JiGGERY·POKERY

Ammo 100LA

v1.2.0

Produced and Designed by Matt Black
Coding by Pitchblende Ltd for Jiggery-Pokery

AVAILABLE IN THE propellerhead shop

www.jiggery-pokery.com

Re Rack Extension

Ammo 100 "Light Artillery"

Ammo 100LA is the cut-down, oscillator-only edition of the *Ammo* Rack Extension series. Eschewing the complex internal routing matrix and internal envelope, the 100LA is an efficient, rack-space saving device providing 128 preset waveforms, with the same a huge rate of fire, from 0.001 Hz to 8.4 kHz at both audio and CV rate. *Ammo*'s high quality oscillator has built-in oversampling providing non-aliased audio up to a massive 18 kHz of harmonic content, even using a 44.1 kHz sample rate.

The device functions as a monophonic synthesizer as well as an LFO device. External modulations for oscillator rate and depth can be at standard Reason cv rate (1/64th of audio rate), or audio rate for true FM (frequency modulation) and AM (amplitude modulation).

While the number of preset waveforms is slightly reduced from 136 in the 1200BR/400R to 128 in the 100LA, we've simply removed a few of the pre-inverted copies; these are still available by simply inverting the output with the Depth control. Using 128 waves allows 1-to-1 mapping in the Combinator TS8450 programmer.

For extra convenience and space-saving, the primary controls are available in this ½U "Light Artillery" mode for a genuinely little LFO.

It might be smaller and leaner, but pound-for-pound it can still unleash more shock and awe in your Reason rack than competing devices twice its size.

Oscillator controls

The following functions are available in both Full and Light Artillery mode:

- **Oscillator Off/On**:
  —Turn the oscillator off or on as required. To prevent clicks during patch browsing, by default the Oscillator is Off
- **Waveform selector**:
  —Use either the up/down buttons to step through the waveforms, or drag up/down on the display to rapidly move through them
  —Waveforms W001–005 are basic analogue waves, sine, triangle, saw up and down, and square
  —Waveform W128 is square random (noise); "soft" random can be made by adding **Up/Lag Down**
  —Waveform W127 is a DC line. Use this to output a single fixed CV value.
- **Rate knob**:
  —Adjust the oscillator frequency within selected Range, *Low*, *High*, *Tempo Synced*, *Semitone*, and *Cents*
  —You can switch between ranges as required and the **Rate** knob remembers the setting each **Range**
- **Rate display**:
  —This window shows the current rate of the oscillator according to the **Range** and **Rate** settings
  —The display is Read Only. Please use the Rate knob to adjust the value

- **Range selector**:
  This button below the rate display (Full mode) or to the right of it (LA mode) sets the frequency range of the oscillator. Press repeatedly to cycle through the five options:
  —*Low*: 0.001 Hz to 30.0 Hz [from a 15-minute LFO single waveform cycle up to note B0]
  —*High*: 30.0 Hz to 8.4 kHz (8,372 Hz) [a note range of B0 to C9]. Default is A4 (440 Hz)
  —*Semitone*: +/- 36 semitones from the *High* range frequency
  —*Cents*: +/- 50 cents detune from the frequency as determined by *High* and *Semitone* ranges
  —*Tempo Synced*: this is the tempo synced Low Range mode offering a selection of LFO durations from 32/1 to 1/128T
- **Depth knob**:
  —Control the amplitude of the waveform
  —This is an inverting control. Use +1 (full right) for maximum amplitude, set to 0 (middle) for no output, and -1 (full left) for a maximum inverted amplitude
- **Phase knob**:
  —Use this control to set the starting point within the waveform in degrees (°)

A pair of LEDs provide an indication of whether the output signal is positive (green), zero (both off) or negative (orange), and there is a gate/note event LED notification.

The remaining controls are only available in Full mode.

