the progress bar stops. If you release the SET button too soon, the error message "Target device ID not found" will follow, see the error messages section.

Continue with section (7.).

 Since the HoTT receiver must be reset to the factory settings after updating, the receiver data, which may have been changed via the transmitter's "Telemetry" menu, should be saved in advance with the program "Receiver setting". This saves you from reprogramming the receiver via the "Telemetry" menu.

c) Update HoTT sensors

HoTT module, HoTT receiver, HoTT sensor, servo, speed controller

Sensor update

After clicking on the button  ("automatically load"), the HoTT sensors are plugged into the 3-pin socket of the adapter cable No. 7168.S, see pictures on the previous pages. Continue with section (7.).

SMART box update

d) Update SMART Box
Connect to the right-hand socket (S + -) seen from above with the 3-core cable supplied with the SMART Box or the 3-core cable No. 33700.1, see figure in section (3d). Now connect the other end to the 3-pin socket of the adapter cable No. 7168.S.
Please read the notes under "*Required Accessories*" on page 46, should an update not work.



During the update, the SMART Box display remains dark.

Continue with section (7.).

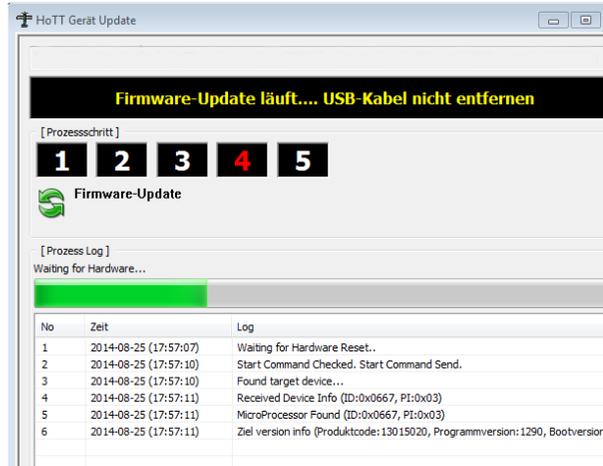
Digital servo update

e) Digital servo update
Now connect the battery or the digital servo with the programming adapter cable No. S8363 as shown in the picture above.

File selection auto update

7. File selection with automatic update

The flashing digit changes to "[Process step] 4" for all HoTT devices (a) to (e).

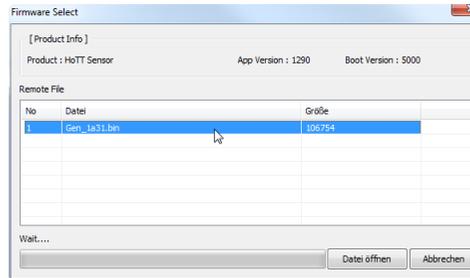


The progress bar stays in place.

In the last, the sixth line of the table, the currently stored firmware version of the connected HoTT device is read out. In the example shown, it is "Version 6.30" of the HoTT receiver GR-16.

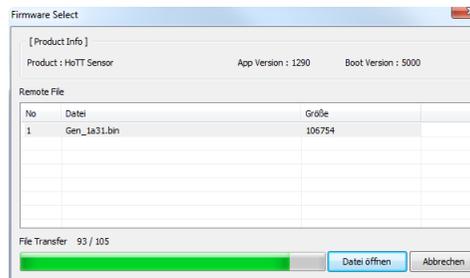
Depending on the speed of the connection, it will take some time for another window, "Firmware Select", to open. This list contains the current firmware version of the respective HoTT device.

Click on the desired update file (*.bin-file) - in the example shown for the HoTT receiver GR-16: "gr_rx8_6a30_f9.bin".



(The identifier "6a30" stands for the version number "Ver: 6.30", so that in this case the process could also be aborted.)

Click on the firmware file and then on the "Open File" button. The file is first downloaded from the Internet - recognizable by the progressing bar.



(Although you have enough time to select the file, if you do not choose to do so, the update process stops and needs to be repeated.)



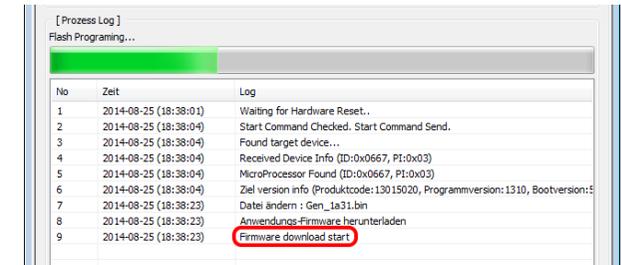
Note:

- ▶ Do not stop downloading a file via . Otherwise, you "produce" a "runtime" error.
- ▶ With faulty Internet connection appears after absolutely only 1 ... 2 min the above "Firmware Select" window, but without firmware files. But do not close the program until this (empty) window is visible. A premature attempt to terminate the program may otherwise cause the program to "hang up". In this case, close the program using the Windows® Task Manager.



Dual update HoTT receiver

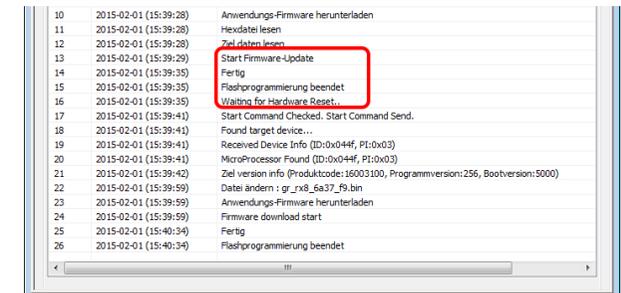
A new progress bar in "[process step] 4" and the table entry "Firmware download start" indicate proper data transfer to the HoTT device ...



Double update for HoTT receiver

On page 47 it has already been pointed out that in individual cases HoTT receiver must be updated twice in a row. This need can be recognized by the table entry in the picture above:

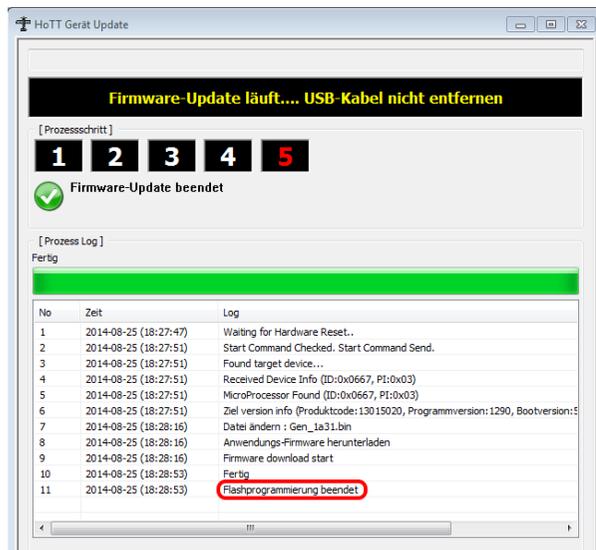
If it says "Firmware download start", no further updating is necessary. However, if the table entry reads "Start Firmware Update", the progress bar and the "Waiting for Hardware Reset" table entry will appear again shortly after the receiver is recognized. Now the power supply or the interface distributor must be briefly disconnected from the receiver and then connected again while holding down the SET button for the next update.



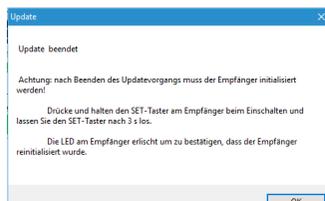
At the end, in the "[process step] 5" in the table, a confirmation of the transmission follows with the text line "flash programming finished".

HoTT module, HoTT receiver, HoTT sensor, servo, speed controller

⚠ Dual update HoTT receiver



In the case of a HoTT receiver update, a window will pop up informing you of a required initialization of the HoTT receiver. A description is given in section (9).



For the other HoTT devices only the pop-up window appears: "Update completed".



Interrupt USB connection



Note:

- On the HoTT RF board (module M-G1) of the transmitter an LED lights green when the receiver is still switched off.
- Remember, for transmitters with internal telemetry (eg MC-19 HoTT, MC-22 HoTT, or upgrades to the MC-19s, MC-22s, MX-22, MC-24, and MX-24), to reconnect the internal connection cable "Model T-DATA" after an update. If necessary, refer to the transmitter or HoTT RF module manual for the plug-in direction, see also Fig. on page 48 in the case of the open M-G1 module.
- After a successful receiver update, the LED flashes red when the transmitter is switched off.
- After updating the SMART-Box, the SMART-Box turns on automatically. During the update, the display remains dark.

8. Interrupt USB connection

Disconnect the interface cable from the HoTT device and, if necessary, also the USB connection to the PC.

Initialization transmitter/receiver

9. Reset HoTT transmitter and receiver

a) HoTT RF module initialization in the transmitter

After the firmware update, the HoTT RF module MUST be reset to initialize it. Press and hold the BIND / RANGE button on the HoTT RF module or the BIND button on the front of the MX-10 transmitter while turning on the transmitter. Release the button, the module is now initialized. Be sure to read the appropriate section in the HoTT RF module manual or in the transmitter manual.

⚠ *If necessary, the failsafe and country settings must be repeated, read the instructions of the module / transmitter!*

b) Initializing a HoTT receiver

⚠ *For safety reasons, an initialization must be performed before the receiver is used again.* The above ad at the end of the successful update, section (7), points it out. Please also read the instructions of your HoTT receiver.

If necessary, switch off the associated HoTT transmitter beforehand.

When switching on the receiver, press and hold the SET button on the receiver. The green and red LEDs flash four times for about 3 s. (For the receiver GR-12 (L) only one red or green LED is lit). Then both LEDs go off for just under 3 s, before only the red LED continues to flash. Now you can release the SET button. On the other hand, with the HoTT receiver GR-12 (L), you release the button as soon as the LED goes out.

In both cases, keep the SET button on the receiver pressed for at least 3 seconds.

If you subsequently switch on the transmitter again, the green receiver LED of the bound receiver lights up permanently approx. 2 to 3 seconds after the RF radiation has started.

Initialization Transmitter/Receiver

With the receiver GR-12 (L) the red LED goes off.

If the receiver is still unbound, you can now "bind" it with a transmitter. For details, see the corresponding manual of the transmitter or HoTT module.

 *It is imperative that you check the operability of the updated HoTT device BEFORE restarting it!*

Error messages

Error messages

What to do in the event of a failure?

If the update process does not start or if it aborts, repeat the procedure. Note any error messages that appear.

Open port failed

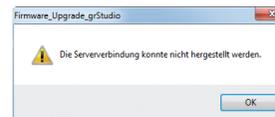
If an incorrect COM port has been assigned or the driver has not yet been installed, the error mes-



sage "The connection to the device has failed". Incidentally, the Silicon Labs COM port is only recognized when the interface adapter No. 7168.6 is connected. If the USB port is not recognized repeatedly, switch off the power supply and disconnect the USB connection to the interface No. 7168.6 for a few seconds.

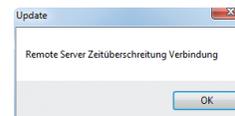
Missing server connection at autom. update

If the server connection does not work, the pop-up window will appear. A firewall may prevent the connection. Deactivate them temporarily - then reactivate them.



Timeout with automatic update

While you have plenty of time to select files but if you wait too long to make the decision, the update process will stop and must be repeated. A firewall may also prevent the connection, see above.

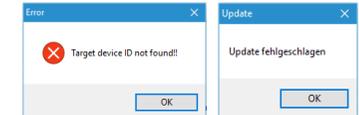


- ▶ "Open file" interrupted on update via Internet
If you terminate the procedure  (accidentally) after selecting and downloading the firmware file via the button , a "runtime" error appears.

Before rebooting, disconnect the mini USB socket from the interface for a few seconds otherwise the port will not be recognized.

- ▶ HoTT device not switched on in time or pressed the SET or BIND button when switching on the transmitter or receiver

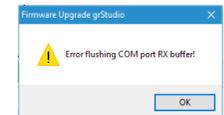
The pop-up windows "Target device ID not found !!" and "Update failed" appear next to an error message in "[process step] 5".



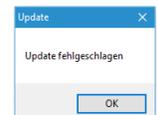
- ▶ USB connection between HoTT device and PC interrupted

The USB connection to the PC must not be interrupted during the update.

If the USB connection between the PC and the USB interface is interrupted, the error message "Error flushing COM port RX buffer!" appears.



If the connection between the USB interface and the HoTT device is interrupted, only the "Update failed" pop-up will open.



Check the connections and repeat the update process.

HoTT module, HoTT receiver, HoTT sensor, servo, speed controller

Manual firmware update—product specific

to B) Firmware update via "Open file".

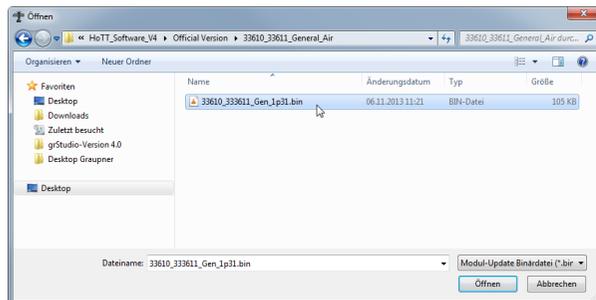
As an alternative to the update method described above, select the update file that you have downloaded to your PC with the complete package "HoTT_Software_VX", see page 10.



Follow steps 1 to 5 "General Preparations" as described above. It continues with ...

6. Open file

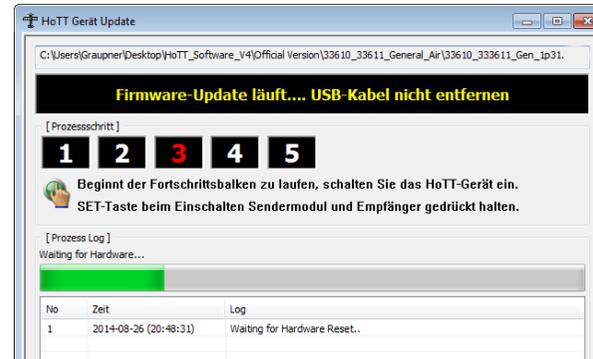
Click on the button ("Open file") and find the firmware update file for your HoTT device in the directory "HoTT_Software_VX\Official Version\[product number]" with the extension ".bin" in the opening "Open file" dialog, e.g. "33610_333611_Gen_1p31.bin" for the General Air Module in subdirectory "33610_33611_General_Air".



Switch on HoTT device

7. Power on HoTT device

As soon as you have selected the correct *.bin file, the flashing digit changes to "[process step] 3".



While the progress bar is starting, connect the respective HoTT device (a) to (d) as follows ...

Transmitter manual update

a) Switch the transmitter on

When updating the HoTT module in the transmitter, turn it on *while pushing* the BIND / RANGE button on the HoTT RF module (MG-1, MG-2) or BIND button on the front of the MX-10 transmitter. As soon as the HoTT device is detected, the progress bar stops. The button can be released. Do not release the button prematurely!

Product related updates

Receiver manual update

b) Switch on receiver

When updating a HoTT receiver, depending on whether you are transferring the update with or without a separate power supply, proceed as follows:

Update **WITH** receiver battery:

This method is preferable to the option "update without receiver battery", see below.

Connect the 2-pin end of the adapter cable No. 7168.S to the "- + T" port of the switched off HoTT receiver.

Now connect a receiver battery - preferably via a switch - while keeping the SET button pressed on the receiver when switching on the power supply. Release the SET button only when the progress bar has stopped. If you release the SET button too soon, the error message "Target device ID not found" will follow, see the error messages section.

Update **WITHOUT** receiver battery:

 A receiver battery may **NOT** be additionally connected.

Insert the 3-core cable (No. 33700.1), which is connected to the 3-pin socket of the adapter cable (No. 7168.S), into the socket marked "- + T" of the receiver, hold down the SET button on the HoTT receiver. Release the SET button as soon as the progress bar stops. If you release the SET button too soon, the error message "Target device ID not found" will follow, see the error messages section.

 Since the HoTT receiver must be reset to the factory settings after updating, the receiver data, which may have been changed via the transmitter's "Telemetry" menu, should be saved in advance with the program "Receiver setting". This saves you from reprogramming the receiver via the "Telemetry" menu.

Sensor manual update

c) Connect HoTT sensors

The HoTT sensors are plugged into the 3-pin socket of the adapter cable No. 7168.S, see figure page 49.

SMART box manual update

d) Connect the SMART Box

Connect to the right-hand socket (S + -) seen from above with the 3-core cable supplied with the SMART Box or the 3-core cable No. 33700.1, see figure in section (3d) on page 49. Now connect the other end to the 3-pin socket of the adapter cable No. 7168.S. Please read the notes under "Required Accessories" on page 46, should an update not work.



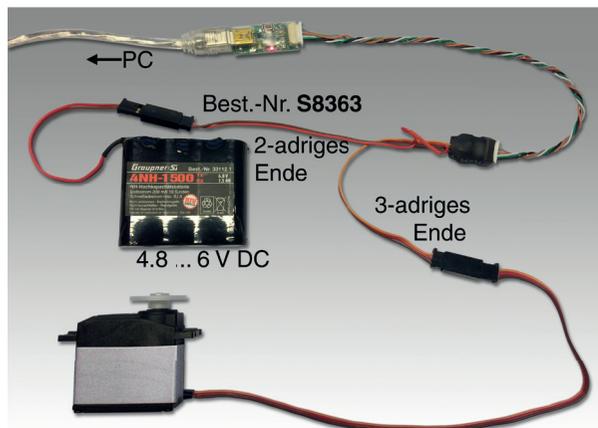
 During the update, the SMART Box display remains dark.

HoTT module, HoTT receiver, HoTT sensor, servo, speed controller

Digital servo manual update

e) Connect digital servo

Now connect the battery or the digital servo with the programming adapter cable No. **S8363**.



⚠ Data transmission and receiver dual update

8. Data transmission

The flashing digit changes to "[Process step 4".

No	Zeit	Log
1	2014-08-26 (20:50:13)	Waiting for Hardware Reset..
2	2014-08-26 (20:50:16)	Start Command Checked. Start Command Send.
3	2014-08-26 (20:50:16)	Found target device....
4	2014-08-26 (20:50:16)	Received Device Info (ID:0x0667, P1:0x03)
5	2014-08-26 (20:50:16)	MicroProcessor Found (ID:0x0667, P1:0x03)
6	2014-08-26 (20:50:17)	Ziel version info (Produktcode:13015020, Programmversion:1310, Bootversion:5
7	2014-08-26 (20:50:17)	Anwendungs-Firmware herunterladen
8	2014-08-26 (20:50:17)	Firmware download start

⚠ Double update for HoTT receiver

On page 47 it has already been pointed out that in individual cases HoTT receiver must be updated twice in a row. This need can be recognized by the table entry in the picture above:

If it says **"Firmware download start"**, no further updating is necessary. However, if the table entry reads **"Start Firmware Update"**, the progress bar and the "Waiting for Hardware Reset" table entry will appear again shortly after the receiver is recognized. Now the power supply or the interface distributor must be briefly disconnected from the receiver and then connected again while holding down the SET button for the next update.

10	2015-02-01 (15:39:28)	Anwendungs-Firmware herunterladen
11	2015-02-01 (15:39:28)	Hexdatei lesen
12	2015-02-01 (15:39:29)	Ziel datei lesen
13	2015-02-01 (15:39:29)	Start Firmware-Update
14	2015-02-01 (15:39:35)	Fertig
15	2015-02-01 (15:39:35)	Flashprogrammierung beendet
16	2015-02-01 (15:39:35)	Waiting for Hardware Reset..
17	2015-02-01 (15:39:41)	Start Command Checked. Start Command Send.
18	2015-02-01 (15:39:41)	Found target device....
19	2015-02-01 (15:39:41)	Received Device Info (ID:0x044f, P1:0x03)
20	2015-02-01 (15:39:41)	MicroProcessor Found (ID:0x044f, P1:0x03)
21	2015-02-01 (15:39:42)	Ziel version info (Produktcode:16003100, Programmversion:256, Bootversion:5000)
22	2015-02-01 (15:39:59)	Datei ändern : g_rxB_6a37_f9_bin
23	2015-02-01 (15:39:59)	Anwendungs-Firmware herunterladen
24	2015-02-01 (15:39:59)	Firmware download start
25	2015-02-01 (15:40:34)	Fertig
26	2015-02-01 (15:40:34)	Flashprogrammierung beendet

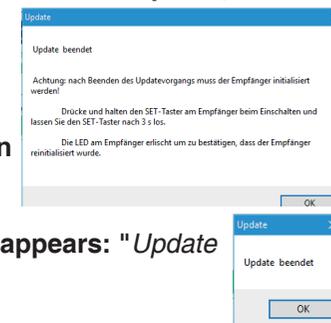
⚠ Make sure that the USB connection between the HoTT device and the PC is not interrupted.

Proper data transmission to the HoTT device indicates a progress bar ... At the end, in the "[process step] 5", a confirmation of the transmission follows with the table entry "flash

Interrupt USB connection

programming finished".

In the case of a HoTT receiver update, a window will pop up informing you of a required initialization of the HoTT receiver, see section (10.). For the other HoTT devices only the pop-up window appears: "Update completed".



⚠ Notices:

- On the board of the transmitter's M-G1 HoTT RF module, a green LED lights up when the receiver is still switched off. Remember, for transmitters with internal telemetry (eg MC-19 HoTT, MC-22 HoTT, or upgrades to the MC-19s, MC-22s, MX-22, MC-24, and MX-24), to reconnect the internal connection cable "Model T-DATA". If necessary, refer to the transmitter or HoTT RF M-G1 module manual for the plug-in direction, see also Fig. on page 48 in the case of the open M-G1 module.
- After a successful receiver update, the LED flashes red when the transmitter is switched off.
- After updating the SMART-Box, the SMART-Box turns on automatically.
- ⊘ Never perform a transmitter update during model operation, as the RF transmission to the receiver is switched off.

9. Interrupt USB connection

Turn off the transmitter, receiver etc. and disconnect the USB connection between HoTT device and PC.

⚠ In the case of the mc-19(s)/22(s) HoTT, do not forget to replace the "Module T-DATA" cable afterwards.

Initialization transmitter and receiver

10. Reset HoTT transmitter and receiver

a) HoTT RF module initialization in the transmitter

After the firmware update, the HoTT RF module **MUST** be reset to initialize it. Press and hold the BIND / RANGE button again while turning on the transmitter. Release the button, the transmitter is now initialized. Be sure to read the appropriate section in the HoTT RF module manual or in the transmitter manual.

 *If necessary, the failsafe and country settings must be repeated. Please read the instructions of the module / transmitter.*

b) Initializing a HoTT receiver

For safety reasons, an initialization must be performed before the receiver is used again. The ad at the end of the successful receiver update will alert you. Please also read the instructions of your HoTT receiver.

If necessary, switch off the associated HoTT transmitter beforehand.

When switching on the receiver, press and hold the SET button on the receiver. The green and red LEDs flash four times for about 3 s. Then both LEDs go off for just under 3 s, before only the red LED continues to flash. Now you can release the SET button.

On the other hand, with the HoTT receiver GR-12 (L), you release the button as soon as the red or green LED goes out.

In both cases, keep the SET button pressed for at least 3 seconds, as described in the popup window above.

If you subsequently switch on the transmitter again, the green receiver LED of the bound receiver lights up permanently approx. 2 to 3 seconds after the RF radiation has started.

With the receiver GR-12 (L) the LED goes off. If the receiver is still unbound, you can now "bind" it with a transmitter. For details, see the corresponding manual of the transmitter or HoTT RF module.

 *It is imperative that you check the operability of the updated HoTT device BEFORE restarting it!*

Error messages

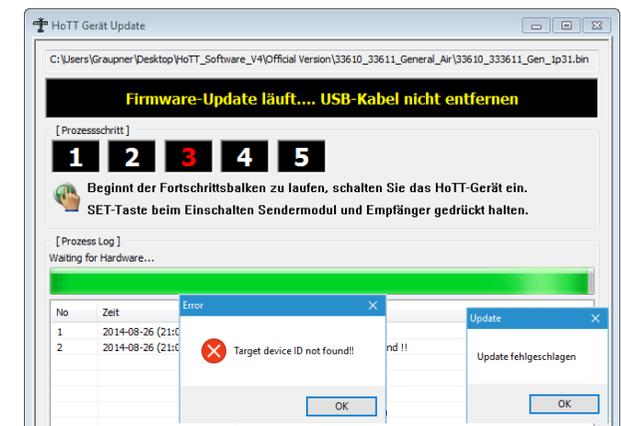
Error messages

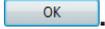
Open port failed

If an incorrect COM port has been assigned or the driver has not yet been installed, the error message "The connection to the device has failed. Incidentally, the Silicon Labs COM port is only recognized when the interface adapter No. 7168.6 is connected. If the USB port is not recognized repeatedly, disconnect the USB connection to the interface No. 7168.6 for a few seconds.

HoTT device not switched on in time or pressed the SET or BIND button when switching on the transmitter or receiver

The pop-up windows "Target device ID not found !!" and "Update failed" appear next to an error message in "[process step] 3 or 5":



Click on each popup window .

Firmware file older than already saved

If you have selected an older firmware than on the HoTT device, you will be notified before the update.

HoTT module, HoTT receiver, HoTT sensor, servo, speed controller

Error messages

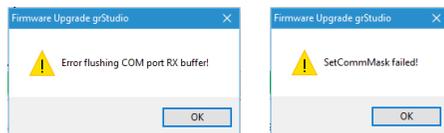
Click ("Yes") if you want to overwrite the existing firmware or otherwise ("No").



➤ USB connection between HoTT device and PC interrupted

The USB connection to the PC must not be interrupted during the update.

If the USB connection between the PC and the USB interface is interrupted, the error message "Error flushing COM port TX/RX buffer! – Update failed" or "SetCommMask failed!" appears.



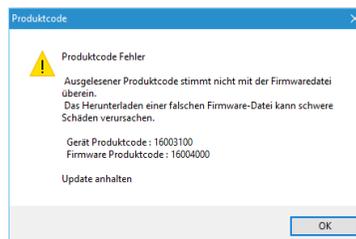
If necessary, click on the button until the progress bar has reached the right end.

If the connection between the USB interface and the HoTT device is interrupted, only the "Update failed" pop-up window opens in "[process step] 4". This can take a long time. Do not quit the update program prematurely. Check the connections and repeat the update process.

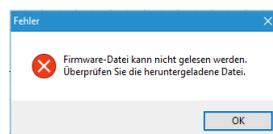


➤ Wrong file read

If you chose a file that does not fit the HoTT module, a pop-up window will notify you, either "product code error" ...



or "Firmware file cannot be read" ...



or "file load failed. Stop update" ...



... each with the note that the update failed.

Firmware update of a speed controller

Firmware update "Speed controller"

With this program, the two *Graupner* travel controllers Genius Race II 80R (No. 7156) or 120R (No. 7158) and future travel controllers can be updated.



ATTENTION:

- Please also read the instructions of your controller for additional information!
- Disconnect the speed controller from the receiver before an update,
- disconnect the connection to the motor,
- Never connect a receiver and the battery at the same time during an update and never reverse the connections. This can destroy the speed controller.

Suggested accessories:

- USB interface No. 7168.6 incl. USB cable,
- Interface cable No. 7168.S,
- Up to 2 Y cables No. 3936.11, see following description,
- Receiver battery (preferably with switch) or battery, see following descriptions.

General preparations

1. USB drivers installed?

Have you already installed the USB driver?
Otherwise read the section "Driver installation" on page 12.

2. Select COM port

Then select - if you have not already done so - the COM port (USB port on the PC) as described on page 17.

3. Start the "Speed controller" program

In the "Device" program group, start the "Speed controller" program. (Alternatively select in "menu" the related entry.)



4. Disconnect the speed controller

Disconnect the controller from the receiver, the power supply *and* a motor.

(a) Speed controller without telemetry (GENIUS Race II 80R and GENIUS Race 120R)

5. Connect the speed controller to the PC

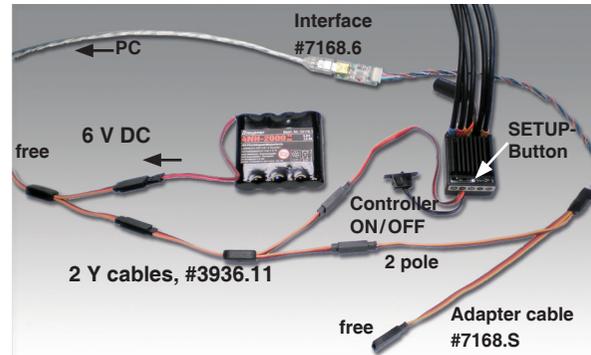
a) *Speed controller without telemetry* No. 7156/7158)

The following two configurations for updating can be used ...

1. ... using a receiver battery

Connect the adapter lead No.7168.6 to the USB interface and connect the usb cable to your PC. (The LED quits automatically after a period depending on the OS).

Now connect the two Y (or V) cables, as shown in the figure, and plug the connection cable of the speed controller into one socket and the 2-pin connector of the interface cable No. 7168.S in the second. The second Y-cable is needed for (later) connection of a receiver battery (preferably with additional switch).



The receiver battery is still not connected or the switch remains in the OFF position.

(Leave any switch on the controller in the OFF position during the entire update process.)

Continue reading from section 6.

2. ... using the model battery

Alternatively, use only **one** Y-cable as described below: Disconnect the 3-pin connection cable of the travel controller from the receiver. Then plug it into a socket of the Y cable, now plug the 2-pin end of the adapter cable No. 7168.S into the second socket of the Y cable with the USB interface. (The plug of the Y cable remains free). Now connect an operating battery (do not exceed the max. permissible operating voltage!) to the appropriate connections on the controller. However, do not yet switch on the controller by means of the ON/OFF switch on the controller. Thereto read the manual of your speed controller.

Continue reading from section 6.

b) *Speed controller with telemetry* (Marking in the type designation: "+ T")

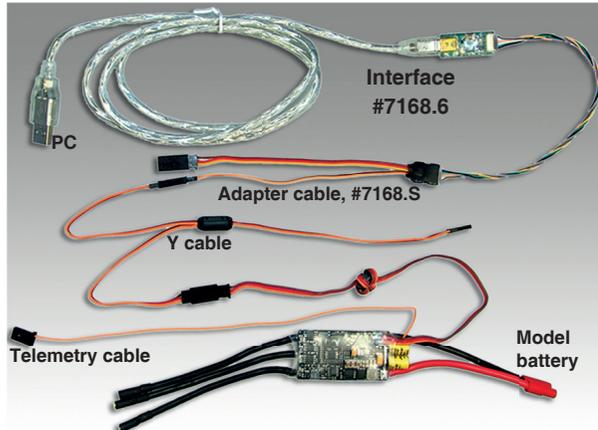
For an update, a model or a receiver battery is needed.

! Under **NO** circumstances connect both batteries at the same time.

For the speed controllers with separate 1-wire telemetry cable this connection remains free during the update, as the following figure shows:

HoTT module, HoTT receiver, HoTT sensor, servo, speed controller

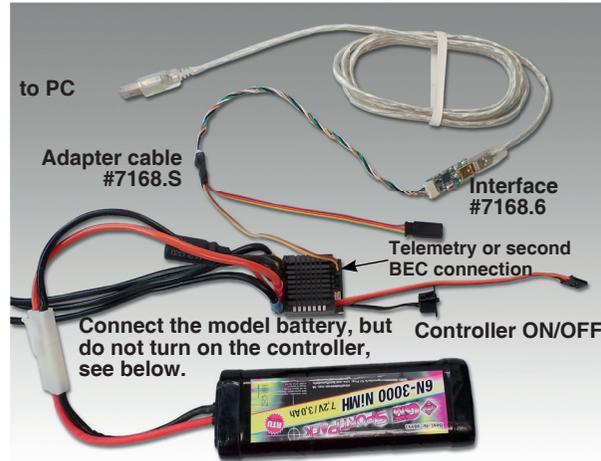
(b) Speed controller with telemetra (" +T")



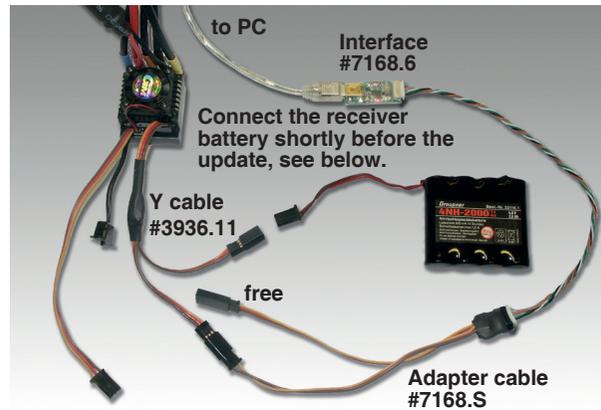
Connect the components as shown above. (The Y cable is needed because it has two sockets.)

For speed controls with separate telemetry socket, such as No. 97170 or 97171, and with speed controllers with two BEC sockets (eg BRUSHLESS CONTROL+T 60 - 160, HV) disconnect the power supply, motor and receiver first. Then connect the 2-pin end of the adapter cable No. 7168.S with the telemetry socket or with the second BEC socket (called SLAVE connection) of the speed controller.

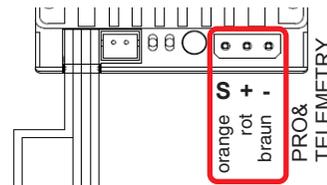
A Y cable is not required with these controllers.



If you do not have a model battery, connect a receiver battery using a Y cable immediately before the update as shown below.



Connection Y cable to "S + -"



Possibilities for a firmware update

6. Firmware loading

You now have two ways of loading the firmware file:

A) "Automatically load"

In this case, the * .bin file matching the charger is automatically downloaded when the internet connection is active.

Automatisch laden

- Update files downloaded via the Internet are always stored in an automatically generated subdirectory named "FTP_Download" in the firmware upgrade grStudio main directory, so that you can repeat the update manually at a later time, if necessary, via "Open file".

B) "Open file"

After clicking on the "Open File" button, search for the (current) firmware file in the opening program window, for example "3G_CAR_TB_2a90.bin" for the speed controller "Genius Race II 80R".

Datei öffnen

Files for controllers without telemetry may be found in the download area of the corresponding product, otherwise as described on page. 10. Put this file in a directory suitable for you.

Firmware update via Internet

to A) Firmware update via "Automatically load"

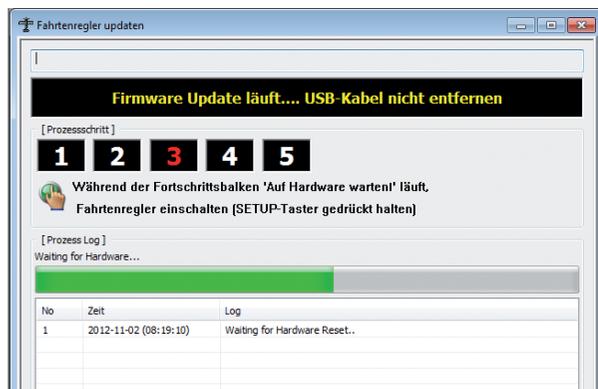
Follow steps 1 to 6 previously. It continues with ...

7. Update automatic download

With the internet connection active, press the "Auto-load" button  in "[process step] 1".



The flashing digit changes to "[Process step] 3". Wait until the progress bar has started ...



Follow the description below for ...

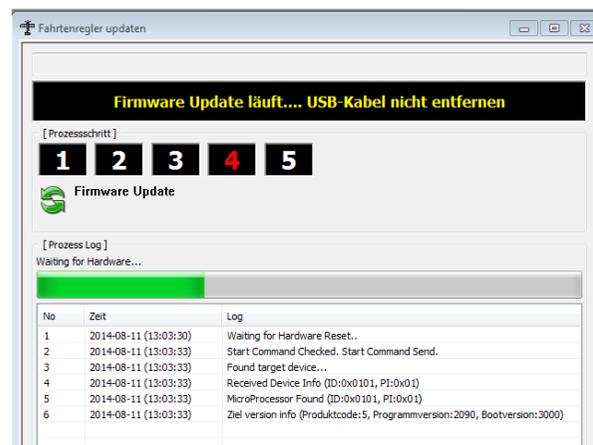
"(a) Speed controller without telemetry" or
"(b) Speed controller with telemetry".

Auto update speed controller without telemetry (GENIUS Race II 80R and GENIUS Race 120R)

a) Speed controller without telemetry No. 7156/7158)

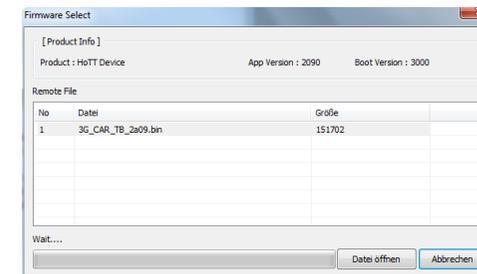
With receiver battery: Now press and hold the speed controller SETUP button while connecting the receiver battery to the second jack of the Y cable. Now you can release the SET button. (An ON / OFF switch on the receiver battery facilitates "finger acrobatics.")

With model battery: If you have connected a model battery instead of a receiver battery, press the SETUP button while turning on the switch on the controller.



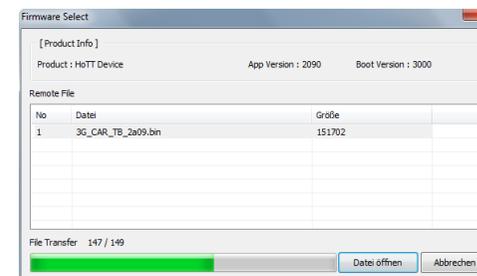
The progress bar remains after detection of the speed controller. In the last, the sixth line, the currently stored firmware version of the connected speed controller is read out. In the example shown, it is "Version 2090" of the speed controller "GENIUS Race 80R".

Depending on the speed of the connection, it will take some time for another window, "Firmware Select", to open. This list contains the current firmware version of the respective speed controller.



(The identifier "2a90" stands for the version number "Ver: 2090", so that in this case the process could also be aborted.)

Click on the firmware file and then on the "Open File" button . The file is first downloaded from the Internet - recognizable by the progressing bar.



(Although you have enough time to select the file, if you do not choose to do so, the update process stops and needs to be repeated.)

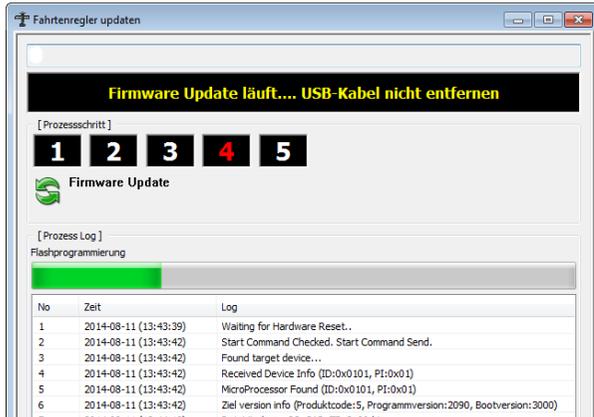
 With faulty Internet connection appears after absolutely only 1 ... 2 min the "Firmware Select" window. This does not contain any firmware files. But do not close the program until this (empty) window is visible. A premature attempt to terminate the program may cause the program to "hang up".

If the process does not stop automatically after a certain time, close the program via the Windows® task manager.

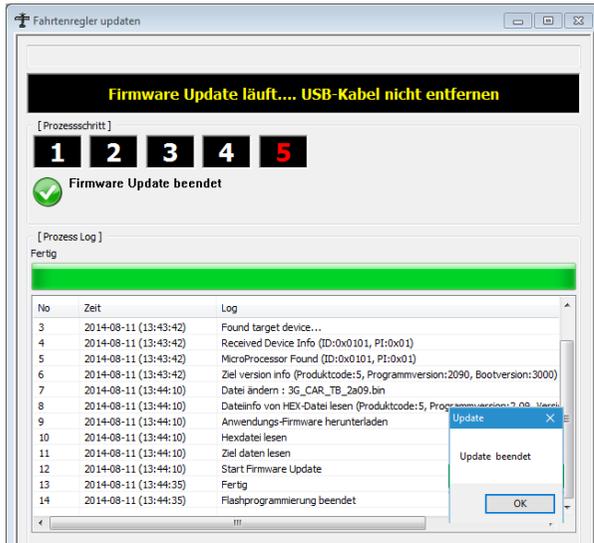
HoTT module, HoTT receiver, HoTT sensor, speed controller

Auto update speed controller without telemetry

Proper data transfer to the cruise control displays a progress bar in "[process step] 4" ...



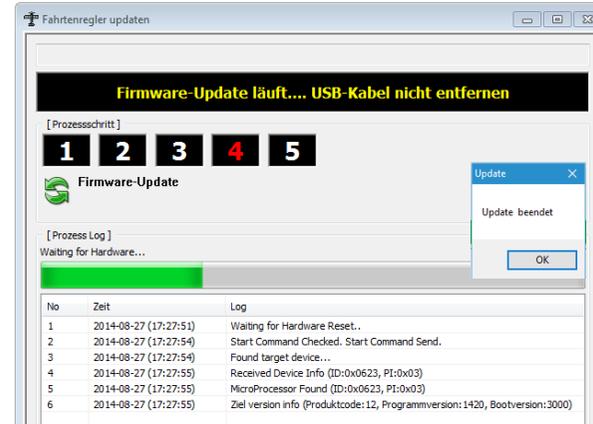
... at the end, "[process step] 5" is followed by confirmation of the transmission with the text line "Flashprogramming completed" in the table as well as a pop-up window "Update completed", which you can close through .



