REELY

GB Operating Instructions

Electrical quadrocopter “R5-Foldable FPV Drone” RtF

Item No. 1714585

CE

Table of contents

GB

1. Introduction

Dear customer,

Thank you for purchasing this product.

This product complies with statutory national and European regulations.

To ensure that the product remains in this state and to guarantee safe operation, always follow the instructions in this manual.

These operating instructions are part of this product. They contain important information on setting up and using the product. Do not give this product to a third party without the operating instructions.

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 symbol with an exclamation mark in a triangle is used to highlight important information in these operating instructions. Always read this information carefully.

The arrow symbol indicates special information and advice on how to use the product.

3. Intended use

The "R5-Foldable FPV Drone RtF" electric quadrocopter is an electrically driven helicopter-like model that is wirelessly controlled using the included wireless remote control or a suitable smartphone (not included). The quadrocopter is designed solely for private use within the domain of model construction with the associated operating times.

The model is designed for operation indoors but may also be used outdoors in calm conditions.

It is not suitable for other purposes. Using this product for any purposes other than those described above may damage the product and result in a short circuit, fire, electric shock or other hazards.

The product must not become damp or wet.

This product is not suitable for children under 14 years of age.

Always follow the safety information in these operating instructions. It contains important information on how to handle the product safely.

You are responsible for the safe operation of this model!

4. Delivery content

- Ready-to-fly quadrocopter
- Flight battery
- Wireless remote control transmitter
- Smartphone holder
- USB charging cable
- Propeller guards (2 pcs)
- Screwdriver
- Spare propeller (4 units)
- Operating instructions (on CD)

Up-to-date operating instructions

Download the up-to-date operating instructions at www.conrad.com/downloads or scan the QR code shown. Follow the instructions on the website.

5. Product description

The ready-to-fly "R5-Foldable FPV Drone RtF" quadrocopter features 4 separately controlled motors, each of which drives its own propeller. Using the simultaneous acceleration of all propellers, the quadrocopter can lift off from the ground and, at appropriate propeller speeds, hover steadily in the air.

For stabilisation in flight, the quadrocopter has sophisticated electronics with position and acceleration sensors allowing you to detect uncontrolled movements of the model and compensate them immediately. The quadrocopter is equipped with a barometric air pressure sensor allowing the quadrocopter to stabilise its flight altitude itself.

For flight in a given direction, the electronics in the model detect the control impulses of the transmitter and alter the speeds of the individual motors accordingly. The quadrocopter thus tilts in the desired direction and the lift thereby also acts as thrust. The quadrocopter flies in the respective direction.

On the model, two propellers turn clockwise and two turn anti-clockwise. Through a targeted change of speed of the two propeller groups relative to each other (propellers turning to the right turn somewhat faster and propellers turning to the left turn somewhat slower or vice versa), it is possible to turn (yaw) the quadrocopter around the vertical axis while keeping the altitude the same and keeping the quadrocopter in the same spot. If required, the quadrocopter can even do roll-overs (flips).

Four propeller arms can be folded for easier transport, which means that the model can be transported in a very space-saving manner.

The quadrocopter has an integrated HD camera, which transfers images or even videos via Wi-Fi to a suitable smartphone (not included) during the flight. If necessary, the smartphone can also be used to control the quadrocopter.

To operate the transmitter, you require 3 AAA/Micro type batteries (e.g. Conrad Item No. 652278, please order 3x).

6. Safety instructions

Damage caused due to failure to observe these instructions will void the warranty. We shall not be liable for any consequential damage.

We shall not be liable for damage to property or personal injury caused by incorrect handling or failure to observe the safety information! Such cases will void the warranty/guarantee.

Normal wear and tear during operation (e.g. worn-out engine bearings) are excluded from the guarantee and warranty; the same is also the case for accidental damage (e.g. broken chassis parts or propellers).

Dear customer,

These safety instructions are designed to ensure the safe operation of the product and your personal safety. Read this section very carefully before using the product.

a) General information

Caution, safety hazard!

This model has the potential to cause damage to property and/or individuals. Ensure that you are sufficiently insured, e.g. by taking out private liability insurance.

If you already have such a policy, check with your insurance company that use of this model is covered by the policy.

Important: In some EU countries, you are required to have insurance when using a model aircraft.

Familiarize yourself with the local statutory regulations for using model aircraft. In Germany, for example, the regulations for model aircraft are stipulated in the German Air Traffic Act. Any breaches of the statutory regulations could lead to severe penalties as well as restrictions to your insurance cover.

- The unauthorised conversion and/or modification of the product is prohibited for safety and approval reasons.
- This product is not a toy and is not suitable for children under 14 years of age.
- The product must not become damp or wet.
- If you do not have sufficient knowledge of how to operate remote-controlled models, contact an experienced model user or a model club.
- Do not leave packaging material carelessly lying around, since it could become a dangerous plaything for children.
- Should any questions arise that are not answered by this operating manual, contact our Technical Advisory Service (contact information, see section 1) or another expert.
- The operation and handling of remote controlled quadrocopters must be learned! If you have never operated a model of this kind, start with particular care and get used to the reactions of the model to the remote control commands first. Be patient!

b) Before first use

- Select a suitable location to fly the helicopter.
- When switching the quadrocopter on, always follow the procedure outlined in a separate section of these instructions. This ensures that the remote control and receiver connect properly and that the model responds reliably to remote control commands.
- Ensure that there are no other models operating on the same frequency (2.4 GHz) within range of the remote control. Always check whether there are any other 2.4 GHz remote control systems that may interfere with the model.
- Conduct regular checks to verify that the model and remote control are safe to use. Inspect the parts for any signs of damage, such as broken connectors or damaged cables.

  All moving parts on the model should move freely, but there must be not any slackness in the bearing.
- Check that the rotors are secure and in the correct position before each use.
- The flight battery must be charged before use.
- Always ensure that the batteries in the transmitter have sufficient capacity remaining (see transmitter LED). If the batteries are empty, replace all of the batteries at the same time. Never replace individual batteries.

c) During use

- Do not take any risks when using the product! Always use the model responsibly, otherwise you may endanger yourself and your surroundings.
- Improper use can cause serious injury and damage to property! Ensure that you maintain a sufficient distance from people, animals and objects. Never try to grab the flying model with your hand!
- Only fly the model when you are fully alert and able to respond. Fatigue, alcohol and medication can affect your ability to respond.
- Keep objects and body parts away from the rotors when the rotors are moving.
- Do not fly the model towards spectators or towards yourself.
- Never try to grab hold of the flying quadrocopter with your hands.
- Motors, flight regulator and flight battery alike can become hot during operation. For this reason, take a 5 to 10 minute break before recharging the flight battery or restarting the model with a charged spare battery.
- Always leave the remote control (transmitter) switched on when the model is in use. After landing, always switch off the quadrocopter first before you switch off the remote control.
- Never switch the transmitter off during operation while the quadrocopter is still running.
- Do not expose the model or the remote control to direct sunlight or excessive heat for prolonged periods.
- In the event of a severe crash (e.g. from a high altitude), the electronic gyro sensors may be damaged. Always check that the model is functioning properly before flying it again!
- In the event of a crash, switch off the rotor motors immediately. Rotating rotors may be damaged if they come into contact with obstacles or in the event of an impact. Check the rotors for any signs of cracks or damage before flying the model again!
- To avoid damaging the model due to a crash caused by an undervoltage/overdischarging of the battery, monitor the undervoltage indicators during the flight.

7. Battery information

Batteries present numerous safety hazards.

Always observe the following general information and safety information when handling batteries.

