

Manual

GR-12L HoTT

6 channel 2.4 GHz HoTT receiver

No. S1012



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Introduction

Thank you very much for purchasing a **Graupner S1012 GR-12L** receiver.

Read this manual carefully to achieve the best results with your HoTT system 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. Be always updated by checking periodically on our website, **www.graupner.com** to be always up to date with the products and firmwares.

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 all the safety notes before using the product and you have to respect those notes also for future use!



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

Deutschland, Österreich, Niederlande

D-Power Modellbau
Sürther Straße 92-94
50996 Köln
Deutschland
www.d-power-modellbau.com

Robbe Modellsport
Industriestraße 10
4565 Inzersdorf im Kremstal
Österreich
www.robbe.com

France

Fresh RC
ZAC Centre 15 Rue Martin Luther King 38400 Saint-Martin-d'Hères
FRANCE
www.flashrc.com

Italia

Jonathan SRL
Via dell'Industria 1 02032 Fara in Sabina -Passo Corese (RI) Italy
www.jonathan.it

Graupner in Internet For the service centres outside the above countries please refer to our website **www.graupner.com**

Intended use

The receiver only be used for the purpose specified by the manufacturer for operation of remote control models without passengers. Any other type of use is impermissible and may damage the system and cause significant property damage and/or personal injury. No warranty or liability is therefore offered for any improper use not covered by these provisions.

In addition, it is explicitly pointed out that you must inform yourself about the laws and regulations applicable at your respective starting point before starting the remote control operation. Such conditions may differ from state to state, but this must be followed in every case.



Note

Read through this entire manual before you attempt to install or use the transmitter.

Target group

The item is not a toy. It is not suitable for children under 14. The installation and operation of the receiver must be performed by experienced modellers. If you do not have sufficient knowledge about dealing with radio-controlled models, please contact an experienced modeler or a model club.

Package content

- Receiver **S1012 GR-12L HoTT**
- Manual

Technical data

S1012 GR-12L HoTT

Antenna	1 x wire 145 mm of which Antenna 30 mm
Operating voltage	(2.5) 3.6 ... 8.4 V
Frequency range	2400 ... 2483.5 MHz
Modulation	2.4 GHz FHSS
Number of controls	6
Current consumption approx.	70 mAh
Temperature range	-15 ... +70°C
Dimensions approx.	36 x 21 x 10 mm
Weight approx.	7 g

Connection table

CH 5	SERVO and updates / SENSOR / BATT-V
CH6	SERVO / SUMD / SBUS / SP2048

Symbol description

Always observe the information indicated by these warning signs. Particularly those which are additionally marked with the 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



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

- Do not leave the packaging material lying around, this could be 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 receiver must not use the receiver without supervision or instruction by a responsible person.
- Operation and use of radio-controlled models needs to be learnt! If you have never driven such a model, then start extra carefully and make sure to be familiar with the reactions of the model to the remote control commands. Proceed responsibly.
- 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.
- Only use the components and spare parts that we recommend. Always use matching, original **Graupner** plug-in connections of the same design and material.
- Make sure that all of the plug-in connections are tight. When disconnecting the plug-in connections, do not pull the cables.
- Protect the receiver from dust, dirt, moisture and foreign parts. It 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.
- Always use all your HoTT components only with the latest firmware version.
- If you have questions which cannot be answered by the operating manual, please contact us or another expert in the field.

For your safety by handling the transmitter and the receiver



WARNING

Also while programming the transmitter, make sure that a connected motor cannot accidentally start. Disconnect the fuel supply or drive battery beforehand.



CAUTION

Avoid every kind of short-circuit in all sockets of the transmitter! Risk of fire! Use only the suitable connectors. In no case the electronic component of the transmitter or of the receiver may be changed or modified. Due to licensing reasons, any reconstruction and/or modification of the product is prohibited.



Note

During transport protect the model and the transmitter from damages.

For your safety by handling the batteries



CAUTION

- Protect the batteries from dust, dirt, moisture, heat and vibrations. **Only use in dry locations.**
- Do not use any damaged battery.
- Batteries may not be heated, burned, short-circuited.
- If handled improperly, there is a danger of fire, explosion, irritation and burns.
- 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.
- Stock the batteries in dry and fresh conditions.
- Dispose of the battery in the proper disposal centers.

