2.4GHZ DSM

LCD DIGITAL PROPORTIONAL RADIO CONTROL SYSTEM

Opertating Manual

E-FLY™

210x285mm

Catalog

Thanks for purchasing E–Fly 100C radio control set. For safe use, please read this manual before using carefully. Any damage or loss to radio control set and model due to inproperuse will not be shouldered by Art–Tech.

Function of Transmitter

ETC61–2.4GHz is a newly developed 6 channel proportinal transmiiter.
The latest developed product of ART-TECH RC hobby corporation the 2.4GHz RC system uses digital frequency–hopping technology, it has enormous advantage compared with traditional system: no crystal, no frequency interference, short antenna length and low power consumption.
Four flying mode installed:A(aeroplane mode); V(V tail mode); C(CCPM helicopter mode); H(helicopter mode) The swithc between each mode is very convenient. There is a reverse switch for Ch1, CH2,CH4 and CH6 separately.The LCD on the transmitter can show voltage of transmitter,channel status, flying mode and flying time.It has a function of auto–alarm for low voltage.

Contents:

Transmitter:	ETC61–2.4GHz	1pcs	Belt:	1pcs
Receiver:	ER61–2.4GHz	1pcs	Manual:	1pcs
Simulator cable:		1pcs	CD–Rom:	1pcs

We do not offer servo, speed controller, battery or changer with the radio control system .
Users can by then spare parts.

Servo:	AS–100(9 g)	3pcs
Speed controller:	ESC–30A	1pcs
Bettery packs:	9.6V/Ni–MH	1pcs
Charger:		1pcs

Specifications

Number of channels: 6
Charging jack: yes
3D switch: yes
Power supply: 12 V (1.5V * 8AA batteries)
Modulation: GFSK
Voltage Display: LCD
Color: Black
Antenna length: 15 cm
Using occasions: aircraft, helicopters
Certification: FCC, CE, RoHS

Notice for flying

Please do not fly in the rain or strong wind. The water can sink into the transmitter which can cause out of control,leading to crash.

The shortened antenna may cause the short range.

Pleas note before using, test the radio set first and any change to the radio set or model can cause crash.

Please do not fly near housing, road,airport or power line

Notification before Using

Indications of Special signs

Please pay more attention to signs in this manual and safety while using

Show	Logo	Meanings
WARNING	⚠	I Inproper operation may cause injury or hurt
CAUTION	!	I Inproper operation may cause injury or hurt

Storage note

▲Please do not place the radio control set in the below situation:

hot or cold (60℃above or –10℃below)
under the sunshine long time
moist condition
dusty place
vibration condition

▲long time without using, please pick up batteries from the bay and store in the dry condition.

▲It is forbidden to clean the radio control set with chemical solvent such as acetone

▲The over used dry batteries can not be dispatched anywhere. That should be stored in a non–metal tool and dispatched by environment–protection department.

▲It is strongly recommended to use chargeable battery for the transmitter with the hope of environment–protection and cost–reducing.

! Notice for using

While opening the transmitter,the joystick for throttle shoule be on idle;only opening the transmiiter can connect the power to model.

In order to close the transmitter, the joystick for throttle should be on idle. Disconnect the power of model,and close the transmitter. The propeller maycause damageif inproper operation.

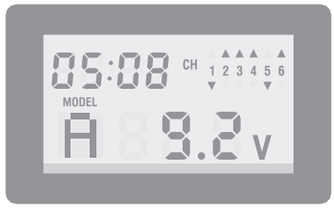
Stop the motor while transmitter adjustment. Please pay attention to the motor during adjustment.It is better to use transmitter ,receiver etc,together from ART–TECH.

Please do not do any change to transmitter, or that can affect transmitter`s function.

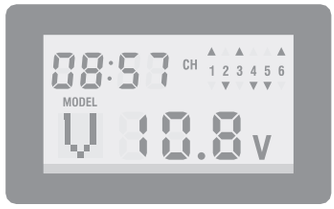
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment

Description of four flying modes

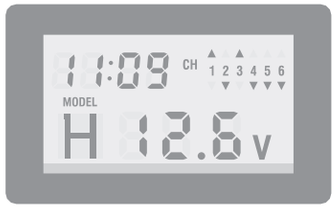
ETC61–2.4GHz with four flying mode installed:A(aeroplane mode); V(V tail mode);C(CCPM helicopter mode); H(helicopter mode) The swithc between each mode is very convenient. There is a reverse switch for Ch1, CH2,CH4 and CH6 separately.The LCD on the transmitter can show voltage of transmitter, channel status, flying mode and flying time.It has a function of auto–alarm for low voltage.



