REELY

GB Operating Instructions

Electrical quadrocopter “Foldable Drone G-Sense” RtF

Item No. 1697439

CE

Table of contents

GB

Page

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 these operating instructions!

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, keep these operating instructions for future 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 that must be observed.

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

3. Intended use

The “Foldable Drone G-Sense 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 it may also be used outdoors in windless conditions.

It is not suitable for any other operation. Any other use than described above may damage the product and result in a short circuit, fire, electric shock, etc.

The product must not become damp or wet.

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

Always follow the safety instructions in these operating instructions. They contain important information on how to handle the product.

You are solely responsible for the safe operation of this model!

4. Delivery content

- Ready-to-fly quadrocopter
- Flight battery
- Wireless remote control transmitter
- USB charging cable
- Screwdriver
- Spare propellers (4 pcs)
- 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 “Foldable Drone G-Sense 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 the ground and hover steadily in the air at appropriate propeller speeds.

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

For the flight in a certain direction, the electronics in the model recognise 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 propulsion. The quadrocopter flies in the respective direction. The transmitter is controlled by a joystick, as well as by tilting and tipping the hand-held transmitter. The transmitter has a built-in G-sensor that detects the movement.

On the model, two propellers rotate clockwise and two rotate counter-clockwise. Through a targeted change of speed of the two propeller groups relative to each other (propellers rotating to the right rotate somewhat faster and propellers rotating to the left rotate somewhat slower or vice versa), it is possible to turn (yaw) the quadrocopter around the vertical axis while keeping the same altitude and the quadrocopter at the same spot. The quadrocopter can even perform sideways flips, if necessary.

The 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 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 need 2 Micro/AAA non-rechargeable batteries.

6. Safety instructions

Damage caused by failure to observe these operating 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 improper handling or failure to observe the safety instructions! Such cases will void the warranty/guarantee.

Normal wear and tear during operation (e.g. worn motor shaft bearings) and accidental damage (e.g. broken chassis parts or propellers) are excluded from the guarantee and warranty.

Dear customer,

These safety instructions are designed not only for the product protection, but also for your personal safety and safety of others. Read this chapter very carefully before using the product!

a) General information

Please note!

This model has the potential to cause damage to property and/or individuals. Therefore, make sure that you are sufficiently insured for the operation of the model, e.g. by a personal liability insurance. If you already have a personal liability insurance, check with your insurance company whether the operation of the model is also insured.

Important: In various countries, you are required to have insurance when using a model aeroplane.

Familiarise yourself with the local statutory regulations for using model aeroplanes. In Germany, for example, the regulations for an operator of any model aeroplanes are stipulated in the German Air Traffic Act. Any breaches of the statutory regulations can 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.
- If you have any questions that are not covered by these operating instructions, please contact us (see chapter 1 for contact information) or an experienced technician.
- 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 familiarise yourself first with the responses of the model to the remote control commands. Be patient!

b) Before first use

- Select a suitable location to operate your model.
- When switching on the quadrocopter, follow the procedure described below in a separate chapter. This ensures that the transmitter and receiver connect properly and that your model responds reliably to remote control commands of your transmitter.
- Ensure that there are no other models operated on the same transmission frequency (2.4 GHz) within range of the remote control. Always check whether there are any other 2.4 GHz transmitters that may interfere with your model.
- Check that your model and remote control are safe to use. Pay attention to visible damage such as broken connectors or damaged cables. All moving parts on the model must operate smoothly, but there must be no play in the bearing.
- Check that the rotors are secure and in the correct position before each use.
- The flight battery required for operation must be charged before use.
- Always ensure that the non-rechargeable batteries in the transmitter have sufficient remaining capacity (see transmitter LED). If the non-rechargeable batteries are empty, always replace the complete set. Never replace individual cells.

c) During operation

- 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 personal injury and damage to property! For this reason, make sure that you maintain a sufficient safety distance from people, animals and objects.
- 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 running rotors.
- Do not fly the model towards spectators or towards yourself.
- Never try to grab hold of the flying quadrocopter with your hands.
- Motors, motor controller and flight battery 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 operation. After landing, always switch off the quadrocopter first before you switch off the remote control.
- Never switch off the transmitter 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 damage to the model due to a crash caused by an undervoltage/deep discharge of the rechargeable battery, we recommend that you monitor the undervoltage indicators during the flight.

7. Information on non-rechargeable and rechargeable batteries

Although handling non-rechargeable and rechargeable batteries in daily life is a matter of course today, there are numerous hazards and problems.

Therefore, always observe the following general information and safety instructions when handling non-rechargeable and rechargeable batteries.

- Keep non-rechargeable/rechargeable batteries out of the reach of children.
- Do not leave non-rechargeable/rechargeable batteries lying around, as they present a choking hazard for children and pets. Seek immediate medical advice if a battery is swallowed!
- Non-rechargeable/rechargeable batteries must never be short-circuited, taken apart or thrown into fire. There is a risk of explosion!
- When handling leaking or damaged non-rechargeable/rechargeable batteries, always use suitable protective gloves to avoid burning your skin.
- Do not attempt to recharge conventional 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 non-rechargeable batteries (observe plus/+ and minus/-). Incorrect polarity will not only damage the transmitter and non-rechargeable batteries. It may also cause a fire or explosion.
- Always replace the entire set of non-rechargeable batteries. Do not mix full non-rechargeable batteries with half-full batteries. Always use non-rechargeable batteries of the same type and from the same manufacturer.
- Never mix non-rechargeable batteries with rechargeable batteries. Always use non-rechargeable 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 non-rechargeable batteries from the remote control to prevent them from leaking and causing damage.
- Switch off the quadrocopter after the 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). Otherwise, this may cause deep discharge or permanent damage to the flight battery.
- Never charge the flight battery immediately after use. Always allow the flight battery to cool down until it has reached room or ambient temperature again.
- Charge intact and undamaged flight batteries only. Do not charge the flight battery if the external insulation of the rechargeable battery is damaged, or if the rechargeable 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 film cover or prick the flight battery with sharp objects. This may cause a fire or explosion!
- Never charge the flight battery when the product is unattended.
- Disconnect the charging cable from the flight battery when it is fully charged.

