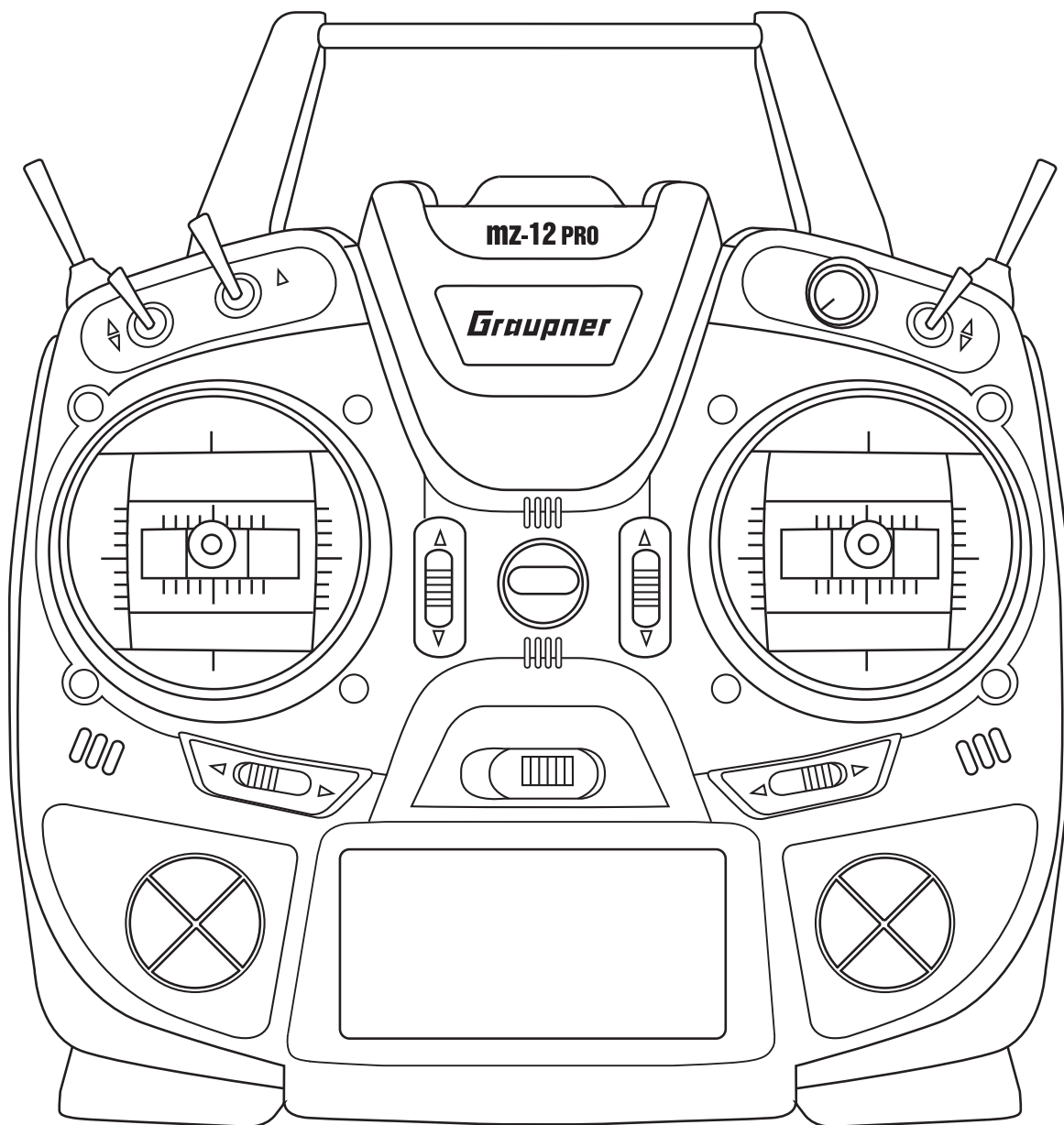


# Manual

## mz-12PRO HoTT

12 channel 2,4 GHz transmitter

No. S1002.PRO



**CE** Part 1



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## Introduction

Thank you very much for purchasing a **Graupner mz-12 Pro HoTT** transmitter.

Read the manual carefully to use the transmitter optimally 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.de](http://www.graupner.de)** 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!



### Notes

- This manual is composed by two parts. Part 1 is contained in the product's package content. Part 2 can be found in its last version on **[www.graupner.de](http://www.graupner.de)** by the related item page.
- 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.

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## Service center

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### **Graupner in Internet**

For the service centers outside Germany please refer to our web site **[www.graupner.de](http://www.graupner.de)**.

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## Intended use

This transmitter system must 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 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 operation of the transmitter must be performed by experienced modelers. If you do not have sufficient knowledge about dealing with radio-controlled models, please contact an experienced modeler or a model club.

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## Package content

- Transmitter **mz-12 Pro HoTT**
- 1s1p LiPo transmitter battery
- Transmitter strap
- Receiver (optional)
- Transmitter manual (Part 1)
- Receiver manual (optional)

The programming manual (manual part 2) can be found in its last version on [www.graupner.de](http://www.graupner.de) by the related item page.



