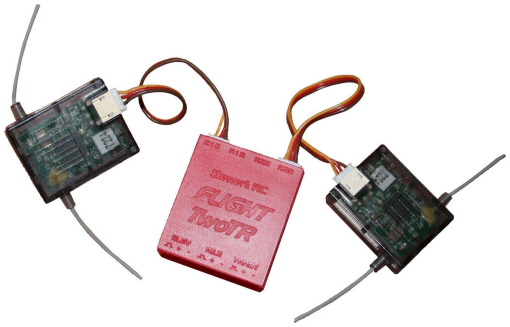
Flight TwoTR

Two Transmitters – Two Receivers

A 6-Channel, Dual Receiver Mixer
For Pilot Training
OR
Airsoccer Gaming



Introduction:
The The Flight TwoTR allows two pilots to control a single aircraft without a trainer cord. Control is shared between the two transmitters using dual receivers or dual receiver pairs onboard the aircraft. Receiver signals are mixed to move the servos. The Flight TwoTR simulator is the best way to get familiar with the capabilities and programmable features of the Flight TwoTR. Download the simulator for free from our web site at http://www.desertrc.com.

The Flight TwoTR is ideal for student pilot training using an instructor transmitter and a student transmitter. A spare channel is used on the instructor transmitter to transfer control of a remotely piloted aircraft to the student. The instructor can give the student only as much control as the student can handle. The instructor can take control back from the student if necessary, or give the student more control as the student's flying skill improves. This prevents the student from over-controlling the aircraft, which is the most common mistake when learning to fly.

Airsoccer:
Having the ability for two people to concurrently share control of an aircraft opens doors to new gaming possibilities. Airsoccer is a game that is played between two pilots where each pilot has equal control over all aircraft functions such as aileron, elevator and rudder. When one pilot turns the ailerons left, the other pilot can neutralize the ailerons by turning them right, then use rudder to steer, or use other tactics to maneuver the aircraft towards a pilot's own goal line. The object for each pilot is to land (or crash) the aircraft on their side of a goal line to score points. Goal lines can be as close together or as far apart as desired, and that distance often affects how quickly points are scored. There are no firm rules for Airsoccer other than what the participants create. Airsoccer is always changing. It is fast, fun, and hones your skills piloting like nothing else can.

Getting Started:
The Flight TwoTR comes pre-programmed for Airsoccer gaming. Everything can be plugged in and flown right out of the box providing the remote receivers are already bound to their respective transmitters. Follow the manufacturer's binding procedure to bind your DSM2 compatible receivers.

The Flight TwoTR can be safely operated with only one active transmitter and it does not matter which single transmitter is used. Any time the Flight TwoTR is not receiving data from one transmitter, 100% control will automatically be granted to the active transmitter. Feel free to fly your model solo. The second transmitter can be turned on at any time for dual transmitter operation.

Use only name-brand DSM2 compatible receivers such as Spektrum or JR. Using counterfeit knockoffs of DSM2 receivers is not recommended and may not work properly.

Programmable Features:
Flight TwoTR programmability is provided to allow the user to set the following features:

1) ***Set a Gain Channel***: Optionally select a specific channel to be used to adjust the amount of control between two pilots. A single channel on the instructor transmitter is used to vary the amount of control between the two pilots. This feature is turned off by default.
2) ***Exclude channels from mixing***: The Flight TwoTR allows certain channels to be excluded from the student transmitter control. The Default setting enables all student transmitter channels.
3) ***Set the Receiver Gain***: In gaming mode, each pilot has control over the servos in the same amount. The default gain from both receivers is 80%. The servos will move 80% of their normal travel distance in response to individual pilot commands. When both transmitters command the servo to move in the same direction, the actual servo motion is limited to 120% of normal servo travel.

Connections:
There are four connectors available for DSM2 compatible receivers on the top of the Flight TwoTR. Receiver plugs marked R1A and R1B are used to connect receivers bound to the instructor transmitter. Receiver plugs marked R2A and R2B are used to connect receivers bound to the student transmitter.

Two DSM2 compatible remote receivers are required for close range aircraft. One receiver bound to the instructor transmitter can be plugged into either the R1A or R1B connectors. Likewise, one receiver bound to the student transmitter can be plugged into either the R2A or R2B connectors.

Full range applications may require a pair of two receivers for each transmitter where two receivers bound to the instructor transmitter plug into R1A and R1B connectors, and two receivers bound to the student transmitter plug into R2A and R2B connectors. Receivers must be bound to their respective transmitters before connecting them to the Flight TwoTR.

Observe proper connector orientation when plugging in servos making sure the black or brown wire (battery -) connects to the pin marked with the minus sign (-) on the plastic case. Make sure the red or orange wire (battery +) connects to the pin marked with the plus sign (+).

When the system is turned on, make sure the LED light inside the remote receivers turn on to indicate they are receiving data from their respective transmitters. A red LED inside the Flight TwoTR will flash twice if no data is being received from the student transmitter. The same LED will flash once if no data is being received from the instructor transmitter.