8. Transmitter controls

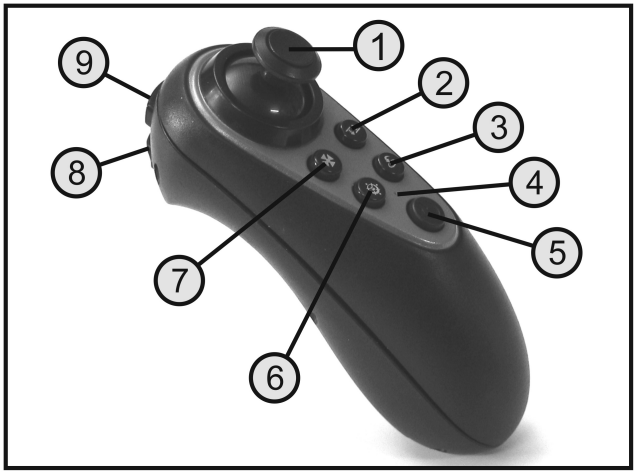

Figure 1

1 Joystick for the pitch and yaw function

2 Push button for the take-off and landing function

3 Push button for the return function

4 LED indicator

5 Push button for the on/off function

6 Push button for the headless function

7 Push button for sensor calibration

8 Push button for photo and video recording *

9 Push button for the beginner, sport and expert mode

⟶ * Please note:

The photo and video recording takes place exclusively in conjunction with a smartphone (not included). For this purpose, an app must be installed on the smartphone. Then images and videos can be stored in the smartphone. The exact procedure is described according to the app installation information.

9. Using the transmitter

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

The figures of the remote control and the model in these operating instructions are for illustrative purposes only. The label, design and colour scheme of the products supplied in series may differ completely from the figures in these operating instructions.

a) Inserting the non-rechargeable batteries

The transmitter is supplied by 2 Micro/AAA non-rechargeable batteries.

Important!

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

To insert the non-rechargeable batteries, proceed as follows:

Push the locking latch of the cover lock (1) on the underside of the transmitter forward and lift off the battery compartment cover (2).

Insert 2 Micro/AAA non-rechargeable batteries (3) according to the specifications on the bottom of the battery compartment (4), paying attention to the correct polarity. The spiral spring contact (5) must always be connected to the negative pole of the non-rechargeable battery.

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

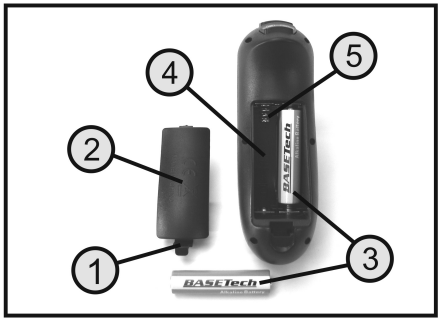

Figure 2

b) Switching on the transmitter

Press and hold down the push button for the on/off function (see also Figure 1, no. 5).

The transmitter will emit two short beeps and the LED indicator (see also Figure 1, no. 4) will start to flash.

Then push the joystick for the pitch and yaw function (see also Figure 1, no. 1) all the way up.

The transmitter will emit a beep. Now move the joystick all the way down. The transmitter will emit another beep and the LED indicator will now glow steadily.

To turn off the transmitter, press and hold down the push button for the on/off function. The transmitter will emit a beep and the LED will go out.

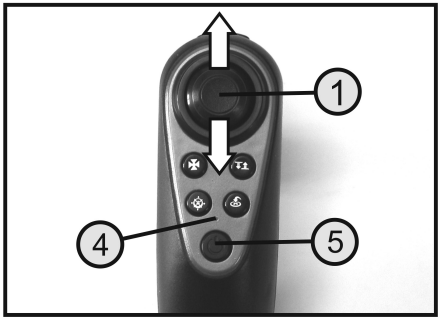

Figure 3

If the power supply is no longer sufficient for the proper operation of the transmitter, the LED indicator (see Figure 3, no. 4) will start to flash.

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

10. Operating the quadrocopter

a) Charging the flight battery

The flight battery can be charged using the included USB charging cable.

→ The charging cable in Figure 4 is wound up for photo-technical reasons. Before first use, remove the cable tie and fully unwind the charging cable.

Charging:

Connect the USB plug of the charging cable (1) to a USB port of a computer/laptop or a USB charger plug.

The LED charging indicator on the USB plug (2) will go on to indicate that the USB charging cable is supplied with the correct voltage.

Connect the 2 mm barrel connector (3) of the charging cable to the charging socket (4) of the flight battery (5).

Charging will now start automatically and the LED charging indicator on the USB plug (2) will go out.

The red LED on the USB plug will go on when the flight battery is fully charged.

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

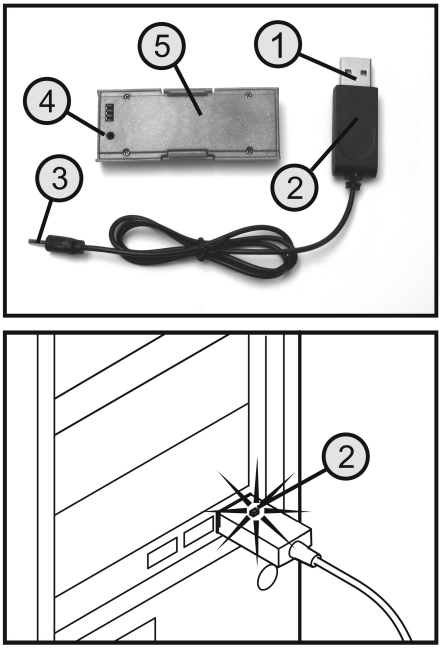

Figure 4

Caution!

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 flight battery.

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

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

Important!

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

b) Folding the rotor arms in and out

The propeller arms with the propellers and guards can be folded in for space-saving transport (see Figure 5A).

The front and rear propeller arms on each side are mechanically interconnected and folded in and out together (see Figure 5B).

When both sides are unfolded, the quadrocopter lies flat on the surface (see Figure 5C).

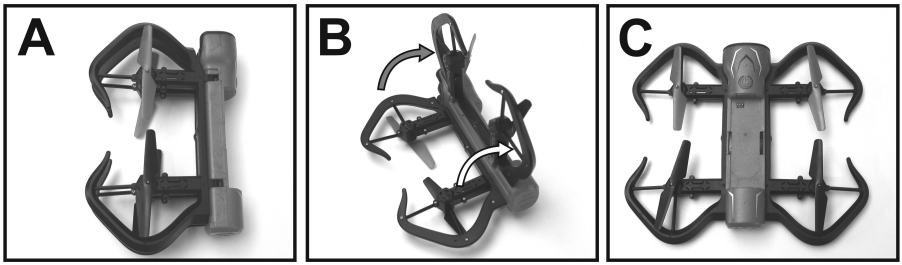

Figure 5

c) 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, rotate each individual propeller carefully with your finger and check the concentricity and the ease of movement.

When doing this, pay attention to the directions of rotation of the various propellers. Two propellers rotate clockwise as viewed from above (A) and two propellers rotate counter-clockwise (B).

