<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>5</td>
</tr>
<tr>
<td>Service Centre</td>
<td>5</td>
</tr>
<tr>
<td>Intended use</td>
<td>6</td>
</tr>
<tr>
<td>Package content</td>
<td>6</td>
</tr>
<tr>
<td>Technical Data</td>
<td>7</td>
</tr>
<tr>
<td>Declaration of conformity</td>
<td>7</td>
</tr>
<tr>
<td>Symbols explication</td>
<td>8</td>
</tr>
<tr>
<td>Safety notes</td>
<td>8</td>
</tr>
<tr>
<td>For your safety by handling the battery</td>
<td>9</td>
</tr>
<tr>
<td>Control elements and connections</td>
<td>11</td>
</tr>
<tr>
<td>Layout of switches and buttons</td>
<td>11</td>
</tr>
<tr>
<td>Commissioning</td>
<td>12</td>
</tr>
<tr>
<td>Battery connection</td>
<td>12</td>
</tr>
<tr>
<td>Battery charging</td>
<td>12</td>
</tr>
<tr>
<td>Transmitter switching on and off</td>
<td>12</td>
</tr>
<tr>
<td>Neutralization spring setting</td>
<td>13</td>
</tr>
<tr>
<td>Adjusting the position of the steering wheel</td>
<td>13</td>
</tr>
<tr>
<td>Converting the steering wheel for left-handers</td>
<td>14</td>
</tr>
<tr>
<td>Installing the steering wheel spacer</td>
<td>15</td>
</tr>
<tr>
<td>Menu RF SET</td>
<td>16</td>
</tr>
<tr>
<td>Binding</td>
<td>16</td>
</tr>
<tr>
<td>Channel features (CH FUNCTION)</td>
<td>17</td>
</tr>
<tr>
<td>Range test</td>
<td>18</td>
</tr>
<tr>
<td>Start display</td>
<td>19</td>
</tr>
<tr>
<td>Main menu</td>
<td>21</td>
</tr>
<tr>
<td>Menu SYS SET</td>
<td>21</td>
</tr>
<tr>
<td>Telemetry menu</td>
<td>22</td>
</tr>
<tr>
<td>Setting &amp; Data View</td>
<td>22</td>
</tr>
<tr>
<td>RF Status View</td>
<td>22</td>
</tr>
<tr>
<td>Voice Trigger</td>
<td>23</td>
</tr>
<tr>
<td>Device Management</td>
<td>23</td>
</tr>
<tr>
<td>Secret mode</td>
<td>24</td>
</tr>
<tr>
<td>Announcements (Voice Update)</td>
<td>24</td>
</tr>
<tr>
<td>Language change</td>
<td>24</td>
</tr>
<tr>
<td>Steering wheel and throttle lever calibration</td>
<td>25</td>
</tr>
<tr>
<td>Interface</td>
<td>25</td>
</tr>
</tbody>
</table>
Display warnings ...............................................................26
Voltage display calibration ...............................................26
Change the values in an input field ..................................27
Model selection .................................................................27
Servo Reverse ....................................................................27
Trim .....................................................................................27
E.P.A. (TRA ADJ) ..............................................................28
D/R,EXP ..............................................................................28
B.R.A. (ATL) ........................................................................29
B-MIX ..................................................................................30
TH RESP .............................................................................30
IDLE UP / PUMPING ..........................................................30
PROFILE .............................................................................31
S/SPEED .............................................................................32
START .................................................................................32
Timer ...................................................................................33
SW SET .................................................................................34
Failsafe ...............................................................................36
SERVO (S VIEW) .................................................................36
P/MIX ..................................................................................37
AUX .....................................................................................38
S/MODE ..............................................................................38
A.B.S ...................................................................................40
Operating receiver GR-8 ...................................................41
GR-8 receiver menu in the telemetry ...............................42
Firmware update transmitter............................................43
Firmware update receiver .................................................44
Notes on environmental protection .................................45
Care and maintenance ......................................................45
Warranty .............................................................................45
Introduction

Thank you very much for purchasing the Graupner X-8E HoTT transmitter. This X-8E HoTT transmitter is extremely versatile. Read this manual carefully to achieve the best results with your X-8E HoTT transmitter and first of all to safely control your models. If you experience any trouble during operation, take the instructions to help or ask your dealer or Graupner Service Centre.

Due to technical changes, the information may be changed in this manual without prior notice. Keep updated by regularly checking our own website, www.graupner.de to be always updated with the products and firmware.

This product complies with national and European legal requirements.

To maintain this condition and to ensure safe operation, you must read and follow this user manual and the safety notes before using the product!

Note
This manual is part of that product. It contains important information concerning operation and handling. Keep these instructions for future reference and give it to third person in case you gave the product.

Service Centre

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For the service centers outside Germany please refer to our web site www.graupner.de
Intended use

The **X-8E HoTT transmitter** is an ergonomically and technically modern 8 function radio control system in 2.4 GHz HoTT technology for ambitious and professional RC car and speedboat drivers.

The **X-8E HoTT transmitter** is designed exclusively to be used in battery-powered, radio controlled models which do not transport any man, any other use is not allowed. For any improper use no warranty or liability is accepted.

Read through this entire manual before you attempt to use the **X-8E HoTT transmitter**.

**Graupner/SJ** constantly works on the development of all products; we reserve the right to change the item, its technology and equipment.

Target group

The product is not a toy. It is not suitable for children under 14 years. The operation of the **X-8E HoTT transmitter** must be performed by experienced modelers. If you do not have sufficient knowledge about dealing with radio-controlled models, please contact an experienced model builder or a model club.

