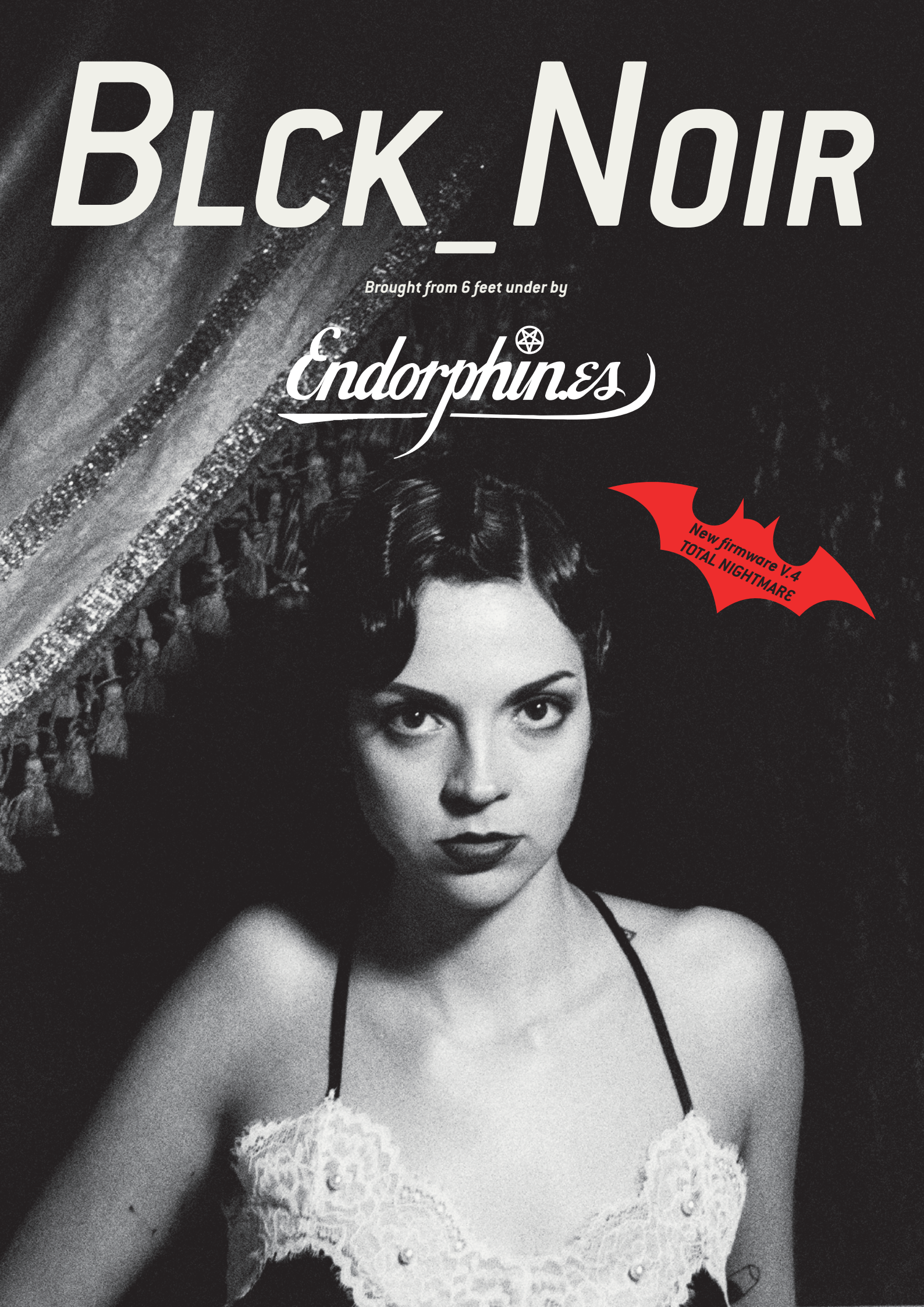
BLCK_NOIR

Brought from 6 feet under by

Endorphin.es



HELLO DARKNESS, MY OLD FRIEND.

Photo copyright: © Andreas Van Ingen

RTFM – be so kind and read the manual. It will provide you with the information you need to fully indulge in the module you just purchased – for which we like to thank you.

Enjoy your sound experiences, dear sonic traveller.

Beginning from the product's purchase date a 1-year warranty is guaranteed for each product in case of any manufacturing errors or other functional deficiencies during runtime.

The warranty dœs not apply in case of:

- damage caused by misuse
- mechanical damage arising from careless treatment (dropping, vigorous shaking, mishandling, etc.)
- damage caused by liquids or powders penetrating the device
- heat damage caused by overexposure to sunlight or heating
- electric damage caused by improper connecting

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FURTH BARCELONA, S.L.

VAT ID:ES B66836487

THIS MODULE AND THIS PAGE INTENTIONALLY MADE BLACK

PORTABLE DARKNESS

- 30 HP width under a black panel, < 2 cm or 3/4“ in depth
- 7 drum voices in the analog kit: bass drum, snare, tambourine, closed and open hi-hats, metallic beat and cymbal;
- hybrid sound generation: band-limited digital noise with spectrum animation, injected into analog circuits
- full discrete analog generation part, using inductor coils instead of op-amps
- on-board effect processor with 8 drum-oriented effects, including additional auxiliary input and firmware update over audio (2 different banks installable)
- drums that have character: fit all styles of music – specifically tuned for darkwave and techno
- separate analog outputs and isolator-style final filter with resonance for main outputs.

MORE GOOD THINGS TO COME

In close future there will be a firmware update that replaces the 8 effects with 8 drum-oriented ones.

NOW YOU ARE MINE

BLCK_NOIR is a complex 7 voice analog drum / percussive synthesizer module.

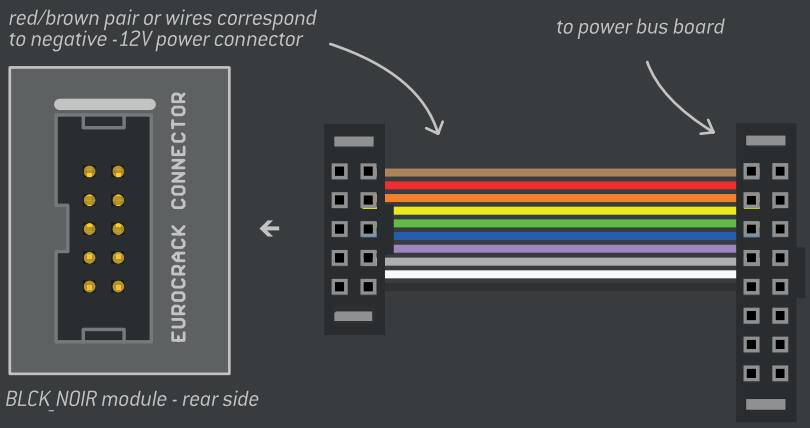
Power requirements: +12V: 240 mA; -12V: 75 mA; +5V: not used.

AT THE BEGINNING, IT WAS ALL BLACK

The BLCK_NOIR comes complete with:

- module itself
- 10 to 16 pin ribbon power cable
- 4 fixing screws with 4 washers
- optional stickers.

Be sure to connect the module properly in your power bus board according to the following orientation:



BLCK_NOIR module - rear side

Warning: *module uses choke coil inductors in sound generation. You may see those coils from the backside of the module. To avoid possible noise hums, don't place the module close to a power supply transformer or DC-DC power modules in your case.*

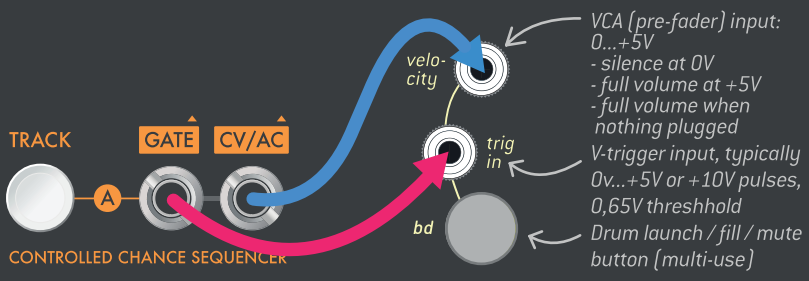
ABOUT: BLANK

BLCK_NOIR is a drum generation module; therefore, to operate, it requires a running sequencer or triggers generator.

7 drum voices are grouped into 5 channels:

- bass drum (bd)
- snare drum (sd)
- tambourine (tb)
- hi-hat (closed and open hi-hats: ch, oh)
- metallic (metal beat and cymbal: mb, cy)

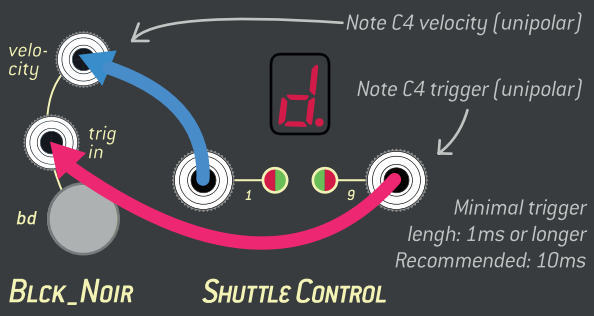
Drums are triggered by applying analog pulses/gates into corresponding trigger inputs:



Every drum channel has a CV VCA controlled Velocity input, which defines the amplitude (volume) of the drum channel. When no plug is inserted into the velocity jack, the volume of that channel is maximum by default. Think of the Velocity input as either VCA to make accents for your drums, or as an envelope input to adjust the dynamics.

