



USB Test Software Manual

JFW Industries, Inc.

5134 Commerce Square Drive

Indianapolis, IN 46237

Phone: 317-887-1340

sales@jfwindustries.com | www.jfwindustries.com

The JFW USB GUI provides an interface to control and script one or multiple JFW USB attenuators. Attenuators are automatically added to the GUI interface when connected to the computer. Each USB attenuator has a control that can be used to control a single device, or test scripts can be made to run automated testing.

Requires

- Microsoft Windows Vista or greater
- Dot Net Framework version 4.0 or greater

Basic Features

- Auto-discovery of any JFW USB attenuators connected to the computer.
- Control attenuator(s) using a slider bar, increment buttons, or manually entering the attenuation value.
- Set persistent device *names* for better organization for complex test scenarios.

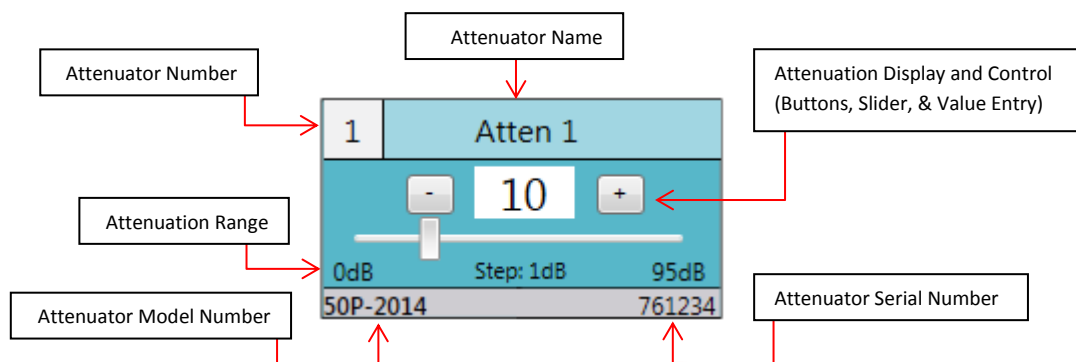
Script Features

- Create test scripts that can control many attenuators.
- Fade and Handover commands can be executed in Sequential or Synchronous mode.
- Saving and Loading of scripts in JSON format.

The screenshot displays the JFW USB GUI interface. It features eight control panels for different devices, each with a slider and numerical input field. The top row contains four attenuators (Atten 1-4) with values 10, 20, 40, and 60 dB. The bottom row contains two receivers (Rx 1-2) and two transmitters (Tx 1-2) with values 0, 95, 0, and 63 dB. Below the device controls is a script editor with a 'Set Mode' dropdown, 'New' and 'Save' buttons, and a table of operations. The table includes operations like 'Set Mode', 'Set All Attenuators', 'Pause', 'Handover', and 'Set Mode' with their respective details. A 'Repeat' section at the bottom allows selecting 'Once', 'Indefinitely', or 'Loop' (set to 16 times) with 'Load', 'Save', 'Reset', and 'Start' buttons.

Operation	Details
Set Mode	Sequential
Set All Attenuators	Set All Attenuators to 95dB
Pause	Pause for 2000ms
Handover	Handover Attenuator 5:Rx 1 and Attenuator 6:Rx 2 from 0dB to 95dB by 95dB
Handover	Handover Attenuator 7:Tx 1 and Attenuator 8:Tx 2 from 0dB to 30dB by 30dB
Set Mode	Synchronous

Repeat: Once Indefinitely Loop 16 times



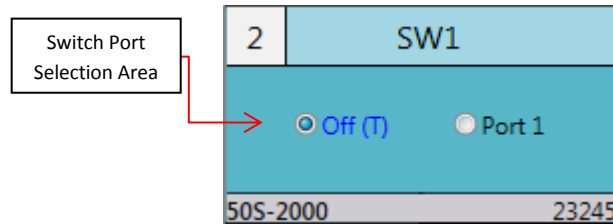
When a JFW USB attenuator is connected a new *Attenuator Control* for that attenuator is added to the Test Software GUI. The *Attenuator Control* shows detailed information and allows for direct control of the device.

The *Name* of the attenuator can be changed by clicking in the area that shows the current device name and typing in the new name followed by the “Enter” key. Names can be up to 15 characters long and are stored on the device. When selecting a device in the script drop downs, the attenuator will be identified by its number and name.

The *Attenuator Control* gives easy access to the attenuation level of individual devices. The plus and minus button on each side of the attenuation display can be used to manually step the attenuator up or down by the step size of the device. Use the slider below the display to quickly change the attenuation. Finally clicking the displayed attenuation allows for manual entry of a new attenuation setting.