Installation

The receiver must be protected against dust, exhaust gases, splash water, etc. in the model. When you install your receiver, make sure that it is not excessively airtight to prevent it from overheating during operation.

Servo cables may not be wound around antennas or run next to them. Make sure that the cables cannot shift to lie directly adjacent to antennas during flight.

In the case of carbon fibre fuselage, at least the last 35 mm of the antennas shall be routed from the fuselage.

Connections

Connect the devices that have to be connected to the receiver to the row of sockets on one end of the receiver. The servo connections of the **Graupner**-HoTT receiver are numbered.

The polarity of the plug-in system cannot be reversed. Do not apply force.



Note

For the GR-12L HoTT receiver, insert the connectors with the brown or black cable upwards.



Power supply



In principle, a battery can be connected to any free socket. By V- or Y-cable also with any remote control component. If the power supply is provided by more than one battery, it is important to ensure that the batteries have the same nominal voltage and rated capacity. It is not allowed to connect different battery types or rechargeable batteries with too different charge states to the receiver, as short-circuit-like effects can occur. For safety reasons, voltage stabilizers such as PRX-5A receiver power supplies (No. 4136) should be connected between batteries and receiver.



Attention

When selecting and connecting a power supply, be aware that although the operating range of the receiver ranges from 3.6 to 8.4 V. However, practically all of the previously marketed servos, speed controllers, gyros, etc. as well as many which are offered today have a permissible operating voltage range of 4.8 to 6 V.

Binding

To establish a connection with the transmitter, the **Graupner** HoTT receiver must first be "bound" to at least one model memory in "its" **Graupner** HoTT transmitter. This process is generally called "binding".

Binding step-by-step

1. *Prepare the transmitter to be bound according to its instructions for binding.*
2. *Switch on the receiver power supply.
The LED of a **GR-12L HoTT** receiver lights up red.*
3. *Press and hold the SET button on the receiver until the LED starts to flash for about 3 seconds after approx. 3 seconds.
During this time lapse, the receiver is in bind mode.*
4. *Within this time lapse start the transmitter-side binding according to the instructions of the transmitter.*
5. *If the red LED of the **GR-12L HoTT** receiver goes out, the binding process has been completed successfully.
Your transmitter/receiver combination is ready for operation.*

*If the red LED of the **GR-12L HoTT** lights up again constantly, the "Binding" has failed. Change the positions of the associated antennas and try the entire procedure again.*

Receiver reset

To reset the receiver, press and hold its SET button while turning on the power to the receiver:

If the reset was triggered with the transmitter switched off or with an unbound receiver, the red LED of the receiver **GR-12L HoTT** starts to flash after about 3 seconds. The button will now be released.

If the reset is performed with a not bound receiver, you can then start a binding process at any time.

If a reset has already been performed on an already-bound receiver and the associated model memory is active in the switched-on transmitter, then the red LED of the receiver **GR-12L HoTT** should go out and thus signal a correct connection to the transmitter. Otherwise the process has to be repeated.



Notes

- Through a RESET ALL of the settings in the receiver are brought to the factory settings with the exception of the HoTT synchronization information!
- If a reset is performed accidentally, all of these settings that were made using the "Telemetry" menu in the receiver should be restored.
- Resetting is particularly recommendable when you want to switch a receiver to a different model. This makes it easy to keep settings which do not match from being transferred.

Setting and display of the receiver settings

TELEMETRY

```
▶SETTING & DATA VIEW
  SENSOR
  DISPLAY RF STATUS
  SELECT ANNOUNCE
  RX DATA      ON
  ALARM SETTING
```

The receiver-side menus can be viewed and sometimes changed using a suitable HoTT transmitter or the SMART-BOX. You can find out how to open the menus of a receiver in the "Telemetry" section of the corresponding manual as well as a detailed description of the receiver menus on the respective product page at www.graupner.com on the Internet.



Note

The values shown in the following display illustrations always show the standard values.

