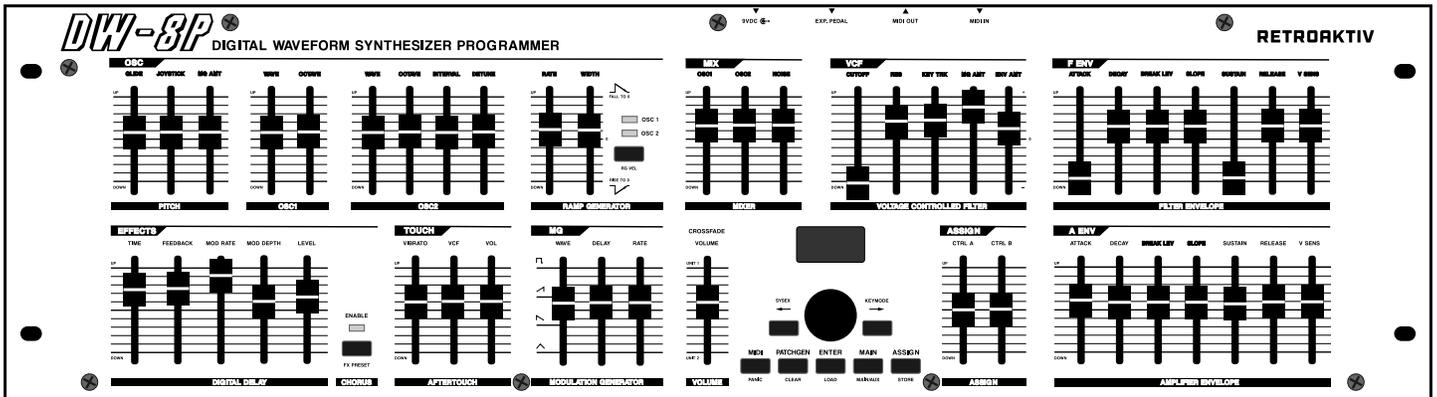


# RETROAKTIV DW-8P

## DIGITAL WAVEFORM SYNTHESIZER PROGRAMMER USER GUIDE AND REFERENCE



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Colorado, USA.  
Revision 2  
Covers all firmware up to 2.0

## FEATURES

Real time control of all DW/EX8000 and 6000 tone parameters.

The DW-8P is a full-featured MIDI controller for programming Korg EX-8000, DW-8000, and DW-6000 synthesizers. DW-8P can control 2 synthesizers at once, allowing fast switching between synths, and ability to smoothly cross-fade and layer the two synths.

Flexible MIDI matrix for controlling multiple parameters simultaneously

CC mode transmits and decodes CC messages for easy DAW integration

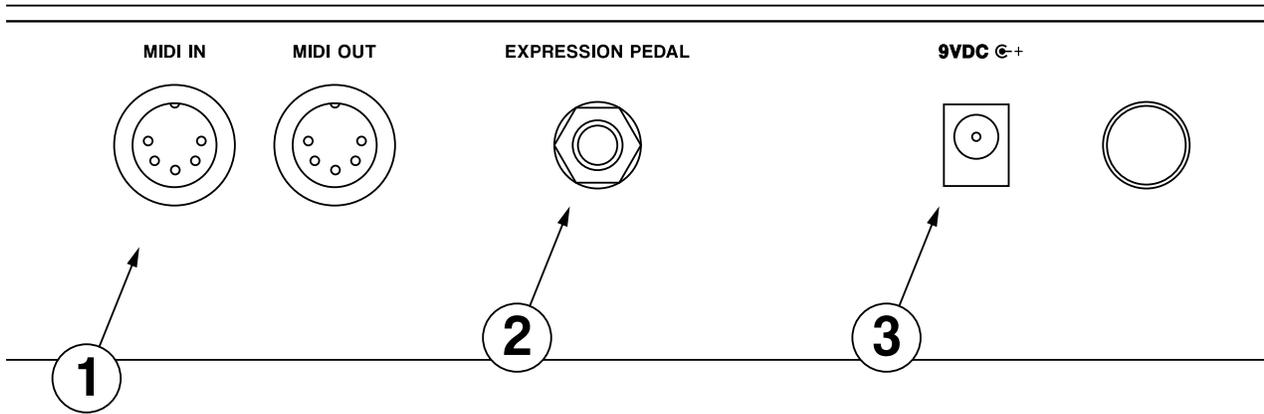
In CC mode, the DW-8P will transmit SYSEX to the synth whenever a slider is moved, and it will simultaneously send a MIDI CC message that can be recorded with a DAW. Playing the recorded CC back into the DW-8P will translate the data back into SYSEX and transmit to the synth.

Scratch tone generators for quickly creating a "starting place" when programming a new sound.

The RANDOM TONE GENERATOR on the DW-8P 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, electric piano, analog, choir, percussion, bass, bells/metal, digital synths 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.



### 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 DW-8P 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 DW-8P. Roland, Moog, and Kurzweil expression pedals have been found to work well with the DW-8P.

### 3 ) DC Power Jack & Switch

For use with a 9V-12V DC power adapter with the positive connection on the center pin. The DW-8P consumes 35mA.

