

MU-FX PHASOR 2X SPECIFICATIONS AND OPERATION

MUSICIAN'S MANUAL



The Mu-FX PHASOR 2X is the enhanced reissue of the vintage classic Musitronics Mu-Tron® Phasor II

The PHASOR 2X is a multi-mode phase shifter with enhanced audio and control features which provide *simple, intuitive and performance-oriented* control versatility. The PHASOR 2X retains the vintage classic sound of the Phasor II, which offered distortion-free audio processing and feedback-controlled effect emphasis for the cleanest possible sound.

The Mu-FX Phasor 2X provides 4 and 6 stage OPTICAL phasing – for the best possible dynamic range and signal-to-noise ratio - without the *distortion* inherent in FET and transconductance-amp phasors. The *EMPHASIS of the phasing effect* is produced with FEEDBACK around the electro-optical resistive phase circuitry *without creating distortion of the signal*.

To preserve the best possible dynamic range and signal-to-noise ratio, the Phasor 2X is powered from *external 12Volt AC power* and internal LINEAR voltage regulators. This eliminates the signal noise, distortion and radio frequency interference caused by “switching regulator” power supplies.

The Phasor 2X also uses TRUE-GROUND dual power supply rails and other specialized components to further minimize distortion and sensitivity to external RF interference.

The phase sweep is optimized for each unit to give the smoothest sounding sweep. The 4 and 6 stage phasing, controlled by a foot switch, is also optimized for best sweep range and characteristic for each type of phasing.

Simple, intuitive, and performance oriented!

The controls are very simple: **RATE, DEPTH and FEEDBACK** for each of the 4 and 6 stage modes. This allows easy and independent adjustment without having to compensate for the different characteristics of 4 and 6 stage phasing modes.

The 4 and 6 modes are instantly accessible with the PHASE MODE foot switch.

Pedal control switches for each (4 and 6) mode allow you to set dramatically different kinds of expression pedal (or external CV) effects.

FEATURES AND SPECIFICATIONS

- **4 and 6-stage phasing modes (foot-switch selectable to main output)**
- **Smooth and consistent phase sweep by LFO, expression pedal or control voltage**
- **Stereo output for 4 and 6 stage modes (“secret sauce” phasing to second (or stereo) output)**
- **Electro-optical phasing with superior dynamic range, no distortion and low noise level**
- **Retro “Mini-MU” housing with original “Mu-Tron®” Phasor II color scheme**
- **Powered by 12V AC for optimal dynamic range and signal-to-noise ratio**

LFO starts precisely from the LOW END OF SWEEP when effect is engaged. So, you can count on a consistent, predictable LFO sweep, especially good for slow sweep rates!

Footswitch control and dual-color LED indicator for 4 or 6-stage phasing and control set
BLUE is for 6-Stage Phase (and top BLUE knob pointers)
GREEN is for 4-Stage Phase (and top GREEN knob pointers)

EFFECT/BYPASS Footswitch and 3-color LED indicator
RED for BYPASS
BLUE-to-GREEN for PHASE RATE or SWEEP
RED/BLUE or RED/GREEN for pedal control indicator

Expression Pedal or CV control of RATE or SWEEP for both 4 and 6-stage phaser banks

All audio switching by “silent” footswitches and electromechanical relays

Internal Switch setting for TRUE or ACTIVE bypass: (MAIN and STEREO outputs)

PANEL CONTROLS: TOP PANEL

6-STAGE MODE CONTROLS

RATE 6: Exponential LFO (from 10 second period to 20 Hz)

DEPTH 6: LINEAR Sweep control from zero sweep to full-scale (optimized for 6-stages)

FEEDBACK 6: Zero to max positive feedback around phase stages

PED/CV SWITCH 6: RATE – OFF – SWEEP

4-STAGE MODE CONTROLS

RATE 4: Exponential LFO (from 10 second period to 20 Hz)

DEPTH 4: LINEAR Sweep control from zero sweep to full-scale (optimized for 4-stages)

FEEDBACK 4: Zero to max positive feedback around phase stages

PED/CV SWITCH 4: RATE – OFF – SWEEP

PANEL CONTROL DETAILS

RATE, DEPTH, FEEDBACK controls for each of 6 and 4 stage phasing modes, selectable by 4-6 footswitch