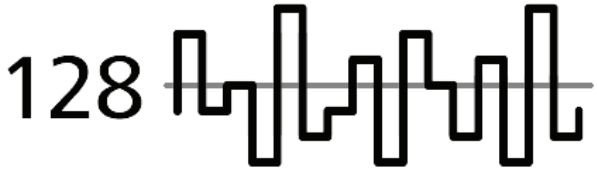
- **Pulse Width knob (PW)**:
  —This inverting control, from -100 to +100%, moves the centre position of the waveform backwards or forwards. Note that setting maximum value results a fixed value (a DC line). For best results limit the range to +/- 95% or less
  —Due to the wavetables being bandlimited to prevent aliasing, **Pulse Width** is only available in Low/Tempo Sync Ranges
- **CV In knobs**:
  —Rate, Depth and Phase controls have CV trim adjustment for their CV inputs available on the front, rather than the back to allow easy access and automation. These have no effect if the respective CV in is not connected
  —Rate and Depth have audio rate CV in as well as Reason CV, and these trim knobs will also adjust modulation level when audio cv is used
- **Keyboard control/Portamento amount (Kbd/Porta)**:
  —Turn the knob fully counter-clockwise to disconnect keyboard note pitch control to the oscillator, allowing you to modulate another parameter by the fixed Rate only, rather than the Rate scaled by note frequency input
  —Turn slightly clockwise to enable keyboard note to oscillator frequency control; this is a monophonic retrigger mode
  —Continue to turn clockwise to select Portamento; increase the portamento time (slide length) between notes
  —For a smooth glide between pitches in portamento mode, play the notes with legato
  —Keyboard control can be used in any Range mode to create keyboard rate scaling from slow (low notes) to fast (high notes). In High Range the scaling is set equal temperament based on master tuning of A=440 Hz. Change the default High Range value to alter the master tuning, however for most purposes use Semitone and Cents to fine tune the oscillator pitch

- **Envelope CV In**:
  —*Charlotte Envelope Generator* is a great companion to *Ammo 100LA*. When it is connected to *Ammo 100LA*'s Env CV In you can scale the envelope input using this control. Normally this can be left at maximum
- **Free button**:
  —Leave enabled for a free-running oscillator when not using one-shot mode. Turn off to retrigger the waveform on a gate event when you are not using an external envelope. This function is ignored when 1-Shot is enabled.
- **1-S (1-Shot) button**:
  —With this button enabled the entire waveform will play once, holding the final level (*see page 11 for more details*)
  —The final held level may not be consistent if the oscillator is being externally modulated
  —Remember that the Phase setting determines the start and end point of waveform; use a zero degree phase (0°) to play the waveform as you see it described in the preset waveform display
  —This control is only used in *Low* and *Tempo Sync* ranges
- **Lag Up/Lag Down knobs**:
  —Ammo is the only Reason system that allows separate slew adjustment of the up and down slopes of the waveform. Lag acts as a filter, rounding off sharp waveform edges. Because we have separate controls, you can smooth, for example, only the up portion of a square or random wave, and leave the falling edge sharp. **Lag Up**, the left knob smooths the rising edges of a waveform clockwise; **Lag Down**, the right knob, smooths the falling edges of the wave form anticlockwise
- **Output**:
  —This is a x2 scaler, useful if you want a really hot signal. By default it is set to x1 (no scaling)

The order in which the *Ammo* waveforms have been arranged was chosen mostly to group similar types of LFO shapes together, rather than provide a typical wavetable that might be based on one waveform but with different harmonics. This allows the commonly used basic shapes at the beginning, with DC Line (fast to end and one button back) and random stepped easily available right at the end for easy location and selection.

Random waveform

The random waveform supports several useful applications, including noise and S&H-style output, for experimental, avant-garde and special effect purposes.



Audio Noise

With High Range selected, the random waveform acts as noise and you can use both **Rate** and **Phase** controls to adjust the sample rate of the noise. The Lag controls act as filters which can be used to adjust the "colour" of the noise.

CV Noise

In Low Range set the **Phase** to 0° for a fast CV noise, .

