

5020 STEREO FET LIMITER- MKII

M House Studios 2022



User Manual

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5020

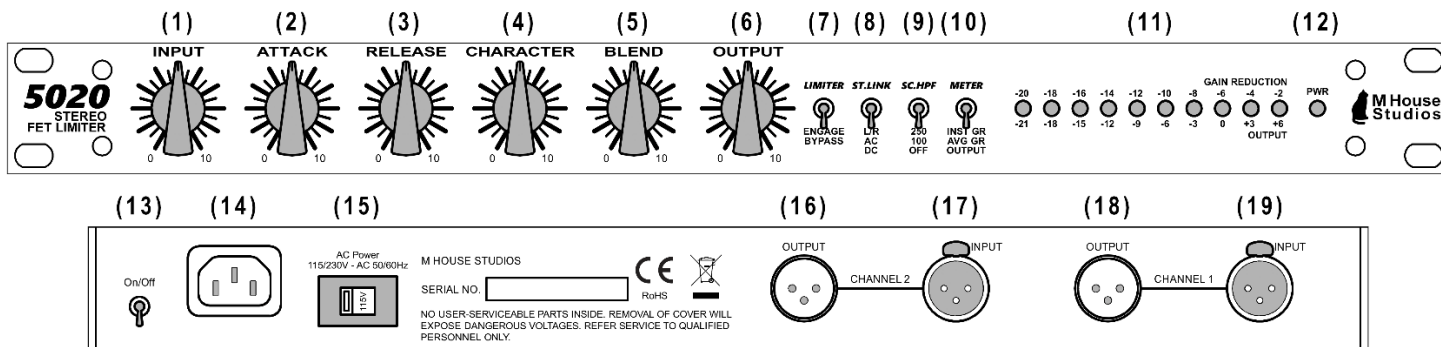
MKII



Foreword

Many modern compressors are designed to be unobtrusive, transparent, and inoffensive to source material. This is not one of those compressors. The 5020 has been specially designed to smash your drum bus into pieces and glue it back together again with aggressive JFET limiting action. Tracks which were once dull and lifeless can be resurrected from the proverbial grave by the 5020's ability to bring out room sounds and resonance. With a comprehensive feature set, the 5020's controlled chaos can be dialed in to add the perfect amount of excitement and motion to a mix.

With the MkII revision, the 5020 retains its signature sound and gains a new robust chassis, universal power supply, and improved build quality.



Features

FRONT

1. **INPUT** Volume
2. **ATTACK** Time
3. **RELEASE** Time
4. **CHARACTER** (Linearity)
5. **BLEND** (Wet/Dry Mix)
6. **OUTPUT** Volume
7. **LIMITER** Bypass
8. **ST.LINK** (Stereo Link) Select
9. **SC.HPF** (Side-Chain Filter) Select
10. **METER** Select
11. **GAIN REDUCTION / OUTPUT** Display
12. **PWR** (Power) Indicator

REAR

13. **On/Off** Switch
14. **AC Power** Inlet
15. **AC Power** Voltage Select
16. **CHANNEL 2** OUPUT
17. **CHANNEL 2** INPUT
18. **CHANNEL 1** OUTPUT
19. **CHANNEL 1** INPUT

