

REELY

Ⓒ Operating Instructions

10-channel remote control “HT-10”, 2.4 GHz

Item No. 1518204

CE

Table of Contents



| | Page |
|---|------|
| 1. Introduction | 3 |
| 2. Explanation of Symbols | 3 |
| 3. Intended Use | 4 |
| 4. Product Description | 4 |
| 5. Scope of Delivery..... | 5 |
| 6. Safety Notes | 5 |
| a) General..... | 5 |
| b) Operation..... | 6 |
| 7. Battery and Rechargeable Battery Notes | 7 |
| 8. Charging Rechargeable Batteries..... | 8 |
| 9. Operating Elements of the Transmitter | 9 |
| 10. Setting up the Transmitter..... | 10 |
| a) Inserting the Batteries..... | 10 |
| b) Switching on the Transmitter | 10 |
| c) Setting the Control Stick Length..... | 11 |
| 11. Setting up the Receiver | 12 |
| a) Connecting the Receiver | 12 |
| b) Mounting the Receiver..... | 14 |
| 12. Installing the Servos | 15 |
| 13. Setting the Trim..... | 16 |
| 14. Checking the Servo Directions of Travel..... | 17 |
| 15. Switching the Servo Directions of Travel | 18 |
| 16. Conversion of the Control Lever Functions | 19 |
| 17. Changing the Control Lever Allocation | 20 |
| 18. Mixer Function..... | 21 |
| 19. Switching the Digital Code..... | 25 |
| 20. Binding Function..... | 26 |
| 21. Simulator Function, Student Transmitter Function..... | 27 |
| 22. Maintenance and Care | 27 |
| 23. Troubleshooting | 28 |
| 24. Disposal | 29 |
| a) Product..... | 29 |
| b) Batteries/Rechargeable Batteries..... | 29 |
| 25. Declaration of Conformity (DOC)..... | 29 |
| 26. Technical Data | 30 |
| a) Transmitter..... | 30 |
| b) Receiver | 30 |

1. Introduction

Dear Customer,

thank you for purchasing this product.

This product complies with the statutory national and European requirements.

To maintain this status and to ensure safe operation, you as the user must observe these operating instructions!



These operating instructions are part of this product. They contain important notes on commissioning and handling. Also consider this if you pass on the product to any third party. Therefore, retain these operating instructions for reference!

If there are any technical questions, please contact:

International: www.conrad.com/contact

United Kingdom: www.conrad-electronic.co.uk/contact

2. Explanation of Symbols



The exclamation mark in a triangle indicates important notes in these operating instructions that must be observed strictly.



The arrow symbol indicates that special advice and notes on operation are provided.

3. Intended Use

The 10-channel remote control "HT-10" is solely designed for private use in the field of model construction and the operating times associated with it. This system is not suitable for industrial use, such as controlling machines or equipment.

Any use other than that described above can damage the product and involves additional risks such as short circuit, fire, electric shock, etc. The product must not be technically modified or rebuilt! The safety information must be observed at all times!



Observe all safety information in these operating instructions. They contain important information on handling of the product.

You are solely responsible for the safe operation of your remote control and your model!

4. Product Description

The 10-channel remote control system "HT-10" is a radio control system that is mainly ideal for function models such as excavators or crawler vehicles. If necessary, the remote control can also be used to control model planes, model vehicles, model ships or simple 4-channel model helicopters (speed-controlled).

The various driving and steering functions can be remote-controlled separately using the ten proportional control channels.

The ergonomic casing fits comfortably into your hand and allows for easy and safe operation of the model and the transmitter.

For operation, 4 AA/mignon batteries (e.g. Conrad item no.: 652507, pack of 4, order 1x) are required for the transmitter.

Where no drive or flight controller with BEC switch is used, you need 4 AA/mignon batteries for the receiver (e.g. Conrad item no. 652507, pack of 4, order 1x) or 4 AA/mignon rechargeable batteries with the corresponding battery holder. Alternatively, 4- or 5-cell NiMH receiver batteries (rated voltage 4.8 - 6.0 V) can also be used with the switch cable.

5. Scope of Delivery

- Remote control transmitter
- Remote control receiver
- Binding plug
- Latching bracket with screws
- Operating instructions on CD

Current operating instructions

Download the current operating instructions via the link www.conrad.com/downloads or scan the QR code displayed. Observe the instructions on the website.



6. Safety Notes



In case of damage caused by non-compliance with these operating instructions, the warranty/guarantee will expire. We do not assume any liability for consequential damage!

We do not assume any liability for property damage or personal injury caused by improper use or non-compliance with the safety instructions! In such cases the warranty/guarantee is voided.

Normal wear and tear in operation and damage due to accidents (like the receiver aerial being torn off, the receiver casing broken etc.) are excluded from the warranty.

Dear customer, these safety instructions are not only for the protection of the product but also for your own safety and that of other people. Therefore, read this chapter very carefully before taking the product into operation!

a) General

- The unauthorized conversion and/or modification of the product is inadmissible because of safety and approval reasons.
- This product is not a toy and not suitable for children under 14 years of age.
- The product must not get damp or wet.
- Taking out private liability insurance is recommended. If you already have one, get some information on whether or not the operation of a radio-operated model is covered by your insurance.
- Do not connect the drive motor to electric models before the receiver system has been installed completely. This ensures that the drive motor does not start unintentionally.
- Do not leave packaging material unattended. It may become a dangerous toy for children.



- Please check the functional safety of your model and of the remote control system each time before you use the model. Watch out for any visible damage such as defective plug connections or damaged cables. All movable parts on the model have to be running smoothly. However, there must be no tolerance or 'play' in the bearing.
- The operation and handling of remote controlled models must be learned! If you have never controlled such a model, start especially carefully to get used to how it responds to the remote commands. Do be patient!
- Should questions arise that are not answered with the help of this operating manual, contact us (contact information, see chapter 1) or another expert.