A：Aeroplane
1.The ranges of CH1,CH2 and CH4 of servos can be adjusted by Tiny mix1 in order to adjust for different aerobatics.
2.The function of CH1,CH2,CH4 small angel and large angle can be changed by switch 3
3.The mixture function of ch1 and ch6 can be achieved by switch 2.
4.There is a isolated channel for landing gear and that function can be achieved by switch 1
5.reverse switch for CH1,CH2,CH3,CH4 and CH6
6.lock and unlock function.When every data is settled ,the situation can be saved with lock function and every change will be not accepted.
7.Alarm for low voltage:when voltage of battery is under 8.5V,the red LED will flash and when under 7.5V,LEC will close.



V：v tail mode
1，The mixture function of ch1 and ch6 can be achieved by switch 1.
2，The range of servo for CH4 can be changed by tiny mix2
3，The function of CH1,CH2,CH4 small angel and large angle can be changed by switch 3
4，There are two isolated switch channel CH5 and CH6.And collapsable landing gear as well as photo–taking can be achieved by switch channel 1 and 2
5，reverse switch for CH1,CH2,CH3,CH4 and CH6
6，lock and unlock function.When every data is settled,the situation can be saved with lock function and every change will be not accepted.
7，Alarm for low voltage:when voltage of battery is under8.5V,the red LED will flash and when under 7.5V,LEC will close.

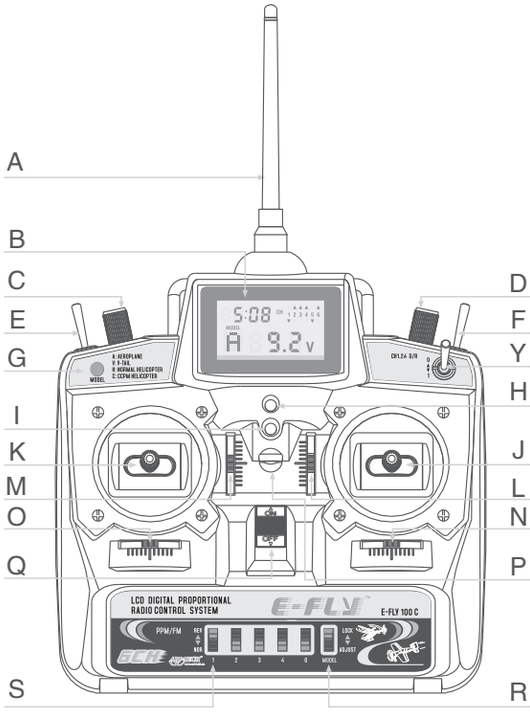


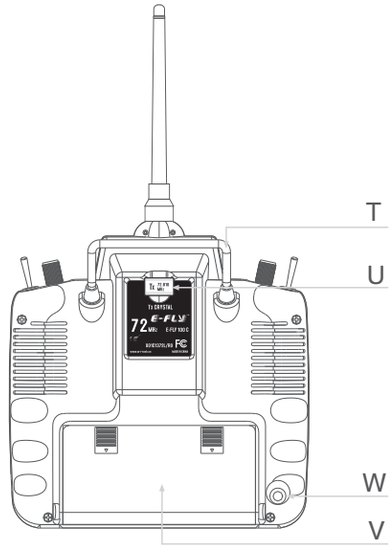
H：Helicopter mode
1，PIT and PLT can be adjusted by tiny mix 1 and 2
2，The function of CH1,CH2,CH4 small angel and large angle can be changed by switch 3
3，There is a switch for the function of Gyro and can be switched between normal mode and head lock mode by switch 1
4，The switch 2 is settled for 3D diverted flight
5，reverse switch for CH1,CH2,CH3,CH4 and CH6
6，lock and unlock functionWhen every data is settled ,the situation can be saved with lock function and every change will be not accepted.
7，Alarm for low voltage:when voltage of battery is under 8.5V,the red LED will flash and when under 7.5V,LEC will close.

