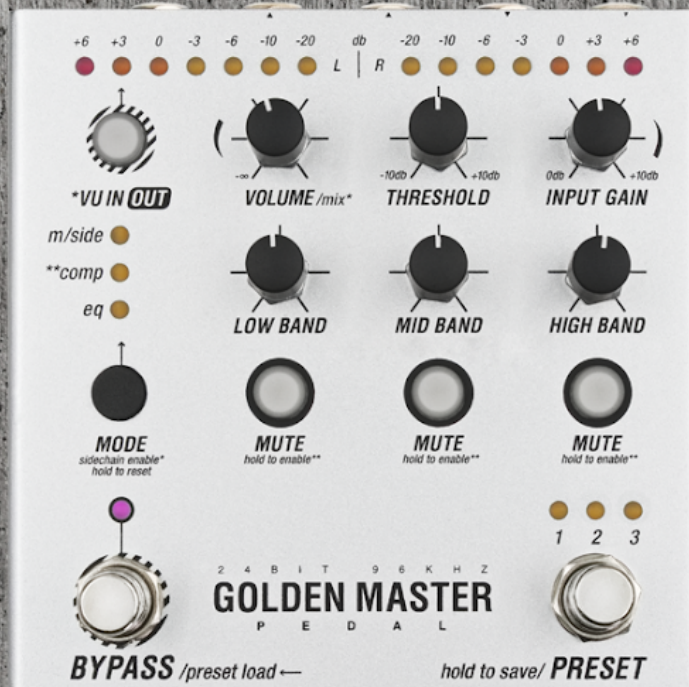


MULTIBAND MASTERING PROCESSOR

ENDORPHINES GOLDEN MASTER

P E D A L



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WARRANTY

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

The warranty does 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

The warranty covers replacement or repair, as decided by us. Please contact us via email for a return authorization before sending anything. Shipping costs of sending a module back for servicing is paid by the customer.

VISIT US

<https://endorphin.es>

<https://youtube.com/user/TheEndorphines>

<https://facebook.com/TheEndorphines>

https://twitter.com/endorphin_es

<https://www.instagram.com/endorphin.es/>

<https://www.modulargrid.net/e/modules/browser/vendor:167>

For technical requests: [**support@endorphin.es**](mailto:support@endorphin.es)

For dealer / marketing inquiries: [**info@endorphin.es**](mailto:info@endorphin.es)

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It is doing business as FURTH BARCELONA, S. L. (EU VAT ID: ES B66836487).

INTRO

Based on our [GOLDEN MASTER](#) eurorack module and our experience in [electronic live music performances](#), we developed the GOLDEN MASTER Pedal – a stereo multiband processor PEDAL with surprisingly wide application palette: from guitarists (and especially bass guitarists) to pedalboards' or entire electronic mix end-of-chain processor to deliver high pressure audio for live concerts and venues: sound loud and punchy without overloading the master limiter.

GOLDEN MASTER Pedal takes inspiration from studio mastering and radio loudness units from the 1990s and gives control over the **EQ, compression** (with **parallel compression**) and **mid/side** processing: **all three available at the same time** along with the and multiband **sidechain** input that can be triggered using audio sources sent into the expression pedal input. The settings are simplified and intuitive. All of the settings can be stored to any of the 3 available preset slots for instant recall. This pedal isn't just another compressor; it's a conduit for innovation and expression, destined to become an essential tool in the arsenal of forward-thinking musicians and sound designers.

Thanks to the 24-bit/96kHz audio fidelity with 32 bit internal processing, you'll get incredible processing power. It features three bands - low, medium, and high - each handling its distinct part of the audio spectrum. These controls feature a single knob that both boosts and cuts signals. Set the overall loudness limit of your sounds and the brickwall limiter ensures all your sounds stay in check. Bass guitar players will love the proper control over the low end spectrum - stay in mono where needed with enough punch and clarity - that might become the only must-have effect your bass would need. This multi-band effect is the perfect end-of-chain tool, ensuring that anything you throw at it sounds dynamic and full. Additionally it features high impedance inputs and pseudo-balanced outputs, allowing it to work as a DI-box on stage.

