

# MU-TRON 3X

## Envelope Controlled Filter

### **IMPORTANT SAFETY INSTRUCTIONS - SAVE THIS INSTRUCTIONS**

**Warning:** When using electric products, basic precautions should always be followed, including the following:

1. Read all the instructions carefully before using the product.
2. Do not use this product near water, for example inside a bathroom, kitchen sink, in a moistly basement, near a swimming pool or the like.
3. This product should be operated only at an location that is recommended by the manufacturer.
4. This product, in combination with an amplifier and speakers or headphones, may be perfectly capable of producing sound levels that could cause permanent hearing loss. Do not operate for a long period of time at a high volume level or at a level that is uncomfortable. If you experience any hearing loss or ringing in the ears, you should consult an audiologist.
5. The product should be located so that its location does not interfere with its proper ventilation.
6. The product should be located away from heat sources such as radiators, heat registers or other products that produce heat.
7. Do not attempt to use an AC adaptor other than the original supplied power adapter (12 V AC 500mA isolated output transformer). The use of an incompatible adaptor may result in irreparable damage to the Mu-Tron3X, and even pose a serious shock hazard.
8. Be sure to disconnect the power adaptor from the outlet when the Mu-Tron3X is not in use.
9. Care should be taken so that objects do not fall, or liquids are not spilled into the enclosure.
10. The product should be serviced by qualified service personnel when:
  - a) The power supply cord has been damaged; or
  - b) Objects have fallen or liquids have been spilled into the product; or
  - c) The product has been exposed to rain; or
  - d) The product does not appear to operate normally or exhibits a marked change in performance; or
  - e) The product has been dropped or the enclosure has been damaged.
11. Do not attempt to service the product beyond that means described in this operation manual. All other servicing should be referred to qualified service personnel.

### **CARE INSTRUCTIONS:**

Although the product has been constructed to withstand the rigors of normal use on stage or studio for optimum sturdiness and reliability, you should treat it with care and avoid it to strong physical shocks (such as dropping or hitting it) and also avoid applying excessive force to the various controls. Always unplug cables by gripping the plug firmly, not by pulling on the cable.

Clean with a soft, dry cloth and never use solvents such as benzine or thinner to clean the surface, since these will damage the panel finish. If necessary, use a soft, clean, slightly moistened cloth - making sure to wipe the enclosure off again with a dry cloth.

Do not open the enclosure or trying repairing the product yourself! The product contains no user-servicable parts. Never open the enclosure or tamper with the internal circuitry in any way, since doing so may result in damage and you will lose any warranty by the manufacturer. Refer all servicing to qualified Mu-FX service personnel.

## MUSICIAN'S MANUAL

### MU-TRON 3X Envelope Controlled Filter

by *Mu-FX*  
Division of Beigel Sound Lab  
Designed by Mike Beigel  
Made in USA



Mu-FX™ Mu-Tron 3X™

#### MUSICIAN'S MANUAL



#### CONTROLS DESCRIPTION

4. **Audio distortion LED:** When the signal to the filter from either MU or PRE, or the audio output of the filter hits clipping distortion or filtered distortion this LED lights up.
5. **ENVELOPE SATuration LED:** When the envelope is driven to the top of its range, this LED lights up.
6. **ENVELOPE UP-DOWN drive switch:** The UP position produces more familiar "auto-wah" sound. The DOWN position produces the "down swoop" sound.
7. **PRE control:** Controls Audio Level to Filter, INDEPENDENT of MU setting (envelope drive). (MU control still controls envelope drive).
8. **MU-PRE switch:**  
MU position: Works like Musitronics Mu-Tron III.  
PRE position: MU control only controls envelope drive; PRE control only controls filter audio drive.
9. **MU control:** Controls ENVELOPE DRIVE and AUDIO VOLUME to FILTER
10. **Filter HI-LOW range switch:** Sets the filter sweep to a LOW range for most rhythm and lower fret uses or to a HIGH range for accenting string harmonics or for up-the-neck and solo work.
11. **Filter MODE control switch:** Switches between filter mode types:  
LP-lowpass filter: Passes all the signals below the PEAK and attenuates signals above the peak.  
BP-bandpass filter: Passes signals only near the PEAK and attenuates signals below and above the peak.  
HP-highpass filter: Passes all the signals above the PEAK and attenuates signals below the peak.  
MIX: an optimized mixture of the DRY (unfiltered signal) and the filtered signal.
12. **Filter PEAK control:** Controls the PEAK or Q of the filter audio response from very weak to very strong. The original Musitronics product peak maximum was at about 8 on the dial, the Mu-Tron 3X peak is much stronger, from about 9 to 11 on the dial.

13. **FX status LED:** When BLUE the MU-Tron filter effect is activated. When GREEN you are in BYPASS mode. When OFF there is no power to the effect, but TRUE BYPASS will still pass the signal.
14. **Foot switch:** Controls the effect or bypass modes, and changes the FX status LED color.

As you can see from the photo, to modernize and miniaturize the "Mu-Tron III" I took a VERY DIFFERENT approach than the UNAUTHORIZED version.

