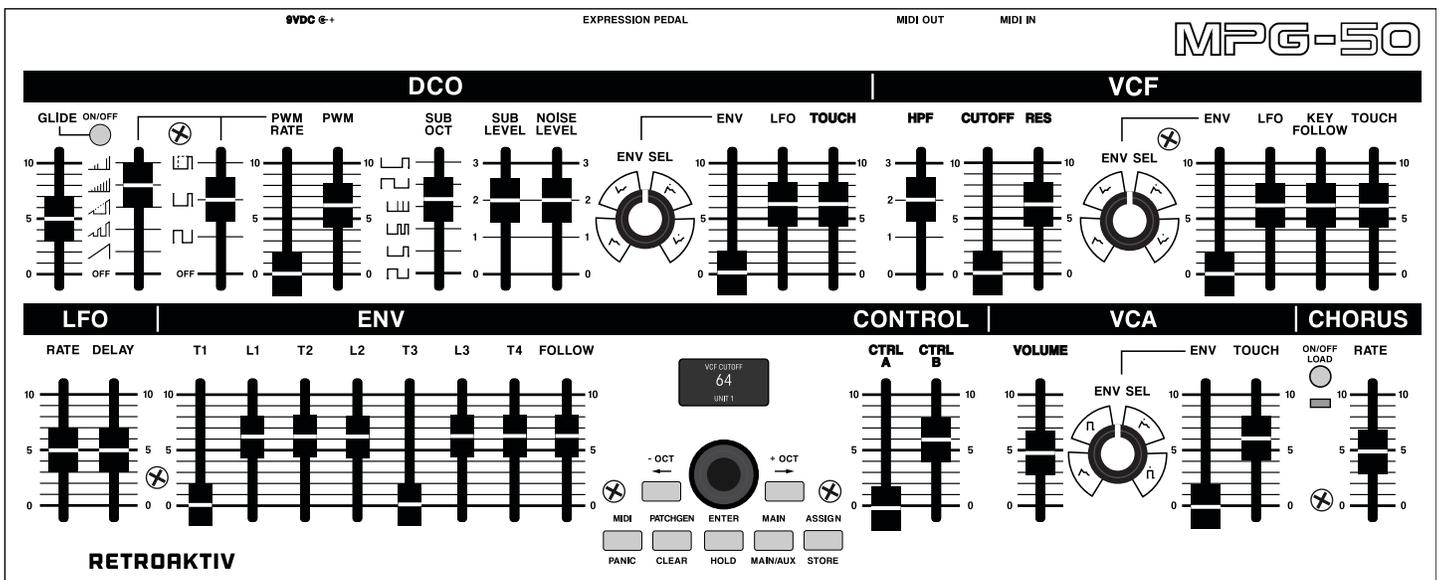


# RETROAKTIV MPG-50

## OWNER'S MANUAL



MANUAL VERSION 1.0 for MPG-50  
OS 1.31

## FEATURES

### **Real time control of all Alpha Juno tone parameters**

The MPG-50 is a MIDI controller designed to work with the Alpha Juno 1 & 2, and MKS-50 synthesizers. It can control 2 of these synthesizers from one MPG-50 and provides the ability to cross-fade between the 2 synths.

### **Flexible assignable controllers allow new ways of animating tones**

Two assignable sliders (CTRL A & CTRL B) and an expression pedal input allow for real time over up to 5 simultaneous tone parameters each. Use a slider to open a filter while simultaneously increasing the chorus rate and decreasing the filter resonance. The range of each tone parameter can be selected, and the response can be inverted.

### **CC mode transmits and decodes CC messages for easy DAW integration**

In CC mode, the MPG-50 will transmit SYSEX to the synth whenever a slider is moved, and it will simultaneously send a MIDI CC message that can be recorded with a DAW. Playing the recorded CC back into the MPG will translate the data back into SYSEX and transmit to the synth.