b) Operation

- If you do not yet have sufficient knowledge on how to deal with remote-controlled models, please contact an experienced model sportsman or a model construction club.
- When putting the device into operation, always turn on the transmitter first. Then switch on the receiver in the model. Otherwise, the model might show unpredictable responses! Avoid directing the tip of the aerial directly towards your eyes.
- Before operating the model, check whether the stationary model reacts as expected to the commands of the remote control.
- When you operate the model, always make sure that no parts of your body, other people or objects come within the dangerous range of the motors or any other rotating drive parts.
- Improper operation can cause serious damage to people and property! Always make sure that the model is in your line of sight and do not operate it at night.
- Only operate your model if your ability to respond is unrestricted. Fatigue or the influence of alcohol or medication can lead to wrong responses.
- Operate your model in an area where you do not endanger any persons, animals or objects. Only operate it on private sites or in places which are specifically designated for this purpose.
- In case of a fault stop operating your model straight away and remove the cause of malfunction before you continue to use the model.
- Do not operate your RC system during thunderstorms, beneath high-voltage power lines or in the proximity of radio masts.
- Never switch off the remote control (transmitter) while the model is in use. To switch off the model, always switch off the motor first, then switch off the receiver. Only then may the remote control be switched off.
- Protect the remote control from dampness and heavy dirt.
- Do not expose the remote control to direct sunlight or excessive heat for a long period of time.
- If the batteries in the remote control are low, the range decreases. If the receiver batteries or rechargeable battery in the receiver are low, the model will not respond correctly to the remote control.
If this is the case, stop driving immediately. Replace the batteries with new ones or recharge the receiver's rechargeable battery.
- Do not take any risks when operating the product! Your own safety and that of your environment depends completely on your responsible use of the model.

7. Battery and Rechargeable Battery Notes



Although use of batteries and rechargeable batteries in everyday life is a matter of course today, there are many dangers and problems. Therefore, always observe the following information and safety notes in handling of batteries and rechargeable batteries.

- Keep batteries/rechargeable batteries out of the reach of children.
- Do not leave any batteries/rechargeable batteries lying around openly. There is a risk of batteries being swallowed by children or pets. If swallowed, consult a doctor immediately!
- Batteries/rechargeable batteries must never be short-circuited, disassembled or thrown into fire. There is a danger of explosion!
- Leaking or damaged batteries/rechargeable batteries can cause chemical burns to skin on contact; therefore, use suitable protective gloves.
- Liquids leaking from batteries/rechargeable batteries are chemically highly aggressive. Objects or surfaces that come into contact with them may take severe damage. Therefore, keep batteries/rechargeable batteries in a suitable location.
- Do not recharge normal batteries. There is a risk of fire and explosion! Charge only rechargeable batteries intended for this; use suitable chargers.
- Always observe correct polarity (positive/+ and negative/-) when inserting the batteries/rechargeable batteries.
- If the device is not used for an extended period of time (e.g. storage), remove the inserted batteries/rechargeable batteries from the remote control and the car to avoid damage from leaking batteries/rechargeable batteries.
- Recharge the rechargeable batteries about every 3 months. Otherwise, so-called deep discharge may result, rendering the rechargeable batteries useless.
- Before using your model, always check the battery or rechargeable battery condition. Replace the flat/used batteries with new ones or recharge the rechargeable batteries completely.
- Always replace the entire set of batteries or rechargeable batteries. Never mix fully charged batteries/rechargeable batteries with partially discharged ones. Always use batteries or rechargeable batteries of the same type and manufacturer.
- Never mix batteries and rechargeable batteries!
- For reasons of operational safety, only use batteries and rechargeable batteries for the remote control transmitter.

8. Charging Rechargeable Batteries

If you use rechargeable batteries for power supply of the receiver, they are usually flat at delivery and must be charged.

→ **Observe:**

Before a rechargeable battery reaches maximum capacity, several complete discharge and charge cycles are necessary.

Always discharge the rechargeable battery at regular intervals, since charging a "half-full" rechargeable battery several times can cause a so-called lazy battery effect. This means that the rechargeable battery loses capacity. It no longer provides all of its stored energy, and the operating time of the model is reduced.

If you use several rechargeable batteries, purchasing a high-quality charger may be worthwhile. Such a charger usually has a quick-charging feature.

9. Operating Elements of the Transmitter

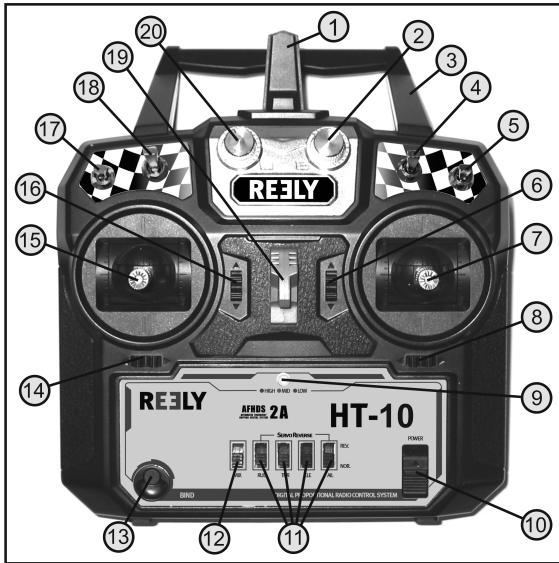


Figure 1

- | | |
|-------------------------------------|--------------------------------------|
| 1 Transmitter aerial | 11 Reverse switch for channel 1 - 4 |
| 2 Dial switch for channel 8 | 12 Mixer switch |
| 3 Carrying handle | 13 Binding button |
| 4 Switch for channel 9 | 14 Trimming button for channel 4 |
| 5 Switch for channel 10 | 15 Control stick for channel 3 and 4 |
| 6 Trimming button for channel 2 | 16 Trimming button for channel 3 |
| 7 Control stick for channel 1 and 2 | 17 Switching button for channel 5 |
| 8 Trimming button for channel 1 | 18 Switching button for channel 6 |
| 9 LED Display | 19 Carrying belt eyelet |
| 10 On/off switch | 20 Dial switch for channel 7 |

→ The toggle switches for channels 5, 6, 9 and 10 each have a centre position and two end positions. The switches for channels 5 and 6 are buttons that independently spring back to the middle position. The switches for channels 9 and 10 remain in the respective switching position until they are actuated again.

Servos that are operated on the four switch channels can be switched to three different positions with the switches.

Servos operated on channels 7 and 8 can be controlled smoothly from one end stop to the other with the two dial switches.

10. Setting up the Transmitter

→ In the further course of these instructions, figures in the text always refer to the adjacent figure or the figures within the section. References to other figures are indicated with the corresponding figure number.

a) Inserting the Batteries

For the power supply of the transmitter you will need 4 alkaline batteries (e.g. Conrad item no. 652507, pack of 4, order 1x) of the size AA/mignon.

