OTTOBIT X

MANUAL v1.0.1

(Note: Manual version # does not reflect the exact firmware version #)

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CONTACT

Email Us

phone: 747.233.1440

www.meris.us

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01 - OVERVIEW

OTTOBIT X

'80s DREAM REBORN

At its core, Ottobit X is a modular degradation and texture engine packed with vintage nostalgia.
Ottobit X upgrades our past vintage gaming inspired devices. Ottobit Jr. + Ottobit Sr. are now expanded with LO-FI sounds reminiscent of the '80s. You have **99** presets to explore or fill. **18** artist presets are nested towards the end of the banks. Don't forget to hit the HOLD MODIFIER per preset to unlock more sounds. Hop on your BMX, buy a Thrifty's ice cream cone and be ready to play.

This includes a full stereo:

- Advanced BIT CRUSHER
- **6** GLITCH Types; GRAIN FREEZE (updated version of freeze first introduced in MercuryX), STUTTER with independent playback speed and subdivision control, **2** (1 button loopers with expressive real-time speed control): PUSH LOOPER and WIKKI WIKKI (vinyl scratching), customizable TAPE STOP for dramatic slow down effects, STUTTER STEP a sequenced stutter engine with unique triggering and timing behavior.
- **3** FILTER types; Ladder, State Variable and now featuring the OTTO TRON, an envelope filter with customizable sensitivity.
- **2** AMBIENCE types; VHS REVERB and VHS DELAY
- **5** PITCH types; POLY CHROMA[1], OTTO TUNE with integrated pitch correction, MICRO TUNE, MONO CHROMA, LO-FI.
- **5** MODULATION types; RING MOD (an AM/FM Ring Modulator from Ottobit 500 Series), DIV TREM (a sequenced tremolo with deep per step subdivision control), TAPE MOD, FREQ SHIFT (capable of everything from subtle inharmonic movement to aggressive metallic textures), OTTO VIBE (a lush, watery phase shifter with adjustable LFO bias for dialing in low end thump.)
- **4** PREAMP types; Volume Pedal, Tube, Vinyl and Wavefold

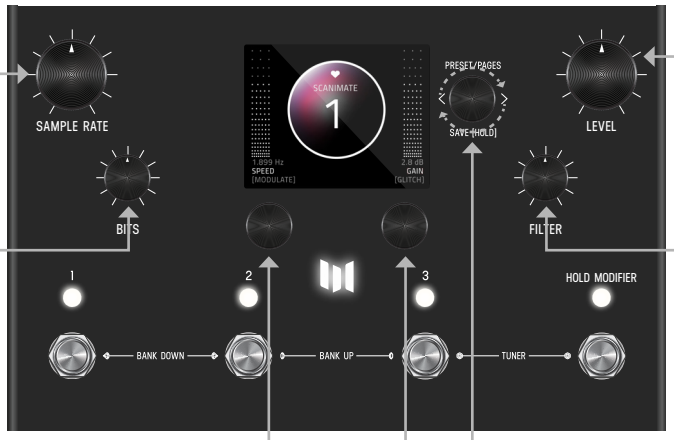
1 Poly Chroma is the only effect in Ottobit X that sums to mono.

3 MAIN CONTROLLERS: C1, C2, C3

When using Ottobit X, 3 knobs are your main navigation controllers: **C1, C2, C3.**
The other four knobs are your top level controls for SAMPLE RATE, BITS, FILTER, and LEVEL.

SAMPLE RATE - Changes the sample rate from 48 Hz to 48 kHz. PG. 13

BITS - Changes the bit depth from 1 bit to 32 bits. PG. 13



LEVEL - Controls the overall output level.

FILTER - Sets the filter's cutoff frequency. This parameter has a central role in determining how bright or dark the sound is. PG. 15

CONTROLLER 3 (OR C3)

CONTROLLER 1 (OR C1)

CONTROLLER 2 (OR C2)

7 HIGHLIGHTED FEATURES

1. MODULAR — TEXTURE ENGINE
2. PITCH — CORRECTION
3. MIDI — IN/OUT
4. 99 — PRESETS
5. ARM — ADVANCED PROCESSOR
6. DEEP — PARAMETER MODIFIERS
7. TUNER — PRECISION

BACK PANEL CONNECTIONS

5 PIN DIN MIDI I/O JACKS

POWER SUPPLY
9VDC center-negative power and at least 300mA of current to the 2.1mm power input required.

LINE/SYNTH LEVEL
Indicator LED is lit when enabled.

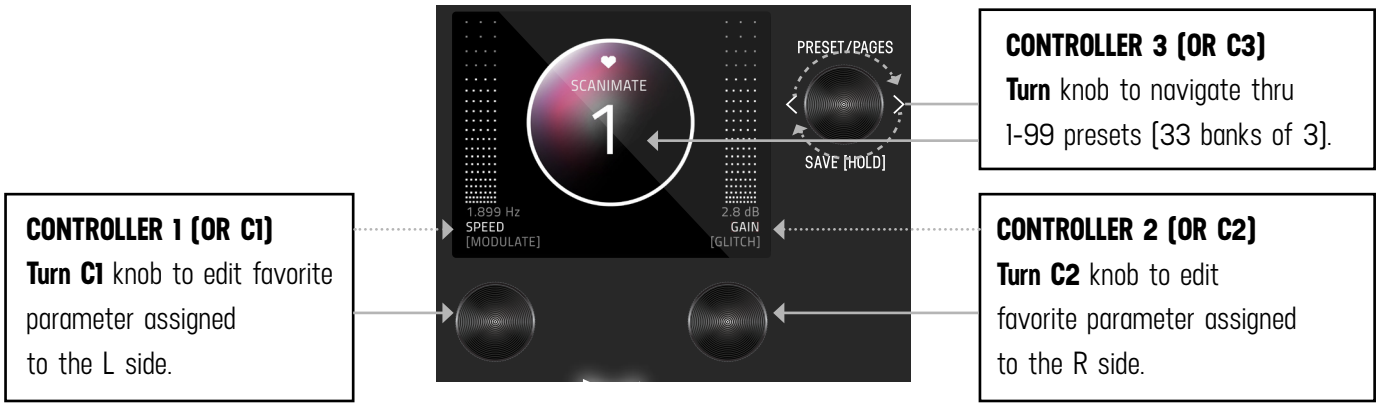
EXPRESSION PEDAL JACK
Realtime control of multiple parameters simultaneously.

USB-C Used to connect to computer for firmware updates. [MIDI In and Out over standard MIDI Din Jacks or USB-C][1]

1. Standard MIDI din operation is preferred for the lowest noise operation and to prevent audio ground loops

02 - PRESET PAGE (GRAPHIC VIEW)

When you first power up Ottobit X, you will enter the Preset Page. By default, Ottobit X is shipped in "GRAPHIC VIEW". In GRAPHIC VIEW, 3 knobs are your navigation controllers: **C1, C2, C3**. The Preset Page consists of a preset bubble that contain the name and number. **2 FAVORITE PARAMETERS** are controlled by **C1** and **C2** (located directly above the controllers).
(You can assign your favorite parameters per preset, to either the L or R side. Changes of the 2 favorited parameters are located in the **SAVE AS PAGE**.) Details ahead.

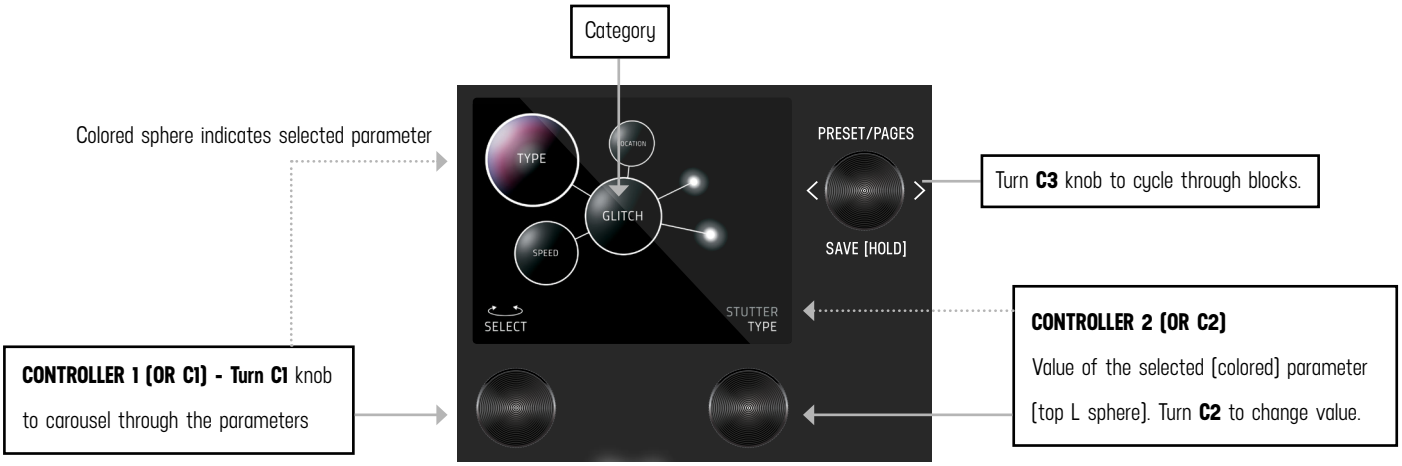


NOTE: GRAPHIC VIEW is designed to focus on 1 block and/or 1 parameter at a time per preset.
(You have the option to switch to "**TEXT VIEW**" in GLOBALS -> EDIT PAGE. Favorite Parameters are also available in **TEXT VIEW**.