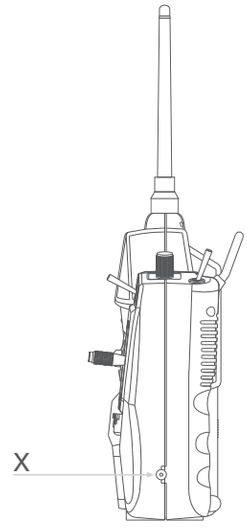
C：CCPM helicopter mode
1，The mixture function of CH1,CH2,CH3 and CH6 can by achieved for CCPM helicopter.PIT and PLT can be adjusted by tiny mix 1 and 2
2，The function of CH1,CH2,CH4 small angel and large angle can be changed by switch 3
3，There is a switch for the function of Gyro and can be switched between normal mode and head lock mode by switch 1
4,The switch 2 is settled for 3D diverted flight。
5，reverse switch for CH1,CH2,CH3,CH4 and CH6
6，lock and unlock functionWhen every data is settled ,the situation can be saved with lock function and every change will be not accepted.
7，Alarm for low voltagewhen voltage of battery is under 8.5V,the red LED will flash and when under 7.5V,LEC will close.

C1: CCPM helicopter mode
Comparing C1 mode, C mode keeps all the operation function same as C mode except Pitch's direction to the opposite, which takes much better compatibility for CCPM helicoper.

Transmitter particular introduce







A：Antenna

B：LCD(Liquid Crystal Display)

1) To indicate the battery voltage of transmitter

2) To show the situation of channels whether it is reversed

3) To show the flying time

4) To indicate flying mode

5) To indicate the status of lock and unlock

C：Tiny Mix 1

D：Tiny Mix 2

E：Switch 1

This switch is for Ch5 that can be used for aerial camera, collapsible landing gear and shift between gyro mode and gain, etc.

F：Switch 2

G：Flying Mode Switch

When the lock switch is on ADJUST,it is can be adjusted to A/V/H/C Flying Mode

H：LED Indicator for Power

I：Red LED Indicator for low Voltage: When battery is under 8.5V,the LED will have a flash alarm,the LCD will cut off when voltage is under 7.6V。

Note: When red LED flashes or nothing shows on LCD, pls change the battery in order to avoid flying out of control.

J：Joystick

1) If the transmitter is Model 1,CH1 is for aileron and CH3 for throttle.

2) If the transmitter is Model 2,CH1 is for aileron and CH2 for Rudder

K：Joystick

1) If the transmitter is Model 1,CH2 is for elevator and CH4 for rudder.

2) If the transmitter is Model 2,CH3 is for throttle and CH4 for rudder.

L：Tiny Mix for Channels

1) If the transmitter is Mode 1,it is for Ch3

2) If the transmitter is Mode 2,it is for Ch1

M：Tiny Mix for Channels

1) If the transmitter is Mode 1,it is for Ch1

2) If the transmitter is Mode 2,it is for Ch3

N：Tiny mix For Aileron

O：Tiny mix for rudder

P：Flying Ring

Q：Switch for Power

R：Lock Switch

When the switch is on Lock status, all are locked, including switch for flying mode, tiny mix1,and tiny mix2 When the switch is on adjust status, all can be changed,including flying mode,tiny mix1and tiny mix2

S：CH1, CH2, CH3, CH4, CH6 Reversed Switch

For changing the turning of servo, up for reversed and down for normal. REV：Reversed NOR：Normal

T：Steel Handle

U：TX Crystal

V：Battery bay for transmitter

W：Plug for Simulator

X：Rechargeable plug (Note:Only 9.6V Nihe battery packcan be recharged)

Y：Witch 3

The switch is to change the turning range of servos(100%/70%) for CH1, CH2, CH4.When it is 0, it means the turning range of servos is 100%. When it is 1,it means the turning range of servos is 70%.

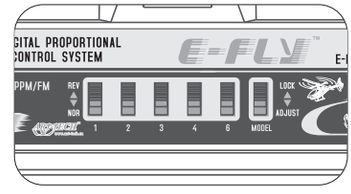
Other function of transmitter

Alarm for low voltage of transmitter

When the voltage of transmitter battery is under working voltage, the red LED will flash.It is better to stop flying,or that can cause crash of model.