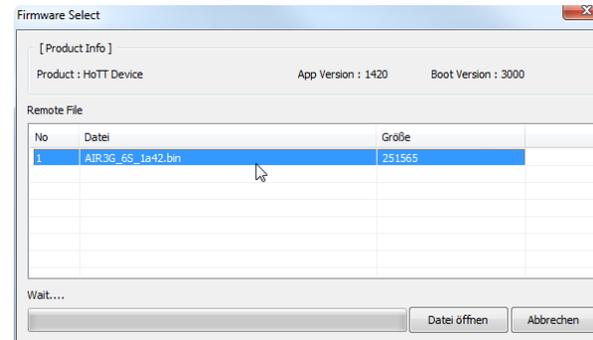
Auto update speed controller with telemetry (" +T")

b) Speed controller with telemetry

In "[process step] 3" with the model battery connected, switch on the controller via the ON / OFF switch or connect the receiver battery. The flashing digit changes to "[Process step] 4":



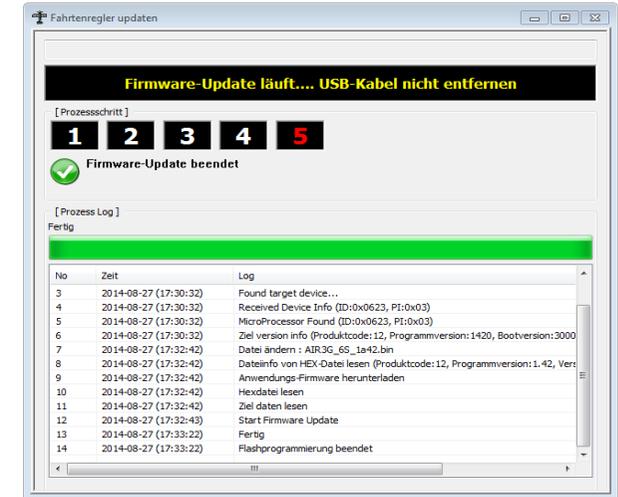
Continue as described above by selecting the file from the "Firmware Select" window and clicking the button to download the file. In the example: Update file for the speed controller "Brushless Control +T 35".



Then the file is transferred to the speed controller and the successful transmission is

Factory reset

displayed in "[process step] 5":



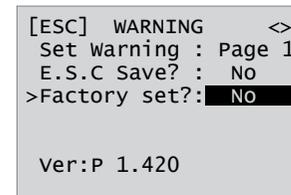
8. Interrupt USB connection

Switch off the controller and interrupt the USB connection to the PC.

⚠ Make absolutely sure BEFORE restarting in a model, that the speed controller is working properly!

9. Factory reset

After an update, the speed controller must be reset to the factory settings in individual cases. This affects the "Brushless Control + T" controller. There is a point in the "Telemetry" menu of the transmitter on the "WARNING" page: "Factory Set ?:" (factory reset):



This must be set to "Yes" after an update. Please read the instructions of the corresponding transmitter and speed controller.

Error messages

Error messages

If the update process does not start or if it aborts, repeat the procedure. Note any error messages that appear.

Open port failed

If an incorrect COM port has been assigned or the driver has not yet been installed, the error message "Open port failed". Incidentally, the Silicon Labs COM port is only recognized when the interface adapter No. 7168.6 is connected. If the USB port is not recognized repeatedly, disconnect the USB connection to the interface No. 7168.6 for a few seconds.



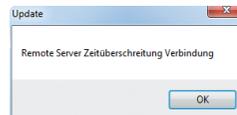
Missing server connection at autom. update

If the server connection does not work, the pop-up window will appear. A firewall may prevent the connection. Deactivate them temporarily - then reactivate them.



Timeout with automatic update

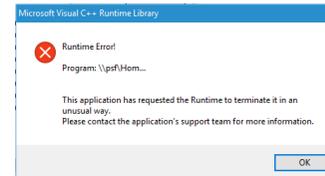
While you have plenty of time to select files during an automatic update, if you wait too long to make the decision, the update process will stop and must be repeated. A firewall may also prevent the connection, see above.



"Open file" interrupted on update via Internet

If you terminate the procedure (accidentally) after selecting and downloading the firmware file via the button (OK), a "runtime" error appears.

Before rebooting, disconnect the mini USB socket from the interface for a few seconds otherwise the port will not be recognized.



A speed controller not switched on in time or switched on without pushing the SETUP button

The pop-up windows "Target device ID not found !!" appear in "[process step] 3".



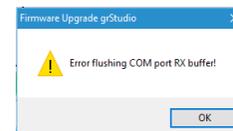
The display changes after clicking on "[process step] 5" with the error message "Update failed". Click here too on and repeat the process.



USB connection between speed controller and PC interrupted

The USB connection to the PC must not be interrupted during the update.

If the USB connection between the PC and the USB interface is interrupted, the error message "Error flushing COM port RX/TX buffer! - Update failed" appears. If the connection between the USB interface and the HoTT device is interrupted, only the "Update failed" pop-up window will open.



Click on each message . Check the connections and repeat the update process.



Manual update of a speed controller

to B) Firmware update via "Open file".

As an alternative to the update method described above, select the update file from the hard disk of the PC.

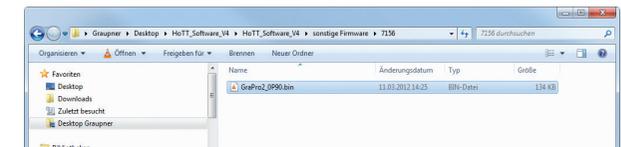
 Files for controllers *without* telemetry may be found in the download area of the corresponding product, otherwise as described on page. 10. Put this file in a directory suitable for you.

Follow steps 1 to 6 previously. It continues with ...

7. Open file



To do this, click on the button ("Open file") and in the opening "Open file" dialog, search for the firmware update file with the extension ".bin" on your PC that matches the speed controller - eg "3G_CAR_TB_2a90.bin" for the speed controller "GENIUS Race 80R" in the directory "... HoTT_Software_V4 / other firmware / 7156" created here as an example:



 Bin files with the identifier "QUAD" in the file name are specially designed for quadcopter use.

8. Switch on the speed controller

As soon as you have selected the correct *.bin file and clicked on (Open), the flashing digit changes to "[process step] 3".

HoTT module, HoTT receiver, HoTT sensor, servo, speed controller

a) Speed controller without telemetry

a) *Speed controller without telemetry* No. 7156/7158)

Now press and hold the speed controller SET-UP button while connecting the power supply (receiver battery 4.8 ... 6.0 V DC) to the second socket of the Y cable. Now you can release the SET button. (An ON / OFF switch on the receiver battery facilitates "finger acrobatics.")

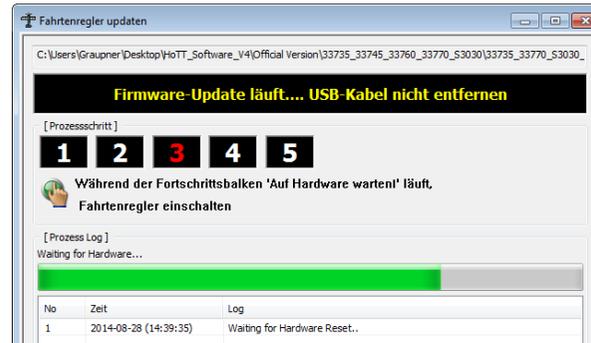
If you have connected a model battery instead of a receiver battery, press the SETUP button while turning on the switch on the controller. For details, see section (5.).

b) Speed controller with telemetry (" + T")

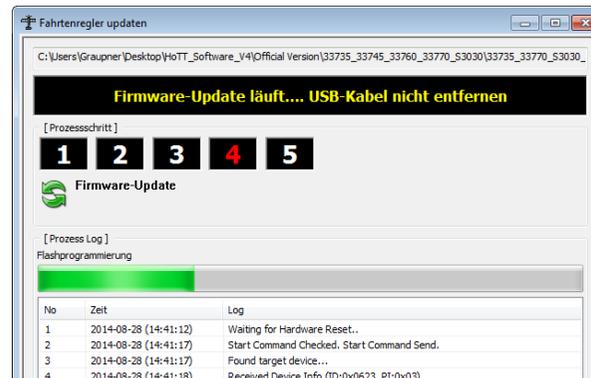
b) *Speed controller with telemetry (identifier: " + T")*

Since these speed controllers do not have a SETUP key, you only need to connect the battery in "[process step] 3".

Regardless of whether a speed controller without or with telemetry is updated, it continues with ...

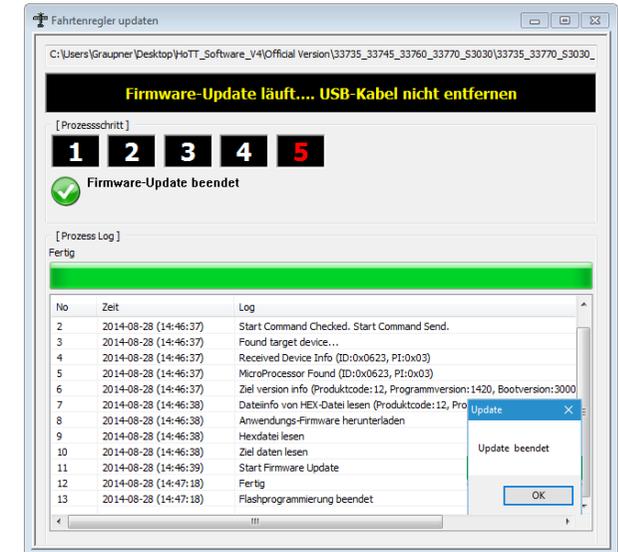


Flashing digit changes to "[Process step] 4". Make sure that the USB connection between the speed controller and the PC is not interrupted. After recognition of the speed controller, the currently stored firmware version of the connected speed controller is output in line 6. In the example shown, it is "Version 1420" of the speed controller "Brushless Control + T 35".



Proper data transfer to the cruise control are displayed by the progress bar.

When it reaches the end, "[process step] 5" is followed by confirmation of the transmission with the text line "Flash Programming Complete" in the table and the pop-up window "Update Complete".



9. Connection interruption

Switch off the controller and interrupt the USB connection to the PC..

! Make absolutely sure BEFORE restarting in a model, that the speed controller is working properly!

Factory reset

10. Factory reset

After an update, the speed controller must be reset to the factory settings in individual cases. This affects the "Brushless Control + T" controller. There is a point in the "Telemetry" menu of the transmitter on the "WARNING" page: "Factory Set ?:" (factory reset):

```
[ESC] WARNING <>
Set Warning : Page 1
E.S.C Save? : No
>Factory set?: No

Ver:P 1.420
```

This must be set to "Yes" after an update. Please read the instructions of the corresponding transmitter and speed controller.

Error messages

Error messages

If the update process does not start or if it aborts, repeat the procedure. Note any error messages that appear.

Open port failed

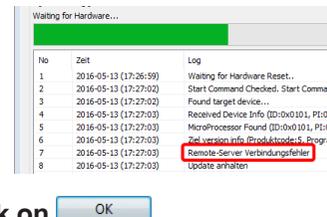
If an incorrect COM port has been assigned or the driver has not yet been installed, the error message "The connection to the device has failed."



Incidentally, the Silicon Labs COM port is only detected if the interface distributor No. 7186.6 is connected. If the USB port is not recognized repeatedly, disconnect the USB connection to the interface for a few seconds.

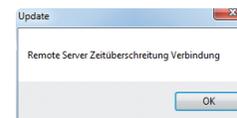
Missing server connection at autom. update

If the server connection does not work, the list entry "Remote server connection error" and the "Update failed" pop-up appear. Click on



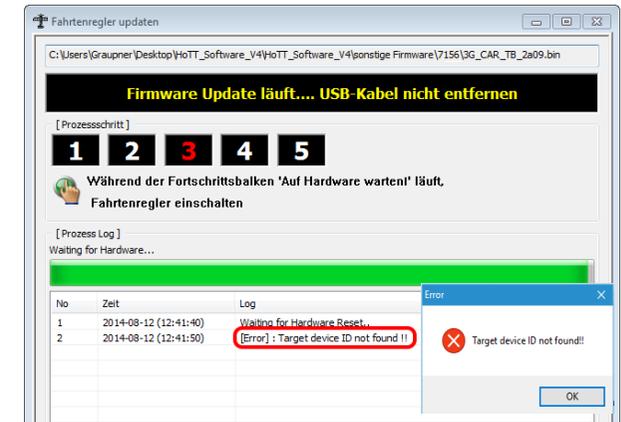
Timeout with automatic update

While you have plenty of time to select files but if you wait too long to make the decision, the update process will stop and must be repeated. A firewall may also prevent the connection, see above.

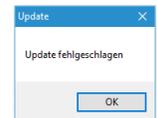


A speed controller not switched on in time and/or switched on without pushing the eventually provided SETUP button

The pop-up windows "Target device ID not found !!" appear in "[process step] 3". Click on

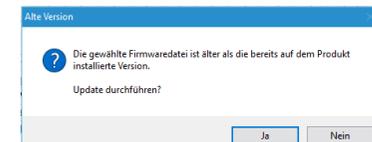


The display changes to "[process step] 5" with the error message "Update failed". Click on each pop-up window



Firmware file older than the already existing firmware

If you have selected an older firmware than on the speed controller, you will be notified before the update. Click ("Yes") if you want to overwrite the existing firmware on the HoTT device or otherwise ("No").



USB connection to the PC disturbed

The USB connection to the PC must not be interrupted during the update.

If the USB connection is interrupted, the error message "Error flushing



HoTT module, HoTT receiver, HoTT sensor, servo, speed controller

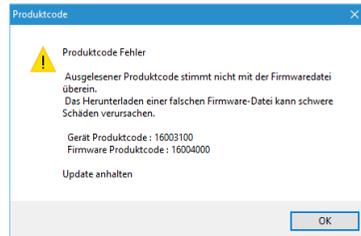
Error messages

COM port RX/TX buffer! - Update failed" appears. The display changes after clicking on  "[process step] 5" with the error message "Update failed". Check the connections and repeat the update process.

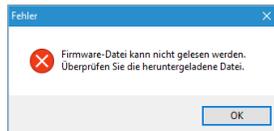
Wrong file read

The firmware files are product-specific coded, if you accidentally select a non-product related file, the program responds with one of the following error messages ...

- "Product code error"



- "Firmware file can not be read"



- "Wrong firmware file"



... in each case with the following note in "[process step] 5" that the update has failed.

BUS firmware update

BUS firmware update

BUS firmware update

Use this program to update HoTT components with a BUS system, such as the GPS sensor, No. S8437. Other components will follow.



ATTENTION:

- ▶ Please also read the related instructions for additional information!
- ▶ Disconnect an up-to-date component from the receiver.

Suggested accessories:

- USB interface HoTT / GM-Genius incl. USB cable (USB-A to mini-B-USB, 5-pin), No. 7168
- Adapter cable, No. 7168.6, to USB interface HoTT / GM-Genius.



Future BUS systems may require additional accessories. Read the corresponding product manual.

General preparations

1. USB drivers installed?

Have you already installed the USB driver? Otherwise read the section "Driver installation" on page 12.

2. Select COM port

Then select - if you have not already done so - the COM port (USB port on the PC) as described on page 17.

3. Preparation: Connect interface distributor with PC

Connect the USB cable incl. USB interface, the included 5-core cable and interface cable No. 7168.S to the computer. When properly connected, an LED on the interface board should light up red, which may turn off after a few seconds, depending on the operating system. But do not connect the HoTT device to the interface yet.

4. Start the "BUS firmware update" program

Start the program "BUS firmware update" in the program group "Device". (Alternatively select in "menu" the related entry.)



Possibilities of a firmware update

Firmware loading

You now have two ways of loading the firmware file:

A) "Automatically load"

In this case, the * .bin file matching the BUS system is automatically downloaded when the internet connection is active.



Update files downloaded via the Internet are always stored in an automatically generated subdirectory named "FTP_Download" in the firmware upgrade grStudio main directory (Local Disk (C :) • Programs (x86) • Graupner • grStudio • FTP_Download) so that you can if necessary, you can repeat the update manually later, ie via "File open".

B) "Open file"

If you have downloaded the "HoTT_Software_VX" file or the update file for the product yourself and saved it on a hard disk as described above, you can also load the required * .bin file from the corresponding subdirectory.



BUS firmware update

Firmware update on Internet

to A) Firmware update via "Automatically load"

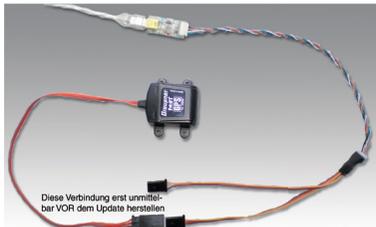
(1 ... 4 see above.)

5. Update on Internet

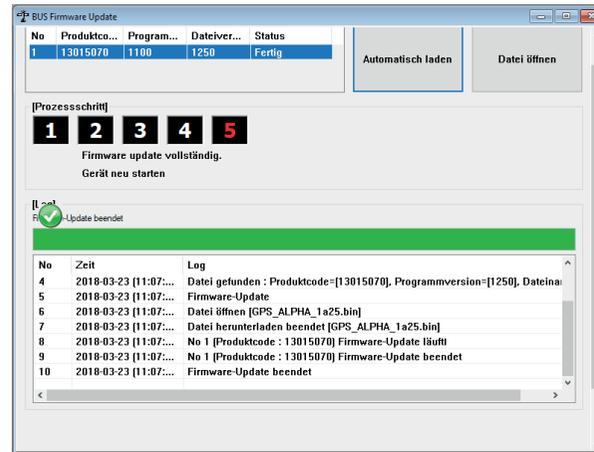


While the Internet connection is active, press the *Auto-load* button.

The flashing digit changes to "[Process step] 2". Wait until the progress bar has started and then connect the device via the adapter cable, No. 7168.6, with the USB_ interfaces distributor:



If the device is detected, the flashing display changes to "[process step 3]" to download the corresponding firmware file in the network. Immediately afterwards, in "[process step] 4", the updating begins. The version number is listed in the table under "File open [...].bin", here eg "1a25" for the GPS sensor. Do not interrupt the update process. After successful transfer, "[process step] 5" indicates the end of the transfer in the last line of the table with "firmware update completed":



No	Zeit	Log
4	2018-03-23 (11:07:...	Datei gefunden : Produktcode=[13015070], Programmversion=[1250], Dateina...
5	2018-03-23 (11:07:...	Firmware-Update
6	2018-03-23 (11:07:...	Datei öffnen [GPS_ALPHA_1a25.bin]
7	2018-03-23 (11:07:...	Datei herunterladen beendet [GPS_ALPHA_1a25.bin]
8	2018-03-23 (11:07:...	No 1 (Produktcode : 13015070) Firmware-Update läuft
9	2018-03-23 (11:07:...	No 1 (Produktcode : 13015070) Firmware-Update beendet
10	2018-03-23 (11:07:...	Firmware-Update beendet

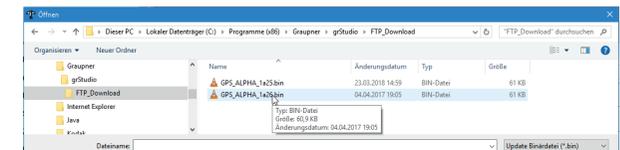
Manual update

to B) Firmware update via "Open file".

As an alternative to the update method described above, select the update file that you have previously downloaded from the www.graupner.de website under the corresponding product to your PC or after an automatic update, see above, already in the FTP subfolder of the grStudio program. Follow steps 1 ... 4 previously.

1. Open file

To do this, click on the button ("open file") and look in the following window for the appropriate firmware update file with the extension ".bin":



2. Power on the device

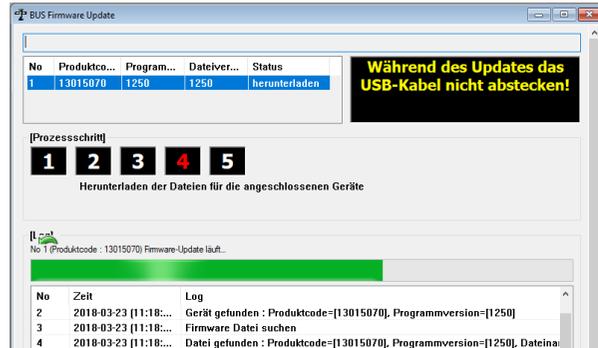
As soon as you have selected the correct *.bin file and clicked on "Öffnen", the flashing digit changes to "[process step] 2": "Find device".



While the progress bar is starting, connect the device via the adapter cable, No. 7168.6, with the USB interface.

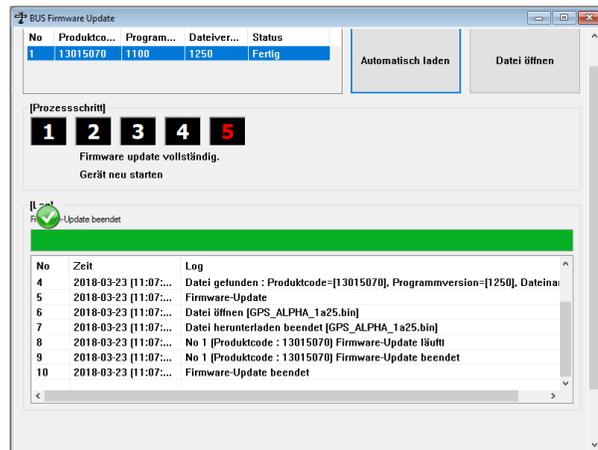
Manual update

As before, the display changes to "[process step] 4", the firmware is transferred.



 Make sure that the USB connection between the device and the PC is not interrupted.

The proper data transmission is indicated by a progress bar. When it reaches the end, "[process step] 5" is followed by a confirmation of the transmission with the text line "Firmware update completed".



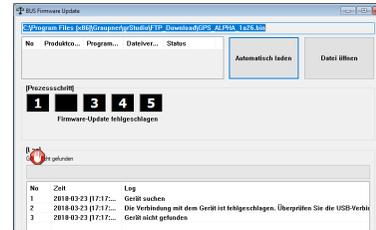
Error messages

Error messages

If the update process does not start or if it aborts, repeat the procedure. Note any error messages that appear.

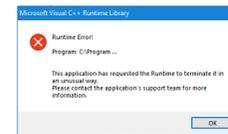
Open port failed

If no or an incorrect COM port has been assigned or the driver has not yet been installed, the error message



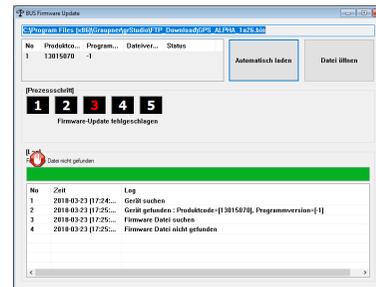
"Device not found".

In these cases, close the program and restart it (possibly also the grStudio program).



Missing server connection at autom. update

If the server connection does not work, the list item "Firmware file not found" appears in "[process step] 3". Check the internet connection and restart the program.

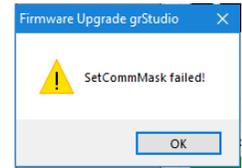


Interruption of connection device - interface

If the connection to the device is interrupted in "[process step] 4", the list entry "Firmware update failed". Restart the "BUS firmware update" program

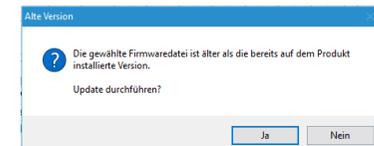
Interruption USB connection - Interface

In this case, the adjacent message appears. Check the connection and restart the program "BUS firmware update".



Firmware file older than the already existing firmware

If you have selected an older firmware than on the speed controller, you will be notified before the update. Click ("Yes") if you want to overwrite the existing firmware on the HoTT device or otherwise ("No").



USB connection to the PC disturbed

The USB connection to the PC must not be interrupted during the update.

If the USB connection is interrupted, the error message "Error flushing COM port RX/TX buffer! - Update failed" appears. The display changes after clicking on "[process step] 5" with the error message "Update failed". Check the connections and repeat the update process.

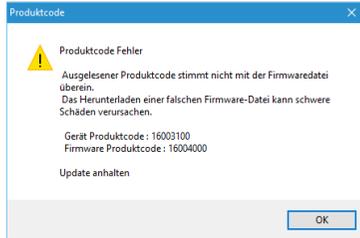


Wrong file read

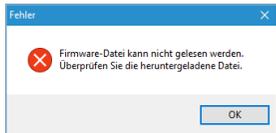
The firmware files are product-specific coded, if you accidentally select a non-product related file, the program responds with one of the following error messages ... - "Product code error"

BUS firmware update

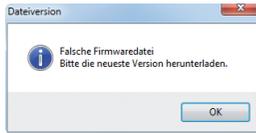
Error messages



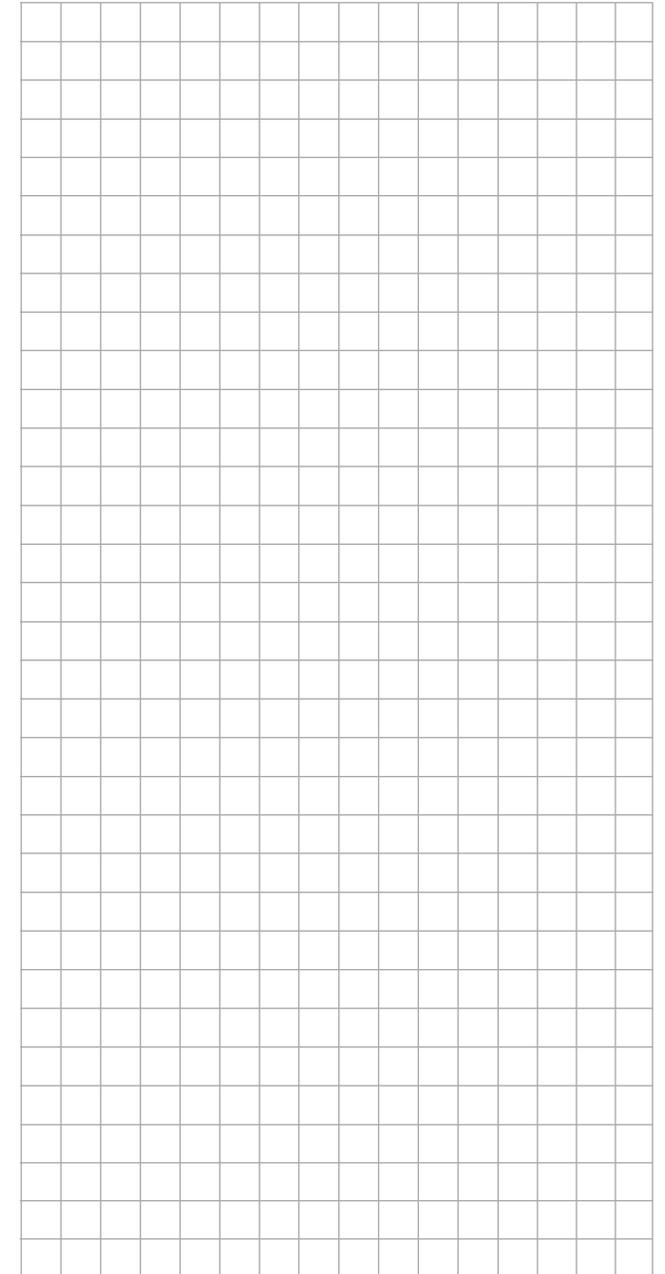
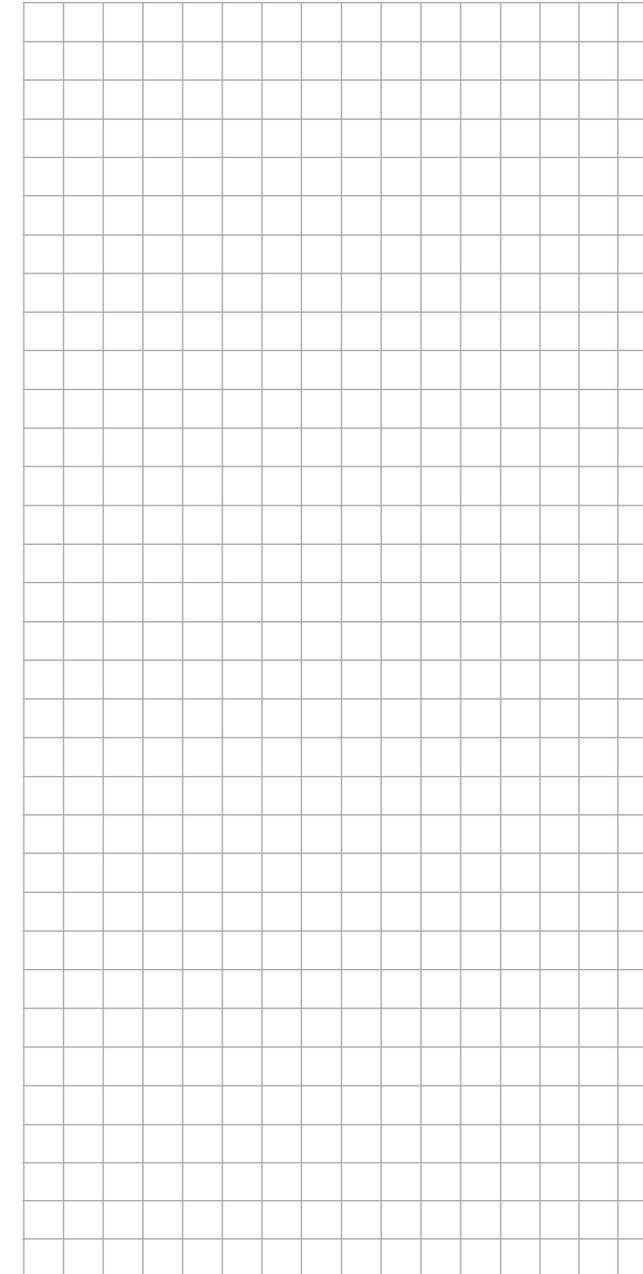
- "Firmware file can not be read"

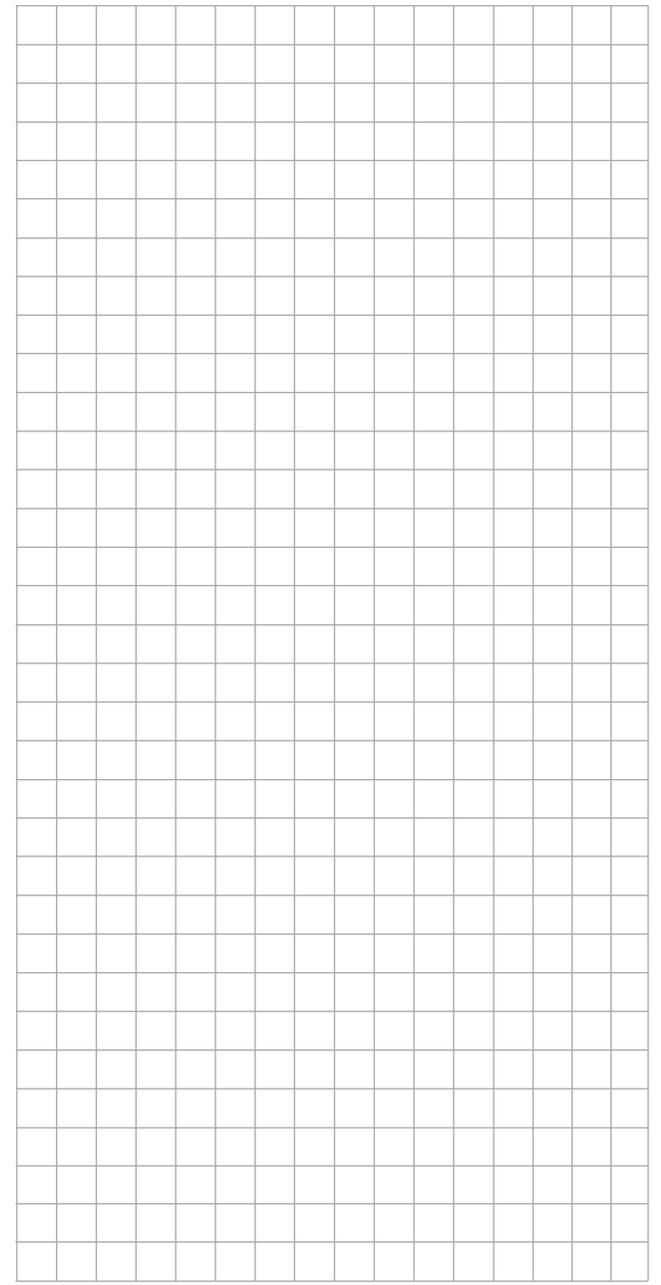
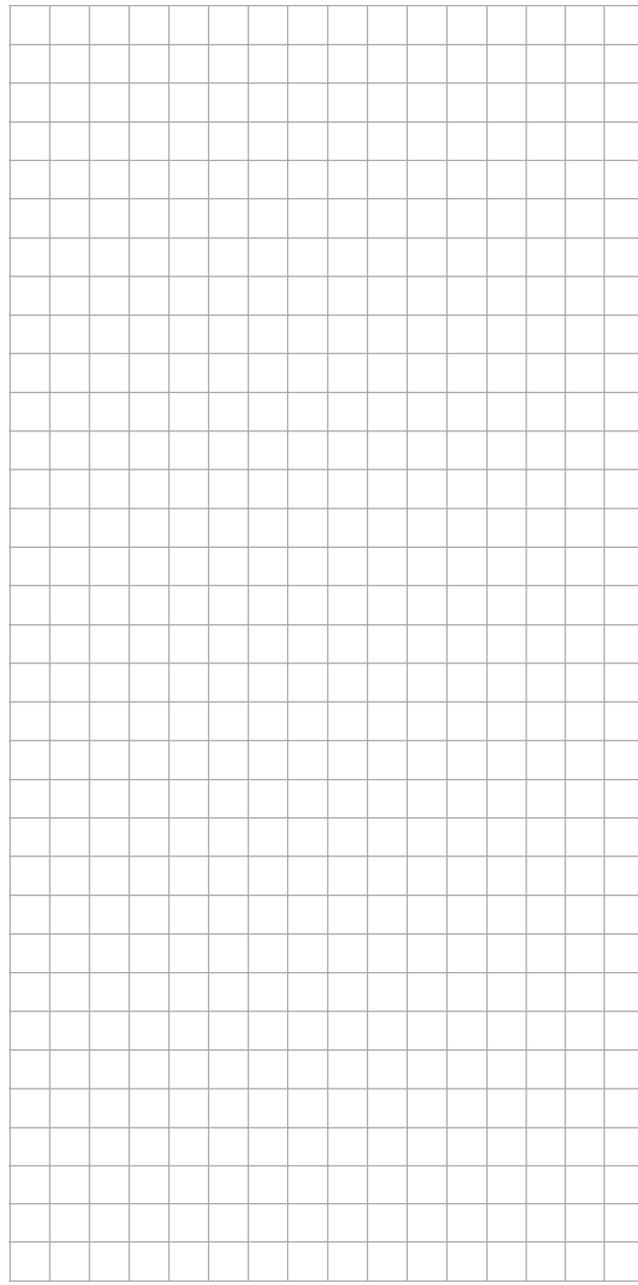
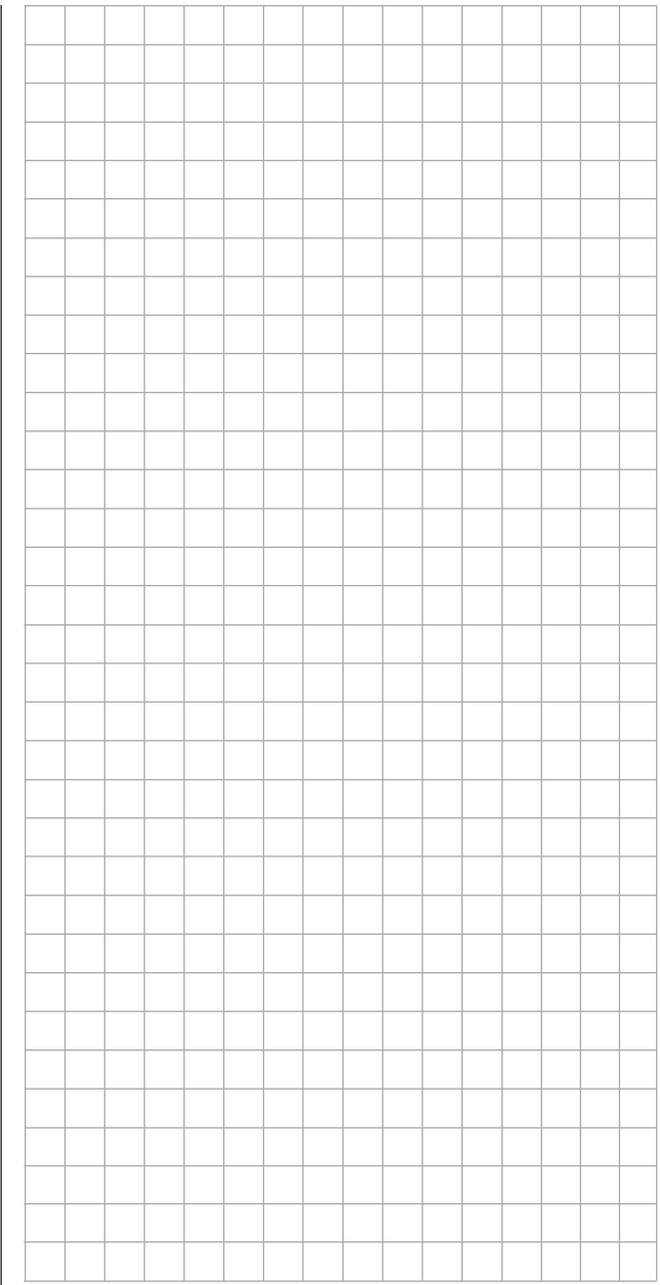


- "Wrong firmware file"



... in each case with the following note in "[process step] 5" that the update has failed.





3 Program group "Charger"

Charger updates of the series ULTRAMAT and POLARON

Program group "Charger"

Program group "Charger"

In this program group you can perform firmware updates of the charger series "ULTRAMAT" and "POLARON".

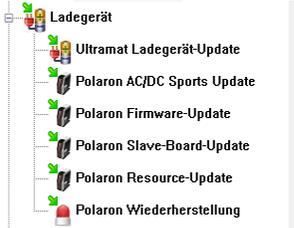
Please observe the respective instructions as to whether the device is updateable.

A wireless update via a Bluetooth® module is not possible.

First, the description of an update of the ULTRAMAT chargers. This is followed by a description of the POLARON update programs.

 Firmware files for chargers can be found at www.graupner.de for the respective product.

 Observe the safety instructions in the instructions for the chargers when handling (rechargeable) batteries.



Update of an ULTRAMAT charger

Firmware update "ULTRAMAT charger"

This section describes the update program for Graupner ULTRAMAT series chargers:

ULTRAMAT 16S No. 6468
ULTRA DUO PLUS 45, No. 6475
ULTRA DUO PLUS 60, No. 6478
ULTRA DUO PLUS 80, No. 6480

(For older (or even more recent) models, refer to the instructions.)

The update programs for POLARON series chargers are described below, see from page 81.

 Please also read the instructions of your charger to see if the charger is updateable. If necessary, you will also find additional information there.

Suggested accessories

- Depending on the device type, only one USB cable (PC-USB / Mini-USB) is required for the update,
- For some ULTRAMAT chargers also the interface adapter cable No. 6466.S, which is used instead of the adapter cable No. 7168.S to connect the USB interface No. 7168.6. Pay attention to the accompanying instructions.

General preparations

1. USB drivers installed?

Have you already installed the USB driver, otherwise see page 12?

When connecting the USB cable on one side to the PC and on the other side to the interface distributor No. 7168.6, an LED on the interface board should be red. (Depending on the operating system, this will disappear after some time.)

Once the USB cable is connected directly to the charger, the interface is automatically detected when the device is turned off. (If not, turn on the charger once and then turn it off again.)

2. Select COM port

Then select - if you have not already done so - the COM port (USB port on the PC) as described on page 17.

3. Start "ULTRAMAT charger" program

Start the "ULTRAMAT charger" program in the program group "Charger". (Alternatively select in "menu" the related entry.)



- #### 4. To connect an update-ready charger to a PC
- Connect the charger directly to the PC via the USB cable if the charger has a mini USB port. Otherwise, the interface adapter No. 7168.6 is required in conjunction with the adapter cable

Charger updates of the series ULTRAMAT

General preparations

No. 6466.S. Please read the instructions of your charger.

 **Make sure that the charger is switched off - if necessary Disconnect the mains plug or switch off the power supply and wait until the display goes out.**

Possibilities of a firmware update

5. Firmware download

You now have two ways of loading the firmware file:

A) "Automatically load"

In this case, the *.bin file matching the charger is automatically downloaded when the internet connection is active.

Automatisch laden

 Update files downloaded via the Internet are always stored in an automatically generated subdirectory named "FTP_Download" in the firmware upgrade grStudio main directory, so that you can repeat the update manually at a later time, if necessary, via "Open file".

B) "Open file"

After clicking on the "Open File" button, search for the (current) firmware file in the opening program window, for example "ultra18_2a30_120119.bin" for the charger "Ultramat 18".

Datei öffnen

 Since these files are not HoTT firmware, you must first download them from the download area of the respective charger separate from the other HoTT firmware versions at www.graupner.de. Put the file in a directory suitable for you.

 **During an update, the USB connection must never be interrupted. A break may damage the device.**

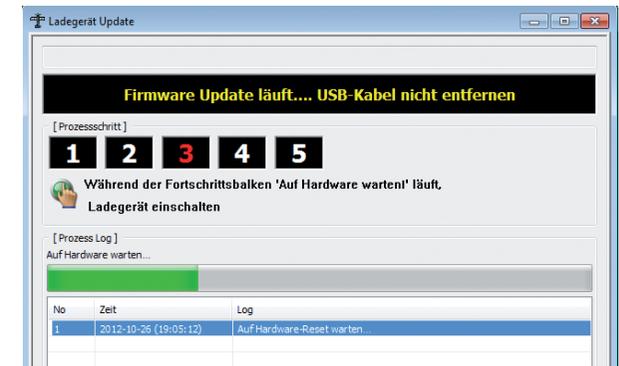
Update ULTRAMAT charger via Internet

to A) Firmware update via "Automatically load"

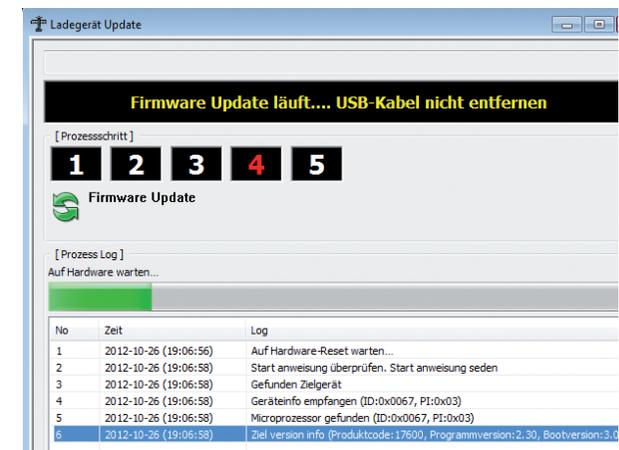
Follow steps 1 to 5 previously. It continues with ...