### **Random tone generator creates beautiful, musical tones at the press of a button**

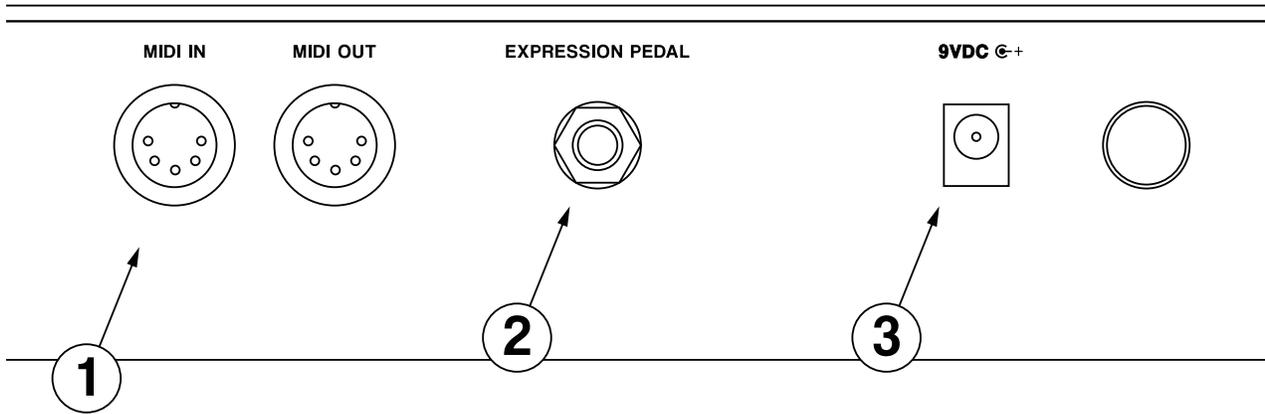
The RANDOM TONE GENERATOR on the MPG-50 is a powerful tone creation tool featuring the ability to randomize all of the tone parameters in a musical way, or to generate completely random tones. Using the category select, generate pads, brass, strings, basses, and more. Each section of the synth can be "masked" so the randomizer will not change that section when it generates a new tone. Like the filter set where it is? Mask the VCF and it won't get changed!

### **Route incoming mod wheel and aftertouch messages to any 5 tone parameters each**

Create amazingly expressive sounds using an external midi controller by using the on-board assignable controls to respond to incoming mod wheel and aftertouch messages. Mod wheel and aftertouch can be routed to up to 5 tone parameters each.

### **Can be rack mounted, used as a tabletop controller, or mounted to the Alpha Juno using the music holder mounting holes.**

Flexible format allows unit to be rack mounted with optional rack ears. Has 4 rubber feet on the bottom for firm tabletop placement. For Alpha Juno users, an optional mounting stand is available, allowing for the MPG-50 to be firmly mounted to the keyboard using the music holder mounting holes.



## 1) MIDI In & MIDI Out Jacks

Allows for MIDI connections to and from the controller. Incoming MIDI messages are received from a controller keyboard and are read and relayed to the synthesizer via the MIDI OUT port. Controller data from the MPG-50 is merged with incoming MIDI data and sent to the synthesizer.

## 2) Expression Pedal Jack

For connection of a variable expression pedal for use with the ASSIGN P function on the MPG50. Roland, Moog, and Kurzweil expression pedals have been found to work well with the MPG50.

## 3) DC Power Jack & Switch

For use with a 9V-12V DC power adapter with the positive connection on the center pin. The MPG50 consumes 25mA.

