



## GRAND TERMINAL FIRMWARE UPDATE

No.	filter	Airways (default ambient fx bank)	Darkwaves (drum fx bank)
1	●●●● Transistor ladder ZDF	hall reverb	gated reverb
2	●●●● MS-20 ZDF	shimmer reverb	spring reverb
3	●●●● Vactrol ZDF	stereo room reverb	reverse reverb *
4	●●●● Vactrol w/reso ZDF	plate reverb	flanger
5	●●●● Dual LP/HP SFV ZDF	spring reverb	ring modulator
6	●●●● Hi-Pass SVF ZDF	ping-pong delay	overdrive **
7	●●●● Band-pass SVF ZDF	tape echo delay	compressor **
8	●●●● Comb filter	chorus	freezer

\* new effect    \*\* fixed effects

New firmware codename 'TOTAL NIGHTMARE' (v4.TN) introduces new reverse reverb as well as lots of small bugs fixes of 'Total Fuckng Darkness' v3 firmware. TFD firmware introduced 2 banks of 8 effects each. Short TYPE+TAP changes the banks. Long TYPE+TAP enables scanning over all 16 effects on and off (-5...0v scans over inactive bank of 8 effects, 0...+5V scans over current 8 effects).

Cabin pressure and fever CV inputs become unipolar and accept 0...+5V - so they expect an envelope, for example or output from a typical sequencer. Applying negative voltages does the same effect as positive (i.e. full rectification). In that case you can apply standard +/-5V bipolar LFO directly without offset and it will work at full range, just twice the frequency. For that purpose is way faster to adjust LFO frequency rather than add a module with offset/CV summer.

We continuously work on new features and improvements as well as on bug fixes. It is recommended to use the latest firmware installed to experience the latest features. It is also possible to downgrade to any earlier or custom firmware in case you like them better.

Warning – after update procedure you will lose your filters/effects tweaks stored in the memory as well as filter's volumes and panning settings will be set to default ones. In case of finding bugs or offer improved/new functionality, please report to e-mail: [beta@endorphin.es](mailto:beta@endorphin.es)

Latest Grand Terminal manual:

<https://endorphin.es/endorphin.es--manuals.html>

## GRAND TERMINAL UPDATE VIA AUDIO

power OFF your modular system:



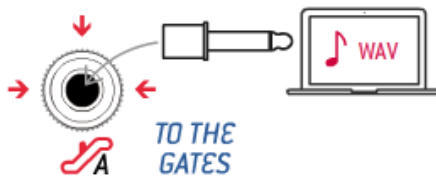
hold TAP while powering your system again:



you will see all 8 LEDs will light up for 1 sec and then off. 'FOLLOW ME' LED will blink green



with simple mono or stereo cable connect audio output from your computer headphones output to Grand Terminal's Gate A input



Press PLAY and wait 1.5 minutes. Your GT will reboot automatically after new firmware will be installed

Most possibly, you are running 1.6 or 1.6.1 firmware version. In that case, you can update your Grand Terminal via audio file.

If you have Grand Terminal lower than S/N 67, you most probably run v1.5, which you have to update to 1.6 or 1.6.1 or to higher via USB first. Then any next updates may be done via audio.

To update via audio, power up your Grand Terminal during **TAP** button hold.

Green LED in the triangle should start to blink (release TAP button then).

Connect audio/headphones output from your PC/Mac into Gate A input of GT

Play the audio WAV file fully all 2+ minutes. Use any file player that does not apply audio compression the file.

During playback, you should observe green LED continue to blink and row of 8 yellow LEDs moving - that means acting data transfer.

In case you will obtain red LED blinking (in the beginning or in the middle), that means you have to stop playback, reset firmware listening by pressing TAP and then playback the file fully again from the beginning (probably, with boosted audio level, either on PC/Mac, either with Gate A trimmer).

**IMPORTANT:** to prevent the errors during the audio playback of the firmware, please use any audio editor without any effects applied (EQ etc).