Package content

- X-8E transmitter
- GR-8 Receiver
- LiPo battery 1S 6000 mAh
- USB update cable set (No.S8500, 7168.S)
- Micro SD card
- Steering wheel spacer and cover
- Manual
# Technical Data

## X-8E transmitter data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating voltage</td>
<td>3.4 ... 6 V</td>
</tr>
<tr>
<td>Frequency</td>
<td>2.4 Ghz</td>
</tr>
<tr>
<td>Weight</td>
<td>657 g</td>
</tr>
<tr>
<td>Modulation</td>
<td>FHSS</td>
</tr>
<tr>
<td>Range</td>
<td>500 m</td>
</tr>
<tr>
<td>Control functions</td>
<td>4</td>
</tr>
<tr>
<td>Power consumption</td>
<td>max. 600 mA</td>
</tr>
<tr>
<td>Temperature range</td>
<td>-10 ... +55 °C</td>
</tr>
<tr>
<td>Antenna type</td>
<td>Patch antenna</td>
</tr>
<tr>
<td>Dimensions</td>
<td>220 x 185 x 140 mm</td>
</tr>
</tbody>
</table>

## GR-8 receiver data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating voltage</td>
<td>3.6...8.4 V</td>
</tr>
<tr>
<td>Frequency</td>
<td>2.4 Ghz</td>
</tr>
<tr>
<td>Weight</td>
<td>6.9 g</td>
</tr>
<tr>
<td>Modulation</td>
<td>FHSS</td>
</tr>
<tr>
<td>Range</td>
<td>500 m</td>
</tr>
<tr>
<td>Control functions</td>
<td>4</td>
</tr>
<tr>
<td>Power consumption</td>
<td>80 mA</td>
</tr>
<tr>
<td>Temperature range</td>
<td>-10 ... +55 °C</td>
</tr>
<tr>
<td>Aerial length</td>
<td>110 mm</td>
</tr>
<tr>
<td>Dimensions</td>
<td>30 x 21 x 14.3 mm</td>
</tr>
</tbody>
</table>

# Declaration of conformity

**S1008 / X-8E**

Graupner/SJ declares that the product is conform to EU norms.

- EN 301 489-1 V1.9.2
- EN 301 489-17 V2.2.1
- EN 300 328 V1.8.1
- EN 62311:2008
Symbols explication

Always observe the information indicated by this warning sign. Particularly those which are additionally marked with the signal words **CAUTION** or **WARNING**. The signal word **WARNING** indicates the potential for serious injury, the signal word **CAUTION** indicates possibility of lighter injuries.

The signal word **Note** indicates potential malfunctions. **Attention** indicates potential damages to objects.

Safety notes

General

These safety instructions are intended not only to protect your own and other people’s safety, but also to protect the product. Therefore please read this section very carefully before using the product!

Do not carelessly leave the packaging material lying around, since it might become a dangerous toy for children.

- Persons, including children, with reduced physical, sensory or mental capabilities, or lack of experience or knowledge, or not capable to use safely the transmitter must not use the transmitter without supervision or instruction by a responsible person.

- First, always perform a range and function test on the ground (to do so, hold your model tight), before you use your model. Repeat the test with running motor and with short throttle bursts.

- Before you start using the remote control model, you have to check the further relevant laws and regulations. These laws you must obey in every case. Pay attention to the possibly different laws of the countries.

- The insurance is mandatory for all kinds of model operation. If you already have one, so please inform yourself if the operation of the respective model is covered by your insurance. If this is not the case, conclude a special liability insurance policy for models.
- Protect all equipment from dust, dirt, moisture. All equipment must be protected from vibration as well as excessive heat or cold. The models may only be operated remotely in normal outside temperatures such as from -10°C to +55°C.
- Only operate all your components using the current software version.
- If you have questions which cannot be answered by the operating manual, please contact us (contact information see page 3) or another expert in the field.

For your safety by handling the battery

**CAUTION**

- Protect all equipment from dust, dirt, moisture. Only use in dry locations.
- Do not use any damaged battery. Risk of injury!
- Any alterations to the battery can cause serious injury. Risk of fire!
- Batteries may not be heated, burned, short-circuited or charged with excessive current or with reversed polarity.
- While they are being charged, the batteries must be placed on a non-flammable, heat-resistant and non-conductive surface. Combustible or highly flammable objects are to be kept away from the charging area. Batteries must be monitored while they are being charged.
- The maximum quick charging current specified for the respective cell type may not be exceeded.
- If the battery heats up above 60°C while it is being charged, stop charging and let the battery cool down to approximately 30 - 40°C.
- Never charge batteries that have already been charged, are hot or are not fully discharged. If a cell in a battery pack has become particularly hot following a quick-charge process, this may indicate a defect in that cell. Do not use the battery pack any more!
- The batteries must not be modified. Do not directly solder or weld the cells.
If handled improperly, there is a danger of fire, explosion, irritation and burns. To extinguish a fire use: water, CO², sand.

Leaked electrolyte is caustic and should not be touched or come into contact with your eyes. In case of emergency, rinse with a large quantity of water and consult a Med. Doctor.

Always charge the battery fully.

The maximum charging current permitted may not be exceeded.

Never leave the charger unattended when it is connected to the power supply.

Batteries may only be charged in rooms fitted with smoke detector.

**Special instructions on charging LiPo batteries**

- To charge and discharge LiPo batteries, only use specifically designed chargers/dischargers with balancer connector.

- The white connector (cell count + 1 pole) is designed for the connection to a LiPo balancer or a battery charger as a single cell charger with a manual cell balancer. Always charge the battery with the balancer connector.

**Safety notes for stocking LiPo batteries**

- LiPo batteries should be stored with a voltage of about 3,8V per cell. If the cell voltage falls below 3 V, then the battery must be necessarily charged. Deep discharge and storage in discharge status (cell voltage < 3V) make the battery useless.

- Charge and transport your LiPo batteries always in a safety bag.
Control elements and connections

1. Touch Display
2. Steering wheel
3. Throttle lever
4. Earphone socket
5. SD card slot
6. Data socket
7. Mini USB socket
8. On/off switch
9. Direct button S1 (see chapter SW SET)
10. Direct button S2 (see chapter SW SET)

Layout of switches and buttons
Commissioning

Battery connection
Remove the cover from the bottom of the transmitter and connect the battery, while observing the correct polarity. Shut the cover and ensure the cover sits properly.

