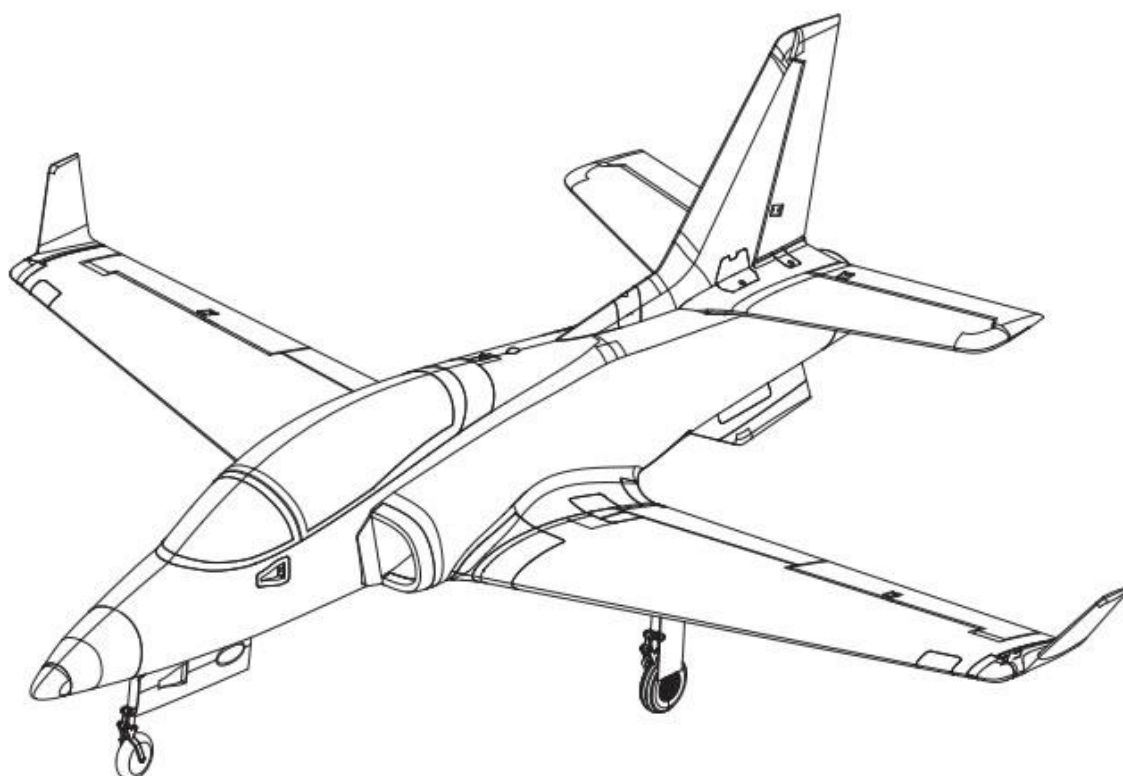




90mm Viper



Instruction Manual

操作手册

REALISTIC
• Retract & Flaps Installed

RIGID
• Strong durable EPO

STABLE
• Smooth flying performance

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WARNING



WARNING: Read the ENTIRE instruction manual to become familiar with the features of the product before operating. Failure to operate the product correctly can result in damage to the product, personal property and cause serious injury.

This is a sophisticated hobby product and NOT a toy. It must be operated with caution and common sense and failure to do so could result in injury or damage to the product or other property. This product is not intended for use by children without direct adult supervision.

This manual contains instructions for safety operation and maintenance. It is essential to read and follow all the instructions and warnings in the manual prior to assembly, setup or use, in order to operate and avoid damage or serious injury.

Safety precautions and warnings

As the user of this product, you are solely responsible for operating in a manner that does not endanger yourself and others or result in damage to the product or the property of others. This model is controlled by a radio signal subject to interference from many sources outside your control. This interference can cause momentary loss of control so it is advisable to always keep a safe distance in all directions around your model, as this margin will help avoid collisions or injury.

Age Recommendation: Not for children under 14 years. This is not a toy.

- Never operate your model with low transmitter batteries.
- Always operate your model in an open area away from cars, traffic or people.
- Avoid operating your model in the street where injury or damage can occur.
- Never operate the model in populated areas for any reason.
- Carefully follow the directions and warnings for this and any optional support equipment you use (chargers, rechargeable battery packs, etc.)
- Keep all chemicals, small parts and anything electrical out of the reach of children.
- Moisture causes damage to electronics. Avoid water exposure to all equipment not specifically designed and protected for this purpose.
- Never lick or any place of any your model in your mouth as it could cause serious injury or even death.