03 - EDITING (EDIT PAGE IN GRAPHIC VIEW)

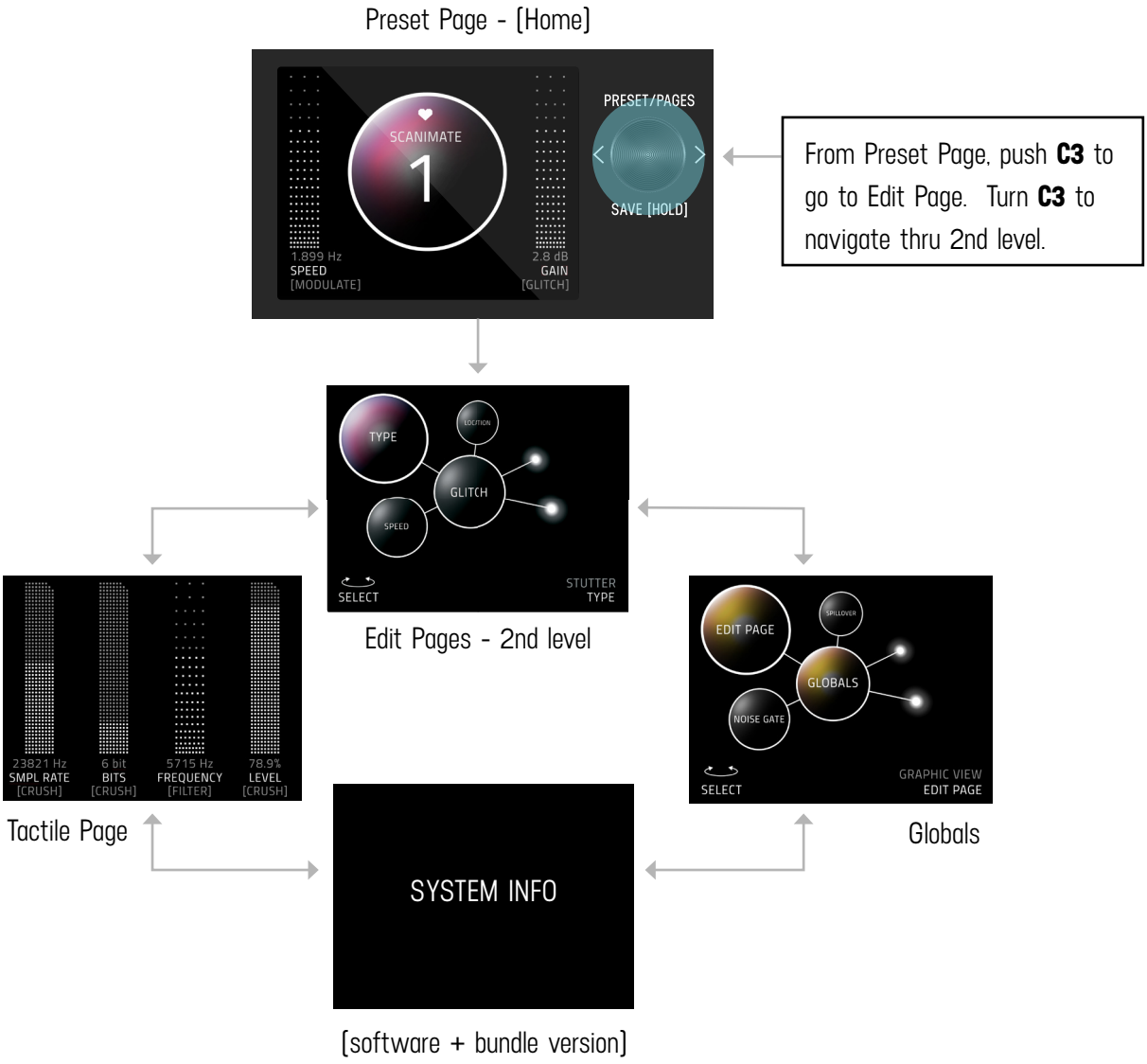
EDIT PAGE

From the PRESET PAGE, push **C3** to enter EDIT PAGES. The EDIT PAGE is where you select categories and change parameters within each preset. The middle bubble is your category. **Turn C3** to cycle through categories. **Turn C1** knob to carousel through the parameters. The colored bubble is your selected parameter within each category. **Turn C2** to edit the selected parameter.



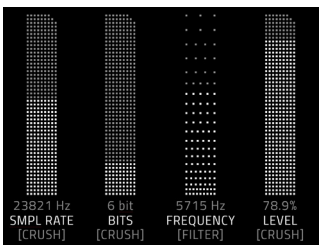
UI MAP - (IN GRAPHIC VIEW)

From the **PRESET PAGE** (home), push **C3** to navigate into the EDIT PAGES (2nd level). The 2nd level, consists of EDIT PAGES, **GLOBALS**, SYSTEM INFO and TACTILE PAGE that wrap around when turning **C3**.



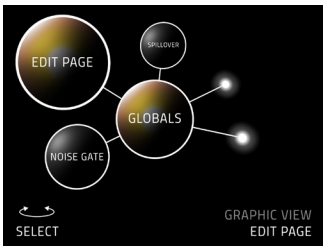
TACTILE PAGE

Turn knobs for SAMPLE RATE, BITS, FILTER, and LEVEL any time while editing, and the Tactile Pop-Up View (for detailed values) will temporarily show. (You can also turn "OFF" or disable the Tactile Pop-Up View in Globals) To have the TACTILE PAGE in persistent view, push **C3** from PRESET PAGE, then turn **C3** L from EDIT PAGE.



GLOBALS

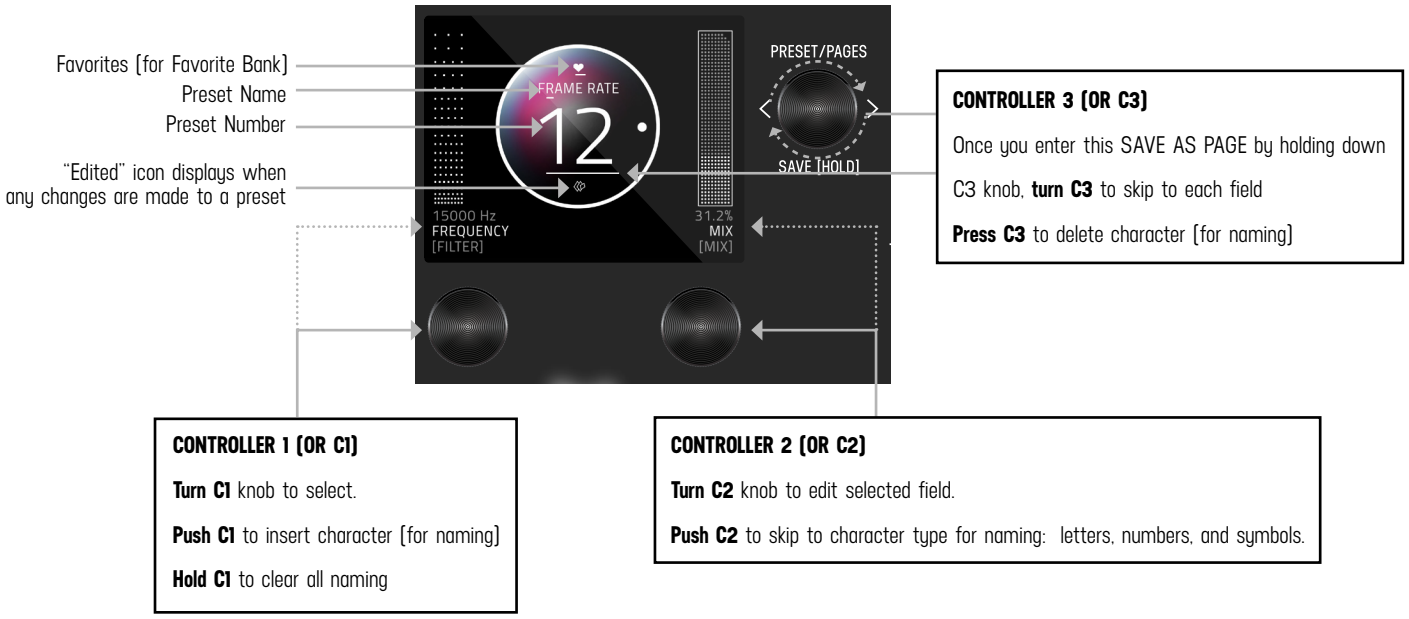
Globals is located at the end of the Edit Page, after you cycle thru all categories. A shortcut to Globals is to start from Edit Page and turn **C3** L. Globals is before System Info. Globals carousels the same way as the Edit Page but will be colorized in solid gold.



04 - SAVING (SAVE AS PAGE IN GRAPHIC VIEW)

SAVE AS PAGE

Once edits are made within a preset, hold down **C3** knob to enter SAVE AS PAGE. Sphere will change color.
You can change the name, change the preset number, select/deselect if this is one of up to 3 favorite presets (for the **FAVORITES BANK** located before Bank 1) and assign your 2 favorite parameters on either the L or R side of the screen (located directly above **C1** and **C2**).

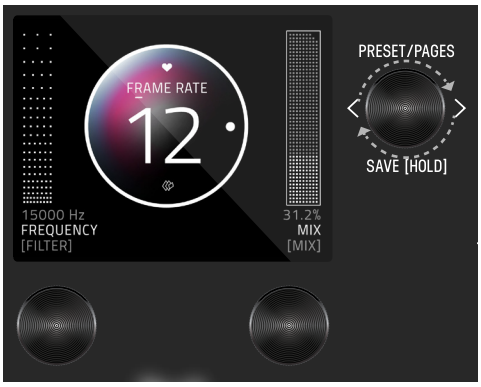


SELECTING FIELDS

The name edit field will always be selected first when you enter the SAVE AS PAGE. Use **C3** to select fields. You can navigate fields within the bubble and to the L and R parameter. The field selection order when turning **C3** R starting from the name field is: name -> number -> L favorite parameter -> R favorite parameter -> heart (for favorite bank).

2 FAVORITE PARAMETERS (ASSIGNABLE TO EACH PRESET)

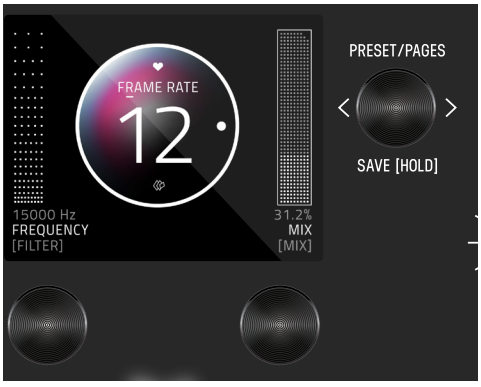
2 FAVORITE PARAMETERS can be assigned to each preset. They are located on each side of the preset bubble, directly above **C1** and **C2**. In the SAVE AS PAGE, turn **C3** to select either the L or R field. The field will highlight as an outlined box AND a dot will appear on either side of the preset bubble to indicate which side is selected. Turn **C1** or **C2** to change parameter. HOLD **C3** to save your assigned favorite parameter.



In the **EDIT PAGE**, if a parameter was assigned as a FAVORITE PARAMETER, a filled in L or R dot will appear to remind which side it was assigned.

