



UNFa-1 User Manual Version 1.2

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1. INTRODUCTION

Congratulations! You are the proud owner of the UTA UNFa-1 UnFairchild Accessory unit that adds a whole new world of control and flexibility to the UnFairchild 670M mkII.

To get up and running right away with your UNFa-1, skip to Chapters 2 (Powering Up), 3 (Rack Mounting), and 4 (Front Panel Controls). The most vital information about the proper installation of the UNFa-1 in this manual is in Chapter 3 (Rack Mounting). The rest of the manual contains more detailed information that is not essential for understanding the unit's basic functionality.

The UNFa-1 is a collection of new features, some of which I always knew I wanted on the UnFairchild and some of which I discovered I wanted on the UnFairchild after years of use. I always knew I wanted a built in HP filter for the side chain and a WET/DRY mix control but there were already so many new controls on the UnFairchild that I felt it was better to save them for an optional add on. The WET/DRY mix requires adding an additional active gain stage that didn't exist on the original Fairchild and I felt permanently adding it to the original UnFairchild unit would stray too far from the mission of faithfully recreating the integrity of the Fairchild circuit. These additional feature would also drive the cost higher on a unit that is already on the very high end of the world of high end audio gear. I didn't want people paying for features that they might not want or never use and were never on an original Fairchild.

The Feedback/Feed Forward blend control is something I discovered in my travels with the UnFairchild 670M mkII as I explored using it on absolutely everything. It is by far my favorite of the new features added with the UNFa-1. I was enjoying the incredibly aggressive compression character you can achieve with the Feed Forward splitter cables but found that, at times, it was difficult to find a setting that wouldn't over compress on some sections while under compressing on others. I started experimenting with blending Feedback and Feed Forward externally on my console. The results were immediately, massively satisfying but the setup was complicated and cumbersome. I knew I wanted this feature to be more effortlessly available.

I realized that it was impossible to do Feed Forward compression at the same time as either of the M/S modes. There were times when I needed to do this, so that is fixed with the M/S mode switch on the UNFa-1. There were times when the simple approach of "loudest channel takes over" stereo linking was unforgiving when you have extreme differences in the left/right source material. The "AVG" mode addresses that issue.

I will get into detailed explanations and examples on how to apply all of these exciting new features later in this manual!

-Eric Valentine

2. SAFETY/POWERING UP

SAFETY INSTRUCTIONS



WARNING: To reduce the risk of fire or electric shock, do not expose this product to rain or moisture.



CAUTION: RISK OF ELECTRIC SHOCK. DO NOT OPEN. There are no user serviceable parts inside the product. Refer servicing to qualified service personnel.

In order to ensure safe operation of the device, follow these guidelines:

1. Read the instruction manual in its entirety before operating the equipment. Retain the manual for future reference.
2. Observe all safety precautions, warnings and instructions noted in this manual.
3. Always unplug this device from the wall socket before cleaning. Use only dry cloth. Do not use aerosols or solvents.
4. Keep this device away from sources of water such as pools, bathtubs and sinks, and do not expose it to rain or splashes of water. Do not place objects filled with fluid on the device.
5. Vents are provided for heat dissipation on the sides and the rear of the device. Maintain at least 2" (5cm) space around these vents to provide sufficient ventilation.
6. Keep the device away from sources of heat and open flame such as heaters, radiators, stoves, lit candles, etc..
7. Make sure the power cord is intact before plugging it into the device. Do not use cords with visible damage to the insulation or connectors.
8. This device is equipped with a safety feature that requires the use of a three-pin grounding power plug. Do not defeat the safety purpose of the grounding plug. If the provided plug does not fit your outlet, consult an electrician to replace your obsolete power outlet.
9. Use only accessories listed in this manual or otherwise specified by the manufacturer.
10. Do not install this product on carts or other moving objects.
11. When the device is in use, route the power cord in such a way that will prevent it from being stepped on, tripped on, pinched or damaged.

