

IMPORTANT SAFETY INSTRUCTIONS

For the continued safety of yourself and others we recommend that you read the following safety and installation instructions. Keep this document in a safe location for future reference. Please heed all warnings and follow all instructions.

Do not use this equipment in a location where it might become wet. Clean only with a damp cloth. This equipment may be used as a table top device, although stacking of the equipment is dangerous and not recommended.

Equipment may be located directly above or below this unit, but note that some equipment (like large power amplifiers) may cause an unacceptable amount of hum or may generate too much heat and degrade the performance of this equipment. Only use attachments and accessories specified by Rane. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as spilled liquid, fallen objects into an opened chassis, exposure to rain or moisture, a dropped unit, or abnormal operation.

INTRODUCTION

Refer to the separate Quick Start guide that was included in the box. If you lose yours, a new copy (along with this manual and all other documentation) may be downloaded at www.rane.com/scratch.html. To keep up with the latest tips, and to check for Scratch LIVE software updates, visit the Official Scratch LIVE Forum at Scratchlive.net

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WEAR PARTS: The Scratch LIVE interface contains no wear parts. The vinyl records and CDs are wear parts as described in the Limited Domestic Warranty section at the end of this manual.

OPTIONAL POWER SUPPLY

Connect an external power supply to the SL 1 to power the THRU channels when USB power is not present. This allows you to play vinyl or CDs when the host computer is not present; useful for permanent installations or using more than one computer. The power supply is 9 volts DC, 300 mA, using a P6 type barrel plug.

-(-5.5mm)  +(2.5mm)

(Radio Shack carries a compatible supply. Use model 273-1770 or 273-1768 with Adaptaplug N).

MINIMUM SYSTEM REQUIREMENTS

- A DJ mixer with at least 2 channels
- At least one turntable , CD player
- Computer with USB 1 port supporting Full Speed Mode (USB 1.1).
- Screen resolution 1024 x 768 or higher.
- Hard drive space for storing music.

PC

- Windows XP with Service Pack 2 or Vista with Service Pack 1
- Pentium 4 / 1.5 GHz
- 1 GB RAM.

MAC

- Mac OSX 10.3
- G4 / 1 GHz
- 1 GB RAM.

Scratch LIVE is compatible with Intel-based Mac computers.

CHECK LIST

These items are included in the Scratch LIVE box:

- Scratch LIVE hardware unit.
- Scratch LIVE software install disc.
- 2 (two) control CDs.
- 2 (two) control records.
- 1 USB cable.
- 4 stereo RCA cables.
- Package of 4 rubber feet.
- Quick Start Guide.
- This manual.

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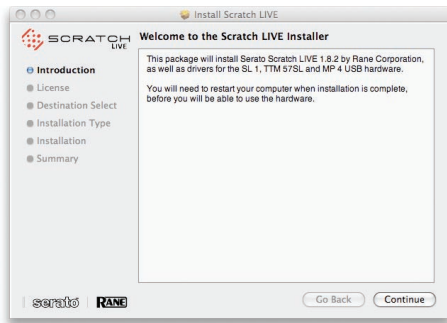
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SCRATCH LIVE: GETTING STARTED

INSTALLING SCRATCH LIVE MAC

1. Insert the Software Installation CD-ROM and double-click the installer icon.

You will see the following screen:



Follow the on-screen instructions.

Once the installation is complete, Scratch Live will appear in your applications list. You may like to drag the Scratch LIVE icon to your dock for quick launching.

2. Plug in your SL 1. No extra hardware or driver installation is required.

WINDOWS

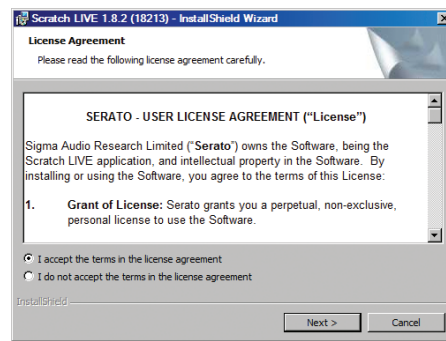
It is important that Windows users install the SL 1 drivers as well as the Scratch LIVE software. The easiest way to do this is to allow the Scratch LIVE installer to do all the work.

1. Connect your SL 1 before you insert your installation CD. When you first connect it, Windows will attempt to install the drivers via the hardware wizard. Cancel and close the hardware wizard.

2. Insert the Software Installation CD-ROM. (Making sure your SL 1 is connected first)

If setup doesn't start automatically, browse to the CD drive and run setup.exe.

You will see the following screen:



3. Follow the on-screen instructions. Once the installation is complete, Scratch Live appears in the Start Menu under All Programs > Serato > Scratch Live.

Because the SL 1 was connected prior to installing Scratch LIVE, there is no extra hardware installation is required.

NOTE: Select the custom install option if you wish to change the installation location of Scratch LIVE.

ADDITIONAL DRIVER INSTALLATION (WINDOWS)

Windows treats each USB port individually. You might like to install the Drivers for the SL 1 hardware on all of your USB ports.

Connect your Scratch LIVE hardware to a USB port. Windows will again attempt to install the drivers via the hardware wizard. Cancel and close the hardware wizard.

With your hardware still connected, run the Scratch LIVE driver updater.

This is usually located in

C: > Program Files > Serato > driver_updater

Repeat this process for each of your USB ports.

TIP: The driver updater can install drivers for different types of Scratch LIVE hardware, not just the SL 1. For example, if you play at a club that uses a TTM 57SL mixer, just connect the mixer and run through the driver updater as above.

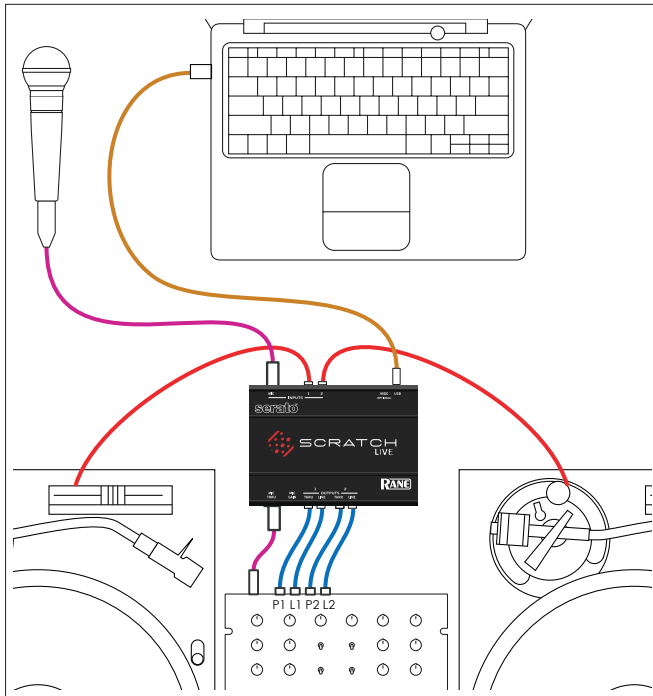
STARTING THE SOFTWARE



Close all other programs on your Mac or PC. When you load Scratch LIVE for the first time, you will see the screen shown above.

USING THE TOOL TIPS

Click on the ? icon to enable tool tips. This is located in-between the midi and setup button next the Scratch LIVE logo, as shown below. Tool tips provide a handy way to learn the various features of Scratch LIVE. Move the mouse over a section of the screen to bring up a context-sensitive tool tip. Holding the mouse over the ? button with tool tips turned on will show you a list of all keyboard shortcuts. Tool tips are available in several languages. Scratch LIVE will display the tool tips in the language that your computer is set to. If your language is not available, the tool tips will be displayed in English.



CONNECTING YOUR HARDWARE SYSTEM OVERVIEW

The Scratch LIVE control records and CDs are pressed with an audible tone specifically developed for controlling the Scratch LIVE software application.

The Scratch LIVE audio hardware converts the control signal coming from each deck into digital audio, to be sent via USB to the Scratch LIVE software, which decodes that signal into a stream of information on what the DJ is doing with the control disc. A virtual 'deck' replicates the movements of the control disc. Audio files loaded onto the virtual decks are then played back through the outputs of the hardware, with any manipulation of the control discs reproduced on the audio, effectively emulating vinyl control of the files loaded in software.

CONNECTING THE SL 1

To integrate an SL 1 unit into a typical DJ setup, connect it to your turntables (or CD players) and mixer, as follows:

1. Connect the Turntables or CD Players.

Plug the cables from your decks, into the input sockets of the SL 1, plugging the left deck into input 1 and right deck into input 2.

Playing backwards on one side? Swap the RCA cables around for that particular deck.

2. Connect the Line Outputs to your Mixer.

The output from Scratch LIVE comes from the LINE OUTPUTS on the SL 1.

Using the included RCA cables, Connect the Deck 1 Line outputs into the left line input your mixer, then repeat for the Deck 2 Line outputs, into the right Line Input of your mixer.

If your mixer has selectable input levels, make sure these are set to Line level.

3. Connect your Thru Outputs to your Mixer.

The THRU outputs on the SL 1 are used if you want to play regular vinyl or CDs during your set. They allow you to bypass your Scratch LIVE software, sending audio direct from the SL 1 inputs to your mixer. (i.e. the sound from your records or CDs)

Connect these to inputs on your mixer matching the level of your decks. In general, turntables are phono level, and CD players are line level.

Once your THRUS are connected, you can switch to your vinyl or CD's using the phono/line switch or transform switch on the top of your mixer.

If you hear the sound of your control discs instead of music from Scratch LIVE, you are listening to the thrus rather than the line outputs.

The thrus only work when the SL 1 is powered, either by a computer over USB, or by the optional DC power supply.

4. Connect the SL 1 to your computer.

Using the provided USB cable, connect your SL 1 to an available USB port on your computer.

Make sure you connect it directly to your computer and not through a hub or splitter.

TURNTABLE SETUP

1. Set the tone arms to the specific recommendations of the cartridge used, such that the needle never leaves the record, but not heavy enough that it heats up significantly. Both produce poor tracking.

2. Grounding is extremely important when using Scratch LIVE. Make sure you have good connections from the ground wires of your turntables to the grounding post of your DJ mixer. All DJ mixers with turntable inputs have built in grounding points for this purpose. If you do not ground your turntables properly, the control signal will be noisy and the tracking of the record position will be erratic.

TIP: We recommend Shure M44-7 needles for use with Scratch LIVE, due to their high output volume, excellent tracking and low record wear.

CD PLAYER SETUP

Disable all built-in effects on the CD player, including keylock/master tempo.

Ensure the input level in Scratch LIVE is set correctly to accept a LINE level signal.

SEE: AUDIO INPUT LEVEL (PAGE 22)

CALIBRATING SCRATCH LIVE

Since Scratch LIVE is controlled by an analogue signal, there is no guarantee of what state that signal will be in by the time the software gets to interpret it. Therefore, Scratch LIVE needs to be able to handle a wide range of signals, and be configurable to use them optimally. Calibrating is just configuring the software to your situation.

Calibration is equally important for both vinyl and CD users of Scratch LIVE.

There are two parts to the Scratch LIVE control signal: The directional tone, and the noise map. Listening to the control vinyl, the directional tone is the 1 kHz tone. The noise map sounds like random noise over the top of the tone.

The directional tone provides the current speed and direction of the record, while the noise map tells the software precisely where on the record the needle is currently.

