K7Yachts
Beginners Guide to Setting Up The Futaba T6K 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

Futaba make some great transmitters, and amongst them the "T6K" is very suitable for Radio Sailing. It feels good in the hands especially if you prefer something size-able.... Large hands etc. For even higher robustness, some are looking at the Model T10.

At our club, about half the fleet use Futaba and it would be the leading radio platform in use there.

Famously, it also has a ratchet on the mainsheet control lever, which is extremely good for simple "pinch and puff" settings. More of that later.

The software and user interface are proprietary to Futaba and simple to use. The JOG button is the basic menu navigation tool. Some might find it a touch over sensitive, but it's OK with practice.

This guide sets out to show a beginner to radio sailing how to set up the Futaba T6K 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 Futaba T6K for radio sailing.

This document will be much easier to read if you have a Futaba T6K 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 come with a switchable "mode", but with Futaba you choose "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 of switches on the Futaba T6k. There are four. You might use just one or two of them, or indeed none of them at all.

All four switches have three positions – up, middle, and down. This could become of interest if you want to experiment using one of the switches for "Rudder EXPO" or for "Pinch and Puff"

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

We have used a six channel receiver named Futaba R3006SB (you will also see R3008SB with 8 channels). We only use two of the channels (1 and 3) in radio sailing. If you look carefully at this photo you will see we only have plugs in positions 1 and 3.
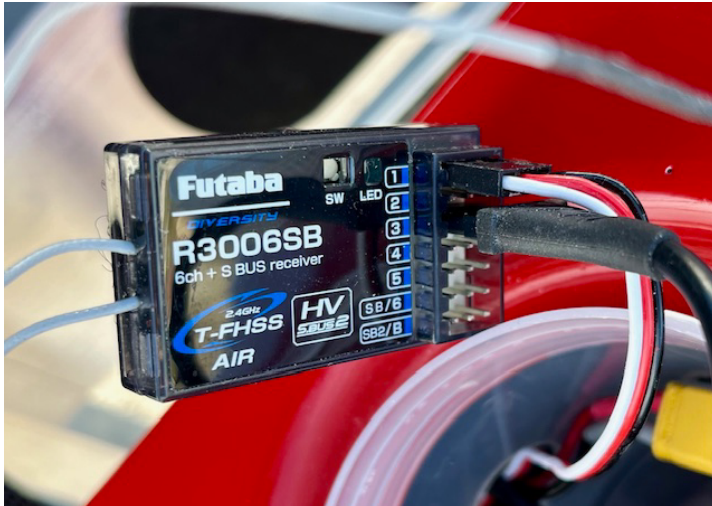
Other functions:

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. The author has not yet got this working. To be developed.

2.3 About Servos and Winches

We are using this receiver in our K2 International One Metre (IOM) fitted with an RMG Series J winch, and a Futaba S9177 rudder servo. In our F6 Marblehead, we are using a Red Ant Stinger winch with a Futaba Rudder servo.

3.0 About All of the Levers and Switches

Volume

Built-in Antenna

Carrying Handle

3 Position Switch (A)

3 Position Switch (B)

3 Position Switch (C)

2 Position Switch (D)

Rudder /Throttle Stick

Power LED

Throttle Trim Lever

Rudder Trim Lever

END Key

Elevator /Aileron Stick

Elevator Trim Lever

Aileron Trim Lever

+ Key

− Key

Jog Key

Power Switch
(Up position: ON)

LCD Panel

Hook
(for optional neckstrap)
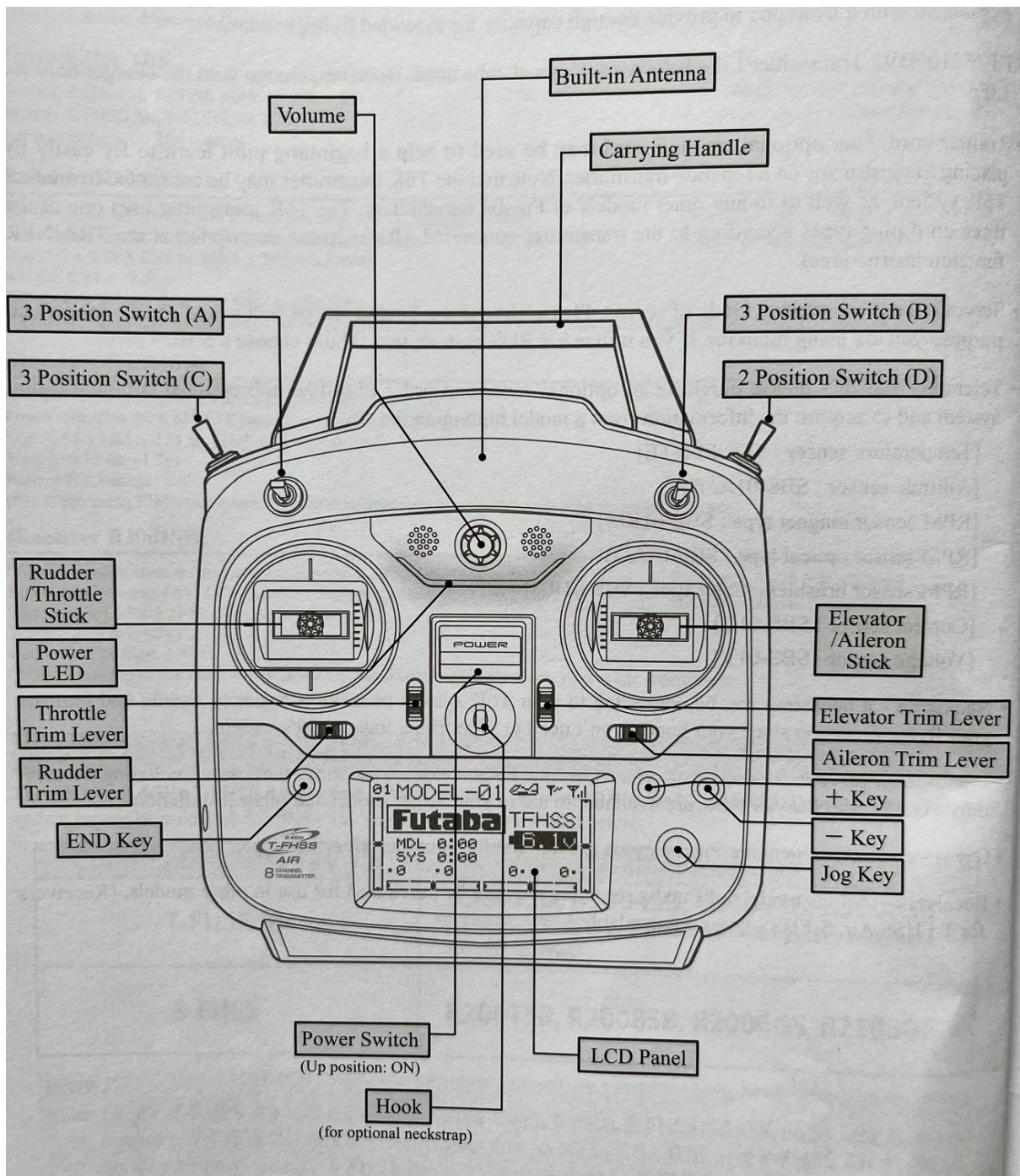
3.1 What we DO Use