Configurable expression jack input can either be used to control EQ band gain or can be switched to sidechain mode, which works by extracting the envelope follower curve from an audio source fed into the expression pedal input and can be mapped to control each EQ band in certain proportions (directly or inverted), turning Golden Master into a multiband sidechain processor.

CONNECTING THE POWER

Use a quality 9V 'Boss'-standard center negative power adapter, typically 500mA. However the unit may be powered from any 9 to 18V center-positive or center-negative DC adapters (full protection). Power supply not included.

TECHNICAL SPECIFICATIONS

- Audio input impedance: 500 k Ω , output impedance: 100 Ω
- Audio input: up to +12 dBV, 1/4" or 6.35mm TS unbalanced
- Audio outputs: 1/4 or 6.35mm TS unbalanced or or TRS balanced (pseudo-balanced outputs)
- Power: 2.1mm tip / 5.5mm barrel DC jack, 150 mA minimum, 9V (adapter not included)
- Bypass options: true-stereo on electromechanical relays, buffered
- Audio I/O: 24 bit, 96 kHz with 32 bit floating point internal processing
- Pedal dimensions: 122 mm x 118 mm x 60 mm (5" x 5" x 2 $\frac{1}{3}$ ")
- Box dimensions: 125 mm x 125 x 65 mm (4.9" x 4.9" x 2.6")
- Weight: pedal only: 450 gram /1 lb; incl. box & packaging: 600 gr / 1.32 lbs

OVERVIEW

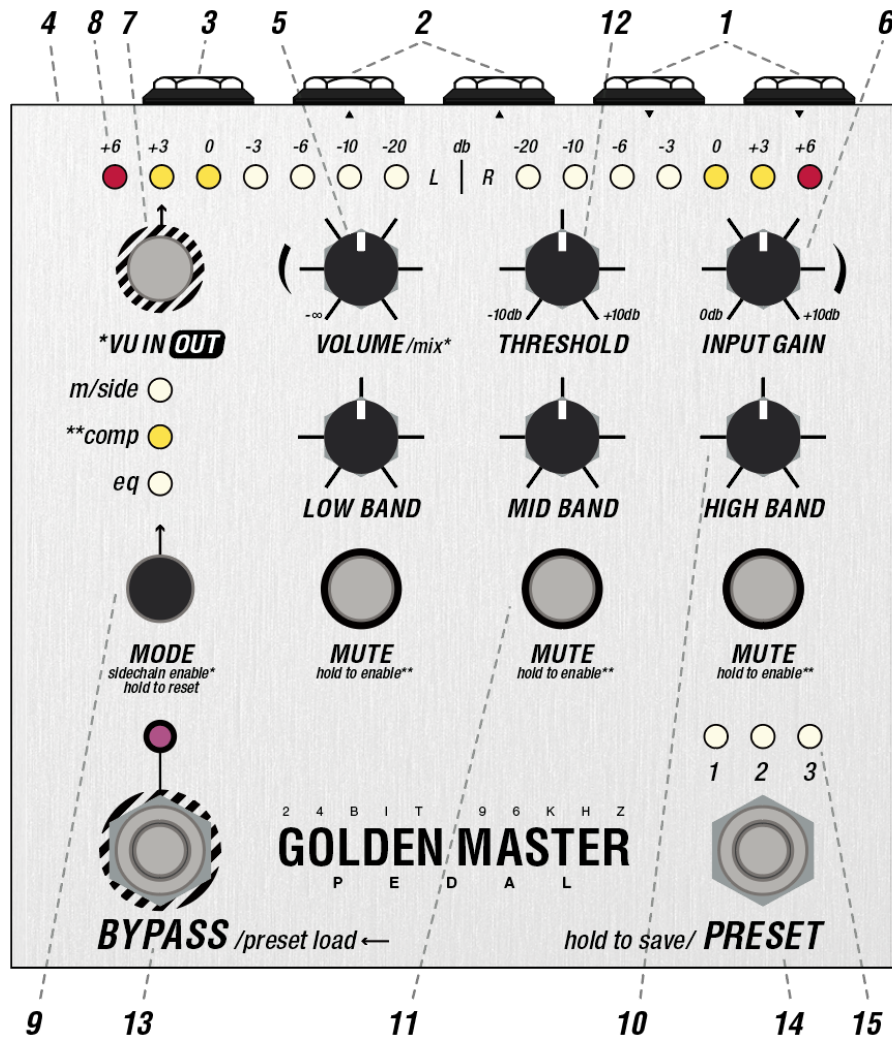
Golden Master is a true stereo pedal designed for both live musicians and studio heads that want to take extra care of their mix or just give extra punch to specific sounds. Built in end of signal chain limiter makes it a great sound design tool whether used on guitars or synthesizers especially when used for feedback patching.

