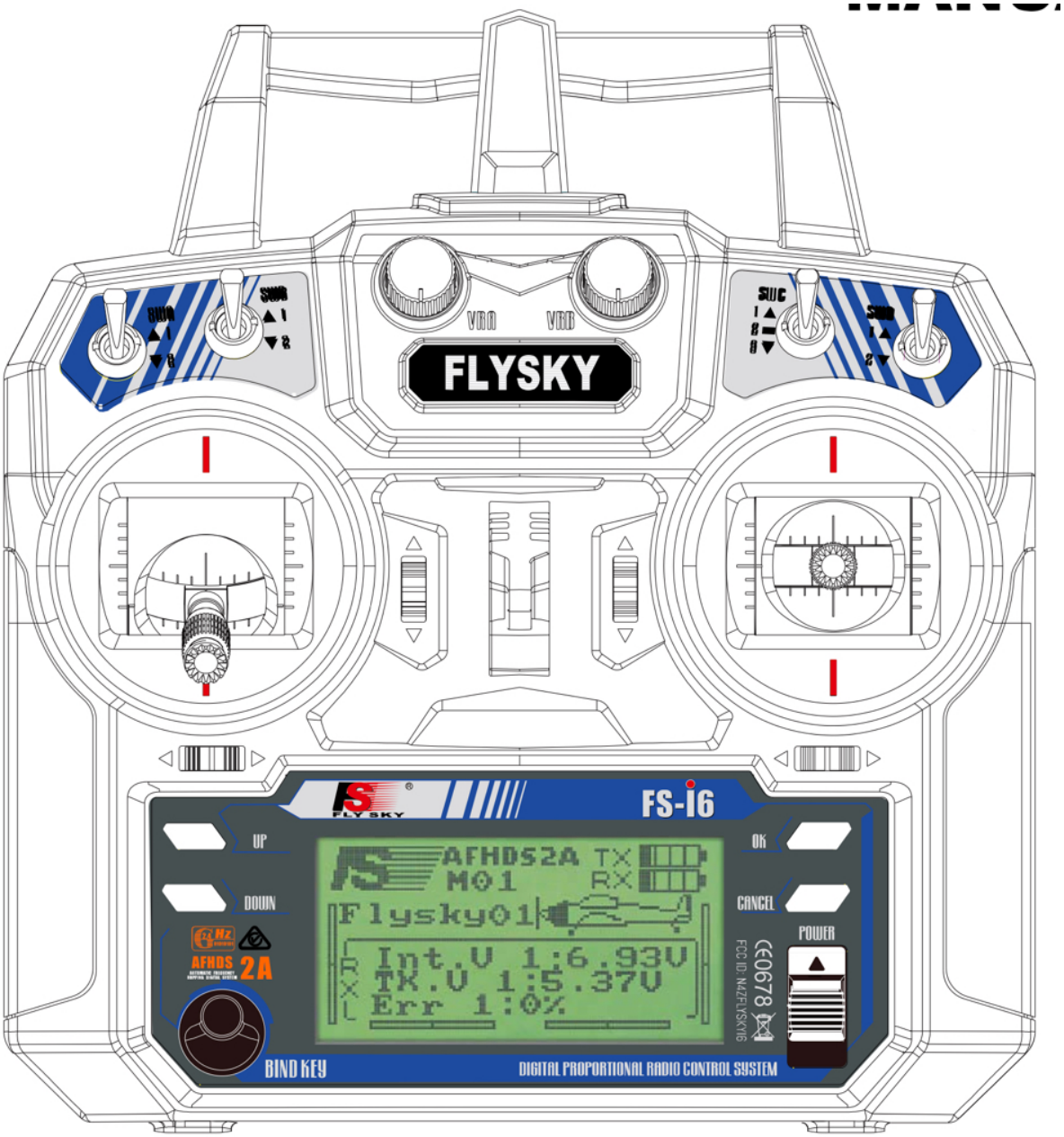
K7Yachts
Beginners Guide to Setting Up The Flysky FSi6 for Radio Sailing

Based on Ideas by Greg Norris, Mike Wyatt and Leen Buurman

Authors : Phil Holliday and Richard Jones



The challenge using radio transmitters for the first time is essentially to learn the menu system of your particular transmitter. “It’s all in the software”, as they say. So our beginner guides take you through the menu architecture three times, each time going a little deeper. You’ll soon get used to it.

CONTENTS

1.0 Introduction

Flysky make some great transmitters, and amongst them the "FSi6" is extremely popular for Radio Sailing.

At our club, about quarter to a third of the fleet use Flysky and if you have a big DF65 or DF95 fleet it would be the leading radio platform in use there.

It is just a great transmitter at an amazing price point.

Using the transmitter is easy and pretty intuitive. The main learning to do is navigating your way around the menus in the context of radio sailing, which is the main purpose of this manual

The software and user interface are proprietary to Flysky and super simple to use.