THE NOISE THRESHOLD

A threshold is a lower limit, below which a process will not occur. In the case of Scratch LIVE, the noise threshold is the limit below which the input signal will not be interpreted as control signal; in other words if it's below the threshold, it is considered noise and ignored.

This setting is necessary because a stylus is very sensitive, and will inevitably pick up noise from the environment as well as the signal on the record, especially in the noisy environment of a live show.

HOW TO CALIBRATE SCRATCH LIVE

With music playing in the background, put your needle on record with the turntable **stopped**. If you are using CD players, the same rules apply. Have the CD deck paused or stopped while calibrating.

Click and hold the estimate button until the slider stops moving. Moving the threshold slider to the left will make Scratch LIVE more sensitive to slow record movement, but also more sensitive to background noise.

Repeat the process for each deck

Things to remember:

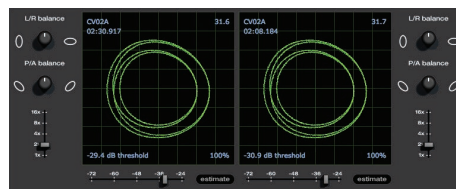
Your needle must be on the record.

Your turntable (or CD player) must be stationary. The background music playing must be at a similar level to which you will play your set at.

You should calibrate Scratch LIVE every time you play.

TIP: If the slider jumps to the far right, then you have a problem with noise in your turntables/CD players/mixer. Check all your connections and make sure your equipment is well earthed. In some situations you will not be able to improve the signal quality, and you will have to play on regardless. In this situation, stick to rel mode.

THE SCOPES



The scopes on the setup screen in Scratch LIVE display the input signal as a phase diagram. The key factors to look at on the scope display are crisp clean lines, round shape, and the tracking percentage in the lower right corner.

Start both turntables or CD players. You will see green rings appear in the scope view, **as shown above**.

For optimal performance the inner ring should be as close to circular as possible. Use the scope zoom slider (1x to 16x) to zoom in or out as necessary. Use the scope L/R balance and P/A balance controls to adjust the shape of the inner ring.

The number in the top left corner of the scope view gives the current absolute position within the control record or CD. The number in the top right corner is the current speed in RPM. In the bottom left is the current threshold setting, and the number in the bottom right shows the percentage of readable signal – this number should be close to 85% when your system is calibrated properly.

CALIBRATION TROUBLESHOOTING

After calibration, the number in the upper right corner of the scope view should say 0.0 while the needle is on the record and the turntable is stopped.

If that number is fluctuating then manually move the estimate slider to the right until that number is stable at 0.0. If you've moved the slider all the way to -24 and it's still fluctuating then you have a grounding or interference problem somewhere in the chain.

If so, the first thing to check is that the grounding wire coming from your turntable is connected to your mixer's grounding posts.

Next, make sure that the SL 1 isn't sitting next to a power source such as a power strip or power box and that the rca cables connected to the SL 1 aren't laying across other power conducting cables.

If you are still experiencing issues, you might have to adjust the placement of your setup. For example, make sure bass bins aren't directly under the turntables.

If you have trouble getting the rings circular, you probably need to clean or change your needles.

If the image appears as a line, then you have a missing channel. Check your RCA connections and needles.

SEE: SCOPE READING AND FIXES (PAGE 28) FOR MORE CALIBRATION TROUBLESHOOTING HELP

IMPORTING AND PLAYING MUSIC

IMPORTING YOUR MUSIC

The easiest way to load music into your library is by using the import button:

1. Click on the import button to open the import panel. The left side of this window displays various locations on your computer hard drive (and external drives if you have one). Click on these locations to navigate your computer and find your music.

By default, your music will usually be found in either “Music” (Mac) or “My Music” (Windows).

2. Once you have located your music, drag the folder or files you want to import onto the purple “All...” icon. This is located to the left of your screen at the top of the crates and playlist window.

If you wish to import all of your music, just drag your whole music folder onto this icon.

TIP: You can also import by dragging files and folders directly from Windows Explorer (PC version) or Finder (Mac version) into the Scratch LIVE library.

SUPPORTED FILE TYPES

Scratch LIVE supports fixed and variable bit rate .MP3, Ogg Vorbis, AAC, .AIFF, and .WAV file types. M3U playlists are also supported.

NOTE: iTunes Music Store DRM files cannot be played back by Scratch LIVE.

PLAYING MUSIC

Click on the **All...** icon to show all the tracks in your library. Use the keyboard shortcut Shift - Left Arrow to load the highlighted track on to the left deck, and Shift - Right Arrow to load the highlighted track on to the right deck.

TIP: You can also load tracks to decks using the mouse. Click and drag a track from the track list area on to either deck.

To start playing a track, simply put the needle on the record and start the turntable. The track will start playing as soon as it detects the signal from the control vinyl (or CD).

In ABS mode, the track will play from the position dictated by the placement of the needle on the record. If you place the needle at the beginning of the record, the track will start playing from the beginning. You can skip through the track by picking up the needle and placing it further into the record, just as with regular records (This is known as needle dropping).

SEE: SCRATCH LIVE MODES (PAGE 13)

TRACK DISPLAY

When a track is loaded, the track name, artist and length are displayed in the track title bar, and the Virtual Deck shows a solid black line.

If the track has BPM information written in the tag this will also be displayed.

SEE: SET AUTO-BPM (PAGE 10)



PREPARING YOUR FILES

BUILDING OVERVIEWS

Before you play your music in Scratch LIVE, it is important to first prepare your files by building overviews.

The overview builder analyses the songs in your library to detect file corruption, saves the waveform overview to an ID3 tag*, and calculates auto-gain and bpm values.

HOW TO BUILD OVERVIEWS

To build overviews start Scratch LIVE with the hardware disconnected. On the left side of the main screen, you will notice a button labeled "build overviews". Click this to automatically build the overviews for all the tracks in your library.

TIP: You can drag and drop individual folders, crates or files onto this button to force the building of overviews at any time.

ABOUT CORRUPT FILES

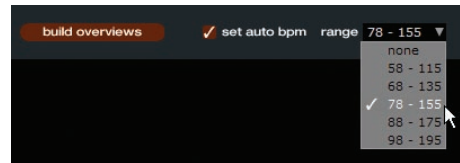
If Scratch LIVE detects a corrupt file it will tag it with a corrupt file icon:



It is very important that you delete ANY corrupt files from your library as they can cause Scratch LIVE to crash regardless if you play the file or not.

SEE: STATUS ICONS (PAGE 19) AND CORRUPT FILE DESCRIPTIONS AND DIAGNOSES (PAGE 34)

SET AUTO-BPM



If this option is checked while building overviews, Scratch LIVE will calculate the estimated tempos of your files. If Scratch LIVE is confident that the auto-BPM estimate for a file is accurate, it will be written to an ID3 tag* in the file.

The auto-BPM function will not be applied if the track already contains BPM information. To rebuild overviews and use auto-BPM or auto gain on those files, drag them onto the build overviews button. If you know your files BPM will fall within a certain range, use the range drop down to avoid double or half value BPMs being calculated.

***ID3 tags contain data about your tracks and are saved inside the files themselves. Genre, track name and artist are examples of common tag information.**

SEE: EDITING ID3 TAGS (PAGE 19)

THE OFFLINE PLAYER

The offline player is available when the Scratch LIVE hardware is not connected, and outputs through the current default audio device. Load a track to the offline player by dragging and dropping onto the deck, or pressing shift+left arrow. If the end of the loaded track is reached, the next track in the current playlist is played automatically.

The offline player is a useful tool for preparing crates, auditioning tracks, and setting cue and loop points.

PLAYBACK CONTROL

THE CONTROL RECORD

The control record has two sides. The first side is 10 minutes long and contains the Vinyl Scroll section. The second side is 15 minutes long. Scratch LIVE can be configured to work with records playing at either 33 RPM or 45 RPM, depending on your preference. The record has thin marks every minute, and a thicker mark every 5 minutes (when playing at 33 RPM). These marks are to assist you when using needle dropping to move through the track. These marks do not affect the playback of the track.



THE CONTROL CD

The control CD has two tracks. The first track is 15 minutes long and controls playback. The second track is 40 seconds long and controls vinyl scroll.

VINYL SCROLL

Vinyl Scroll allows you to select and load tracks using only your turntables (or CD player) – no contact with the computer necessary! To use Vinyl Scroll with turntables, lift the needle off the record and drop it into special “bonus track” section at the end of the record’s A side. The movement of the control disk now controls the selected track within your library. Lift the needle out of the Vinyl Scroll section of the record and into the lead out (between the Vinyl Scroll area and the end of the record) to change crates or iTunes playlists. Go back to the Vinyl Scroll area of the record to choose a track within the crate or playlist. Once you have found the track you wish to play, put the needle back at the beginning of the record and it will load automatically. This feature is available to CD users. Go to track 2 on the control CD to access Vinyl Scroll. Find the track you want to load, and go back to track 1.

The track you selected will be loaded and ready to play. You can reverse the direction of Vinyl Scroll and set the sensitivity in the setup screen.

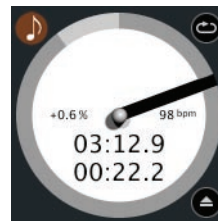
TIP: You can also use Vinyl Scroll in the prepare window.

SEE: VINYL CONTROL (PAGE 23)

MAIN SCREEN OVERVIEW

VIRTUAL DECK

The Virtual Deck shows everything about the speed and position of a track. As the vinyl rotates, so does the line on the label. The circular progress bar around the edge is a visual representation of the position within the song, and can be set to flash to warn you that the track is nearing its end. The time and remaining time are displayed in minutes and seconds. The turntable speed as a percentage pitch shift is shown on the left of the Virtual Deck, and the pitched BPM (BPM with pitch adjustment multiplier added) is shown on the right of the virtual Deck. If the track has no BPM information, pitched BPM will not be shown.



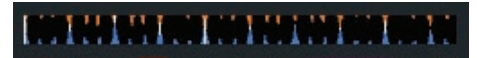
If you are playing regular vinyl, notice that the Virtual Deck behaves strangely as Scratch LIVE attempts to decode the incoming signal. This will not cause any problems, but you may find it distracting. You can unload the currently loaded track using the eject button next to each Virtual Deck.

TIP: Use the keyboard shortcut shift-alt-arrow to unload a track from the Virtual Deck.

VISUAL AIDS

When the track is playing several waveforms are displayed. Each shows a different aspect of the track being played.

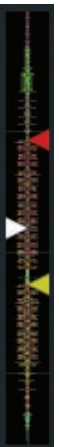
TEMPO MATCHING DISPLAY



The Tempo Matching display area provides a helpful tool for beat matching. Scratch LIVE detects the beats within the track, and places a row of orange peaks (for the track on the left side) above a row of blue peaks (for the track on the right side) in the Tempo Matching display area. When the two tracks are matched to the same tempo, the peaks will line up. Note that the tempo display is aligned with the beginning of the bar, so the peaks keep their relative position as the track plays. This display does not show the relative timing of the beats, only the tempos of the tracks. The peaks will still line up when the tracks are playing at the same tempo, but are out of sync.

TRACK OVERVIEW DISPLAY

This view provides a complete overview of the waveform of the track, and includes a marker to show the current position within the track. This view is useful for finding transitions within the track. The waveform is colored according to the spectrum of the sound – red representing low frequency bass sounds, green representing mid frequency sounds and blue representing high frequency treble sounds.