**VIDEO ABOUT UPDATE PROCEDURE:**

<https://youtu.be/omVMR7NnNp8?t=5m46s>

# ***GRAND TERMINAL FIRMWARE DOWNLOAD:***

[https://airways.endorphin.es/Grand\\_Terminal\\_update.zip](https://airways.endorphin.es/Grand_Terminal_update.zip)

## **GRAND TERMINAL V4 'TOTAL NIGHTMARE' (20.05.2020)**

- New reverse reverb effect added (#3 in default Darkwaves bank)
- COMB filter adjusted: now with full resonance it becomes a resonator with self-oscillation (negative feedback)
- Saturator in secondary volume mode adjusted: volume/gain compensation added
- Filters adjusted and fine-tuned
- Lowered clicks between switching the effects. Also lowered clicks on loading compressor and overdrive. All fixes thanks to Xavier Galai

## **GRAND TERMINAL V3 'TOTAL FUCKING DARKNESS' R2 (10.10.2019)**

- TFD firmware update includes proper CABIN PRESSURE and CABIN FEVER pots curves. FEVER has linear curve with proper selection of dividers etc. PRESSURE has log curve however still as smooth as butter, but as sharp as a razor. Control and power, a la force du piolet! (additional thanks Xavier Galai for all TDF FX banks merging)

## **GRAND TERMINAL V3 'TOTAL FUCKING DARKNESS' (16.05.2019) - initial release**

- new 'Total Fucking Darkness' v3 (v.3.TFD) firmware that consists of two effects banks switched by short TAP+TYPE press between them (see GT manual for all effects descriptions), which becomes new and only factory bank

## **GRAND TERMINAL V.3 'DARKWAVES' (31.10.2018)**

- two effects banks 'Airways' and 'Darkwaves' available (see BN manual for all effects descriptions)
- dual low-pass/hi-pass State-variable zero-delay feedback filter added in filter #5 – same as in BLCK\_NOIR default filter
- chorus effect added to effect #8 in Airways bank.
- by default after firmware update or reset GATE A is bypassed from effect processor. FX bypass by long TYPE hold now indicated with green blink

- by long hold TYPE for 5 seconds swaps bypass of Gate A (default) or Gate B from the effect processor. That choice is reminded on next module's power up
- entering secondary parameter by long hold now always blinks red and return always blinks green
- some reverbs from Airways bank had super low noise at full CCW Cabin pressure position. Improved full dry state, as well as better knobs and CV inputs filtering

### **GRAND TERMINAL V. 2 R2 'AIRWAYS' (14.08.2018)**

- fixed serial routing: input of Gate B is now correctly mixed with Gate A input, then routed into Filter A and then Filter B. (thanks Ben DivKid for the find)
- effect #8: freezer becomes bi-polar. Cabin fever knob in the middle manually defines the smallest granule size. Turning that knob CW will increase looped granules up to 2 seconds and turning CCW will do the same just granules will go in reverse
- effect #5, spring reverb: spring's excitement decreased to avoid clipping

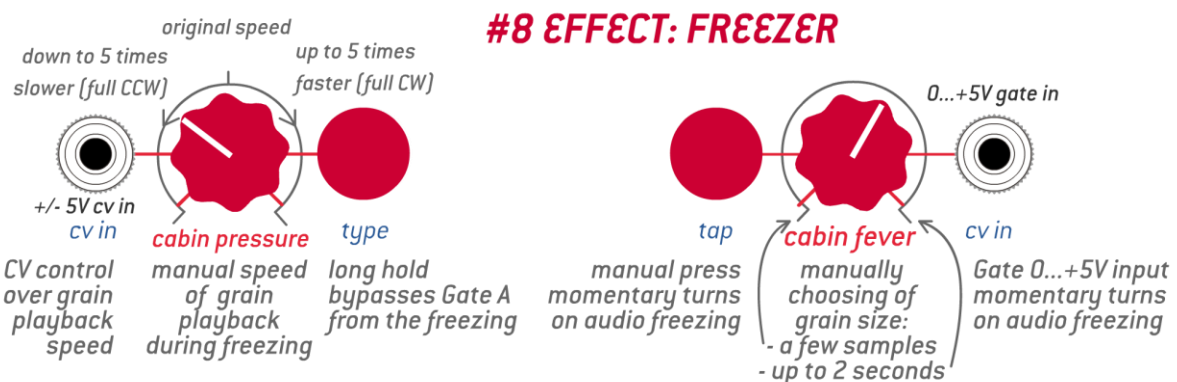
### **GRAND TERMINAL V. 2 R1 'AIRWAYS' (26.06.2018)**

- fixed FEVER CV input that accepted CV not in all FX modes (thanks Brian Rowe for the find).