I SEE BLACK LIGHT

Alternatively, you can use any MIDI sequencer, groove box, drum machine or DAW using MIDI to CV/GATE converter:

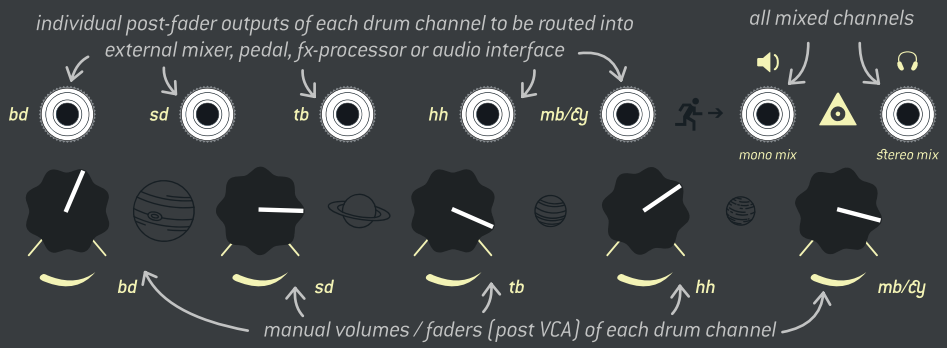


WILL YOU LOVE ME WITH MY DARK SIDE?

BLCK_NOIR's names for drum voices and controls have a certain resemblance to their acoustic counterparts, which is common for drum machines and synthesizers in general. We will provide parallels with the acoustic drum set to show where certain names came from. Just think of the BLCK_NOIR as a complete analog drum kit; limited in some ways, but capable of fully or partially supplying the rhythm section to your music in various styles - from electro to hip-hop, synth-pop, industrial or complex techno.

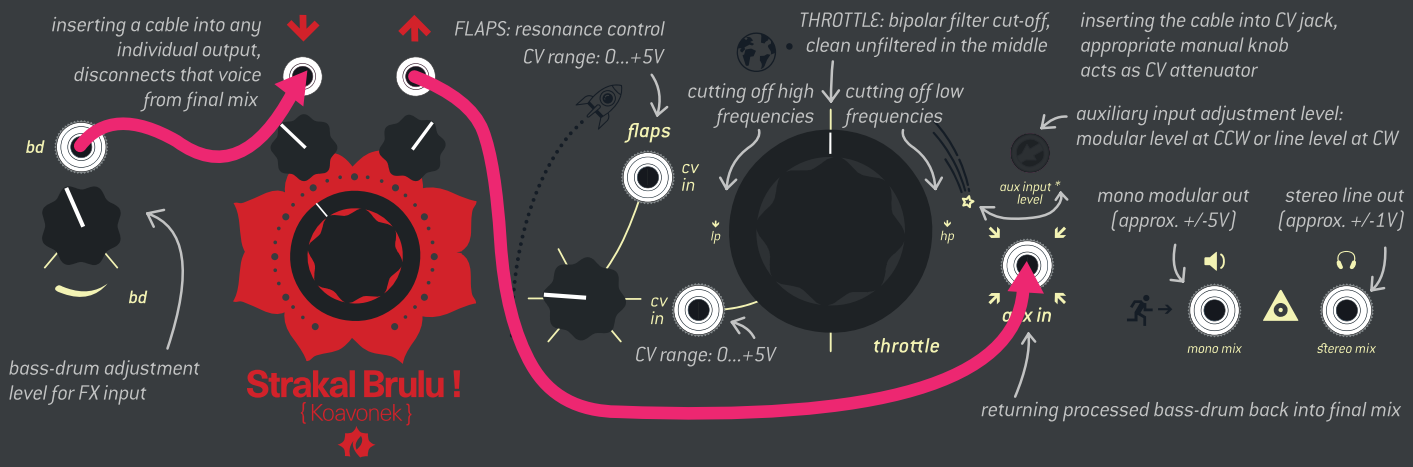
SHOW ME YOUR DARKNESS

Audio outputs are located at the top of the module:

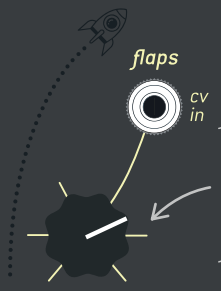


THROTTLE is a bipolar, DJ-isolator-style filter cut-off control that applies to the final outputs, mono and stereo. It is 12 db/oct zero-delay state-variable filter. Its sound is clean (or unfiltered) when the knob is in the middle, filters high frequencies (lo-pass) when turning the knob CCW, and filters low frequencies (hi-pass) when turning the knob CW from its middle position.

BE AWARE: *turning THROTTLE fully CCW or CW cuts off the low or high frequencies completely, which can result in complete silence in some cases.*



FLAPS is the resonance control of THROTTLE, and functions as a tone control for the output. Be aware: use FLAPS carefully: with higher values you may get a loud hi-frequency whistling sound that could damage your ears or PA. Filter controls THROTTLE and FLAPS influence only final outputs (and everything that is inserted into AUX IN), not separate outputs.

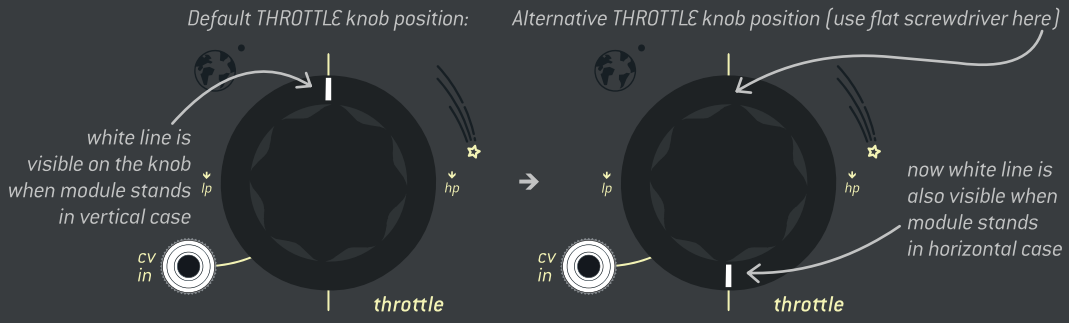


Be aware:
Flaps has an extra reserve for resonance amount and can be pushed to very extreme values. High resonance amounts will cause extra hum, then filter's self-oscillation, and as a result - high frequency whistle that may damage your ears or PA

I OWN TOO MUCH BLACK

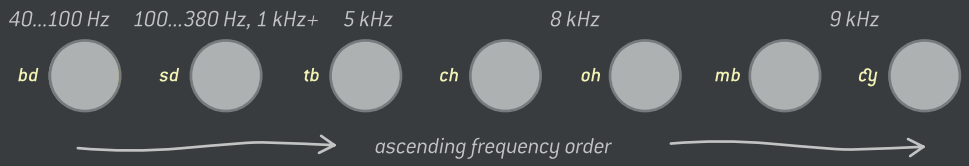
Connecting any cable into individual drum channels will disconnect them from final output. However, you can always return them to final mix output via AUX IN (auxiliary input). Small ***AUX IN*** trim knob defines the input level of mono auxiliary input. Route the signal here if you want to process it through the filter with final output exit. When the trimmer knob is fully CCW, the input of that filter accepts modular level of the signal – i.e. +/-5V (approx. +15dBu) with some reserve for extra gain. Signals that exceed the range of approx. +/-6.9V (approx. +19dBu) will be soft clipped or saturated to avoid clipping distortion. When the trimmer knob is fully CW, the input gain of the signal corresponds to an approximately 10 times higher source – i.e. a normal 1Vpp (+/0.5V) line-level signal with some reserve for the headroom. Keep in mind you can always decrease/attenuate the incoming signal level for accepting up to 0 or +4dBu, adjusting that knob when connecting professional audio electronics. You may also connect portable electronics directly (approx. -10dBV level) that has a 3.5 mm mono jack output, without needing to adjust the gain to a modular level. That input is also used to update the firmware of the filter/effect section.

I'LL STOP WEARING BLACK WHEN THEY MAKE A DARKER COLOR



DARKNESS IS EVERYTHING

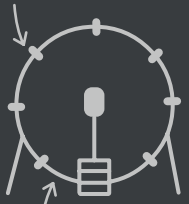
Drum voices are arranged in ascending frequency order from left to right. Each drum voice occupies a separate frequency spectrum. This way they don't overlap, and sound clean in the mix:



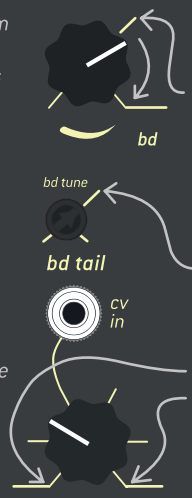
YOU WILL KICK ASS TODAY

BASS, or KICK DRUM or BD is the lowest, deepest large drum that produces a sound of a specific pitch. It has two controls: tune and decay. Tune control is manual only: think of it as the tension of the heads. Because the Bass drum - together with the Snare drum - creates the backbone of the rhythm, Bass drum has more headroom than the other instruments. This reserve of amplitude increases especially after the volume knob crosses 2 o'clock, which causes extra saturation at final outputs:

Tune of the bass drum resembles tension of the membrane heads



Tail is the decay of the bass drum. It can be considered as the size of the drum, so it fades-out longer



Bass drum volume fader. When turning that knob after 2 o'clock into CW, then bass drum will obtain more saturation in the final outputs (not individual outptus)

