Red Dwarf EX User's Guide

Thank you for purchasing the 'Red Dwarf EX Semi-Modular by Zarg'! I hope it will provide you with many hours of fun and experimentation.

To get the most out of this complex synth, some detailed explanation of its design is in order. What follows is my attempt to give you some insight as to how the Red Dwarf works. Hopefully I will inspire you to experiment.

First, some caveats:

1) Because all of the presets reference the modules and effects, you should have the RD modules in the same location as when I made the presets. However, you can place them where you like, as long as you instruct SFP to search for Modules in that location. This setting is done in the Set Menu (in the SFP Live Bar) under 'Search Options'. At first you will probably get a popup requester looking for certain files. If you've set the Search Options correctly, you should be able to browse to the correct location and load things. Once this is done, subsequent preset selects should be fine.

Here's the original path for the modules as programmed. To do this, you have to create some 'dummy' folders to fool the preset search:

1) C:\SFP\Devices\Effects\Stereo\RD II modules

(I used my C: drive for the path, so if you are not running on the C: drive, the first time you drag in the Red Dwarf EX device you should get a requester asking to locate a file. Once you redirect this, it should be fine.)

2) Once the Red Dwarf EX is loaded, and the modules are correctly located in the directory, you will be able to right-click on any of the Red Dwarf EX's insert slots and find the RD series II library of modules.

3) You can always just drag something into the slots, if the right-click couldn't find it.

4) Changing presets causes a reloading of the DSP area, so most likely it will take around 5-7 seconds or so to effect a change, sometimes less (also depends on polyphony). If you are holding down notes when you change presets, you may hear some strange artifacts as the DSP code is updated, and it's very likely that sometimes these artifacts can be damaging to speakers or ears (if using headphones). So, it is recommended that you wait before playing when a new preset is selected, and try to let the current sound "die out" before changing to the next.

5) There are some unique aspects to using the Templates - they need to be "saved", in addition to the presets that use them. See below for details.

6) The Red Dwarf EX v3.0 has a new, 'paged' control panel. In the lower left part, you will see 3 page tabs: Main, Mods, and Global&FX. Two additional control surfaces are available for LFO1&2, by selecting the small 'Controls' button next to each LFO 's label.

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Use of the RD Modules

The main idea of the Red Dwarf EX is to provide a modular approach in a compact and easy-to-use structured design. You will find that there are a few dedicated sections (such as LFO1, LFO2, Envelope 1, Amp Envelope, Flanger, and Delay), with most of the important sections of the synth left "open" using insert slots. (However, you can also replace LFO1&2, and both Envelopes with RD slot modules.)

RD Insert Slots: There are 10 insert slots (not counting the Mono and Stereo Insert Racks): **Osc 1, Osc 2,**

Filter 1, Filter 2, LFO1, LFO2 and Gated Mod 1-4.

In addition, the Mono and Stereo Insert racks each have 5 slots (the sixth slot for each is reserve as a modulation source path, see '**Miscellaneous**' below).

The most important concept to realize is that EACH PRESET can have an entirely different set of modules in each of these slots.

You can load the slots in two ways:
1) Right-click while over a slot to bring up a file browser (locate the RD II modules folder and search within there)
2) Locate the desired module in the File Browser and "drag'n'drop" it into a slot

For editing, you will want to *double-click* on the name of the module once you've loaded it in a slot. This brings up a 'mini' control panel, which contains all parameters that could not be accounted for on the main Red Dwarf EX front panel.

Oscillator 1&2 Slots: Each module will have different parameters, although there's similarities in the dual osc pairs, etc. Since all oscillators need an initial frequency, and most all of them need some waveshape control (except the dedicated sine or saws), these parameters have been located on the main Red Dwarf surface. Special 'oscillator pairs' have provisions for offsetting the initial pitch or shape settings, and also, one of the two oscs usually have a switch that shuts off waveshape modulation completely.

Oscillator 1&2 WAV Slots: By clicking on the RD Slot label, you will see a small popup list that shows 'RD Slot' and 'WAV'. Selecting WAV replaces the regular parameter knobs with new parameters, geared for sample playback. It disables any RD module loaded in the RD Slot, and allows you to load any sample using the Akai .s, AIFF, or .wav format.

Load - Clicking on Load brings up a File Browser dialog to load samples. Occasionally this Browser gets 'hidden' behind the Project Window. In this case, move around the various windows on your desktop to locate the file browser.
Clear - This clears the sample file.
Fixed - when Fixed is selected, the sample will play back at its originally sampled pitch.
Fine Tune - plus or minus a semitone to detune the loaded sample from its main pitch.
LKey - Low Key, below which the wav osc will not play.
RLey - Root Key. This sets the base pitch of the sample playback. This is ignored if 'Fixed' is ON.
HKey - High Key, above which the wav osc will not play.

