TERMINAL
MASTER EFFECT

Terminal Master Effect Rack Extension

OPERATION MANUAL v 1.0.1

Revision history

Version 1.0 - Initial Release

Version 1.0.1

Minor bug fixes

Updated Operation Manual

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Contents

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About Terminal Master Effect

Terminal Master Effect is a 2-input, 2-output multi-effect Rack Extension used for creating creative effects, modulations, distortion effects, sound shaping and mastering. The device is visually divided into four groups:

- Studio Master Section
- Damage Master Section
- Color & Ambience Master Section, and
- LFO Master Sections

Each Master Section has corresponding sets of effects.

After the sound passes the Master Sections, it is controlled with the Mix Control and a Limiter/Maximizer.

Need to Know and How-to

Terminal should be attached to an instrument.

After you create Terminal, **the best start would be to** copy the notes from your source instrument and paste them into the Terminal's note lane. This is how the 4 LFO modules are triggered, which is an essential part of harnesing the true power of the device.

Notes in terminal are used specifically for triggering the LFOs, once you copied the notes from your source instrument, you can re-arrange the notes rhythmically in Terminal to match your own feel and groove. Note key is not important, it's only important if a note is played and for how long. You will be able to see that the LFOs are working by the modulation analyzers/indicators (the white dots on LFO displays).

You don't need to put in any notes for static processing (mastering, static EQ-ing etc.)

Patches - The best way to use Terminal patches is on clean signals (i.e clean saw signal, guitar, vocal) without too many effects already applied. Terminal prefers signals with larger frequency coverage (i.e saw > sine)

Patches "For Stabs" - Use regular patches for long/continuous sounds/instruments/vocals (longer processing flow) and use "For Stabs" patches for stab sounds (very short sounds like stabs, or natural instruments played very shortly and with little release). Example Patch from this group is the Insomnia Pizzicato which, added as ab effect on NN-19's Pizzicato patch, creates the legendary sound similar to Faithless' Insomnia song.

LFOs can modulate other LFOs. Example patches for this are Filter Slowing Down and Filter Speeding Up where one LFO is modulating the Filter Cutoff and the second LFO is modulating the first LFO's rate.

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To draw a custom LFO modulation, make sure you turn on "Custom" wave type for the particular LFX LFO module.

To target any parameter in Terminal with LFO, "Filter 1 Cutoff" for example, choose "Filter 1" as the target and then choose "Cutoff" as a destination, and don't forget to increase the depth on the LFO (and to actually enable "Filter 1").

When "Retrigger" is OFF on the LFO, an initial note is still required in Terminal's note lane to initialize the modulation.

You can use the LFX LFO display to draw rhythmic patterns (since it's a 64-bar display). Simply set the LFO Time Mode to "Beats" to sync with the main tempo, then modulate either Volume or Filter Cutoff.
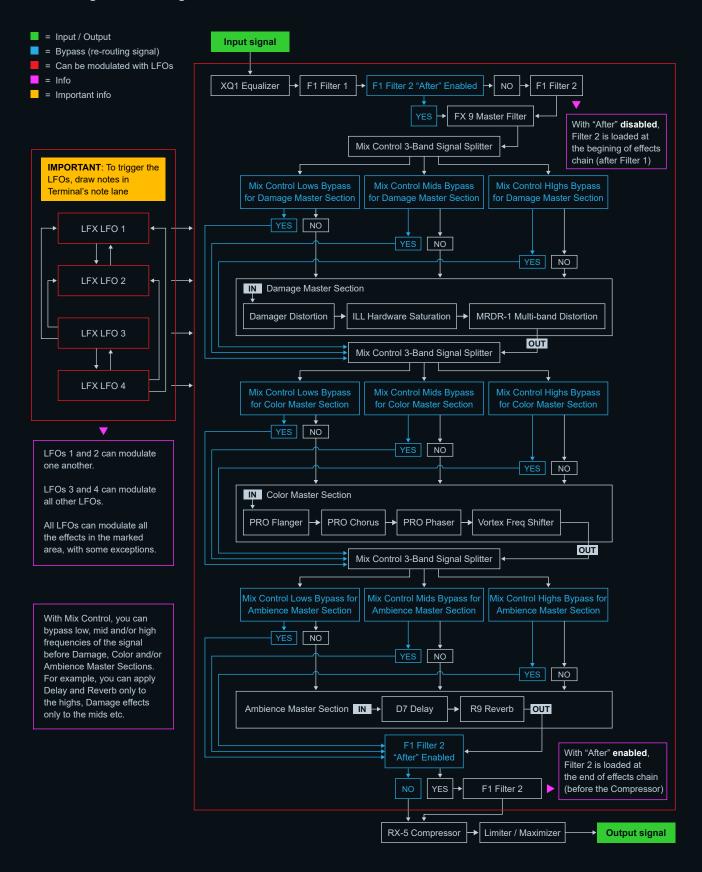
The second filter, "Filter 2", has the "After" option which you can use to place a filter after everything else (before compressor and limiter), which can completely change the sound with everything else staying the same. For instance, you can filter the echo of a delay, or you can filter the sound coming to the delay (or both), depending on where your Filter 2 is in the chain.