Safety

Lithium Polymer (Li-Po) Battery Warning

CAUTION: Always follow the manufacturer's instructions for safe use and disposal of batteries. Fire, property damage, or serious injury can result from the mishandling of Li-Po batteries.

- By handling, charging or using a Li-Po Battery you assume all risks associated with lithium batteries.
 - If at any time the batteries begin to swell or balloon, discontinue use immediately!
- Always store the batteries at room temperature in a dry area to extend the life of the battery. Always transport or temporarily store the battery in a temperature range of 40-120F. Do not store the battery or model in a car or in direct sunlight. If stored in a hot car, the battery can be damaged or even catch fire.
- Never use a Ni-Mh Charger to charge Li-Po Batteries. Failure to charge the battery with a Li-Po compatible charger may cause fire resulting in personal injury and property damage.
- Never discharge Li-Po Cells below 3V.
- Never leave charging batteries unattended.
- Never charge damaged batteries.
- Charging the Flight Battery Warning
 - Use a battery charger that is designed to safely charge the Li-Po Battery. Read the charger instructions carefully before use. When charging the battery, make certain the battery is on a heat resistant surface. It is also highly recommended to place the Li-Po Battery inside a fire resistant charging bag readily available at hobby shops or online.

Introduction

The FMS 90mm Viper is an upgrade from the best-selling 70mm Viper, designed to provide the look and performance of a jet fighter with the stability of a low-wing sport aircraft, so that more pilots of all levels can enjoy the fun of EDF aircraft.

The combination of FMS high-efficiency 90mm 12-blade EDF unit, high-power 3670-KV1950 inner running motor and high-quality 120A ESC provides unparalleled performance to the aircraft, and the throttle can respond instantly, making the sound very immersive. When paired with 6S 5000- 6000mAh 45C battery, the top speed could hit 120+ MPH.

The 90mm Viper has a superior structure, which complements the power system, enabling it to perform well in both high-speed and low-speed flight. It can fly leisurely, fly fast, and even aerobatics - the 90mm Viper is extremely manoeuvrable and can effortlessly perform most aerobatic maneuvers such as rolls, somersaults, and side spins

The 90mm Viper adopts the latest assembly structure and techniques, such as screw-together airframe, ball-linked control surfaces, high strength spars, multi-connector, so that it can be assembled in a very short time. In addition, the electronic retracts in the locked-rotor mode and the CNC-processed kneeling structure metal landing gear set are used to effectively resist violent landing; the large-sized durable tires are used to facilitate the take-off and landing on various grounds such as cement roads, grass, sand, etc.

No matter whether you have collected Vipers before, this newly launched FMS 90mm Viper EDF is very worth looking forward to. It can give you a refreshing experience in terms of details and performance. It is the best choice for players to experience large-scale aircraft.

Features:

- Electronic configuration: high-quality 120A ESC, high-power 3670 KV1950 inner running motor, high-efficiency 90mm 12-blade EDF unit, high-precision metal digital servos.
- The extremely wide performance range and speed range can be used for leisure flying and aerobatics, and the overall take-off, flight and landing process is easy and smooth.
- The locked-rotor mode electronic retracts with overcurrent protection function and the CNC-processed kneeling structure metal landing gear set, effectively resist violent landing
- Functional navigation lights.
- Functional flaps
- The buckle structure design effectively prevent the cockpit from falling off during flight.
- The large size battery compartment is convenient for placing batteries of different sizes from different manufacturers.
- Large size durable tires for taking off and landing on rough ground.
- Preinstalled ball-linked control horns for accurate and precise movements.
- Screw assembly structure, , eliminating the trouble of applying glue

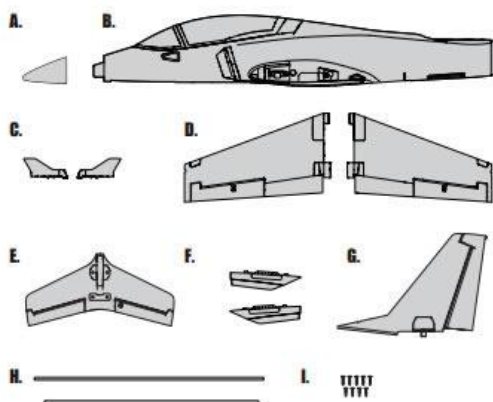
Kit contents

Before assembly, please inspect the contents of the kit. The photo below details the contents of the kit with labels. If any parts are missing or defective, please identify the name or part number (refer to the spare parts list near the end of the manual) then contact your local shop or email us: support@fmsmodel.com.