The Attenuator Control slider and value are updated during script execution if the dB value changes. If the attenuation value is at the devices default setting the value text will be shown in blue. The default value is the attenuation level that is auto set when the attenuator is first connected to a USB port. The default value can be changed by setting the device to the desired attenuation, then left clicking on the attenuator number box.

A device can be set to factory settings by right clicking the devices model number and selecting the Factory Reset option from the drop down. It is advisable to restart the Test Software after performing factory resets.

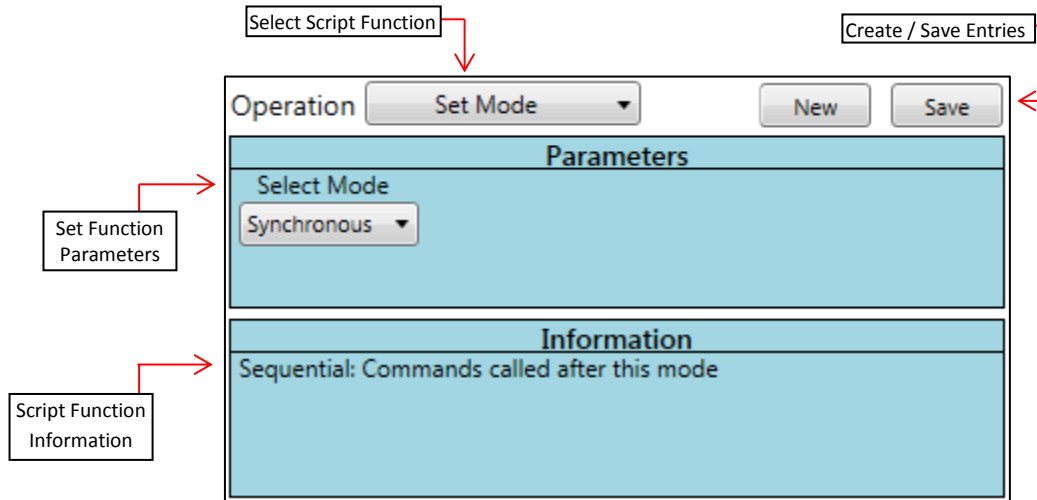


When a JFW USB switch is connected a new Switch *Control* for that device is added to the Test Software GUI. The Switch *Control* shows detailed information and allows for direct control of the device. The switch control is laid out the same manner as the attenuator control. The only difference is the center body of the switch control has radio buttons that are used to select the current switch port.

If the switch has an “Off” state, a radio button will be shown labeled “Off” and a T (Terminated) or R (Reflective). The default port is assigned by selecting the corresponding radio button for the desired port, and then left clicking the switch controls device number. The radio button of the default port will be displayed in blue.

A switch can be set to factory defaults by right clicking on the model number and selecting the Factory Reset Option.

Script operations are added to the script list by picking the operation and filling in the details of that operation in the *Parameters* section. The *Information* section provides a detailed description of how the selected operation works. Once script entries are added to the script list they can be modified by selecting them from the list and changing the settings in the *Parameters* section. When a script is running the *Parameters* and *Information* section are updated to show the details of the script entry that is being performed.



Procedure

- 1) Click "New" or select a command in the script list.
- 2) Select an Operation from the drop down list.
- 3) Provide the details for the operation in the Parameters section.
- 4) Click the "Save" button to add the command to the script list.

Operations	Name	Description
Fade	Fade	Incremental step an attenuator over a period of time.
Handover	Handover	Incremental step two attenuators over a period of time.
Set Attenuator	Pause	Stop script execution for a period of time.
Set All Attenuators	Set Mode	Change how the Fade and Handover commands are executed.
Set Switch	Set Attenuator	Set the attenuation of a device.
Set All Switches	Set All Attenuators	Set the attenuation of all connected devices.
Pause	Set Switch	Set the port of a switch.
Set Mode	Set All Switches	Set the port of all switches.

Pause

Description

Stop script execution for a defined period of time. If the current script execution mode is set to synchronous then the pause command acts as a barrier to which no further commands will be executed (including the pause operation) until the previous commands have finished.

Parameters

Interval: Amount of time in milliseconds. Range [0–3,600,000]ms

Fade

Description

Incrementally step the attenuation of a device from a starting value to an ending value over a period of time.

Parameters

Device: Attenuator denoted by number and device name.

Start dB: Initial setting. Range is determined by device.

Stop dB: Final setting. Range is determined by device.

Interval: Amount of time in milliseconds.