In Mix Control, aside from separating frequencies into three bands, you can choose which effects are applied to which Master Section (including 1. Damage (distortions and saturation), 2. Color (Flanger, Chorus, Phaser & Freq Shifter) and 3. Ambience (Delay and Reverb)). This is an awesome way to, for example, add reverb only to the highs of your sound, without muddying up the low end.

And last but not least, chain Terminals! Yes, load a couple of Terminals on top of each other. Either with our patches, or your own, chaining Terminals will produce amazing results, whether you're mastering, modulating, distorting, going creative or all of the above. And then play with note arrangements in each Terminal individually.

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Device Block Diagram

Audio signal flow diagram with LFO modulation indication

- 🟩 = Input / Output
- 🟦 = Bypass (re-routing signal)
- 🟥 = Can be modulated with LFOs
- 🟪 = Info
- 🟧 = Important info

Input signal

IMPORTANT: To trigger the LFOs, draw notes in Terminal's note lane

LFX LFO 1
LFX LFO 2
LFX LFO 3
LFX LFO 4

LFOs 1 and 2 can modulate one another.

LFOs 3 and 4 can modulate all other LFOs.

All LFOs can modulate all the effects in the marked area, with some exceptions.

With Mix Control, you can bypass low, mid and/or high frequencies of the signal before Damage, Color and/or Ambience Master Sections. For example, you can apply Delay and Reverb only to the highs, Damage effects only to the mids etc.

XQ1 Equalizer → F1 Filter 1 → F1 Filter 2 "After" Enabled → NO → F1 Filter 2

YES → FX 9 Master Filter

With "After" **disabled**, Filter 2 is loaded at the begining of effects chain (after Filter 1)

Mix Control 3-Band Signal Splitter

Mix Control Lows Bypass for Damage Master Section — YES / NO
Mix Control Mids Bypass for Damage Master Section — YES / NO
Mix Control HIghs Bypass for Damage Master Section — YES / NO

IN Damage Master Section
Damager Distortion → ILL Hardware Saturation → MRDR-1 Multi-band Distortion **OUT**

Mix Control 3-Band Signal Splitter

Mix Control Lows Bypass for Color Master Section — YES / NO
Mix Control Mids Bypass for Color Master Section — YES / NO
Mix Control Highs Bypass for Color Master Section — YES / NO

IN Color Master Section
PRO Flanger → PRO Chorus → PRO Phaser → Vortex Freq Shifter **OUT**

Mix Control 3-Band Signal Splitter

Mix Control Lows Bypass for Ambience Master Section — YES / NO
Mix Control Mids Bypass for Ambience Master Section — YES / NO
Mix Control Highs Bypass for Ambience Master Section — YES / NO

Ambience Master Section **IN** → D7 Delay → R9 Reverb **OUT**

F1 Filter 2 "After" Enabled — NO / YES → F1 Filter 2

With "After" **enabled**, Filter 2 is loaded at the end of effects chain (before the Compressor)

RX-5 Compressor → Limiter / Maximizer → **Output signal**

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Navigation

Terminal comes with envious amount of effects. This is an overview / quick explanation of the modules.

Effect Tabs

Navigate the devices master sections.

Each master section is comprised of a series of effect modules.

Studio, Damage, Color & Ambience, Closed Lid, LFO 1/2 and LFO 3/4 tabs let you navigate over device tabs.