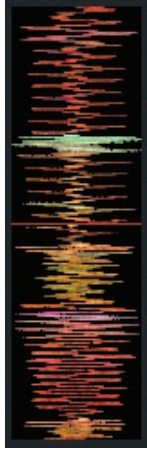


You can jump to different positions within the track by clicking on the Track Overview display (disabled in abs mode). Grey lines behind the overview show the length of the track – a thin grey line every minute, and a thick grey line every 5 minutes. The overview will be filled when you load the track onto a Virtual Deck. On slower computers, you should disable auto fill overviews in the setup screen – with this setting disabled, the overview will be filled as you play the track.

SEE: PREPARING YOUR FILES (PAGE 10)

MAIN WAVEFORM DISPLAY

This view provides a close-up view of the track, including color coding to show the frequency of the sound; red representing low frequency bass sounds, green representing mid-frequency sounds and blue representing high-frequency treble sounds. You can also switch to a three-band spectrum view by holding the ctrl key and clicking on the waveform. Click on the waveform to 'scrub' or make fine adjustments to your position within the track. This applies to int mode only, and may be useful if you wish to set cue points in your tracks without your turntables or CD players connected. The Main Waveform is zoomed around the current position in the track.

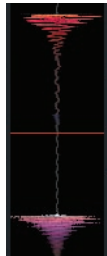


SEE: CUE POINTS (PAGE 15) AND SCRATCH LIVE MODES (PAGE 13)

TIP: Use the + and – keys to zoom in and out.
TIP: Waveform can be either vertical or horizontal

In the example below, the red part of the wave represents a kick drum, while the purple part represents a snare drum.

Kick Drum



Snare Drum

BEAT MATCHING DISPLAY

This view shows the position of beats within the track. When beat matching, this view helps align the downbeats of the two tracks. The markers are matched up when the two tracks are beat matched.

Example: The following is a demonstration of using the visual aids

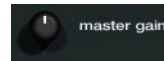


to help beat match. In this example, the track that is playing is on the left deck, and the track to be mixed in is on the right deck.

1. Start the track playing on the right deck. After a few seconds, blue peaks appear in the Tempo Matching display.
2. Adjust the pitch of the right turntable until the blue peaks sit under the orange peaks in the Tempo Matching display. Once they are aligned, the two tracks have the same tempo.
3. Next align the markers in the Beat Matching display. Watch the color of the items passing by in the Main Waveform display. Remember that a kick or bass drum will be red in color, and a snare drum will be green or blue. This technique will by no means guarantee perfect mixes, but may help to speed up the process of beat matching.

MASTER GAIN

The master output of Scratch LIVE can be controlled using the master gain control. This adjusts the output volume of all tracks played.



NOTE: For best results, set the master gain to the 12 o'clock position, and adjust the volume of individual tracks using the track gain adjustment.

33 / 45 SPEEDS

Set this to match the speed of your turntable for normal playback.



TRACKING INDICATOR

The tracking indicators on the main screen show the quality of the signal coming from the control record or CD. The length of the bar indicates the speed of the record or CD. The color indicates the amount of position information Scratch LIVE is receiving. When you are playing the record at normal speed, the tracking indicator should be grey. If it is mostly red there is a problem reading the control signal. Make sure your needles are clean, and check the calibration in the setup screen.



NOTE: It is normal for the tracking indicator to be red when cueing or scratching.

TAP TEMPO

For tracks with no BPM information, there is a tap tempo button displayed where the BPM usually is, in the song info area. Pressing alt-space bar activates the tempo tapper (press alt-space bar a second time to activate the tempo tapper on the right Virtual Deck). Tap the space bar along with the beat. After you've tapped the first beat, you can switch to double time tapping, half time, start of each bar etc. The range is set by the first two taps, after that you can switch to any steady rhythm you feel comfortable with – quarter notes, half note, whole notes. Esc resets the BPM, Enter saves the BPM to the track. You can use the mouse if you prefer. Your CD player or turntable's pitch slider doesn't need to be at zero, we do the math for you. You can also use the tempo tapper when no song is loaded, for finding the BPM of regular records, for example.



KEY LOCK

When Key Lock is on, the key or pitch of the song stays locked at what it would be if the track was playing at normal speed, regardless of the platter speed of the turntable or CD player. Key Lock has scratch detection, so that it automatically turns off when scratching for a natural scratching sound. Turn Key Lock on or off by pressing the button to the top right of the Virtual Deck.



TIP: F5 and F10 will turn Key Lock on and off for the left and right decks respectively.

REPEAT

Use the repeat function to repeat the song across the entire length of the control record.



TIP: Short "loop" samples can be turned into a continuous track using the repeat function. The loops must be less than 10 seconds long, and cut at the start and end of a bar.

CENSOR

Use the censor button to 'mask' parts of a song, or use as a special effect. When you press the censor button, the track starts playing backwards from that point. When you release the censor button, the track plays forward from the point you would have been, had you not pressed the censor button. Censor is available only in rel and int modes.



EJECT

This ejects the track playing or loaded track from the Virtual Deck.



AUTOPLAY

Click the auto button to enable autoplay. With this setting turned on, when one track finishes playing, the next track starts automatically. Load from a crate to play through the songs in that crate, or from your library to play through your library. Use the next EEI and previous IFF buttons to jump to the next track or go to the previous track in the list. Autoplay works in both rel and int modes. Play from start must be checked in the setup screen for autoplay to work correctly.

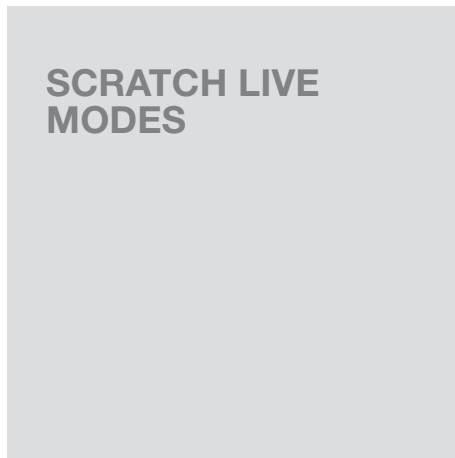


TRACK GAIN

Use the track gain adjustment to balance the volume of the tracks in your library. Any adjustment made to the gain of a track is saved with the file, and will be reapplied to the entire track when it is loaded again. The level meter shows the level sent to the hardware interface after both individual track gain and master gain adjustment.



NOTE: For automatic gain setting of your tracks, SEE ADDITIONAL SETUP



Scratch LIVE has three different modes of operation. You can switch between these modes by clicking the mode buttons near the Virtual Deck.

ABSOLUTE MODE



abs mode is the default mode, and most closely resembles the properties of normal vinyl. The beginning of the record is mapped to the start of the record, and by picking up the tone arm and moving the needle to another part of the record (needle dropping) you can move to a different position within the track.

abs mode faithfully reproduces the movement of vinyl control records, including stops, starts, scratching, needle dropping, rubbing and other turntablist techniques. When you reach the end of the record using either **rel** or **abs** modes, Scratch LIVE automatically switches to **int** mode. This is known as Emergency Internal mode, and prevents long tracks from stopping when you run out of record. You can switch from Emergency Internal mode to **rel** mode by lifting the needle and placing it in the lead-in of the control record.

Emergency int mode will activate after 1 second. Use the keyboard shortcut F1 (left deck) or F6 (right deck) to switch to **abs** mode.

NOTE: Be careful when scratching near the end of the record not to accidentally go past this point and into int mode the track will no longer respond to record movement!


RELATIVE MODE





rel mode observes the relative forward and backward movement of the record, but does not take into account the position within the record. **rel** mode disables needle dropping, but allows skip-free scratching.


SEE: DROP TO ABS POSITION (PAGE 23)

rel mode adds additional speed controls:

Rewind – The rewind function speeds up the longer you press the button. 

Bend down – Create a temporary decrease in the playback speed. Use bend down if the two tracks are in time, but this track is slightly ahead of the other track. 

Bend up – Create a temporary increase in the playback speed. Use bend up if the two tracks are in time, but this track is slightly behind the other track. 

Fast forward – The fast forward function speeds up the longer you hold the button. 

TIP: Use the keyboard shortcut F2 (left deck) or F7 (right deck) to switch to rel mode.

INTERNAL MODE



int mode allows you to play tracks without external vinyl (or CD player) control. **int** mode has a start / stop function and virtual pitch slider. Holding down the shift key moves the pitch slider slowly. Holding the ctrl key and clicking on the pitch slider resets it to 33 rpm or 45 rpm, depending on which you are closest to at the time.

Scratch LIVE automatically switches to **int** mode when the end of the control record is reached; you can switch back to **abs** mode by placing the needle in the lead-in of the control record. If you switch from **abs** or **rel** into **int** mode, Scratch LIVE automatically adjusts pitch to maintain playback speed as set by the turntable. Use the keyboard shortcut F3 (left deck) or F8 (right deck) to switch to **int** mode.

int mode adds these additional controls:

Rewind - The rewind function speeds up the longer you press the button.



Bend down - Create a temporary decrease in the playback speed. Use bend down if the two tracks are in time, but this track is slightly ahead of the other track.



Play / pause reverse - Press to play, press again to stop playback. You can adjust the braking knob in the setup screen to range from an immediate stop to a slow turntable-style 'power down'.



Play / pause forward - Press to play, press again to stop playback. Uses the same braking as described above.



Bend up - Create a temporary increase



in the playback speed. Use bend up if the two tracks are in time, but this track is slightly behind the other track.

Fast forward - The fast forward function speeds up the longer you hold the button.



PITCH SLIDERS

Scratch LIVE has two pitch sliders - a large slider for coarse pitch adjustment, and a small pitch slider for fine adjustments. Click above or below the handle on the large pitch slider to make small pitch adjustments, or hold the shift key and drag the pitch slider to move it slowly. Drag the center of the small pitch slider to make fine pitch adjustments, or click on either side of the small slider to pitch bend.



TEMPORARY CUE

There is a temporary cue point that can be used like the Cue button on many DJ CD players. Press ctrl-I to set this temporary cue point on the left deck, and ctrl-K to set it on the right deck. This temp cue point is shown in the main waveform as a white marker. This cue point is not saved with the track, and by default is set to the beginning of the track. Press I to jump to this temporary cue point on the left deck, and K for the right deck. If you hold down the I or K key while the track is stopped, it will play from the temp cue point. As soon as you release the key, it will jump back to the temp cue point. Note that you can use this shortcut to jump to the beginning of the track if the temporary cue point has not been set.

SEE: CUE POINTS (PAGE 15)

The buttons above the small pitch slider allow you to seed the base playback speed - 1/2 (half speed), 33/45 or the speed of a 45 rpm recording playing at 33 rpm, 1x or normal speed, 45/33 or the speed of a 33 rpm recording playing at 45

rpm, or 2x (double speed).

You can also control playback using the computer keyboard shortcuts - turn Caps Lock on to enable.

SEE: PLAYBACK KEYS USE SHIFT (PAGE 22)

Left Deck	Function	Right Deck
Q	play / pause reverse	A
W	play / pause forward	S
E	pitch down	D
R	pitch up	F
T	bend down	G
Y	bend up	H
Alt-Q	load previous track	Alt-A
Alt-W	load next track	Alt-S
Alt-E	rewind	Alt-D
Alt-R	fast forward	Alt-F
Ctrl-I	set temporary cue point	Ctrl-K

Click on the waveform to 'scrub' or make fine adjustments to your position within the track. This may be useful if you wish to set cue points in your tracks, and don't have your turntables or CD players connected.