- Keep batteries out of the reach of children.
- Do not leave batteries lying around, as they present a choking hazard for children and pets. Seek immediate medical advice if a battery is swallowed.
- Batteries/rechargeable batteries must never be short-circuited, taken apart or thrown into fire. Danger of explosion!
- When handling leaking or damaged batteries, always use suitable protective gloves to avoid burning your skin.
- Do not attempt to recharge disposable, non-rechargeable batteries. This may cause a fire or explosion! Only charge rechargeable batteries which are intended for this purpose (1.2 V); use suitable battery chargers. Non-rechargeable batteries (1.5 V) are designed to be used once and must be disposed of properly when they are empty.
- Pay attention to the correct polarity when inserting batteries (observe plus/+ and minus/-). Incorrect polarity will not only damage the transmitter and batteries. It may also cause a fire or explosion.
- Always exchange the entire set of batteries. Do not mix full batteries with half-full batteries. Always use batteries of the same type and from the same manufacturer.
- Never mix disposable batteries with rechargeable batteries. Always use disposable batteries to power the remote control.
- If you do not plan to use the model for an extended period (e.g. during storage), remove the batteries from the remote control to prevent them from leaking and causing damage.
- Turn the quadrocopter off after a flight and remove the flight battery from the quadrocopter. Do not leave the flight battery in the quadrocopter when you are not using the model (e.g. during transport or storage). This may cause the flight battery to overdischarge and permanently damage the battery.
- Never charge the flight battery immediately after use. Always leave the flight battery to cool down until it has reached room or ambient temperature again.
- Charge intact and undamaged batteries only. Do not charge the flight battery if the external insulation or battery housing is damaged, or if the battery is deformed or swollen. This may cause a fire or explosion!
- Never damage the external casing of the flight battery. Do not tear the foil cover or prick the battery with sharp objects. This may cause a fire or explosion!
- Never charge the flight battery when the product is unattended.
- Disconnect the flight battery from the charging cable when the battery is fully charged.

8. Remote control buttons

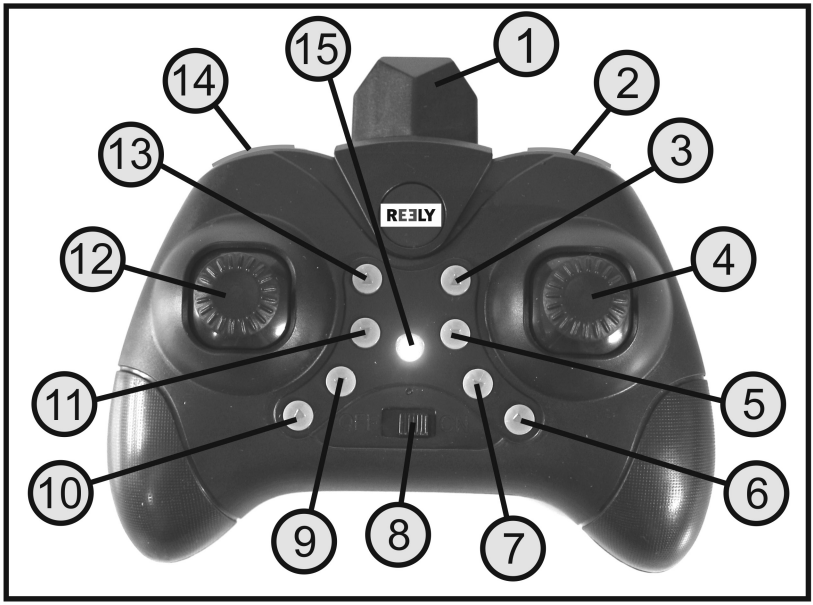

Figure 1

1 Socket for smartphone holder
2 Push button for the flip function
3 Trim button for the bob function (forwards)
4 Joystick for the bob and roll function
5 Trim button for the bob function (backwards)
6 Trim button for the roll function (right)
7 Trim button for the roll function (left)
8 On/off switch
9 Push button for the start and land function
10 Push button for the motor emergency-off function
11 Push button for the headless/return function
12 Joystick for the pitch and yaw function
13 Push button for photo and video recording (without function on this model)
14 Push button to switch between beginner, sport and expert mode
15 LED indicator

9. Using the remote control

→ The numbers used in these instructions refer to the illustration alongside the text or the illustrations within the respective section. Cross references to other figures are indicated with the corresponding number.

The illustrations of the remote control and the model in this manual are for illustrative purposes only. The label, design and colour scheme of the products supplied in series may differ completely from the illustrations in this manual.

a) Inserting the batteries

To power the transmitter, you require 3 AAA/Micro type batteries (e.g. Conrad Item No. 652278, please order 3 x).

Important!

Use only standard batteries (1.5 V/cell) and not rechargeable batteries (1.2 V/cell) as the power supply for the transmitter.

To insert the batteries, proceed as follows:

Loosen the retaining screw (1) on the battery compartment cover (2) on the back of the transmitter with a suitable screwdriver.

Press the latch (3) of the lid locking mechanism down and remove the battery compartment cover.

Insert 3 AAA/Micro type batteries with correct polarity following the instructions on the bottom of the battery compartment (4). The spiral spring contact (5) must always be connected to the negative pole of the battery.

Replace the battery compartment cover (2) again and allow the locking mechanism to lock into place in the transmitter housing.

Re-tighten the retaining screw (1).

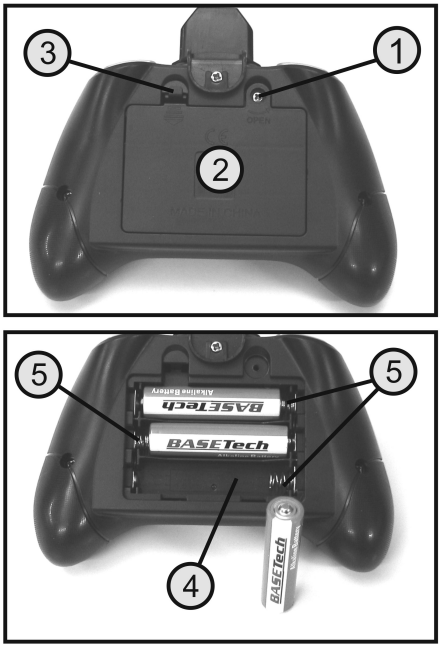

Figure 2

b) Switching on the remote control

Slide the on/off switch (see also Figure 1, no. 8) from the left position (OFF) to the right position (ON).

The transmitter emits a short beep and the LED indicator (see also Figure 1, no. 15) starts to flash.

Then the transmitter emits another short beep with a higher frequency and the LED glows steadily.

Then, switch off the transmitter again using the on/off switch.

If the power supply is no longer sufficient for the proper operation of the transmitter, the LED indicator (see Figure 3, no. 15) will start to flash and the transmitter will emit short beeps.

In this case, stop flying the quadrocopter immediately and insert a new set of batteries into the transmitter.

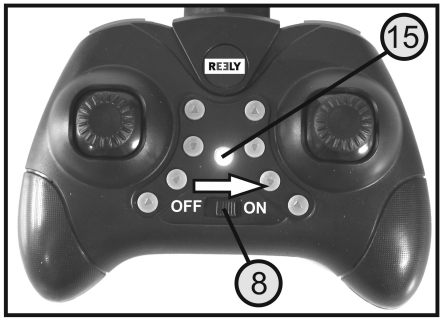

Figure 3

10. Operating the quadrocopter

a) Charging the flight battery

The flight battery can be charged using the USB cable provided.

⟶ The charging cable in Figure 4 is wound up. Before first use, remove the cable tie and fully unwind the charging cable.

Charging:

Connect the reverse polarity protected plug connector (1) of the charging cable to the charging socket of the flight battery (2).

As soon as the USB plug on the charging cable (3) is connected to a USB port on a computer/notebook or to a USB charger plug, charging begins automatically.

The red charging indicator LED (4) on the USB plug lights up and indicates that charging has started. When charging is complete and the flight battery is fully charged, the red LED of the USB plug goes out.

Disconnect the flight battery from the charging cable immediately after charging and unplug the USB plug on the charging cable from the computer/laptop or charger plug.