6. Update automatic download

 **Make sure that the charger is switched off!** While the Internet connection is active, press the "Auto load" button . The flashing digit changes to "[Process step] 3". Wait for the progress bar to start, then turn on the charger:



The flashing digit changes to "[Process step] 4".

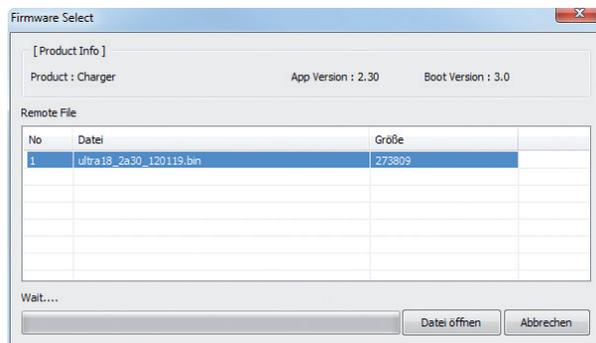


The progress bar stays in place.

Charger updates of the series ULTRAMAT

Firmware update of an ULTRAMAT charger via Internet

In line 6, the currently stored firmware version of the connected charger is read out. In the example shown it is "Version 2.30" of the charger ULTRAMAT 18.

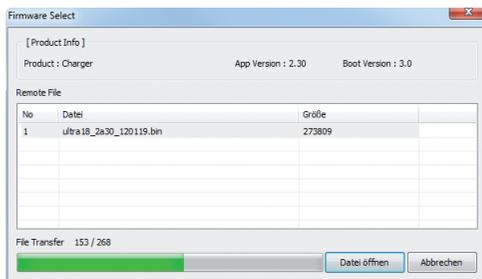


Depending on the speed of the connection, it will take some time for another window, "Firmware Select", to open. This list contains the current firmware version of the respective charger.

(The identifier "2a30" stands for the version number "Ver: 2.30", so that in this case the process could also be aborted.)

Click on the firmware file and then on the "Open File" button .

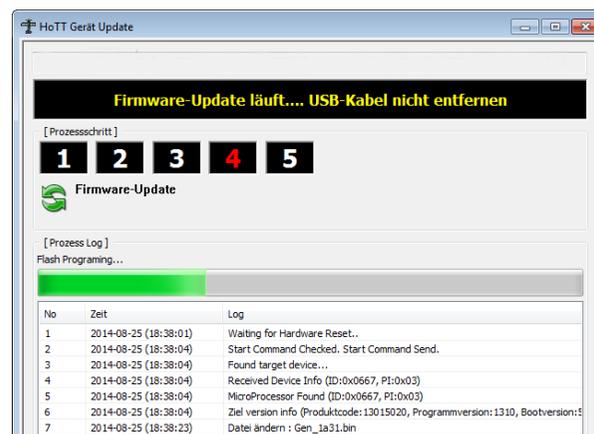
The file is first downloaded from the Internet - recognizable by the progressing bar.



(Although you have enough time to select the file, if you do not choose to do so, the update process stops and needs to be repeated.)

 With faulty Internet connection appears after absolutely only 1 ... 2 min the "Firmware Select" window. This does not contain any firmware files. But do not close the program until this (empty) window is visible. A premature attempt to terminate the program may cause the program to "hang up". If the process does not stop automatically after a certain time, close the program via the Windows® task manager.

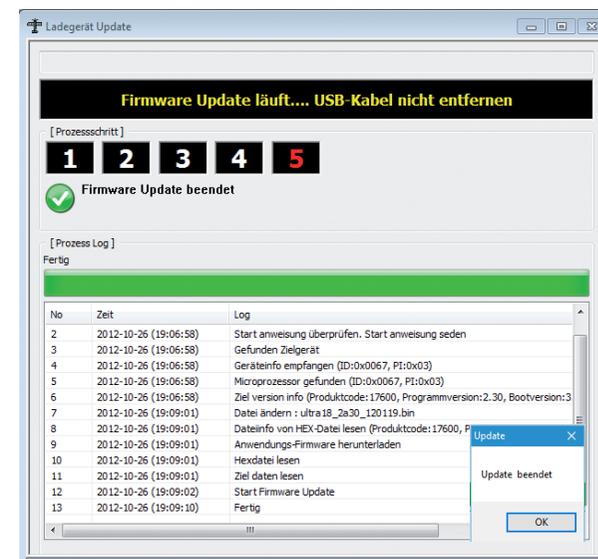
Proper data transfer to the charger is displayed by a progress bar in "[process step] 4"



... at the end, "[process step] 5" is followed by confirmation of the transmission with the text line "Ready" in the table as well as a pop-up window "Update completed", which you can close through .

For the ULTRAMAT 18 charger listed here by way of example, the current version number appears on the display of the charger at the end of the transmission.

Initialization



7. Interrupt USB connection

Switch off the charger and interrupt the USB connection to the PC.

8. Initialization

The chargers partially require an initialization. Please read the instructions of the product.

ULTRAMAT error messages

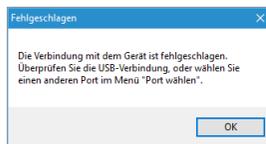
Error messages

If the update process does not start or if it aborts, repeat the procedure. Note any error messages that appear.

If you repeat the update after an error message and the transfer still does not start, you may need to wait up to 1 min before turning the charger back on or plugging the power into the socket.

Missing USB connection

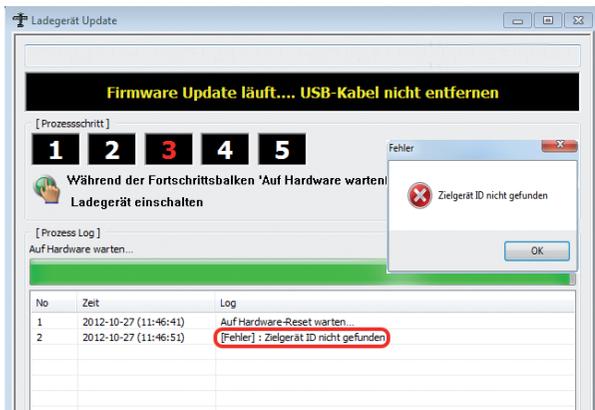
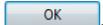
"Failed to connect to the device" is the error message if you did not connect the USB cable to the charger



even if the charger is turned off. If the error occurs despite the existing USB connection, switch off the charger that may have been switched on and disconnect the USB connection for a few seconds before repeating the procedure.

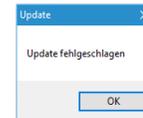
Charger not switched on in time

The pop-up windows "Target device ID not found !!" appear in "[process step] 3". Click on



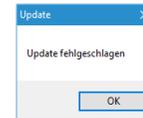
The display changes to "[process step] 5" with the error message "Update failed".

Click here too on  and repeat the update process.



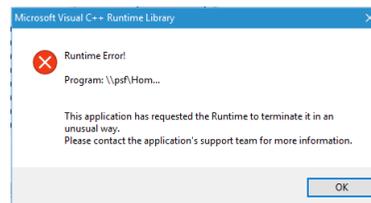
Waited too long with *.bin file selection when updating via Internet

If you are "distracted" in file selection and wait too long, the program will be "impatient" and you must repeat the process.



"Open file" interrupted on update via Internet

If you terminate the procedure  (accidentally) after selecting the firmware file via the button , a "runtime" error appears.

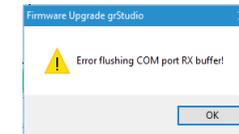


Before rebooting, turn off the charger and disconnect the mini-USB port from the interface for a few seconds, otherwise the USB port may not be detected.

USB connection between charger and PC interrupted

 The USB connection to the PC must not be interrupted during the update.

If the USB connection is interrupted, the error message "Error flushing COM port RX/TX buffer! - Update failed" appears. ..."



The display changes after clicking on  "[process step] 5" with the error message "Update failed" ...



Check the connections and repeat the update process.

Charger updates of the series ULTRAMAT

Manual update of an ULTRAMAT charger

to B) Firmware update via "Open file".

As an alternative to the update method described above, select the update file that you downloaded from the Internet page www.graupner.de under the corresponding product to your PC. (The firmware files can not be found in the HoTT download package because the chargers are not HoTT products.)

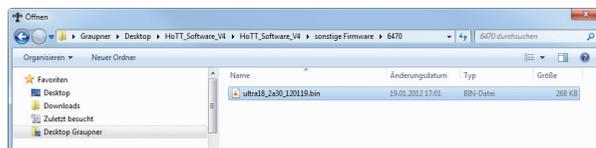


The charger must still be switched off!



1. Open file

To do this, click on the button ("Open file") and in the opening "Open file" dialog, search for the firmware update file with the extension ".bin" on your PC that matches the charger - eg "Ultra18_2a30_120119.bin" for the charger ULTRAMAT 18 in the directory "... HoTT_Software_V4 / other firmware / 6470" created here as an example:



2. Switch on the charger

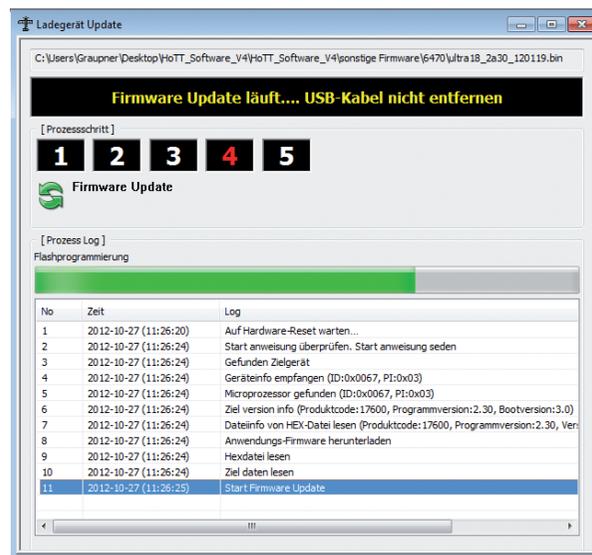
As soon as you have selected the correct *.bin file and clicked on , the flashing digit changes to "[process step] 3". While the progress bar is starting, turn the charger on or plug the power cord into the wall outlet with the

USB cable connected.



The flashing digit changes to "[Process step] 4".

Make sure that the USB connection between the charger and the PC is not interrupted.

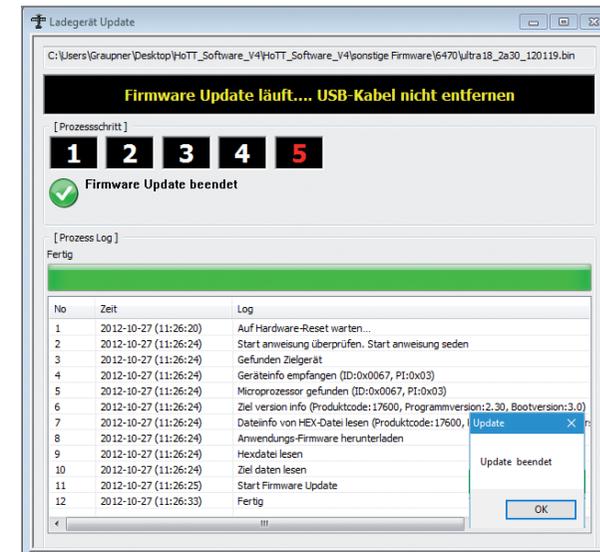


The proper data transmission to the charger is indicated by a progress bar.

... at the end, "[process step] 5" is followed by confirmation of the transmission with the text

Initialization

line "Ready" in the table as well as a pop-up window "Update completed".



3. Disconnecting the USB connection

Switch off the charger and interrupt the USB connection to the PC.

4. Initialization

The chargers partially require an initialization. Please read the instructions of your product.

ULTRAMAT error messages

Error messages

If the update process does not start or if it aborts, repeat the procedure. Note any error messages that appear.

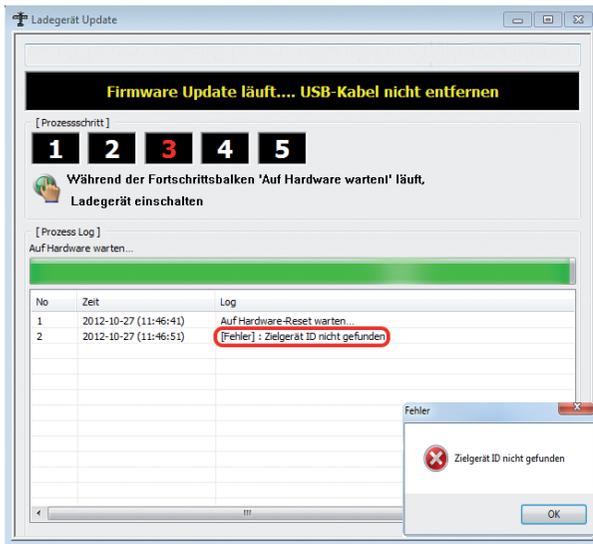
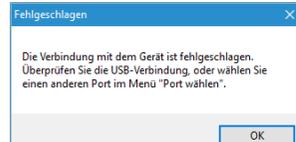
Missing USB connection

"Failed to connect to the device" is the error message if you did **not** connect the USB cable to the charger even if the charger is turned off.

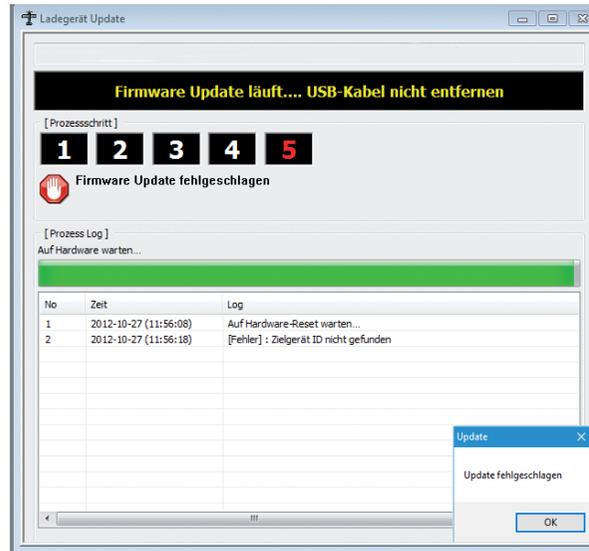
If the error occurs despite the existing USB connection, switch off the charger that may have been switched on and disconnect the USB connection for a few seconds.

Charger not switched on in time

The pop-up windows "Target device ID not found !!" appear in "[process step] 3". Click on



The display changes to "[process step] 5" with the error message "Update failed".

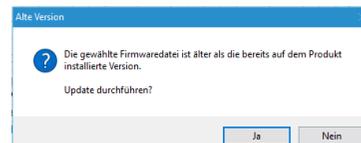


Click on each popup window .

If you reconnect the charger to the mains and the transmission does not start, you may need to wait up to 1 min before reconnecting the power plug.

Wrong file read

If you have selected an older firmware than on the charger, you will be notified before the update. Click ("Yes") if you want to overwrite the existing firmware on the HoTT device or otherwise ("No").



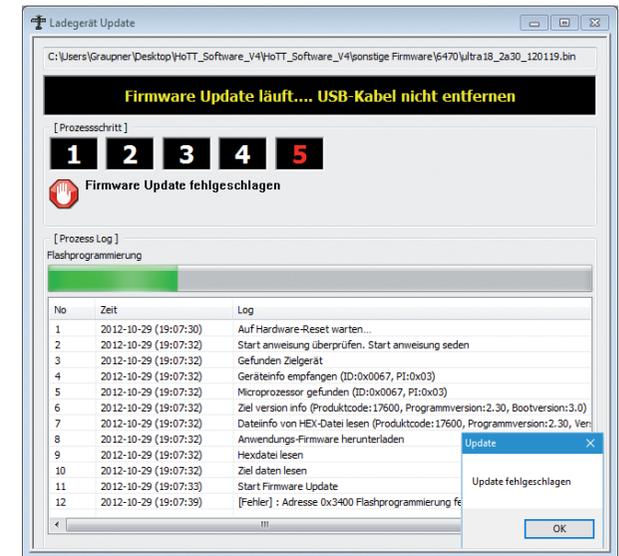
USB connection between charger and PC interrupted

The USB connection to the PC must not be interrupted during the update.

If the USB connection is interrupted, the error message "Error flushing COM port RX/TX buffer! - Update failed" appears. ...



The display changes after clicking on "[process step] 5" with the error message "Update failed" ...



Check the connections and repeat the update process.

Wrong file read

The firmware files are product-specific coded, if you accidentally select a non-product related file, the program responds with one of the following error messages ...

Charger updates of the series POLARON

Program overview POLARON chargers and general preparations for all POLARON series: "AC / DC Sports", "EX" and "Pro"

Updates for POLARON chargers

This section describes the update program for Graupner POLARON series chargers:



Please also read the manual of the charger.

For chargers of the series POLARON the following five sub-programs are available in the category "Charger":

❶ Polaron-Update AC/DC Sports

only for POLARON chargers of the model series AC/DC Sports (No. S2004).

Always apply the four other update programs for the POLARON "EX" and "Pro" series chargers in the following order:

❷ Polaron Firmware-Update:

Basic firmware update for all POLARON "EX" and "PRO" chargers.

❸ Polaron slave board update

Only for the series "EX" and "PRO".

The display has its own operating system. A separate update may be available for this.

❹ Polaron resource update

Only for the series "EX" and "PRO".

Update for the graphic display and acoustic messages. Please read the corresponding instructions. There you will find additional information.

❺ Restoration

Only for the series "EX" and "PRO".

In the event of a malfunction during updating, the functions can be "restored".

Suggested accessories

- For the update, a USB cable (PC-USB / Mini-USB) is required in all cases.



Power supply when updating

Conventional DC power supplies and in particular switching power supplies can cause interference in an individual case due to excessive noise, which prevent an update.

Therefore, it is best to use a fully charged 12V lead-acid battery or 3-cell LiPo battery with at least 2200 mAh for update problems. The battery is connected to the back of the device. Make sure that the polarity is correct.



Before using the software, you should close all other programs, such as mail, Internet, and other communications programs, so that the computer has sufficient resources for the firmware update program.

1. USB drivers installed?

Have you already installed the USB driver, otherwise see page 12?

2. Polaron charger with PC connect

Make sure that the charger is switched off - if necessary Disconnect the mains plug or switch off the power supply and wait until the display goes out. Now connect the charger directly to the PC via the USB cable. The interface is automatically detected. (If not, turn on the charger once and then turn it off again.)

3. Select COM port

Then select - if you have not already done so - the COM port (USB port on the PC) as described on page 17.



Note about the update files

Since these files are not HoTT firmware, you must first download them from the download area of the respective charger separate from the other HoTT firmware versions at www.graupner.de. Put the file in a suitable directory and unzip the files. Alternatively, use the option "Auto load", if this option is provided.

The following are the update programs for the series POLARON AC / DC Sports "❶" as well as the programs "❷" to "❹" for the series "EX" and "Pro".

Afterwards, you will find information about possible error messages.

Charger updates of the series POLARON

❶ POLARON AC / DC Sports Firmware update

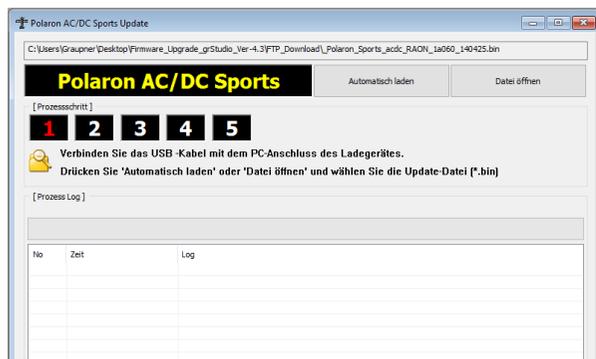
❶ "POLARON AC/DC Sports Firmware update"

The following update steps apply only to the POLARON AC / DC Sports AC charger.

Follow steps 1 to 3 previously. It continues with ...

4. Start the "Polaron update AC/DC Sports" program

Start the "Polaron charger AC/DC Sports" program in the program group "Charger". (Alternatively select in "menu" the related entry.)



Connect the still off charger to the PC via the USB cable. You can then turn on the charger, otherwise, when prompted, in step (5.)

Possibilities of a Firmware Update

Firmware loading

You now have two ways of loading the firmware file:

A) "Automatically load"

In this case, the *.bin file matching the charger is automatically downloaded when the internet connection is active.

Automatisch laden



Update files downloaded via the Internet are always stored in an automatically generated subdirectory named "FTP_Download" in the firmware upgrade grStudio main directory, so that you can repeat the update manually at a later time, if necessary, via "Open file".

B) "Open file"

If you have the update file previously by the GRAUPNER | SJ website www.graupner.de downloaded and saved on a hard disk, you can load the required *.bin file from the appropriate subdirectory. Also pay attention to the note "A)".

Datei öffnen

Firmware update POLARON Sports via Internet

to A) POLARON AC / DC Sports firmware update via "load automatically"

(1 ... 4 see above.)

Only for POLARON AC / DC Sports Charger.

5. Update via internet

While the Internet connection is active, press the Auto-load button

Automatisch laden



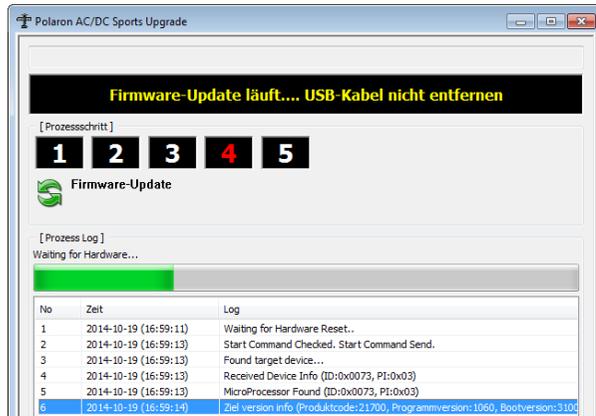
If the charger is already switched on, the display of the charger will show:

"SysRESET pls wait." ("System reset, please wait".) And then goes out.

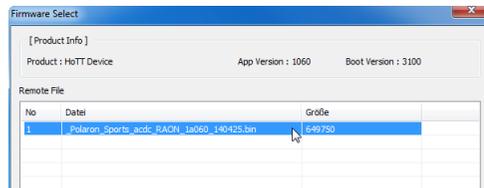
If you now switch on the charger according to the "Switch on charger" prompt in the above display, the display will remain dark from the beginning.

In the "[Process step] 4" ...

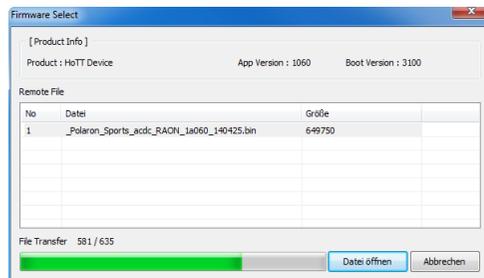
Firmware update POLARON AC/DC via Internet



... opens after a certain time another window called "Firmware Select" depending on the speed of the Internet connection:



Here you can find the current firmware version of the charger. Click on the desired update file (* .bin-file). As soon as you click on the "Open File" button **Datei öffnen**, the data is first downloaded from the Internet - recognizable by the progressing bar.

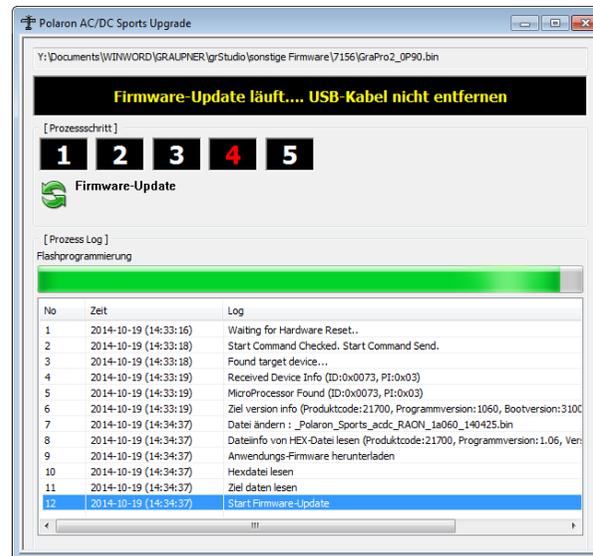


Subsequently, the update process starts, as described in text line 12 of the following figure:

"Start Firmware Update".

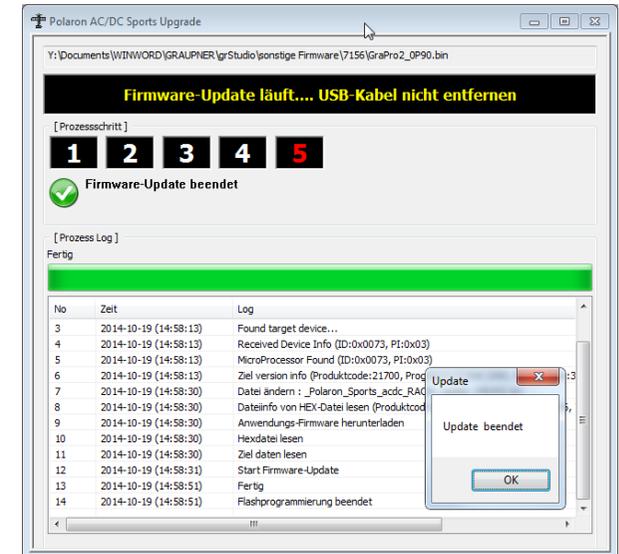
Line 6 shows the currently stored program version number (here: "1060"), line 7 shows the version number to be loaded (here also: "1 (a) 060", but file identification with additional letter, ie "1a060") ,

⊘ Make sure that the USB connection between the charger and PC is never interrupted during an update! This can lead to malfunction or device damage!

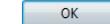


When it reaches the end, "[process step] 5" displays the successful update process.

Update malfunction



Click in the "Update completed" pop-up window



After a successful update, the POLARON AC / DC Sports device restarts. The current version number is displayed when the POLARON software starts up.

6. Update malfunction

If an update fails, you must first turn off the charger before repeating the procedure. Wait until all indicators have gone out before turning the device back on.

7. Disconnecting the USB connection

⚠ Turn off the charger before disconnecting the USB connection to the PC.

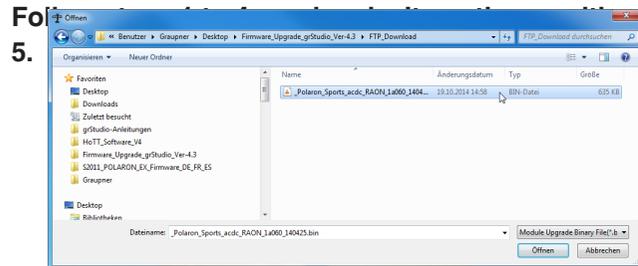
📖 Information on possible error messages can be found at the end of the POLARON program descriptions starting on page 90.

Charger updates of the series POLARON

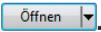
Manual update of a POLARON AC/DC Sports

to B) POLARON AC / DC Sports Firmware update via "Open file".

As an alternative to the update method described above, select the update file manually, which you may have previously stored on your PC.



6. Start transmission

Click on the firmware file and then on the "Open" button .

The further steps are analogous to the automatic update described in paragraph (5.) of the chapter above:

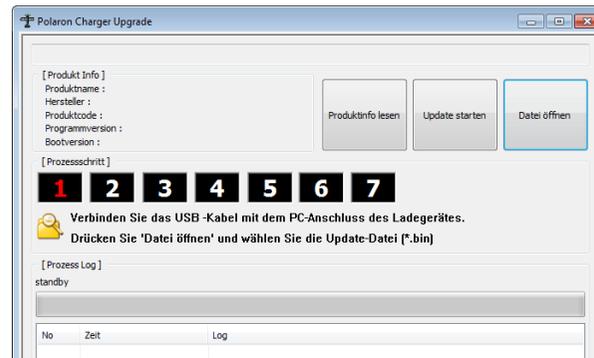
"A) Firmware update via "Automatically load"
Please continue reading there.

2 POLARON EX/Pro manual firmware update

2 "POLARON EX/Pro Firmware update" – Basic firmware update (manual)

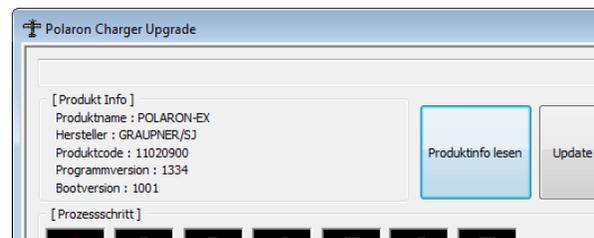
Follow steps 1 to 3 previously. It continues with ...

4. Start the "Polaron firmware update" program
Start the "Polaron firmware update" program in the program group "Charger". (Alternatively select in "menu" the related entry.)



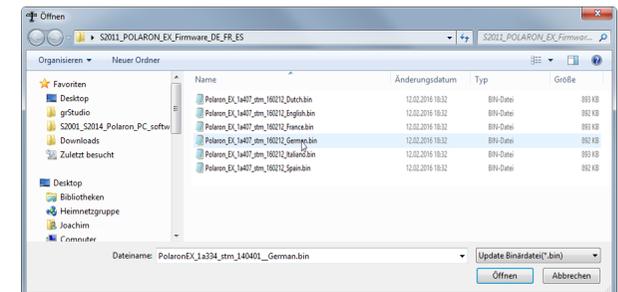
5. Read out the firmware version

 If you click on the "Read product info" button when the charger is switched on, in the program window beside some other information about the charger - here POLARON-EX - also the currently stored version number of the basic firmware is shown in the line "Program version" - in the shown example Version "1334".



6. Firmware loading

 After clicking on the "Open File" button, select the current firmware file in the window that opens (with the "stm" label in the name, eg "PolaronEX_1a334_stm_140401_German.bin" for the charger "POLARON-EX", from the corresponding directory on the hard disk.



7. Switch on the charger

As soon as you have selected the correct * _stm_ *. Bin file in the desired language (currently English, Spanish, French, German) and clicked on , the flashing digit changes to "[process step] 2":

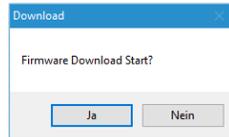


 Follow the instructions in "[process step] 2", switch on the charger, wait for the POLARON software to start up, and then click on the "start update" button.

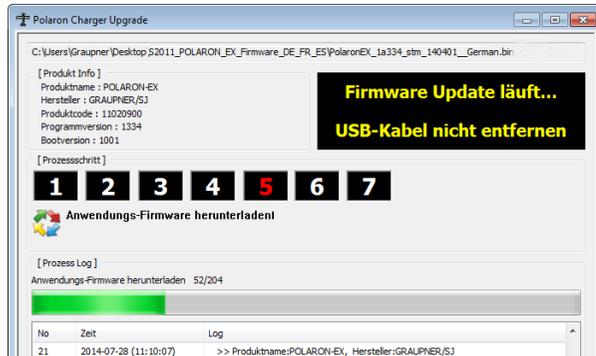
 Observe the instructions for power supply above!

POLARON EX/Pro firmware update

Again, a confirmation prompt appears asking if the firmware should be transferred.

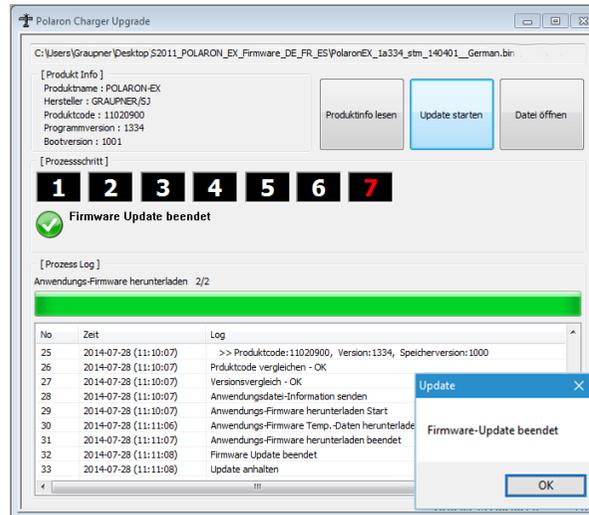


Click "Yes" to start the update process. In "[process step] 5", the progress bar indicates the transfer to the charger.



⚠ Make sure that the USB connection between the charger and the PC is not interrupted. A break may damage the device.

When it reaches the end, "[process step] 7" displays the successful update process.



Click in the "Firmware update completed" pop-up window .

After a successful update, the POLARON program restarts. The current version number is displayed when the POLARON software starts up. Otherwise, check the version number as described above using the "Read product info" button.

8. Disconnecting the USB connection

⚠ Turn off the charger before disconnecting the USB connection to the PC.

💡 Information on possible error messages can be found at the end of the POLARON program descriptions.

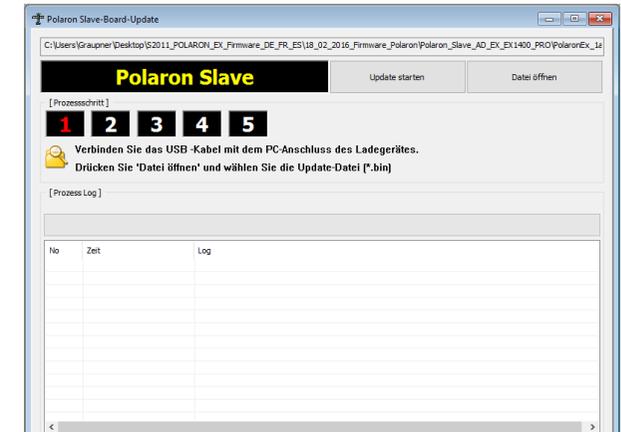
③ POLARON EX/Pro slave board manual update

③ "POLARON EX/Pro Slave board update" – POLARON update slave operating system (manual)

Follow steps 1 to 3 in the "Preparations" section previously. It continues with ...

4. Start the "POLARON slave board update" program

In the "Charger" program group, start the "POLARON Slave Board Update" program. (Alternatively select in "menu" the related entry.)



5. Slave firmware loading

After clicking on the button ("open file"), select in the opening program window the current *.bin firmware file with the label "pic" in the name of the hard disk of the PC, eg "PolaronEx_1a337_pic_140225.bin" for the charger "POLARON-EX".

6. Switch on the charger

As soon as you have selected the correct *_pic_*.bin file and clicked on , the flashing digit changes to "[process step] 2":

Charger updates of the series POLARON

POLARON EX/Pro slave board manual update

Interrupt USB connection

7. Disconnecting the USB connection

- ⚠ Turn off the charger before disconnecting the USB connection to the PC.
- 💡 Information on possible error messages can be found at the end of the POLARON program descriptions.

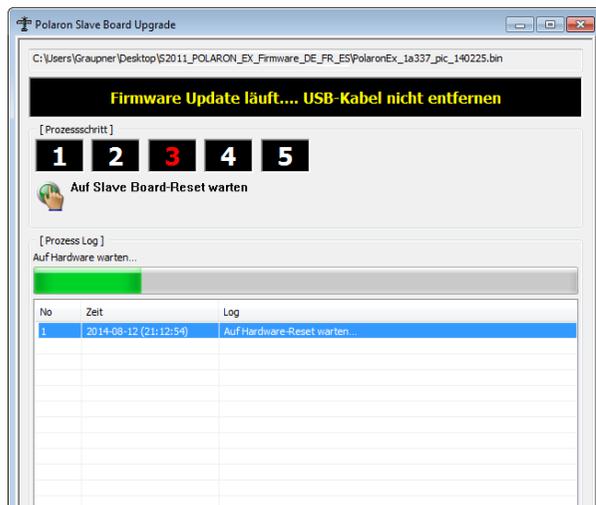


Turn on the charger, wait for the POLARON software to start up, and then click on the button **Update starten** ("Start update").

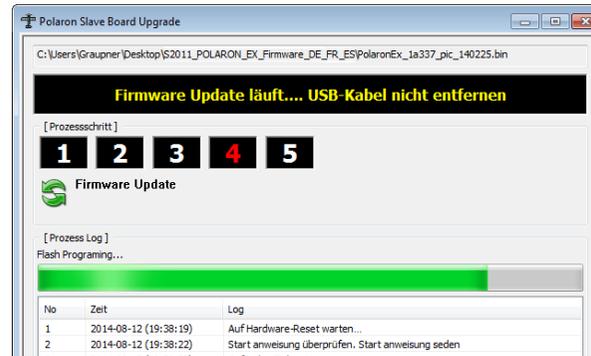
⚠ Observe the instructions for power supply above!

🚫 Make sure that the USB connection between the charger and the PC is not interrupted. A break may damage the device.

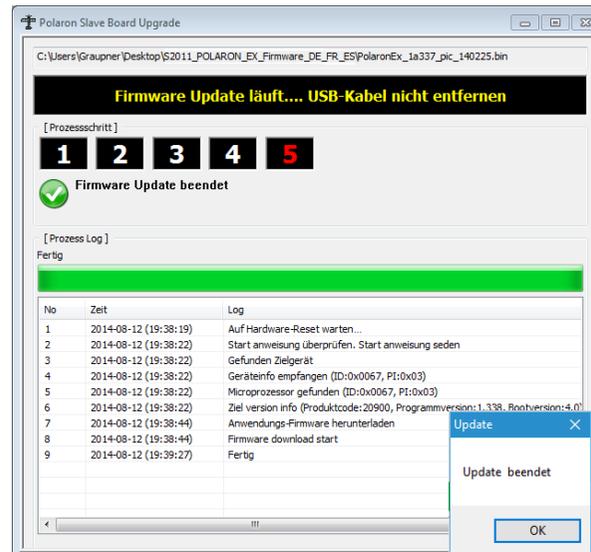
For a brief moment, "[Process Step] 3" is displayed until the SLAVE board hardware has been detected.



The transfer of the firmware to the charger can be tracked in the "[process step] 4" on the progress bar:



When it reaches the end, "[process step] 5" displays the successful update process.



Click in the "Update completed" pop-up window **OK**.

After a successful update, the POLARON charger restarts. The current SLAVE version number is displayed in the POLARON display when the operating system is booted.

④ POLARON EX/Pro Resource manual update

④ "POLARON EX/Pro resource update" – graphic display / tones (manual)

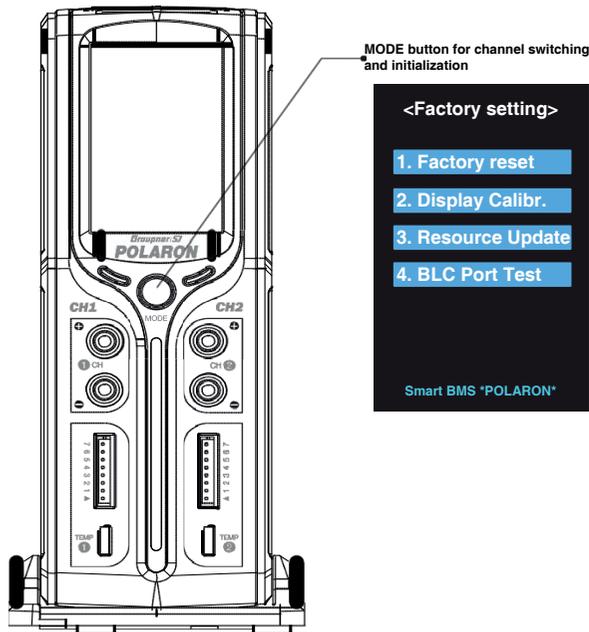
Follow steps 1 to 3 in the "Preparations" section previously. It continues with ...

4. Calling up the "POLARON Resource Update" program

After you have connected the charger to the PC when it is switched off, press the MODE button on the charger and keep it pressed during switch-on until the service menu "Factory setting" appears.

 Observe the instructions for power supply above!

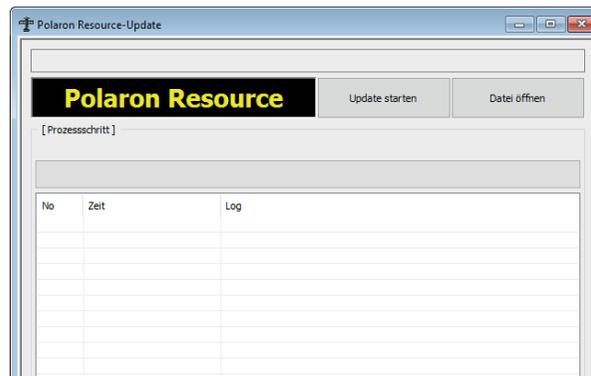
Select the menu point "3. Resource update":



The POLARON display changes to ...

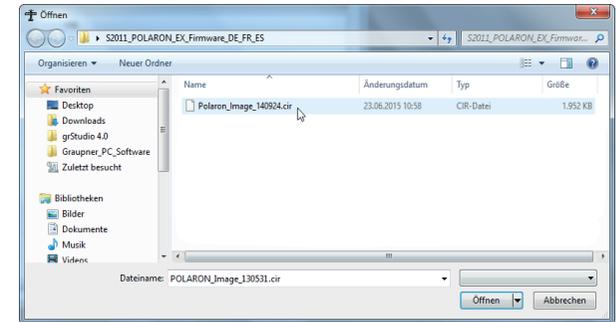


5. Start the "Polaron resource update" program
Start the "Polaron resource update" program in the program group "Charger". (Alternatively select in "menu" the related entry.)



6. Resource data loading

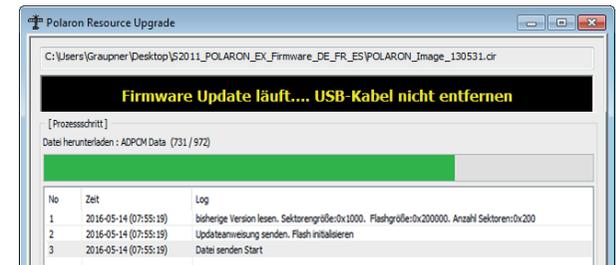
After clicking on the button ("Open file"), select in the opening program window the current *.bin resource update file with the label "cir" in the name of the hard disk of the PC, eg "POLARON_Image_130531.cir" for the charger "POLARON-EX".



Click on **Öffnen**.

7. Start update

Click on "Start update" .