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".
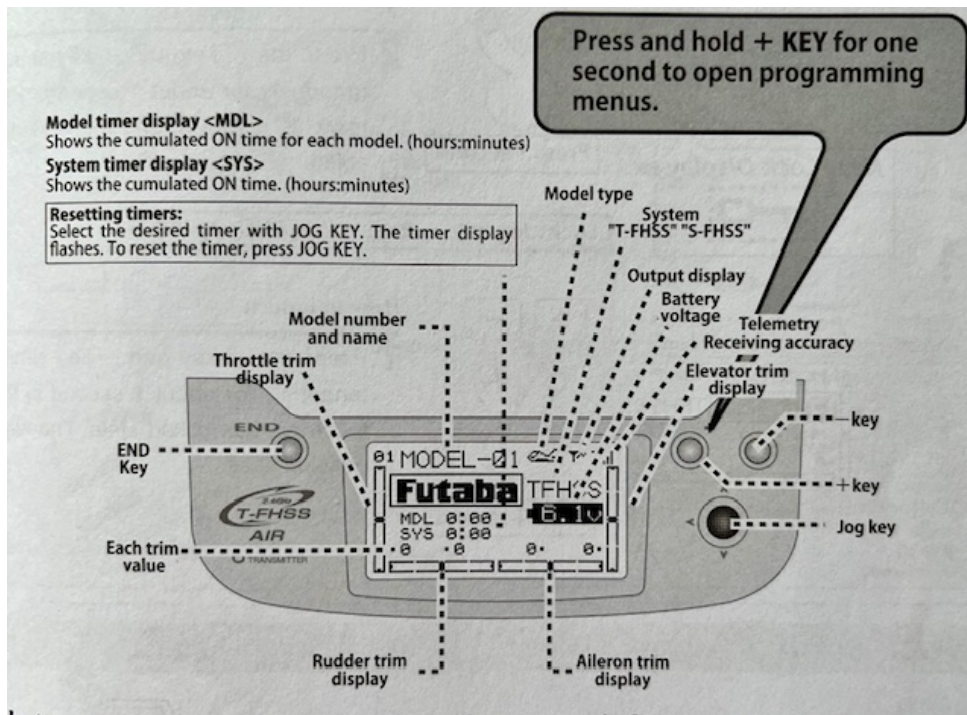
Rudder control

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

Otherwise :

Menu JOG Key and control buttons

Probably the very first controls to get to grips with are the three silver buttons (END, Plus, Minus – see diagram above) and the little black key shown in the diagram as the JOG Key. The JOG key corresponds quite closely to the "Scroller" in Spektrum and Radiomaster menu designs.

END key – this finishes the screen that you are working with, saves the values that you have changed (if any) and if you keep clicking it takes you back to the primary menu.

PLUS and MINUS buttons – these are used to increment or decrease values in menus (plus or minus)

PLUS also critically gives you access to the Model set up menus which you will use frequently. When on the main menu, just hold it down for a second or two and you will enter the important model setup menus. More of this later.

Try it now. Press PLUS for one or two seconds, see the next menu for model setup. The JOG button is like a little joystick to explore all the menu choices here. Try pushing the JOG button downwards then upwards to see how it works.

Now click END as many times as it takes to get back to the main menu.
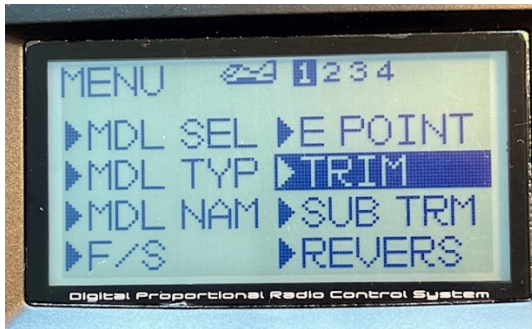
You will see if you explore that there are four screens of sub menu choices containing 25 sub-menus. They are arranged in four screens – and you can tell which screen you are on by the blocked number in the header line. In the photo above, you wil see we are on sub-menu number one. It is just a helpful little aid for keeping track of where you are in the menus.

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

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 Futaba.

Starting at the main menu, press PLUS for a second or two and you will arrive at the menu above. Use the JOG key to highlight "MDL SEL" at the top of the left hand column.

I find the JOG key quite sensitive. You can end up landing in all sorts of menus – don't worry if this happens. Just click END until you get back to the primary menu and start again. You simply need quite a positive vertical click on the JOG button and you will reach this menu shown above.

This transmitter in use for this manual has a K2 IOM "All" Rigs setup as model 1, an F6 Marblehead Swing Rig set up as model 2, and Marblehead B and C rigs set up as model 3.

Can you see that the numeral 1 is highlighted in the large black box on the second menu row? . This indicates the transmitter is on model 1 – in this case the IOM named "K2 ALL"..

This is where the PLUS and MINUS keys come in. If I click PLUS, you can see the highlighted number has changed to "2" and the Model name is now "F6 SWING".

If I click MINUS the model selection reverts to the K2 IOM

Can you see the black line with an inverted triangle on top? That is the transmitter saying that to select this model, you need to press the JOG key vertically down and hold

it for a second. The transmitter sends out an "are you sure" signal (blinks) when it is ready for the change.

Can you see the word "sure?" on the screen above. The transmitter will now double check and invite you to confirm that this is the change you want, by clicking the JOG key again – a "beep" sounds to confirm the change is made. Press END a few times to revert to the main menu and double check that the correct boat name is on the screen.