### Note

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

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## Technical data

### Transmitter mz-12 Pro HoTT

Frequency band	2,4 ... 2,4835 GHz
Modulation	FHSS
Transmitting power	100 mW EIRP
Control functions	12 functions of which 4 can be trimmed
Temperature range	-10 ... +55 °C
Antenna	Integrated antenna
Operating voltage	3.4 ... 5.5V
Power consumption	Approximately 180mA
Dimensions	Approx. 190 x 185 x 90 mm
Weight	approx. 700g with battery



#### Note

The technical data of the optional receiver are available in the manual included in the receiver package content.

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## Symbol description



Always observe the information indicated by this warning sign. 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.

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## 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 transmitter must not use the transmitter without supervision or instruction by a responsible person.**
- **Operation and use of radio-controlled models needs to be learnt! 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 always responsibly.**
- **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.**
- **First, always perform a range and function test on the ground before you start using your model. Only so you can grant a safe use! How to perform a range test is explained in the Part 2 of the manual.**
- **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



### **WARNING**

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



### **CAUTION**

Avoid every kind of short-circuit in all sockets of the transmitter and of the receiver! 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. Any interference will void the authorization.



### **Note**

During transport protect the model and the transmitter from damages.

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.
- Any alterations to the battery can cause serious injury or burns.
- Batteries may not be heated, burned, short-circuited or charged with excessive current or with reversed polarity.
- Combustible or highly flammable objects are to be kept away from the charging area.
- Never leave the charger unattended when it is connected to the power supply.
- Please charge your batteries only in rooms fitted with a smoke detector.
- Always charge the battery with a suitable charger.
- 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 or hot ones. 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 may 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, CO<sup>2</sup> or sand.**
- **Leaked electrolyte is caustic! It 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.**

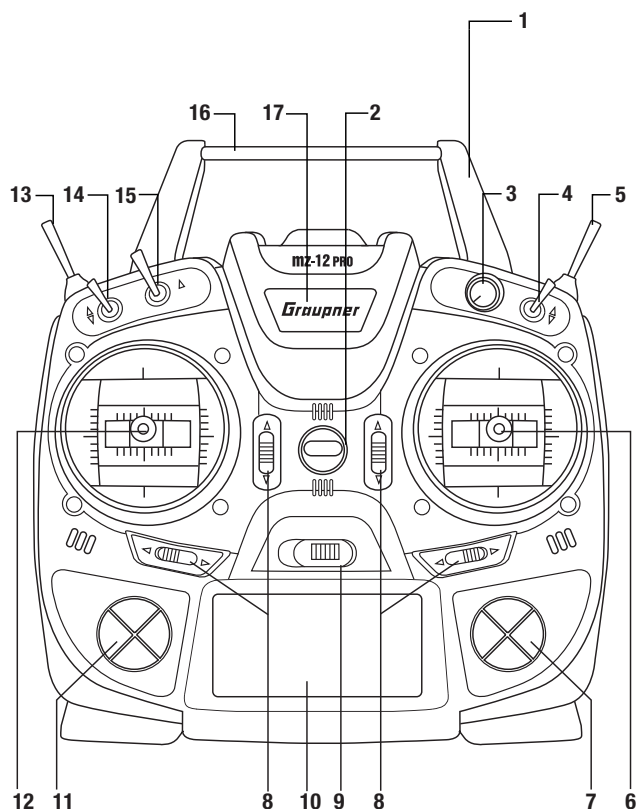
### **Special instructions**

- To charge and discharge 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.

### **Safety notes for stocking batteries**

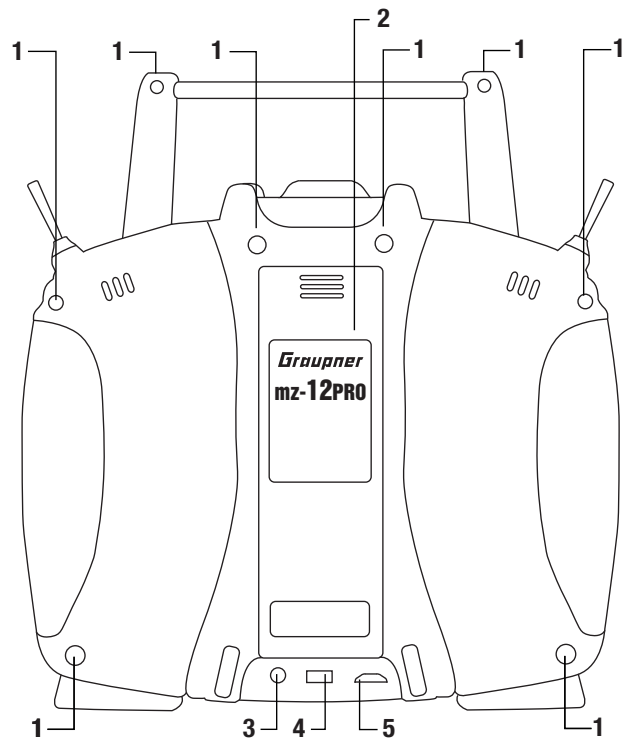
- Batteries may only be stored in dry rooms with an ambient temperature of +5°C to +25°C.
- If the LiPo battery must be stored for a longer period, the voltage per cell should be about 3,8V. If the cell voltage drops below 3 V, they must be recharged immediately. Deep discharge makes the battery short-term, longer storage in discharged as well as fully charged state make the battery in the long term useless.