Correctly set the the battery warning threshold in accordance with the used battery. (see Chapter "SYS SET")

If a voltage warning has been triggered, charge the batteries.

Battery charging
Charge the battery in the transmitter through the micro USB socket with the included USB cable. (Only with the included LiPo battery). Therefore use an USB connection e.g. a PC USB port or an USB net adapter. The LED under the display lights up red during the charge process. When the battery is full the LED turns off.

Alternatively you can charge the battery outside the transmitter with an RC battery charger (not included) with LiPo program.

Transmitter switching on and off
In the upper side of the transmitter there are two buttons. The transmitter can be switched on and off through both buttons. By pushing the right button for about 2 sec the transmitter is switched on without RF module. In this mode it is possible for example to program without the risk that a switched on model can accidentally start. Moreover the current consumption will be reduced because the RF module is off.

With the left button it is possible to switch the transmitter and the RF module on.
Neutralization spring setting

The adjusting screw for adjusting the neutralization spring for the steering wheel is located in the housing below the wheel.

By turning the screw left or right, the reset force is increased or decreased.

The adjusting screw for adjusting the neutralization spring for the throttle lever is located in the housing at the throttle lever.

By turning the screw left or right, the reset force is increased or decreased.

Adjusting the position of the steering wheel

You can adjust the position of the steering wheel forward or backward. To do so, remove the cover with the X-8E logo above the steering wheel. Then, loosen the two screws and place the steering wheel in its new position. Now, tighten the two screws again.
Converting the steering wheel for left-handers

The entire steering wheel can be converted to the left side for operation by left-handers.

1. Remove the X-8E logo cover (see following figure)
2. Now, unscrew the steering wheel (2 screws)
3. Unplug the cable of the steering wheel
4. Mount the steering wheel on the left side and re-plug the cable.
5. Tighten the steering wheel and refit the X-8E logo cover.

---

**Attention** After the conversion, check all functions of steering wheel, of the buttons and of the rotary controls before you operate a model again!
Installing the steering wheel spacer

The steering wheel position can be adjusted through a spacer to fit to the pilot preference.

1. Remove the steering wheel
2. Remove the four screws that are under the wheel.
3. Remove the steering wheel under-part and disconnect the connector
4. Install the spacer with the four short screws
5. Reconnect the connector
6. Install the steering wheel under-part on the spacer part

Attention After the conversion, check all functions of steering wheel, of the buttons and of the rotary controls before you operate a model again!
Menu RF SET

Binding and range test

Binding
In order to be able to establish a connection to the transmitter, the Graupner-HoTT receiver has first to be "bound" to "its own" Graupner-HoTT transmitter. This process is known as "binding". You can also select, before the BINDING, in the TELEMETRY line, if you want the telemetry data to be displayed or not. This "binding" is however required only once for each transmitter-receiver combination. This process has already been performed for the transmitter and the receiver here included. This is the procedure in detail:

♦ Switch on the receiver and put it in binding mode, by pressing and holding the binding button for 3 sec. (green and red LED on the receiver are flashing)

♦ Through the ON or OFF button in the telemetry line you can select if the receiver has to be bound with or without telemetry. (Must always be selected before binding)

♦ Trigger the binding in the menu "RF SET", by pressing the "OFF/CHK" button in the "BIND" line

♦ If the red LED of the receiver goes out within about 10 seconds and the green LED is illuminated, the binding process has been completed successfully.

♦ Your transmitter/receiver combination is now ready for operation.

If the red LED is still lit, the "binding" failed. In this case, repeat the whole procedure.
Meaning of the individual menu items

**RF SYSTEM** = HoTT for receiver (GR-4/12/16/18/24/32)

HoTT V2 for receiver with SUMD-V2 (GR-8)

**BIND** = display of the actually bound receiver type

**RF ON/OFF** = Display if the RF is switched on or off

**RANGE TEST** = Range test (see chapter range test)

**CH FUNCTION** => (only available in HoTT V2 operation with suited receiver)

Channel features (CH FUNCTION)

Only available in HoTT V2 operation with suited receiver!

Following settings are possible for each channel:

- USR1m50 : ULTRA SIGNAL 1.5msec
- FSR3m00 : FAST SIGNAL 3.0msec
- SUMD-V2 : FAST SIGNAL BUS 3.0msec
- NSR6m00 : NORMAL SIGNAL 6.0msec
- NSR12m0 : NORMAL SIGNAL 12.0msec
- NSR24m0 : NORMAL SIGNAL 24.0msec

In this menu, the properties for adjusting to the servo, used by the respective channel, are set. *(Observe the information from the servo manufacturer)*

**Attention**

The setting **SUMD-V2** can only be used for Graupner servos, sensors and controllers supporting this function!

**Notice:** Follow the instructions on the screen, in order to save the settings in the receiver!

Proceed always in this order!

1. Switch receiver off
2. Switch transmitter off
3. Switch transmitter on
4. Switch receiver on

Afterwards, in the telemetry menu, check whether the settings are displayed in the receiver.
Range test

Perform a range test of the Graupner HoTT 2.4 system, by observing the following instructions. It is useful to have an assistant to help you with the range test.

Install the receiver, which preferably has already been bound to the transmitter, in the model. Switch on the radio control and wait, until the red LED on the receiver is no longer lit. You are now able to monitor servo movements.

Place the model on a flat surface (cement, mowed lawn or ground) so that the receiver antennas are at least 15 cm above the ground. It may therefore be necessary to place a support underneath the model during the test. Hold the transmitter at hip level at a slight distance from your body. However, do not point the aerial directly at the model, but turn and/or angle the aerial tip so it stands vertical during operation. Start the range test mode in the "RF SET" menu, by pressing OFF in the line "RANGE TEST", which is now active for 99 sec., after which it will be switched automatically off. You can also quit the range test mode by pressing ON in the line "RANGE TEST".