Proceed as follows to insert the batteries:

The battery compartment lid (1) is located on the back of the transmitter. Press the corrugated area (2) and push off the lid downwards.

Ensure that the polarity is correct when inserting the 4 batteries. A corresponding note (3) is located on the bottom of the battery compartment.

Then slide the lid of the battery compartment back on from the bottom until the locking mechanism engages.

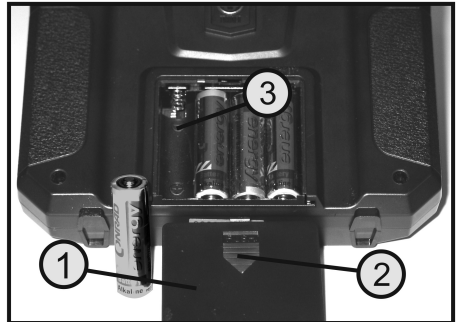


Figure 2

b) Switching on the Transmitter

When new batteries are inserted, switch on the transmitter with the function switch (see figure 1, item 10) for test purposes. For this, slide the operating switch from the bottom (off) to the top (on).

The transmitter emits a short signal sound and the LED display (also see figure 1, item 9) lights up green permanently.

If the voltage supply drops below 5 V, the LED display switches from green to orange to red and thus indicates threatening undersupply of the transmitter. The model should then no longer be operated.

When the voltage drops below 4.2 V, the LED display starts flashing red and the transmitter emits acoustic warning sounds at regular intervals. In this case, operation of the model must be ceased as quickly as possible. Insert new batteries for further operation of the transmitter.

After you have verified the correct function of your transmitter, switch it off again.

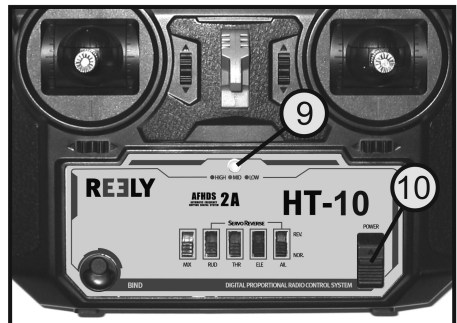


Figure 3

c) Setting the Control Stick Length

You can adjust the length of the control sticks, depending on your steering habits.

To do so simply hold the bottom part of the grip (1) and turn the upper part (2) up anti-clockwise.

You can now set the length of the control lever by turning the bottom part of the grip.

Finally, tighten the upper part of the grip back up.

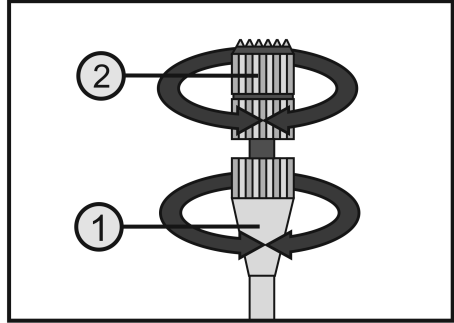


Figure 4

11. Setting up the Receiver

a) Connecting the Receiver

The receiver offers connection options for up to 10 servos (channels 1 to 10 correspond to the receiver outputs "CH1" to "CH10"). The servos can also be replaced by motor/speed controllers or switching elements.

If the remote control is used for a plane/helicopter model, the receiver outputs "CH1" to "CH4" are assigned to the following functions:

"CH1" = Aileron/roll servo (AIL*)

"CH2" = Elevator/nod servo (ELE*)

"CH3" = Throttle servo, flight/speed controller (THR*)

"CH4" = Rudder/tail servo (RUD*)

* The three letters in brackets correspond to the English abbreviations for the function designations. The reverse switches for channels 1 - 4 (see figure 1, item 11) are also labelled with these abbreviations.

At the "B/VCC" connection, a battery box (1) or a receiver battery with switch cable (2) is connected if no flight controller with BEC switch is used.

If 2 servos are needed for a steering function (e.g. the aileron steering at plane models), the servos must be connected via a V-cable to the receiver output "CH1". For the ailerons to deflect alternatingly, the servos must be installed in the wing mirror-inverted.

The receiver also offers a connection option for I-Bus-capable servos and sensors (see figure 5, item 3). In combination with the remote control system "HT-10", these connections are, however, not assigned or used.

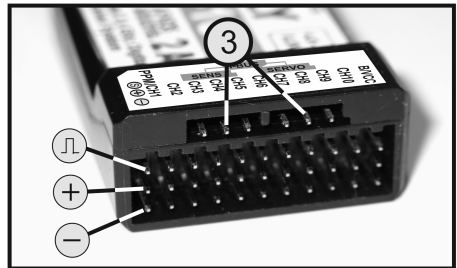
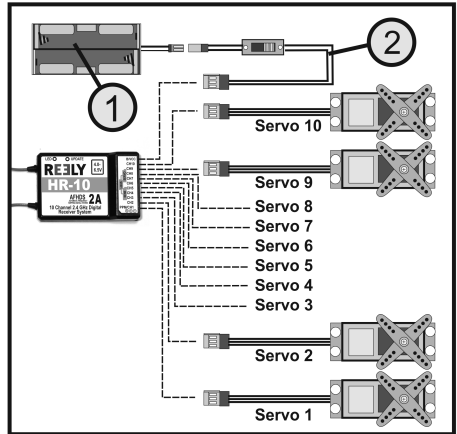
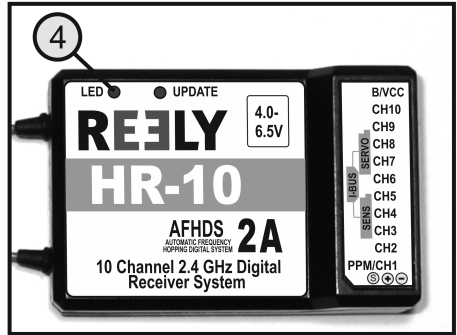


Figure 5

→ When using servos with high power demand, we recommend to always use a receiver battery pack.
The connections are designed for Futaba plug connectors. If required, you can also easily use JR plugs or plug connectors of the same build.



Important!

When connecting servos and speed controllers, always make sure of correct polarity of the plug connectors. The plug-in contact for the impulse line (yellow, white or orange, depending on the manufacturer) must be connected to the upper pin contact (see lower illustration in figure 5). The plug contact for the negative line (black or brown, depending on the manufacturer) must be connected to the bottom pin contact.