The progress bar indicates the transfer to the charger. The transmission is also shown in the POLARON display "Update in progress":

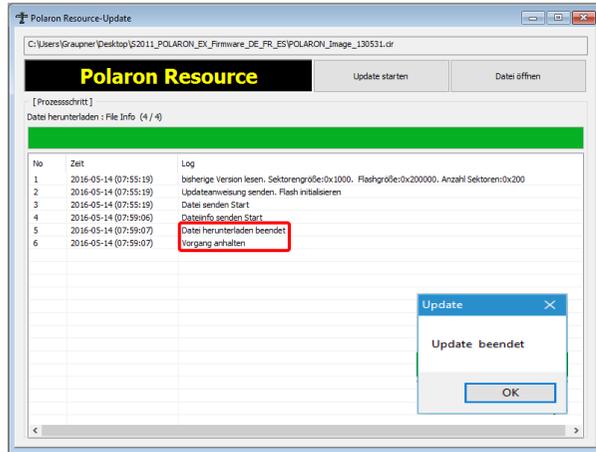


 Make sure that the USB connection between the charger and the PC is not interrupted. A break may damage the device.

Charger updates of the series POLARON

POLARON EX/Pro resource update

At the end, the successful update process is displayed: "File downloaded completed - process stopped".



In the popup window click on .

After a successful update, the POLARON charger restarts.

8. Disconnecting the USB connection

Turn off the charger before disconnecting the USB connection.

6 POLARON EX/Pro software manual restoration

6 POLARON EX/Pro-Software manual restore – "Recovery"

If a firmware update of the charger via the "POLARON Firmware Update" program has failed and / or the POLARON software "hangs up", you can restore the firmware with this program.

 If necessary, first disconnect the power supply from the charger and do not switch it on again until it is indicated within the "Recovery" program.

Follow steps 1 to 3 in the "Preparations" section previously. It continues with ...

4. Start the "Recovery" program

Start the program "Recovery" in the program group "Charger".

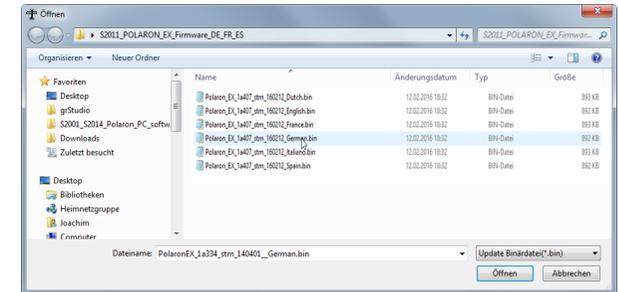
(Alternatively select in "menu" the related entry.)



After the program has been called, the flashing red "1" of the number series 1 ... 5 in the head of the window indicates that the program is currently in "[process step] 1".

5. Firmware loading

Press the button "Open file" and look in the opening file manager the current *.bin firmware with the identification "stm" in the file name on the hard disk of the PC.



(For example, the file version 1.407 that matches the POLARON EX charger is: "PolaronEX_1a407_stm_160212_Englisch.bin" etc.).

6. Restore

After selecting the *.bin file, "[process step] 2" flashes: Make sure that the charger is switched off!



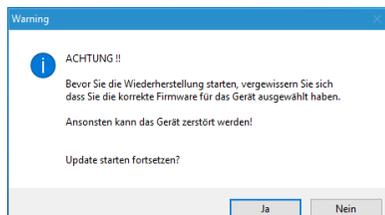
Now click the button ("Start update") to start the recovery process.

 Beforehand, a confirmation prompt appears. Please check again if the "correct" file was selected. An automatic file check as in the regular update case is not possible with "recovery".

In the worst case, a restore attempt is no longer possible in a transmission attempt of a not matching to the charger firmware file. Please contact the GRAUPNER | SJ Service.

Read the notes in the section "Error messages" on page 90.

POLARON EX/Pro software manual restoration



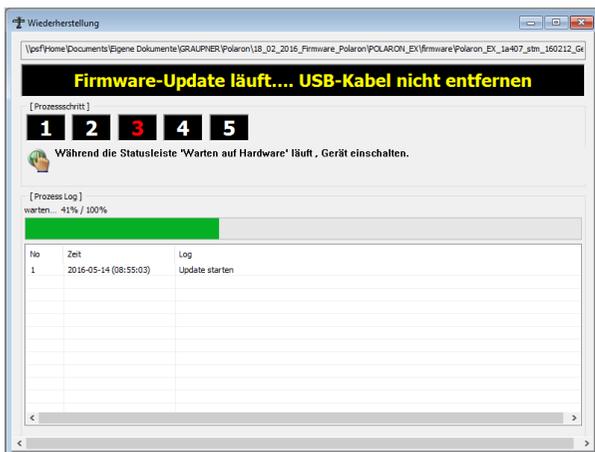
If you are sure that you have selected the correct file, click on .

7. Switch on the charger



Wait until the status bar has started, and switch on the charger only now!

You have time until the progress bar in the "[process step] 3" has reached the right end.

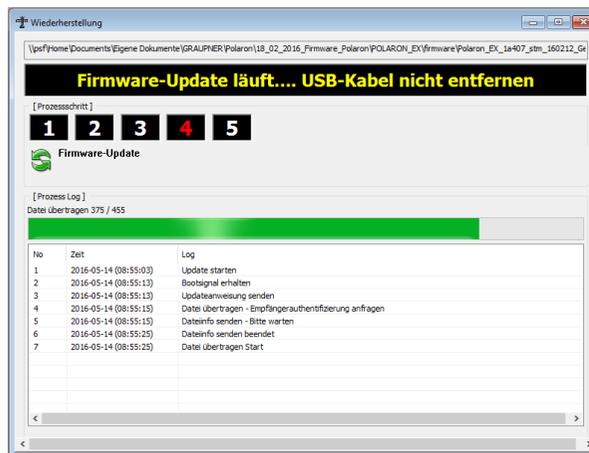


After switching on the charger, the data is transmitted.



The screen of the charger remains dark. DO NOT turn off the charger during the update!

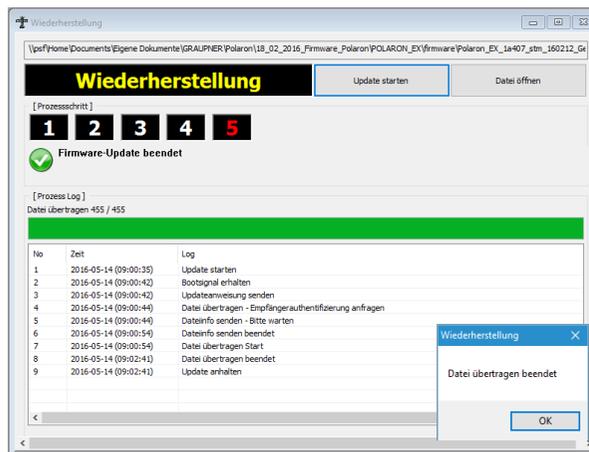
The progress bar indicates the proper transmission in "[process step] 4".



During the update process, the USB cable must not be removed. Also make sure that the USB connectors on the transmitter or PC are in good contact and do not wobble. A break may damage the device.

8. Ending the transmission

The firmware transfer is completed as soon as the progress bar has reached the right end, and the message "File Transfer Finished - Stop Update" in the "[process step] 5" signals the successful transfer.



After the recovery, the charger software re-starts. When booting the operating system, the currently loaded firmware version is displayed in the POLARON display.

Finally, click on the pop-up window "Transfer File Completed" . Turn off the charger, and then disconnect the USB connection to the PC or laptop.



BEFORE restarting the unit, it is imperative that you check the functionality and any settings you have made for the charger!

Charger updates of the series POLARON

Error messages

Error messages

If the update process does not start or if it aborts, repeat the procedure. Note any error messages that appear.

Open port failed

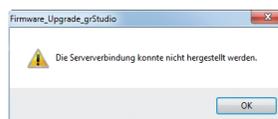
If an incorrect COM port has been assigned or the driver has not yet been installed, the error message: "The connection to the device has failed".

Incidentally, the Silicon Labs COM port is only detected with the charger connected (also switched off) or interface adapter No. 7168.6. If the USB port is not recognized repeatedly, switch off the power supply and disconnect the USB connection to the charger of the interface No. 7168.6 for a few seconds. If necessary, switch the switched-off charger briefly on and off again after a few seconds.



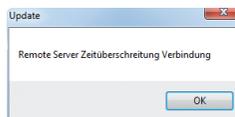
Missing server connection at autom. update

If the server connection does not work, the pop-up window will appear. A firewall may prevent the connection. Deactivate them temporarily - then reactivate them.

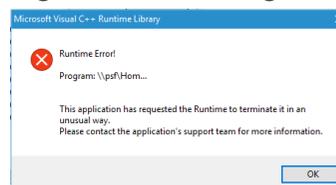


Timeout with automatic update

While you have plenty of time to select files but if you wait too long to make the decision, the update process will stop and must be repeated. A firewall may also prevent the connection, see above.



- Open file" interrupted on update via Internet
If you terminate the procedure (accidentally) after selecting and downloading the firmware file via the button , a "runtime" error appears.

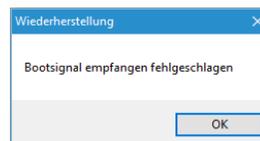


Before rebooting, disconnect the mini USB socket from the interface for a few seconds otherwise the port will not be recognized.

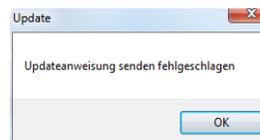
- Charger not switched on in time

The following error messages can occur:

"Send boot signal failed" appears in "[Process Step] 3.



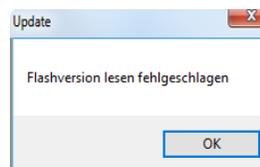
"Send update statement failed"



"Target device ID not Found !!



"Read flash version failed"



Click on .

If you reconnect the charger to a (suitable) AC adapter or battery, see page 81, and the transmission does not start, you may need to wait up to 1 min before reconnecting the power supply.

- Firmware file older than the already existing firmware

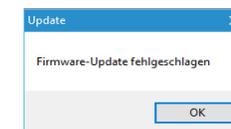
If you have selected an older firmware than on the charger, you will be notified before the update. Click ("Yes") if you want to overwrite the existing firmware or otherwise ("No").



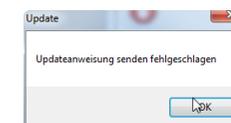
- USB connection between charger and PC interrupted

 The USB connection to the PC must not be interrupted during the update. This can lead to malfunction or device damage!

If the USB connection is interrupted, the error message "Firmware update failed" appears.



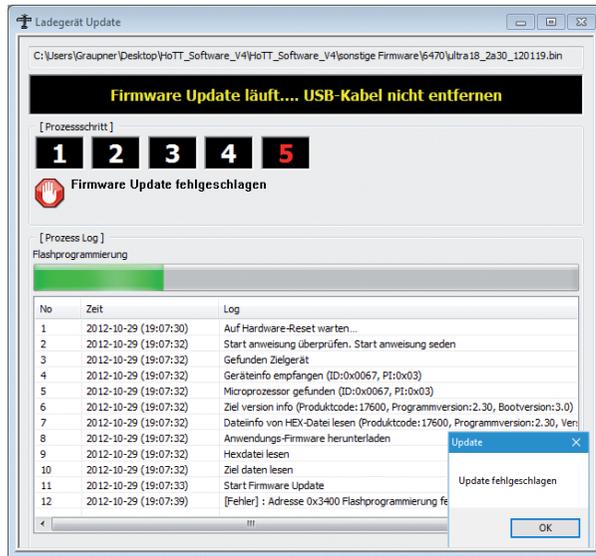
A new update attempt could end with the following pop-up window:



"POLARON software may hang" and the charger may not work after a reboot.

Error messages

The display changes after clicking on "[process step] 5" with the error message "Update failed" ...



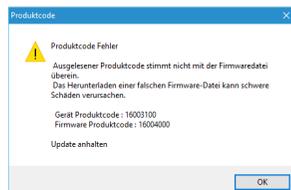
Check the connections and repeat the update process.

Wrong file read

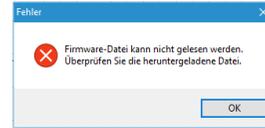
The firmware files are product-specific coded, if you accidentally select a non-product related file, the program responds with one of the following error messages ...

In the event of a program crash, switch off the device and restart the program.

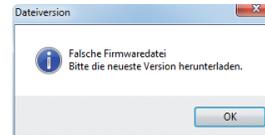
- "Product code error"



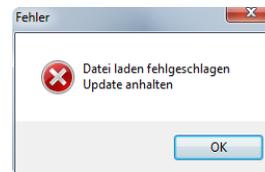
- "Firmware file can not be read"



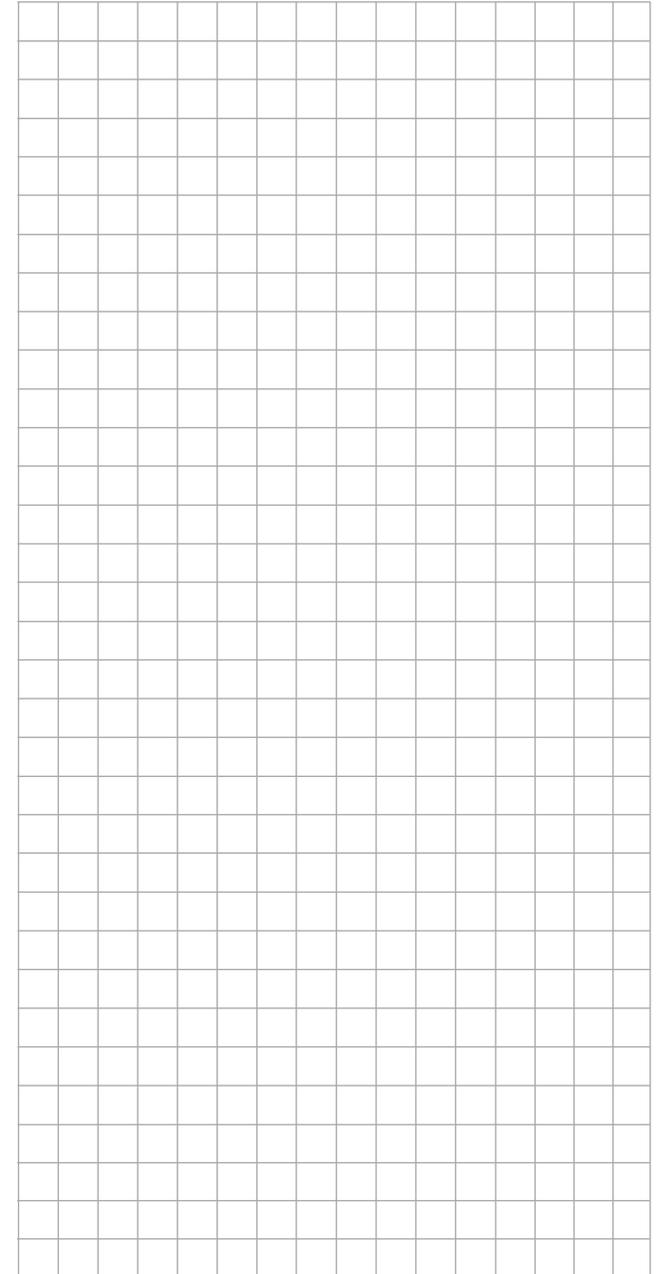
- "Wrong firmware file"



- "File failed to load"



... each with the following indication that the update failed.



4 Program group "Live Log"

Save and view log data in real time

Program group "Live Log"

Program group "Live Log" (save and display telemetry data)

With the program group "Live Log" the data of the HoTT transmitters (only transmitters with integrated speech output) as well as connected HoTT receivers and optional HoTT sensors can be stored and displayed "live".

The display on the screen essentially corresponds to the data display in the transmitter display or the SMART box.

Suggested accessories:

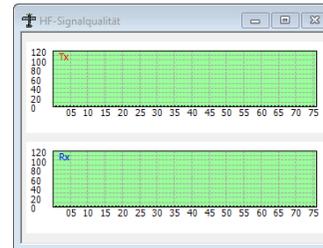
- USB cable supplied with the interface set, No. 7168.6 included or similar USB cable (USB-A to mini-B-USB, 5-pin),
- alternatively: Bluetooth® adapter, see page 14.



General preparations

1. **USB drivers installed?**
Have you already installed the USB driver? Otherwise read the section "Driver installation" on page 12.
2. **Establish connection to the PC and select COM port**
Connect the USB / mini-USB cable to the PC and the corresponding mini-USB port of the switched-off HoTT transmitter. Then select - if you have not already done so - the COM port (USB port on the PC) as described on page 17.
3. **Start the "Live Log" program**
Click on the "Play" icon Logdaten speichern under "Live Log" in the left menu.
(Alternatively, select the appropriate entry in the menu bar under "Log protocol".)
Even when the transmitter is switched off, at first two windows always appear, namely ...

▶ the RF Signal Quality RF display window for transmitter (TX) and receiver (RX). This visualises the quality of the connection between transmitter and receiver so as

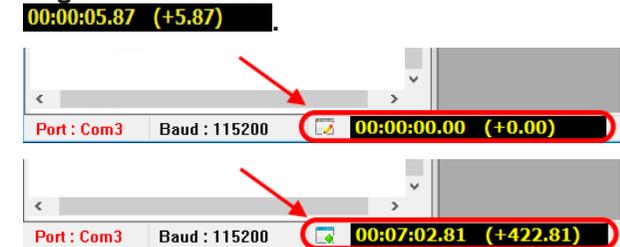


▶ the window "Sensor Data - Receiver", which provides information about signal strength, signal quality, receiver battery voltage, etc.



If the two windows are not opened, first click on the button Log anhalten
Further information on the display windows can be found on the following pages.
You now have 30 seconds to switch on the transmitter and receiver before the program is aborted with a "read log data failed" error message and must be restarted; see section "Error Messages" below.

4. **Switch on transmitter and receiver**
Switch on the transmitter and the HoTT receiver (bound to the transmitter) with any HoTT sensors connected. All telemetry data is displayed in real time on the PC.
As soon as the connection to the transmitter or receiver is active, a flashing green arrow symbol instead of the symbol appears in the lower status line of the basic window. In addition, a timer starts in the Live Log status bar at the bottom of the screen.



5. **Display window**
If additional sensors are connected to the HoTT receiver and activated in the HoTT transmitter, next to the two windows mentioned, further windows belonging to the respective sensor, eg. the "VARIO and GPS window" as shown in the following illustrations.
The sensors whose telemetry data is to be transmitted to the transmitter via the receiver's return channel must first be activated in the "Telemetry" menu of the HoTT transmitter.

Display window

Find out more about this in the manual of the respective HoTT transmitter.

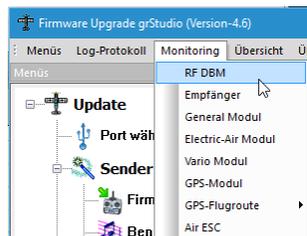


A description of the individual telemetry windows can be found on the following pages.

For a better presentation, you can enlarge the program window of the grStudio program like a Windows® window or switch to full screen mode and move the display windows with the mouse as well as adjust the size individually.

You can open additional display windows manually via the "Monitoring" menu in the menu bar.

However, only data in the window that was also activated in the transmitter is displayed live. In the remaining windows, the values remain "frozen", that is, they are inactive.

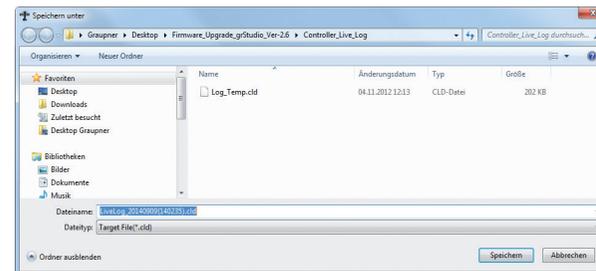


Stop transmission and save data

6. Stop transmission and save data

Click in the left part of the grStudio window  **Log anhalten**. The telemetry data transmitted to the PC up to this point can now be saved on the PC.

If you click on in the "Save log data" pop-up window, the directory "Controller_Live_Log" will automatically be created when you save it for the first time, in the folder in which the executable file "Firmware_Upgrade_grStudio_Ver-x.y.exe" including the associated program files is stored.



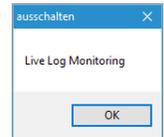
If necessary, change the file name or the directory path and / or generate a new directory according to your wishes.

The log data is saved in "*.cld" format. By default, "LiveLog" is given as name followed by the date "YYYYMMDD" and the time "(hhmmss)" of the data record, e.g. "LiveLog_20140909(140235).cld".

You can view the saved telemetry data in the "File Log Display" program in the "File Log" program group, see page 98, if required.

 As long as "Save log data" is active - green arrow symbol in the status bar  -, "File log display" in the "File Log" program group can not be started. The pop-up window "Live Log Monitoring" appears.

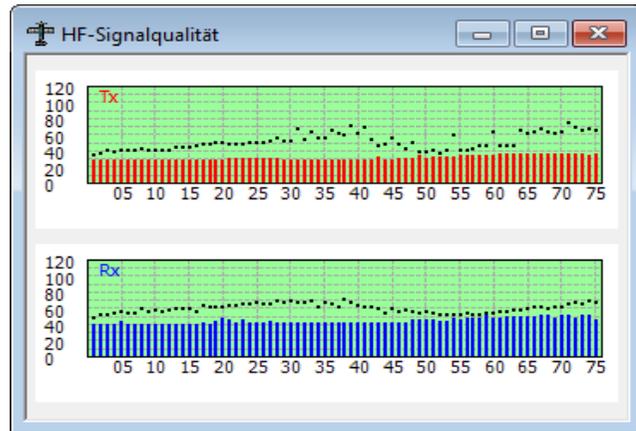
In this case, quit "Save log data" with a click on  **Log anhalten**, save the data if necessary and start "File log display" again.



Save and view log data in real time

Visualization of the signal attenuation

Visualization of received data



Visualization of received data for transmitters and receivers over 75 channels in the 2.4 GHz band: "RF RXSQ"

The graphic shows the current RF status (analogous to the transmitter display, if provided there, as in the case of the RC-B2)

- Upper row (TX transmitter: the signal of the return channel of the receiver arriving at the transmitter): Signal attenuation in negative dBm values of the channels 1 ... 75 of the 2,4 GHz band.
- Lower row (RX receiver: the signal of the transmitter arriving at the receiver): Signal attenuation in negative dBm values of the signal arriving at the receiver of the channels 1 ... 75 of the 2,4 GHz band.

 The height of the bar is a measure of the reception level expressed as logarithmic values with the unit dBm (1 mW = 0 dBm). 0 dBm corresponds to the two base-lines in the above graph. Consequently, the level is poorer the higher the bar and vice versa. The dots above the bar indicate the worst reception since the transmitter was switched on.

Telemetry data "Receiver"

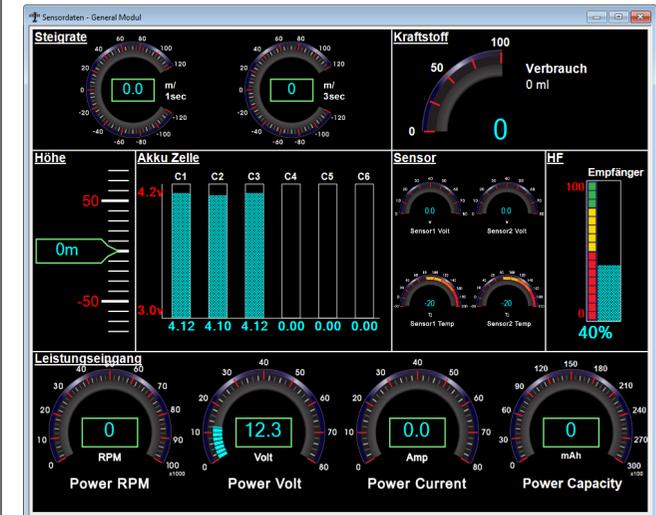
Telemetry data – Receiver



HF Quality	Signal quality in %
Strength	Signal strength in %
Receiver Signal quality	Reception power in %
lost	This indicates the longest period in milliseconds in which data packages are lost during transmission. In practice, this is the longest period in which the remote control system enters fail safe mode.
Receiver Volt	Actual receiver voltage
Low Volt	Minimal operating voltage of the receiver since turned on
Receiver Temp	Current receiver temperature

Telemetry data sensor "General Air Module"

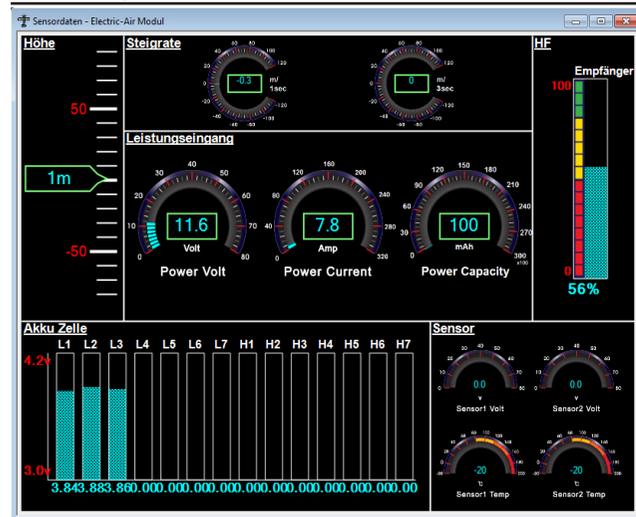
Telemetry data – General Air Module



Climb rate	Climb or sink rate in m/1 Sec. and m/3 Sec.
Fuel	Fuel consumption in ml
Height	Flight altitude in meter
Battery cell	shows single cell voltages from cell 1 (C1) to cell 6 (C6) when the balancer connector is connected
Sensor	above: current voltage of the optional sensor 1 and / or 2 bottom: current temperature of optional sensor 1 and / or 2
RF	Signal strength of the incoming signal at the receiver in %
Power RPM	current RPM of the optional RPM (revolution per minute) sensor
Power Volt	Current voltage of the battery connected
Power Current	Actual current output of the battery connected
Power Capacity	actually used capacity of the connected battery

Telemetry data sensor "Electric"

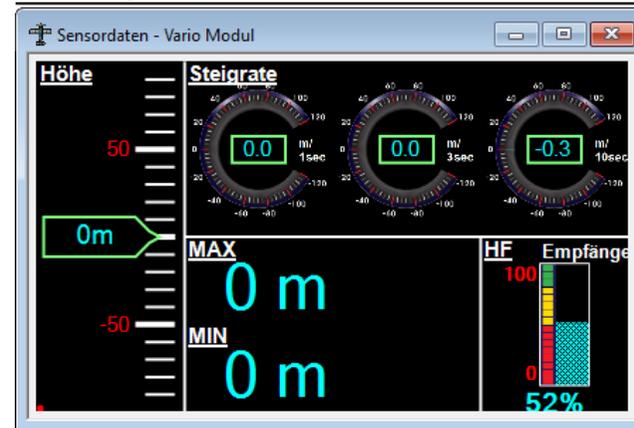
Telemetry data – Electric Air Module



Height	Flight altitude in meter
Climb rate	Climb or sink rate in meters per second, meters per 3 seconds and meters per 10 seconds
RF	Signal strength of the incoming signal at the receiver in %
Power Volt	left: actual voltage of the battery connected
Power Current	Middle: Actual current output of the battery connected
Power Capacity	right: actually used capacity of the connected battery
Battery cell	shows the single cell voltages of battery 1 (L1 - L7) and battery 2 (H1 - H7) when the balancer plug is connected
Sensor	above: current voltage of the optional sensor 1 and / or 2 connected bottom: current temperature of optional sensor 1 and / or 2 connected

Telemetry data sensor "Vario"

Telemetry data – Vario Module



Height	Altitude in meters related to starting point
Climb rate	Climb or sink rate in meters per second, meters per 3 seconds and meters per 10 seconds
Max	Max altitude related to starting point
Min	Min altitude related to starting point
RF	Signal strength of the incoming signal at the receiver in %

Telemetry data sensor "GPS"

Telemetry data GPS module

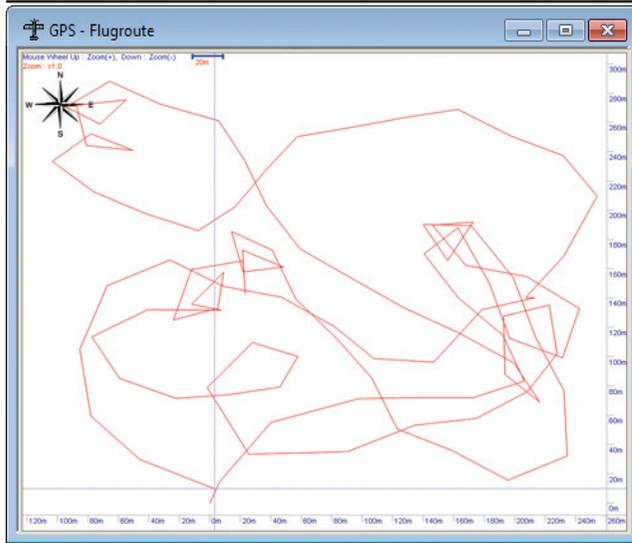


Height	Altitude in meters related to starting point
Flight direction	Flight direction in Degree (N = Nord, E = East)
Speed	Current speed in km/h
GPS coordinates	N-S: northern latitude in: degrees - minutes - seconds (with 2 decimal places) E-W: eastern longitude in: degrees - minutes - seconds (with 2 decimal places)
Climb rate	Climb or sink rate in meters per second (left) and meters per 3 seconds (right)
Distance	Current distance to starting point in meter
RF	Signal quality received by the receiver in %

Save and view log data in real time

Display of itinerary according to GPS data

Telemetry data GPS - Flight route:



The image is displayed only with the GPS data logged in.

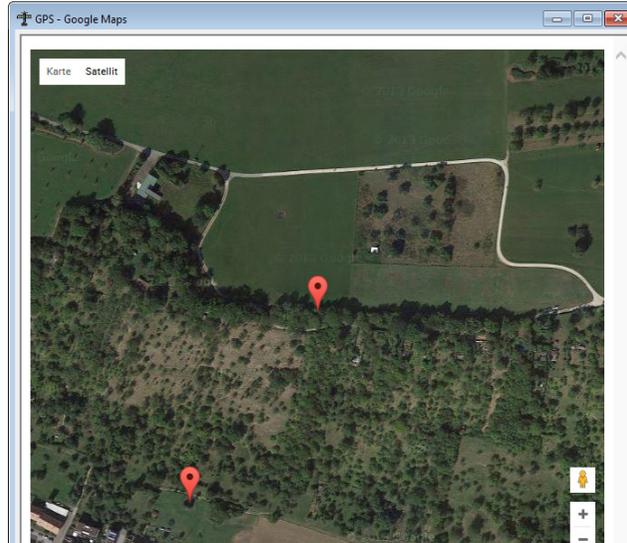
The graphic shows the flight path of the model from a bird's eye view. The scale of the axes depends on the distance traveled.

The scale can be adjusted manually with the mouse wheel.

The route display is identical to that in the Google Maps™ view (see next section). For pure GPS display no active Internet connection is needed.

Display of itinerary in Google Maps™

Telemetry data Google Maps™ - Flight route:



Logged GPS data can be projected into a satellite image while the internet connection is active.

Open in the menu bar:

"Monitoring • GPS flight route • Google Maps".

The route of the model is shown from a bird's-eye view. Google Maps™ automatically starts when opened and loads the appropriate map section.

 Depending on the computer and Internet connection, the representation of the trajectory may take some time.

You can switch between the satellite and map view and the map section within Google Maps™. The change map / satellite view, however, must be done before clicking the Start button in the "Log view".

Error messages

Error messages

Missing USB connection

"The connection to the device failed" is the error message if you did not connect the USB cable to the transmitter.



If the error occurs despite the USB connection, disconnect the USB connection with the transmitter switched off for a few seconds.

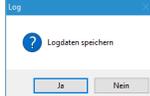
grStudio cannot be stopped

If the program grStudio cannot be stopped, disconnect the USB connection for a few seconds. But wait at least 30 s. on a possible error message.

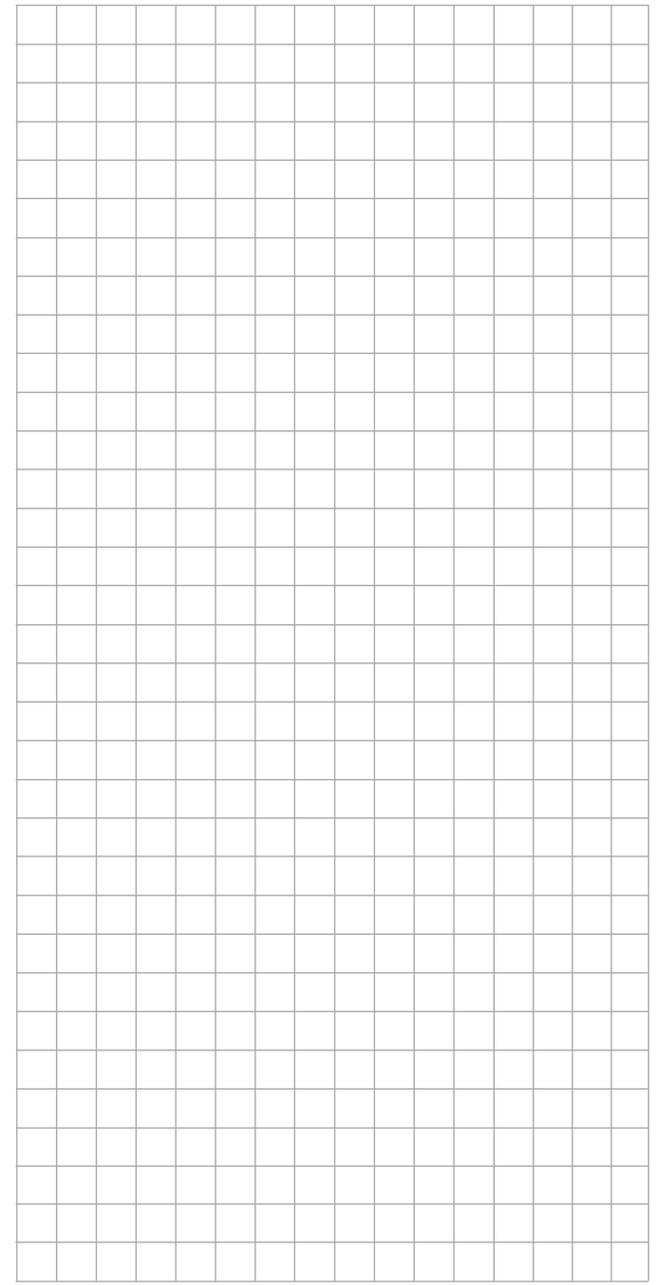
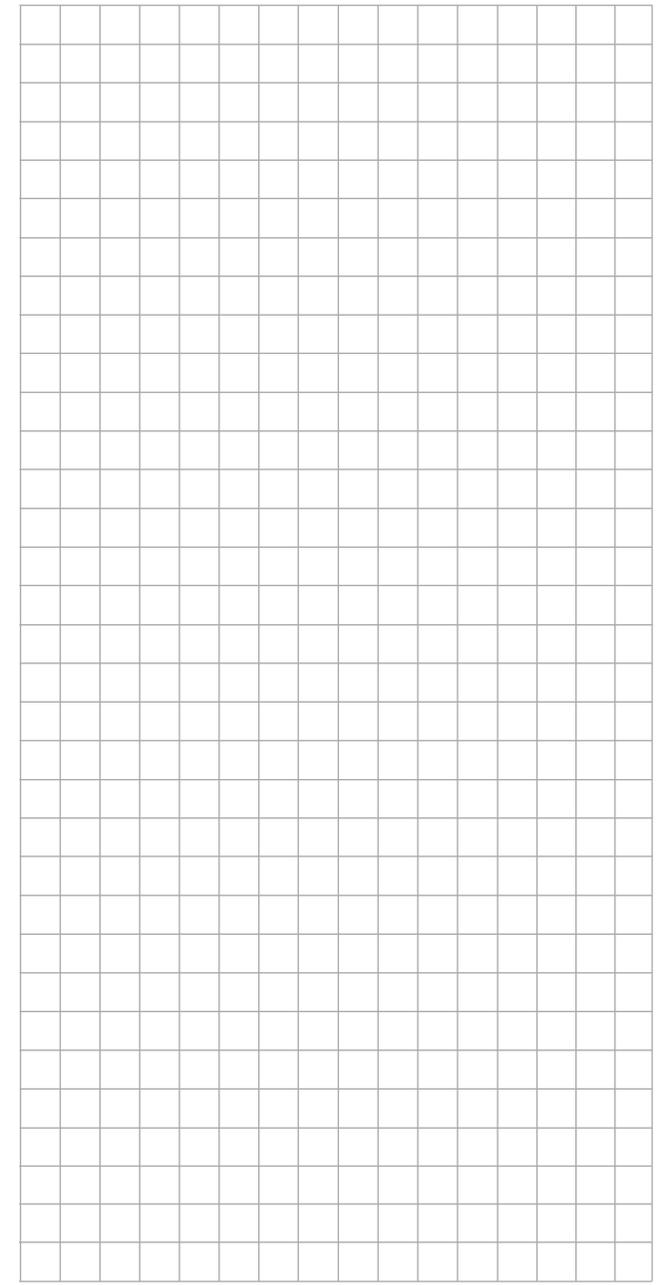
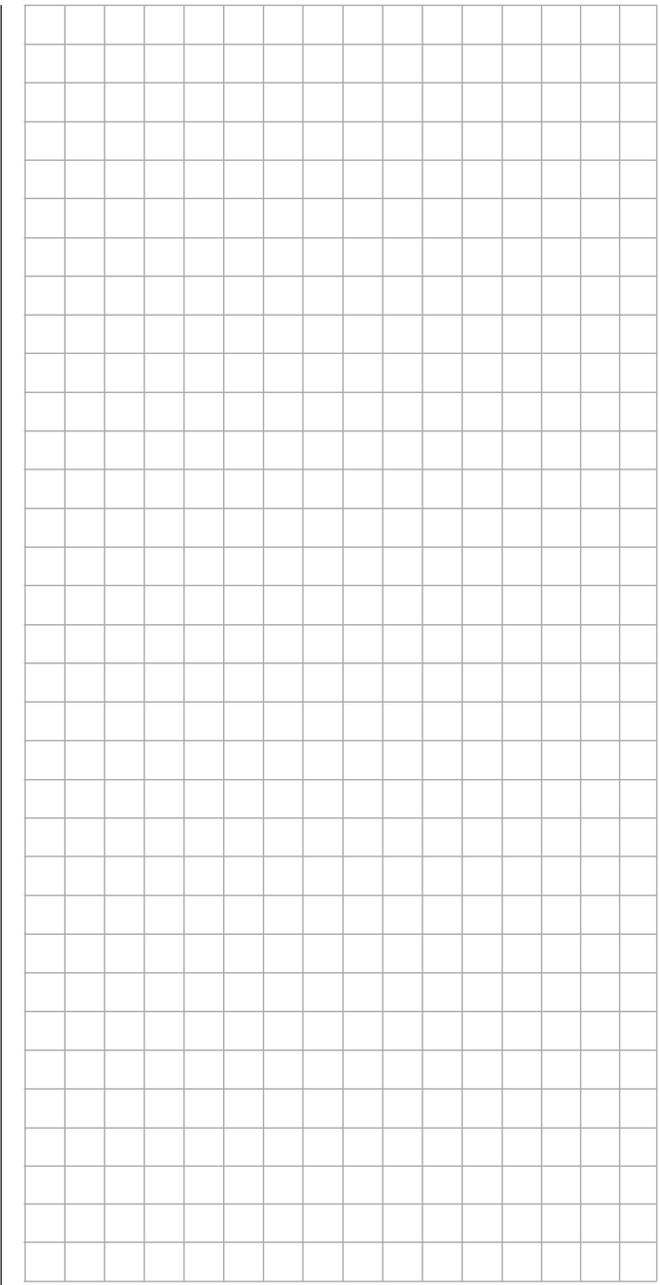
Transmitter and receiver not switched on in time

After a click on , the transmitter and receiver must be switched on within approx. 30 s, provided that the HoTT transmitter has been connected to the PC according to section (2.) and switched on according to seconds, the pop-up window will

 "Log Data Read Fail", which you can close by clicking ...
... and the demand, if you (still) want to save something:

 "Save log data".

Of course, you do not "want" to save this record, so click .



5 Program group "Data Log"

Display saved log data

Program group "Datei Log"

Program group „Data Log“ (Display of the log files of the transmitter)

The "File Log Display" program in this program group is used to display

* .cld files already stored on the PC hard disk through **Logdaten speichern**, see "Program Group 4" previously, or log data (* .bin) recorded on the SD card transmitter.

The data recording on an SD card in the transmitter is linked to the time of flight clock. As soon as the flight time clock is started, data recording starts on the SD card of the transmitter - recognizable by the current bar within the map symbol in the transmitter display. Data logging ends when the clock is stopped or the transmitter is turned off. Please read the corresponding sections in the operating instructions of the respective HoTT transmitter.

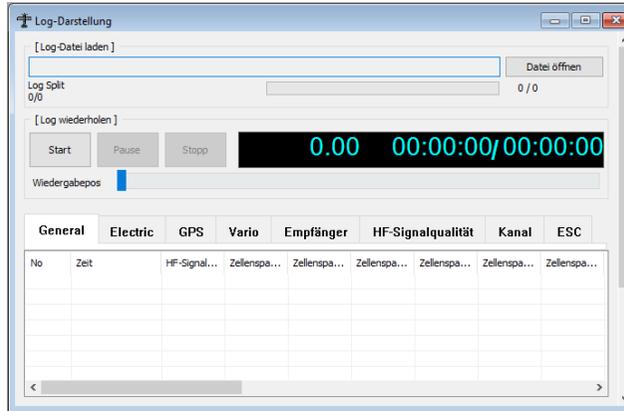
! Only remove the SD card from the SD slot with the transmitter switched off and insert the SD card into the memory card reader of your computer via the SD adapter.

Open the "LogData" folder on the memory card. Separately for each model memory, a folder with the name of the model memory is created. Open the desired folder.

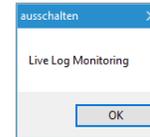
The log files are stored chronologically by date: "0001_2014-09-09.bin" means e.g. first (0001) log file, taken on 09.09.2014.

If the clock is restarted, for example, for the second flight of the day, this file will be saved under the name "0002_2014-09-09.bin", and so on.

To view the log files (* .cld or * .bin), start "File log display" to view all telemetry data - including those of the sensors connected during recording:



! As long as the program **Logdaten speichern** is active - green arrow symbol in the status bar - the playback can not be started - the pop-up window "Live Log Monitoring" appears. In this case, stop the recording by clicking on the stop symbol **Log anhalten** and start "File Log Display" again.