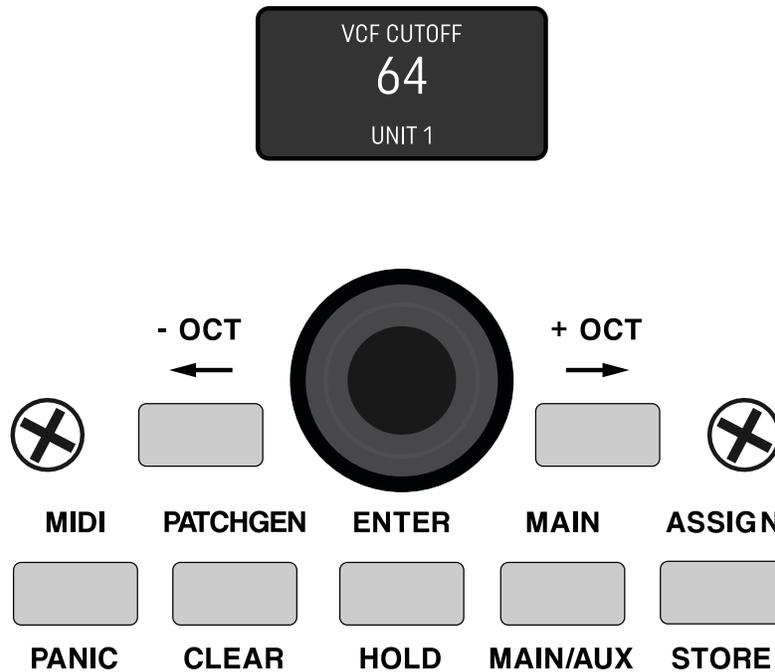
## Getting Started

To begin using the MPG-50 connect the DC power adapter to the DC power jack and use the ON/OFF button in the rear of the unit to turn on. When power is applied, the MPG-50 splash logo will be displayed on the OLED display. The version of the MPG-50 operating system

To communicate with the synthesizer plug the MIDI OUT of the MPG50 into the MIDI IN of the synth. This will allow the MPG to transmit controller data to the synthesizer. If using an external MIDI controller, plug the MIDI OUT of the external controller into the MIDI IN of the MPG. This will merge the output of the external controller and the MPG, eliminating the need for a MIDI MERGE when using a controller keyboard and the MPG to play the Alpha Juno. If you're sending dense streams of controller data (using a 5 layer ASSIGN, sending to 2 Junos, for example) consider upgrading to a dedicated hardware merger to merge your keyboard data with the MPG output stream. The MPG hardware buffers are only so large, and you can overwhelm it if you're sending in lots of aftertouch and mod wheel data that it has to transmit.

## MENU NAVIGATION

The MPG-50 will display the MAIN menu screen when booted up. Menus can be selected by using the buttons to the left of the display. On menu pages that feature the cursor, move the cursor using the LEFT and RIGHT buttons. To change a parameter value in a menu, use the black rotary encoder dial. Push the encoder in to use the SHIFT function. The SHIFT function is used to toggle a button's second function. For example, holding SHIFT and pressing the RIGHT button will transpose the Alpha Juno's DCO up one octave. Pressing LEFT while holding shift will transpose the DCOs one octave down.



There are several menu pages on the MPG-50. To access a menu, use the navigation buttons on the front panel. The LEFT and RIGHT buttons are used to navigate the cursor when in a menu other than the MAIN menu. There are multiple menus that you can access using the front panel menu buttons. Use the following buttons to access the various menus:

**MIDI BUTTON** - Use the MIDI button to navigate to the MIDI settings menu. The MIDI settings menu contains the settings used to select the MIDI channels of the MAIN and AUX synths, as well as the model of synth being controlled, and the protocol that synth will respond to.

**PATCHGEN BUTTON** - Use the PATCHGEN button to access MANUAL MODE, the SCRATCH PATCH GENERATOR, and the RANDOM TONE GENERATOR.

**ASSIGN BUTTON** - Use the ASSIGN button to access the assignable controller settings, to route incoming mod wheel, breath control, and aftertouch messages to Juno parameters, or to LOAD and STORE user-created ASSIGNS.

**MAIN BUTTON** - Use the MAIN button to jump to the MAIN screen at any time from any other menu. If in the MAIN menu, use the MAIN button to jump to the patch menu for the MKS-50, or the Alpha Juno settings page. Use the SHIFT+MAIN button to select which layer (MAIN, AUX, or BOTH) the MPG-50 is controlling. Press ENTER when on the MAIN screen to enter ASSIGNABLE CC menu.