Filter 1&2 Slots: all filters have a cutoff (frequency) parameter, so this is on the main Red Dwarf EX surface. Most filters also have a resonance control, but this parameter has been put on the individual 'mini' control panels for each filter. If you double-click on the inserted filter module and get nothing, then there is no control surface needed for that module (for example, the 18 dB Lowpass has no resonance, so no control panel).

Env 1, Amp Env, and Gated Mod 1-4 slots: You can load any of the RD series II Envelope modules into these slots; please note that for Env 1 and Amp Env, the front panel knobs for those sections will no longer be valid when you load the associated RD slot, except the Velocity, Squared, and Rate Mod functions. (For the Rate Mod to work, you must click on the 'Enable Time Mod' switch on the RD Envelope module's mini control surface.) Envelope 1 and Amp Env have a check box called "Squared". This takes the envelope output and passes it through a ring modulator, then on to its final destination. This has the effect of accentuating the exponential response, so you will get a more "percussive" effect (especially with using it on the Amp).

LFO 1&2: Both LFOs are fully functional multimode LFOs (same as the older SMO used for LFO1 before). However, these take up a little more DSP as well, so sometimes you may want to use the simple **Sine LFO RD** or **Sine LFO II** modules instead, to reduce DSP load. You may also want to use one of the

audio oscillators (such as Supersaw) as an LFO source. For either of these cases, there is an RD Slot available for each LFO, which will then completely replace the internal multimode LFO. For RD slot LFOs, the only parameters that remain functional on the main LFO panels are KeyTrack, MIDI Clock Sync, and Quantize. (**NOTE:** Most of the RD series II LFOs have an External Frequency switch, which must be on for the MIDI Clock Sync or KeyTrack to function. In these cases, please set the LFO's mini-control panel Frequency to **0.00**, and click the Ext. Frequency switch.)

Another feature of the RD series II is that the **Special** modules allow you to greatly expand the capabilities of the different slots. Certain modules - the **Y Connector II**, **Y Connector Oscs**, and the **Series-Parallel II** modules - can be placed in slots to expand the number of objects available within a slot.

For example, you may want to have four oscillators in a single slot. By using the **Y Connector Oscs**, you can drop in two 'oscillator pair' modules, one for each insert slot in the Y Connector. The only thing you should be aware of are the levels; it's easy to clip audio levels when using this approach.

You can continue this process, and even use them in multiple instances of themselves - you could have a Y Connector filled with a Y Connector, filled with a Series-Parallel, etc., etc., ...and on and on. The possibilities are truly endless (well, depending on your number of DSPs, of course!).

Please see the README file that comes with your RD II modules Zip file for further information.

Modulation Matrices

On the Mods Page, you will find the Mod Matrices.

Sources:
The Mod sources are pretty straight-forward. Here's a list of all mod sources:

Off, Env 1, Gated 1, Gated 2, Amp Env, Velocity, Note 1, Note 2, Mod Wheel, AT (aftertouch), Envelope Follower, External In 2, Gated 3, Gated 4, LFO 1, LFO 2, Osc 1, Osc 2, Noise, Filter 1, Filter 2, Flanger, Flanger+Delay, Mono FX Insert slot #6, and Stereo FX Insert slot #6.

 If you use the Envelope Follower (Env Foll) as a source, you have to turn it 'ON' by clicking on the little LED in the upper left corner of the Env Follower's surface. This loads/unloads it from the DSP calculation. Also, the Env Follower uses the External Input for its signal, which is the 'IN 1' of the Red Dwarf device.
The last selection for a mod source is IN 2, so that you can use any external signal as a mod source this way.

Destinations:
The modulation matrix destinations should mostly be clear, with some special cases needing to be explained. See the table below for all mod destinations.

Note for the Gated Mod sources - for rate scaling, these require a special arrangement, because of the way the Creamware envelope modules work. You can see in the Gated Mod section that there are rate scaling amounts. These control how much the final rate scaling modulation will be, but first you have to program some mod sources to the Gated Mods in the mod matrix. Then you have to enable Time Mod on the mini control panel of the RD module in use in that slot.

With velocity as a source, for example, scaling in the positive direction will lengthen the envelope times with higher velocity; negative values will shorten the times with high velocity.

Regarding "Noise (pre-mixer)" - this was primarily so I could envelope the noise when I was using it as an impulse into the tube filter. Likewise, following that is the "mixer output", so that I could use the

oscillators as well for the enveloped impulse.