Range [0–3,600,000]ms

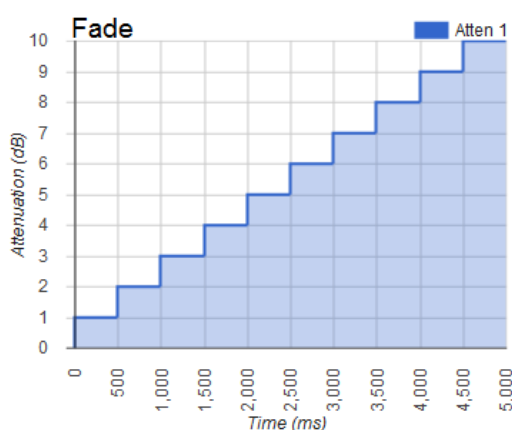
Step dB: A positive increment of each state change.

If the Start value is greater than the Stop value
Then the Step is additive, else the step is subtractive.

On Loop: If a script's "Repeat" option is enabled, set the action to take when this fade is repeated.

Reset: Execute the operation as if it is its first.

Reverse: Swap the Start and Stop after each repeat.



Handover

Description

Incrementally step the attenuation of two devices. The first device is stepped from Start to Stop attenuation value, while the second device is stepped from the Stop to Start attenuation value.

Parameters

Devices: Attenuator denoted by number and device name.

Start dB: Initial setting. Range is determined by device.

Stop dB: Final setting. Range is determined by device.

Interval: Amount of time in milliseconds.

Range [0–3,600,000]ms

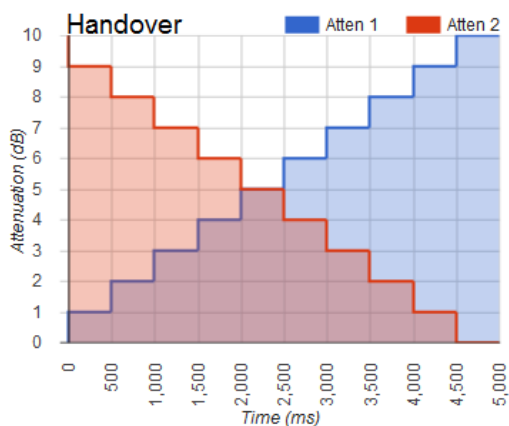
Step dB: A positive increment of each state change.

If the Start value is greater than the Stop value
Then the Step is additive, else the step is subtractive.

On Loop: If a script's "Repeat" options is enabled, set the action to take when this fade is repeated.

Reset: Execute the operation as if it is its first.

Reverse: Swap the Start and Stop each repeat.



Set All Attenuators

Description

Set all connected attenuators to the same attenuation value.

Parameters

Value: Attenuation value

Set Attenuator

Description

Set an individual attenuator to the defined attenuation value.

Parameters

Device: Attenuator denoted by number and device name.

Value: Attenuation value

Set All Switches

Description

Set all connected switches to the same port.

Parameters

Value: Port of switch to set

Set Switches

Description

Set an individual switch to the defined switch port.

Parameters

Device: Switch denoted by number and device name.

Value: Port of switch to set

Set Mode

Description

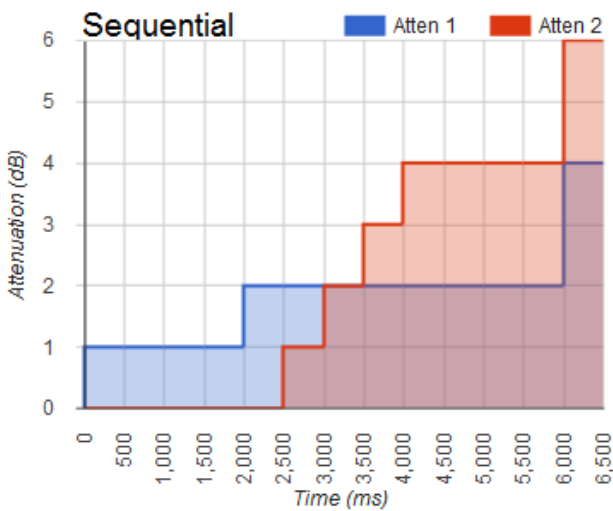
Set script execution order.

Parameters

- Sequential: Commands following this mode are executed in a first-in-first-out manner. Fade and Handover commands are processed as separate operations.
- Synchronous: Commands following this mode are executed all at once. Fade and Handover commands will not wait for the previous fade or handover command to finish before executing the next command. In this mode the PAUSE command is not executed until all the previous commands have finished.