Tune of the bass drum body:
- CCW: 40 Hz
- CW: 100 Hz

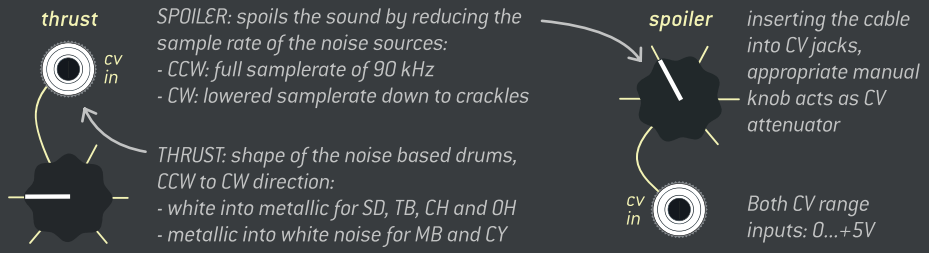
When tune knob is at 2 o'clock position, then TAIL (decay) of the BD has the highest working range of values:
- CCW: shortest decay
- CW: longest decay (up to 1 second)

CV input range: 0...+5V (knob works as attenuator when CV in applied)

DANCE TO THE BEAT OF YOUR DRUM

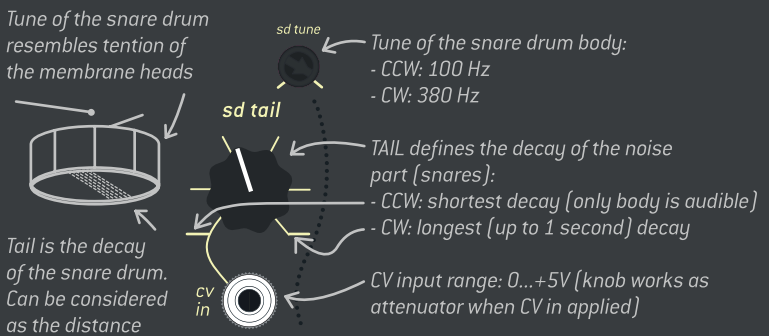
The other 6 drums ***(SD, TB, CH, OH, MB, CY)*** share two noise generators: white and metallic. The shape of those generators is adjusted with ***THRUST*** and ***SPOILER*** knobs:

These two controls are applied to all noise sources at once.



I WILL FOLLOW YOU INTO THE DARK

SNARE DRUM or SD produces a sharp staccato sound. Same as a real snare drum, it consists of two parts: the body (membranes or so-called heads), and a rattle of metal wires on the bottom head called the snares. Tune control is manual only: think of it as the tension of the heads. Decay of the snares has a CV input for modulation. If decay is at full CCW position, it's as if the strainer is disengaged: the sound of the drum resembles a tom because the snares are inactive. Decay of the body is fixed.



DO WHAT YOU WILT

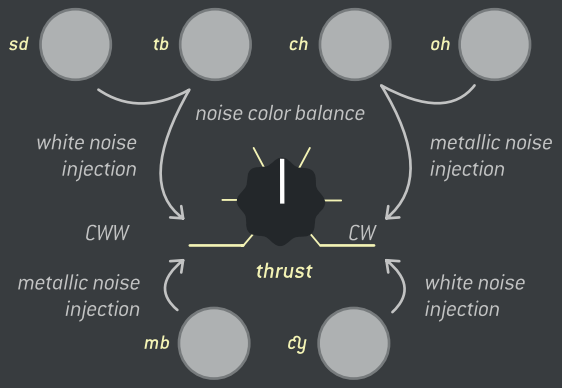
In the middle (at around 11-12 o'clock) snare decay becomes moderate. Together with body tune at full CW position, it creates the snappiest sound – according to our taste. Move the THRUST knob into CW direction and the snare obtains a unique metallic character, as if you hit the hammer on the anvil (hello, Judgment Day – score by Brad Fiedel). Crank the SPOILER into CW direction and the snare obtains dirtiness, and becomes akin to a clap sound, especially when mixed with tambourine. There is no pure clap sound in the BLCK_NOIR, because no one claps in hell.

DO YOU BELIEVE IN VOODOO?

The other 5 drum voices are pure noise-based.

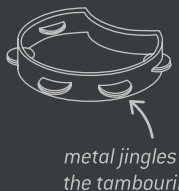
Tambourine, Closed and Open Hi-hats (by default THRUST at full CCW) are based on white noise, while Metallic beat and Cymbal are based on metallic noise injection. Rotation (or modulation with CV) of THRUST knob into CW direction shapes white-based drums into metallic ones, and conversely, metallic-based drums into white noise ones:

White and metallic noise sources are band-limited noise generators with a very high 90 kHz sample rate generation. This enables the sound spectrum to be pure, flat and without aliasing, especially when decreasing the sample rate with SPOILER knob into CW direction or modulating with CV.



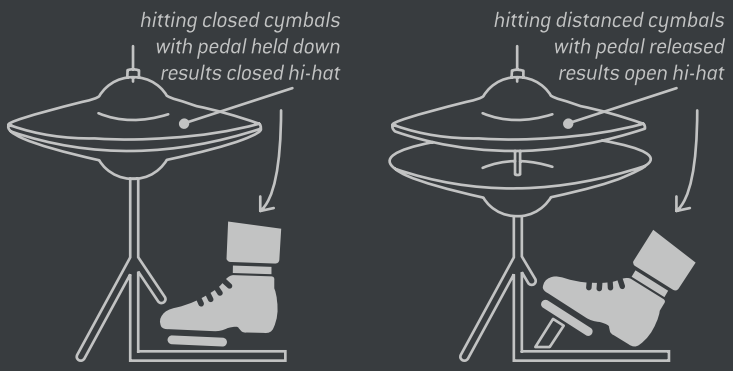
THROUGH THE DARKNESS OF FUTURE'S PAST

TAMBOURINE or TB is a percussive instrument with pairs of loose metal jingles – *called zills* - at the sides, played usually by shaking or striking with the hand. Tambourine adds a swing character to the rhythm, and plays an important role in the sound spectrum by filling the frequency range from snare to hi-hats. Alternatively, you can use it as a low-tuned open hi-hat or a kind of maracas.



IS HER SOUL TOO DARK FOR YOU?

CLOSE and OPEN HI-HATS or CH/OH is a combination of two cymbals facing each other and mounted on a metal stand. In a real drum set, striking the cymbals when they are in open position will produce the open hi-hat sound. Striking the cymbals while they are closed by holding the pedal down with your foot, will produce a closed hi-hat sound. Combination of these two sounds plays a major role in perception of tempo by enriching it with structure. The speed or division of how the hi-hats are played in the grid influences how slow or fast the rhythm sounds.



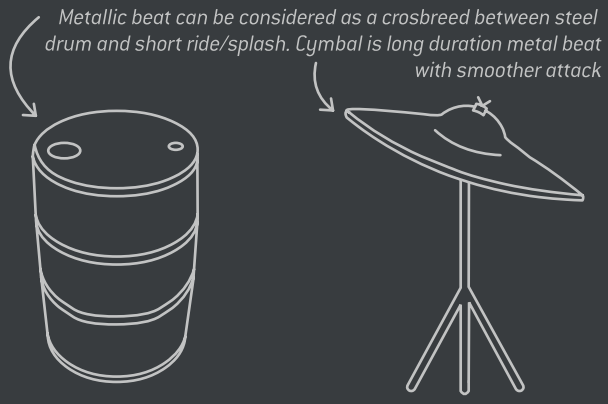
UP IN THE AIR [TONITE]

Since two cymbals are located on the same stand, they can't sound as open and closed hi-hats at the same time. Usually striking the cymbals and closing the pedal will produce a closed hi-hat sound. The same happens here: by playing the closed hi-hat right after striking the open hi-hat, the open one will shut off leaving only the closed one. We call this *hi-hat link*, and this feature can significantly animate your hi-hat line and make it more realistic.

In BLCK_NOIR the length of closed and open hi-hats is fixed. In fact, it was experimentally chosen to fit most music styles. Just in case you feel open hi-hat is too long for you sometimes: you can always mute it by playing a closed hi-hat a few steps after the open hi-hat. Both closed and open hi-hats share the same velocity channel, volume fader knob and individual jack outputs; they can't be separated.

HER DARKNESS, THAT'S WHAT MADE ME LOVE HER.

METAL or METALLIC BEAT or MB is an accent striking sound similar to steel drum. It has nothing to do with heavy metal music as the name is derived from its metallic nature. Because of the harshness it delivers, it brings fresh accents to your rhythm. A good example of using metallic beat is a song by Martial Canterel – 3 Days (from Sister Age (2004)). Usually a metallic beat voice can be used as rimshot or ride cymbal, or double the hi-hat line as was implemented in the original CR series, though in BLCK_NOIR it's separated into an individual voice.



HOPE IN THE DARK

CYMBAL or CY – is a longer-duration variation of the metal beat sound with less sharp attack. In a real drum set it stands somewhere among china, crash, splash or ride cymbals. Usually it is played in the climax parts of the music, or in the beginning of every verse or chorus right after the rhythm's fill variation - usually on the first step of the bar. Apart from the other drum voices, it is always good to have more sound variations in the music.