12. Do not use this device with wall or ceiling mounts not specified by the manufacturer.
13. To completely disconnect the device from the AC Mains, disconnect the power cord from the AC receptacle. For additional protection, unplug the device during electrical storms, or when not used for long periods of time.
14. No user serviceable parts inside. Refer servicing to qualified personnel. If the unit was exposed to liquid, excessive heat or fire, or sustained mechanical damage of any kind, do not attempt to operate it. Disconnect the unit from the wall outlet and consult qualified service personnel.

INSTRUCTIONS FOR 220-240VAC OPERATION

1. Before proceeding, disconnect the power cord from the AC inlet.
2. This device is provided with a power cord for North American 110-120VAC operation. For operation in other locations and/or from other voltage sources, use the correct type of power cord for your area and voltage source.
3. This device is provided with T 0.4A AC Mains fuses installed for 110-120VAC operation, and includes T 0.2A accessory fuses for 220-240VAC operation packed separately. Open the fuse drawer on the AC receptacle on the rear of the device and replace the T 0.4A fuse with the T 0.2A accessory fuse.
4. In the fuse drawer, change the AC Mains PCB from the 110V position to the 240V position.
5. Assure that the fuse drawer is secured closed before attaching the power cord.

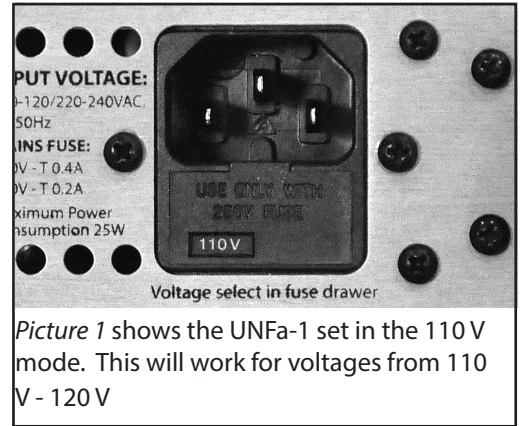
POWERING UP

Before you connect the AC power cable, check to make sure the AC operating voltage on the unit is set to properly match the voltage of your AC outlets. The options are 110 V (appropriate for 110 V - 120 V range) or 240 V (appropriate for 220 V - 240 V range). The operating voltage of the UNFa-1 can be changed by removing the small tray in the power entry module. Simply flip around the small PCB inside the tray so the correct voltage is showing in the window when the tray is re-inserted in the power entry module. When changing the UNFa-1 to a different operating voltage, you must also change to the appropriate fuse value to be sure it is either properly protected, or won't immediately blow the fuse (see *Picture 1* or *2* for appropriate fuse values). **PLUGGING THE UNFa-1 INTO A 220 V- 240 V OUTLET WHEN SET FOR 110 V OPERATION WILL LIKELY RESULT IN DAMAGE TO THE POWER SUPPLY OF THE UNIT AND REQUIRE SENDING IT BACK TO UTA FOR REPAIR!!!**

Once you have confirmed that the operating voltage is set correctly, make sure the power switch is in the "OFF" or "OUT" position. Plug the supplied IEC AC power cable into the AC power receptacle on the back of the unit. Plug the other end into an appropriate grounded AC outlet. You are now ready to power up the unit. Simply push the power switch on the front panel to the "ON" or "IN" position. When the UNFa-1 is powered on you will see the the red LED illuminate. This indicates that the UNFa-1 is powered up and ready for use.