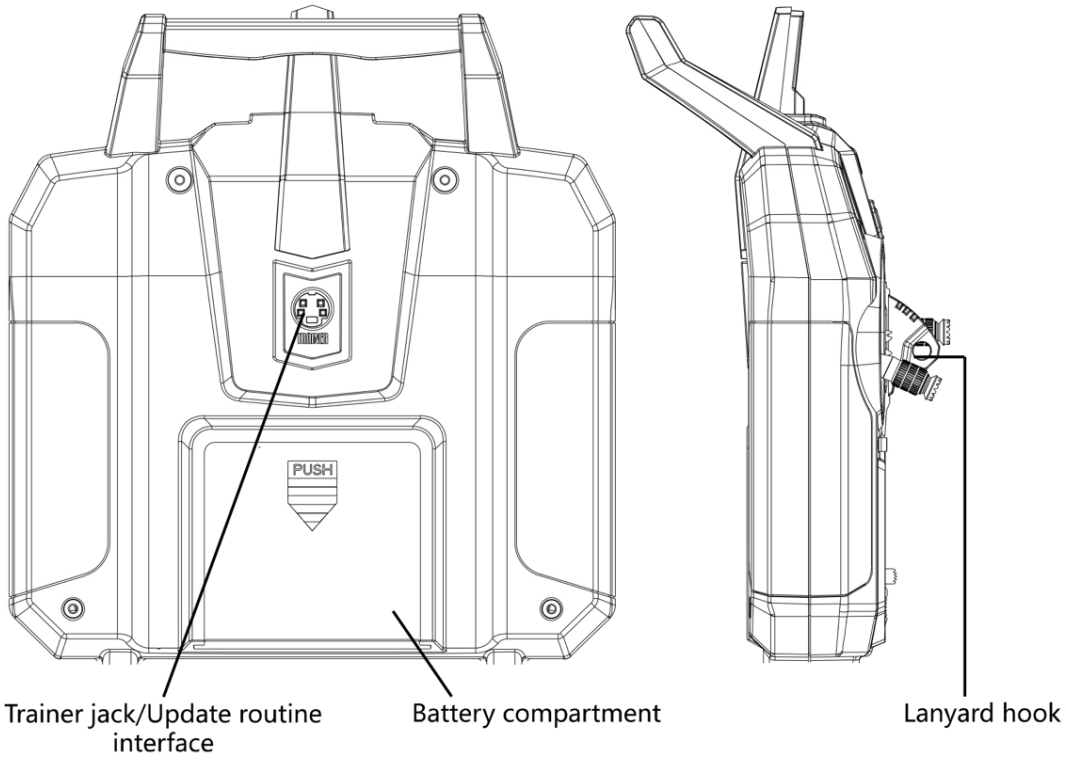
This guide sets out to show a beginner to radio sailing how to set up the Flysky to suit our sailing needs. It is written for the beginner or non-techy sailor. The issue is not so much "how to", but rather which settings shall we use on this or that menu. The goal is to show you, step by step, how to set up the Flysky for radio sailing.

This document will be much easier to read if you have a Flysky powered up with your boat right next to you.

In radio sailing we use only a fraction of what modern transmitters can deliver. We shall need to be clear about what switches and menus do not apply to radio sailing, which is many of them. We shall set up the transmitter using the software as if for flying a plane, but only using the airplane's "aileron and throttle" channels/controls. That is channel one for the boat's rudder and channel three for mainsheet.

In radio sailing we need our transmitters to be in "Mode 2" – which incidentally is the standard for airplanes in North America. Some transmitters, including Flysky, come with a switchable "mode", but for now check your Flysky is"Mode 2" when you buy. It simply means that in radio sailing, the mainsheet is on the left joystick, and the boat rudder is on the right joystick.

This is the rear panel on the Flysky.



In section 3.0 we shall have more about the front panel and the switches. Suffice to say that you may decide not to use the four auxiliary switches at all.

2.1 The Basic Rule for Switching Your Kit On and Off

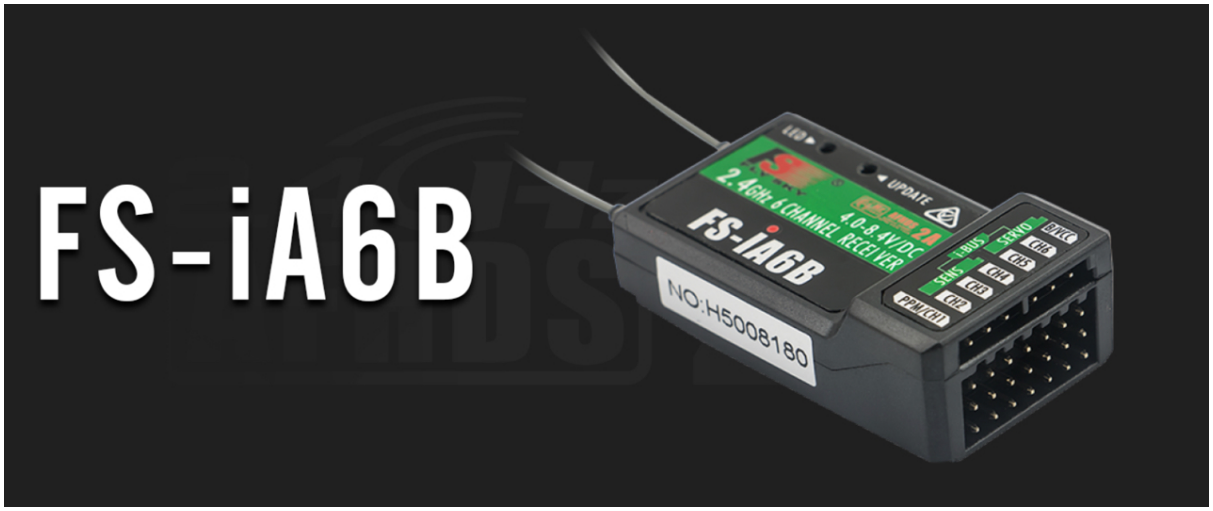
The basic rule for arriving at and leaving from your race session is when you switch "ON", you switch on the Transmitter (the unit you hold in your hands) first, then you switch on the power in the boat. As you switch on the transmitter it will ask you to pull the left joystick back towards you so that it can calibrate.

When you have finished for the session, switch "OFF" the power in the boat first, and the Transmitter second. The routine goes in reverse.

There may be some variations to this when you initially pair your receiver to the transmitter (brand dependent), so check the instructions for that carefully.

2.2 About Receivers

Most probably if you buy yourself a new receiver it will be the six channel FS-iA6B model with includes basic telemetry. Older boats and transmitters will probably have the FS-iA6A, which is pretty much the same.