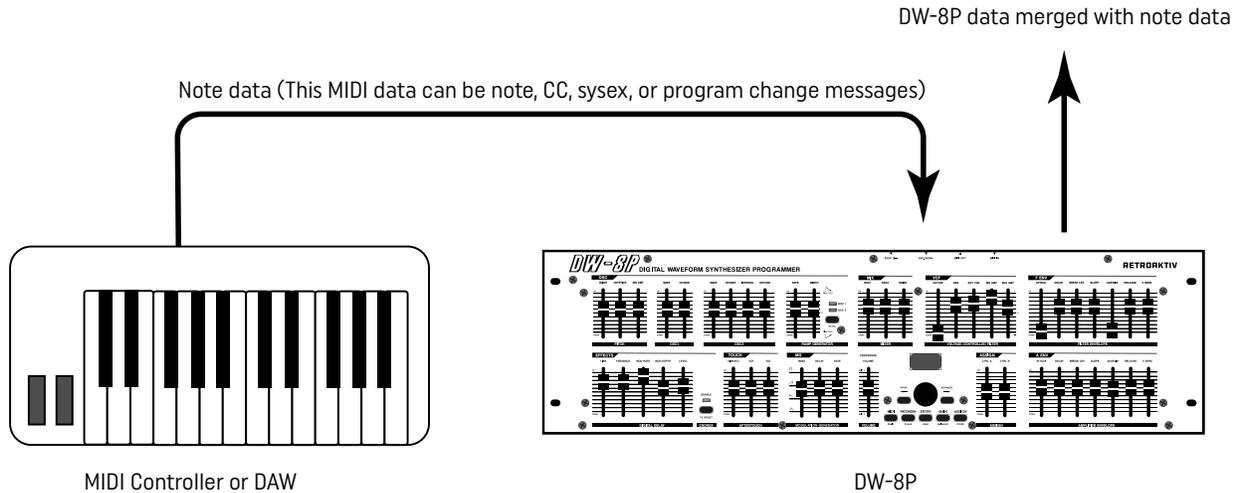
## Getting Started

To begin using the DW-8P 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 DW-8P splash logo will be displayed on the OLED display. The version of the operating system will also be displayed on this screen.



## BASIC CONNECTIONS

DW-8P has a "soft MIDI THRU", meaning that it will pass any data seen at the MIDI IN to the MIDI OUT (With exceptions. See section about MIDI MAP) To communicate with the synthesizer plug the MIDI OUT of the DW-8P into the MIDI IN of the synth. This will allow the DW-8P 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 DW-8P.



If you're sending dense streams of controller data (using a 5 layer ASSIGN, sending to 2 DW/EXs, for example) consider upgrading to a dedicated hardware merger to merge your keyboard data with the DW-8P output stream. The DW-8P's hardware buffers are only so large, and you can overwhelm it if you're sending in lots of data. Don't forget, the DW-8P needs to read and parse every byte of MIDI data it receives, so sending the DW-8P lots of unnecessary data (Like data from MIDI channels other than the one being used to control the DW/EX) will fill the queue faster.

Depending on what the setup is, the ideal DW-8P connection will vary. A device that can filter MIDI data by type (Note, CC, pitch wheel, etc) is very useful, as is the ability to split and merge data. A complex setup where the DW-8P is integrated with a DAW is going to require more planning than a simple MIDI IN/OUT setup.

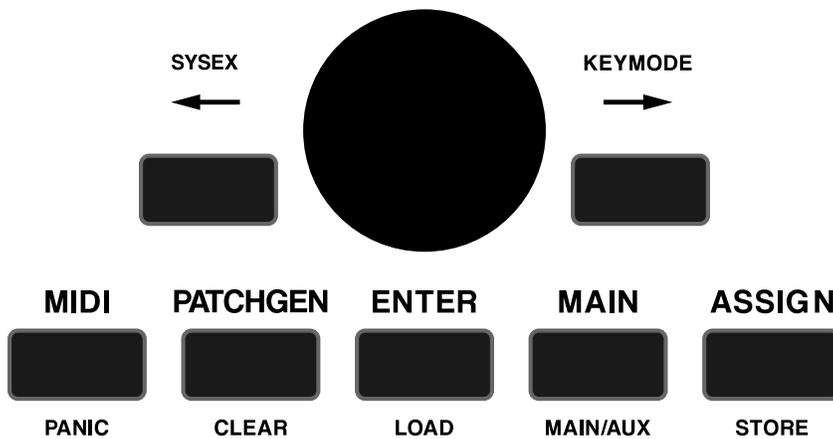
## USING DW-8P WITH DW-6000

If using the DW-8P to program a DW-6000, there are some sysex implementation notes that users must be aware of. The EX and DW8000 both have one parameter offset ID per parameter. This means that to change an individual tone parameter, the DW-8P needs to send a handshake that lists the offset ID ("This is the parameter being changed") and the new parameter value. The DW-6000 however, uses shared parameter IDs (For a list of the shared parameter IDs, refer to pages 46 and 47 of the DW-6000 user's manual), which means that changing a single tone parameter will result in 2 tone parameters (The parameters that share the ID) being changed on the DW-6000, which is annoying. To deal with this problem, the DW-8P can download the

current DW-6000 sound (The one currently being heard from the synth), and can then change only a single parameter. To use this feature, the MIDI OUT of the DW-6000 needs to be connected to the MIDI IN of the DW-8P, and the MIDI OUT of the DW-8P should be connected to the MIDI IN of the DW-6000. When using this configuration, pressing SHIFT+LEFT will send the DW-6000 a request for the current sound. The DW-6000 will then send the DW-8P the current sound, and a success message will be displayed on the DW-8P. Now that the DW-8P knows the contents of the shared parameter IDs, it can send data bytes that will only change one of the parameters on the shared ID. Use SHIFT+LEFT to download the program from the DW-6000 whenever a new program is selected.

If creating a program from scratch on the DW-8P, it is recommended that the MANUAL, SCRATCH PATCH, or PATCHGEN function be used as a starting point, so that the DW-8P always knows what sound the DW-6000 is playing. The shared parameter ID issue is the reason that most universal programmers do a poor job of controlling the DW6000.

## MENU NAVIGATION



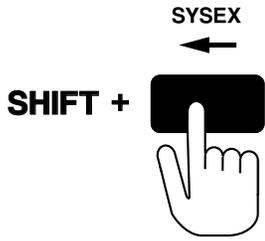
The DW-8P will boot, display the DW-8P logo and version number, and will then display the MAIN page on the screen. The MAIN page displays the current active parameter, the layer being edited, and the 7 bit (0-127) user CC value of the current slider (Only used if a user CC map is being used on the DW-8P). To navigate to the MIDI pages, ASSIGN pages, or PATCHGEN pages, press the associated button. Each subsequent press of a button will advance through the pages of that category.

For example, press the ASSIGN button once, and the settings for ASSIGN A will appear on the screen. Pressing ASSIGN once more will display the settings of ASSIGN B. This is how the PATCHGEN, MAIN, ASSIGN, and MIDI pages all work.

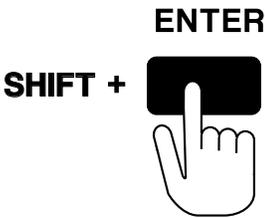
Most buttons have dual functions, meaning that they will do something different if pressed while the encoder is held in (SHIFT). For instance, pressing SHIFT + MIDI from any menu will initiate an all notes off/all controllers off sequence. (MIDI panic)

On the following pages are charts showing the second functions of all of the buttons from each menu.