Programming from the Flight TwoTR Simulator:
Programming the Flight TwoTR is much easier when it is done using the Flight TwoTR simulator with the USB DRC-Link product, version 1.4 or above. See our web site for details. Use the following procedure:

1. Plug the two-wire cable into the end of the DRC-Link.
2. Plug the DRC-Link into a USB outlet on your computer.
3. Plug the two-wire cable into any of the receiver plugs on the Flight TwoTR.
4. Turn on power to the Flight TwoTR.
5. Launch the Flight TwoTR Simulator and change any desired settings.
6. Click "Program Device" when all options are set properly on the Simulator.

Important: Use the two-wire cable that comes with the DRC-Link when using the simulator to program the Flight TwoTR. **Never use a three-wire DRC-Link cable if any receivers are plugged into the Flight TwoTR or your receivers may be damaged.** A three-wire cable can only be used if all DSM2 receivers are unplugged. Make sure the Flight TwoTR Simulator program is started AFTER the DRC-Link has been plugged into a USB outlet on your computer.

Programming Using the Programming Cable and Your Transmitter:
A single wire jumper is provided to program the Flight TwoTR without the DRC-Link. There are six pulse pins denoted by the marking in the plastic case where servos plug in. Turning on power to the Flight TwoTR with the programming cable connected between the any receiver connector and a servo pulse pin initiates programming mode. Power can be applied from any of the six servo connections.

Using the programming cable requires the programming cable be plugged into any one of the four receiver connectors. Some features require using the instructor transmitter, and also require receiver 1 (R1A or R1B) to be plugged in. All other receivers should be unplugged.

Default Settings:
The Flight TwoTR is factory configured to be used for Airsoccer gaming. Default settings will provide 80% control over the servos from each pilot with all other programmable options disabled. The Flight TwoTR can always be set back to its factory configuration by following these steps:

1. Turn off the system and connect the Programming Cable between any receiver connector and the AUX1 servo connector.
2. Turn the system on and notice the LED stays on constantly.
3. Turn off the system and remove the Programming Cable.

Gain Channel
The Flight TwoTR can be programmed to select a specific channel to be used as the "Gain Channel". The Gain Channel is used to vary the amount of control between the two transmitters. Only one channel from the instructor transmitter can be used as the Gain Channel. As the control gain from one transmitter is increased using the Gain Channel, the control gain from the other transmitter is reduced such that the sum of the gain from both

transmitters equals 100%. This feature is disabled as the default setting. The Gain Channel is automatically excluded from mixing (see Channel Exclusions section for more information). Channel 7 may be used as a Gain Channel if a 7-channel transmitter (Aux-2 on most systems) is used. Using channel 7 avoids consuming any of the channels that are routed to the servos.

Gain Channel Programming:
Use the instructor transmitter and receiver 1 to perform Gain Channel programming.

1. Turn off the system and connect the Programming Cable between any receiver connector and the Elevator servo pulse pin.
2. Turn the system on and notice that the LED continuously flashes 4 times in a row.
3. Move the transmitter control of the selected Gain Channel *all the way* back and forth at least 3 times, or until the LED starts flashing at a slower rate.
4. Move the transmitter control to the position where full control is to be granted to the instructor transmitter, and hold it there for 10 seconds until the LED stays on constantly.
5. Turn off the system and remove the Programming Cable.

Gaming Mode Receiver Gain:
Each receiver will have equal influence on the servos in Gaming Mode, and the amount of that influence is programmable. When both receivers are active, the amount of control that each receiver has can be anywhere from 50% to 100%. This feature has a default setting of 80%.

Receiver Gain Programming:
Use the instructor transmitter and receiver 1 to perform Gain Channel programming.

1. Turn off the system and connect the Programming Cable between any receiver connector and the Throttle servo pulse pin.
2. Turn the system on and notice that the LED continuously flashes 5 times in a row.
3. Move any single transmitter control back and forth all the way at least 3 times, or until the LED starts flashing at a slower rate.
4. Move the same transmitter control to the point where the receiver gain setting is desired, and hold it there for about 10-seconds until the LED turns on constantly. For example, if it is desirable to set the receiver gain to 75%, move the selected transmitter control only half way in either direction and hold it there.
5. Turn off the system and remove the Programming Cable.

Channel Exclusion:
Certain channels can be excluded from mixing allowing those channels to be controlled only by the instructor transmitter. The same channel exclusion programming procedure is used to turn channel exclusion on and off.

Channel Exclusion Programming:

1. Turn off the system and connect the Programming Cable between any receiver connector and the Rudder servo pulse pin.
2. Turn the system on and notice that the LED begins flashing rapidly.
3. Move the transmitter control of a channel to be excluded back and forth at least 3 times, or until the LED stays on continuously.
4. Turn off the system.
5. Remove the Programming Cable, or repeat from step 2 to toggle the exclusion feature on another channel.