S&H

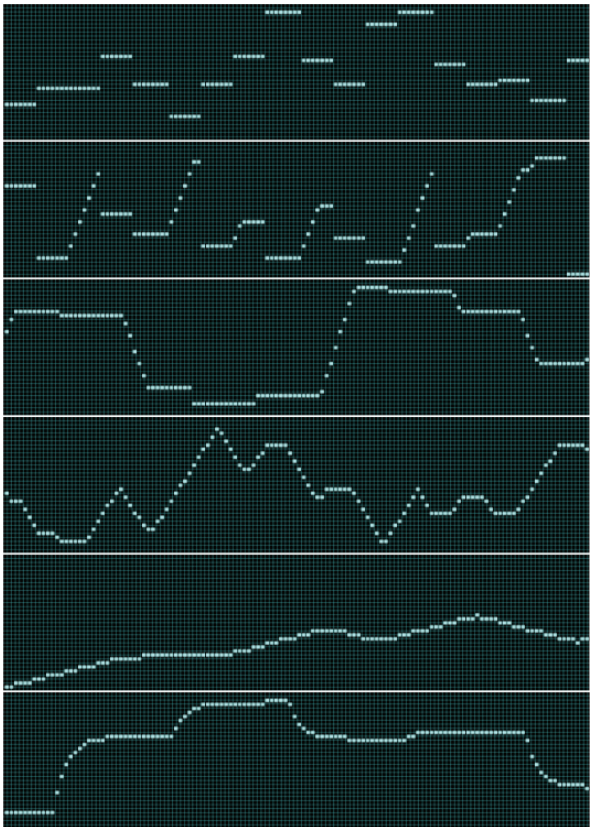
Still in Low Range you can increase the **Phase** value up to 360° to slow down the time between samples.

For S&H random oscillator pitch effects route a Low Range random Ammo 100LA to a High Range Ammo 100LA. Set the master pitch on the latter and use the CV In trims on the audio oscillator to control the amount the pitch changes, although note the resulting pitch itself won't be tuned as the random voltage can result in pitch frequencies between notes. However you could use an RE such as *OchenK CV Tuner* to convert the random CV pitch to note CV pitch.

In Tempo Sync Range, set the **Phase** to 360°, and use the **Rate** control to set the sample length; due to the way *Ammo* operates you will get two samples per cycle, so set the rate to double the value you need for a single value. So for a fixed random value of one bar, set the **Rate** to two bars (2/1).

Lag

Use the Lag controls to smooth the edges of waveforms. *Ammo* smooths the rising and falling edges independently for improved Lag control. Since Lag is essentially filtering, it can be used equally well on audio signals or CV ones. Two modes are available using the **Lag Mode** selector switch on the back (version 1.1 and above); Logarithmic provides a curved smoothing, Linear provides a straight smoothing.



Random waveform with no Lag

Random waveform with only 40% linear **Lag Up** applied. Note that only the *rising* edge of the waveform is filtered

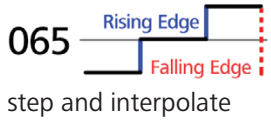
Random waveform with 25% linear **Lag Up** and 25% linear **Lag Down** applied. Both rising and falling edges are gently smoothed leaving a plateau at the peaks and plain in the troughs

Random waveform with 50% linear **Lag Up** and 50% linear **Lag Down** applied. Both rising and falling edges are smoothed creating a random triangular waveform

Random waveform with 100% linear **Lag Up** and 100% linear **Lag Down** applied. The wave is now smoothed to approximately a sine. Note that at maximum Lag, you may need to raise the Output level slightly to compensate for reduced gain

Random waveform with 50% logarithmic **Lag Up** and 50% logarithmic **Lag Down** applied. Both rising and falling edges are smoothed with a curve; in this scenario the device acts like SubTractor's Smooth Random

You can use this approach for any wave that features a step, or where the end and start values are different, to effectively interpolate the end/start values. For example, for waveform 116, the step is on the falling edge of the waveform, so adding just 20% **Lag Down** will nicely reduce the both the step and interpolate the difference between the end value of the waveform and start value.



Performance controls

The *Ammo 100LA* provides an onboard pitch-bend and modulation wheel control. Pitch-bend is routed to oscillator Rate, and the Mod Wheel controls oscillator Depth. The Mod Wheel is an inverting control, so the oscillator Depth *reduces* as you *increase* the mod wheel value. The Mod Wheel lamp output will decrease accordingly. This behaviour is the same regardless of the inversion of the Depth knob itself: it will reduce inverted Depth to zero the same as non-inverted Depth.