1. **INPUT** – Each channel of the 5020 contains two parallel signal paths: a ‘Wet’ path which contains the Limiter stage and a ‘Dry’ path which contains a buffer stage. The Input knob controls the signal level into both signal paths on each channel. The Level knob is variable from -34 dB **(0)** to +0 dB **(10)**. The ‘threshold’ of the 5020 is so low that the Limiter is effectively always engaged. The Input control can be used to drive the Limiter stage and set the desired amount of gain reduction.
2. **ATTACK** – The Attack time of the Limiter can be varied from extremely fast—on the scale of tens of microseconds in some circumstances **(0)**—to a moderately slow 50 ms **(10)**
3. **RELEASE** – The Release time can be varied from a fast 51 ms **(0)**—to a moderate 1 s **(10)**
4. **CHARACTER** – Intended for creative use, ‘Character’ is a unique control of the Limiter’s linearity. Increasing the Character setting from **0** to **10** warps the ‘knee’ shape of the Limiter, resulting in more harmonic content from the from the Limiter stage.
5. **BLEND** – Blend allows for parallel processing built directly into the 5020 by controlling the ratio of Wet to Dry signal mixed together before the Output control. The Blend control is fully variable from 0% Wet signal, 100% Dry signal **(0)** to 100% Wet signal, 0% Dry Signal **(10)**. An indent is provided at **(5)** for convenient 50/50 Blend setting.
6. **OUTPUT** – The Output knob controls the make-up gain applied to the summed (Wet + Dry) signal on each channel. The Output control is variable from -6 dB attenuation **(0)** to +20 dB gain **(10)**.
7. **LIMITER** – The Limiter switch allows the Limiter to be engaged or bypassed.
 - **ENGAGE** – Engaging the Limiter inserts the entire parallel signal chain in between the balanced XLR Inputs and Outputs.
 - **BYPASS** – The 5020 features a true hardware bypass. In Bypass, the entire parallel signal chain is disconnected and the XLR Outputs are hardwired directly to the XLR Inputs. When the 5020 is Off, the Limiter defaults to Bypass.
8. **ST.LINK** – The Stereo Link switch allows three distinct modes of operation for the Left and Right channels:
 - **L/R** – The channels and their respective detectors are unlinked and operate independently. The controls apply to both channels and the meter will still reflect activity on either channel.
 - **AC** – In this classic stereo link mode, the filtered audio signals from each side chain are summed and sent to both detectors.
 - **DC** – In this additional stereo mode, the rectified side chain voltages from each channel are summed and sent to both detectors. Additionally, the attack and Release timing constants are scaled down to faster ranges. Using the fastest Attack and Release **(0-2)** settings in this mode will result in prominent, aggressive distortion. It is important to set the timing controls accordingly.
9. **SC.HPF** – The Side Chain High Pass Filter switch allows several filtering options for the audio in each side chain:
 - **250** – A gentle high pass filter at 250 Hz is inserted into both side chains. As a result, the unit will have reduced sensitive to low frequency elements of the audio in each side chain. In this mode, the unit can act as a subtle equalizer as well as a Limiter by making low frequency elements more prominent.
 - **100** – A gentle high pass filter at 100 Hz is inserted into both side chains. This mode can be used to reduce unwanted compression ‘pumping’ caused by low frequency elements in the audio signal.
 - **OFF** – No filters are applied to the side chains in this mode.

10. **METER** – The Meter switch allows the 10-segment RGB LED meter to reflect different readings in three distinct modes:
 - **INST GR** – In Instantaneous Gain Reduction mode the meter displays the current amount of compression in blue from right to left. This mode is most useful for observing the timing of the compressor so that the Attack and Release controls can be set correctly. The GAIN REDUCTION scale should be used to read the Meter in this mode.
 - **AVG GR** – In Average Gain Reduction mode the meter displays the recent average amount of compression applied—similar to the action of an analog VU meter. This mode is displayed on the meter from right to left in green and is useful for setting compression levels, especially when fast Attack and Release times are being used. The GAIN REDUCTION scale should be used to read the Meter in this mode.
 - **OUTPUT** – In Output mode the meter displays the internal post-makeup gain level, referenced to +4 dBu. Depending on how the 5020 Outputs are loaded, it is possible for the Output drivers to deliver up to +6 dB extra gain to a balanced load. The output level is displayed from left to right in red. In all modes, the meter reflects half of the summed signal from both channels. The OUTPUT scale should be used to read the Meter in this mode.
11. **GAIN REDUCTION / OUTPUT** – The meter features separate scales for reading the GAIN REDUCTION values (-2 dB to -20 dB) and the OUTPUT level values (-21 dB to +6 dB).
12. **PWR** – The PWR indicator lights up pink when the unit is powered on.
13. **On/Off** – Unit On/Off toggle switch
14. **AC Power Inlet** – AC main power inlet
15. **AC Power Voltage Select** – The AC Power voltage selector allows the 5020 to operate on 115 VAC or 230 VAC mains. *It is critical to match this setting to your local AC mains voltage.*
16. **CHANNEL 2 OUTPUT** – Balanced XLR output for CHANNEL 2. Driven by THAT Corp 1646 balanced line driver.
17. **CHANNEL 2 INPUT** – Balanced XLR input for CHANNEL 2. Driven by THAT Corp 1200 balanced line receiver.
18. **CHANNEL 1 OUTPUT** – Balanced XLR output for CHANNEL 1. Driven by THAT Corp 1646 balanced line driver.
19. **CHANNEL 1 INPUT** – Balanced XLR input for CHANNEL 1. Driven by THAT Corp 1200 balanced line receiver.

First Time Use

Warning: the 5020 Stereo FET Limiter contains no user-serviceable parts inside. Removal of the cover will expose dangerous voltages. Refer service to qualified personnel only.

Before setting up the 5020, inspect the unit for any damage. If the unit shows signs of mishandling, do not connect AC power. Refer to M House Studios for service. The 5020 is compatible with both 115 VAC and 230 VAC mains power. Before connecting the supplied power cable to the AC Power Inlet **(14)**, set the AC Power Voltage selector **(15)** to match your local AC mains voltage. *It is critical to match this setting to your local AC mains voltage or damage will occur.*

Once the AC Power Voltage selector has been set, the supplied power cable can be connected to the AC Power Inlet **(14)** and the XLR inputs and outputs can be connected to other equipment—such as an interface, converter, or other analog processing equipment. Finally, the 5020 can be powered on by setting the On/Off toggle switch **(13)** to **On**. When the 5020 is powered on, the PWR indicator will illuminate pink.