MAIN MENU BUTTONS:

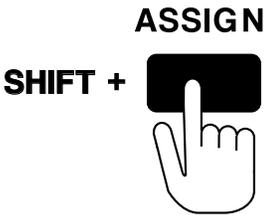


(GET SOUND) - Request current sound from DW/EX synth. INVALID SYSEX message will be displayed if no answer is received from the synth, or if the next incoming MIDI message is not a valid sysex dump. This function requires bidirectional communication with the DW/EX to work.



(LOAD) - Opens the PATCH, SETUP, and ASSIGN LOAD menus.

Note: This function is only enabled on units with the MBX board installed.



(STORE) - Opens the PATCH, SETUP, and ASSIGN STORAGE menus.

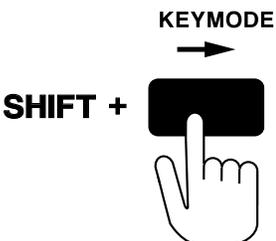
Note: This function is only enabled on units with the MBX board installed.



(EDIT CC MAP) - From the MAIN screen, the ENTER button will navigate to the USER CC MAP menu. Pressing enter from the USER CC MAP pages will exit to the MAIN screen.



(GENERATE PATCH) - From the MAIN screen, this will generate a new patch according to the current settings on the RANDOM TONE GENERATOR page.



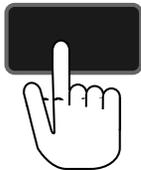
(TOGGLE KEY MODE) - Toggles the current layer's key mode. (POLY1, POLY2, UNSN1, UNSN2)

**FROM ALL MENU PAGES:**

**SHIFT +**  **MAIN** (LAYER TOGGLE) - Switches between MAIN, AUX, and BOTH. This function is used when controlling more than one synth independently using the DW-8P layering function.

**SHIFT +**  **MIDI** (MIDI PANIC) - Sends an ALL NOTES OFF message on all MIDI channels. Use this function in the event of a stuck note etc.

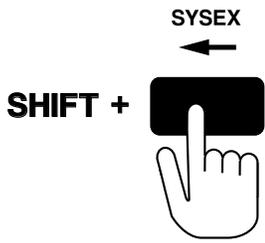
 **OSC** (RAMPGEN VEL) - Opens the DW-8P's VELOCITY CONTROLLED RAMP GENERATOR menu.  
 **OSC**

**SHIFT +** 

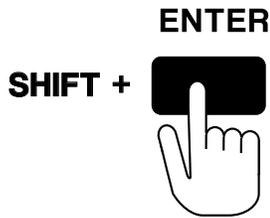
 **ENABLE** (FX PRESETS) - Opens FX preset menu.

**SHIFT +**  **FX** (For use with EX-8000 and DW-8000 only)  
 **CHORUS**

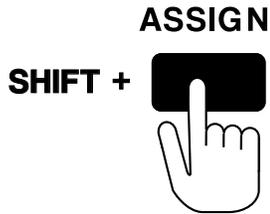
## MEMORY EXPANSION CARD PAGES:



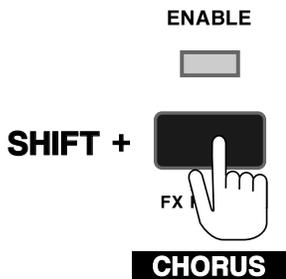
(SYSEX UTILITY) - Import and export DW/EX-8000 and DW-6000 sounds to and from the MBX-1 memory card. To navigate to this page from one of the memory pages, press SHIFT+LEFT. To navigate to this page when on the MAIN menu, simply press LEFT.



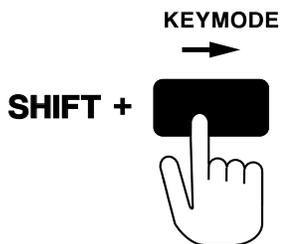
(LOAD) - Opens the PATCH, SETUP, and ASSIGN LOAD menus when in the memory pages. To navigate to the LOAD menu from the MAIN menu, simply press RIGHT when on the MAIN screen.



(STORE) - Opens the PATCH, SETUP, and ASSIGN STORAGE menus.



(FX PRESETS) - Opens MBX-1 FX preset menu. Open this menu by pressing SHIFT + CHORUS when in the FX PRESET page. Scrolling through the MBX-1 FX will automatically load the effect.



(OBJECT TYPE SEL) - Selects the object type (PROGRAM, ASSIGN, FX, SETUP) to stored or loaded. This only works when in the memory menus. Otherwise, this function will toggle the current layer's keymode.

RANDOM TONE GEN BUTTONS:

	<b>ENTER</b>	(GENERATE TONE) -	Generates a tone one the selected layer(s).
			
	<b>ENTER</b>	(GENERATE TONES) -	Generates a separate tone on the MAIN and AUX layers.
<b>SHIFT +</b>			
	<b>PATCHGEN</b>	(MASK/UNMASK ALL) -	Alternates between masking all patchgen parameters and unmasking all patchgen parameters. If on the MAIN menu, pressing SHIFT+PATCHGEN will generate a random tone on the selected layer.
<b>SHIFT +</b>			
	<b>ASSIGN</b>	(CHANGE RANDOM ALG) -	Generates a new random "seed" for generating random numbers in the patch generator. Use this to vary the randomizer algorithm.
<b>SHIFT +</b>			

In ASSIGN A, B, P menu:

	<b>ASSIGN</b>		
<b>SHIFT +</b>		SHIFT+ASSIGN: (STORE)	On stock units, this will store the current assign to one of the 3 USER ASSIGN preset slots. If using the memory expansion card, this will open the STORE ASSIGN menu, where the ASSIGN can be named and stored in the DW-8P
	<b>ENTER</b>		
<b>SHIFT +</b>		SHIFT+ENTER : (LOAD)	On stock units, this alternates between loading the default and the user ASSIGN for each of the 3 ASSIGN slots in memory. On units with memory expansion, this will enter the LOAD ASSIGN menu.
	<b>PATCHGEN</b>		
<b>SHIFT +</b>		SHIFT+PATCHGEN :	Selects the mod source to route to the current ASSIGN. (Mod wheel, aftertouch, and breath CCs can be used to control ASSIGNS A and B)

In MIDI menu:

**ASSIGN**

**SHIFT +**



SHIFT+ASSIGN: (STORE) Stores the current settings as the default on boot-up. This function is active on MIDI MENU 1 and BUTTON REPEAT SETTINGS pages.

