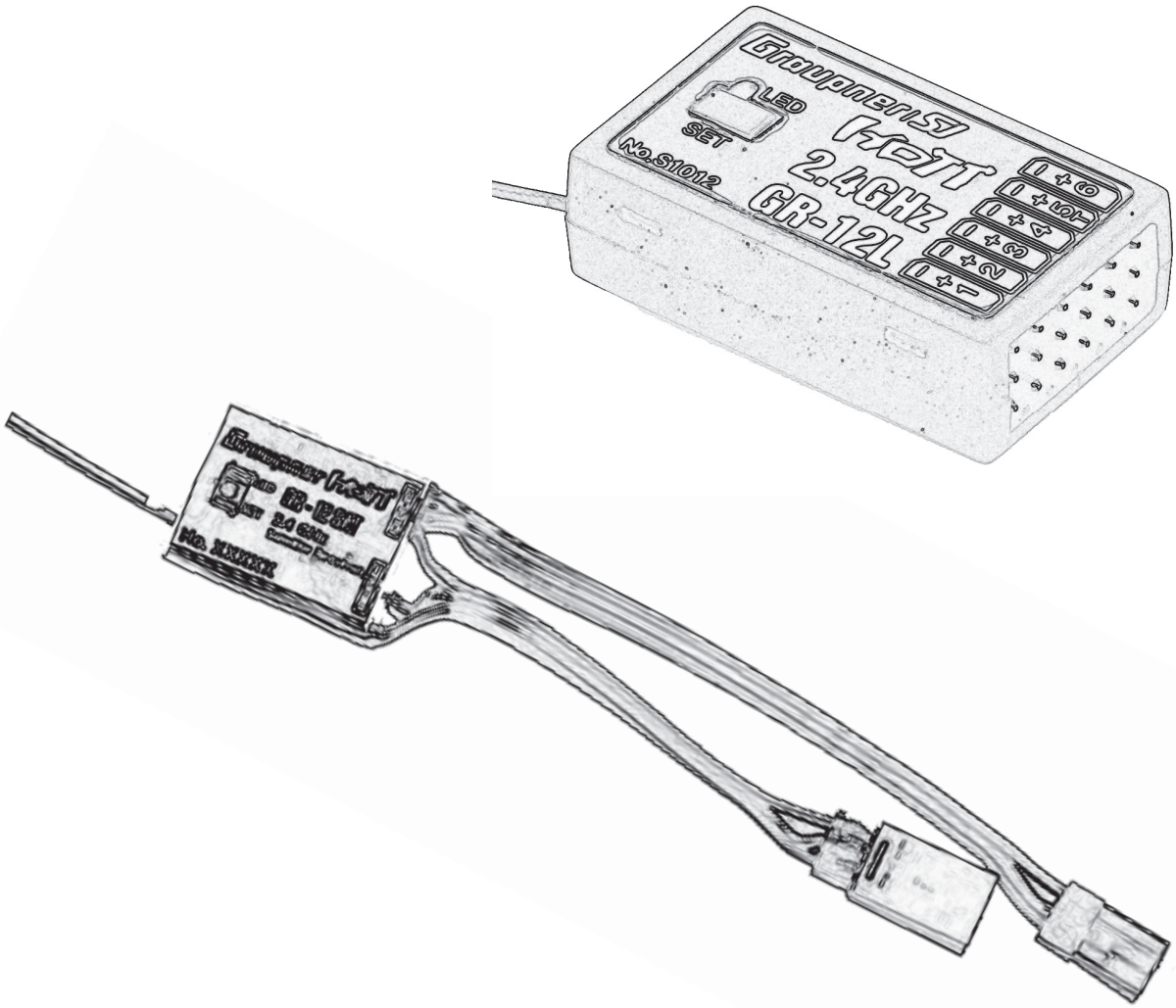
EN

Manual

GR-12L / GR-12L SUMD+T

6 channel receiver / Satellite receiver

No. S1012 / S1037



CE

Part 1

Graupner

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Introduction

Thank you very much for purchasing the ***Graupner* GR-12L receiver**. This **GR-12L receiver** is extremely versatile.