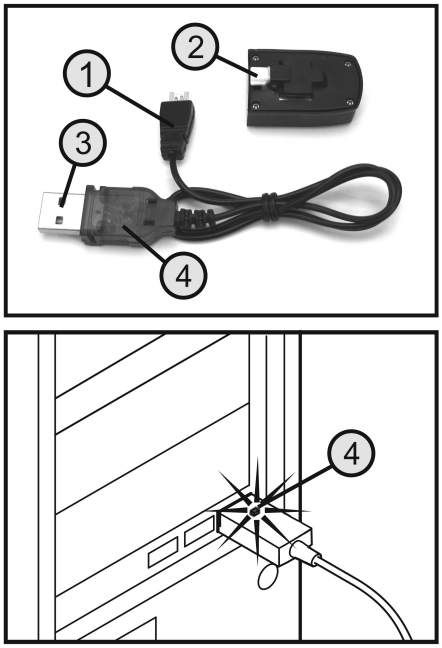

Figure 4

Warning!

Do not connect the USB cable to a USB hub without its own power supply (e.g. a USB port on a keyboard), as the current is not sufficient to charge the battery.

The operating system will not detect any new hardware when the charging cable is connected, as the USB port is only used to charge the battery. Please note that most USB ports on computers/laptop are only active when the computer/laptop is switched on.

We therefore recommend that you only connect the charging cable to a computer/laptop that is switched on.

Important!

Only charge the flight battery in the quadrocopter using the enclosed charging cable. Never attempt to charge the battery in the quadrocopter with a different or unsuitable charger!

b) Folding the rotor arms in and out

Four propeller arms can be folded in for space-saving transport (see Figure 5 A).

When unfolding, the two front propeller arms must first be folded out as viewed in flight direction (see Figure 5 B). The arms will automatically lock into place in the end position.

Then the two rear propeller arms can be folded out as viewed in flight direction (see Figure 5 C).

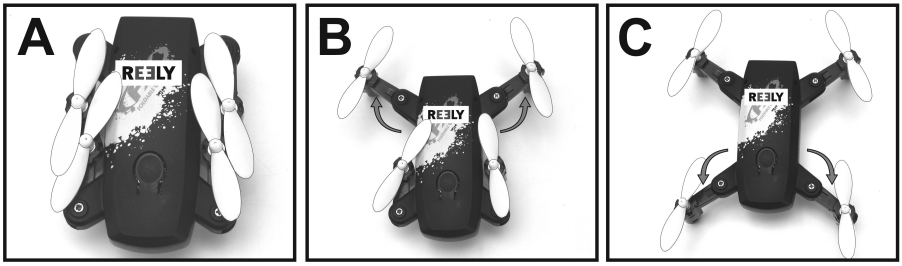

Figure 5

First the two rear propeller arms and then the two front propeller arms are folded in for transport.

c) Attaching the propeller guard

The quadrocopter comes with two plastic guards (1) that ensure protection against rotating propellers.

Slide the plastic guards over the landing legs from below until the two latches (2) lock into place on the guard holder of each motor.

For better illustration, Figure 6 shows a guard already mounted.

To disassemble the guard, slightly open the two latches on each motor with a fingernail or a small screwdriver and push down the holder.

Important note:

Even when the quadrocopter is shown without the protective guard in these instructions for illustrative purposes, you should always use the quadrocopter with the propeller guards mounted for safety reasons.

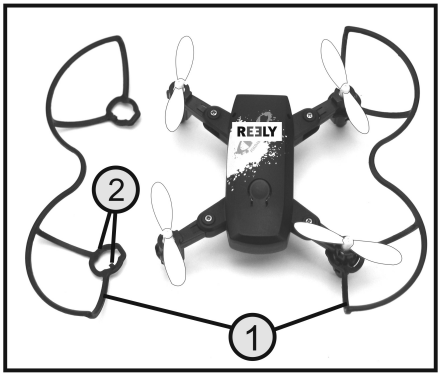

Figure 6

d) Checking the drive

Before starting the quadrocopter, you must test the drive. Only when all four propellers run smoothly and in a perfect circle can the model be flown with the minimum energy consumption. For this reason, you should check the function of the drive propellers before each flight.

To do this, turn each individual propeller carefully with your finger and check the concentricity and the ease of movement.

When doing this, pay attention to the rotational directions of the various propellers. Two propellers turn clockwise when seen from above (A) and two propellers turn anticlockwise (B).

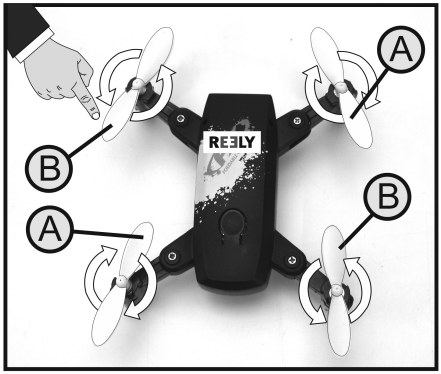

Figure 7

e) Inserting the flight battery

To insert the charged flight battery (1) easily, turn the quadrocopter on its back.

Mount the flight battery on the quadrocopter as shown in Figure 8 above. Then slide it forward until it locks into place in the holder.

To remove the rechargeable battery, press on the grooved surface (2) with your thumb and push the rechargeable battery backwards. At the same time, make sure that you do not press the on/off switch of the quadrocopter with your forefinger (see Figure 9, no. 1).

Important!

If you will not be using the quadrocopter, e.g. during transport and storage, always remove the rechargeable battery from the quadrocopter.

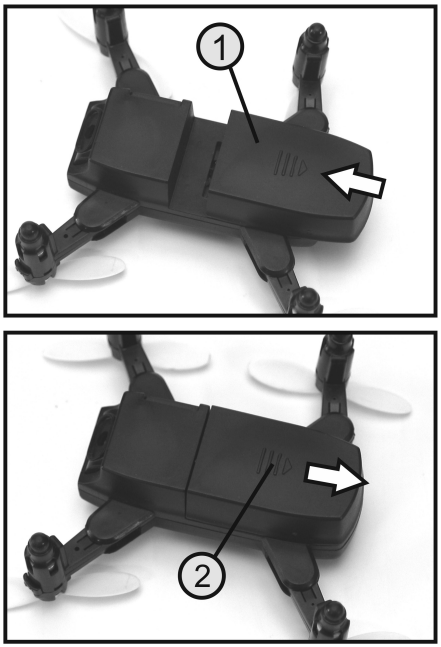

Figure 8

f) Switching the quadrocopter on

So that the receiver in the quadrocopter can react to the signal transmitted, the receiver and the transmitter must have the same digital coding (pairing). For this reason, it is important that you switch the quadrocopter on as described below.

First insert the charged flight battery into the quadrocopter as described above and set the quadrocopter on a flat base.

Press and hold down the function button of the quadrocopter (1) for approx. 1 second.

The LED below the function button will go on.

Then use the on/off switch to switch on the transmitter (see also Fig. 1, no. 8). The transmitter will then be paired with the quadrocopter.

If the LEDs on the transmitter and the quadrocopter glow steadily, the quadrocopter is ready to start.

Important:

There should be no other 2.4 GHz transmitters in the immediate vicinity during the switching on process. The quadrocopter must not be moved or turned during the switch-on process.

→ To switch off the quadrocopter, press and hold down the function button for approx. 1 second. When the button is released, the LED on the quadrocopter goes out. Now you can also switch the transmitter off.

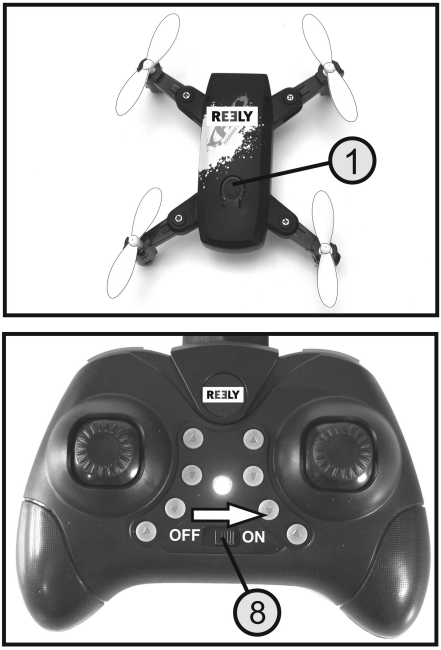

Figure 9

g) Basic information on steering quadrocopters

Before starting your model for the first time, you should first familiarise yourself with the control features available to you to be able to control the model in a safe manner.