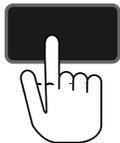
In RG VEL menu:

 **osc 1**

 **osc 2**

SHIFT+RG VEL - Pressing this when in the velocity control menu will enable velocity control. Pressing again will turn velocity control off.

**SHIFT +**



MIDI MENU

The MIDI MENU contains the settings used for communicating with the synth(s) you plan on programming with the DW-8P. DW-8P uses MIDI to communicate with the DW/EX synth. There are 2 "channels" available on the DW-8P, a MAIN, and an AUX channel. Note that the MAIN and AUX channels are not MIDI channels. They are controller channels. The DW-8P can control 2 separate sDW/EX synths from one unit. One synth is the MAIN synth, and the other is the AUX synth. The DW-8P can control both synths individually or simultaneously, for easy on-the-fly editing. Use the MAIN/AUX/BOTH toggle (SHIFT+MAIN) to control which synth the DW-8P is sending control data to. Press SHIFT+ASSIGN to store your MIDI settings as defaults. ( This only needs to be done once.)

The DW-8P uses SYSEX and CC data to communicate with the synthesizer. (All parameters except MASTER VOLUME are sysex.) Whenever a slider on the DW-8P is moved, the new value is transmitted to the synth. The data will only be transmitted to the synth receiving on the current controller channel. (MAIN, AUX, BOTH) When setting up the DW-8P for the first time, the model (DW8K, EX8K, or DW6K) must be selected on the MAIN and AUX channels. If only using one synth, only the MAIN channel must be configured. Make sure that the MAIN



and AUX channels are set to different values. The DW-8P will not transmit sysex if both channels are set to the same value.

MIDI MENU functions are as follows:

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

MAIN TRANSLATE : Selects which CC to SYSEX translate mode is used. (See CC Translate section)

MAIN UNIT TYPE : Use to select the model of synth used on the MAIN channel. Select DW8K for use with DW-8000. Select EX8K for use with EX-8000, and select DW6K to use with a DW-6000. Since DW-6000 can only read sysex on channel 1, DW6K option is only available on the MAIN channel. Select USR to use the currently selected USER MIDI CC map.

AUX CHANNEL : Sets the MIDI channel of the MAIN synth channel. (1-16)

AUX TRANSLATE : Selects which CC to SYSEX translate mode is used. (Default is translate off)

AUX UNIT TYPE : See above

## CC TO SYSEX TRANSLATE MODES

The DW/EX synth parameters can only be changed using sysex, which can be an issue for people recording controller data with their DAW. Many DAWs do not allow SYSEX message to be recorded. DW-8P allows incoming CC messages (See table in last section of manual) to be translated into SYSEX messages for the DW/EX , allowing users to record and playback slider movements. DW-8P has 3 CC to SYSEX translate modes:

**CC+SYX**: In this mode, incoming CCs are translated into SYX. When a slider is moved, the corresponding SYX message as well as the CC message will be transmitted from the DW-8P MIDI OUT. The synth will respond to the SYX, and the DAW can record the CC. When this recorded CC is played back into the DW-8P, the corresponding SYX message will be sent to the synth.

**CC ONLY**: In this mode, incoming CCs are translated into SYX, and when a slider is moved, only the coded CC message will be sent (No sysex). This means that in order for a SYX message to be sent to the synth when in this mode, a CC must be played back into the DW-8P. This mode is ideal for people recording slider move-

## MIDI MENU 2 - DATA FILTERING AND MAPPING

Page 2 of the MIDI menu contains the MIDI MAP parameters. The MIDI MAP function Requires a brief explanation to fully understand how this function works.

In many MIDI setups, a DAW is used to record and playback MIDI data. This can sometimes cause a MIDI feedback loop, where the DW-8P is sending data, CC for example, and receiving this same data at the MIDI IN of the DW-8P. For example, if the DW-8P is connected to the EX/DW , under normal circumstances, when a note gets played from the DW keyboard, it is sent to the DW-8P, where it gets sent right back to the DW. This will cause erratic behavior because there is now a feedback loop.

The mapping function solves the problem just mentioned using a simple solution. The DW/EX 8000 synths will only receive sysex on the channel the synth is set to receive on (MIDI CHANNEL parameter). If the DW/EX channel is set to channel 3, but it receives a sysex message on channel 4, the synth is going to ignore the message. When the EX/DW is in OMNI MODE (Parameter 86 = 1 on DW/EX8K and parameter 83 = 1 on DW6K) note and CC data will be recognized by the synth on all channels. If OMNI mode is set to 0, then the synth will only respond to incoming MIDI data on the synth's MIDI channel. The MAPPING feature takes advantage of this. When MAPPING is activated, the DW-8P will only accept incoming note and CC data on the MAIN or AUX MIDI channels (Set in MIDI PAGE 1). If valid note or CC data is received on the MAIN or AUX channel, then the DW-8P will change the channel of that data to the MAIN or AUX MAP CH, and then send it. When the mapped note/cc data goes through the feedback loop, it gets filtered by the DW-8P because it does not match the MAIN or AUX channel. If the synth is not in OMNI mode, it will not respond to the mapped note/cc data, thus breaking the feedback loop.



**MAIN MAP CHANNEL** : Anything on the MAIN or AUX channels (From MIDI MENU pg 1) will be sent out of the DW8P on the corresponding MIDI MAP CH. When mapping is turned on, the DW8P will ignore any data coming in on any channel other than the MAIN and AUX channel (Set in MIDI PAGE 1). When the DW sends the data out mapped to the MAP CH, when it re-enters the DW's MIDI IN< the data will be rejected (Because it doesn't match the MAIN or AUX MIDI IN channels. This is how a feedback loop is prevented. The synth must not be in OMNI mode for this to work.