It's not difficult.

If, when you try it, the JOG key seems to you a bit sensitive, you are in good company. It usually takes this author a few attempts! You will love the Scroll Wheel concept when you try that on other transmitters!

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".
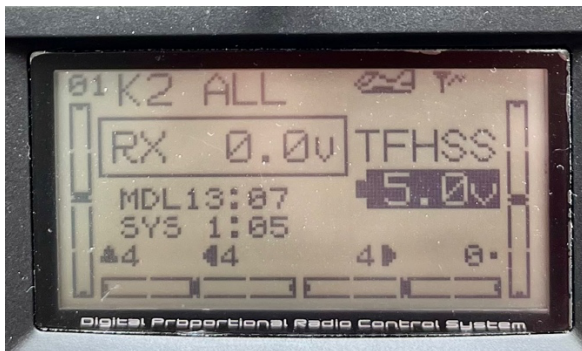
Trim Switches

Using the switches diagram above (section 3.0) to locate the four black buttons marked "Trim Switches". We only use two of them – T1 (trim rudder) and T3 (trim mainsheet). The numbers on the unit are 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, up and down (mainsheet) and the right switch you will only be using the clicks in the horizontal i.e. left right, plane (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. In this example, you will see that I have a +4 upward adjustment on the mainsheet (left vertical bar) and coincidentally a +4 right adjustment to the rudder to get it centred.

Try adjusting your Trim tabs and watch those values change.

Other Switches

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

On the back panel (facing away from you) we have two more 3-click switches which we also do not use often. Later in the manual we show a potential use for Switch D.

3.2 What we do NOT use (in the main)

As we have said, we don't use the four auxillary switches very often.   On the left side, there is a socket for a charging jack if you are using MiMH batteries and charging them in place. In radio sailing, I think in general we don't do that on Futaba though I admit I do so on my Radiomaster.

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. See photo below. If you find that the AA batteries are hard to remove from the casing, try insert a loop of ribbon to ease the process of prizing them out. (photo below)

4.0 About the Menu System
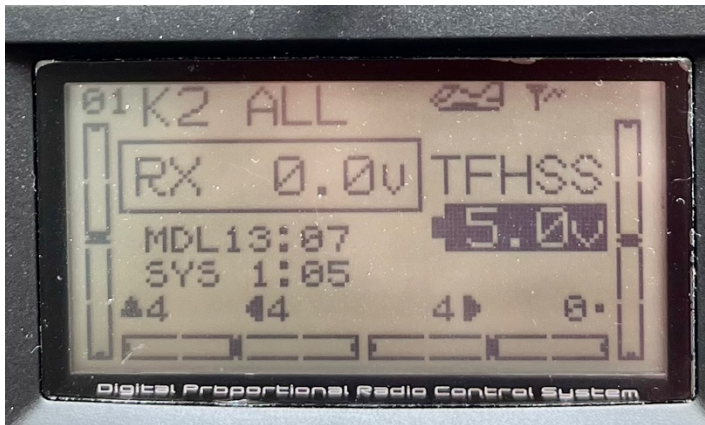
4.1 What Menus We Have

When you switch on, the primary menu, you see

- The current Model Name you are using (Here "K2 ALL")
- The voltage level of the batteries in the transmitter (Here 5.0V)
- The four trim bars previously discussed, only two of which are used in sailing..

Primary Menu choices:-

Basically, the Futaba T6K has two separate suites of menus for telemetry and, importantly, for configuring your boats.

1/ Telemetry Menus

To access these menus from the primary menu, press and hold the END button down. You can use the JOG key to navigate around telemetry, but largely in radio sailing we don't use this. We could be interested in receiving battery strength data from aboard the boat, and if it is possible, we shall add this later to this manual. It's far from essential though.

2/ Boat (aka "Model") Configuration Menus

The second set of menus control the way that the receiver in each boat is configured and adjusted. You will use this much more often and you reach these menus by pressing PLUS for a second or two, and selecting the boat you wish to configure. (see section 3.1.1 above) . You will then be able to navigate the 25 sub menus for each boat using the JOG button to find what you want. Each boat has its own 25 menus, only a few of which we actually use.   Some menus naturally have sub-menus. You page through them using the JOG, PLUS and MINUS buttons on the front face of the transmitter. You click END as many times as you need to "climb" out of the menu structure and return to the main screen.

4.2   Using the Menu System

The configuration 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 hit Return (END) 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 receivers. Once you have got your boat receiver paired with the transmitter, you'll probably not do it again.

The Futaba User Manual is not too onerous for this process. There are around six pages covering pairing and cabling up. Just find the model number of your receiver (ours for example is R3006SB) running the TFHSS protocol. Simply find the page/s of the manual for "linking" receivers (ie "pairing") and follow the instructions. They are pretty good and it is a quick job. One word of warning – when in pairing mode, a Futaba T6K will pair with anything in the vicinity. So ensure other receivers in the room are switched off before you start.

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 MDL NAM
- Polarity of rudder and mainsheet joysticks (maybe). See REVERS menu.
- 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 E POINT

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

Firstly, 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).
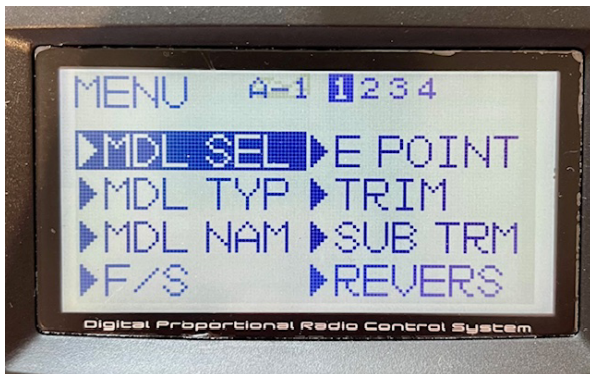
Start at the main menu, and if that is not where you find yourself, then press END repeatedly to get there.
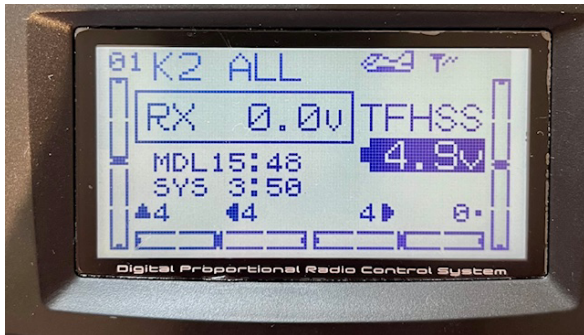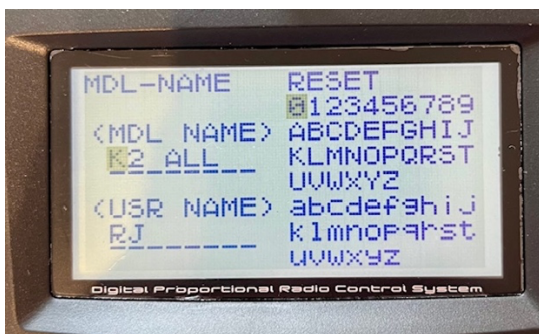

In this photo I am starting at my main menu and the boat currently loaded is The International One Metre called "K2 ALL".