The quadrocopter is controlled via the two joysticks on the remote control transmitter. The following functions are available:

Altitude function

With the pitch function you can control the flying height of the helicopter (see Figure 10). Steering is carried out with the left joystick (see also Figure 1, no. 12).

When the motors are started by remote control, they run at idle speed. If the joystick is now pushed forwards from its central position, the rotational speeds of the propellers increase and the quadrocopter lifts off. Once the desired flight altitude has been reached, the joystick can be returned to the centre position. Thanks to its barometric sensor, the quadrocopter can now hover at a nearly constant flight altitude.

If the joystick is moved further forwards, the quadrocopter ascends. When the joystick is pulled back, the quadrocopter descends (see arrows in Figure 10).

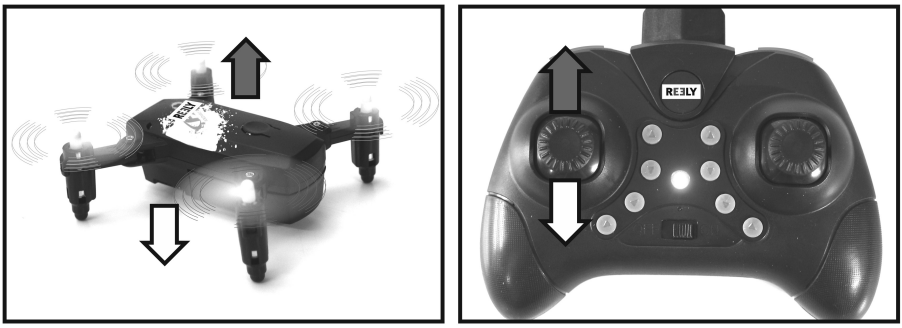

Figure 10

Yaw function

The torques that act on the model are balanced by the two right-turning and the two left-turning propellers, and the quadrocopter hovers steadily in the air.

When the joystick is moved to the left for the yaw function (see also Figure 1, no. 12), the model electronics speed up the propeller rotating to the right (clockwise) as viewed from above and simultaneously slow down the propeller rotating to the left (counter-clockwise). As a result, the entire lifting force remains the same, but the model now has a torque that turns the quadrocopter around the vertical axis to the left as viewed from above (see arrows in Figure 11).

If the joystick is moved to the right, the speed changes of the propellers come out exactly the opposite and the model turns to the right.

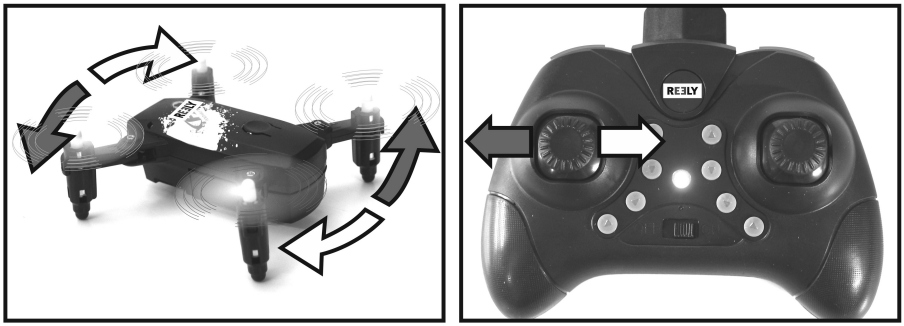

Figure 11

Roll function

The roll function allows you to move the quadrocopter sideways to the right and to the left (see Figure 12). The control is effected with the right joystick (see Figure 1, no. 4).

When the joystick is moved slightly to the left, the quadrocopter electronics change the propeller speeds so that the model tilts slightly to the left and thus also flies to the left (see arrows in Figure 12).

If you steer to the right on the transmitter, exactly the opposite speed changes of the propellers occur and the model flies sideways to the right.

Figure 12

Pitch function

The bob function allows you to move your model helicopter forward and backward (see Figure 13). This steering is carried out with the right joystick (see also Figure 1, no. 4).

When the joystick is pushed slightly forward, the quadrocopter electronics change the propeller speeds so that the model tilts slightly forward and thus also flies forward (see arrows in Figure 13).

If you steer backward on the transmitter, exactly the opposite speed changes of the propellers occur and the model flies backward.

Figure 13

h) Practical flight tips for beginners

Although the model can be flown in small rooms, we recommend using a unobstructed space of 3 x 3 m for the first few flight attempts.

When flying the quadrocopter outdoors for the first time, there should be absolutely no wind.

Place yourself directly behind your quadrocopter. For as long as you see your model from behind, it will respond from your perspective to the right, left, forward and backward control commands just as you steer the transmitter. However, if you face the camera of your model, the model will respond from your perspective exactly the opposite as you steer the transmitter.

Allow the quadrocopter to climb to eye level after start up. This enables the flight attitude to be detected optimally and the quadrocopter is visibly more stable than at ground level. This is because, if the quadrocopter flies so low that the air blown downwards by the propellers reaches the ground (ground effect), the flight attitude is significantly more unstable.

⟶ If the propellers bump against objects and get blocked, immediately press the push button for the motor emergency stop function (see Figure 1, no. 10) so that the drive motors are no longer supplied with power.

After a clumsy landing or a crash, the quadrocopter cannot be started for approx. 10 seconds. During this time, the position sensors are automatically recalibrated. This process can be shortened by manual calibration. The procedure is described in detail in one of the following chapters.

Important!

Never try to grab hold of the flying quadrocopter with your hands. There is an increased risk of injury!

When the LED near the front rotor arms (see Figure 17, no. 1) starts to flash, the flight battery has reached its lower voltage limit. In this case, stop flight operation and charge the flight battery again in order to avoid deep discharge that can damage the flight battery.

If the quadrocopter is used outside, pay attention to the flight distance. The further away the quadrocopter is from you, the harder it is to detect the attitude. In addition, the wireless remote control has a limited range of approx. 30 m.

Never switch the transmitter off while the quadrocopter is flying.

i) Starting the quadcopter

Start up the quadrocopter and then the remote control transmitter as described above. The LEDs on the quadrocopter and the transmitter must glow steadily.

You can use three different methods to start up the propellers on the quadrocopter.

Method 1:

Briefly push the left joystick (see also Figure 1, no. 12) completely forward and then pull it back to the middle position. The propellers will start to rotate at low speed.

Method 2:

Move the left joystick to the lower left corner and the right joystick (see also Figure 1, no. 4) to the lower right corner. Hold the two joysticks in this position until the propellers start and turn at low speed. Then pull the joysticks back to the middle position.

Method 3:

Briefly press the push button for the take-off and landing function (see Figure 1, no. 9).

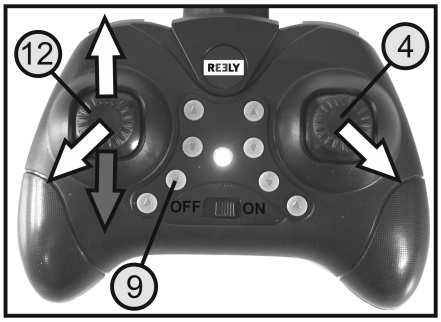

Figure 14

Important note:

To stop the rotating propellers, move the left joystick to the lowest position and hold it until the propellers stop (see dark arrow in Figure 14).

Alternatively, you can move the left joystick back to the lower left corner and the right joystick to the lower right corner until the motors stop. Then immediately pull the joysticks back to the middle position, otherwise the propellers will restart.