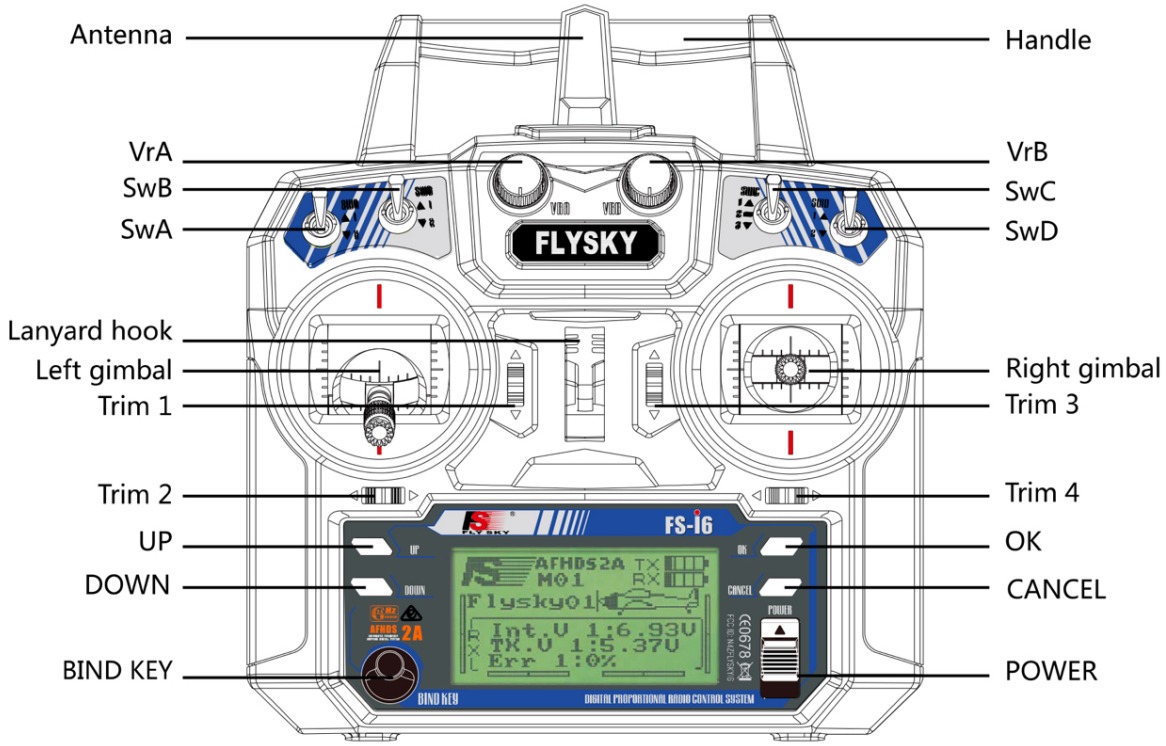
Other functions:

Basic receiver telemetry comes as standard. In radio sailing, most people do without, but we probably have just one piece of data we would wish to read on the boat – the on-board battery voltage. This receiver should do just that.

2.3 About Servos and Winches

We believe the Flysky will work with pretty much all the leading servos and winches that we use, so long as you have an appropriate Flysky Receiver in the boat.

3.0 About All of the Levers and Switches



3.1 What we DO Use

The on-off switch and the two joysticks, you will already be well acquainted with.

Sail/Mainsheet Control lever

This is the left joystick and we shall set it up so that the lever down towards you is “sheeted in” and the lever upward away from you is “sheeted out”.

Rudder control

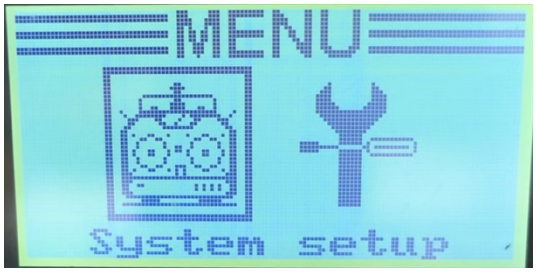
This is the right hand joystick, and left or right has, hopefully, the effect you expect.

Otherwise :

You will use all the switches that reside around the screen in the lower panel. You will also use the trim switches (two of them anyway).

Probably the first two buttons to get acquainted with are the two on the right.

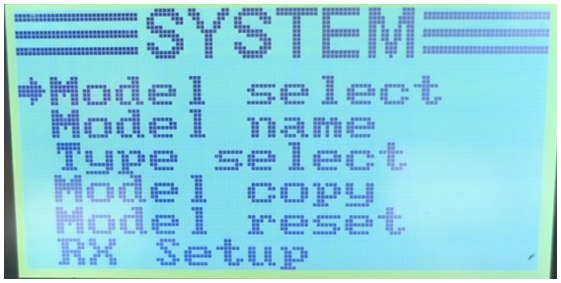
The OK button is used to enter the menu system (click and hold) ...and a click UP on its own says “move to the next field”.

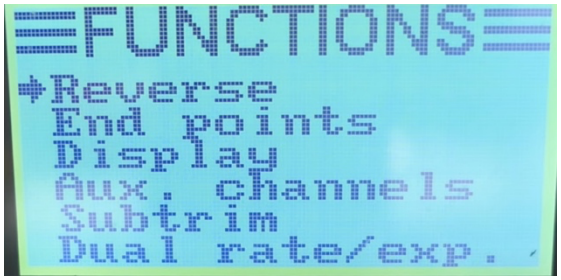


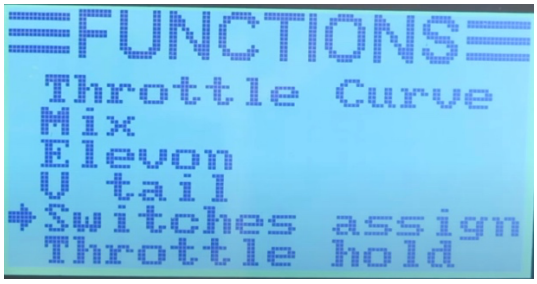
The “Cancel” button is perhaps inappropriately named as in reality it means “Save and Exit”. Very important for doing anything.

The two buttons on the left are marked “Up” and “Down” and do what they say. Menus are presented to the user usually as vertical lists, and Up and Down are the beautifully simple way to navigate to the option you want next.