RATE: Continuous control of LFO

0.05Hz to 20 Hz for top control set (6-stage phasing)

0.1 to 10 Hz for bottom control set (4-stage phasing)

- LFO always starts from LOW END OF SWEEP when effect is engaged after bypass is engaged (to provide consistency of effect)

- LFO LED indication of RATE is provided on BYPASS LED - whether or not the unit is in bypass mode

- LFO LED also indicates that a pedal or CV control is connected to the PED/CV JACK (RED added to BLUE-to-GREEN)

SWEEP / DEPTH: Full Sweep range is OPTIMIZED for both 4 and 6-stage phasing

- In LFO mode, SWEEP RATE is controlled by ultra-linear LFO sweep generator according to DEPTH control

- In PEDAL control mode, LFO is disabled and SWEEP is controlled by pedal, over its full excursion

FEEDBACK: provides positive regenerative feedback across phase stages for effect emphasis -- without distortion of audio signal -- for each of 4 and 6 modes

PEDAL/ CV CONTROL SWITCHES: Independent for each of the 4 and 6-stage phase modes, a 3-position toggle switch controls the pedal function when an XP-2 control pedal is plugged into the pedal jack

Even if you don't have an expression pedal or external Control Voltage connected to the pedal jack, these switches DO have a useful function:

--When the control pedal switches are in the OFF (center) position, the PANEL CONTROLS (Rate and Depth) entirely determine the phase shift settings.

--When either switch is set to RATE, the phase rate acts as if a pedal were set to its mid-sweep position, and offsets the LFO rate accordingly

--When either switch is set to DEPTH, the LFO is disabled! And the DEPTH control sets the sweep to a non-swept Multi-Pole Filter function.

FOOT SWITCH CONTROLS DETAILS

BYPASS FOOTSWITCH: Silent footswitch operates mechanical relay bypass function

PHASE STAGE FOOTSWITCH: Silent footswitch operates solid-state audio switch between 4 and 6 stage operation

JACKS: BACK PANEL

INPUT Jack: 1Megohm input impedance (capacitively coupled) in EFFECT or ACTIVE BYPASS mode;

- Greater than 11Meg DC to system ground in TRUE bypass mode for ESD protection.

- Both modes are ESD (electrostatic discharge transient) protected by ferrite bead at input and both output jacks.

OUTPUT 1 Jack: 150 ohm output impedance (capacitively coupled) in EFFECT or Active Bypass mode;

- DC coupled to INPUT jack in TRUE bypass mode. Greater than 11Meg resistive coupled system ground in TRUE bypass mode.

- Both modes ESD protected by ferrite bead at input and output jacks.

OUTPUT 2 Jack: 1Megohm input impedance capacitively coupled in EFFECT or Active Bypass mode;

- DC coupled to INPUT jack in TRUE bypass mode. Greater than 11Meg to system ground in TRUE bypass mode.

- Both modes ESD protected by ferrite bead

EXP PEDAL Jack: For use with either Mu-FX/Mission XP-2 pedal or external Control Voltage (0-5 volts low-impedance drive for full range of RATE or SWEEP).

Ring: 5V short-circuit protected voltage to XP-2 pedal, 10 milliamps output to XP-2

External CV: 0 to 5V DC for full-scale excursion of LFO RATE or Full-range SWEEP

Should ONLY be connected with T-R-S plug, using TIP (CV) and SLEEVE (Ground) and with RING un-connected.

CV input DC Resistance: 1 Meg ESD protected, biased to 2.5V
TIP - input control voltage from XP2 or External CV input
SLEEVE - Control signal ground
Do not use RING to power an external CV device!

POWER SUPPLY JACK: 12V AC ONLY at 50-60 Hz, 15V AC Maximum, 200 milliamp max current draw.

Use with any other voltage or any DC voltage supply may damage the product and void the warranty!

Power supply is protected against ESD transients and internal short circuit by ferrite bead and self-resetting fuse.

INTERNAL FUNCTIONS (Use extreme care if you open the housing!):


INTERNAL BYPASS MODE SWITCH: TRUE bypass or ACTIVE bypass select on inside circuit board.

THE INTERNAL SWITCH IS FACTORY PRE-SET TO TRUE-BYPASS MODE.