The signal chain is designed in the following way.

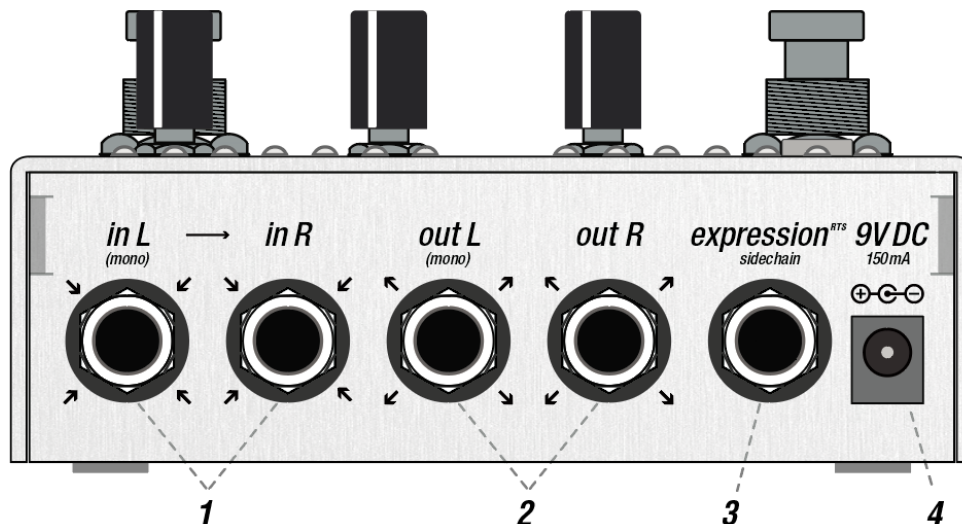
First the signal enters the stereo inputs with an additional digital saturation stage to boost the signal to the right level, which can be especially useful to harder hit the compressor. Next we have 3 bands, each with their own EQ setting, mute / compressor enable button, compressor per band with global threshold, stereo image enhancer and a final limiter.

- Multi-band processor inspired by mastering tools from the 1990s: adds punch and dynamics to your sound
- EQ, Compression with the Sidechain input, Mid/Side processing
- Three frequency bands with +8 db boost and -20 db cut
- Brickwall limiter sets upper limit of signals, with look ahead latency of 1.5ms.
- 24 bit 96 kHz audio I/O with 32 bits internal processing
- Per-band mute buttons
- Parallel compression: mix dry signal to processed audio to retain much of the original dynamics
- Dual mode expression pedal input: in standard configuration the expression pedal can be mapped to adjust each of the EQ bands (in + or – individually). In Sidechain mode an envelope follower is extracted from an external audio source sent to the expression input and applied as a control source for each of the EQ bands.
- Pseudo-balanced outputs allow to use the pedal between the effects chain with simple unbalanced TS instruments cables but also as a final end-of-chain tool with balanced output like a DI box.