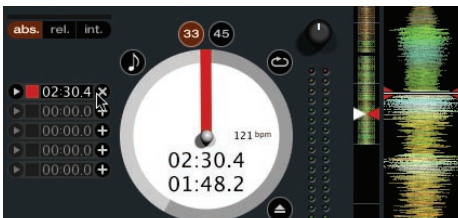
NOTE : If you play a track in int mode, and then switch to abs or rel mode, the pitch adjustment will be dictated by the turntable, so there will be a jump in pitch unless they are already perfectly matched.

TIP: Panic! If you are in abs or rel mode and you get a build up of dust on the needle that is breaking up the audio, hold down ctrl and press the int button. This will take you to internal mode, and reset the pitch to zero.

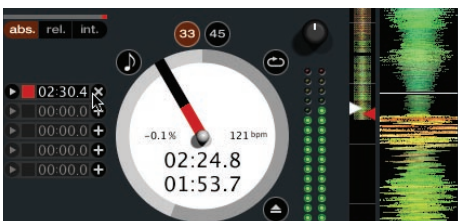
CUE POINTS

You can set up to five visual cue points within each track. Use the + button to place cue point.

Click the arrow to the left of each cue point to jump to it (rel and int mode only). You can also jump to cue points using keyboard shortcuts – 1 through 5 for the cue points on the left deck, and 6 through 0 for the right deck cue points. Notice that the stripe on the Virtual Deck jumps to the 12 o'clock position and changes color when you set a cue point – you are at the cue point when the stripe is one solid color and at the 12 o'clock position.



As the record plays on beyond the position of the cue point, the colored bar will shorten by a fifth for each rotation. Likewise, as you approach the cue point, the color will grow by a fifth each rotation. For example, the picture below shows the record just before the end of the 5th rotation before the cue point.



Each cue point can have a different color. To change the color of a cue point, click on the colored square and choose a new color from the drop down menu.

To remove a cue point, use the x button on the right side of the cue point panel.

A cue point can occupy any of the 5 slots. You can drag and drop cue points to change their order in the list. If you wish to have the cue points sorted chronologically, check the sort cues chronologically option in the setup screen. If you load the same track on to both decks, you will be able to add or modify cue points from either deck.

When you jump to a cue point in internal mode while paused, the track will play from the cue point for as long as the key or mouse button is pressed, after which the playhead returns to the cue point. If this is done using the keyboard while the track is playing in either internal or relative mode, the cue point will be repeatedly triggered, producing a stuttering effect.

TIP: The rate of cue point stuttering is controlled by your operating system keyboard repeat rate settings. Windows users: Keyboard properties are in the Control Panel. Mac users: Keyboard and Mouse are in System Preferences.

TIP: Use the keyboard shortcuts ctrl-comma (for left) and ctrl-dot (for right) to place cue points.

LOOPING

You can save up to 9 loops per track; these loops are saved in the file, and will be



present when you reload the track. To make a loop, set the in-point by clicking the in button, and the out-point by clicking the out button. To turn the loop on or off, click the loop button. If you want the playhead to jump to the start of the loop when you enable the loop, hold the control key and press the loop button.

To adjust the in-point of the loop, click the in button. You can use the arrow keys: left arrow to move the in-point towards the start of the track, right arrow to move the in-point towards the end of the track. Hold down the shift key while pressing the arrow key to make coarse adjustments. Click the in button again to save the in-point. The same applies to adjusting the out-point.

You can also use the control vinyl (or CD) to adjust the in- and out-point. Click the in button, then move the control vinyl. Moving the vinyl will adjust the in-point. Once you are happy with the new in-point, click the in button to save, and release the control vinyl.

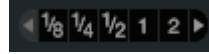
The control vinyl will go back to controlling playback once the record is back up to normal speed. Using the control vinyl to adjust loop end points is optional — to turn this feature off, disable the adjust loops with vinyl option in the setup screen. There are 9 available loop slots per track. If a loop is set in a given slot, the background (behind the loop number) will be green. Press the x button to clear the loop. If you

click on the locked loop symbol, a red border will appear. This indicates the loop is locked, and you will not be able to adjust the end points or delete the loop until you unlock it, by clicking on the number again.

NOTE: Looping applies to rel and int modes.

AUTO LOOPING

Auto looping allows you to create loops instantly.



If the track has a BPM value simply click the



number of bars you wish to loop and Scratch LIVE will create the loop for you. The loop is snapped to the beats in the song detected by Scratch LIVE so even if when you press the button slightly out of time Scratch LIVE will still create a perfect loop for you.

Five auto-loop buttons are available on screen at any one time. They range from 1/8 to 32 bars. The user can select the autoloop range with the < and > buttons.

Pressing an auto-loop button will create a loop start point from the nearest beat to the playhead (within reason), and set a loop endpoint in the future. Pressing auto-loop 1 while auto-loop 1 is active will deactivate the loop. Pressing a different auto-loop button while looping is active will extend the endpoint of the current loop to the appropriate new auto-loop length.

You can also save an auto-loop to the next available slot. When using an auto-loop, a save button is visible where the lock loop button normally is.

NOTE: Auto-looping requires the track bpm to be set.


THE A - SLOT

A special loop slot 'A' exists for auto-looping. The act of using the auto-loop buttons sets a loop in the 'A' slot, following the rules above. Turning a loop off using the auto-loop buttons returns you to the loop slot that you were previously in at the time you started auto-looping. Turning the loop off using the 'loop' button leaves you in the 'A' slot. The 'A' slot is not saved to disk automatically, pressing 'save' saves the loop to the first empty slot in 1-9.

Auto-looping shortcut keys are alt-1 to 5 for the left deck, and alt-6 to 0 for the right deck. They correspond to the looping buttons as laid out on screen. ie. if the onscreen buttons display 1 2 4 8 16 bar loops, alt-1 triggers 1 bar loop, and alt-5 triggers a 16 bar loop.

MIDI CONTROL

ASSIGNING CONTROLS

To enable MIDI assign mode, click  the MIDI button or press ctrl+M. Hovering the mouse pointer over a control will bring up the MIDI assignment box, showing the current assignment status.

To assign a MIDI control, click on the control in Scratch LIVE, then move the MIDI control. The MIDI assignment box should update to show it has mapped the controls to one- another.

To un-assign a MIDI control, click on the control in Scratch LIVE, and press return on your computer keyboard.

OVERVIEW

The MIDI Control feature in Scratch LIVE provides the ability to map MIDI controls to Scratch LIVE controls, and thus control the functions of Scratch LIVE using MIDI controllers such as keyboards, triggers, sliders, and knobs. Integrating MIDI controllers into your Scratch LIVE setup can improve live performance usability, such as hitting pads on a MIDI controller to trigger loops and cue points.

MIDI CONTROLLER SETUP

The process of setting up a MIDI controller for use with Scratch LIVE will vary depending on the hardware in question. Many devices can connect to a computer using MIDI over USB, and will either be supported directly by your operating system, or require installation of drivers and configuration utility software. Follow the manufacturers instructions for installation.

Other controllers may solely use a MIDI out connector to send control messages, and will require a separate MIDI interface unit to communicate to software. Generally the MIDI interface will come with drivers and configuration tools which pass your controllers output onto an available MIDI channel, which can be used by Scratch LIVE.

Once your controller is installed and functioning correctly, use the directions for assigning controls below.

NOTE: Once in MIDI assign mode, Scratch LIVE controls will no longer respond directly to the mouse. If you need to change a control using the mouse, disable MIDI assign mode.

While in MIDI assign mode, controls which have MIDI inputs assigned show a green box indicator around them.

A NOTE ABOUT MIDI PLATTERS

The Scratch LIVE virtual decks are not user assignable to MIDI control. MIDI devices with platters on them all send different data so user mapping is not possible. To control the platter use a natively supported controller.

ASSIGNING MIDI TO OTHER CONTROLS

Controls which are not normally visible are available for assignment in the lower part of the screen when in MIDI assign mode. These include library navigation controls and the temporary cue points for either deck.

ASSIGNING CTRL-CLICK FUNCTIONALITY

Some Scratch LIVE controls on the GUI have additional functionality assigned to ctrl-click. You can assign ctrl-click functionality to a midi control, alongside the normal functionality. For example, ctrl-click on the internal mode pitch slider returns pitch to zero. To assign this to midi

control, enter midi assign mode, ctrl-click on the slider, and then assign one of the pads to it. When you press the pad, pitch goes to 0.

PRESETS



MIDI presets are accessible in the MIDI panel of the setup screen. By default, the current MIDI assignments in Scratch LIVE are automatically remembered and loaded next time you start the program. The preset screen allows you to save and recall several different MIDI setups. This is useful if you are using several MIDI devices or want to quickly switch. MIDI setups without having to re assign all your controls.

NATIVE CONTROLLER SUPPORT

Scratch LIVE version 1.8.2 currently has native support for the following 3rd party controllers:

- Denon DN-HC4500**
- Denon DN-HD2500**
- Numark DMC2**
- Numark iCDX**
- Pioneer CDJ-400**

These controllers are plug and play, and can automatically control Scratch LIVE with no MIDI assignment necessary.

Visit Scratchlive.net for detailed documentation on how to use these controllers.

TECHNICAL INFORMATION

Scratch LIVE MIDI Control only supports Note On/Off, standard 7 bit CC (Control Change), 14 bit CC, and RPN/NRPN (14 bit).

ORGANIZING YOUR MUSIC

Scratch LIVE can support an unlimited number of tracks – the only limitation is the size of the hard drive of your computer. A number of features are included to help you to keep your music organized and find songs quickly and easily.

GROUPING TRACKS INTO CRATES

Scratch LIVE supports several ways of organizing and sorting your file library. iTunes™ users will notice that Scratch LIVE can incorporate your existing iTunes library and playlists.

Scratch LIVE uses digital “crates” for quick access to your favorite collections. There is no limit to the number of crates you can create, and any given track can be placed in multiple crates. For example, you could organize your files into the following crates, where any one track would be filed in more than one crate:

- Hip Hop
- UK Hip Hop
- French Hip Hop
- Inst Hip Hop
- Old Hip Hop
- Hip Hop LPs



To make a new crate, click the + button. To rename a crate, double click the crate name

You can change the order of tracks within a crate by dragging them up or down.

TIP: The protect library option in the setup screen applies to removing, editing and renaming crates. Check this option to prevent changes to your crates. If you do delete a

crate by accident, you can get it back from the recycle bin / trash. Crate files have the extension .crate.

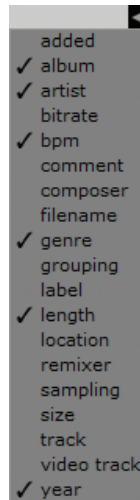
SUBCRATES


You can drag and drop crates into other crates to make subcrates. If you drag a crate to the very left of the crate panel, it will stay in the top level of the crate structure. If you drag the crate a little to the right, onto the name of another crate, it will make the crate you are dragging a sub crate of the first crate.

SORTING YOUR FILES

The track information display area can be customized to display the columns listed below:

- Added
- Album
- Artist
- Bitrate
- BPM
- Comment
- Composer
- Filename
- Genre
- Grouping
- Label
- Length
- Location
- Remixer
- Sampling
- Size
- Track
- Video Track
- Year



The column button  is located at the top of the library pane in right hand corner. Click on the column button to select which columns you want to display. To sort your library by a column, click the column header so it highlights. For example, clicking on the album column header will sort your library alphabetically by album title. To move a column, drag the header to the left or right. To resize a column, click on the column boundary and drag it to the left or right.