NOTE: *NONE OF THE INTERNAL TRIM-POTS ON THE PC BOARD ARE USER-ADJUSTABLE!!! DO NOT ADJUST!!!!*

THIS WOULD VOID THE FACTORY WARRANTY

WARRANTY: 1 Year Parts and Labor for defects in product resulting in product failure or faulty performance. Tampering with product or accidental breakage will void the warranty.

<h3>SAFETY INFORMATION</h3>		<p>WARNING To prevent fire or shock hazard, do not expose the unit to rain or moisture.</p> <p>ATTENTION: RISQUE DE CHOC ELECTRIQUE NE PAS OUVRIR.</p> <p>The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of ungrounded hazardous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.</p> <p>The exclamation point, within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.</p>	<h3>WARRANTY INFORMATION</h3>
<p>For your protection, please read these safety instructions completely before operating the product, and keep this manual for future reference.</p>	<p>Carefully observe all warnings, precautions and instructions on the product and described in the operating instructions supplied with the product.</p>	<p>your electrician to replace the defective and unsafe AC connection.</p>	<p>Beigel Sound Lab / Mu-FX offers a one-year limited warranty on all our products.</p>
<p>INSTALLATION Water and Moisture - Do not install the product near water: for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool. Heat - Do not install the product near sources of heat such as radiators, heat registers, stoves, or other products that produce heat. Ventilation - Situate the product so its location or position does not interfere with its proper ventilation. For example, you should not place the product on a bed, sofa, rug, or similar surface that might block the vent openings, or placed in a built-in installation, such as a bookcase or cabinet that might impede the flow of air through the ventilation openings. Accessories - Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to a child or adult, and serious damage to the product. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer, or sold with</p>	<p>the product. Any mounting of the product should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.</p> <p>USE Power Source - Connect the product to a power supply only of the type described in the operating instructions or as marked on the product. Power-Cord Protection - Route the power cord so that it is not likely to be walked on or pinched by having objects placed on it, paying particular attention to the plugs, receptacles, and the point where the cord exits from the product. When not in use - Unplug the power adapter cord of the product from the outlet when left unused for a long period of time. To disconnect the cord, pull it out by grasping the power adapter. Never pull the power adapter plug out by the cord. AC Receptacle - Check to make sure that the AC receptacle holds the power adapter plug firmly and securely. If the power adapter plug is loose, contact</p>	<p>Foreign Objects - Be careful that foreign objects and liquids do not enter the enclosure through openings. Cleaning - unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.</p> <p>SERVICE Unplug the product from the wall outlet and consult qualified service personnel when:</p> <ul style="list-style-type: none"> the power cord or the plug has been damaged. a solid object or liquid has fallen into the cabinet. the product has been exposed to rain or moisture. the product does not appear to operate normally or exhibits a marked change in performance. the product has been dropped, or the enclosure damaged. <p>Do not attempt to service the product beyond that described in the operating instructions. For all other servicing, refer to qualified service personnel only.</p>	<p>In the unlikely event of a malfunction due to component failure or defective workmanship, contact us at service@mu-fx.com for return authorization. We will then repair or replace your product and send it back to you - free of charge and usually within 2 weeks.</p>
<p>the product. Any mounting of the product should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.</p> <p>USE Power Source - Connect the product to a power supply only of the type described in the operating instructions or as marked on the product. Power-Cord Protection - Route the power cord so that it is not likely to be walked on or pinched by having objects placed on it, paying particular attention to the plugs, receptacles, and the point where the cord exits from the product. When not in use - Unplug the power adapter cord of the product from the outlet when left unused for a long period of time. To disconnect the cord, pull it out by grasping the power adapter. Never pull the power adapter plug out by the cord. AC Receptacle - Check to make sure that the AC receptacle holds the power adapter plug firmly and securely. If the power adapter plug is loose, contact</p>	<p>the product. Any mounting of the product should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.