In an emergency, you can also use the push button for the motor emergency stop function (see Figure 1, no. 10) to disable the motors.

Manual start:

If the propellers are rotating at low speed, carefully move the left joystick forward. The quadrocopter will significantly increase the propeller speeds and take off.

With the right joystick, you can easily correct any drift forwards or backwards or to the side. Once the desired flight altitude has been reached, move the left joystick back to the middle position. The quadrocopter will go into hover at a constant altitude.

Use the two joysticks to individually control the flight altitude and flight direction.

Automatic start:

If the propellers are rotating at low speed, briefly press the push button for the take-off and landing function (see Figure 1, no. 9). The propellers will speed up and the quadrocopter will take off quickly. It ascends automatically to an altitude of approx. 1.8 m and then automatically goes into hover.

Use the two joysticks to individually control the flight altitude and flight direction.

→ The quadrocopter is equipped with automatic altitude stabilisation. This stabilisation takes the air pressure as a reference for the current flight altitude. Since the measured values change only slightly with minimal change in altitude, slight fluctuations in flight altitude cannot be avoided.

j) Landing the quadrocopter

There are two ways to land the quadrocopter:

Method 1:

When the quadrocopter is hovering, carefully reduce the flight altitude with the left joystick (see also Figure 1, no. 12) until the quadrocopter stands safely on its landing legs.

Once the quadrocopter has landed, move the left joystick to the lowest position and hold it in this position until the propellers have come to a standstill.

The quadrocopter can now be switched off.

Method 2:

When the quadrocopter is hovering, press the button for the automatic take-off and landing function (see Figure 1, no. 9).

The quadrocopter will now reduce its flight altitude itself until it is on its landing legs again. While charging, the quadrocopter can still be fully controlled using the yaw, bob and roll functions and the landing point can be adjusted, if necessary.

After the quadrocopter has landed, the propellers will stop automatically.

The quadrocopter can now be switched off.

k) Trimming the quadcopter

If you find that the quadrocopter always wants to fly in a certain direction while hovering, even without a control command from the transmitter and without external influence such as wind or draught, adjust the flight behaviour using the trim.

⟶ Every time a trim button is pushed, the trim is adjusted by one step and the adjustment confirmed by a short beep. When the button is pressed and held, the transmitter emits a quick sequence of beeps, and thus indicates the step-by-step adjustment of the trim. Once the trim's end position is reached, no more beeps are emitted by the transmitter. The middle position of the trim is audibly indicated with a higher pitched beep.

Roll trimming:

If the quadrocopter drifts or tips sideways to the right, slowly reduce the flight altitude until the quadrocopter is safely back on its landing feet. Press the left trim button for the roll function (see also Figure 1, no. 7) several times.

Then, carefully push the pitch joystick forwards again and check whether the adjustment was sufficient. Repeat the procedure until the model does not show any tendency to drift to the right.

If the quadrocopter wants to drift sideways to the left, press the right trim button for the roll function (see also Figure 1, no. 6).

Figure 15

Bob trimming:

If the quadrocopter drifts forward, reduce the speed until the quadrocopter once more stands safely on its landing feet. Press the lower trim button for the bob function (see also Figure 1, no. 5) several times.

Then, carefully push the pitch joystick forwards again and check whether the adjustment was sufficient. Repeat the procedure until the model does not show any tendency to drift forwards.

If the quadrocopter wants to drift backwards, press the upper trim button for the bob function (see also Figure 1, no. 3).

Figure 16

⟶ If you have the quadrocopter under secure control after a few test flights, you can also optimally adjust the trim during the flight.

The trim for the roll and bob functions is not saved. After you switch the transmitter on and off, the trim returns to the centre position.

Warning!

If big adjustments have to be made to the trim, the position sensors require calibration. The required procedure is described in detail in the following chapter.

11. Calibration of position sensors

If the quadrocopter does not hover steadily in one spot but is always flying in one direction, the trim may need correcting. However, if the trim needs to be adjusted significantly, it may be necessary to re-calibrate the position sensors in the model.

Proceed as follows:

First switch on the quadrocopter and then the transmitter. The trims must all be set to the middle position.

Place the quadrocopter on a flat, horizontal surface.

Then move the two joysticks of the transmitter (see also Figure 1, no. 4 and 12) to the lower right corner and hold them in this position.

You can see a flashing LED through a small opening on the left or right rotor arm (1). If the LED no longer emits flashing pulses after approx. 1.5 seconds, the calibration is successfully completed.

Then pull the joysticks back to the middle position.

Check with a test flight whether the quadrocopter is still showing a strong tendency to fly in a particular direction.

Small tendencies can be offset by trimming. If required, repeat the calibration process.

Attention important!

After a clumsy landing or a crash, the quadrocopter cannot be started for approx. 10 seconds. During this time, the position sensors are automatically recalibrated. This process can be shortened by manual calibration.

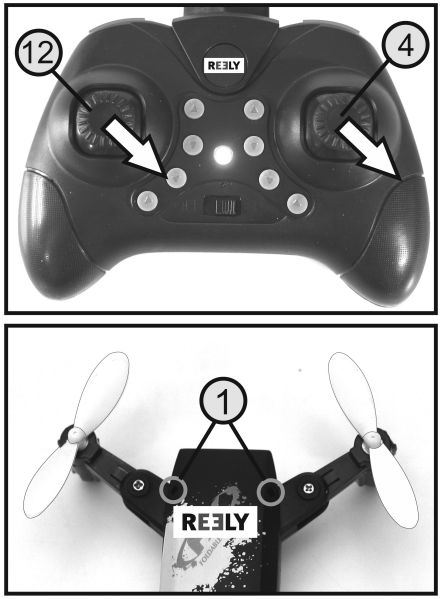

Figure 17

12. Beginner/sport/expert mode switching

With beginner/sport/expert mode switching, the remote control allows you to individually adjust the control sensitivity of the quadrocopter (Dual Rate Function). The following modes are available:

Beginner mode

Beginner mode is automatically activated when the remote control transmitter is switched on. In this flight mode, the quadrocopter reacts less sensitively to the steering commands from the transmitter and can therefore be controlled very delicately. This mode is ideal for beginners flying the quadrocopter for the first time.

Sport mode

In sport mode, the quadrocopter reacts much more sharply to the transmitter's steering commands. For this reason, this mode is ideal for advanced users.

Expert mode

Expert mode gives you maximum control sensitivity. This setting is intended for experienced users and for use of the quadrocopter in outdoor areas.

Activating the different flight modes:

When it is switched on, the transmitter is automatically in beginner mode.

To switch from beginner mode to sport mode, briefly press the push button for beginner, sport and expert mode (also see Figure 1, no. 14). The transmitter emits two short beeps to indicate that sport mode has been activated.

The next time you press the push button, the transmitter emits three beeps to indicate that you have switched to expert mode.

If the push button for beginner, sport and expert mode is pressed again, the transmitter returns to beginner mode. The transmitter emits a beep at the same time.

Figure 18

13. Flip function

The quadrocopter is also designed to fly roll-overs (flips) if desired. You should fly the first flips outside when there is absolutely no wind. To do this, let the quadrocopter climb to a safe altitude of approx. 2 - 3 m and then hover in position.

To switch the transmitter to flip mode, press the push button for the flip mode (see also Figure 1, no. 2). To indicate that the transmitter has switched to flip mode, it emits short beeps continuously.

Now quickly move the joystick for the bob and roll function (see also Figure 1, no. 4) as far as it will go in the direction in which the quadrocopter should flip and then immediately pull the joystick back to the middle position.

The quadrocopter executes the roll-over in the desired direction. The transmitter then deactivates flip mode.

To be able to fly another flip, you have to push the button for flip mode again.

Figure 19

14. Flying in headless mode

The quadrocopter's direction of movement is always dependent on the direction in which the model is oriented with respect to the pilot or the side from which the pilot is looking at the quadrocopter. Therefore, you will quickly find it very difficult if you are not looking at the model from behind, and are instead looking at it from the side or the front. For this reason, the quadrocopter has been equipped with headless mode.