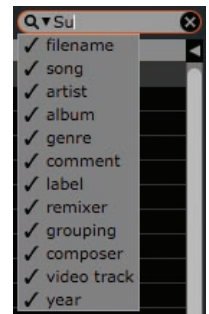
USING THE SONG BROWSER



The song browser allows you to filter your song list by Genre, BPM, Artist and Album. To turn the song browser on or off, click the browse button.

SEARCHING

Scratch LIVE includes a search function to help you find files quickly and easily. Enter text into the search box and Scratch LIVE will automatically find as you type. To select which fields the search function will look through, click on the left hand side of the search box. The drop down menu shows which fields are currently being used. Press esc or the x button on the right of the search box to clear the search.



TIP: Use the keyboard shortcut ‘ctrl-f’ to jump to the search box. This keyboard shortcut will also take you out of any crate or playlist that you might be in and into your main library, so you can find any track in your collection. If you then click on a crate or playlist, the search query will be cleared.

PREPARE WINDOW

The prepare window is a holding area for tracks, much like preparing a set by lifting records part way out of your record bag. You can drag tracks (or whole crates) from the main track list into the prepare window, or simply drag them onto the prepare button. These tracks will be removed from the prepare window once they have been played. All tracks in the prepare window will be discarded when you exit Scratch LIVE.

TIP: Use the keyboard shortcut ctrl-p to add tracks to the prepare window.

TIP: Select the contents of the prepare window, drag them onto the new crate button (+) to save the selection.

REVIEW WINDOW

The review window shows the tracks you have recently played in the order in which they were played. Tracks you have played recently are colored green – press the clear button to reset the list of recently played tracks.

TIP: Select the contents of the review window and drag them onto the new crate button (+) to save a history of the tracks you played.

EDITING ID3 TAGS

Much of the information associated with each file can be edited from within Scratch LIVE. Double click on the attribute within the main library to edit the attribute. Filename, length, size, bit rate and sampling cannot be edited. This information is saved in the file itself. Note that the protect library option in setup must be unchecked to allow edits.

SEE: PREPARING YOUR FILES (PAGE 10) FOR DETAILS ON BUILDING OVERVIEWS AND SETTING AUTO-BPM.

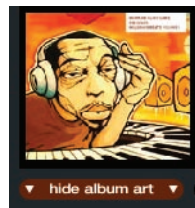
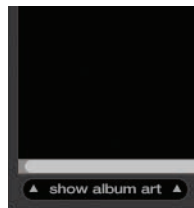
TIP: Use the keyboard shortcut “ctrl-e” to edit text. Hold down the ctrl key and move with the arrow keys to change to a different field while staying in edit mode. When you have more than one file selected, editing tags changes all the files in your selection.

TIP: The second column in the library is the label color for that file. Click it to bring up a color palette, and customize the virtual deck for that file.

LIBRARY ZOOM

You can change the size of your library text by using the shortcuts ctrl + and ctrl -







DISPLAY ALBUM ART



MP3 files can contain album art information. To display this album art, click the show album art button. There are many third party applications available for adding album art to MP3s.

STATUS ICONS

The leftmost column shows the status of each track. The image to the left shows five tracks with differing statuses.

- Scratch LIVE has detected some corruption in the MP3 file. If possible, re-encode the MP3. 
- The track has been imported from the iTunes™ library. 
- The track has been imported from the iTunes library, and Scratch LIVE has detected some corruption in the MP3 file. Solution: If possible, re-encode the MP3. 
- The track cannot be found. Most likely the file has been renamed or moved. 
- Scratch LIVE is trying to import a track from the iTunes library, but cannot find the file. 
- Tracks that are read-only have a locked icon. 

MORE INFO ON CORRUPT FILES

If you have a corrupt file in your library, hover your mouse over the status icon for information on what type of corruption was found. Detailed explanations of these messages can be found on page 34.

AUTO-BACKUP

Scratch LIVE stores your library database and crates information in a Scratch LIVE folder on your hard disk. This folder is created on a drive when files from that drive are added to Scratch LIVE. There is one on your system drive and there will be one on every external drive that you use with Scratch LIVE.

Auto backup creates a copy of the Scratch LIVE folder on your system drive once a week on startup. If an external drive containing a Scratch LIVE folder is detected it will be backed up if the last backup on that drive is older than a week or if no backup exists.

A copy of each Scratch LIVE folder called ScratchLIVEbackup is created next to the folder it is backing up. Auto-Backup will only keep ONE level backup at a time, each time autobackup runs it overwrites the previous backup.

DELETING CRATES AND TRACKS FROM SCRATCH LIVE

To delete tracks from your Scratch LIVE library, select the track and use the keyboard shortcut ctrl-delete. (Make sure you have the protect library option unchecked in the setup menu.)

- Deleting a track when you are in the All...playlist removes it from your library and any crates that the track may be in.
- Deleting a track inside a crate removes it from that crate but the file will remain in your All...playlist.
- Deleting a track from a subcrate will remove it from the subcrate and the main crate but not the All...playlist.
- Crates that are deleted are sent to the recycle bin/trash.

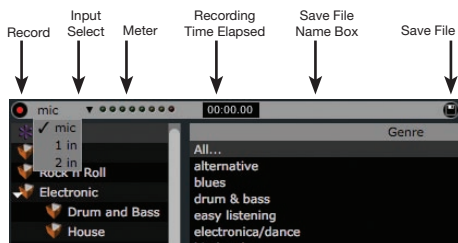
NOTE: To delete any files from your library and your harddrive (sending them to the recycle bin) use the shortcut ctrl-shift-delete.

If you are using iTunes playlists, your files cannot be deleted this way. You will need to delete them from within iTunes.

RECORDING

Stereo recording is possible even while using two stereo vinyl control inputs.

1. Click on the downward arrow (icon) to get the drop menu displaying the three possible record sources.
2. Select the desired source and press the record icon to start recording.
3. The record icon flashes while recording and the display shows the elapsed recording time.
4. Press the record icon again to stop the recording.
5. To save the recording, type in a name for the recording and click the save icon.
6. The recording is automatically placed in a crate named "RECORDED". If the crate does not already exist, it will be created automatically.
7. To start a new recording without saving, simply click the record button again.



Recordings can be loaded onto the decks, renamed, and managed like other files. Recordings are saved in "MyDocuments\My-Music\ScratchLIVE\Recording" on a PC and "~/Music/ScratchLIVE/Recording Temp" on a Mac. Recordings are saved as 16-bit, 44.1 kHz stereo AIFF files

TIPS.

- The keyboard shortcut **ctrl-n** turns recording on and off
- You can load a recording without saving it using the short cut keys **shift left arrow** to deck 1 or **shift right arrow** to deck 2.
- If the Virtual Deck is set to int mode and is unloaded, the input record level is sent to the Virtual Deck's higher resolution stereo meters. E.g., if you're recording from input 2, set the right Virtual Deck to int, eject the track if there is one loaded, and the Virtual Deck's meters will show the signal coming into input 2.

NOTE: Any recordings over 3 hours are automatically split into individual files.

SAMPLING FROM VINYL

You can use the SL 1 interface to sample from vinyl or any other sound source. If you click on the triangle next to the mic record button, you'll see that you can select inputs 1 and 2. Select one of these, and you'll see an input level adjustment knob appear to the right of the level indicators. This boosts or attenuates the input signal up to 12 dB. The recordings are in the same format and saved to the same place as mic recordings. On a PC this is in 'My Documents\My Music\ScratchLIVE\Recording'. On a Mac this is ~/Music/ScratchLIVE/Recording/. The file is saved as a 44.1Khz 16-bit stereo AIFF file. The input select in the setup screen (line or phono) determines whether or not the phono preamp is used.

TIP: Remember that **ctrl-n** turns recording on and off, and that you can load a recording without saving it using **shift left arrow** or **shift right arrow**. Drop the needle into a loud part of the track, and record a few seconds, and then **shift left arrow** or **shift right arrow** to load it on to the virtual deck. This way you can double check your levels.

KEYBOARD SHORTCUTS

These actions can be accessed directly from the computer keyboard.

NOTE: Playback, cue and speed controls use Shift or Caps Lock. You can turn this off in the setup screen.

SEE: PLAYBACK KEYS USE SHIFT (PAGE 22)

KEY	ACTION
ctrl - L	Locate the current track. This will highlight the track you most recently loaded. Pressing ctrl - L again will alternate between the tracks recently loaded on both decks.
ctrl - R	Reveal - the highlighted song is opened in a file browser.
ctrl - F	Find - moves the cursor to the search box.
ctrl - A	Select all.
ctrl - C	Copy text in edit mode.
ctrl - E	Edit text.
ctrl - V	Paste text in edit mode.
ctrl - X	Cut text in edit mode.
ctrl - Z	Undo last track load.
shift ctrl - ↑ shift ctrl - ↓	Move focus up / down through the library or crates. Note that if you have a song highlighted in the song view, and use shift - ctrl - ↑ / ↓ you will move up or down through the library or crates. When you release the shift or ctrl key, the focus will go back to the song view so that you can move up and down through songs using ↑ / ↓.
ctrl - P	Add tracks to the prepare window.
ctrl - N	Start a new mic recording.
ctrl - O	Open the track in your default MP3/WAV/OGG/AIF player.
- or +	Zoom the main waveform display.
tab	Alternate focus between crates or songs.
ctrl - del and ctrl - shift backspace	Remove track from library, remove track from crate, delete crate (does not delete the file).
alt - del and alt - backspace	Remove track from crate and from library
ctrl - shift - del and ctrl - shift - backspace	Delete the file from your library and send to the recycle bin. (Note to iTunes users: files in your iTunes library cannot be deleted this way).
ctrl - shift /	Toggle the input reverse switch.
esc	Clear search string if searching, or exit Scratch LIVE.

LEFT DECK	ACTION	RIGHT DECK
ctrl - ← or shift - ←	Load the highlighted song to a deck.	ctrl - → or shift - →
ctrl - shift - →	Load the track currently on one deck onto the other deck as well	ctrl - shift - ←
ctrl - /	Swap the two currently playing tracks from one deck to the other.	ctrl - /
shift - alt - ←	Unload the track from a deck.	shift - alt - →
ctrl - , (comma)	Place a cue point.	ctrl - , (comma)
1, 2, 3, 4, 5	Jump to cue points in track. (rel and int modes)	6, 7, 8, 9, 0
F1	Switch deck to abs mode.	F6
F2	Switch deck to rel mode.	F7
F3	Switch deck to int mode.	F8
F5	Key lock on / off.	F10
Q	Play / pause reverse.	A
W	Play / pause forward.	S
E	Pitch down.	D
R	Pitch up.	F
T	Bend down. (rel and int modes)	G
Y	Bend up. (rel and int modes)	H
U	Censor. (rel and int modes)	J
I	Go to temporary cue point. (rel and int modes)	K
O	Set / adjust loop in-point.	L
P	Set / adjust loop out-point.	;
[Loop on / off.	'
ctrl - [Jump to selected loop.	ctrl - '
alt - Q	Load previous track.	alt - A
alt - W	Load next track.	alt - S
alt - 1, 2, 3, 4, 5	Auto-loop on / off.	alt - 6, 7, 8, 9, 0
alt - E	Rewind. (rel and int modes)	alt - D
alt - R	Fast forward. (rel and int modes)	alt - F
alt - O	Previous loop.	alt - P
alt - L	Next loop.	alt - ;
alt - spacebar	Activate the tempo tapper.	alt - spacebar (x2)
ctrl - I	Set temporary cue point. (rel and int modes)	ctrl - K

ADDITIONAL SETUP

This section covers general preferences and adjustments you can make to improve the performance of Scratch LIVE. From the main screen, tick setup to get to this area.