Specifications

Wingspan: 1400mm /55in
Overall Length: 1280mm /50.4 in
Flying Weight: Around 3250g
Motor Size: 3670 KV1950
Wing Load: 107.6g/dm ²
Wing Area: 30.2dm ²
ESC: 120A
Servo: 13g X 8
Recommended Battery: 22.2V 5000-6000mAh 45c

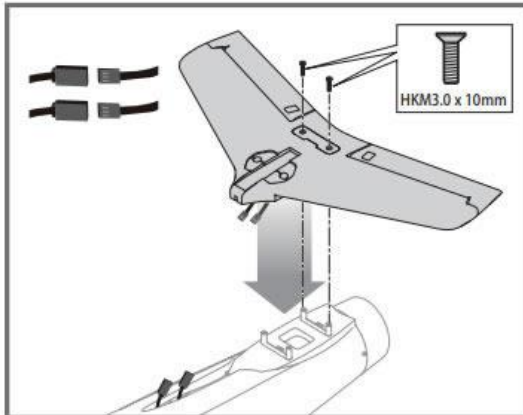
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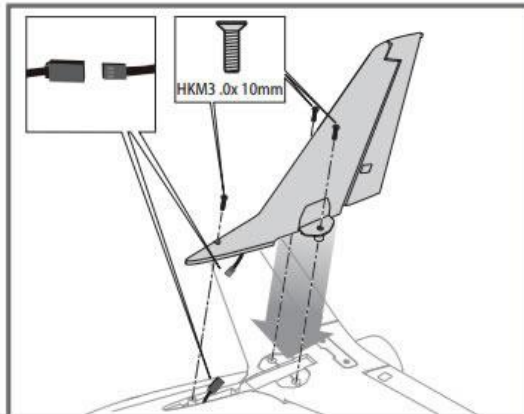
- A: Nose Cone
B: Fuselage
C: Winglet Set
D: Main Wing
E: Horizontal Stabilizer
F: Ventral Fin Set
G: Vertical Fin
H: Wing Tubes
I: Screw Set

Horizontal stabilizer installation

1. Attach the horizontal stabilizer to the fuselage as shown.
2. Insert the included two screws (HKM 3.0*10) into the circular aluminum part. Do not lock the screws. And then put the aluminum part into the slot shown in the figure.
3. Lock the horizontal stabilizer to fuselage by tightening the screws on the circular aluminum part.

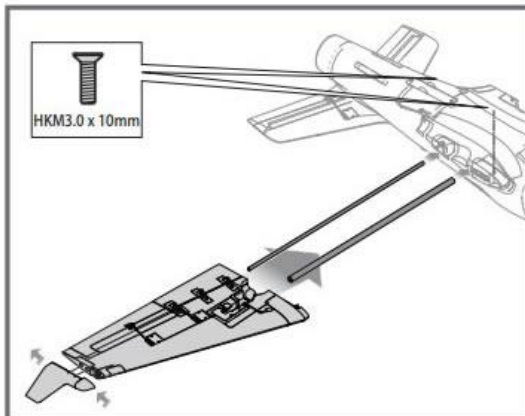
**Vertical stabilizer installation**

1. Connect the rudder servo connectors to the servo extensions in fuselage. Note the corresponding wire color.
2. Attach the vertical stabilizer to the corresponding slot at the rear of the fuselage as shown, and then use three included screws (HKM 3.0*10) to fix it from the both sides of fuselage.

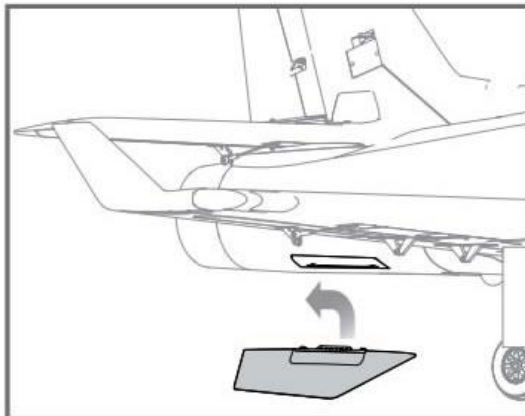


Main wing installation

1. Slide the wing spars into the fuselage as shown.
2. Install the left and right wing halves over the wing spars and into the wing slots. Be sure the connectors on both sides are attached precisely and firmly.
3. Secure the left and right wings to the fuselage using four screws included (HKM 3.0*10)
4. Attach the winglet to the corresponding slot on main wing, then slide toward the rear of the fuselage to lock in place.

