

GWS MT-1 RC Multiple Tester

USING the KEYBOARD

“MOD” is used to select or deselect a major function.

“MID” is used to select or deselect a sub-function.

The up and down are used to move up and down through the menus.

To select F0 to F7 Push up or down until the “major F” function (F0-F7) shows in the display, then push MOD to select or deselect that F function.

After selecting the “major F function”, push the up and down arrows to select the “sub function” and then push MID to select the sub-function setting. Pushing MID a second time will exit the sub function and you can select another sub function or you could push MOD to exit back to the major F functions

The display will show the pulse widths in us (microseconds) to convert to ms (milliseconds), insert a decimal point after the first digit. Example: 1540us (1540 microseconds) is 1.540ms (1.540 milliseconds). A typical servo travel is from 1 to 2ms (1000-2000us) with 1.5ms(1500us) as the center.

The RPM (rotations per minute) will be shown on the display at 1/10 of the actual rotation., you will have to multiply the number in the display by 10 to get the actual RPM. Example: If the display shows 990RPM it is actually 9900RPM.

USING the MT-1

Major Function F0 – Used to setup default values

This is the first function shown on the screen at power up and is used to set up the default values for the servo movement. When F0 is shown on the screen, press MOD to enter the sub-function menu for F0-0, F0-1, F0-2, and F0-3 selection. F0-0, F0-1, F0-2, and F0-3 are selected using up and down and pressing MOD.

F0-0 is used to set the minimum servo pulse (minimum end point adjustment) for testing.

F0-1 is used to set the center position of the servo for testing.

F0-2 is used to set the maximum servo pulse width (maximum end point adjustment for servo testing).

F0-3 is used to identify how large each servo step will be when the servo is being tested under major function F2.

Sub-Function Selection and Initial Setup

F0-0

This is used to set up the value for the minimum output pulse for the servo position. The range value is 300us to 1998us, default is 800us for the minimum pulse width.

Step by step set up is: Turn on tester, push up or down until F0 is displayed and then press MOD to confirm, F0-0 should show on the display, if not press up and down until F0-0 shows on the display.

Then press MID to set the minimum servo pulse width using up and down (I use 1000). Press MID to exit back to F0-0 to select another sub function F0-1, F0-2, or F0-3..

F0-1

This is used to set up the default value for the mid-point for the servo pulse position. The range value is 1000us to 1999us, default is 1500us for the mid point.

Step by step set up is: Turn on tester, push up or down until F0 is displayed, then press MOD to confirm. Press up or down until F0-1 is displayed and press MID., The display will show the current mid point setting. Then press up and down to change mid point of the servo (I use 1500). Press MID to exit back to F0-1 to select another sub function, F0-0, F0-2, or F0-3, or push MOD to go back to F0 to select another major F function.

F0-2

This is used to set up the value for the maximum output pulse for the servo. Range is 1000us to 2699us, default is 2000us for the maximum pulse width.

Step by step set up is. Turn on tester, push up or down until F0 is displayed, then press MOD to confirm. Press the up and down keys until F0-2 is displayed and press MID, the maximum pulse width will show on the display. To set the maximum servo pulse width, use the up and down arrow keys (I use the 2000 default). Press MID to exit back to F0-2 to select another sub function, F0-0, F0-1, or F0-3, or push MOD to go back to F0 to select another major F function.

F0-3

This is the “step” pulse width the servo uses when testing when in major function F2. The range available is 1us to 100us, the default is 5us. The lower setting, such as 1us, will test the servo more precisely.

Step by step set up is: Turn on tester, push up or down until F0 is displayed, then press MOD to confirm. Then Press up or down until F0-3 is on the display, then push MID, the current servo step size will show on the screen, the default is 5us. Adjust the servo step size to use by using up or down. Press MID to exit back to F0-3 to select another sub function, F0-0, F0-1, or F0-2, or push MOD to go back to F0 to select another major F function.

Major Function F1 – To position servo to the above default positions

This function is used to position the servo according to the parameters you set in major function F0.

Plug the servo into the OUT plug be careful to observe the polarity (negative, positive and signal). NOTE: there are two “OUT” plugs, all modern servos use a positive going pulse, so plug your servo into the plug showing a positive going pulse “_[]_” (looks like a “hat”).

Turn on the tester and use the up and down keys to go to F1 and push MOD. The display will show your center position of the servo (I used 1500us) and the servo will go to that position as the center position. Now push the up and down keys one after the other to alternate between the maximum and minimum servo position – the position you set is in us (microseconds) and is shown on the display. To return to the center position, push MID. To exit back to the major function menu push MOD.