**ENTER BUTTON** - The ENTER button is a general purpose button that has different functions, depending on the page that you're currently in. If on the MAIN screen, use ENTER to check the CC assignment of any slider on the MPG. (Excluding GLIDE, MASTER VOLUME, CTRL A, CTRL B s)

**LEFT & RIGHT BUTTONS** - Use these to navigate the cursor position on the MENU pages. Holding SHIFT and one of these buttons will transpose the octave of the current layer being controlled.

**ENCODER** - Use the ENCODER to change the value of any highlighted menu value. Pressing the ENCODER = SHIFT. Holding SHIFT and turning ENCODER will increment or decrement the currently selected value by 10.

## **MIDI MENU**

The MIDI MENU contains the settings used for communicating with the synth(s) you plan on programming with the MPG. The MPG uses MIDI to communicate with the AJ & MKS-50. There are 2 "channels" available on the MPG-50, a MAIN, and an AUX channel. Note that the MAIN and AUX channels are not MIDI channels. They are controller channels. The MPG-50 can control 2 separate MKS-50/AJs from one MPG. One is the MAIN synth, and the other is the AUX synth. The MPG can control both synths individually or simultaneously. Use the MAIN/AUX/BOTH toggle to control which synth the MPG is sending control data to.

The MPG uses SYSEX and CC data to communicate with the synthesizer. Whenever a slider on the MPG is moved, the new value is transmitted to the synth. Since many DAWs do not allow recording of SYSEX data, the MPG can also transmit a CC message (See MPG-50 CC Table) whenever a slider is moved. The Juno will ignore these, but they can be recorded by a standard DAW. If these CC messages are sent back to the MPG-50, the MPG can translate those messages from CC back into SYSEX and send them to the synth.

To save your MIDI settings as the defaults, press SHIFT+ASSIGN (STORE) when in the MIDI menu.

The MPG can also transmit user-selected CC messages from any slider. (For more info, see CC MENU page) Transmitted USER-CC messages will be sent on the MIDI CHANNELs selected in the MIDI MENU.

MIDI MENU SETTINGS:

**MAIN MIDI CH:** Sets the MIDI channel of the MAIN synth channel. (1-16)

**MAIN PROTOCOL:** Use the NORML setting to disable CC translate mode (See MPG-50 CC table for more). Use CC2SX to activate CC to SYSEX translation.

**MAIN TYPE:** Use to select the model of synth used on the MAIN channel. Select MKS for use with MKS-50. Select AJ for use with Alpha Juno 1 & 2. Select PHU for a Phutura plug-in map. Select USR to use the currently selected USER MIDI CC map.

**AUX MIDI CH:** Sets the MIDI channel of the AUX synth channel. (1-16)

**AUX PROTOCOL:** Same as MAIN PROTOCOL.

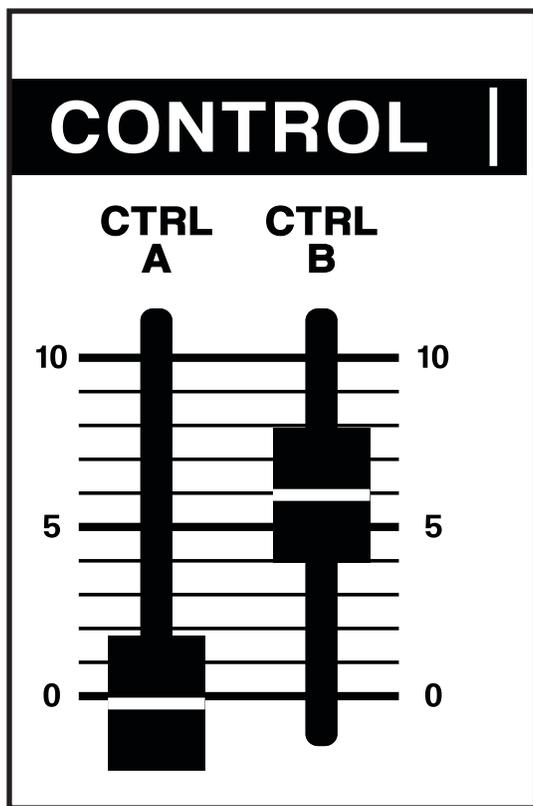
**AUX TYPE:** Use to select the model of synth used on the AUX channel. Select MKS for use with MKS-50. Select AJ for use with Alpha Juno 1 & 2.

