Fly Dream Multifunctional Servo Tester STV3

Manual

Functions

1. Simple servo test (three modes)
2. Servo end point test
3. Servo speed test
4. Servo dead band test
5. Servo torque test (requires torque sensor, available separately, and not released now)
6. Tachometer function (measures rotational speed of propellers)
7. PWM signal width test (measures receiver channel signals)
8. Lithium battery power test (1-8 cells)

Features of STV3

1. Dot matrix LCD (84*48) provides rich, clear display
2. Powered by built-in 5A UBEC via Lipo battery or 8V-18V DC supply power
3. Provides choice of three output voltages to servo: 4.8v, 6.0v and 7.4V
4. Intelligent programming ensures compatibility with both analog and digital servos
5. Thermometer sensor measures temperature during servo testing.
6. Factory Mode enables test programs customized to the needs of manufacturers

Specifications

Size: 100*72*36mm

Net Weight: 180g

Gross Weight: 248g

Operating Voltage Range: 8V-18V
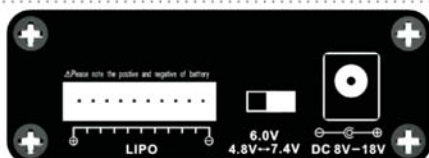
Output Voltage:4.8V/6.0V/7.4V
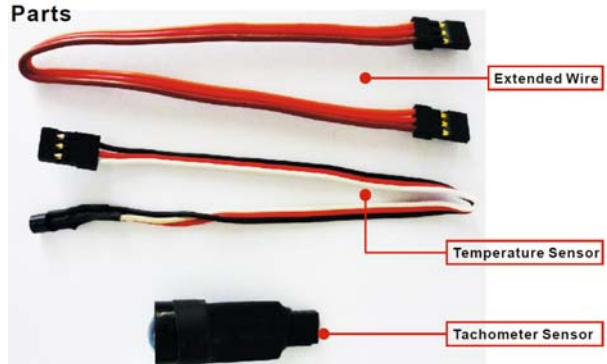
Quiescent Current :< 20mA

Resolution: 1us

Operation

1. Power Supply Mode

The STV3 can use two kinds of power supply:

- A 3s or higher lithium battery (balance connector plugged into the socket).
- An external 8V-18V DC supply (cable plugged into the power jack).

The output voltage to the servo is switch-selectable to 4.8V, 6V or 7.4V.

Note: Be sure to select an appropriate setting, as excessive voltage can damage some servos.

2. Servo and Sensor Interfaces

For the Simple Servo Test, the primary servo is plugged into S4. Additional servos can be plugged into S1, S2 and S3 and will respond as slaves.

The STV3 can also measure servo end points, speed and dead band parameters for a servo plugged into S4. The slave sockets do not operate for these functions.

The STV3 provides interfaces for a tachometer sensor, temperature sensor and torque sensor.

Note: Be sure to select the appropriate socket for the servo or sensor interface.
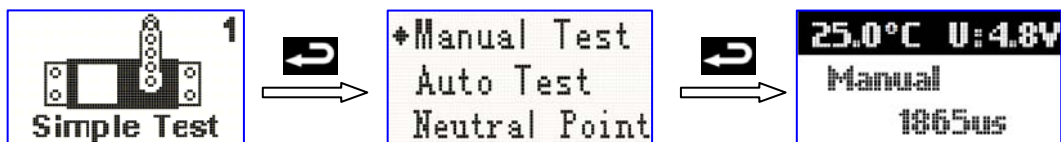
3. Selecting a Function

Supply power to the STV3 and turn on the switch. The LCD will display the LOGO and then the version number of the servo tester.

Press the ENTER button ⏎ to display the function interface list. Browse the list with the UP and DOWN buttons ▲ ▼ and press the ENTER button ⏎ again to select a function interface.

Using the Functions

1. Simple Servo Test

Connect the servo to be tested to socket S4 on the left side of the STV3. Additional servos may be plugged into S1, S2 and S3.

The Simple Servo Test function offers three options:

1. *Manual Test*: The knob positions the servo(s) by adjusting the PWM signal over the range 1 ms to 2 ms (period 20ms).
2. *Auto Test*: The PWM signal changes automatically to drive the servo(s) back and forth at a selectable speed by turning the knob: *slow, normal, quick,* or *instant*.
3. *Neutral Point*: The STV3 provides fixed output of 1.5ms or 1.52ms positive pulse (Period 20ms). Turning the knob changes the neutral point. Signal width resolution is 1us (microsecond), and range is 1ms-2ms (milliseconds).

Press the EXIT button ⏎ to return to the function list.

Note: This function is for servos. In particular, don't test an ESC, motor, etc. in *Auto Test* mode.

2. End Point Test
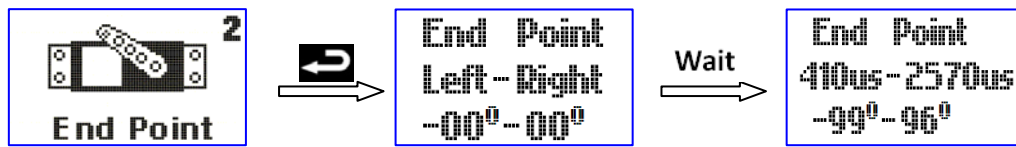
Connect the servo to be tested to socket S4 on the left side. The STV3 will determine automatically whether the servo is digital or analog and select the corresponding test. The test will show the pulse width for left and right servo end points, in ms (milliseconds) to a precision of 1us (microsecond). It will also show, to a precision of 1°, the angle of the servo arm. The angle shown is based on a conversion of the pulse width, with neutral point of 1.5 ms corresponding to 0°.

Press the EXIT button to return to the function list.

Note: The end point test takes several seconds, so please wait for it to complete.