Display "RECEIVER"

```
RECEIVER 2.05 >
>ALARM VOLT: 3.7V
ALARM TEMP: 65°C
PERIOD: 20ms
CH5 FUNCTION:SERVO
CH6 FUNCTION:SERVO
RSSI CH : OFF
F.RESET : No
```

ALARM VOLT

- If "SERVO" or "SENSOR" is visible in the "CH5 FUNCTION" line described below, the operating voltage of the receiver is monitored via the limit value set in the value field of "ALARM VOLT".
- If "BATT-V" is visible in the "CH5 FUNCTION" line described below, the operating voltage of the drive battery connected via "BATT-V" is monitored via the limit value set in the value field of "ALARM VOLT".

In both cases, the actual voltage is shown in the transmitter's display in the "Receiver voltage" field.

If the voltage drops under the set limit value, a transmitter-side alarm takes place in the form of an acoustic signal (interval beep long / short).

Adjustment range: 2,5 ... 22,5 Volt in 0,1 Volt steps.

ALARM TEMP

This option monitors the receiver temperature. If the set limit is exceeded, a transmitter-side alarm takes place in the form of a continuous beep.

Adjustment range: 30 ... 80 °C

PERIOD

In this line, specify the periods for the individual channel pulses. This setting is transferred for all control channels.

If your system is used exclusively with digital servos, you can set a cycle time (frame rate) of 10 ms. If your system includes some or uses exclusively analogue servos, always select 20 ms since the analogue servos may be overloaded and respond by "jittering" or "growling".

Adjustment range: 10 or 20 ms

CH5 FUNCTION

- **SERVO**

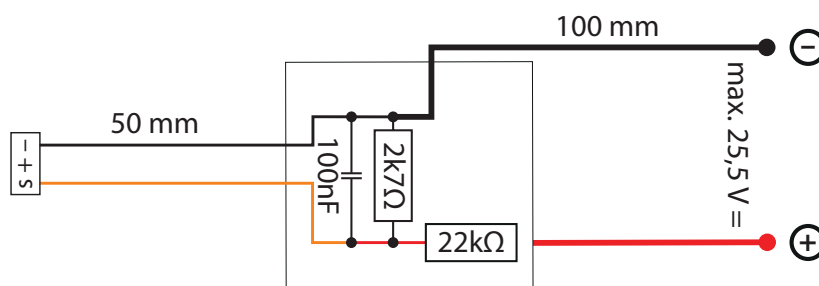
Port "5" is suitable for operating RC components and for receiver updates.

- **SENSOR**

Port 5 is suitable for the operation of telemetry sensors.

- **BATT V**

After switching as described before, a DC voltage of max. 25,5 V can be displayed instead of the receiver voltage. This way it is possible to monitor the main battery voltage without using external sensors. The ESCs S3082 and S3083 have this switch already included.



Attention

Never connect a power supply with an output voltage higher than 8,4 V directly to a connection port of the receiver! The receiver and all connected devices would be immediately destroyed.

CH6 FUNCTION

- **SERVO**

The connection 5 is suitable for the operation of RC components.

- **SUMD**

At connection 5, a digital sum signal is provided.

- **SBUS**

Digital sum signal in SBUS format.

- **SP2018**

The port 6 is suitable for connecting a flight control, the Spektr. 2048 signal can handle. e.g. 48377.

RSSI CH

As soon as "SUMD", "SBUS" or "SP2048" is selected instead of "SERVO" in the "CH6 FUNCTION" line described above, changing the value field of this option from "OFF" to "CHxx" will change the number of channels contained in the selected sum signal. At the same time, the servo signal of the highest numbered channel is replaced by an RSSI signal.

With this RSSI signal and a flight control board with OSD, e.g. No. 48377, the signal strength of the receiver can be displayed in video goggles or monitors.

Adjustment range: OFF, CH8, CH12, CH16

F.RESET

After changing the value field to "Yes" and then pressing or tapping on the ENT key, or equivalent, a factory reset of the receiver is performed.

Display "MIXER"

RX FREE MIXER <>	
> MIXER:	1
MASTER CH:	0
SLAVE CH:	0
TRIM:	0%
TRAVEL-:	100%
TRAVEL+:	100%

Up to five mixers can be programmed in the receiver.

