MetaFly

By bionicbird
Biomimetic Drone

THANK YOU FOR PURCHASING METAFLY

INSTRUCTION MANUAL

To read imperatively before first use.

14 + years old. THIS IS NOT A TOY!

- Ultra light weight less than 10 g
- Custom developed micro coreless motor 1.6 Watt / aluminum heat sink
- Extremely precise power control (128 steps)
- Sharp & immediate directional control for aerial stunts
- Electronic protection against battery damage
- Flies up to 1 mile in a single flight
- Ultra long life LiPo battery included
- Transmitter auto power-off (battery saving)
- Adjustable tail angle for fast or slow flights
- Up to 8 min flight, on a single charge
- Charging time: 13 min
- Remote control by 2.4 GHz radio
- Frequency hopping technology to code frequency (allows numerous users in the same place)
- Range up to 150 meters

WARRANTY: This product is warranted against defects in material and workmanship under normal use for thirty (30) days from the date of purchase (Keep your purchase receipt).
For any questions regarding this product, please contact our customer service by email at:
contact@bionicbird.com.
You can find video instructions at
www.bionicbird.com.

XTIM SARL – 77 rue de Lyon 13015 MARSEILLE - FRANCE
email: contact @mybionicbird.com
website: www.bionicbird.com

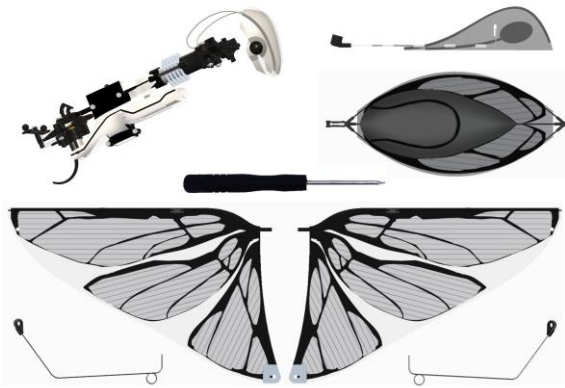
PATENTS:

Patented by Edwin Van Ruymbeke - France 0855430 date 08/05/08 and 0901629 date 3/04/09 PCT FR2009/051560

PARTS INCLUDED

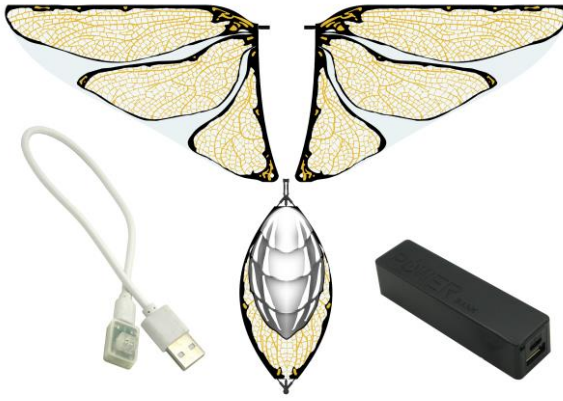
1/ METAFLY STANDARD

1 complete MetaFly kit and its transmitter:



2/ METAFLY UPGRADED KIT additional parts:

MetaFly upgrade kit includes the standard kit + these add-ons (extra wings special edition, USB charger, nomad charger):



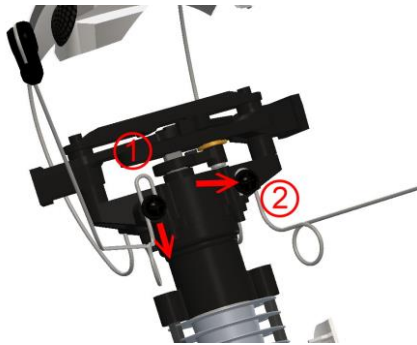
BATTERIES:

MetaFly (onboard): 3.7 Volt 1 cell 58 mAh Li-Po (1,6g) included
Transmitter: 4AA, 1.5 volts - *NOT INCLUDED*
Nomad charger (upgrade kit only): 3.7 volt 1 cell Li-Po 800 mAh. Allows up to 15 recharges outdoor.

ASSEMBLING YOUR METAFLY

Legs, wings, tail and rudder must be assembled to MetaFly's body. It is very simple if **you follow strictly the instructions below** but might be tricky if you don't. Please proceed with care as all parts are tiny, and make sure you wear your reading eyeglasses (if needed).