Favorite parameters can also be quickly assigned to **C1** or **C2** in the EDIT PAGE. The methods for quick assign of the favorite parameters are slightly different between Graphic View and Text View. In Graphic View, simply HOLD **C1** to assign the current parameter to C1 or HOLD **C2** to assign the current parameter to C2. In Text View, press and hold either **C1** or **C2** (depending if you want to assign the Left or Right Fav Param), and then turn the parameter up and down in the Edit Page that you would like to assign to the Favorite Parameter.

Favorite parameters assigned to a list (ex. ON/OFF or REC/PLAY) can be activated by Quick-Pressing the Favorite Parameter encoder. For example, if you assign the BRAKE parameter within TAPE STOP to Favorite Parameter 1, then you will be able to Quick-Press C1 to turn the Brake off and on.



SAVE PRESET OR CANCEL

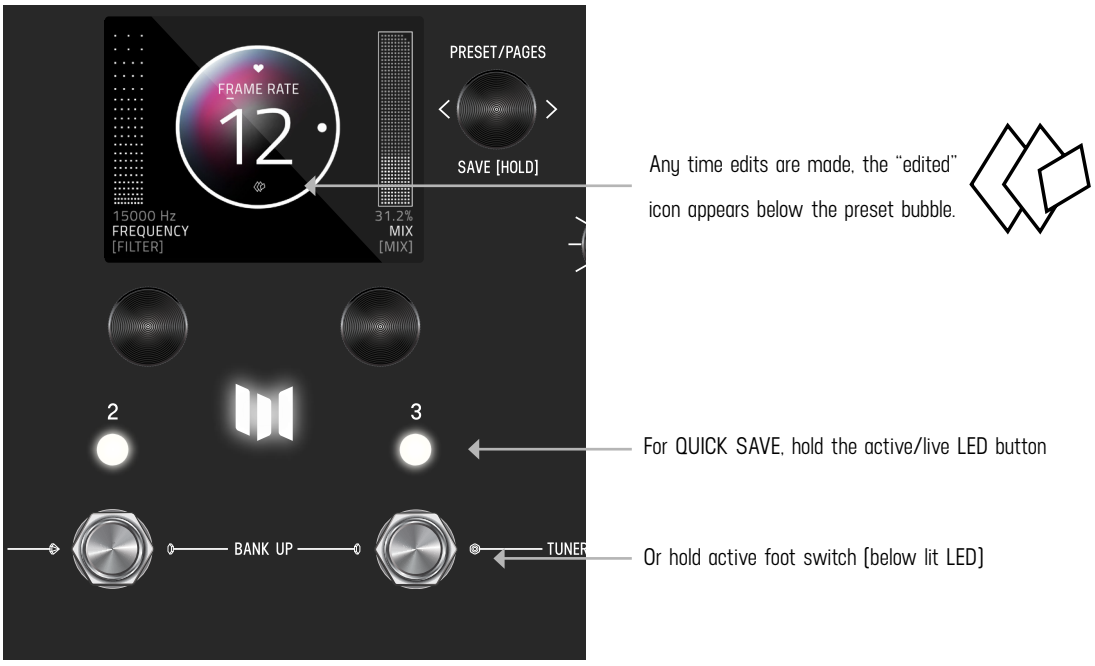
Hold down **C3** knob again to save. Or QUICK SAVE.
To CANCEL a save, press any of the four footswitches. This will exit the SAVE AS PAGE without writing over your preset.
Note: If you cancel, no edits are saved.

COPYING A PRESET

Anytime you assign a Preset to a different Preset Number + Press and Hold **C3** to save, you will automatically duplicate the Preset. If you have exited the Save As Page, Press and Hold down **C3** knob to enter the Save As Page. Turn **C3** to the right to highlight the Preset Number. Change the preset number to the copy destination. [To CANCEL a copy, press any of the four footswitches.] To proceed a copy, Press and Hold **C3** to a save a copy in the new location.

QUICK SAVE

To QUICK SAVE without changing the name or favorite status, hold the active/lit LED button or foot switch directly below. The completed save will return you to the PRESET PAGE and you'll notice the "edited" glyph will have been removed.



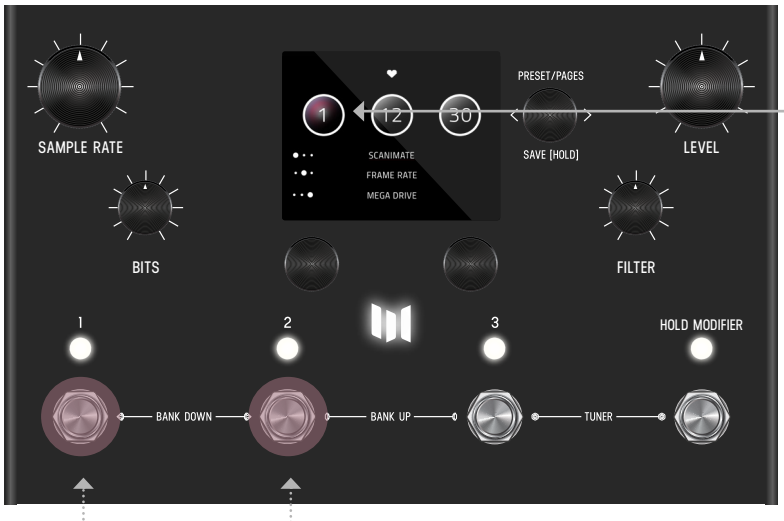
Any time edits are made, the "edited" icon appears below the preset bubble.

For QUICK SAVE, hold the active/live LED button

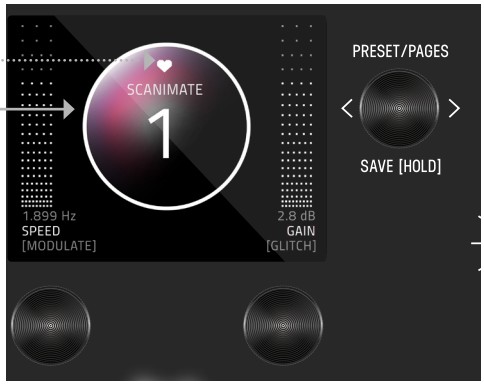
Or hold active foot switch [below lit LED]

05 - FAVORITES BANK

The purpose of the Favorites Bank is to have a shortcut access to your top 3 favorite presets without the need to navigate through banks. The Favorites Bank is located before bank 1. To jump to the Favorites Bank, **HOLD 1 + 2** footswitches. While the Favorites Bank is highlighted in the screen, use the 3 footswitches to choose which favorite preset to jump to. To bank up, PRESS **2 + 3** at the same time. To bank down, PRESS **1 + 2** at the same time. A total of 3 presets can be assigned to your FAVORITE BANK within the **SAVE AS** page.



HOLD **1 + 2** footswitches to jump to **FAVORITES** bank.



Any preset that is favorited, includes a heart in the preset bubble.

06 - SWITCHES OR LED SWITCHES

C3

LED Switches

Foot Switches

To navigate through the 99 presets, you can use the traditional route of hitting the first 3 foot switches. Above each of the 3 foot switches are corresponding LED switches (or small buttons) that serves the same functions ideal for desktop use. For faster navigation, use **C3** to quickly scroll through presets.

07 - MODIFIERS

Ottobit X has MODIFIERS which allow automatic control of your knobs. For each Modifier, you can choose which parameter the modifier is automatically controlling, how fast the changes are happening, and how large the changes are. To get to the Modifiers Edit Page, press **C3** to enter the Edit Pages and turn **C3** to MODIFIERS (named in middle bubble).

COMMON MODIFIER PARAMETERS

SPEED: This sets how fast the Modifier completes a full cycle. LFO A, LFO B, S&H (a periodic random number generator) and the Sequencer all feature a speed parameter that can be set independently. The Envelope Modifier doesn't have a speed, but instead features Attack and Decay Time which together set how long it takes the envelope to complete its cycle.

NOTE DIVISION: Links the speed of the Modifier to Ottobit X's current CLOCK tempo. When the Note Division is set, the Speed parameter is ignored and the speed is calculated as a note division of the CLOCK parameter.

ASSIGN: Each modifier is a self contained module that can automatically adjust a parameter in Ottobit X. To link a modifier to a parameter, use the modifier's ASSIGN parameter. Here you'll find a list of all the available parameters you can link to the modifier including NONE for when you don't want to use the Modifier.

MIN & MAX: To set how much the Modifier changes the parameter use the Modifier's Min and Mix controls. For the Min and Max controls, the percentage relates to the current position of the parameter you are assigned to, where 100% equates to exactly where the current parameter is set at. Having the Min and Max work as a percentage of the current parameter value allows you to still control a parameter even when it is attached to a modifier. This is really useful if you like the way the modifier is working but want to make general changes on the fly by simply adjusting the parameter directly.

MODIFIER EXAMPLE - CONTROLLING LEVEL

Let's assign the LFO A Modifier to automatically change the level.

First, turn **C3** to a "BLANK" preset. Next, press **C3** to enter the Edit Pages.
Now use **C3** to navigate to the MODIFIERS Edit Page. Here we'll use the first modifier, LFO A, to automatically change the level. Let's change the LFO A Speed to around 3 Hz and the LFO A Assign to CRSH-LEVEL. Let's leave the other LFO A parameters alone. If you take a listen, you'll hear the level pulsating in time with LFO A's Speed. Try changing the LFO A Div parameter to link the pulsations up with Ottobit X's Clock.