Read this manual carefully to achieve the best results with your **GR-12L receiver** 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 the 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

Graupner Central Service

☎ (+49) (0)7021/722-130
Monday- Thursday:
9:15 am- 4:00 pm
Friday:
9:15 am- 1:00 pm

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***Graupner* in Internet**

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

Intended use

The **GR-12L receiver** is designed exclusively to be used in battery-powered, radio controlled models, any other use is not allowed. The **GR-12L receiver** works only with HoTT transmitters. For any improper use no warranty or liability is accepted.For any improper use no warranty or liability is accepted.

Read through this entire manual before you attempt to install or use the **GR-12L receiver**.

Target group

The product is not a toy. It is not suitable for children under 14 years. The installation and operation of the **GR-12L receiver** must be performed by experienced modelers. If you do not have sufficient knowledge about dealing with radio-controlled models, please contact an experienced R/C model fan or a model club.

Package content

- **GR-12L receiver**
- Manual

Technical data

GR-12L

Frequency band	2,4 ... 2,4835 GHz
Operating voltage	(2,5) 3,6...8,4 V
Range	2000 m
Power consumption	70 mA
Temperature range	-15...+70°C
Dimensions	36x21x10 mm (S1037- 25x19x5mm)
Weight	7 g (S1037- 5 g)

Symbols explication

Always observe the information indicated by this warning sign. Particularly those which are additionally marked with the **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 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 receiver must not use the receiver without supervision or instruction by a responsible person.

- Operation and use of radio-controlled models needs to be learned! If you have never operated a model of this type before, start carefully and make yourself familiar with the model's reactions 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.
- 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, 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. We recommend to provide your model with a label, where your personal data are indicated. So that the model can be clearly assigned in the event of a crash.
- Due to safety and licensing reasons (CE), any reconstruction and/or modification of the product is prohibited.
- 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.
- 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 or another expert in the field.

WARNING

- Also while programming, make sure that a connected electric motor cannot accidentally start. Risk of injury by rotating propellers!
- Avoid shock and pressure. Check the receiver regularly for damages to the housings and cables, specially after model crashes. Damaged or wet receiver, even if re-dried, should no longer be used!

Installation

Install the receiver so that the connecting cables for the servos and power supply remain loose, and so that the receiving antennas are at least 5 cm from all large metal parts or wires. This includes carbon fiber parts, servos, electric motors, fuel pumps, all types of cables, etc. in addition to steel parts. It is preferable to install the receiver away from all other installed parts at an easily accessible location in the model. Servo cables may not be wound around antennas or run next to them.

If the fuselages are made of carbon fiber, the ends of the antennas should extend from the fuselage by at least 35 mm. If necessary, exchange the approx. 145 mm standard antennas for HoTT receivers with the 300 mm or 450 mm long antennas No. 33500.2 or 33500.3.

Binding

Binding is only possible if the receiver has not been linked with a bound transmitter since being switched on (red LED lights). Press the SET button to set the receiver to BIND mode.

If you wish to bind the receiver to a new model memory, this is the procedure:

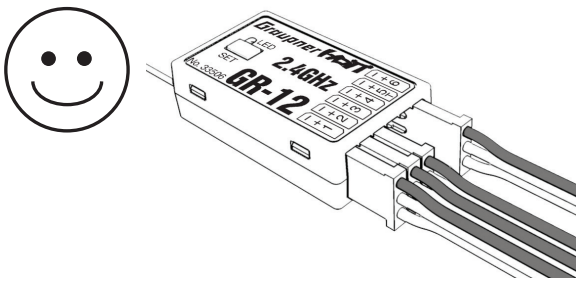
- Switch the transmitter's RF section off in the "Basic model settings" menu (see transmitter manual)
- Switch on the receiver and put it in binding mode, by pressing and holding the binding button (green and red LED on the receiver are flashing)
- Initiate binding in the transmitter's "Basic model settings" menu
- 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.