## Description of the transmitter



## Control elements on the transmitter

1	antenna integrated in the case
2	Eyelet for neck strap
3	Proportional dial DV
4	2 way switch SW 3
5	3 way switch SW 6 and 7, push-switch, latching-switch
6	Right stick
7	Right four way keys
8	Trim
9	ON/OFF switch
10	LCD
11	Left four way keys
12	Left stick
13	3 way switch SW 4 and 5
14	2 way switch SW 1
15	2 way switch SW 2
16	Carrying handle
17	Central status LED



1	Case screws
2	Battery case cover
3	3,5 mm jack to connect earphones or a DSC cable
4	Data socket to connect a smart box
5	Micro USB port, to use as: Charge port, update port, joystick function

## Connections and fixtures

### Attaching the transmitter neck-strap

On the upper side of the transmitter there is an eyelet which can be used to hook a neck-strap.

### Jack socket

Display light	always
Region setting	Europe
Voice volume	3
Signal volume	3
▶Back port	OHRH
▼▲	

The port for a 3,5 mm jack is located on the back of the transmitter. Depending on the settings in the menu (OHRH or DSC) this interface can be used as a earphone port or as a DSC cable port.

### Headphone connection

Though this interface both acoustic signals and voice messages are emitted.

The volume can be controlled by "Voice volume" and "Signal volume" in the general settings.

### DSC connection

Through a DSC cable the port can serve to use the transmitter with a simulator or to connect it with another one in Teacher/pupil mode.



#### Attention

When your transmitter is directly connected to a desktop computer by a connecting cable (DSC cable) and/or a computer interface is connected to your simulator, the transmitter may be destroyed by electrostatic discharge. This type of connection should therefore only be used if you protect yourself from electrostatic discharge while operating the simulator by wearing a commercially available grounding armband. **Graupner** therefore strongly recommends only using wireless simulators.



Switch on the line "DSC output" of the menu "general Set." to DSC mode if necessary. In this way you can change the base display too. Right in the display appears "DSC".

*To ensure a correct DSC connection, observe the following*

1. *Perform any necessary adaptations in the menu.*
2. *Connect one end of the DSC cable in the DSC port of the switched-off transmitter and the other end to the device to be connected.*
3. *Switch the transmitter on.*

### Data socket

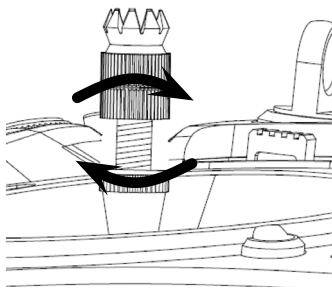
The data socket is suitable for connection of a smart box or an external Bluetooth module.

Micro USB charging socket, see section "Battery charging"

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## Transmitter preparation

### Adjusting the length of the control sticks



Length of both control stick can be adjusted. Hold down the bottom half of the knurled grip, and loosen the screwed connection by turning the top part.

You can now lengthen or shorten the control stick by screwing it up or down. Then clamp the top and bottom part of the grip by rotating them against each other.

### Opening the transmitter housing

The transmitter should be opened only in the following cases:

- If a self centering stick has to be converted in non self centering
- If a non self centering stick has to be converted in self centering
- To set the control stick centering force



#### CAUTION

**Never switch the transmitter on while the housing is open. Risk of short-circuit! Before opening the housing remove the batteries.**

*Open step by step*

1. *Before opening the housing switch the transmitter off.*
2. *Open the battery case.*
3. *Remove the transmitter battery lifting it from one side and gently release it from the Velcro tape.*
4. *Retire the connection plug.*
5. *Unscrew the eight screws with a cross-screwdriver.*
6. *Hold both housing halves with both hands and let the screws fall on a proper surface turning the transmitter upside-down.*
7. *Rotate the lower half carefully and fold it to the bottom.*



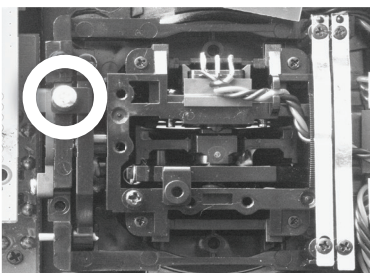
#### Note

Cables connect the lower half of the housing with the upper part electronic components. This connection must not be damaged! Do not touch the electronic boards.



1	Transmitter antenna integrated in the handle
2	Adjust screws for brake spring (outer) and ratchet (inner)
3	Stick self centering force adjust screws
4	Screw to convert from neutralizing to non neutralizing and vice versa

### Neutralizing the control sticks



Both control sticks can be set from neutralizing to non-neutralizing and vice versa. Locate in the right-hand control stick gimbal the screw surrounded by a white circle in the picture.