BREAKDOWN OF EACH MODIFIER AND ITS PARAMETERS:

LFO A MODIFIER - a periodic oscillating signal generator with selectable waveshapes
Parameters: Speed, Note Division, Shape (Ramp Up, Ramp Down, Triangle, Sine, Square, 3 Steps Up, 3 Steps Down, 4 Steps Up, 4 Steps Down), Assign, Minimum, Maximum

LFO B MODIFIER - a periodic oscillating signal generator with selectable waveshapes
Parameters: Speed, Note Division, Shape (Ramp Up, Ramp Down, Triangle, Sine, Square, 3 Steps Up, 3 Steps Down, 4 Steps Up, 4 Steps Down), Assign, Minimum, Maximum

ENVELOPE MODIFIER - a note triggered envelope generator. When a note onset or pick attack is detected the envelope begins its travel from the Min to Max value at the Attack Time before then traveling from Max back to Min at the Decay Time. The Linear Shape completes this travel in a straight line and the Exponential Shape completes this travel using curved lines. The Clipped Attack shape holds the envelope value at Max for the Attack Time interval before traveling back to the Min Value at the Decay Time interval. Tip: try swapping the Min and Max values to flip the envelope shape.
Parameters: Attack Time, Decay Time, Shape (Linear, Exponential, Clipped Attack), Assign, Minimum, Maximum

SAMPLE & HOLD MODIFIER - a periodic random number generator, a new random number is generated after every cycle (set by Speed or Note Division) is complete. Use this to randomly change a parameter at a fixed interval.
Parameters: Speed, Note Division, Assign, Minimum, Maximum

SEQUENCER MODIFIER - plays back a repeating pattern with a new element generated after every cycle (set by Speed or Note Division) is complete. The pattern is created by setting 16 individual steps of equal length. Patterns less than 16 steps can be created turning the step all the way down to its minimum value which is 'Skip'. The Seq Mode parameter controls how the sequencer runs and responds to incoming notes. In Free mode, it cycles continuously through all steps; the classic sequencer mode. In Triggered mode, it also runs continuously, but restarts from step 1 with each new input note. In Once mode, each new input note starts the sequence from step 1, which then plays once and stops.
Parameters: Speed, Note Division, Seq Mode, Assign, Step 1 - 16

SOME MODIFIERS TIPS: Ottobit X will allow you to assign multiple modifiers to the same parameter for creative control combinations. When the modifiers are assigned to the same parameter the control signals they generate are added together before modifying the parameter. This sum is automatically clipped at 100% when it gets too large.

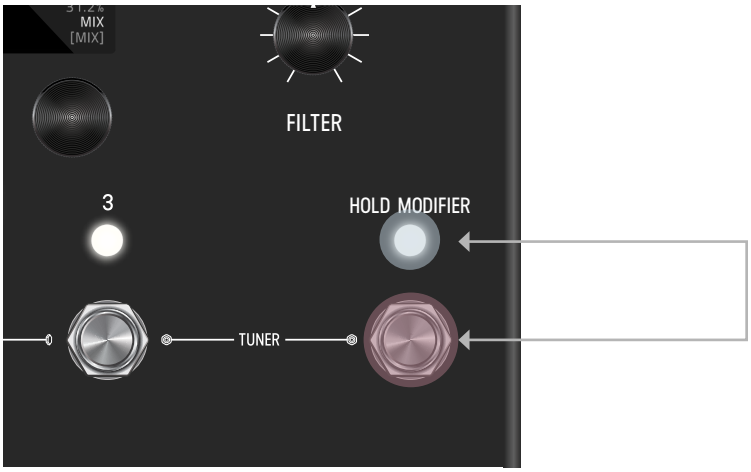
When looking at the Assign parameter for any of the modifiers, Ottobit X will only show the parameters for Categories where a processing element has been selected. If the Type is set to None, then that Category will not appear in the list of Assign parameters.

HOLD MODIFIER - The Hold Modifier's envelope can be triggered by the front panel footswitch, LED switch, or MIDI command. The Hold Modifier can be set to **Momentary, Latching or Tap Tempo** action per preset. The LED switch will light up to indicate when the modifier is active.

When set to Momentary, the envelope travels from the Min to Max value at the attack time while the footswitch is held. When the footswitch is released, the envelope begins to travel back down to the Hold Min at the Decay Time.

When set to Latching, the envelope travels from the Min to Max value at the attack time while the footswitch is pressed. The envelope will stay at the Max value until the next press where it will travel back down to the Min value at the Decay Rate. The Latching mode is perfect for use as an on/off switch when assigned to the Mix parameter of a Category Type.

When set to Tap, the Hold Modifier switch functions as a traditional Tap Tempo switch that controls the predelay time.



Press either HOLD MODIFIER switch (per preset) to explore its expressive function.

08- EXPRESSION

The rear panel of Ottobit X has an EXP jack which allows you to connect an expression pedal for on the fly changes of parameters. Ottobit X lets you make 6 expression pedal assignments and for each assignment you can choose which parameter the expression pedal is controlling, and how much the parameter is changed at the minimum and maximum positions of the expression pedal. To get to the Expression Edit Page, press C3 to enter the Edit Pages and turn C3 to EXP PEDAL (named in middle bubble).

Expression pedal adjustments affect the parameters only when an expression pedal is connected to the EXP jack on the back of Ottobit X. When a physical expression pedal is not connected to Ottobit X, all EXP PEDAL assignments with the Source parameter set to EXP will be ignored.

BREAK DOWN OF THE EXPRESSION PEDAL PARAMETERS:

Source A-F: Source sets which signal is used to modify the assigned parameter. By default, Source is connected to EXP (the expression pedal). For most presets, having Source set to EXP is exactly what you want; where simply, the expression pedal modifies the assigned parameter. Setting the Source to something other than EXP is useful when you want a modifier to control a second parameter, see the example labeled 'Using Expression Source' below.

Assign A-F: Ottobit X features 6 separate parameter assignments. To link the expression pedal to a parameter, use one of the six expression pedal ASSIGN parameters labeled A through F. Here you'll find a list of all the available parameters you can link to the expression pedal including NONE.

Min & Max A-F: For each of the expression pedal parameter assignments you'll find a corresponding set of Min and Max controls also labeled A through F. Min represents the expression pedal at its minimum position (heel down), and Max represents the expression pedal at its maximum position (toe down). The percentage relates to the current position of the parameter you are assigned to, where 100% equates to exactly where the current parameter is set at. Having the Min and Max work as a percentage of the current parameter value allows you to still control a parameter even when it is attached to an expression pedal. This is really useful if you like the way the expression pedal is working but want to make general changes on the fly by simply adjusting the parameter directly.

EXPRESSION PEDAL EXAMPLE - CONTROLLING SAMPLE RATE

Let's assign the expression pedal to change the Sample Rate of Ottobit X. First, connect your expression pedal to the EXP jack on the back of Ottobit X.

Turn C3 to a BLANK preset. **Press C3** to enter the Edit Pages. **Turn C3** to the EXP PEDAL Edit Page. Change the first expression pedal assignment, EXP A Assign, to CRSH-SMPL RATE. This is shorthand for the parameter where the first word stands for the Category (here we are targeting CRUSH) and the second word stands for the actual parameter name (the Bit Crusher's Sample Rate). Now, let's sweep the connected expression pedal from Min to Max. Since the Min parameter presents heel down and the Max parameter represents toe down on the expression pedal, moving the expression pedal will smoothly move between 20 Hz and the full 48 kHz Sample Rate.

EXPRESSION PEDAL EXAMPLE - USING EXPRESSION SOURCE

Let's create a preset in Ottobit X where a single LFO controls both the Level and Filter Frequency. This will demonstrate how the Expression Source parameter complements the Modifier section.

Turn C3 to a BLANK preset. **Press C3** to enter the Edit Pages. **Turn C3** to the MODIFIERS Edit Page. We'll use the first modifier LFO A. Change LFO A Assign to CRSH-LEVEL, and the LFO A Speed to around 4 Hz. If you take a listen, you'll hear the output level pulsate in time with LFO A.

To link the Filter Frequency to the same modifier as Oscillator Level, we'll use an Expression Source parameter. Turn C3 to the first EXP PEDAL Edit Page. Set EXP SOURCE A to LFO A and EXP ASSIGN A to FLTR-FREQUENCY. Let's leave the other EXP A parameters alone. If you take another listen, you'll now hear the filter follow the same pulse as the output level.

09 - OTTOBIT X BIT CRUSHING

At the heart of Ottobit X is a full time stereo bit crusher, a staple of the Ottobit line since our initial 500 series device. This lets you instantly dial in a rainbow of LO-FI textures by degrading the audio into the limited sample rate and bit depths of vintage digital electronics. Included in the bit crusher is a stereo dry blend that gives even more flexibility.

FRONT PANEL CONTROL

SAMPLE RATE - Controls how smooth or grainy your sound feels. Higher settings stay clean and full, while lower settings introduce digital roughness and aliasing.

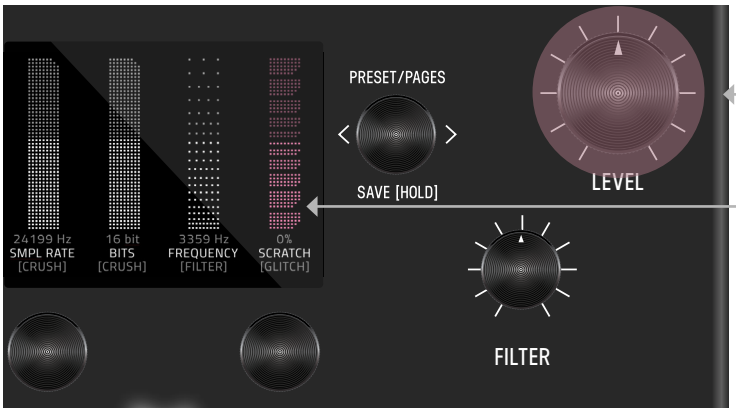
BITS - Controls how clean or crushed your sound becomes. High settings preserve clarity and dynamics, while lower settings add distortion, noise, and classic bit-crushed character. The volume of BITS has been scaled to prevent spikes in volume, however this volume adjustment can be turned off with the BITS SCALING parameter.

LEVEL TO TOP R KNOB - Set the overall output of the bit crushing section**.** The LEVEL knob can also be taken over and reassigned to certain GLITCH Category parameters. The LEVEL knob takeover is specifically designed as a convenient option for smooth scratching with WIKKI WIKKI ***for those who do not have an option for external expression control***.[1] This parameter allows you to reassign the front panel LEVEL knob to a specific parameter within the GLITCH Category (see below) . Depending on which GLITCH Category Type is selected, there will be a different parameter taken over. When GLITCH Type is set to OFF, the top right knob defaults back to controlling LEVEL. See below, for specific GLITCH parameters that you can use TOP R KNOB takeover for each Category Type.

For those who do not have an option for external expression control, LEVEL KNOB can be taken over to for certain GLITCH parameters, listed below.

CATEGORY TYPE	GLITCH PARAMETER
OFF	LEVEL
GRAIN FREEZE	PITCH
STUTTER	SPEED
PUSH LOOP	SPEED
WIKKI WIKKI	SCRATCH
TAPE STOP	PRESSURE
STUTTER STEP	SPEED

1 For an external expression control, we recommend the Expression Slider - Folded from our friends at Old Blood Noise Endeavors.



NOTE: During knob takeover, the LEVEL knob cannot be assigned to both LEVEL and a GLITCH parameter at the same time. The Tactile Page for the taken over parameter will be displayed in pink instead of white.