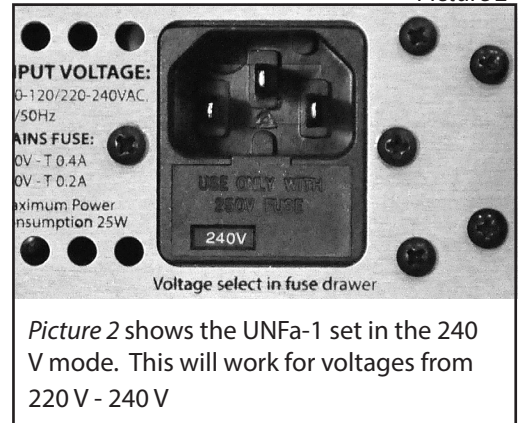
The UNFa-1 is protected by a "slow blow" or time delay fuse. The fuse can be found mounted in the removable tray (see *Picture 3*). There is also a small compartment that holds a spare fuse. The spare fuse is a T0.4A fuse for 110 V operation. If the UNFa-1 blows a fuse, it is best to first try to determine what caused the fuse to fail before installing the spare. Once the cause for failure has been resolved, install the spare fuse and you are ready to go!

Picture 1



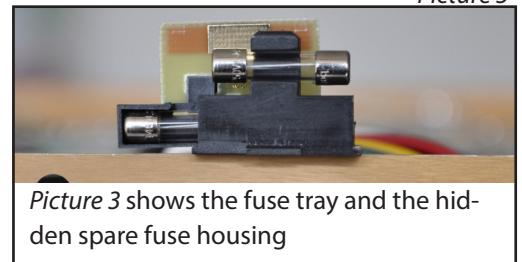
Picture 1 shows the UNFa-1 set in the 110 V mode. This will work for voltages from 110 V - 120 V

Picture 2



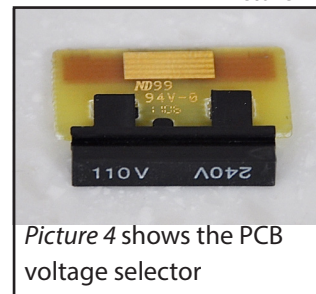
Picture 2 shows the UNFa-1 set in the 240 V mode. This will work for voltages from 220 V - 240 V

Picture 3



Picture 3 shows the fuse tray and the hidden spare fuse housing

Picture 4



Picture 4 shows the PCB voltage selector

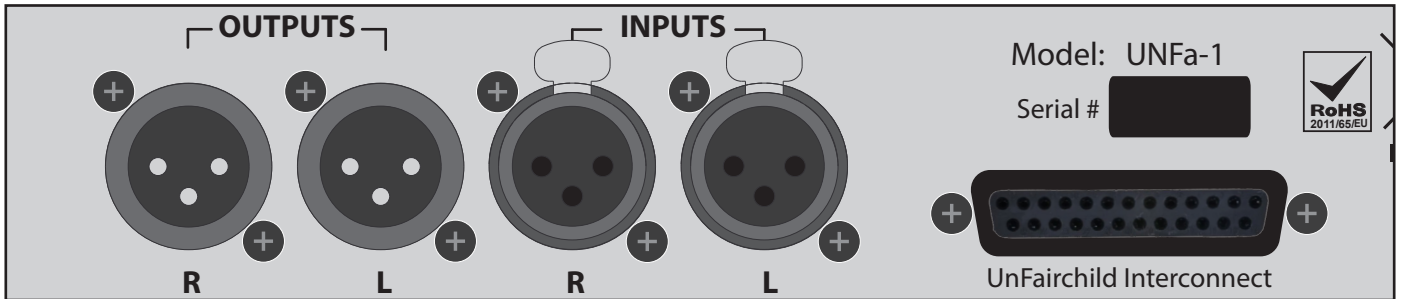
3. RACK MOUNTING

The UNFa-1 is a Class A device. Class A circuitry unavoidably generates heat. How one chooses to rack-mount these devices can have a significant affect on the ambient temperature inside the enclosure. We have done everything we can (short of using a fan) to improve the thermal performance and we have put them through “worst case” rack mounting scenarios to make sure that they will perform reliably under those conditions.

WE STRONGLY RECOMMEND LEAVING A 5/8” GAP BETWEEN THE UNFa-1 AND THE UNFAIRCHILD MOUNTED IN A RACK TOGETHER. It will ensure longest possible healthy function of both devices.

