Radio Master TX16s Programming

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Figure 1Radio Setup Screen

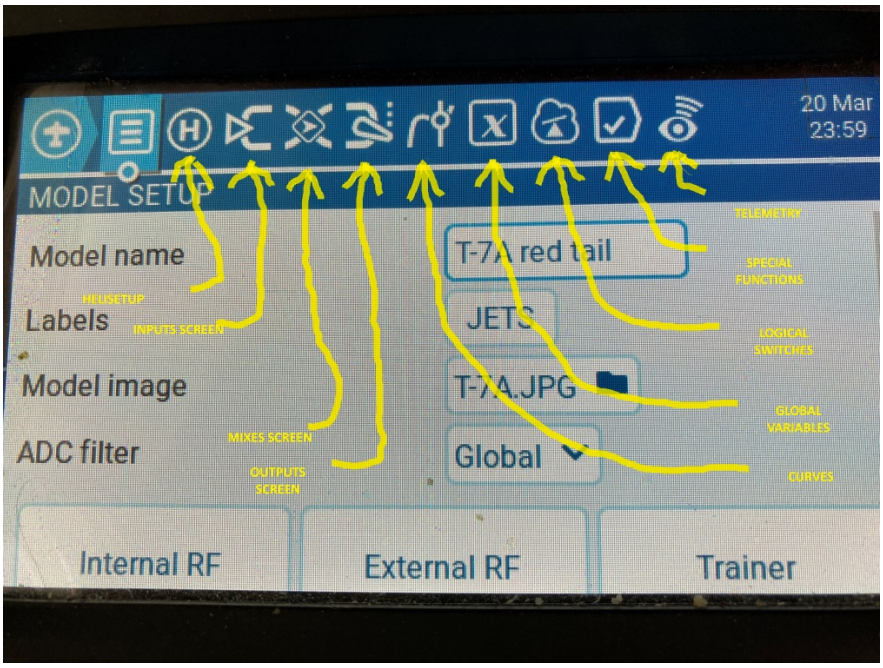

Figure 2Model Setup Screen

Introduction

I have been asked a number of time why I chose Radio Master transmitters over all of the more established systems available. At the time, I had switched from the Spektrum/JR based system to the Graupner radio on the advice of members of our club. I will admit, that it was a great system. The transmitter was, at the time, reasonably priced but the receivers were pricey and difficult to obtain. They weren't that simple to program either. I used Graupner for a few years until over one weekend, I lost two different airplanes in the same area east of the field. Because each plane had a different receiver, it was easy to isolate the problem to the transmitter itself. Because each crash happened after the same time in the air, I thought it might be an overheating problem. I contacted Graupner U.S. and they informed me that with repairs and shipping it would cost about the same as buying a new transmitter.

I started researching replacement transmitters and was shocked at the prices. During my investigation for a replacement, I saw an advertisement from Great Hobbies for a transmitter called Radio Master for less than $300.00 (at that time).

1) The first feature, besides the price, that caught my attention was that this radio would work with virtually any other manufacturer's receivers.
2) The next feature was that it had up to 16 programmable channels. The case even had places to install additional switches or push-buttons.
3) This radio was designed with all plug-in components that were easily and cheaply available through Great Hobbies. Radio Master even openly encouraged owners to open the case and experiment without the fear of losing their warranty.
4) It came equipped with a large, coloured touch enabled screen.
5) It can be programmed either through the radio screen itself or using a free PC program called "Companion".

The above were all the positive things that helped me decide on the purchase of the Radio Master TX16s transmitter. But like everything in life, nothing is perfect. Here are the cons that I have identified.

1) The transmitters 2 cell 7.4 volt 5000 mAh battery had to be purchased separately
2) There are many ways to program a single function
3) Programming is not as straight forward as some systems. You work with "Inputs", "Mixes", and "Outputs". There are new terms such as "Global Variables", "Logical Switches", "Special Functions", and "Global Functions".
4) During the binding process, a "Unique ID # must be established. (The radio will not allow you to use a duplicate ID). This is the Radio Masters version of "Model Match".
5) A centre frequency must be calculated for each Manufacturer and receiver type. (This is because each manufacturer uses a slightly different portion of the band) Once calculated, it will be the same for that manufacturer.