Like most transmitters, here are two sets of menus, which we shall cover more of later.

- The first set of menus are for your “system”… .largely how you select what you want the transmitter and receiver to do, or do next.
- 

- The transmitter can hold up to 20 boats or boat/rigs in its memory. The second set of menus called “Functions” is how you configure the transmitter for each “boat” in the transmitter memory. You configure each boat separately. You might have different memories being used for the same boat hull with different rigs or maybe different conditions.
- When you coinfigure each boat, you will select “Setup” from the main menu above and you will be able to access two sub-menus of screen to do with configuring the boat. One screen starts with “Reverse” and “End Points” and the second set of sub menus begins “Throttle Curve”
- 



In radio sailing you will use both sets of menus frequently.

3.1.1 How to Select the Boat or Rig You Want to Use

To do this, you will use the System Menus.

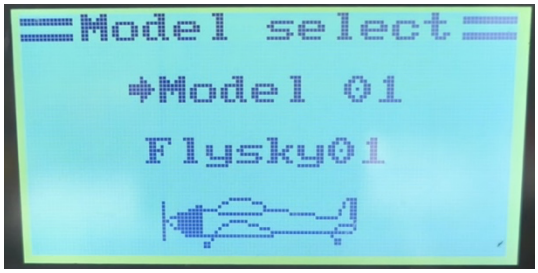
Model Select

(This is quite an easy, safe, way to get a feel for the basic switch operation on the transmitter).

You may have only one boat when you start, but you will quickly start wondering if you should have different "models" in the transmitter for your one boat with different rigs, or for sailing in different conditions. If you have many boats, or just one, you will be interested in how to do Model Changes on the Flysky.

Starting at the main menu, press OK for a second or two and you will arrive at the menu asking if you want to access "System" or "Setup" menus. To change the boat ("Model") in use, we need the "System" menu - click and hold the OK button.

This is a good point to practice with the UP and DOWN buttons to review all the choices in this menu. Then find Model Select and click OK.



If you have a number of boats in the memory, you will be able to increment that line with the arrow (above) using the UP key, and skip through a selection of all the boats you have. When you have found the correct boat, click and hold the CANCEL key which effectively means "Save and Exit".

3.1.2 How to Use the Trim Switches and Other Main Control Switches

End Points Versus Trim Switches

This manual will deal with End Points in the setting-up section, 4.2.2.

It is important to understand the difference in function between End Points and Trim Switches. It is easy be confused.

Adjusting the end points of the mainsheet for example is exactly what you would expect. You are telling the transmitter where maximum sheet-out and maximum sheet-in should be. The transmitter then calculates the mid-point itself.

(Think through the rudder setup in your mind now. You want a known centre point and you want the same numerical end points for port and starboard helm. Same maths problem – but the other way around.)

You use the "End Points" sub-menu for this job.

What do Trim Switches do?

It is easy to think they move the end points along a little, but in fact what they do is move the calculated centre point one way or the other. Take a moment to reflect on this difference. It will be important later in "Setting Up".

Trim Switches

Using the switches diagram above (section 3.0) to locate the four black buttons marked "Trim Switches". We only use two of them – T4 (trim rudder) and T1 (trim mainsheet). The numbers on the unit can be challenging to read, but the switches correspond in direction to the directions on the joystick that we use.

If your transmitter is switched off, have a little fiddle with the trim switches now simply to get the feel for them and where the clicks are.

You'll use these two trim switches most days you go sailing. The left trim switch you will only be using the clicks in the vertical axis beside the mainsheet, in the direction up and down (same as mainsheet) and the right switch you will be using the clicks in the horizontal i.e. left right, plane (same as rudder).

You can use the trim switches to adjust the centre point position and consequently the end limits of travel - maybe plus or minus 10% or so – for example to get your rudder centred before sailing. Trim switch values are preserved in the transmitter memory between power-ups.

On the main display you can see what is happening on the trim tabs. Ideally at the start of your day both will be centred. In sailing we use the vertical one on the left and the right horizontal bar. The other two are not used.

Other Switches

On the main panel, we have two redundant trim tabs, two rotary sound volume control wheels, and var click switches with two or three click-positions on each. In sailing, these are not essential, but later in the manual we shall show a possible use for one or two of these Switches..

3.2 What we do NOT use (in the main)

As we have said, we don't use any of the four auxiliary switches very often, if at all.

3.3 Recharging Your Transmitter

At our Club, most probably members use either four normal Duracell type AA batteries (total 6v when fresh) ...for convenience... or use rechargeable batteries with an external charger.

4.0 About the Menu System

4.1 What Menus We Have

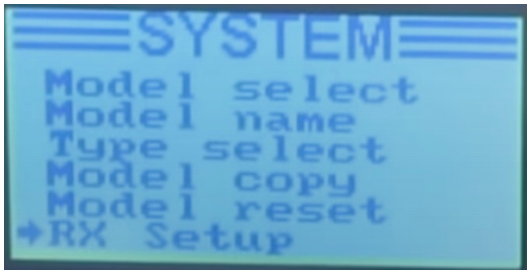
When you switch on, you'll see

- The current Model Name you are using
- The voltage level of the batteries in the transmitter
- The four trim bars previously discussed, only two of which are used in sailing..
- Some extra data, which if you're lucky includes receiver voltage via telemetry

Primary Menu choices:-

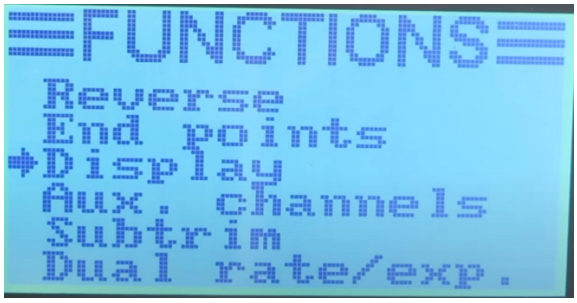
When you click on OK and hold it down a moment, you will be offered either the use of System menus or Menus to "Setup" the boat via the "Function" menus. The latter you will probably use quite often.