## MAIN MENU

The MAIN MENU will display the currently selected Juno parameter and its current value. Pressing MAIN while in any other menu will navigate to the MAIN screen. If already on MAIN screen, then pressing main will navigate to the MKS-50 and Alpha Juno settings menus. Note that if a parameter is toggled in either the MKS-50 menu or the Alpha Juno menu, that parameter will be transmitted to the currently selected layer. For example, if you are using 2 MKS-50s, then you need to select the synth before sending a PATCH MENU change.

When on the MAIN MENU, pressing ENTER will display the USER CC MAP. Pressing ENTER again will return to the MAIN screen. The ENCODER can be used to enter slider values when on the main screen. Pressing SHIFT+ENTER when in the MAIN menu will toggle the HOLD function. The HOLD function will send a SUSTAIN PEDAL ON/OFF message to the currently selected layer.

## ASSIGN MENU



FRONT PANEL ASSIGNABLE CONTROLS

The MPG-50 features a powerful feature called an ASSIGN. There are 3 separate ASSIGNs in the MPG-50: ASSIGN A, ASSIGN B, and ASSIGN P. Each assign allows users to control up to 5 Juno parameters using the CTRL A, CTRL B sliders, and the EXPRESSION PEDAL.

Pressing the ASSIGN button will navigate to the ASSIGN menu. The currently selected ASSIGN (A, B, or P) will be displayed on the screen. Each press on the ASSIGN button will navigate to another ASSIGN.

An ASSIGN can have up to 5 layers each. Each layer of an ASSIGN contains the following settings:

**LAYER NUMBER** - The top line of the ASSIGN menu displays the current assign, as well as how many layers there are in that ASSIGN, and which of those layers is currently being displayed. For example, ASSIGN A LYR 1 OF 5 means that ASSIGN A is currently selected, and it has 5 layers. Layer 1 settings are being currently displayed.

**PARAMETER**: Each layer of an ASSIGN must have a parameter assigned to it. For example, selecting VCF CUTOFF as the parameter when in ASSIGN A will make the VCF CUTOFF value change when CTRL A is moved.

**MIN & MAX**: Use these settings to set the range of the currently selected parameter in the current layer.

**INVERT**: Turn INVERT on to invert the current ASSIGN LYR.

It is easiest to explain how the ASSIGNS work by using an example. Let's say that you would like to use the CTRL A slider to sweep the VCF CUTOFF between 30 and 80, while simultaneously sweeping the VCF RESONANCE from 110 to 50. Normally, this would require one hand sweeping the CUTOFF slider up, while the other hand is sweeping the RESONANCE slider down. By assigning each of these parameters to a single ASSIGN, this can be done with one hand. To create an assign that does what was just mentioned, select ASSIGN A.

The settings in layer 1 would be as follows:

LYR 1 of 2  
VCF CUTOFF  
MIN:30      MAX:80  
INVERT: OFF

The settings in layer 2 would be:

LYR 2 of 2  
RESONANCE  
MIN: 50      MAX:110  
INVERT: ON

These settings can be entered manually using the cursor to navigate and the encoder to dial in the values, or a shortcut can be used. To automatically fill in all parameters of an ASSIGN layer, hold SHIFT while moving the parameter to be assigned to the current layer. Moving the slider through the desired range will automatically enter the MIN and MAX settings. The INVERT setting will be entered when the SHIFT button is released. If the final value of the slider is higher than the starting value, then invert will be OFF. If the final value is less than the starting value, INVERT will be ON. Using this method, it is possible to set up a 5 layer ASSIGN in a few seconds.