HARDWARE



USB BUFFER SIZE (LATENCY)

Scratch LIVE processes audio in small chunks. When smaller chunks are used, the movement of the record is translated into audio more often which results in a lower overall system latency. However, this requires more processing and therefore a higher CPU load, so lower buffer size settings require a more powerful computer to produce uninterrupted audio. If you want tighter control, you should try decreasing this setting, on the other hand, if you experience audio dropouts, you need to increase this setting (or use a more powerful computer).

AUDIO INPUT LEVEL

Set the input level to match the level of your control sources. Most turntables are phono level, and CD players line level.

PLAYBACK



TRACK END WARNING

Enable track end warning to flash the virtual deck as you approach the end of the track. The label will start flashing 20 seconds from the end of the record. The track end warning does not apply to any tracks under 1 minute long.

PLAYBACK KEYS USE SHIFT

This is checked by default. Unchecking this option will enable all of these keys without pressing shift or having caps lock on. This applies to all cue points (1...0) and cue controls (QWERTY etc).

SEE: [KEYBOARD SHORTCUTS \(PAGE 21\)](#)

LOCK PLAYING DECK

Every DJ's nightmare used to be lifting the needle of the wrong turntable in the middle of a set. This setting helps to avoid the digital equivalent; loading a new track to the wrong deck. When this option is checked, you can only load a track if the target deck is stopped.

SORT CUES CHRONOLOGICALLY

The five cue points can be placed in any order, and can be dragged up and down if you wish to reorder them. If you prefer to lock them to chronological order, turn this option on.

AUTO GAIN

Auto gain enables you to set a uniform volume level for the tracks in your library. When a track is in auto gain mode, the track gain knob appears depressed.

To enable auto gain, go to the setup menu, select the playback tab, and then check the "use auto gain" check box. Provided you have built your overviews, your tracks will now be loaded with the auto gain applied.

MODIFYING THE AUTO GAIN LEVEL.

Next to the "use auto gain" check box, there is a drop down menu that sets the target gain volume level. Use this to adjust the level of your auto gain.

To find the optimum setting, load a track with an average volume level onto one of the virtual decks. Now play the track, and note the volume and LED lights inside the software.

The idea is to have the track volume sit just under the clipping point (indicated by the LED meter red lining). If the track is too quiet, unload the track, then go to the setup screen and boost that auto gain db value more.

Once you've made that adjustment, load that same track onto the virtual deck again.

Notice that the volume knob has turned up and the volume is louder.

Keep making those adjustments on that particular track until its just below the clipping point. Once that is set you don't need to adjust the target gain level ever again.

Because the track you used had an average volume level, most of the other tracks in your library will be around the same volume. You may still need to turn up the separate track volume when you load a quieter track onto the deck and turn down the louder tracks but once you've made those adjustments Scratch LIVE will remember them the next time you load the file.

TIP: Slightly too quiet is always better than too loud. If your LED meter is in the red, it is likely that it is clipping. Not only does clipping not sound very nice, it can damage your equipment.

NOTE: Your overviews need to be built by version 1.7.2 or later for auto gain to work.

HI-FI RESAMPLER

This significantly reduces digital distortion at very slow or very fast record speeds, increasing the CPU load slightly. This option is off by default, the old resampler is used when switched off.

PLAY FROM START

Enable this to start all tracks from the beginning when loaded in rel and int modes. If this setting is not enabled, freshly loaded tracks will continue to play from the point the last track was at. This option is on by default.

INSTANT DOUBLES

This allows you to quickly match the playhead position of two tracks. With this option set, when you load a track on one virtual deck that is already loaded on the other virtual deck (it must be the same file), the playhead will jump to the position of the track that was loaded first, with the keylock state and looping settings copied. This setting overrides the play from start and play from first cue point options.

PLAY FROM FIRST CUE POINT

Enable this option to start all tracks from the first cue point when loaded in rel and int modes. This setting overrides the play from start option.

BRAKING (INT MODE)

This controls how fast the deck stops when play is stopped. Counterclockwise, the stop is immediate. Clockwise rotation increases the stop from a finger grab all the way to a slow turntable power-down.

AUDIO OUTPUT

By default the output of Scratch LIVE is stereo. You can also select mono output. This setting is saved when you exit Scratch LIVE.

VINYL CONTROL



REVERSE VINYL SCROLL

This setting allows you to reverse the direction of Vinyl Scroll. **SEE: PLAYBACK CONTROL (PAGE 10)**

ADJUST LOOPS WITH VINYL

Loop end points can be adjusted using the control vinyl. Disable this option if you wish to use the computer's arrow keys to adjust loops, and keep audio playback controlled by the vinyl. **SEE: LOOPING (PAGE 16)**

NEXT SONG ON FLIP

When this option is enabled, changing the side of control vinyl you're using ('flipping the record') loads the next song.

VINYL SCROLL SPEED

Vinyl Scroll allows you to load a new track without touching the computer, by lifting the needle and placing it in the special section of side A of the control record. This setting allows you to adjust the sensitivity of Vinyl Scroll, so that you can control the amount of record movement required to move between tracks.

DROP TO ABSOLUTE POSITION

This detects a deliberate repositioning of the needle, and moves the playhead to the absolute position of the needle, as if it were in absolute mode. Accidental skipping of the needle does not reposition the playhead. (rel mode only)

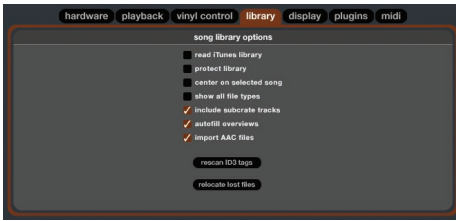
DROP TO CUE POINTS

This option triggers the corresponding cue point when the needle is repositioned into one of the first 5 one-minute sections on the control vinyl. For instance: needle dropping into the second minute on the left turntable, will send playback for deck 1 to cuepoint 2, if that cuepoint is set. (rel mode only)

TRACK START OFFSET

If you find that you have cue burn at the beginning of the record, you will notice that the tracking will be poor at this point. Use the two knobs to offset the start point, so that the track will start playing from a point further into the control record. The first knob sets the number of whole minutes to offset by, the second knob sets the number of whole rotations within that minute.

LIBRARY



READ ITUNES™ LIBRARY

Existing iTunes users will recognize many features from iTunes. Scratch LIVE can read the iTunes library format, and will automatically import the iTunes library and iTunes playlists. iTunes is available for Mac and PC, for more information about iTunes, visit www.apple.com. Click read iTunes library to activate.

NOTE: it may take some time to read your iTunes library if it contains a lot of tracks. If you edit the file information of tracks from your iTunes library, the changes will not appear in iTunes until after you play the track. Scratch LIVE cannot play files that have been protected by Digital Rights Management systems, such as those sold through the Apple iTunes Music Store.

PROTECT LIBRARY

Uncheck this setting to remove files and crates from your library. Enable to lock your library and prevent accidental file or crate deletion while using Scratch LIVE. Enabling this setting will also lock all file tags and crate names, so that no text can be changed.

CENTER ON SELECTED SONG

With this option on, scrolling up and down in your library holds the selected track in the middle of the library panel.

SHOW ALL FILE TYPES

Enable this option to show all files when importing tracks into Scratch LIVE. If this option is not selected, only files that Scratch LIVE can play will be displayed.

INCLUDE SUBCRATE TRACKS

You can drag crates into other crates to make subcrates. If you have the “include subcrate tracks” option turned on, any crate will also display the contents of all its subcrates.

SEE: ORGANIZING YOUR MUSIC (PAGE 18)

AUTO FILL OVERVIEWS

Enable this setting to automatically generate the track overview as soon as a track is loaded. If this setting is not enabled, the track overview will be generated as the track plays. Automatically generating the track overview uses more of the computer’s CPU power, and should be disabled on slower computers.

IMPORT AAC FILES

Turn this option off if you do not wish to import AAC files into your library. Changing this option will cause your iTunes library to be reloaded if you have the ‘read iTunes library’ option turned on.

RESCAN ID3 TAGS

Click this button to force Scratch LIVE to re-read all file tags. Use this function if you have edited or modified file tags outside of Scratch LIVE.

TIP: Rescanning the tags is a handy way to identify all the files that Scratch LIVE can’t find (for example if the files have been altered or moved). These tracks will show up red in the main track list, with an exclamation mark in the status column. You can sort by the status column to group all these tracks together.

RELOCATE LOST FILES

This feature is used to find music and folders on your computer that you have either moved or alerted.

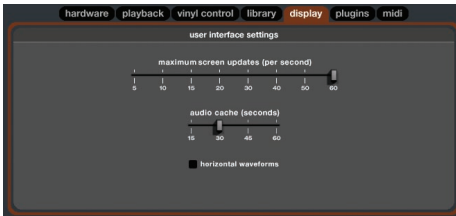
If Scratch LIVE cannot locate a file in your library, it will be displayed in pink and display “file not found” when you try to load it to a deck. Rather than re-importing the files, use this feature to relocate them.

To use relocate lost files:

1. Go to the setup menu and select the library tab. At the bottom of this menu is the relocate lost files button.
2. Clicking this button will search all your drives (internal and external) for files currently marked as not found in your library.
3. When this process is complete, your Scratch LIVE library will be updated with the new location of your files.

TIP: You can also drag folders or files from finder (mac) or explorer (windows) onto the relocate lost files button. This is useful if you know the location of files, and can be much faster than scanning all of your drive/s.

DISPLAY



MAXIMUM SCREEN UPDATES (PER SECOND)

This feature allows you to throttle back the screen refresh rate. Users with slower computers might like to do this if they are having performance issues. It could also be useful if you want to limit Scratch LIVE's processor usage, for example if you are running a recording program at the same time. The default setting is 60 Hz, or refreshed 60 times per second. This setting applies to the entire screen (i.e. the Virtual Decks, the Waveforms, the library, and the setup screen).

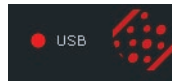
AUDIO CACHE (SECONDS)

Use the slider to set the amount of audio that is loaded into memory. A small audio cache will place less load on your computer, and the tracks will load faster. A large audio cache will give you a bigger view of the waveform when the main waveform view is zoomed out.

HORIZONTAL WAVEFORMS

Check this option to display the main waveform view horizontally. The waveform will expand to fill available screen space. If you are using a widescreen computer, increase the audio cache size to make the waveform bigger.

USB DROPOUT INDICATOR



The USB dropout indicator on the main screen is a useful trouble shooting tool if you have problems with audio dropouts. Such dropouts are caused by an interruption in passing the audio to the Scratch LIVE hardware interface. If such an interruption (or dropout) occurs, a red light will appear briefly, just to the left of the Scratch LIVE logo at the top of the screen. The light will be red for one second, and then orange for four seconds.