### **GRAND TERMINAL V. 2 'AIRWAYS' (30.04.2018)**

- all zero delay feedback filters with audio improved quality and less noise at the output
- filter #1: 24 dB/oct low-pass transistor ladder zero delay feedback (ZDF) filter with resonance volume compensation
- filter #2: MS-20 zero delay feedback 12 dB/oct low-pass filter. That filter has very powerful resonance (be careful :) and is now instead 18db/oct diode ladder
- filters #3-4: vactrol zero delay filters. Identical to stock vactrol ones but with zero-delay nature. #4<sup>th</sup> filter has resonance volume damping to prevent clipping at high resonance level
- filters #5-7: state variable zero delay feedback 12 dB/oct filters (low-pass, high-pass, band-pass). Hi-pass closes fully into high-frequency silence even with full resonance
- filter #8: is unchanged – comb filter, since isn't possible to have it with zero delay nature, however fixed 2 kHz noise in the audio output

- volumes of all 8 filters are equalled (in power) when **X** is fully CW and **Y** is fully CCW
- in secondary mode while choosing filter volume and panning: when panning crosses the exact center (equal of left and right channels), FOLLOW ME green LED blinks
- when we switch from 8th effect to 1st - green LED blinks and from 4th to 5th - red one.
- effect #8: **FREEZE** effect (instead of previous chorus): when the tap is pressed (or fever CV gate is on), the audio is looped by the grain length of fever knob and by speed defined by pressure knob or pressure CV applied.



### GRAND TERMINAL V. 1.6.1 FIX (28.02.2017):

[http://firmware.endorphin.es/Grand\\_Terminal\\_v1.6\\_MAC\\_OSX\\_update.zip](http://firmware.endorphin.es/Grand_Terminal_v1.6_MAC_OSX_update.zip)

- fixed audio noise that may appear at a low level of volume knob.
- filter #1 adjusted to same volume as rest ones

### GRAND TERMINAL V. 1.6 UPDATE (26.02.2017):

[http://firmware.endorphin.es/Grand\\_Terminal\\_v1.6\\_MAC\\_OSX\\_update.zip](http://firmware.endorphin.es/Grand_Terminal_v1.6_MAC_OSX_update.zip)

- CV sampling frequency for X and Y jacks increased twice to 2 kHz.
- Filter #1 (transistor ladder) - improved resonance volume drop.
- Filter #3 (vactrol) - shorted the shortest vactrol's decay time.
- Filter #4 (vactrol with resonance) - improved resonance behaviour.
- Filter #6 (svf high pass) - removed bleed when resonance is applied on (bleed may still occur at high distortion gain).
- Exponential curve of Cabin pressure knob.

- All next updates after current 1.6 version could also be done via audio file playback into Gate A input (QPSK modulation):

a) Pressing TAP during power-up enables audio firmware update into Gate A audio input (re-power to boot in normal mode again). Mono file, 1.5 minutes, line level (adjusted with Gate A input trimmer).

b) Pressing TYPE during power up - module will be loaded as before in normal DFU mode (update via USB). After you update with current binary/dfu, there is a sample WAV file - that's same firmware, but units with v1.6. firmware can update to new firmware after 1.6 with audio only.

- Effect #4 (plate reverb) - high pass filter is fixed to a moderate level to prevent boomy lo-frequencies. Secondary Cabin fever parameter now controls pre-delay amount (before pre-delay was set to zero, now it can enhance the room size).

- VCF/VCFA mode revised:

a) when 1st green jumper on the XP pins on the backside of each Gate is ON (VCF mode switch on Gateway is UP), then certain Gate works as pure VCF.

b) when no 1st jumper is installed (VCF mode switch on Gateway is DOWN), then:

-- Y knob (usually resonance) is no more CV controlled (only manual change).

-- instead, Y jack in that mode becomes a CV control over a VCA at certain Gate. Maximal range of CV control over VCA is defined by Y knob in secondary gate mode (including extra gain for distortion!). That mode is useful when having CV control over gain to create accents.

**GRAND TERMINAL V.1.4 (25.11.16):** release candidate

**GRAND TERMINAL V.1.3 (10.11.16):** initial beta

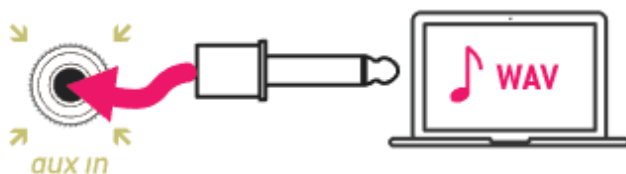
Download latest firmware/bank  
for BLCK\_NOIR when available at:  
<http://airways.endorphin.es>



Power OFF your modular system:



With simple mono or stereo cable connect  
audio output from your computer audio  
output to AUX IN input of the module



Hold TAP while powering your system again:



You will see all HAL 9000 LED  
will slowly blink green like LFO:



Press PLAY and wait 1.5 minutes.  
The module will reboot automatically  
with new firmware installed

Don't play any drum sounds during  
update process. When HAL 9000 LED  
flashes RED - that means signal is too  
low or too high - just repeat the process  
regulating the level with AUX TRIM knob