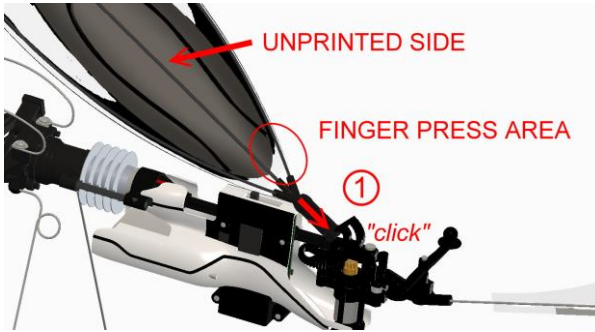
1/ LEGS



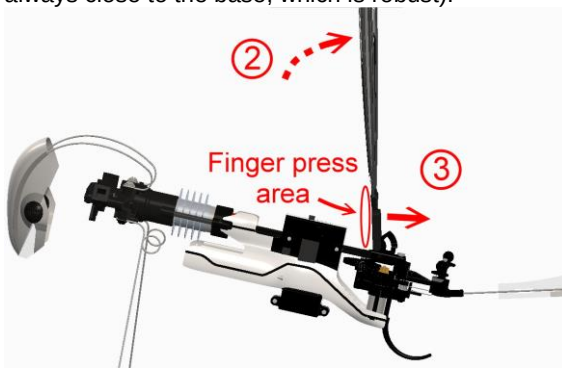
1 - Slide the "hook" at the end of the leg below the screw head (the screws come already assembled on the frame).
2 – When it's in the right position, fix it by tightening the screw (use the supplied screwdriver).

2/ TAIL

This require more attention, please follow strictly this 3 steps process:

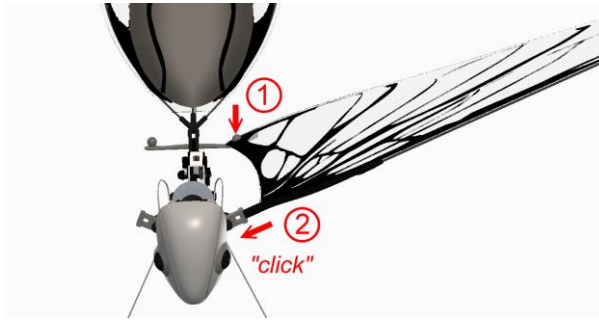


1 - Snap the tail end into its hole by pushing following the arrow direction until you feel a “click”. Mind your fingers position as shown on the picture. (hold the tail always close to the base, which is robust).



2 – Once in position, rotate the tail up to a vertical position, then 3 – **slide your forefinger down** at maximum to press it backward into the final position.

3/ WINGS



Select the right wing for the right side and the left wing for the left side (the upper side of the wing is the one printed).
1 – At rear, snap the back of the wing on the round knob of the steering mechanism.
2 - Align the wing bone with the shoulder and insert it in the slot. You should feel a click, meaning that the wing is correctly inserted. NB: Always hold the wings by the base, which is robust.

4/ RUDDER

Insert the rudder end by pressing it up on the tube at the end of the steering system, while holding the upper side of this tube with the other hand's forefinger to balance the force. Spread the spring ends if necessary, they must stay outside of the rudder end.

INSTRUCTIONS OF USE

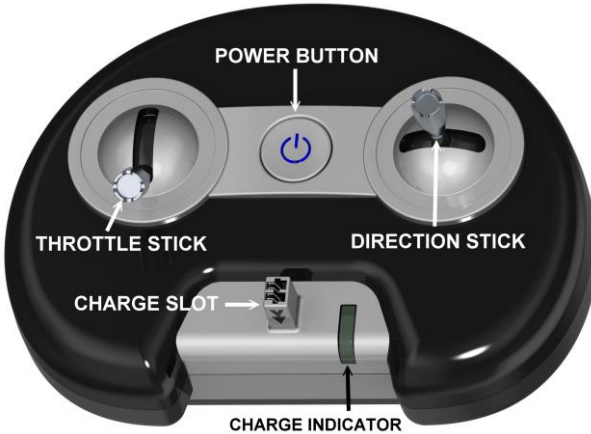
MANUFACTURER NOTES:
* Never try to move the wings up/down manually!
* This product was tested for a lifespan of hundreds of cycles in flight; however, it remains a high technology product that should be handled with care when not flying. Avoid seizing it by the wings or tail, place it carefully and gently on the charging slot, proceed gently also when replacing wings.