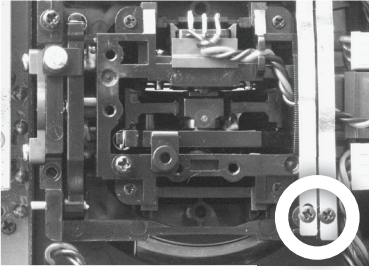
Turn the screw toward the inside of the transmitter until the relevant control stick can move freely from stop to stop, or turn it outward until the control stick resets itself independently.



#### Note

The left-hand control stick gimbal is specular to the left one, so that here the screw is located right under the middle.

## Brake spring and ratchet



The outboard screw of the two marked in the figure adjust the braking force.

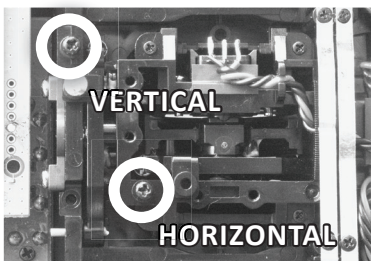
The inboard screw adjusts the strength of the ratchet for the respective control stick.



### Note

The left-hand control stick gimbal is specular to the left one, so that here the screws are located left on the top side.

## Control sticks centering force



The control sticks' restoring force can also be adjusted. The adjustment is located next to the return springs.

By turning the respective adjust screw the spring force can be adjusted:

Right turn = return harder

Left turn = return softer



### Note

The left-hand control stick gimbal is specular to the left one, so that here the screws are located left in the middle.

## Closing the transmitter housing

### *Closing step by step*

1. Check if the upper and the lower part of the transmitter housing are correctly coupled and the tiny cables are properly placed.
2. Screw the housing screws in their original position.
3. Connect the battery.
4. Close the battery case.

## Transmitter power supply

The **mz-12 Pro HoTT** transmitter is normally delivered with a 1s2p LiPo battery.

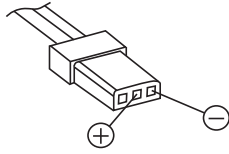
## Installing the battery



### Note

Pay attention when inserting the battery to the correct position and make sure the contacts are solid. Interruptions of the power supply to the transmitter during the use of the models can lead to big danger for your self and for other people!





Connect the battery plug in the transmitter socket with the correct polarity. Next to the socket the same symbols are printed: **Red = +**  
**Black/Brown = -**

Place the battery into its compartment and close the cover.

## Charge the battery

The transmitter battery is charged by means of the micro USB socket on the back of the transmitter with the charging currents (5 V / max. 0.5 A) which are common to USB2 ports. To do this, the included USB cable must be connected to a USB compatible charger.

The charging process is shown through the red lightning **Graupner** text. The indication quits when, with switched off transmitter, the battery is full.

If the transmitter is switched on the charge time is longer than if the transmitter is switched off.



## WARNING

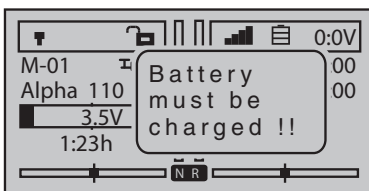
**The charger should always be supervised during charge and it should be used only in rooms fitted with a smoke detector.**

## Removing the transmitter battery

Remove the battery case cover. Detach the battery by lifting it from the side of the Velcro and then gently pull the plug of the lead wire.

Possibly charge the battery outside the transmitter according to the instructions of the charger.

## Low voltage warning



The transmitter battery voltage should be monitored in the LCD display during operation. In case the voltage drops under a preset threshold, standard setting 3,6 V, an acoustic warning signal is emitted and in the display appears in a warning note "battery needs charging".

Now at the latest, stop operation and recharge the transmitter battery!

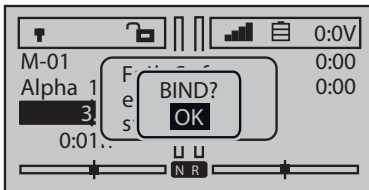
## Battery use timer in the display

The battery use timer is shown in the lower left part of the display. The battery use time is added at every use. After every charge or battery exchange the timer is reset to "00:00". This happens only if the battery voltage increases at least of 0,3V.

## Starting up the transmitter

At the factory, the first six model memories are preloaded with a Copter model from the **Graupner** product range so that each of these 6 models can be put into operation immediately after the binding of a receiver.

It is important to know this before the transmitter is put into operation, since the throttle / pitch position is first checked on the side of the software after switching on the transmitter. If these are outside the idle range, and there is a risk of spinning rotors, an audible warning will sound and the warning message shown on the left will be displayed. In order to stop them both, the left stick is to be brought to the pilot-side stop.



As soon as the left stick is at the backstop, the warning "Throttle too high!" is blanked out or not even displayed if it is already "at the rear" when the transmitter is switched on. In both cases, the question "BIND OK?" is visible.

You can decide to wait until the question "BIND OK?" disappears automatically or you can shorten the waiting time manually, by pushing the ENT button of the right four-way button:

Model memory	M. Type phase	Servo setting	Ctl setting
D/R Expo	Tx setting	Thr. curve	Wing mix

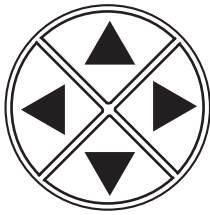
- In the one case, the "Fail Safe" setting, which is only fragmentarily visible under the question "BIND OK?", is completely visible. This note, which is completely uninteresting in this situation, is also automatically dimmed after a few seconds. Alternatively, press the ENT key of the right four-way key to switch directly to the menu selection, as shown on the left. Further information can be found further back and in the manual part 2, which can be found at [www.graupner.de](http://www.graupner.de) on the product page.