**Ventral Fin installation**

Attach the left and right ventral fins to the slots at the bottom of fuselage, then slide toward the rear of the fuselage to lock in place.

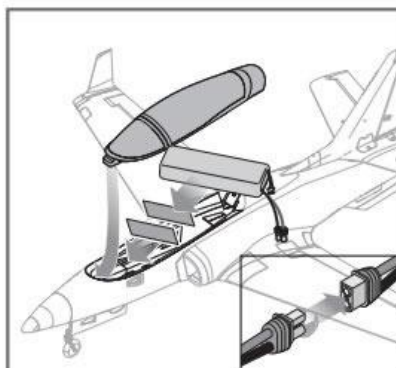


Battery installation

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1. Pull back on the latch and remove the battery hatch.
2. Apply the hook tape to the cable end of the battery.
3. Slide the full charged battery into the battery compartment with the power supply cable toward the rear end of the plane.

Note: The center of gravity can be adjusted by moving the battery forward or aft. Having the correct center of gravity is critical to achieving proper flight characteristics.



Receiver diagram

The cables from the servo connector board should be connected to your receiver in the order shown. Note that the LEDs can be powered by any spare channel on the receiver. Tuck the wire leads into the recessed cavity towards the rear of the battery hatch.

		Receiver
Aileron	1	Channel-1 — Aile
Elevator	2	Channel-2 — Elev
Throttle	3	Channel-3 — Thro
Rudder	4	Channel-4 — Rudd
Gear	5	Channel-5 — Gear
Spare	6	Channel-6 — Spare

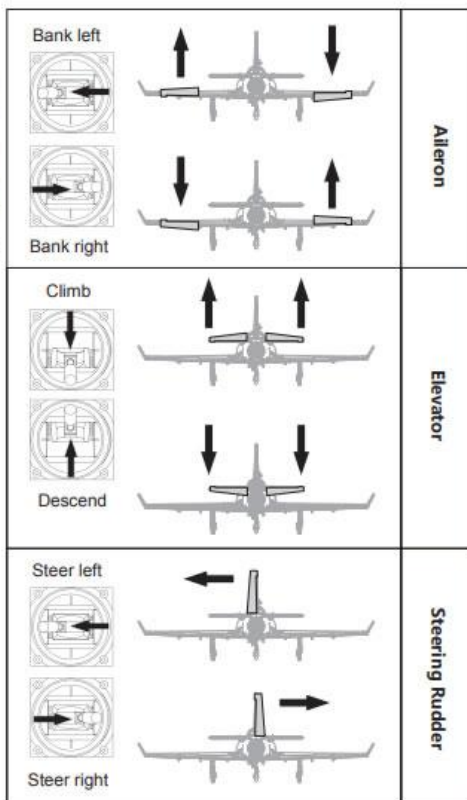
Get your model ready to fly

Important ESC and model information

1. The ESC included with the model has a safe start. If the motor battery is connected to the ESC and the throttle stick is not in the low throttle or off position, the motor will not start until the throttle stick is moved to the low throttle or off position. Once the throttle stick is moved to the low throttle or off position, the motor will emit a series of beeps. Several beeps with the same tune means the ESC has detected the cells of the battery. The count of the beeps equals the cells of the battery. The motor is now armed and will start when the throttle is moved.
2. The motor and ESC come pre-connected and the motor rotation should be correct. If for any reason the motor is rotating in the wrong direction, simply reverse two of the three motor wires to change the direction of rotation.
3. The motor has an optional brake setting. The ESC comes with brake switched off and we recommend that the model be flown with the brake off. However, the brake could be accidentally switched on if the motor battery is connected to the ESC while the throttle stick is set at full throttle. To switch the brake off, move the throttle stick to full throttle and plug in the motor battery. The motor will beep one time. Move the throttle stick to low throttle or the off position. The motor is ready to run and the brake will be switched off.
4. Battery Selection and Installation. We recommend the 22.2V4000mAh-5000mAh 45c Li-Po battery. If using another battery, the battery must be at least a 22.2V4000mAh-5000mAh 45c battery. Your battery should be approximately the same capacity, dimension and weight as the 22.2V4000mAh-5000mAh 45c Li-Po battery to fit the fuselage without changing the center of gravity significantly.