First, switch on the transmitter and then the receiver. If the binding function is working correctly, the red LED indicator in the receiver (see figure 5, item 4) lights up and the ten servos react to the movements of the control levers, switches and dial switches. The assignment of which servo is operated with which control element at the transmitter is evident from figure 1. Verify correct receiver function and then switch the receiver off again.

→ If the servos do not react and the LEDs in the receiver do not light up, perform binding (see chapter 20).

b) Mounting the Receiver

Installation of the receiver depends on the model. For this reason, you should always follow the recommendations of the model manufacturer regarding the installation.

Regardless of the model, you should always try to install the receiver so that it is protected from dust, dirt, moisture, heat and vibration in the best possible way.

Keep enough distance from motors and electronic flight or speed controllers. Metal or carbon parts have a shielding effect and thus may considerably impair reception. In this case, it is sensible to relocate the aerials outwards through a bore in the fuselage.

Two-sided adhesive foam (servo tape) or rubber rings that hold the foam-wrapped receiver securely in place are suitable for fastening.



Attention!

The length of the two aerials (1) is determined precisely. For this reason, you must not bend or cut off the aerials or the aerial lines.

This would decrease the range significantly and thus pose a considerable safety risk.

Important!

The receiver has two separate HF-receiver parts that are equipped with a receiver aerial each.

To achieve the maximum possible reception line, the two aerials must be placed at a 90°-angle to each other (see figure 6).

It is not relevant if one aerial is placed to the right and the other up or one to the left and the other down. It is only important that the two aerials are at a 90° angle to each other.

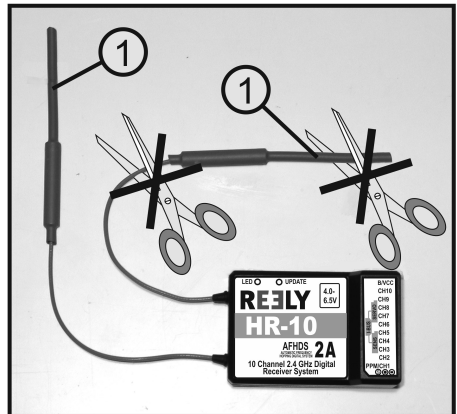


Figure 6

12. Installing the Servos

The installation of a servo (1) always depends on the particular model used. Detailed information on this can be found in the construction documents of the model. Generally, however, try screwing in the servos in a vibration-dampened manner. This is why rubber bushings (2) with metal sleeves (3) are usually included with the servos.

When linkages are stiff, the servos cannot assume the required positions. This causes higher power consumption and the model cannot be controlled properly. The linkages must work as smoothly as possible without having any play in the bearings or deflections.

Before installing the servo lever, take the transmitter and then the receiver into operation and check the trim at the remote control transmitter for correct middle position (see following chapter).

Then always mount the servo stick at a 90° angle to the linkage rods (see figure 8, sketch A).

The servo lever is at an angle to the linkage rod (see figure 8, sketch B), the control paths of the two control directions will be unequal in spite of the same turning angle.

A slight mechanical inclination due to interlock of the servo levers may be corrected with the trim later.

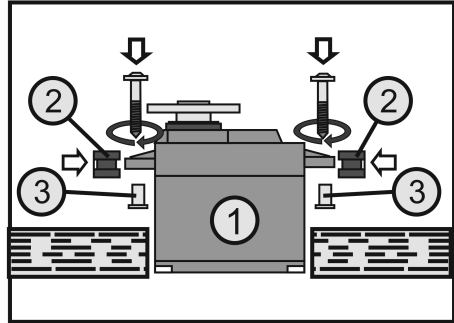


Figure 7

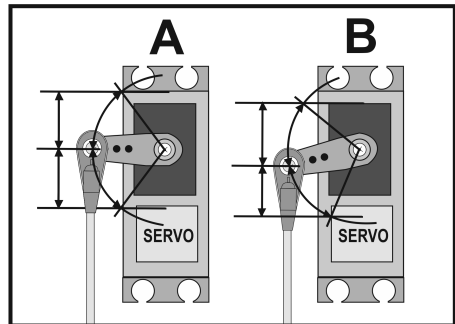


Figure 8

13. Setting the Trim

The trim mostly serves to correct the slight inclination of the servo levers for channels 1 to 4 due to the interlock and the connected irregular control movements. Additionally, there is the option to adjust the model in operation precisely, e.g. if it is not flying straight although the control lever is in the middle position.

Then the linkage or rudder rods must be adjusted so that the trim has its original value (90°-range between servo lever and rods) again and the model still runs straight.

The remote control "HT-10" has a finely tuned digital trimming with which each control channel can be individually set with a trimming button (also see figure 1, items 6, 8, 14 and 16).

The trimming buttons are assigned the following control functions:

Trimming button 6 = elevator/nod servo (ELE) "CH2"

Trimming button 8 = aileron/roll servo (AIL) "CH1"

Trimming button 14 = rudder/tail servo (RUD) "CH4"

Trimming button 16 = throttle servo, flight/speed controller (THR) "CH3"

To check the setting of the digital trimming, first switch on the transmitter and then the receiver.

If a trimming button is moved to the side or up or down and held, the transmitter will emit brief signal sounds in a quick sequence. The servo of the respective control channel will change the position of the servo lever in small steps. When the end of the trimming range is reached, the signal sounds go out and the servo lever stops turning. If the trimming button is then deflected in the opposite direction and held, the signal sounds sound again and the servo lever turns back to the middle position step by step.



Figure 9

When the middle position of the trimming range has been reached, the remote control issues a longer signal sound.

Now set the middle positioning of the trimming in all four channels and install the servo levers so that they are at a 90° angle to the rods. Since the servo levers and the servo axis are interlocked, very small inclinations of the servo lever cannot always be avoided. In this case, the trimming of the respective channel must be adjusted slightly from the middle to return to the 90° angle of the servo lever to the linkage rod (see figure 8).

Switch off the receiver and then the transmitter.

→ The set trim value is automatically saved in the remote control and is retained even after switching it off and on.

When using the electrical model with a flight controller, the trim for channel 3 also needs to be set to the middle value.