The package had been made smaller and EVEN MORE ROBUST, but the electronics use the original MU-TRON MOJO circuitry that has been used in all true Mu-Tron III products made by Musitronics Corp and then later by ARP Instruments under license.

**By paying VERY CAREFUL ATTENTION to keep the authentic SOUND and RESPONSE of the original product (you can operate it exactly like the original IF YOU WISH), we have also added features and extra range capability that allows you to build on the flexibility and play-ability of the original, and get more intense effects, and also some NEW EFFECT MODES and Hi-gain DISTORTED FILTER MODES while retaining completely variable ENVELOPE control to articulate this NEW kind of distortion sound.**

### **CONTROLS-Detailed Description**

The control panel is very much the same as the original Musitronics Mu-Tron III

1. The **MU control** corresponds and is the same as the original GAIN control on the original unit. It controls the signal gain for both the ENVELOPE and the FILTER audio, but only when...
2. The NEW "**MU-PRE**" **switch** is set to the MU position.  
The Mu-Pre switch has another position which provides a HIGH IMPEDANCE (CONSTANT IMPEDANCE) HI-GAIN AUDIO PREAMP that feeds the audio signal from the input directly to the FILTER audio input. THIS ALLOWS FOR COMPLETELY INDEPENDENT SETTING OF THE AUDIO LEVELS TO THE ENVELOPE GENERATOR AND TO THE AUDIO FEED TO THE FILTER.
3. The new **PREamp control** direct to the filter (in the PRE toggle switch position) provides a FIXED, HIGH IMPEDANCE INPUT compared to the VARIABLE IMPEDANCE input of the MU control (which was intentionally left as designed, for use in the MU position). The MU control still works EXACTLY the same as it did before, for the signal envelope level control (ONLY) when the switch is in the PRE position, but since it is connected to the PREAMP BUFFER (Gain =1) amplifier through an impedance compensated network, likely the same exact levels you used to get the same FILTER SWEEP from the MU control will not change, or hardly change.  
The PREAMP CONTROL to the filter, because it is buffered by the buffer amplifier, does NOT change the input impedance no matter how you set it. Like the MU control, it starts with a gain of less than 1, so it can take mixing board level signals and still provide useful volume control. But the HIGH GAIN END (the dial is marked to 11 and red-lined at 9, 10 and 11) can give a very high signal gain and drive itself into almost constant overload if you play aggressively. This is NOT the usual kind of overload distortion you usually want to hear.
4. How to get the most information from the overload lights, and how this helps to define your sound.  
There are two overload lights in the Mu-Tron 3X, which indicate two different kinds of overload types in the signal processing sections:  
The ENV SAT (Envelope Saturation) LED (Yellow)  
The AUDIO DIST (Audio Distortion) LED (RED)  
And hidden in the FX STATUS LED (Usually GREEN or BLUE) there is also an additional Output Distortion LED (RED) which AT VERY HIGH OUTPUT DISTORTION LEVELS will turn the BLUE (FX-PROCESS) light to PURPLE (BLUE +RED) and if you have the unit set for ACTIVE BYPASS mode THE GREEN (FX BYPASS) light turns a shade of (???) when the DRY (bypassed but amplified) signal is highly distorted by the MU preamp or the FILTER preamp.

The separation of the ENVELOPE GAIN and AUDIO GAIN controls in the 3X is an innovation which gives the user a choice of MU (Original Mu-Tron III) sound setting control (the MU position of the toggle switch between MU and PRE controls)

In which the MU control defines the amplification level for BOTH THE ENVELOPE AND THE AUDIO AMPLIFICATION. This feature allows the user to use the same principle of operation as the original Musitronics Corp Mu-Tron III \*.

The separation of AUDIO and ENVELOPE signal gain has been used for years in subsequent products \*\* but never before has there been a combination of INDEPENDENT GAIN CONTROLS for both Envelope and Audio to the filter section.

Surprisingly, this feature gives possibility for "unexpectedly interesting" effects since both the Mu and the PRE preamps are capable of very high gain, leading to distortion of either or both of the Envelope and the Audio signals separately.

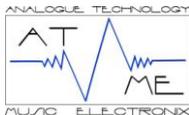
### PHOTOMOD WARM-UP TIME

A very important aspect of the characteristics of the PHOTOMODS that drive the filter frequency: They have a WARM UP time! The best way to KNOW you are getting the sweep you want is to leave the power on and the sweep in DOWN DRIVE, HIGH RANGE for about 10 minutes before you start to experiment with the settings. In fact, if you have enough time, it's a good thing to give it at least 3 to 5 minutes in this position so the photomods settle in to their "playing mode" before you make your settings. This phenomenon has to do with "light history" and is intrinsic to the unique sound of the Original MuTron and new Mu-Tron3X products.

**Hint:** on our website you can read about the "History of The Musitronics Mu-Tron III and the Tru-Tron 3X" plus background information about the "Musitronics Corporation (New Jersey 1972) and its relation to Beigel Technology".

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