Rate Mod Range selector

On the back of is an adjustment screw for Rate modulation sensitivity. At a basic level you can use this to adjust the pitch-bend range, but it has a more significant use as it also allows greater range for other modulation sources. Remember that an *Ammo* oscillator has a very wide frequency range, and so using the Pitch Wheel with the oscillator at a very low rate, i.e., 0.01 Hz is not going to get the rate to move very far even with a maximum input level: a one octave range up from 0.01 Hz is only going to be 0.02 Hz.

So to compensate for this you can set the sensitivity of the *Ammo* oscillator rate to modulation input:

- **Low**:
  —100% Pitch-Bend range = Seventh
- **Standard**:
  —100% Pitch-Bend range = Octave
- **High**:
  —100% Pitch-Bend range = Two octaves (default setting)
- **Full**:
  —100% Pitch-Bend range = 26 octaves

The Full setting may not be particularly practical using 100% modulation input settings to a High Range oscillator, but will be especially useful a very low rates.

Back panel connectivity

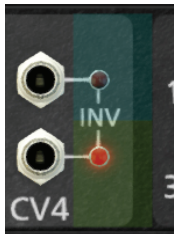
By including both CV and audio input and output, Ammo 100LA punches above its weight with the ability to create a truly modular system in conjunction with other Reason devices, but especially products in the Jiggery-Pokery Super-Spider range.

Inputs

- **Sequencer CV In**:
  —The Gate input alone can be used to trigger Ammo 100LA in one-shot mode
  —If Gate and CV connections are used, you can trigger Ammo 100LA for continuous drone output; use the ModWheel to adjust the Depth dynamically
  —Connect the Env, Gate and CV inputs to *Charlotte* for full envelope (depth), gate (trigger) and CV (pitch) control

- **P.Wheel CV In/Range**:
  —Connect a CV input to adjust the oscillator Rate as if using the pitch-wheel
  —Input effects are in addition to those applied by the Rate CV inputs
  —Set the pitch-wheel range using the **Range** knob (see above)
- **Waveform CV In**:
  —*Ammo* has been set up to provide smooth cross-faded modulation between waveforms
  —Best results are achieved by keeping the modulation to within the "similar LFO group", so use very small input values
- **Rate CV In**:
  —The top connector is the audio input jack for true FM; below is the CV input jack for CV rate modulation
  —Both can be used at the same time; many of the included example synth Combinator patches add FM via the audio input and vibrato via the CV input
  —Use front panel **Rate CV In Amount** knob to adjust input level
- **Depth CV In**:
  —The top connector is the audio input jack for true AM; below is the CV input jack for CV rate modulation
  —Both can be used at the same time
  —Use front panel **Depth CV In Amount** knob to adjust input level
- **Phase CV In**:
  —CV input jack for phase modulation
  —Use front panel **Phase CV In Amount** knob to adjust input level
- **Output CV In**:
  —CV input jack and trim knob for master output control

Outputs



- **Bipolar CV1–4 Out**:
  —Four separate outputs for bipolar CV values (-64 to +64)
  —If available, select "Bipolar" as the CV input type of the target device
  —Click the **INV** radio button to the right of Bipolar CV Out 4 to invert its output (the active click area extends well above and to the right of the LED itself, shown here in blue, so you don't need to pre cisely hit the small lamp directly)
- **Unipolar CV1–4 Out**:
  —Four separate outputs for unipolar CV values (0–64 / 0–127)
  —If available, select "Unipolar" as the CV input type of the target device for full range 0–127, otherwise the usable range is limited to just the positive Ammo output range
  —Click the **INV** radio button to the right of Unipolar CV Out 4 to invert its output (the active click area extends well below and to the right of the LED itself, shown here in green, so you don't need to precisely hit the small lamp directly)
- **Audio Out 1–4**
  —Four identical audio outputs

The oscillator signal is sent to all CV and audio outputs regardless of which **Range** you have selected; the internal signal path is entirely at audio rate. The CV outputs downsample the audio signal to Reason's standard 1/64 CV rate.