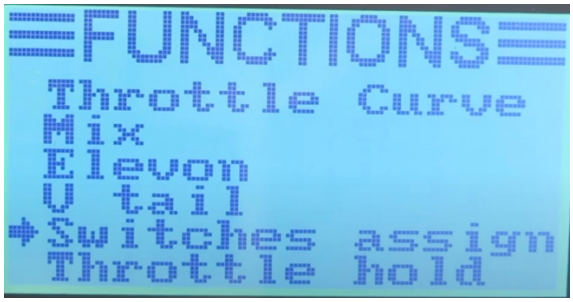
1/ System Menus



Once you are nicely set up, you will probably only use "Model Select' from this system menu. On the occasion you are setting up a new boat or receiver you will probably use it a little more.

2/ Boat (aka Model) "Setup" Menus





The second pair of menus control the way that the receiver in each boat is configured and adjusted. You will use this suite much more often and you reach these menus by pressing OK for a second or two, and selecting the boat you wish to configure. (see section 3.1.1 above) . Then move to the "Setup" option of the main menu to configure your boat.

(see above) We may be occasionally interested in "REVERSE" and "SUB TRIM", but in the main we shall want "END POINTS".

We might also later want to access "DUAL RATE/EXPO" , "THROTTLE CURVE" and "SWITCH ASSIGNMENT".

The rest of the options are not usually used by radio sailors.

4.2 Using the Menu System

The system menus are where you make changes to tailor the transmitter for radio sailing. Each time you decide to make changes it is strongly recommended that you write down, or photograph, the values that were in the fields before you start adjusting them. Once you save and end by pressing CANCEL the new values are saved permanently. There is very limited "reset", "undo" or "go back" facility to get the original values back. Write them down.

4.2.1 Binding the On-boat Receiver to the Transmitter

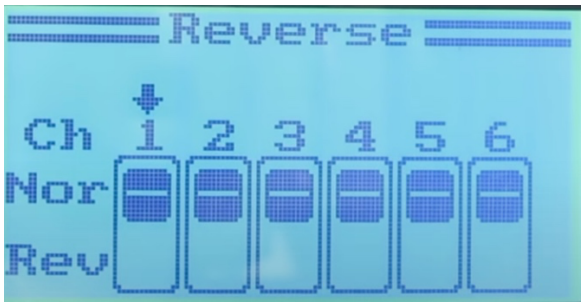
These transmitters can "pair" or "bind" or "link" with all sorts of Flysky receivers. Once you have got your boat receiver paired with the transmitter, you'll probably not do it again.

The Flysky manual is great for helping you do this, plus there are loads of youtube videos to support you (albeit airplane focussed).

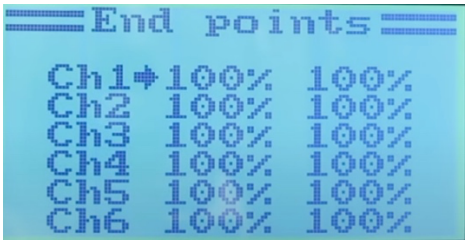
Most probably when you start off all the "Binding" has been done by the factory or by the previous owner.

4.2.2 Setting up the Boat and its Rig

When you first set up the transmitter for a boat there is a short list of things to complete using the menu options:

- Giving it a "model name". eg "My Marblehead with Swing Rig", but you give it s short mnemonic such as "F6 Swing". On the menu this is Model NAME
- 

- Polarity of rudder and mainsheet joysticks (maybe). See REVERSE menu.

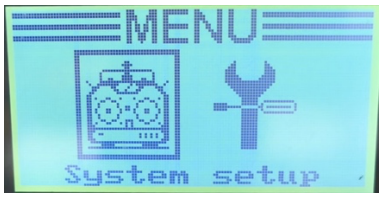
- No need to be alarmed if either or both of your joysticks seem to operate the wrong way around. You simply use the menu above to swap the channel polarity over.
- 

- Setting the limits of travel : left and right for rudder, in and out for the mainsheet (see sections 4.2.2.1 and 4.2.2.2 below)See the menu named END POINTS
- Again, it completely normal to end up with strange looking numbers like 96 one end, and 110 at the other. All very usual. Reminder – channel one is rudder, channel three is mainsheet.

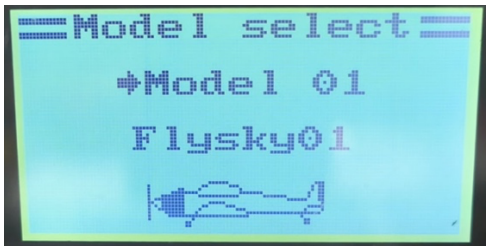
We do this by pressing the OK key for two seconds and entering the Menu system.

Firstly, on the SYSTEM option we have a choice to setup a new model, or use an existing model. You can copy across the parameters from an existing model as the basis for a new model if you wish (see later in this manual).

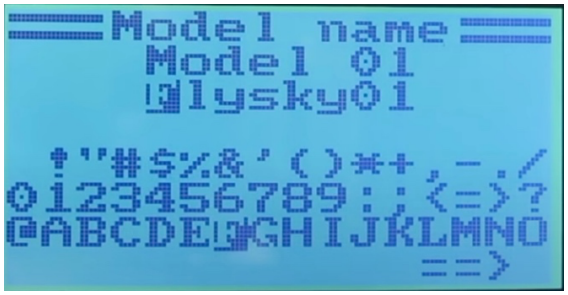
Start at the main switch-on menu, and if that is not where you find yourself, then press CANCEL to get there. Then hold down OK to get into the menu structure.



In this photo below, we have started at the main menu and you can see the current model name is FLYSKY01.