The ASSIGNS correspond to the CTRL A, CTRL B, and EXP PEDAL and moving one of these 3 controllers will always control the associated ASSIGN. It is also possible to assign incoming MOD WHEEL, BREATH CONTROL, and AFTERTOUCHE MIDI messages to the ASSIGNS. This allows any JUNO parameter to be controlled by these.

ASSIGN A will allow incoming MOD WHEEL or BREATH messages to be routed to it. ASSIGN B will allow incoming channel AFTERTOUCHE messages to be routed to it. This allows for great flexibility when using a controller keyboard with your Juno. Notice that in the ASSIGN menus, the box in the lower left of the screen will display NO MOD. This means that no incoming messages are being routed to this assign. To route incoming BREATH, MOD WHL, or AFTERTOUCHE messages to an ASSIGN, press SHIFT + PATCHGEN when in the ASSIGN MENU. This will cycle between NO MOD and the available modulation routings available.

Each of the 3 ASSIGNS has a USER PRESET and a DEFAULT PRESET. To store the USER PRESET, navigate to the ASSIGN you'd like to save, then press SHIFT+ASSIGN (STORE). To recall this ASSIGN, navigate to the ASSIGN (A, B, or P) you'd like to recall, then press SHIFT+CHORUS ON/OFF (LOAD). If the DEFAULT is currently loaded, then the USER PRESET will be recalled. If the current ASSIGN is on a USER PRESET, then the DEFAULT will be recalled.

A memory card upgrade is planned for the MPG-50, which will allow users to save as many ASSIGN setups as they wish.

## CC ASSIGN MENU

The MPG-50 will allow users to transmit any CC message (0-127) from any of the 35 parameter sliders, excluding GLIDE, CTRL A & B, and VOLUME. This is a useful feature that allows the MPG-50 to send controller messages to other hardware or software synths. To create a layer that transmits the current USER CC MAP, select USR in the MIDI PROTOCOL menu.

To view or "peek" at a slider's CC assignment, navigate to the MAIN MENU screen and press ENTER. This will display ASSIGNABLE CC as well as the controller number this slider is set to transmit when moved. To change a slider's CC assignment, press SHIFT and move the slider or use the ENCODER. Each slider can transmit from either the currently selected layer channel (MAIN MIDI CH & AUX MIDI CH) or a user-selected channel. Pressing SHIFT and moving the encoder will set the MIDI channel for each slider to transmit on. If using the layer midi channel, select XX.

To unmap a CC assignment from a slider, select the slider to be unrouted and press PATCHGEN (CLEAR). Pressing SHIFT + PATCHGEN in CC MENU will clear all slider CC mappings.

Use the RIGHT & LEFT buttons to select a USER CC MAP. To load a CC MAP, select the MAP, then press SHIFT+ CHORUS(LOAD). To store a CC MAP, select the MAP location the new setting is to be stored in, then press SHIFT + ASSIGN(LOAD).

## MKS-50 PATCH MENU

MPG-50 has a dedicated PATCH MENU for MKS-50 users. This allows users to alter PATCH MENU settings directly from the MPG-50 without menu diving on the MKS. The MKS-50 PATCH MENU contains the following settings:

tone number (A0-A50 & B51-B99)

MOD DEPTH - Set the depth of MOD WHEEL messages.

PITCH BEND RANGE - Sets the bender range of the MKS-50.

DETUNE - Sets the fine tuning of the MKS-50

XPOS - Sets the MASTER transpose on the MKS-50

KEY MODE - Toggles the KEY MODE (MONO, POLY, CHORD MEM) on the MKS-50.

CHORD MEMORY # - Selects the saved CHORD to use when using CHORD MEMORY.

## ALPHA JUNO PATCH MENU

This menu contains settings for ALPHA JUNO users. The following settings can be changed in this menu:

PITCH BEND RANGE - Sets Alpha Juno pitch bend range.