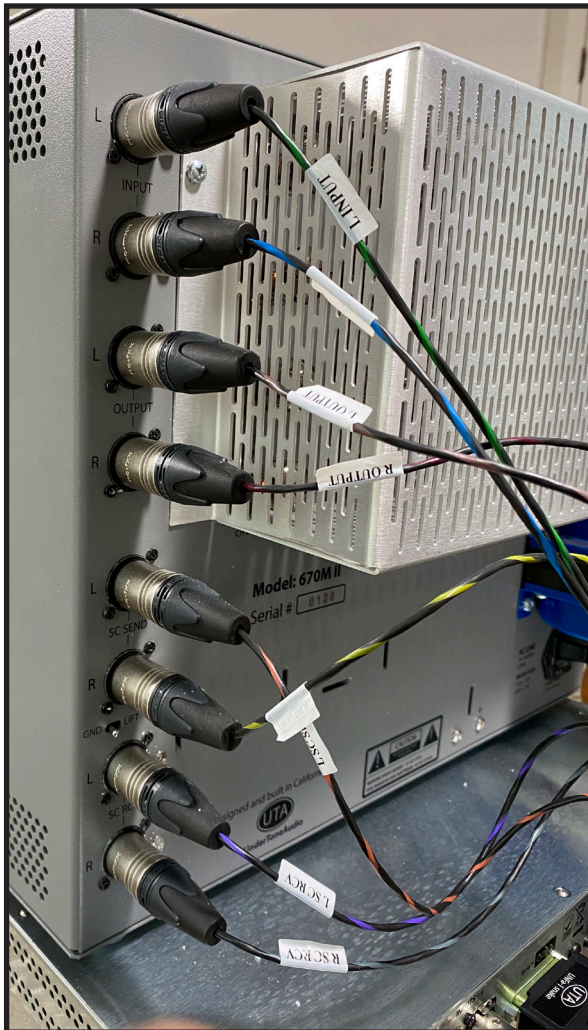
4. AUDIO CONNECTIONS

REAR AUDIO INPUTS/OUTPUTS



XLR AUDIO INPUTS/OUTPUTS - Use these connectors as your main inputs and outputs for the UnFairchild 670M mkII. The DB25 “UnFairchild Interconnect” snake will pass these signals on to the UnFairchild 670M mkII.

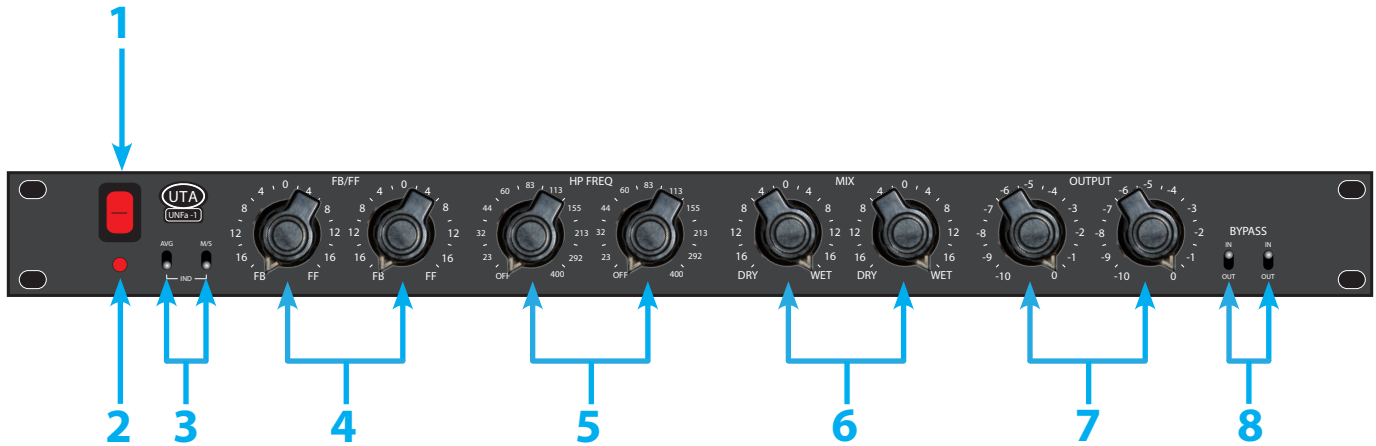
DB25 UNFAIRCHILD INTERCONNECT - Connect the DB25 end of the provided “UnFairchild Interconnect” snake to the DB25 connector on the back of the UNFa-1 unit. All 8 of the XLR connectors on the other end of the “UnFairchild Interconnect” snake needs to be plugged into the corresponding inputs and outputs on the back of the UnFairchild 670M mkII unit. The DB25 is wired with the TASCAM DB25 pinout standard.