We have done this a few pages back - Press the PLUS ("Model Menu")

If you want to set up a new boat, the transmitter is preloaded with 30 model numbers. You can also see here (below) in this screen where you click to enter or alter a Model (Boat) name – MDL NAM

Above MDL NAM you can see Model Type (MDL TYP). The transmitter knows Airplanes, glider, drones and helicopters. In radio sailing we use "Airplane"
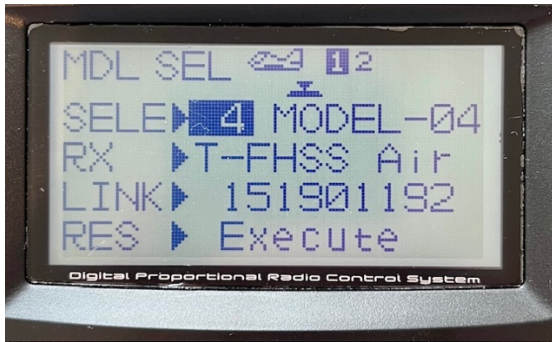
Need to begin a new boat/model? You can enter a new boat configuration, or take a copy of an existing boat and build upon that (see later in this manual). If you click on MDL SEL (Model select) with the JOG key, then keep clicking PLUS until you find an empty model slot. In this example, the first three slots already had boats in them, but number four is free. We would use this one as an example to add a new boat.

More Useful functions in the menu system include this REVERS screen above where you can change the polarity of your joysticks if you need. In this example, you can see that Channel 3 ("Mainsheet" in radio sailing) and here labelled THRottle, has had its polarity reversed to get the mainsheet direction of travel that we require.

If you go to the E POINT 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 (SUB TRM) 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 PLUS for two seconds then select E POINT. 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 PLUS to get to the boat you want to setup. Select E POINT to adjust your end points. Remember that in sailing your rudder is channel 1. In the example below my rudder end points are 112 and 99 – looks like I have improvements to do!

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 set to 96 and 109.

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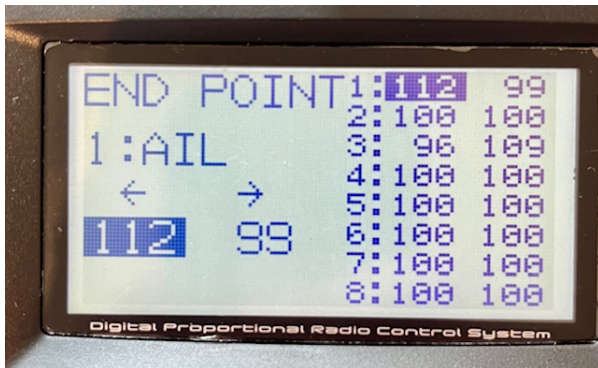
Adjust the values here on channel 3 to see the mainsheet take off hook on the boat adjusting itself to match your new numbers.

The first thing to check is whether this channel needed to be "inverted" (REVERS 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 for radio sailing – nothing to be alarmed about.
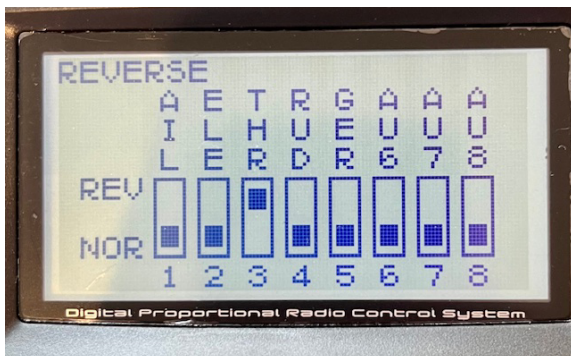
We are mainly interested in using those MAX and MIN values for the limits of travel for the winch. We want the travel of the F6 mainsheet take-off hook to correspond to those deck marks that match what we want to the sails to do when in or out.

(Apologies for the blurriness – difficult task single handed !)

This photo is to show adjusting the sheeted-in limit using the End Points Menu (E POINT) while standing beside the One Metre.

The inner limit of the K2 IOM jib sheet hook should be set to the chine. (not photographed is that the outer limit for the jibsheet is the hook just reaching the bow)

You can see that the right hand limit on the display (black rectangle around 106) is the one I am adjusting. Click the PLUS/MINUS buttons to reach the setting required to get the hook/mark in the right place.

Click END repeatedly to reach the main menu. The new value 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
- Pinch and Puff, and "Ken Read"Modes
- 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 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 servo/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" you 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 Futaba is to use one of those redundant 3-position switches and simply turn EXPO on and off. In fact, we shall suggest using switch D on the back panel right hand side, same side as the rudder joystick. Pushing it down will switch EXPO Off, the middle switch position will be medium-EXPO, and pulling the switch right upward will be more-EXPO. 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 PLUS for two seconds to enter the menu system, then go to the MDL SEL menu and select the boat upon which you want to install EXPO. Then using the END key, go back to the main menu to double check that you have selected the correct boat.

If you have the correct boat set, click PLUS for two seconds again and use the JOG key to move through the menu looking for a sub-menu named "DR EXPO". Select it with a quick press of the JOG button.
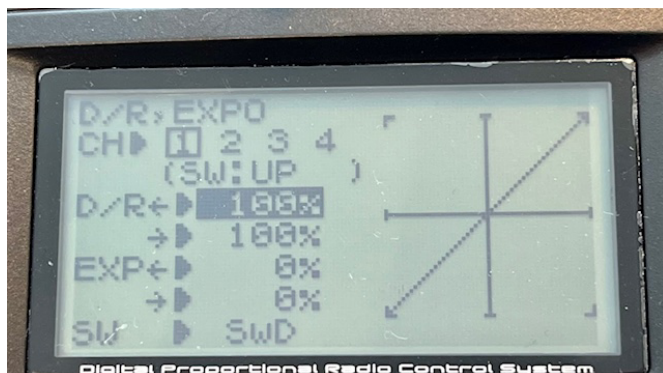
You should see the DR EXPO Menu looking like this.