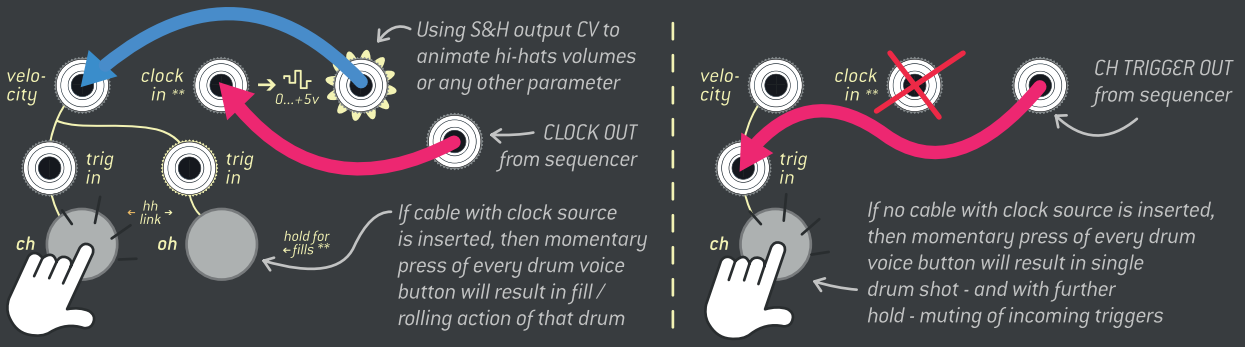
Metallic beat and cymbal share the same velocity channel, volume fader knob and individual jack outputs; they can't be separated.

IN THE DARK, TIME FEELS DIFFERENT THAN IN THE LIGHT

CLOCK IN ** is a special gate/trigger input (usually 0...+5V) that acts in two ways:

1. When a cable with clock source is inserted into CLOCK IN** jack, pressing one of the drum launch buttons will activate momentary fills/rolls of that drum voice, following clock's tempo: each pulse of the clock trigger will fire certain drum.
2. Provides clock for random *sample & hold,* which will generate a stepped CV signal on every clock step in a range from 0 to +5V. This is easy to apply instantly anywhere into modulation.

When no cable is inserted into CLOCK IN** jack, pressing one of the drum launch buttons launches that drum voice (drum shot preview). Additionally, holding down the button longer will disable input for that drum voice while you are holding it down. You can use this feature as a momentary mute. Just remember that the first button press will always trigger the drum voice, so time it right.



We recommend using the same synchronized clock from your sequencer to trigger the drums. Here are most usable clock rates, assuming your sequencer runs at common 24 PPQN (pulses per quarter note) division:

- PPQN/3: 1/32th
- PPQN/6: 1/16th
- PPQN/12: 1/8th
- PPQN/24: 1/4th

EVEN THE MOON HAS A DARK SIDE

Also, don't forget PPQN/8 (eighth note triplet) or make custom made trigger clips/tracks to dynamically vary fills/rolls of different speed.

STARS CAN'T SHINE WITHOUT THE DARKNESS

CABIN PRESSURE EFFECT PROCESSOR (find detailed information in the FX Addendum at the end of the manual):

DARKWAVES BANK

GATED REVERB is based around plate reverb with noise gate. The primary 'cabin fever' defines the reverb decay, but the secondary defines the threshold of the noise gate. Noise gate's attack and decay are fixed and chosen experimentally to fit most musical styles.

SPRING REVERB: The primary 'cabin fever' defines the decay of the reverb. With the 'tap' button you can simulate a sound as if you pluck the real spring with your finger. The secondary function is tied to the 'tap' button's 'pluck the spring' feature and defines the DECAY of how fast the spring will calm down after manually plucking it.

REVERSED REVERB takes the reverb tail of the sound and reverses it. If applied on a drums like snare then it creates breathing effect. 'Cabin pressure' knob defines the predelay time along as acts as a dry/wet control. 'Cabin fever' sets the reverb decay value. Holding 'tap' for longer than 1 second enables the secondary function for 'cabin fever': damping, i.e. volume of the tail (in our case tail = 'head' as the tail is reversed).

FLANGER: The 'cabin pressure' knob sets the amount of delay. With primary 'cabin fever' we set the LFO speed. The secondary defines the feedback. Playing with that three parameters allows to achieve sweeping, airplane engine alike sound with a pretty wide range.

RING MODULATOR multiplies the signal with an internal sine wave oscillator. 'Cabin pressure' defines the amount of modulation and 'cabin fever' defines the speed of the oscillator. Secret ingredient – feedback! Its amount is controlled by the secondary 'cabin fever' and brings special dirtiness to the sounds.

OVERDRIVE: 'Cabin pressure' knob adjusts the drive amount with volume compensation, while 'cabin fever' defines the tone control as usually found in guitar pedals. The 'tap' button makes the effect active or bypassed, like the switch on a guitar pedal – and so does 'cabin fever' latching trigger CV input.

PEAK COMPRESSOR: 'Cabin pressure' knob defines the threshold from -90dB to 0dB (fully CW). Primary 'cabin fever' sets the amount of gain reduction (ratio) from 1 to 25. Secondary parameter defines the attack, from 1 to 200 msec. Release is always 'auto'. 'C. fever' CV input is an unattenuated side-chain input.

FREEZER/LOOPER: When 'tap' is pressed (or 'cabin fever' CV gate is ON), the audio is looped by the grain length defined by the 'cabin fever' knob – and with the speed – defined by 'cabin pressure' knob or CV – applied.

AIRWAYS BANK

HALL REVERB: 'Cabin fever' knob defines the decay of the reverb or hall size. Holding 'tap' for longer than 1 second enables the secondary function for 'cabin fever': fixed hi-pass-filter to cut off low frequencies and have more 'air' in the final output.

SHIMMER REVERB is a variation of the hall reverb with a pitch shifter to create choir-like, huge and unrealistic spaces. The primary 'cabin fever' function defines the decay and the secondary function defines the amount of pitch-shifter mixed into original reverb.

STEREO ROOM REVERB recreates a sort of stereo room ambience. Primary 'cabin fever' parameter defines room size and the secondary defines the stereo spread of the reverb, from mono up to a huge stereo spread.

PLATE REVERB: The primary 'cabin fever' defines the decay of the reverb. In real life equivalent this is the distance from the pickups to the metal plate which is how long the tail of the reverb ispresent. Secondary parameter defines the amount of pre-delay to distant sounds in ambience.

SPRING REVERB: The primary 'cabin fever' defines the decay of the reverb. With the 'tap' button you can simulate a sound as if you pluck the real spring with your finger. The secondary function is tied to the 'tap' button's 'pluck the spring' feature and defines the decay of how fast the spring will calm down after manually plucking it.

PING-PONG DELAY is a stereo clocked delay. A 'tap' is usually three or more short clicks on the 'tap' button. The primary 'cabin fever' parameter defines the feedback of the delay or repeats. The secondary defines the clock division of the incoming tap/clock: 1, 3/4, 2/3, 1/2, 1/3, 1/4, 1/8

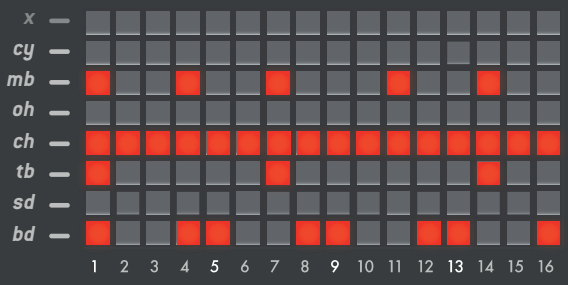
TAPE ECHO is a delay with 3 fixed playback heads. Primary 'cabin fever' parameter defines the delay repeat rate which is the speed of tape. The 'tap' button works in a limited frequency range of manual tapping and defines the amount of feedback. The secondary works as a divider for the incoming clock.

CHORUS: Primary 'cabin fever' knob defines the feedback amount. In average amounts, it creates typical unison effect however in full CW it goes to an infinite feedback resulting unrealistic ambient. Secondary parameter defines the modulation depth, which is ‚full on' by default.

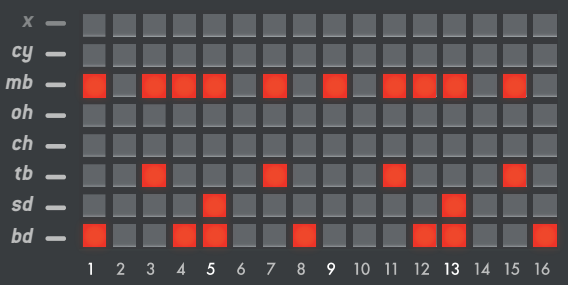
NIGHT ENDED, NIGHTMARES DIDN'T

Making a proper drum rhythm for beginner most likely will be a trial and error process. Expertise comes with practice and choosing proper programming methods. Below are typical rhythms in various music styles using BLCK_NOIR drums on example of Winter Modular Eloquencer grid. Track A (most top one) is marked as ***X*** and isn't filled with anything on the pictures. We recommend to put there some CV control or, what is even more interesting – put triggers/gates with different ratcheting options and apply that triggers into CLOCK IN** of the BLCK_NOIR to have various tempo divisions (1/8, 1/16, 1/32) on fills buttons press.