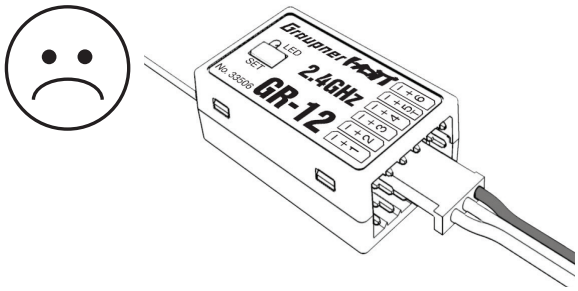
Connection S1012 - GR-12L

Connect the servos to the row of sockets on one end of the receiver. The connectors are reverse polarity protected: note the small chamfers on the sides. Never use force – the connectors should engage easily. The polarity is also printed on the receiver; the negative wire (-) is brown, the positive (+) red and the signal orange. The servo sockets of Graupner-HoTT 2.4 receivers are numbered sequentially.

Attention

A servo plug must never be inserted horizontally on the vertical servo connectors. Orientation of the servo connectors as indicated on the receiver. Risk of short-circuit.





The socket for channel 6 can also be programmed to deliver a (digital) sum signal (see receiver settings section).

Power supply

The receiver does not feature specific sockets for connecting the battery. We recommend that you connect the power supply to the socket(s) close to the servos already connected to the receiver. If you wish to connect multiple separate batteries, the batteries must be of the same nominal voltage and capacity. Never connect different battery types or batteries with strongly different charges since this can cause an effect similar to a short circuit. In such cases for safety reasons, insert voltage stabilizing elements such as PRX-5A (No. 4136) receiver power supplies between the batteries and receiver.

Attention

Never connect a battery with voltage higher than 8,4V directly to the receiver! The receiver and the connected servos would be destroyed.

Telemetry or channel (T/5) socket

The socket is also used for channel 5

The optional telemetry sensors or modules are connected to the socket marked “T” (T/5)- Telemetry. In addition, the update is performed on this socket. (see section Firmware update)

Connection S1037 - GR-12L SUMD+T

Connect your Flybarless system to the SUMD connector.

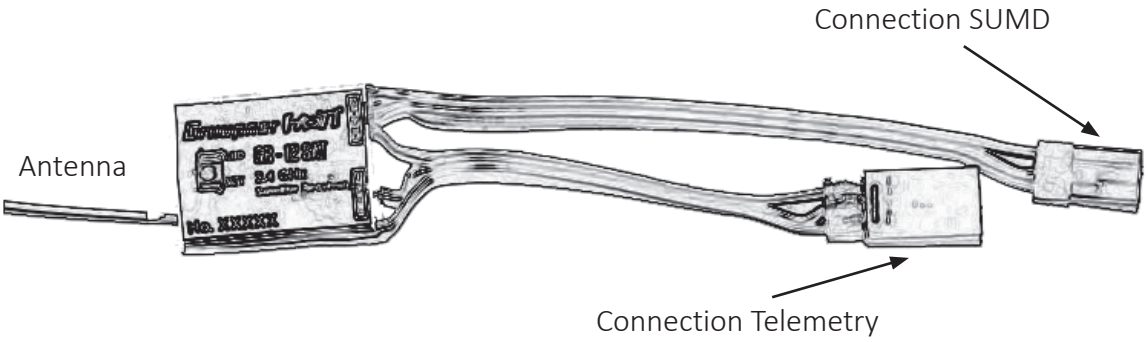
You can connect HoTT sensors to the Telemetry port.