However, the quadrocopter should necessarily be oriented in the desired forward direction before switching on (see white arrow in Figure 20 A) in order to effectively use the headless mode.

For as long as the model pilot stands exactly behind the quadrocopter and looks in the predefined forward direction, the quadrocopter will respond from the pilot's perspective just as the pilot steers the transmitter. When steered forward, the quadrocopter also flies forward from the pilot's perspective (see dark arrow in Figure 20 B).

If the quadrocopter has turned 90 degrees to the left in flight and now has its left side oriented to the pilot, it will fly to the left from the pilot's perspective when the transmitter is steered forward (see dark arrow in Figure 20 C).

When headless mode is activated, it does not matter which direction the front of the quadrocopter is facing. When the transmitter is steered forward, the quadrocopter always flies in the direction that is set as forward when switching on (see dark arrow in Figure 20 D).

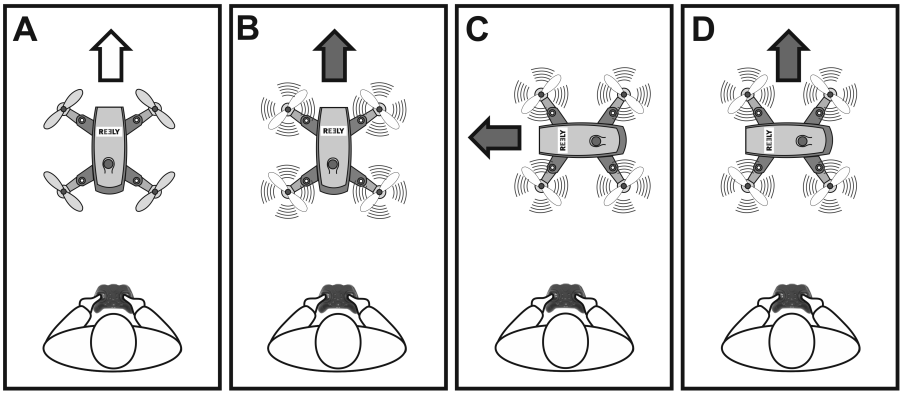

Figure 20

To switch on the headless mode, briefly press the push button for the headless/return function (see also Figure 1, no. 11). To indicate that headless mode has been activated, the transmitter emits a short beep. The quadrocopter is now flying in headless mode.

To switch off the headless mode, press the push button for the headless/return function again. The quadrocopter is now flying in normal mode again.

Figure 21

15. Return home function

The quadrocopter has a return home function which causes it to fly backwards automatically. Thus exactly in the opposite direction, which has been set as the forward direction when switching on (see white arrow in Figure 22 A). As with headless mode, it does not matter in which direction the front of the quadrocopter is currently oriented (see Figure 22 B).

Important!

The return home function should only be activated if the quadrocopter has flown too far from the pilot in the previously defined forwards direction and the pilot is in line with the quadrocopter facing forwards. If the quadrocopter is offset laterally, it will fly past the pilot laterally when enabling the return function and will thus fly away again (see Figure 22 C).

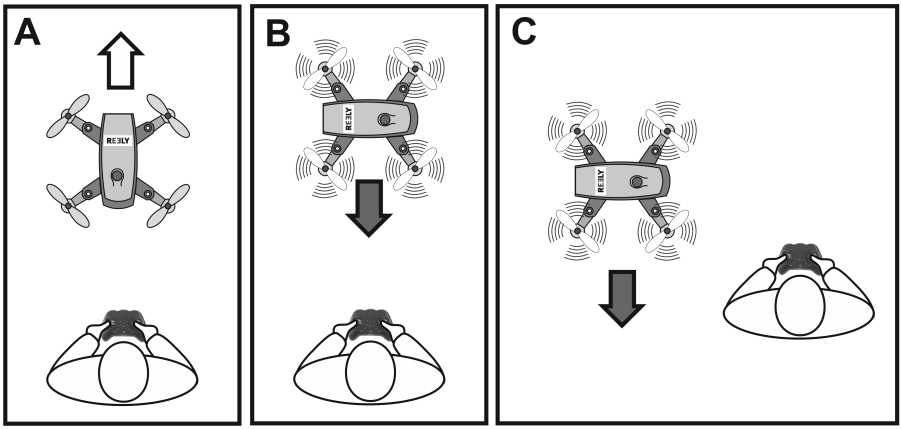

Figure 22

To enable the return function, press and hold down the push button for the headless/return function (see Figure 21, no. 11).

To show that the return home function has been activated, the transmitter emits a short beep. The quadrocopter tilts backwards and starts to fly backwards.

If the quadrocopter has flown backward far enough, push the joystick for the bob and roll function (see also Figure 1, no. 4) in any direction and the return function will be terminated automatically.

16. Installing the smartphone app

The quadrocopter has a Wi-Fi function and can thus be connected to a smartphone. For this purpose, you first need to install a special app on your smartphone. The only costs incurred will be the normal costs incurred through downloading. The app itself is free.

Scan the QR code for your operating system (iOS or Android). After scanning the QR code, you will be automatically re-directed to the download page for the current version of the app.

QR code for iOS

QR code for Android

Alternatively, search for the "GX-FPV" app in "Apple Store" for the iOS operating system and in "Google Play Store" for the Android operating system.

a) Opening the app

Once the app has been successfully installed on your smartphone, you can open the app.

⟶ As the app is constantly updated, it is possible that new functions have been added to the current app, which are beyond the scope of this manual. If you have any questions regarding the functionality, you should use the app's help function.

Figure 23 shows the home page of the app, which includes three options:

1 Question mark icon = access the help pages

2 Cog icon = Adjust settings

3 "Play" icon = start app

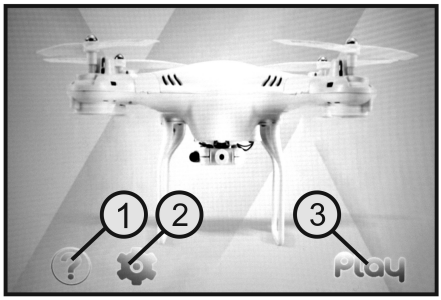

Figure 23

b) Help function

You can call up the current help function using the question mark icon (see Figure 23, no. 1). This function is useful if the current version of the app differs from the one described in this manual.

You can turn pages to the right and left using the swipe function. You can use the arrow or triangle icon (1) to switch back to the home page.

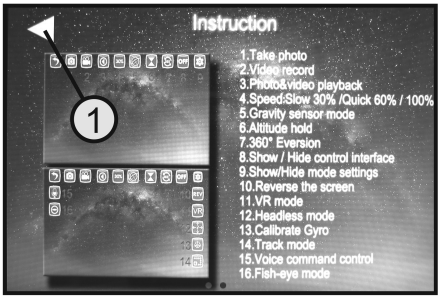

Figure 24

c) Setting Options

If you select "Settings" (see Figure 23, no. 2), a new screen will appear, in which you can set the following functions:

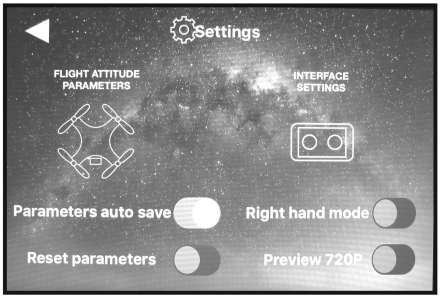

Figure 25

"Parameters auto save":

Automatic storage of adjustable parameters, e.g. trim values (activation recommended).

"Reset the parameters":

Reset of the stored trim values to the factory parameters.

"Right hand mode":

If the function is disabled, the virtual joysticks on the smartphone (see Figure 30, nos. 18 and 19) will function just as the ones on the supplied transmitter (control mode 2).