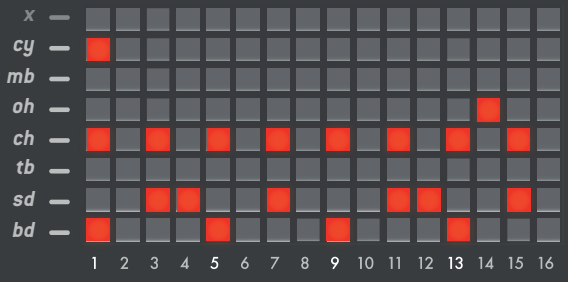
Bossa nova



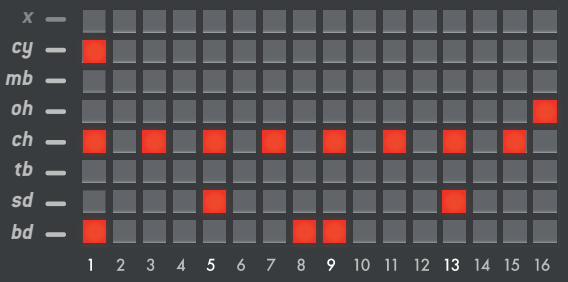
Cha-cha-cha



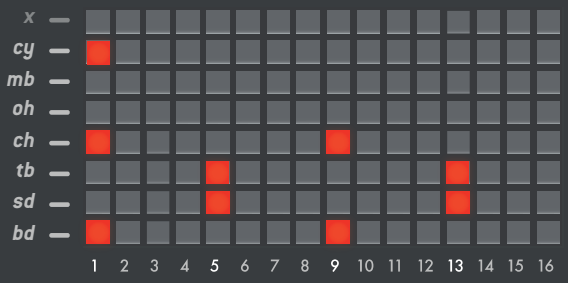
Enka



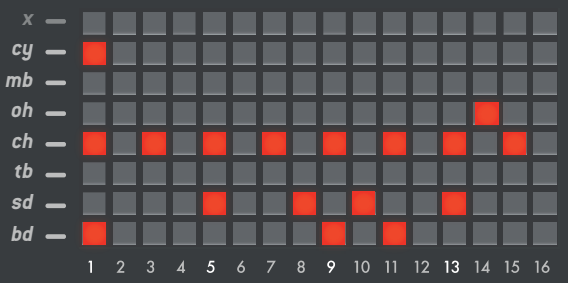
Rock 1



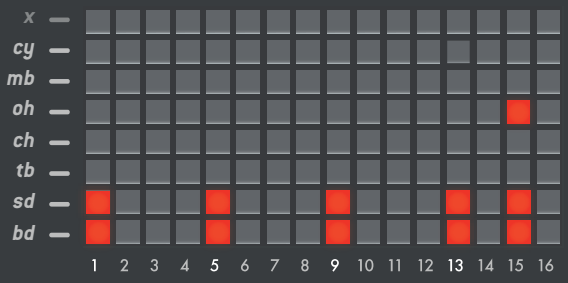
Foxtrot



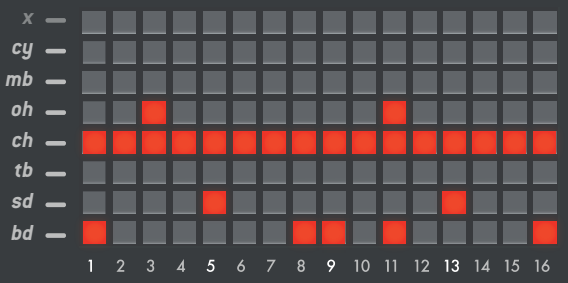
Rock 2



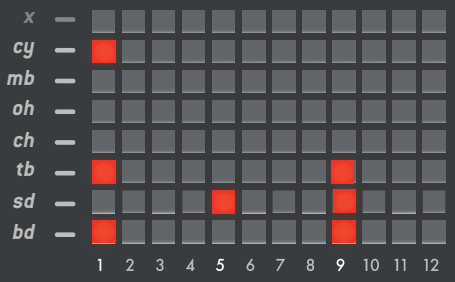
Tango



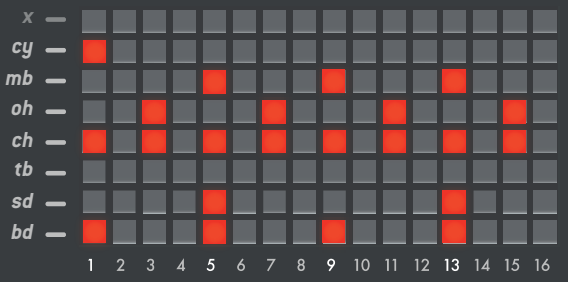
Rock 3



Waltz



Dance 4/4



MY DARK PASSENGER MADE ME DO IT

FIRMWARE/EFFECT BANKS UPDATE. We continuously work on new effects and improvements, as well as on bug fixes. It is recommended to have the latest firmware installed to experience the latest features.

In case of finding bugs or offer improved/new functionality, please report to e-mail: ***beta@endorphin.es***

https://airways.endorphin.es

download latest firmware/bank
for BLCK NOIR:
https://airways.endorphin.es

power OFF you modular system:

hold TAP while powering your system again:

you will see all HAL 9000 LED will blink green:

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

Press PLAY and wait 1.5 minutes. The modue will reboot automatically after new firmware will be 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 reset the firmware aquire process by pressing TAP once and regulating the level with AUX TRIM knob

IMPORTANT:

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

HOW DO YOU DESTROY A MONSTER WITHOUT BECOMING ONE?

During BLCK_NOIR development, we got inspired and discussed things with lots of beautiful people. We thank you all for your input – without you BLCK_NOIR would not exist the way it is now (in alphabetical order):

- Andrew Huang (Andrew Is Music)
- Ben Wilson (DivKid)
- Danny Kim (Binary Society)
- Derrick Estrada (Baseck)
- Jónatan Bernabeu (n^3)
- Kim Bjørn (Bjooks)
- Leonardo Mirabal (insula.me)
- Marshall Goppert (Nero Bellum / Psyclon Nine)
- Nicolas Bougaïeff (Novamute)
- Paul Chambers (@theworldofpaul)
- Ramiro Jeancarlo (Staccato du Mal)
- Sean McBride (Martial Canterel)
- Todd Barton (@synthtodd)
- Tony Garrucho (Tony Verdi)

ENDORPHIN.ES † COVEN

BLCK_NOIR product shot page 1: © derwellenreiter, Berlin

STARS CAN'T SHINE WITHOUT THE DARKNESS

CABIN PRESSURE EFFECT PROCESSOR hosts 16 effects organiszed in two banks of 8.

The first effect bank is known as 'AIRWAYS' and contains effects tailored for tonal content. It recreates different ambient spaces. The effects are approximately arranged by size – going from bigger spaces (like halls) to smaller ones finishing with delays and chorus

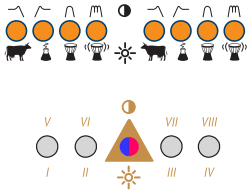
The second bank 'DARKWAVES' contains 8 effects suitable for percussive sounds and serves a variety of different flavours.

See https://airways.endorphin.es for more details and latest updates.

	INDICATOR *(Blck_Noir, Grand Terminal, Milky Way)*			***AIRWAYS*** *(ambient effect bank)*	***DARKWAVES*** *(drum effect bank)*
1	• *(BN)*	•○○○ ○○○○ *(GT)*	○•○ •• *(MW)*	HALL REVERB	GATED REVERB
2	•• *(BN)*	•○○○ ○○○○ *(GT)*	•○○ •• *(MW)*	SHIMMER REVERB	SPRING REVERB
3	••• *(BN)*	•••○ ○○○○ *(GT)*	••○ ○• *(MW)*	ROOM REVERB	REVERSED REVERB
4	•••• *(BN)*	••••○ ○○○○ *(GT)*	•• ••○ *(MW)*	PLATE REVERB	FLANGER
5	• *(BN)*	○○○○ •○○○ *(GT)*	○•○ •• *(MW)*	SPRING REVERB	RING MODULATOR
6	•• *(BN)*	○○○○ ○•○○ *(GT)*	•○○ •• *(MW)*	PING-PONG DELAY	OVERDRIVE
7	••• *(BN)*	○○○○ ○○•○ *(GT)*	•• ○•• *(MW)*	TAPE ECHO DELAY	COMPRESSOR
8	•••• *(BN)*	○○○○ ○○○• *(GT)*	•• ••○ *(MW)*	CHORUS	FREEZER

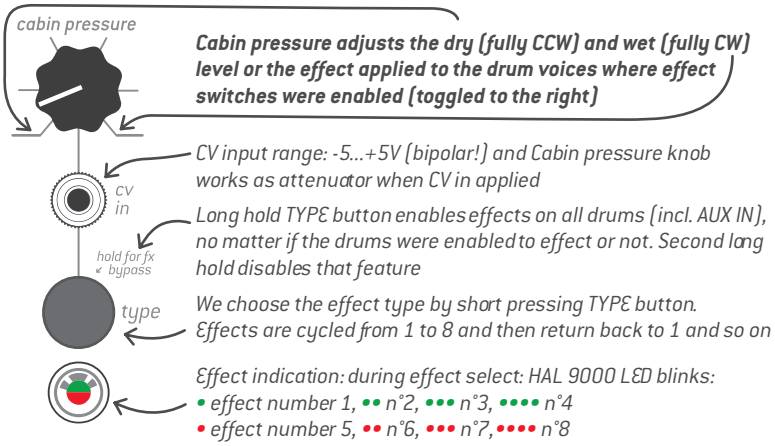
SPECIFIC FOR GRAND TERMINAL/MILKY WAY

The current effect type chosen is shown at the row of LEDs by shortly blinking of the LED. Only one effect may be chosen at a time. The 8 LEDs of Grand Terminal correspond to the 8 effect preset cells. Milky Way uses 4 LEDs that shine either half or fully lit to indicate the chosen effect.



SPECIFIC FOR BLCK_NOIR

IMPORTANT: *holding the **TYPE** button for longer than 1 second will enable effects on all drum voices no matter if they were enabled or disabled from the effect. Another long hold press will revert the effect only to those drums that have their switches enabled.*



The effect type is selected by pressing the ***TYPE*** button in the CABIN PRESSURE area on the upper right corner of the module. The effects are cycled one by one (from 1st to 8th and then back to 1st and so on). When powering the module as well as when selecting an effect the ***'HAL9000'*** LED blinks certain times (1-4) in green or red, identifying the effect currently selected. If the first effect is selected, then it blinks ***green*** • once. Second effect: ***green*** •• twice. Third effect: ***green*** ••• trice and four times ***green*** •••• for effect #4.