MIXER

In the "MIXER" line, select one of mixers 1 ... 5.

The following settings in this display only relate to the mixers selected in the "MIXER" line.

MASTER CH

In this line the MASTER CH (signal source or source channel) has to be selected.

Selection range: (CH)1 ... (CH)6

If no mixer has to be set, select "0".

SLAVE CH

In this line, select the SLAVE CH (signal source or source channel) to which the signal of the MASTER CH (source channel) is proportionally mixed.

The level of mixing is determined by the percentages entered in the "TRAVEL-" and "TRAVEL+" lines.

Selection range: (CH)1 ... (CH)6

If no mixer has to be set, select "0".

TRIM

Analogous to the trimming of the control functions 1 ... 4, the neutral position of the mixer in the range of $\pm 30\%$ can be trimmed in this line.

TRAVEL -/+

With the settings of these two lines, the percentage of mixing is specified in relation to the MASTER signal separately for both directions.

Display "CH REVERSE"

CH REVERSE		<
>CH1 :	Normal	
CH2 :	Normal	
CH3 :	Normal	
CH4 :	Normal	
CH5 :	Normal	
CH6 :	Normal	

In this display, the direction of rotation of each of the servos connected to the receiver outputs 1 ... 6 can be set individually: select the desired line; press or tap on the ENTER key or equivalent, then change the setting value from "Normal" to "Reverse" or vice versa in the active value field.

Firmware update

Firmware updates of the receiver are performed via the telemetry port of the receiver using a PC running Windows 7 ... 10. You will also need a USB interface, No. 7168.6, and adapter lead, No. 7168.6A or 7168.S, which are available separately.

The programs and files required can be found in the Download area for the corresponding products at www.graupner.com

Connect the adapter lead to the USB interface. The polarity of the plug-in system cannot be reversed. Note the small chamfers on the sides. Do not use force, the plug should click into place easily.

Connect the other end of the adapter lead to the socket of the receiver **GR-12L HoTT** labelled with "+5T". The polarity of the plug-in system cannot be reversed. Do not apply force. The plug should be fully inserted.

In addition, this connection has to be set to "SERVO" for the duration of the update process.

The update is carried out via the "HoTT device" program section of the program "Firmware_Upgrade_gr_Studio". Please follow the notes of the software. The further procedure is also described in detail in the manual contained in the data package. You can also download these from the download page of the product at www.graupner.com





Manufaturer / Manufaktur

GRAUPNER Co. Ltd
Post Code: 14557
202-809, 18, Bucheon-ro 198beon-gil, Bucheon-si,
Gyeonggi-do, South Korea

Vertrieb Deutschland, Österreich, Niederlande

D-Power Modellbau

Inhaber: Horst Derkum
Sürther Straße 92-94
50996 Köln
Deutschland
www.d-power-modellbau.com

Robbe Modellsport

Geschäftsführer: Matthew White
Industriestraße 10
4565 Inzersdorf im Kremstal
Österreich
www.robbe.com

France

Flash RC

ZAC Centre 15 Rue Martin
Luther King 38400
Saint-Martin-d'Hères
FRANCE
www.flashrc.com

Contact : support@flashrc.com
Phone : +33 4 76 01 05 23

Italia

Jonathan SRL

Via dell'Industria 1
02032 Fara in Sabina-
Passo Corese (RI) Italy
www.jonathan.it

Contact
<https://shop.jonathan.it/it/contact>

Notes on environmental protection



If this symbol is on the product, instructions for use or packaging, it indicates that the product may not be disposed with normal household waste once it has reached the end of its service life. It must be turned over to a recycling collection point for electric and electronic apparatus.

Individual markings indicate which materials can be recycled. You make an important contribution to protection of the environment by utilizing facilities for reuse, material recycling or other means of exploiting obsolete equipment.

Care and maintenance



The product does not need any maintenance. Always protect it against dust, dirt and moisture.

Clean the product only with a dry cloth (do not use detergent!) lightly rub.

Warranty conditions

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.

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