Walk away from the model, and move the sticks. If you detect an interruption in the link within a range of about 50 m at any time, attempt to reproduce it.

If possible, switch on an existing motor, in order to additionally check the interference resistance. Move further away from the model until it does not respond perfectly. Move further away from the model until it does not respond perfectly. Now, terminate the range test mode manually.

Now, the model should respond again. If this is not 100 % the case, do not use the system and contact your Service at Graupner/SJ GmbH.

Perform the range test before each operation and simulate all servo movements which are part of the normal operation. In order to guarantee a safe model operation, the range must always be at least 50 m on the ground.
Start display

Explanation of the symbols

**Voice output (announce)**
Active - blue, inactive - gray

**Earphones (announce)**
Connected - blue, without - gray

**Display rotation (function - press)**
1 - normal, 2 - 90° right, 3 - 90° left

**SD card (indicator)**
Insert - blue, not insert - gray

**Display warnings (function - press)**
Warnings display (see chapter "Warnings")

**Transmitter battery display (function - press)**
Graphical representation, calibration of the voltage indicator (see chapter "voltage indicator calibration"), blinks while battery charging

**Reception strength (display)**
Bar display receiver field strength

**RF switched on (display)**
blue - RF on, gray - RF off

**Transmission strength (display)**
Bar display transmitter field strength

**Receiver input voltage**

Voice output (announce)
Active - blue, inactive - gray

Earphones (announce)
Connected - blue, without - gray

Display rotation (function - press)
1 - normal, 2 - 90° right, 3 - 90° left

SD card (indicator)
Insert - blue, not insert - gray

Display warnings (function - press)
Warnings display (see chapter "Warnings")

Transmitter battery display (function - press)
Graphical representation, calibration of the voltage indicator (see chapter "voltage indicator calibration"), blinks while battery charging

Reception strength (display)
Bar display receiver field strength

RF switched on (display)
blue - RF on, gray - RF off

Transmission strength (display)
Bar display transmitter field strength

Receiver input voltage
M-1
Tip for model memory selection

Model 1
Tip to input the model name

Profile
Switching of the five profiles

Main menu
Tip to move to main menu

Telemetry menu
Tip to move to telemetry menu

Bar display (only display)
Steering
Throttle

Percent display / status display
shows the percent position of steering, throttle, dual-rate
and the switch state of PS1, PS2

By tipping this field it is possible to accede to another display
with bigger representation of the values in this field. (only display)

Model use time (see chapter "Timer")

Battery use time (see chapter "Timer")

Laps timer: Tipping opens the menu "Timer"
Main menu

Push the "F" button in the start display to move to main menu. The main menu is displayed on 3 pages which can be selected by tipping the + and - buttons. In these displays there are different menus which you can access by tipping the related icon.

Menu SYS SET

In this menu it is possible to setup the system and display settings. Switching between System and Display through the button near HW Type.

System settings (push system button)

Battery type - For the transmitter it is only possible the battery type LiPo:

LiPo - The warning threshold is automatically set to 3,6V.

Battery warning - Manual setting of the battery warning threshold in 0,1 V steps.

Startup tone - Here you can switch a start melody on or off.

Voice volume - Setting of the loudspeaker for voice announces, Off - 05.

Power saving - Setting of the time before the transmitter switches automatically off. If you do not act on the transmitter for the selected period of time, a 1 minute countdown will start and at its end the transmitter switches automatically off.

Secret Mode - Settings see chapter "Secret mode"
Display settings (push display button)

**Brightness** - Setting of the brightness, 1 - 20

**Display light** - Setting of the time during which the back-light is switched on.

**Touch sense** - Setting of the touch sensibility of the display. 1 - sensible to 5 - reduced sensibility.

**LED control** - Opens a separate page in which it is possible to switch on and off the illumination LEDs on the transmitter and change their color.

**Display mode** - Setting of the display orientation, 90° right or left rotation.

**RFID** - displays the identification number of the transmitter.

---

Telemetry menu

**Setting & Data View**

In this menu you can setup the options in the telemetry menu of the bound receiver or HoTT module.

Please read the instructions of the related HoTT module.

**RF Status View**

This display indicates the frequency band and the assignment of the channels.
Voice Trigger
Select the device by tipping on it, here you can choose the voice output list.
Only connected sensors and receiver are active.
REPEAT: if the REPEAT function is activated (via SW/FUN menu, VOICE RPT function), the repetition time of the voice output can be set here.
TRIGGER: current voice output from play list
FIXED VOICE: Select only one announce
TRANSMITTER, RECEIVER, ESC, SERVO...: List of the devices in SUMD-V2 system

Device Management
Menu for the administration of the SUMD-V2 devices connected to the receiver, if SUMD-V2 is set for the channels in the RF SET menu at „CH FUNCTION“ (it is only displayed)

Device List
DEVICE LIST: Here, the connected devices are displayed in a list as well as to which receiver socket they are connected, and they can be freely assigned to channels.

New Device
Push FIND,
FINDING.. NO. is displayed, now plug in the devices one after another, after which they will be recognized and added to the list.
Live Log Device
Here, the devices are displayed whose data are output via the Bluetooth interface, in order to display them e.g. in the Live Log of the Firmware Upgrade Studio. To do so, the optional Bluetooth module S8351 has to be used. The settings for the data transmission are made in the Secret mode (see chapter Secret mode).

Secret mode
The "Secret mode" menu is located in the "SYS SET" menu as last point.

Announcements (Voice Update)
These messages are in German by default. These announcements are summarized in a voice packet which is stored in a transmitter-internal memory but they can be replaced by a voice packet of a different language at any time.

On the included micro SD card are already available the following languages: German, English, French, Dutch, Italian and Spanish.

The most actual language packets are available on www.graupner.de.