Major Function F2 – Used to test servo sensitivity

This function is used to test the sensitivity of the servo. The servo will move one step each time the up or down key is pressed using the step pulse set up in F0-3.

Plug the servo into the OUT plug be careful to observe the polarity (negative, positive and signal). NOTE: there are two “OUT” plugs, all modern servos use a positive going pulse, so plug your servo into the plug showing a positive going pulse “_[]_” (looks like a “hat”).

Turn on the tester and use the up and down keys to go to F2 and push MOD. The servo center you set up in F0-1 will show on the display. Press the up or down key and the servo will step (using the pulse width set up in F0-3). The new position the servo moves to will be seen on the display. Push MOD to exit back to the major function display.

Major Function F3 – To automatically exercise a servo

This function is used to continually exercise the servo automatically.

Plug the servo into the OUT plug be careful to observe the polarity (negative, positive and signal). NOTE: there are two “OUT” plugs. All modern servos use a positive going pulse, so plug your servo into the plug showing a positive going pulse “_[]_” (looks like a “hat”).

Turn on the tester and use the up and down keys to go to F3 and push MOD. The display will show one of the AUD01-AUD06 test. Alternate between the tests by using the up and down keys.

AUD01-AUD06 are servo speeds, AUD06 will be the fastest test and the smoothest. AUD01 will be the slowest and will “step” to the next position while testing. Push MOD to exit back to the major function display.

Major Function F4 – To manually move the servo with the MT-1 dial

This function is used to test the rotation of a servo manually.

Plug the servo into the OUT plug be careful to observe the polarity (negative, positive and signal). NOTE: there are two “OUT” plugs, all modern servos use a positive going pulse, so plug your servo into the plug showing a positive going pulse “_[]_” (looks like a “hat”).

Turn on the tester and use the up and down keys to go to F4 and push MOD. Turn the knob on the tester, the servo should move with the movement of the knob and the position of the servo should show on the display. Push MOD to exit back to the major function display.

Major Function F5 – To visually check a channel output pulse width at the receiver

This function is used to check the output pulse width of each channel at the receiver.

You must turn on the transmitter and receiver first. To do this, plug the receiver battery into the receiver and turn the transmitter on.

Connect the supplied female to female cord from the receiver channel you wish to check, into the SIGNAL I/P plug on the MT-1. NOTE: You could also plug the receiver channel into the MT-1 tester after the MT-1 is powered up.

Turn on the MT-1

Use the up and down keys to go to F5 and push MOD.

The MT-1 will show the transmitter/receiver pulse width on the display. If no signal is detected, the display will show “OFF”.

NOTE: The MT-1 is very sensitive and if the transmitter pulse varies just a small amount, the display will identify this and you will see the units and tens display numbers changing rapidly.

Major Function F6 – To check transmitter output pulse width at the transmitter

This function is used to the output pulse for each channel from the transmitter trainer port. This can check up to 9 channels.

You will need a cable from the transmitter trainer port to the MT-1. The signal output pin from the transmitter trainer port will need to go to the MT-1 SIGNAL I/P “S”. The shield from the transmitter output will need to go to the SIGNAL I/P “-“ (negative). The “+” is NOT connected.

Plug the above cable into the transmitter trainer port and into the MT-1 SIGNAL I/P port.

Turn on the transmitter and select the transmitter (if needed) as a trainer (not master).

Turn on the MT-1, use the up and down arrow keys to select F7, then push MOD. CH-1 will be shown advising you that channel 1 will be tested, if you want another channel, use the up and down arrow keys to select the channel you want. Push MID when the channel you want is displayed.

The output pulse width will be displayed on the display of the MT-1. To select another channel, push MID, select the channel you want with the up and down arrow keys and push MID to display that channel.

Major Function F7 – To read the RPM of a spinning propeller

This function is a tachometer used to check the RPM of 2-6 blade propellers. NOTE: The display will read be 1/10 of the actual RPM so you must multiply the reading by 10 to get the correct RPM.

On the top of the MT-1 is the photocell to read the RPM. Do the test in sunlight or use a DC (direct current or battery) light source such as a flashlight. Note: Do not use an A/C (alternating current such as house hold light source) light source since the AC current alternates and may give a false reading.

Turn on the tester. And use the up and down keys to go to F7 and push MOD.

Select the number of propeller blades by pushing the up and down arrow keys. F7-2 is for 2 bladed props, F7-3 is for 3 bladed props, F7-4 is for 4 bladed props etc. Push MID after selecting the correct number of blades while pointing the photocell at the propeller. The RPM of the propeller will show in the display as 1/10 of the RPM – to get actual RPM, multiply the display reading by 10.