DR stands for Dual Rate and we do not use it in sailing. We shall leave those values at 100%.

1/ Make sure the little square box 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%, 100%, 0% and 0% in the list below.

2/ Select the switch we are going to use. You want switch D. Use the JOG key to jump down to the bottom line where it says SW. Use the + key to alter this value to SWD.

3/ Now let us set the zero-EXPO setting, Push the switch D right down and you will see the value in the row beneath the channels change. On our transmitter it says SW:UP when the switch is in furthest down position. Maybe the switch has been fitted inverted at the factory or maybe it's always like that. So when we eventually exit the DR EXPO menu to Futaba will remember that with Switch D right down, it uses these 0%, 0% values for Rudder Expo.

4/ Now let's set the values for medium-EXPO. Pull switch D into its middle "centre" position. Check the value on the screen says "SW:CNTR".

Using the JOG key and plus minus buttons, if you put minus numbers in the two EXPO fields 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.
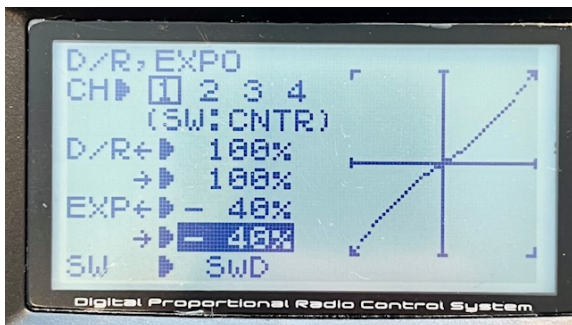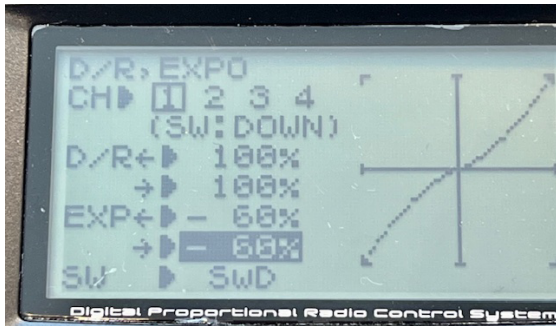

Note how the shape of the graph has moved from a straight line to an S shape.

5/ Now let's set a "More-EXPO" for when you pull switch D fully upwards toward you. This will be your "softest" helm setting.

Pull the switch D furthest upward, and note the display change. On this Futaba, it says "SW:DOWN".

We have put minus 60 in both EXPO fields. You will see that the curve in the graph is slightly more exaggerated. Some experts suggest using minus 50, some say minus 60. It will come down to personal preference per design of boat in the end. Try minus 60 to start. When sailing, if it is too soft, just flick switch D downward a notch or two.

Now your rudder EXPO is set. Click end repeatedly and those rudder EXPO values for the three switch positions are in the memory for that particular boat.

4.2.3.3. "Mainsheet Curve" with "Pinch and Puff" and "Ken Read" Modes

For now, let us say that a lot of people would believe that a Futaba does not need this feature as it has a mainsheet ratchet on the left joystick. Simply set your optimum rig with the mainsheet out at about 2 clicks, then when you want to go into pinch mode just try pulling in one or two clicks more. On my F6 Marblehaed Swing Rig, it's about four clicks to pull the gizmo right down, and in free sailing I like the main off one click more than that – so 5 clicks off.

You might want to get your head around "Mainsheet Curve" (called Throttle Curve in the manuals) and what it tries to do.

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.

The critical extra thing we can do is use it to define a different end point at the sheeted-in position, called P-1. Hence if we steal another of those redundant three position switches, we can set up three different curves – pinch, normal and puff.

99% of the time you would sail in "normal", but at the flick of a switch you could move into separate handling of the sheets to a design you set. You have to set up this feature for each boat individually. As it will take some tweaking (hours on the water) to get the numbers right, I am going to suggest you set up a new additional boat in the transmitter to experiment with Pinch and Puff Mode.

Set Up a Copy of the Boat

Click the Plus key for two seconds to get to the boat menu and use MDL SEL to set the boat you wish to copy.

Nudge the JOG key to the left. You should get the COPY sub menu. You are going to copy the existing boat into the next free model slot available. Use the PLUS key to alter the model number in the copy location.


Press the JOG key for a second to confirm the new location, then when the screen says "sure?" click the JOG key again to confirm.

The new model you have created has all the same details as the boat you started with, including the name being the same. We want a new name for the new model. Now starting with the home screen set on your new model (Model 04 in my example), use the PLUS key for a second to get into the boat menus and select MDL NAM and use this

menu with JOG, PLUS and MINUS keys to enter a new name. You will see that I have changed the name from F6 BC to F6 BCPPM.
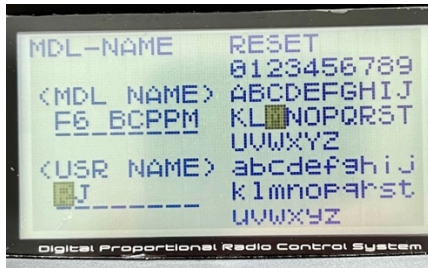

Using Mainsheet Curve to Set Up Pinch and Puff Modes

(Editorial Note : before you start consider in which order you set up these modes. On the Marblehead we did the sequence as normal-pinch-puff as per the notes below. When the exercise was repeated on the IOM pinch-normal-puff seemed a little quicker. Also notable was that the P1 values on the IOM were a lot lower than on the Marblehead.)

We are now going to use the new copy of the boat we have created to set up Pinch and Puff Modes on a switch. We are going to use Switch A immediately adjacent to the mainsheet joystick. We can set the switch in the middle position for "normal" pointing, one click towards you for Pinch Mode, and one click away from you for Puff Mode. You will sail on "normal" 99% of the time(!).

If you want to have the Futaba Manual to hand, find the airplane section named "Throttle Curve".