Language change
Language change step by step:
1. Insert the included memory card in its slot.
2. Switch the transmitter on with the RF module on.
3. Change in the "Secret mode" menu.
4. Tip on the "Voice Update" button
5. Select the language in the list by tipping on the related button.
6. Tip on the "Load" button. The selected language packet will be stored in the transmitter memory.
7. The loading process is finished as soon as the progress bar at the lower edge of the display disappears.
8. When this process is finished, switch the transmitter off.
Steering wheel and throttle lever calibration

If the center position of steering wheel or of the throttle lever does not precisely correspond to 0% control travel, you can check and correct it as follows.

Stick calibration step by step:

Move to the "Model select" menu and initialize a free model memory.

Move to the "Servo display" menu without any change to trim settings or other program settings.

In this menu point you can check if the steering wheel or the throttle lever are correctly centered. Move then the throttle lever and the steering wheel in the middle position. If the throttle lever and the steering wheel are correctly placed, this display should ideally look like the one shown on the left.

One after the other, put both sticks into each of their four possible limit positions without exerting force at the limit position and check if the value are between -100% and +100%.

If you note that the throttle lever and the steering wheel do not reach the desired values, tip on the "Stick calibration" button in the "Secret mode" menu.

Follow the indications on the display and move the steering wheel and the throttle lever in the indicated positions and keep them still. Now confirm the position by tipping on the ENT button. Repeat this procedure for all of the indicated positions. If you have correctly performed all position, a confirmation message will be displayed. Tip on "OK" to save the calibration. Tipping the "BACK" key will quit the process and return to the submenu "Stick Calibration".

Interface

In this menu item it is defined, though which port of the transmitter the telemetry data will be transmitted to the outside:

DATA PORT

If you select this setting, the telemetry data will be output via the DATA socket on the rear side of the transmitter. There, the external Bluetooth module S 8351 will be plugged in. In the BT SPEED line below, FAST or NORMAL will be set, depending on the transmission speed of the counterpart device.

USB PORT

If you select this setting, the telemetry data will be output via the micro USB socket on the rear side of the transmitter. Here, a connection to the PC can be established by using the supplied connection cable 7168.
Display warnings

Push the symbol in the highest line of the start display to accede to the warnings display. Here you will see the current values for transmitter voltage, receiver voltage, signal strength, speed controller voltage and current.

Acoustic and optical warnings (A-S) can be activated through ON or deactivated through OFF.

Through CLR (Clear) you can reset the alarms.

Voltage display calibration

If in the start display you tip on the battery symbol, the display on the left will appear. Here it is possible to calibrate the voltage display as follows:

Voltage display calibration step by step:
1. Measure the battery voltage with a voltmeter
2. Tip on the Cali. Data button
3. You can change the value by 2 or 10 units steps
4. SAVE tip and confirm the safety query through YES
5. Now the new value is displayed under TX VOLT
**Change the values in an input field**

In some of the following menus you will find the following three buttons in the lower part of the display. After tipping on a button you can change the value through the + and - buttons or you can reset the original value through the arrow button.

![Input Field Buttons]

**Model selection**

In this menu you can manage the model memories.

You have the following possibilities:

- Through SEL you can change active model memories
- Through IMP.M you can import model memories from the SD card
- Through EXP.M you can export model memories from the SD card
- Through RES you can reset a model memory to the factory settings. **Notice:** All the settings will be deleted!
- Through CPY you can copy the actual model memory in a new model memory.

![Model Selection Menu]

**Servo Reverse**

In this menu you can setup the servo direction:

Normal - Reverse

The changes are performed by tipping on the button of the related servo. Only by throttle a safety query will be displayed, after that query the change will be effective.

![Servo Reverse Menu]

**Trim**

With this trim function, the entire servo travel is moved, i.e. the position of the full deflections also changes.

In the second line is displayed the respective trim value that has been set through the buttons.

Tip on the related button. By pushing the +/- keys you can change the values. Through the arrow key you can reset the standard value.
E.P.A. (TRA ADJ)

End Point Adjustment

This function sets the maximum servo travel of the servo per channel. The left and right deflection can be set separately in the range from 0 - 150 %. Tip on the related button. By pushing the +/- keys you can change the values. Through the arrow key you can reset the standard value.

D/R, EXP

In this menu, you can set the DR (Dual Rate) and EXPO (Exponential) function for the steering and throttle channel. Select here in the CH line through the STEERING or THROTTLE button. In both menus the setting procedure is the same.

Setting steering channel
D/R: 0 - 100% Dual Rate function setting, here the steering course is limited.
EXP: -100% to + 100% Exponential function setting, here the steering course is changed exponentially

The change of the setting is represented in the diagram if you move the steering wheel.

Throttle channel settings
D/R: 0 - 100% Dual Rate function setting, here the throttle course is limited.
EXP: -100% to + 100% Exponential function setting, here the throttle course is changed exponentially
FW: Here you can set between forward and brake area, the settings can be separately set for both areas.
Type: Select between DUAL RATE / EXPO or throttle curve
D/R - EXP setting see above
CURVE: setting as described in the following page
THROTTLE FWD point setting step by step:
1. Set the button "ST OFF" on "ST ON".
2. Move the throttle lever by Throttle FWD. A green line moves horizontally through the diagram.
3. By tipping on the arrow key you can confirm a new point.
4. So you can set other points.

THROTTLE FWD point moving step by step:
1. Set the button "ST ON" on "ST OFF".
2. Select the point that you want to move through the +/- keys. The red mark indicates the selected point.
3. Select the X-axis or the Y-axis button. Through the +/- keys you can reposition the point.

Brake force setting
Select the "THROTTLE" setting by tipping on the "STEERING" button.
Select the "BRK" setting by tipping on the "FWD" button.
Moving the throttle lever the green line moves in the diagram.
Select the percent button near "D/R". Here you can set the brake force by tipping on the +/- keys.
Select the percent button near "EXP". Here you can set the brake effect by tipping on the +/- keys.

B.R.A. (ATL)
In this menu, the travel distribution for the brake travel and the throttle travel in the throttle channel can be set. Also, the size of the brake range can be defined.

