SERVOXCITER EF

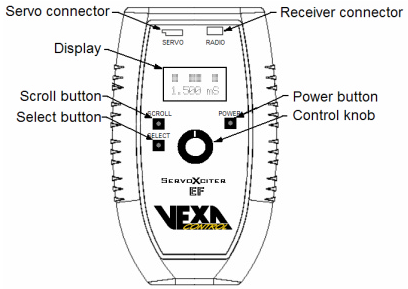
A precision servo driver/tester with current meter and receiver diagnostics.

DESCRIPTION

The **ServoXciter EF** is a compact precision servo driver/tester that is capable of driving an R/C servo throughout its useable band in 1024 discrete steps and also features…

- One touch servo centering
- Servo current draw display with 10 milliamp resolution
- Servo dead-band checking
- Servo auto-sweep mode with 32 speeds
- Record and playback custom servo movements (up to 38 seconds)
- ***NEW! High Frame Rate capability (with standard or narrow pulses).***
- Read your receiver's output signal with 1 microsecond resolution
- Save your receiver's center and end points to use when driving a servo
- View receiver glitches (short, long, and missing pulses)
- View your receiver battery pack's voltage
- ***NEW! DC power jack (for 8 to 12 volt wall transformers).***

The **ServoXciter EF** utilizes an easy to read LCD display, three buttons (SCROLL, SELECT, POWER), and a knob to activate the different modes and control a servo.



TURNING ON and OFF

Press the POWER button to turn the **ServoXciter EF** ON. The **ServoXciter EF** is turned OFF by pressing and holding the power button until the display shows "Release button". The **ServoXciter EF** also has an auto off mode which will turn the unit off automatically after a set amount of time of non-use (*see AUTO-OFF section*).

CONNECTORS

The **ServoXciter EF** has two connectors. The LEFT connector (**SERVO**) is the servo connector and RIGHT connector (**RADIO**) is the receiver connector. Both connectors have a signal, plus, minus **(S + -)** configuration and the label shows the layout.

To plug your receiver into the **ServoXciter EF** you should use an aileron extension cable.

The **ServoXciter EF** has one jack for using an external DC power source. Use a wall transformer rated for 8 to 12 volts, 800 mA+, with a 0.70mm ID and 2.35mm OD plug.

OPERATING MODES

The **ServoXciter EF** has nine modes for testing servos and radios. Press the **SCROLL** button to cycle through the modes. You can disable any mode (except **? DRIVE**) so that it is not available during operation (*see SET-UP MENU section).* This is useful if you find that you never use some of the modes and would like to not have them available. The modes can easily be turned back on when desired.

Servo test modes:

→DRIVE	→CURRENT	→DEADBND	→SWEEP	→RECORD	→9V BATT

Receiver diagnostic modes:

→RX SIG	→GLITCH	→RX BATT

HIGH FRAME RATE ENABLE

SCROLL + SELECT + POWER

The **ServoXciter EF** can drive digital servos that require the High Frame Rate (4mS) instead of the standard frame rate (20mS).

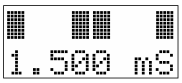
Press and hold the **SCROLL** and **SELECT** buttons while powering the ServoXciter EF. The display will show "HFR >ACTIVE<" for 2 seconds and then ask "narrow pulses?". Press the SCROLL button for narrow pulses (0.50 ms to 1.00 ms, 0.75 ms center). Press the SELECT button for standard pulses (1.00 ms to 2.00 ms, 1.50 ms center).

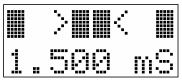
The ServoXciter EF will only operate with the High Frame Rate when turned ON while holding the **SCROLL** and **SELECT** buttons, otherwise it operates with the standard frame rate.

SERVO TEST MODES

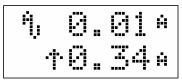
DRIVE mode.
The bars at the top of the display show the relative position of the servo while the bottom line shows the output pulse to the servo in milliseconds (with .001 millisecond resolution). The servo is within center range when the two center bars and two outer bars are on.

Centering a servo is as easy as pressing the **SELECT** button while in the **? DRIVE** mode. The display will show the centered indication (two outer and two center bars on) with the addition of the two markers to indicate that the unit is in one-button-center mode. The mS display will show the saved center pulse. Press the **SELECT** button again to give servo control back to the control knob.

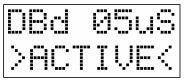




CURRENT mode.
The top line display will show the average amount of current that the servo is drawing and the bottom line will show the maximum current draw with a resolution of 10 milliamps. Press the **SELECT** button to reset the maximum current back to 0 amps.



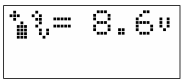
DEADBND mode.
Use the control knob to vary the dead-band value from 0 to 31 microseconds. Start with a dead-band value of 0 and slowly increase until >ACTIVE< is displayed or flashing. This point is the minimum pulse difference required to cause movement in the servo.