Switch for servo reverse operation

During using, if servos movement can not cater to the model`s flying need, the servos movement can be changed.CH1 is for ailoren, ch2 for elevator,ch3 for motor, and ch4 for rudder. Rev means reversed and Nor indicates normal



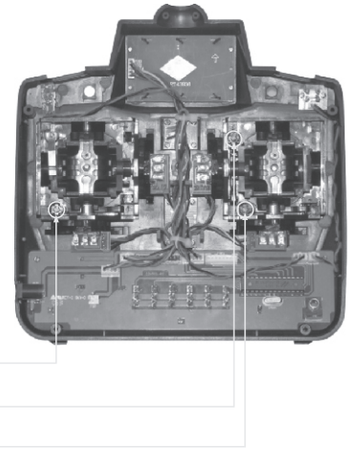
Adjustment on Joystick Spring

The joystick spring can be adjusted and it is possible to change that for ailoren, elevator and rudder.

1.Turn the srew on the transmitter back anticlockwise, and open the back

2.turn the screw of the channel to adjust the spring, deasil for stronger and anticlockwise for weaker.

3.close the back and turn the screw deasil



Adjustment for the joystick`s length

1.turn the head of joystick anticlockwise to prolong the length and deasil for shorten the length Please note do not prolong too much.

2.tighten the lower part of the joystick anticlockwise

Operation for chargeable plug

The chargeable plus is on the side of transmitter,and it is specially designed for charging the transmitter battery.Please note the batteries should be well arranged in the bay and do not over charged

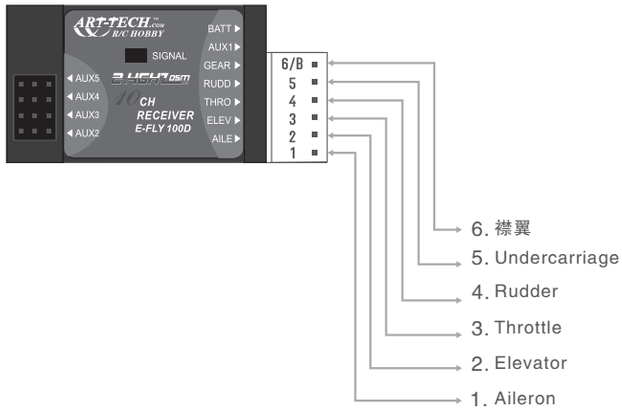
Receiver

Specifications

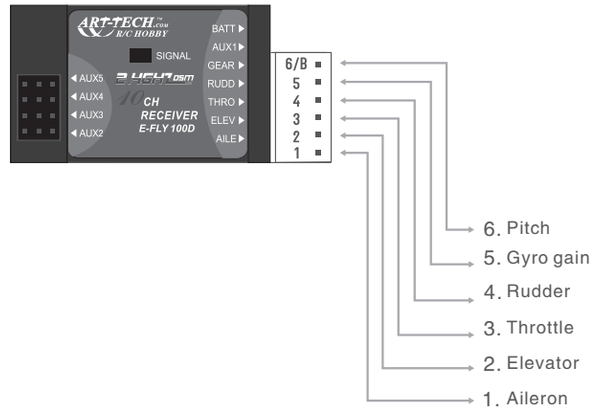
Operating voltage：4.8V~5.2V
Current drain：≤40mA
Weight：12g
dimension：44mm*23mm*15mm
Channels: 6 Channels
Reception system：GFSK
Range(Height)：≥350m
Adjacent channel rejection：≥–85dBm± 16kHz

Function

Operation for aeroplane

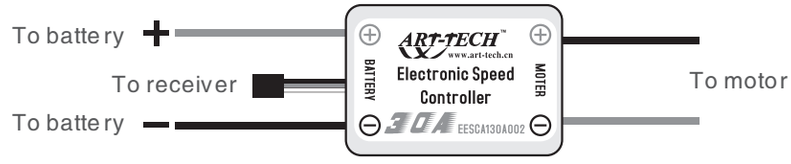


For operating helicopter



Electrio speed controler

Specifications for ESC–30A
Working currency:30A/50A(max currency)
input voltage：DC,5V–14.4V.
starting mode：adaptable point (1.0ms–1.5ms)
control mode：200 class proportional
output voltage(BEC) ： 5V/1A(direct for servo)

