

No. 33505 No. S1021
No. S1022 No. S1023

Graupner **HoTT**
HOOPING · TELEMETRY · TRANSMISSION



33505 GR-12S HoTT



No. S1021 GR-16L HoTT



No. S1022 GR-24L HoTT



No. S1023 GR-32L DUAL HoTT

OPERATING INSTRUCTION

Prior to use, please read this manual thoroughly.
Keep this manual in a convenient place for quick and easy reference.

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• BEFORE USE

Thank you for purchasing Graupner HoTT 2.4GHz receiver. It is the common manual for GR-12S (6 Channels), GR-16L (8 Channels), GR-24L (12 Channels), GR-32L (16 Channels). This system is extremely versatile and may be used by beginners and pros alike. In order for you to make the best use of your system and to fly safely, please read this manual carefully. If you have any difficulties while using your system, please consult the manual, our online Frequently Asked Questions (on the web pages referenced below), your hobby dealer, or the Graupner Service Center. Due to unforeseen changes in production procedures, the information contained in this manual is subject to change without notice.

• SUPPORT AND SERVICE

• Customer support

We are happy to assist you with any question by e-mail or phone. Customer service hours are from 9 am to 5 pm PST (Pacific Standard Time) during the workweek, Monday through Friday. E-mailed questions will be answered as soon as possible

• Online Support

Please visit us at www.openhobby.com, to stay up to date with the latest software, firmware and product information.

• A/S Support

During the warranty period, we can repair this product at no cost in the event that it has become faulty under normal operating conditions.

For non-functional products that are past the expiration date of the warranty or have been improperly used, we would be happy to repair this product for an appropriate amount of cost to the consumer.

• Warranty information

Refer to the WARRANTY CARD in the Package

• OPENHOBBY A/S CENTER

3245 University Ave, Suite 1520, San Diego, CA 92104, United States of America

Phone: +1 855-5-RCisHoTT (+1 855-572-4746) Fax: +1 855-546-0350

E-mail: service@openhobby.com

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1. INTRODUCTION

Graupner HoTT receivers are compatible with all of Graupner transmitters and used to airplane, helicopter and glider. HoTT system gives user real-time information on various useful data such as user model's RPM, voltage, temperature, user programmable warning, and so on which are directly obtained from telemetric speed controllers equipped with this HoTT system without having to install separate sensor devices. Of course, all of those telemetric data can be also transmitted from separate sensor devices. The use of up to 75 hopping channels provides advanced reliable operation while keeping from any external interference.

All instructions, warranties and other collateral documents are subject to change at the sole discretion of Graupner. For up-to-date product literature, visit <http://www.openhobby.com> and click on the support tab for this product



WARNING

Read the ENTIRE instruction manual to become familiar with the features of the product before operating. Failure to operate the product correctly can result in damage to the product, personal property and cause serious injury.

2. FLYING SAFETY

1. Do not fly your model near spectators, parking areas or any other area that could result in injury to people or damage of property.
2. Ensure that all channels are working in the proper manner.
3. Perform a ground range check prior to the initial flight of the day
4. Do not fly during adverse weather conditions. Poor visibility can cause disorientation and loss of control of your aircraft. Strong winds can cause similar problems
5. We strongly recommend to set the Failsafe function and also recommend that the preset Failsafe would be idle position
6. You need to set the function of the transmitter after removing a power battery from a model or stopping a engine of a model.
7. Ensure that all your batteries have been properly charged prior to flight.

3. FEATURES

- The use of up to 75 channels ensures extreme operating reliability and immunity to external interference.
- The broad reception voltage range of 3.6 V - 8.4 V (functional to 2.5 V) ensures full functionality even when voltage fluctuates.
- Two LEDs signal operating status.
- The optimized sizes and weights
- Receiver input sensitivity and thus the range have been increased further.
- Servo connections in the front panel.
- Failsafe, Hold, OFF, and standard (channel 1 failsafe; all others hold) programmable.