If the function is activated, the virtual joysticks on the smartphone invert the bob and function (control mode 1).

"Preview 720P":

If the function is activated, the real-time camera image on the smartphone is shown in 720p format (1280 x 720). If the function is disabled, the display will have a VGA quality.

⟶ To leave the settings function, select the icon at the top left. The home page of the app appears again (see Figure 23).

d) Operation

If you select "Play" (see Figure 23, no. 3), the following user interface will open:

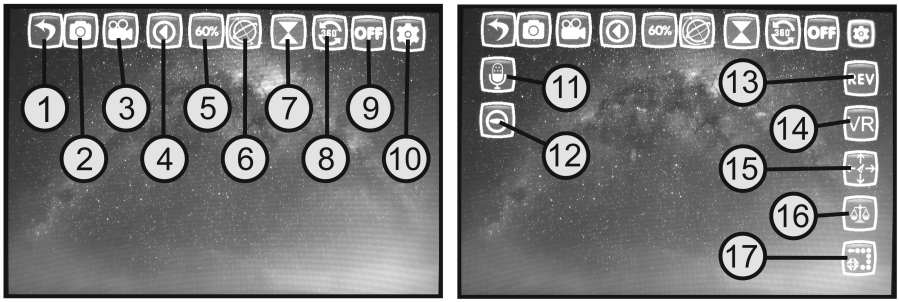

Figure 26

The icons shown in Figure 26 have the following function:

1 Return to the app's start page

2 Capture an image with the quadrocopter camera. The images are stored in the smartphone.

3 Record a video with the quadrocopter camera The videos are stored in the smartphone.

4 View stored images and videos on the smartphone.

5 Switch beginner, sport and expert mode, the control sensitivity is 30%, 60% and 100%.

6 In gravity sensor mode, the bob and roll movement of the quadrocopter is controlled by tilting and tipping the smartphone.

7 Use the "Altitude hold" mode to switch the virtual control for models with automatic altitude stabilisation.

8 Button for flip function.

9 Show or hide virtual joystick, including trim indicators.

10 Show and hide further settings.

11 Switch voice control on or off. The quadrocopter can be controlled with the following commands: "take-off", "landing", "forward", "backward", "rightward", and "leftward". *

12 Fisheye mode (only in iOS app). It cannot be used in conjunction with the "R5-Foldable FPV Drone RtF" quadrocopter.

13 Press the "REV" button to flip the camera image vertically.

14 VR switching enables you to use the smartphone in a VR headset (not included).

15 Button for headless mode.

16 Button for sensor calibration.

17 Switch tracking mode on and off. *

In tracking mode, the right joystick is hidden. As an alternative, a flight path (1) can be drawn on the smartphone with your finger.

As soon as your finger no longer touches the display, the quadrocopter will fly according to the drawn flight path.

Touching the display again clears the flight path and a new flight path can be drawn.

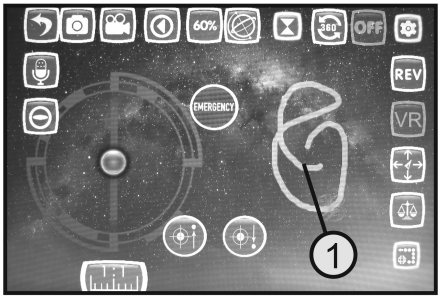

Figure 27

*** Please note, important information!**

First test the voice control without starting the quadrocopter motors. With the responses of the virtual joysticks, you can easily recognise if the voice commands are performed correctly and how slowly the controller responds. Similarly, you can test the tracking mode to familiarise yourself with the function.

In the Android app, the quadrocopter must be paired with the smartphone so that the buttons for the tracking mode and voice control are displayed.

If you would like to control the quadrocopter later using one of these two modes, make sure that you have enough space and avoid flying the quadrocopter close to people, animals or obstacles.

The background images shown in Figs. 26 and 27 only appear if the app has been activated with the quadrocopter switched off. Otherwise, the camera image is shown in the background.

Notes on FPV operation

The so-called "FPV operation" is possible thanks to the live transfer of camera images to the smartphone (FPV = First Person View = video image flying).

Warning!

Pure FPV operation increases the risk of accidents because you may not see obstacles or may not see them in time due to the restricted camera image. As a general rule, when using FPV mode, the vehicle must be monitored by a co-pilot who can warn you about potential hazards. It therefore requires a lot of practice to fly in FPV operation.

During the learning phase in particular, ensure that the selected flight area is free of obstacles and far away from people, animals, buildings and roads.

To ensure an interference-free transmission of video signals, there should be no other transmitters in the model's 2.4 GHz transmission range nearby. The smartphone's "Bluetooth®" function must be disabled.

17. Recording photos and videos

The quadrocopter has a built-in HD camera that is oriented diagonally downwards in flight direction. You can use this camera to record videos or photos on a smartphone (not included) during the flight.

To use the smartphone as a camera monitor, the smartphone holder must first be mounted on the transmitter.

Proceed as follows:

To do this, slide the clamping device of the smartphone holder (1) as far as it will go into the socket on the remote control (2).

The upper holding forceps (3) can be pulled further upwards out of the holder by hand. This makes it possible to use smartphones with different dimensions. The strong tension spring on the upper holding forceps ensures that the smartphone sits securely.

For optimal alignment of the smartphone, the holder has a tilting joint (4), which can be adjusted sensitively.

Now the image transfer to the smartphone can be enabled.

Start up the quadrocopter and then the transmitter. The LEDs on the quadrocopter and the transmitter must glow steadily.

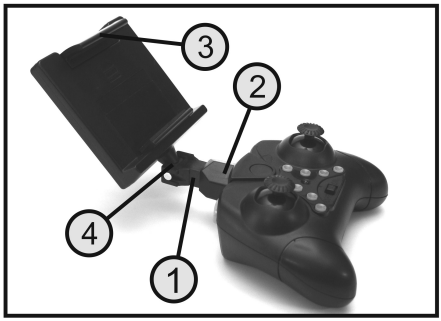

Figure 28

Then call up the settings menu for Wi-Fi connections in the settings area on your smartphone.

The Wi-Fi connection of the quadrocopter will appear on the smartphone display shortly thereafter (for example, WiFiUFO-XXXXXX).

Enable this Wi-Fi connection so that the quadrocopter and the smartphone can exchange data with each other.

Leave the settings area on your smartphone and start the "GX-FPV" quadrocopter app.

As soon as you enable the "Play" button, the smartphone will show the current camera image.

Now insert the smartphone into the camera holder on the transmitter.

The angle of inclination of the camera (1) can be manually adjusted to the desired value, if necessary.

The quadrocopter is ready for the camera flight.

To capture images or videos, just tap the respective buttons (see Figure 26, no. 2 or 3).

The images and videos are stored directly in the smartphone and can be viewed using the playback function (see Figure 26, no. 4).

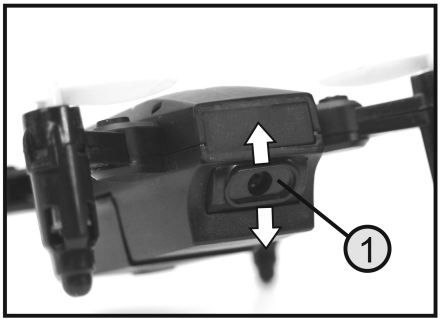

Figure 29

Practical tips

If a video is recorded during the flight, make sure that you fly the quadrocopter carefully and without hectic control movements. In case of hectic control movements, the video is very shaky.

You can also capture images and videos when the quadrocopter is controlled using the smartphone. Since the supplied remote control transmitter enables a more sensitive control, we recommend that the transmitter be used for video recordings.

Important note:

Pay attention to the legal principles of your country regarding the creation of photos and video recordings of persons, objects and facilities as well as the publication of such photos and videos. You accept sole responsibility for the case that rights, laws or ordinances are violated by the use of the camera.

18. The smartphone as a remote control

Caution, safety hazard!