Even though the programming learning curve is fairly steep, once you do it a couple of time, it actually all makes sense. I am hoping to get you started with the following set of programming instructions for the TX16s transmitter broken into chapters.

ENJOY your Radio Master TX16s radio.

Chapter 1

I am using Edge TX “Centurion” V2.10.5, so your screens may not be identical to mine

1. After turning on transmitter, select “Manage Models”.
2. Select “New” to create a new model.
3. Select “New Model” then “Blank Model”.

4. You have actually created a four channel model but nothing will show on the screen yet. We will set that up later.

5. Tap the top left of the screen and select “Model Settings”.
6. Type in a name for your model.
7. Labels and images will be discussed later.

8. Tap on the “Inputs” symbol across the top of the screen. This symbol looks like a triangle with horns coming out of the right side.
9. You will see that the radio has created a basic four channel setup for you. This screen is where you can define the switches, buttons or knobs for things such as gear and flaps or a bomb drop etc.
10. Let’s add a second aileron channel, and retractable landing gear.
11. Scroll to the bottom of the screen and tap the “+” sign.
    a. A list of available inputs will be displayed. Tap the highlighted channel
12. Tap the highlighted rectangle and give the input a name such as “Ail2”.
13. Type in a line name “Ail 2”
14. Tap the Source and select the Ail icon
15. Tap the “Input“ icon to return.

16. Now, lets add a retract channel.
17. Scroll to the bottom of the screen and tap the “+” sign again.
18. A list of available inputs will be displayed. Tap the highlighted channel.
19. Tap the highlighted rectangle and give the input a name “ret”.
20. Type in a line name “Retract”
21. Tap the Source and select the switch you wish to use such as “SA”.
22. If you want to remove a channel, highlight it and tap delete.
23. Our inputs have now been created, so let us enable them through our mixing function.

24. Next select the “Mixes” icon. This looks like a diamond with horns out of both sides. This is where you enable the channels we have just created.
25. You will note that we still only show the original 4 channels.
26. Scroll to the bottom of the screen and press the “+” sign.
27. Select second Aileron “CH5” in this case.
28. You will note that the source is already filled in from the input screen.
29. Type in a name such as “Ail2”. That is all you need for Aileron2 at this time.
30. Tap the mixes icon at the top left of the screen to return to the mixes screen.
31. CH5 Ail2 now shows and is activated.
32. Scroll to the bottom of the screen and press the “+” sign.
33. Select the channel you used to operate the retracts.

34. Again the Source has already be filled in by the input screen.
35. Type in a name such as “RETRA”
36. The retracts will function now, but if you want to specify a certain switch position for gear up and down then tap the Switch highlighted square.
37. In my case I selected SA with the arrow up for gear retracted.
38. Tap the mixes icon at the top left of the screen to return to the mixes screen.
39. Tap on the line you just created and tap Insert after.
40. Use the same name again.
41. Tap the switch icon and select the switch position you want. I selected SA with the arrow down.

42. You may have noted that both Ailerons are moving in the same direction. We will fix that in the output screen.

43. Now select the “Outputs” icon. This symbol looks like a control surface in the down position with horns facing left. This is where you can set throw limits, servo centres and servo reversing.
44. I am going to assume that the channel 2 aileron is moving in the correct direction so channel five aileron servo direction will have to be changed
45. Scroll down to channel 5 and tap it. Select Edit from the menu.
46. Tap the invert icon and the channel direction is reversed.
47. Tap the icon on the top left of the screen to return to the main screen

OOPS, IT’S BLANK..... Stay tuned for screen set up and widgets.

Chapter 2

Basic Screen Setup

OK, you have a basic airplane created, so let's work on the front screen so you can actually see it.

1. To get to the screen layout page, press the "TELE" button on the lower left below the "SYS" button or tap the left top of the screen and then tap "SCREENS SETTINGS".