Basic Modular Synthesis Workshop

Programming a simple monosynth patch

Audio rate FM effects are easily achievable by modulating an oscillator with another oscillator. Simply connect the audio output of one *Ammo 100LA*, the modulator, to the **Audio Rate CV In** of a second, the carrier, which is then used to create the sound output to the mix channel.

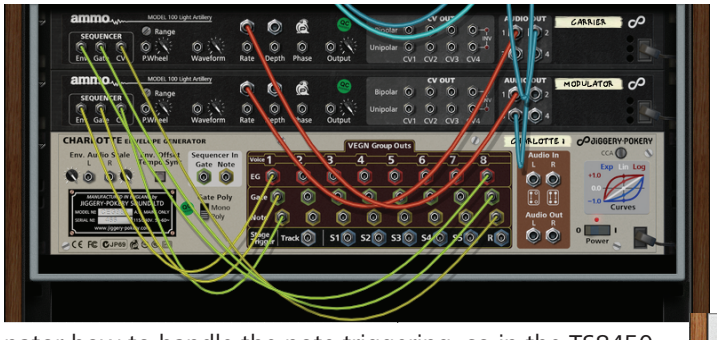
For best results keep the pitch of the modulator the same pitch as the carrier, or whole octaves apart. Using different pitches for the modulator should be used for creative effects!

You can adjust the level of the FM input using either the **Rate CV In** control next the carrier's **Rate** knob, or the **Depth** or **Output** controls on the modulator.

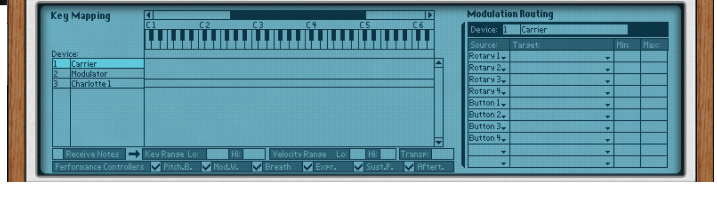
Because you have four audio outputs on each *Ammo 100LA*, you can still use the modulator as an audio output, or using the carrier to modulate the modulator!

Let's play "follow the cable"! In this second example, turn the **Rate CV In** down to around 30 on the modulator, for a slightly more pleasing distorted sound on the right channel. Alternatively, you could connect the modulator to the Depth Audio CV In, for AM effects.

With **Keyboard** set to "On" for both carrier and modulator, we can play the keyboard and the pitch will track, but it's just a drone! The tone doesn't stop. This is because *Ammo 100LA* doesn't feature an internal amp envelope. While we can use the Mod Wheel to control the output level and play the device like a Theremin, that isn't exactly practical much of the time! So let's connect an amp EG.



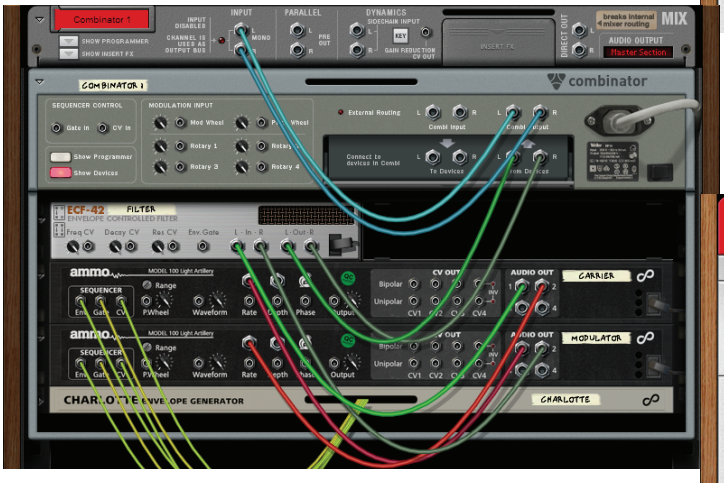
Add a *Charlotte Envelope Generator* VEGN group to each oscillator (we've used VEGN1 and VEGN8 for easier visual reference, but if *Charlotte*'s **Priority** is set to "All", you can use any VEGN group). However we need to tell the Combinator how to handle the note triggering, so in the TS8450 programmer, turn off "Receive Notes" for the two oscillators and enable it for the *Charlotte*. Load a *Charlotte* patch or program a nice envelope, and our basic, stereo monosynth FM patch is complete!