Control mode	2
Receiver output	=>
▶ Rx bind	---
Range test	99sec
RF module	OFF
▲▼	

- If you do not wait for "BIND OK?" to be hidden, you can press the ENT key to change the focus directly to the "BIND" menu of the "Transmitter Setting" menu. Here, a receiver which is already ready for operation can be connected to the transmitter without further detours. Further information can be found further back and in the manual part 2, which can be found at [www.graupner.de](http://www.graupner.de) on the product page.

## Use and menu functions

### Four-way keys

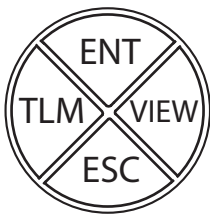


### Buttons to the left of the display

Hereinafter referred to as left, right upper and lower selection keys. These keys are used to scroll through lists, columns, etc., in the same way as their arrow directions, and values are changed.

Furthermore,

- Pressing one of these selection buttons from the base display will bring up the "display telemetry data".
- Simultaneously press the left and the right selection keys to reset in almost every value field a changed parameter back to the default value. (CLEAR function).
- Simultaneously press the left and the right selection keys to recall the sensors selection within the menu "Settings & data view" of the "Telemetry" menu. To change within the sensors push the upper and the lower key.
- Simultaneously press the left and the right selection keys to recall the "Hidden mode" from the base display of the transmitter as from almost every menu position.



### Buttons to the right of the display

- **ENT button**
  - The ENT key is used mainly to confirm a selection made through the selection keys. For example a menu selected through the selection key can be opened by pushing the ENT key.
  - Push the ENT key to recall the selection menu from the base display.
  - Push the ENT key to activate and deactivate or confirm changed values in activated (represented with inverted contrast) value fields within the setting menu.
- **ESC button**

Pressing the ESC button brings about a stepwise back to the basic display.

Any setting changed in the meantime is retained.
- **VIEW button**

Pushing the four-way keys will cause a jump from the transmitter's base screen or from almost any menu position to the "Servo display" menu.
- **TLM button**

Pushing the TLM key will cause a jump from the transmitter's base screen or from almost any menu position to the "Telemetry" menu.



### Note

In the event the four way keys do not exhibit any functionality immediately after switching the transmitter off and then on again right away, this is not a fault. Just switch the transmitter off again then wait for several seconds before switching it on again.

## Short-Cuts

- **CLEAR**

Simultaneous touch of the left and the right selection keys of the left four way keys will restore the active entry field's changed parameter value back to its default value.

- **"Servo display"**

Pushing the four-way keys will cause a jump from the transmitter's base screen or from almost any menu position to the "Servo display" menu.

- **"Telemetry" menu**

Pushing the TLM key will cause a jump from the transmitter's base screen or from almost any menu position to the "Telemetry" menu.

- Within the "Setting & data view" sub-menu of the "Telemetry" menu, it is possible to recall the sensor selection by pushing simultaneously the left and the right selection keys.
- The desired sensor can be selected in a rotation order through the upper and lower selection keys.

Push the ESC key to come back to the exit position.

- **Telemetry data display**

You can move from the base display of the transmitter to the "Telemetry data display" pushing one of the selection keys.

- Within the "Telemetry data display" you can recall the list of the selectable sensors through the upper and lower selection keys.
- Push the ESC or ENT key to move back to the base display.



### Note

A complete description of the "Telemetry menu" and "Telemetry data display" can be found in the Part 2 of the manual available for download on [www.graupner.de/Productpage](http://www.graupner.de/Productpage).

- **"HIDDEN MODE"**

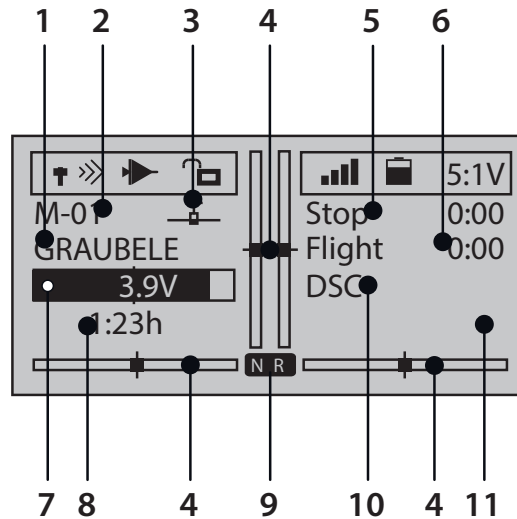
Simultaneously press the left, the right and the lower selection keys of the four-ways key to open the "Hidden mode" menu from the base display of the transmitter as from almost every menu position.

- **Key lock**

The four-way keys can be locked by pushing simultaneously the TLM and VIEW keys for about 1 second in the base display.

- The key lock function is displayed by a lock symbol: The controls remain operational.
- Push again the TLM and VIEW keys for about 1 second to remove the key lock.