SWEEP mode.
Press the **SELECT** button to turn auto-sweep on and off. Use the control knob to vary the speed of auto-sweep from 1 – 16 (16 is the fastest).
Auto-sweep will only be active while the sweep display is on.

RECORD mode.
Press the **SELECT** button to PLAY (ON) or STOP (OFF) the playback of your recorded servo movements. Press and HOLD the **SELECT** button to record the servo movements you perform with the control knob (the display will show REC). Up to 39 seconds of recording is possible.

9V BATT mode.
The voltage of the 9 volt battery is displayed here.



RECEIVER DIAGNOSTIC MODES

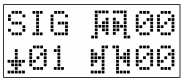
RX SIG mode.
This mode shows the pulse coming from your receiver to drive a servo and its pulse recurring time frame (usually around 20 milliseconds for standard frame rate and 3 to 4 milliseconds for high frame rate). This requires a servo extension cable (typical of aileron extensions) to be plugged into your receiver and into the RADIO connector of the **ServoXciter EF**.

Save your custom center pulse
Center your trims and stick and then press the **SELECT** button. The display will show "S-Center" to indicate that the center pulse was saved if your receiver's pulse was between 1.350 ms and 1.650 ms (0.675 and 0.825 for narrow pulse mode).

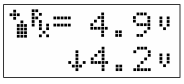
Save your custom endpoint pulses
Deflect your stick in one direction then press the **SELECT** button. The display will show "S-End pt" to indicate that the endpoint was saved. Deflect your stick in the opposite direction and the press the **SELECT** button. The display will show "S-End pt" to indicate that the endpoint was saved.

The ServoXciter EF has memory for three sets of center and endpoints (normal frame rate, high frame rate/standard pulses, and high frame rate/narrow pulses).

GLITCH mode.
This mode shows the number of glitches recorded. The bottom left part of the screen (with down arrow) show the number of missing pulses. The upper right part of the screen shows the number of pulses longer than 2.500 milliseconds (1.300 ms narrow pulse mode), and the bottom right part of the screen show the number of pulses shorter than 0.500 milliseconds (0.250 ms narrow pulse mode). Press the **SELECT** button to clear the pulse counts.



RX BATT mode.
This mode shows your receiver pack battery voltage on the top line and the minimum voltage detected on the second line. Press the **SELECT** button to reset the minimum voltage.



TESTING SERVOS

Connect the servo to be tested.

Hold the servo in your hand while sweeping the servo back and forth (manually or auto-sweep). Listen and feel for clicking that may indicate stripped gears (repeat while applying slight pressure to the servo horn).

Put the **ServoXciter EF** into **CURRENT** mode and watch the current. Typical idle current draw on a standard S3003 servo will be approximately 0.01 amps with no load. If the current is excessively high there may be binding internal to the servo or in the linkages. A servo that pulls too much current will drain the receiver pack faster and can lead to a crash.

Put the **ServoXciter EF** into **SWEEP** mode and watch the smoothness of the sweep during differing speeds. Jerky operation (especially near center) could indicate a bad servo pot. Jittering at the ends of the range could indicate a problem with the servo electronics.

Put the **ServoXciter EF** into **DEADBND** mode and check the deadband of the servo. Standard ranges are from approximately 4 – 20 uS. The higher this value the less precise the servo will be. If this value is very low the servo may hunt.
Use the deadband feature to check compatibility between servos for ganging operation, compare servos for resolution, and diagnose electronic problems.

Put the **ServoXciter EF** into **RECORD** mode and record a custom servo movement. This is useful when breaking-in servos with a custom sweep (slow sweep followed by fast sweep, with wait periods at the extremes). Use this mode to record a custom servo movement for breaking in gas engines on the bench. Start at idle, ramp up to mid RPM and hold, ramp to max RPM and back to three-quarters RPM and hold, drop back to one-quarter RPM, etc.

TESTING RECEIVERS

Connect the receiver to be tested.

Put the **ServoXciter EF** into the **RX SIG** mode. Use your transmitter to vary the output pulse. Watch the display for a smooth pulse transition. Leave the pulse in one spot and observe the displayed pulse. Any large changes could indicate a receiver problem or interference. Use this mode to check for transmitter stick centering repeatability. Watch the PRT (Pulse Recurrent Time) display for any rapid changes. A normal PRT will be approximately 19 – 21 milliseconds. If the PRT is very long (eg. 40mS) then the servo reaction time will be slow. If the PRT is very short (eg. 5mS) then it may cause a jittery servo condition (unless the servo is designed for High Frame Rate).

Put the **ServoXciter EF** into the **GLITCH** mode. The numbers should remain at zero. If a number is incrementing then the receiver is sending short pulses, long pulses, or no pulses at all. This could cause a loss of an airplane because the servo will react slowly or not at all.

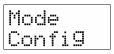
Use the Glitch mode to do a radio range check!