But of course, we don't want to stop there!

We can add a filter. There are a number of options both in Reason and with third party Rack Extensions. For now, let's just use the old faithful, the ECF-42. You could use the existing *Charlotte* envelope and connect a spare EG output to the Combinator's CV1 input, then route that the ECF-2 filter frequency.

For now, though, we'll simply trigger the ECF-42's own ADSR envelope by enabling its own "Receive Notes" in the programmer.



Insert the ECF-42 between the *Ammo 100LA*s and the Combinator. Start playing and adjust the filter's ADSR.

From this simple setup we can start adding more oscillators, and gradually building up the patch.

Creating a polyphonic synth patch

In our simple monosynth patch, create two more oscillators, and hook all four into a Line Mixer. Route the Line Mixer output through the filter and into the Combinator, and connect the Sequencer CV In of each oscillator to consecutive Charlotte VEGN groups, so VEGN1, 2, 3 and 4. For clarity I've removed the FM cables.

Select the Semitone Range, and set oscillators 1 to 4 to 0, +12, 0 and +7 semitones respectively. And remember to disable "Receive Notes" for the two new oscillators in the TS840 programmer!

Now play your keyboard and you have a four voice monosynth. But we have a *Charlotte* connected, so we can make this polyphonic with just one more knob twist!

Since we have four oscillators, set **Voices** to 4. (You can also set the **Priority**, so that the each note of the chord is sent to same oscillator. For now, set **Priority** to "Low", so the that lowest note goes to Oscillator 1 and the highest note goes to Oscillator 4.) Now play a three or four note chord, and you have a three or four note polyphonic synth!

Now set **Priority** to "Rotate", and just play a repeating three-note chord. You now have now programmed a wave sequencing polyphonic arpeggiator by hand!

Charlotte sequentially rotates three notes across four voices, one step for each gate on. A single *Charlotte* supports up to eight voices, so add more oscillators. But remember, you'll need to play/sequence one less note in the chord than the number of Oscillators/Voices you have for this to work, or else there is no spare voice to rotate through.

Patches

A selection of instrument and insert effect Combinators featuring the *Ammo 100LA* are available from your patch browser.

As befits the sonic heart of a modular system, note that most of the patches which are using one or more *Ammo 100LA* devices as the instrument sound source require *Charlotte Envelope Generator*. Required Rack Extensions are listed within the brackets of the patch name; while RE Studio or Creative effects, such as *Chenille Chorus Ensemble*, or *Audiomatic Retro Transformer*, are not necessary for the patch to function, those with Utilities, such as *Lolth CV Delay Splitter*, are. *Charlotte* and the "Super-Spider Bundle" are also available from the Propellerhead Shop.

Envelope/Gate/Oneshot behaviour types

The following table is a list of the behaviours available in *Ammo 100LA* depending on how you use the device, either standalone with no external input, via a keyboard or the sequencer (MIDI Trig.), or in conjunction with the *Charlotte* VEGN or alternatively Thor's gate/cv output and global envelope using the three *Ammo 100LA* Sequencer inputs Env, Gate and CV.

Remember that **1-Shot** mode is only available in Low or Tempo sync ranges. "Env In" assumes **Env CV In** control is greater than zero (thus active until it reaches zero), while "MIDI Trig." assumes **KBD/Porta** is On, otherwise Rate is not keyboard scaled.