## Display and touchpad



1	Model name
2	Memory 1 ... 250
3	Model type display Plane, helicopter, copter, truck, boat models
4	Optical display of the trim position
5	Flight chronometer in min:s (forward/reverse)
6	Flight or drive chronometer in min:s (forward/reverse)
7	Transmitter battery voltage (when a determined threshold is trespassed a warn message is displayed, contemporary a warn signal is emitted).
8	Transmitter use timer since last charge in h:min
9	Display of the transmitter mode
10	Status display
10	Phase name

### Symbols in the info list of the display

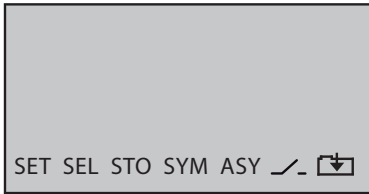
- T** No receiver in range
- »» ▶ Display of the signal strength of the signal coming back from receiver
- 🔒 Button lock inactive / active
- The right info-field is empty in case of not bound model memory
- 📶 The active model memory is bound to a receiver
- 🔌 0.0V No connection to receiver
- 🔌 5.2V Current operating voltage of the receiver power supply with symbol display of the power supply charge state

### Display of the transmitter mode

NR: normal mode

TP: Teacher/pupil mode

## Function field in the display

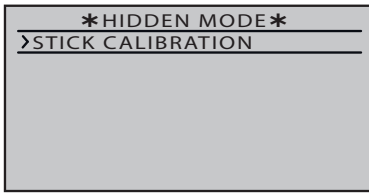


Depending on the given menu, certain function fields will appear on the bottom display line.

A marked function is activated by pushing the ENT key.

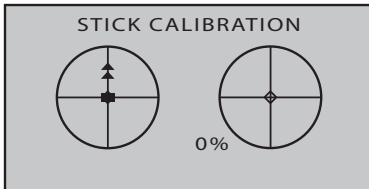
<b>SET</b>	<b>(SET)</b>	
<b>SEL</b>	<b>(SELECT)</b>	
<b>STO</b>	<b>(STORE)</b>	
<b>SYM</b>		Set values symmetrically
<b>ASY</b>		Set values asymmetrically
/-		Switch symbol field (assignment of all types of switches)
[ ]		After the selection of the so marked column change to the following page Come back with ESC

## Hidden mode



Simultaneously press the left, the right and the lower selection keys of the four-ways key to open the "Hidden mode" menu from almost every menu position.

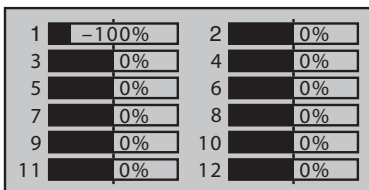
## Stick calibration



If the middle position of the self neutralizing control stick is not exactly 0% of the control course, this can probably be corrected in this menu.

### Verifying the stick calibration step by step

1. Change to the "Model memory" menu.
2. Initialize a free model memory with a suitable model memory.
3. Nothing should be changed in the settings and trim positions.
4. Change to the "Servo display" menu push the VIEW key of the four-way key.
5. If all of the self neutralizing control sticks is in its middle position, the display of the control channels 2 ... 4 should look like the representation on the left.



The not self neutralizing control stick of the channel 1 is placed, according to this display, on its end point on the idle position side.

If the display looks as shown, everything is ok and the previously created model memory can be deleted again.

If the display deviates from the desired values, these can be calibrated in the "Stick calibration" sub-menu of the "HIDDEN MODE" menu.

### Stick calibration step by step

1. Leave the model memory created as described in "Checking the stick Calibration Step-by-Step" activated.
2. Push simultaneously the left, the right and the lower selection keys.
3. Push the ENT button of the right four-way button.  
The two flashing arrows indicate the actual position of the control stick to be calibrated.
4. Possibly use the selection buttons on the left four-way button to select the position of the control stick to be calibrated.
  - Gently push the control stick to the end points.
5. Push the ENT key.
6. Use the same procedure for the control stick positions.
7. Push the ESC key to stop the procedure.



## Binding a receiver

Model memory	M. Type phase	Servo setting	Ctl setting
D/R Expo	<b>Tx setting</b>	Thr. curve	Wing mix

To establish a connection with the transmitter, **Graupner** HoTT receivers must first be "bound" to at least one model memory in "its" **Graupner** HoTT transmitter. This process is generally called "binding" and it can be repeated all the times it is needed.

This binding of a receiver is normally performed always model memory specifically, but it can be changed in every moment to transmitter specific, for every not-bound model memory of the same transmitter in the menu line "Binding type".

The complete sequence of the binding process results from the combination of the description of the transmitter-side part of the binding process in part 2 of the transmitter instructions as well as from the description of the receiver-specific procedure to be found in the respective receiver manual.

### Basic procedure step by step

1. Move transmitter and receiver at a moderate distance from each other.
2. Switch the **mz-12 Pro HoTT** transmitter on without RF module or set the RF module on "OFF" in the "RF module" line of the "Tx setting" menu.
3. Select the "Tx setting" menu in the transmitter.
4. Push the ENT key.
5. Use the selection keys to move to the "Bound receiver" line.
6. Switch the receiver system power supply on.