I - INSTALLING BATTERIES IN THE TRANSMITTER

Please install 4 AA/LR6 1,5V batteries at the back of the transmitter (open the battery cap by unscrewing it).
Warning: ensure that the + and - polarities match the illustrations inside the battery compartment.

II – TRANSMITTER FUNCTIONS

Left stick - Throttle control: this stick controls the power of the flapping of the wings and therefore the speed at which MetaFly gains altitude.
Right stick - Direction stick: push briefly left or right. Avoid oversteering.
Automatic power-off function:
If not in use for l0 min, the transmitter will turn itself off



(saving battery power).

Transmitter low batteries warning:

If the power button starts flashing fast, you should replace the batteries.

Note: Most of the time, the transmitter batteries become low during the charging process. **The charging will be stopped and MetaFly will not be fully charged**. It is then impossible to recharge MetaFly again without replacing the batteries.

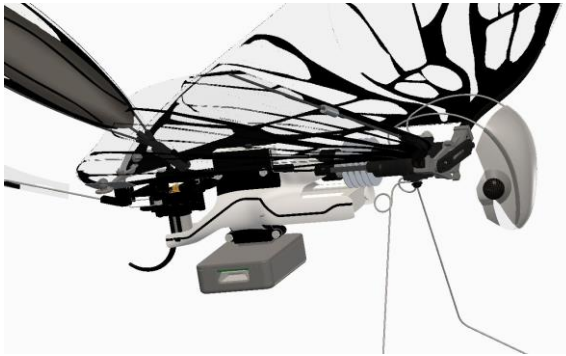
III - CHARGING METAFLY ON THE TRANSMITTER

Turn on the power of the transmitter by pushing on the power button. Then Insert MetaFly's connectors into the charging slot of the transmitter. Be careful to insert MetaFly in the right direction as shown on the picture.

The CHARGE indicator (green LED) is flashing and the power button LED turns off: MetaFly is charging
When the CHARGE indicator stops flashing MetaFly is fully charged.

IV - CHARGING METAFLY ON THE USB CHARGE DEVICE (UPGRADE KIT ONLY)

The process is the same, and you'll use the USB cable to connect either our nomad charger (upgrade kit only), an USB port or a mobile phone USB wall charger to the charge device.



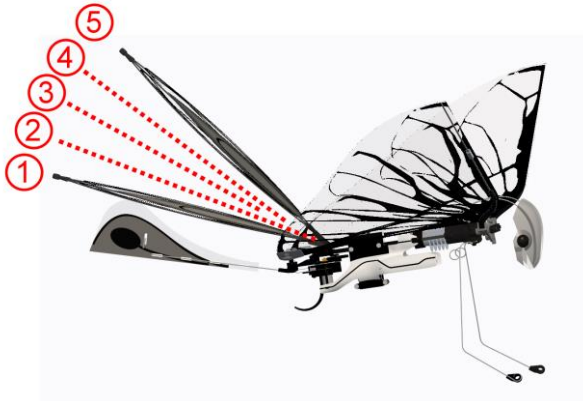
V – FLYING YOUR METAFLY

Conditions of use:

Indoor use doesn't require any conditions except a room big enough to fly around without obstacle.
Outdoor use requires adapted weather conditions, ideally no wind at all (recommended for beginner, compulsory to balance wings, see below), and no rain. For an experienced user, wind up to 8 mph is acceptable, if it's steady. It is advised to choose an open area, far from trees or buildings, which could create whirlwinds. Avoid flying nearby a road, or water, where it could fall by accident.

A: Turn on / automatic binding
Turn the transmitter ON (power button) first.
The blue LED indicators lights up and starts flashing.
Then turn MetaFly ON. MetaFly will bind automatically to its transmitter (LED constant).
NOTE: If MetaFly doesn't bind (LED flashing slowly), read chapter VI – “Manual binding” below.