1-Shot	MIDI Trig.	Env In	Gate In	CV In	Output
Off	–	–	–	–	Continuous output at the set **Rate** frequency
Off	Yes	–	–	–	Continuous output, rate adjusted adjusted by MIDI Note
Off	–	–	Yes	–	Continuous output when Gate is active, at the set **Rate** frequency
Off	–	–	Yes	Yes	Continuous output when Gate is active, rate adjusted by MIDI Note
Off	–	Yes	Yes	Yes	Continuous output when Gate is active, rate adjusted by MIDI Note; Output level scaled by Envelope CV, and can continue after Gate is deactivated if Envelope CV level > 0; retriggers at current waveform phase position
Off	–	Yes	Yes	–	Continuous output when Gate is active, at the set **Rate** frequency; Output level scaled by Envelope CV, and can continue after Gate is deactivated if Envelope CV level > 0; retriggers at current waveform phase position
On	–	–	–	–	No output possible
On	Yes	–	–	–	Plays entire waveform once from the set **Phase** position; ***cannot*** be retriggered until completed, however *the frequency is still effected by playing a note of different pitch while that one-shot is playing*; final waveform value is held until next MIDI trigger is received.
On	–	–	Yes	–	Plays entire waveform once from the set **Phase** position provided Gate is active at the set **Rate** frequency; final waveform value is held as long as Gate is on; waveform is immediately retriggered from the set **Phase** position with a new Gate on event is received.
On	–	–	Yes	Yes	Plays entire waveform once from the set **Phase** position provided Gate is active, rate adjusted by MIDI Note; final waveform value is held as long as Gate is on; waveform is immediately retriggered from the set **Phase** position with a new Gate on event is received and frequency is still effected by playing a different note pitch.
On	–	Yes	Yes	Yes	Plays entire waveform once from the set **Phase** position provided Gate is active, rate adjusted by MIDI Note; Output level scaled by Envelope CV, so final waveform value can be held until next *after* Gate is deactivated **if** Envelope CV level > 0; waveform ***cannot*** be retriggered until completed, however frequency is still effected by different note pitch
On	–	Yes	Yes	–	Plays entire waveform once provided Gate is active, rate adjusted by MIDI Note; Output level scaled by Envelope CV, so final waveform value can be held until next *after* Gate is deactivated **if** Envelope CV level > 0; waveform is retriggered from the set **Phase** position with a new Gate on event

You can see that the "Env In" is basically an alternative "Gate In"; technically you don't need to use "Gate In" on *Ammo 100LA* if using *Charlotte*, but we provide the option for compatibility purposes, and it doesn't break anything to connect both. Using the Env In instead of the Gate In allows the Release stages of your envelope to function correctly to fade out the waveform level after you release the gate. With **1-Shot** turned off, note that the oscillator is free-running and will retrigger from its current internal wave playback position.

Remote Mapping

```
//Remote Map template for  Instruments        Jiggery-Pokery Sound: Ammo 100LA Modulation Oscillator
Scope     Jiggery Pokery      com.jiggerypokery.Ammo100LA
//        Control Surface Item          Key     Remotable Item    Scale     Mode
//Map     _control_           Oscillator On
//Map     _control_           Range
//Map     _control_           Low Rate Hz
//Map     _control_           High Rate Hz
//Map     _control_           Rate Semitone
//Map     _control_           Cents Detune
//Map     _control_           Rate Tempo Sync
//Map     _control_           Depth
//Map     _control_           Phase
//Map     _control_           Keyboard
//Map     _control_           Oneshot
//Map     _control_           Waveform
//Map     _control_           Pulse Width

//Map     _control_           Rate CV In Amount
//Map     _control_           Depth CV In Amount
//Map     _control_           Phase CV In Amount
//Map     _control_           Envelope CV In Amount

//Map     _control_           Lag Up
//Map     _control_           Lag Down
//Map     _control_           Output
```

Version history

1.2.0
- **Ammo 100LA can now operate with free running oscillator or key sync**

1.1.1
- **Waveforms now correctly retrigger on a new gate event in One-Shot mode**

1.1.0
- **Added logarithmic lag mode**
- **Improved startup performance**

1.0.0
- **Initial release**

Special thanks to the Ammo 100LA *testing and patch crew: Dogboy1973, JesseRyckman, 0zone0, Reason1O1, Aroneous, meowsqueak, alteree, celticdale, kylelee, NaviRetlav, Shokstar and odarmonix.*

Ammo 100LA was designed and assembled by Jiggery-Pokery Sound, of London, England; DSP coding by Pitchblende Ltd, of Middle Earth.

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From the maker of ...