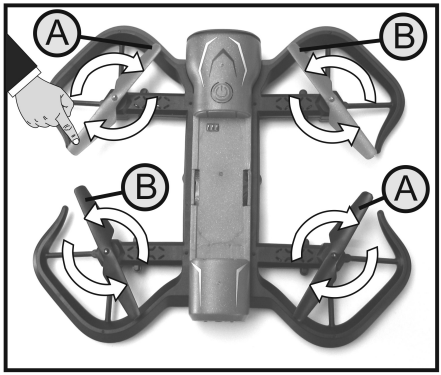

Figure 6

d) Inserting the flight battery

Mount the flight battery (1) on the quadrocopter from above.

It is important that the connection contacts (2) of the quadrocopter engage securely in the connection socket (3) of the flight battery.

The flight battery lock is taken over by two locking latches (4) on the sides of the flight battery.

To remove the rechargeable battery, slightly press the two grooved surfaces (5) on the right and left of the flight battery inwards and lift off the rechargeable battery.

Important!

If you do not use the quadrocopter, e.g. during transport and storage, always remove the rechargeable battery from the quadrocopter.

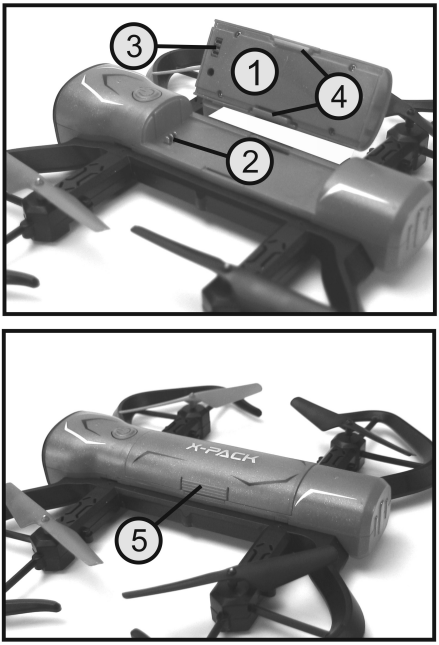

Figure 7

e) Switching on the quadrocopter

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

First insert the charged flight battery into the quadrocopter as described above and place the quadrocopter on a level surface.

Press and hold down the function button (2) on the quadrocopter until the green LED (3) at the rear of the quadrocopter starts to flash.

Then press the push button for the on/off function on the remote control transmitter (see also Figure 1, no. 5). The red LED on the hand-held transmitter (see also Figure 1, no. 4) will flash.

Then push the joystick for the pitch and yaw function (see also Figure 1, no. 1) all the way up. The transmitter will emit a beep and the green LED on the quadrocopter will flash faster.

Then move the joystick all the way down. The transmitter will emit another beep and the red LED indicator on the transmitter will glow steadily.

The green LED on the quadrocopter will also glow steadily after successful pairing.

Shortly thereafter, a blue LED below the function button will signal the operational readiness of the camera module.

The quadrocopter is ready to start.

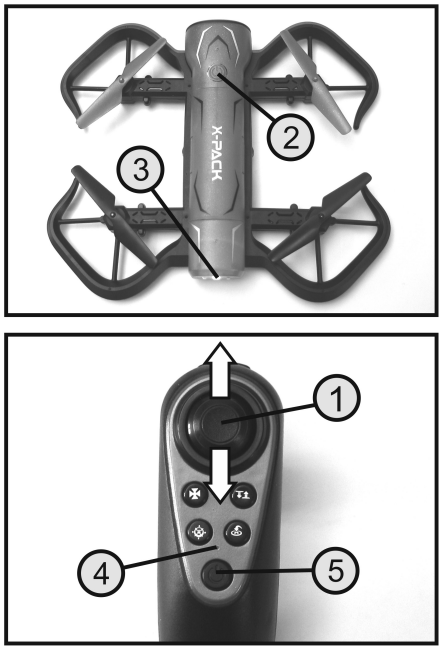

Figure 8

Important!

There should be no other 2.4 GHz transmitters in the immediate vicinity during the switch-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 on the quadrocopter until the green LED at the rear goes out. Now you can also switch off the transmitter.

f) 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 using the joystick on the remote control transmitter and the movement of the transmitter. The following functions are available:

Pitch function

With the pitch function, you can control the flight altitude of the quadrocopter (see Figure 9). Use the joystick for steering (see also Figure 1, no. 1).

When the motors are started by a remote control command, they are idling. If the joystick is now pushed forwards from its middle position, the propellers will speed up and the quadrocopter will lift off. Once the desired flight altitude has been reached, the joystick can be returned to the middle 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 will ascend. When the joystick is pulled back, the quadrocopter descends (see arrows in Figure 9).

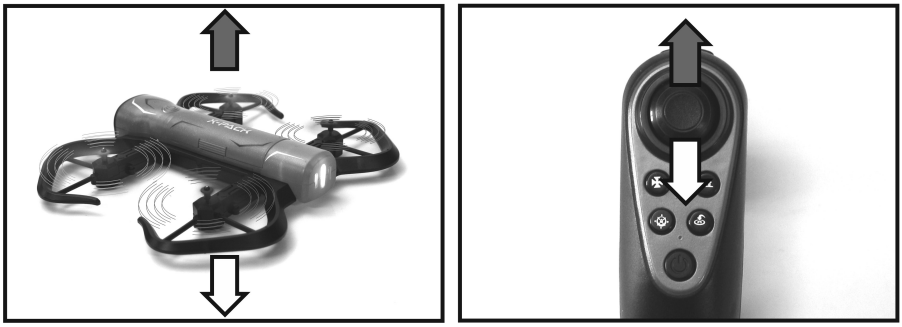

Figure 9

Yaw function

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

When the joystick is moved to the left (see also Figure 1, no. 1), 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). Thus, the total lift remains the same, but now a torque acts on the model turning the quadrocopter about the vertical axis to the left, as seen from above (see arrows in Figure 10).

When the joystick is moved to the right, the propeller speeds are changed exactly the opposite and the model turns to the right.