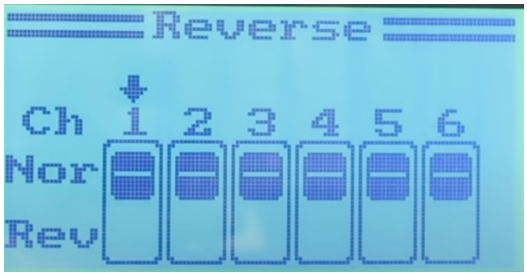


If you want to set up a new boat, the transmitter is preloaded with 20 model numbers. You can also see here (below) in this screen where you click to enter or alter a Model (Boat) name – MODEL NAME. You can change the name of a model quite easily using the selection of numbers and letters shown on the menu.

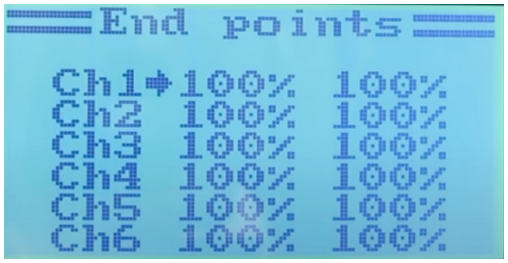


A reminder : the transmitter is preloaded with Airplane, glider, drones and helicopter modes. In radio sailing we use “Airplane” mode.

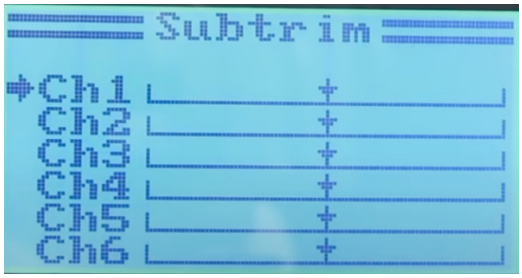
Need to begin a new boat/model? You can enter a new boat configuration using “Airplane”, or take a copy of an existing boat and build upon that (see later in this manual). The Flysky user manual is pretty easy to follow if you would like to do this.



More Useful functions in the menu system include this REVERSE screen above where you can change the polarity of your joysticks if you need. In radio sailing you will want to check Channel 3 (“Mainsheet” in radio sailing) and Channel 1, the rudder. Simply check that the direction of movement on the boat is the way round that you expect when moving the joysticks.



If you go to the END POINTS menu, you will see how we adjust End Points. We shall come to this adjustment elsewhere in this manual. See sections 4.2.2.1 and 4.2.2.2



When you set up the first time, you will likely want to try the Sub Trim Menu to adjust your centre points and this manual will deal with that in Section 4.2.3.1

Summary:-

On race day, to check or reset your end-limits, click OK for two seconds then select "End Points". . Stand close to the boat so that you can see what is going on. Try adjusting values on this menu and watch what happens on the boat.

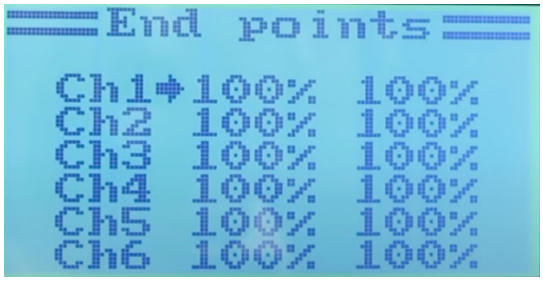
4.2.2.1 Setting Up the Rudder

To set up the rudder, it is handy as a beginner to take a fine pen and mark the bottom of the hull with three marks.

(i) mark on the hull where the rear tip of the rudder sits when central
(ii) mark the hull for maximum rudder throw, approximately both 45 degrees to port and 45 to starboard

The 45 degree marks are the maximum rudder throw that you want. Any more and the rudder could act more as a brake than even it does normally.

Start at the main menu. Now click OK and get to "Model Select" to get to the boat you want to setup. Select "End Points" to adjust your end points. Remember that in sailing your rudder is channel 1.



You will hear talk of Rudder EXPO. It is by no means essential and many sailors, inexperienced or otherwise, do not use it. We shall address this in "Advanced Topics", section 4.2.3.6

4.2.2.2 Setting up the Winch for Mainsheet

Setting up the mainsheet winch is very similar to setting up the rudder servo above.

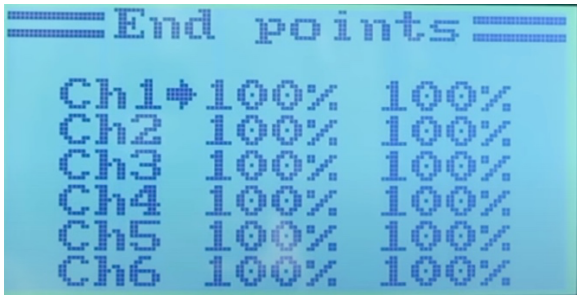
In the preceding photo you will see the Channel 3 End Points for this boat are still set to 100 and 100.

Firstly, it is useful to mark on the hull minimum and maximum points for mainsheet travel, simply mark the sheets with a felt pen for fully sheeted in or out (similar idea to the 45 degree marks for the rudder). You will likely see boats at your club displaying these marks. With your rig on, you want to mark the maximum sheeted in position and the maximum sheeted out position. How best to do this will vary enormously by class and rig. Quite probably you can manage on one pair of marks for all rigs on a One Metre for example, whereas you might just need two sets of marks for swing and conventional rigs on a Marblehead (and therefore two Models in the transmitter).

On my One Metre, the sheets are all below deck, so I have marked the sheets themselves. On the K2 IOM, the builder also recommends aligning jib sheet hooks with visible set points – it's simply different ways of achieving the same outcome.

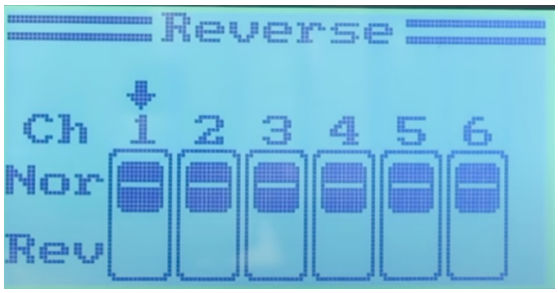
The photos below are from an F6 Marblehead which are used in this manual to make following the logic easier.