14. Checking the Servo Directions of Travel

For function, driving or ship models, you can individually specify the driving and steering functions of the control levers, since both control levers are returned to the middle position by spring force. For flight or helicopter models, it is best to comply with the above control lever functions for channels 1 to 4. However, the control lever for the throttle/pitch function can be mechanically changed to no longer return to the middle position (see the following chapters).

Take the transmitter into operation, then the receiver. If the connection is correct, the servos or speed controllers at the outputs "CH1" to "CH10" are to react according to the requirements in the model.

If the servos or speed controllers at channels 1 to 4 react in precisely the opposite manner as the transmitter is controlled, the reverse switches (see following chapter) can swap the running direction of the respective servo.

→ When connecting electronic speed controllers, note that the end points of the available control paths and the middle position for the motor off position must be stored in the speed controller. Further information on this can be found in the documents for the speed controller.



Attention!

Only perform the motor test in an electric model when the model, e.g., is reliably secured on a model stand. Make sure that neither objects nor body parts are in the area of the powered parts.

Important!

Always switch on the transmitter first, then the receiver. When you switch off the devices, always switch off the receiver first, then the transmitter.

Never switch off the remote control as long as the receiver is in operation. This can lead to unexpected reactions by the model!

15. Switching the Servo Directions of Travel

If the movement directions of the servos or the speed controller function at the receiver outputs "CH1" to "CH4" are not as required, you can switch the running direction of the servos or the speed controller function in the transmitter with the reverse switches (also see figure 1, item 11).

The individual switches are assigned as follows:

"AIL" = receiver output channel 1 "CH1"

"ELE" = receiver output channel 2 "CH2"

"THR" = receiver output channel 3 "CH3"

"RUD" = receiver output channel 4 "CH4"

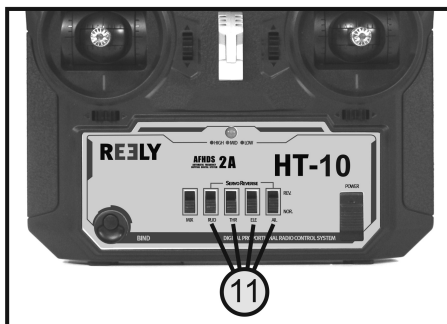


Figure 10

If the switch is in the bottom position, the "regular" running direction is set. If the switch is pushed to the top position, "reversed" running direction is activated.

→ Please observe that the centre position of the servo or the neutral position of the speed controller may have to be adjusted after switching.

16. Conversion of the Control Lever Functions

If you want to control a motor-powered flight model with your "HT-10" remote control, the left control lever must not return to the middle position on its own at forward or reverse movement (throttle/pitch function). It must remain in the position into which it was last moved. For this, the return mechanic must be deactivated and the control lever movement friction must be enlarged.

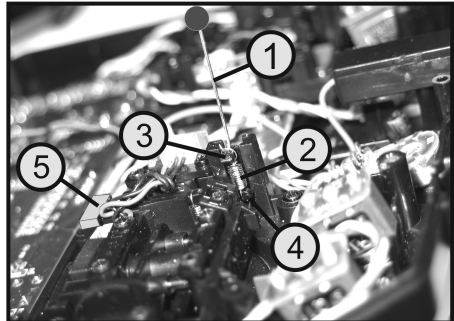
To make the necessary changes, some experience with remote control transmitters is required. Therefore you should consult an experienced model maker or a model construction club if you do not feel capable of undertaking the procedures described in the following.

→ Always convert the control lever mechanics (the right control lever mechanics viewed from the rear with the transmitter open), even if you want to have the throttle/pitch function on the right control lever later! For further notes in this respect, refer to the following section.

Remove the transmitter batteries. Unscrew the four screws by means of a Phillips-tip screwdriver from the rear panel of the transmitter and lift the rear panel carefully.

After you have disconnected the plug connector of the student socket, you can fold the rear of the transmitter down.

Take a pin (1) and bend the tip into a small hook. You can use this tool to easily remove the return spring (2) from the setting hook (3) of the left (the right when viewed from the rear) control lever mechanics.



Then disconnect the lower end of the return spring at the return lever (4) and remove the spring. The setting hook can then be pulled out of the guide upwards.

The return lever cannot be taken out of the mechanics. Therefore, you should fasten it in its bearing with a narrow strip of adhesive type (5) to keep it from slipping and the lever unit from catching.

Then attach the latching bracket (6) enclosed with the remote control according to the lower illustration in figure 11. Observe correct installation position of the bracket. The lower screw (7) must be tightened firmly and the upper screw (8) only until the desired resistance in the control lever movement is reached.

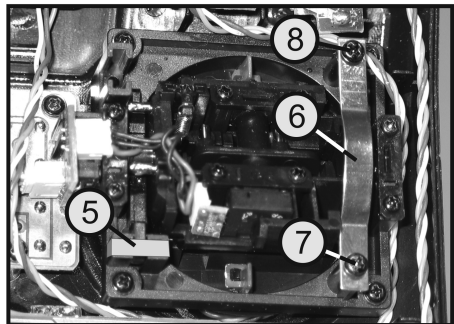


Figure 11

When installed correctly, the control lever for the throttle/pitch function always must remain in the position into which it was last put. Then close the connection plug of the student socket again and place the rear panel on the transmitter housing.

Tighten the four attachment screws again and check for correct function of the remote control.

17. Changing the Control Lever Allocation

If you do not want to operate your motor or helicopter model by controlling the throttle/pitch function with the left control lever (mode II) as intended ex works, but with the right control lever (mode I), the transmitter can be adjusted accordingly.



Important!

First deactivate the return mechanics of the left (the right when viewed from the rear) control lever mechanics as described in the previous section.

For this, loosen the four screws at the control lever units (1) and swap the two units. You need to turn the control lever units by 180° each so that the connections of the control lever potentiometers (2) are aligned to the inside again.

Observe that the connection lines of the toggle switches and the dial switches are not caught and squeezed off.

Then screw on the control lever units again.

To switch the throttle/pitch function electronically as well, use pointed pliers or pincers to pull the jumper (3) from the position "L" and reinsert it in position "R".