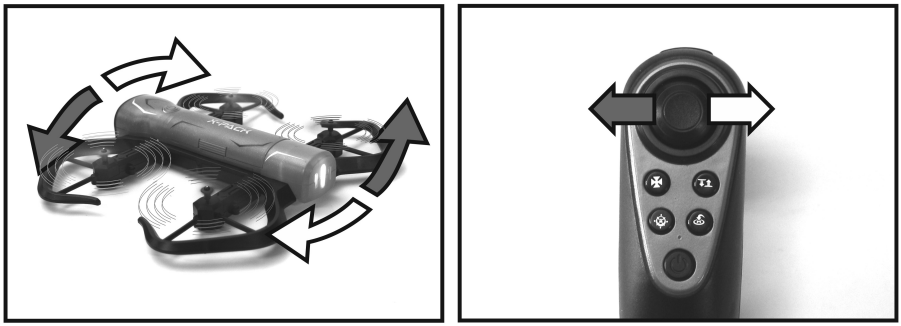

Figure 10

Roll function

The roll function allows you to move the quadrocopter sideways to the right and to the left (see Figure 11). Move the remote control transmitter for steering.

When the transmitter is tilted to the left around the longitudinal axis, 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 11).

When the transmitter is tilted to the right around the longitudinal axis, the propeller speeds are changed exactly the opposite and the model flies sideways to the right.

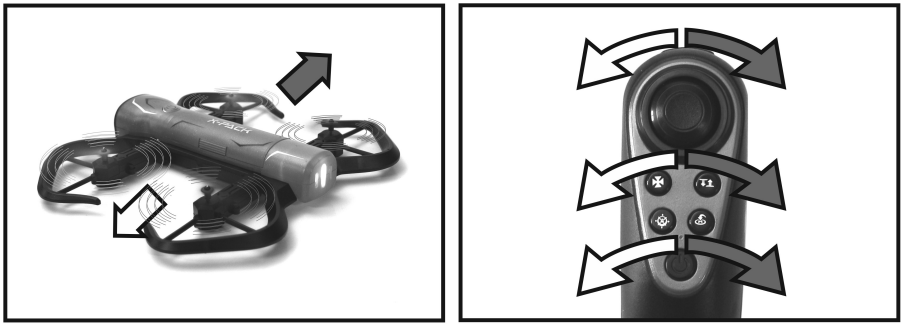

Figure 11

Pitch function

The pitch function allows you to move your quadrocopter forward and backward (see Figure 12). Move the remote control transmitter for steering.

When the front of the transmitter is tilted downwards, the quadrocopter electronics change the propeller speeds so that the model tilts slightly forward and thus also flies forward (see arrows in Figure 12).

When the front of the transmitter is lifted up, the propeller speeds are changed exactly the opposite and the model flies backward.

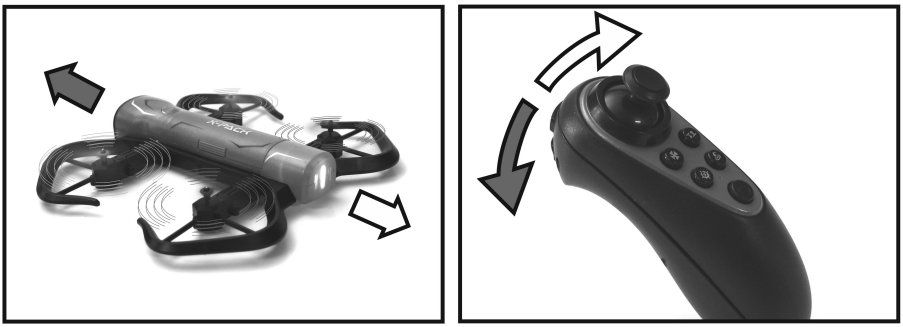

Figure 12

g) Practical flight tips for the first start

Calibrate the position sensors before each start. The exact procedure is described in the following chapter.

Although the model can be flown in a very confined space, we recommend using an unobstructed space of approx. 3 x 3 m for the first 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 ascend to eye level after start-up. This enables the flight attitude to be recognised optimally and the quadrocopter is more stable than at ground level. 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 hit any objects and become blocked, turn off the drive motors immediately so that they are no longer supplied with power.

Caution!

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

When the green LED at the rear of the quadrocopter starts to flash, the flight battery has reached its lower voltage limit. In this case, stop the flight operation immediately and recharge the flight battery in order to avoid deep discharge that can damage the flight battery.

If the quadrocopter is used outdoors, pay attention to the flight distance. The further away the quadrocopter is from you, the harder it is to recognise the attitude. In addition, the wireless remote control has a limited range of approx. 30 – 50 m.

Never switch off the transmitter while the quadrocopter is flying.

11. Calibrating the position sensors

Before starting the quadrocopter, you should calibrate the position sensors. This ensures that the quadrocopter hovers smoothly at one spot and does not fly in one direction spontaneously and without a control command.

Proceed as follows:

First switch on the quadrocopter with the function button (2) and then place it on a flat, level horizontal surface.

Then turn on the transmitter and push the joystick (1) completely forward and then pull it back again.

When the blue LED below the function button, the green LED (3) on the quadrocopter and the red LED (4) on the transmitter glow steadily, the quadrocopter is ready to start.

Now press the push button for sensor calibration (7). The transmitter will emit a long beep and the green LED (3) at the rear of the quadrocopter will start to flash.

After approx. 2 seconds, once the calibration has been successfully completed, the green LED on the quadrocopter will glow steadily again.

If you discover later while flying that the quadrocopter still wants to fly in a certain direction, repeat the calibration procedure. Then make sure that the quadrocopter is absolutely level.

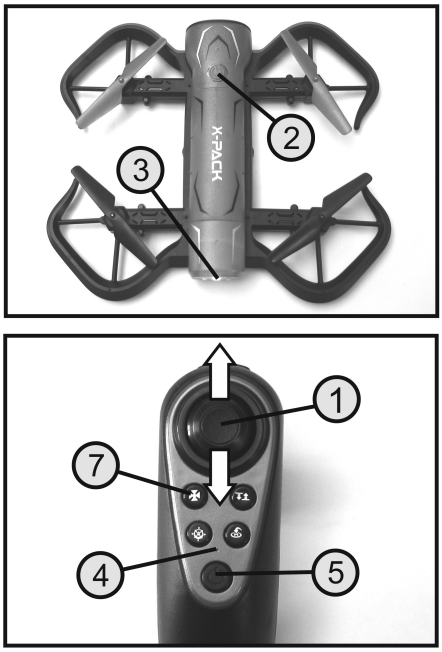

Figure 13

12. Lifting off the quadrocopter

With the quadrocopter and transmitter switched on and the sensors successfully calibrated, the quadrocopter can be lifted off.

Push the joystick completely forward and then pull it back again. The propellers will start to rotate at low speed. To stop the rotating propellers, move the joystick to the lowest position and hold it until the propellers stop.

To lift off the quadrocopter, you have two options:

Manual start:

If the propellers are rotating at low speed, carefully move the joystick (1) forward. The quadrocopter will significantly increase the propeller speeds and take off.