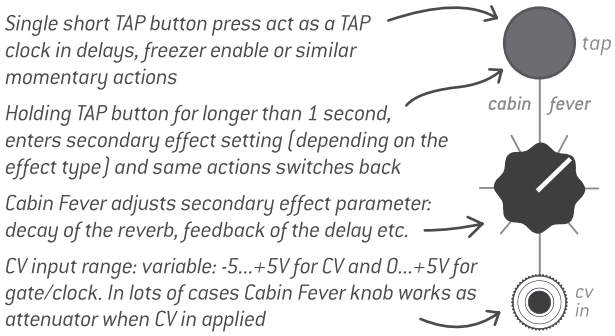
At effect #5 it blinks ***red*** • once. Twice ***red*** •• for effect #6, trice ***red*** ••• for effect #7 and four times ***red*** •••• when effect #8 is chosen.

IN GENERAL

Some effects work in true stereo, and some widen the stereo spread (which would not be audible in the mono output). Only one effect can be chosen at a time. The ***CABIN PRESSURE*** knob always defines the DRY/WET parameter of the effect. When the knob is fully CCW, then there is no effect at all: dry output only. When the knob is fully CW, then the signal will be fully processed with the effect: 100% wet. Adjusting that knob is a balance of how the sound is processed: think of it as opening the window to get some fresh air – you may open it only a bit for some ventilation, or fully open it to get lots of fresh air. The corresponding CV IN jack is a CV control for the dry/wet parameter. It accepts BI-POLAR -5v...+5v voltage and when the plug with CV is inserted (3.5mm MONO jack), the CABIN PRESSURE knob acts as an attenuator for that incoming CV.

Each effect has a few additional parameters. These parameters are defined by the ***CABIN FEVER*** knob, corresponding to the CV IN jack and a TAP button. Depending on the effect, these controls are assigned to different parameters as described below.

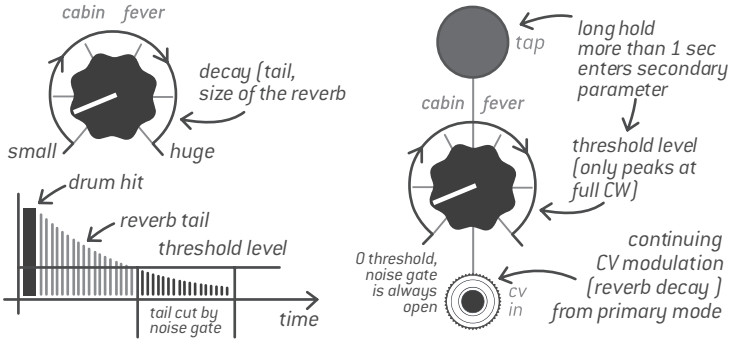
Pressing and holding the ***TAP*** button longer than 1 second in almost all effects activates the secondary mode for the CABIN FEVER knob. The correspronding LED will blink once, to show that you are in secondary mode. Press and hold the TAP again for around 1 second and you will notice the corresponding LED will blink once again meaning you are back in primary mode.



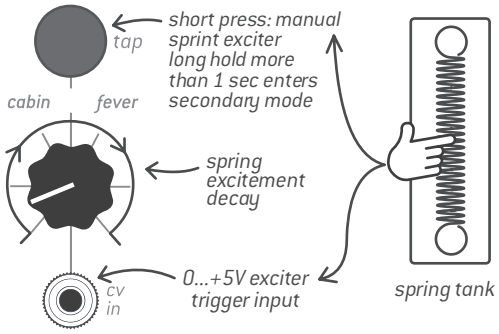
WELCOME TO THE DARK SIDE.

DARKWAVES: the stock bank containing 8 drum oriented effects

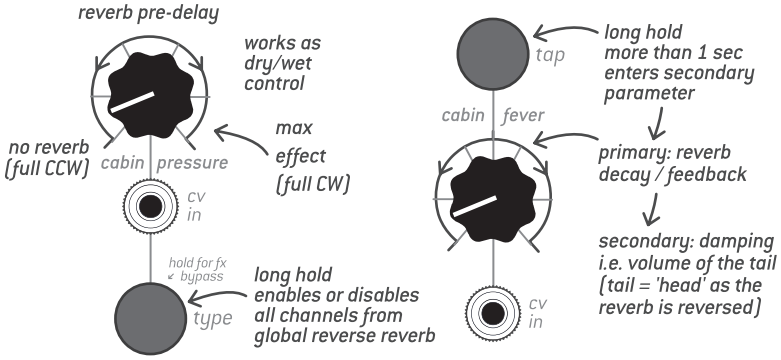
1. **GATED REVERB** That type of effect is widely known from records of the 80s. It was defining the sound of the snare drum (usually). Typical examples: Phil Collins – In The Air Tonight (1981), Peter Gabriel – Intruder (1980). To make a drum sound powerful, a reverb with huge tail is applied. However that tail is being cut by a noise gate (with defined threshold) after the drum was hit. This resulted in a mix still sounding clean and light because the lack long reverb tails. Gated reverb is based around plate reverb – the most universal sounding one from our point of view, which also fits nicely to drums. CABIN PRESSURE defines the reverb dry/wet amount and CABIN FEVER defines the reverb decay, as usually. However the secondary FEVER action defines the threshold of the noise gate – from zero (full CCW, sound always on) to max (full CW, only slight peaks). Default threshold value is 20%. This setting suits most of the drums. Noise gate's attack and decay are fixed and chosen experimentally to fit most musical styles.



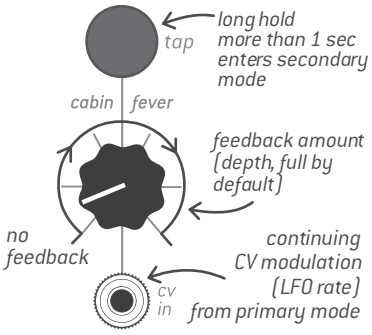
2. **SPRING REVERB** – effect is unchanged from original Airways bank (#5) because it works great for drums. It gets its unique sound from the diffusion in the metal spring, because higher frequencies travel more slowly through the spring than the lower ones. The CABIN FEVER knob, as usually, defines the decay of the reverb. We also implemented a unique feature: With the TAP button you can simulate a sound as if you pluck the real spring with your finger. That gives the distinct exciting spring reverb sound we all love so much. The secondary function of the CABIN FEVER is tied to the TAP button's 'pluck the spring' feature and defines the DECAY of how fast the spring will calm down after manually plucking it. The spring plucking may be done manually by using the TAP button or by applying a trigger into the CABIN FEVER CV input while being in the secondary function. By adjusting the decay to the maximum value, the spring sounds long (up to infinite) with a small self-oscillation. Keep that in mind when you select this effect.



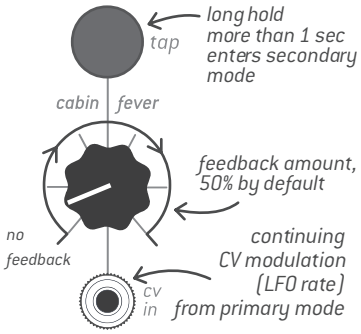
3. **REVERSE REVERB** – takes the reverb tail of the sound and reverses it. If applied on a drums like snare then it creates breathing effect. 'Cabin pressure' knob defines the predelay time along as acts as a dry/wet control. 'Cabin fever' sets the reverb decay value. Holding 'tap' for longer than 1 second enables the secondary function for 'cabin fever': damping, i.e. volume of the tail (in our case tail = 'head' as the tail is reversed).



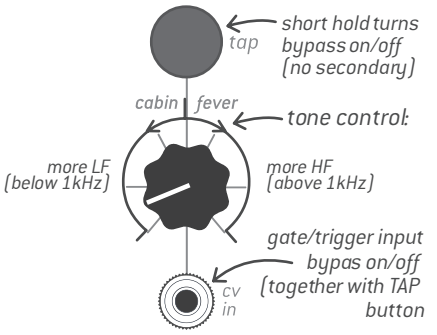
4. **FLANGER** is one of the typical effects used for drums and guitars. The signal is duplicated and its copy is delayed in time (typically around 20ms). That delay is modulated by an LFO, which rate is controlled by the CABIN FEVER knob. The CABIN PRESSURE knob defines the amount of delay. Finally, the secondary FEVER parameter defines the feedback. Playing with that three parameters allows to achieve sweeping, airplane engine alike sound with a pretty wide range.



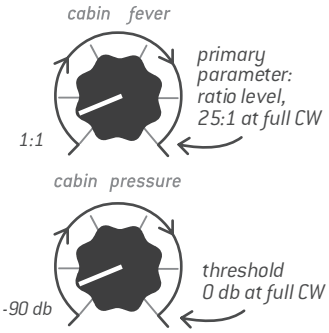
5. ***RING MODULATOR:*** It is a special type of amplitude moduation and is called 'balanced' in the FURTHRRRR GENERATOR. The Ring Modulator multiplies the signal with an internal sine wave oscillator that results in an increase in side-band harmonics. CABIN PRESSURE defines the amount of modulation and CABIN FEVER defines the speed of the LFO. Secret ingredient: Feedback! Its amount is by default set to 50% on the secondary parameter (CABIN FEVER) and with further increase will bring special dirtiness to the drum sounds (or any other).