KEY MODE - Sets key mode on the ALPHA JUNO. Note: There is a bug in the original ALPHA JUNO 1 & 2 firmware that incorrectly makes the AJ read the MONO command as the CHORD MEMORY command. The MPG-50 uses the sysex commands given in the owners manual of these products. There are EEPROM updates that fix this issue. If your Juno does not respond correctly to this command, try updating your Juno firmware to the latest version.

## RANDOM TONE GENERATOR MENU

Pressing the PATCHGEN BUTTON once will open the RANDOM TONE GENERATOR. (RTG) The RTG is a powerful sound creation tool that will enhance creativity and generate useful, expressive tones. The RTG can generate a wide array of useful musical sounds, ranging from lush pads to metallic bells. By selecting the category of sound to be generated, many different textures can be layered in a matter of seconds, allowing users to hear what the Juno is capable of. The RTG has a masking feature which allows the user to "mask" sections of the synthesizer that should not be randomized. The amount of randomness can also be set if not using a tone category. (ANY selected) To fully utilize the RTG, it is important to understand how each of the RTG sections works. The RTG menu contains the following parameters:

TYPE - This allows the user to select the type of random tone to be created. Selecting ANY will generate a completely random tone, where the amount of randomness can be set using the AMOUNT parameter at the bottom of the screen. There are multiple categories of tone types that can be created, including BASS, POLYSYNTH, PAD, BELLS, PERC, STRING, BRASS, DRONE, NOISE and ANY (Completely random) . As OS updates occur, more RTG categories will be added to the firmware.

MASK - Each section of the Juno can be masked (protected from being randomized by the RTG) by selecting the section, and turning MSK on. The following sections of the JUNO can be masked:

DCO - This affects SAW, PULSE, SUB SELECT, NOISE & SUB LEVELs.

PMOD - This affects PWM AMOUNT, PWM RATE, DCO LFO AMOUNT, DCO ENV SEL, DCO ENV AMOUNT, and DCO TOUCH.

VCF - This affects HPF, VCF CUTOFF, and RESONANCE.

FMOD - This affects VCF ENV SEL, VCF ENV AMOUNT, VCF LFO, VCF TOUCH, and VCF TRACK.

VCA - This is the VCA ENV LEVEL slider. It cannot be randomized.

AMOD - This affects VCA TOUCH and VCA ENV SELECT.

ENVL - This affects ENV L1, L2, L3 and FOLLOW.

ENVY - This affects ENV T1, T2, T3, T4.

LFO - This affects LFO RATE and LFO DELAY.

CHORUS - This affects CHORUS ON/OFF and CHORUS RATE.

AMOUNT - The amount of randomization can be changed using this setting. Use this to limit the range of a randomized setting to + and - the AMOUNT.

Pressing ENTER while in the RTG menu will generate a random tone on the synth layer selected. Pressing SHIFT+ENTER will generate a separate random tone on each synth layer, allowing users to quickly layer 2 random tones.

## MANUAL MENU

Pressing ENTER while in this menu will transmit the value of all 35 JUNO parameters on the front panel.

## SCRATCH PATCH GENERATOR

This tool allows users to create "starter tones" that serve as a generic starting point when creating a new sound. There are 3 SCRATCH TONES available:

BASIC SAW

BASIC PWM

BASIC FILTER SWEEP

Press ENTER to generate a SCRATCH TONE.

## SPECIAL FEATURES

CROSSFADE - When layering 2 Juno synths, it is often desirable to mix between the MAIN and AUX synth levels to achieve a balance between the two. To make the VOLUME slider function as a CROSSFADE, go to the MAIN menu and move the VOLUME slider to select it. Now press ENTER. The screen should now display CROSSFADE when the VOLUME slider is moved. Repeat the process to change the slider back to VOLUME function.

MONO/POLY/CHORD MEMORY - Press SHIFT + GLIDE to toggle KEY MODE of the currently selected layer.