10 - FILTERS

Ottobit X features **3** Filter Types: **Ladder** from the original Ottobit, **State Variable**, plus **Otto Tron.**

COMMON PARAMETERS:

FREQUENCY (FRONT PANEL CONTROL LABELED FILTER) - Sets the filter's cutoff frequency. This parameter has a central role in determining how bright or dark the sound is.

TOPOLOGY - This selects the filter type. The **3** types of filters are Lowpass (where high frequencies are cut), Highpass (where low frequencies are cut by the filter) and Bandpass (where a narrow band of frequencies are emphasized by the filter, cutting both lows and highs).

RESONANCE/BANDWIDTH - Emphasizes a narrow band of frequencies around the cutoff frequency. High levels of resonance will give you a sharp and aggressive filter, whereas lower levels of resonance will create a smooth filter response.

NOISE - Sets the output level of the white noise generator that gets mixed in with the signal from the oscillators.

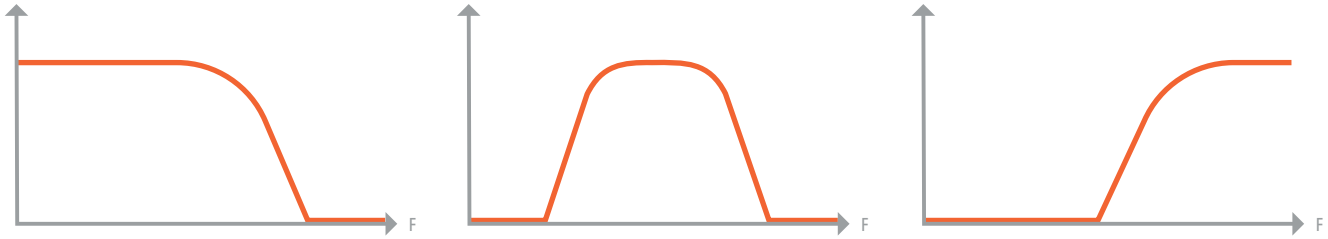
FILTER TYPES:

LADDER - our unique Meris designed 24 dB per-octave resonant filter. This filter design made its debut in its predecessor, Ottobit Jr.

Parameters: Frequency, Resonance, Topology, Noise

STATE VARIABLE - the State Variable filter is a 12 dB per octave filter and offers another great flavor of creamy filtering to compliment the Ladder Filter.
Parameters: Frequency, Resonance, Topology, Noise

OTTO TRON - An expansion on the classic envelope driven filter. The Up/Down mode sets the direction of the filter sweep: Up sweeps the filter frequency upward the harder you play, and likewise Down sweeps the filter frequency downward with a louder input signal. The SENSE control determines how sensitive Otto Tron is to your input signal.
Parameters: Frequency, Resonance, Topology, Up/Down, Sense



Lowpass Bandpass Highpass

11 - CLOCK

The Clock is the central timing element in Ottobit X, setting the tempo for the Stutters, the Echo (from the Ambience category), and all processing elements and modifiers with a 'Note Div' parameter. Most presets default to using their own tempo, but a global tempo can be adjusted on the GLOBALS page.

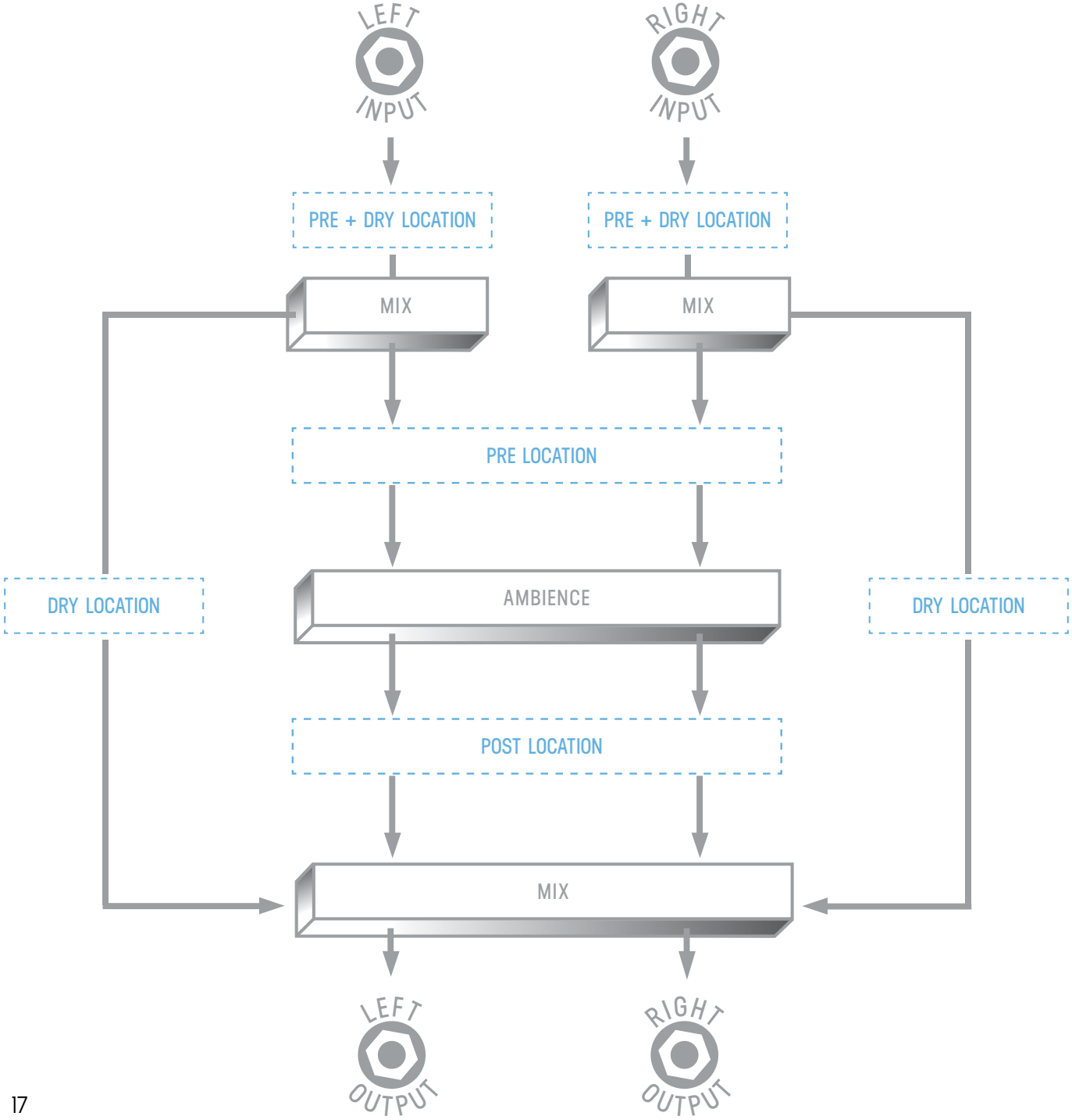
TEMPO - The main timing of Ottobit X, can be expressed in either Seconds or BPM by changing the TEMP DISP parameter in the GLOBALS.

MIDI CLOCK - This parameter lets you ignore the incoming MIDI Beat Clock on a per preset basis. For most situations, you can just use the Global to either accept or ignore incoming MIDI Beat Clock, but if you need more control, then use this parameter. This parameter has three settings: "USE GLOBAL", "FORCE LISTEN', and 'FORCE IGNORE'. 'USE GLOBAL' sets the preset to follow whatever the Global MIDI Clock parameter is set to, all of the factory presets in Ottobit X default to this setting. 'FORCE LISTEN' lets you set this preset to always listen to MIDI Beat Clock and 'FORCE IGNORE' lets you set the preset to always ignore MIDI Beat Clock.

12 - CATEGORIES AND ELEMENTS

The processing elements are grouped into categories. The categories are: **PREAMP, CRUSH, FILTER, GLITCH, PITCH, AMBIENCE, MODULATE, and MIX.**

IMPORTANT: In Ottobit X, the elements can be placed right at the inputs, in the parallel dry path, and before or after the Ambience, with locations indicated in light blue. When the categories are in the same location, the processing order is Preamp first, followed by Crush, Filter, Glitch, Pitch, Ambience, Modulate. The Ambience and Mix Categories are immovable and fixed in the locations shown in the graphic below.



PREAMP CATEGORY:

VOLUME PEDAL - comes alive when assigned to modifiers, allowing dynamic control over your signal. Adjust Balance to create continuously shifting stereo panning of the preamp signal.
Parameters: Level, Balance

TUBE - provides a midrange boost with controllable gain and output level. It's ideal for warming presets while keeping dynamics under control.
Parameters: Gain, Level,

VINYL - A warm phonograph-style preamp with a controllable dust parameter. Increasing Dust Lvl and Dust Amt adds the subtle imperfections and noise found in the grooves of a vinyl record.
Parameters: Gain, Level, Dust Lvl, Dust Amt

WAVEFOLD - This preamp features a blendable, classic frequency doubler (rectifier) circuit. The Shape parameter introduces screaming overtones, especially when playing on the neck pickup above the 12th fret, and can be fully removed when set to zero.
Parameters: Gain, Level, Shape

GLITCH CATEGORY:

GRAIN FREEZE - An updated version of our Freeze first introduced in Mercury X, Grain Freeze provides a tighter more fast acting response. The Pitch control lets you speed up and slow down the freeze in half step intervals.
Parameters: Freeze, Gain, Mix, Pitch

STUTTER - This is the original Ottobit Jr. Stutter stretched, expanded and made stereo. Speed controls the play speed and lets you dial in various half speed, regular speed and double speed options both in forward and reverse. The Note Div parameter sets the timing of the stutters relative to the main Clock and the Sub Div parameter lets you divide down to even smaller chunks. With Sub Divisions and Speed broken out onto separate controls, you can get even more creative results.
Parameters: Hold, Note Div, Sub Div, Speed

PUSH LOOPER - is a 1 button looper new for Ottobit X. Different from a traditional multi-layer looper, we designed the PUSH LOOPER for immediacy and live interaction with your musical phrase. The PUSH LOOPER [REC/PLAY] can be assigned to the HOLD MODIFIER switch. If your L Favorite [**C1**] or R Favorite [**C2**] push encoders are assigned to [REC/PLAY] then the encoder switch can be used for that function. For example, **Preset 16** named PUSH LOOPER is premade to have the PUSH LOOPER Type assigned to the HOLD MODIFIER switch. Hold down the **HOLD MODIFIER** to record, and release it to play back your loop. The Fade In and Fade Out controls allow you modify how the loop swells in and recedes. Speed controls how quickly the loop plays either forward, or in reverse. You can even bring the loop to a stop with Speed at zero. **NOTE:** As a 1 button single layer looper, PUSH LOOPER does not support overdubbing, so it can not transition from recording to an overdub state.