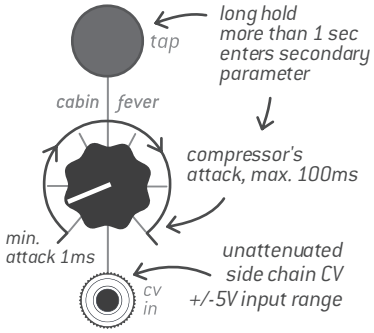


6. ***OVERDRIVE*** This is a typical guitar pedal effect simulating the creamy sound of an overdriven tube amplifier. CABIN PRESSURE knob adjusts the drive amount from initial to maximum (with volume compensation), while CABIN FEVER defines the tone control. Either it boosts the presence of lower or higher frequencies as usually found in guitar pedals. The TAP button defines if the effect is active or bypassed (like the switch on a guitar pedal) and so does FEVER CV input that accepts gates/triggers to activate or bypass of the effect. Overdrive effect uses 4x oversampling to eliminate aliasing at heavy distortion.

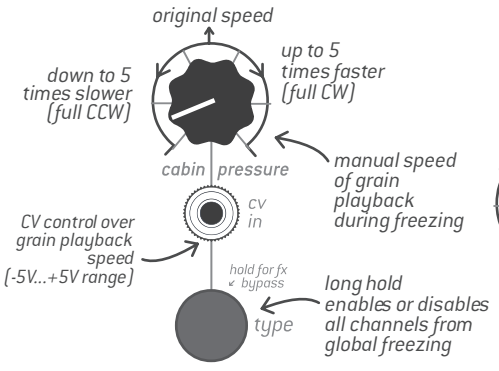


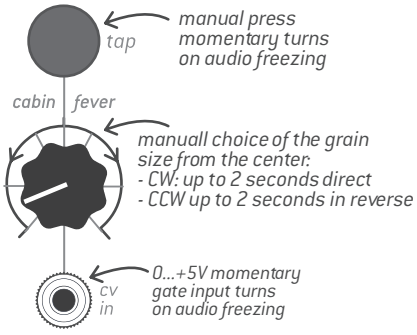
7. ***PEAK COMPRESSOR:*** The dynamic range of audio material is the ratio of the loudest signal to the quietest. A Compressor reduces loud sounds over a certain threshold while quiet sounds remain unaffected. It is an essential tool for shaping dynamics of audio sources – especially drums. CABIN PRESSURE knob defines the THRESHOLD from -90 dB (fully CCW) to 0 dB (fully CW). The amount of gain reduction is determined by the RATIO. The CABIN FEVER knob defines the RATIO: from 1 (fully CCW) to around 25 (fully CW) the compressor becomes a LIMITER then. The compressor provides a certain degree of control over how quickly it reacts. Secondary CABIN FEVER parameter defines the attack, from 1 to 200 msec. Release is automatically adjusted and is calculated using ratio of peak to RMS (crest factor). CABIN FEVER CV input is an unattenuated side-chain input for linear bipolar CV input, which is then subtracted from compressor threshold in dB. The Compressor also features automatic makeup-gain, which compensates for an eventual volume-loss caused by the compression itself.





8. ***FREEZER/LOOPER:*** When TAP is pressed (or FEVER CV receives an 'open gate' CV), the audio is looped by the grain length – defined by the CABIN FEVER knob – and with the speed – defined by CABIN PRESSURE knob or CV – applied. Both knobs are bi-directional: With the CABIN FEVER knob in the middle position the granule size is the smallest. Turning the knob CW will increase the granule size; turning CCW will do the same thing, but the granule will be reversed. Same for the speed parameter: With the CABIN PRESSURE knob in the middle position the speed is matching the original sound. It slows down the sound 5 times at full CCW and speeds it 5 times up at full CW.





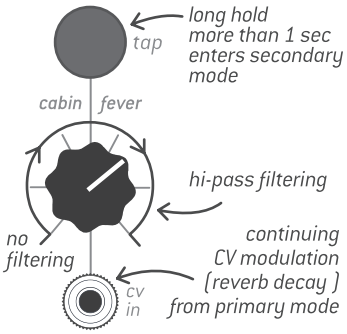
YOU WILL BE DEAD – DARKWAVES NEW EFFECTS BANK:

	EFFECT	PRIMARY 'CABIN FEVER' ACTION	SECONDARY 'CABIN FEVER' ACTION	TAP BUTTON
1	GATED REVERB	Decay of the reverb	Noise gate threshold, by default set to 20%	Long hold: entering secondary function
2	SPRING	Decay of the reverb	Decay of spring excitement from TAP button or incoming by CV IN clock, by default set to maximum	Short press: spring excitement. Long hold: entering secondary function
3	REVERSED REVERB	Reverb's decay value	Damping volume of the tail (in our case 'tail' = 'head' as the tail is reversed)	Long hold: entering secondary function
4	FLANGER	Range of LFO	Feedback amount, by default set to 100%	Long hold: entering secondary function
5	RING-MODULATOR	Modulator's frequency rate	Feedback amount, by default set to 50%	Long hold: entering secondary function
6	OVERDRIVE	Tone control	None	Overdrive bypass on/off (latch)
7	COMPRESSOR	Ratio from 1:1 to 1:25	Attack of compressor from 1 to 100ms	Long hold: entering secondary function
8	FREEZER	Granule size (bipolar)	none	Short/long momentary press: freezing enable

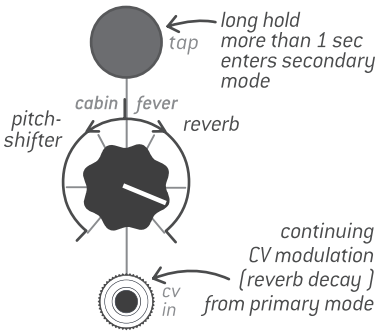
I FEEL COMFORTABLE IN BLACK

AIRWAYS – factory ambient effects bank:

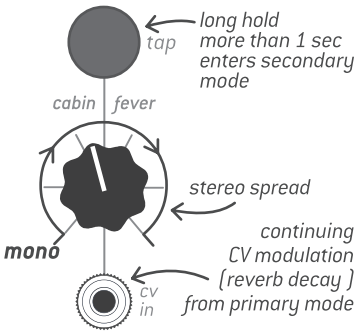
1. **HALL REVERB** is a very clean space effect that may create an extremely large - up to almost infinite - ambience. The CABIN FEVER knob defines the decay of the reverb, or in other words, can be considered as the hall size. At full CW position the sound will sustain up to infinite, while fully at CCW only the effect of a small room will be heard. Don't forget to adjust CABIN PRESSURE simultaneously to have a proper balance for your sound. Holding TAP for longer than 1 second enables the secondary function for CABIN FEVER knob. The amount of decay - primary parameter of the CABIN FEVER knob - will be stored and the CABIN FEVER knob will adjust the amount of fixed HI-PASS filter at the input of the reverb (only manual control, no voltage control). The hi-pass filter is an essential tool within almost any reverb to cut off low frequencies and have more 'air' in the final output without the 'boomy' low frequencies. Be aware: after applying too much hi-pass filter to the reverb, you will hear almost no reverb effect when you play Bass drum sound send to effect. By default, after firmware/bank update, this hi-pass filter cuts only a bit of low frequencies until you adjust it manually with the secondary CABIN FEVER function. Then that parameter is stored in the memory.



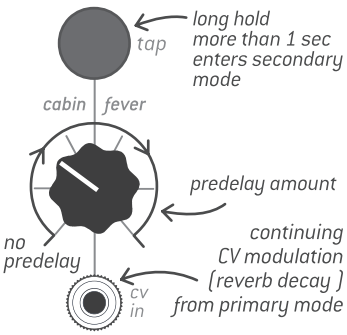
2. **SHIMMER REVERB** is a variation of the hall reverb, with a pitch shifter in the reverb feedback loop, which creates weird, choir-like, huge and unrealistic spaces. The primary CABIN FEVER function defines the decay of the reverb and the secondary function defines the amount of pitch-shifter mixed into original reverb. This means: no pitch-shifter at the fully CCW position of the CABIN FEVER knob, half-and-half in the middle, and pitch-shifted mix only at fully CW position. By default (or after resetting the module) this secondary parameter is set with an approximate ratio 40%/60% of shimmer/reverb until you adjust it manually with the secondary CABIN FEVER function.



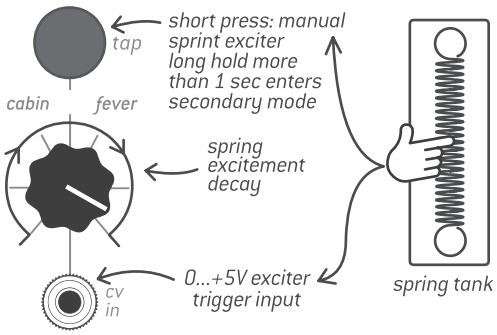
3. **STEREO ROOM REVERB** uses four all-pass filters in series and eight parallel Schroeder-Moorer filtered-feedback comb-filters to recreate a sort of stereo (room) ambience. The CABIN FEVER defines the DECAY of the reverb, or again, adjusts the room size. The Secondary function (holding TAP for longer than 1 second) defines the stereo spread of the reverb, from mono (fully CCW) up to a huge stereo spread. By default (or after resetting the module) this spread is cranked up fully until you adjust it with secondary CABIN FEVER function. This change is audible when you use the stereo output of your module connected, e.g. to your headphones or speakerphones.