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.
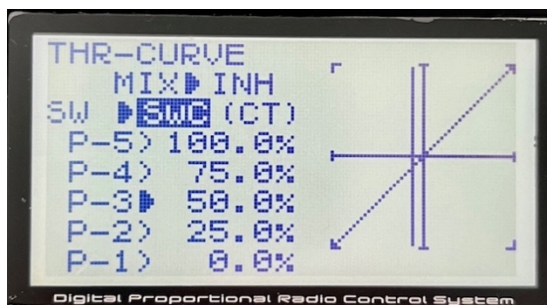
The default values of these points are

p-1. 0% fully sheeted in position

p- 2 25%

p-3 50% centre point

p-4 75%

p-5 100%. Fully sheeted out position

The lower the values in P-2, p-3,p-4 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.

For Pinch and Puff modes we can also alter the value held in P-1 which effectively alters our "fully sheeted in" position.
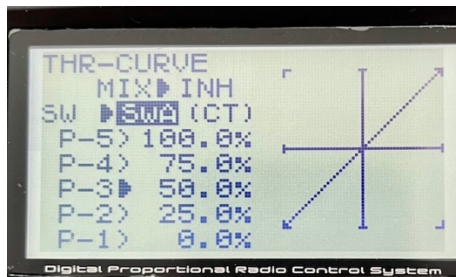
Setting Up "Normal Mode"

1/ Go to the Main menu and ensure you are on the new PPM boat model that you just created.

2/ Centre both your joysticks

3/ A long click of the PLUS button to reach the boat menus. Use the JOG key to scroll down to reach the sub menu named THR CRV (In airplanes, this is "Throttle Curve")

4/ Set switch A into the central position. First thing to do is to use the JOG , PLUS and MINUS keys to get to the SW line (3rd row of screen) and change the setting to SWA – it should now say SWA(CT) meaning centre switch position.

This is going to be our normal sailing mode. Use the JOG, Plus and Minus buttons to assign these values

P5 = 100%   P4 = 43%   P3 = 18%   P2 = 8%   P1 = 3%
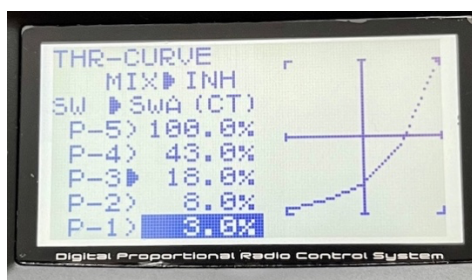
Note the straight line graph becomes a curve.

(This is very slightly softer than the values in the Flysky Mainsheet curve video, and the sheeted in position is 3 points "off" full in.)

Finally change the MIX field to say "ON" – and you will probably hear your mainsheet move slightly. On my F6 this eases the mainsheet by about 5mm. My first guess is that I want 10mm of mainsheet eased. So I am adjusting my new curve by adding 3 to each of P1 to P4. So my first attempt ashore in the workshop at "normal" is

P5 = 100   P4 = 50   P3 = 25   P2 = 15   P1 = 10
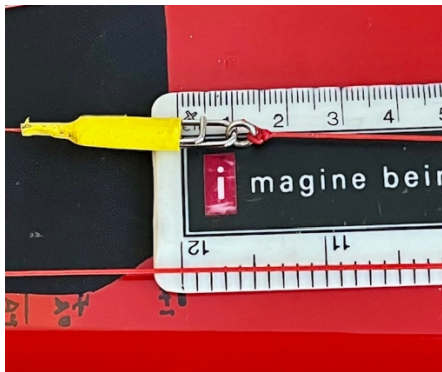
This is my Mk 1 for "normal" mode and the centre switch position. It'll have to be adjusted finally on the water.
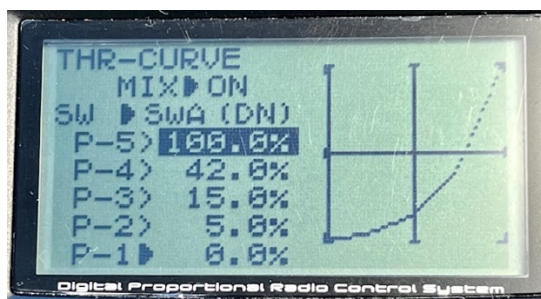
Settling Up Pinch Mode

Basically do the same routine again. Pull switch A towards you and the SW line of the display should read SWA(DN).

1/ Set new curve values for Pinch Mode that brings your mainsheet in to its maximum inward settling.
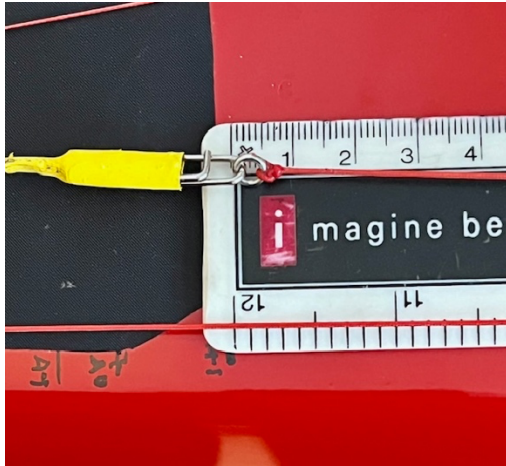
My P Values for this are

P5 = 100   P4 = 42   P3 = 15   P2 = 5   P1 = 0

If the boat is set up properly anyway before you start on Pinch and Puff, then you should find the mainsheet is in the correct place at both ends. It is slightly less likely that you will end up changing this curve much..
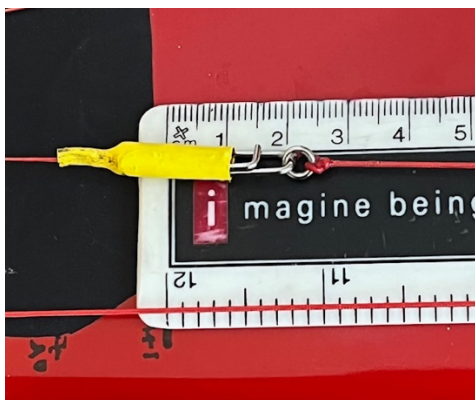
Setting Up Puff Mode

Now basically do the same routine a third time.. Push switch A towards you and the SW line of the display should read SWA(UP).
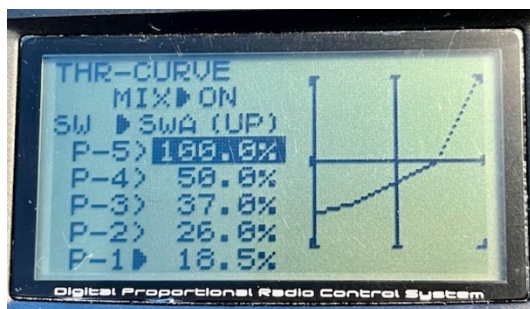
1/ Set new curve values for Puff Mode that brings the mainsheet in to its "gusty moments" setting. I have decided to try for 20mm of eased sheet to begin with.