- SPECIFICATION

Model Name	GR-12S	GR-16L	GR-24L	GR-32L
Channel	6 channels	8 channels	12 channels	16 channels
Frequency	2400~2483.5 MHz	2400~2483.5 MHz	2400~2483.5 MHz	2400~2483.5 MHz
Modulation	2.4GHz FHSS	2.4GHz FHSS	2.4GHz FHSS	2.4GHz FHSS
Temperature Range	-15~+70°C	-15~+70°C	-15~+70°C	-15~+70°C
Operating Voltage	(2.5) 3.6~8.4V	(2.5) 3.6~8.4V	(2.5) 3.6~8.4V	(2.5) 3.6~8.4V
Charging rate	35.0mA	70.0mA	70.0mA	70.0mA
Antenna	1ea,85mm/3.35in	2ea,145mm/5.71in	2ea,145mm/5.71in	4ea,145mm/5.71in
Amplifier	O	O	O	O
Size	31x20x19 mm 1.22x0.79x0.35 in	46x21x14 mm 1.81x10.83x0.55 in	46x31x14 mm 1.81x1.22x0.55 in	63x30x14 mm 1.48x1.18x0.55 in
Weight Approx	4.0g 0.15 oz	12.0g/ 0.42 oz	16.0g/ 0.56 oz	24.0 g/ 0.85 oz



When switching on or adjusting the radio control system it is essential to keep the transmitter antenna at least 30 cm away from the receiver antenna all the time. If the transmitter antenna is too close to the receiver antenna, the receiver will be overloaded and the status LED on the receiver blinks red. The transmitter responds by repeating a single beep every second and the radio control system is entered Fail-Safe mode. If the distance of the antennas between transmitter and receiver would be simply longer than 30cm in this situation, the beep of transmitter is ceased and the status LED on the receiver turns solid green

4. OPERATION

1) Binding

- Switch on the transmitter and receiver. The status LED of the receiver blinks red until the receiver is bound to the transmitter.
- Enter BIND mode of your specific transmitter and press & hold the SET button on the receiver for over 3 sec, the red status LED and the green status LED blink together. After that, follow the procedures of your specific transmitter to bind, the system will connect within a few seconds. Once connected, the status LED on the receiver turns solid green, indicating the receiver is bound to the transmitter. If the binding process has failed, repeat the whole procedure.
- Binding a number of receivers in one model

It is possible to bind a number of receivers to a transmitter in one model. Every receiver must be bound to the transmitter individually according to the procedure already described.

The last bound receiver is the master receiver when the system would be in use. Every telemetry sensors installed in the model must be connected to the master receiver, since the only master receiver transmits sensor data through the downlink channel. The second and all further receivers are operated as the slave mode which are connected in parallel to the master, with the downlink channel switched off. The control signals can be passed to a number of receivers simultaneously and also the different signal can be assigned to each receiver through the Channel Mapping function of the transmitter or the optional SMART BOX. The typical example would be the use of two servos for each aileron, etc.

NOTICE : Make sure to double check that transmitter is bound to receiver by turning off/on transmitter's power after binding process is completed

2) Range checking

Before every flying session and especially with a new model, it is important to perform a range check. All Graupner aircraft transmitters incorporate a range testing system which, when activated, reduces the output power, allowing a range check. Notice that every flying must not be permitted in the range checking mode and the model is restrained on the ground. After binding the receiver to the transmitter, switch the on transmitter and the receiver and wait until the status LED on the receiver turns solid red.

- Mount the bound receiver in the target place in the model.
- Switch on the RC system so that you could observe the movement of the servos.
- Put the model on a flat surface (pavement, closely mown grass or earth), and ensure that the receiver antenna should be at least 15cm above from the ground.
- Face the model with the transmitter in your normal flying position, the antenna on the transmitter shouldn't be toward the model directly and it keeps stand horizontally during range checking
- Enter range check mode of your specific transmitter and follow the procedures of your specific transmitter to check the range. the transmitter repeat a single beep with a regular rhythm, indicating the Range checking is processed normally.
- Walk over 50 meters away from the model with controlling the transmitter sticks constantly and check whether the model is operating normally. You should have total control of the model with the trainer switch pulled
- If control issues exist within 50 meters, the system should not be used. And contact your local Service Department of SJ INCORPERATED.
- Range-check is automatically terminated in 90 seconds and it is also terminated by turning off the range check function of your specific transmitter. the status LED on the receiver turns solid green when terminated.
- Have your helper position the model and check effective radio range before every flight while simulate all the servo movements which will take place when the model is in fight. The ground range must always be at least 50m in order to ensure safe and reliable model control.