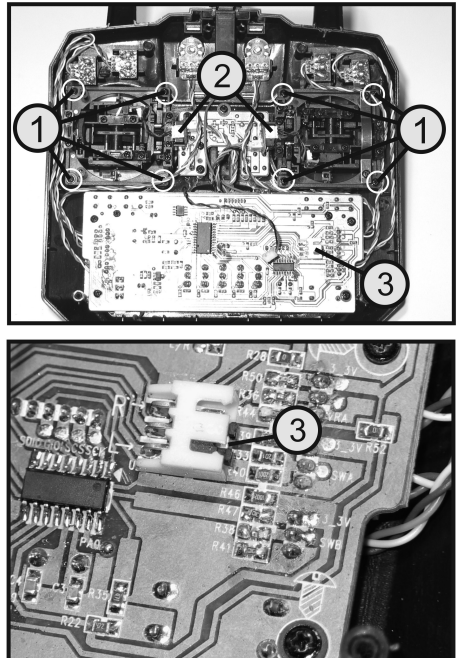


Figure 12

18. Mixer Function

The remote control "HT-10" has a mixer function that can be activated with the mixer switch (also see figure 1, item 12). When the slider is in the bottom position, regular operation without mixer function is active. If the slider is pushed up, channel 1 "CH1" and channel 2 "CH2" will be mixed.

Use of the mixer in a plane model:

For a delta plane model with triangular wing, the ailerons also have to perform the elevator function. For this reason, such models require a mixer. No matter whether the transmitter controls the aileron or elevator function then, the servos at the receiver outputs "CH1" and "CH2" will always react at the same time then.

The servo of the left wing has to be connected to the receiver output "CH1" and the servo of the right wing to the receiver output "CH2". The deflections of the two rudder flaps have to be according to the figures in figure 13.

If required, the servo directions can be corrected with the reverse switches.

→ Figure 13 on the next page shows the assignment of the lever movements to the aileron movements.

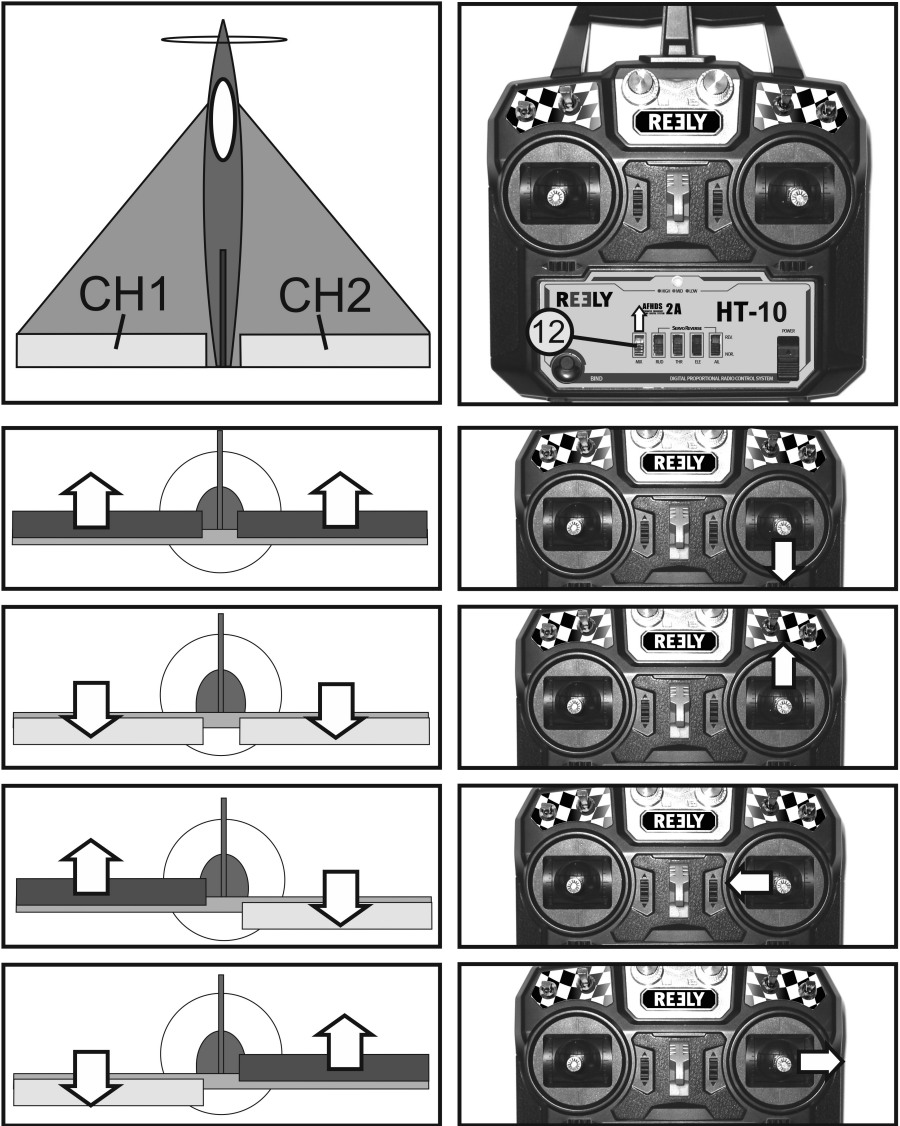


Figure 13

Use of the mixer in a crawler:

In a crawler where every chain is controlled via a dedicated motor with speed controller, channel 2 "CH2" and channel 3 "CH3" can be used for driving. The control then takes place with the two control levers and the mixing function can be switched off. When both control levers are in the centre positions, the vehicle is standing still (see upper illustration in figure 14). If connected correctly, the two drive chains run as the two control levers at the transmitter are moved.