The 5020 features fully balanced inputs and outputs fed from and by THAT Corp 1200 and 1600 series differential amplifiers, respectively. The balanced inputs and outputs are presented on rugged, Neutrik XLR connectors. High quality, balanced audio cables with XLR connectors should be used to connect to the 5020 to maximize signal integrity. The outputs of the 5020 *can* drive single-ended loads, however this will negate the +6 dB available gain from the output drivers.

When initially using the 5020, the sound of this Limiter can be quite drastic. It is best to take a ‘tour’ of the various sounds offered by the 5020 through the example settings listed below. Consider these to be starting places from which to develop a particular sound with the 5020.

Example Settings

- **Knobs: 5-5-5-5-5-5** – One of the most straightforward and forgiving settings on the 5020, ‘All Fives’ provides a solidly aggressive compression sound without the extreme artifacts of fast compression times. This setting can be blended in to taste to thicken up a track or group. Consider placing the mode switches in their AC, OFF, and AVG GR positions to achieve classic bus compression.
- **Knobs: 10-0-0-0-10-7** – This ‘Smash’ setting provides the definitive sound of the 5020 Limiter. With extremely fast Attack and Release times, instrument transients are abruptly leveled and brought to the same volume as their resonant tails. This setting can be used to bring out room sounds so much that the 5020 can sound similar to reverb. Try using this setting on drums and room microphones with the mode switches in their AC, OFF, and INST GR positions to access some of the most dramatic compression artifacts possible with the 5020. *It should be noted that to maximize the effect of this setting, the Input level should be adjusted to achieve the largest dynamic range of gain reduction before the side chains run out of headroom. The meter should be visibly pumping from -2 dB to -20 dB gain reduction on the loudest notes.*
- **Knobs: 7-10-5-10-4-5** – With a slowed Attack and moderate Release time, this is the 5020’s ‘Transient Enhancer’ setting. Instrument transients are allowed to pass through the Limiter since the gain reduction response is more delayed. After a transient passes, the Limiter clamps down just behind the transient, reducing resonance and ringing. By pushing the Character control to 10, the compression curve of the 5020 is at its most non-linear. The harmonics produced by this non-linear amplification in combination with the enhanced clarity of transients amount to a sound that is very pronounced and forward. Try using this setting with the mode switches in their DC, 250, and OUTPUT positions to impart a bold, colorful tone on bass guitar, kick drum, or snare.

Application Notes

The 5020 is capable of producing a number of unique and interesting compression artifacts which can be used to add excitement and intrigue to a mix if incorporated creatively. To easily trigger these sounds, consider the tips listed here.

- **Ringing and Resonance** – To bring out the ringing tone of an instrument or room microphone, try using extremely fast Attack and Release settings. This will heavily limit transients and dramatically increase the level of background sounds.
- **Low Frequency Distortion** – When the gain reduction of the Limiter is being adjusted at a shorter time scale than a single period of a low frequency signal, the signal becomes modulated. This modulation results in additional harmonic content—in other words, distortion. However, this harmonic content is not necessarily musical and can be very abrasive. To emphasize this distortion, place the Stereo Link mode switch in the DC position.
- **Percussive Transients** – To reduce resonance and sharpen the transients of a duller instrument, set the Attack and Release controls to longer times. This will cause the 5020 to react after a transient has passed and squash the resonant tail which follows, rather than the transient itself.

Warranty Information

M House Studios Non-Transferrable Limited Warranty

M House Studios warrants the product to be free from defects in material and workmanship for a period of one (1) year from the original date of purchase. If the product fails within the warranty period, M House Studios will repair or, at our discretion, replace the product at no cost to the original purchaser. If the one year warranty has expired, M House Studios can repair units for a reasonable cost, depending on the damage.

Exclusions

This warranty covers defects in manufacturing discovered while using this product as recommended by M House Studios. This warranty does not cover loss or theft, nor does the coverage extend to damage caused by misuse, abuse, unauthorized modification, improper storage, lightning, or natural disasters. Damage caused by any of the above circumstances may result in a non-warranty repair fee.

Limits of Liability

In the case of malfunction, the purchaser's sole recourse shall be repair or replacement, as described in the preceding paragraphs. M House Studios will not be held liable to any party for damages that result from the failure of this product. Damages excluded include, but are not limited to, the following: lost profits, lost savings, damage to other equipment, and incidental or consequential damages arising from the use, or inability to use this product. In no event will M House Studios be liable for more than the amount of the purchase price, not to exceed the current retail price of the product. M House Studios disclaims any other warranties, express or implied. By using the product, the user accepts all terms herein.

How to Obtain Service Under this Warranty

Contact M House Studios through email, info@mhousestudios.com, for Return Authorization and information. Proof of original ownership may be required in the form of a purchase receipt.

Contact Information

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Recall Sheets