INTERFACE – FRONT PANEL



INTERFACE – REAR SIDE



- 1. IN LEFT (MONO), IN RIGHT JACKS:** line level or high impedance left and right stereo audio inputs. *INPUT LEFT* – is *normalised*, i.e. pre-routed → to *INPUT RIGHT* when no audio cable is plugged into the *IN R* jack. Accept standard unbalanced TS instrument 1/4" cables, line levels (up to 12dBV or +/-2V) with soft clipping introduced with higher audio amplitudes.
- 2. OUT LEFT (MONO), OUT RIGHT JACKS:** final separate left and right stereo audio outputs. Accept standard unbalanced TS instrument 1/4" cables. Using 1/4" TRS cables can be used as *pseudo-balanced* outputs as a DI-box with better performance with noise cancellation since the ring is connected to ground, catches the same hum which then self-cancels from the audio from the tip.
- 3. EXPRESSION / SIDECHAIN INPUT JACK:** assignable expression pedal input. Accepts standard RTS expression pedal, +5V supplied from the ring. Expression pedal morphing macro settings are saved for each of the three presets separately. For more details on how to assign the expression jack check *EXPRESSION INPUT ASSIGNMENT* section below. Additionally used to accept audio line-level signals when the *SIDECHAIN* mode enabled.
- 4. DC IN JACK:** 2.1mm/5.5mm connector for the power adapter – typical Boss® standard, 500mA, +9V, center negative. This jack has internal reverse protection and voltage rectification therefore accepts any DC adapter of 9 to 15 volts of any polarity – center positive or center negative.
- 5. VOLUME KNOB/MIX*:** final audio volume: maximum at full CW, silent at full CCW. Secondary */MIX** function (pressing or holding **VU IN/OUT* while turning the knob) controls the *GLOBAL DRY/WET MIX* after the *INPUT GAIN* stage or the clean input at full CCW and the final processed audio chain output before the *VOLUME KNOB* at full CW
- 6. INPUT GAIN KNOB:** digital input gain saturator up to +10db. Warning: May increase noise level, but compressor will work more aggressively as the audio will hit the compressor harder. Use it in combination with *THRESHOLD* knob (12) to fine tune the compressor action. Default value is at 0db (no amplification).
- 7. *VU IN/OUT BUTTON:** selects the VU meter audio source. By default it is off, which means the *VU METER* LEDs show the level of the input signal post *INPUT GAIN* (6) stage. By pressing the **VU IN/OUT* again (fully lit) switches the *VU METER* LEDs to show the final audio output level. Additionally acts as a *SHIFT* button when long holding and tweaking parameters marked with asterisk /...* on the panel: *dry/wet /MIX** (5) or *LOW/MID/HIGH KNOBS* (10) to set the level of expression pedal or sidechain influence per band.