! If the telemetry data is written via the program **Logdaten speichern** via USB cable into a CLD file directly on the PC, the "channel" data (servo positions) will NOT be recorded. The table under the tab **Kanal** remains empty.

! Since at the beginning of the data recording, a scan process first takes place at the receiver, the data recording should not be too short (at least 30 ... 60s). Otherwise errors may occur during playback.

Suggested accessories:

- deleted -

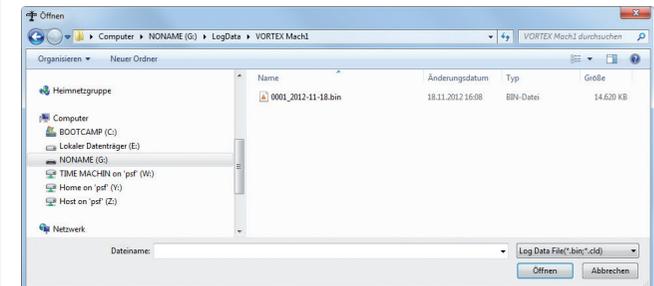
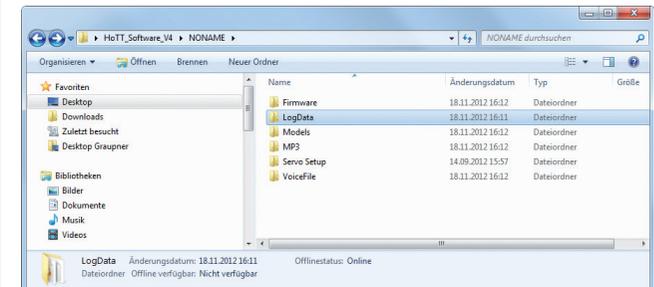
Visualizing Log data (*.bin, *.cld)

File log display

Press the "Open File" button **Datei öffnen** and double-click on the desired file in the window that opens. You can either ...

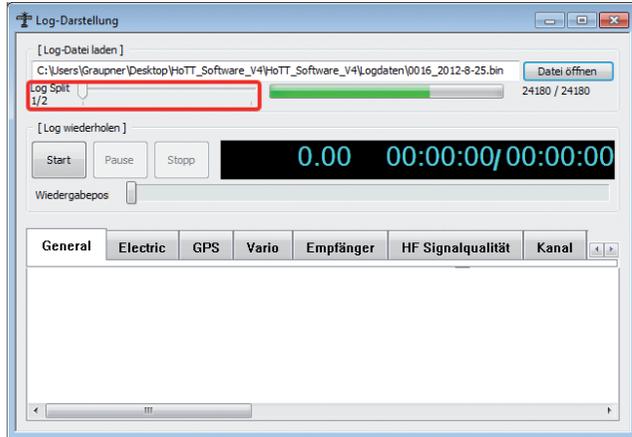
- Log files that you may have copied from the SD card to the hard disk, with the file extension *.bin or
- data recorded by the program **Logdaten speichern** with the suffix *.cld. For these files, "channel" data (servo positions) will not be recorded

! If you insert the SD card into the card slot of a PC or laptop, you will find it in File Manager under the default drive name "NONAME". The log data are stored there in the directory "LogData".



The file is now loaded, the status bar indicates the progress, the number of stored records is also displayed "XXXX : XXXX".

Visualizing Log data



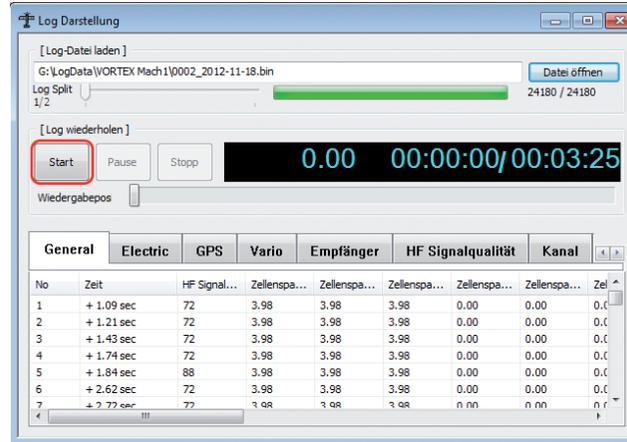
Since log data over max. 20 min can be listed in tables, the record is split when exceeded "Log Split" - in the example shown in two sequences. By moving the slider, as shown above, you can select the desired section, which will then be loaded from the existing data set. Using the "General", "Electric" tabs, etc., you can view the recorded sensor log data in tabular form. Further tabs are displayed above.

The "Channel" tab logs the servo positions (in μs) of all channels. A full scale of $\pm 100\%$ corresponds to approximately $1.100 \mu\text{s}$ (-100%) or $1.900 \mu\text{s}$ ($+100\%$).



Note:

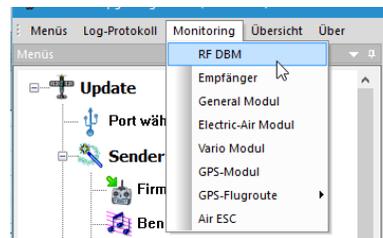
- 1 $\mu\text{s} = 10^{-6} \text{ s} = 0,000001 \text{ s}$, read: "microsecond".
- When changing the "signal speed", see page 106, the servo strokes range from $600 \dots 1400 \mu\text{s}$ and the neutral point is $1,000 \mu\text{s}$.



As usual, you can enlarge the grStudio program window and the "Log display" window, and / or use the scroll bars on the right or bottom edge of the table.

The stored table values can be displayed via the same windows as in the program part "Save log data". To do this, press the start button , see the figure above.

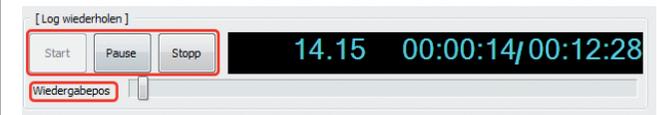
At the same time, besides the two "RF Signal Quality" and "Sensor Data - Receiver" windows, whose telemetry data is always recorded, further windows of those sensors which were connected at the time of recording automatically open. Additional windows can be opened if required via the menu "Monitoring" in the menu bar.



In the window next to "[Repeat log]", as shown in the next figure, you will see from left to right ...

- the current playback position in seconds (with two decimal places),
- the playback position in hh:mm:ss as well
- outside right, the total length of the record in hh:m-m:ss

is shown:



Press ("Pause") to pause or resume ("Resume") to resume playback. Use ("Stop") to stop playback.

By holding down the left mouse button, you can manually move the "playback position" via the "handle".



This menu item can only be closed after ending playback via the "Stop" button .

Display saved log data

Visualizing Log data

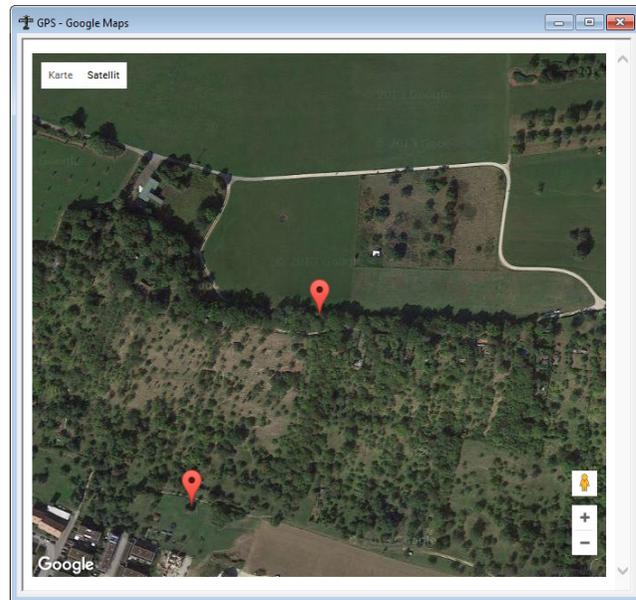
Example "Display of GPS data"

Tab "GPS" (table entries)

The screenshot shows a window titled "Log-Darstellung" with a progress bar and a digital display showing "0.00 00:00:00/00:28:21". Below the display is a table with the following columns: General, Electric, GPS, Vario, Empfänger, HF-Signalqualität, Kanal, and ESC. The table contains 12 rows of data.

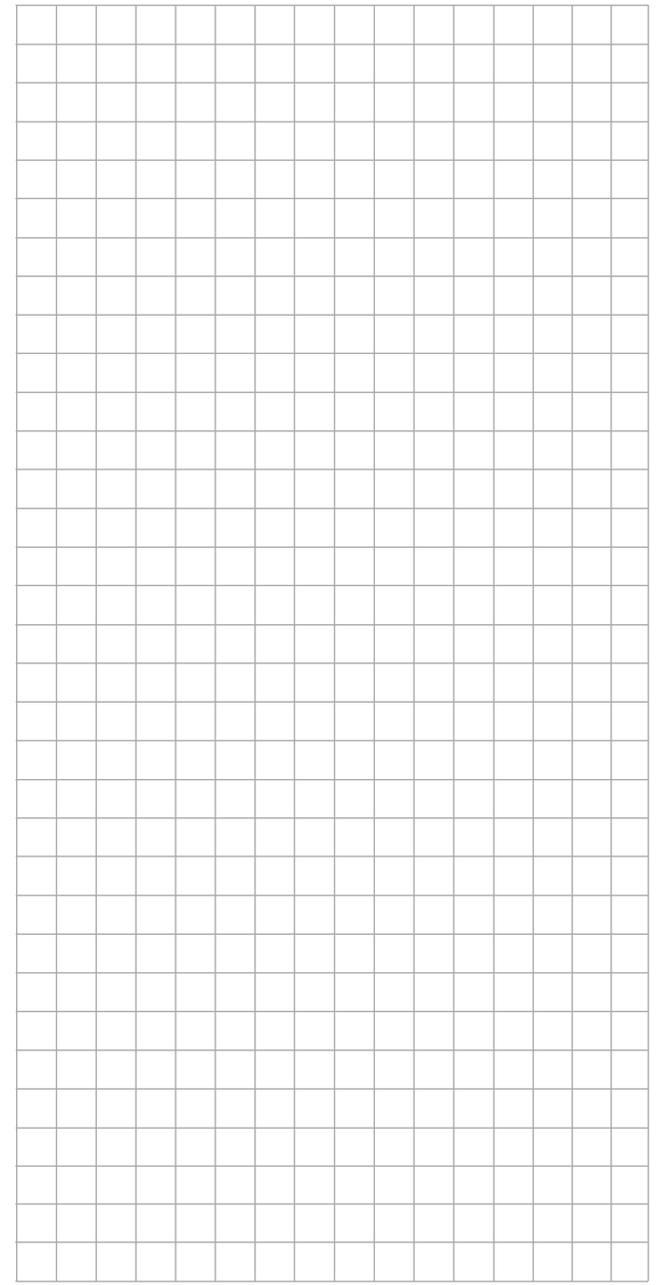
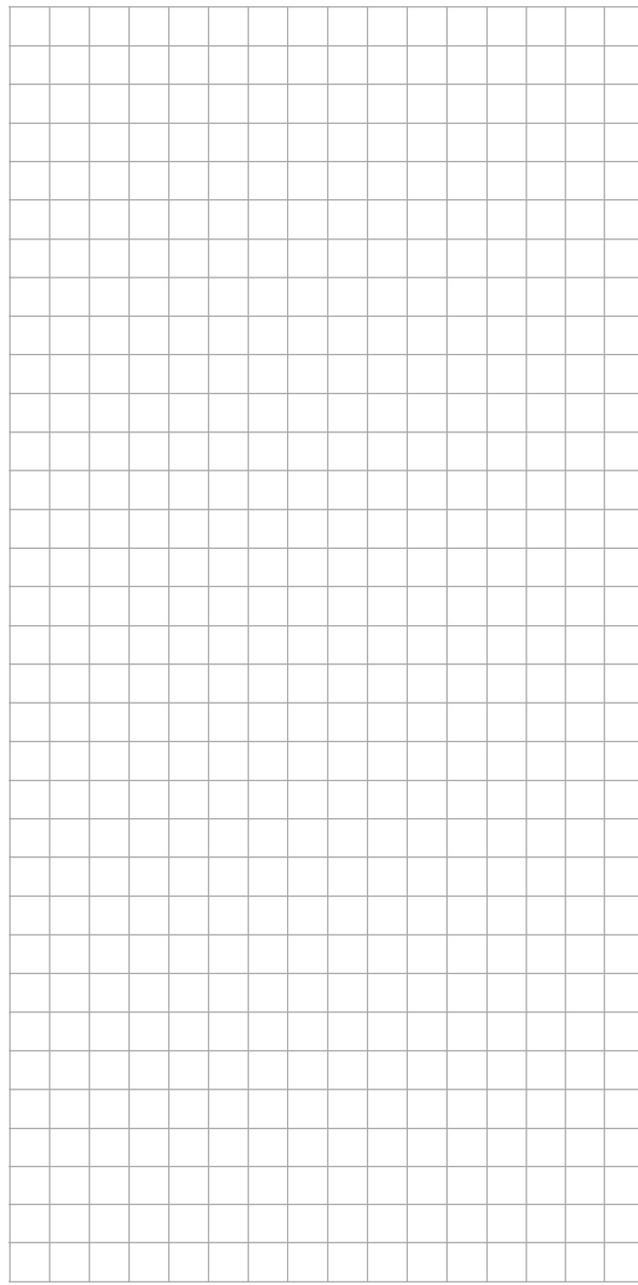
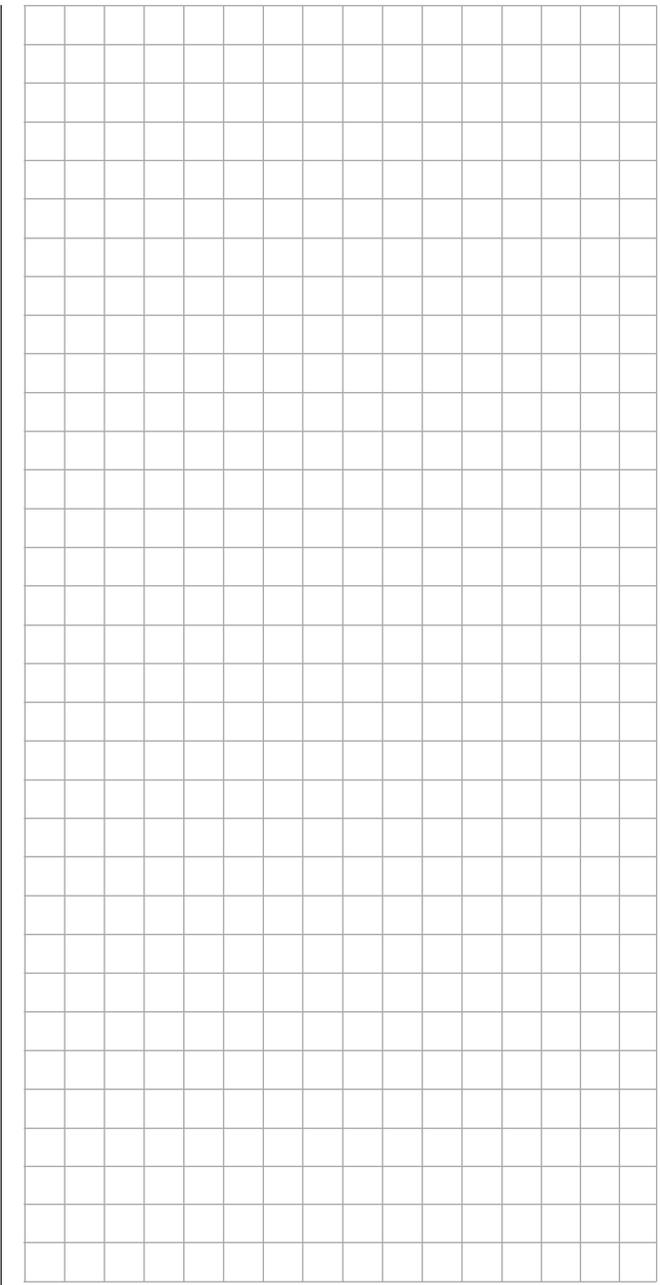
No	Zeit	HF-Signal...	aktuelle S...	min. Spe...	Kapazität	aktueller ...	max. Strom	Drehzahl	ma
1	+ 1.36 sec	-52	100	90	2000	5.1	5.1	30	
2	+ 1.83 sec	-35	100	90	2000	5.1	5.1	30	
3	+ 1.98 sec	-34	99	90	2000	5.1	5.1	30	
4	+ 2.32 sec	-34	99	90	2000	5.1	5.1	30	
5	+ 2.99 sec	-36	99	95	2000	5.1	5.1	30	
6	+ 3.16 sec	-35	99	95	2000	5.1	5.1	30	
7	+ 3.31 sec	-35	99	95	2000	5.1	5.1	30	
8	+ 3.45 sec	-34	99	95	2000	5.1	5.1	30	
9	+ 3.59 sec	-40	99	95	2000	5.1	5.1	30	
10	+ 3.72 sec	-39	99	95	2000	5.1	5.1	30	
11	+ 3.90 sec	-40	98	100	2000	5.1	5.1	30	
12	+ 4.13 sec	-46	98	100	2000	5.1	5.1	30	

GPS Google Maps™ display



⚠️ Tips and notes:

- Depending on the computer and Internet connection, the representation of the trajectory may take some time.
- Zoom in on the windows as you would expect under WINDOWS®.
- Choose between Map and Satellite view through . The view must be made before clicking the start button in the "Log display" window.
- You can also zoom in on the map section using the "+/-" field (bottom right) and move it with the left mouse button pressed.
- The "male" 🧑 in the Google Map window is irrelevant here. It's meant for the Street View feature.
- The two symbols 📍 represent the start and landing point of a model flight. Move the mouse pointer over the symbol, then "find out" which of the two points is Start (Start) or End (Finish) of the data recording.



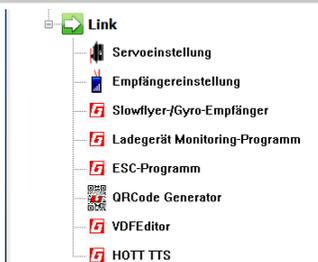
6 Program group "Link"

Additional programs

Information about the additional programs

Program group "Link" (additional programs)

In the function menu "Link" some additional programs around "HoTT" are summarized, namely the software packages ...



- **"Servo adjustment"** (page 102) for programming the Graupner DES (except DES 577), HVS, HBS servo and GM servo type HGM
- **"Receiver Setting"** (page 108) for programming and saving HoTT receiver settings,
- **"Slowflyer, Gyro Receiver"** (page 111) for firmware update of the manuals available when creating the manual ...
Slowflyer receiver
 - GR-12SH+HoTT, No. **33565**
 - GR-12SC+HoTT, No. **33566**

 The Slowflyer receiver GR-12S HoTT, No. **33505**, is updated via the "HoTT device" program in the "Device" program group.

Gyro receiver

- GR-12+3xG (+3A + Vario) HoTT, No. **33575/6/7**
- GR-18 +3xG+3A + Vario HoTT No. **33579**
- GR-24 PRO+3xG+3A+3M+Vario HoTT No. **33583**
- **Charger monitoring** (page 113) for systematic logging and display of charging parameters,
- **ESC utility program** (electronic speed controller – Page 126) for setting "power curves" (throttle or power curves) for "Brushless GM-GE-NIUS PRO+T" series ESC travel controllers.

➤ **VDF editor (Voice Data Files)** is a program for editing the announcement files of Graupner HoTT transmitters. This editor offers more functions and comfort than the function contained in the previous Firmware Upgrade Studio.

➤ **HoTT -TTS (Text to Speech)** allows the conversion of texts into speech.

 By renaming the file type from *.exe to *.jar, the programs "VDFEditor" and "HoTTTS" can also be started under macOS® or Linux®. Under macOS®, right-click on the file and select "Open".

The programs listed below are automatically installed when the grStudio program is first installed and can also be started separately from the grStudio program by double-clicking on the respective exe file.

The executable programs can be found at:
"Local Disk (C :) • Programs (x86) • Graupner • grStudio"

grStudio designation	exe Program
 Servoeinstellung	 Graupner_Servo_Setup.exe
 Empfängereinstellung	 Receiver_Setup.exe
 Slowflyer-/Gyro-Empfänger	 micro_gyro_swloader.exe
 Ladegerät Monitoring-Prog	 Graupner_Charger_Monitoring_Suite.exe
 ESC-Programm	 ESC_Setup_Util.exe
 QRCode Generator	 QRCodeGenerator.exe
 VDFEditor	 VDFEditor.exe
 HOTT TTS	 HoTT-TTS.exe

"Servo setting"

Servo programming - Servo setting

Servo programming – Servo setting

This program is used to read out and program the Graupner digital servos of the DES (exception: type DES 577), HVS, HBS and HGM series.

The software allows the servos to be perfectly adapted to the respective conditions without having to program in the menu of the remote control. They can therefore be set up before commissioning.

 However, be careful with this option, especially if you have additionally defined the servo settings on the transmitter side or on the receiver side, or if you want to change them later.

Suggested accessories:

- the USB interface No. **7168.6**,
- the servo USB programming adapter cable No. **S8363**

 The use of the interface cable with the No. 7168.A or 7168.S is not possible!

- a suitable receiver battery.
- Alternative: If you still have the older adapter cable No. **6466.S**, you also need two Y cables (No. **3936.11**) to connect a receiver battery. The positive cable (red) should also be pulled out of the plug, see below.

 A clear summary of adjustable servo parameters can be found on page 106.

General preparations

1. USB drivers installed?

Have you already installed the USB driver? Then move on to the next step. Otherwise read the section "Driver installation" on page 12.

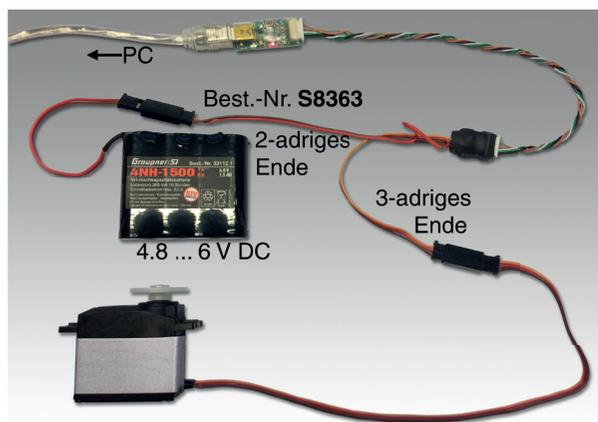
2. Select COM port

Then select - if you have not already done so - the COM port (USB port on the PC) as described on page 17.

3. Connect programmable servo

Connect the USB interface to the computer and connect the remaining cables as shown in the illustrations below. If necessary, charge the receiver battery first.

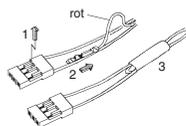
a) Connection using the adapter cable S8363:



b) Connection using the adapter cable No. 6466.S and two Y cables, No. 3936.11.

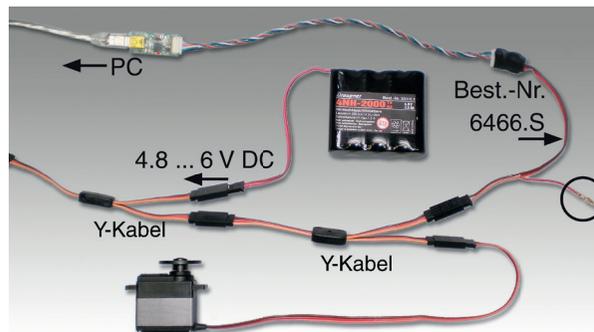
! The positive cable of the interface cable No. 6466.S MUST be removed from the housing before making the connection on the connector side (circle).

Use a small screwdriver to slightly lift the middle tab of the connector (1) and pull out the middle red cable (2).



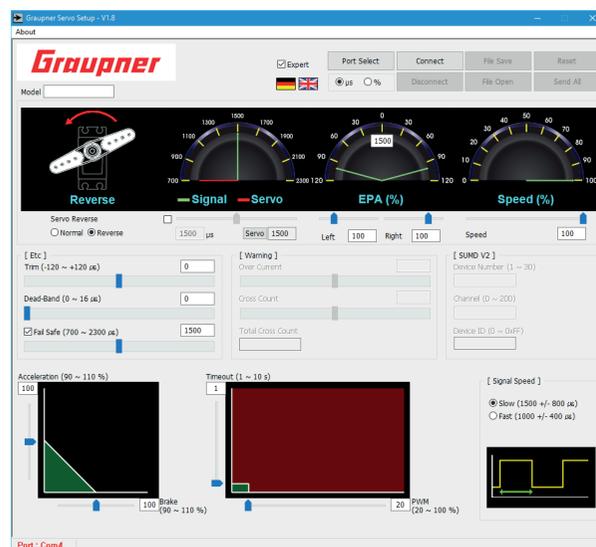
Program start "Servo setting"

If necessary, secure the end with adhesive tape as shown in (3).



4. Start the "Servo setting" program

Click on "Servo setting" (or start the program `Graupner_Servo_Setup.exe`). This opens a window for setting servo parameters, which is explained below.



As soon as GM servos of type HGM are connected, the logo changes in the top left, and in the middle part further functions are unlocked (see below):

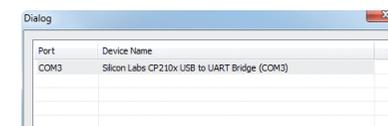


At the time of writing this manual, version 1.8 is available, see header. (You can also query the version number by clicking on "About" above the Graupner logo.)

In the header of the window, first select via  or  the menu language German or English. Through   (at the top of the picture), you can display servo settings in μs or % values, where 1,500 μs corresponds to the neutral position, ie 0%.

COM port not yet selected?

If not already done before - see (2.) - you can also select the COM port within this menu. Click on the button  ("Port Select") and set the COM port, which is occupied by the Silicon Labs USB driver. The correct COM port assignment can be found using the  button. Select "Silicon Labs CP210x USB to UART Bridge".



Make connection

5. Establish connection

Click on the button ("Connect"). (If you have not yet set the COM port, you will be notified by a pop-up window "Port Open Fail").

After about 3 seconds, the button disappears and the current parameter settings of the servo are displayed in the corresponding fields and graphics, which are explained in the table below. At the same time the other buttons are displayed:



 **Do not press any other button during the readout time. Be sure to wait until the button is released again.**

Beneath the *Graupner* or GM logo, next to "Model", the servo type of the connected servo is displayed whose data has been read out. If necessary, you can change this servo name and transfer it to the servo, see next paragraph. Eight characters are available at maximum.



The button ("Disconnect") terminates the active connection again.

 **disconnect the connected servo after a click**

6. Setting and saving servo parameter

A clear summary of adjustable servo parameters can be found on page 106.

The servo parameter ...

- Rotating direction ("Servo reverse"),
- Neutral point setting (activate before),
- EPA (End Point Adjustment),

Adjust servo parameter settings, save

➤ Speed (adjustment)

... can be set as desired. To do this, click on the corresponding option below the display and move the respective "handle" with the mouse button pressed down.



 Use the left handle to adjust the servo position. Prior to this, a check mark must be placed to the left of the handle. The green pointer stands for the desired position, the red for the actual position. If necessary, click on the handle several times to bring both hands together.

 The button is only required if the servo position is not transmitted automatically.

In the middle part of the window "Servo setting" you can set presets for ...

- Servo trim,
- Dead band and
- Fail Safe



Via dead band you influence the servo response to smaller control commands between 0 and 16 µs pulse width. The smaller you choose the dead time, the more sensitive the servo will be. If the servo flaps in neutral with this setting, the value must be changed to 6 ... 8. (Depending on the servo type, the dead time set here can not be lower than certain values.)

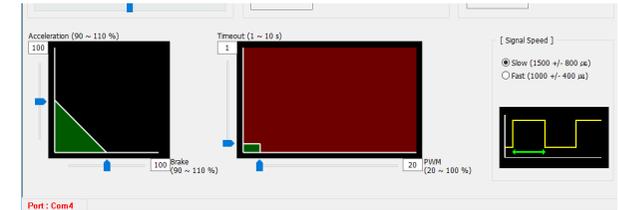
Expert mode

If you click on Expert Mode Expert at the top of the screen, you will have access to the three options listed in the lower part of the screen ...

- Acceleration / brake,
- Timeout / pulse width,

GM telemetry servo settings

➤ Signal speed: slow or fast



Modified parameters are automatically stored in the servo within approx. 0.5 s.

 If there is a possible error message, click on the button ("Save data") in the upper right corner, as described in the next paragraph.

If necessary, you can also transfer the settings to the connected servo by clicking on the button ("Save data" - **not** "Save file"), which is displayed via the "Data Send" window. See section "9. Load saved data".

The button ("Reset") returns the connected servo to the factory settings. However, a modified servo name will not be reset. For details, see the following table.

7. For future SUMD-compatible devices, such as GM telemetry servos type HGM + T, in conjunction with the car transmitter sets X-8N and X-8E as well as receivers with SUMD V2 bus system



These parameters are only accessible with a connected GM servo.

"Over Current": Set the max. servo current recording in mA. As soon as the limit value is exceeded, there will be an acoustic warning message on the transmitter side in lat-

Additional program "Servo setting"

Save servo parameters to PC

Transfer stored data to servo

er use.

"*Cross Count*": counts the servo movements left and right via the integrated potentiometer. A warning sounds if the number of servo movements set here (from left to right) is exceeded.

"*Total Cross Count*": total number of servo movements (left / right), not changeable.

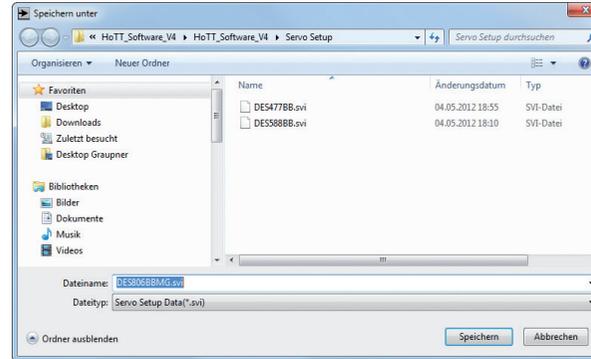
"*Device Number*": Assigned as soon as the device is registered by the transmitter. This entry indicates where in the device list "Device Management" the transmitter display is listed.

"*Channel*": channel selection (regardless of which receiver port ("*port*") the device is in), 1 = steering (channel 1), 2 = throttle (channel 2), ...

"*Device ID*": A non-modifiable device ID (for SUND protocol); is assigned automatically as soon as the transmitter registers the device (servo, controller, ...).

8. Save servo parameter on the PC

The button ("*Save file*") in the upper button line saves the current servo configuration as a ".svi" file on the PC. The Windows dialog window "Save as" opens. Select the desired folder in which the file should be stored, give the file a suitable name and click on ("*Save*").

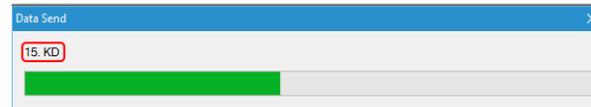


If the backup was successful, the pop-up window "Data Save Success" appears.



9. Transmitting the saved data on a servo

The button ("*Load File*") opens a servo configuration file saved on the PC. This can then be e.g. by clicking on the button ("*Save data*", **not** "*Save file*") to be transferred to the connected servo. The "Data Send" window indicates the progress of the data transfer. Do not interrupt the transmission .



After successful transfer, the pop-up window "File Data Load Success" appears.



 First click on the button ("*Disconnect*") before removing the servo from the interface.

Additional program "Servo setting"

Description of adjustable servo parameter

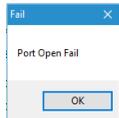
Parameter	Description	Settings / comments
Model	Display servo type (Name)	max. 8 characters
Servo reverse	Servo reverse, changes the direction of rotation of the servo	normal, reverse; factory setting: normal
Signal - Servo	Signal: After setting a check mark in the check box, the servo can be moved with the slider, the current position is displayed in μs or%. Servo: Clicking on the "Servo" button displays the current servo position in μs or%.	700 ... 2.300 μs ; factory setting: 1.500 μs
EPA End Point Adjust- ment	End point adjustment: maximum servo travel separately adjustable right and left <i>Note: With "Signal Speed" "fast" - not for Graupner Servos - the neutral point ("Signal Servo" display) is changed from 1,500 μs to 1,000 μs, see last line "Signal Speed"</i>	30 ... 120%; factory setting: 100%
Speed	Servo speed (100% = maximum), for example, to adjust the servo speed for special functions	1 ... 100%; factory setting: 100%
Trim	Trim position, for fine trimming the middle position	- 100 ~ +100
Dead band	Dead band setting: the higher the value, the greater the stick travel around the zero position until the servo responds. If the servo flaps in neutral with this setting, the value must be changed to 6 ... 8. Values other than these should not be programmed.	0 ... 16; factory setting for all servos 2
Failsafe	Failsafe position to activate Failsafe, check the box <input checked="" type="checkbox"/> Failsafe (700 ~ 2300 μs) and select a position	700 ... 2300 μs , factory setting: disabled
Can only be activated by clicking the checkbox <input checked="" type="checkbox"/> Expert ("Expert")		
Acceleration- Brake	Sets the acceleration and braking behavior of the servo.	90 ... 110%, factory setting: 100%
Timeout PWM	Pulse width modulation: Here you can set the behavior of the servo at full load. Example setting timeout 3 s, PWM 60%: If the servo is fully loaded, it will give full power for 3 s, after 3 s the power will be reduced to 60%.	Timeout: 1 ... 10 s, PWM: 20 ... 100%; Factory setting: Timeout: 3 seconds, PWM: 100%
Signal speed	Type 1 (slow): setting for most servos, also for all <i>Graupner</i> remote control systems (and servos DES, HVS, HBS and HGM), Type 2 (fast): for some Futaba or Sanwa remote control systems that require this setting.  <i>With signal speed "fast", the neutral point ("signal servo" display in the display above) is changed to 1000 μs, the servo deflections now range from 600 ... 1400 μs.</i>	slow fast; factory setting: slow
[Warning] Over Current Cross Current	in preparation: only for GM telemetry servos A warning is issued when the peak current exceeds the current set here. Unit: mA On the transmitter side, an acoustic warning is issued if the number of servo movements (from left to right) per second is greater than the number specified here	variable to 9.000 mA
Total Cross Current [SUMD V2] Device Number	Total number of servo movements (from left to right) from the first to 1/100 of the actual number Only in conjunction with car transmitter sets "X-8N" and "X-8E" as well as receivers with SUMD V2 bus system Assigned automatically. This entry indicates where it is listed in the "Device List" in the "Device Management" menu of the transmitter display.	Servos, controllers, ... must support SUMD not changeable
Channel	Channel via which the device is controlled - independent from the "port" (receiver port) to which the device is connected. Changeable, see right.	1 = steering (channel 1), 2 = throttle (channel 2), ...
Device ID	Internal device ID (value depending on connected device) for SUMD protocol	not changeable

Error messages

Error messages

Missing USB connection

"Port Open Fail" is the error message when the USB cable is not connected to the interface.



If the error occurs despite the USB connection, disconnect the USB connection for a few seconds before restoring it.

Interruption of the USB connection between interface and PC after clicking on ("Save data")

Two messages appear consecutively. Click on the corresponding  button until the progress bar in the background has reached the right end. This is necessary because the program attempts to transfer a total of 20 records, which are displayed to the left above the progress bar.



 At the end the message "Data Send Success" appears, because there is no feedback internally. So click here  too.

Then you must first disconnect  and repeat the process after checking all line connections. If these messages occur elsewhere, the following applies in principle: First click on  and then repeat the procedure.

No reaction when clicking on

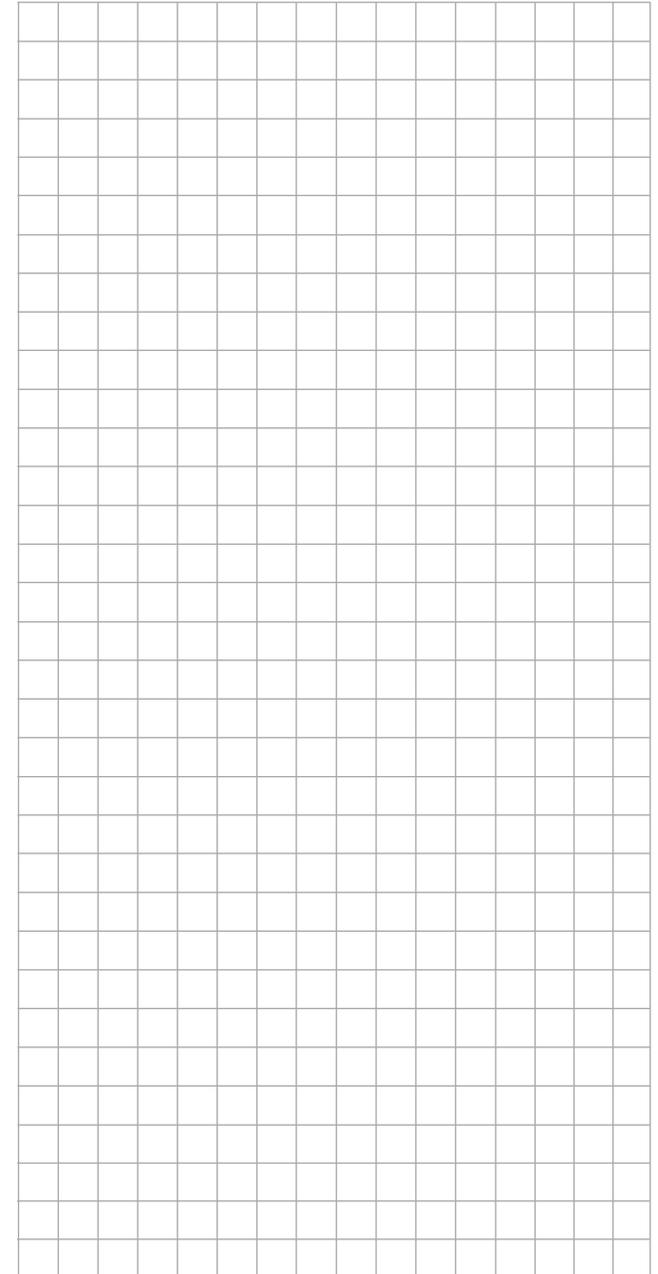
In this case, no error message appears. Wait until the "Connect" button is active again. Check the connections using the figure on page 103.

Use the "correct adapter cable" No. S8363 (or, if still available, No. 6466.S with positive lead pulled out (red wire)).

 The cable with the No. 7168.S must **NOT** be used!

Wrong file

If you see a "File Size Mismatch" error, you probably uploaded a non-servo file from the PC.



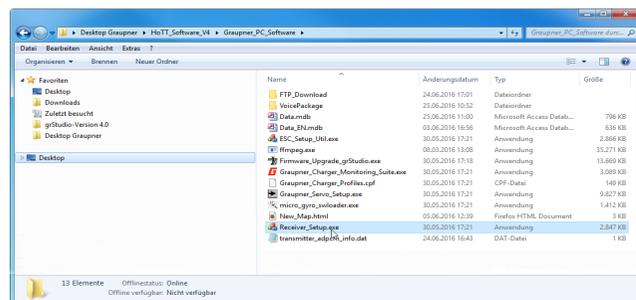
Additional program "Receiver setting"

Read and save receiver data – Receiver setting

Use the "Receiver Setting" item to save all the data programmed in the receiver to a file on your computer so that you can transfer the record back to the receiver. If necessary, this will save you re-programming via the »Telemetry« menu.

 The program "Receiver setting" is currently only intended for reading out and storing receiver data on a PC or laptop. At a later time, parameter values can also be changed and transferred to a receiver via this program. You are currently not allowed to make any changes in the corresponding fields and transfer them to a HoTT receiver. Your settings already made via the "Telemetry" menu may be lost.

The "Receiver Setting" program is preferably called from the "Firmware_Upgrade_grStudio" program. Alternatively, you can start this application program directly. You will find the  file in the directory "Graupner_PC-Software".



 If you call "Receiver setting" from the Firmware_Upgrade program, make sure that the subroutine  is in the same directory as the "Firmware_Upgrade_grStudio" program!

Start "Receiver setting"

 The following HoTT receivers can not currently be read out with the "Receiver setting" program:

Type	No.
GR-4	33502
GR-8 Race	33504
GR-12L	S1012
Gyro receiver:	
GR-12SH +3xG	33575
GR-12+3xG	33576
GR-12+3xG +3A + Vario	33577
GR-18 +3xG+3A + Vario	33579
GR-24 PRO+3xG+3A+3M+Vario	33583
Slowflyer receiver:	
GR-12S	33505
GR-12SH	33565
GR-12SC	33566

Suggested accessories:

- USB interface No. **7168.6**,
- Interface cable No. **7168.S** so as
- suitable receiver battery. It is recommended to connect the receiver battery to the receiver via a switch cable.
- Alternative without receiver battery: additional 3-core cable No. **33700.1**.

General preparations

1. USB drivers installed?

Have you already installed the USB driver? Then move on to the next step. Otherwise read the section "Driver installation" on page 12.

2. Select COM port

Then select - if you have not already done so - the COM port (USB port on the PC) as described on page 17. Remember the COM port number for point (4.).

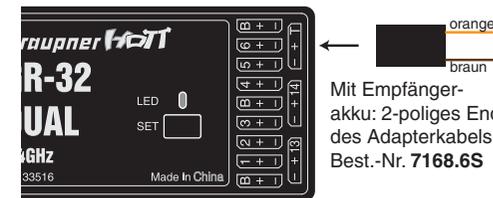
3. Connect the receiver / PC

Two options with / without separate power supply are described below. Disconnect previously connected servos, speed controller etc. from the receiver.

a) With separate power supply (see image)

This variant is preferable to option (b).

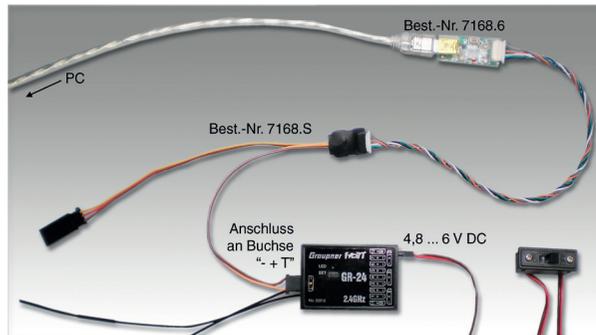
Connect the 2-pin end of the interface cable, No. 7168.S with the connection "- + T". In this case you need a receiver battery. *The receiver may not yet be switched on!*



 If you have the - older - adapter cable No. 7168.6A, the positive lead on the plug side **MUST** be removed. Use a small screwdriver to slightly lift the middle tab of the connector and pull out the middle red cable.