In this photo above the mainsheet is fully out and you can just see a tiny black mark in the top right corner of the photo near the steel hook, and the small black mark in the bottom left of the photo denoting the sheeted in position.



Adjust the values here on channel 3 to see the mainsheet take off hook on the boat adjusting itself to match your new numbers.

The first thing to check is whether this channel needed to be “inverted” (REVERSE menu) so that pushing the joystick out causes the sheets to try out not in. (see next photo) So the direction or polarity, had to be reversed in this boat. This happens a lot in both radio sailing and airplanes – nothing to be alarmed about.



We are mainly interested in using those MAX and MIN values for the limits of travel for the winch. We want the travel of the example F6 mainsheet take-off hook to correspond to those deck marks that match what we marked earlier in Section 4.2.2.2 above.

Adjust using the end points menu at Channel 3, using the buttons to reach the setting required to get the hook/mark in the right place.

Click CANCEL to “save and exit” and to reach the main menu. The new values will be saved in the process.

4.2.3 Slightly More Advanced Features when You're Ready

In this section, we detail setting up optional (more advanced) functions.

- Setting Up The Very First Time
- Setting EXPO for Your Rudder
- Mainsheet "curve"
- Telemetry – Show Receiver Signal Strength
- Telemetry – Turning audible warning messages OFF
- Telemetry – Setting a Low Battery Warning
- Failsafe

4.2.3.1. Setting Up The Very First Time

Most likely, when you pick this manual up for the first time, the receiver and transmitter are already connected (aka "Paired" or "Bound") and receiver connected to the servo and winch.... and talking to each other from the boat. However, there is going to be an occasion when it's all brand new and first-time, so what do we do?

When you connect the transmitter and receiver for the very first time in a boat, the transmitter is going to assume that the rudder and mainsheet points that it encounters at when you switch on are the *mid points*. That's how the transmitter knows where to start its work from.

Before you power anything up:-

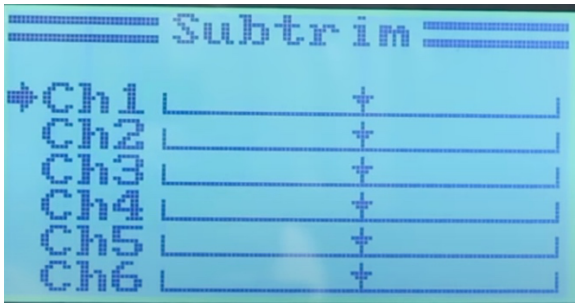
-manually coax your rudder into the centre position ("helm straight ahead")

- manually coax your mainsheet winch into the mid position. It is best to get the ruler out and measure this up on the sheets with the rig up. Mark dots on the mainsheet with a black pen against a reference point (eg mainsheet post) and mark the full-in, full-out sheet positions. Then measure where the mid point between the two dots is and mark that with a third pen dot. Now you know what you are trying to achieve and adjusting the End Points will follow.

Get everything on the mid points and connect the power.

Sub Trim Menu

Imagine for a moment that we are setting up a plane, which after all is the intended design of the transmitter. The Ailerons need to be dead centre, or the plane will roll and crash. They may look to the eye as if they are centred, but the issue is are they "really centred".



The sub trim menu function is used to set and recognise the rudder servo/mainsheet-winch neutral positions and may be used to make fine adjustments to get it spot on.

When you are confident, get out the transmitter user manual and look for the pages on Sub Trim for Ailerons. That's basically what you will do. Follow the instructions there.

4.2.3.2 Setting EXPO for your Rudder

There is a function from flying radio control planes that we can carry across into sailing. It determines how sensitive your rudder movement is relative to the rudder-joystick movements. It determines how "twitchy" your boat is reacting to rudder-joystick movements around the central position. In sailing, it is known as Rudder EXPO.

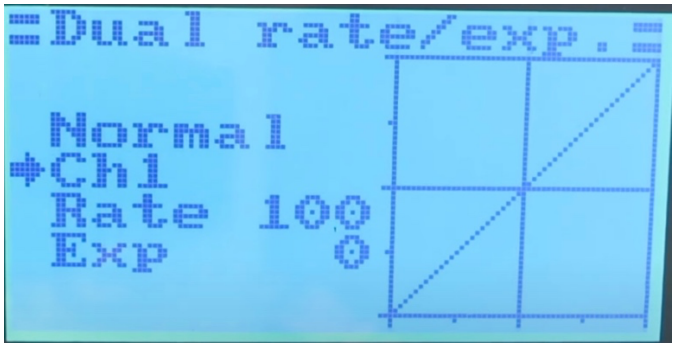
By no means do all sailors use it. It's a personal preference thing.

It is set up individually for each boat, which is one way you can try it out for yourself. Another way to try it on the Flysky is to use one of those redundant 3-position switches and simply turn EXPO on and off.

In fact, we shall suggest using the top left hand switch on the control panel to turn EXPO on and off. We shall suggest values that control the amount of Rudder EXPO, but feel free to experiment with different values. On shore, in the workshop it is really hard to tell the difference visually – you will need to try it on the water and proceed accordingly.

Click down OK for two seconds to enter the menu system, then go to the Model Select menu and select the boat upon which you want to install EXPO. Then using the keys, go back to the main menu to double check that you have selected the correct boat.

If you have the correct boat set, click OK for two seconds again and use the keys to move through the menus looking for a sub-menu named "Dual Rate Expo".



You should see the Dual Rate Expo Menu looking like this.

Dual Rate, we do not use in sailing. We shall leave those values at 100%.

1/ Make sure the little arrow is focussed around CH 1, your boat's Rudder channel.

Note the graph to the right, which shows a straight line relationship between joystick movement and the boat's rudder movement.