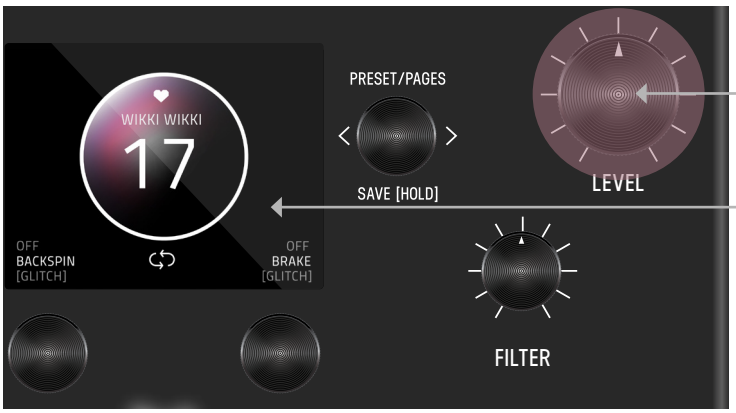
Parameters: Rec/Play, Fade In, Fade Out, Speed, Level

LOOPER icon appears whenever looper is assigned in a preset.

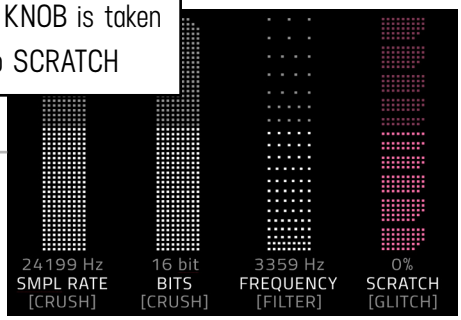
[**NOTE:** Looper does not sync to tap tempo or MIDI clock.]

[**C1**] controls the L favorite [**C2**] controls the R favorite

WIKKI WIKKI - is a brand new 1 button looper just like PUSH LOOPER, but with unique parameters designed to recreate classic vinyl scratching sounds. For a smooth scratch experience with WIKKI WIKKI, we recommend assigning the REC/PLAY parameter to the Hold Modifier and using the Expression Slider - Folded from our friends at Old Blood Noise Endeavors. ***For those who do not have an option for external expression control***, we provide a convenient option for the LEVEL knob to be taken over for scratching. Within the EXP PEDAL edit pages, set EXP A Assign to GLITCH: SCRATCH, and use the Expression Slider to manipulate loops with real time scratching. Scroll to **Preset 17** to give it a try. You will notice when using the LEVEL knob, the TACTILE PAGE reads



LEVEL KNOB is taken over to SCRATCH



Tactile Page shows when moving LEVEL KNOB

SCRATCH [in pink] instead of LEVEL [normally in white.] **NOTE:** Similar to PUSH LOOPER, WIKKI WIKKI is a single layer looper that does not support overdubbing, but instead has dynamic interaction with the Modifiers where every parameter including the REC/PLAY can be used to create a dynamic modulated performance.
Parameters: Rec/Play, Scratch, Brake, Backspin, Level, Speed, Spin Mult

TAPE STOP - Tape Stop is a real-time slow down effect, hitting the Brake parameter instantly sounds like you are running out power! Let go of the brake and the audio returns to normal speed based on the Release control. Set the Release control to Natural and the audio will speed back up to catch up to the input. Set the Release control to Skip and the input audio will instantly return with no speed up. The Pressure parameter sets how much tension is used when the Brake is applied. The lower the value, the faster acting the slow down will be. **Preset 18** is set up with the Brake connected to the **HOLD MODIFIER**.
Parameters: Release, Pressure, Brake

STUTTER STEP - Another all new stutter for Ottobit X is the Stutter Step. Connecting an 8 step sequencer with envelope triggering puts even more detailed stutter pattern possibilities at your fingertips. The Mode switch can be set to TRIGGER, which will restart the sequence at Step 1 and continuously cycle, or it can be set to Once which will restart the sequence at Step 1 and run through the complete sequence one time before stopping on the last step. Each step represents a second sub division of the main tempo. When Note Div is Off, the Rate parameter is used to set the speed. When Note Div is set to any other note division, the note value is used with the CLOCK Tempo to set the speed.
Parameters: Rate, Note Div, Mode, Speed, Step 1-8

PITCH CATEGORY:

POLY CHROMA - our fully polyphonic chromatic pitch shifter. The Poly Chroma sums your stereo channels together and perfectly shifts the audio no matter how complicated the chords.
Parameters: Pitch, Mix

OTTO TUNE - Adapted from the Hedra, Otto Tune is a 2 voice harmonizing pitch shifter with pitch correction. Set the Key and Scale to hard-tune incoming audio to a specific song, or set Scale to "Chromatic" for general pitch correction across all scales.
Parameters: Pitch Left, Pitch Right, Key, Scale, Correct, Mix

MICRO SHIFT - Micro Shift is a variation of the LO-FI Pitch element that allows independent detuning to each side of the stereo spectrum.
Parameters: Pitch Left, Pitch Right, Mix

MONO CHROMA - Adapted from Hedra and optimized for single note lead lines, the Mono Chroma provides extra crisp pitch shifting.
Parameters: Pitch Left, Pitch Right, Glide, Mix

LO-FI - This element is a dual version of the pitch shifter from the Ottobit Jr. The LO-FI element uses an early pitch shifting technique that creates modulated low-fidelity voices.
Parameters: Pitch Left, Pitch Right, Mix

AMBIENCE CATEGORY:

VHS DELAY - Tape voiced stereo delay with a unique Play Speed control. With Play Speed at 100%, VHS Delay operates like a standard delay with Feedback, Left/Right subdivision control, and Age to introduce tape-style wear to the repeats. As you lower Play Speed, the length of delay repeats elongates and the sample rate decreases, allowing for significant degradation and slow repeats at lower Play Speed values. Manipulating Play Speed while audio is being repeated will result in Pitch Gliding repeats as the delay trails shorten or lengthen.
Parameters: Left Div, Right Div, Feedback, Age, Mix, Play Speed

VHS REVERB - A brand new reverb algorithm designed specifically for Ottobit X with Play Speed manipulation capabilities. Similar to VHS Delay, lowering the values of Play Speed will pitch down and lengthen the trails within VHS Reverb's tank. With low Play Speed values, VHS Reverb's Decay will be stretched and the Sample Rate aliasing will be prominent. Perfect for ethereal, droning reverb sounds.
Parameters: Decay, Mod, Play Speed, Mix

MODULATE CATEGORY:

RING MOD - The pitch tracked Am/FM Ring Modulator for our 500 series Ottobit makes its debut for the first time in pedal form. The very powerful controls of this element that lets you dial in everything from robotic clangs, to vibrato, to sub octave effects. The FM Blend control lets you bring in frequency modulation at the same rate as the classic amplitude modulated ring mod sound. The FM Depth control lets you fine tune pitch swing of the frequency modulation. And the Tracking lets you tune the modulation in half step intervals.
Parameters: Frequency, Waveshape, FM Blend, FM Depth, Tracking

DIV TREM - Brand new for Ottobit X is this powerful sequenced tremolo. Tremolo modulates the volume of your input signal. With DIV TREM, there are 8 "steps" which allow you to speed up or slow down the tremolo with each beat. The number value of the step corresponds to the subdivision speed of the tremolo. For example, If you set STEP 1 to "4", and STEP 2 to "8", the tremolo will modulate at 4x speed for the first step, then 8x speed for the second step. Each step can also be set to be skipped, muted, or "FULL" which allows the audio to pass unmodified for that step. Width controls the waveshape of the tremolo, allowing for normal 50% volume up, 50 % volume down sounds, or incredibly narrow, choppy tremolo capabilities. Mode sets how the DIV Trem interacts with new notes. When Mode is set to FREE, the DIV Trem continuously runs through the sequence and does not reset. When Mode is set to TRIGGER, DIV TREM retriggers the sequence to Step 1 when new notes occur, but then cycles normally. When Mode is set to ONCE, the DIV TREM retriggers the sequence starting at Step 1, but only plays through the sequence once.
Parameters: Speed, Note Div, Mode, Width, Step 1 - 8

TAPE MOD - The Tape Mod Element provides the classic pitch bends and warbles of a worn out tape player. Wow introduces random pitch bends, while Flutter creates fast, noisy fluctuations associated with cassette-style tape modulation.
Parameters: Wow, Flutter, Highs, Lows, Mix

FREQ SHIFT - The Frequency Shifter pitches every part of your sound up or down by a fixed amount. Because each harmonic is shifted by the same amount, the relationship between harmonics becomes broken, giving you metallic and bell-like tones. Frequency controls the shift amount and Direction lets you choose the shift polarity: Up, Down or Both
Parameters: Frequency, Direction

OTTO VIBE - Originally designed to mimic a rotating speaker cabinet, this watery modulation effect can create warm phase and pitch shifting sounds from any instrument source. When the Vibe control is on, the internal dry mix is muted leaving only the modulated signal. The Bias parameter interacts with the internal LFO letting you dial in the perfect amount of low frequency lumpy-ness.
Parameters: Speed, Note Div, Depth, Vibe, Bias

MIX CATEGORY:

MIX - At the end of the signal flow, Ottobit X features a 4-input/2-output Mixer. This Mixer allows you to blend the input signal with the main wet path. The MIX parameter controls the overall mix and uses a custom taper to adjust the balance between the stereo wet and dry signal paths. Two trim controls, Dry Trim and Wet Trim, fine-tune the levels of the dry and wet signals relative to the MIX setting. When both trims are set to zero, the MIX parameter operates with its default taper.
Parameters: Mix, Dry Trim, Wet Trim