**AUX MAP ENABLE** : Enables MIDI MAPPING of incoming note and controller data.

**AUX MAP CHANNEL** : Same as MAIN MAP CHANNEL.

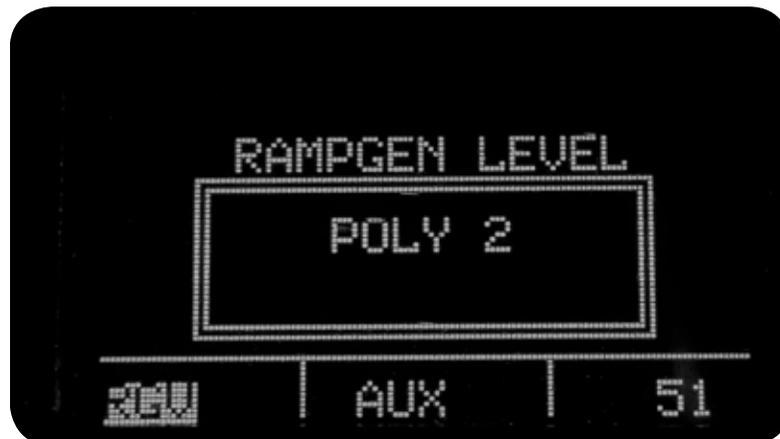
**AUX MAP ENABLE** : Same as MAIN MAP ENABLE.

## MAIN MENU

The MAIN MENU will display the currently selected DW/EX parameter and its current value. Since every parameter on the DW/EX has differing numbers of steps, each slider's CC value (0-127) is displayed in the lower right corner. This is useful if layering a user map with the DW/EX control surface. In the left corner of the MAIN screen, the word RGV (Ramp Generator Velocity) is displayed. When highlighted, this means that the ramp generator is currently responding to the velocity of incoming notes. (See Ramp Generator Velocity Control section)



Pressing MAIN while in any other menu will jump to the MAIN screen. If already on MAIN screen, then pressing main will navigate to the DW/EX settings menus, which allow users to select programs, change the KEY MODE, and toggle VCF BEND. (Pressing SHIFT+RIGHT in any menu will also toggle through the KEY MODE options.)



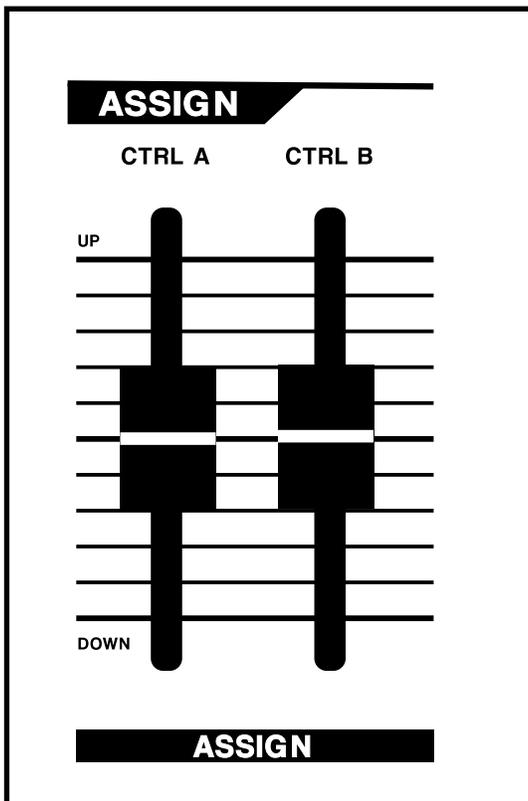
The active synth channel (not MIDI channel) will be displayed on the MAIN menu. (MAIN, AUX, BOTH) Pressing SHIFT+MAIN in any menu will toggle between MAIN/AUX/BOTH.

When in the MAIN menu, the function of the VOLUME SLIDER can be toggled to function as a volume control, or as a crossfade between the MAIN and AUX synth. To toggle this, go to MAIN MENU and move the volume slider so that MAIN VOLUME is displayed. Press ENTER. Now the screen will display CROSSFADE when the slider is moved.

If any slider other than VOLUME is selected when in the main menu, pressing ENTER will enter the USER CC MAP MENU and display that slider's USER MAP CC #. To exit the USER CC MAP MENU press MAIN.



## THE ASSIGN MENUS



The DW-8P features a powerful feature called an ASSIGN. There are 3 separate ASSIGNs in the DW-8P: ASSIGN A, ASSIGN B, and ASSIGN P. Each assign is a control matrix that allows users to control up to 5 DW/EX parameters using the CTRL A, CTRL B sliders, an expression pedal, a mod wheel, aftertouch, or a breath controller.

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. Each ASSIGN can have up to 5 layers. 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 0 and 40, while simultaneously sweeping the VCF RESONANCE from 31 to 15. 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, or can be automated with a single CC lane on a DAW.



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:0 MAX:40 INVERT: OFF The settings in layer 2 would be: LYR 2 of 2 RESONANCE MIN: 15 MAX:31 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 AFTERTOUCH MIDI messages to the ASSIGNS. This allows any DW/EX 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 AFTERTOUCH messages to be routed to it. This allows for great flexibility when using a controller keyboard with your DW/EX. Notice that in the ASSIGN menu, 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 AFTERTOUCH 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.

If the MXP-1 memory card is installed on the DW-8P unit, then 100 ASSIGNS can be stored on the unit.

## USER CC MAPS

The DW-8P will allow users to transmit any CC message (0-127) from any of the 45 parameter sliders, excluding CTRL A & B, and VOLUME. This is a useful feature that allows the DW-8P 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+ ENTER (LOAD). To store a CC MAP, select the MAP location the new setting is to be stored in, then press SHIFT + ASSIGN (LOAD). 8 user maps can be stored on DW-8P.

## RAMP GENERATOR VELOCITY CONTROL

DW-8P adds a useful performance feature to the DW/EX called RAMP GENERATOR VELOCITY CONTROL. The ramp generator on the EX/DW is used to bend one or both oscillators toward zero whenever a key is pressed. This creates a "dip" or a "scoop", which can be used to detune the two oscillators over time. The DW-8P allows this to be more nuanced and expressive by making it velocity controlled.