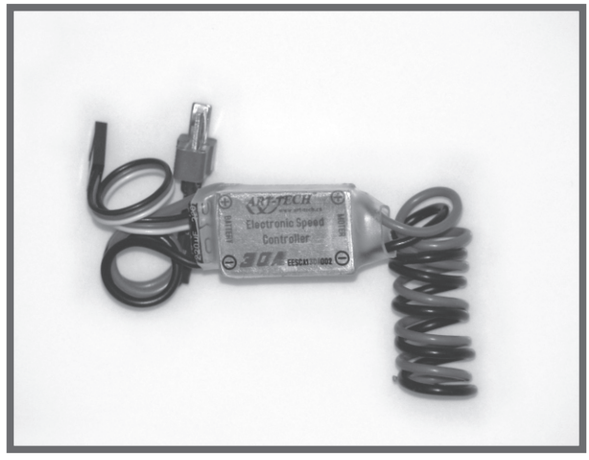


Auto cut–off function

When the voltage of battery in model plane is under working voltage, ESC has the function of cutting the power to the motor and only supply to receiver in order to save power. In that case, the model plane should be landed immediately for the sake of safety.

Notice

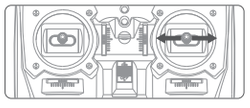
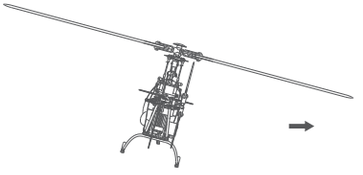
It is better to choose proper motor and battery in oder not to over load. And please pay attention to the conntion between ESC and the motor. In working condition, the ESC will become hot,so please pay attention to that.



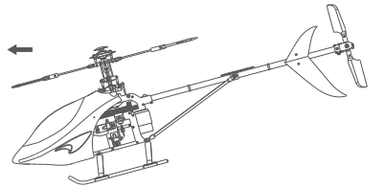
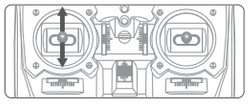
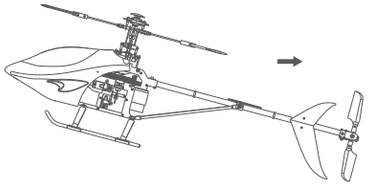
For operating helicopter (Mode 1)

Before adjusting, please be familiar with transmitter operation and servo(Below description in case of all neutral)

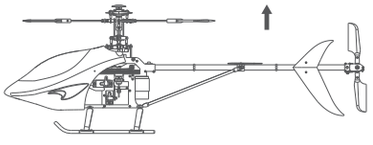
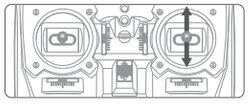
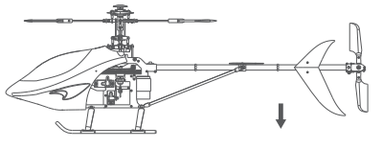
Ailoren Operation
Joystick for ailoren left forward
plane moves left
Joystick for ailoren right forward
plane moves right

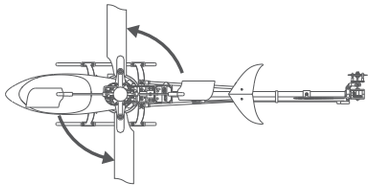
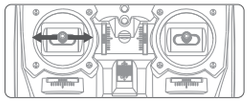
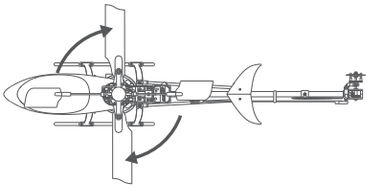
Elevator Operation
Joystick for elevator up forward
tail is up,and plane will go
downforward
Joystick for elevator down forward
tail is down,and plane will go
upforward

Throttle Operation
Joystick is up forward,
the power becomes large
Joystick is down forward,
the power becomes small

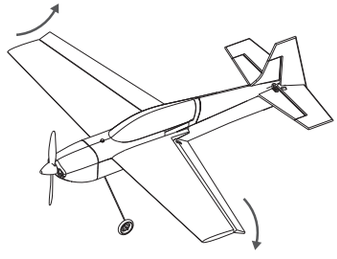
Rudder Operation
Joystick for Rudder left forward
the plane will turn anticlockwise
Joystick for Rudder right forward
the plane will turn deasil

Operation for transmitter and servo

Operation for aeroplane (Mode 1)