You can easily adjust any drifting forwards, backwards or sideways by tilting and tipping the wireless remote control. Once the desired flight altitude has been reached, move the joystick back to the middle position. The quadrocopter will go into hover at a constant altitude.

The flight altitude and flight direction can be controlled individually by means of the joystick and by moving the transmitter.

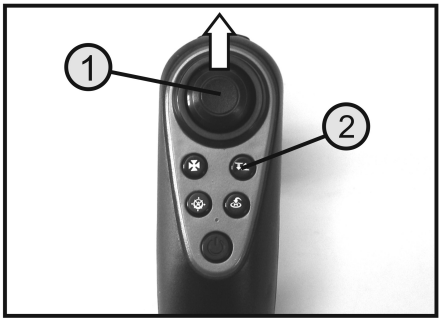

Figure 14

Automatic start:

If the propellers are rotating at low speed, briefly press the push button for the take-off and landing function (see Figure 14, no. 2). The propellers will speed up and the quadrocopter will take off quickly. It ascends automatically to an altitude of approx. 80 – 100 cm and then automatically goes into hover.

Then use the remote control transmitter 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.

13. Landing the quadrocopter

There are two methods for landing the quadrocopter:

Method 1:

When the quadrocopter is hovering, carefully reduce the flight altitude with the joystick (see Figure 14, no. 1) until the quadrocopter stands safely on the ground.

Once the quadrocopter has landed, move the joystick to the lowest position and hold it in this position until the propellers stop.

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 14, no. 2).

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, pitch 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.

14. 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 enabled when the remote control transmitter is switched on. In this flight mode, the quadrocopter responses less sensitively to the control 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 responses much more agile to the transmitter control 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 the outdoor use of the quadrocopter.

Enabling 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 the beginner, sport and expert mode (see also Figure 1, no. 9). The transmitter emits two short beeps to indicate that sport mode has been enabled.

If you press the push button (9) again, the transmitter will emit three beeps and thus signalise switching to expert mode.

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

Figure 15

15. Flip function

The quadrocopter can perform sideways flips, if necessary. You should perform the first flips outdoors when there is absolutely no wind. For this purpose, allow the quadrocopter to ascend to a safe altitude of approx. 2 – 3 m and then hover at one spot.

To switch the transmitter to flip mode, press the joystick from above (see also Figure 1, no. 1). To indicate that the transmitter has switched to flip mode, it emits short beeps continuously.

Turn the transmitter quickly to the right or left similar to the roll control and then turn it back to normal position.

Once the sender has recognised the command, the beeps will mute. The quadrocopter will ascend a bit higher and will then flip to the desired side.

After flipping, the quadrocopter will go back into hover.

To perform another flip, press the joystick again from above.

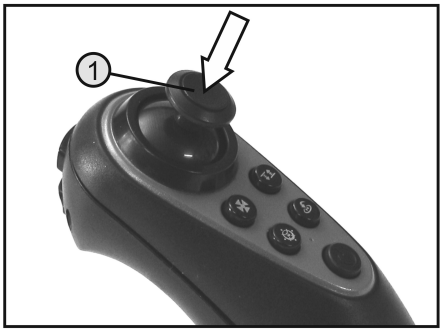

Figure 16

⟶ When the green LED at the rear of the quadrocopter starts to flash, the flight battery has reached its lower voltage limit. In this case, the flip function is disabled.

16. Flying in headless mode

The quadrocopter's direction of movement always depends 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 can be confused quickly when you see the model from the side or the front, not from behind. 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 17A) 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 17B).

If the quadrocopter has turned 90 degrees to the left in flight so that its left side is 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 17C).

If headless mode is enabled, it does not matter in which direction the front of the quadrocopter is oriented. 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 17D).

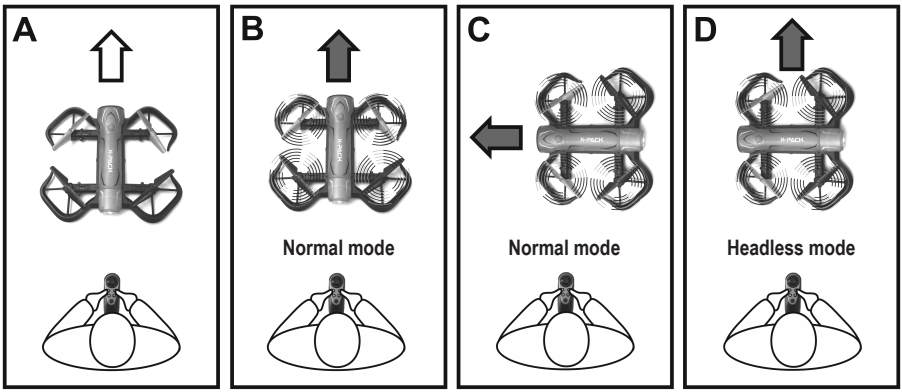

Figure 17

To switch on the headless mode, briefly press the push button for the headless function (6) (see also Figure 1, no. 6). The transmitter will emit a short beep to signal the enabled headless mode and the green LED at the rear of the quadrocopter (see Figure 8, no. 3) will flash slowly. The quadrocopter is now flying in headless mode.

To switch off the headless mode, press the push button for the headless function (6) again. The quadrocopter is now flying in normal mode again.

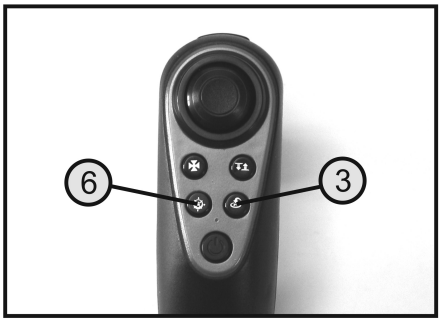

Figure 18

17. Return function

The quadrocopter has a return 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 19A). As with headless mode, it does not matter in which direction the front of the quadrocopter is currently oriented (see Figure 19B).

Important!

The return function should only be enabled if the quadrocopter has flown too far from the pilot in the previously defined forward direction and the pilot is in line with the quadrocopter facing forwards. If the quadrocopter is offset sideways, it will fly past the pilot sideways with the return function enabled and will thus fly away again (see Figure 19C).