</p> <p>USE Power Source - Connect the product to a power supply only of the type described in the operating instructions or as marked on the product. Power-Cord Protection - Route the power cord so that it is not likely to be walked on or pinched by having objects placed on it, paying particular attention to the plugs, receptacles, and the point where the cord exits from the product. When not in use - Unplug the power adapter cord of the product from the outlet when left unused for a long period of time. To disconnect the cord, pull it out by grasping the power adapter. Never pull the power adapter plug out by the cord. AC Receptacle - Check to make sure that the AC receptacle holds the power adapter plug firmly and securely. If the power adapter plug is loose, contact</p>	<p>your electrician to replace the defective and unsafe AC connection.</p> <p>Foreign Objects - Be careful that foreign objects and liquids do not enter the enclosure through openings. Cleaning - unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.</p> <p>SERVICE Unplug the product from the wall outlet and consult qualified service personnel when:</p> <ul style="list-style-type: none"> the power cord or the plug has been damaged. a solid object or liquid has fallen into the cabinet. the product has been exposed to rain or moisture. the product does not appear to operate normally or exhibits a marked change in performance. the product has been dropped, or the enclosure damaged. <p>Do not attempt to service the product beyond that described in the operating instructions. For all other servicing, refer to qualified service personnel only.</p>	<p>Please note that we cannot replace a product until we have received it here at the factory.</p>
<p>the product. Any mounting of the product should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.</p> <p>USE Power Source - Connect the product to a power supply only of the type described in the operating instructions or as marked on the product. Power-Cord Protection - Route the power cord so that it is not likely to be walked on or pinched by having objects placed on it, paying particular attention to the plugs, receptacles, and the point where the cord exits from the product. When not in use - Unplug the power adapter cord of the product from the outlet when left unused for a long period of time. To disconnect the cord, pull it out by grasping the power adapter. Never pull the power adapter plug out by the cord. AC Receptacle - Check to make sure that the AC receptacle holds the power adapter plug firmly and securely. If the power adapter plug is loose, contact</p>	<p>the product. Any mounting of the product should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.</p> <p>USE Power Source - Connect the product to a power supply only of the type described in the operating instructions or as marked on the product. Power-Cord Protection - Route the power cord so that it is not likely to be walked on or pinched by having objects placed on it, paying particular attention to the plugs, receptacles, and the point where the cord exits from the product. When not in use - Unplug the power adapter cord of the product from the outlet when left unused for a long period of time. To disconnect the cord, pull it out by grasping the power adapter. Never pull the power adapter plug out by the cord. AC Receptacle - Check to make sure that the AC receptacle holds the power adapter plug firmly and securely. If the power adapter plug is loose, contact</p>	<p>your electrician to replace the defective and unsafe AC connection.</p> <p>Foreign Objects - Be careful that foreign objects and liquids do not enter the enclosure through openings. Cleaning - unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.</p> <p>SERVICE Unplug the product from the wall outlet and consult qualified service personnel when:</p> <ul style="list-style-type: none"> the power cord or the plug has been damaged. a solid object or liquid has fallen into the cabinet. the product has been exposed to rain or moisture. the product does not appear to operate normally or exhibits a marked change in performance. the product has been dropped, or the enclosure damaged. <p>Do not attempt to service the product beyond that described in the operating instructions. For all other servicing, refer to qualified service personnel only.</p>	<p>User-generated malfunctions due to dropping, intentionally breaking, attempting to repair during the warranty, or opening the product will NOT be covered by the warranty. You may send the unit to us and we will give you an estimated repair charge, and upon your authorization we will repair and re-calibrate the product.</p>
			<p>LIMIT OF LIABILITY REGARDING THE PRODUCT AND ITS POWER SUPPLY</p>
			<p>BEIGEL TECHNOLOGY CORPORATION (PARENT COMPANY OF BEIGEL SOUND LAB) ASSUMES NO RESPONSIBILITY FOR DAMAGE TO THE PRODUCTS, OTHER EQUIPMENT THEY MIGHT CONNECT TO BY ANY MEANS, OR ANY OTHER PROPERTY DAMAGE, INJURY OR DEATH RESULTING FROM ITS USE OR MISUSE.</p> <p>IT IS POSSIBLE THAT CONNECTING THE TRANSFORMER TO AN INCORRECT VOLTAGE MAY RESULT IN INJURY OR DEATH TO ANYONE OPERATING THE EQUIPMENT.</p>
			<p>USE OF ANY OTHER POWER ADAPTER NOT SUPPLIED BY OR APPROVED BY MU-FX /BEIGEL SOUND LAB DIVISION OF BEIGEL TECHNOLOGY CORPORATION IS NOT RECOMMENDED.</p>