RATE: 50:50 - 70:30 with the setting 70:30, the servo center is moved. (Factory setting 50:50)
B.R.A.: 0 - 100% Here, the size of the brake range is defined.
**B-MIX**

In this menu you can setup the brake mixer with channel 3 or 4. The A.B.S. can be switched off here.

- **ACT:** Activates the brake secure function for the channel, switch **On** or **Off**
- **RATE:** Setting of the mixer part of the brake for the channel
- **DELAY:** Setting of the delay time before the ABS is active
- **ABS:** Activates the ABS function for the channel, switch **On** or **Off**

**TH RESP**

In this menu, one percent value can be set in the throttle and brake travel, from which the control starts. When operating the throttle lever in the direction of throttle or brake, the servo immediately jumps to this value, from where the control starts. (e.g. in order to compensate backlash of the throttle linkage or throttle response weakness in the lower range)

- **FW:** 0 - 100%
- **BK:** 0 - 100%

**IDLE UP / PUMPING**

- **IDLE UP**
  
  In this menu, the motor start function “Idle Up” is set.

  **IDLE UP** enables a better start of the cold combustion engine, since the throttle is held on a specific value, here. You can set this value in the **POS** line. After starting the engine, this function has to be deactivated again, since the throttle lever has no effect during the **IDLE UP** function.

- **CTL**
  
  The function is activated through a free programmable switch (see chapter **SW SET**)
**PUMPING**

In this menu, the “PUMPING” function is be set. **PUMPING** enables automatic throttle activations, e.g. during refueling, so the motor does not over-grease or run out when in idle. You can set the strength of the throttle activation in the **POS** line. The waiting time between the throttle activations can be set in the **DELAY** line.

The function is switched on and off through the **ACT** button.

**PROFILE**

In this menu you can set up to five different profiles for the actual model memories. You can provide the profiles with a name and recall them through a specifically assigned switch. (see menu **SW SET**)

All the settings that have been changed in the other menus will be recalled in the related profile.

**Change profile name:**

Tip on the "Profile name" button.

Tip on **NAM**

It appears an input field, digit the new profile name

Confirm the new profile name through **EN** in the lower right side

Go back to the menu through the **BACK** button on the upper left side

**Copy profile:**

Select the profile to copy by tipping on the profile name

Tip then on **CPY**, a pop-up window will appear

Select there the target profile and confirm through **YES**

**Delete profile:**

Select the profile to delete by tipping on the profile name

Tip on **DEL**, the profile will be deleted without confirm query, all the settings will be reset to factory values
In this menu, the servo speed for the steering and throttle servo can be set.

For the steering servo, you can set the speed for left and right and for forward and return travel separately.

For the throttle servo, a point can be set at which the speed is set in two steps.

**THROTTLE**

Setting of the speed for both ranges **HIGH** and **NEUTRAL POINT**

Setting of switchover point between both ranges

In this menu, automatic start function “START” can be set.

The **START** function allows a quick start without spinning of the drive wheels, since the throttle is held on a specific value. You can set this value in the **RATE** line.

This function is activated by assigning a switch. By activating this switch, the **START** function is set on standby. If now the throttle lever exceeds the trigger point (T/POS), the function is triggered.

With **TIME**, the delay of the response of this function is set, when exceeding the trigger point.
Timer

The timer menu is made of two displays: Timer and Date. You can change the display through the NEXT button.

**Timer display**

**P.ALARM:** Here you can set the time for a pre-alarm that will be active before the main alarm.

**Mode:** Here you can set the timer alarm, UP for increasing count, DOWN for countdown and LAP for lap timer. If you select LAP, the **TIMER START** function will be automatically set to TH for throttle. Now the timer starts through the throttle lever.

**TIMER START:** The assignment of the function to start and stop the timer through a your preferred button will be explained in the SW SET menu. Only possible in mode UP or DOWN.

**LAP SW:** The assignment of the function to start and stop the timer through a your preferred button will be explained in the SW SET menu.

**LAP List:** Tipping on the button with the arrows to the right you can accede the laps times. Here are shown as first the best and the average laps.

**Vibrator:** here you can set if and how the vibration should be activated with the alarm. You have the possibility to set five different vibration kinds.

**CLR:** Tipping on this button the best and the average lap times will be reset to zero.

The lap times list has 120 memories. Through the arrow button facing to the bottom you can move between the pages. The best lap is always marked in red and highlighted with a B.
Display data / time
here you can set the date and the time. In the lower part you can reset the battery time and the model time.

Control Key
In this menu, you can assign a function to trim buttons, switches and rotary controls. By default, some buttons and switches have already been assigned functions, which can be assigned again as all the others, as follows:

- Tip on the Control Key button.
- Tip on NEXT until you find the desired control.
- Tip on the control button and select the desired function for the control. Depending on the control there are different functions available here. Function already assigned are displayed with a gray background. (see list in the next page)

- Tip on the lower + or - key to select the function

REV: Here you can set the switch function between normal and reverse

T/S: Setting of the increase for each click or step. Only available by trims and rotary controls

Direct Button
Set the function (short-cut to a menu), of both buttons (S1, S2) under the display:

- Tip on the related button.
- Tip on the lower + or - key to view and select the available functions
- Activate the function of the S1 and S2 buttons through the button near ACT
Menu Screen

The green marked area indicates the first main menu page, the yellow marked area indicates the second main menu page, the blue marked area indicates the third main menu page (see chapter "Main menu")

RES: Through the upper right reset function all the pages will be factory reset after a safety query.

Change the display assignment:

- Tip on the field that you want to change, the display becomes a selection display
- All the available buttons for this field will be displayed crossed out
- Select the desired button and tip on the upper left button to confirm
- Delete the desired button by tipping the button and then tapping on the upper right BLANK button.
Failsafe

In this menu, you can change the Fail Safe settings individually for each channel. This function sets the servo of the respective channel into a predefined position, in case of a signal loss of the receiver. For instance, the throttle servo of an engine-powered model can, in this case, be set to idle (of an electric-powered model to motor Off), so the model does not move on without control.