Transmitter and model setup

Before getting started, bind your receiver with your transmitter. Please refer to your transmitter manual for proper operation.
CAUTION: To prevent personal injury, DO NOT install the propeller assembly onto the motor shaft while testing the control surfaces. DO NOT arm the ESC and do not turn on the transmitter until the Transmitter Manual instructs you to do so.
Tips: Make sure all control sticks on your radio are in the neutral position (rudder, elevator, ailerons) and the throttle is in the OFF position. Make sure both ailerons move up and down (travel) the same amount. This model tracks well when the left and right ailerons travel the same amount in response to the control stick. Move the controls on the transmitter to make sure the aircraft control surface moves correctly. See diagrams right.



Control throws

The suggested control throw setting for the 80mm Dassault Rafale are as follows (dual rate setting):

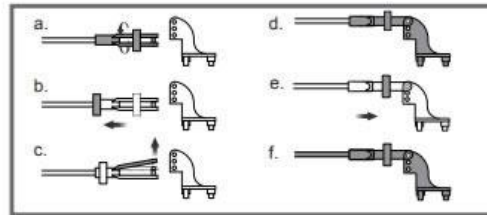
Tips: On the first flight, fly the model in low rate. The first time you use high rates, be sure to fly at low to medium speeds. High rate, as listed, is only for EXTREME maneuvering.

	High Rate	Low Rate
Elevator	16mm up / down	12mm up / down
Aileron	12mm up / down	8mm up / down
Rudder	11mm left / right	7mm left / right

Clevis installation

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1. Pull the tube from the clevis to the linkage.
2. Carefully spread the clevis, then insert the clevis pin into the desired hole in the control horn.
3. Move the tube to hold the clevis on the control horn.



Control horn and servo arm settings

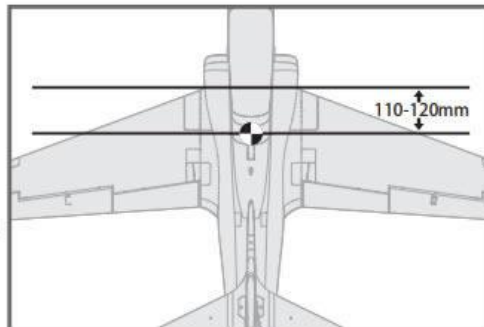
The table shows the factory settings for the control horns and servo arms. Fly the aircraft at the factory settings before making changes. After flying, you may choose to adjust the linkage positions for the desired control response.

	Horns	Arms	More control throw
Elevator			
Rudder			
Ailerons			
Canard			
			Less control throw

Check the C.G. (Center of gravity)

When balancing your model, adjust the battery as necessary so the model is level or slightly nose down. This is the correct balance point for your model. After the first flight, the CG position can be adjusted for your personal preference.

1. The recommended Center of Gravity (CG) location for your model is (110-120mm) from the leading edge of the main wing (as shown) with the battery pack installed. Mark the location of the CG on top of the wing.
2. When balancing your model, support the plane at the marks made on the bottom of the main wing with your fingers or a commercially available balancing stand. This is the correct balance point for your model. Make sure the model is assembled and ready for flight before balancing.



Before flying the model

Find a suitable flying site

Find a flying site clear of buildings, trees, power lines and other obstructions. Until you know how much area will be required and have mastered flying your plane in confined spaces, choose a site which is at least the size of two to three football fields - a flying field specifically for R/C planes is best. Never fly near people - especially children, who can wander unpredictably.

Perform the range check for your plane

As a precaution, an operational ground range test should be performed before the first flight each time you go out. Performing a range test is a good way to detect problems that could cause loss of control such as low batteries, defective or damaged radio components, or radio interference. This usually requires an assistant and should be done at the actual flying site you will be using.

First turn on the transmitter, then install a fully-charged battery into the fuselage. Connect the battery and install the hatch.

Remember, use care not to bump the throttle stick. Otherwise, the propeller/fan will turn and possibly cause damage or injury.

Note: Please refer to your Transmitter Manual that came with your radio control system to perform a ground range check. If the controls are not working correctly or if anything seems wrong, do not fly the model until you correct the problem. Make certain all the servo wires are securely connected to the receiver and the transmitter batteries have a good connection.

Monitor your flight time

Monitor and limit your flight time using a timer (such as on a wristwatch or in your transmitter if available). When the batteries are getting low you will usually notice a performance drop before the ESC cuts off motor power, so when the plane starts flying slower you should land. Often (but not always) power can be briefly restored after the motor cuts off by holding the throttle stick all the way down for a few seconds. To avoid an unexpected dead-stick landing on your first flight, set your timer to a conservative 4 minutes. When your alarm sounds you should land right away.

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Flying course

Take off

While applying power, slowly steer to keep the model straight. The model should accelerate quickly. As the model gains flight speed you will want to climb at a steady and even rate. It will climb out at a nice angle of attack (AOA).