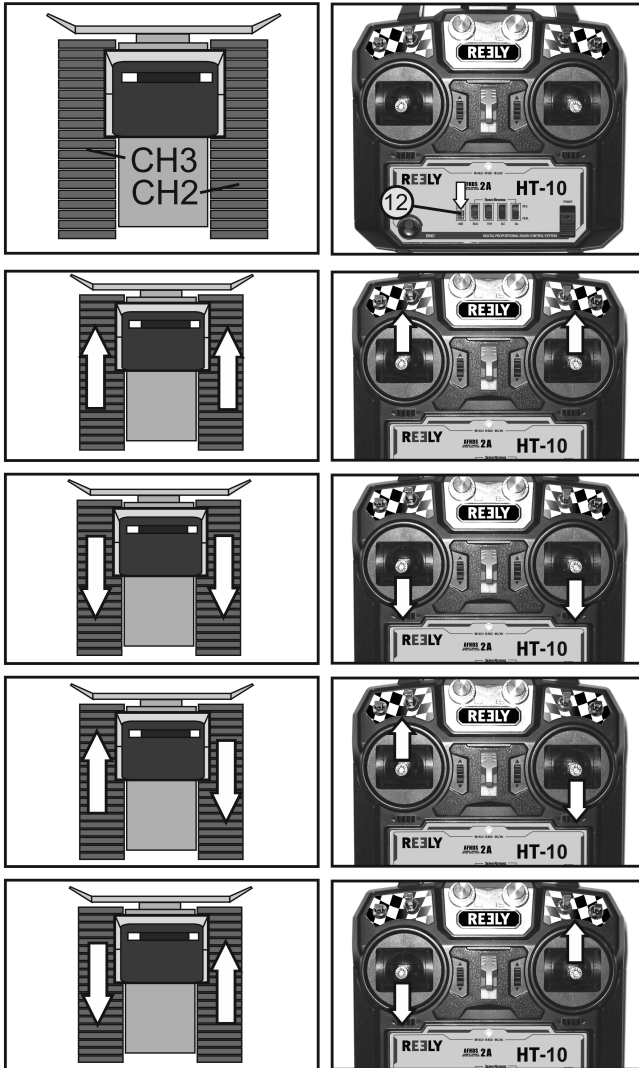


Figure 14

If you want to control only using one control lever, the two speed controllers for the left and right chains must be connected to channel 1 "CH1" and channel 2 "CH2". When the mixer has been activated, the model must react according to figure 15. The left control lever then can be used for other functions, such as when lifting and lowering a clearing shield.

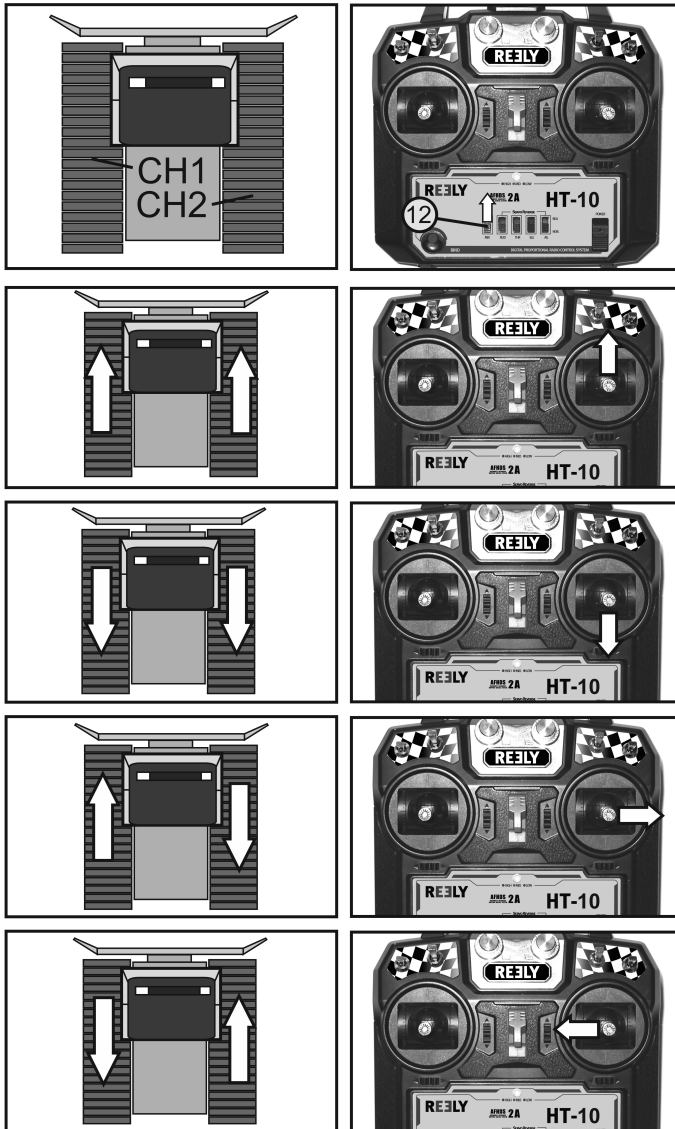


Figure 15

19. Switching the Digital Code

The remote control transmitter enables you to control receivers with the digital code "AFHDS" and "AFHDS 2A". Ex works, the transmitter is set to the enclosed "AFHDS 2A" encoded receiver.

If you want to operate a REELY receiver with the digital code "AFHDS", the transmitter must be switched first and then the receiver must be bound to the transmitter (see following chapter).

To switch the digital code at the transmitter, proceed as follows:

Switch off the transmitter.

Move the two control levers to the lower left corner and keep it there.

Switch on the transmitter with the on/off switch with the control levers deflected.

Release the two control levers so that they move to the centre position.

If the LED display flashes, the transmitter has switched to the digital code "AFHDS". If the LED display flashes and the remote control also issues short signal sounds in a cycle of one second, the transmitter has switched to the digital code "AFHDS 2A".

Switch off the transmitter so that the currently set digital encoding is saved.



Figure 16



Important!

The receiver enclosed with the remote control system "HT-10" works with code "AFHDS 2A". Therefore, always observe that the right code is programmed at the transmitter!

20. Binding Function

To enable transmitter and receiver to work together, they must be bound by the same digital code. In the delivery state, transmitter and receiver are aligned with each other and can be used at once. The binding settings must be renewed mainly after a replacement of the transmitter or receiver or to remove any interferences.

Before you can bind the receiver to the transmitter, check if the transmitter works in the right digital code (see previous chapter).

To perform the binding procedure, proceed as follows:

Transmitter and receiver must be in direct proximity (distance approx. 50 cm).

Switch off the transmitter.

Disconnect any servos that may be connected from the receiver.

Connect the enclosed programming plug (1) to the "B/VCC" connection (2) of the receiver.

The power supply of the receiver (receiver battery or speed controller with BEC) is connected to any output ("CH1" - "CH10") of the receiver.

Switch on the receiver. The receiver LED (3) starts to flash quickly.

Press the binding button at the transmitter (see also figure 1, item 13) and keep the button pressed.

Switch on the transmitter with the on/off switch with the binding button pushed. The transmitter LED display starts to flash quickly.

When the LED in the receiver (3) remains lit after a few seconds, binding has been completed.

Release the binding button at the transmitter.