2. Tap the screen layout icon to the right of the word Layout. Select the screen layout you like.
3. Decide if you want the top bar, Flight Modes, Sliders, Trims , or Mirror to be displayed.
4. Tap "Set Widgets" icon. Tap on the section of screen you wish to use.
5. I chose the right side. Scroll down the screen to decide what info you want to display.
6. I chose "Model Info". I turned off "Use theme color". Tap the color icon.
7. I selected black for my writing. Tap "save". For "Size" I used "L" for large print.
8. Tap the screen to return to widget set up screen.
9. I selected the top left part of the screen for my flight timer location.
10. Scroll down the screen to "Timer" or "Timer2". Select your timer source. I chose "Timer 1".
11. that is essentially all you need to have some useful information showing on the screen.
12. In a later article, I will go over how you can add a picture of your plane onto the front screen.

Binding

1. With the radio turned on, Click on "Model Setup".
2. Tap on "Internal RF". (This is to set up the Multi Protocol process)
3. On the "Mode" line, select "Multi" and then select your receiver type
4. Select the channel range for your receiver
5. Because receiver ID is only semi-automatic, you will have to scroll through the ID numbers until a unique one is found. It will display the receiver number and "ID is unique".
6. Put your receiver into bind mode and then tap the "Bind" icon on the transmitter
7. It should bind quickly.

RF Frequency Fine Tuning

Each receiver manufacturer uses a slightly different section of the RF band as their frequency centre, there you will have to find that centre frequency. Once found, it will be the same for all of that manufactures brand and receiver type.

1. Scroll back up the screen to the "RF Freq fine tune" line. Tap on the icon.
2. Tap the "<<" until the signal disappears and then use the "+" sign until it just comes back. Record that number. Now tap the ">>" sign until the signal

disappears again. Tap the “-” sign until the signal just returns. Record this number. Add the 2 numbers together. (Eg. -56 + 106 = 50.) Divide your result by 2 and enter that into the “RF Freq fine tune” location.

Chapter 3

Simple Electric Throttle Cut

This chapter introduces “Logical Switches”, and “Special Functions”

In this set-up, the throttle must be low AND a selected switch must be thrown.

Bring up “model Settings” and select “Logical Switches”. (Icon looks like a small teeter totter inside a cloud)

Select an un-used LO number.

#	Function	V1	V2	And
LOx	A<X	Thr	-96	SF (Up arrow)
LOy	sticky	LOx	SF (Down arrow)	

Select “Special Functions”.

#	Switch	Action	Parameter	Enable
Sfx	|Loy	Override ch1	-100	x (check Box)

Gas Throttle Cut

Go to “Mixes”

Select first available. DUPLICATE

	Channel #(X)	Channel #(Y)
Name:	ThrArm	ThrCut
Source:	Max	Max
Weight:	+100	-100
Switch:	SF (Arrow Up)	SF (Arrow Down)

Go to “Special Functions”
Select first available;e SF location.

Switch:	Action:	Parameter:	
SF (Arrow Down)	Over ride channel 1	-100	Check ENABLE box.

Modified Throttle Cut

Throttle and Rudder DOWN and LEFT

LOGICAL SWITCHES

LO #	Function:	V1	V2	AND Switch F
LO1	a<x	I1:Thr	-95	
LO2 use	a<x	I4:Rud	-95	(watch rudder direction. May have to a>x with V2 of +95)
LO3	AND	LO1	LO2	SF (Up Arrow)
LO4	Sticky	LO3	SF (down Arrow)	

Global Functions

(These functions are active across all models.)

#	Switch	Action	Parameters	Enable
SF1	!LO4	Override CH1	-100	[X]
SF2	L04	Play Track	Armed	[X]
SF3	!LO4	Play Track	Disarmed	[X]

Chapter 4

Model Pictures

Lets add a model of your airplane into the radio so you can display it on the main screen.
First, take a picture of your model and bring it into a photo editor such as “Paint”.
Reduce its size so that the longest edge is 550 pixels or less. Save it to a file.
There is 2 ways to transfer your image to the radio.