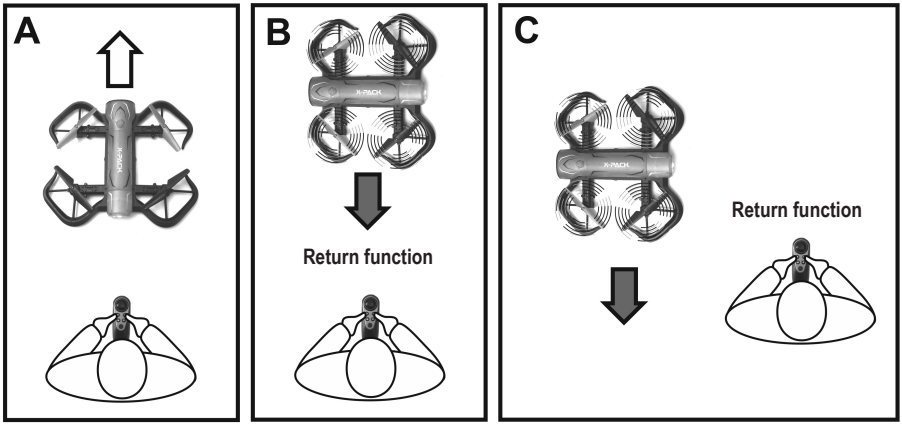

Figure 19

To enable the return function, press and hold down the push button for the return function (see Figure 18, no. 3).

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

As soon as the quadrocopter has flown backward far enough, move the transmitter in any direction similar to the pitch and roll control and the return function will be terminated automatically.

Caution!

When enabling the return function, the remote control transmitter must not be moved at the same time as this would disable the function immediately. The quadrocopter would then tilt back once shortly and go back into hover.

18. 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 one of the following QR codes depending on the operating system of your smartphone (iOS or Android). After scanning the QR code, you will be automatically linked to the current version of the app.

QR code for iOS

QR code for Android

Alternatively, search for the “XT-GO” 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 20 shows the app's home page, which includes six options:

1 Gearwheel symbol = adjust settings

2 Question mark symbol = request support

3 Folder symbol = view captured images and videos

4 FLY = enable smartphone control

5 PVE = start augmented reality game

6 Quadrocopter image = model selection

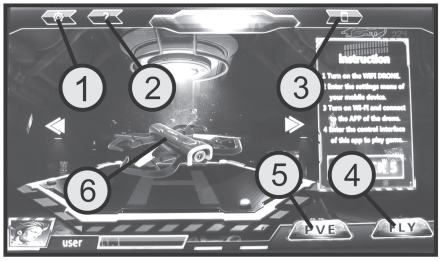

Figure 20

In order for the app to establish a working connection with the quadrocopter, it is important to select the image of the “Foldable Drone G-Sense RtF” quadrocopter on the home page (see Figure 20, no. 6). To change the quadrocopter images, use the swipe function or the side direction arrows.

The “PVE” button (see Figure 20, no. 5) can only be selected if the quadrocopter is connected to the smartphone via Wi-Fi.

b) Making settings

If the gearwheel symbol (see Figure 20, no. 1) is enabled, a new screen will appear, in which you can set the following functions:

1 Music volume adjustment

2 Sound effects volume adjustment

3 Menu language selection

4 Back to app's home page

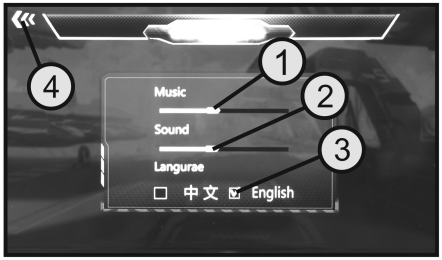

Figure 21

c) Help function

You can call up the current help function using the question mark symbol (see Figure 20, no. 2). 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. Use the arrow symbols (1) to return to the app's home page.

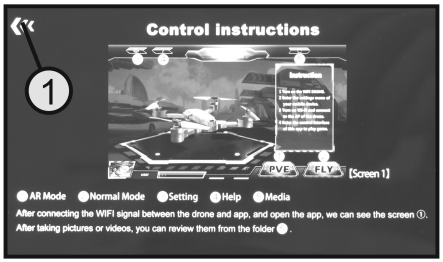

Figure 22

d) Operation

If you select the “FLY” button (see Figure 20, no. 4), the following user interface will open:

The background image shown in Figure 23 only appears if the app has been activated with the quadrocopter switched off. When the quadrocopter is connected to Wi-Fi, the camera image is shown in the background.

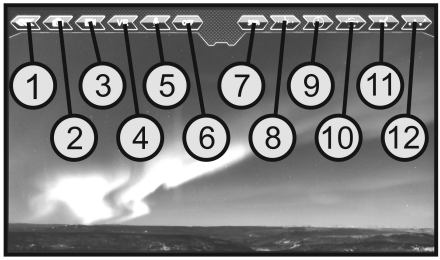

Figure 23

The symbols shown in Figure 23 have the following function:

1 Return to the app’s home page

2 Capture a photo 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 VR switching enables to use the smartphone in a VR headset (not included).

5 Switch voice control on or off.

6 Show or hide virtual joystick, including trim indicators.

7 Switch beginner, sport and expert mode. Control sensitivity is 30%, 60% and 100%.

8 Button for headless mode.

9 Button for sensor calibration.

10 Button for flip function.

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

12 Switch tracking mode on and off.

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).

Caution!

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 the FPV operation, the quadrocopter must be monitored by a co-pilot who can warn you on time about potential hazards. It therefore requires a lot of practice to fly in the FPV operation. During the learning phase, in particular, make sure that the selected flight area is free of obstacles and far away from people, animals, buildings and roads.

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

19. 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.

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

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, XT-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 “XT-GO” quadrocopter app. Select the image of the “Foldable Drone G-Sense RtF” quadrocopter on the home screen.

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

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

The quadrocopter is ready for the camera flight.

To capture photos or videos, use the push button for photo and video recording (see Figure 1, no. 8) on the remote control transmitter. Press the button briefly to capture a photo. Press and hold down the button to record a video. In this case, the green LED at the rear of the quadrocopter (see Figure 8, no. 3) will flash in double rhythm.

Alternatively, the respective buttons on the smartphone (see Figure 23, no. 2 or 3) can be enabled. In this case, however, the ongoing video recording will only be displayed on the smartphone. The LED on the quadrocopter does not flash.

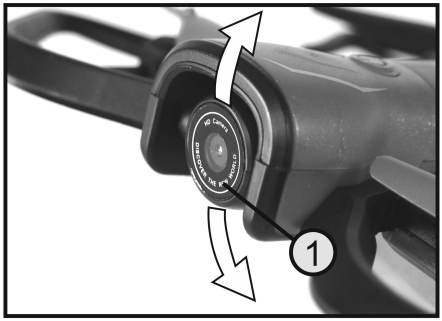

Figure 24

The images and videos are stored directly in the smartphone and can then be viewed using the playback function (see Figure 20, no. 3).