Flying

Always choose a wide-open space for flying your plane. It is ideal for you to fly at a sanctioned flying field. If you are not flying at an approved site always avoid flying near houses, trees, wires and buildings. You should also be careful to avoid flying in areas where there are many people, such as busy parks, schoolyards, or soccer fields. Consult laws and ordinances before choosing a location to fly your aircraft. After takeoff, gain some altitude. Climb to a safe height before trying technical manoeuvres, including high speed passes, inverted flight, loops, and point rolls.

Landing

Land the model when you hear the motor pulsing (LVC) or if you notice a reduction in power. If using a transmitter with a timer, set the timer so you have enough flight time to make several landing approaches.

The model's three point landing gear allows the model to land on hard surfaces. Align model directly into the wind and fly down to the ground. Fly the airplane down to the ground using 1/4-1/3 throttle to keep enough energy for proper flare. Before the model touches down, always fully decrease the throttle to avoid damaging the propeller or other components. The key to a great landing is to manage the power and elevator all the way to the ground and set down lightly on the main landing gear. After a few flights you will find the model can be set down lightly on the mains and you can hold the nose wheel off balancing themodel on the mains until it slows and gently settles the nose.

Maintenance

Repairs to the foam should be made with foam safe adhesives such as hot glue, foam safe CA, and 5min epoxy. When parts are not repairable, see the Spare Parts List for ordering by item number.

Always check to make sure all screws on the aircraft are tightened. Pay special attention to make sure the spinner is firmly in place before every flight.

Problem	Possible Cause	Solution
Aircraft will not respond to the throttle but responds to other controls.	-ESC is not armed. -Throttle channel is reversed.	-Lower throttle stick and throttle trim to lowest settings. -Reverse throttle channel on transmitter.
Extra propeller noise or extra vibration.	-Damaged spinner, propeller, motor or motor mount. -Loose propeller and spinner parts. -Propeller installed backwards.	-Replace damaged parts. -Tighten parts for propeller adapter, propeller and spinner. -Remove and install propeller correctly.
Reduced flight time or aircraft underpowered.	-Flight battery charge is low. -propeller installed backward. -Flight battery damaged.	-Completely recharge flight battery. -Replace flight battery and follow flight battery instructions.
Control surface does not move, or is slow to respond to control inputs.	-Control surface, control horn, linkage or servo damage. -Wire damaged or connections loose.	-Replace or repair damaged parts and adjust controls. -Do a check of connections for loose wiring.
Controls reversed.	Channels are reversed in the transmitter.	Do the control direction test and adjust controls for aircraft and transmitter.
-Motor loses power -Motor power pulses then motor loses power.	-Damage to motor, or battery. -Loss of power to aircraft. -ESC uses default soft Low Voltage Cutoff(LVC).	-Do a check of batteries, transmitter, receiver, ESC, motor and wiring for damage(replace as needed). -Land aircraft immediately and recharge flight battery.
LED on receiver flashes slowly.	Power loss to receiver.	-Check connection from ESC to receiver. -Check servos for damage. -Check linkages for binding.

Spare parts list content

FMSTB101	Fuselage	FMSTB115	Wing Tubes
FMSTB102	Main Wing Set	FMSTB116	Lighting Set
FMSTB103	Vertical Stabilizer	FMSTB117	Pilot
FMSTB104	Horizontal Stabilizer	FMSTB118	Nose Gear Strut
FMSTB105	Canopy	FMSTB119	Main Gear Struts
FMSTB106	Nose Cone	FMSTB120	Front Landing Gear System
FMSTB107	Winglet Set	FMSTB121	Main Landing Gear System
FMSTB108	Linkage Set	FMSRE064	Electronic Retract
FMSTB109	Control Horn Set	FMSRE065	Electronic Retract
FMSTB110	Wheel Set	FMS90MM	90MM Ducted Fan (12-blade)
FMSTB111	Screw Set	FMSDF011	Ducted Fan With
FMSTB112	Ventral Fin Set		Motor3670-1950KV (plastic) 6S
FMSTB113	Decal Set	PRESC039	120A ESC
FMSTB114	Front Landing Gear Door	PR13MGDP	Predator 13g digital metal gear servo positive
FMSTB114-1	Main Landing Gear Door	PR13MGDR	Predator 13g digital metal gear servo reverse

Thanks for purchasing our Electronic Speed Controller (ESC). High power system for RC model is very dangerous, please read this manual carefully. In that we have no control over the correct use, installation, application, or maintenance of our products, no liability shall be assumed nor accepted for any damages, losses or costs resulting from the use of the product. Any claims arising from the operating, failure or malfunctioning etc. will be denied. We assume no liability for personal injury, property damage or consequential damages resulting from our product or our workmanship. As far as is legally permitted, the obligation to compensation is limited to the invoice amount of the affected product.