8. **VU METER LEDs:** two rows of seven LEDs act as a standard volume unit meters per left and right channel. Used to show either the audio input or output level selected with *VU IN/OUT (7) button press.
9. **MODE BUTTON WITH LEDs:** selecting the mode of *LOW/MID/HIGH BAND KNOBS*. Shortly press to select one of the 3 modes to edit: Equalizer, Compressor, Mid/Side widener. Selected MODE be edited using the 3 band knobs (10) shown with the column of 3 LEDs (see below). Long press resets the controls to their default (typically clean) states. When the Expression input jack is set to *SIDECHAIN MODE* after pressing the VU + Mode button, that row of LEDs shows selected Mode inverted (selected Mode LED is off).
10. **LOW / MID / HIGH BAND KNOBS:** depending on the mode, they adjust:
 - **EQUALIZER MODE (eq):** level of each band: from -20db (CCW) to normal (noon) to +8db (CW). See *HOW EQUALIZER WORKS* section below.
 - **COMPRESSOR MODE (**comp):** adjusting predefined compressor settings (see *HOW COMPRESSOR WORKS* section below): from soft (CCW) to normal (middle) to heavy (CW).
 - **MID/SIDE MODE (m/side):** increase or decrease stereo enhancement per band: from full mono in the CCW, to normal at noon to full stereo spread at CW. See *HOW MID/SIDE PROCESSING WORKS* section below)
11. **MUTE/COMPRESSOR ENABLE BUTTONS:** a single press on these buttons works as an immediate mute per band. When the band is muted, its button LED is semi-dimmed. You can use it as a live performance feature, but also to precisely set the compressor while muting other bands. Long press (more than 1.5 seconds) enables the **compressor and its button is fully lit. Only after the compressor is enabled on a certain band, you will be able to set its parameter with *LOW/MID/HIGH BAND KNOBS* (10) set to **comp mode (9).
12. **THRESHOLD KNOB:** global threshold offset for all 3 bands. Use it to increase or decrease the compression amount so the audio 'hits' the compressor harder or softer.
13. **BYPASS /PRESET LOAD FOOTSWITCH:** is essentially a **BYPASS / enable / activate effect / on footswitch**. Each consequent press enables and disables the whole effects chain. When the effects chain is enabled, the **pink LED** near that footswitch is ON. When the effect chain is bypassed, the LED is off and also all the remaining LEDs except the preset selection LEDs are dimmed. Additionally is used to confirm the load of the newly selected preset with *PRESET* (14) footswitch.

- 14. PRESET /HOLD TO SAVE FOOTSWITCH:** selects one of 3 presets (15). Once you select the preset, its LED starts to blink. To load that preset you have to confirm it with the BYPASS footswitch (20). Loading the presets will not alter current bypass effect state on or off. To save the preset you have to hold the **PRESET** footswitch for longer than 3 seconds. One of the 9 slots will start to blink and you may choose the new slot to save to by pressing the **PRESET** footswitch a few times. To confirm the preset save in the selected slot press and hold **PRESET** (20) footswitch for longer than 3 seconds.
- 15. 3 PRESET LEDES:** three **white** LEDs show the currently selected preset slot and blink when you select the new one without activating it yet.

OPERATION MODES

Golden Master's chain consists of 3 main parts that can be configured using 3 main **LOW/MID/HIGH BAND** (10) KNOBS: stereo multiband EQ, stereo multiband Compressor and stereo multiband Mid/Side processing. All modes are working simultaneously, but only one can be edited at a time.

Once the **MODE** is selected (9) each of three knobs (10) changes its functionality per band.

EQ MODE: **LOW/MID/HIGH** knobs adjust each band's volume with 100% in the middle, -20 db CCW and +8db boost CW. Band crossover points are around 300 Hz and 3 kHz.

COMPRESSOR MODE: **LOW/MID/HIGH** knobs adjust each band's compressor settings: From soft (full CCW) to normal (middle) to heavy (full CW). In total, you can morph per band between five different compressor settings (see **HOW COMPRESSOR WORKS** paragraph below). There is 1.5 msec look-ahead time, to make the compression more precise. Additional global **THRESHOLD** (12) knob can be used to further adjust the threshold level for all the compressors at once.

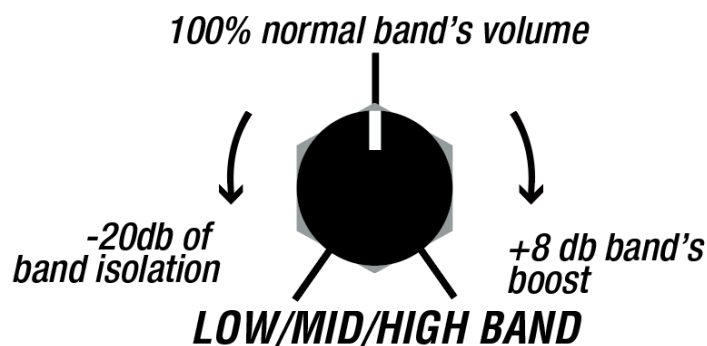
MID/SIDE MODE: **LOW/MID/HIGH** knobs allow you to adjust the stereo spread of each band. It is a powerful tool for removing muddiness by focusing the low-end in the center of the mix, freeing up space on the sides. From mono (full CCW) to normal (middle) to wide stereo spread (full CW) - see **HOW MID/SIDE PROCESSING** paragraph below.