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 included remote control transmitter enables a more sensitive control, we recommend that the transmitter be used for video recordings.

Please note!

Observe the statutory regulations of your country regarding photo and video recordings of persons, objects and facilities, as well as their publication. You assume sole responsibility in the event that rights, laws or regulations are violated by the use of the camera.

20. Using the smartphone as a remote control

Please note!

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. Perform the first test flights on a sufficiently large area in order to avoid flying the quadrocopter close to people, animals or objects.

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

a) Enabling smartphone control

Start up the quadrocopter. The LED at the rear of the quadrocopter must flash.

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, XT-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 “XT-GO” quadrocopter app.

Select the image of the “Foldable Drone G-Sense RtF” quadrocopter on the home screen.

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

Press the “Off” button (6) to display the virtual joysticks (13 and 14) and trim indicators (15) shown in the figure. The indicator of the button (6) will switch from “OFF” to “ON”.

After approx. two seconds, the pairing between the smartphone and the quadrocopter will be completed and the LED at the rear of the quadrocopter will glow steadily.

Practical tips

You should set the control sensitivity to 60% or 100% using the Dual Rate Switching button (7) in order for the quadrocopter to better respond to virtual joystick movements.

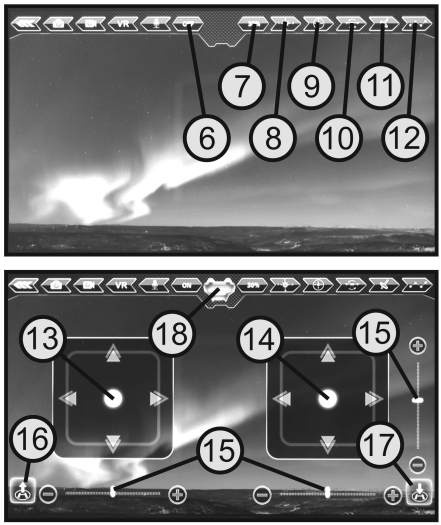

Figure 25

b) App control functions

When the quadrocopter stands on a flat start surface, calibrate the position sensors. For this purpose, press the respective button (see Figure 25, no. 9) on the display. The button will get brighter and the green LED at the rear of the quadrocopter (see Figure 8, no. 3) will start to flash. As soon as the calibration process is completed, the button will get darker and the LED on the quadrocopter will glow steadily.

Use both virtual joysticks for steering. The function of the left joystick (see Figure 25, no. 13) corresponds to that of the joystick on the remote control transmitter. Use the right joystick (see Figure 25, no. 14) to control the pitch and roll function.

In addition, it is possible to trim the quadrocopter. When the hovering quadrocopter drifts slightly to the left, press the button (+) below the right joystick during trimming until the quadrocopter hovers at one spot again. The trimming indicator (see Figure 25, no. 15) will move from the middle position. If the quadrocopter drifts to the right, press the button (-) below the right joystick. The pitch and yaw function also has trim settings that work on the same principle.

Should the trim be adjusted very far, land the quadrocopter on a flat surface, set all trims back in the middle position and calibrate the position sensors.

To start the rotors, move the left virtual joystick (13) to the lower left and the right virtual joystick (14) to the lower right (see light arrows in Figure 26). Hold both joysticks in this position until the rotors start. As the rotors rotate, return the joysticks to the middle position.

To stop the rotors, move the left joystick (13) to the lower position and hold it in that position until the rotors stop (see dark arrow in Figure 26). Alternatively, press the button for the motor emergency stop function (18).

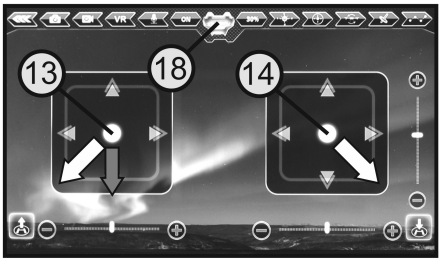

Figure 26

Caution!

Never enable the motor emergency stop function (18) when the quadrocopter is in the air. In this case, it would fall to the ground without propulsion and sustain damage.

c) Quadrocopter take-off via smartphone

If the propellers are rotating at low speed, carefully move the left virtual joystick (13) forward. The quadrocopter will significantly increase the propeller speeds and take off. Alternatively, you can also use the button for the automatic take-off (16).

Then use both virtual joysticks for steering.

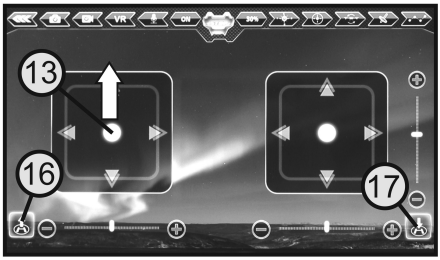

Figure 27

d) Landing the quadrocopter via smartphone

To land the quadrocopter, carefully reduce the flight altitude with the left joystick (see Figure 27, no. 13) until the quadrocopter stands safely on the ground. Once the quadrocopter has landed, move the virtual joystick to the lowest position and hold it in this position until the propellers stop. Alternatively, you can also use the button for the automatic landing function (see Figure 27, no. 17).

e) Other control options

In addition to the control using both virtual joysticks, there are other quadrocopter control options.

Voice control

If the button for the voice control (5) has been enabled, the quadrocopter can be controlled by voice commands. The possible voice commands such as “take-off”, “landing”, “forward”, “backward”, “right side”, and “left side” are briefly displayed when voice control is enabled.

Gravity sensor mode

If the button for the gravity sensor mode (11) has been enabled, the smartphone will respond in the same way as the included remote control transmitter. The pitch and roll function is controlled by tilting and tipping the smartphone. To control this function, the right virtual joystick moves according to the movement of the smartphone.

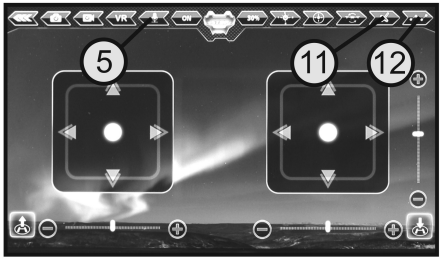

Figure 28

Tracking mode

The right joystick is hidden when the button for the tracking mode (see Figure 28, no. 12) is enabled.

As an alternative, a flight path (1) can be drawn on the smartphone with the finger. As soon as the 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.

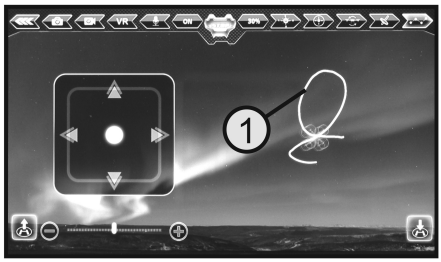

Figure 29

Please note, important information!