Specifications

Model	Cont Current	Burst Current (≤10)	BEC Mode	BEC Output	BEC Output Capability				Battery Cell		Weight	Weight L*W*H (mm)
					2S Lipo	3S Lipo	4S Lipo	6S Lipo	Lipo	NiMH		
6A	6A	8A	Linear	5V/0.8A	3servos				2S	5-6 cells	5.5	32*12*4.5
12A	12A	15A	Linear	5V/1A	3servos	2servos			2-3S	5-9 cells	9g	38*18*6
12AE	12A	15A	Linear	5V/2A	5servos	4servos			2-3S	5-9 cells	10g	38*18*7
15A	15A	20A	Linear	5V/2A	5servos	4servos			2-3S	5-9 cells	16.5g	48*22.5*6
20A	20A	25A	Linear	5V/2A	5servos	4servos			2-3S	5-9 cells	19g	42*25*8
30A	30A	40A	Linear	5V/2A	5servos	4servos			2-3S	5-9 cells	37g	68*25*8
40A	40A	55A	Linear	5V/3A	5servos	4servos			2-3S	5-9 cells	39g	68*25*8
40A-UBEC	40A	55A	Switch	5V/3A	5servos	5servos	5servos		2-4S	5-12 cells	43g	65*25*12
50A-UBEC	50A	65A	Switch	5V/5A	8servos	8servos	6servos	6servos	2-4S	5-12 cells	41g	65*29*10
60A-UBEC	60A	80A	Switch	5V/5A	8servos	8servos	6servos	6servos	2-6S	5-18 cells	63g	77*35*14
60A-UBEC	60A	80A	N/A	N/A					2-6S	5-18 cells	60g	86*38*12
80A-UBEC	80A	100A	Switch	5V/5A	8servos	8servos	6servos	6servos	2-6S	5-18 cells	82g	86*38*12
80A-UBEC	80A	100A	N/A	N/A					2-6S	5-18 cells	79g	86*38*12

Programmable Items (The option written in bold font is the default setting)

1. Brake Setting: Enabled / **Disabled**
2. Battery Type: **Lipo** / NiMH
3. Low Voltage Protection Mode(Cut-Off Mode): **Soft Cut-Off (Gradually reduce the output power)** /Cut-Off (Immediately stop the output power).
4. Low Voltage Protection Threshold(Cut-Off Threshold): Low / **Medium** / High
 - 1) For lithium battery, the battery cell number is calculated automatically. Low / medium / high cutoff voltage for each cell is 2.85V/3.15V/3.3V. For example: For a 3S Lipo, when "Medium" cutoff threshold is set, the cut-off voltage will be: 3.15*3=9.45V.
 - 2) For NiMH battery, low / medium / high cutoff voltages are 0%/50%/65% of the startup voltage (i.e. the initial voltage of battery pack), and 0% means the low voltage cut-off function is disabled. For example: For a 6 cells NiMH battery, fully charged voltage is 1.44*6=8.64V, when "Medium"cut-off threshold is set, the cut-off voltage will be: 8.64*50%=4.32V.
5. Startup Mode: **Normal** /Soft /Super-Soft (300ms / 1.5s / 3s)
 - a) Normal mode is suitable for fixed-wing aircraft. Soft or Super-soft modes are suitable for helicopters. The initial acceleration of the Soft and Super-Soft modes are slower, it takes 1.5 second for Soft startup or 3 seconds for Super-Soft startup from initial throttle advance to full throttle. If the throttle is completely closed (throttle stick moved to bottom position) and opened again (throttle stick moved to top position) within 3 seconds after the first startup, the re-startup will be temporarily changed to normal mode to get rid of the chance of a crash caused by slow throttle response. This special design is suitable for aerobatic flight when quick throttle response is needed.
6. Timing: **Low** / Medium / High,(3.75°/15°/26.25°) Usually, low timing is suitable for most motors. To get higher speed, High timing value can be chosen.

Begin To Use Your New ESC

IMPORTANT! Because different transmitter has different throttle range, please calibrate throttle range before flying.