HOW EQUALIZER WORKS

Equalizer or simply EQ is a tool used to adjust the levels of different frequencies in the audio. For that purpose the audio is being separated (filtered, or so called isolated) to separate bands which then sum together. Adjusting the volume of each of those bands helps us to cut or boost a certain frequency spectrum allowing you to balance the sound levels, eliminate unwanted frequencies and create a cohesive sound. Cutting the frequencies involves reducing the levels of specific frequencies, while boosting frequencies involves increasing their levels.

GOLDEN MASTER Pedal has 3 bands with band crossover points at around 300 Hz and 3 kHz creating three: LOW (approx. 20 Hz to 300 Hz), MID (300 Hz to 3 kHz) and HIGH (approx. 3 kHz to 20 kHz) bands. Separating audio spectrum in such parts helps us to adjust most sensitive parts of the audio individually so most of the musical instruments occupy mostly one of the bands each:

- *HIGH BAND*: bass guitar, kick drum, bass synth
- *MID BAND*: guitar, synthesizers, toms
- *LOW BAND*: hi-hats, percussion



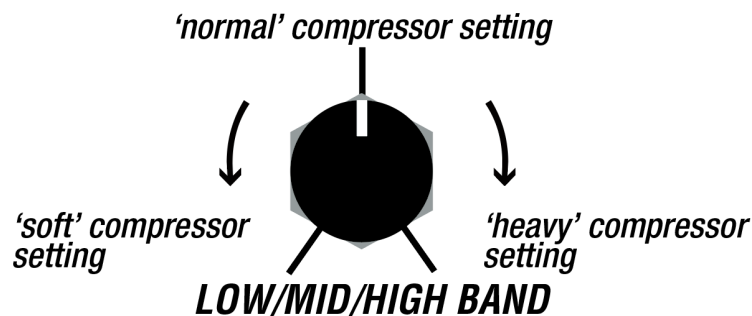
→ *Note*: The level of cut/boost is asymmetric; maximum boost is limited to +8dB, while the cut is extended to -20dB like on a professional DJ mixers.

HOW COMPRESSOR WORKS

To better understand the GOLDEN MASTER Pedal, let's have a small theory lesson of how a compressor works. In the audio signal usually we have loud parts (e.g. strong hits on the strings) and quieter parts (notes played with soft velocity). The difference between those parts is called the dynamic range of a signal. What the compressor does is it attenuates the loud parts towards more quiet ones - i.e.

reducing the dynamic range of the audio. Of course that depends on the compressor settings such as: ratio, threshold, attack and release. Why we compress is that in the end we get a more smooth and consistent audio. Some audio sources like bass guitar are especially sensitive in dynamic range and therefore need to be compressed especially to be perceived without 'drops' of the volume in the speakers. At the compressor GOLDEN MASTER Pedal has an automatic makeup gain to ensure all the gain reduction we've made from the compressor is being compensated. This way you get a balanced audio that also goes through a limiter to ensure all the unwanted peaks or the audio clipping is eliminated to avoid damaging your PA equipment.

The compressor settings values are already picked up to be intuitively chosen when you turn the COMPRESSOR settings per band with *LOW/MID/HIGH* knobs (10) giving you a distinct spectrum of soft to heavy settings.



So far, GOLDEN MASTER has six compressors for each stereo pair; LOW, MID and HIGH bands running at the same time.