Control mode	2
Receiver output	=>
Rx bind	---
Range test	99sec
▶ RF module	OFF

Control mode	2
Receiver output	=>
▶ Rx bind	---
Range test	99sec
RF module	OFF

### ... Receiver with SET button

7. Push the SET button on the receiver for approx. 3 seconds.

### ... Receiver without SET button

7. The receiver is automatically in binding mode for a few seconds after switch on.
8. Push the ENT key on the transmitter to start the binding process on the transmitter side.

If the LED on the receiver indicates the correct connection according to its description and in the value field of the line "Bound receiver" appears the abbreviation of the receiver name, the binding process has been completed successfully. Otherwise change the positions of the devices and repeat the entire procedure.

## Adjusting the control mode

▶ Control mode	2
Receiver output	=>
Rx bind	---
Range test	99sec
RF module	OFF
▼	

The transmitter is sent out of the factory with the control mode 2 software. That is the reason why also every new model memory will be initialized with the control mode 2.

However, this default value can always be adapted to the user's own habits in the "Control mode" line of the "Tx settings" menu.

### Change control model step-by-step

1. Move to the "Tx settings" menu.  
*The value field of the "Control mode" line is already framed.*
2. Push the ENT key.
3. Set the desired control mode through the selection keys:
4. Push the ENT key.
5. Leave the menu pushing the ESC key.

|| The following control modes are available:



- (Fixed-wing models)

MODE 1 (Throttle right)	MODE 2 (Throttle left)
MODE 3 (Throttle right)	MODE 4 (Throttle left)



- (Helicopter models)

MODE 1 (Throttle right)	MODE 2 (Throttle left)
MODE 3 (Throttle right)	MODE 4 (Throttle left)



(Copter)

MODE 1 (Throttle/Pitch right)	MODE 2 (Throttle/Pitch left)
MODE 3 (Throttle/Pitch right)	MODE 4 (Throttle/Pitch left)

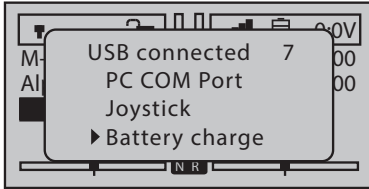


(Truck and boat models)

MODE 1 (for/backward right)	MODE 2 (for/backward left)
MODE 3 (for/backward right)	MODE 4 (for/backward left)

## Display "USB connected"

### Charge the battery

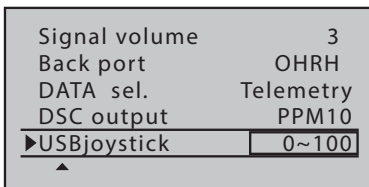


As long as a USB cable is connected to the switched-off transmitter and this is connected to a suitable USB power source, the transmitter is automatically charged until the battery is full.

If the transmitter is switched on during a charging process, a selection menu appears in the display. In this "Charge battery" is activated by default and a time display up on the right counts backwards from 10:

- You can wait until this window disappears or the operation is abbreviated by pressing the ENT key.
- Within the remaining time, one of the other two lines can be selected with the selection keys, and then the ENT key can be pressed.

### Joystick



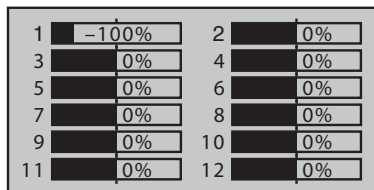
The "Joystick" line must be selected if the transmitter is to be recognized as a "joystick" by a PC connected via USB cable, for example, to operate a flight simulator.

In the "USBjoystick" line of the "General settings" menu the control course can be adjusted within 0 ... 100% or from -100% to +100%. The standard setting suitable for the most flight simulators is 0 ... 100%.

### PC COM Port

Select the "PC COM Port" line if the transmitter is connected to a PC for update reasons.

## Servo display



The graphical representation of the current servo position can be recalled at any time by pushing the VIEW key of the right four-way keys from the base display so as from almost every other menu positions.

The current setting of each servo is displayed precisely between -150% and +150% of the normal path taking into account the control and servo settings, dual rate/expo functions, the interaction between the linear and curve mixes, etc.

0% equals the middle position of the servo.



### Attention

All the program steps on the model have to be tested before first use to make sure there are no errors!

- For fixed wing models, the display follows the assignment below:

Bar 1	Throttle/brake servo or speed controller
Bar 2	Aileron or left aileron
Bar 3	Elevator or elevator/rudder in a V-tail
Bar 4	Rudder or rudder/elevator in a V-tail
Bar 5	Aileron right / free channel
Bar 6	Free or flap or flap left
Bar 7	Free or flap right
Bar 8	Free or 2nd elevator servo
Bar 9	Free or special function
Bar 10	Free or special function
Bar 11	Free or special function
Bar 12	Free or special function

- For helicopter models, the display follows the assignment below:

Bar 1	Pitch or roll (2) or nick (2) servo
Bar 2	Roll (1) servo
Bar 3	Nick (1) servo
Bar 4	Tail servo (gyro)
Bar 5	Nick (2) servo
Bar 6	Throttle servo or governor
Bar 7	Gyro
Bar 8	Speed controller
Bar 9	Free or special function
Bar 10	Free or special function
Bar 11	Free or special function
Bar 12	Free or special function