If you do experience USB drop outs:

- Increase the USB audio buffer size (in the setup screen).
- Try closing other applications that are running at the same time as Scratch LIVE.
- Try turning off background tasks, for example, wireless networking.

If your CPU load is very high, try decreasing the maximum screen updates (in the setup screen).

MIXING WITH ONE TURNTABLE

MIXING WITH ONE TURNTABLE OR CD PLAYER

This single turntable technique allows you to mix as if you had two turntables, using just one. If one of your turntables is not performing properly, or if you only have one available, you will be able to continue to mix the way you are used to.

The following is a step-by-step description of how to do perform a mix using only your right turntable or CDJ with the instant doubles feature.

MENU SETTINGS

Go to the setup menu, click on the playback tab. Make sure "instant doubles" is checked, and "lock playing deck" is unchecked.

1. Load a track onto the right deck in Scratch LIVE and play as usual.

2. Put the left hand deck into **int** mode.

3. Load the same song you have playing on the right deck onto the left deck. The track on the left will start playing from the same point and at the same pitch as the right deck

4. You can now quickly slide the cross fader over to the left deck.

5. Your right deck is now free to load up a new song ready to mix in.

6. Repeat!

SEE: INSTANT DOUBLES (PAGE 23)

TROUBLESHOOTING AND FREQUENTLY ASKED QUESTIONS

THE AUDIO PLAYBACK IS DROPPING OUT / CLICKING / POPPING

Scratch LIVE is not getting a clear signal from the record, or your computer is not able to process the information quickly enough. Go to the setup screen and check the scope views. When the record is playing, the circles should be round, and the value in the bottom right corner should be close to 100%. If this is not the case, you need to calibrate.

SEE: CALIBRATING SCRATCH LIVE (PAGE 8)

You should also try increasing the USB audio buffer size if your computer is close to the minimum spec.

Clean your needles! This is the most common cause of audio drop-out. Because you are playing the same record over and over, the needles will get dirty more quickly than usual.

THE THRESHOLD GOES TO THE FAR RIGHT WHEN I CLICK THE ESTIMATE BUTTON

Make sure the needle is on the record and the record is stopped when you click estimate. If the slider goes hard right and stays there, you most likely have an earthing problem with your turntables/mixer. If you cannot eliminate this problem, use rel mode over abs mode.

THE TRACKS ARE PLAYING BACKWARDS!

The inputs (from the turntables or CD players) are the wrong way around. Try swapping red and white wires at one end.

I CAN'T GET THE SCOPE VIEW TO SHOW NICE CLEAN CIRCLES

Select phono as the audio input level in the setup screen if you are using vinyl. Check your needles and make sure they are clean. If the circles look fuzzy, try cleaning your control record. If the Scope View shows a line instead of a circle, Scratch LIVE is only receiving a signal from one channel — check all your cables, and the connection between your cartridges and the tone arm. You can order replacement control records from your local distributor. You may also order these in the online store at www.rane.com if you are in the USA.

SCRATCH LIVE MAKES A STRANGE “DIGITAL” NOISE, EVEN WHEN NO TRACK IS PLAYING

Scratch LIVE is interpreting background noise as record movement. Go to the setup screen and move the threshold slider (located to the left side of the estimate button) to the right until the noise stops.

SEE: CALIBRATING SCRATCH LIVE (PAGE 8)

THE FIRST TIME I PLAY A NEW TRACK, IT TAKES A WHILE TO LOAD

Scratch LIVE has to read the entire file and create a file index (overview) the first time it is loaded. This may take a few seconds for longer files. After the first load, it should load instantly.

SEE: BUILD OVERVIEWS (PAGE 10)

I HAVE A PARTICULAR MP3 THAT WON'T PLAY / PLAYS BADLY / TAKES A LONG TIME TO LOAD / CRASHES THE PROGRAM. WHAT SHOULD I DO?

The file may be damaged. Please go to the forum at Scratchlive.net and notify the support team that you have a bad file. By reporting damaged or corrupt files, you will help the developers to improve Scratch LIVE's ability to play damaged MP3 files in the future.

SCRATCH LIVE FREAKS OUT WHEN I USE THE MASTER TEMPO (KEY CORRECTION) FUNCTION ON MY CD PLAYER

Scratch LIVE interprets the signal coming out of the CD player, and uses this information to control the play back of the files on your computer. Any audio processing performed on the signal before it reaches the hardware interface, such as key correction, will scramble the signal making it illegible to Scratch LIVE. Key correction is available in Scratch LIVE software.

SEE: KEY LOCK (PAGE 19)

I GET A LOUD SCREECHING SOUND LIKE A FAX MACHINE AND NO MUSIC, WHAT AM I DOING WRONG?

That is the sound of the control signal — make sure you are listening to the line outputs of the hardware interface.

CAN I USE ONE TURNTABLE AND ONE CD PLAYER?

Yes. You need a phono pre-amp (as in a DJ mixer) to boost the signal from the turntable to line level, and you need to set the input to line in the setup screen.

WHEN I DO TRANSFORM SCRATCHES (SWITCHING BETWEEN PHONO AND LINE LEVEL INPUTS) I HEAR A CRAZY NOISE; WHAT'S HAPPENING?

When you switch to phono level, you will hear the sound of the control vinyl. If you want to use the transform switches to scratch, use separate channels on your mixer if you have more than four channels, or disconnect the phono thrus if you have a two channel mixer.

I WANT TO BACKUP MY LIBRARY AND CRATES OR MOVE THEM TO ANOTHER MACHINE, SO WHERE ARE THEY STORED?

Your database and crates are stored in the folder Home\Music\ScratchLIVE on a Mac, and My Documents\My Music\ScratchLIVE on a PC. If your library contains tracks that are stored on a drive other than your boot drive, a folder called _ScratchLIVE_ will be created in the root of that drive, and a separate database will be made in this folder. If it is a removable drive, the tracks will only appear in your library when the drive is connected. Visit Scratchlive.net for detailed instructions on how to move and backup your library.

WHAT NEEDLES ARE BEST FOR USE WITH SCRATCH LIVE?

We recommend Shure M44-7 needles for use with Scratch LIVE, due to their high output volume, excellent tracking and low record wear.

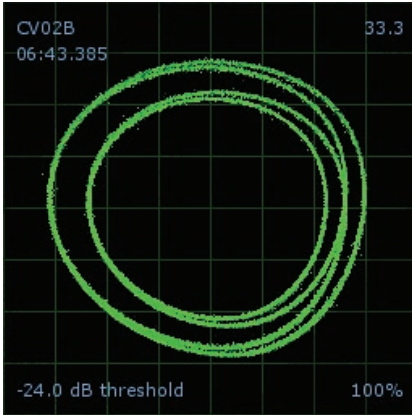
I HAVE CUE BURN AT THE BEGINNING OF MY CONTROL RECORD, DOES THAT MEAN I NEED TO REPLACE IT?

No, use the track start offset function (in the setup screen) to move the point at which tracks begin to a position further into the vinyl.

NOTE: To keep up with the latest tips, visit the **Official Scratch LIVE Forum** online at Scratchlive.net

SCOPE READING AND FIXES

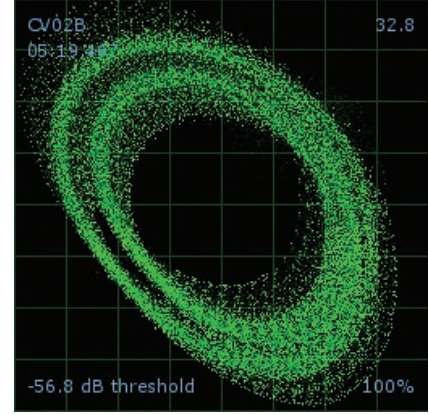
Most of the problems that occur with Scratch LIVE can be attributed to it not getting a good reading of the control signal from your records or CDs. These examples show what the scopes on the setup screen can look like to help solve possible problems. Some problems cause similar looking scopes, e.g. if your scopes look like the Dusty Needle one, the cause could be a damaged needle.



GOOD SIGNAL - Clean signal with 100% tracking.



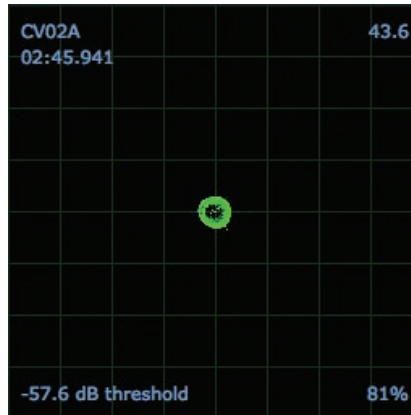
NO SIGNAL - Scratch LIVE is not receiving any control signal - check your connections.



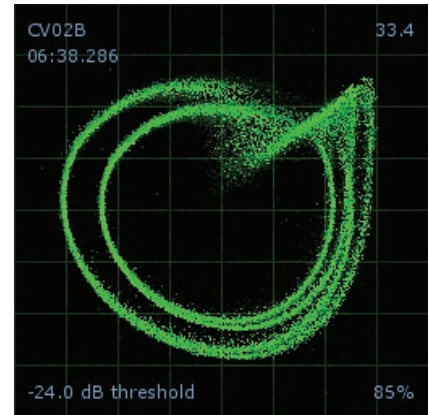
BAD TURNTABLE VIBRATION - Bass is reaching the stylus. Try to isolate the turntable from the speakers.



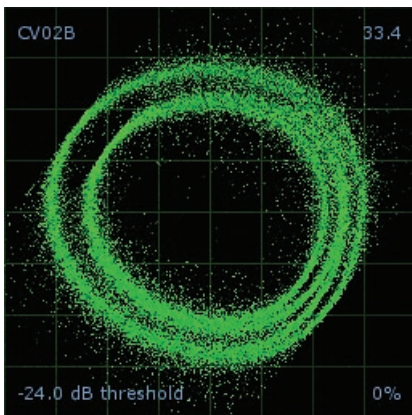
CD PLAYER INTO PHONO INPUT - Scratch LIVE is set to receive phono level input. Set to the correct value in the setup menu.



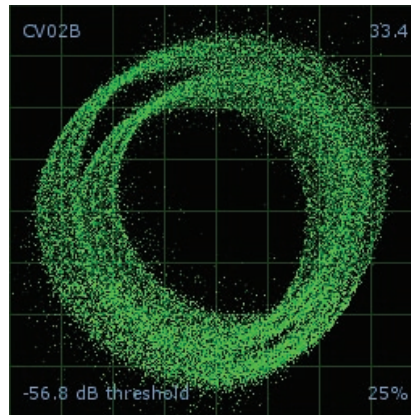
PHONO INTO LINE INPUT - Scratch LIVE is set to receive line level input. Set to the correct value in the setup menu.



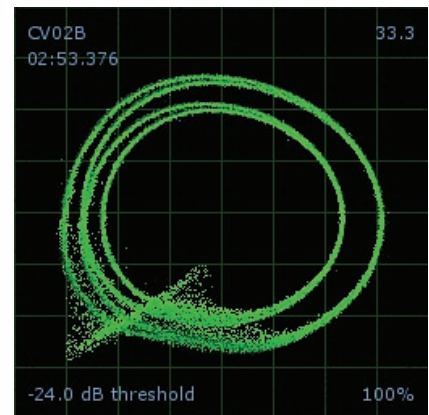
DUSTY NEEDLE - Dust is preventing the stylus from tracking the groove correctly. Clean your needle and the control vinyl.