The compressor settings are tuned for each band separately and are morphed between each other, however the generic settings are as following:

ATTACK: 50 mSec (CCW) to 14 mSec (CW)

RELEASE: 1500 mSec (CCW) to 150 mSec (CW)

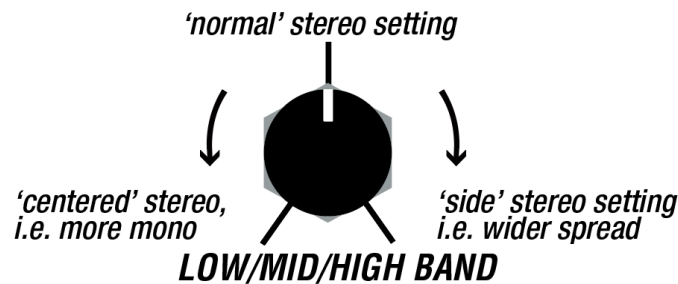
RATIO: 1:1.25 (CCW) to 1:4 (CW)

THRESHOLD: -12db (CCW) to -20db (CW).

→ Keep in mind you can offset the global threshold for the compressors enabled on a certain band with the *THRESHOLD* knob (12) so the compressor will 'hit' harder or softer (by default the knob's value is in the middle, 0db).

HOW MID/SIDE PROCESSING WORKS

You may easily enhance the width of a whole mix by boosting the stereo width on the high band. Yet another important use of Mid/Side is to make the bass mono. It's sort of an unwritten law that low-frequency instruments like bass guitar, kick drum, synth bass, should stay in the center of a stereo mix. Otherwise with the wide stereo image they may be self-canceled or simply lost in the speakers.



On the GOLDEN MASTER Pedal the middle channel is being extracted and subtracted from the left and right channels of each band. The more you turn the knob CW from the center, the more side information is left in the channels. When the knob is turned CCW from the center, the stereo image will gradually become more mono.

→ *Note:* to expect a proper stereo image 'widening', be sure to feed some stereo signal into the GOLDEN MASTER Pedal. Feeding only single mono audio (e.g. into *IN L INPUT JACK*) will not give you a significant result as there is simply no difference between the left and right and center/side parts will not be perceived.

EXPRESSION INPUT ASSIGNMENT

EXPRESSION PEDAL (RTS): to assign the expression pedal to a band, hold the VU button and turn BAND knobs CW for positive or CCW for inverted modulation. In this Mode EQ/COMP/MSIDE LEDs are non-inverted.

AUDIO SIDECCHAIN INPUT: press VU + MODE buttons - EQ/COMP/M.SIDE LEDs are inverted. To assign the extracted envelope follower from the sidechain audio input to a band, hold VU button and turn BAND knobs CW for positive or CCW for negative sidechain ducking.

PRESETS LOAD / SAVE

Presets allow you to instantly save and recall knob positions, *MUTE* buttons (11) states (incl. compressor enable on a certain band) and expression modes and adjustments, except the *VOLUME KNOB* (5) position.

GOLDEN MASTER Pedal has 3 preset slots which correspond to 3 LEDs (15) above the **PRESET** footswitch (14). You may still play with the current preset but only select the new slot to load. Preset selection and saving is made with the idea to be operated with one foot only.

TO LOAD A PRESET

- shortly press **PRESET** footswitch (14) a few times to move the blinking LED over to one of three slots you wish to load.
- Press **BYPASS** footswitch (13) and the new preset will be loaded. All the parameters which have continuous changes will slew to the new preset values to avoid any clicks.
- *Note:* loading the new preset with a single **BYPASS** footswitch (13) confirmation will not alter current bypass effect state on or off.

Once you make some changes to the knobs on your GOLDEN MASTER Pedal you wish to recall later, you have to save them. If the changes are not saved, you will have the previously saved preset recalled on the next pedal startup.

TO SAVE THE PRESET

- Hold the **PRESET** footswitch for longer than 2 seconds: one of the 3 slots will start to blink
- You may choose the new slot to save by short pressing the **PRESET** (20) footswitch a few times.
- To confirm the preset save in the selected slot, press and hold **PRESET** footswitch for longer than 2 seconds.
- *Note:* there is a blinking LED timeout when you started to load or save a preset and LED is blinking asking for load confirmation (with *BYPASS* footswitch) or save confirmation with *PRESET* footswitch - after approximately 15 seconds it will return to a normal state without any load or save.