## CC TRANSLATE MODE

In the MIDI settings menu, users can set the communication preferences of the MPG-50. In the DATA setting for the MAIN and AUX channel, NORML or CC2SX can be selected. If NORML is selected, then moving a slider on that channel will send a corresponding SYSEX message to the synth. If CC2SX is selected, the unit will still send sysex to the synth, but with one major difference. In CC2SX mode, the MPG will also send a corresponding CC message (see chart to the right) that can be recorded by a DAW. If in CC2SX mode, sending a CC message to the MPG will result in the MPG translating that message into sysex and sending it to the synth.

For example, if you are using an external controller keyboard and you assign one of its controls to CC# 27, then send that data to the MPG, it will alter the VCF CUTOFF on the Juno. Use these CCs to either control the Juno with external gear, or to record your MPG-50 slider movements on a DAW.

When in CC2SX mode, the MPG-50 will only translate and send messages to the JUNO on the currently selected layer, MAIN, AUX, or BOTH.

If using the Redominator plug-in, selecting RED as the unit TYPE in the MIDI menu will transmit the CC messages corresponding to the table to the right. (These CCs will need to be set in Redominator for the plug-in to understand the messages)

PARAMETER	MIDI CC ID
DCO Env Sel	11
VCF Env Sel	12
VCA Env Sel	13
Sq Select	14
Saw Select	15
Sub Select	16
DCO Range	17
Sub Level	18
Noise Level	19
HPF	20
Chorus On/Off	21
DCO LFO Amt	22
DCO Env Amt	23
DCO Touch	24
PWM	25
PWM Rate	26
Cutoff	27
Res	28
VCF LFO	29
VCF Env Amt	30
VCF Follow	31
VCF Touch	32
VCA Env Amt	33
VCA Touch	34
LFO Rate	35
LFO Delay	36
T1	37
L1	38
T2	39
L2	40
T3	41
L3	42
T4	43
Env Follow	44
Chorus Rate	45

## **BOOTLOADER & OS UPDATES**

The MPG-50 has a MIDI bootloader that allows users to update their OS in the field using a MIDI sysex utility such as MIDI OX. New OS files are available from Retroaktiv when updates are issued. To obtain an OS file, contact Retroaktiv and request a copy of the latest SYSEX OS file.

### **HOW TO USE THE BOOTLOADER**

To load a new OS onto the MPG-50, power up the MPG while holding the GLIDE button down. The CHORUS LED should blink once when the bootloader has been opened. Once the bootloader is opened begin sending the .SYX file to the MPG from MIDI OX or another similar MIDI sysex utility.

The process should take about 4 minutes to complete. When the new operating system has been loaded, the CHORUS LED will stay lit. If the CHORUS LED begins blinking, this means that an error has occurred.

In the event of an error occurring, the new OS must be loaded successfully before the MPG-50 can boot the main OS again. In this case, power up while holding the GLIDE button down and try loading the OS file again. The bootloader can not be erased, so if an error does occur, it is always possible to open up the bootloader and flash a new OS file.

The bootloader was designed to use the default MIDI OX MIDI delay settings. If there is a consistent failure to load the new OS file, please contact Retroaktiv for advice about what might be happening.

## **WEIGHT AND DIMENSIONS**

The MPG-50 is 6.6 pounds and the enclosure measures 14.5" x 5.8" x 1.5". The MPG-50 can also be rackmounted using optional rack ears, which can be purchased at [www.RetroaktivSynthesizers.com](http://www.RetroaktivSynthesizers.com).

The enclosure has 4 heavy-duty screw-on rubber feet for no-slip tabletop use.

## **THANK YOU!**

Thanks for using these Retroaktiv synthesizer products. We are a small company and we appreciate the musicians and artists using this gear. If you have any questions or comments about this or other products, please contact us by visiting [www.RetroaktivSynthesizers.com](http://www.RetroaktivSynthesizers.com) and using the CONTACT US link at the top of the page. We want to hear from you about your user experience and feature requests. Sincerely,

-Rob Currier

Owner and Chief Engineer/Designer/Programmer at Retroaktiv LLC.

All Retroaktiv products are built in Colorado USA. All PCB assembly and metal work is contracted to local Colorado companies. Thanks for supporting us!

This manual was written by Rob Currier.