Switch off the receiver and transmitter and remove the programming plug.

Re-connect the servos/controllers to the receiver.

Check the function of the system.

If the system is not working properly, perform the process again or check the digital code of the transmitter.

→ The LED with label "UPDATE" (see figure 17, item 4) is only activated when installing new firmware. Since the transmitter and the receiver are delivered with the current firmware, an update is required.

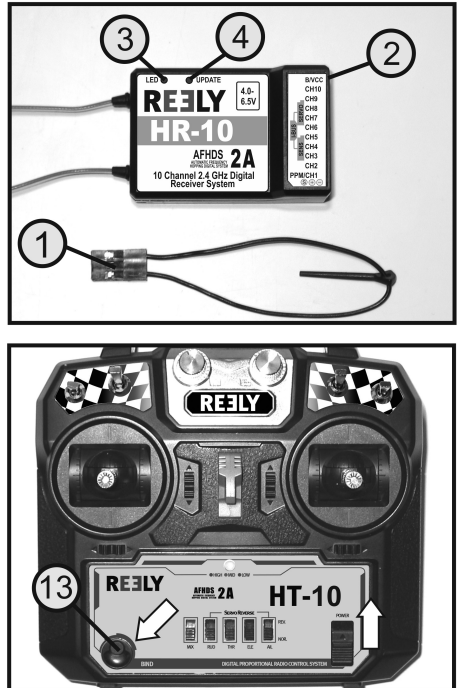


Figure 17

21. Simulator Function, Student Transmitter Function

If required, you can also use the transmitter at the PC for simulations or games. In this case, you will require the optional USB cable (Conrad item no. 517956) and suitable computer software (e.g. flight simulation games, etc.).

The USB cable is connected to the PS2 interface socket (1) at the rear of the transmitter.

At correct connection and proper installation, the activated transmitter is recognised by the operating system (e.g. at least Windows XP or higher) and can be used like a commercial joystick.

For all further information on this, see the operating instructions of the USB cable.

Alternatively, the signal output of the remote control may be used to control a teacher transmitter. In this case, the remote control "HT-10" acts as the student transmitter. Further information on this can be found in the operating instructions of the teacher transmitter.

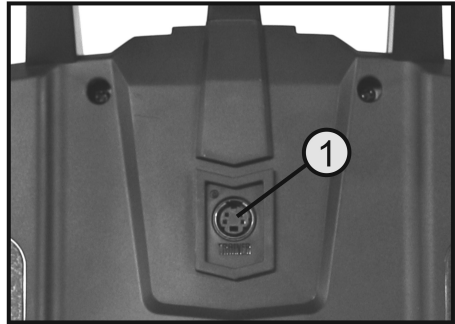


Figure 18

22. Maintenance and Care

Clean the exterior of the remote control with a soft, dry cloth or brush only. Never use abrasive cleaning agents or chemical solutions as these could damage the surfaces of the casings.

23. Troubleshooting

| Problem | Remedy |
|---|--|
| Transmitter doesn't respond | <ul style="list-style-type: none">• Check the batteries in the transmitter.• Check the polarity of the batteries.• Check the battery contacts of the remote control.• Check the on/off switch. |
| The servos do not respond | <ul style="list-style-type: none">• Check the batteries in the receiver.• Test the switch cable.• Test the BEC function of the controller.• Check the polarity of the servo connector.• Check the digital coding of the transmitter.• Perform binding.• For test purposes, change the receiver and bind again. |
| The servos vibrate | <ul style="list-style-type: none">• Check batteries in the remote control and the receiver.• Check connectors on the receiver.• Dry the receiver with a hair dryer in case it has gotten wet.• Check the receiver aerial for damage.• Reorient the receiver aerials in the model for test purposes. |
| A servo hums or chirps | <ul style="list-style-type: none">• Check the batteries in the receiver.• Make sure the linkage rods run smoothly.• Operate the servo without the servo arm for test purposes. |
| The range of the system is very short | <ul style="list-style-type: none">• Check the batteries in the transmitter and receiver.• Check the receiver aerial for damage.• Install the receiver aerial in a different position in the model for test purposes. |
| Transmitter switches off on its own at once of after a short period | <ul style="list-style-type: none">• Check or replace the batteries in the transmitter.• Check the contacts in the battery compartment. |

24. Disposal

a) Product



Electronic devices are recyclable and should not be disposed of in household waste. Dispose of the product according to the applicable statutory provisions at the end of its service life.



Remove any inserted batteries/rechargeable batteries and dispose of them separately from the product.

b) Batteries/Rechargeable Batteries

You as the end user are required by law (Battery Ordinance) to return all used batteries/rechargeable batteries. Disposing of them in the household waste is prohibited.



Batteries/rechargeable batteries that contain hazardous substances are labelled with the adjacent icon to indicate that disposal in domestic waste is forbidden. The descriptions for the respective heavy metals are: Cd=cadmium, Hg=mercury, Pb=lead (the names are indicated on the battery/rechargeable battery e.g. below the rubbish bin symbol shown on the left).

You may return used batteries/rechargeable batteries free of charge at the official collection points in your community, in our stores, or wherever batteries/rechargeable batteries are sold.

You thus fulfil your statutory obligations and contribute to the protection of the environment.

25. Declaration of Conformity (DOC)

Conrad Electronic SE, Klaus-Conrad-Straße 1, D-92240 Hirschau, hereby declares that this product complies with directive 2014/53/EU.



The complete text of the EU declaration of conformity is available under the following web address:

www.conrad.com/downloads

Choose a language by clicking a flag symbol and enter the item number of the product into the search field; then you may download the EU declaration of conformity in the PDF format.

26. Technical Data

a) Transmitter

Frequency range2.4 GHz
Transmission output<20 dBm (<100 mW)
Channel number10
Encoding.....AFHDS / AFHDS 2A (Automatic Frequency Hopping Digital System)
Signal output.....PS 2 socket (PPM)
Operating voltage6 V/DC via 4 type AA/mignon batteries
Dimensions (W x H x D)174 x 187 x 80 mm
Weight without batteriesapprox. 360 g

b) Receiver

Frequency range2.4 GHz
Channel number10
CodingAFHDS 2A
Connector system.....Futaba
Operating voltage4.0 - 6.5 V/DC
Dimensions (W x H x D)55 x 34 x 15 mm
WeightApprox. 19 g

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