The quadrocopter's steering is significantly more sluggish when it is controlled by smartphone compared to when the supplied remote control transmitter is used. Therefore it requires some practice until you get used to the steering. Therefore, carry out the first test flights on a sufficiently large area so as to avoid flying the quadrocopter close to people, animals or objects.

Practical tips

You should set the control sensitivity to 60% or 100% using the Dual Rate Switching button (see Figure 26, no. 5) in order for the quadrocopter to better respond to virtual joystick movements.

For the first test flights, we recommend a calm day and a sufficiently large flight area without obstacles.

To enable the control, proceed as follows:

Start up the quadrocopter. The LED on the quadrocopter must glow steadily.

Call up the settings menu for Wi-Fi connections in the settings area on your smartphone.

The Wi-Fi connection of the quadrocopter will appear on the smartphone display shortly thereafter (for example, WiFiUFO-XXXXXX).

Enable this Wi-Fi connection so that the quadrocopter and the smartphone can exchange data with each other.

Leave the settings area on your smartphone and start the "GX-FPV" quadrocopter app.

As soon as you enable the "Play" button, the smartphone will show the current camera image.

Press the "Off" button (9) to display the virtual joysticks (18 and 19) and trim (20) shown in the figure. The display of the button (9) will switch from "OFF" to "ON".

Tap the button for the "Altitude hold" mode (7). The left virtual joystick (18) will move to the centre and the motor start (21), automatic landing (22) and motor emergency stop (23) buttons will be displayed.

To start the rotors, briefly push the left joystick forward and then pull it back to the middle position. The rotors begin to rotate at low speed. Alternatively, you can also press the motor start button (see Figure 30, no. 21).

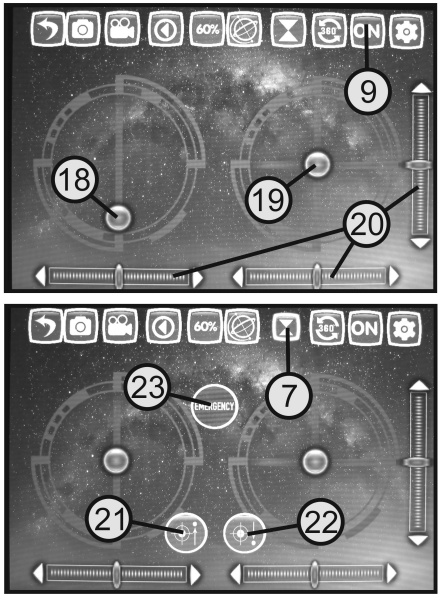

Figure 30

If you move the left joystick forward again, the propellers will speed up and the quadrocopter will take off. The quadrocopter can now be controlled as usual using the two virtual joysticks.

Alternatively, you can use the gravity sensor mode, the tracking mode or voice control.

19. Maintenance and cleaning

Clean the exterior of the model and the remote control with a soft, dry cloth or brush. Never use abrasive cleaning agents or chemical solutions, as these may damage the surface of the housing.

The propellers must move smoothly and motor shafts should not be bent or have any play in the bearing. Propellers that are cracked or bent or from which small pieces have broken off must always be replaced.

Changing the propellers

The propellers (1) are only pushed onto the motor shafts (2) of the drive motors and can be removed carefully upwards from the shafts.

When removing the propellers, ensure not to bend the motor shafts.

When selecting the new propeller, always pay attention to the direction of rotation (see also Figure 7).

The new propeller should be positioned on the motor shaft straight, from above and pushed carefully down as far as it will go.

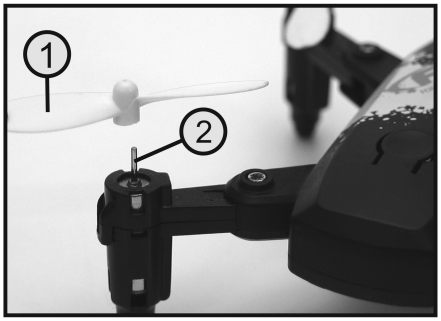

Figure 31

Important!

Do not use any unnecessary force or unsuitable tools.

When replacing mechanical parts, always purchase genuine replacement parts from the manufacturer.

The spare parts list can be found in the downloads section of our website (www.conrad.com).

You can also order the spare parts list by calling our customer service hotline. For contact details, please refer to the "Introduction" section at the beginning of these instructions.

20. Disposal

a) Product

Electronic devices are recyclable waste and must not be disposed of in the household waste. At the end of its service life, dispose of the product according to the relevant statutory regulations.

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

b) (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.

Contaminated (rechargeable) batteries are labelled with this symbol to indicate that disposal in the domestic waste is forbidden. The designations for the heavy metals involved are: Cd = Cadmium, Hg = Mercury, Pb = Lead (name on (rechargeable) batteries, e.g. below the trash icon on the left).

Used (rechargeable) batteries can be returned to collection points in your municipality, our stores or wherever (rechargeable) batteries are sold.

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

21. Declaration of Conformity (DOC)

Conrad Electronic SE, Klaus-Conrad-Straße 1, D-92240 Hirschau, hereby declares that this product conforms to Directive 2014/53/EU.

→ Click on the following link to read the full text of the EU Declaration of Conformity:

www.conrad.com/downloads

Select a language by clicking on the corresponding flag symbol, and then enter the product order number in the search box. The EU Declaration of Conformity is available for download in PDF format.

22. Troubleshooting

This model and the remote control were built using the latest technology. However, faults and malfunction may still occur. We would, therefore, like to show you how to correct potential faults.

Problem	Solution
The transmitter does not respond, the LED does not go on.	• Check the batteries in the remote control. • Check the polarity of the batteries in the remote control. • Check the on/off switch.
LED on the transmitter flashes and the transmitter emits alarm sounds.	• Check or replace the batteries in the transmitter.
The quadrocopter will not turn on. The LED on the quadrocopter does not go on.	• Check that the flight battery is inserted correctly. • Charge the flight battery again for testing purposes. • Press and hold down the button on the quadrocopter for at least 1 second.
Propellers do not start.	• Check the remaining battery level. • Charge the flight battery again for testing purposes. • Repeat the power on procedure.
The quadrocopter tilts to the side on start-up.	• Repeat the switch on sequence of the quadrocopter and do not move the model while doing so. • Check the ease of movement of the drive motor. • Calibrate the position sensors.
The quadrocopter has too low a performance or too short a flight time.	• Check the remaining battery level. • Replace flight battery.
The quadrocopter always flies in one direction.	• Adjust the trim on the transmitter. • Unfavourable flight conditions (wind or draughts). • Calibrate the position sensors.
Quadrocopter reacts very sluggishly to the control commands.	• Switch to sport or expert mode.

23. Technical data

a) Remote control

Frequency range	2.401 - 2.480 GHz
Transmission power	<20 dBm
Control channels	4
Transmitter range	approx. 30 m
Operating voltage	4.5 V/DC via 3x AAA/micro batteries
Dimensions (W x H x D)	114 x 95 x 50 mm (without smartphone holder)
Smartphone holder range	max. 80 mm
Weight without batteries	70 g

b) Quadcopter

FPV frequency range	2.412 - 2.480 GHz
Transmission power	< 20 dBm
Transmitter range	approx. 30 m
Power supply	3.7 V/220 mAh (1S LiPo)
Dimensions	incl. guards: 115 x 115 x 31 mm without guards/propellers: 71 x 71 x 31 mm folded: 46 x 31 x 62 mm
Propeller diameter	40 mm
Take-off weight, incl. rechargeable battery	31 g

c) Camera

Video resolution	1280 x 720 pixels at 30 fps
Image resolution	1280 x 720 pixels
Adjustable angle of inclination	30° - 45°

d) USB charger

Operating voltage	5 V/DC (via USB)
Current consumption	max. 500 mA
Charging time	approx. 45 - 60 minutes

e) Software

Android app	Android 5.0 or later
iOS app	iOS 5.0 or later

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