

The Taranis (Q) X7S - Trainer (Wired)

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DISCLAIMER

This document is for guidance only, it is the readers responsibility to thoroughly test the model operation before flight.

This document is not a complete, comprehensive or thorough guide to using the Q X7(S) in Trainer mode.

No responsibility is accepted for any harm to persons or damage to property, howsoever caused, arising from the use of this document.

1 Trainer Mode

Trainer mode (also called ‘buddy box’) allows an Instructor to teach a student to fly without having to physically pass the transmitter between the two pilots. For the method below, a lead is used to connect another transmitter to the Q X7(S), either as master or slave.

The Futaba T9CP (slave) and the JR 3810 (master and slave) have been used with the Q X7(S). To connect JR3810 to Q X7(S)S requires a mono audio cable, but other transmitters may require a different lead eg Futaba use a variety of connectors.

1.1 Notes

1. The connecting leads used for this document is a mono audio lead, with 3.5mm hack connectors. The Futaba T9CP requires a ‘square’ adaptor to 3.5mm connector.
2. It is up to the reader to determine the suitability of the paired transmitter for the trainer function, and source the leads and adaptors required.
3. Master refers to the Instructor transmitter, slave refers to the Student transmitter.
4. Thanks to Alex Staden-Lea at <https://www.youtube.com/watch?v=dAg8feKBPOw> He has the Q X7S(S) slave transmitter powered on, as the author suspected.

1.2 Choice of Slave Transmitter

This example uses a JR 3810 transmitter in Mode 2 as the slave. The JR 3810 channel assignment is the same as the Q X7(S) set to TAER mode so the 'Thr' is CH1, 'Ail' is CH2 etc. See Para 2.5 for the Futaba T9CP example.

2 Q X7(S) as Master

To implement the trainer function, two individual programming areas require setting up and a switch allocated to activate/deactivate the Trainer mode.

2.1 Setting the Trainer Function

The trainer channel options are set in the TRAINER screen. From the Model screen, long press MENU, then PAGE to TRAINER screen, Fig 2.1a.



Figure 2.1a – TRAINER Screen for JR3810 as Slave

There are three options to connect the slave transmitter channel signals to the master:

- := Replace This replaces the master channel with the slave signal.
- += Add This adds the two input sticks – both Instructor and student.
- *= Multiply. This multiplies the two inputs – both instructor and student.

The chosen option is Replace (:=) ie when the switch is in student position, the slave transmitter stick signal will be used, via the master transmitter, to fly the airplane.

Fig. 2.1a shows the TRAINER screen set for JR3810 as the slave where:

- Mode: is the Q X7(S) sticks (TAER format) and the method of mixing with the slave signal (ADD, REPLACE, MULTIPLY).
- %: is the stick Weight
- Source: is the slave channel assignment

The Multiplier is used to compensate for any scaling of the control surface movements (see 'Cal' below). If the control surface movements are too small, then the movement may be increased or decreased by altering the value of 'Multiplier'

'Cal' is used to zero the stick positions of the slave inputs and indicate the percentage variation of the four inputs. With the two transmitters connected, and SH in student mode, moving a slave stick will change the corresponding value. When the slave sticks are correctly set, centre them, scroll to highlight 'Cal', then press ENT twice. All numbers on the 'Cal' line will go to zero. Now, as the sticks move, there should be symmetry about zero, and should be about 80% at the extremes. If they are too low or high, use the Multiplier to adjust to suit. The final servo travels will be set while testing the trainer setup, Para 3.2..

2.2 Choice of the Switch

SH, the spring-loaded switch, is used in the following examples - SH in its 'rest' position is Instructor control, while SH pulled to the front of the transmitter is Student control. The Instructor releases SH to regain control of the airplane.

2.3 Activating the Trainer Mode

Activating the trainer mode requires a SPECIAL FUNCTION be set. Press MENU > PAGE to SPECIAL FUNCTION. The switch is selected first. In Fig 1.5.2b, switch SH↓ enables the Trainer handover. Reasonably enough, un-ticking this box cancels the Trainer function.

Next, one of two methods of handing individual channel control to the student is chosen:

1. All – this hands all channels to the student. This is shown in Fig. 2.3a.

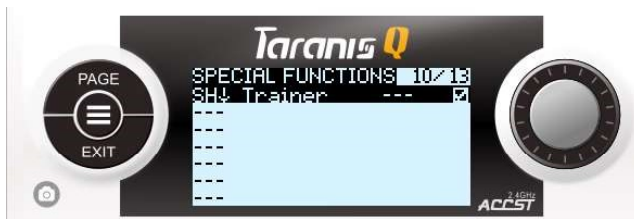


Figure 2.3a – Setting TRAINER for SH and All Channels

2. Selective - only allows chosen channels to be handed over. Fig. 2.3b shows Aileron, Elevator and Rudder handed over, but not the throttle channel. Thus the Instructor can maintain control of any channels deemed appropriate, adding more channels as the student progresses.



Figure 2.3b – Selective Channel Transfer.

2.4 Alternate Slave Transmitters

The Q X7(S), can 'buddy' with transmitters having different channel assignments (such as the Futaba), and transmitters of different stick Modes, as described below.

Fig. 2.5a shows the TRAINER screen set for Futaba T9CP as the slave where:

reassigning the Futaba (slave) channels to the Q X7(S) gives

- | | |
|--------------------|----------------------------|
| T9CP CH3, Throttle | Replaces Q X7(S) CH3 'Ele' |
| T9CP CH1, Aileron | Replaces Q X7(S) CH1 'Thr' |
| T9CP CH2, Elevator | Replaces Q X7(S) CH2 'Ail' |
| T9CP CH4, Rudder | Replaces Q X7(S) CH4 'Rud' |



Figure 2.5a - TRAINER Screen for Futaba T9CP

3 Using the Buddy box

This requires two steps.

1. Connect the transmitters, see Para 3.1.
2. Match the model programming in both transmitters, see Para 3.2

3.1 Connecting the Two transmitters

Switch on the Q X7(S) (master) and insert one end of the trainer lead into the top-right socket (next to the aerial). For JR and Futaba as slave, typically DO NOT switch on the other set, just plug in the lead to its trainer connector. For other transmitter models, check the manual. The slave transmitter will turn on but no radio signal will be transmitted. If audio is enabled on the Q X7(S), the Q X7(S) will announce 'Trainer signal recovered' or similar. Should the lead become unplugged, the Q X7(S) will announce 'Trainer signal lost'.

3.2 Matching the Transmitter settings

In use, any rate, differential and expo etc. settings are controlled from the transmitter currently selected ie the pilot in control. Therefore it is necessary to set up the model on both transmitters to give the same control surface movement for any given stick and switch position.

With both transmitters active, and alternating between Instructor and Pupil mode (ie toggle switch H), move the sticks and any rate switches to ensure both transmitters give the same movement whether the Instructor or Student transmitter is selected. Correct as required.

4 Q X7(S) Trainer Mode as Wired Slave

The Q X7(S) is different to conventional transmitters in that the Q X7(S) has to be switched on when used as a slave. Note no audio announcements are made from the Q X7(S) as slave.

1. On Q X7(S):
 - a) Switch ON > Navigate to SETUP and:
 - a) SWITCH OFF Internal and/or External transmitter modules;
 - b) select Slave/Jack
2. Switch on Master transmitter
3. Connect one end of trainer lead to the master transmitter and the other end to the Q X7(S) (top-right socket next to the aerial).

Test trainer mode as described in Para 3.2.