(Back of UNFa-1)

← (Back of UNF 670M II)

5. FRONT PANEL CONTROLS



DESCRIPTION OF FRONT PANEL CONTROLS

1. POWER SWITCH - This switch power the unit on and off

2. POWER LIGHT - This light is illuminated when the unit is powered on.

3. AVG,M/S,IND - These toggle switches add additional control for stereo linking and M/S modes. When they are both in the down position, the UnFairchild can behave as two mono compressors. When the left toggle is in the up position, the left and right signals are blended together and sent to both channels for "Averaged" stereo linking (more about this on pg. 11). When the right toggle is in the up or "M/S" position the feed forward signal is converted to M/S so you can do M/S compression on FF or blended side chain signals. (More about this on pg. 12). The "SIDE CHAIN INSERT" toggle switches on the UnFairchild must be turned on for these features to function.

4. FB/FF - These rotary switches control the blend between Feedback and Feed Forward signals going to the side chain inputs. When the control is fully counterclockwise the side chain input will receive 100% Feedback signal. When the control is turned fully clockwise the side chain input will receive 100% feed forward signal. When the controls are in the 12 O'clock positions, the side chain input will receive equal amounts of Feedback and Feed forward signals. The numbers indicate a difference in volume. Each step of the rotary switch adds 2dB of difference in volume. For example, the "4" position in the clockwise direction indicates that the "FF" signal will be 4 dB louder than the "FB" signal. The "SIDE CHAIN INSERT" toggle switches on the UnFairchild must be turned on for these features to function.

5. HP FREQ - This rotary switch sets the high pass frequency for the side chain signal. In the fully counterclockwise position there is no high pass filtering happening. As the knob is turned clockwise the high pass frequency will get increasingly higher. The filter is 12dB/oct Butterworth filter at the frequencies indicated by the marking on the panel. The "SIDE CHAIN INSERT" toggle switches on the UnFairchild must be turned on for these features to function.

PANEL CONTROLS (CONTINUED)

6. MIX - This control allows you to blend the compressed signal with the original un-compressed signal. The numbers indicate a difference in volume. Each step of the rotary switch adds 2dB of difference in volume. For example, the "4" position in the clockwise direction indicates that the "WET" signal will be 4 dB louder than the "DRY" signal.

7. OUTPUT - This rotary switch allows you to reduce the output volume of the blended output signal 10dB in .5 dB steps. I have found that the UnFairchild can sound really good when pushing A LOT of level through it. By reducing the output level, you can get the benefits of pushing a lot of level without clipping the input of whatever device comes after it.

8. BYPASS - These toggle switches allow you to bypass the MIX and OUTPUT processing done by the UNFa-1. These bypass switches only bypass the processing done by the UNFa-1 and do NOT bypass the processing done by the UnFairchild 670M mkII. If you want to bypass the compression entirely, you have to use the bypass setting on the unFairchild itself. It is done this way so users can bypass all of the active circuitry of the UNFa-1 and use the UnFairchild 670M mkII as it was originally designed. When the toggle switches are down, the unit is bypassed.