Master Sections

Studio Master Section

- RX-5 Compressor
- 2x F1 Multi-mode filter
- FX9 Master Filter
- XQ1 Equalizer
- Mix Control Advanced Mixer (always visible)
- Limiter & Maximizer (always visible)

Damage Master Section

- Damager Distortion
- ILL Hardware Saturation
- MRDR-1 Multi-band distortion

Color & Ambience Section

- PRO Series Flanger
- PRO Series Chorus
- PRO Series Phaser
- Vortex Frequencty Shifter
- D7 Delay
- R9 Reverb

LFX LFO (1/2 and 3/4) Master Sections

- 4x LFX - Advanced LFO Modules

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Effects & Controls

RX-5 Comressor

- Comp Enabled: Enables/Disables compressor effect
- Comp Threshold: Audio level above which compression is applied
- Comp Ratio: Amount of gain reduction to apply
- Comp Soft Knee: Gradual increase in ratio as signal level crosses threshold
- Comp Attack: Controls how fast compression will start when the threshold is reached
- Comp Release: Controls how fast the compression will stop when input gets below threshold
- Comp Output: Controls the output volume after compression

F1 Filters / Filter 1 & Filter 2

- Filter 1(2) Enabled: Enables/Disables the filter effect
- Filter 1(2) Mode: Type of filter to apply
  - LP12: 12 dB/oct lowpass
  - LP24: 24 dB/oct lowpass
  - LP+: Brickwall lowpass (no resonance)
  - BP6: Bandpass with 6 dB/oct roll-offs
  - HP12: 12 dB/oct highpass
  - HP+: Brickwall highpass (no resonance)
  - Comb+: Comb filter
  - Comb-: Comb filter with inverted phase
  - SVF: State Variable filter

- Filter 1(2) Cutoff: Cutoff frequency
- Filter 1(2) Resonance: Strength of resonant peak at cutoff frequency
- Filter 2 After
  - OFF: Places the filter before other effects in the device
  - ON: Makes Filter 2 the last effect in the device

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FX9 Master Filter

- FX9 Enabled: Enables/Disables the effect
- Cutoff: Cutoff frequency of the filter, bipolar
  - Negative values create a low pass filter
  - positive values create a high pass filter.
  - 0.0 exactly is CPU friendly.
- FX9 Low Reso: Resonance of the low pass filter
- FX9 Low Reso Track: Adjust resonance at high versus low cutoffs
- FX9 Low Freq: Frequency of the low boost
- FX9 Low Boost: Psycho-acoustic low shelf filter
- FX9 High Reso: Resonance of the high pass filter
- FX9 High Reso Track: Adjust resonance at high versus low cutoffs
- FX9 High Freq: Frequency of the high boost
- FX9 High Boost: Psycho-acoustic high shelf filter

XQ1 Equalizer

Four-band equalizer with parametric mid bands

- EQ Enabled: Enables/Disables the effect
- EQ Low Freq: Low shelf frequency
- EQ Low Gain: Gain/Cut level of the low frequency
- EQ Low Contour: Shape of low shelf: Baxandall at 0%, values above 50% add a notch
- EQ Low Mid Freq: Low-mid center frequency
- EQ Low Mid Gain: Low-mid frequency boost or cut
- EQ Low Mid Width: Low-mid bell bandwidth
- EQ High Mid Freq: High-mid center frequency
- EQ High Mid Gain: High-mid frequency boost or cut
- EQ High Mid Width: High-mid bell bandwidth
- EQ High Freq: High shelf frequency
- EQ High Gain: Gain/Cut level of the high frequency
- EQ High Contour: Shape of high shelf: Baxandall at 0%, values above 50% add a notch

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Damager Distortion

- Damager Enabled: Enables/Disables the effect
- Damager Mode: Transistor (stereo hard clipping) or Tube (soft clipping with DC bias)
- Damager Drive: Input gain to the distortion
- Damager Rectify: Degree to which negative signal peaks are converted to positive
- Damager Low Cut: High Pass filter before distortion
- Damager High Cut: Low Pass filter before distortion
- Damager Dry Wet: Signal mix from dry to wet. Dry = no effect, Wet = full effect
- EQ High Contour: Shape of high shelf: Baxandall at 0%, values above 50% add a notch

ILL Hardware Saturation

- Saturation Enabled: Enables/Disables the effect
- Saturation Drive: Increases the input level resulting in more saturation and more level
- Saturation Low Drive: Increase the distortion of low frequencies
- Saturation High Drive: Increase the distortion of high frequencies
- Saturation Thresh: The audio level at which saturation occurs.
- Saturation Density: Adjust the distortion curve from concave to convex
- Saturation High Bypass: Crossover to allow high frequencies through unprocessed

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MRDR-1 Multi-Band Distortion