**FREE:** No Fail Safe function

**HOLD:** The servo is held on the last position

**POSITION:** The servo is moved to a defined position

**Setting the position:** Tip on the button related to the desired channel, a percent value will appear on the right near the channel. Tip on the percent value and set the desired position of the servo by moving the related control. Confirm with **SET**, and the percentage display shows the position of the servo.

**DELAY:** Here, you set the delay time, until the response of the Fail Safe in case of a signal loss of the receiver. (50 ms, 100 ms, 250 ms, 500 ms, 750 ms, 1 s)

**Attention**

Save the settings by pressing the **STO** button in the receiver, otherwise they will have no effect!

To confirm it will appear the message "Position stored".

**SERVO (S VIEW)**

Servo monitor (only display)

In this display, you can observe the servo travels of all four control channels.
In this menu you can set up to 5 free mixers. The mixer 1 and 2 are linear, the mixer 3 to 5 can be set through curves. On the right, near the mixer number, in the ACT column there is the status display that indicates if the mixer is on or off.

By tipping on MST or SLV a new window will be opened. Here is selected the origin (master) and the target (slave) channel. To delete the selection tip on CLR (Clear).

Afterwards change in the menu screen by tipping on the BACK button. Now in the SET column there is a button with arrows.

By tipping on this button you can accede the settings menu, linear menu for the mixers 1 and 2, curve menu for mixers 3 to 5.

Linear menu (img.1)

- Tip on the "A" button to set the left part (red) of the line through the + or - buttons
- Tip on the "A" button to set the right part (blue) of the line through the + or - buttons
- Tip on the "X" or "Y" buttons to move the line on the X or Y axis through the + or - buttons.
- Move the throttle lever or the steering wheel. A green line moves horizontally through the diagram.

Curve menu (img. 2)

Point setting step by step:
1. Set the button "ST OFF" on "ST ON".
2. Move the throttle lever or the steering wheel. A green line moves horizontally through the diagram.
3. By tipping the central +/- keys you can set a new point.
4. So you can set other points (max. 5) or you can delete them tipping again.

Point moving step by step:
1. Set the button "ST ON" on "ST OFF".
2. Select the point that you want to reallocate by moving the steering wheel or the throttle lever. The red mark indicates the selected point.
3. Select the X-axis or the Y-axis button. Through the + or - keys you can reposition the point.
4. In this way the mixer is not linear but follows the set curve.
## AUX

In this menu, you can set the OFFSET (centre) for the two additional control channels 3 (CH3) and 4 (CH4) and the servo deflections.

- **OFF**: Setting for the central point
- **UP**: Setting for the upper end point
- **DN**: Setting for the lower end point

## S/MODE

In this menu, you can select preprogrammed mixers for the various model types (crawler, track vehicle, boat), which are tuned for the characteristics of the vehicles. After activating the function, further settings can be made in the menus:

After you have switched from **OFF** to **ON** in the **ACT** column one between CRAW, TANK or BOAT, in the column **SET** appears a button with arrows.

Tip on this button to change the settings for the vehicle type.

### CRAWLER

- **4WS**: 2 servos (channel 1 and 3), switching ON - OFF (all wheel steering activation)

### DUAL ESC:

- Switching ON - OFF (two independent drive motors with 2 speed controllers on channel 2 and 4)

### ST MODE:

- FRONT, REAR, NORMAL, REVERSE (see following sketch, if 4WS steering is active)

### ESC MODE:

- FRONT, REAR, NORMAL, REVERSE (see following sketch; 2 motors, if DUAL ESC is active)

### SPD RATE:

- Max. speed for both speed controllers in DUAL ESC mode
ST MODE (steering)

TANK
In this mode the throttle and the steering are mixed for a tracked vehicle and emitted on channel 1 and 2. Here the left and the right tracks speed is controlled to actuate the steering.

ST MODE: TYPE 1 = rotation only possible when standing, TYPE 2 = rotation only possible when driving

SPD RATE: Setting the maximum speed of the drive, 0 - 100%

BOAT
These mixers can actuate e.g. a second drive (ESC)

ST -> 3CH: mixer from steering to channel 3, mixing rate from -100 to +100% adjustable

3CH -> ST: mixer from channel 3 to steering, mixing rate from -100 to +100% adjustable
A.B.S

In this menu, the A.B.S function is be set.

A.B.S. enables a better braking response, since the brake is actuated in pulses.

**ACT:** **INH** = function OFF, **ON**= function ON

**DUTY:** Ratio between pulse and pulse pause (see sketch below)

**T/POS:** Here, the point on the brake lever path is set, from which the A.B.S. will become active

**MOV:** Setting the pulse height (see sketch below)

**CYC:** Setting the pulse length (see sketch below)

**DELAY:** Here, you set the delay time, until the response of the A.B.S. (0 - 1 s)
Operating receiver GR-8

### Description LED indicator

<table>
<thead>
<tr>
<th></th>
<th>Red LED</th>
<th>Green LED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not bound</td>
<td>Flashes</td>
<td>Off</td>
</tr>
<tr>
<td>Bound</td>
<td>Off</td>
<td>On</td>
</tr>
<tr>
<td>Error</td>
<td>Flashes</td>
<td>On</td>
</tr>
<tr>
<td>Binding</td>
<td>Flashes</td>
<td>Flashes</td>
</tr>
</tbody>
</table>

### Channels function

<table>
<thead>
<tr>
<th>Function</th>
<th>Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH 1 Channel 1 signal output</td>
<td>SUMD-V2 BUS system Battery plug connection</td>
</tr>
<tr>
<td>CH 2 Channel 2 signal output</td>
<td>SUMD-V2 BUS system Battery plug connection</td>
</tr>
<tr>
<td>CH 3 Channel 3 signal output</td>
<td>SUMD-V2 BUS system Battery plug connection</td>
</tr>
<tr>
<td>CH 4 Channel 4 signal output</td>
<td>SUMD-V2 BUS system Battery plug connection</td>
</tr>
<tr>
<td>T/V Ext. temp./voltage sensor</td>
<td>------</td>
</tr>
</tbody>
</table>

The power source for the receiver is connected through channel 1 to 4. If all of the channels are used, you can use a Y-cable on one channel.