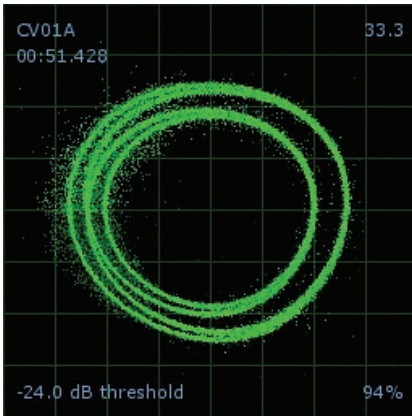
UNEARTHED - Very susceptible to interference. Attach the turntable's ground wire.



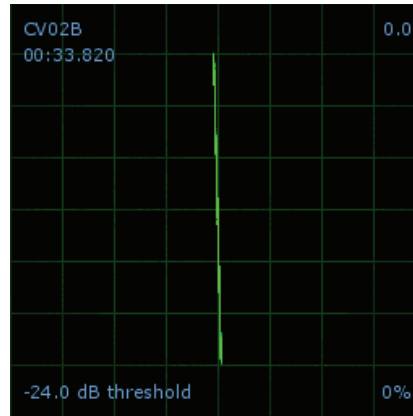
USING PIGGYBACK CABLES - Picking up huge amounts of noise, barely tracking. Connect your turntables directly to the hardware.



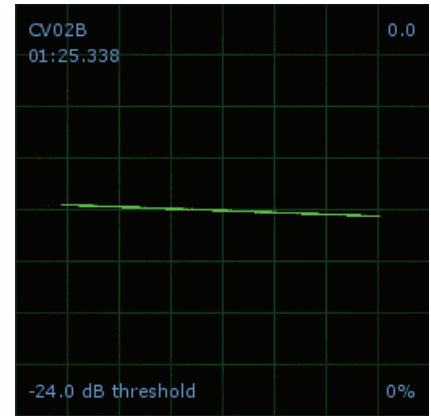
DAMAGED NEEDLE - Try re-seating, cleaning or replacing your stylus.



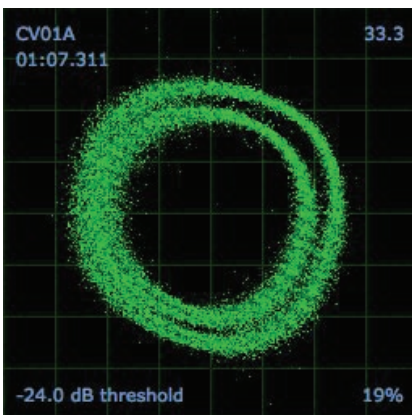
RECORD BURN - This section of the control vinyl has been worn. Swap sides or use the track start offset.



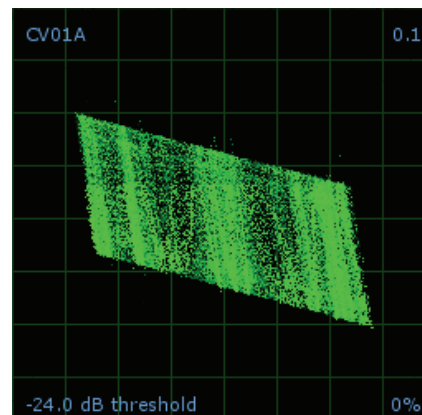
LEFT CHANNEL MISSING - The signal from the needle is not reaching the SL 1. Check the cable and cartridge connections.



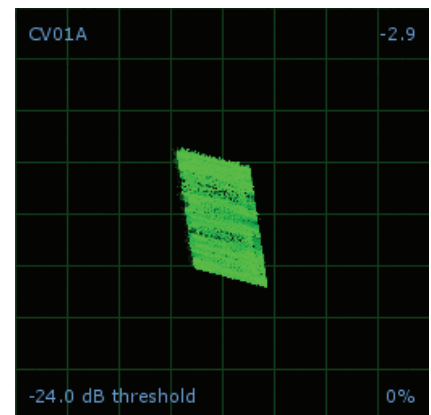
RIGHT CHANNEL MISSING - The signal from the needle is not reaching the SL 1. Check the cable and cartridge connections.



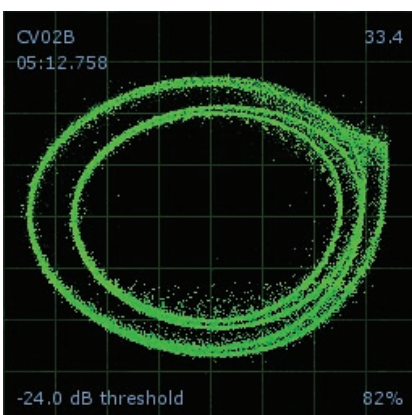
BAD RECORD BURN - Your record is very badly worn and Scratch LIVE is unable to track correctly. Swap sides or get new vinyl ASAP.



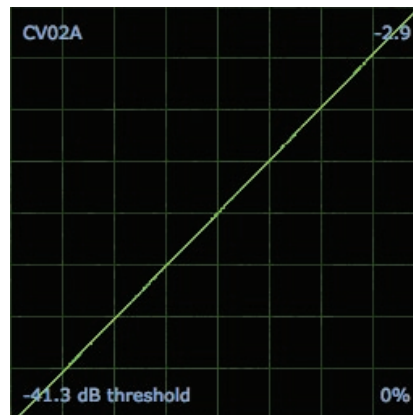
LEFT CHANNEL IS NOISE - Left signal has been lost with a noisy loose connection.



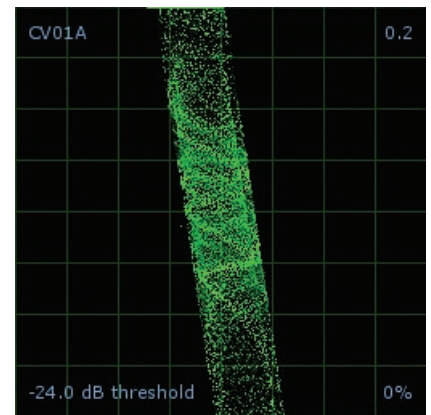
RIGHT CHANNEL IS NOISE - Right signal has been lost with a noisy loose connection.



ONEARM IS SLIGHTLY TOO LIGHT - Susceptible to dust and vibration. Adjust the tonearm.



SIGNALS ARE SUMMING TO MONO - The left and right signals have been combined into one somewhere in your signal chain.



RIGHT CHANNEL IS INTERFERENCE - Right signal has been lost with a noisy loose connection and left channel crosstalk.

CORRUPT FILE DESCRIPTIONS AND DIAGNOSES

Corrupt file: This MP3 contains invalid frames.	This MP3 contains frames which do not conform strictly to the official MP3 specification. Scratch LIVE can not be certain that this file will play back 100% accurately.
Corrupt file: This file contains corrupt frames that may result in audible glitches.	This file contains two or more contiguous corrupt frames. Since corrupt frames are replaced with silence, this could result in what might sound like an audio glitch.
Corrupt file: This file has been split. You should check the beginning for audio glitches.	The first MPEG audio frame in this file refers to audio that should be present before it but is not. This is usually the result of incorrect MP3 editing. Since a corrupt frame is replaced with silence and most songs start with silence, the resulting silence might not be noticeable. All the same, listen to the beginning of the song, just to be sure.
Corrupt file: This MP3 contains frames with corrupt data.	Decoding of an MPEG audio frame failed. This means that the frame contained invalid data. As usual with corrupt frames, this frame will be played as silence.
Corrupt file: This MP3 lost synchronization between the frame index and the frames.	Scratch LIVE is reading an old overview of an MP3 that has been edited in a 3rd party editing program. Re-building the overviews for the affected files usually corrects this error.
Corrupt file: This MP3 is completely invalid and is not playable.	Self explanatory. Possible causes are disk bad sectors, file system corruption, wrong file types, wrong file extensions, etc
Corrupt file: This file contains invalid audio data.	Scratch LIVE encountered a lot of invalid data while looking for audio in this file. This message alerts you to the fact that the file you're trying to play contains corrupt data. This may, or may not, affect playback.
Corrupt file: This MP3 contains no valid frames.	No audio could be found in this file, which means it is completely unplayable as far as Scratch LIVE is concerned. Please make sure this really is an audio file.
Unsupported file: This MP3 contains multiple layers.	While scanning this file, Scratch LIVE found frames belonging to multiple MPEG layers. Scratch LIVE does not support MP3s that contain frames from multiple layers – some frames may be output as silence.
Unsupported file : This file is more than 2GB in size.	Self explanatory. At the moment, Scratch LIVE does not support files that are 2GB in size (or larger).
Unsupported file : This file has data blocks greater than 2GB in size.	This file contains chunks of data that are larger than 2GB. Scratch LIVE does not support files that are more than 2GB in size.
Corrupt file: This WAV contains no valid chunks.	This WAV file contains no recognizable WAV data. It is quite possible that this might not be a WAV file.
Unsupported file: This file's data is not in PCM format.	WAV files can contain data in several formats. Scratch LIVE only supports WAV files that contain data in the PCM format.
Unsupported file: This file has a sampling rate greater than 48kHz.	Scratch LIVE does not support sampling rates greater than 48 kHz. If you see this message, the simplest approach is to re-sample the audio at 48 kHz and re-save the file.
Unsupported file: This file uses more than 24 bits per sample	Scratch LIVE supports a maximum of 24 bits per sample of audio data.
Corrupt file: This WAV is incomplete.	Scratch LIVE expected more data in the file, but found none. This could be because the file was incorrectly truncated or because the data in the file is corrupt, causing Scratch LIVE to incorrectly estimate the amount of data present in the file.
Corrupt file: This file contains corrupt blocks.	This file contains blocks of data that report their size to be zero. This message was inserted to identify files that might cause lockups on previous versions of Scratch LIVE.
Corrupt file: This song contains no audio data.	Scratch LIVE could not find any audio in this file. Please check to make sure this file contains audio in a format that Scratch LIVE supports.
Corrupt file: This song contains invalid samples.	This file contains samples of audio that are too small to represent accurately and will therefore be truncated to zero. This should not result in any audible audio artifacts, but could cause audio dropouts on earlier versions of Scratch LIVE.

SL 1 SPECIFICATIONS

SL1 SPECIFICATIONS		(all specs typical)
USB Power	300mA, 5.0 Volts	
Optional External Power Pack	300mA, 9.0 Volts	
CODEC	16-bit / 44.1 kHz sample rate	
Line Output	Unbalanced RCA	
.....THD+N	-88 dB (1 kHz, 0 dBu, 20 kHz BW)	
.....Maximum Output	+5 dBu, +3 dBV	
.....Dynamic Range	94 dB A-weighted	
Input to Thru	Unbalanced RCA	
.....Gain	Unity	
.....Maximum Input / Output	2 Vrms	
.....Dynamic Range	110 dB A-weighted	
Phono Input	Unbalanced RCA	
.....Maximum Input	35 mVrms	
Line Input	Unbalanced RCA	
.....Maximum Input	2 Vrms	
Mic Input to ADC	Unbalanced ¼" Tip-Sleeve	
.....Maximum / Minimum Gain	49 dB / 9 dB	
.....Maximum Input	150 mVrms	
Mic Thru	Unbalanced ¼" Tip-Sleeve	
.....Gain	+6 dB	
.....Maximum Output	300 mVrms	
.....Noise	3.5 uVrms A-weighted	