

## GETTING STARTED GRAUPNER-HOTT 2.4

### 1. GENERAL NOTE

When switching on or adjusting the radio control system it is essential to keep the transmitter aerial at least 15 cm away from the receiver aerials at all times. If the transmitter aerial is too close to the receiver aerials, the receiver will be overloaded, causing the red LED on the receiver to light up. The transmitter responds by emitting a beep once every second; the red LED also goes out. The radio control system is now in Fail-Safe mode.

If this should occur, simply increase the distance between the aerials until the audible warning signal ceases, and the red LED on the transmitter lights up again; at the same time the red LED on the receiver should go out.

### 2. FUNCTIONS

#### a. Binding

When you wish to use the Graupner HoTT 2.4 GHz receiver with a particular transmitter, the first step must always be to "bind" the unit to "its" Graupner HoTT 2.4 GHz RF module (transmitter). This "binding" procedure only needs to be carried out once for each combination of receiver and RF module. The units supplied in the set are already bound to each other at the factory, i.e. the binding procedure described in the following section only needs to be carried out when you wish to use an additional receiver. However, it can also be repeated at any time if required, e.g. after changing transmitters. When binding is required, this is the procedure:

- Switch the transmitter and receiver on.
- Locate the BIND / RANGE button on the back of the transmitter, and hold it pressed in while you press and hold the SET button on the receiver. Both LEDs on the back of the transmitter now glow constantly, and the red LED on the receiver flashes.
- Under normal circumstances the flashing red LED on the receiver will cease to flash and switch to a constant green within about ten seconds. This indicates that the binding process is complete. You can now release both buttons, and your transmitter / receiver combination is ready for use.
- However, if the red LED on the receiver continues to flash for longer than ten seconds, then the binding process has failed. If this should occur, repeat the whole procedure.

#### b. Range checking

The method of checking the effective range of the Graupner HoTT 2.4 GHz system is described below. We recommend that you ask a friend to help you with this procedure.

After binding the receiver to your transmitter, switch the transmitter and the receiver on, and wait until the green LED on the receiver lights up.

- Install the bound receiver in the model in its final intended position.
- Switch the RC system on, so that you can observe the movement of the servos.
- Set up the model on a flat surface (pavement, closely mown grass or earth), and ensure that the receiver aerials are located at least fifteen cm above the ground. This may require a support for the model.
- Hold the transmitter at hip-height, away from your body, but do not point the aerial directly at the model; instead turn and / or angle the aerial tip so that it stands vertical, and keep it there for the duration of the range check.
- Locate the BIND / RANGE button on the back of the transmitter, and press it to initiate range-check mode. Hold the button pressed in until the transmitter starts to beep at a regular rhythm; the red and green LEDs adjacent to the BIND / RANGE button now flash alternately.
- Walk away from the model, operating the transmitter sticks constantly. If you detect an interruption in the link within a range of about fifty metres, stand still and attempt to reproduce it.
- If the model is fitted with a motor, switch it on in order to check whether the power system is generating interference.
- Continue to walk away from the model until you reach the point where perfect control is no longer possible.
- Now press the BIND / RANGE button on the transmitter once more; this terminates range-check mode manually, and the model should respond normally to control commands. If this does not occur with 100% reliability, the system should not be used. Contact your local Service Department of Graupner GmbH & Co. KG.
- Range-check mode is usually terminated manually when the user presses the BIND / RANGE button, but it terminates automatically after about ninety seconds in any case. The red LED now glows constantly again, while the green LED either glows constantly or flashes continuously, according to the Country setting.
- We recommend that you check effective radio range before every flight. While you are carrying out the check, simulate all the servo movements which will take place when the model is in flight. The ground range must always be at least fifty metres in order to ensure safe, reliable model control,

### c. Fail-Safe-function

In its default state (as delivered) the receiver is set to "Hold" mode, i.e. if a fail-safe situation occurs, all the servos connected to it maintain the last position detected as valid. In this mode the red LED on the receiver lights up when interference occurs, and the red LED on the transmitter goes out. The transmitter also starts beeping about once per second as an audible warning.

You can exploit the safety potential of the fail-safe option by at least 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". If interference should occur, these settings will help prevent the model flying out of control, possibly causing personal injury or property damage.

#### **IMPORTANT:**

The two functions "Binding" and "Range check" described above can be used regardless of the method you last employed to program the transmitter, i.e. using the programming button or the Smart-Box; neither of these two options causes significant changes to the settings saved in the receiver. However, if you call up the Fail-Safe function using the programming button as described below, this resets ALL the settings of the Smart-Box at the Fail-Safe screen (RX FAIL SAFE) - and this includes the settings available through the facilities of the programming button.

Switch your receiving system on. Locate the BIND / RANGE button on the back of the transmitter, and hold it pressed in while you switch the transmitter on. Release the button again once it is switched on.