**CH 1+2:** To the channel 1 is connected the steering servo.

Channel 2 is connected with the throttle servo of engine-powered models or with the speed controller of electric-powered models.

**CH 3+4:** These channels are freely assignable control channels for special functions

**T/V socket:**

This socket is used for connecting the optional external voltage and temperature sensor S8362. When reaching the warning thresholds, an alarm is generated (setting of the warning thresholds via telemetry menu). Sensor and voltage of a battery must only be connected according to the following scheme:

**ATTENTION:** The receiver will be destroyed if you connect a battery directly to this socket without a pre-resistance. This socket is neither suited for the power supply of the receiver.
GR-8 receiver menu in the telemetry

Display screen (only display)
- S-QUA: transmission quality
- S-STR: transmission power
- S-dBm: transmission power in dBm
- RX-TEMP: receiver temperature
- LOSS PACK: lost data packets in milliseconds
- BATT VOLT: receiver voltage
- LOW VOLT: warning threshold for min. receiver voltage

Setting screen for warning thresholds and telemetry language
- AL RX-V: warning threshold for receiver voltage
- AL RX-T: warning threshold for receiver temperature
- AL EX-V: warning threshold for ext. voltage sensor
- AL EX-T: warning threshold for ext. temperature sensor
- LANGUAGE: language selection (only for telemetry menu)
The current value is shown in brackets

Setting screen for channel properties (see chapter RF SET)
Meaning of the settings:
- USR1m50 : ULTRA SIGNAL 1.5msec
- FSR3m00 : FAST SIGNAL 3.0msec
- SUMD-V2 : FAST SIGNAL BUS 3.0msec
- NSR6m00 : NORMAL SIGNAL 6.0msec
- NSR12m0 : NORMAL SIGNAL 12.0msec
- NSR24m0 : NORMAL SIGNAL 24.0msec

Display of connected components
(only display, see Chapter TELEMETRY)

Fail Safe setting screen
- F/S MEMORY: select „Yes“ for saving the data in the receiver and confirm with ENTER
- F/S DELAY: Fail Safe delay time
- CH1(STR): FREE, HOLD, POSITION
- CH2(TH): FREE, HOLD, POSITION
- CH3(AUX): FREE, HOLD, POSITION
- CH4(AUX): FREE, HOLD, POSITION
(see also description in Chapter FAIL SAFE)
Firmware update transmitter

**NOTE**

In case of transmitter firmware update please carefully observe the following "Important instructions". Before every update we recommend to save all the model data on the SD card (see chapter "Model select")

Update THROUGH BACK-SIDE USB SOCKET ...

... through a PC or a laptop with Windows XP, Vista, 7 or 8 OS. Download an up-to-date software package from our homepage on the Internet and unpack it on your PC or laptop. Connect your switched off transmitter with your PC or laptop, by using the USB cable (USB-A to mini-B-USB, 5 pole), which is supplied as a standard accessory, by plugging one end of the USB cable directly into the 5 pole micro-USB port at the rear side of the transmitter and the other end into a free USB port of your computer. For more information, please refer to the respective software package. Here, update instructions are enclosed in a PDF file.
Firmware update receiver

Updates to the receiver’s firmware are made via the telemetry socket using a PC running Windows XP, Vista or 7. You will also need the included USB interface, order No. 7168.6, and adapter lead, order No. 7168.6A or 7168.S.

The programs and files required can be found in the Download area for the corresponding products at:

www.graupner.de.

Connect the adapter lead 7168.S to the USB interface order No. 7168.6. The connectors are reverse polarity protected: note the small chamfers on the sides. Never use force – the connectors should engage easily.

Connect the adapter lead to the receiver’s socket 3 (CH 3). The connectors are reverse polarity protected: note the small chamfers on the sides. Never use force – the connectors should engage easily.

Update process

Ensure that the adapter lead is plugged into the receiver. Start the Firmware Update Studio.

Select the correct COM-Port "Silicon Labs CP210x USB to UART Bridge" under “Port Select” to which the USB cable is connected.

Then, in the menu select the item: “HoTT device”. In the opening window, press the button "File Download" and select the firmware file with the ending *.bin, which was downloaded before. If everything is correct, the file with the corresponding window appears. The update process is started, by double-clicking the file.

If you have not yet downloaded the file, press the button "Auto Download". If your computer is connected to the Internet, the respective software is being searched. If the firmware file is displayed now, the update process can be started by pressing the button "File Download".
Notes on environmental protection

Disposal notes
This symbol on the product, user manual or packaging indicates that this product must not be disposed of with other household waste at the end of its life. It must be handed over to the applicable collection point for the recycling of electrical and electronic equipment.

The materials are recyclable as marked. By recycling, material reusing or other forms of scrap usage you are making an important contribution to environmental protection.

Batteries and accumulators must be removed from the device and disposed of at an appropriate collection point. Please inquire if necessary from the local authority for the appropriate disposal site.

Care and maintenance

Notes on care
The product does not need any maintenance, it works so as it is without any special care. In your own interests protect it from dust, dirt and moisture.

Warranty

The Graupner, Henriettenstrasse 96, 73230 Kirchheim/Teck grants from the date of purchase of this product for a period of 24 months. The warranty applies only to the material or operational defects already existing when you purchased the item. Damage due to misuse, wear, overloading, incorrect accessories or improper handling are excluded from the guarantee. The legal rights and claims are not affected by this guarantee. Please check exactly defects before a claim or send the product, because we have to ask you to pay shipping costs if the item is free from defects.

The present construction or user manual is for informational purposes only and may be changed without prior notice. The current version can be found on the Internet at www.graupner.de on the relevant product page. In addition, the company Graupner has no responsibility or liability for any errors or inaccuracies that may appear in construction or operation manuals.

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