First test the different control options without starting the quadrocopter motors. With the responses of the virtual joysticks, you can easily recognise if the voice or control commands are performed correctly and how slow the controller responds.

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

21. Augmented reality game

In addition to the control functions and the photo or video recording, the app also offers an augmented reality game. In this game, virtual aeroplanes are displayed in the real camera image.

To start the game, the quadrocopter must be connected to Wi-Fi. Only then the “PVE” button (see Figure 20, no. 5) can be selected.

Select the image of the “Foldable Drone G-Sense RtF” quadrocopter on the home screen.

As soon as you enable the “PVE” button, the smartphone will show the current camera image with the displayed virtual aeroplanes.

As opposed to the fly mode, the VR mode, voice control, the gravity sensor mode and the tracking mode are disabled in the augmented reality game. The remaining control options are identical to the FLY mode.

The enemy aeroplanes can be combated with cannons (1), rockets (2) and bombs (3). The current score (4) and a life status indicator (5) are displayed at the same time.

Press the “Off” button (6) to display the virtual joysticks shown in the figure.

With the position sensors calibrated, the quadrocopter can be started and controlled using both virtual joysticks.

The targets can be aimed at precisely by tilting and tipping the smartphone.

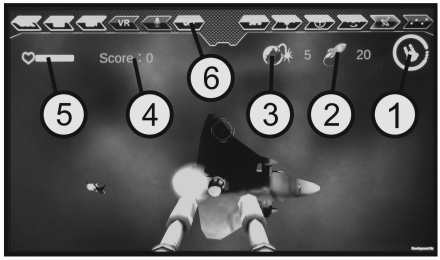

Figure 30

Caution!

Since your focus is on the smartphone display when playing a game, and the quadrocopter thus flies in FPV mode, you should make the first game attempts on a sufficiently large area. With this in mind, also pay attention to the aforementioned safety notes and tips on FPV flying.

22. Maintenance and cleaning

Clean the exterior of the model and the remote control with a soft, dry cloth or brush. Never use aggressive 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.

Replacing 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, make sure that you do not bend the motor shafts.

When selecting the new propeller, always pay attention to the direction of rotation (see also Figure 6).

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

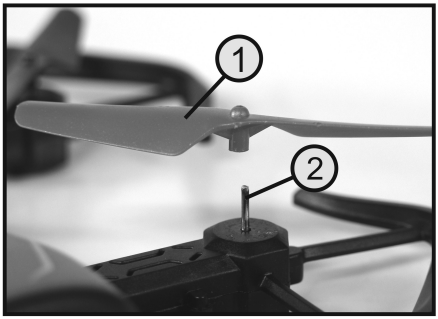

Figure 31

Important!

Do not use force or unsuitable tools.

When replacing mechanical parts, only use original spare parts from the manufacturer.

The spare parts list can be found in the downloads section for the respective product on our website www.conrad.com.

You can also request the spare parts list by phone. The contact details can be found at the beginning of these operating instructions in chapter 1.

23. Disposal

a) Product

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

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

b) Non-rechargeable/rechargeable batteries

As the end user, you are required by law to return all used non-rechargeable/rechargeable batteries (Battery Directive). They must not be placed in household waste.

Non-rechargeable/rechargeable batteries containing harmful chemicals are labelled with this symbol to indicate that disposal with household waste is forbidden. The abbreviations for heavy metals in batteries are as follows: Cd = cadmium, Hg = mercury, Pb = lead (indicated on the non-rechargeable/rechargeable batteries, e.g. below the waste bin symbol on the left).

Used non-rechargeable/rechargeable batteries can be returned free of charge to local collection points, our stores or non-rechargeable/rechargeable battery retailers.

You thus fulfil the statutory obligations and contribute to environmental protection.

24. 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.

25. Troubleshooting

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

Problem	Solution
The transmitter does not respond, the LED does not go on.	• Check the non-rechargeable batteries in the transmitter. • Check the polarity of the non-rechargeable batteries in the transmitter. • Check the on/off switch.
The transmitter LED flashes.	• Check or replace the non-rechargeable batteries in the transmitter. • Perform the quadrocopter switch-on process again.
The quadrocopter will not turn on. The LED on the quadrocopter does not go on.	• Check that the flight battery is inserted correctly. • Recharge the flight battery for testing purposes. • Press and hold down the button on the quadrocopter for at least 1 second.
Propellers do not start.	• Check the flight battery charge level. • Recharge the flight battery for testing purposes. • Repeat the switch-on process.
The quadrocopter tilts to the side when started.	• Repeat the switch-on process of the quadrocopter and do not move the model while doing so. • Check the ease of operation of the drive motors. • Calibrate the position sensors.
The quadrocopter vibrates intensely in the air.	• Propellers do not rotate smoothly. • Propellers are damaged or deformed.
The quadrocopter has too little power or too short flight times.	• Check the flight battery charge level. • Replace the flight battery.
The quadrocopter always flies in one direction.	• Unfavourable flight conditions (wind or draught). • Calibrate the position sensors.
Quadrocopter responses very sluggishly to the control commands.	• Switch to sport or expert mode.
The quadrocopter cannot be paired with the smartphone.	• Wrong quadrocopter selected in the start menu. • Wi-Fi connection not established.
No camera image is shown on the smartphone.	• Wi-Fi connection is faulty or not established. • Disturbance by other Wi-Fi devices.

26. Technical data

a) Transmitter

Frequency range .....2.450 – 2.478 GHz
Transmission power.....9 dBm
Control channels.....4
Transmitter range .....approx. 30 – 50 m
Operating voltage .....3.0 V/DC via 2 Micro/AAA non-rechargeable batteries
Dimensions (L x W x H).....112 x 37 x 55 mm
Weight without batteries .....47 g

b) Quadrocopter

FPV frequency range.....2.402 – 2.422 GHz
Transmission power.....15 ±2 dBm
Transmitter range .....approx. 30 m
Power supply.....3.7 V/500 mAh (1S LiPo, 15C)
Dimensions.....158 x 180 x 27 mm (incl. guards)
Folded: 158 x 103 x 50 mm
Propeller diameter .....68 mm
Take-off weight, incl. rechargeable battery.....86 g

c) Camera

Video resolution.....1280 x 720 pixels at 20 fps
Image resolution.....1280 x 720 pixels
Adjustable angle of inclination.....15° – 45°

d) USB charger

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

e) Software/app

Android .....Android 4.0 or later
iOS.....iOS 8.0 or later

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