3. Operating Speed Test
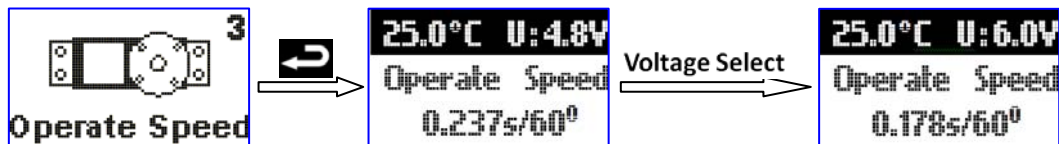
Connect the servo to be tested to socket S4 on the left side. This test allows the servo speed to be determined at various voltages, which are set by the switch on the right side of the STV3. Normally, the higher the voltage, the faster speed at which the servo will run. The speed test starts the servo at 666us, and stops it at 1833us, or the reverse. The precision with which the operating speed is measured is $0.001s/60^{o}$. The operating speed includes servo start time.

Press the EXIT button to return to the function list.

Note: Please choose an appropriate voltage. Too high a voltage can damage some servos.

4. Dead Band Test
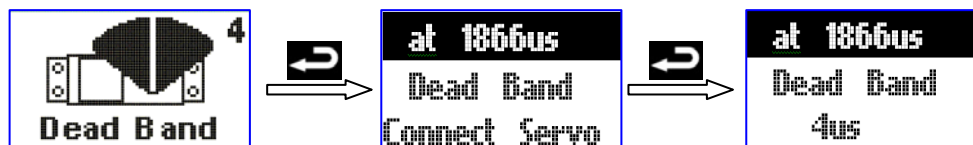
Connect the servo to be tested to socket S4 on the left side. Rotate the knob to choose the desired test position and press the ENTER button to begin testing. When the test is completed the STV3 buzzer sounds. The precision of dead band measurement is 1us, and the test range is 1us-25us.

Press the EXIT button to return to the function list.

**Note: Please choose an appropriate voltage. Too high a voltage can damage some servos.**

5. Torque Test
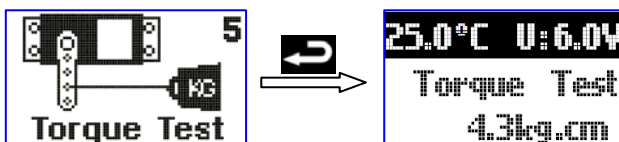
Connect the servo to be tested to the torque sensor (available separately). Use the knob to adjust the servo output arm angle, then connect OUT on the torque sensor with T3 on the left side of STV3. Press the START button of the torque sensor to begin the test. When complete, the STV3 will display the result. The torque test range is 0 kg-cm to 20 kg-cm with precision of 0.01 kg-cm.

Press the EXIT button to return to the function list.

6. Tachometer
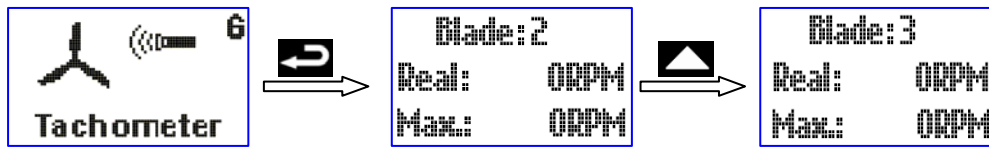
Connect the tachometer sensor to T1 on the STV3. Press ENTER button ⏎ to enter the testing interface, and press ▲ or ▼ to choose the number of propeller blades. Aim the STV3 at the spinning propeller and it will display current rotational speed as well as recording the maximum value for the test. The sensor is effective up to 20cm from the propeller. The test range is from 0 rpm to 50,000 rpm with precision of 30 rpm.

Press the EXIT button ⏎ to return to the function list.

Notice: Because the tachometer uses an optical sensor, it only functions in a bright outdoor environment. In particular, fluorescent lighting will give incorrect readings.

7. Pulse Measurement
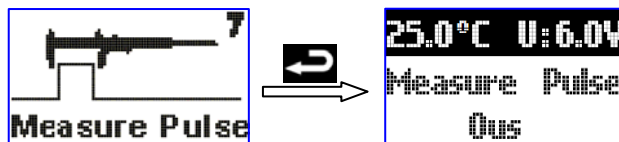
This test measures the pulse width of signals generated by a transmitter. Using a receiver matched to the transmitter, connect one channel (i.e., one servo output) to T3 on the left side of the STV3 and turn on the transmitter. Press the ENTER button ⏎ to show the test function interface. Pulse width for the channel will be displayed in micro seconds. The test range for pulse width measurement is: 100us-2500us (0.1ms to 2.5ms) with precision of 1us.

Press the EXIT button ⏎ to return to the function list.

8. Voltage Measurement (1s to 8s)
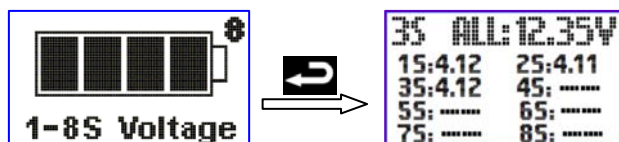
Connect the battery to be tested to the LIPO balance socket on the right side of the STV3.

Press ⏎ to enter the function interface. The STV3 will display individual cell voltages and overall voltage for batteries from 1s to 8s with precision of 0.01V.

Press the EXIT button ⏎ to return to the function list.

Other Functions

Pressing ⏎ and ▲ simultaneously will adjust the backlighting of the screen.

Pressing ▼ and ⏎ simultaneously will adjust the key tone.

Note: Because STV3 has a built-in 5A UBEC, there is a delay of 1 to 2 seconds after power is turned off before the system shuts down.