Here is a list of each mod matrix destination:

LFO1, LFO2	Mod Paths 1-8
Off	Off
Oscillator 1 pitch	Oscillator 1 pitch
Oscillator 1&2 pitch	Oscillator 1&2 pitch
Oscillator 2 pitch	Oscillator 2 pitch
Oscillator 1 shape	Oscillator 1 shape
Oscillator 1&2 shape	Oscillator 1&2 shape
Oscillator 2 shape	Oscillator 2 shape
Filter 1 cutoff	Filter 1 cutoff
Filter 1&2 cutoff	Filter 1&2 cutoff
Filter 2 cutoff	Filter 2 cutoff
Noise (pre-mixer)	Gated 1 Rate
Mixer Output	Gated 2 Rate
Amp	LFO1 Rate
*LFO 2 Rate	LFO1 Amount
*LFO 2 Amount	LFO 2 Rate
**LFO 1 Rate	LFO 2 Amount
**LFO 1 Amount	Noise (pre-mixer)
	Mixer Output
	Amp
	Envelope 1 Rate
	Amp Envelope Rate
	Gated 3 Rate
	Gated 4 Rate

* Available only in LFO1 mod path #3
** Available only in LFO2 mod path #3

Each amount of modulation is now bi-polar (+/-), so you can have inverted control signals going to the various destinations.
In addition, the Mod Matrices now provide a separate 'Mod Amount Mod', which allows the scaling of the Mod Matrix source by another modulator. The sources for this 'mod amount mod' are the same as the regular matrix sources.

GLOBAL PARAMETERS

All Global parameters are store in presets, with the exception of the **Fine Tune**. This control applies +/-

100 cents tuning to the entire synthesizer. This parameter is **not** stored in presets. This is because you may want to play the Solaris along with an acoustic instrument that is not at concert pitch, and cannot be retuned easily (such as an old piano). You can set the Fine Tune as needed, and still select through the presets without resetting this parameter.

Coarse Tune - The Transpose control shifts the tuning entire synthesizer +/- 36 semitones. The Transpose amount is stored in the presets.

PBend Range - Pitch Bend range (in semitones). This controls how much pitch bend will occur at maximum pitch wheel excursion. Since most pitch wheels are centered, this is a +/- amount. For example, a value of 2 provides for a whole step of pitch bending in either direction.

Glide Mode (Off, Portamento, Glissando, fingered Portamento, fingered Glissando) - Glissando is 'quantized portamento'. It's as if you were sliding your finger up a guitar neck, with discreet semitone intervals being played as you slide. 'Fingered' means it only glides when legato notes are played (you play a new note before lifting off the old note).

Glide Time - 0 to127.

Legato Mode (Off, Reassign, Retrigger) - Determines if a voice is retriggered when it is stolen for use in legato mode or not. When Legato mode is Off, only the most frequently pressed key will sound. In Legato mode (reassign or retrigger), a key that is held down will re-sound after another key is played and released. Reassign mode reassigns the voice to the original note, resulting in a legato effect. Retrigger mode retriggers the original note with each note on event.

The **MWh Rate**, **Initial Amt**, and **AT Amt** parameters pertain to the Vibrato LFO, permanently connected to both oscillators.

Unison Voice # (OFF, All, 2-8 voices) - Unison Voice # should normally be set to All, however there is an 'intelligent assignment' if you want to stack unison voices. If the synthesizer is set to play 12 voices in your Project, then setting the Unison Voice # parameter to 6 will give you 2 playable notes, each with 6 voices stacked together. The Unison Detune then acts as a tuning spread, and each of those 6 voices will be more and more detuned from one another as this value increases. If you set the Unison Voices to 4, then you would have 3 notes with 4 voices stacked on each. A Voice setting of 2 would give you 6 notes, with 2 voices stacked on each key.

Unison Detune – 0 to 127.

Note Priority (Off, Last Note, Low Note) - When in Unison mode, note priority determines which key pressed will have priority, i.e., which note will be sounded. In Low Note mode, the lowest note played on the keyboard will sound. In Last Note mode, the most recently pressed key will have priority. The early Minimoogs had a low note priority; most synths now use Last Note priority.

MISCELLANEOUS:

1) LFO1 and LFO2 have the ability to track the keyboard, or be sync'ed to MIDI clock, however, both of these conditions are not possible simultaneously. They also can be quantised, but to hear the full effect of quantisation, the Amount parameter must be fully on, so check this if you feel you are not getting any quantisation. A trick is to attach a MIDI controller to this Amount, so that you can "fade in" the quantisation as desired.

2) As always, if you increase polyphony, some adjustment of the Poly Level may be necessary.

3) On the Mods page, Noise Frequency and KeyTrack only are applicable if you have selected Pink noise on the Main panel as the noise type.

4) **There is a 6th modulation source for the Effect (FX) Inserts, one for each group (Mono and Stereo Inserts). In each section, at the bottom, you will find 1 insert that is graphically separated by a line. This 6th insert is the modulation source identified in the Mod Matrix as either MonoFX6 or StereoFX6.**

I hope this aids in your understanding of the Red Dwarf. If you have any questions or comments, or need

further clarification of a section, please send me e-mail at:

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I will be happy to answer you, and it will also help others, as I can include it in a 'FAQ' file in this document.

Special thanks to Stephen Hummel and Shayne White, who both created a number of great presets.

- John Bowen
http://www.zargmusic.com

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