1. With the power turned off on the radio, remove the SD card from the bottom of the radio. Plug the SD card into a card reader on your PC. Select the “Images” folder from the SD card and Drag and Drop the required Photo/s to it. Insert the SD card carefully back into the bottom of the radio

2. Turn the radio “ON”. Connect the charging cable that came with the radio to the top connector under the flap infront of the antenna. A USB options menu will appear on your radio screen. Select “USB Storage (SD)”. A list of the contents of the Micro SD card will appear on your computer screen. Select “IMAGES” from the list. As above, drag and drop the required image from your computer to the “Images” file of your radio.

Go into model setup and type in the model name if you haven't already. Tap on the “Model image” icon and scroll through the list until you find the image you want. Tap on that image. Go back to your front screen and the picture of your selected model will be there.

Supported formats include JPG, BMP and PNG (including PNG with transparency).
Length or width must not exceed 550 pixels.

Setting Timers

Setting up timers on the radio is very straight forward. Go to “Model Settings” and scroll down until you see “Timer 1”, “Timer 2” and “Timer 3”. Select the timer you desire to set up. Give the timer a name if you wish.

In “**MODE**”, you have choices. “Off”, “On”, “Start”, “Throttle”, “Throttle %”, and throttle start”.
“START”- This mode allows you to manually start the timer using a selected switch. One of the nice features of this radio is that when you want to select a switch, you don’t have to scroll through a list, but just move the switch you want to use to the position you want it and the radio will display it hi-lighted on the screen. All you have to do is tap the hi-lighted selection.
“THROTTLE” – In this mode, the timer starts when the throttle moves above zero and stops when it returns to zero.
“**THROTTLE %”**- As the above throttle mode, the timer starts when the throttle moves above zero. The difference is, the lower the throttle setting, the slower the counter goes. At full throttle, the timer is actually counting full seconds.
“THROTTLE START”- This is the mode I use. The timer starts when the throttle moves above zero and has to be reset manually.
At the “**Start**” icon. Set the time you need for your battery run time.
At the “**Direction**” icon you can select “Show remaining” which is countdown or “Show elapsed “ which is count up.

Turn the “**Minute call**” on if you like to know when you have one minute left.
I set “**COUNTDOWN”** to voice and 30 sec so I have a verbal countdown to land.
You can turn “**PERSISTENT”** “on” if you want this timer to keep track of your total flight time.

Reset Timers

Ok, you now have an active timer that runs. Lets set up a reset function for it.
Bring up the “RADIO SETTINGS” screen by pressing the “SYS” button.
Tap the “Global Functions” icon which looks like a fat arrow pointing to the right with a check-mark and two small airplane shapes in it.
Scroll up the screen until you see a “PLUS” sign at the bottom of the screen. Tap the plus sign. This will allow you to add a global function. Select the hi-lighted “GF number”.
Tap on the “TRIGGER” icon and select the switch or button you want to use to reset a timer. (Instead of scrolling through the whole list, just move the switch to the position you like. Tap the high-lighted switch)
Tap the “FUNCTION” icon and tap on “RESET”.
Tap the RESET” icon and tap on the timer you wish to reset.
Final step. Tap on the “ENABLE” icon to activate this reset.

Stick Calibration

Go into “RADIO SETTINGS” and select the “Hardware” icon.
Scroll down to “Inputs” and tap “CALIBRATION”.
Follow the instructions on the screen.

Labels

When you created your model, you may have noticed the icon called “LABELS”.
This function allows you to save your models in different categories to make searching easier instead of having to scroll through a long list.

To create a “label”, go to the “Manage Models”, screen.
Tap on the word “NEW”, in the upper right of the screen.
Tap on “New Label”.
Type in the “LABEL” name.
Finally tap “SAVE”.

Removing A Label

To remove a label. Go to the “Manage Models” screen
Tap on the label you want to remove.
Press and hold on the label until a menu appears.
Select “Delete Label”, from the menu.
Tap on “YES”.