A 4-distortion stereo mix preceded by multi-mode filters

- MRDR1 Band 1(2,3,4) Power: Enables/Disables the corresponding distortion
- MRDR1 Band 1(2,3,4) Drive: Distortion input drive for the corresponding distortion
- MRDR1 Band 1(2,3,4) Curve: Lets you choose distortion curve from 201 diffrent presets and applies the curve to the corresponding distortion
- MRDR1 Band 1(2,3,4) Cutoff: Adjust cutoff frequency of pre-distortion filter
- MRDR1 Band 1(2,3,4) Resonance: Adjust filter resonance (values below 11% result in a notch rather than a peak) for the corresponding distortion
- MRDR1 Band 1(2,3,4) Tilt: Adjust filter mode from highpass, through notch or bandpass, to highpass, for the corresponding distortion
- MRDR1 Band 1(2,3,4) Level: Output level of the corresponding distortion
- MRDR1 Band 1(2,3,4) Pan: Stereo pan of the corresponding distortion band. Also fades the distortion input between the left and right inputs to allow true stereo processing
- MRDR1 High Bypass: Cuts distorted high frequencies and lets dry highs pass through
- MRDR1 Low Bypass: Cuts distorted low frequencies and lets dry lows pass through
- MRDR1 Dry Wet: Signal mix from dry to wet. Dry = no effect, Wet = full effect

PRO Series Flanger

- Flanger Enabled: Enables/Disables the effect
- Flanger Rate: Modulation rate
- Flanger Depth: Delay modulation depth
- Flanger Delay: Minimum delay
- Flanger Feedback: Add resonant peaks
- Flanger Phase: Phase offset between left and right modulation
- Flanger Dry Wet: Signal mix from dry to wet. Dry = no effect, Wet = full effect

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PRO Series Chorus

- Chorus Enabled: Enables/Disables the effect
- Chorus Rate: Modulation rate
- Chorus Depth: Depth of delay (pitch) modulation
- Chorus Delay: Pre-delay for each voice
- Chorus Damping: Attenuate high frequencies
- Chorus Voices: Number of chorus voices
- Chorus Modulation: Square or sine wave LFO
- Chorus Dry Wet: Signal mix from dry to wet. Dry = no effect, Wet = full effect

PRO Series Phaser

- Phaser Enabled: Enables/Disables the effect
- Phaser Rate: Modulation rate
- Phaser Depth: Center frequency modulation
- Phaser Feedback: Add resonant peaks between the notches
- Phaser Invert Feedback: Flip feedback polarity for a different sound character
- Phaser Poles: Number of stages (more stages = more peaks and notches)
- Phaser Center: Center frequency
- Phaser Spread: Offset between left and right center frequencies
- Phaser Dry Wet: Signal mix from dry to wet. Dry = no effect, Wet = full effect

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Vortex Freq Shifter

- Freq Shifter Enabled: Enables/Disables the effect
- Freq Shifter Range: Frequency shift in Hertz. Low values result in barber's pole phasing when Mix is set to 50%
- Freq Shifter Depth: Linear scaling of shift amount, can also be inverted. Useful as a mod destination
- Freq Shifter Feedback: Add feedback to add overtones or increase depth of phasing
- Freq Shifter Mode: Shift frequencies up, down, or left and right channels in opposite directions
- Freq Shifter Balance: Fade between selected direction (100%) to the opposite direction through ring modulation (0%)
- Freq Shifter Dry Wet: Signal mix from dry to wet. Dry = no effect, Wet = full effect

D7 Delay

- Delay Enabled: Enables/Disables the effect
- Delay Time: Delay time
- Delay Damping: Lowpass filter for progressive damping of each delay repeat
- Delay Feedback: Feedback from delay output to input to create multiple repeats
- Delay Mode: Sets which channel(s) feedback is taken from
- Delay Sync: Sets Time parameter to seconds or quarternote beats
- Delay Dry Wet: Signal mix from dry to wet. Dry = no effect, Wet = full effect

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R9 Reverb

- Reverb Enabled: Enables/Disables the effect
- Reverb Time: Length of reverb tail
- Reverb Pre Delay: Initial delay before reverb
- Reverb Low Cut: High Pass filter cutoff frequency
- Reverb High Cut: Low Pass filter cutoff frequency
- Reverb Low Damping: Progressive loss of low frequencies in reverb tail
- Reverb Damping: Progressive loss of high frequencies in reverb tail
- Reverb Dry Wet: Signal mix from dry to wet. Dry = no effect, Wet = full effect

LFX LFO (1, 2, 3 and 4)

4x LFX - Advanced LFO Modules, description below applies to all four modules

- LFO 1 Unipolar: Bipolar LFO covers the entire range of the targets modulation, unipolar LFO only covers the upper half (or lower half, when inverted). For example: if we target a Delay's Dry Wet parameter with a bipolar LFO, with full depth, the LFO will modulate the parameter all the way from completely dry to completely wet. Unipolar lfo will modulate from 50/50 dry/wet to completely wet, and an inverted unipolar LFO will modulate from completely dry to 50/50 dry/wet.