To enter the RGV menu, press SHIFT+RG VEL. When RG TIME or RGA (Ramp Gen Amount) is set to ON, then those parameters will react to any incoming note's velocity, as long as the velocity of the note is greater than the RGA THRESH (Threshold) value. If a note's velocity is below this value, then no ramp generator will be applied to that note. Any note with a velocity greater or equal to the threshold value will have ramp gen applied based on the RGT SENS (Ramp Gen Time Sensitivity) and RGA SENS (Ramp Gen Amount Sensitivity) values. This allows the ramp generator to be used to expressively apply detuning in real time.

When in the RGV menu, press shift + RG VEL to turn all RGV response ON. Use this button combination again to turn all RGV response OFF. When RGV response is ON, then RGV will be highlighted in the lower left corner of the display in the MAIN menu.



## FX PRESETS

This feature applies to DW-8000 and EX-8000 users only. To select an FX preset (CHORUS, FLANGE, DELAY, CHORUS/DELAY), press SHIFT+FX PRESET. Now the FX Preset menu will be displayed. To select a preset, use the data encoder dial. To enable or disable the selected effect, press CHORUS button. From this menu, the MXB-1 FX presets can be accessed by pressing SHIFT + CHORUS again.

## OSC 2 EXTRA INTERVALS

DW-8P adds the ability to select multiple "extra" tuning intervals for the OSC2 on the EX/DW. Intervals available are:

Unison, min 2nd, maj 2nd, min 3rd, maj 3rd, perf 4th, perf 5th, + 1 oct, + oct and maj 3rd, hi-frequency 1, hi frequency pedal tone, hi frequency 2, -1 step, -oct and 3rd, "super detune".

Super detune function allows more detuning than the normal unison setting.

## COMBINED PARAMETERS

For ease of use, the FENV AMT and FENV polarity parameters are combined. The same is true of the RAMP GENERATOR amount and polarity. DELAY TIME and DELAY FACTOR are now combined. To change polarity of the envelope or ramp gen, simply move the slider to above (+) or below (-) the center point (0).

## 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 EX/DW is capable of. The RTG has a masking feature which allows the user to "mask" sections of the synthesizer that should not be randomized.



RTG menu contains the following parameters:

TYPE - This allows the user to select the type of random tone to be created. Selecting ANY will randomly choose a category and generate that type of tone. There are multiple categories of tone types that can be created:

BELL/MTL - Metallic tones, bells, glockenspiel, chimes, metallic klangs, digital chimes. These sounds have an undamped decay.

E. PIANO - DX-style EP, analog pianos, clavichord, harpsichord. Piano-style damping.

PAD - Atmospheric pads.

VOCALS - This category is not meant to be a "choir" sort of algorithm. It creates vocal phenomes using an algorithm.

ANAL:OG - Classic analog synths.

DIGITAL - Classic digital sounds.

BASS - Acoustic basses, E bass, FM bass, synth bass.

E.P. DW6K - Piano category based on DW-6000 features. (DW6k patchgen categories still work with the other EX/DW 8000)

BELL 6K - Bell/Mtl category based on DW-6000 features.

ANALOG 6K - Analog category based on DW-6000 features.

RANDOM - Completely random patch parameters. Chaos.

Each section of the EX/DW can be masked (protected from being randomized by the RTG) by selecting the section, and turning MSK on. The MASK function is divided into the following subsections:

DC01 - This affects DCO 1 section only.

DC02 - affects DC02 only.

PMOD - Affects PITCH and MIX sections.

VCF - Affects cutoff, resonance and key tracking.

FMOD - Affects filter MG amount, envelope amount.

FENV - Affects Filter envelope.

AENV - Affects Amp envelope.

FX - Affects chorus and digital delay sections.

MG - Affect modulation generator.

RAMP - Affects ramp generator.

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 MODE

Pressing ENTER while in this menu will transmit the value of all 45 parameters on the front panel.

## SCRATCH PATCH GENERATOR

Generates a basic generic starting point for creating a new patch.

## CHORD MODE

Pressing the MIDI button will navigate to the DW-8P CHORD MODE menu. Each layer has its own chord mode, so if 2 synths are being used, chord mode can be active on one, and not the other.

To input a chord, press ENTER from the CHORD MODE page and send the DW-8P a chord from either the MAIN or the AUX channel. Do not send MIDI note data from MAIN and AUX channel at the same time, or the incoming chord data will be rejected.

Use the MAIN and AUX CHORD MODE ON/OFF toggles to activate chord mode on a synth layer.

## BUTTON REPEAT SETTINGS

This sets the time it takes to retrigger a button when it is held down. For example, with a low value, holding the LEFT button would rapidly send messages to move the cursor left. Set this value to the preferred value and press SHIFT + ASSIGN (LOAD) so it becomes the default bootup value.

## SCREEN CPU USAGE

This turns off screen resources when in the MAIN screen, allowing for a faster slider refresh rate. NOTE: When on any other screen than MAIN, this is turned off anyway, so the option only affects the display when on the MAIN screen. If zippering is heard when on MAIN screen, turn off OLED resources or just go to any other menu page.

## RETROAKTIV MXB-1 128kb MEMORY CARD FOR DW-8P

When the OPTIONAL memory card is installed, the card must be formatted so the DW-8P will recognize it. To format, hold down CHORUS+LEFT+RIGHT on power up when you see the DW-8P splash screen displayed. (You don't need to be holding the 3 buttons down when applying power, just hold them down when you see DW-\*P splash screen and keep held until SUCCESS message displayed) The splash screen will appear to pause while the card is formatted. A success/failure message will be displayed upon completion of the format.

### **What can be saved?**

MBX-1 can store 40 banks of DW/EX 8000/6000 patches. (64 sounds per bank) There is storage space for 100 user effects presets, 100 setups, and 100 assigns.

### **What are the types of objects?**

Programs: A program is a single sound on a DW/EX.

Setups: A setup consists of all settings on the main and aux layers (The equivalent of 2 programs if you have 2 DW/EXs) and all 3 assigns. Included in a setup are the velocity controlled ramp generator settings, the assign modulation select (Aftertouch, modwheel, breath) settings, and crossfade settings (IF you have 2 synths connected)

Assigns: An assign is a 5 layer assign, which can be placed in either ASSIGN A, B or P.

Effects: An effect is a combination of the 5 sliders in the digital delay section.