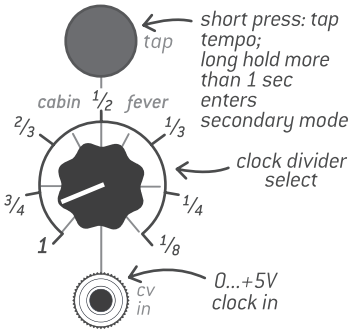
4. **PLATE REVERB** has a distinct sound that recreates picked up vibrations of a big metal sheet driven by an electromechanical transducer. It is one of the first digital reverb simulation approaches ever made. It suits various music genres, vocals and drums, ranging from a subtle effect up to an infinitely sustained ambience. The primary CABIN FEVER function defines the decay of the reverb. In real life this is the distance from the pickups to the metal plate, and defines how long the tail of the reverb is present. Secondary parameter defines the amount of pre-delay to psychologically distant sounds in ambience. By default (or after firmware/bank update) the pre-delay is set to maximum, until you adjust it manually with the secondary CABIN FEVER function.



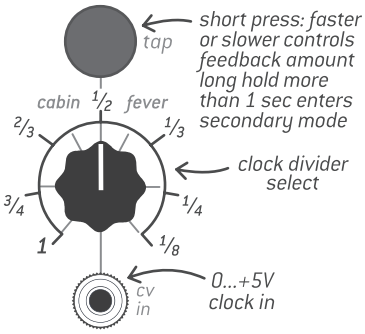
5. SPRING REVERB gets its unique sound from the diffusion in the metal spring, because higher frequencies travel more slowly through the spring than lower ones. The CABIN FEVER knob, as usual, defines the decay of the reverb. We also implemented a unique feature: with the TAP button you can simulate a sound as if you pluck the real spring with your finger. That gives the distinct exciting spring reverb sound we all love so much. The Secondary function of the CABIN FEVER is tied to the TAP button's 'pluck the spring' feature and defines the DECAY of how fast the spring will calm down after manually plucking it. The spring plucking may be done manually by using the TAP button or by applying a trigger into the CABIN FEVER CV input while being in secondary function. By adjusting the decay to the maximum value, the spring sounds long (up to infinite) with a small self-oscillation. Keep that in mind when you select this effect.



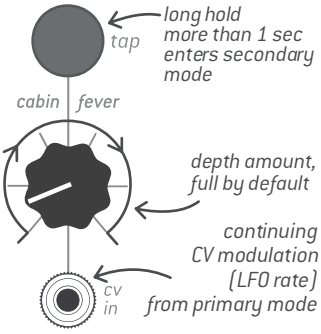
6. PING-PONG DELAY is a recreation of a stereo delay with the rate of repeats controlled by a manual tap or by a clock. A 'tap' is usually three or more short clicks in a row on the TAP button, after which the repeats of the delay follow the tempo you have tapped. Double internal down-sampling allows the delay to sustain up to a maximum of 2 seconds. The primary CABIN FEVER parameter defines the feedback of the delay – i.e. how much sound goes into the feedback loop to be repeated. At full CW knob position, almost no new incoming sound comes to the feedback loop and the sound regenerates itself infinitely. The secondary CABIN FEVER parameter defines the clock division of the incoming tap/clock. These taps/clock come either from the manual TAP button or from the CV IN jack. The CV IN jack becomes a 0..+5V trigger input in that mode. In the secondary mode the CABIN FEVER knob range is divided into 6 sectors that correspond to divisions: 1, 3/4, 2/3, 1/2, 1/3, 1/4, 1/8. Clock division change is possible during new taps, and is saved after you switch to the primary mode. Some pitch-shifting artefacts may arise during changing the divisions; just wait a few seconds until the delay buffer is fully emptied/renewed and you will have a proper tempo calibration. If the total tap applied (after division) is longer than the maximal time delay can handle, then the maximal tap tempo is set. Since this is a stereo delay, all taps affect the left and right channel.



7. TAPE ECHO is a recreation of Variable Tape Speed Echo machines with 3 fixed playback heads – inspired by the Roland RE-201 Space Echo, with a warm saturation emulation. With double internal downsampling, the total delay time is around 1.4 seconds from the initial echo input until the output of the third delay. The overall time is spread over all three tape heads/delays, that's why the total 1.4 seconds may be audible as 480ms delay. In primary mode, the CABIN FEVER knob defines the delay repeat rate (speed of the tape). Bipolar +/-5V CV input applied (i.e. an LFO) to the CABIN FEVER CV input, using the knob as attenuator, may create interesting detuned audio effects. The tap button works in a limited frequency range of manual tapping, and defines the INTENSITY (number or repeats, or feedback) of the delays. The faster you tap, the longer the decay (delay tail) you obtain. The secondary CABIN FEVER parameter works as a divider for the incoming clock (into CV IN jack) or by using manual taps with the same dividers as in Ping-Pong delay described above.



8. CHORUS is an ambient effect to thicken the sound and create unrealistic spaces by varying the modulation parameters continuously. The chorus effect is the result of delaying an original signal in time and mixing it with a signal modulated by a few of fixed LFOs and obtaining unison effect as a result, or to make sound fatter. CABIN PRESSURE defines the amount of dry and wet signal. Primary CABIN FEVER knob defines the feedback amount. In average amounts, it creates typical unison effect, however in full CW amount in goes to an infinite feedback resulting unrealistic ambient. Secondary FEVER parameter defines the modulation depth, which is 'full on' by default.

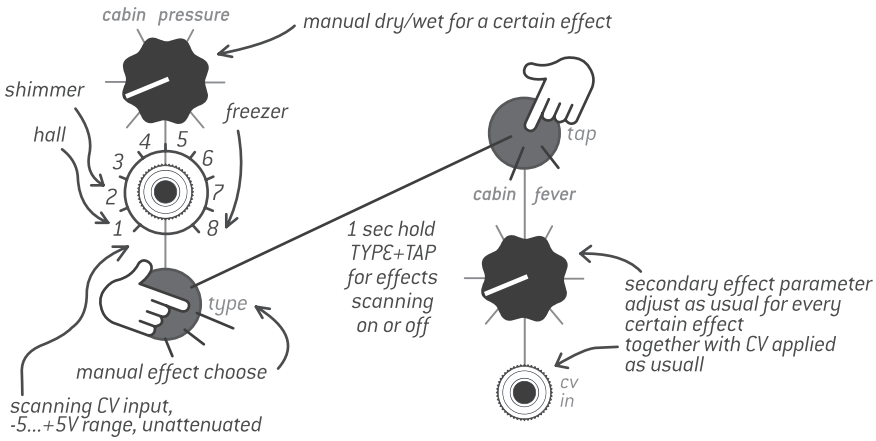


EVERBODY HAS A DARK SIDE

	EFFECT	PRIMARY 'CABIN FEVER' ACTION	SECONDARY 'CABIN FEVER' ACTION	TAP BUTTON
1	HALL REVERB	Decay of the reverb	Hi-pass filter at reverb input, by default set to 50%	Long hold: entering secondary function
2	SHIMMER	Decay of the reverb	Pitch-shifter vs reverb mix, by default set to 40/60%	Long hold: entering secondary function
3	ROOM	Decay of the reverb	Room stereo spread, by default set to maximum	Long hold: entering secondary function
4	PLATE	Decay of the reverb	Pre-delay amount, by default set to maximum	Long hold: entering secondary function
5	SPRING	Decay of the reverb	Decay of spring excitement from TAP button or incoming by CV IN clock, by default set to maximum	Short press: spring excitement. Long hold: entering secondary function
6	PING-PONG DELAY	Delay's feedback amount	Divider for delay's frequency from TAP button or incoming by CV IN clock, by default set to 1/1 (max length)	Short press: tap tempo Long hold: entering secondary function
7	TAPE ECHO	Tape speed	Divider for delay's feedback from TAP button or incoming by CV IN clock. By default set to 1/1 (max length)	Short press: tap for feedback Long hold: entering secondary function
8	CHORUS	Feedback amount	Modulation depth, by default 100%	Long hold: entering secondary function

YOU WILL HAVE NIGHTMARES FOREVER

CABIN PRESSURE SCAN: by pressing and holding the ***TYPE + TAP*** buttons simultaneously for longer than 1 second, you enable the effect type change under incoming CV. Every effect type has a memory, so the values of every parameter are stored and then immediately recalled under incoming CV for a certain effect type. In that mode, the CABIN PRESSURE parameter is no longer CV controlled and works only as a manual DRY/WET control. The CV input for CABIN PRESSURE accepts bi-polar -5...+5V CV signal and changes the type of effect under incoming CV. The range of -5...+5V is divided into 8 zones (with adjusted hysteresis range) with approx. 1.25V per step. If the incoming CV is from -5V to -3.75V, then the first effect type is chosen. If the CV is in the range from -3.75 to -2.5V, then the second effect is chosen and so on, up to the 8th effect.



NOT A NIGHTMARE IF YOU KNOW WHAT YOU ARE DOING

IMPORTANT: Because the DSP in the module can only handle loading one effect at once, very fast scanning of effects may cause clicks. There are small crossfades in volume during effect transitions, and we tried to minimize the clicks as much as possible, but they cannot be fully eliminated.

I'M THE DEATH

In case you tweaked everything so hard, you finally don't hear any signal from the main outputs, or only things you don't want to hear, there is a soft reset that adjusts all parameters to their default values, so you may start tweaking from the beginning. Reset also clears all effect memories. Press both TYPE and TAP buttons simultaneously and hold for more than 5 seconds. You may hear a short blip and then you will see the effect will be set to the first cell by one green blink.

This works for Grand Terminal, Blck_Noir and Milky Way: