

Repeater

Loop Based Digital Recorder



English

ELECTRIXTM



CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN



ATTENTION: RISQUE DE CHOC ELECTRIQUE - NE PAS OUVRIR

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE



THE LIGHTNING FLASH WITH ARROWHEAD SYMBOL, WITHIN AN EQUILATERAL TRIANGLE, IS INTENDED TO ALERT THE USER TO THE PRESENCE OF UNINSULATED "DANGEROUS VOLTAGE" WITHIN THE PRODUCT'S ENCLOSURE THAT MAY BE OF SUFFICIENT MAGNITUDE TO CONSTITUTE A RISK OF ELECTRIC SHOCK TO PERSONS.



THE EXCLAMATION POINT WITHIN AN EQUILATERAL TRIANGLE IS INTENDED TO ALERT THE USER TO THE PRESENCE OF IMPORTANT OPERATING AND MAINTENANCE (SERVICING) INSTRUCTIONS IN THE LITERATURE ACCOMPANYING THE PRODUCT.

INSTRUCTIONS PERTAINING TO A RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS

**IMPORTANT SAFETY INSTRUCTIONS:
READ AND SAVE THESE INSTRUCTIONS**

WARNING -- WHEN USING ELECTRICAL PRODUCTS, BASIC PRECAUTIONS SHOULD ALWAYS BE TAKEN, INCLUDING THE FOLLOWING:

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. READ ALL THE INSTRUCTIONS BEFORE USING THE PRODUCT. 2. DO NOT USE THIS PRODUCT NEAR WATER - FOR EXAMPLE NEAR A BATHTUB, WASHBOWL, KITCHEN SINK, IN A WET BASEMENT, OR NEAR A SWIMMING POOL. 3. THIS PRODUCT, EITHER ALONE OR IN COMBINATION WITH AN AMPLIFIER AND HEADPHONES OR SPEAKERS, MAY BE CAPABLE OF PRODUCING SOUND LEVELS THAT COULD CAUSE PERMANENT HEARING LOSS. DO NOT OPERATE FOR LONG PERIOD OF TIME AT HIGH VOLUME OR AT AN UNCOMFORTABLE LEVEL. IF YOU EXPERIENCE ANY HEARING LOSS OR RINGING IN THE EARS, CONSULT AN AUDIOLOGIST. 4. THIS PRODUCT SHOULD BE LOCATED WITH SUFFICIENT AIR SPACE FOR PROPER VENTILATION. 5. THE PRODUCT SHOULD BE LOCATED AWAY FROM HEAT SOURCES SUCH AS RADIATORS, HEAT REGISTERS, OR OTHER HEAT PRODUCING PRODUCTS. 6. CLEAN ONLY WITH A DRY CLOTH. BEFORE CLEANING THE UNIT, TURN OFF THE POWER AND UNPLUG THE POWER CORD FROM THE OUTLET. 7. THE POWER SUPPLY CORD OF THE PRODUCT SHOULD BE UNPLUGGED FROM THE WALL OUTLET DURING LIGHTNING STORMS OR WHEN LEFT UNUSED FOR A LONG PERIODS OF TIME. 8. DO NOT DEFEAT THE SAFETY PURPOSE OF THE POLARIZED OR GROUNDING-TYPE PLUG. A POLARIZED PLUG HAS TWO BLADES WITH | <ol style="list-style-type: none"> ONE WIDER THAN THE OTHER. A GROUNDING TYPE PLUG HAS TWO BLADES AND A THIRD GROUNDING PRONG. THE WIDE BLADE OR THE THIRD PRONG ARE PROVIDED FOR YOUR SAFETY. IF THE PROVIDED PLUG DOES NOT FIT INTO YOUR OUTLET, CONSULT AN ELECTRICIAN FOR REPLACEMENT OF THE OBSOLETE OUTLET. 9. PROTECT THE POWER CORD FROM BEING WALKED ON OR PINCHED PARTICULARLY AT PLUGS, CONVENIENCE RECEPTACLES, AND THE POINT WHERE THEY EXIT FROM THE APPLIANCE. 10. USE ONLY WITH ATTACHMENTS/ACCESSORIES SPECIFIED BY THE MANUFACTURER. 11. THE PRODUCT SHOULD BE SERVICED BY QUALIFIED SERVICE PERSONNEL WHEN: <ol style="list-style-type: none"> A. THE POWER SUPPLY CORD OR THE PLUG HAS BEEN DAMAGED; OR B. OBJECTS HAVE FALLEN, OR LIQUIDS HAS BEEN SPILLED INTO THE PRODUCT; OR C. THE PRODUCT HAS BEEN EXPOSED TO RAIN; OR D. THE PRODUCT DOES NOT APPEAR TO BE OPERATE NORMALLY OR EXHIBITS A MARKED CHANGE IN PERFORMANCE; OR E. THE PRODUCT HAS BEEN DROPPED, OR THE ENCLOSURE DAMAGED. 12. DO NOT ATTEMPT TO SERVICE THE PRODUCT BEYOND WHAT HAS BEEN DESCRIBED IN THE USER MAINTENANCE INSTRUCTIONS. ALL OTHER SERVICING SHOULD BE REFERRED TO QUALIFIED SERVICE PERSONNEL. |
|--|---|

This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment on and off, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult a qualified dealer or an experienced radio / TV technician for help.

The user may find the following booklet, prepared by the Federal Communications Commission, helpful: "How to identify and Resolve Radio/TV interference Problems." This booklet is available from the US Government Printing Office, Washington, DC 20402, USA. Stock No. 004-000-0034-4.

Caution:
You are cautioned that any change or modifications not expressly approved in this manual could void your warranty.

For the customers in Canada:
This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil Numerique de la Classe B respecte toutes les exigences du Reglement sur le materiel brouilleur du Canada.

Certificate of Conformity
Electrix, a div. of IVL Technologies Ltd., hereby declares on their own responsibility that the following product:
Electrix Repeater is covered by this certificate and marked CE-label conforms with the following standards:

- EN 60065: Safety requirements for mains operated Electronic and related apparatus for household and similar general use
- UL6500-99 Audio/Video and Musical Instrument Apparatus for Household, Commercial and Similar General Use.
- EN 55103-1: Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use. Part 1: Emission
- EN 55103-2: Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use. Part 2: Immunity

With reference to regulations in following directives:
72/23/EEC, 89/336/EEC as amended by directive 93/68/EEC
Issued in Victoria, February 15, 2000 by Brian Gibson, Executive Vice-President, Research and Development

For the UK

**IMPORTANT: THE WIRES IN THIS MAINS LEAD ARE COLOURED IN ACCORDANCE WITH THE FOLLOWING CODE: BLUE: NEUTRAL
BROWN: LIVE**

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals on your plug, proceed as follows: **The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or coloured BLACK
The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured RED.**

Under no circumstances may either of the above wires be connected to the earth terminal of the three pin plug

BEFORE YOU BEGIN

INVENTORY INSPECTION:

The uniquely styled Electrix carton should contain...

- o **Electrix Repeater**
- o **Warranty Card**
- o **Repeater User Manual**
- o **International Switching Power Supply** (with a power cord appropriate for your region)
- o **Rackmount Screws** (in a small envelope)

Note: If any of the above are missing, please inform your local Electrix distributor, agent or dealer immediately.

WELCOME TO ELECTRIX!

We would like to thank you for purchasing Repeater, possibly the first "intelligent" loop based recorder to reach planet earth. Repeater's powerful custom software and intuitive design will make sampling and looping an integral part of your live and studio music production.

Repeater, like its other Electrix siblings, represents an entirely new concept in musical electronics, unique in both its 'hands on' ease of use and 'future-retro' design.

This manual describes the behaviour of Repeater running OS1.10. Further upgrades of system firmware may be made available from time to time.

ELECTRIX DOES LOOP BASED RECORDING?

First we shook up FX processing (with our popular Filter and Warp Factories, MoFX, and the MOD's), now we're challenging the contemporary notion of linear recording. Why? Because we realized that many of our Electrix friends are producing music in loops and phrases. So we put our heads together to come up with an intuitive way to record and manipulate loops in music composition. Whatever the genre you like to work in, Repeater will benefit your creative process by allowing you to quickly sketch and manipulate musical phrases and parts.

THE FEEDBACK LOOP

Repeater was designed for creative people, and as a tool to spark the creative process. Along those lines, we would like to hear what you can do with Repeater and other Electrix gear. If you're so inclined, please send your original ideas on CD, MD, MP3, vinyl or cassette to us at the address on the back page of this manual. You just may become a legend of our lunchroom!

Want to find out more about other Electrix products?

Check out our Web site at: <http://www.electrixpro.com>

Again, thanks for purchasing Repeater.

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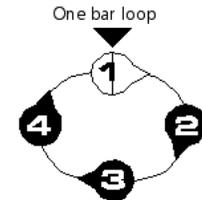
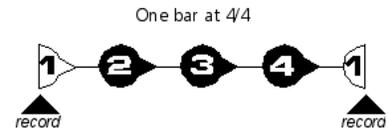
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OVERVIEW

Throughout this book we'll be discussing many terms and ideas. Two of these terms are important to understand at the get go. Don't worry, there won't be any tests! So here you go...

TERM #1: LOOPS

When we talk about loops, we're simply making reference to a repeating musical figure. Looping is unique in the way it allows you to record and arrange your music. When Repeater hits the end of the loop it will immediately start playing again from the beginning.



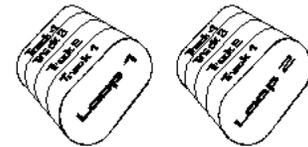
How your recording becomes a loop

LoopBasics

- Repeater can store up to 999 Loops per CFC card.
- Repeater can store an additional 16 loops in its internal memory.
- Only one Loop can play at a time.
- Each Loop is comprised of 4 mono Tracks (or 2 stereo).
- Tracks levels can be independently controlled
- You can cued up another Loop to play immediately after the current Loop.

TERM # 2: TRACKS

A track is a unique place to record audio within a loop. Tracks on Repeater are much like tracks on any hard disk or tape based recorder. Each track has level, pan, pitch shift and time slip controls.



Each loop has 4 tracks

WHY LOOP BASED RECORDING

Regardless of the genre of music or ability of the musician, recording with loops can be an efficient way to establish the feel of a song. Loops can also benefit the arranging process, allowing the composer to focus on a single section of a song, shaping and refining until that phrase feels just right. Loop based recording makes for a great musical scratch pad, allowing you to quickly sketch out a tune. It is also an indispensable tool for creating grooves and textures both live and in the studio.

Loop based recording essentially gives all musicians access to the same arranging power that a MIDI sequencer gives a keyboard player. But now you can use live drums, real bass, layered guitars and vocals to shape your masterpiece.

For the music producer, loop-based recording allows you to quickly build up a unique groove. Refine a 2-bar progression or work an 8-bar verse until it sits just right. Overdub parts and licks until you've created the perfect supporting bed.

Loop based recording benefits the live player too. Imagine harnessing the power of a multitrack recorder for live spontaneous use. Layer harmonies, add percussion, drop in licks, and paint ambiences. Before you or your audience knows it, you've become a one man band.

OVERVIEW

KEY FEATURES OF REPEATER

Time Stretching gives Repeater the unique ability to change tempo without affecting the pitch of the loop.

Pitch Shifting lets you change the pitch or key of each track independently. Repeater uses instrumental pitch shifting that is specially engineered for music.

Loop Point Assist™ (LPA) is an automatic loop trimming feature. It automates the tedious "pre-production" process of manually trimming a loop to match a given BPM. LPA works in real time. The moment Repeater leaves record, it will begin playing the automatically trimmed loop. You can over-ride LPA with the loop trim function. Learn more about this in LOOP EDITING.

Compact Flash Cards (CFC) are Repeater's main storage mechanism. They supplement Repeater's internal 8MB of memory with up to 512MB of additional storage space. Loops on the CFC are in .WAV file format. With the addition of an inexpensive CFC USB card reader, you can export loops and tracks from Repeater to your PC without any special software.

MIDI Clock makes syncing Repeater up to your sequencer or drum machine easy. When you adjust your tempo, Repeater will time stretch the loop to match the tempo without affecting the key. How cool is that?

Beat Detection keeps Repeater in sync with incoming audio like a live drummer or a vinyl source. (Okay, this one may be even cooler than the MIDI sync above.)

The **FX Insert** allows external effects to be applied to individual tracks, the input of Repeater, or the entire output. Alternatively you can use the FX insert to achieve independent track outputs.

Reverse Play is a fun way to realize reverse solos and ambient textures.

These are just a taste of some of the great features in Repeater. So call your friends and tell them how smart you are for buying Repeater, then sit down and learn how to use it. Trust us, it's quite easy...

ALL THINGS RELATED TO POWER

Repeater comes with an external switching power supply. It will work with line voltages from just about anywhere around the world without any modification. If you should happen to lose your Power Supply, get in touch with Electrix and ask for a TFR0035. The Electrix TFR0035 is the only Power Supply that will work with Repeater.

Repeater's power supply features a locking connector. To insert the connector:

- Pull back the housing
- Insert the connector
- Release the housing

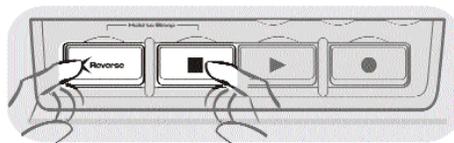


Pull back the housing to insert

SLEEP MODE

Repeater does not have a power switch. It does, however, have an energy saving sleep mode. To enter sleep mode:

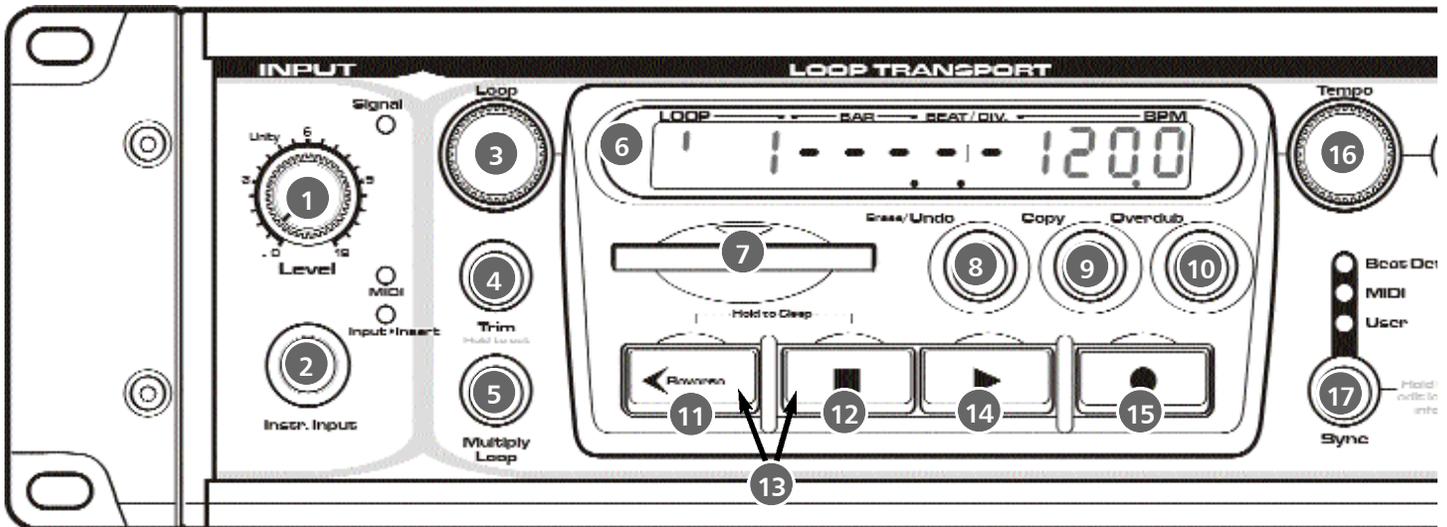
- Press **Reverse** and **Stop** at the same time and hold for 3 seconds
- You will not lose any of the data stored in internal or external memory.



Sleep Mode

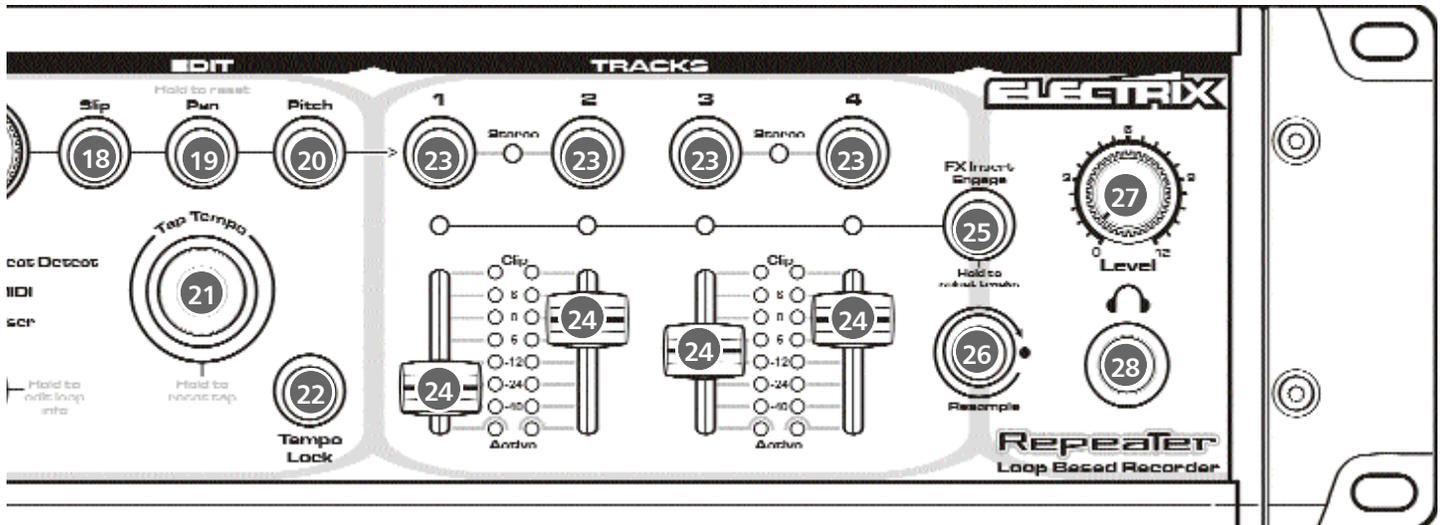
TO WAKE REPEATER PRESS ANY BUTTON

FRONT PANEL



- 1 **Input Level** - controls the input level to Repeater. Set this control so that the input level indicator is Orange most of the time, and rarely clips (goes red).
- 2 **Instrument Input** - a high-impedance input optimized for instrument level sources. When a cable is plugged into this input, the rear inputs are disabled.
- 3 **Loop** - selects the current loop.
- 4 **Trim** - allows the length of a loop to be modified either by bar or in 1/100ths of a second. This is useful for trimming an 8-bar loop down to 4 or for overriding the LPA™ function to manually trim the loop. See LOOP EDITING for details.
- 5 **Multiply Loop** - lets you multiply out your loop. With Multiply Loop, you can overdub an eight bar progression over a 1 bar drum loop. See LOOP EDITING for details.
- 6 **Repeater's Display** indicates the status of four crucial parameters:
 - Loop** - shows the current loop number (internal memory loops have a little ' in front of the number)
 - Bar** - when stopped, the bar display shows the loop length (in bars). During an initial record it shows estimated beats. While playing or overdubbing this display shows the current bar.
 - Beat/Div** - shows the time signature of the current loop while stopped, and counts beats while in Play or Record.
 - BPM** - indicates the current tempo (Beats Per Minute)
- 7 **Compact Flash Card Slot** - insert a Type 1 CFC here. The CFC is slotted so that the card can only be plugged in right side up. Check our website for CFCs that will work. On the first insertion, Repeater will format the CFC for you. See FILE MANAGEMENT for more information.
- 8 **UNDO/ Erase** - a single press will UNDO the last operation or overdub. Pressing and holding will put you in the ERASE mode, where tracks or the entire loop can be selected for erasing.
- 9 **Copy** - makes a duplicate of the current loop in any available loop location. Copy can be used to make multiple revisions on a single bed, or to copy material stored internally to the CFC. Press and hold COPY to see remaining record time.
- 10 **Overdub** - sets Repeater's record mode. When the Overdub indicator is lit, the recording will be mixed together with any existing material on a given track. Alternatively Replace mode is available to replace the content of the selected track when recording is engaged. Replace mode is active when the Overdub indicator is off. See RECORDING LOOPS for details.
- 11 **Reverse** - reverses the direction for both Recording and Playback. See RECORDING LOOPS for details.
- 12 **Stop** - stops playback or record operations.
- 13 **Sleep Mode** - press **Reverse** and **Stop** at the same time and hold for 3 seconds to enter the energy saving sleep mode. You will not lose any of the data stored in internal or external memory. To revive press any button.

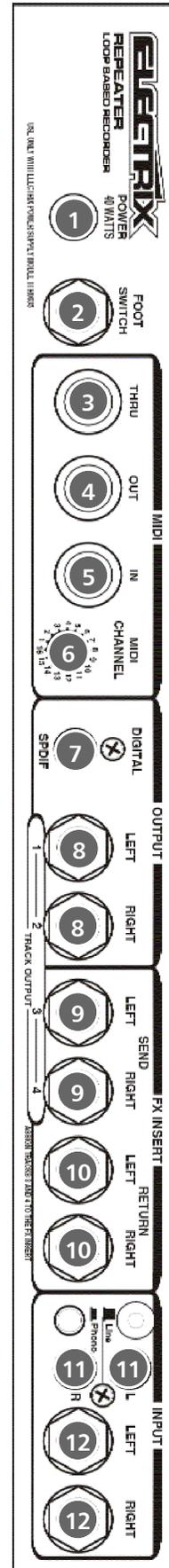
FRONT PANEL



- 14 Play** - Play immediately starts the loop at the beginning. To achieve a stuttering effect, press and hold **Stop** then rhythmically press **Play** to trigger the loop. You can restart the loop even while it is playing by pressing **Play**.
- 15 Record** - press **Record** to enter and leave recording. Pressing **Record** on Repeater also engages **Play** for you. With an empty loop, pressing **Record** also defines the downbeat. Recording can be undone with the UNDO feature.
- 16 Tempo** - can adjust the tempo of the loop in real-time. The range of the tempo control may be limited by the speed of the storage device. Repeater's has a tempo range of 1 BPM up to 150% of the recorded tempo. See LOOP EDITING for details. This control is also used for Slip, Pan and Pitch edits.
- 17 Sync** - selects the clock master. In beat detection mode Repeater tracks the tempo of the incoming audio and acts as a master clock with MIDI. In MIDI mode, Repeater slaves to incoming MIDI clock. In User mode, Repeater will clock to the tempo set with the **Tempo** knob or the **Tap Tempo** Function. See LOOP SYNC for details.
- 18 Slip** - offsets the start point of a given track or combination of selected tracks with the tempo knob. See LOOP EDITING for details. Twist the **Tempo** encoder quickly for larger steps and slowly for divisions of each beat.
- 19 Pan** - selected tracks are panned with the **Tempo** knob.
- 20 Pitch** - selected tracks are pitch shifted within a range of -2 octaves through +1 octave. Twist the **Tempo** encoder quickly for large steps and slowly for cents.
- 21 Tap Tempo** - in User Sync mode, the **Tap Tempo** is used to establish the tempo of the current loop. In Beat Detection mode, the **Tap Tempo** button can be used to help the software find the beat of the incoming audio by tapping along with the beat.
- 22 Tempo Lock** - In beat detect mode, activation of the tempo lock feature locks the unit tempo to the currently detected beat, allowing only minor variations for tracking. In user mode, activation of tempo lock forces all newly loaded loops to run at the current user tempo.
- 23 Track Select Buttons** - operations such as record, re-sample, pan, pitch, slip, and FX insert all use the **Track Select** buttons to determine which tracks an operation is carried out on. You can select any or all tracks for editing.
- 24 Track Levels** - these control the levels of each track to the main outputs.
- 25 FX Insert** - assigns the FX loop to the input, an individual track, or any combination of tracks. The FX loop is post fader and pan. See RECORDING LOOPS for details.
- 26 Re-sample** - records the selected tracks and the FX inserts to an individual track or a stereo pair of tracks. See GETTING STARTED for details.
- 27 Headphone Output & Level** - a headphone output and volume control makes Repeater a stand-alone recording device. Especially suitable for that 3:00 A.M. inspiration that can't wait 'til morning.
- 28**

REAR PANEL

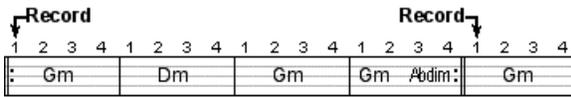
- 1 **Power Input** - accepts only the Repeater power supply. Pull back the connector housing to insert the jack into Repeater.
- 2 **Footswitch** - plug in a Digitech FS-300 three button footswitch here. Undo, Play/Stop, and Record are supported with the footswitch. A single momentary footswitch will control the Record function. Please connect the footswitch before powering up Repeater.
- 3 **MIDI Thru** - sends a perfect copy of the MIDI information received at the MIDI in.
- 4 **MIDI Out** - transmits the best of the front panel commands to facilitate the use of multiple Repeaters in loop based recording setups and live rigs.
- 5 **MIDI In** - full support for MIDI control change, program change and MIDI clock messages to control all front panel functions.
- 6 **MIDI Channel Select** - selects the receiving/transmitting MIDI channel.
- 7 **Digital Output** - 44.1kHz, 16 bit S/PDIF Coaxial 75 main output for those who know better than to use the analog inputs on their Sound Blasters.
- 8 **Main Outputs** - stereo mix outputs.
- 9 **FX Send** - a post fader, post pan FX send activated by the front panel control. Connect this to the input of an Electrix MOFX or Filter Factory for some serious FX mayhem. The FX send also serves as multiple outputs. Just assign Tracks 3 & 4 to the FX sends and pan them hard left and right. Tracks 1 & 2 will be on the main outputs while 3 & 4 come out the FX sends. See ADDING EXTERNAL FX for details.
- 10 **FX Return** - Connect the outputs of your FX device here. The FX return is mixed in with the other tracks on the main bus that is sent to the main and digital outputs. See page 12 for details.
- 11 **Main Inputs** - Stereo unbalanced 1/4" inputs. (Don't forget the mono instrument input of the front as well...)
- 12 **RCA & Phono Pre inputs** - the RCA's and the phono pre afford quick and easy setup with CD players and turntables.



GETTING STARTED

RECORDING BASICS

Loop recording works a little differently than conventional recording. Capturing a good loop is all about being in touch with the rhythm of your musical figure.



A typical 4 bar loop

- Start by playing your groove to get a feel for the tempo.
- Press **Record** right on the downbeat of the first bar of the loop to start recording.
- Assuming a four bar loop, press **Record** again on the downbeat of bar five to end recording (bar five is essentially the first bar repeated).

Now you've captured a complete 4 bar loop that will play back perfectly every time.

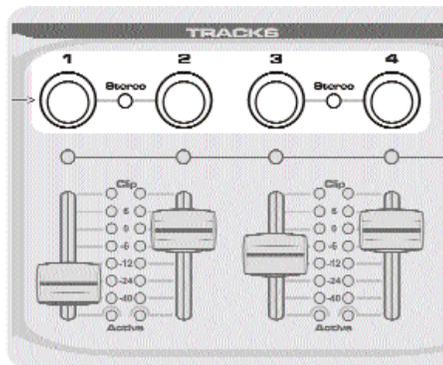
Sound Design Considerations

Repeater is a great sound design tool for music production. By using Repeater's exceptional time stretching algorithms you can combine and synchronize loops of different tempos together into one new loop (see sidebar). By utilizing Repeater's FX loop you can add an external Filter or effects unit to shape the sound of each track. Once you're satisfied you can re-sample the loop and export it to your PC via the CFC or Digital output.

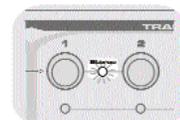
Recording a Loop

Set your levels so that the **Signal** bi-color LED goes red every once in a while. Keeping it in the yellow will assure great levels and no harsh digital clipping.

- Select a track or a pair of tracks to record to by pressing the **Track Select** buttons (above the **Track Level** faders.)
- Set the **Track Level**(s) to the top which is unity.
- Press **Record** to start recording. The next time you press **Record** or **Play**, the recording will finish, and the loop will immediately start playing back.
- Selecting a pair of tracks simultaneously sets Repeater to record in stereo. The **Stereo** LED will go on to indicate that the pair of tracks have been linked for stereo.



Track Select Buttons



Press both tracks to create a stereo pair

Recording and Combining Loops at Different Tempos

Say you've got a drum loop at 100 BPM and you want to add a shaker loop to a new track but its tempo is 94 BPM. With Repeater you can record samples that were different tempos and synchronize them into the same loop, here's how:

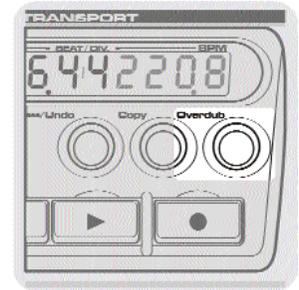
- First load the drum loop just like we've been teaching you.
- Now select **BEAT DETECT SYNC**.
- Play your new sample at the new tempo.
- Wait for Repeater to get a lock on the tempo
- You will now hear that the two samples are synchronized.
- press **Record** on the downbeat and press **Record** again to stop the recording.
- Now switch back to **USER SYNC** and set the tempo back to 100 BPM.

Note. If you are recording in stereo on your initial pass, Repeater automatically pans the tracks hard Left and hard Right.

GETTING STARTED

OVERDUBBING ADDITIONAL PARTS

Now that you've got your first loop down, you can continue to overdub onto the existing track. If you want this new part to be quieter, try adjusting the **Input Level** or the volume of your instrument to get the balance just right. Repeater has a default feedback amount that reduces the level of the original recording as the overdub is recorded onto it. This prevents undesirable gain increases throughout the recording process. See RECORDING LOOPS for details.



RECORDING TO A NEW TRACK

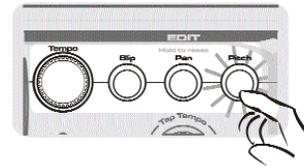
Additionally, you may select a new track to record another part. Recording to a new track affords more control and access to Repeater's track parameters, like Pitch and Level. Later you can bounce your tracks, after you've mixed them to taste, down to one or two tracks.

LOOP MANIPULATION

Now that you've got your basic tracks down, there is so much more you can do.

Start by tweaking the pitch of the loop.

- Press the **Pitch** button, select the tracks you've recorded on and turn the **Tempo** knob to pitch shift the tracks.

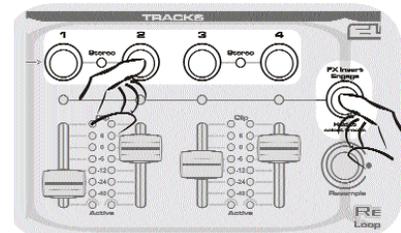
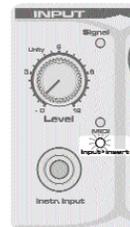


If you think that's cool, use the **Slip** function to slip a track out by an 1/8th note.

(You can slip through the entire range of the loop until you eventually get right back to the beginning. Yeah, baby!)

ADDING EXTERNAL FX

If you have an external FX unit connected to Repeater's FX Insert you can apply FX to the input and record the effects as a part of the loop, or you can apply the FX to any number of tracks during playback.



To set the FX Insert location:

- Press and hold **FX Insert** button
- Select the tracks that you'd like the FX inserted on by using the **Track Select** buttons. If you de-select all of the tracks, the FX will be applied to the input. (The **Input>Insert** LED will light.)

USING THE METRONOME

Repeater has a great training feature that will help you to develop a consistent meter with some practice. Repeater will produce a metronome sound at the current tempo when you press and hold the **Tempo Lock** button for 1 second. While the metronome is playing Repeater will quantize the initial record to the beat of the metronome. To disengage the metronome press and hold **Tempo Lock** for 1 second. You can set the **metronome level** by pressing and holding **Tempo Lock** while tempo Lock is engaged. Use the Tempo knob to adjust the level while holding down the **Tempo Lock** button. When the metronome is active in user sync mode, recordings will be quantized to the beat as they are in MIDI or Beat Detect sync modes.

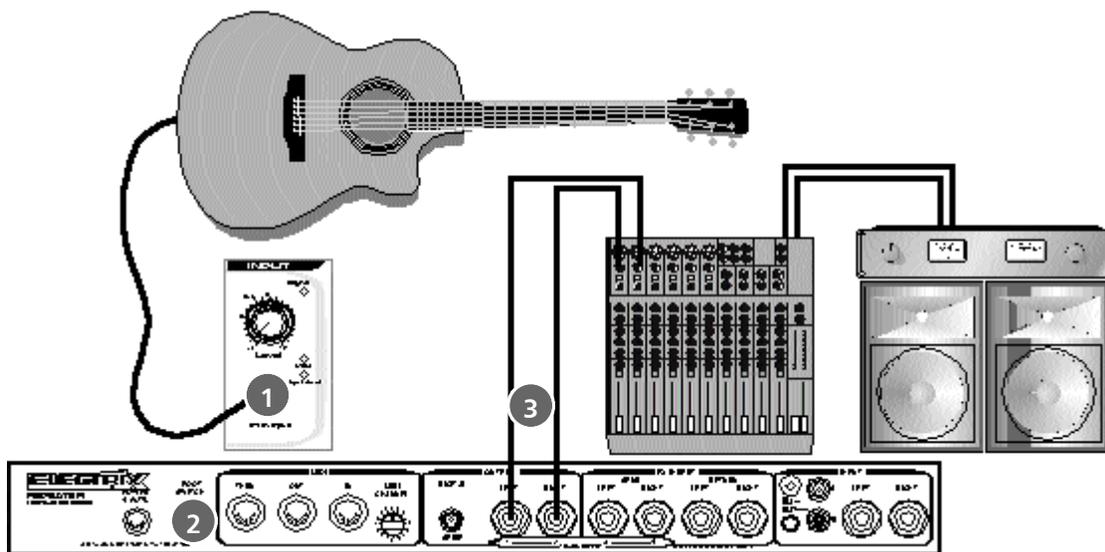
GETTING STARTED

ACOUSTIC GUITAR

Here's a basic setup to get an acoustic guitar up and running with Repeater - without the need of any help from your "pocket protector" friends...

Making a Connection

- 1 Plug in your guitar here.
- 2 Connect the optional Digitech FS-300 or a single momentary footswitch to engage/disengage the Record function here.
- 3 Connect Repeater's outputs to your monitoring system.



ELECTRIC GUITAR

Now for the guitar player for whom effects have become an integral part of their sound... Try integrating Repeater in this format:

Using an amp without an effects loop

You can plug Repeater into the guitar input of your amp if you take the following precautions:

- Turn down the **Input Level** to at least half of what you usually run. Repeater's output is at line level, and this is substantially hotter than the average guitar.
- Use the clean channel of your guitar amp. If you try to run Repeater into a high gain or lead channel you will most likely be unhappy with the unnecessarily noisy results.
- To get distorted or lead sounds try using one of the many available distortion pedals or a tube preamps before connecting to your Repeater.

Trigger Record

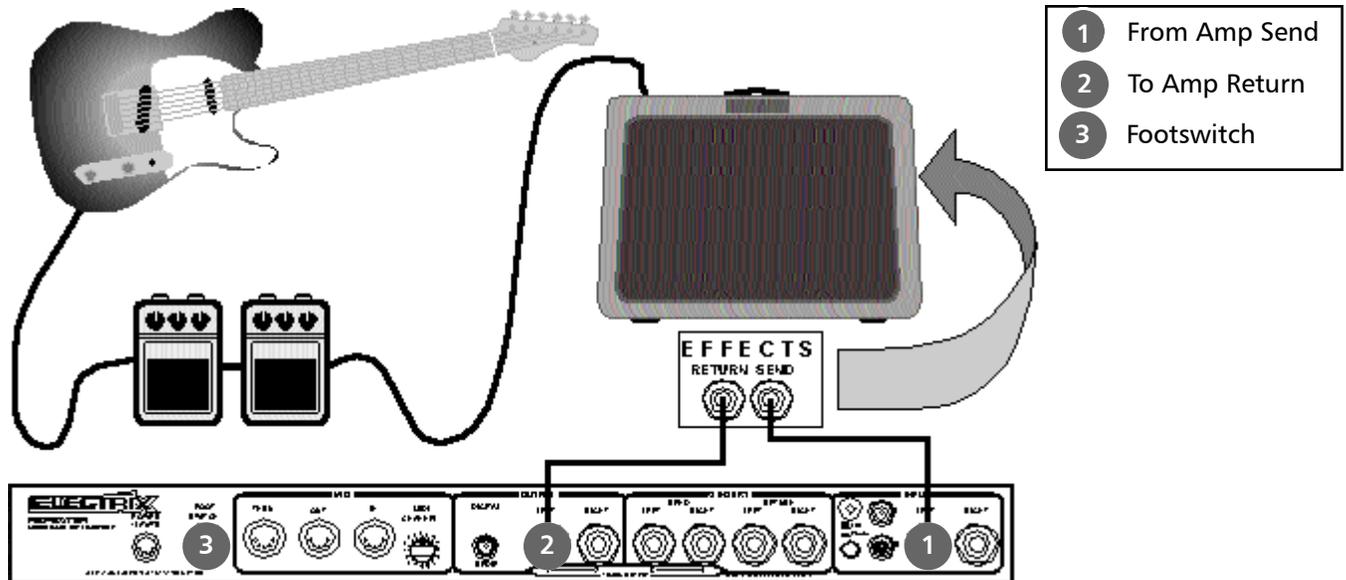
If you don't have a foot switch you may benefit from using Repeater's handy Trigger Record feature. Trigger Record will set Repeater to start recording as soon as signal is present at the audio input.

To set Repeater for Trigger Recording:

- Press and hold **Stop** and press **Record**
- Repeater's **Record** LED will flash indicating that it is armed and ready for recording
- Start playing

As soon as Repeater detects audio at the input it will start recording.

GETTING STARTED



Using an amp with an effects loop

It is best to plug Repeater into the Effects Loop of your amp if it has one. Connecting this way will ensure safe passage of your tone through Repeater. If your amp has a Wet/Dry Mix, set it to 100% wet for best results.

Using a Footswitch

If you're thinking "How am I supposed to do all this button pressin' while I'm playin' my guitar" then you may benefit from picking up a Digitech FS-300 3 button footswitch. The FS-300 will let you control Undo, Play/Stop and record with your feet. This should free up your hands for some serious bo-jangelin'.

Accessing Repeater's features from a MIDI Foot Controller

If you want to control Repeater from the floor you will be glad to know that you can access all of Repeater's front panel parameters and controls via MIDI Program Changes or Control Change messages. Pick up a MIDI floor controller like a Digital Music Corp. Ground Control, Yamaha MFC10, Lexicon MPX-R1, or a Digitech Control 8. You can control Repeater with Program Change messages and/or Control Change messages. Basically that means that just about any MIDI foot controller is capable of controlling Repeater.

Don't have a bass guitar?

One of the advantages of Repeater's pitch shifting being on the loop output, as opposed to the input, is that you can quickly achieve great pitch shift effects automatically on playback. Try this on for size: Set the pitch shift of Track 4 to -12. Now create a rhythm loop with your guitar on Track 1. Select Track 4 to record and play a bass line on your low E string. You will not hear the pitch shift effect until you are done recording. As soon as the loop starts playing back Track 4 will be pitch shifted an octave down, and you'll have snuck in a bass line without anyone knowing what happened.

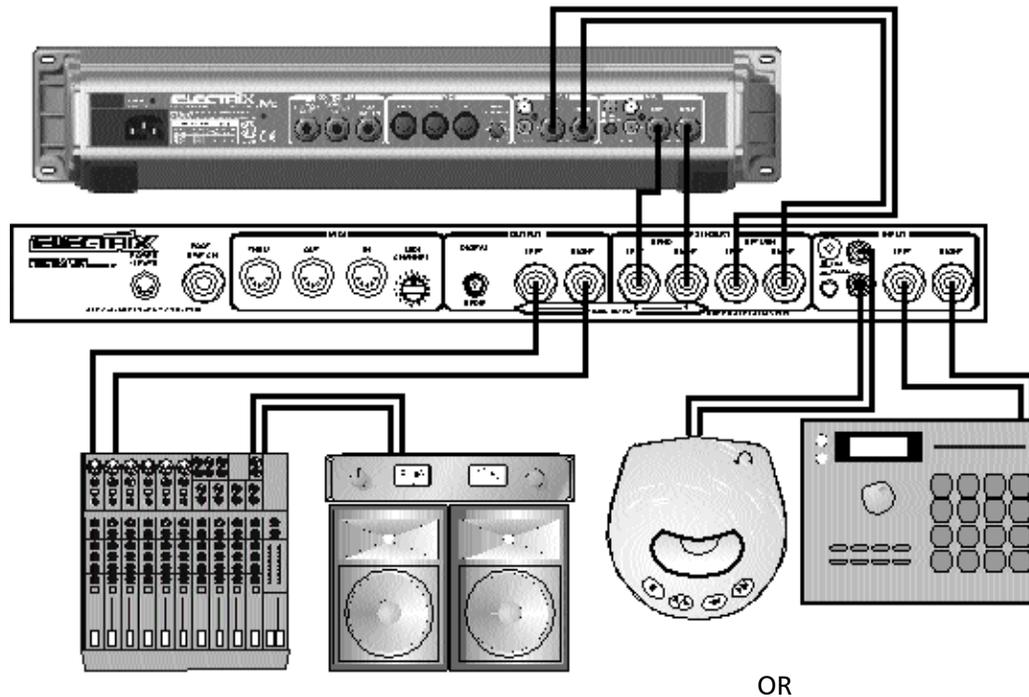
Create Ambient Tracks

A looping recorder is a great way to create ambient textures. By using external effects and Repeater's own arsenal of time stretching and pitch shifting, thick and organic textures are within your reach. Use delay, reverb, and filtering to shape sounds giving them depth and resonance. Layer these sounds being careful to record only the sustaining portions of each note. Experiment with Reverse mode and the Overdub feedback level to facilitate ever changing loops and ambiances.

GETTING STARTED

LIVE SAMPLING

Repeater is set up to take just about any kind of signal; from a sub-mixer to your mixer's FX send, a group output, or even a vinyl source. In addition, you can connect an effects processor to Repeater's **FX Insert** for easy patching of the effect onto the overall input or individual tracks.



LPA™ Considerations

If Repeater is in Beat detect, MIDI Sync, or the metronome is turned on in User mode then as long as you press **Record** near the downbeat of your track, Repeater will automatically tweak the loop start time to the nearest division of the beat. To stop recording press **Record** close to the downbeat of the next bar. Repeater will automatically tweak the end point to match up with the start point and immediately begin playing the trimmed loop. If you are just in user mode with no metronome then no LPA is applied to your recording.

Trigger Recording

Repeater has a great little feature we call Trigger Recording. Pressing **Stop** and **Record** at the same time will arm Repeater. In this mode, Repeater will automatically trigger the Record operation when an audio signal is present at the inputs. This is useful when sampling from CDs or in facilitating a hands-off approach to recording and overdubbing.

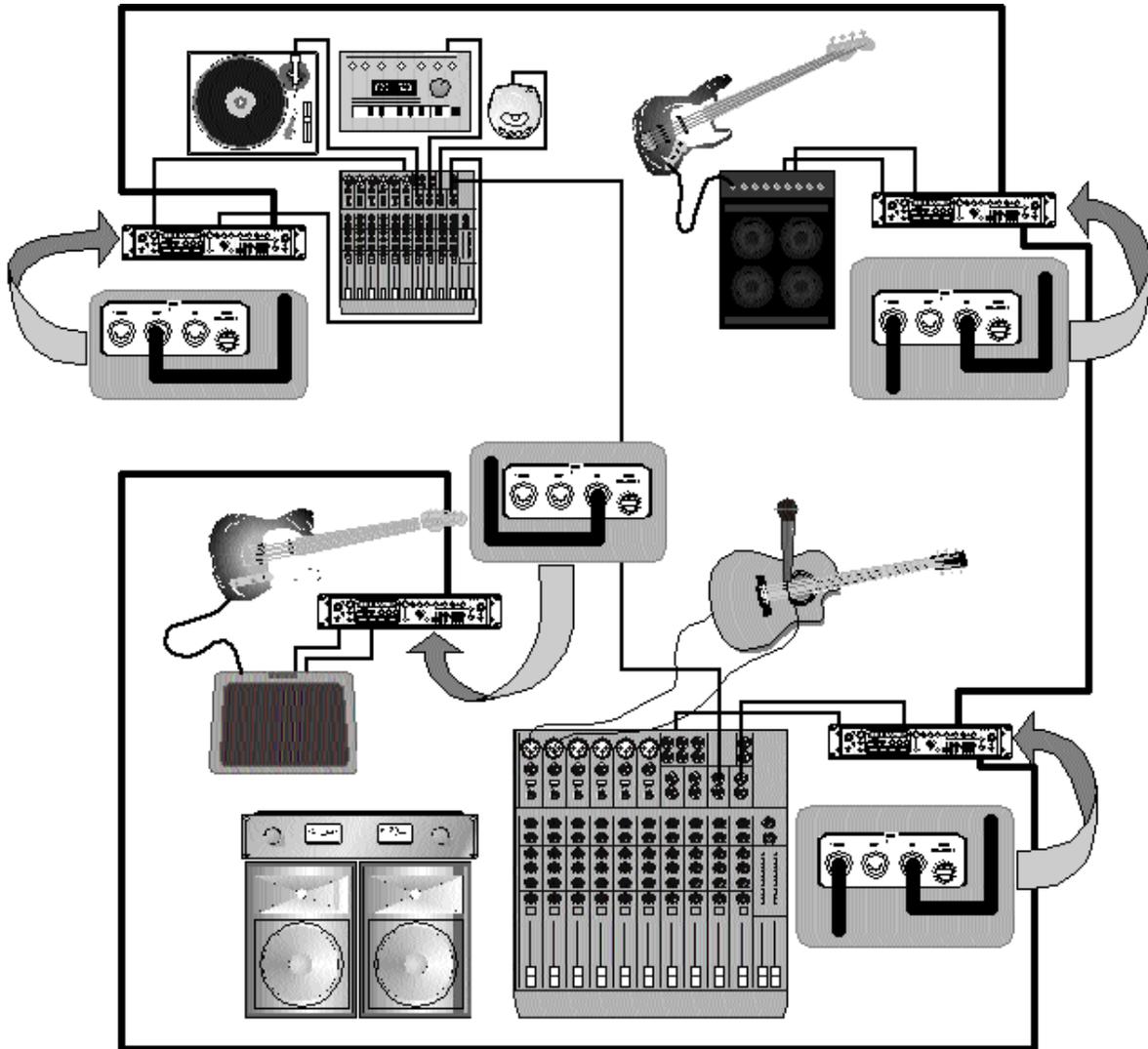
Input Mute

In some situations it may be desirable that the dry signal is not passed through Repeater and mixed with the track outputs. To activate this feature, hold down **Stop** and press the **Overdub** button. The display will state 'Dry Muted' or 'Dry unmuted' depending on whether you are activating or deactivating the feature. This feature can also be accessed via MIDI.

GETTING STARTED

THE ALL REPEATER BAND

One day every person in every band will integrate Repeater into their live show. Imagine a band that utilizes Repeaters, allowing them to loop themselves, then move on and overdub additional parts. All in perfect sync with each other via MIDI. The air would fill with harmonies, licks, ambient loops, and grooves, grooves, grooves. Hey you could load your part into Repeater, put down your instrument and go and dance with your honey...hmmmm...



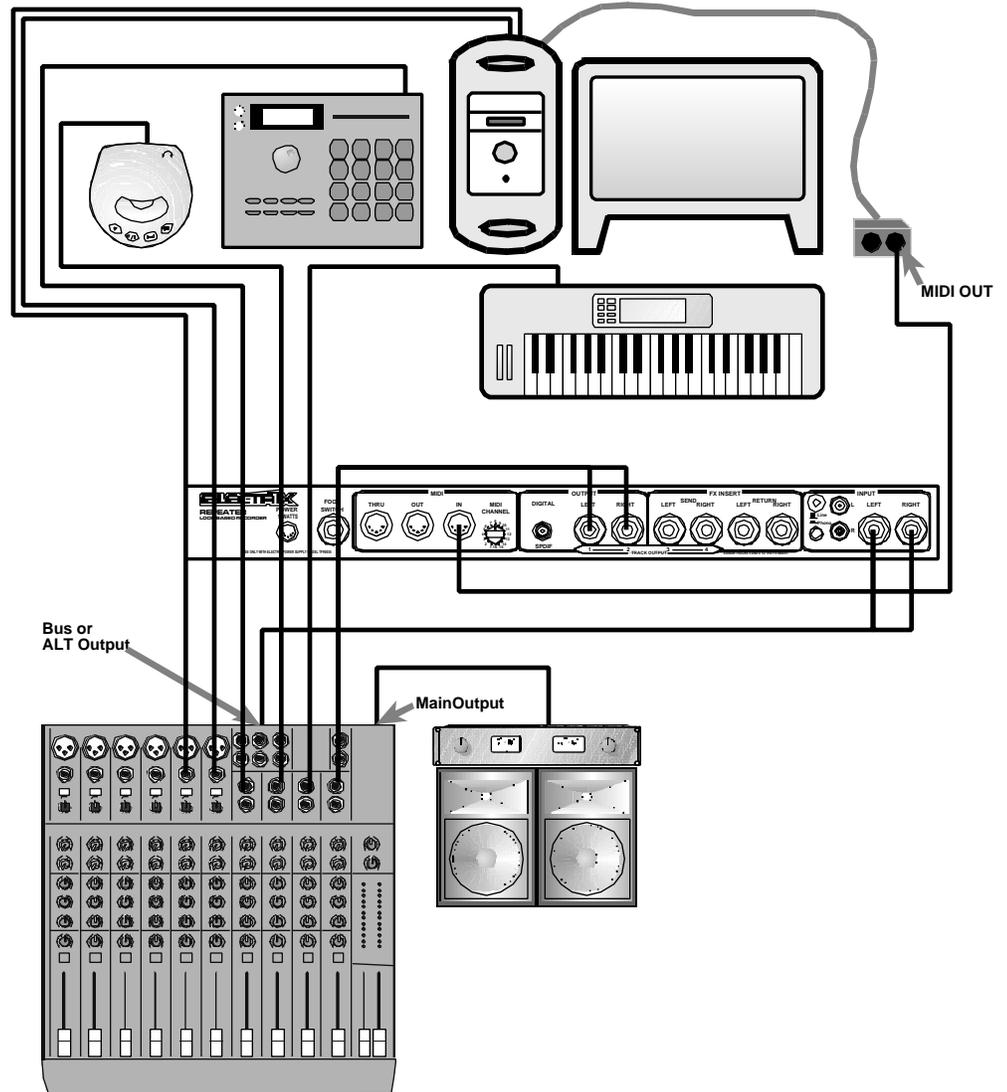
The All Repeater Band, a little obsessive we know...

GETTING STARTED

STUDIO

In the studio Repeater can serve many purposes. It makes a great scratch pad for getting ideas or grooves down quickly. It also makes for a great loop player with its unique ability to record and play loops without the need for manual trimming. Repeater can also function as a great sound design tool. Check it out..

If you've got a modest home studio setup try connecting Repeater like this:



Utilizing Multiple Outputs

For those of you with large format expensive consoles with great EQ and routing capabilities, Repeater's 25mm faders may not quite be your cup of tea... Well, we thought about you, and how much we'd like to be you, but in the meantime here's how to set up Repeater to send each channel out a unique output.

- First make sure Tracks 1 & 3 are panned hard Left, and Tracks 2 & 4 hard Right.
- Now press and hold **FX Insert** and select Tracks 3 & 4.
- You will now find Tracks 1 & 2 on the main outputs, and Tracks 3 & 4 on the FX Sends.
- Simply set the **Track Levels** to the top, (Unity Gain) and take command from the bridge of your own console, captain.

Sampling from Sample CDs

If you need help capturing a loop from a sample CD try using Repeaters "Single Bar Capture" mode. Put Repeater into **Beat Detect** sync mode, arm the Audio Trigger by pressing **Stop** and **Record** together. Now play the sample. Repeater will start recording automatically when the audio kicks in. Now press **Record** near the downbeat of the end of your track, as long as you're close Repeater will automatically tweak the loop end to the nearest transient. Don't worry about your loop speeding up when you're done. This is because you have now left "Single Bar Capture" and are in Beat Detect mode. Just put Repeater into user sync mode and hold down the **Tap Tempo** button to reset to the native tempo of the just-captured loop.

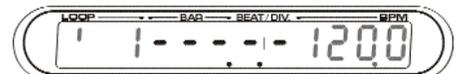
RECORDING LOOPS

BELOVED PROPELLERHEADS

For those of you that are still reading this manual - and not busy making freak-a-delic loops that will earn you a Grammy - we offer these thoroughly entertaining and highly technical discussions regarding the finer points of the micro-technology blinking before you. This section was lovingly prepared for you by our really smart, and talented engineering folks. The smirky text is courtesy of the marketing department. Please keep your arms and legs inside the tram at all times. Your mileage may vary. Void where prohibited.

EMPTY LOOPS

Dial around with the loop encoder and find yourself an empty loop. An empty loop location shows up on the display as a loop with the bar/beat division display as '-----'. If browsing to this loop in **User Sync** mode without **Tempo Lock**, the BPM display will also show the last known loop tempo. Don't worry this tempo will not affect your initial recording in **User Sync** mode.



Empty loop with Tempo

Initial Recording

The first recording/overdub on an empty loop defines the length of the loop. During this initial recording the display will change to indicate the estimated beats. Once the initial recording is completed, Repeater estimates the tempo and calculates the loop length.



Setting the SyncMode

Repeater defaults to User Sync mode on power up. If you wish to Record while syncing to MIDI or Beat Detection, select the appropriate Sync mode before starting your Recording.

Setting Levels before Recording

The **Input Level** knob on the front panel of Repeater controls the front and back input levels. To set the level, plug in your instrument and tweak the **Input Level** knob until the LED flickers red just on the loudest notes.

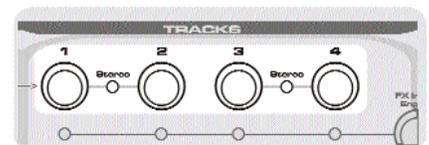
The Signal LED beside the **Input Level** knob indicates the audio level.

- **Green:** Repeater hears audio somewhere in the range of -20dBu to +12dBu, optimum level is +4dBu.
- **Orange:** Optimal level, this is where you want to be.
- **Red:** The audio signal is causing saturation or clipping (some consider this bad), borderline on distortion.

The LINE/PHONO switch on the back panel sets the RCA inputs for either phono or line input levels.

Track Selection

The default state of the unit is ready for recording. Press the **Track Select** buttons to select the target track(s) for recording/overdubbing. Selected tracks are indicated by the lit LEDs surrounding the **Track Select** buttons.



If one of the Pitch, Pan or Slip edit parameters are selected, the **Track Select** buttons LEDs will flash to indicate the selected tracks for that particular operation. Make sure the track parameters are deselected before you attempt to select a track for recording.

RECORDING LOOPS

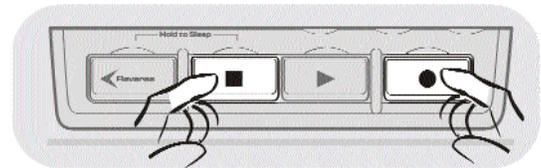
When selecting tracks for recording, the **Track Select** buttons operate as 'radio' style buttons. Pressing a new button deselects the previous track and chooses the one you just pressed, extinguishing and lighting the appropriate LEDs. You can select single tracks or stereo pairs. Stereo pairs are selected and deselected with a simultaneous press of both tracks. Tracks 1 & 2 can be paired as can Tracks 3 & 4.

Audio Triggered Recording

You still have to press record manually to finish the loop recording, but try this on for size:

Repeater can begin recording when it hears something, rather than in response to a button being pressed. Here is how to do it:

- Press and hold **Stop** and then press **Record**. This puts the unit into audio triggered mode.
- Whilst record is held down the trigger level can be adjusted using the tempo encoder.
- The audio trigger is activated when **Record** is released. This is indicated by the record button LED flashing.
- The audio triggered record will start when audio is detected above the selected trigger level.
- Audio triggered record can be cancelled by pressing the **Stop** button



Setting up for Trigger Recording

OVERDUB VS. REPLACE

Repeater normally operates in Overdub mode. In overdub mode, Repeater will mix the recording with the existing material on the selected track without erasing the original recording. In Replace mode, Repeater will replace the existing material on the track with the new recording like a conventional tape based recording device. Pressing the **Overdub** button will extinguish the **Overdub** LED and put Repeater into the Replace mode. Overdub lets you infinitely stack and layer additional parts much like you would on the JAMMAN™ or Digital Echoplex Pro™.

Setting Overdub Feedback Level

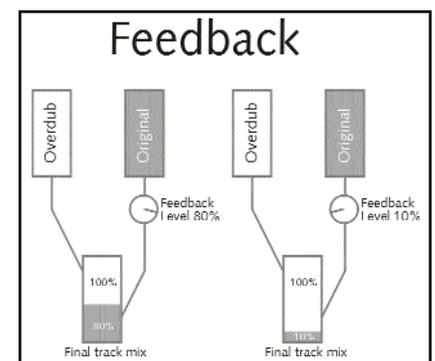
The Overdub Feedback reduces the level of the original recording as a new part is recorded on top of it. This prevents an undesirable gain increase. This level can be customized, and here's Johnny to tell you how...



To change the default overdub feedback levels...

- Press and hold **Overdub** for a half a second.
- The display changes to show the feedback value (level), which you can modify using the **Tempo** knob.
- Press **Overdub** again to exit and overdub with the new feedback level.

Every time you overdub to a track, the original track content is mixed in with the new material from the overdub. The Feedback control adjusts how much of this signal is mixed in. Try setting it to 30% for example. Now every time you overdub a new part the original track(s) will quickly get quieter with every pass. Repeater defaults to 94% which works most like a multi-track recorder when overdubbing. Settings of 85% and less will create dynamic loops that will evolve over time with each new overdub.



RECORDING LOOPS

0% Feedback

0% feedback will completely erase the original loop track after the completed overdub cycle. This differs from Replace mode in that Replace will mute the track during the record cycle. In Overdub, at 0% feedback, the record destination track will not be muted during the record cycle.

UNDO /REDO

Repeater features one level of Undo for overdubbing operations. Additionally you can Redo what you just undid, and then carry on to Undo the Redo if you just can't make up your mind.

ERASE

Erase lets you erase any or all tracks within a loop even while the loop is playing...

- Press and hold the **Erase/UNDO** button until the display changes to look like "- - - -" and the **Track Select** and **Erase/UNDO** buttons all flash in unison.
- The track select buttons will flash only for full tracks, thus in the example shown, you have a loop with four full tracks.
- You can select tracks to erase by pressing the **Track Select** buttons.
- Press **Erase/UNDO** to erase the selected tracks, **Stop** will take you out of Erase mode without erasing anything.
- Erasing all tracks will completely erase the loop.

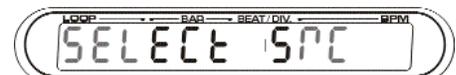
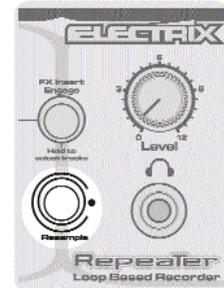


RESAMPLING/BOUNCING

Once you've built up a multitrack loop, you can bounce it down to one or two tracks. Resampling will cement any modifications you've made to your loop, including pitch shift, track slip, pan, level, FX and tempo. Resampling can bounce the contents of all four tracks down to a mono or stereo pair of tracks. You can only bounce down to a stereo pair if one is already made. You cannot record a stereo pair over two mono tracks.

To Bounce (Resample) Tracks...

- Set the **Levels**, **Pan**, **Pitch** and **FX Inserts** just how you want it to sound for the new resampled track.
- Use the **Track Select** buttons to select the track(s) you wish to record to.
- Press **Resample**. The display will show "SELECT SRC"
- Use the **Track Select** buttons to select the tracks you wish to be a part of the new mixed track(s).
- Press **Resample** again to confirm your settings.
- Now press **Record** to engage the resample. Repeater will stay in record and play until you press **Record** again. If you press **Record** before an entire loop cycle is completed then the record light will begin to flash. Don't panic. Resample needs to record through one entire loop cycle. When the Resample operation is complete the **Record** light will stop flashing and you're done. Pressing the **Record** button before the loop is finished is a good way to automate the resampling to a single loop cycle.



RECORDING LOOPS

You may adjust the mix or any other parameter during the resampling operation.

During resample, if any destination tracks have the FX insert assigned to them then any tracks that were not chosen as sources will have their FX sends suspended. The FX send lights will flash until the resample is done. This ensures the FX return from such tracks does not mix into the resampled track or tracks.

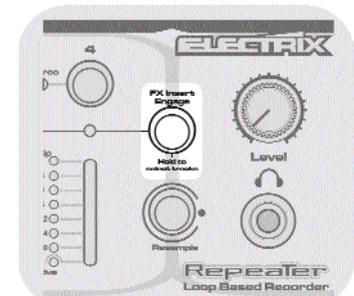
REVERSING

Reversing is great for creating (or decoding) secret messages or transmogrifying your lyrics into some ancient foreign tongue. More appropriately, Reverse Play is a fun way to create reverse solos and ambient textures. You can put Repeater into **Reverse** only when Repeater is in **PLAY** or **STOP** mode. Repeater will not allow you to reverse direction in the middle of a recording.

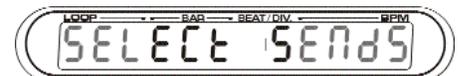
A cool effect is to hit **Reverse**, overdub a new part, and then hit **Reverse** again to take you out of the reverse mode. Now your loop will play forwards, and the portion you've just overdubbed (like a guitar solo) will be playing backwards. !looC

FX INSERT

The stereo effects insert allows you to integrate external effects processing into your loop/sound design. You can assign this insert to the main input or on individual tracks. The insert is engaged when the **FX Insert** button is lit. If there is nothing plugged into the FX Inserts when the insert is engaged, the signal path will be broken and you will no longer hear what is routed to the FX Inserts. Assigning the FX Insert to the input allows you to record the effects into the loop.



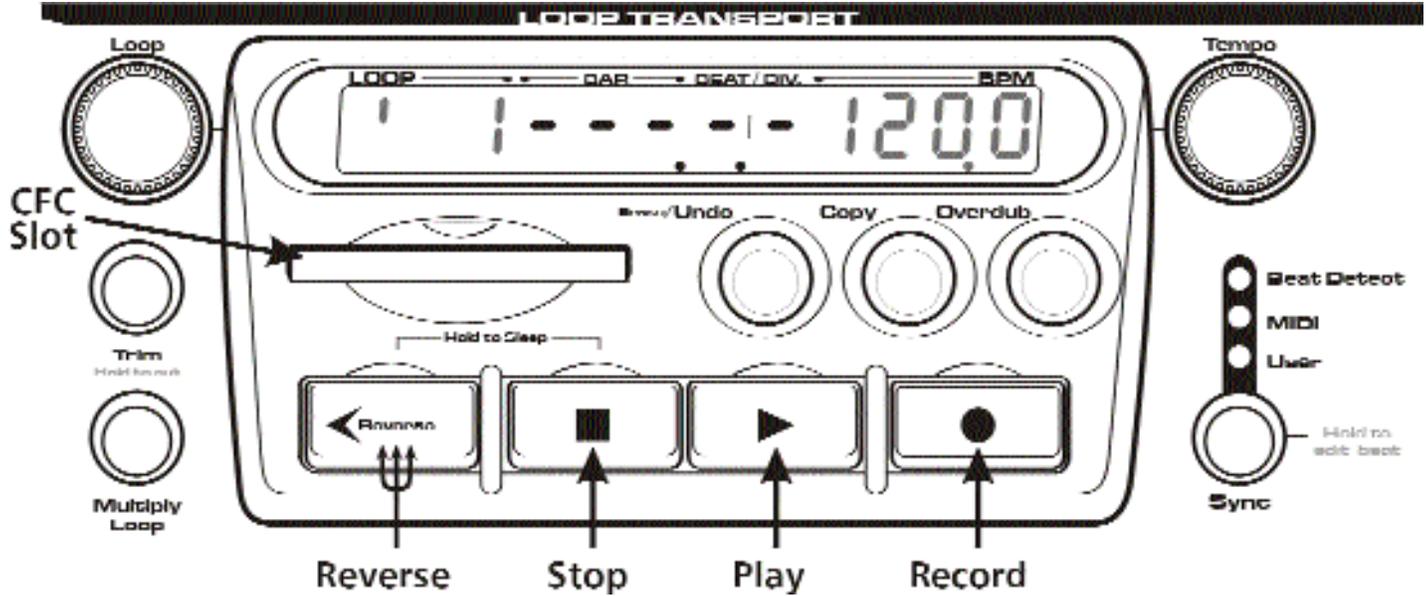
Engaging the FX Send



To select tracks for the FX Insert:

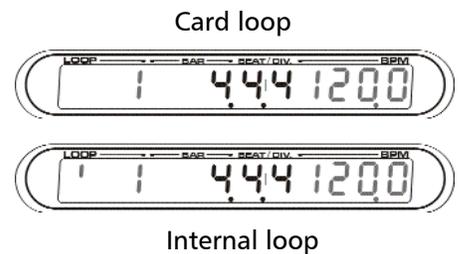
- Press and hold **FX Insert** button, the display will read "SELECT SENDS".
- Use the **Track Select** buttons to select the tracks to be sent to the FX Insert.
- Release the **FX Insert** Button.

THE TRANSPORT



LOOP BROWSING

Loops are arranged in a continuous sequence, with allowance for gaps if loops have been deleted. The browser indicates internal loops with a " ", CFC loops are indicated simply with the numbers, "128". Once you browse to the end of the set of internal loops there will be a final blank internal loop. Then the external loops on the compact flash card will be displayed with the numbering starting again at 1. The CFC Indicator displays card activity: Green for reading, Red for writing.



Note: One empty loop will always be shown at the end of the internal and external sequences to provide a location for the creation of a new loop.

LOOP CUEING

If Repeater is currently playing a loop, you can use the **Loop** knob to select a new target loop number (if not the current loop number). The new loop needs time to load (about a half a second), so prepare a little early for your loop transition. Repeater tells you when the new loop is locked and loaded by adding a row of dots under the flashing loop number. Pressing **Play** will then engage the auto loop transition. Repeater will wait and quantize the start of the new loop to the end of the playing loop. The play light will flash until the cued loop begins playing. This facilitates seamless loop transitions. If you press **Play** at any time after the first press (while the play light is flashing) the new loop will start playing immediately and the display will stop flashing. Pressing **Stop** will stop the current loop leaving the unit cued and ready to start playing the new loop.

THE TRANSPORT

PLAY

In Play mode, Repeater plays back the contents of a recorded loop at the selected tempo, and the green LEDs of the **Play** button are illuminated (seems obvious, but you never know...). In addition, the **Slip**, **Pan**, and **Pitch** controls are available and can be tweaked. If these controls are used, they will take over the normal play display.

Play mode can be entered in several ways. The conditions and meaning of these different entry modes are discussed below. Oooh! Wait till you read this...

From Stop

Pressing **Play** while the unit is in the stop state will instantly trigger the loop from the start. If the current loop is an empty loop, the play button is inactive.

From Record

If the unit is in the record state and **Play** is pressed, the recording will be completed and playback will start if it's an initial record or continue if it's an overdub.

From Play

Pressing **Play** when the unit is in the play state/ Pressing **Play** when the unit is in the play state has the effect of continuing the play operation but immediately moving back to the start of the loop. (Get it?)

From a Cued Loop

Pressing **Play** when a new loop is being cued will engage the auto loop transition. pressing play again will engage the new loop immediately.

Playing with Loop Triggering

Repeater's transport has some unique features that make it very playable in a performance setting. Every time you press **Play** the loop is restarted from the beginning. This is great for re-triggering or changing up the feel of loops on the fly. Additionally you can press and hold **Stop** and momentarily trigger the loop by pressing **Play**. The loop will only play for as long as you hold down **Stop** and **Play** together. This is great for stuttering FX and sample hits and shots.

RECORD

Recording mixes the audio from the input with selected tracks to produce a new track (or stereo pair of tracks). The display shows the current bar and beat counting down and the **Record** button LEDs will light. Additionally, while the undo function is available, the **Erase/UNDO** button is lit.

During recording, it is legal to operate the **Slip**, **Pan** and **Pitch** controls. (You may also dance, but only if legal in your current location.)

The special case of recording is the 'Initial' recording, which is defined as recording to a track in a loop that currently contains no data. In this special case, the loop length is set by the length of this initial recording.

Recording Limitations

Record is always immediately available, but may not be possible to complete due to memory constraints. In the case that record is triggered when memory is full, the word 'MEM LIMIT' will flash in the memory/play time window for 3 seconds. A **Track Select** button (or a stereo-linked pair of **Track Select** buttons) will always be lit. This is the active track for recording. By default/initially, Track 1 will be selected and so the Track 1 select button LEDs will be lit.



Memory Full Display

THE TRANSPORT

Pressing Record from Stop

Pressing **Record** when the unit is in the stopped state will immediately start the unit recording/overdubbing. If the current loop is empty, this first recording will determine the length of the loop.

Pressing Record from Play

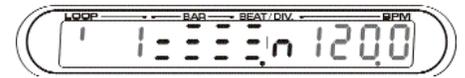
Pressing **Record** when the unit is in play mode will immediately start the unit recording from the current play position.

Pressing Record from a Cued Loop

Pressing **Record** when a loop is cued will immediately begin recording to the new loop location.

Undo Considerations

Undo will normally undo the last overdub, however if multiple overdubs are made without leaving the record mode, the undo function will undo all of the overdubs back to the last time the unit entered Record.



Remaining Memory Display

Additionally, the record operation consumes memory as it progresses. This leads to the potential condition that the unit runs out of memory before it can complete a record operation (perish the thought!). The sequence of indications and the subsequent operation in this case is as follows:

- When the memory limit is approached, the display will show a shrinking bar graph that will show the impending demise of the available memory.
- As the unit runs out of memory, the unit will behave as if the user had pressed the **Stop** button.

Beat Quantization in MIDI and Beat Detect Sync modes

If Repeater is in Beat Detect or MIDI sync modes or the Metronome is on then it is assumed that you want to hit the **Record** button near the beat of the input signal. This is why, in these sync modes, Repeater quantizes your recording to the beat of these tempo sources.

STOP

In the stop state, the unit displays the current size of the loop in the bars/beats/division at the currently selected unit tempo. Even in the stopped state, the input is routed through the selected track output slider. Thus if the selected track level is turned all the way down the output will be silent.

From Play

Pressing **Stop** when the unit is playing will immediately stop playback and return to the start of the loop

From Play with Stop held

If the **Stop** button is held down, the **Play** button will momentarily trigger the loop for as long as it is held. (Stu, Stu, Stu, Stutter effects are created this way)

THE TRANSPORT

From Record

This will immediately stop the recording process and return the current playback/read point to the start of the loop.

REVERSE

Reverse can be pressed at any time except during recording. For both recording and playback, the active direction will now be reverse. If pressed again the transport will return to the forward operating mode.

In Beat Detect and MIDI Sync modes going in and out of reverse might cause your loop to speed up. This is because external sync modes, like Beat Detection and MIDI Sync, force the loop to synchronize to the incoming beats. Here's what happens: as Repeater goes in and out of Reverse the beat of the loop may become misaligned to that of the external sync source, so Repeater will speed up/slow down to correct this timing discrepancy and realign the beats. If you don't want this to happen put Repeater into User mode. In User mode, Repeater's "intelligence" takes a back seat, allowing you to Reverse all you want without it trying to stay in sync with anything.

LOOP EDITING

CHANGING TEMPO

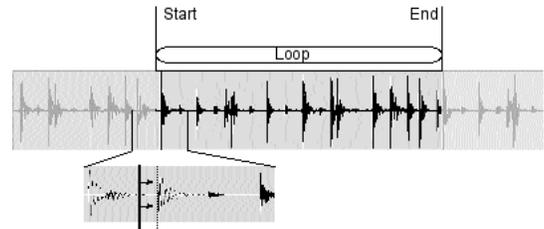
In User Sync mode the tempo of the loop can be changed at any time by simply adjusting the **Tempo** knob or tapping a new tempo with the **Tap Tempo** button.

Native Tempo

To return to the original tempo the loop was recorded at, press **Stop** and **Tap Tempo** buttons at the same time.

TRIMMING

When you first record into an empty loop Repeater pads the recording a little, leaving you extra room at the start and end to develop the best loop points. You can even move the trim point past zero to add silence to the beginning or end of your loop.

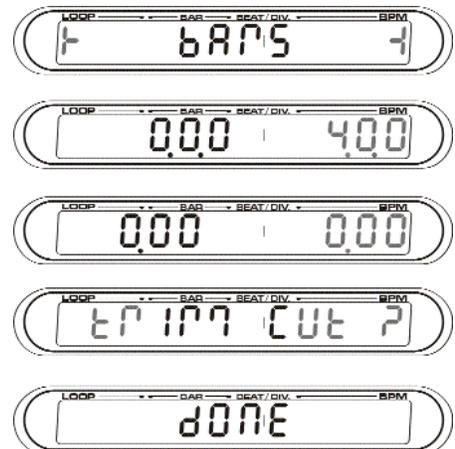


The effect of trimming

Trim Basics...

- The first press of **Trim** will put you into the Bars Trim mode. The **Loop** knob will remove whole bars from the front of the track, the **Tempo** knob removes bars from the end of the track.
- Press **Trim** again to go into Seconds Trim mode. In Seconds Trim mode the display shows the start and end points of the loop in min.sec.sec/100, which you can modify with the **Loop** and **Tempo** knobs. These changes will affect your tempo, and the Bars and Beats will be recalculated according to the rule: $\text{Seconds} = \text{Bars} \times \text{Beats} \times ((\text{Tempo}/60)/\text{Div})$. [BTW - Math is truth and beauty]. For example, in 3/4 time, the Beats value would be 3 and the Div would equal 4. 4/4 time the values would be Beat = 4, Div = 4.

Trimming is non destructive, so when you've finished editing and want to discard the trimmed parts, press and hold **Trim**. The display will change to read "TRIM CUT", and **Stop** and **Trim** will flash. Pressing **Trim** will save and discard the trimmed ends. The display will flash "DONE". Pressing **Stop** will cancel. Discarding the trimmed parts is a destructive edit and cannot be undone.



MULTIPLY LOOP

Pressing **Multiply Loop** will double the length of your loop. For example you can turn a four bar loop into eight, then eight into sixteen, etc. This is great for creating a longer bed for overdubbing guitar solos or longer musical phrases. **Multiplying creates "virtual tracks"**. Virtual Tracks don't take up extra memory until they have been Resampled or Overdubbed. They are indicated by the blinking active LED in the tracks section. Virtual tracks can be a real memory saver: for example, if you record a one bar drum loop on Track 1 and multiply it out eight times, then switch to Track 2 to record an eight bar riff, guess what? Your drum loop will still only take up one bar of memory even though the loop is eight bars long.

LOOP EDITING

IMPORTANT!

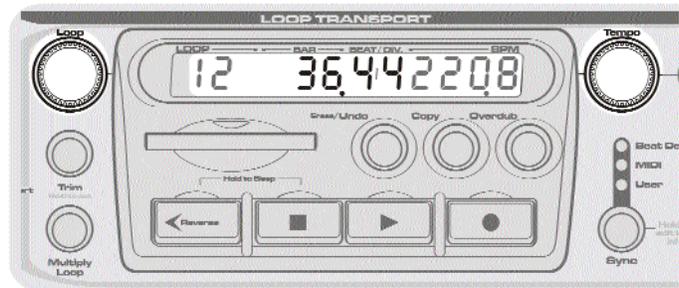
Repeater must record or Overdub though the entire length of the "Virtual Track" after which it flattens the track and it is no longer virtual. If you do not record through the entire length of the loop Repeater will automatically keep recording until the end of the loop. During this time the **Record** LED will flash to indicate that Repeater is still Recording. If you press **Stop** during the recording immediately after a Loop Multiply your overdub will be lost.

You can multiply the loop out by a factor greater than two by pressing and holding the **Loop Multiply** Button. Use the **Tempo** encoder to select the multiplication factor. Release **Loop Multiply** to execute. If you have multiplied the loop further than you wanted, you can multiply the loop by a fraction to get back to where you started, or to a smaller number of multiples of the original loop. Just rotate the tempo encoder to the left to access the available fractional multiples of the current loop. Note this is only possible for loops consisting completely of 'virtual' tracks.

TEMPO EDIT

If Repeater has not figured out the proper bars, beats and division for your loop, don't worry; you can edit this information. Changing these values has no effect on the actual audio, it will however affect how the loop syncs to incoming tempo information.

- Press and hold **Sync** to get into the Tempo Edit mode.
- Use the **Loop** knob to edit the total number of beats in the loop
- Use the **Tempo** knob to change the time signature.
- You can always return to the tempo the loop was recorded at by pressing **Stop** and then **Tap Tempo**.



RECORDING POLYRHYTHMIC TIME SIGNATURES

Even though Repeater defaults to 4/4 time, it will support many strange and wonderful time signatures. To record in a polyrhythmic time signature...

- First, in **User Sync** mode, select a new loop.
- Record your first part.
- Now press and hold the **Sync** button to enter BEAT EDIT. Here you can use the **Loop** and **Tempo** knobs to change the number of beats and the division.
- Use the **Loop** knob to select the total number of beats in the loop.
- Use the **Tempo** knob to select the time signature.
- Press **Sync** to exit.
- Tap a Tempo with the **Tap Tempo** and finish laying your masterpiece down.

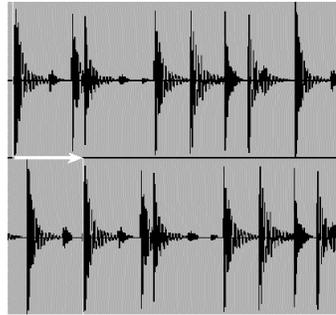
LOOP EDITING

SLIPPING

Slipping lets you offset the start position of a loop or its individual tracks.

- Press **Slip**, and the display will change to show the slip offset of each active track in beats.
- You can select/deselect the appropriate tracks for Slipping by using the **Track Select** buttons. Editing one track at a time displays the slip amount with a finer resolution.
- Use the **Tempo** knob to set the slip position in bars/beats/1/100 of a beat, with zero being the original position. Use the **Loop** knob to slip whole beats.
- Twist the knob quickly to edit in larger steps. Twist the knob slowly to adjust in finer amounts.
- Press **Slip** again to confirm and exit.
- Press and hold **Slip** to reset to 0 slip.

Track 1



Track 2

LOOP BAR BEAT/DIV BPM
EDIT SLIP

LOOP BAR BEAT/DIV BPM
TRACK 1 00.000

LOOP BAR BEAT/DIV BPM
00.00.00.00

PITCH SHIFTING

You can alter the pitch of your tracks by one octave up or two octaves down.

- Press the **Pitch** button and the display will change to show pitch information in semi-tones for the selected track(s).
- Deselect any tracks you don't want to Pitch Shift using the **Track Select** buttons. Editing one track at a time displays the pitch shift amount with a finer resolution.
- Use the **Tempo** knob to change the pitch in cents (100th of semitone) intervals. Use the **Loop** knob to shift in semitone increments.
- You can press and hold **Pitch** to reset to 0.

LOOP BAR BEAT/DIV BPM
EDIT PITCH

LOOP BAR BEAT/DIV BPM
TRACK 1 - - - - -

LOOP BAR BEAT/DIV BPM
- - .4 42 -12

Using a Keyboard to Trigger Pitch

Repeater's Track Pitch Shift can be easily controlled with MIDI note information. All the tracks currently selected for slip/pan or pitch will be affected.

To control the track Pitch Shift via MIDI:

- Connect the MIDI out of your keyboard to the MIDI In on Repeater
- Set the MIDI receive channel on the back of Repeater to match the MIDI transmit channel on your keyboard
- Play monophonically (one note at a time) to shift the pitch
- Middle C will return the track(s) back to their default key

PANNING

You can set the pan positions for tracks using the **Pan** button.

- Press **Pan**, and the display will change to show the current pan value.
- Deselect any tracks you don't want to Pan using the **Track Select** buttons. Editing one track at a time displays the Pan amount at a finer resolution.
- Use the **Tempo** knob to scroll the pan values from 100% Left to 100% Right. Press and hold **Pan** to reset the values back to 0.

LOOP BAR BEAT/DIV BPM
EDIT PAN

LOOP BAR BEAT/DIV BPM
TRACK 1 28 L

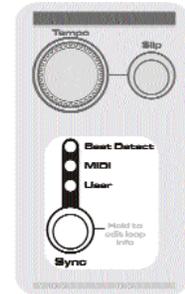
LOOP BAR BEAT/DIV BPM
PAN 3L -1- 03

LOOP SYNC

SYNCING

Press the **Sync** button to toggle through your sync modes:

- **Beat Detect:** Repeater reads your incoming audio to find the tempo.
- **MIDI:** syncs tempo to MIDI clock input
- **User:** tempo is set by the **Tap Tempo** button and adjustment of the **Tempo** encoder



Selecting Sync

Beat Detect

Repeater identifies the beat and tempo of your input audio and uses it to drive Repeater's internal clock which determines the tempo of any recorded loop. In Beat Detection mode it may be necessary to help Repeater define the downbeat. Press **Play** to re-trigger the loop on the downbeat or press the **Tap Tempo** once to realign the beats. If Repeater is having trouble tracking the incoming beat, try tapping along with the **Tap Tempo** to reinforce the tempo. In Beat Detect mode Repeater transmits MIDI clock in both Play, Stop and Record modes.

In the absence of an input signal the beat detection software will lock onto the last stable tempo and hold there until it can detect a new signal/tempo. The Beat Detect LED will flash to indicate that Repeater is not able to lock to the incoming audio.

MIDI

When MIDI is selected as the sync mode, tempo is determined by incoming MIDI - try hooking up your drum machine to drive Repeater at the tempo you want. You can use the Transport to define the position of the downbeat: just press **Play** at the top of the bar.

USER

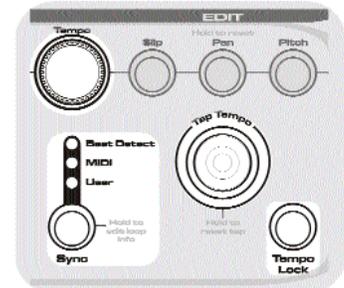
In User mode, Repeater stores tempo information within each loop. This is the loop's 'stored' tempo. In a performance setting, this feature allows you to pre-configure each loop for a unique tempo that will automatically be recalled the next time the loop is loaded. You can manually change the tempo of the loop at any time with the **Tempo** encoder, or by tapping a new tempo with the **Tap Tempo** button. If you change the tempo of the current loop, Repeater will store this new value as the loop's 'stored' tempo. Repeater transmits MIDI clock during both Play and Record operations.

Native Tempo

You can always return to the tempo the loop was recorded at by pressing **Stop** and **Tap Tempo** at the same time.

TEMPO LOCK

In User mode the Tempo Lock feature overrides the 'stored' tempo information imbedded in a loop in favor of the current tempo. This is useful for quickly loading a different loop at the current tempo. In Beat Detect mode, the Tempo Lock feature will lock down the current tempo and yet still make adjustments to keep Repeater beat synced to the incoming audio.



Sync, Tap Tempo and Tempo Lock

Press and hold the **Tempo Lock** button for 1 second to engage the metronome. While the metronome is playing Repeater will quantize the initial record to the beat of the metronome. To disengage the metronome press and hold **Tempo Lock** for 1 second. You can set the **metronome level** by pressing and holding **Tempo Lock** while tempo Lock is engaged. Use the Tempo knob to adjust the level while holding down the **Tempo Lock** button.

FILE MANAGEMENT

COMPACT FLASH CARDS

IMPORTANT!

Never remove the Compact Flash Card while the light is on. No, it doesn't matter if it is green yellow or red. Wait until the light is out to remove the card. If you do remove the card while the light is on the data on the card could become corrupted and unreadable by repeater.

The Compact Flash Card (CFC) use the standard FAT (DOS-like) file system using the FAT16 standard. Current Type 1 CFC implementations peak out at 256MB. Repeater is designed to take advantage of Type 1 CFC implementations with up to 512MB of storage.



Compact Flash Cards

When a CFC is inserted into Repeater, the unit checks it for formatting and readability. It then looks for a directory called 'Electrix' then one called 'Repeater'. If this directory exists, then this is the focus for all file operations. Within the 'Repeater' directory, each loop will have its own directory labeled 'LoopXXX'. Each loop folder contains up to nine files: up to four .WAV files 'Track1.wav' that contain the contents of each track, and five proprietary files that contain track and loop information TrackX.tdf and LoopInfo.lfd.

The LED above the CFC slot indicates the state of the Compact Flash Card as follows:

1. **Off.** Card inactive or no card is inserted. It is safe to remove the card.
2. **Flashing Red.** Card checks out as unformatted or unusable.
3. **Flash Green Once.** Card is Ok.
4. **Constant Green.** Data is being read by the card.
5. **Constant Red.** Card is actively writing. Do not remove.

IMPORTANT! CFC Performance

All CFC's are not created equal. Some lack the bandwidth to keep up with Repeater. Cards that we have tested to work with Repeater are **Sandisk**, **Simple technologies**, **Kingmax** and our own cards. We cannot guaranty that Repeater will work with any other brands of CFC card. Before you buy a card make sure it is type 1 and that it is a high bandwidth card. Check out our website for the latest information. www.electrixpro.com

Formatting a CFC Card

When you insert an unformatted CFC into Repeater, the CFC indicator will flash red in unison with Record button and the Display will read "FORMAT CFC". Pressing the **Record** button will format the card, pressing stop will cancel. While formatting, the record LEDs stay on and the CFC indicator continues to flash. Once the operation is complete, the CFC indicator will light green for 1 second and then extinguish to show that the card is OK.



Force Formatting

To force a CFC to be formatted, press and hold **Stop** while inserting the CFC. The display will read "FORMAT". Press **Record** to format or any other button to cancel.

FILE MANAGEMENT

LOOP COPY

The Copy function is available when Repeater is playing or stopped.



To Copy a loop...

- Select the loop and press the **Copy** button. The **Copy** button will flash, indicating that you're in copy mode, and the display will change to show the source loop number on the left of the display, and the target loop location on the right of the display.
- If you don't have enough memory, the display will read "FULL". You can free up space by erasing some loops.
- Use the **Tempo** knob to change the target location, and press **Copy** again to make the copy, or **Stop** to get out of the copy function.
- When the copy is complete the display will flash "LOOP COPIED".



MEMORY SPACE MANAGEMENT

Repeater's memory structure is comprised of two storage areas: internal memory and external flash memory. Internal Memory has an apostrophe before the loop number.

Internal Memory

Internal memory is limited to 8MB, which translates to about 85 seconds of record time. This memory is volatile memory, so if you lose power to Repeater, you will lose the data. Internal loops can be copied to a CFC. Internal memory space may have performance advantages over some CFC's. Some functions like time stretching are limited by the speed at which a storage device can move data. Internal memory is faster than some CFC's and may offer you greater range when it comes to speeding up and time stretching a loop. Internal memory is great for those times when you forget your CFC, or want to copy files between CFC's.

External Memory



Internal Memory



External Flash Memory

CFC memory is non-volatile, and will hold its content forever without the need for power of any kind. CFC memory is designed to work like a hard drive, in fact most computers treat it simply as a hard drive which makes it a widely compatible storage medium. CFC's come in a variety of sizes; Repeater is compatible with Type 1 CFCs up to 512MB in size. Some CFCs perform better than others. We tested a number of brands of card before settling on the brand that we ship with Repeater. This card has been found to provide the performance required to allow all operations that can be performed through the use of internal memory. Not all cards are so lucky. All CFC cards should work with Repeater, but there may be speed issues which prevent multiple tracks or stereo recording from behaving well with some cards. For details of recommended cards to use with Repeater, get the latest information from our website.

Checking available memory space

To find out how much record time you have left, press and hold the 'copy' button for about half a second. The display will change to show firstly internal memory remaining, and if a CFC is inserted a further press of copy will show the amount of CFC memory remaining. A final press will return the display to normal. The space remaining is displayed in minutes and seconds.

FILE MANAGEMENT

FILE DIRECTORY STRUCTURE

Repeater stores information on the CFC in a hierarchical format:

F:\Electrix\Repeater\Loop001.....Loop999\track1.wav

Each loop folder contains up to 9 files, of which there are three possible file types:

< .wav > - the .WAV file contains the content for each track in the standard 16 bit 44.1kHz format. Loop start and end locations are marked with region markers.

< .ldf > - a Loop Data File is a proprietary file that contains parameter data for the loop and the status of each track. Please do not mess with the contents of this file.

< .tdf > - a Track Data File contains proprietary information about the content of the track. Repeater uses this data to optimize time stretching and pitch shifting operations. Don't mess with this either.... see above...

A typical 4 track loop will look like this:

Please do not rename any of the files inside a loop folder. Repeater will not recognize files or folders that do not conform to its strict file structure.

The .WAV files are standard files and are compatible with many PC based audio applications. Each of the four tracks are exactly the same length.



COPYING BETWEEN COMPACT FLASH CARDS

There are two basic ways to copy data between CFC's:

1. Copy using Repeater's internal memory

- Select the Loop you wish to copy.
- Press **Copy** and use the **Tempo** knob to select the destination Loop number.
- Press **Record** to execute.

2. Copy using a PC with a CFC reader

- Simply copy the contents of a card onto a local drive on your PC. Here you can rename each folder (within Repeater's naming convention of course!) to re-organize a new set of loops for a new card. Now copy the folders onto the card into the Electrix\Repeater\ directory.

FILE MANAGEMENT

SHARING FILES WITH YOUR PC

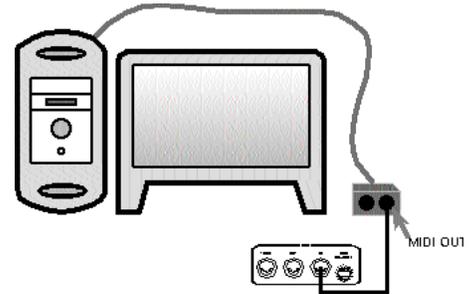
Here's how to get the loops you've created with Repeater onto your PC for back up or for loading into your favorite PC based audio application. First you're going to need a USB Compact Flash Reader. Check out the SanDisk ImageMate, (<http://www.sandisk.com/cons/imagemate.htm>). Get the CFC reader working and plug in a CFC with Repeater data on it. Repeater organizes its data in convenient folders. The folders are named just like the loop, i.e. "Loop001". Inside the folder are nine files. Four (4) of these files labeled: "track1.wav.... track4.wav", are the content from each track in the standard .WAV file format. The other five (5) files are proprietary Repeater files that contain track and loop information. If you have pitch shifted or time-stretched to a new tempo you will need to re-sample each track before exporting to capture those effects. Repeater records extra data at the start and end of each loop to facilitate trimming. If you want your exact loop in the .wav file you will have to erase that extra data. You can do this on Repeater by pressing and holding the **Trim** button until the display reads "TRIM CUT".

Organizing Loops

You can re-organize the order of loops in Repeater simply by renaming the folders. Be careful to keep Repeater's naming convention, otherwise Repeater may not be able to find your loops even though they remain on the card. When copying Loop folders, insure that they contain all of the proprietary Repeater files along with the .WAV files.

Exporting Loops From Repeater

The .WAV file format has provision for region marks. Repeater uses the region marks to identify the start and end point of the loop. Most audio applications will support and indicate the region marks in their editor windows.



Bounce Tracks & Commit External FX & Pitch Shift (Flatten the loop)

Pitch shifting and FX applied on tracks are completely non-destructive in that they do not permanently affect the recorded audio. If you wish to record the effects to memory, you can re-sample the tracks.

To Bounce Tracks with (or without) Effects...

- Set the LEVELS, PAN, PITCH and FX Insert just how you want it to sound for the new resampled track.
- Select the track(s) you wish to resample to. Press **Resample**
- Use the **Track Select** buttons, select the tracks you wish to be mixed into the resampled tracks. Press **Resample** again to confirm
- Now press **Record** to engage the resample. Repeater will stay in Record and play until you press **Record** again. If you press **Record** before an entire loop cycle is completed then the record light will begin to flash. Don't panic. Resample needs to record through one entire loop cycle. When the Resample operation is complete the flashing CFC light will stop and you're done. Pressing the **Record** button before the loop is finished is a good way to automate the resampling of a single loop cycle.
- You may adjust the mix or any other parameter during the resampling operation.

MIDI

USING MIDI

Repeater primarily uses MIDI in two ways: to automate/remotely control its parameters via MIDI Control Change messages and to sync to MIDI clock from Sequencers or other Repeaters.

MIDI CHANNEL SELECTION

Repeater receives MIDI information on the channel specified by the MIDI channel selector on the rear panel. There is one exception to the global MIDI receive channel as set by the rear panel selector: MIDI clock messages are not channel specific and will be received regardless of the receive channel. Additionally, reception of MIDI Clock messages will not light up the MIDI Receive LED on the front of Repeater.

REPEATER & MIDI CLOCK

Repeater responds to the following MIDI clock related messages:

System Common Messages:

- **SPP** - Identifies the location of the next timing clock by 1/16 note (6 ticks).

System Real-time Messages:

- **Start** - Regarded as a SPP of 0 and a sequencer start message (0x FA)
- **Stop** - Stops the sequencer (0xFC)
- **Clock** - Sent out 24 times per quarter note (0xF8)

Advanced MIDI RT tweaking

In some situations it may be desirable for Repeater to NOT send out MIDI RT start, stop and SPP messages. The output of these messages can be inhibited/enabled by sending Repeater the Inhibit MIDI RT Control CC message.

When syncing via MIDI, it may be necessary to tell Repeater where the downbeat is. This is done by pressing the tap tempo button.

USING A KEYBOARD TO TRIGGER PITCH

Repeater's Track Pitch Shift can be easily controlled with MIDI note information.

To control the track Pitch Shift via MIDI:

- Connect the MIDI Out of your keyboard to the MIDI In on Repeater,
- Set the MIDI receive channel on the back of Repeater to match the MIDI transmit channel on your keyboard
- Press the **Pitch** Edit Button
- Select the track(s) you wish to adjust
- Play monophonically (one note at a time) to shift the pitch
- Middle C will return the track(s) back to their default key
- Press **Pitch** to exit

MIDI

SELECTING LOOPS VIA MIDI

Repeater uses the MIDI Bank control change messages for remote selection of loops via MIDI. They work as a MSB/LSB pair. MSB stands for Most Significant Bit and LSB: Least Significant bit - think of it as chapter and verse. MIDI CCs are limited to 127 values. Using MSB/LSB allows us to utilize banks of 127 to access all of Repeater's 1000+ loops. Use the Bank Select MSB CC#0 to Select the Bank as follows:

- | | |
|----------------------------|----------------------------|
| - Bank 0 = Internal 1-16 | - Bank 5= External 513-640 |
| - Bank 1= External 1-128 | - Bank 6= External 641-768 |
| - Bank 2= External 129-256 | - Bank 7= External 769-896 |
| - Bank 3= External 257-384 | - Bank 8= External 897-999 |
| - Bank 4= External 385-512 | |

Use the Loop Select LSB to select the loop within the bank. i.e. to select External 387, send CC#0 (Loop select MSB) at 4, and CC #32 (Loop select LSB) at 3.

There are some other ways of moving between loops too. Try these for size:

- Loop select up/down via PC or CC messages.
- Direct loop select PC messages.

MIDI CONTROL CHANGE

All of Repeater's functions are remotely accessible via MIDI.

Almost all controls on Repeater generate MIDI Control Change (CC) messages from the MIDI output. These CC's all occur on the currently selected Repeater MIDI channel. Additionally, all front panel controls respond to CC and PC messages received on the currently selected MIDI channel. The MIDI CC and PC messages supported are given in the Repeater MIDI Specifications Table:

USING A MIDI FOOT CONTROLLER WITH REPEATER

By lining up a MIDI foot controller with some of the above mentioned parameters it is possible to control a Repeater entirely with one's feet. May we make a few suggestions:

| Name | Default | PC | CC | Value ranges and meaning |
|------------------------|---------|-----|-----|--|
| Track 1 Record Select | 0 | 6 | 80 | 0 - 127 64-127 (active) |
| Track 2 Record Select | 0 | 7 | 81 | 0 - 127 64-127 (active) |
| Track 3 Record Select | 0 | 8 | 82 | 0 - 127 64-127 (active) |
| Track 4 Record Select | 0 | 9 | 83 | 0 - 127 64-127 (active) |
| Track 1 Level/Mute | 100 | 16 | 16 | 0 - 127 see Appendix G |
| Track 2 Level/Mute | 100 | 17 | 17 | 0 - 127 see Appendix G |
| Track 3 Level/Mute | 100 | 18 | 18 | 0 - 127 see Appendix G |
| Track 4 Level/Mute | 100 | 19 | 19 | 0 - 127 see Appendix G |
| Overdub Feedback Level | 90 | N/A | 11 | 0 - 127 (no feedback - 100% feedback) |
| Reverse | forward | 10 | 84 | 0 - 127 0-63 (forward), 64-127 (reverse) |
| Play | 0 | 20 | 85 | 0 - 127 64-127 (Press) |
| Record | 0 | 3 | 86 | 0 - 127 64-127 (Press) |
| Stop | 0 | 21 | 87 | 0 - 127 64-127 (Press) |
| Undo | 0 | 1 | 89 | 0-63 (off) 64-127 (Undo) Momentary |
| Loop Multiply | 0 | 0 | 102 | 0 - 127 64-127 (Press) |
| FX Insert | 0 | 11 | 103 | 0 - 16 As per Appendix E |
| Tap Tempo | 0 | 12 | 68 | 0 - 127 64-127 (Press) |
| Loop Select Up | 0 | 4 | 96 | 0 - 127 64-127 (Action) |
| Loop Select Down | 0 | 5 | 97 | 0 - 127 64-127 (Action) |

MIDI

SYNCING REPEATER TO POPULAR SEQUENCERS/DAW'S

Protools

Syncing to Protools is a two step process. First, if you are using a Mac, you must set up OMS to acknowledge Repeater and its characteristics. In the Studio Setup create a device that looks like this: (see Opcode for OMS instructions)



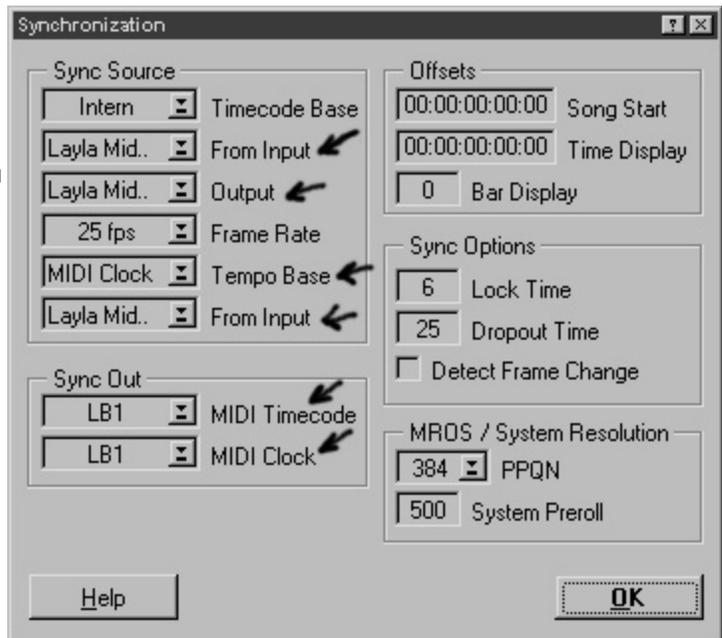
Now in Protools under the MIDI menu, select MIDI Beat Clock. Enable Beat Clock, and select your MIDI Interface.



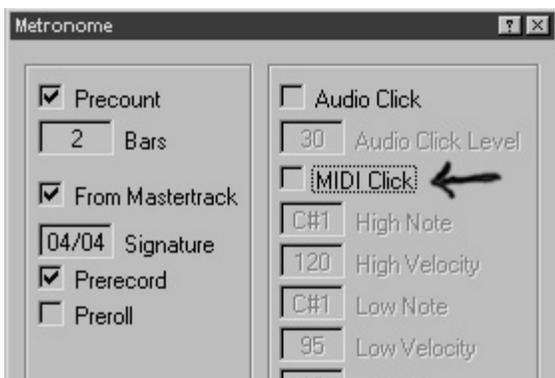
Now Repeater will sync to the tempo map in Protools.

Cubase

Syncing to Cubase is also simple. First, if you are using a Mac, you must set up OMS (see above). (This assumes you have a MIDI interface). Then you will need to setup your synchronization inputs and outputs. Go to the Synchronization window under the Options menu. Select your input and output device. Set the tempo base to MIDI Clock. Select your MIDI clock input source as your MIDI interface port. For the Sync out select your MIDI interface port.



Double clicking on the "Click" button in the transport will open the "Metronome" window. Disable MIDI Click by unchecking the "MIDI Click" box. Now Repeater will sync to Cubase.



MIDI

MIDI SPECIFICATIONS TABLE

| Name | Default | PC | CC | Value | Ranges and meaning |
|-------------------------|---------|-----|-----|---------|--|
| Track 1 Record Select | 0 | 6 | 80 | 0 - 127 | 64-127 (active) |
| Track 2 Record Select | 0 | 7 | 81 | 0 - 127 | 64-127 (active) |
| Track 1&2 Record Select | 0 | 14 | 90 | 0 - 127 | 64-127 (active) Selects stereo pair 1&2 |
| Track 3 Record Select | 0 | 8 | 82 | 0 - 127 | 64-127 (active) |
| Track 4 Record Select | 0 | 9 | 83 | 0 - 127 | 64-127 (active) |
| Track 3&4 Record Select | 0 | 15 | 91 | 0 - 127 | 64-127 (active) Selects stereo pair 3&4 |
| Track 1 Level/Mute | 100 | 16 | 16 | 0 - 127 | see Appendix G |
| Track 2 Level/Mute | 100 | 17 | 17 | 0 - 127 | see Appendix G |
| Track 3 Level/Mute | 100 | 18 | 18 | 0 - 127 | see Appendix G |
| Track 4 Level/Mute | 100 | 19 | 19 | 0 - 127 | see Appendix G |
| Loop Select MSB | 0 | N/A | 0 | | Selects Loop in combination with Loop Select LSB messages see Appendix A |
| Loop Select LSB | 0 | N/A | 32 | | |
| Slip Track 1 Beats | 0 | N/A | 20 | | Slips by beat as per Appendix B |
| Slip Track 1 MS | 0 | N/A | 52 | | Slips between beats as per Appendix C |
| Slip Track 2 Beats | 0 | N/A | 21 | | Slips by beat as per Appendix B |
| Slip Track 2 MS | 0 | N/A | 53 | | Slips between beats as per Appendix C |
| Slip Track 3 Beats | 0 | N/A | 22 | | Slips by beat as per Appendix B |
| Slip Track 3 MS | 0 | N/A | 54 | | Slips between beats as per Appendix C |
| Slip Track 4 Beats | 0 | N/A | 23 | | Slips by beat as per Appendix B |
| Slip Track 4 MS | 0 | N/A | 55 | | Slips between beats as per Appendix C |
| Pan Track 1 | 64 | N/A | 24 | 0 - 127 | 0(full left), 64 (centre), 127(full right) |
| Pan Track 2 | 64 | N/A | 25 | 0 - 127 | 0(full left), 64 (centre), 127(full right) |
| Pan Track 3 | 64 | N/A | 26 | 0 - 127 | 0(full left), 64 (centre), 127(full right) |
| Pan Track 4 | 64 | N/A | 27 | 0 - 127 | 0(full left), 64 (centre), 127(full right) |
| Pitch Track 1 Semi | 64 | N/A | 28 | ±12 | Semitones as per Appendix D |
| Pitch Track 1 Cents | 0 | N/A | 60 | 0 - 99 | 0-99 (cents) [99 - 127 = 99] |
| Pitch Track 2 Semi | 64 | N/A | 29 | ±12 | Semitones as per Appendix D |
| Pitch Track 2 Cents | 0 | N/A | 61 | 0 - 99 | 0-99 (cents) [99 - 127 = 99] |
| Pitch Track 3 Semi | 64 | N/A | 30 | ±12 | Semitones as per Appendix D |
| Pitch Track 3 Cents | 0 | N/A | 62 | 0 - 99 | 0-99 (cents) [99 - 127 = 99] |
| Pitch Track 4 Semi | 64 | N/A | 31 | ±12 | Semitones as per Appendix D |
| Pitch Track 4 Cents | 0 | N/A | 63 | 0 - 99 | 0-99 (cents) [99 - 127 = 99] |
| BPM & Pitch MSB | 64 | N/A | 14 | 0 - 127 | (-75%+150%) Adjusts the Tempo and Pitch of all four tracks as a percentage of the current tempo 76 is zero shift |
| BPM & Pitch LSB | 0 | N/A | 46 | | |
| Tempo MSB | 64 | N/A | 9 | 0 - 127 | 1-240bpm in 2 bpm increments |
| Tempo LSB | 0 | N/A | 41 | | fine increments 0-2 bpm |
| Overdub Feedback Level | 90 | N/A | 11 | 0 - 127 | (no feedback - 100% feedback) |
| Overdub/Replace | 90 | 13 | 105 | | On/Off Off=replace On=overdub |
| Reverse | forward | 10 | 84 | 0 - 127 | 0-63 (forward), 64-127 (reverse) |
| Play | 0 | 20 | 85 | 0 - 127 | 64-127 (Press) |
| Record | 0 | 3 | 86 | 0 - 127 | 64-127 (Press) |
| Stop | 0 | 21 | 87 | 0 - 127 | 64-127 (Press) |
| Play/Stop | N/A | 2 | 88 | 0 - 127 | 64-127 (Press) |
| Undo | 0 | 1 | 89 | 0 - 127 | 64-127 (Press) |
| Loop Multiply | 0 | 0 | 102 | 0 - 127 | 64-127 (Press) |
| FX Insert | 0 | 11 | 103 | 0 - 16 | As per Appendix E |

MIDI

| | | | | | |
|------------------------------------|-----|----------|-----|---------|--|
| Tempo Lock | Off | N/A | 104 | 0 - 127 | 0-63 (off) 64-127 (on) |
| Tap Tempo | 0 | 12 | 68 | 0 - 127 | 64-127 (Press) |
| Loop Select Up | 0 | 4 | 96 | 0 - 127 | 64-127 (Action) |
| Loop Select Down | 0 | 5 | 97 | 0 - 127 | 64-127 (Action) |
| Dry Mute* | Off | 22 | 107 | | 0-63 (Off) 64-127 (On) |
| Erase Loop* | N/A | N/A | 108 | | Value of 123 erases the current loop |
| Audio Trigger Record* | N/A | 23 | 92 | | 64-86 arm trigger at current programmed level. Values 87-127 arm the audio trigger at -40dB to 0 dB respectively |
| Advance Track Select* | N/A | 24 | 109 | | 64-127 (Action) |
| Tracks 1&2 Level /Mute* | N/A | 25 | 110 | 0 - 127 | See Appendix G |
| Tracks 3&4 Level /Mute* | N/A | 26 | 111 | 0 - 127 | See Appendix G |
| Inhibit MIDI RT Start/Stop Output* | Off | N/A | 112 | | 0-63 (off) 64-127 (on) |
| Internal Loop Select PC* | N/A | 48 - 63 | N/A | | Selects Internal loop 1-16 |
| CFC Loop Select PC* | N/A | 64 - 127 | N/A | | Selects CFC loop 1-64 |

* Denotes new options in OS 1.1

MIDI

The MIDI CC and PC messages tables reference the following appendices:

Appendix A - Loop Bank Select MSB controls the range of the LoopSelect LSB message as received by Repeater.

- Bank 0 = Internal 1-16
- Bank 1 = External 1-128
- Bank 2 = External 129-256
- Bank 3 = External 257-384
- Bank 4 = External 385-512
- Bank 5 = External 513-640
- Bank 6 = External 641-768
- Bank 7 = External 769-896
- Bank 8 = External 897-999

Appendix B - Slips to the beat number. Loops generally have unique numbers of beats. To determine the number of beats, multiply the bars by the beats in the time signature. This controller will advance through each beat at a rate of one beat per value.

Appendix C - Slips the beat between the beat selected as per Appendix A and the next consecutive beat by percentage.

Appendix D - Sets Pitch Shift in semitones

| | | | | | | |
|---------|---------|---------|--------|-------|--------|--------|
| 40= -24 | 46= -18 | 52= -12 | 58= -6 | 64= 0 | 70= 6 | 76= 12 |
| 41= -23 | 47= -17 | 53= -11 | 59= -5 | 65= 1 | 71= 7 | |
| 42= -22 | 48= -16 | 54= -10 | 60= -4 | 66= 2 | 72= 8 | |
| 43= -21 | 49= -15 | 55= -9 | 61= -3 | 67= 3 | 73= 9 | |
| 44= -20 | 50= -14 | 56= -8 | 62= -2 | 68= 4 | 74= 10 | |
| 45= -19 | 51= -13 | 57= -7 | 63= -1 | 69= 5 | 75= 11 | |

Appendix E - Selects the FX Insert combination:

| | | |
|-----------------------------|-------------------------|------------------------|
| 0= No Effects Insert active | 6= FX on Tracks 2&3 | 12= FX on Tracks 3&4 |
| 1= FX on Track 1 | 7= FX on Tracks 1,2&3 | 13= FX on Tracks 1,3&4 |
| 2= FX on Track 2 | 8= FX on Track 4 | 14= FX on Tracks 2,3&4 |
| 3= FX on Track 1&2 | 9= FX on Tracks 1&4 | 15= FX on all Tracks |
| 4= FX on Track 3 | 10= FX on Tracks 2&4 | 16= FX on input. |
| 5= FX on Tracks 1&3 | 11= FX on Tracks 1, 2&4 | |

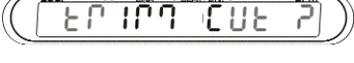
Appendix F - Note that selecting a track (track pair) causes the current selection to be removed.

Appendix G - Track Level PC messages will mute/unmute the particular track. Once a track is muted via a MIDI PC, unmuting it will restore it to the level as set by the channel fader or the associated MIDI CC message.

REFERENCE

DISPLAYED MESSAGES

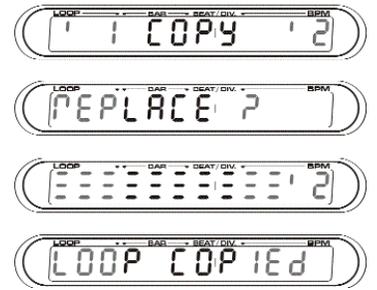
For those of you who hate reading manuals, we've matched LCD displays to brief descriptions so you can quickly flip to what you want to know.

| | |
|--|--|
| <p>Power Up On power up. Software Version. Detects CFC.</p> |  |
| <p>Loop Location CFC Memory Internal Memory</p> |   |
| <p>Multiply Loop Press Multiply Loop and the loop is instantly doubled in length. Press and hold Multiply Loop and use the Tempo knob to dial in another multiple.</p> |  |
| <p>Trim Loop</p> <ul style="list-style-type: none"> • The first press of Trim will put you into the Bars Trim mode. The Loop knob will remove whole bars from the front of the track, the Tempo knob removes bars from the end of the track. • Press Trim again to go into Seconds Trim mode. In Seconds Trim mode the display shows the start and end points of the loop in min.sec.sec/100, which you can modify with the Loop and Tempo knobs. These changes will affect your tempo, and the Bars and Beats will be recalculated according to the rule: Seconds = Bars x Beats x ((Tempo/60)/Div). For example, in 3/4 time, the Beats value would be 3 and the Div would equal 4. 4/4 time the values would be Beat = 4, Div = 4. |      |
| <p>Undo Press Erase/UNDO, and the display reads "UNDONE" for a second. Press Erase/UNDO, a second time and the display reads "REDONE".</p> |  |
| <p>Erase Press and hold the Erase/UNDO button to put the unit into erase mode. The display shows four "-"-s and flashes all four Track Select buttons, the Stop button and the Erase button. Only the Erase button enacts the erase. All other button presses cancel the erase. Track Select buttons are used to select/deselect tracks to be erased. If all tracks are erased then the loop becomes EMPTY. If the Erase button is pressed then the tracks are erased and the display shows the progress and finishes with "LOOP ERASED".</p> |  |

REFERENCE

Copy

If there is not enough memory to complete the copy the "MEM LIMIT" message is presented. If there is room to copy the display will indicate the current source loop on the left and destination loop on the right. The **Tempo** knob controls the destination. Stop and Record will flash. Pressing **Copy** performs the action. Pressing **Stop** (or any other button) cancels the copy. The copy function is complete and the unit leaves copy mode.



Overdub Feedback Level

A single press of **Overdub** puts the unit in overdub mode. Press and hold **Overdub** for 3 seconds and the unit enters feedback edit mode. Modify the feedback level using the **Tempo** knob.



Edit Beat

Press and hold the **Sync** button for one second and the unit enters tempo edit mode. Use the **Loop** knob to edit the total number of beats in the loop. Use the **Tempo** knob to change the time signature.



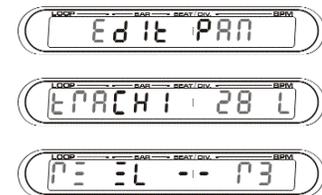
Slip

If only one track is selected for slipping the display reads "TRACK X" with a higher resolution displayed for the slip amount in bars/beats/1/100 of a beat. If more than one track is selected for slipping the display shows all slip values (in beats only). The dot indicates that the value is as displayed plus some fraction.



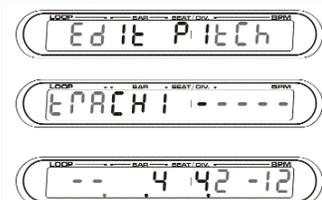
Pan

If only one track is selected for panning the display says "TRACK X" with a higher resolution displayed for the pan amount in %. If more than one track is selected for panning the display shows all pan values.



Pitch

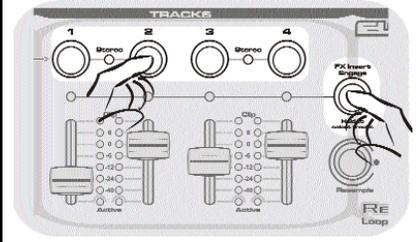
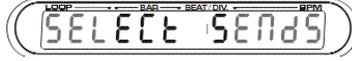
If only one track is selected for pitch shifting the display says "TRACK X" with a higher resolution displayed for the pitch amount in semitones up (no extra indicator) and down (a minus sign). If more than one track is selected for pitch shifting the display shows all shift values.



REFERENCE

FX Insert Engage

When the **FX Insert** is lit the FX Insert is engaged. While it is held down the display says "SELECT SENDS" and the tracks to be sent can be selected by the **Track Select** buttons (which are lit to indicate the selected tracks to be sent out the insert). These tracks are always displayed by lit FX Insert LEDs. (Even when the insert is not engaged).



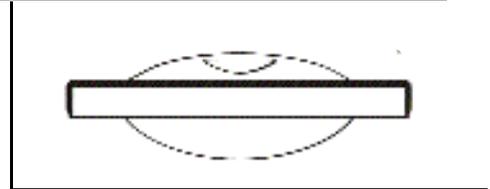
Resample

Set the **Levels, Pan, Pitch** and **FX Inserts** just how you want it to sound for the new resampled track. Use the **Track Select** buttons to select the track(s) you wish to record to. Press **Resample**. The display will show "SELECT SRC". Use the **Track Select** buttons to select the tracks you wish to be a part of the new mixed track(s). Press **Resample**. Now press **Record** to engage the resample. Press **Record** again to finish the resample.



CFC States

- **Card Ready:** Card inserted in socket and socket LEDs off
- **Reading from card:** Green.
- **Writing to card:** Red.
- **Reading/Writing:** Amber.
- **Card rejected:** Flashing Red



Note: Removing the card whilst reading or writing is in progress can potentially corrupt the file system on the card. To be safe, ensure the CFC slot LEDs are off before removing the card.

Unformatted Cards

If you insert an unformatted card in while playing a loop the CFC light blinks red.

If you insert an unformatted card any other time the "FORMAT CFC ?" display comes up. To format the card the unit needs to be stopped. When the "FORMAT CFC ?" prompt comes up just press record to format the CFC. To force format simple insert the CFC while holding the **Stop** button.

Remember to check the amount of remaining memory by holding down the **Copy** button. First press shows the internal memory left, a second press of **Copy** shows the CFC's available memory. A third press exits.



REFERENCE

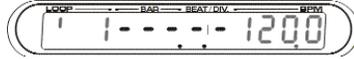
Upgrading Software

To upgrade Repeater's software, first copy the file from your PC onto a CFC card that Repeater has formatted. Unplug Repeater's Power Supply and insert the CFC with the upgrade software. Restore the power. If more than one version of software exists on the card then the **Tempo** encoder will scroll through them. Select the software version you wish to load and then press **Record** to upgrade the unit. Any other button press cancels the action.



Blank Loop

Blank loop with tempo information.



Low on Memory

In the case that record is triggered when memory is full, the word 'MEM LIMIT' will flash in the memory/play time window for 3 seconds. Unless the unit shows the current memory space is full, a track select button (or a stereo-linked pair of **Track Select** buttons), will always be lit. This is the active track for recording. By default/initially, Track 1 will be selected and so the Track 1 select button LEDs will be on.



TROUBLESHOOTING

✎ **Can't hear the Input** - make sure the input level is set sufficiently to make the **Input** LED go red on louder notes, Make sure the selected track/tracks output levels are turned up. Make sure the FX Insert is not engaged.

✎ **Tracks are not making sound** - If there is signal present as indicated by the LED meters next to each track, make sure that the **Levels** are up, that the FX Insert light is off, (if not press **FX Insert**), and that your tracks are panned where you are expecting them.

✎ **Loop skips a beat** - it is conceivable that the Loop Point Assist algorithm won't work every time. Use the Trim function to correctly trim your loop manually.

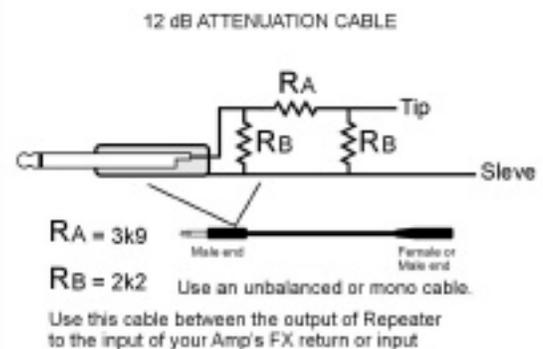
✎ **Repeater won't sync to incoming audio** - make sure that you are sending sufficient signal to Repeater, insure that the signal is clean and rhythmic in nature. Kick into beat Detection mode. Emphasize the beat if necessary by tapping along with the **Tap Tempo**. Press **Play** on a downbeat.

✎ **Unusually loud levels and distortion** - if you are using the RCA inputs and you are experiencing unusually loud levels and distortion, then you probably have the phono pre-amp engaged even though you are feeding a line level signal . Disengage the phono pre by pressing the back button on the back of Repeater next to the RCA inputs.

✎ **Noisy results with Guitar amp inputs or FX loops** - Guitar inputs are typically sensitive to low level signals (typically -20dBu). FX loops are typically designed to operate at or near 'line' level (-4dBu). Repeater is designed to produce a clean high level signal (typically around +8dBu) suitable for a studio environment. As a result, the output from Repeater can mis-match with some guitar amps producing a noisy result.

The first step in improving the situation is to try and optimise the levels in the system to minimise noise. Try adjusting the input level of the guitar amp down so that it will accept a signal from Repeater that corresponds to 0dB or better on the track level indicators without clipping. Reducing the output of Repeater using the track sliders or input level control is undesirable as this will reduce the ratio of signal to noise in the system.

If you cannot achieve a good result by this means, the diagram to the right shows how to build an in-line attenuator cable that will help match the output of Repeater to a high-gain input such as a guitar amplifier.



✎ **Repeater won't power up** - Make sure you've got the correct power supply. Repeater requires a custom Electrix power supply model TFR0035. The power supply has a mechanical fuse that will reset after a short or a faulty power input cable is replaced. The power supply also has a small green led that indicates if it's working.

✎ **I can't overdub**. To Overdub, Repeater still needs memory to undo. And you probably don't have enough memory left. Or you might have multiplied and recorded to other tracks, and once you try and overdub to the multiplied track you might not have enough memory. See virtual tracks

✎ **I try playing my loop on my PC and it doesn't sound right**. First you need to discard any extra trim data. Press and hold **Trim** to cut and discard any extra data. If you have pitch shifted or changed tempo then you will need to flatten the loop before you move it to the PC. Do this by resampling the tracks to themselves. See resample.

✎ **I can't trim my loop**. You might have a multiplied track that is still "virtual" check the active LEDs in the tracks section. If any are blinking you have a virtual track. You need to flatten it by resampling it to itself or overdubbing to the virtual track. See resample. Now you can trim the loop.

TROUBLESHOOTING

✎ **My MIDI foot controller doesn't line up with Repeater's PC numbers.** Some companies offset their PC numbers to confuse the rest of us. Hooray! You may need to subtract one from the Program Change numbers in Repeater's MIDI chart to line up right with your floor controller.

✎ **I insert a CFC while playing and the CFC light just blinks red.** It's an unformatted card. You need to stop Repeater and reinsert the card to format it. It's a card that is too slow to work with Repeater.

✎ **I try to record and all I get is a "Tempo Fast" or "Tempo Slow" message.** You need to adjust the tempo of the loop into a range that Repeater can handle.

✎ **I remove the CFC and when I put it back in, the loop has lost my edits.** Repeater saves parameters only after coming out of record or when you change loops. Try changing loops before removing the card.

✎ **My loop speeds up.** If you are in Beat Detect or MIDI sync modes Repeater will sync your loop to these sources. In different cases this could cause Repeater to speed the loop up to resync the beats. Putting Repeater into User sync will prevent this.

✎ **After I resample my loop sounds different.** After you resample, Pitch edits and the FX sends are still active. You need to reset any Pitch shifting and disengage the FX insert or you will double up on the effect.

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SPECIFICATIONS

MAIN AUDIO PATH

Connector: 1/4" Unbalanced Input/Output
Input Impedance: 77kOhm
Output Impedance: 1kOhm
SNR: 94dB (A-Weighted)
THD: <0.012%
Max Input: 18.2 dBu
Frequency Response: +0/-0.7dB (20Hz to 20kHz)
Gain: 21dB to negative infinity

EFFECTS LOOP PATH

Connector: 1/4" Unbalanced Input/Output
Input Impedance: 77kOhm
Output Impedance: 1kOhm
SNR: 94dB (A-Weighted)
THD: <0.013%
Max Input: 18.2 dBu
Frequency Response: +0/-0.6dB (20Hz to 20kHz)
Gain: 0dB

INSTRUMENT PATH

Connector: 1/4" Unbalanced Input
Input Impedance: 500kOhm
SNR: 94dB (A-Weighted)
THD: <0.014%
Max Input: 18.2 dBu
Frequency Response: +0/-0.5dB (20Hz to 20kHz)
Gain: 21dB to negative infinity

PHONO PATH

Connector: RCA (phono/line) Input
Input Impedance: 47kOhm (phono/line)
SNR: 94dB (A-Weighted)
THD: <0.28% (phono), <0.014% (line)
Max Input: -19 dBu (phono), 18.2 dBu (line)
Frequency Response: +2.5/-0.2dB (20Hz to 20kHz phono)
+0/-0.75dB (20Hz to 20kHz line)
Gain: 36dB @ 1kHz

POWER CONSUMPTION 15W

USE ONLY WITH ELECTRIX

POWER SUPPLY MODEL TFR0035

Voltage
100-240 V

Frequency
47/63Hz

FLOW DIAGRAMS