Rack Extensions in the Propellerhead Shop

- **Ammo 100LA Modulation Oscillator** - Portable single-channel oscillator for audio and CV rate synthesis and LFOs, featuring 128 waveforms
- **Ammo 400R Modulation Oscillators** - 4-channel LFO generator with audio output, featuring 136 waveforms and advanced modulation mixing
- **Ammo 1200BR Modulation Synthesizer** - Advanced 4-channel LFO generator and audio synthesizer adds S&H, Comparator and Electro-Switch
- **Anansi Mid/Side Mastering Router** - Mid/side audio router with mono compatibility check, 3-in merger and 3-out splitter
- **Charlotte Envelope Generator** - 9-stage EG with time, level, curve and velocity control per stage, and a priority-selectable MIDI-to-cv-pitch splitter
- **Chenille BBD Chorus Ensemble** - Realistic BBD chorus device, based on the 70s string synth ensembles and the classic Roland Dimension D rack unit
- **Itsy Stereo/Phase Inverter** - L/R channel flip, cv-controllable 180° stereo inverting width adjust, stereo phase inverters and phase correlation metering
- **Lolth CV Delay Splitter** - 4x4 channel cv splitter with independently adjustable gain and inversion controls, channel delay, and mirroring
- **Miranda CV Delay Merger** - 4x4 channel cv merger with independently adjustable gain and inversion controls, channel delay, and mirroring
- **Mordred Audio Bypass Merger** - 4 x 5 channel stereo audio merger with independently switchable outputs and autofade control
- **Shelob Audio Bypass Splitter** - 4 x 5 channel stereo audio splitter with independently switchable outputs, mirroring, and autofade control
- **Super-Spider Bundle** - Anansi, Itsy, Lolth, Miranda, Mordred and Shelob: buy all six and get one and a couple of knobs on another absolutely free!

ReFills

- **Guitars vol.1+2: Stratocaster & Telecaster** - Multi-sampled guitars with slides, mutes, signature L6 effects and keyswitching
- **Elements²: Vector Synthesis Workstation** - Massive patch collection featuring Korg Wavestation/MS2000, Waldorf Blofeld and Roland SC-8850
- **Additions: Vintage Additive Synthesizers** - DK Synergy + Kawai K5m + Thor FM.
- **Blue Meanie: Virtually an ARP2600** - Thor and Kong-based analogue synth machine
- **Kings of Kong Classic Drum Machines*** - the premier ReFill for Reason 5+, with over 50 classic beatboxes for Kong Drum Designer
- **Retro Organs v2**- Hammond B3 + Farfisa Combo Compact + Vox Continental in one brilliant ReFill. Also available for Reason Essentials
- **B3 Tonewheels v1.5** - the original 24-bit non-Leslie samples ReFill with advanced rotary speaker emulation
- **Farfisa Combo Compact Deluxe v1.5** - the complete set of original 24-bit Farfisa samples covering, both standard and Deluxe models
- **Vox Continental v1.5** - a complete set of original samples from the classic C300 organ, featuring original and extended Continental footages
- **Hammond Novachord*** - the near-antique pre-WW2 monster polyphonic valve synthesizer
- **Retrospective: 40 years of Synthesizer History*** - Over 1Gb of vintage samples from synths and electronic keyboards from the Hollow Sun archive

FreeFills

- **Additives** - demo version of Additions: the fantastic Additives tracks from PUF Challenge #2 can be found at **http://soundcloud.com/groups/additives**
- **8-BIT Magic**: The ZX Spectrum ReFill
- **Classic Drum Machine Collection v1.1**
- **Eminent 310 Strings** v3** - the classic Jarre string sound, with stereo samples plus the Oxygene II / Equinoxe 4 pizzicato lead
- **Harpe Laser**** - the famous Laser Harp sound, the Elka Synthex preset 46 "Ring Mod"
- **Moog Taurus Bass Synthesizer** v1.1**

For more information on these products and for direct downloads of these latest versions, plus a wide range of great Combinator skins, please visit **www.jiggery-pokery.com**

* Includes samples licensed from HollowSun.com
** demo ReFills for Retrospective