## MEMORY MENU NAVIGATION

To access the LOAD menus, while on either the MAIN or ASSIGN menus, press SHIFT+ENTER(LOAD) or press RIGHT when on main menu. . This will open up the load menus. There are 4 load menus; Program Load, Setup Load, Assign Load, and Effects Load. When in the STORE/LOAD menus, use SHIFT+RIGHT to navigate between all of the object types. To load an assign, program or effect, move the encoder with the ID # of the object highlighted or press enter. To load a setup, locate the object to be loaded, then hit enter.

To access sysex utility, press LEFT when on MAIN menu, or SHIFT+LEFT if in the memory menus.

To change an object's name (This can only be done from the STORE menu), highlight the name and press enter. The first letter of the name will now be highlighted. Use the encoder and LEFT RIGHT keys to edit the name.

### **When in the naming mode, the buttons do the following:**

- MIDI: Prints the letter A
- SHIFT+MIDI: Prints the number 1
- PATCHGEN: Prints a space
- SHIFT+PATCHGEN: Clears the name of object
- Assign: Prints the letter Z
- MAIN: Prints number 1

## MEMORY UTILITY MENU FOR MXB-1

Pressing LEFT when on the MAIN screen, or pressing SHIFT+LEFT (When in the memory menus) will open the MEMORY UTILITY page. The utility allows the DW8P to import and export sysex banks.

### IMPORT SYSEX BANK TO DW-8P

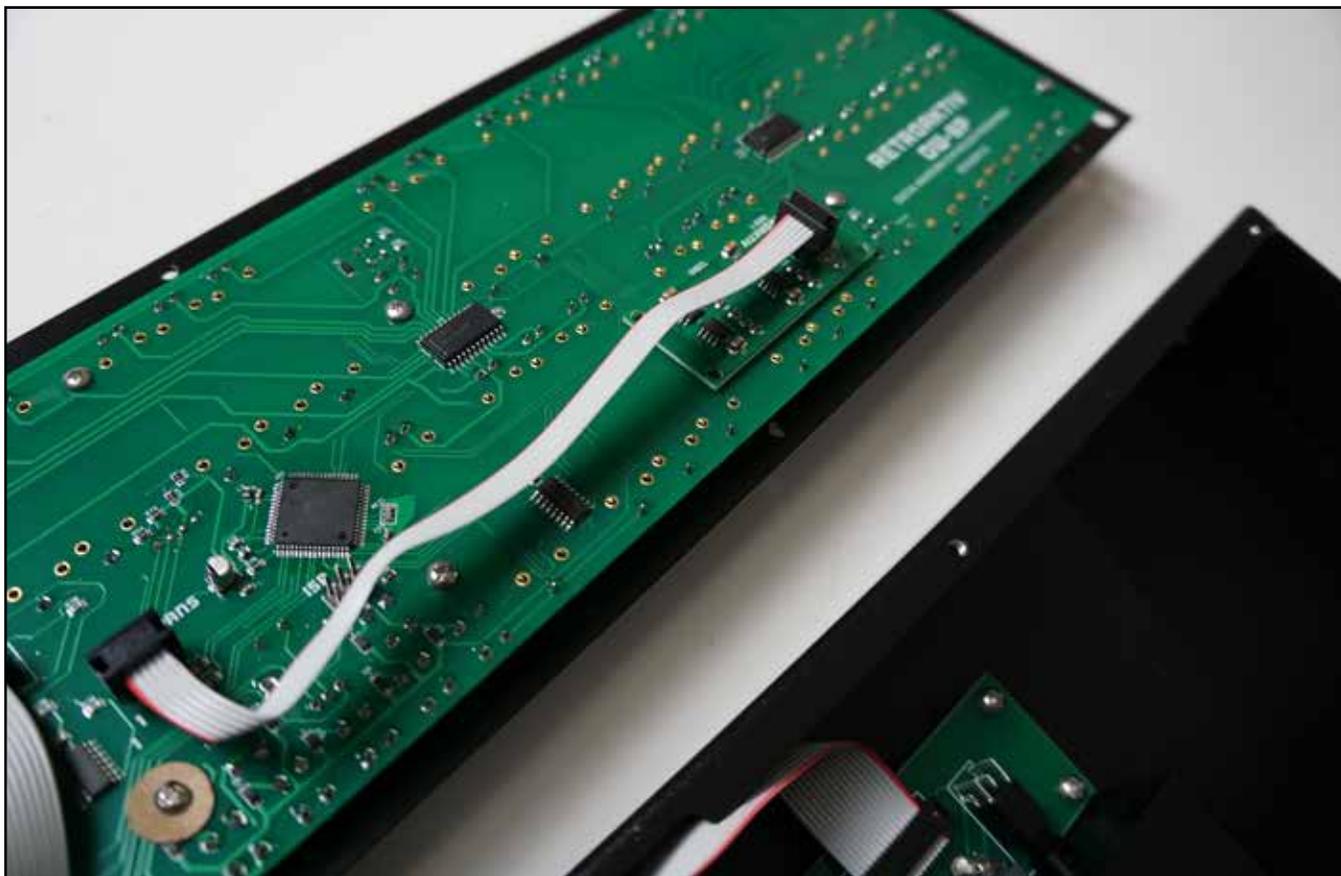
To request a bank from the synth, select IMPORT, the synth model type (DW8000, DW6000), and select the memory location where the sound bank should be placed. Press ENTER and the DW8P will initiate the transfer from the synth (This requires bidirectional communication with the synth). If loading a bank from a sysex librarian, press SHIFT+ENTER when the librarian is ready to send the bank. Once the SHIFT+ENTER button combo has been pressed, send in the sysex bank. A success/failure message will appear after the transfer.

### EXPORT SYSEX BANK FROM DW-8P

To EXPORT a bank, the process is similar. If exporting a bank to the DW synth (requires bidirectional communication), pressing ENTER will initiate the process. If exporting to a librarian, press SHIFT+ENTER to bypass the handshaking required to communicate with the DW synth.

### BACK UP MXB-1 MEMORY CARD

To export the entire contents of the memory card, select EXPORT, DW8P and press ENTER. This will transfer all 45 banks on the card to a sysex librarian. To transfer this file back to the card, select IMPORT, DW8P, press ENTER and send the file to the card.