B - Adjusting the tail - MetaFly flying speed
The tail angle is adjustable (5 notches), making possible to adjust the flying speed of MetaFly. To change the



notch, just push or pull the base of the tail.
* For indoor flights, in a confined space, or for slow flights: set the tail in a high position (choose 5 or 4)
* For outdoor flights, in a big space or for fast flights: adjust the tail in a low position (1 to 3).
Knowing that: Position 1 is for best performance but requires some practice, and a precise wings adjustment (see below).
Warning: When picking up MetaFly after landing, always check that the tail hasn't moved to another notch. If so, set it back again.

C- Flying MetaFly
It is recommended to train first by launching MetaFly

from your hand, before to attempt take-offs from the floor.
Launching from hand: Push the throttle stick 75% of the way up. Always point MetaFly facing the wind, launch it from your hand with a gentle horizontal toss. Let it gain some altitude before trying any turns. If it flies downward, you can try with the tail one notch higher.
Take-off from the floor or from a table: It requires a smooth surface, so that the legs ends can slide properly. In some cases, increasing the throttle gradually is necessary. Take off from a table requires less space than from the floor.
Gliding flight: To make MetaFly glide: gain altitude, reduce speed and get MetaFly flying straight, then cut the throttle suddenly.
Out of range: If MetaFly flies out of range of the transmitter, just get closer to the MetaFly and it will connect again immediately.
Emergency landing: If you need to land MetaFly quickly (in a risky situation), turn right or left to maximum for a few seconds while throttle at maximum. MetaFly will nosedive towards the ground. Immediately after, release the direction stick, and cut the throttle. Generally, doing tight turns will cause the MetaFly to descend. It is a good way to control its altitude.
WARNING: do not keep the direction stick at maximum on one side for a long time, even when the MetaFly is not flying because it could cause the steering micro-motor to overheat.
End of flight: When the MetaFly flight becomes less powerful (wings flapping speed has decreased noticeably) it is time to recharge it (see above). MetaFly's LED blinking indicate that the battery is nearly empty. When it is totally empty the battery will auto

power off (MetaFly LED turns Off), although MetaFly's switch is still ON. No problem, when you'll put the MetaFly back on charge, it will be reactivated.

D- First flight - Triming the wings

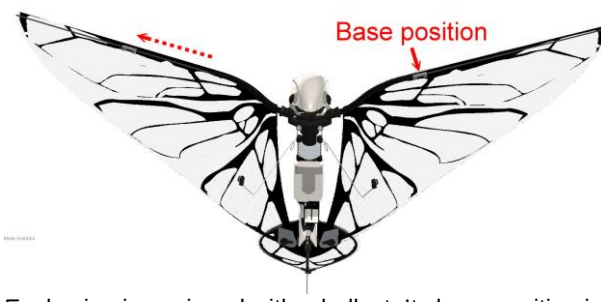
From the very first flight, it is essential to check the wings balance, and to adjust it if needed. If while flying, you notice the following unbalanced flight:

*Immediately when launched, the MetaFly turns to one side and go directly to the ground (big unsteadiness).

*The direction stick is in the middle position but the MetaFly turn left or right in small circles.

*It seems that the MetaFly turns more easily to one side than to the other.

Then you will have to trim the wings.



Each wing is equipped with a ballast. Its base position is nearest to the body. It can slide toward the end to create a ballast differential between the 2 wings.

You must increase the ballast of the opposite wings to the turning side you observed. For instance, If MetaFly tends to turn to its right side, move ballast of its left wing toward the end and leave the one on the right wing

unchanged (base position).
Try flying the MetaFly again, and if necessary, repeat the process until you get a straight flight or an acceptable slight turn. Your MetaFly is now balanced and its performance is optimized.
NB: Flying with tail set in a high (5) or low (1) position may require a different wing adjustment.
In order to fly the MetaFly with tail in high position in a confined space and keep a precise control, it is recommended to do a very precise wing adjustment with the tail in that position.

VI – MANUAL BINDING

Each MetaFly is bind to its transmitter at factory and is coded to be controlled only by its own transmitter. This allows several persons to fly at same time in the same place.
If for any reason, your MetaFly doesn't bind to its transmitter, you can manually reset the code in order to bind it again following that steps:
switch off both MetaFly and the transmitter
Turn the direction stick to the right (max) and keep it while switching ON the transmitter on (LED blink fast)/ Switch MetaFly ON. LED constant. The manual binding is done.
WARNING: the manual binding process must be done without any other transmitter around switched on.