The colors of both cables mean:

brown cable (-) power supply

red cable (+) power supply

orange cable (signal) telemetry or SUMD



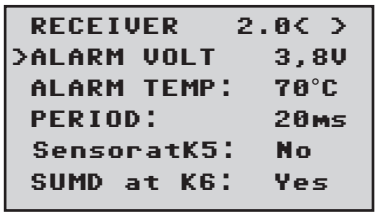
Power supply

You can connect the power supply to the receiver through one of the two cables. Always use only one cable and one power supply. Make sure that the power supply voltage is not higher than 8,4V DC.

Receiver settings

The receiver can be programmed with a suitable HoTT transmitter or in connection with the SMART-BOX.

Receiver settings menu



The receiver setup menu appears in the “Telemetry“ menu under SETTINGS / DISPLAYS or if you are using a SMART-BOX under SETTING & DATAVIEW. How to access this menu is described in the operating instructions supplied with your transmitter or Smart-Box.

Low voltage warning (ALARM VOLT):

If the receiver voltage falls below the set value, a low-voltage warning is generated by the transmitter in the form of a "general alarm tone" (regular beeping at a rate of approx. one beep per second) or the "receiver voltage" speech output message.

Temperature warning (ALARM TEMP):

If the receiver temperature exceeds the set temperature, a warning is generated by the transmitter in the form of a "general alarm tone" (regular beeping at a rate of approx. one beep per second) or the "receiver temperature" speech output message.

Cycle time (CYCLE):

Cycle time (PERIOD): 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, you should always select 20 ms, as many analogue servos cannot process the higher frame rate and may respond by "jittering" or "growling".

Sensor at channel 5 (K5):

The output channel 5 can be used as servo output or as telemetry port.

HoTT sum signal at channel 6 (SUMD):

If you activate the digital sum signal at channel 6, a sum signal containing 8 channels is present at this socket, instead of a servo signal. If the transmitter is configured as SUMD,it generates permanently from 8 control signals of the transmitter a digital sum signal which is emitted through the channel 6. This type of signal was being used by several Flybarless systems and power supplies.

Free mixers

Up to five mixers can be contemporaneously programmed. You can switch between Mixer 1, Mixer 2, 3, 4 … and mixer 5 in the “Mixer” line.

The following settings only affect the mixer selected in this line.

FROM CHANNEL:

The signal source (or source channel) is mixed in to the target channel (TO CHANNEL) with a programmable amount. The method of setting up the values is analogous to the “Free mixers” menu in HoTT transmitters.

TO CHANNEL:

Part of the source channel signal (FROM CHANNEL) is mixed into the target channel (TO CHANNEL). The mixer ratio is determined by the percentage values entered in the “TRAVEL-” and “TRAVEL+” lines. Select “0” if you do not require the mixer.

Mixer ratio (TRAVEL-/+): in these two lines you can define the mixer ratio in relation to the source channel (FROM CHANNEL); the value is set separately for both directions.

Trim

Offset value of the mixer.
Trim range: -30... 0...+30

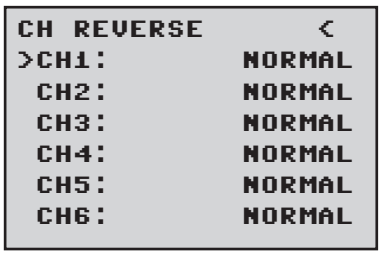
Travel -

Settles the lowest limit for the output channel.
Range: -100...0...+100

Travel +

Settles the highest limit for the output channel.
Range: -100...0...+100

Channel reverse



With this option it is possible to reverse the servo direction to adapt it to the specifics of each model.

NORMAL- normal servo direction

REVERSE- inverted servo direction

Firmware update

Updates to the receiver's firmware are made via the output channel 5 / telemetry socket using a PC running Windows XP, Vista or 7. You will also need a USB interface, order No. 7168.6, and adapter lead, order No. 7168.6A or 7168.S, which are available separately.

All other information can be found in the instructions that come in the software package.

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

www.graupner.de.

Declaration of conformity

CE

S1037 / S1012 receiver GR-12L HoTT

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 60950-1+A11+A1+A12+A2:2013

EN 62311:2008

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, Henriettenstrassee 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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