BYPASS FOOTSWITCH MODES

There are two bypass options that can be selected by pressing and holding **MODE** + **BYPASS** for more than 4 seconds. The number of **BYPASS** button blinks shows the selected **BYPASS** type:

→ ● one blink (by default): **TRUE BYPASS** means that the stereo relays are physically connecting audio input jacks to the effect processor or detaching them from the effect rerouting to the output jacks directly without any buffers. You may hear clicks in the pedal inside during relay bypass switching. When the pedal is unpowered, its bypass is always *true* enabled – meaning it will pass the audio signals from audio *IN L/R* to audio *OUT L/R* accordingly preserving your tone.

→ ● ● two blinks: **BUFFERED BYPASS** means that the relays are always on and we enable/disable effects chain in the DSP code setting the */MIX** control to CCW when bypassed. This type of bypass might be useful if you need a buffered audio input to preserve a tone or volume amplitude.

BYPASS AUTOSAVE. Bypass enable and last preset selected are auto-saved every 2 seconds once we change them. That means if you selected the third preset on the pedal and enabled bypass and in 2 seconds turned it off, it will remain bypassed on the third preset recalled when on the next power up. Selected Bypass type is auto-saved after a slightly longer time period than momentary settings, typically up to 5 seconds.

FIRMWARE UPDATE

Firmware updates are essential for any digital devices. They bring new features or bug fixes. Feel free to write any bugs, features ideas or improvements to beta@endorphin.es

Update procedure video:

To update the firmware on your Golden Master Pedal, first download the latest firmware file once available on ENDORPHIN.ES website:

<https://www.endorphin.es/modules/p/golden-master-pedal>

The update procedure is made via audio: either computer or phone will work, we advise you to disable all notifications (flight mode) so that the update is not interrupted.

1. Power OFF your pedal.
 2. Unplug all the cables from the pedal except for a simple mono or stereo cable connecting the audio output from your computer headphones output to the **AUDIO IN 1** input of the pedal.
 3. Set the output volume of your computer to 100% or slightly lower.
 4. Hold **PRESET FOOTSWITCH** while powering your pedal ON - you will see the **PRESET** LEDs 1-3 blink one after another.
 5. Open the **GOLDENMASTER_PEDAL_UPDATE_XXX.WAV** file with any audio player. Press play and wait 30+ seconds while the firmware is updating. A row of 14 VU LEDs will slowly fill up from left to right showing the upload status.
 6. The pedal will reboot automatically after the new firmware has been installed. That's a good sign that the update was successful.
 7. Enjoy the new features.
- **IMPORTANT:** *to prevent any errors during the audio playback of the firmware, please disable any effects that might be applied to the audio (EQ, room correction etc.)*

CREDITS

ENDORPHIN.ES – GOLDEN MASTER PEDAL COLLECTION SPRING/SUMMER 2024

Module idea, concept and manual by Andreas Zhukovsky
Hardware design, code direction by Andreas Zhukovsky
Core engine programming by BSVi
Manual proofreading and beta testing by Wisdom Water
ENDORPHIN.ES are made in Barcelona, Spain
Follow, like, post and tag us at Instagram: [@endorphin.es](https://www.instagram.com/endorphin.es)

COMPLIANCE

FCC

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes / modifications not approved by ENDORPHIN.ES doing business as Furth Barcelona, S.L. could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

CE

This device meets the requirements of the following standards:

EMC: 2014/30/EU EN55032: 2015 ; EN 55103-2: 2009 (EN55024) ; EN61000-3-2; EN 61000-3-3

Low Voltage: 2014/35/EU EN 60065: 2002+A1: 2006+A11: 2008+A2 :2010+A12: 2011

RoHS2: 2011/65/EU

WEEE: 2012/19/EU