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- LFO 1 Retrigger
    - OFF: Trigger/Initialize the LFO with a single note in the note lane and it runs independently
    - ON: Each note in the note lane re-triggers the LFO and the LFO modulates while note is held.
- LFO 1 Time Mode: Set Rate units to Time (Hz - cycles per second) or Beats (quarternotes per cycle)
- LFO 1 Rate: Sets the duration of 1 cycle of the LFO waveform (relative to Time Mode)
- LFO 1 Wave Type:
    - Sine
    - Triangle
    - Square
    - Saw
    - Random (random steps)
    - Drift (smooth random)
    - Saw Up
    - Saw Exp (exponential decay)
    - Custom: a wave created by the bars you draw on the LFX display
- LFO 1 Start Phase: Position of the LFO wave (from start to end, in degrees) on which to start modulating. 180 degrees will start from the middle of the LFO wave.
- LFO 1 Target 1(and 2): Lets you choose what the target effect to modulate (i.e Filter 1)
- LFO 1 Target 1(and 2)(x) Dest: Lets you choose the destination, when you have chosen a target(x) (i.e if you targeted Filter 1, then the available destinations are the Cutoff and Resonance of that filter)
- LFO 1 Target 1(and 2) Depth: Amount of modulation. 0% = no modulation, 100% = full amount.
- LFO 1 Target 1(and 2) Smooth: Smoothing of parameter changes, useful for very slow LFO rates. At the maximum setting the initial value is held forever.
- LFO 1 Target 1(and 2) Invert: Inverts the modulation
- LFO 1 Custom Wave Columns: A custom, 64-step column(bar) interactive display that lets you draw your own LFO wave

Even though the custom waveform is created from 64 steps, the device's algorithm will make the actual modulation smooth. In extreme cases, on extremely low rates and with no smoothing applied, the actual modulation might be stepped so a tiny amount of smoothing is required in order to smooth out the modulation.

Modulation indicator (the white dot in the white square): follows the modulation wave (phase and velocity) of the currently selected Wave Type, in real-time. Note: When a LFO with a custom wave is being cross-modulated by another LFO, the indicator will show the final outcome, which will not correspond to the drawn custom waveform, i.e the white dot will not go over the drawn columns(bars) correctly since that modulation is being modulated.

Custom Modulation Columns(bars): A free-hand controlled parameters that create a custom-drawn modulation wave. The custom wave you create must be activated by selecting "Custom" in the Wave Type (display will read: Custom Wave: ON, and the modulation columns will turn red).

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LFO Cross-modulation: LFOs can modulate each other (each other's rate and start phase). LFOs 1 and 2 can only cross-modulate each other while LFOs 3 and 4 can cross-modulate the other three LFOs.

Mix Control

Kill-style mixer with "let-through" controls over Damage, Color and Ambience effect master sections
Splits the signal into three frequency bands
Controls which effect chain(s), if any, is applied to which frequency band

- Low X Point: Frequency that devides the low and mid frequency bands
- High X Point: Frequency that devides the mid and high frequency bands
- Kill Low(Mid, High): Completely "kills" the volume of the corresponding frequency band (as a DJ mixer would)
- Low(Mid, High) Level: Level of the corresponding frequency band (as in a DJ mixer)
- Low(Mid, High) To Damage: Sends the corresponding frequency band through the "Damage" master section effects, including Damager Distortion, Saturation and MRDR-1 Multi-band Distortion.
- Low(Mid, High) To Color: Sends the corresponding frequency band through the "Color" master section effects, including PRO Series Flanger, Chorus & Phaser and Vortex Freq Shifter
- Low(Mid, High) To Ambience: Sends the corresponding frequency band through the "Ambience" master section effects, including D7 Delay and R9 Reverb.

Limiter

- Low-CPU safety limiter with a fixed 0 dBFS threshold.
- Limiter Enabled: Enables/Disables the effect
- Limiter Release: Recovery time.
- Limiter Mode: Soft knee, hard knee, or hard clipping.

Maximizer (within Limiter)

- Maximizer On Off: Enables/Disables the Maximizer within Limiter
- Maximizer Drive: Maximizer input level (only has an effect when Maximize is On).

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Support

For support regarding Terminal Master Effect, please visit
https://www.bassgrid.com/rack-extensions-support.html

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