- The display follows the assignment below for copter models:

Bar 1	Pitch
Bar 2	Roll
Bar 3	Nick
Bar 4	Yaw
Bar 5	Free or special function
Bar 6	Free or special function
Bar 7	Free or special function
Bar 8	Free or special function
Bar 9	Free or special function
Bar 10	Free or special function
Bar 11	Free or special function
Bar 12	Free or special function

- The display follows the assignment below for trucks:

Bar 1	Throttle/brake or forward/backward function
Bar 2	Left/right function
Bar 3	Free or special function
Bar 4	Free or special function
Bar 5	Free or special function
Bar 6	Free or special function
Bar 7	Free or special function
Bar 8	Free or special function
Bar 9	Free or special function
Bar 10	Free or special function
Bar 11	Free or special function
Bar 12	Free or special function

Pushing the ESC key of the right four-way keys you turn back to the related output point.



#### Notes

- The servo display refers exclusively to the original sequence of the servos. It does not refer to any changes to the outputs made in the "Transmitter settings" menu, or via telemetry in the "Receiver output " sub-menu of the "Transmitter setting" menu.
- The count of the channels displayed in this menu refers to the 12 control channels available in this transmitter **mz-12 Pro HoTT**. The number of usable channels depends on the type of receiver as well as the number of connected servos and may therefore be significantly less.

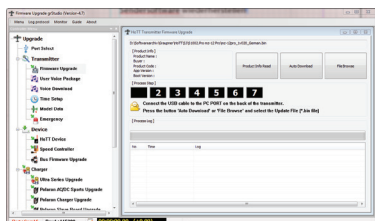
## Firmware update

Firmware updates of the transmitter are carried out via the back micro USB port and the setting "PC COM Port" in the transmitter using a laptop or PC with Windows 7 ... 10.

The required programs and files are enclosed in a software pack and can be found for the corresponding product at [www.graupner.de](http://www.graupner.de).

Download this software package from the Internet, and unpack it on your Windows PC or laptop.

The update is carried out via the "Firmware Upgrade" 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 singularly download these from the download page of the product at [www.graupner.de](http://www.graupner.de).



### Notes

- Please note that compatible firmware is required for reliable communication between the HoTT components. The programs and files that are required for updates are therefore combined into a single pack that is currently named "HoTT\_Software\_V4.zip".
- Only operate your transmitter using the current software version. The current firmware version can be found on the Internet at [www.graupner.de](http://www.graupner.de).

## Transmitter software update

### *Perform update step by step*

1. *Before each update check the transmitter battery charge status.*
2. *Connect the back micro USB port of the switched off transmitter through the included USB cable to a PC.*
  - *Do not disconnect the link to the computer during an update! Make sure that the link between the transmitter and computer is operational.*
3. *Switch the transmitter on, select in "PC COM Port" in the display and push the ENT key.*
4. *Select the correct COM port in the program part "Port select" of the "Firmware\_Upgrade\_gr\_Studio".*
5. *Launch the "Firmware\_Upgrade\_gr\_Studio" and store for safety reasons all the occupied model memories through the program part "Model Data" to be able to restore them.*
6. *Launch the "Firmware Upgrade" program section of the program "Firmware\_Upgrade\_gr\_Studio".*



7. *Select "Load automatically" or "Open file".*
8. *Select the "mz-12Pro\_...bin" file.*  
*The data transfer to the transmitter begins.*
9. *The end of the data transfer will be indicated by the update program. The transmitter indicates the end of the transfer through the power on melody.*
10. *Switch off the transmitter and interrupt the USB connection to the PC.*
11. *After each update, check if the model functions are correct.*

## Restoring the transmitter software

If a firmware update for the transmitter is unsuccessful or the transmitter program freezes and the transmitter cannot be turned off using the "POWER" switch, then remove the transmitter's battery after setting the switch to "POWER = OFF" position, or pull the plug from the transmitter battery. While making sure that the POWER switch is in the "OFF" position, wait a few seconds and then reconnect the disconnected battery.

In this case as well, download a current software package, as described at the beginning of this section, from the Internet and unzip it in your computer or, if you have already done this, start the "Firmware\_Update\_gr\_Studio" and follow the information in the section "Restoration" in the instructions provided in the software package.



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## SIMPLIFIED DECLARATION OF CONFORMITY

**Graupner/SJ** hereby declares that the **S1002.Pro mz-12 Pro HoTT** complies with the Directive 2014/53/EU.

The full text of the EU Declaration of Conformity is available at the following Internet address: **[www.graupner.de](http://www.graupner.de)**

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## 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.

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

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## 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.

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## Warranty certification

*Graupner/SJ* GmbH, 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.

These operating instruction are exclusively for information purposes and are subject to change without prior notification. The current version can be found on the Internet at **[www.graupner.de](http://www.graupner.de)** on the relevant product page. In addition, the company *Graupner/SJ* has no responsibility or liability for any errors or inaccuracies that may appear in construction or operation manuals.

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