Connect the USB interface to the PC or laptop via the supplied USB cable (PC-USB / mini-USB). When properly connected, a LED on the interface board should light up red, depending on the operating system, permanently or for up to 30 s.

General preparations



The receiver - here GR-24 - remains switched off!

b) Without separate power supply:

! In this case, **no separate power supply may be connected to the receiver. This could destroy the receiver.**

! If possible, use a primary USB interface on the PC or laptop. If you have several devices connected to a USB interface, do not turn off the power of the USB port. In this case, a receiver battery is required in addition. See previous section "With separate power supply". All connected servos, travel controllers, etc. must be disconnected from the receiver beforehand in order to limit the power consumption via the USB cable. For this reason variant (a) is recommended.

First, connect the 3-pin socket of the adapter cable, No. 7168.S with the 3-pin plug of the cable No. 33700.1. Immediately before the update, connect the other end to the "- + T" port of the HoTT receiver, see (5.).

Example: Connection to the HoTT receiver GR-32 with 3-pin plug for updating without separate receiver battery.

Start program "Receiver setting"



orange
rot
braun

Ohne Empfänger-akku: 3-poliges Kabel Best.-Nr. 33700.1 mit Adapterkabel Best.-Nr. 7168.S verbinden.

Connect the USB interface to the PC or laptop via the supplied USB cable (PC-USB / mini-USB). When properly connected, an LED on the interface board should light up in red, which will go off or glow steadily for a long time, depending on the operating system.

The plug-in systems are largely reverse polarity protected. Note the small chamfers on the sides. Do not apply force. The plugs should click into place easily.

4. Starting the "Receiver setting" program

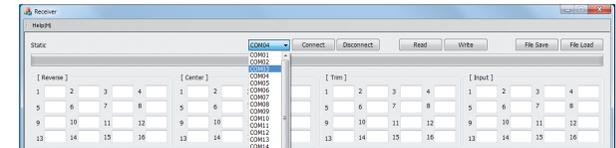
In the left-hand function menu in the "Link" program group, click the "Receiver setting" program. (Alternatively select in "menu" the related entry.)

The following description refers to version 1.0. You can query the version number in the top left corner of the "Receiver" window by clicking on "Help (H)".

(You can also call the associated program "Receiver_Setup.exe" separately. It's in the same directory as the "Firmware_Upgrade_gr-Studio" program.)

A program window will now appear in which you should first set the "correct" COM port for the USB interface (No. 7168.6) in the selection window . If you are not sure, check the COM port in the "Select Port" window of the firmware upgrade program and note the COM port number for the entry "Silicon Labs CP210x USB to UART Bridge" - here "COM03"

Read receiver data



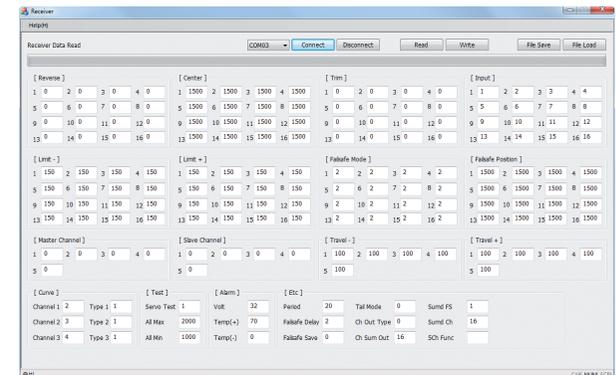
(If you select the wrong port, you will be alerted to this when you read out the receiver data).

5. Reading out the receiver data

With the receiver still switched off, click on the button ("Connect") and wait until the status bar below starts running:



Press and hold the SET button of the receiver and then switch it on. After approx. 3 seconds, the current values of the recipient are displayed in the corresponding fields.



If the progress bar is "faster than you" and has reached the end, even before the receiver is turned on, the pop-up window will appear ...

Additional program "Receiver setting"

Save receiver data



Repeat the process in this case.

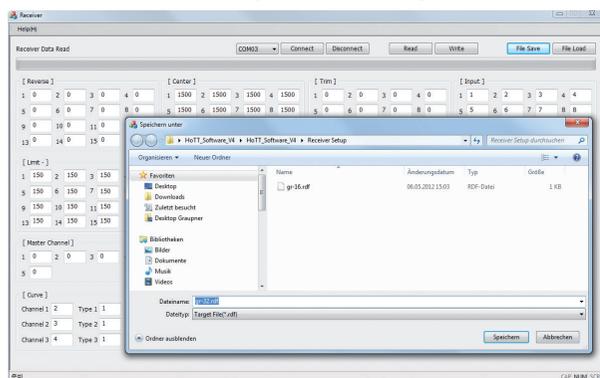


Terminate the active connection with the button  ("Disconnect") only if you want to initialize the receiver directly and do not want to overwrite it with a record that has already been saved.

6. Saving the receiver data

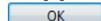
The "Save file" button saves the current receiver or servo configuration on the PC.

The Windows dialog "Save as" opens.



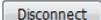
First select a suitable folder in which the file is to be saved and under "File name" enter a suitable but unique name so that you can find the file again later. The file extension ".rdf" will be added automatically. As soon as you click the button  ("Save"), the record is saved.

When this process is completed, the message "File Save" appears.

Close it with a click on .



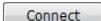
Copy data set to the receiver

Do not forget to disconnect the receiver by clicking on  ("Disconnect") before switching off the receiver.

If necessary, you can reset the receiver to the factory settings ("receiver initialization") as described in the respective manual.

Copy record to receiver

The saved data is read in again via  ("File Load") of this program.

First set up a "connection" of the receiver as described under point 5 "Read out receiver data" by clicking on the "Connect"  button. If the receiver has been previously initialized, it has been reset to the factory settings, the default values are read out.

Now select the desired ".rdf" file from the corresponding directory on the PC and press  in the "File Load" pop-up window.



Clicking the "Write"  button transfers the data to the connected receiver.

As soon as the transfer has taken place, the pop-up window "Receiver Data Write Success" appears.



Finally, confirm the transmission with  and click on the "Disconnect"  button to disconnect the Receiver Setup program from the receiver.

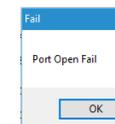
 The other functions of the "Receiver Setup" program, such as changing receiver data, are currently being prepared and must not be used. Find out about the current state of the software in the download area of the corresponding remote control system.

Error messages

Error messages

Missing USB connection

"Port Open Fail" is the error message when the USB cable is not connected to the interface.



If the error occurs despite the USB connection, disconnect the USB connection for a few seconds.

Receiver not yet switched on

If you did not switch on after clicking on  the receiver before the progress bar reached the right end, the following error message appears:



Click on  and repeat the process

SET button on the receiver not pressed down

Hold down the SET button on the receiver by clicking  and making the connection. Otherwise, the previous error message appears.

Receiver data cannot be read repeatedly

You will receive the same error message as before. You may have connected a receiver that can not be read, see Exclusion list at the beginning of this menu description.

Additional program "Slowflyer, gyro receiver" for WIN®, macOS® and Linux®

Start program "Slowflyer, gyro receiver"

Slowflyer and gyro receiver update

With the program "Slowflyer, gyro receiver" firmware updates are transferred to the following Slowflyer receivers and all Gyro-HoTT receivers

...

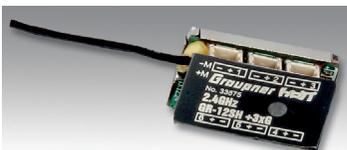
No. 33565
GR-12SH+
(with SH ports)



No. 33566
GR-12SC+
(with ZH ports)



No. 33575
GR-12+3xG



No. 33576/7
GR-12+3xG
(+3A+ Vario)



No. 33579
GR-18 +3xG+ 3A+
Vario



No. 33583
GR-24 +3A+3M+
Vario



an update of this receiver, the adapter cable No. 23048 is required.

Firmware upgrader "Slowflyer & gyro receiver" for macOS® and Linux®

In the download area under "Firmware Upgrade Studio" there is an update package that is separate from the grStudio program: "FirmwareUpgrader-0-9-3-30-jar.zip", which can be started under the operating systems macOS® and Linux®. Unpack the zip file and run the program by right-clicking on the file and clicking on "open". (The *.jar program currently requires Java 8™. Operation is as described below for Windows®.)

Suggested accessories:

- USB interface No. 7168.6 incl. USB cable
- Interface cable No. 7168.S,
- Adapter cable No. 33565.1 for the receiver GR-12SH+ (No. 33565),
- Adapter cable No. 23048 for the receiver GR-12SC+ (No. 33566),
- Y (or V) cable No. 3936.11,
- suitable receiver battery. It is recommended to connect the receiver battery to the receiver via a switch cable.
- without receiver battery: 3-pin connection cable No. 33700.1.

General preparations

1. USB drivers installed?

Have you already installed the USB driver? Then move on to the next step. Otherwise read the section "Driver installation" on page 12.

2. Select COM port

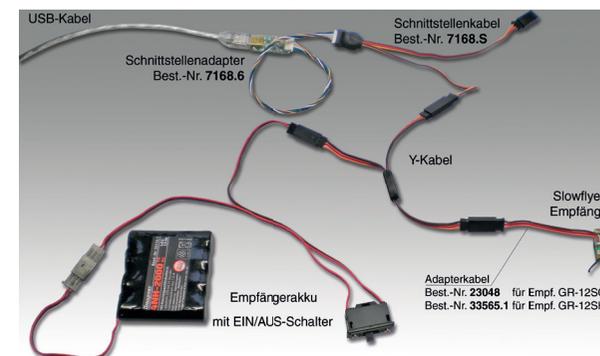
Then select - if you have not already done so - the COM port (USB port on the PC) as described on page 17. Remember the COM port number for point (4.).

3. Connection Slowflyer receiver – PC

⚠ Disconnect all servos, speed controllers etc. from the receiver before the update, as these can receive uncontrolled electrical pulses during the update process. The model may be damaged, start a motor, ...!

a) Preparation for the case WITH a receiver battery:

Connect the USB interface No. 7168.6 via the adapter cable No. 7168.6S with the slow flyer or gyro receiver as shown in the following figure. The power supply remains switched off.



For the gyro receivers, the adapter cable between Y cable and (gyro) receiver is omitted.

⚠ A firmware update of the slowflyer receiver "GR-12S HoTT" (No. 33505) must be carried out with the "HoTT device" program in the "Device" program group. For

General preparations

Connection adapter cable only for Slowflyer receivers:

No. 23048 for the receiver GR-12SH+ (No. 33566) and No. 33565.1

for the receiver GR-12SH+ (No. 33565)



Never use force when connecting the cables. Pay attention to the lateral chamfers or slots. Connect the USB interface to the PC or laptop via the supplied USB cable (PC-USB / mini-USB). When properly connected, an LED on the interface board (depending on the operating system, for a limited period of time) should light up red.

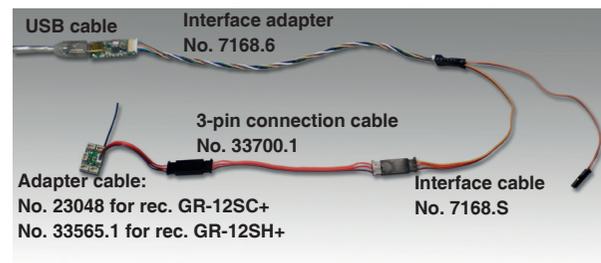
b) Preparation for the case WITHOUT additional power supply:

Connect the USB interface No. 7168.6 via the adapter cable No. 7168.6S.



The connection to the telemetry socket of the receiver via the connection cable (No. 33700.1) or adapter cable is only made later, see section (4.).

(For a slowflyer receiver the adapter cables mentioned in the picture are required.)



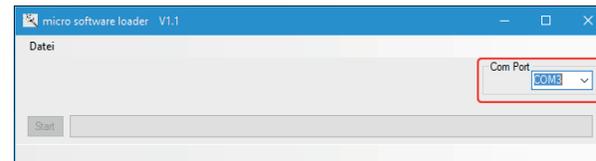
The cabling to a gyro receiver takes place in the same way, only the adapter cable between (gyro-) receiver and 3-pin connection cable is omitted.

Start program "Slowflyer, gyro receiver"

4. Starting the "Slowflyer, gyro receiver" update
The **G**raupner_Charger_Monitoring_Suite.exe update program is preferably called from the "Firmware_Upgrade_grStudio" program. (Alternatively select in "menu" the related entry.)

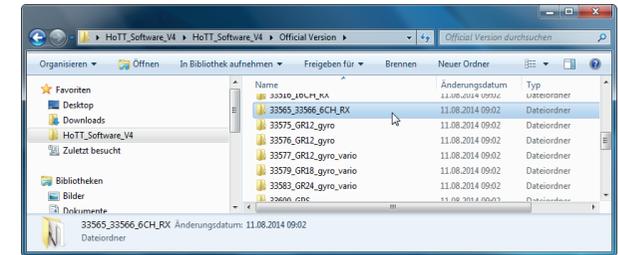
It is also possible to start the associated application program directly. Double-clicking on the file **micro_gyro_swloader.exe**. You will find this .exe file in the "Graupner_PC Software" folder of the "HoTT_Software VX" pack.

A program window will now appear in which you should first set the "correct" COM port for the USB interface (No. 7168.6) in the selection window .



If you are not sure, check the COM port in the "Select Port" window, see section (2.), and note the COM port number for the entry "Silicon Labs CP210x USB to UART Bridge" - here "COM03"

(If you select the wrong port, you will be alerted to this when you read out the receiver data). Click on **Datei** to load the corresponding firmware file from the hard disk. An automatic firmware update via the Internet is not provided.



The firmware files are product-specific coded, so if you accidentally select a file that does not match the product, you will not be able to start the update process.

To the two gyro receivers

➤ GR-18 +3xG+3A + Vario HoTT

No. 33579 and

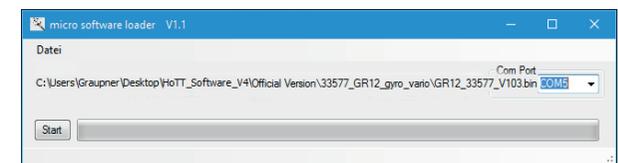
➤ GR-24 PRO+3xG+3A+3M+Vario HoTT

No. 33583

you will find three different bin files in the "Official Version" directory of the "HoTT-Software_V4" software package:

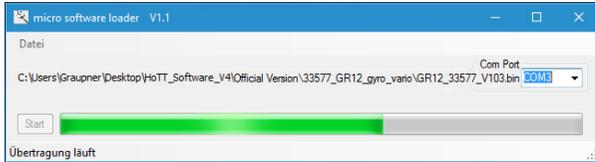
bin file	Description
GR18_33579_V150	regular update
GR24_33583_V150	
GR18_data_default	Factory reset for air-plane software
GR24_data_default	
GR18_data_helireset	Factory reset for heli software
GR24_data_heli_reset	

After loading the *.bin file from the corresponding folder, click on **Start** ...



... and connect or switch on the receiver. (The SET button on the gyro receivers does not need to be pressed.)

Start program "Slowflyer, gyro receiver"



The progress bar shows that the transfer is running normally. The receiver LED is switched off during this time and flashes as soon as the transmission is finished.

5. Initialization

The slowflyer and gyro receivers do not need to be reinitialized.

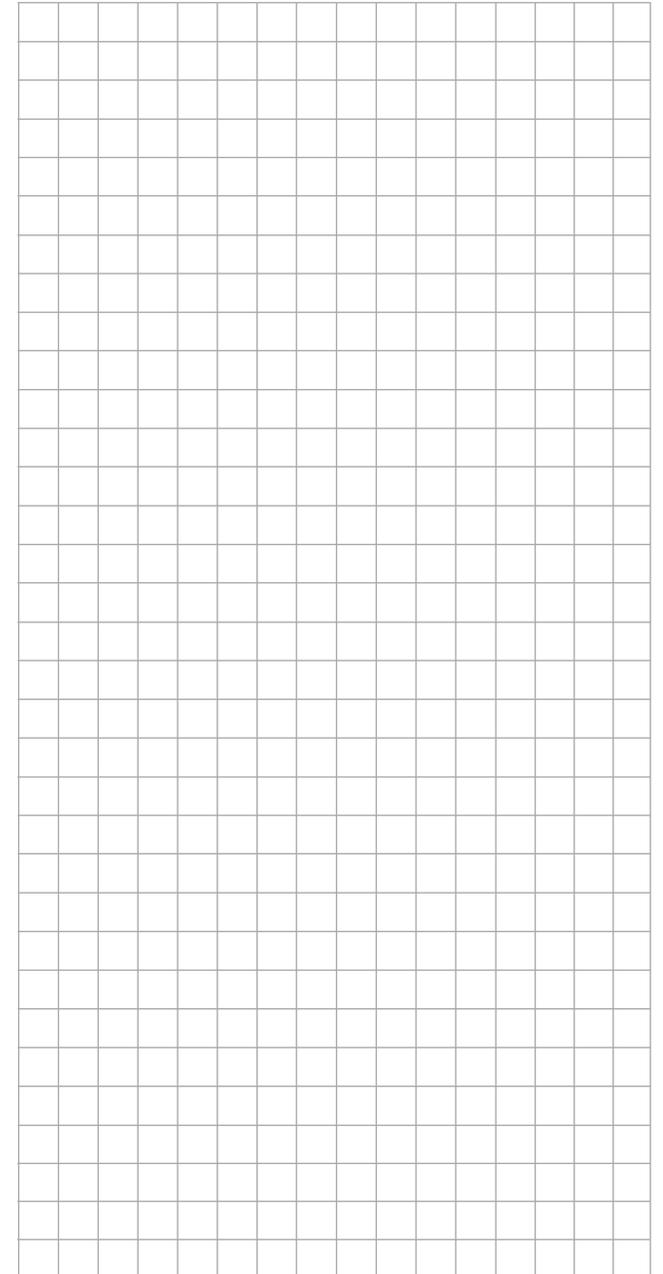
Error messages

Error messages

If the transfer does not work and / or the progress bar does not go through to the end, quit the program and disconnect or switch off the receiver. Repeat the transmission as described.



The correct COM port MUST be re-entered!



Additional program "Charger monitoring"

Charger monitoring program

Charger monitoring

The "Charger Monitoring" program allows the recording, storage and a graphic representation of relevant charging parameters of the POLARON charger series and the ULTRAMAT ACDC EQ charger.

The following description refers to the version 1.3.

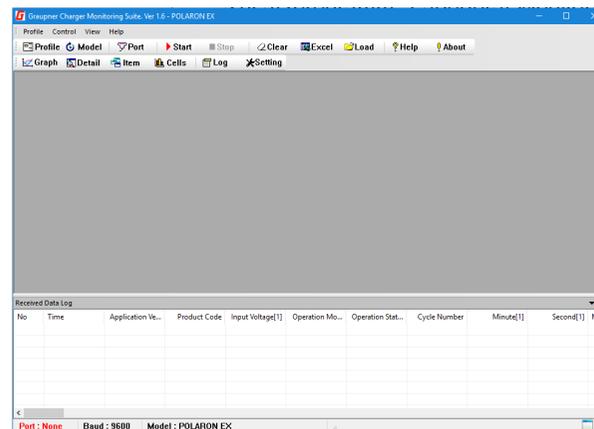
⚠ Power supply
If data logging does not work properly, use a fully charged 12 or 24V lead acid battery (or 3 to 4 cell LiPo battery) of sufficient capacity. Conventional DC power supplies and especially switching power supplies can cause interference in individual cases due to excessive noise.

Suggested accessories for POLARON chargers

- for an update a USB cable (PC-USB / Mini-USB) is required.

General preparations

1. **USB drivers installed?**
Have you already installed the USB driver, otherwise see page 12?
2. **Polaron charger with PC connect**
Make sure that the charger is switched off - if necessary Disconnect the mains plug or switch off the power supply and wait until the display goes out. Now connect the charger directly to the PC via the USB cable. The interface is automatically detected. (If not, turn on the charger once and then turn it off again.)
⚠ Always make sure there is a perfect USB connection. A break may damage the device.
3. **Select COM Port**
Then select - if you have not already done so - the COM port (USB port on the PC) as described on page 17.
4. **Start the "Charger monitoring" program**



Start the charger monitoring program within the "grStudio" program in the "Link" program group by clicking on:  Ladegerät Monitoring-Programm. It is also possible to start the associated application program directly. Double-clicking on the file  Graupner_Charger_Monitoring_Suite.exe.

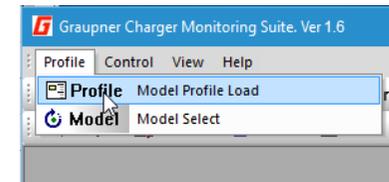
You can find this exe file in the directory of

Menu and button line

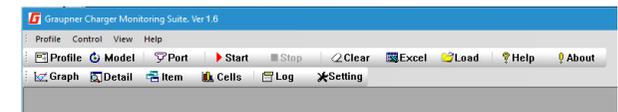
"Firmware_Upgrade_grStudio_Software."

5. Menu and Button line

You can access the functions described below either via the menu bar, with a pop-up window from which the desired function is selected, for example:

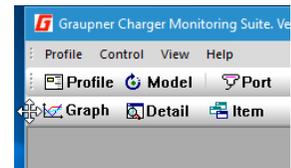


as well - faster and more direct - via the button bar:



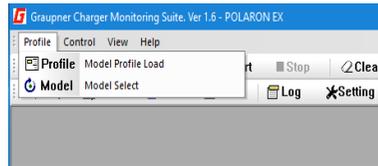
If necessary, you can relocate the button lines with the mouse as you wish, e.g. the lower one next to the upper button line. Place the mouse pointer on the left end until a double cross is visible. By holding down the mouse button, the button line can now be moved.

⚠ The program does not react when clicking on a button? Then you probably forgot to select the charger model first via  "Profile" ("Profiles") or  "Model" ("Model").



Menu "Profiles" (Selection IMPORTANT)

Menu "Profile"



The first menu contains two functions:

"Model Profile Load" (loading the profile file, alternatively clicking the button ) accesses a file that contains information about various chargers that can be operated with the program "Charger Monitoring".

Select the suitable charger via "Model Select" (or via the button )

 Before you continue to work with this program, you **MUST** first select the charger profile here.

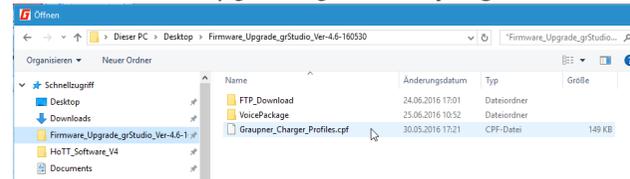
Load profile data

Open the charger profile file "*.cpf"

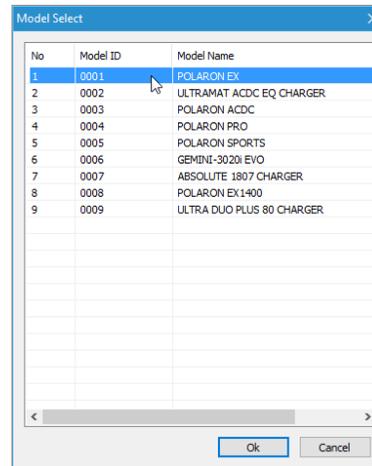
First, the charger profile file "*.cpf" must be read. This file contains the profile collection of all chargers that can be read with this program.

Select "Profiles" in the menu bar and "Model Profile Load" in the window that opens.

The profile file (*.cpf) is in the same directory as the "Firmware_Upgrade_grStudio" program.



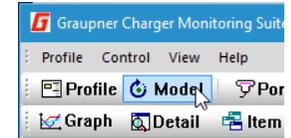
Double-click on the configuration file "Graupner_Charger_Profiles.cpf" ...



... and select the relevant charger from the list of registered chargers. Confirm the selection with . In the title bar and at the bottom of the window (status line) of the program "Graupner Charger Monitoring" the selected POLARON type is displayed - here "POLARON EX":



Once the profile file has been loaded, you can also change the charger type directly by clicking on the button  ("Model").



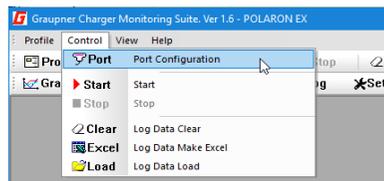
Additional program "Charger monitoring"

 Select COM port

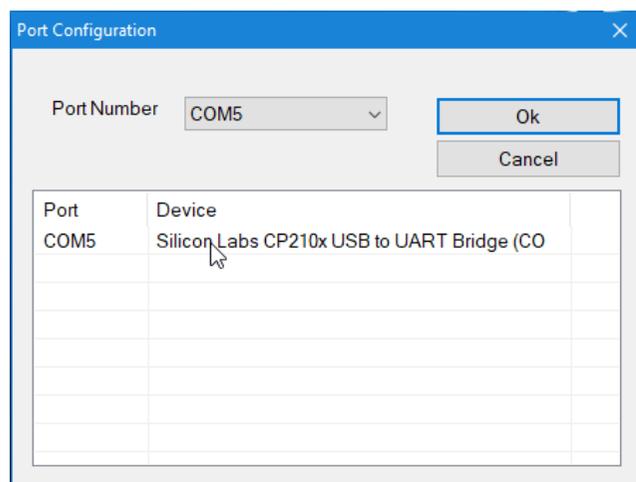
COM port choice within the program

The matching COM port is automatically displayed in the "Port" menu, just as in the "Select port" menu above the "Transmitter" program group.

In the menu bar click on the "Control • Port Configuration"



or alternatively on the "Port" button 



in the window "Port Configuration" the COM Port "Silicon Labs CP210x USB to UART Bridge (COMx)" is shown. (The USB connection is also recognized when the charger is switched off.) Click on this line or, if other ports are displayed, select the corresponding COM port number next to the "Port Number" field, in this case "COM5", and click on





If the COM port is not displayed, disconnect the USB connection with the charger turned off and reinsert the USB cable after a few seconds. In the event of a recurrence, check in the Windows® Control Panel that the driver has been installed correctly.

The COM port and (fixed) baud rate are then displayed in the status bar next to the model type at the bottom left:

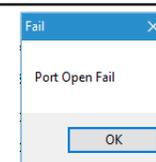


Error messages

Error messages to USB connection

If there is a faulty port connection to the PC, the error message appears "Port Open Fail".

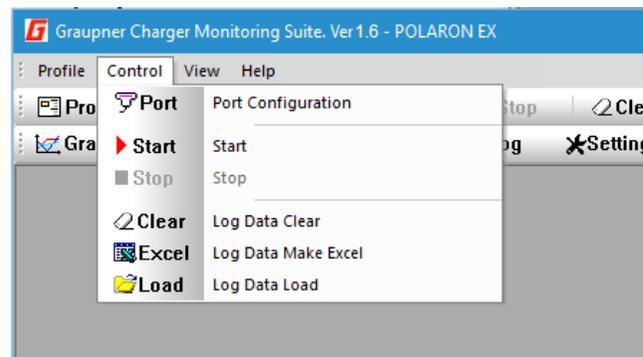
Check the USB port. If necessary, close the program and disconnect the USB connection to the PC. Then restore the USB connection and start the program again.



Menu "Control"

Menu "Control"

In addition to the previously described menus under "Profiles" and "Port Configuration", the remaining options in the menu bar are described below. Each option can also be accessed directly via one of the buttons located below the menu bar.



Options	Description
Port configuration	See above. Assignment of the port for the USB connection
Start	Start data recording
Stop	Stop data recording
Log Data Clear	Delete dataset
Log Data Make Excel	Convert record to Excel format
Log Data Load	Load saved data set from the PC

▶ Start ■ Stop Start/Stop data recording

Start / stop data logging charger

You start the recording via ▶ Start and exit via ■ Stop - alternatively via the pop-up window "Control". If the PC and the charger are properly connected, device data is read out every second during operation of the charger and automatically written to a "*.chg" file when clicked on ■ Stop.

The file name is automatically specified and contains the date of the recording as well as the time and the type designation of the charger, so for example:

"2016-06-26 (14h54m19s)_POLARON EX.chg".

 The records are written to a subdirectory called "Charger_Log", which is automatically created at the root of the Firmware_Upgrade_grStudio software the first time the program is started.

The data recording can also be recognized by the two symbols in the status bar , bottom right in the menu window (flashing arrow and check mark on green background). As soon as the recording is ended through ■ Stop, the icons change: .

By default, a "Received Data Log" table appears in the lower program window, showing a section of the data.

Received Data Log							
No	Time	Application Ve...	Product Code	Input Voltage[1]	Operation Mo...	Operati	
115	14:55:03	1406	20900	12.808 V	1.Charge Mode	CC-C	
116	14:55:04	1406	20900	12.808 V	1.Charge Mode	CC-C	
117	14:55:05	1406	20900	12.815 V	1.Charge Mode	CC-C	
118	14:55:06	1406	20900	12.816 V	1.Charge Mode	CC-C	
119	14:55:07	1406	20900	12.817 V	1.Charge Mode	CC-C	
120	14:55:08	1406	20900	12.818 V	1.Charge Mode	CC-C	
121	14:55:09	1406	20900	12.819 V	1.Charge Mode	CC-C	

Port : Com3 Baud : 115200 Model : POLARON EX

The vertical scrollbar on the right side of the table shows more lines.

To enlarge the display window, move the mouse pointer to the top of the table until a double-headed arrow appears. By holding down the mouse button, the table can be enlarged.

The symbol  is used to close the table.

To reopen the table, go to:

"View • Data Log Window"

or click on the "Log" button .

The table lists subsequent charger information.

 Due to the large number of parameters that can be recorded, more or fewer columns are visible depending on screen size and resolution. **If possible, do not use the mouse within the table to scroll, but use the lower scroll bar, as it reacts faster.** Use the button  ("Setting") to select the data to be listed, see also page 125.

Additional program "Charger monitoring"

POLARON information

Column heading ([1],[2]= Charge port)	Explanations
No	increasing number of the record (every second)
Time	Time data recording
Application version	current firmware version of the charger
Product code	(internal product code)
Input voltage [1], [2]	Input voltage channel 1 & channel 2
Operation mode [1], [2]	Operating mode: 0. no operation, 1. Charge Mode, 2. Discharge Mode, (3. -, 4. -), 5. Finish, 6. Error, 7. LCB (Li-Cell-Balancer), 8. Heater, 9. Motor, 10. Servo
Operation status [1],[2]	Charge / discharge mode details: open output, charge / discharge mode, cut-off discharge end, max. capacity reached, error displays, ...
Cycle number [1], [2]	Number of the cycle
Minute [1], [2]	Time in minutes
Second [1], [2]	Time in seconds
Motor minute [1], [2]	Motor runtime: minutes
Motor second [1], [2]	Motor runtime: seconds
Heater minute [1], [2]	Tire / battery heater runtime: minutes
Heater second [1], [2]	Tire / battery heater runtime: seconds
Output voltage [1], [2]	Output voltage on battery output CH 1/2

Column heading ([1],[2]= Charge port)	Explanations
Output current [1], [2]	Output current on battery output CH1/2
Output capacity [1], [2]	already charged capacity through the charge output
Now temperature [1], [2]	actual temperature (if appropriate sensor connected)
Batt cells [1], [2]	Number of connected cells, if balancer cable connected
Cell voltage 1 ... 7 [1], [2]	Cells voltages (max. 7), if balancer cable connected
Cell resistance 1 ... 7 [1], [2]	Cells internal resistances, if balancer cable connected
Blc pack voltage [1], [2]	Total battery voltage measured via balancer connection
Blc avg voltage [1], [2]	average cell voltage
Blc gap voltage [1], [2]	Voltage difference between lowest and highest cell voltage
Blc max voltage [1], [2]	maximum cell voltage at the balancer connection
Blc min voltage [1], [2]	minimum cell voltage at the balancer connection
Blc cell max [1], [2]	Cell number with highest voltage
Blc cell min [1], [2]	Cell number with lowest voltage

Column heading ([1],[2]= Charge port)	Explanations
Blc dchg count [1], [2]	(shows balancing. "0" = no balancing)
Capacity rate [1], [2]	- (currently not supported on POLARON chargers)
Batt resistance [1], [2]	Internal battery resistance in mOhm
Peak temperature [1], [2]	highest measured temp. until next switch off
Average voltage [1], [2]	average cell voltage
Motor now program cycle [1], [2]	Motor program cycle number
Motor program run delay [1], [2]	- (only for POLARON internal communication)
Motor current average 1 ... 6 [1], [2]	in the motor test program: average power consumption in 6 consecutive sub-cycles
Motor current peak 1 ... 6 [1], [2]	in the motor test program: maximum power consumption in 6 consecutive sub-cycles
Servo RPM [1]	Servo and brushless motor test menu: motor revolutions per minute
Servo KV [1]	Servo and brushless motor test menu: revolutions per minute and Volt
Cycle charge minute [1], [2]	Cycle charge time: minutes
Cycle charge second [1], [2]	Cycle charge time: seconds

POLARON information

Column heading ([1],[2]= Charge port)	Explanations
Cycle peak voltage [1], [2]	max. cycle charge voltage
Cycle charge capacity [1], [2]	Cycle charge capacity
Cycle charge res. [1], [2]	Internal battery resistance during cycle charge in mOhm
Cycle discharge minute [1], [2]	Cycle discharge time: minutes
Cycle discharge second [1], [2]	Cycle discharge time: seconds
Cycle discharge capacity [1], [2]	stored battery capacity during cycle discharge
Cycle average voltage [1], [2]	average cycle voltage
Cycle discharge resist [1], [2]	Internal battery resistance during cycle discharge in mOhm
BLDC sensor	(Control program for motor sensor)
AC check flag	- (no use actually)

Clear Delete Log Data

Log Data Clear

To delete the content of the table, click on "Log Data Clear" and then on button . However, the data record itself is retained because it is stored on the hard disk when the data recording is finished via the button .



Excel Convert Log Data

Log Data Make Excel

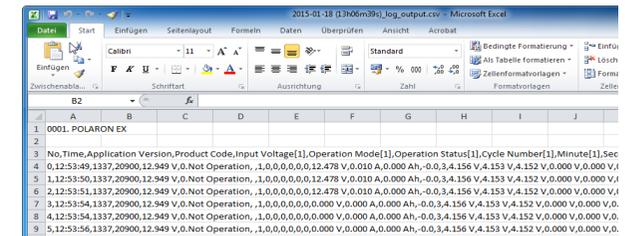
The displayed record can be converted to a Microsoft Office™ Excel readable format. Click on "Log Data Make Excel" or on the button in the "Control" menu.

The example of Microsoft® Office™ 2010 explains the most important steps.

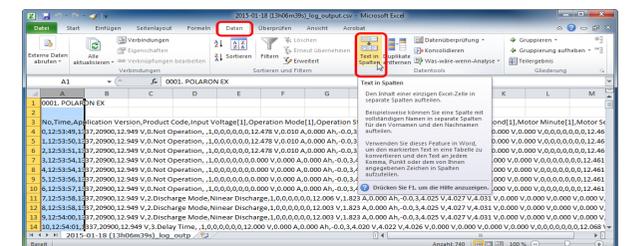
Of course, it is assumed that the Microsoft® Office™ package is installed on your computer.

1. Click on the button . A Microsoft® Excel™ opens. The data of the original table is converted cell by cell, line by line, separated by a comma, into the Excel™ format and must now be converted into a readable table format.

You can also carry out the further steps at a later date, since the still unformatted Excel spreadsheet will be saved as *.csv file in the same directory as the log data with date and time as soon as you click the button, eg: "2015-01-18 (13h06m39s)_log_output.csv".



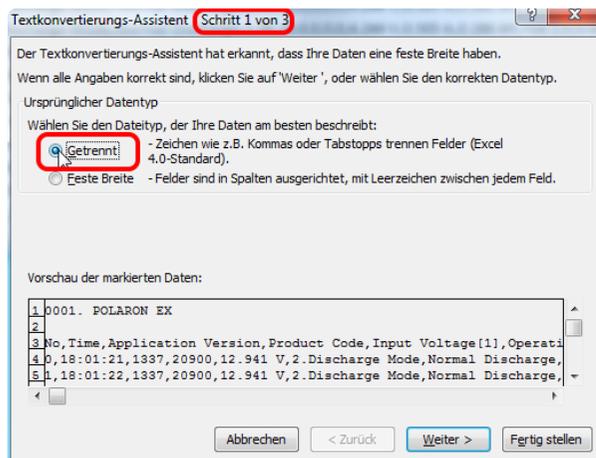
2. Mark the first column "A" and click on "Text in columns" in the menu "Data", see fig.



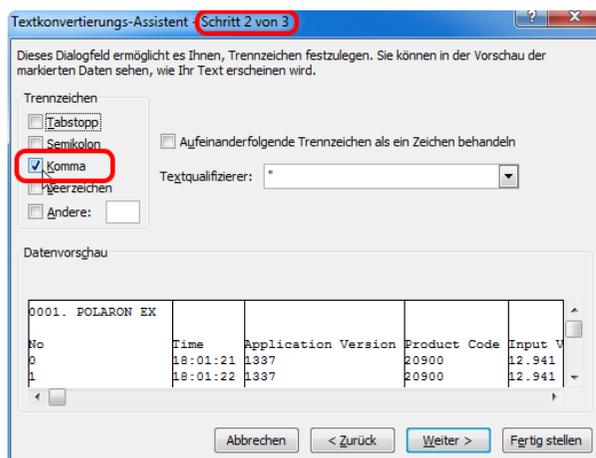
Additional program "Charger monitoring"

Excel Convert Log Data

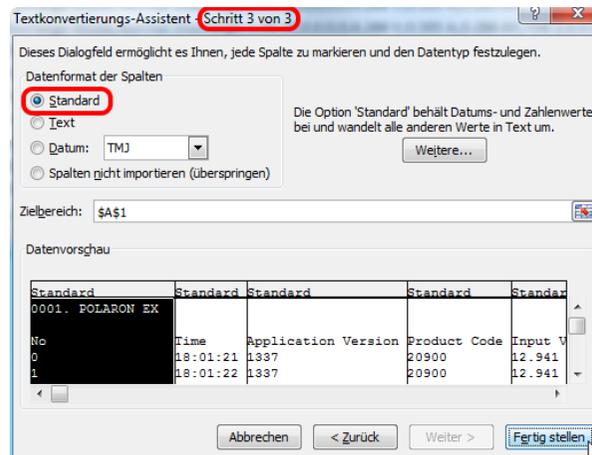
3. In step 1 of 3, under "Original data type", select "Separate" and then click "Next>"



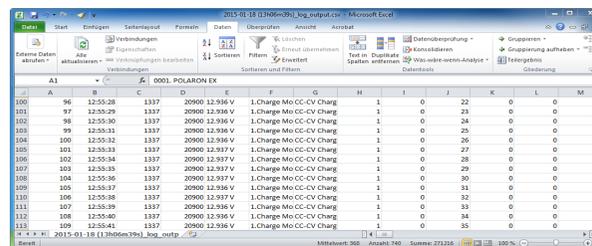
4. In step 2 of 3, put a check mark in front of the "coma" separator. A preview will be displayed. Then click on "Next>"



5. In step 3 of 3 the data format is set. Select "Standard" and finally click on "Finish":



6. The data has now been converted into a readable format for further processing, see example below.



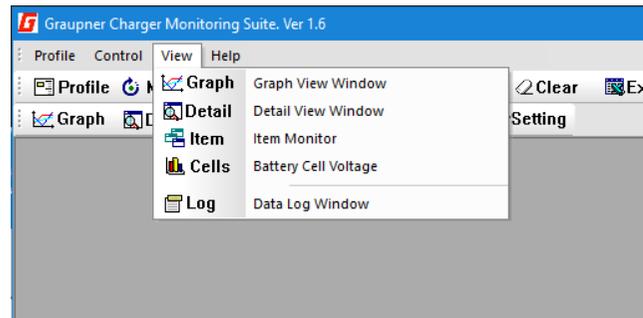
Load Log Data from PC

Log Data Load

Saved POLARON data can also be loaded from the PC again. In the "Control" menu click on "Log Data Load" or on the button ("Load") and select in the subdirectory of the log data "Charger_Log" the desired "*.chg" -POLARON file.

Menu "View"

Menu "View"

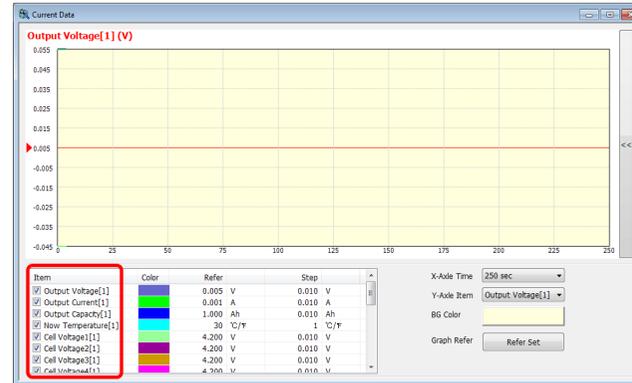


Options	Description
Graph view window	graphic display of charging parameters
Detail view window	charge info
Item monitor	digital display of a freely selectable parameter
Battery cell voltage	Cell voltages
Data Log Windows	Display data log table

Graph Display log data graphically

Graph view window

In the "View" menu, click on "Graph View Window" or on the button . A graphic window opens:



Item	Color	Refer	Step
<input checked="" type="checkbox"/> Output Voltage[1]	Blue	0.005 V	0.010 V
<input checked="" type="checkbox"/> Output Current[1]	Green	0.001 A	0.010 A
<input checked="" type="checkbox"/> Output Capacity[1]	Blue	1.000 Ah	0.010 Ah
<input checked="" type="checkbox"/> Now Temperature[1]	Cyan	30 °C/°F	1 °C/°F
<input checked="" type="checkbox"/> Cell Voltage[1]	Magenta	4.200 V	0.010 V
<input checked="" type="checkbox"/> Cell Voltage[2]	Purple	4.200 V	0.010 V
<input checked="" type="checkbox"/> Cell Voltage[3]	Yellow	4.200 V	0.010 V
<input checked="" type="checkbox"/> Cell Voltage[4]	Pink	4.200 V	0.010 V

In the lower window on the left in the "Item" column, first set those parameters by setting a check mark that should be graphically displayed. Clear the check mark of the related charge output [1] or [2] that is not used when recording data. This applies in particular to the parameters "Output Voltage" and "Output Current", otherwise arbitrary values of the unused (open) charging output are displayed during "live" recording.