6. EXPLANATION OF FEATURES

THE FB/FF CONTROL

We added the FB/FF control so you can get the full benefits of applying Feed Forward (“FF”) compression to the UnFairchild circuit. FF compression is a wonderfully aggressive sound but can be a bit unwieldy at times. Being able to blend the Feed-Forward (“FF”) signal with the Feedback (“FB”) signal allows you to add just the right amount to get that amazing aggressive sound without having the compression fall off a cliff of over compressing. If any of you have experimented with FF compression by using “Y” cables, you probably know that it is a very extreme effect that can easily cause the compressor to sound like it is malfunctioning. Wildly over compressing to the point where the signal is being cut off entirely. Blending in some of the FB signal eliminates that issue. On more percussive signals like a drum mix, we have found that setting the control around 4 or 8 on the FB side can give you some really great aggressive, grabby compression without freaking out too much. Lower settings in the 12 to 16 range on the FB side, can be really great for overall mix buss compression if you want to hear the compression effect more. Higher settings like 8 to 12 on the FF side can give really extreme drum compression that isolates the transients and can be blended in with the mix control. It can serve as a “Transient Designer” type effect.

THE HP FREQ CONTROL

This is pretty straight forward at this point. Many of you are likely already aware of the practice of High Passing the side chain signal on a compressor. For those of us that like to have a lot of low end in our mixes, it is helpful to make the compressor LESS sensitive to those frequencies so it is not mostly reacting to only the low frequencies and pulling down the volume of the overall mix. The HP FREQ control allows you to control this issue. It is really helpful when compressing a drum mix. If you like A LOT of kick drum in your drum mix and are compressing the overall drum mix, the compressor will mostly just be compressing the kick drum hits and make it impossible to maintain the level of the kick drum in the drum mix. Simply turn up the HP FREQ control to the 83 to 113 range until the compressor is equally compressing both the kick and snare in the mix. The same principal applies to an overall mix buss but the setting is typically a little more subtle. Usually in the 44 to 60 range. If additional processing of the side chain signal is needed, it is best to add it between the INSERT RCV snake XLRs and the UnFairchild Insert Returns.

THE MIX CONTROL

This is also pretty straight forward at this point. Many of you are likely already aware of “parallel” compression. With parallel compression, you are blending the compressed signal with the original uncompressed signal instead of only hearing the compressed signal. It allows you to use more extreme compression settings without having the signal sound too compressed. Why is this useful? Why wouldn't you just use a less extreme compression setting if you want it to sound less compressed? Blending more extreme compression can sound very different than simply setting the compressor less extreme. When compressors are imparting more significant amounts of compression (in the 15 - 20 dB range of gain reduction) you get more artifacts from the compression effect (distortion, pumping, etc.) Sometimes these artifacts can be very desirable but make the source sound too compressed. By blending in some of the uncompressed signal you restore the dynamics of the original source while keeping the artifacts of the extreme compression setting. I like to apply this feature by starting with the mix control in the fully clockwise position at 100% wet blend. I find an extreme compression setting that has all of the desirable coloration I am looking for, then blend in some of the dry signal (by turning the mix control counter-clockwise) until enough of the dynamics have been restored.

THE OUTPUT CONTROL

As mentioned in the “Front Panel Controls” section, we have found that the UnFairchild can sound really good when pushing A LOT of level through it. By reducing the output level, you can get the benefits of pushing a lot of level without clipping the input of whatever device comes after it. The setting we generally use for this is to turn the input gain on the UnFairchild all the way up (don't be shy... This thing sounds great when it's pushing a lot of level). Then adjust the “Threshold” control for the desired amount of compression. If the resulting output level is clipping the input of the following device (A/D converter, EQ, etc.) then simply turn down the output level with the “OUTPUT” control on the UNFa-1 until you have the appropriate level.