You can now call up the desired Fail-Safe mode (Fail-Safe on / off, Hold, or Standard) by cycling through the modes with a brief press of the BIND / RANGE button:

- **Fail-Safe mode:** when you press the BIND / RANGE button, the transmitter beeps once; the red and green LEDs glow constantly.  
It is now possible to program positions to which the servos will move in a Fail-Safe situation; this occurs after a "Hold" period of 0.75 seconds: move the corresponding transmitter controls (sticks, rotary knobs, INC / DEC buttons etc.) to the desired Fail-Safe positions SIMULTANEOUSLY, then hold the BIND / RANGE button pressed in for three to four seconds. When you release the button, both the red and green LEDs should light up constantly, and the transmitter should not emit an audible signal: the transmitter now reverts to Control mode. If this does not occur, repeat the procedure.
- **Hold mode (recommended for model helicopters):** when you press the BIND / RANGE button, the transmitter beeps twice; the red LED lights up constantly, and the green LED goes out (factory default setting).  
If interference occurs, all servos programmed to "Hold" remain at the last position detected by the receiver as correct; this situation is maintained until such time as the receiver picks up a new, valid control signal.  
You can save your selection by holding the BIND / RANGE button pressed in for three to four seconds. When you release the button, both the red and green LEDs should light up constantly, and the transmitter should not emit an audible signal: the transmitter now reverts to Control mode. If this does not occur, repeat the procedure.
- **Fail-Safe OFF:** when you press the BIND / RANGE button, the transmitter beeps three times; the green LED glows constantly, the red LED goes out.  
You can save your selection by holding the BIND / RANGE button pressed in for three to four seconds. When you release the button, both the red and green LEDs should light up constantly, and the transmitter should not emit an audible signal: the transmitter now reverts to Control mode. If this does not occur, repeat the procedure.
- **Standard mode (suitable for fixed-wing model aircraft only):** when you press the BIND / RANGE button, the transmitter beeps four times; both LEDs are off.  
In this mode the throttle servo (channel 1) moves to the Fail-Safe position, i.e. the position you have programmed for a Fail-Safe situation, while all the other channels remain at "Hold".  
Move the throttle stick to the desired position, then hold the BIND / RANGE button pressed in for three to four seconds. When you release the button, both the red and green LEDs should light up constantly, and the transmitter should not emit an audible signal: the transmitter now reverts to Control mode. If this does not occur, repeat the procedure.

- **Universal** : the transmitter beeps once when you press the BIND / RANGE button, and the green LED lights up constantly.
- Switch the transmitter off, and remove the programming plug. Do not under any circumstances use the radio control system with the programming plug inserted!

#### e. Initialisation

To initialise the system, i.e. to reset it to the factory default settings, locate the BIND / RANGE button on the back of the transmitter, hold it pressed in while you switch the transmitter on, then release the BIND / RANGE button again. Now immediately press and hold the SET button on the receiver, switch it on, and release the SET button again. After about two or three seconds the green LED on the receiver lights up to confirm that your radio control system has been re-initialised.

##### **Please note:**

The initialisation procedure erases ALL the settings you have entered. Where necessary, you will need to program your preferred settings again.

When initialisation is complete, the transmitter will be in Fail-Safe programming mode, i.e. you can immediately continue programming your Fail-Safe settings, as described earlier.

#### f. Low voltage warning

If the transmitter voltage falls below 8.0 V, the RF module generates an audible low voltage warning in the form of a steady series of beeps at intervals of around one second. This occurs independently of the transmitter software.

#### g. Range warning

If the receiver signal in the down-link channel becomes too weak, the transmitter always generates an audible range warning in the form of a beep emitted about once per second. Since the transmitter's output is much higher than that of the receiver, you will still maintain full control of the model, but in the interests of safety you should fly the model back towards you until the warning signal ceases again.

If the audible range warning signal does not cease when you reduce the distance, then the transmitter or receiver low voltage warning is active! In this case you must land the model and cease operations without delay.

#### h. Firmware update or Smart-Box connection

The Smart-Box is connected to the DATA socket on the back of the transmitter.

Firmware updates for the transmitter RF module can be transferred via the DATA or telemetry interface in conjunction with a PC running Windows XP, Vista or 7. For this you also require the USB interface, Order No. 7168.6, and the adapter lead, Order No. 7168.6A, which are available separately.

## 2. RECEIVER

#### a. Low voltage warning

If the receiver voltage falls below 3.8 V, the transmitter's RF module generates a low voltage warning in the form of a "general alarm sound": a steady beeping at intervals of about one second.

#### b. Firmware updates

Firmware updates for the receiver can be transferred via the programming socket on the side of the unit, in conjunction with the USB interface, Order No. 7168.6, and the adapter lead, Order No. 7168.6A, which are available separately. The programs and files required for this are available from [www.graupner.de](http://www.graupner.de) in the Download area for the corresponding products.