13 - MIDI CC TABLE

CONTROL CHANGE	OTTOBIT X CONTROL	RECEIVE VALUE RANGE
CC# 01	MIX	0 TO 127
CC# 02	DRY TRIM	0 TO 127
CC# 03	WET TRIM	0 TO 127
CC# 04	EXPRESSION PEDAL	0 TO 127
CC# 05	PREAMP TYPE	0 TO 25 = OFF 26 TO 51 = VOLUME PEDAL 52 TO 76 = TUBE 77 TO 102 = VINYL 103 TO 127 = WAVEFOLD
CC# 06	PREAMP LOCATION	0 TO 31 = PRE + DRY 32 TO 63 = DRY 64 TO 95 = PRE AMBIENCE 96 TO 127 = POST AMBIENCE
CC# 07	GAIN	0 TO 127
CC# 08	BALANCE/DUST/WAVESHAPE	0 TO 127
CC# 09	LEVEL	0 TO 127
CC# 10	AMBIENCE TYPE	0 TO 42 = OFF 43 TO 85 = VHS DELAY 86 TO 127 = VHS VERB
CC# 11	FEEDBACK/DECAY	0 TO 127
CC# 12	AGE/AMBIENCE MOD	0 TO 127
CC# 13	AMBIENCE LOWS	0 TO 127
CC# 14	BYPASS	0 TO 63 = FX BYPASS 64 TO 127 = FX ENABLE
CC# 15	TIME	0 TO 127
CC# 16	PLAY SPEED	0 TO 127

CC# 17	ECHO LEFT DIVISION	0 TO 127
CC# 18	ECHO RIGHT DIVISION	0 TO 127
CC# 19	AMBIENCE + ECHO MIX	0 TO 127
CC# 20	DUST AMOUNT	0 TO 42 = LIGHT 43 TO 85 = MEDIUM 86 TO 127 = HEAVY
CC# 21	MIDI CLOCK	0 TO 42 = USE GLOBAL 43 TO 85 = FORCE LISTEN 86 TO 127 = FORCE IGNORE
CC# 22	SAMPLE RATE	0 TO 127
CC# 23	BITS	0 TO 127
CC# 24	LEVEL	0 TO 127
CC# 25	CRUSH LOCATION	0 TO 31 = PRE + DRY 32 TO 63 = DRY 64 TO 95 = PRE 96 TO 127 = POST
CC# 26	DRY BLEND (CRUSH)	0 TO 127
CC# 27	TOP RIGHT KNOB ASSIGNMENT	0 TO 63 = LEVEL 64 TO 127 = GLITCH
CC# 28	BIT SCALING	0 TO 63 = OFF 64 TO 127 = ON
CC# 30	MOD TYPE	0 TO 21 = OFF 22 TO 42 = RING MOD 43 TO 63 = DIV TREM 64 TO 85 = TAPE MOD 86 TO 106 = FREQ SHIFT 107 TO 127 = VIBE
CC# 31	MOD LOCATION	0 TO 31 = PRE + DRY 32 TO 63 = DRY 64 TO 95 = PRE 96 TO 127 = POST
CC# 32	MOD SPEED/FREQUENCY	0 TO 127

CC# 33	MOD DEPTH/WIDTH	0 TO 127
CC# 34	MOD SHAPE/MODE	0 TO 127
CC# 35	MOD BLEND/BIAS	0 TO 127
CC# 36	MOD MIX/TRACKING	0 TO 127
CC# 37	MOD NOTE DIV	0 TO 127
CC# 38	MOD STEP 1	0 TO 127
CC# 39	MOD STEP 2	0 TO 127
CC# 40	MOD STEP 3	0 TO 127
CC# 41	MOD STEP 4	0 TO 127
CC# 42	MOD STEP 5	0 TO 127
CC# 43	MOD STEP 6	0 TO 127
CC# 44	MOD STEP 7	0 TO 127
CC# 45	MOD STEP 8	0 TO 127
CC# 46	PITCH TYPE	0 TO 21 = OFF 22 TO 42 = POLY CHROMA 43 TO 63 = OTTO TUNE 64 TO 85 = MICRO TUNE 86 TO 106 = MONO CHROMA 107 TO 127 = LO-FI
CC# 47	PITCH LOCATION	0 TO 31 = PRE + DRY 32 TO 63 = DRY 64 TO 95 = PRE 96 TO 127 = POST
CC# 48	PITCH L	0 TO 127
CC# 49	PITCH R	0 TO 127
CC# 50	PITCH MIX	0 TO 127
CC# 51	KEY	0 TO 127
CC# 52	SCALE	0 TO 127

CC# 53	CORRECT, GLIDE	0 TO 127
CC# 54	FILTER TYPE	0 - 42 = LADDER 43 - 85 = STATE VARIABLE 86 - 127 = OTTO TRON
CC# 55	FILTER LOCATION	0 TO 31 = PRE + DRY 32 TO 63 = DRY 64 TO 95 = PRE 96 TO 127 = POST
CC# 56	FILTER FREQUENCY	0 TO 127
CC# 57	FILTER RESONANCE	0 TO 127
CC# 58	FILTER TYPOLOGY	0 - 42 = LOWPASS 43 - 85 = BANDPASS 86 - 127 = HIGHPASS
CC# 59	FILTER NOISE/MODE	0 TO 127
CC# 60	FILTER SENSITIVITY	0 TO 127
CC# 62	GLITCH TYPE	0 TO 18 = OFF 19 TO 36 = FREEZE 37 TO 54 = STUTTER 55 TO 73 = PUSH LOOP 74 TO 93 = WIKKI WIKKI 92 TO 109 = TAPE STOP 110 TO 127 = STUTTER STEP
CC# 63	GLITCH LOCATION	0 TO 31 = PRE + DRY 32 TO 63 = DRY 64 TO 95 = PRE 96 TO 127 = POST
CC# 64	GLITCH MODE	0 TO 127
CC# 65	GLITCH SPEED/PITCH	0 TO 127
CC# 66	GLITCH RATE/SUB DIV	0 TO 127
CC# 67	GLITCH GAIN	0 TO 127
CC# 68	GLITCH NOTE DIV	0 TO 127
CC# 69	GLITCH MIX/LEVEL	0 TO 127

CC# 70	GLITCH STEP 1	0 TO 127
CC# 71	GLITCH STEP 2	0 TO 127
CC# 72	GLITCH STEP 3	0 TO 127
CC# 73	GLITCH STEP 4	0 TO 127
CC# 74	GLITCH STEP 5	0 TO 127
CC# 75	GLITCH STEP 6	0 TO 127
CC# 76	GLITCH STEP 7	0 TO 127
CC# 77	GLITCH STEP 8	0 TO 127
CC# 99	TAP TEMPO	PRESS = 127
CC# 117	TOGGLE TUNER MODE	PRESS = 127
CC# 118	TRIGGER HOLD MODIFIER	PRESS = 127

14 - MIDI PC TABLE

PROGRAM CHANGE	ACTION
PC# 0	BYPASS
PC# 1-99	LOADS PRESETS 1 - 99
PC# 100	LOAD FAVORITE PRESET 1
PC# 101	LOAD FAVORITE PRESET 2
PC# 102	LOAD FAVORITE PRESET 3

15 - TUNER

To engage TUNER, HOLD **3** + **HOLD MODIFIER** footswitches. Notes are automatically detected and turn green when accurately tuned. Tuner reference frequency can be adjusted if desired.

CONTROLLER 1 (OR C1)

Turn C1 to adjust the tuner's reference frequency, which also sets the reference frequency for pitch shifting.

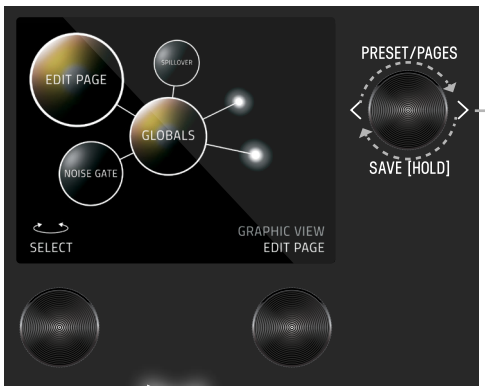
CONTROLLER 2 (OR C2)

Turn C2 to toggle the tuner's output between Bypass and Mute

HOLD **3** + **TAP** footswitches to engage **TUNER**.

16 - GLOBALS

GLOBALS is located at the end of the EDIT PAGES. To reach the end, continue to turn **C3** knob (clock-wise) and cycle through all categories until you reach GLOBALS. For a shortcut to GLOBALS, it is also behind SYSTEM INFO. See map. Global settings affect all presets and do not change per preset.



CONTROLLER 3 (OR C3)

Turn C3 knob (clock-wise) and cycle thru all categories until you reach GLOBALS.

These settings are universal to the entire Ottobit X and do not change with the presets.

- NOISE GATE: Sets the threshold to enable the gate to help with noisy setups
- EDIT PAGE: Text View or Graphic View
- SPILLOVER: With Spillover enabled, echoes from your last preset overlap with your current preset during transitions.[1] [The Spillover needs time to fully decay for the previous preset before it can begin a new spillover for the current preset.]
- BYPASS TRAILS: With trails enabled, your echoes will decay naturally when Ottobit X is bypassed
- TAP GLIDE: With glide enabled delay times entered with tap tempo will smoothly transition
- RELAY BYPASS: Buffered Bypass or Relay Bypass [mono input and output only].[2]
- INPUT LEVEL: Instrument or Line/Synth, if clipping occurs in Instrument mode, choose Line/Synth
- KILL DRY: When kill dry is enabled, Ottobit X only passes audio when active. In bypass, Ottobit X is muted. This is useful when working with an external mix control used in some amplifiers, processors, and mixing boards.
- LOGO LIGHT: Sets logo light brightness from 0 to 100%
- BRIGHTNESS: Sets screen brightness from 0 to 100%
- TUNER REFERENCE: Set the tuner reference from 425 Hz to 455 Hz
- TUNER OUT: Mute or Bypass
- TEMPO: Sets the global tempo
- TEMPO DISP: Milliseconds or BPM
- TEMPO SELECT: Select Preset or Global
- SPLIT MODE: When enabled, your dry signal is always sent to the right output, even with the effect on, effectively adding a built-in Y-Splitter. Use it to send the effect output to a different amp or create a parallel path to your drive pedals.
- TACTILE: Disable the Tactile Page Pop Up
- MIDI CHANNEL: 1 through 16, or OMNI
- MIDI CLOCK - Allows you to choose to LISTEN or IGNORE MIDI Beat Clock globally.
- MIDI OUT: Select MIDI Out or MIDI Thru. When MIDI Thru is enabled, MIDI data received on the MIDI In is passed to the MIDI Out