My P Values for this are

P5 = 100   P4 = 50   P3 = 37   P2 = 26   P1 = 18.5

Undoubtedly, just like "Normal Mode", this setting will need adjusting after trying on the water.

You can test the basic function in the workshop quite easily. Start the boat up normally. With Switch A in its central position sheet in normally. Now pull switch A towards you for pinch more and watch the mainsheet draw in. Now push switch A through normal then one more click for puff mode – watch carefully that the mainsheet is easing correctly.

That's it – you have Pinch and Puff Mode set up on Switch A.

Summary of Settings

Pinch Mode	P5 = 100	P4 = 42	P3 = 15	P2 = 5	P1 = 0
Normal Mode	P5 = 100	P4 = 50	P3 = 25	P2 = 15	P1 = 10
Puff Mode	P5 = 100	P4 = 50	P3 = 37	P2 = 26	P1 = 18.5

"Ken Read" Mode

This year (2024), mega-star yachtsman Ken Read, has issued a terrific DF95 tuning video that you can find on Youtube. It's an hour long, but the last ten minutes or so are dedicated to setting up his transmitter. An intriguing idea he has is to use Mainsheet Curve to deliver improved sheeting when reaching and downwind on a separate switch position.

We are going to show you how to trial that concept here as part of "Pinch and Puff" mode.

In this manual, our three upwind modes are set up on Switch A as pinch, normal, and puff. Most logically you can take the "Puff Mode" and add Ken Read's idea to it for reaching and downwind sailing.

We are trialling this on a K2 One Metre. To add Ken Read Mode on to Puff mode, we aim to invert the little display graph for that mode. We have found it will vary not only with helmsman preference, but hugely by boat class. The numbers for an F6 Marblehead look very different to a K2 IOM.

To get started, write down your existing settings for all three switch positions first so you don't lose them. Now access the transmitter Throttle Curve menu and install these values for P5-P1 for each of your three switch positions.
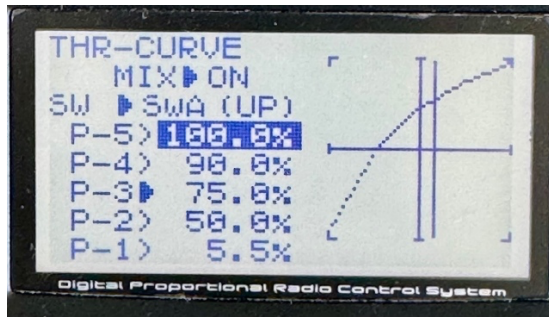
Pinch Mode
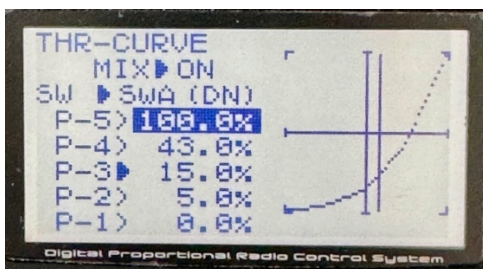
Normal Mode
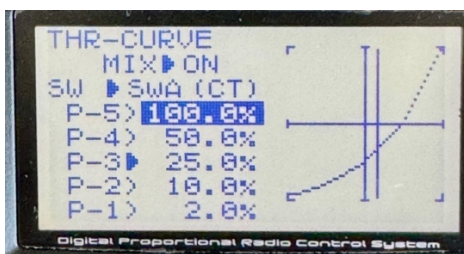
Puff Mode Including Ken Read's Reaching/Downwind Mode

Now just glance at the three graph curves on the screens above, and notice that the third curve is like the first two but ....inverted. Treat this as a starting point and let us know what you think!

Author Feedback: I tried these Ken Read Settings at the weekend. I didn't get on with it at all (!!!) – too inexperienced!!! So instead I have gone to a "Half Ken" and made the inverted curve into a straight line (P2=25, P3=50, P4=75). Actually for me, a raw beginner, that worked pretty well for downwind sheeting. I can see it will take some time to get a feel for what works with each personal style and experience.

Second Method for "Pinch and Puff":-

It might turn out that your Futaba transmitter has mainly (or totally) two position switches. This is the case for the current, beautiful Futaba T10J transmitter, for example. The shortage of three position switches might look a challenge for Pinch and Puff, but there is another way you can try. You can set it up on the left hand joystick.

Nigel Barrow has written a very nice blog item about this on his website on 7th July 2024. Go and search it out when you have a moment. It includes a little video of this idea working.

For me, it's a little more exciting as I have absolutely no idea yet why it works.... Live Dangerously? This is how it works on the Futaba T6K. Small details may vary by version, but I have it working on a T6K Version 3. There are some differences to Nigel's suggested settings.

I would suggest making a NEW MODEL based on a boat configuration you have working already and save it in your model memory in a spare slot – there are 30 slots, so you should be fine. . You use MDL COPY to do this, then do a RENAME on the new model. This is described earlier in section 4.2.3.3 above.

So now you have your new model set up. Select it and using the + key to access the menus, page through and find the sub menu named P.MIX. This might be a good moment to read about P.MIX in the Futaba manual…. I tried, but it didn't help a lot.


When you first look at the P.MIX screen it looks like this. You can Mix channels one to three, and put a Mix curve on Channel four. For Pinch and Puff mode we are ONLY going to adjust NOR:1 shown above. Get you cursor over it and click on the first field as shown.
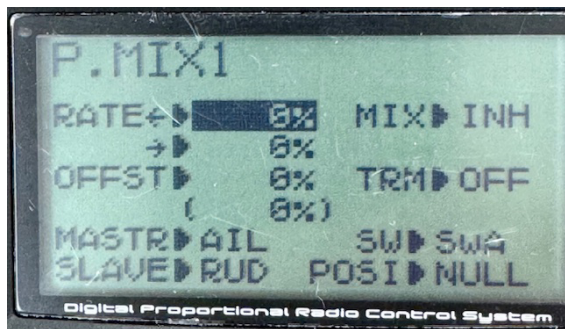
This is what P:Mix number 1 looks like when you first encounter it.