**An MBX-1 128kB memory card installed in a DW-8P**

## STORING AN OBJECT

To store an object, navigate to the storage menu by pressing SHIFT + ASSIGN.

Press SHIFT+RIGHT to scroll through the storage menu pages and find the object type to be saved. (PROGRAM, SETUP, ASSIGN, EFFECT)

Find the bank and program ID where object will be stored. If there is already something saved in that location, the name of that object will be displayed. Otherwise, the name will read "EMPTY".

Press SHIFT + ASSIGN (STORE) to save the object.

## AUDITIONING SAVED OBJECTS

To audition a saved PROGRAM, press SHIFT + ENTER from the MAIN screen.

Select which synth (MAIN or AUX) the sound will be sent to.

When navigating through banks and programs, the new sound will be transmitted to the synth after .8 seconds of no encoder activity. This allows for quick auditioning of stored sounds.

To audition a saved assign, locate the assign and select which assignable controller slot (A, B, or P) the selected assign will be loaded to. Press SHIFT + ENTER (LOAD) and the assign settings will be loaded.

Since a setup includes all settings on both synths, all assigns, and all RTG settings, pressing ENTER is required to load a selected SETUP.

To audition saved EFFECT objects, press SHIFT + CHORUS until MXB FX PRESET menu is displayed. Now moving the encoder will load the selected effect to the currently selected layer.

## WRITE A PRESET TO THE DW/EX

Pressing SHIFT+ASSIGN (LOAD) when on the MAIN SETTINGS or AUX SETTINGS page will write the current layer's sound to the synth. For example if preset 9 is selected on the MAIN SETTINGS page, pressing SHIFT+ASSIGN when on the MAIN SETTINGS page would write the current MAIN sound to preset 9 on the synth. This will also work on the AUX layer using the AUX SETTINGS page.

## DW6000/8000 COMPATIBILITY

DW-8P will automatically convert DW6000 sounds into DW8000 format, and vice versa. Since the 2 synths are different, the translation is not exact, but is still very useful for people wanting to use both models.

## REQUEST THE CURRENT SOUND FROM THE SYNTH

To request the current sound (The sound you are hearing) from the synth, press SHIFT LEFT when on the MAIN screen. This will transfer the current sound on the synth to the MAIN or AUX layer, depending on which is selected. Before saving, it is always good practice to download the sound you are hearing from the synth to the DW-8P, to make sure that the sound is stored exactly as heard.

## CC TRANSLATE MODE

In the MIDI settings menu, users can set the communication preferences of the DW-8P. In the TRANSLATE setting for the MAIN and AUX channel, OFF, CC2SX, CC ONLY or SYSEX ONLY can be selected. If a translate mode is selected, then moving a slider on that channel will send a corresponding SYSEX or CC message to the synth. The chart to the right shows the DW/EX parameters and their corresponding CC translation values. The DW-8P will transmit on these CC controllers when TRANSLATE modes are enabled. It will translate these CC messages into their corresponding SYSEX parameters when TRANSLATE is enabled.

Each CC getting translated can have a value between 0 and 127. DW-8P handles converting the incoming CC data into DW/EX format. This ensures easy CC integration with no fiddling and no risk of the synth receiving "out of range" values, which freeze the synth.

DW/EX Parameter	Midi CC Data	Notes
OSC 1 Octave 1	8	
OSC 1 Waveform	9	
OSC 1 Level	10	
Rampgen Time	11	
Rampgen Amount	12	64 = 0, above 63 = +, below = -
OSC 2 Octave	13	
OSC 2 Waveform	14	
OSC 2 Level	15	
OSC 2 Interval	16	
OSC 2 Detune	17	
Noise Level	18	
Cutoff	19	
Resonance	20	
Keyboard Tracking	21	
VCF Env Amt	22	64 = 0, above 63 = +, below = -
FENV Attack	23	
FENV Decay	24	
FENV L3	25	
FENV T3	26	
FENV Sustain	27	
FENV Release	28	
FENV V Sens	29	
AENV Attack	30	
AENV Decay	31	
AENV L3	32	
AENV T3	33	
AENV Sustain	34	
AENV Release	35	
AENV V Sens	36	
MG Waveform Select	37	
MG Frequency	38	
MG Delay	39	
OSC MG AMT	40	
VCF MG Amt	41	
Delay Time	43	Delay Time and Delay Factor are merged.
Delay Feedback	44	
DMod Freq	45	
DMod Amount	47	
Delay Amount	48	
Glide Time	49	
AT Vibrato	50	
AT Filter	51	
AT VCA	52	

## BOOTLOADER & OS UPDATES

The DW-8P 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 DW-8P, power up the DW-8P while holding the encoder button down. The CHORUS LED should blink once when the bootloader has been opened.

Now the .syx file can be sent to the DW-8P. If there is an error, the DW-8P CHORUS LED will blink to indicate that there is an error. This means that the unit must be power cycled and the process restarted.

The most common cause of error is that the delay after F7 setting in MIDI OX needs to be longer. Experiment to find what delay time works on your system.

When the file has been successfully loaded, the CHORUS LED will be solidly lit.

## BOOTLOADER ERROR CODES:

2 blinks: Didn't receive 0xF0 at beginning of message. This indicates a fundamental problem with the .syx file or MIDI communication. This means that a non-sysex message was received, and the bootloader must be restarted. The bootloader expects to see an F0 command bookended by an F7. If your DAW sends out active sensing messages, this will cause the bootloader to reject the incoming file. Any stray MIDI data will cause the bootloader to abort and give an error message.

3 blinks: There was a problem parsing the dummy packets used as a placeholder while the system is writing data to the EEPROM space.

4 blinks: Wrong product ID. Expected if a sysex file intended for a product other than the connected programmer is used.

5 blinks: Error parsing sysex header. This is the most likely error to occur if the MIDI connection is not reliable and the system is receiving corrupted data.

6 blinks: Checksum failure. There was an error in one or more of the bytes received during the sysex transfer.

7 blinks: Flash write failure. There was an error writing data to the flash memory in the microcontroller.

## WEIGHT AND DIMENSIONS

The DW-8P is 6.6 pounds and the enclosure measures 14.5" x 5.8" x 1.5". The DW-8P 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.