CAUTION

During normal operations (i. e. when controlling a model) never enter the range check mode !

3. Fail-safe function

In its default state, the receiver is set to "Hold" mode. If you lose connection, all channels hold last given command and the status LED on the receiver turn solid red. The transmitter also repeats a single warning beep every second. You can use the fail safe option by programming the throttle channel to respond to a fail-safe situation. : the throttle channel of an engine-powered model should be set to idle, the throttle channel of an electric-powered model to "stop", and the throttle channel of a model helicopter to "Hold". When a signal is lost the throttle channel, all channels are driven to the failsafe position so that it could prevent the model crashing and the personal injury or property damage.



IMPORTANT

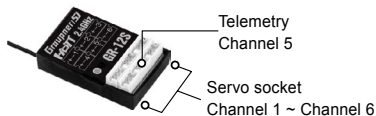
The two functions "Binding" and "Range check" described above can be used by the programming button or the SMART-BOX without any influence on the setting value saved in the transmitter and the receiver. However, if the fail safe option is used by the programming button, all the setting value which is seen on the fail safe screen in SMART BOX, including the setting value that could be installed by the programming button, might be reset. For this reason, we recommend the programming by SMART BOX.

4. Range warning

Since the transmitter's output is much higher than that of the receiver, the user tends to be hard to notice the seriousness of the situation and try to keep full control of the model. So when the receiver signal in the down-link channel becomes too weak, the transmitter repeats a single warning beep every second. You should fly back the model towards the safe place until the warning signal ceases. If the beep warning does not cease when you fly back, it is that the transmitter or receiver low voltage warning or temperature warning is activated, you must land the model and cease operations without delay in this situation.

5. RECEIVER

33505 GR-12S HoTT



S1021 GR-16L HoTT



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S1023 GR-32L DUAL HoTT



1. Servo connection

Plug the servos into the row of sockets on the right end of the receiver. The connector has polarity, note the small chamfer on one edge. The socket polarity is also marked as +, - on the case, brown wire (-), red (+) and orange (signal). The servo sockets of the receiver are numbered and the battery socket and sum signal socket are specified but the servo can be connected in parallel with a Y-lead for your choice

2. Power supply to the receiver

When using High Power servos, connect the receiver power supply to the vertical ports. If the servos would be connected to the vertical ports in parallel with the power supply by a Y-lead, servos also can be controlled.

3. The programming socket

The socket with "T" marks on the left end of the receiver is telemetry interface socket, GR-12S are Channel 5, This socket is used for Telemetry interface by the optional telemetry sensors, updating the latest Graupner Firmware by the USB interface and programming by the SMART BOX. The socket polarity is marked as +, - on the case: brown wire (-), red (+) and orange (T). GR-12S needs the optional adapter cable (Order No.: 23048)

Model Name	GR-12S	GR-16L	GR-24L	GR-32L
Channel	6 channels	8 channels	12 channels	16 channels
Battery channel	Any channel	B	B	B
Sum signal channel	6	8	8	S
Telemetry channel	5	T	T	T

6. THE PROGRAMMING SETUP WITH TELEMETRY BOX



If you use optional SMART BOX, you may perform the programming setup get the real-time data information on receiver through big and clear LCD. Please contact "www.openhobby.com" to get the manual of the optional SMART BOX manual for more details

SMART BOX order No. : 33700

7. FIRMWARE UPDATE

For more information on the latest firmware and the related software, please refer to the download menu on our website www.openhobby.com, www.graupner-sj.com

NOTICE: The optional USB PC Interface, HoTT PC Interface zender and HoTT Adapter cable are needed to update.