Parameter ([1], [2]= charge output)	Description
Output voltage [1], [2]	Output voltage charge output [1] or [2]
Output current [1], [2]	Output current charge output [1] or [2]
Output capacity [1], [2]	charged capacity on the charge output [1] or [2]
Current temperature [1], [2]	actual temperature battery [1] or [2] with connected temperature sensor
Cell voltage 1 ... 7 [1], [2]	Single cell voltage 1 to 7 with connected balancer cable

Additional program "Charger monitoring"

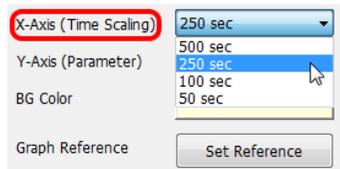
Graph Display log data graphically

Curve color select "Color"
In the column "Color" set the color curve. Double-click on the respective color field to then select a suitable color from a color palette.



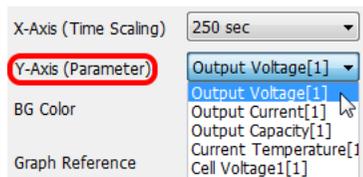
X-axis scaling "X-axis (time scaling)" and display on the Y-axis (Y-axis parameter)
Before you make any changes in the column "Refer(ence)" and "Step" (see figure left column), you should first set the scaling of the x-axis (horizontal axis) and first of all the parameter to which the y-axis (and thus the reference value ("Refer(ence)")) and the step size ("Step") should refer.

a) Scaling the X-axis: "X-Axis (Time Scaling)":



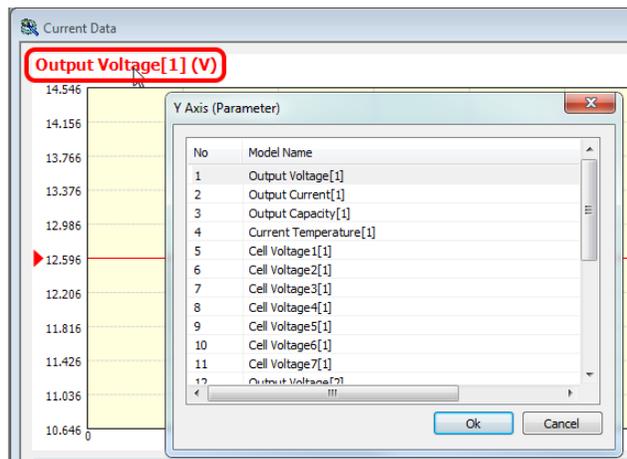
Select the time range on the X-axis (horizontal axis, also called "abscissa"). If the data acquisition takes longer than the preset value, you can adjust the scaling up to 500 sec if necessary. However, data recording does not end until you press the STOP button .

b) Display on the y-axis: "Y-Axis (Parameter)":



Define the parameter value to which the scaling of the y-axis (vertical axis, also called "ordinate") should refer. The current parameter to which the y-axis refers is displayed in the upper left corner of the graph.

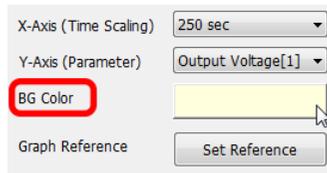
Alternatively, click with the left mouse button in the middle on top of the label of the Y-axis - here "Output voltage [1] (V)":



A window "Y-Axis (Parameter)" opens in which the parameter for the Y-axis can be specified alternatively.

Confirm the selection with .

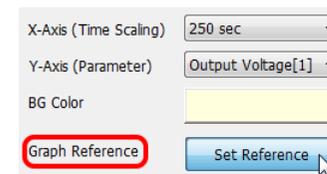
Background color ("Background BG"):



Click on the "BG Color" button if you want to adjust the background color in the graphic.

A color palette (see above) opens, from which you can select a suitable background color.

Set maximum value "Set Refer(ence)":



As soon as you click on this button, the reference value in the middle of the Y-axis "►" of the parameter set in "Y-Axis (Parameter)" - in this case "Output Voltage [1]" - will be reset to its original value that was entered in the table in column "Refer", see next picture. This allows you to make "visible" again also curves that are outside the window because of inappropriate scaling.

Set reference value "Refer" and step size "Step"
Of course, the following two settings are only visible for the currently displayed Y parameter.

a) Reference value (Refer)

In the column "Refer(ence)" of the lower left table, you can specify separately for each parameter which voltage (V), current (A), capacity (Ah) or temperature value (° C / F) should be next to the red triangle ► exactly in the center of the graph (vertical axis (ordinate)).

Item	Color	Refer	
<input checked="" type="checkbox"/> Output Voltage[1]		0.000	V
<input checked="" type="checkbox"/> Output Current[1]		0.001	A
<input checked="" type="checkbox"/> Output Capacity[1]		1.000	Ah
<input checked="" type="checkbox"/> Now Temperature[1]		30	°C/F
<input checked="" type="checkbox"/> Cell Voltage1[1]		4.200	V
<input checked="" type="checkbox"/> Cell Voltage2[1]		4.200	V

Click on the respective "Refer"ence value and adjust it step by step by clicking on the adjacent arrows or enter the desired value via the keyboard. Then press the ENTER key to accept the value.

Graph Display Log Data graphically

 For decimal numbers, a "point" and not a "comma" is to be set.

Alternative setting the reference value:

If you left-click anywhere on the Y-axis, a red double-arrow appears, see picture opposite.

By keeping the mouse button pressed, the current reference value in the amount of the horizontal line drawn in red with the previously set step size ("Step"), see next section, can be moved downwards or upwards.

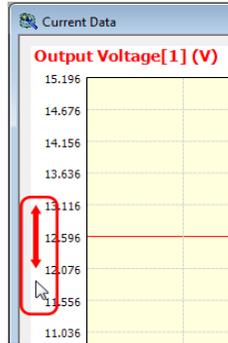
b) Increment (Step)

The scaling of the Y axis is defined in the same way in the "Step" column by clicking on the adjacent arrows or via keyboard input. Then press the ENTER key to accept the value.

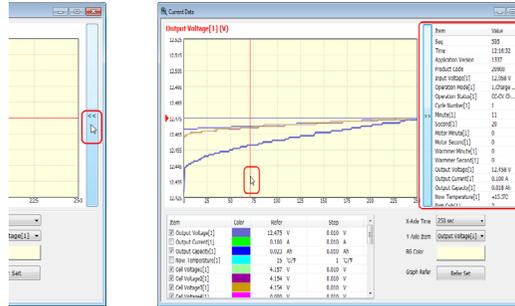
	Refer	Step	
	0.000 V	1.000	V
	0.001 A	0.010	A
	1.000 Ah	0.010	Ah
	30 °C/F	1	°C/F

Alternative setting of the scaling:

If you left-click anywhere on the Y-axis, a red double-arrow appears, see picture above. Keep the mouse button pressed and adjust the scaling with the mouse wheel.



Numeric display of parameter values:
If you click on the bar with the double arrow "<<" to the right of the graphic (see next figure), a list with all the parameters that will be recorded opens..

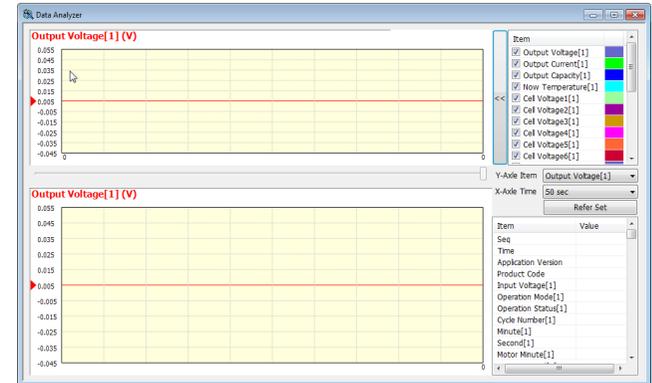


In the "Value" column, after the start of a recording (▶Start) or after loading a previously stored recording (📁Load), only the first record appears. To show the data at a different time, click with the left mouse button on the corresponding position in the diagram. The dataset at the appearing red bar is now displayed on the right. Close this window with the bar pointing to the right with the double arrow ">>".

Detail View Windows

Detail View Windows

In the menu "View" click on "Detail View Window" or on the button . The following graphic window opens.



The upper window shows the complete data record of a record loaded through  ("Load") from the hard disk or the data currently being recorded live. In the lower window you can zoom in on a previously selected section.

Operation is the same as described under "Graph View Window"

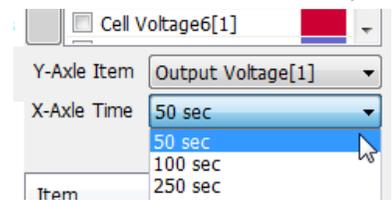
, but "X-Axis (Time Scaling)"

only refers to the lower graphical representation.

This shows a corresponding section of the data set with the set width of 50 sec to max. 500 s of the upper diagram.

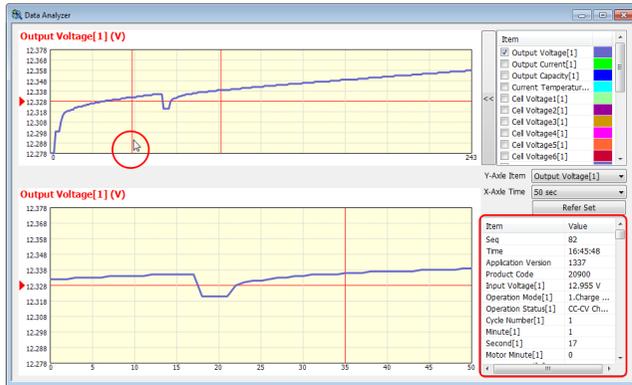
The corresponding section is marked in the upper diagram by two vertical red bars.

Click with the mouse in the diagram to move the cutout. The current mouse position when clicking sets the beginning of the zoomed in time interval.



Additional program "Charger monitoring"

Detail View Windows

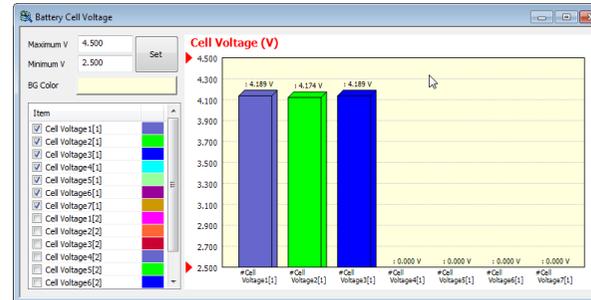


If you click on a certain position in the lower diagram with the mouse, the corresponding data record of all charger parameters will be listed - even if the upper window is not clicked on.

Battery single cell voltage

Battery Cell Voltage

With this option, the single-cell voltages at both charge outputs can be displayed as bar graphs, as long as the respective battery is connected to the charge output via the balancer connection.

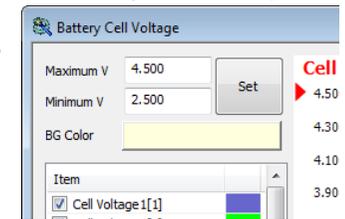


By default in the left table under "Item", all displayable cell voltages ("Cell Voltage") of both charge outputs [1] and [2] are marked with a check mark. If necessary, delete the check mark for unused balancer outputs. If you use many balancer outputs, you can also spread the window for reasons of clarity.

Click the corresponding color field if you want to change the bar color. The color palette window opens, from which you can select the desired color.

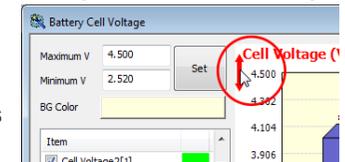


In the upper left part of the "Battery Cell Voltage" window, you specify the minimum and maximum voltage to be displayed on the Y axis as well as the background color ("BG (Background) Color") of the bar graphs.



Highlight the current entry with the mouse and enter the desired area via the keyboard. Click on the "SET" button to transfer the values to the diagram.

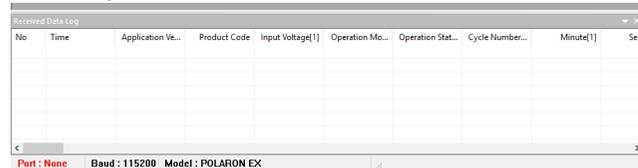
Minimum and maximum voltage can alternatively be changed with the mouse by clicking on the lower or upper red triangle on the Y axis until it changes to a double arrow. Keep the mouse button pressed and adjust the minimum or maximum value via the mouse wheel.



Log Log table

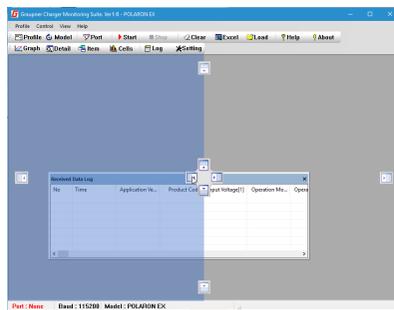
Show / hide and move log table

Via the menu "View • Data Log Window" or the button  you can show or hide the "Received Data Log" table.



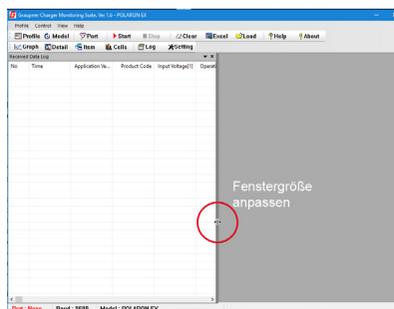
You can move the log table with the mouse. Hold down the left mouse button in the header "Received Data Log".

You can also automatically place the table at the edges of the "Graupner Charger Monitoring Suite" window.



Moving the window will show arrows in the middle and at the edges.

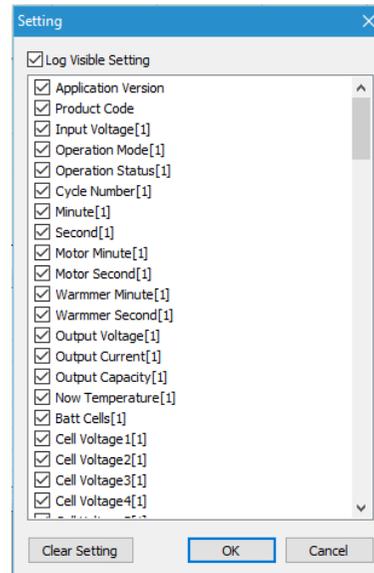
Now move the mouse pointer to one of the arrow icons in the center of the picture or at the edge. Immediately, the part of the window appears in a blue tone, into which the table is moved as soon as you release the mouse button. You can also enlarge the window on the opposite side of the mouse by moving the mouse to the window frame.



Setting Set table entry

Setting

Use this button to specify which entries should be displayed in the table "Received Data Log". For the meaning of the listed entries refer to page118.

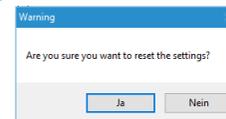


Clear or check the corresponding options.

If you uncheck "Log Visible Setting", all options will be disabled.

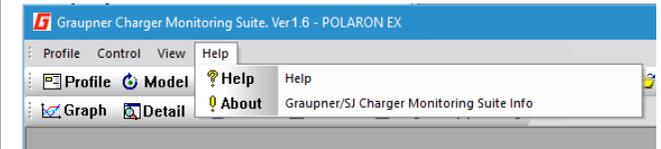
With the button "Clear Setting" you can reset the selection: "Are you sure you want to reset settings?" Click "Yes" or "No".

Close the window with "OK" or "Cancel" if the changes should be discarded.



Menu "Help"

Menu "Help"



Option	Description
 Help	Help function (not implemented yet)
 About	Monitoring Suite Info

About

Press the button  to retrieve the current version number of the software.



Additional program "ESC utility program"

ESC utility program

ESC utility

With the *Graupner* ESC^{*} utility you can program the "Power" curves ("Throttle curves") of the controller series "Brushless GM-GENIUS PRO + T". Thus, the response of the motor (similar to a transmitter-side (exponential) curve adjustment) can be flexibly modified.



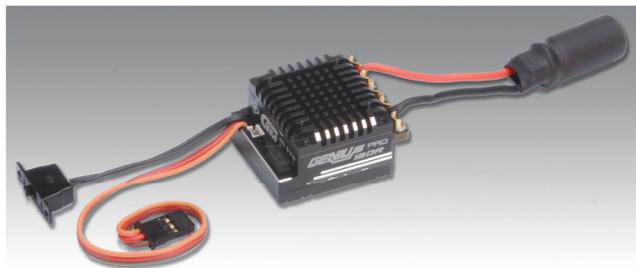
Please read the corresponding instructions.

No. 97170

Brushless GM-GENIUS PRO 120R +T

No. 97171

Brushless GM-GENIUS PRO 90R +T

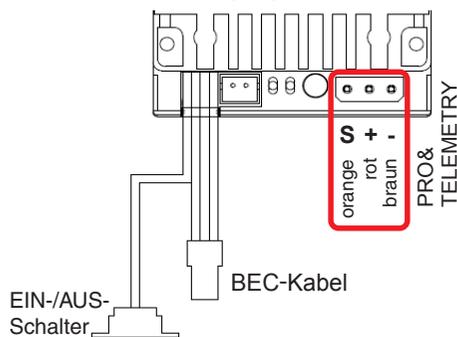


Suggested accessories:

- USB interface No. 7168.6 incl. USB cable,
- Interface cable No. 7168.S,
- Receiver battery (preferably with switch) or battery, see following description.
- Y cable No. 3936.11 when using a receiver battery, see description below.

General preparations

1. **USB drivers installed?**
Have you already installed the USB driver, otherwise see page 12?
2. **Connecting brushless controller with PC**
Disconnect the controller from the model battery, receiver battery and motor. Make sure that the controller is switched off. Now connect the controller via the USB cable, the interface No. 7186.6 and the adapter cable No. 7186.S with the PC. Connect the 2-pin end of the adapter cable to the Pro & Telemetry socket marked "S + -", see the controller instructions and the following fig.



Always make sure there is a perfect USB connection.

3. Program start "ESC utility"

Start the utility by clicking on  ESC-Programm. It is also possible to start the associated application program directly. Double-clicking on the file  ESC_Setup_Util.exe. You can find this exe file in the directory of "Firmware_Upgrade_grStudio_Software."



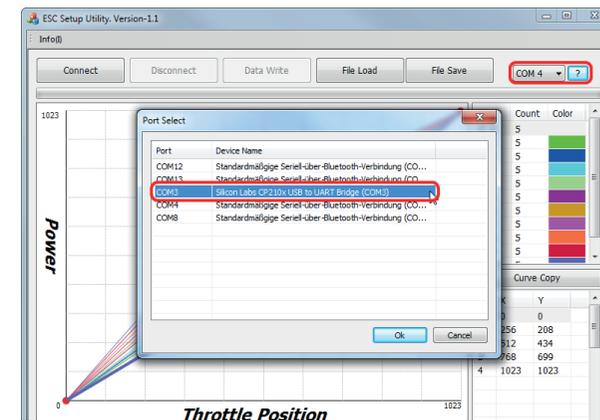
Make sure that the program window is not opened several times.

4. Select COM port

The COM port is automatically selected if the interface is connected to the PC. Otherwise, click on  (" ? ") in the upper right corner of the

Connect speed controller

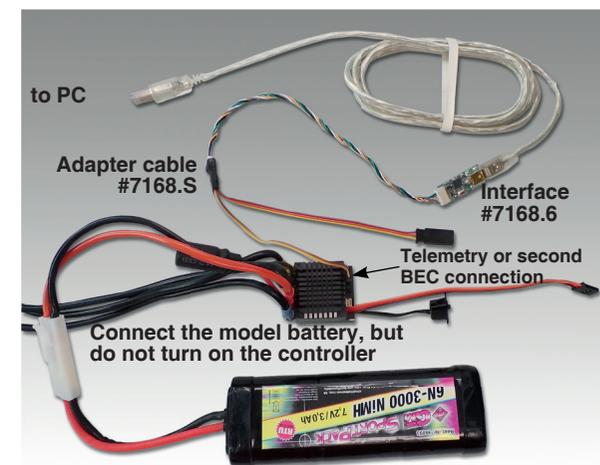
ESC Setup Utility window and select the "Silicon Labs" driver - here COM port 3 -:



Alternatively, select the COM port directly via the COM port button .

5. **Connect controller with ESC program**
Click on the button . Once the progress bar is running, turn the controller on as follows:

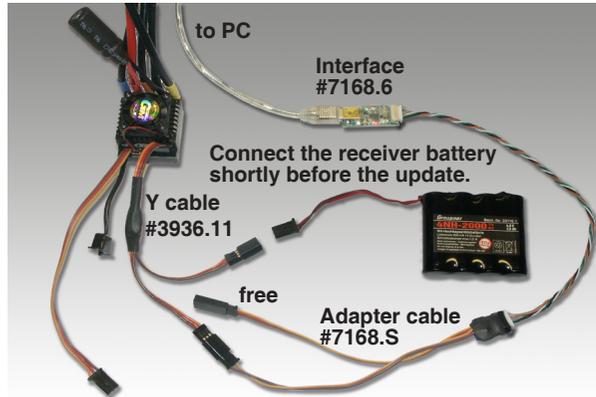
a) when the model battery is connected, via the controller's ON / OFF switch:



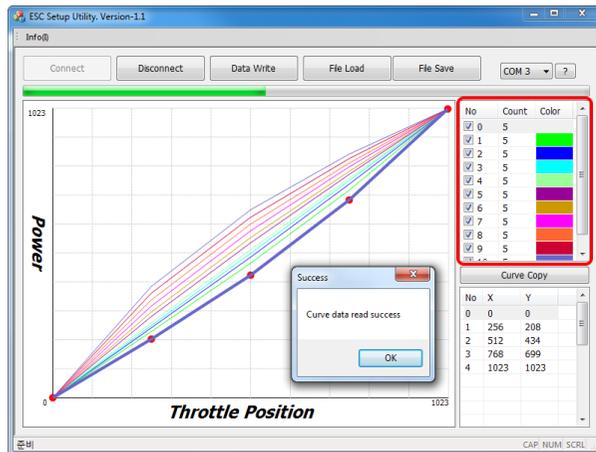
* ESC = electronic speed controller

Connect speed controller

b) when using a receiver battery this is only connected to the controller via a Y-cable. (If necessary, use an additional switch between the receiver battery and the Y-cable.)



The successful connection to the controller is confirmed by a pop-up window: "Curve data read success".



All 11 curves 0 to 10 are always read in. However, only those are shown with a tick on the right side of the graphic.

(The "Count" column contains the current number of adjustable curve points, see below.)

If an error message occurs, repeat the procedure, see chapter end. Close the program and restart it.



Adjust "Power" curves (throttle curve)

6. Adjusting the "Power" curves

Up to 11 "power" curves or throttle curves allow defining the ESC setup program, which can be recalled as a throttle curve from the transmitter via the telemetry menu.

A basic setting of all curves is specified by default at program start, see figure above. The curve that can be changed is always marked with a thicker line and movable red curve points. (The color of the modifiable curve depends on the current curve color 0 to 10.)

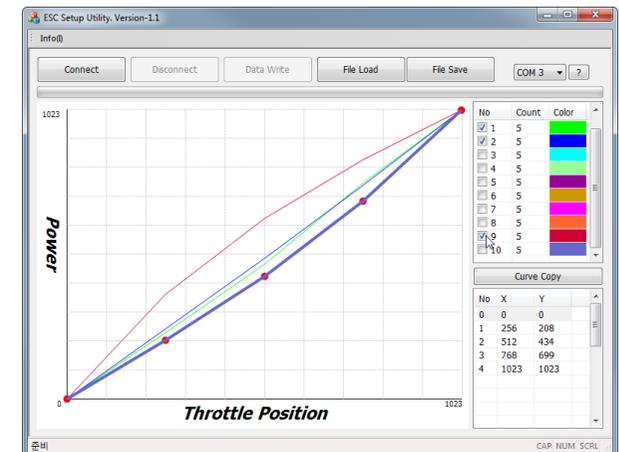
For the sake of clarity, you can hide curves.

Place a tick in the "No" (Number) column with a (left) mouse click or delete it.

In this example, we restrict ourselves to the representation of three curves: 1, 2, and 9.

The changeable (wider) curve can not (naturally) be hidden. After the first program start it will be on curve no. 0.

No	Count	Color
<input checked="" type="checkbox"/> 1	5	Green
<input checked="" type="checkbox"/> 2	5	Blue
<input type="checkbox"/> 3	5	Cyan
<input type="checkbox"/> 4	5	Magenta
<input type="checkbox"/> 5	5	Yellow
<input type="checkbox"/> 6	5	Red
<input type="checkbox"/> 7	5	Orange
<input type="checkbox"/> 8	5	Purple
<input checked="" type="checkbox"/> 9	5	Light Blue
<input type="checkbox"/> 10	5	Dark Blue



The hidden curves are not deleted.

Additional program "ESC utility program"

Move curve points

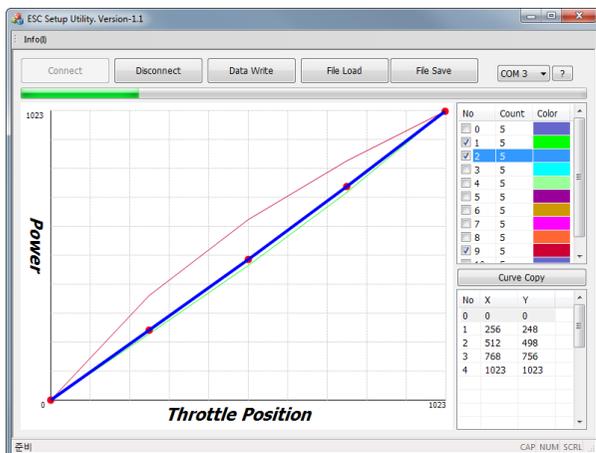
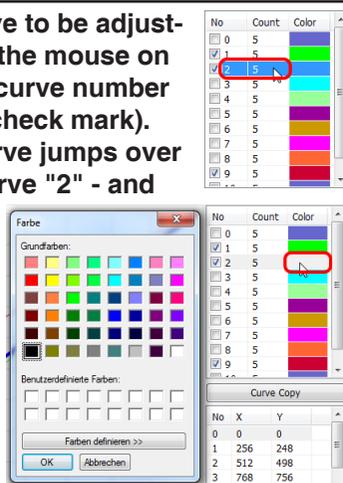
Move curve points

Now select the curve to be adjusted by clicking with the mouse on the corresponding curve number (to the right of the check mark).

The changeable curve jumps over this curve - here curve "2" - and assumes its color.

If necessary, adjust the curve color. Click the color swatch to choose a suitable color from a palette.

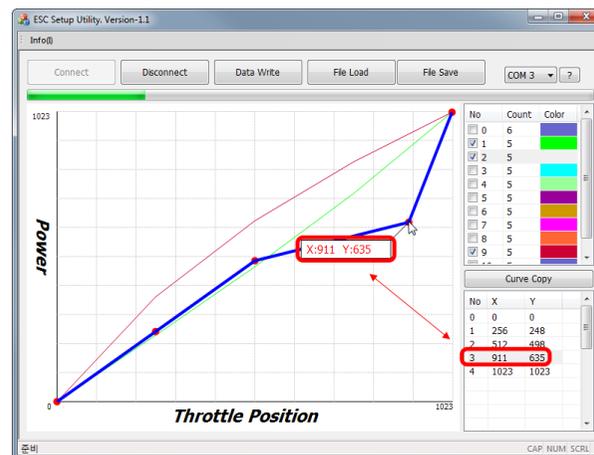
Confirm the selection with **OK**.



Now click with the **left** mouse button on one of the red points and move this curve point with pressed mouse button into the desired position. (The two points at the start and end of the curve with the coordinates $X = 0$ and $Y = 0$ or $X = 1023$ and $Y = 1023$, see table below right, can not be adjusted.)

The coordinates of the red dots are displayed

numerically and displayed at the bottom right of the image:



Alternatively, you can also enter the curve coordinates using the keyboard or the arrow keys. Click with the mouse in the corresponding field of the curve point, here "No. 3", and enter a value separately for the X and Y components. If the permissible value range is exceeded, the input is automatically corrected to the minimum or maximum possible value.

If you use the arrow keys instead of the numeric keypad, the parameters are changed in increments of 10:

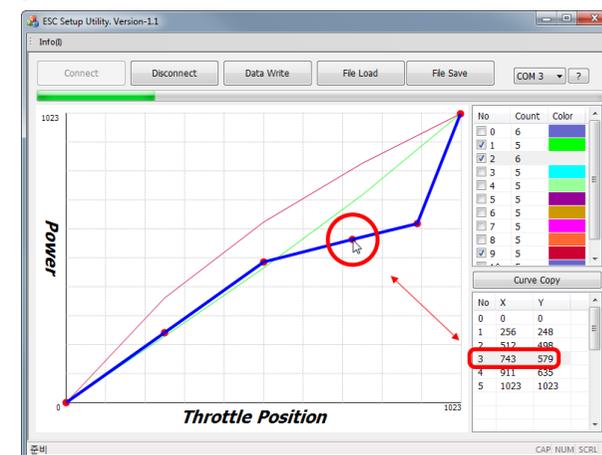
- Use the left and right arrow keys to move the point along the X axis (horizontal axis (abscissa)),
- using the arrow keys down or up along the Y axis (vertical axis (ordinate)).

Insert/delete curve points

Add or delete curve points

To add a changeable curve point, **right-click** on the relevant point of the variable curve or on the position in the graphic to which a new point is to be added. Another red curve point is added at the mouse position, which you can move as described. In this way, a total of 18 points can be set between the two endpoints. The column "Count" shows the total number of curve points - ie a maximum of 20 incl. The two endpoints.

A further right mouse click deletes a curve point.



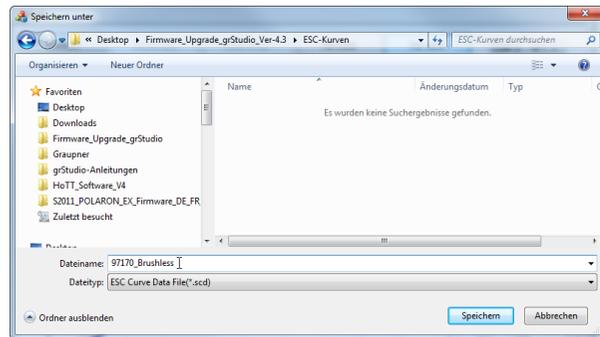
The new coordinates of the added curve point are also shown in the table at the bottom right. Added curve points are placed in the number sequence. The point in the coordinate origin ($X = 0$ and $Y = 0$) always has the number "No. 0".

File Save / File Load **Save / load "Power" curves**

Save and load the "Power" curves (throttle curves)



Use the button **File Save** ("File Save") to save the set of curves in a freely selectable directory on the PC - here called "ESC curves". Give the file an appropriate name, e.g. controller type "97170_Brushless". The ending ".scd" will be added automatically. Click on the button



The hidden curves are also saved.

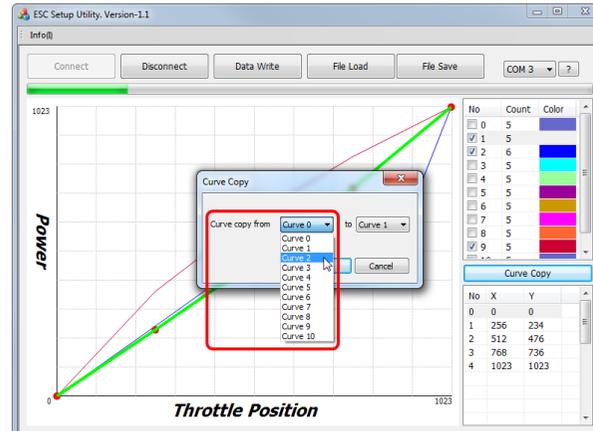
Conversely, you load via the button **File Load** ("File Load") a stored on the PC curve file ("*.Scd"). However, only those curves with a check mark are displayed.



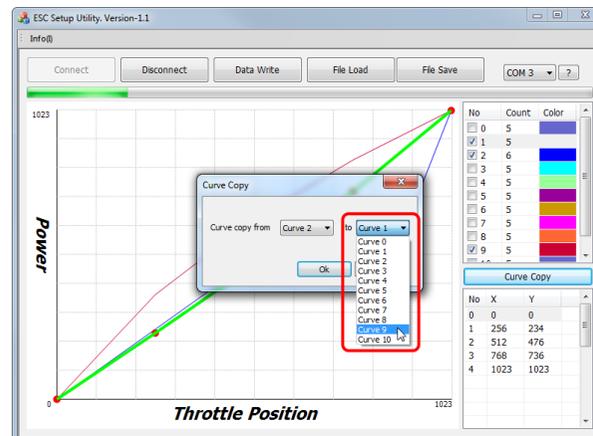
Curve Copy **Copy curve path**

Copy curve path

Click on the "Curve Copy" button to transfer the curve setting of one curve to another. The "Curve Copy" window opens. Select by a (left) mouse click from the list the curve number to be copied ("Curve copy from") - in this example "Curve 2" - ...

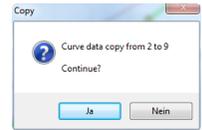


... and through "Curve copy to", the curve that should be overwritten - here Curve 9 -.

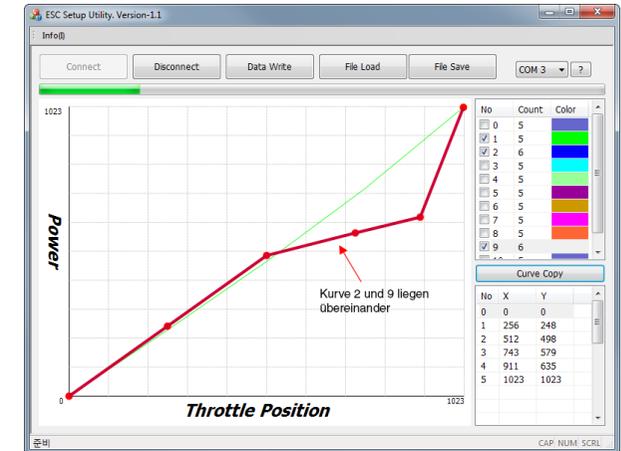


Then click on .

For safety's sake, copying must still be confirmed. Click on (or stop copying with).



The copy result of this example is shown in the next figure. Curve 9 is overwritten by the previously modified curve 2. However, curve 9 is not deleted, as the figure initially suggests: both curves are now one above the other. (Change the changeable curve, for example, to the (hidden) "Curve 0", by selecting the "Curve 0" on the right with the mouse, see above. If you subsequently hide "Curve 2" or "Curve 9", you will see from the different colors that both curves are present.)



Additional program "ESC utility program"

 Transmit curves to the controller

Transferring the curves to the ESC 

To transfer the (modified) curves to the travel controller, click on the button  ("Data Write").

All curves 0 to 10 are transmitted, even if some have been previously hidden. The curves are then available in the »Telemetry« menu of the transmitter.

For the curve selection for motor operation, read the operating instructions of the speed controller and the manual of the HoTT transmitter used.

 Disconnect controller

Disconnect the speed controller from the program



Before disconnecting the USB connection, click on the button .

Error messages

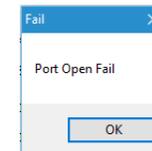
Error messages

If a communication error occurs, repeat the procedure. If necessary, stop the ESC program, interrupt the connection of the drive controller to the interface distributor for a few seconds, and then restart the program.

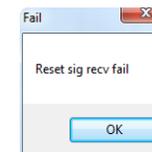
 Make sure that the ESC program window is not opened several times.

❗ **Incorrect COM Port/missing USB connection**
Incorrect COM port selected or USB connection to interface distributor faulty..

Select the COM port named "Silicon Labs CP210x USB to UART Bridge" through  and check the USB connection. If the error occurs despite the existing USB connection, switch off the power and disconnect the USB connection for a few seconds.

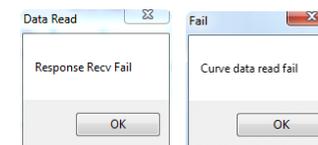


❗ **Controller not switched on in time**
After clicking on the button  speed controller (while the progress bar is running) not switched on in time.



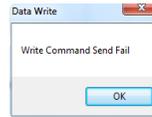
❗ **Battery voltage too low**
The same error message as previously appears, if the battery voltage of the drive battery or receiver battery is not sufficient for a connection to the PC.

❗ **Faulty connection**
If the speed controller and PC are not properly connected, the following error message may appear, followed by a read error message.



Error messages

- **Error writing data to the speed controller**
If data is not transferred to the speed controller correctly after a click on , the message opposite appears. Click on  and repeat the writing process.



Additional program "QR code generator"

QR code generator - General preparations

Generate QR Codes for Polaron WiFi Chargers with this utility:

- ▶ POLARON EX
- ▶ POLARON EX1400
- ▶ POLARON PRO

Charging and discharging parameters are specified once per battery using the QR code.

To import the QR codes, you need the "Graupner Charger Link" app for Android™ or for iOS™ from the corresponding smartphone store.

On the side of the Polaron charger you need the WLAN module No. S8503, which is inserted in the side socket "EXT. Modules".



For commissioning, you must, if not already done, install the current (WLAN) firmware. These can be found in the download area of the corresponding Polaron chargers.

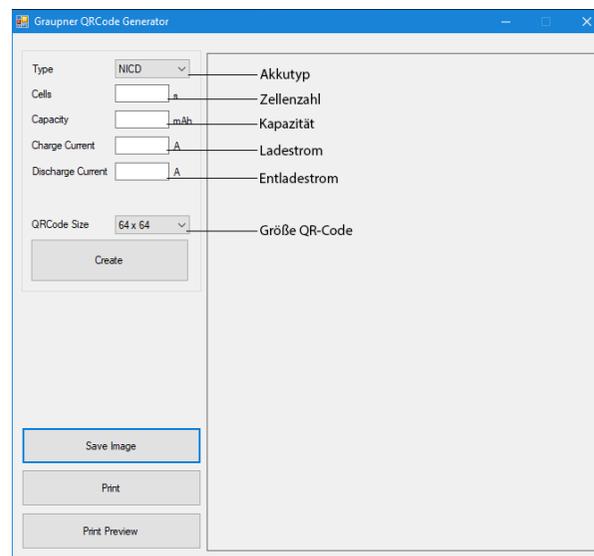
Once installed, tap "SETTINGS" from the basic display screen, and move to the last page with the "↓" arrow icon. There, with the module plugged in, the word "WiFi" at the top of the screen changes from white to purple **WiFi**. For the subsequent connection with the smartphone app you need a password: Return to the basic display, tap on "DIVERSE" and in the next window on "E.S.C. / WiFi". On your smartphone, select "GRAUPNER_XXXX" under the WLAN connections and enter the password (if required). Then open the app. The operation is now exclusively via the app. The Polaron display is locked until the app is stopped. In the display appears a related message. The charger can now be monitored wirelessly.

Start QR generator and parameter input

This subroutine needs no further presettings or additional accessories.

1. Start QR code generator

Click on "QR code generator". The following input window opens:

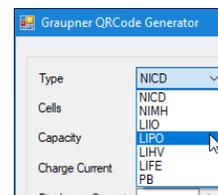


The screenshot shows the Graupner QRCode Generator application window. It has several input fields: Type (NICD), Cells (1), Capacity (1000 mAh), Charge Current (0.5 A), Discharge Current (0.5 A), and QRCode Size (64 x 64). There are also buttons for 'Create', 'Save Image', 'Print', and 'Print Preview'. Labels on the right side identify the fields: Akkutyp, Zellenzahl, Kapazität, Ladestrom, Entladestrom, and Größe QR-Code.

2. parameter input

First enter the following parameters:

Battery type: Open the pop-up menu and select the appropriate battery type first



The screenshot shows the battery type selection dropdown menu. The options are: NICD, NIMH, LIO, LIPO, LIHV, LIFE, and PB. The LIPO option is currently selected.

In the following fields you enter in order ...

- **Battery cell count** ("Cells"),
- **Battery capacity** ("Capacity") in mAh (Milliamperes/hour),
- **Charge current** ("Charge Current") in A (Ampere),
- **Discharge current** ("Discharge Current") in A (Ampere).

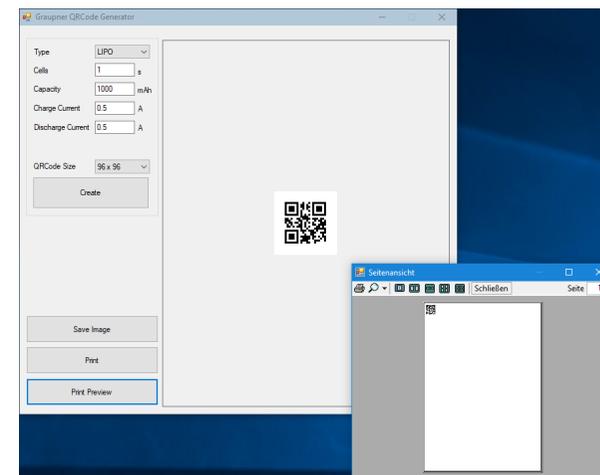
Select print size of the QR codes



When entering the charge or discharge current with one decimal place, a dot and NO comma must be set, eg. "1.5". Enter a maximum of one decimal place.

3. QR code size ("QR code size")

From the data entered, a battery-specific QR code can now be created. Select the desired size from the drop down menu "QR code size" and then click on the button "Create". Click on the "Print Preview" button to view the QR size before the printout, see the following figure, and, if necessary, adjust it via "QR Code Size" and then click on "Create" again.



The screenshot shows the Graupner QRCode Generator application window with the QR code generated. The QR code size is set to 96 x 96. There are buttons for 'Save Image', 'Print', and 'Print Preview'. A print preview window is also visible in the bottom right corner.

Printing on a connected printer can be done directly from the "Page view window" via the printer icon or alternatively via the "Print" button. In the latter case please close the preview window first. Select your connected printer from the following window.

Additional program "VDF editor (Voice Data Files)" for Windows®, MacOS® and Linux®

VDF editor - General preparations

VDF editor (Voice Data Files) is a program for editing the announcement files of Graupner HoTT transmitters. The announcements are stored in so-called VDF files. The announcements are stored in the file in highly compressed form to take into account the limited resources of the transmitter memory.

 The VDF editor can not be used for the mz-32 because the mz-32 does not use vdf files, but directly *.wav audio files.

Wav files can be created with the integrated program "HoTT TTS" (or via an appropriate open source program), see below.