If it is the first time this sub-menu has been used, you will see 100%, and 0% in the list

2/ Now let's set the values for medium-EXPO.

Using the keys, if you put minus numbers in the EXPO field it softens the feeling on the rudder, if you put positive numbers in it exaggerates the helm. So we want minus numbers.

To start experimenting, we suggest that you make both numbers minus 40 and start experimenting from there. You might end up at 50% or 60% or indeed leave well alone.

Note how the shape of the graph on the display has moved from a straight line to an S shape.

3/ If you try flicking the top left hand switch on the control panel you should see the shape of that little graph change. It'll be a straight line in one switch position and an S in the other switch position.

Now your rudder EXPO is set. Click Cancel ("save and exit") repeatedly and those rudder EXPO values for the switch positions are in the memory for that particular boat. Give it a try and see what you think!

4.2.3.3. "Mainsheet Curve" Mode

For now, let us say that a lot of people would believe that a Flysky does not need this feature at all. As standard there is exactly relationship between the mainsheet and joystick positions. Take a look at the Youtube videos listed at the end of this document and you will find nice visual explanations of what Mainsheet curve can offer you.

There is. reasonbable explanation of "Throttle Curve" (as the fliers call it) in the Flysky manual. Take a read of that.

Here is a very useful youtube video based on Flysky that explains the Mainsheet Curve concept very well:-

https://youtu.be/MuDpQPF1kQk

You will see in the section about Rudder EXPO (Section 4.2.3.6 below) that we can use the transmitter to alter the sensitivity of the rudder joystick around the straight ahead (middle of the curve).

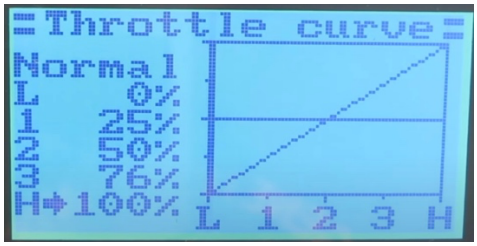
Mainsheet Curve is very similar in that we can take the Curve - which as standard is supposedly a straight line – and change its shape and sensitivity.

Set Up a Copy of the Boat

We'd suggest you use the copy function to create a new copy of the boat upon which to install your mainsheet curve experiment. You may also find that the top right hand switch on the control panel switches "Mainsheet curve" on and off. It didn't work for me, but try section 5,12 "Switches Assignment" of the Flysky User Manual and see if you can get it to work on the Swtch D.

Using Mainsheet Curve

We are now going to use the new copy of the boat we have created to set up Mainsheet Curve. Go to the Throttle Curve screen.



The relationship between the mainsheet position and the joystick position is theoretically linear by default. They define it on a graph with five points on it, that is the two end points and three along the graph line.

The default values of these points are

Low. 0% fully sheeted in position

p- 1 25%

p-2 50% centre point

p-3 75%

p-H 100%. Fully sheeted out position

The lower the values in P-1 p-2,p-3 the "softer" the mainsheet will feel. In the youtube video above for implementing the Mainsheet curve on Flysky, they show a curve of 0%, 10%, 20%, 60%, 100%. The video shows the "softer feel" very well. Give those values a try and see what you think. You will see the little graph curve change as you do so.

4.2.3.4 Telemetry – Show Receiver Signal Strength

If you have a Flysky with a reasonably modern Flysky receiver in the boat, it should by default show the boat battery strength on your home screen. Honestly, this is brilliant.

However, take a moment to check the guidelines for your batteries – they will probably tell you to come ashore and replace your battery when it reaches 50%-65% of its starting capacity. For example : With my nicest LIPOs, which carry 8.4v when full, the advice is to swap batteries when they come down to about 6.4v.

4.2.3.5. Receiver Telemetry : Turning off the Audible Warning Messages

To be developed.

4.2.3.6 Receiver Telemetry : Setting Low Battery Warnings

To be developed.

4.2.3.7 Failsafe

(Remember that you need to set this for each boat in your transmitter)

Failsafe is a surprisingly controversial topic. It may be topical because a number of receivers on the market have automatic Failsafe settings. In the extreme, these may damage the two servos on your boat. We would recommend configuring these settings manually.

When normal radio signal cannot be received on board your boat for any reason, one of two things happen.

(a) Listed Channels can work in normal mode, which holds rudder and mainsheet in the exact last position being used. It may be OK, but your boat may resolutely sail off into the distance.
(b) Listed Channels might be selected to move to F/S (failsafe) mode, preselected by you.

It's slightly controversial in sailing circles as to what you want to happen, and many do not set it at all. You need to decide yourself.

Central to the controversy is that failsafe may default to a servo position that cannot be reached for some reason, and this could lead to servo burnout.

One school of thought consequently is that Failsafe should push the rudder part way to port, and let the mainsheet partly out. To achieve this:-

1/ Select the boat that you wish to enter these failsafe facilities using the Model Select menu and check back on the homescreen that the transmitter is set on the boat you want to adjust.

2/ Hold the OK key down for two seconds to enter the menu system. Use the key sto navigate to the "Failsafe " submenu.

https://youtu.be/MuDpQPF1kQk?feature=shared

Check the first section of this excellent video.

Enter the system menu and find the RX Setup menu then find the Failsafe menu.

We would suggest not setting extremes for Channel I1 and I3, but instead set them mid range somewhere. This should give you the effect you want but minimise your exposure to burnout threats.

4.3 Menus That We Do Not Use

These transmitters are built for planes, gliders, drones and so on. Presumably they can use lots of channels and menus for different functions. We do not use the bulk of them.

4.4. Youtube support videos

Most transmitter types have a forest of support videos on Youtube. In the main they are aimed at Airplanes not boats.

However, in the case of Flysky there ARE support videos for Radio Sailors and we have found them very useful.

https://youtu.be/kKgV3LhAwVo?feature=shared

https://youtu.be/xt5IdeLdiug?feature=shared

Our current favourite for a few more advanced features:

https://youtu.be/MuDpQPF1kQk?feature=shared