Throttle range setting (Throttle range should be reset whenever a new transmitter is being used)

1. Switch on the transmitter, move throttle stick to the top position.
2. Connect battery pack to the ESC, and wait for about 2 seconds.
3. The "Beep-Beep-" tone should be emitted, means the top point of throttle range has been confirmed.
4. Move throttle stick to the bottom position, several "beep-" tones should be emitted to present the amount of battery cells.
5. A long "Beep-" tone should be emitted, means the lowest point of throttle range has been correctly confirmed.

Normal startup procedure

1. Move throttle stick to bottom position and then switch on transmitter.
2. Connect battery pack to ESC, special tone like "♪ 123" means power supply is OK.
3. Several "beep-" tones should be emitted to present the amount of lithium battery cells.
4. When self-test is finished, a long "beep-----" tone should be emitted.
5. Move throttle stick upwards to go flying.

Protection Function

1. Start up failure protection: If the motor fails to start within 2 seconds of throttle application, the ESC will cut-off the output power. In this case, the throttle stick MUST be moved to the bottom again to restart the motor. (Such a situation happens in the following cases: The connection between ESC and motor is not reliable, the propeller or the motor is blocked, the gearbox is damaged, etc.)
2. Over-heat protection: When the temperature of the ESC is over about 110 Celsius degrees, the ESC will reduce the output power.
3. Throttle signal loss protection: The ESC will reduce the output power if throttle signal is lost for 1 second, further loss for 2 seconds will cause the output to be cut-off completely.

Trouble Shooting

Trouble	Possible Reason	Action
After power on, motor does not work, no sound is emitted	After power on, motor does not work, no sound is emitted	Check the power connection. Replace the connector.
After power on, motor does not work, such an alert tone is emitted: "beep-beep-, beep-beep-, beep-beep-" (Every "beep-beep-" has a time interval of about 1 second)	Input voltage is abnormal, too high or too low	Check the voltage of battery pack
After power on, motor does not work, such an alert tone is emitted: "beep-, beep-, beep-" (Every "beep-" has a time interval of about 2 seconds)	Throttle signal is irregular	Check the receiver and transmitter Check the cable of throttle channel
After power on, motor does not work, such an alert tone is emitted: "beep-, beep-, beep-" (Every "beep-" has a time interval of about 0.25 second)	The throttle stick is not in the bottom (lowest) position	Move the throttle stick to bottom position
After power on, motor does not work, a special tone "♪56712" is emitted after 2 beep tone (beep-beep-)	Direction of the throttle channel is reversed, so the ESC has entered the program mode	Set the direction of throttle channel correctly
The motor runs in the opposite direction	The connection between ESC and the motor need to be changed	Swap any two wire connections between ESC and motor

Note: Please make sure the throttle curve is set to 0 when the throttle stick is at bottom position and 100% for the top position.

NO.1 Enter program mode

1. Switch on transmitter, move throttle stick to top position, connect the battery pack to ESC
2. Wait for 2 seconds, the motor should emit special tone like "beep-beep-"
3. Wait for another 5 seconds, special tone like "156712" should be emitted, which means program mode is entered.

NO.2 Select programmable items

After entering program mode, you will hear 8 tones in a loop with the following sequence. If you move the throttle stick to bottom within 3 seconds after one kind of tones, this item will be selected.

Prompt tone	Selected item
"beep"(1 short tone)	brake
"beep-beep-"(2 short tone)	battery type
"beep-beep-beep-"(3 short tone)	cutoff mode
"beep-beep-beep-beep-"(4 short tone)	cutoff threshold
"beep——"(1 long tone)	startup mode
"beep——beep-"(1 long 1 short)	timing
"beep——beep-beep- (1 long 2 short)	set all to default
"beep——beep——"(2 long tone))	exit

Note: 1 long "beep——" = 5 short "beep-"

NO.3 Set item value (Programmable value)

You will hear several tones in loop. Set the value matching to a tone by moving throttle stick to top when you hear the tone, then a special tone "1515" emits, means the value is set and saved. (Keeping the throttle stick at top, you will go back to Step 2 and you can select other items; or moving the stick to bottom within 2 seconds will exit program mode directly) .

Items \ Tones	"beep-" 1 short tone	"beep-beep-" 2 short tones	"beep-beep-beep" 3 short tones
Brake	Off	On	
Battery type	Lipo	NiMH	
Cutoff mode	Soft-Cut	Cut-Off	
Cutoff threshold	Low	Medium	High
Start mode	Normal	Soft	Super soft
Timing	Low	Medium	High

NO.4 Exit program mode

There are 2 ways to exit program mode:

1. In step 3, after special tone " ", please move throttle stick to the bottom position within 2 seconds.
2. In step 2, after tone "beep——beep——"(that is: The item #8), move throttle stick to bottom within 3 seconds.



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