Through the editor you can be edited ...

- **System announcement:** These files contain the announcements used by the transmitter for fixed events. However, the number and order of the announcements are fixed in these files.
- **User announcement:** These files contain any user-defined prompts that can be freely assigned in the transmitter to various events.

Alternatively, the program can also be stored and started anywhere outside the grStudio program. You will find it in the installation directory "Programme (x86) • Graupner • grStudio".

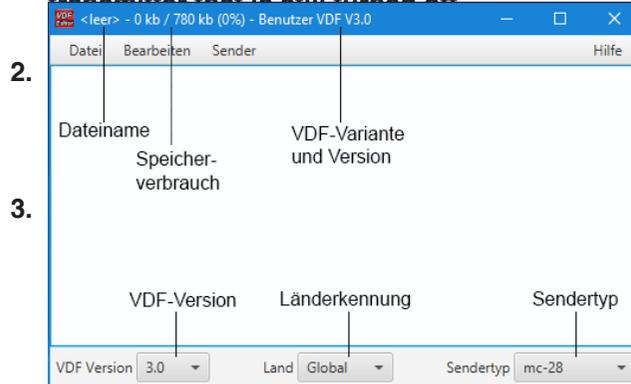
(Alternatively, the VDF Editor can be downloaded as a separate file from the Graupner Update page.)

The VDF editor does not require installation, but a Java™ 8 runtime environment. This can be downloaded for free on the net:

On computers with Windows® operating system, all you have to do is double-click on the program file. For macOS® and Linux® the program file only needs to be renamed from "VDFEditor-x.x.x.x.exe" to "VDFEditor-x.x.x.x.jar".

Connect the transmitter to the PC, select COM port Version, country setting, transmitter type

1. Connect transmitter to PC, then switch on
Connect the USB cable to the computer and then connect it to the mini USB socket of the transmitter that is still turned off



- 2.
3. The title bar contains the file name (here <empty>, that is still without a name) of a VDF file saved on a PC, information on memory usage as well as the VDF variant ("User announcements" or "System announcements", see left column) as well as the version, see next point. In the footer are indications ...

- to the VDF version (depending on the transmitter type)

- Voice 2 (v2.0) – These files are used by the transmitter of older software. Only system announcements (max 253) are supported. For the mz-12, mz-18, mz-24m, X-8E and X-8N stations, only Voice 2 can be selected.

- Voice 3 (v2.5) – These files are used by the transmitter of newer software. The files have the internal version number 2.5. It supports 284 system and up to 10 user announcements (mz-12PRO, mz-24Pro).
- Voice 3 (v3.0) – These files are used exclusively by the mc-26 and mc-28 transmitters and contain additional announcements compared to the other Voice 3 files. 432 system and up to 40 user details are supported.

➤ for country identification

The country code is independent of the language of the announcements and serves to control country-specific features (for example, announcement in feet and miles instead of meters and kilometers).

- Global - This ID is used for most of the announcement files and must normally not be changed.
- USA – Lengths and speeds are quoted as imperial measures (feet / miles).
- China, Korea, Japan - Special Asian versions of the transmitter type.

➤ for transmitter type

List of HoTT stations supported by the VDF editor - depending on the VDF version.. This sets the transmitter type. The VDF version is also changed if the transmitter does not support the currently selected version. The number of announcements will also be adjusted. If fewer announcements are available as a result of changing the VDF version, any excess announcements will be deleted after a warning message. Conversely, missing announcements are filled up with empty placeholders.

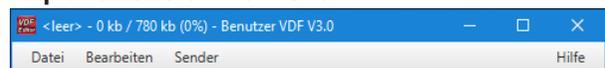
Additional program "VDF editor (Voice Data Files)" for Windows®, MacOS® and Linux®

Version, country setting, transmitter type

 The selection in the "VDF version" and "Transmitter type" fields is only relevant if a VDF file is to be transferred back to a HoTT transmitter. When loading the user and system announcements from the transmitter, this information is automatically detected, see below. However, some remote control systems are compatible with each other with regard to the VDF files, so that it is not always the "actual" transmitter type that is displayed. An incorrect transmitter type selection when saving VDF files to a transmitter is indicated by a corresponding error message.

Explanation of the menu: Menu "File"

4. Explanations of the menu



All functions can be accessed via the "File", "Edit" and "Transmitter" menus as well as the three combo boxes at the bottom. In addition, most menu items can be accessed via keyboard shortcuts. However, the most comfortable method is the use of "Drag & Drop". Files are simply dragged into the window of the VDF editor or elements in the window are moved with the mouse. The latter applies only to "User announcements".

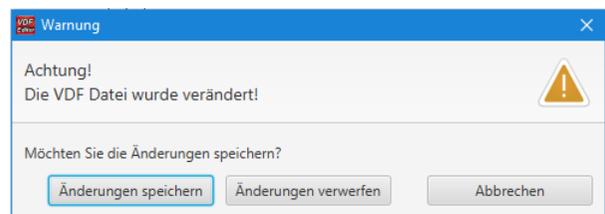
In the following, all menu items and, where available, possibilities for "drag & drop" are explained.

► "File" menu

The file menu allows the basic editing of VDF files:

New VDF (Ctrl + N)

Creates a new, empty "User announcement file". This menu item is always available. If the current data has been modified, it is asked beforehand whether changes should be saved.

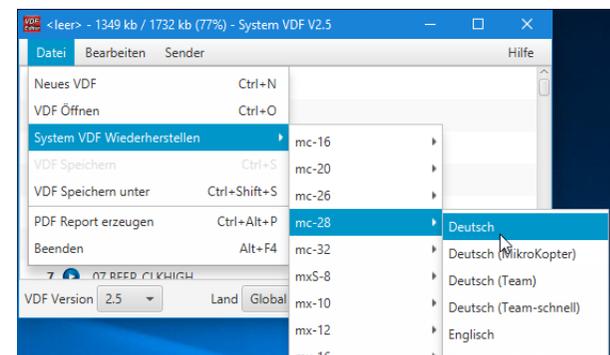


VDF open (Ctrl + O)

Opens the file selection dialog to open a VDF file stored on the PC. Any files with the extension *.vdf can be selected. Alternatively, the VDF file can be dragged and dropped into the window of the VDF editor. The last used directory is saved and reused next time.

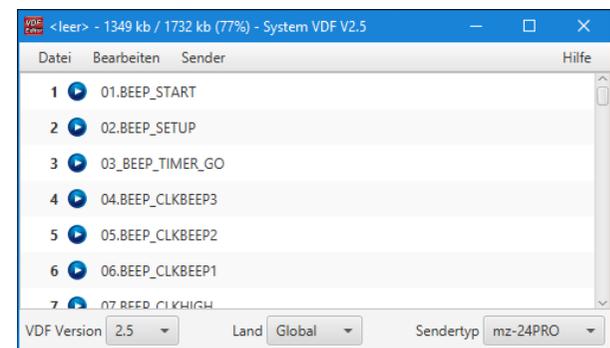
(Alternative: drag a VDF file into the window of the VDF editor drag. The VDF file will open and replace the existing list.)

Restore system VDF



In this menu, all currently available system announcements are offered in different languages specifically for each transmitter. This allows the "System announcements" to be reset to the delivery status.

First, select the appropriate System announcement file for the transmitter, see previous figure.



Depending on the transmitter, the file may be available in two VDF versions. If you do not know the version that is valid for your

Menu "File"

transmitter, you will be alerted in case of an incorrectly selected version number when transferring it to the transmitter, see the menu item "Transmitter" and the option "Transmit announcements to transmitter".

Save VDF (Ctrl + S)

Saves all changes to the previously opened file. This feature is only available if a saved VDF file has been previously opened and changes have been made.

Save VDF under (Ctrl + Shift + S)

Opens the file selection dialog for saving in a new VDF file with a freely selectable name.

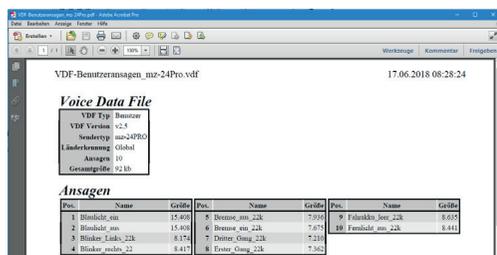
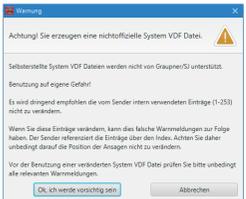
A warning message follows:

"Attention! You are creating an unofficial system VDF file"

Follow the instructions given in this warning display.

Create PDF report (Ctrl + Alt + P)

Opens the file selection dialog for saving a PDF report for the current VDF file (system and / or user announcements) and displays the report. The report contains an overview of all announcements in the file as well as their size, for example:



Pos.	Name	Größe	Pos.	Name	Größe
1	Blaulicht_on	15.000	8	Benruec_on_22k	7.910
2	Blaulicht_aus	15.000	9	Benruec_aus_22k	7.675
3	Blinker_Link_22k	8.175	10	Entsch_Omg_22k	7.210
4	Blinker_ochse_22	8.411	11	Entsch_Omg_22k	7.352

Close (Alt + F4)

Closes the VDF editor.

Menu "Edit"

► "Edit" menu

The edit menu offers special functions for the individual announcements in the VDF file.

Undo (Ctrl + Z)

Undoes the last change.

Restore (Ctrl + Y)

Restores a reversed change.

upwards (Ctrl + U, for user announces only)

Moves the announcement selected with the left mouse button up one position.

This feature is only available for user announcements. For system announcements, the order is specified.

(Alternatively, click on the announcement with the left mouse button and, while holding down the button, move to another announcement in the list. When releasing the mouse button, the announcement is inserted in place.)

down (Ctrl + D, for user announcements only)

Moves the announcement selected with the left mouse button down one position.

This feature is only available for user announcements. For system announcements, the order is specified.

(Alternatively, click on the announcement with the left mouse button and, while holding down the button, move to another announcement in the list. When releasing the mouse button, the announcement is inserted in the appropriate place.)

Rename (Ctrl + R)

Opens an input box after selecting an announcement to rename the selected announcement. Alternatively, the input field can be opened by double-clicking on the name. Enter the new name.

Play (Ctrl + P)

Play the selected announcement through the speakers of the computer. Alternatively, playback can be started by clicking on the play button  to the left of the name of the announcement.

Add an announcement (for user announcements only)

User announcements can be added from two sources:

a) from an audio file (insert)

Opens the file selection dialog to open a new announcement. The audio formats wav, mp3 and ogg are supported. Alternatively, one or more audio files can be dragged and dropped into the list of announcements. The new announcements are inserted at the selected position.

 A selection of "voice files" in wav format can be found on the Graupner update page under: "Voice Files HoTT Viewer App" as a zip file, currently: "Voice_DE30102017.zip".

The order of insertion is determined by the order of the audio files in the clipboard. It is therefore important to always drag the top file into the window of the VDF editor when importing multiple files. This keeps the order of the announcements.

The audio data is converted to 16-bit PCM mono with a sampling rate of 11 kHz when imported. Therefore, audio files with higher quality do not bring any advantages.

 Please keep the original VDF files for later reuse.

Exceeding the (transmitter-dependent) maximum possible number of announcements is displayed.

b) from a text (Ctrl + T)

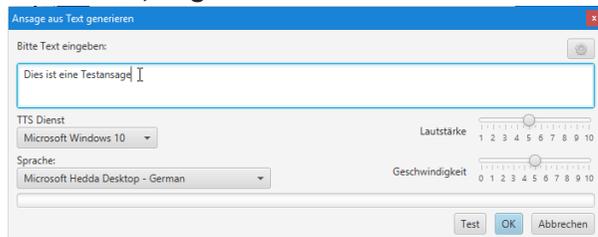
Opens a dialog for entering a text. The pronunciation of the text can be selected via the "Language" selection box. Leave the TTS service

Additional program "VDF editor (Voice Data Files)" for Windows®, MacOS® and Linux®

Menu "Edit"

on "Microsoft Windows".

A more detailed description will be given in the next additional program of the group "Link": HoTT-TTS., Page 139.



Replace announcement (for user and system announcements)

As with adding, two sources can be used when replacing.

a) from audio file (Shift + Insert)

Opens the file selection dialog to open a new announcement. The new announcement replaces the selected announcement.

The order of insertion or replacement is determined by the order of the audio files in the clipboard. It is therefore important to always drag the top file into the window of the VDF editor when importing multiple files. This keeps the order of the announcements.

(The audio files are converted to the internal format of the transmitter upon import. A lossy compression is used, so that it comes with multiple compression to a loss of quality.)



Please keep the original files for later reuse.

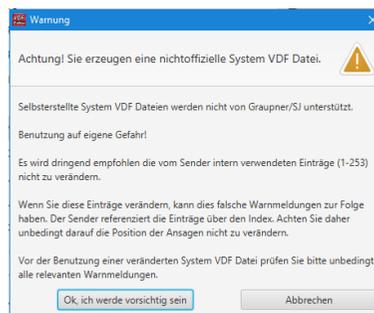


Correct system announcements are crucial for the reliable operation of the transmitter.

The transmitter awaits the announcements at specified locations in the list. Therefore, make changes to the system announcements only with great care. Otherwise, this could result in erroneous announcements. Preferably use the user announcements to create your own voice output.

To minimize errors in system prompts, some system announcements are limited:

- The number of system announcements is fixed. Depending on the transmitter type and VDF version, the number of announcements in the list is constant.
- The order of system announcements cannot be changed. However, individual announcements can be replaced by new ones.
- The names of the announcements always start with a number.
- System announcements cannot be converted to user announcements. The opposite way is not possible either.
- Saving system announcements will display a warning message that needs to be confirmed:



b) from text (Shift + T)

Opens the same dialog for entering a text as for "Paste", see above. The pronunciation of the text can be selected via the selection box. The generated announcement replaces the selected announcement.

Delete announcement (remove)

Deletes the selected announcement. For system announcements, this option is (currently) inaccessible, so that the number and order are retained.

Export audio file via drag & drop

The "Export" option is not listed in the "Edit" menu, as an export of announcements from the VDF file to the computer can also be made via drag & drop.

Once one or more announcements have been selected in the list, they can be dragged and dropped to the desktop or Explorer (File Manager). The export is always in wav format.

(Import from desktop or explorer into a VDF file is not possible. In this case, use the "Add Announcement" option, see above.)

It is also possible to start the VDF editor twice, exchanging announcements between two VDF files.



Due to the lossy compression in the transmitter, the exported wav file has a lower audio quality than the previously imported original file.

Menu "Transmitter"

Menu "Transmitter"

Within this menu, announcements can be transmitted from the transmitter to a PC, played back on the transmitter and transmitted from the PC to the transmitter.

Connect the transmitter to a PC as described on page 133.

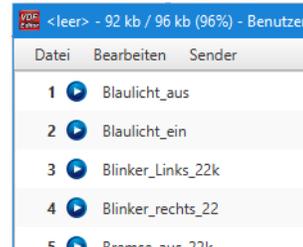
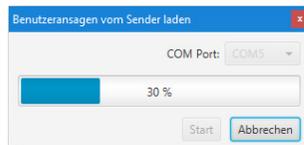
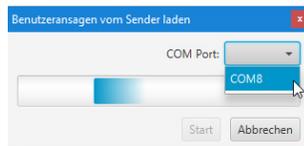
 If the correct channel type is not displayed at the bottom of the editor window, you can adjust it there. In individual cases, however, there is compatibility between different types of transmitters.

Transfer user announcements from the transmitter

Use this option to load the user announcements to a PC. In the adjacent window, select the COM port and click on the "Start" button .

 During download, the RF emission is switched off. Therefore, never load data from the transmitter during model operation.

The user announcements are downloaded and listed in the following window.



Transmit system announcements from the transmitter

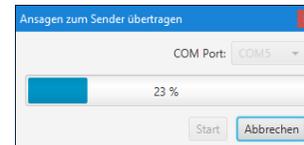
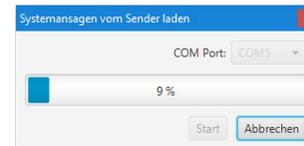
This option works in the same way: Select the COM port and note that the RF emission is switched off. Follow the instructions on the screen.

After clicking on the button , the system announcements are loaded from the transmitter to the PC and also listed in the VDF editor window as before.

 Starting the transfer may take some time.

Send announcements to the transmitter

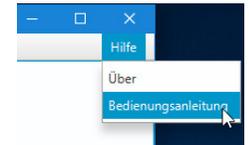
Use this option to transfer the announcements listed in the VDF window from the PC to the transmitter in the same way as described above in the opposite direction.



Menu "Help"

Menu "Help"

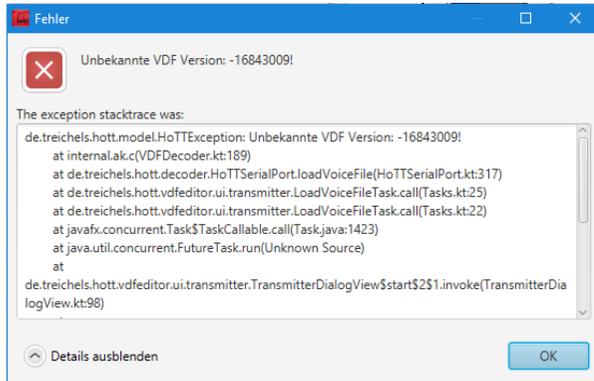
Here you will find information version number, the use of the VDF-editor as well as a manual in pdf-format.



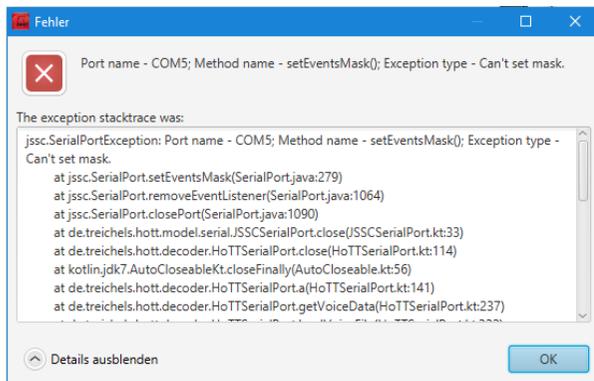
Additional program "VDF editor (Voice Data Files)" for Windows®, MacOS® and Linux®

Error messages

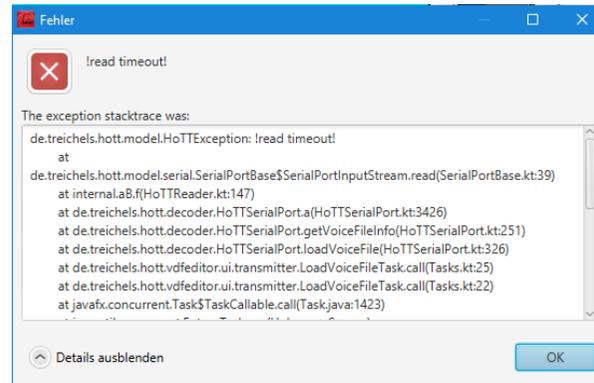
- no user announcements on channels available
If you want to download user announcements from a transmitter but they do not exist, an error message appears



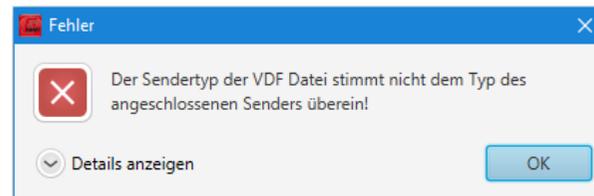
- USB connection interrupted while downloading
If the USB connection is interrupted while downloading announcements from the transmitter to a PC, the following error message appears. Check the USB connection and try again.



- Switch off transmitter during download
A "timeout" error alerts you to the interruption. Repeat the process with the transmitter switched on.

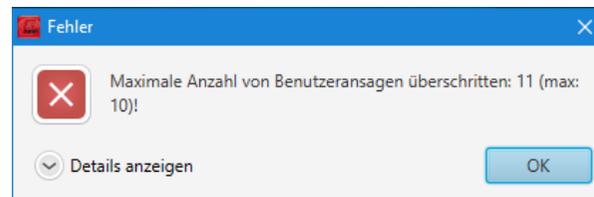


- wrong transmitter type when transferring a VDF file to a transmitter



Correct the transmitter type in the selection window at the bottom of the VDF editor window.

- Max. number of user announcements reached
The number of permitted user announcements is limited depending on the transmitter. If further announcements are added, two error messages appear.



Additional program "HoTT-TTS (Text To Speech)" for Windows®, MacOS® and Linux®

Start HoTT-TTS and entry parameter

The program "HoTT-TTS" allows you to create your own announcement texts, which can be saved as a *.wav file.

Alternatively, the program can also be stored and started anywhere outside the grStudio program. You will find it in the installation directory "Programme (x86) • Graupner • grStudio".

The HoTT-TTS.exe (🔴 HoTT-TTS.exe) program does not require any installation, but a Java™ 8 runtime environment. This can be downloaded for free on the net:

On computers with Windows® operating system, all you have to do is double-click on the program file. For macOS® and Linux® the program file only needs to be renamed from "HoTT-TTS.exe" to "HoTT-TTS.jar".

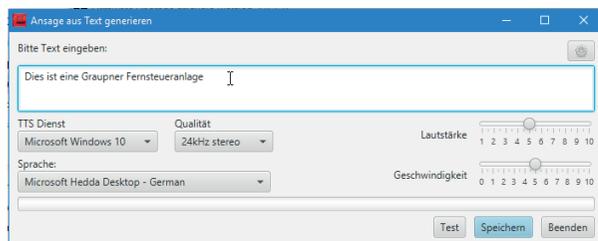
You can replace *system announcements* (see "Replace Announcement" option in the "Edit" menu) or generate new *user announcements*.

The *.wav files can then be dragged and dropped into the VDF editor window via the option "Insert Announcements" or "Replace Announcements" in the "Edit" menu, see above, or drag them to the mass memory of the mz-32 to the folder "Voice".

1. Start program "HoTT-TTS"

Start the program "HoTT-TTS" in the program group "Link".

(Alternatively, select the appropriate entry under "Menus" in the menu bar.)



Parameter entries

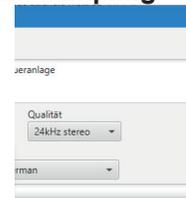
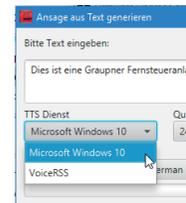
2. Input parameter

Input text: Enter the text to be converted into an announcement in the window.

Select the "TTS service". By default, the TTS service for the current operating system is displayed, here "Microsoft Windows 10®", because under Windows 10®, the function of the operating system can be used.

The "VoiceRSS" service, on the other hand, requires an active Internet connection to convert the input text into a voice output. Under macOS®, only the VoiceRSS service is currently available.

Quality: Under "Quality" select the sampling rate (in mono or stereo quality): max. 24 kHz for the mz-32 and 11 kHz for the other remote control systems, see note below.



⚠ In the Edit menu of the "VDF Editor", audio files are automatically converted into 16-bit PCM with a sampling rate of 11 kHz when inserted into a VDF file. Therefore, audio files with higher quality do not bring any advantages. (For this reason, this option is missing within the VDF editor.)

Language: Under the TTS service "Microsoft Windows 10®" you can choose between a female German ("Hedda") and a female English ("Zira") text pronunciation.



Under "VoiceRSS" there are many more languages to choose from.

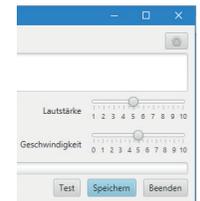
Volume: Adjust the volume at which the text announcement is to be stored by moving the balance control.

Speed: Set the desired playback speed.

Test: Before saving, you can test the settings.

⚠ If the "Test" function does not reproduce a written word, the set language probably does not match the text.

Save: The HoTT-TTS program creates a *.wav file that you can save on the PC (with a freely selectable name).



Error messages

- missing Internet connection
If you selected "*VoiceRSS*" under TTS service, the PC must be connected to the Internet to convert the text into a voice output. Otherwise, the following error message appears:



7 MS-DOS® program "VoltageModule.exe"

Program for firmware update of the "Voltage Module"

Preliminary remarks

Program "Voltage Module VM1"

For a firmware update of the two voltage modules

- ▶ Voltage Module 2-4S, EH, No. 33630



- ▶ Voltage Module 2-4S, XH, No. 33631



Currently only one MS-DOS® program is available which is not compatible with the grStudio program package.

New firmware files for the two products can be found under the tab for the corresponding product "Downloads".

First load the file "VoltageModule.zip" onto your PC or laptop and save the zip file in the directory of your choice.

Unpack the zip file by double-clicking on the zip file or right-clicking: "Extract All ...". Of course you can also change the path for the extracted files, otherwise a folder in the current directory called "VoltageModule" will be suggested. In this now unpacked (sub) folder you will find an executable exe file, the program file "VoltageModule.exe", as well as the firmware file "VoltageModule_VMX_VXXX.hex".

The exe program can not be started under WIN 7/8 / 10®, but only at the MS-DOS® level.

The following instructions describe an uncomplicated procedure for starting the exe program under the operating systems WIN 7/8 / 10® on an MS-DOS® level. If you are still unsure, have the update done by *Graupner / SJ* service.



If a firmware update of the "Voltage Module" on a virtual machine (VM) fails, the update starts from a real WIN operating system.

Suggested accessories

- USB interface No. 7168.6 incl. USB cable
- Interface cable No. 7168.S.

MS-DOS® under WIN 7/8/10®

MS-DOS® Prompt

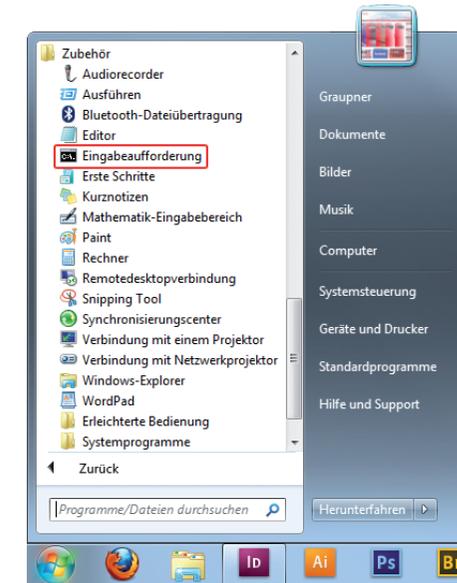
The required MS-DOS® program is called

" command prompt,

the corresponding file "cmd.exe".

WIN 7®: Under WIN 7® you can enter for example ...

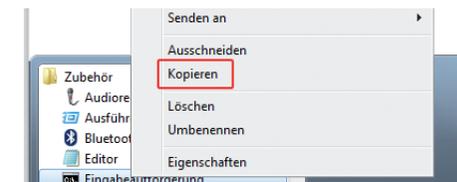
START • ALL PROGRAMS • ACCESSORIES



... to program

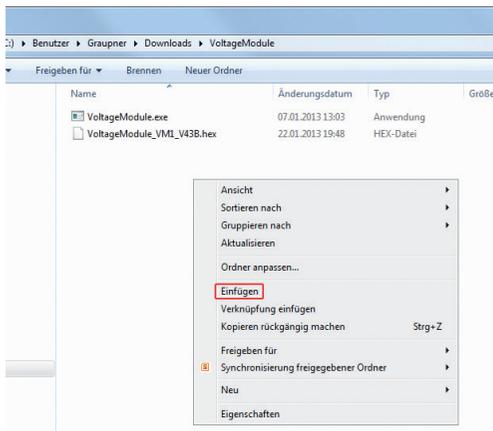
" Commando prompt".

This program will be copied to the unpacked "VoltageModule" directory. Right-click COMMAND PROMPT, and then click COPY.

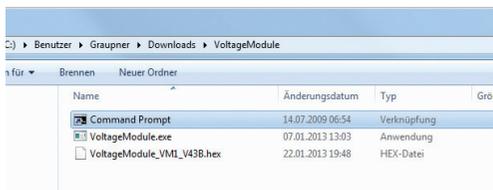


MS-DOS® command prompt under WIN 7/8®

(Alternatively press <Ctrl> + <C> for "Copy".)
Now go to the (sub) directory "VoltageModule" via the File Manager (Windows® Explorer) - here created as an example under "Downloads" -, place the mouse pointer in this directory, click on the right mouse button Window opens, and choose "PASTE" by clicking on the left mouse button.

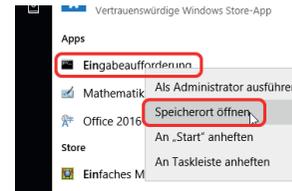


(Alternatively push <Ctrl> + <V>, to insert the program "Command prompt".)



MS-DOS command prompt under WIN 10®

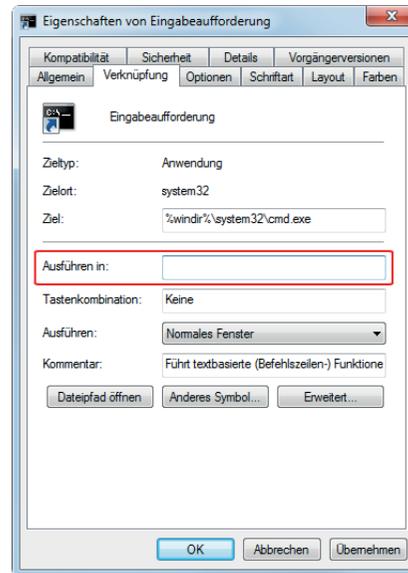
WIN 10®: Under WIN 10® enter "Command prompt" or "CMD" in the input window "Ask me something" or "Enter text here for search". Right-click the program and select "Open Location" to copy the program as before.



The program is now inserted as a link and is called "Command Prompt" depending on the operating system.

The following description is the same for WIN 7/8 / 10®.

Click on the file "Command Prompt" with the right mouse button, select "Properties" in the selection window and delete the entry after "Execute in:" under the tab "Link":

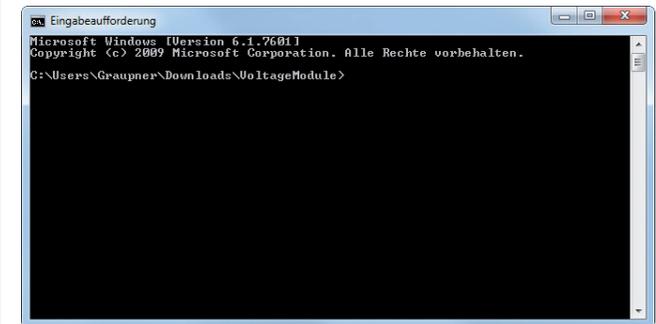


Close the window with **OK**.

This procedure will save you some special MS-DOS® command to get to the "VoltageModule.exe" program.

(An alternative possibility will be briefly described at the end of this description for the sake of completeness.)

Now start the program "Command Prompt" by double-clicking with the left mouse button.



The path displayed here for the destination folder "Voltage Module" ...

`C:\Users\Graupner\Downloads\VoltageModule>`

... is only representative of the path you are using in the unpacked "VoltageModule" (sub) directory.

Now prepare the update process as described below. The Voltage Module program window will open

Program for firmware update of the "Voltage Module"

General preparations

1. USB drivers installed?

Have you already installed the USB driver? Then move on to the next step. Otherwise read the section "Driver installation" on page 12.

2. Select COM port

In the grStudio program, under "Select port", check with which COM port the USB interface (No. 7168.6) is connected, cf. page 17. In our example, it is COM port "3".

3. Preparation: Connecting Voltage Modules / PC

Connect the USB cable incl. USB interface (No. 7168.6), the enclosed 5-core cable and interface cable No. 7168.S to the computer. When properly connected, an LED on the interface board (depending on the operating system, for a limited period of time) should light up red.



The voltage module is not yet connected.

Start update program

4. Start update program

In the MS-DOS® window - shown here under the operating system WIN 7/8/10 - enter ">" at the insertion point (prompt):

VoltageModule.exe <Empty space> COM <Number COM-Port> <Empty space> <Name Update file with the extension hex>

(Spaces only at the two marked places.)

The last update file at the time of writing this manual is named:

"VoltageModule_VM1-4.4.2.hex".

(As of: 08/2018)

In this example, the complete input is:

VoltageModule.exe COM3 VoltageModule_VM1-4.4.2

(each with a space in front of and behind "COM3").

```
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. Alle Rechte vorbehalten.

C:\Users\Graupner\Downloads\VoltageModule>VoltageModule.exe COM3 VoltageModule_VM1-4.4.2
```

Use the left / right arrow keys on the keyboard to correct typing errors.

5. Connection "Voltage Module" with interface adapter

Press ENTER.

```
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. Alle Rechte vorbehalten.

C:\Users\Graupner\Downloads\VoltageModule>VoltageModule.exe COM3 VoltageModule_VM1-4.4.2
Update Voltage Module
Com: 3
UpdateFile: VoltageModule_VM1-4.4.2.hex
Update File 'VoltageModule_VM1-4.4.2.hex' gelesen
Com port '3' geoeffnet
Voltage Module einschalten
Voltage Module gefunden
```

Now the ...

- update files will be read,
- the COM port opens and
- You are asked to connect the Voltage Module.

Connect the voltage module to the 3-pin socket of the adapter cable No. 7168.S.

You have about 10 s for connecting time before the update process is aborted, see section "Error Messages" below.

With "timely" connection - "Voltage Module found" - data transfer begins ...

```
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. Alle Rechte vorbehalten.

C:\Users\Graupner\Downloads\VoltageModule>VoltageModule.exe COM3 VoltageModule_VM1-4.4.2
Update Voltage Module
Com: 3
UpdateFile: VoltageModule_VM1-4.4.2.hex
Update File 'VoltageModule_VM1-4.4.2.hex' gelesen
Com port '3' geoeffnet
Voltage Module einschalten
Voltage Module gefunden
Send File .....
```

... and gets through a running point series "Send file"

is shown.

Do not interrupt the data transmission. The successful update is confirmed in the MS-DOS® window:

"Voltage Module successfully updated".

```
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. Alle Rechte vorbehalten.

C:\Users\Graupner\Downloads\VoltageModule>VoltageModule.exe COM3 VoltageModule_VM1-4.4.2
Update Voltage Module
Com: 3
UpdateFile: VoltageModule_VM1-4.4.2.hex
Update File 'VoltageModule_VM1-4.4.2.hex' gelesen
Com port '3' geoeffnet
Voltage Module einschalten
Voltage Module gefunden
Send File .....
Voltage Module erfolgreich upgedated
C:\Users\Graupner\Downloads\VoltageModule>
```

You can now disconnect the USB connection and close the MS-DOS® window.

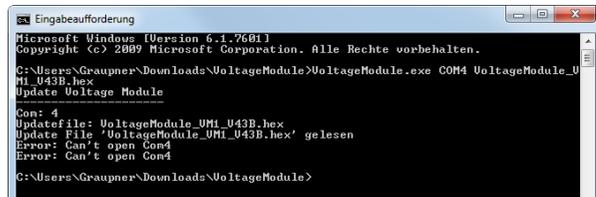
Further information on the "Voltage Modules" can be found in the associated instructions.

Error messages

Error messages

Wrong COM port

In our example, COM port "3" is the correct one, but "4" was entered (by mistake).



```
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. Alle Rechte vorbehalten.

C:\Users\Graupner\Downloads\VoltageModule>VoltageModule.exe COM4 VoltageModule_U
MI_U43B.hex
Update Voltage Module

Com: 4
Updatefile: VoltageModule_UMI_U43B.hex
Update File 'VoltageModule_UMI_U43B.hex' gelesen
Error: Can't open Com4
Error: Can't open Com4

C:\Users\Graupner\Downloads\VoltageModule>
```

"Error: Can't open Com4" is the error message.

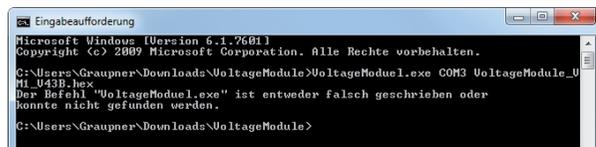
Repeat the input at the insertion point ("prompt") ">" with the correct port number. If the error occurs repeatedly, check the COM port and if necessary disconnect the USB connection for a few seconds.

Further input errors

Typing mistakes can not be ruled out. The MS-DOS® window contains corresponding indications, such as ...

Note on a spelling error - here:

VoltageModuele.exe,"
instead of right: *VoltageModule.exe*":

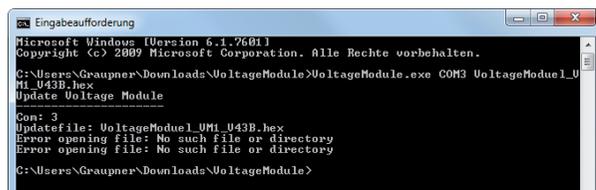


```
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. Alle Rechte vorbehalten.

C:\Users\Graupner\Downloads\VoltageModule>VoltageModuel.exe COM3 VoltageModule_U
MI_U43B.hex
Der Befehl "VoltageModuel.exe" ist entweder falsch geschrieben oder
konnte nicht gefunden werden.

C:\Users\Graupner\Downloads\VoltageModule>
```

or "Error opening file: No such file or directory" – here: hex file names misspelled:



```
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. Alle Rechte vorbehalten.

C:\Users\Graupner\Downloads\VoltageModule>VoltageModule.exe COM3 VoltageModule_U
MI_U43B.hex
Update Voltage Module

Com: 3
Updatefile: VoltageModule_UMI_U43B.hex
Error opening file: No such file or directory
Error opening file: No such file or directory

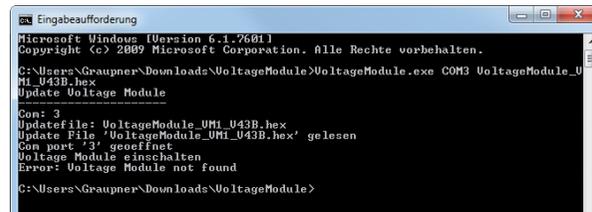
C:\Users\Graupner\Downloads\VoltageModule>
```

Check the input exactly and repeat it after the

last insertion point.

Voltage modules not connected in time

Within about 10 seconds, the module must be connected to the interface after loading the hex file (firmware file), otherwise the error message "Voltage Module not found" appears:



```
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. Alle Rechte vorbehalten.

C:\Users\Graupner\Downloads\VoltageModule>VoltageModule.exe COM3 VoltageModule_U
MI_U43B.hex
Update Voltage Module

Com: 3
Updatefile: VoltageModule_UMI_U43B.hex
Update File 'VoltageModule_UMI_U43B.hex' gelesen
Com port '3' geöffnet
Voltage Module einschalten
Voltage Module gefunden
Error: Voltage Module not found

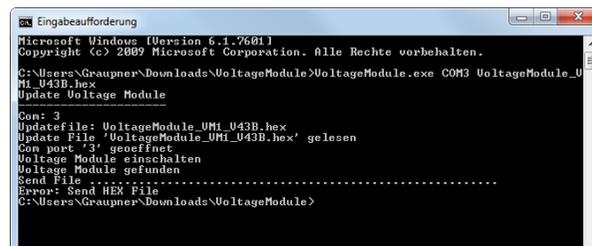
C:\Users\Graupner\Downloads\VoltageModule>
```

Repeat the entry and connect the module within 10 s.

Connection Voltage Module / PC interrupted during an update

If the USB connection to the module is interrupted during an update, the transfer will only seem to be completed, but after some time it will end with the error message "Error: Send HEX File".

Wait for this error message before manually ending the process and resubmitting the update.



```
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. Alle Rechte vorbehalten.

C:\Users\Graupner\Downloads\VoltageModule>VoltageModule.exe COM3 VoltageModule_U
MI_U43B.hex
Update Voltage Module

Com: 3
Updatefile: VoltageModule_UMI_U43B.hex
Update File 'VoltageModule_UMI_U43B.hex' gelesen
Com port '3' geöffnet
Voltage Module einschalten
Voltage Module gefunden
Send File .....
Error: Send HEX File

C:\Users\Graupner\Downloads\VoltageModule>
```

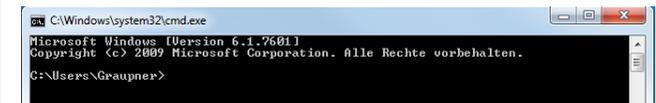
Alternative program start

Alternative approach

If you have copied the MS-DOS® program into the "VoltageModule" directory as described above, you have quickly reached the "target".

Alternatively, you can leave the update program in its original location. In this case, you have to "hang" manually to the unpacked "VoltageModule" (sub) directory via the DOS command "cd" (change directory).

When you start the MS-DOS® program, normally in the current user directory, which is representative here with "Graupner / SJ" named. Under WIN 7/8 / 10® it might look like this:



```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. Alle Rechte vorbehalten.

C:\Users\Graupner>
```

Depending on the operating system, the program is named "cmd.exe" in the header, but is identical to the program name "Command prompt". Where to find this program has been described above. Using the file manager, write down the path to the unpacked "VoltageModule" (sub) directory.

Example: The unpacked (sub) folder "VoltageModule" is stored in the (default) Download (s) folder.

Initially (usually) change to the top level of the "C:" drive by pressing "cd .." twice and, of course, pressing the ENTER button. Then enter (in this example) ...

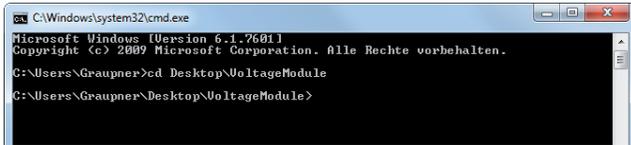
"cd Downloads\VoltageModule"

Under WIN 7/8 / 10® you get from the current level "C: \ Users \ Graupner \ SJ" via ...

"cd Downloads\VoltageModule".

Alternative program start

... directly in the named directory, where "Graupner / SJ" is representative of the current user name:



```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. Alle Rechte vorbehalten.
C:\Users\Graupner>cd Desktop\VoltageModule
C:\Users\Graupner\Desktop\VoltageModule>
```

Now continue as described above and enter the program name "VoltageModule.exe", the COM port and the name of the firmware file with the extension ".hex".

Supplementary MS-DOS® operating instructions

- ▶ If you have lost your way, you always go back one level with "cd .." ("cd" followed by two dots).
- ▶ In each directory, you can display more existing subdirectories by typing "dir" (directory), and "plodding" from one path to the next as described.
- ▶ If the "VoltageModule" folder is on a different hard disk, go to it by typing the drive letter followed by a ":", e.g. "F:" and then continue as previously described.