SET-UP MENU

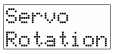
SCROLL + POWER

The set-up menu will allow you to customize your ServoXciter EF to your liking. This menu will allow you to turn ON/OFF the modes available during operation, change the servo rotation, and adjust the auto-off time.
Press and hold the **SCROLL** button while turning on the power to enter the set-up menu. Use the **SCROLL** button to cycle through the set-up menu items and the **SELECT** button to modify the menu item.

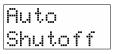
"Mode Config" allows you to turn operating modes ON or OFF so you can customize which modes are visible.



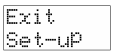
"Servo Rotation" allows you to change the direction the servo rotates when you move the control knob.



"Auto Shutoff" allows you to change the time the ServoXciter stays on before it will automatically shut-off.



"Exit Set-up" exits the set-up menu.



Mode Config
The top line shows the mode to be modified and the second line shows Mode=On or Mode=Off. Use the **SELECT** button to toggle the mode OFF or ON. Use the **SCROLL** button to move to the next mode. Press the **SELECT** button when the display shows "Save and Exit" to exit.

Servo Rotation
The top line shows "Rotation" and the bottom line shows either "normal" or "reversed". Use the **SCROLL** button to toggle normal/reversed. Use the **SELECT** button to save and exit.

Auto Shutoff
The top line shows "Auto Off" and the bottom line shows either 1 min, 5 min, 10 min, 15 min, 30 min, 60 min, or never. Use the **SCROLL** button to toggle to the desired auto off value. Use the **SELECT** button to save and exit.

Exit Set-up
Press the **SELECT** button to exit the set-up menu and return to normal operation.

AUTO-OFF

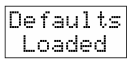
The **ServoXciter EF** features an automatic shut-down function to save battery life when it has been accidentally left on. This feature is enabled/adjusted in the set-up menu (*see SET-UP MENU section*). Auto-off can be set up to turn the **ServoXciter EF** off after 1, 5, 10, 15, 30, or 60 minutes of idle time. The auto-off option can also be turned off by setting the time to "never". The **ServoXciter EF** will turn itself off if the knob and buttons haven't been touched for the auto-off time.

Auto-off has no affect when the ServoXciter EF is in ***?*** **RECORD** mode.

RESETTING DEFAULTS

SELECT + POWER

The **ServoXciter EF** can be reset to the factory defaults by pressing and holding the **SELECT** button while powering the ServoXciter EF. The default restore feature will set 1.500 milliseconds as the center position, 1.000 and 2.000 milliseconds as the end points, auto-off will be set to "never", servo rotation will be normal, and all modes will be available.



SPECIFICATIONS

Power:	*requires one 9 volt rechargeable (or alkaline) battery.*
Current:	*can source 1A to a servo.*
Temp range:	*0C to 70C*
Environment:	*dry only.*
Output Signal:	Default range - *1.000mS – 2.000mS (1.500mS center).*
	(maximum range 0.501mS – 2.499mS).
Resolution:	*1024 steps*
Servo Voltage:	*regulated 5 VDC*
Current resolution:	*10 milliamps*

WARRANTY

Limited 1 year warranty

For 1 year from date of purchase, Vexa Control, Inc. will repair or replace the ServoXciter EF free of charge if defective in material or workmanship. This warranty gives you specific legal rights. You may also have other rights which may vary from state to state. Service is available from Vexa Control, Inc. through support@vexacontrol.com

PROBLEM SOLVING

Won't power on – Verify proper battery polarity and voltage. Verify proper servo and/or receiver connection (signal, plus, minus).

Won't power off – Replace the 9V battery. When the battery power drops below 6.2 volts the **ServoXciter EF** will not be able to be turned off with the **POWER** button.

Won't read receiver pulse – Verify that receiver is powered and functioning. Check connection from receiver to **ServoXciter EF**. Verify extension cable is good.

Display is black – Take unit out of direct sunlight and the display should return to normal. Never leave the **ServoXciter EF** in direct sunlight for extended periods of time.

Display shows black bars and does not operate – This may happen if the **ServoXciter EF** is turned on while plugged into an operating receiver. Remove the receiver plug, power up the **ServoXciter EF** and then plug into the receiver. If there is still a problem, reload the default parameters – press and hold the **SELECT** button while powering the unit.

Display shows strange numbers – Reload the default parameters – press and hold the **SELECT** button while powering the unit.

Servo control is inoperative or erratic – Verify servo is connected properly. Verify servo works. Reload the default parameters – press and hold the **SELECT** button while powering the unit.

One or more of the modes are missing – Turn the mode(s) back on by using "Mode Config" in the SET-UP MENU (*see SET-UP MENU section*).

The servo doesn't turn in the same direction as the control knob – Some servos have reversed control (which is normal). You can force the **ServoXciter EF** to reverse its output pulse by changing the "Servo Rotation" in the SET-UP MENU (*see SET-UP MENU section*).

CONTACT INFO

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