S8270 : USB PC Interface

7168.S: HoTT PC Interface zender

23048: HoTT Adapter cable



8. SAFETY APPROVAL

Declaration of Conformity
(in accordance with ISO/IEC 17050-1)



CE 0678 Ⓢ

Product(s) : Graupner HoTT Receiver GR-12S(6 channels)

Equipment class : 1

The objects of declaration described above are in conformity with the requirements of the specifications listed below, following the provisions of the European R&TTE directive 1999/5/EC:

- EN 60950-1:2006/A11:2009
- EN 301 489-1 V1.8.1
- EN 301-489-3 V1.4.1
- EN 301-489-17 V1.3.2
- EN 300 328 V1.7.1

• FCC Information

Product(s) : Graupner HoTT Receiver
GR-12S(6 channels), GR-16L(8 channels), GR-24L(12 channels), GR-32L(16 channels)

GR-12S	GR-16L	GR-24L	GR-32L
FCC ID : ZKZ-33505 FCC 47 CFR PART 15C	FCC ID : ZKZ-33508 FCC 47 CFR PART 15C	FCC ID : ZKZ-33512 FCC 47 CFR PART 15C	FCC ID : ZKZ-33516 FCC 47 CFR PART 15C

• FCC Statement

1. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
 - (1) This device may not cause harmful interference.
 - (2) This device must accept any interference received, including interference that may cause undesired operation.
2. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

• NOTE

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

• FCC radiation exposure statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

This equipment should be installed and operated with minimum distance of 20 cm between the radiator and your body.

• KC Information

Product : Graupner HoTT Receiver

GR-16L(8 channels), GR-24L(12 channels), GR-32L(16 channels)

국립전파 연구원의 전자파 적합등록을 획득하였습니다.

(This product is certified and registered from Korean National Radio Research Agency.)



GR-16L	<p>KCC인증번호: KCC-CRM-sjr-16003120 방송통신위원회고시 제2013-01호 방송통신위원회고시 제2012-102호 "신고하지 아니하고 개설했을 수 있는 무선기기"</p>
GR-24L	<p>KCC인증번호: KCC-CRM-sjr-16003210 방송통신위원회고시 제2013-01호 방송통신위원회고시 제2012-102호 "신고하지 아니하고 개설했을 수 있는 무선기기"</p>
GR-32L	<p>KCC인증번호: KCC-CRM-sjr-16004010 방송통신위원회고시 제2013-01호 "무선설비규칙" 방송통신위원회고시 제2012-102호 "신고하지 아니하고 개설했을 수 있는 무선기기"</p>

 CAUTION

- This equipment's aerial must be at least 20 cm from any person when the system is in use. We therefore do not recommend using the equipment at a closer range than 20cm.
- Ensure that no other transmitter is closer than 20cm from your equipment, in order to avoid adverse effects on the system's electrical characteristics and radiation pattern.
- The radio control system should not be operated until the Country setting has been set correctly at the transmitter. This is essential in order to fulfill the requirements of various directives - FCC, ETSI, CE, KC and etc. Please refer to the instructions for your particular transmitter and receiver for details of this procedure.
- Check all working systems and carry out at least one full range check on the ground before every flight, in order to show up any errors in the system and the models programming.
- Never make any changes to the programming of the transmitter or receiver whilst operating a model.

• ENVIRONMENTAL PROTECTION NOTES

This product must not be disposed of with other waste. Instead, it is the user's responsibility to their waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more

information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or where you purchased the produce

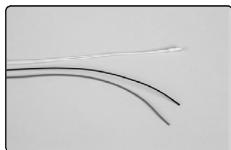


9. ACCESSORIES



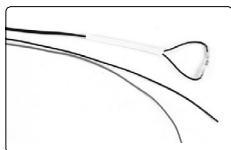
Best.-Nr. 33611

General Air-Modul Graupner HoTT Vario, Drehzahl, Treibstoff, 2x Temperatur, 2x Spannung, Strom bis 40A, Kapazität, Einzelzellenspannung 2-6 S



Best.-Nr. 33612G

Graupner HoTT Temperatursensor 120°C, Spannungssensor



Best.-Nr. 33613

Graupner HoTT Temperatursensor 200°C, Spannungssensor



Best.-Nr. 33615G

Graupner HoTT RPM Optical Sensor



Best.-Nr. 33700

HoTT SMART BOX



Best.-Nr 33576

Receiver GR-12 +3XG HoTT



Best.-No. S1012

Receiver GR-12L HoTT



Best.-No. S1021

Receiver GR-16L HoTT



Best.-No. S1022

Receiver GR-24L HoTT



Best.-Nr. 33600G

Graupner HoTT GPS mit Vario

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