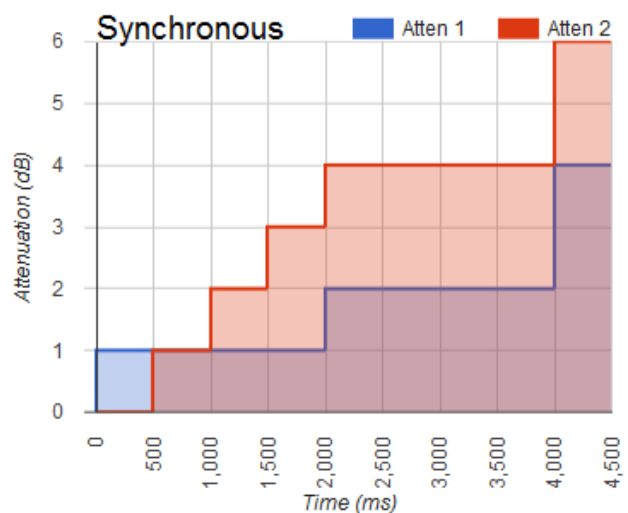
Sequential Script Example

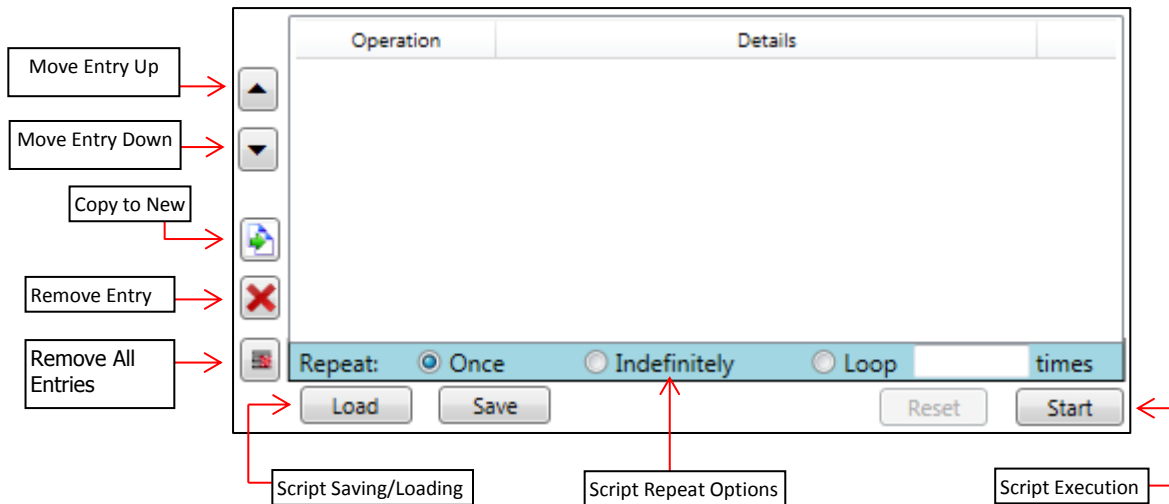
Set Mode: Sequential
 Fade: Device 1:Atten 1 Start=1dB Stop=2dB Step=1dB Interval=2000ms
 Fade: Device 2:Atten 2 Start=0dB Stop=4dB Step=1dB Interval=500ms
 Pause 2000ms
 Set Attenuator 1:Atten 1 Value=4dB
 Set Attenuator 2:Atten 2 Value=6dB



Synchronous Script Example

Set Mode: Synchronous
 Fade: Device 1:Atten 1 Start=1dB Stop=2dB Step=1dB Interval=2000ms
 Fade: Device 2:Atten 2 Start=0dB Stop=4dB Step=1dB Interval=500ms
 Pause 2000ms
 Set Attenuator 1:Atten 1 Value=4dB
 Set Attenuator 2:Atten 2 Value=6dB





Entry Order Controls

Reposition script entries by moving individual entries up/down in the list.

Copy to New

Copy the selected script operation and add that copy to the end of the list.

Remove Entries

The button with the large *red X* removes the selected script operation from the list.
The button on bottom removes all entries from the list.

Script Saving/Loading

Save: Save the script command list to a *JSON* file so it can be recalled later.

Load: Add entries from a saved script. If the script to be loaded contains entries for devices that are no longer connected then a window will pop up to allow the user to redirect those entries to another connected attenuator.

Script Execution

Start: Begin script execution of the script command list. The *Start* button will then be replaced by the *Pause* button that suspends script execution when pressed.

Reset: Stop script execution and return to the first script entry when the *Start* button is pressed.

Script Repeat Options

Once: Execute the script once and stop.

Loop: Specify the number of times to execution the script.

Indefinitely: Continuous script execution.

During script execution or when a script entry is selected, the script operation and parameter controls sections are updated to show the script entry details. While not processing a script this feature allows for quick modification of script entries. Use the *New* button to add a new script entry when using this feature.