Before adjusting, please be familiar with transmitter operation and servo(Below description in case of all neutral)

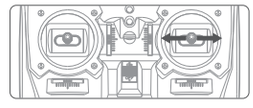


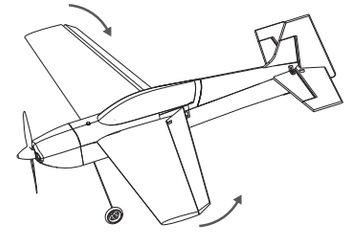
Ailoren Operation

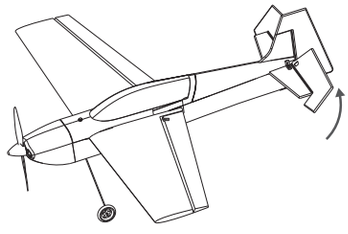
Joystick for ailoren righ forward

the right ailoren up and left ailoren

downand vice versa







Elevator Operation

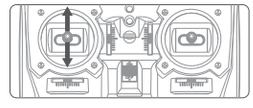
Climb upforward Operation

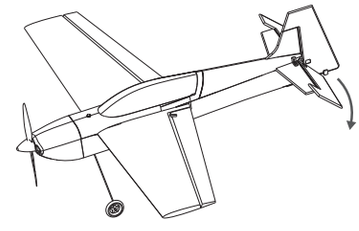
Joystick for elevator is down forward,

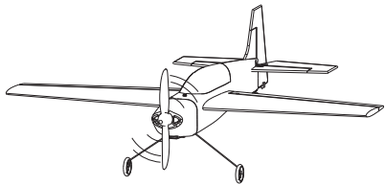
the elevator is up,and tail is down,

then the plane will climb up,

and vice versa







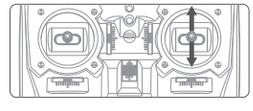
Operation for throttle

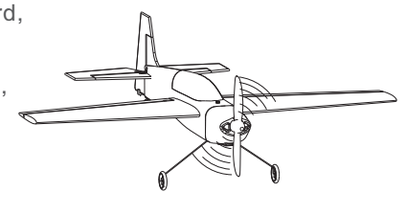
Joystick for throttle is down forward,

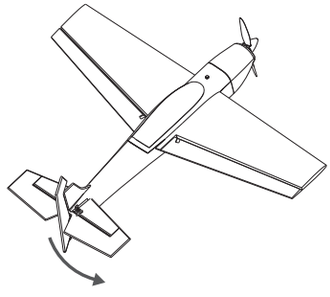
the power becomes small

Joystick for throttle is up forward,

the power becomes large







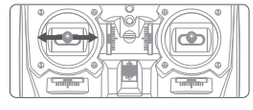
Operation for Rudder

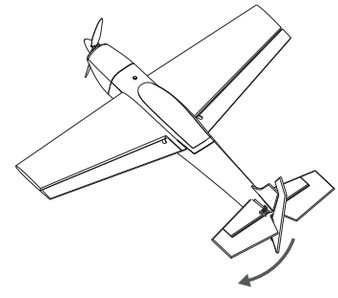
Joystick for Rudder right forward,

rudder is right forward,

and the plane will turn

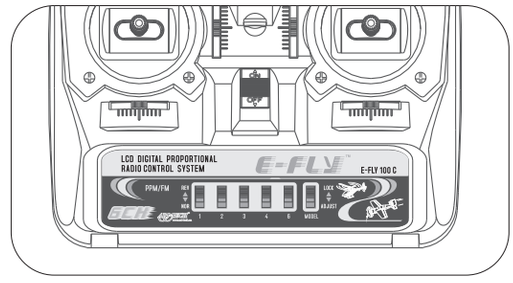
right and vice versa.





Adjustmen order

Open the battery bay, and range the 8 cells AAA battery into the battery bay, then close the bay.Before adjustment, change the reverse switch to the lower positon(Nor). Open the transmitterand the receiver, and do the following steps:



1.check every servo`s movement and make sure every movement of control arms and servo arms is correct If not, please change the switch for reverse.

2.Check the centering position of ailoren,elevator and rudder
Open the transmitter and connect the power to motor. Make sure every servo is in cetering positon and check servoarmhas a 90 angel with servo. Adjust the length of controll rod, and check all control arm is in neutral position.