VII – PARTS REPLACEMENT

Please refer to the "assembling your MetaFly" section. Please contact our customer's service to get replacement parts or instructions on «how to do it» at contact@bionicbird.com or on our web site:

www.bionicbird.com, FAQ or parts pages.
You may also try to find help within the community (Facebook – Youtube especially).

IMPORTANT NOTES ABOUT THE USE OF METAFLY

It is strongly **recommended to charge** the MetaFly at least at 50% of the battery capacity **before to store** it after use, the battery life shall be shortened if not.

At cold temperature, the batteries or rechargeable batteries you use inside the transmitter are losing most of their power. They aren't able to supply enough power to fully charge the MetaFly. It is advised to charge the MetaFly indoor (warm), then to go out for flying.

The motor and clockworks inside the METAFLY are very efficient, with very tight tolerance. They need a training period during which they will get free of friction. The maximum power and flying time will be reached after about ten flights.

The wings structures are made of very light and rigid material necessary to get good flying performances. They are very robust in flying conditions and can last hundreds of flights. But they are not able to withstand heavy weight or force out of normal use, like manual bending, storage below heavy things, stepping on it. Therefore, they are replacement parts that can be purchased separately, as spare parts.
NEVER TRY TO MOVE THE WINGS MANUALLY

PRODUCT SPECIFICATIONS:

Length:	19 cm
Wingspan:	29 cm
Weight:	< 10g
Radio:	2 channels
Battery not included:	4 AA batteries
Rechargeable battery pack:	Li-poly 58 mAh
Charge:	Included in controller
Flight Duration:	8 min (Single charge)
Charge time:	12 min
Range:	up to 150 m
Frequency:	2.4 GHz
Binding technology:	Frequency hopping
Unloaded motor speed:	55,000 RPM
Full loaded motor speed:	35,000 RPM
Wing flapping speed:	up to 20 flaps/sec.
Wing amplitude:	55°
Ratio weight/wing area:	5,2 g/dm^2
Maximum static thrust:	10 g

WARNING:

This product complies with the following standard and complies with FCC part 15 (2008)
R&TTE2008 (EN300440-2. EN301489-1. EN301489-3)
DEEE(WEEE) directive 2002/96/EC.

FCC ID: 2ADQDMETA1

FCC ID: 2ADQDMETAB

This device complies with part 15 of the FCC rules. Operation is subject to the following conditions:
1: This device may not cause harmful interference, and
2: This device must accept any interference received, including interference that may cause undesired operation.
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.
This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.
However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
Reorient or relocate the receiving antenna.
Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected. Consult the dealer or an experienced radio/TV technician for help.

***WARNING**: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.*

***Users should keep and retain this manual for future reference.** Keep the packaging since it contains important information. Keep name and address.*

SAFETY PRECAUTION:

Not suitable for children under 36 months, small parts may be swallowed.
Do not play next to an animal or a person.
Do not use near electrical lines or during a storm.
Do not fly MetaFly near electrical lines, trees, buildings and any other obstacles.
Keep away from water.
Never fly or follow MetaFly in the streets.
Keep MetaFly away from face and eye.
Never put your fingers close to MetaFly when it moves.
Always use the transmitter charger included in this equipment.
Always place the transmitter on the "OFF" position when not flying.

BATTERY CAUTIONS:

Works with 4 AA/LR6 1.5V batteries (not included).
Works with (1) rechargeable LI-PO (lithium Polymer)

battery and (1) 2.4 GHz transmitter (included).
Only batteries of the same or equivalent type as recommended are to be used; do not mix old and new batteries, different types of batteries (standard carbon zinc, alkaline or rechargeable) or rechargeable batteries of different capacity.
Rechargeable batteries are only to be charged by an adult.
Respect the correct polarity (-) or (+)
Do not try to recharge non-rechargeable batteries.
Rechargeable batteries are to be removed from the toy before being charged.
Do not throw the batteries into the fire.
Replace all batteries of the same type/brand at the same time.
The supply terminals are not to be short-circuited.
Remove exhausted batteries from your MetaFly.
Batteries are only to be replaced by an adult.
Only use the battery charger provided with the box to charge the Li-poly battery in MetaFly.

WEEE:

When this appliance is out of use, please remove all batteries and dispose of them separately. Bring electrical appliances to the local collecting points for waste electrical and electronic equipment.
Do not throw in domestic refuse.

WARNING:

CHOKING HAZARD – small parts
Not for children under 3 years