In Nigel's blog that MIX field shows OFF, but on my transmitter the only two options are ON and INHibit. Here it is set on INHhibit.

I found this screen devilishly difficult to edit, but keep trying and eventually you can get it to look almost the same as Nigel's model…. This is where I ended up.
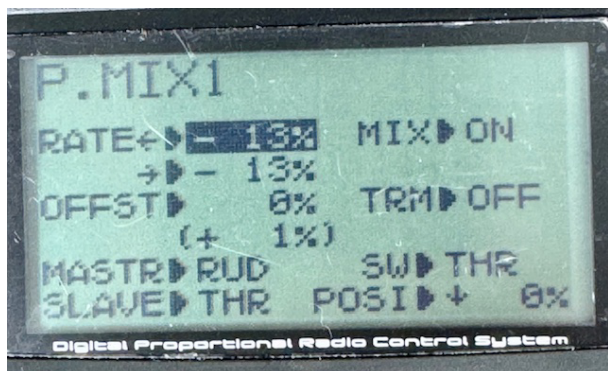
If you have Nigel's blog open as you read this, then you will see that I eventually got to the same sort of place as Nigel, but my MIX switch says "ON". At the point you do that

the thing is properly active on the transmitter, by the way. I also found I could only get +1% in the offset field (Nigel shows +2%) , but it still seems to work.

I tried this on my F6 Marblehead and immediately encountered two problems. Normal mode was not in the correct sheeting position relative the model I made the copy from. Secondly, when throwing the mainsheet joystick from left to right, it did not deliver enough of an adjustment. Quite probably when you try it on your boat you may have similar challenges. They are both quite simple to fix

(i)   Go to the END LIMITS Menu and make sure that you get "normal mode" of sheeted-in mainsheet in the correct place. On my F6 it was about 5 points out on the End Limit setting.

(ii)   Once you have got the normal mode sheeted-in position in the correct place go back to your P.MIX menu.

If you sheet in, then adjust those two RATE fields you will be able to adjust your pinch and puff settings to the positions that suit your boat. You will see that our F6 Marblehead required -13% to be increased to -21%. Throw the joystick across, adjust that value, and you will see the adjustment happening "live" on the boat.

Now for Pinch mode, I can flick the left joystick left, and for Puff mode I flick the joystick to the right. If I let the joystick go, it centres up and gives me "Normal Mode".

Try it and let us know what you think.

4.2.3.4 Telemetry – Show Receiver Signal Strength

A Futaba T6K with an R3008SB receiver using TFHSS protocol is said to be able to show receiver battery strength on board the boat. Candidly, I have failed to get this working to date.

This section of our manual is yet to be developed. Volunteer contributions welcome.

4.2.3.5. Receiver Telemetry : Turning off the Audible Warning Messages

There are warning beeps that the transmitter will sound for various reasons. Until the Telemetry sections of this manual get written, we shall set aside the issue of the audible warnings. At first glance, you cannot turn them off but you maybe control the volume.

In radio sailing, audible warnings tend to irritate those around you. It's better to reduce the volume if you can. You could try the volume control dial in the centre of the transmitter above the power on/off switch.

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 NOR (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.

One school of thought 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 MDL SEL and check back on the homescreen that the transmitter is set on the boat you want to adjust.
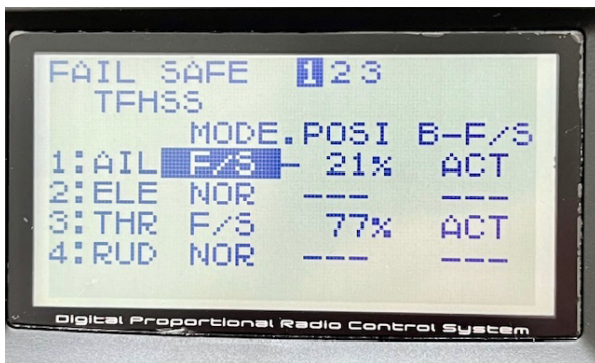
2/ Hold the PLUS key down for two seconds to enter the menu system. Use the JOG key to navigate to the "F/S" submenu.

You will see something like this.
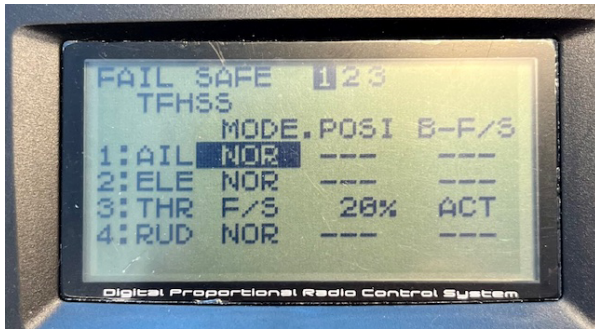
The factory standard for an airplane is to leave all the controls flying as set – which is probably straight ahead – except drop the plane's engine power to 20%. That's what you see here on the standard screen.

These are the proposed failsafe settings for sailing – helm part to port and mainsheet partly out. (see above photo)

There is thinking around that says that in failsafe you should not put either rudder or mainsheet in the fully out positions. If you set them to extremes, there is some chance that the servo and winch cannot wind that far in the heat of the moment. The result of several minutes of that can be burn out. If you know the humming noise from your boat when you sheet in, but the winch cannot actually reach the desired position – that humming is what we want to avoid in Failsafe and at any time.

1/ the boat rudder is on channel 1, so use the JOG key and PLUS key to change the failsafe mode for that channel from NOR to F/S.

2/ Use the JOG key to illuminate the corresponding POSI (position) box for Channel 1. It should be initially showing "+0%".

3/ Pull the rudder joystick partly left and hold the JOG key down for a second. Now that field should show -20% to -60% or some mid-range number.

4/ Use the JOG key to toggle across to the B-F/S column. (B-F/S stands for "Battery Failsafe" . Use the PLUS key to change this value to ACT (active).

5/ Now use JOG key to toggle down to channel 3. Change mode to F/S, change POSI to the mainsheet joystick to sheet half out (click JOG for a second to confirm), then change the B-F/S column to ACT. In the example above, you will see it is in 77% position.

Click END a few times to save your values and return to the main menu.

4.2.4 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.