Some of you may have noticed that under very extreme compression settings the right and left sides can sound a little different even when stereo linked. This is due to the inherent limitations of the design utilizing Vari-Mu tubes for the gain reduction. Differences in the tolerances of the tubes can be more significant when you get deeper into the gain reduction curve of the tubes. The original Fairchild 670 did not even offer a stereo linked mode, maybe for this reason. The issue can be compensated for by adjusting the bias current of each collection of 4 tubes for the left and right sides. We are using the bias current adjustment as the “GAIN TRIM” control on the UnFairchild (bias current also is a great way to adjust the overall level of a channel). With output level control on the UNFa-1 you can now use the “GAIN TRIM” control on the UnFairchild to match the stereo compression for extreme compression settings while maintaining the left/right balance of the two channels. If you are applying very extreme compression on a sound source, let's say a drum mix, and you hear the left and right sides not matching perfectly, then listen to each side individually and determine which of the two sides sounds more compressed. Turn up the UnFairchild “GAIN TRIM” control on the side that sounds more compressed by .5dB and then turn down the “Output” control on the UNFa-1 .5dB (1 click) to match the level. Listen again and see if the two sides are better matched. You can repeat again if the same side is still sounding too compressed.

THE AVG MODE

The “AVG” or “Average” mode offers a different way to achieve stereo linked compression. There are now 3 ways to have both channels compressing the stereo information the same or similar.

Original Link Mode - (UnFairchild set to Link, UNFa-1 “AVG” off or in the down position). If you only use the “Link” mode on the UnFairchild than whatever channel (Left or Right) has the loudest signal will take over and trigger compression on both channels. This is best when you want the compression to be more sensitive to signals that are hard panned left or right. Signals that are hard panned will compress approximately 3dB more than if they are panned to the center (depending on your “pan law” setting).

Link + AVG Mode - (UnFairchild set to Link, UNFa-1 “AVG” on or in the up position). With this combination of settings, the left and right signals are summed to mono before being sent to the side chain. The result is that the UnFairchild will compress more consistently regardless of where something is panned. The benefit of this is that hard panned signals will not excessively pull down the level of a whole mix.

IND + AVG Mode - (UnFairchild set to “IND”, UNFa-1 set to “AVG”). With this combination of settings, the identical mono summed signal is being sent to both channels but the channels are not linked together. You can manually set the UnFairchild for the best matching of left to right compression. The benefit of this that occasionally the tolerances of the tubes make it difficult to electronically link the two channels together and have them match exactly with extreme amounts of compression. With this setting you can simply match them by ear.

THE M/S MODE

The M/S mode on the UNFa-1 simply makes it possible to do M/S compression with Feed Forward compression. If you like Feed Forward compression and M/S processing the benefits are obvious... You're welcome. **It is important to know that both the UnFairchild AND the UNFa-1 need to be in M/S modes for this to work.** The M/S and AVG modes are mutually exclusive. When you engage the M/S mode the AVG mode is bypassed.

8. SPECIFICATIONS

INPUT VOLTAGE110-120/220-240 VAC, 60/50 Hz

MAINS FUSE

110V.....T 0.4 A

240V.....T 0.2 A

MAXIMUM POWER CONSUMPTION25 W

INPUT IMPEDANCE

LINE INPUT25K

OUTPUT IMPEDANCE

LINE OUT.....47 Ω

FREQUENCY RESPONSE

LINE IN/OUT10 Hz - 50 kHz +0 /-1 dB

NOISE FLOOR

LINE IN/OUT-91 dBu (20 Hz - 20 kHz)

MAX LEVEL BEFORE CLIP

LINE IN/OUT+27 dBu (or better)

DISTORTION

LINE IN/OUT005% at +27 dBu

DIMENSIONS

FRONT TO BACK 12.25"

(WITH HEAT SINKS and KNOBS) 14"

LEFT TO RIGHT 17.25"

(WITH RACK EARS) 19"

WEIGHT

ACTUAL12 lbs

SHIPPING15.8 lbs