3.Adjustment for range
Check the movement range and the centering positon of each servo. If the travelling range is not accepted, that can be adjusted by the position of clevise on the servo arm.

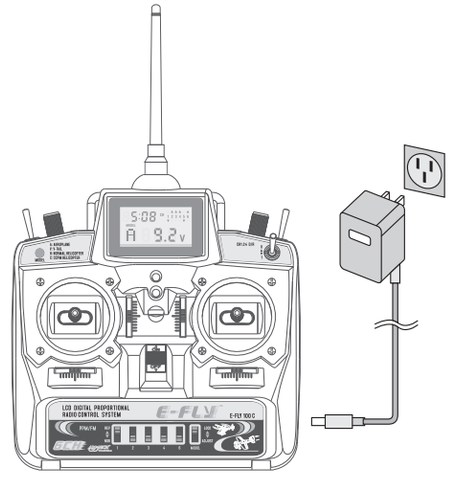
4.Check the connection of ESC and Motor
Check the joystick for throttle movement is in accordance with motor. If not, it is can be adjusted by reverse switch.

5.Check the tiny mix for every control horn.

Charge method of battery

Charge method:
1.Turn off the transmitter, connect the transmitter with the charger in the kits
(Note: Please make sure the transmitter be off before charging, It will not charged unless it is off)

2.check it the input voltage is same as the main voltage, the plug the charger into the socket.
3.the charging time should be no more than 5 hours, it should be recharged if it has been unused in long time.



Remark:
1. only the 9.6V Ni–He rechargeable battery can be charged, the dry cell should not be charged.
2 order to prolong the life of battery, please do not charge more than the required time.

Explaination for Technical words

Here are some technical words used in this Manual

Aileron:Either of two movable flaps on the wings of an airplane that can be used to control the plane's rolling and banking movements

Elevator:A movable control surface, usually attached to the horizontal stabilizer of an aircraft, that is used to produce motion up or down.

Rudder:A similar structure at the tail of an aircraft, used for effecting horizontal changes in course.

Throttle:A valve that regulates the flow of a fluid, such as the valve in an internal–combustion engine that controls the amount of vaporized fuel entering the cylinders.(For electronic plane, it can adjust the currency)

Channel:that means the quantity of isolated operation,and also can indicate the number of servos

Joystick: a stick that can be used to control operation on the transmitter

Proportional Radio:the servo is controlled by that radio and the servo arms can move proportionally and this kind of radio can be called proportional radio

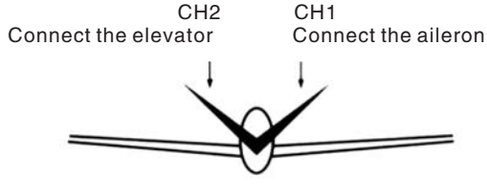
Modulation Mode:Usually there are two modulation mode in radio controll system: AM and FM. Normally FM is chosed for model plane.As well, there are two mode in signal code communication:PPM and PCM

Neutral:Without operation, joysticks in the center position and the servo arm will come to center.

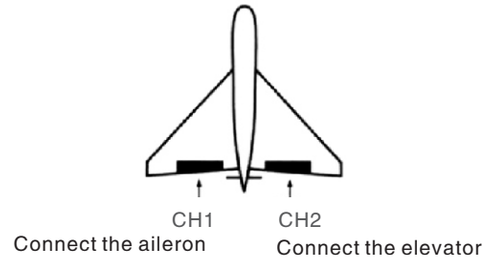
Control Horn: a pole that can connect the servo and control set.

Servo Arm: a part of servo,and it can transit the servo movement to the control horn.With many shpaes, and it should be fixed to the servo by screw.

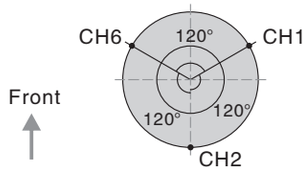
V tail mixer: see the following figure



Triang wing mixer: see the following figure



CCPM Mode: The helicopter pitch is controlled by three servos combined



Aileron Action: Servos for CH1 and CH 6 move in opposite direction synchronously, and the inclined tray set moves rightward and leftward

Elevator Action: Three servos move in same space, the inclined tray set move backward and frontward.

Pitch Action: Three servos move in the same direction synchronously, and the inclined tray set moves upward and downward horizontally

There will be no notice while changes caused by improving.
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