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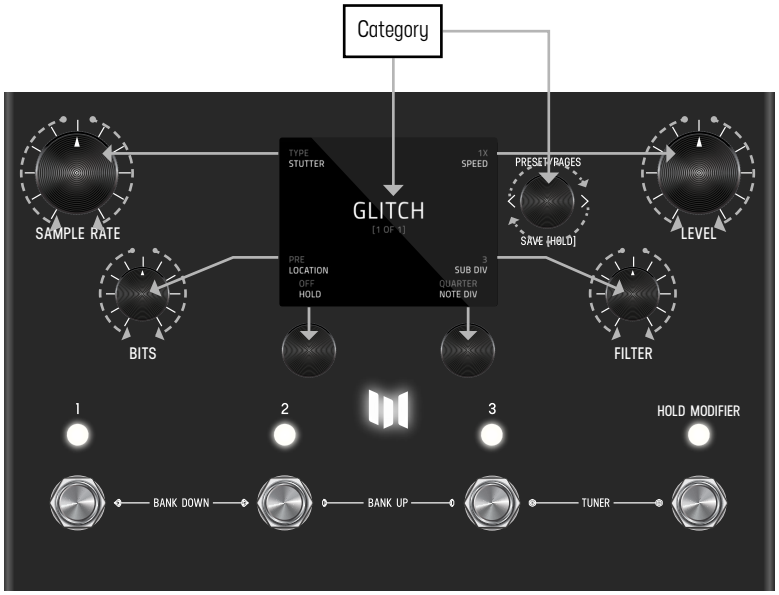
1 Ottobit X features a stereo Analog Mix. Analog Mix is always used unless Spillover is Enabled or a processing element is put in the PRE + DRY or DRY locations.

2 Ottobit X features a mono Relay Bypass selectable in the GLOBALS VIEW edit page. Stereo input and output connections necessitate automatically disabling the Relay and switching Ottobit X to Analog Buffered Bypass. NOTE: Spillover, Trails, and Kill Dry all automatically engage Analog Buffered Bypass if they are selected. This happens transparently in the background in order to always maintain the highest signal integrity.

17 - TEXT VIEW (ALTERNATIVE VIEW OF EDIT PAGE)

The default appearance of the EDIT PAGE is GRAPHIC VIEW, which contains orbiting bubbles allowing for a focused approach to editing. An alternative view of the EDIT PAGE is TEXT VIEW which displays 6 parameters per page. Turn **C3** to cycle through categories. **6** knobs control settings simultaneously. You can change from GRAPHIC VIEW to TEXT VIEW in GLOBALS. In GLOBALS, turn **C1** to carousel to EDIT PAGE. Turn **C2** and change from GRAPHIC VIEW to TEXT VIEW.



6 SIMULTANEOUS KNOB CONTROL
TEXT VIEW edit page (when set) utilizes 6 knobs to simultaneously control settings. See knobs indicated with grey arrows.

18 - EXPORTING PRESETS

Ottobit X will be compatible with our FREE Meris desktop editor/librarian called prEDITOR in the future (availability date unknown). prEDITOR is designed to allow you to quickly and easily export/import presets, organize, and manage full libraries. You can also sculpt your sounds on-the-fly with new heights in speed. In the meantime, to export a preset from Ottobit X, first connect Ottobit X's MIDI In and Out jacks to a MIDI Interface OR use the USB-C jack and connect to your PC or MAC. **NOTE:** ***Standard MIDI din operation is preferred for the lowest noise operation and to prevent audio ground loops.***
Open an app that can record MIDI SysEx. On Mac, we recommend SysEx Librarian. While holding the footswitch for the active preset, quick press the lit LED button above it. The preset will be transmitted as SysEx data from Ottobit X MIDI Out.

19 - FACTORY RESET

To put your Ottobit X back to factory fresh condition, press and hold **C3** when powering up Ottobit X to enter the Factory Reset View. From the Factory Reset View, **press C1** to start the Factory Reset which resets all presets and globals, or **press C2** to cancel the reset and start Ottobit X normally. **NOTE:** Be sure to back up your custom presets via midi sysex.
Factory reset will erase all user edits to Ottobit X factory presets.

20 - FIRMWARE UPDATE

Please check in SYSTEM INFO if you already have the latest firmware version installed in your unit.
To enter firmware update mode, press and hold footswitch **1 and 3** while powering up Ottobit X.
The screen will show a Copy File graphic screen. Connect to your computer via the rear USB-C jack. Ottobit X will appear on your computer as a USB drive. When updates are available, drag and drop the latest Ottobit X firmware image (access from our product page) from your computer onto Ottobit X drive. Ottobit X will display a load meter. When the load meter is full and your computer signals that it is done with the copy, eject Ottobit X drive before unplugging USB-C cable.
Power Cycle graphic screen will display. Unplug and replug the power from Ottobit X to complete the update.

21 - GLOSSARY

A

AMPLITUDE:: The strength or loudness of a sound wave, determined by the height of its waveform.

B

BALANCE [Volume Pedal]: Panning control between left and right channels. -100% results in a fully right channel signal, 100% is fully left.

BANDWIDTH [State, Variable, OTTO Tron]: Sets the range of frequencies (around the center Frequency, that are allowed to pass through the filter. At lower settings, more frequencies are allowed to pass through the filter, at higher settings less frequencies are allowed through. Also known as Resonance.

BIAS [Vibe]: Fine adjustment for the low end intensity of Vibe's swirling modulation.

BITS [Crush]: The resolution of each audio sample, determining the dynamic range and level of detail in the signal. More bits equal more detail.

BIT SCALING: Ottobit X intelligently lowers the volume of the Bit Crusher so as to not create extreme volume spikes at low BIT values. Bit Scaling allows you to turn off this volume lowering feature.

BREAK [Tape Stop]: On/Off control for the Tape Stop. When Off, Tape Stop has no effect. When On, the Tape Stop begins winding down the audio track to a complete stop, with the speed of stoppage determined by the Pressure parameter.

C

CORRECT [Otto Tune]: Adjusts the speed of Otto Tune's pitch correction. Strict creates the classic, robotic real time

tuning. Loose slows down the pitch shift for a more humanized correction. None removes pitch correction from the harmonies altogether.

D

DECAY [VHS Reverb]: Adjusts the size and length of reverb trails.

DUST [Vinyl]: Introduces the subtle imperfections and noise found in the grooves of a vinyl record.

DUST LVL [Vinyl]: Introduces the subtle imperfections and noise found in the grooves of a vinyl record.

DUST AMT [Vinyl]: Adjusts how frequently "pops" from vinyl dust occurs.

E

ENVELOPE: A curve that controls how a sound evolves over time, shaping aspects like amplitude or filter cutoff.

F

FLUTTER [Tape Mod]: Introduces tape-voiced noise and degradation.

FREQUENCY [Filter]: The rate at which a waveform repeats, measured in Hertz (Hz), determining the pitch of the sound.

FM BLEND [Ring Mod]: Introduces vibrato voiced frequency modulation into the Ring Mod circuit. At 100%, the Ring Mod becomes a vibratro.

FM DEPTH [Ring Mod]: Set the amount of pitch shifting which occurs in the Frequency Modulation side of the Ring Mod Category Type. Frequency Modulation (FM) is similar to a vibrato, and the speed is determined by the Ring Mod's Frequency.

G

GAIN [Tube, Vinyl, Wavefold,]: Adjustment for volume before the PREAMP effect.

H

HIGHS [Ambience]: Shelf EQ cut for high-end frequencies, unity gain at 100%.

L

LEVEL: Adjustment for volume after the effect algorithm.

LOWS [Ambience]: Shelf EQ cut for high-end frequencies, unity gain at 100%.

M

MIX: Control over the amount of the wet signal mixed with dry, allowing for subtle use

MOD [VHS Reverb]: Introduces modulation into the reverb tank, creating motion and depth for reverb trails.

.

P

PLAY SPEED [VHS Delay, VHS Reverb]: Time adjustment of the delay repeats or reverb trails which elongates trails and alters pitch. Trails will pitch up or down when Play Speed is adjusted depending on whether the play speed is increased or decreased. The sample rate of the trails are also being manipulated, with aliasing artifacts preset at low Play Speed values.

PITCH: The perceived highness or lowness of a sound, determined by the frequency of the waveform.

PRESSURE [Tape Stop]: The speed at which the signal is being "stopped" and "started" by the Brake. High Pressure values will result in a quick stop and start, whereas low values will be gradual.

R

REC/PLAY [Push Looper, Wikki Wikki]: The foundational parameter for Push Looper and Wikki Wikki. When set to REC, Ottobit X is listening over a 60 second period to all signal passing through. When to Play, Push Looper and Wikki Wikki will play the audio recorded while the parameter was set to REC. Rec/Play works best when assigned to the Hold Modifier (switch).

RESONANCE [Ladder, State Variable, Otto Tron]: Sets the range of frequencies (around the center Frequency, that are allowed to pass through the filter. At lower settings, more frequencies are allowed to pass through the filter, at higher settings less frequencies are allowed through. Also known as Bandwidth.

S

SAMPLE RATE [Crush]: The number of times per second an audio signal is measured, determining the highest frequency that can be accurately captured.

SENSE [Otto Tron]: Determines how sensitive the Otto Tron filter movement is to the input signal.

SHAPE [Wavefold]: Based on classic rectifier circuits, Wavefold's shape blends in full-wave rectification into the preamp signal. Due to the nature of full-wave rectification, the signal which Shape blends in will be pitched up an octave.

SPEED [Modulate]: The rate of change in modulation effects. For most effects, .5 hz is a great starting point.

STUTTER [Glitch]: A rhythmic effect that rapidly repeats short segments of audio, creating choppy, gated, or glitch-like patterns

T

TOPOLOGY [Filter]:

LOWPASS - A filter that passes signal below its cutoff frequency, effectively cutting high frequencies.

BANDPASS - A filter with a selective, narrow bandwidth. This attenuates both high and low end frequencies.

HIGHPASS - A filter that passes signal above its cutoff frequency, effectively cutting low frequencies.

TRACKING [Ring Mod]: Sets Ring Mod Frequency to even, half step intervals.

U

UP/DOWN [Otto Tron]: Determines the direction of the Otto Tron's filter movement. While set to Up, the filter's frequency starts at its lowest point and sweeps up when triggered. While set to down, the filter starts at its highest point and sweeps down.

W

WAVESHAPE [Ring Mod]: The shape of the specific path of modulation that is repeated (e.g., sine, square). Sine will create a smooth gliding modulation, whereas Square will be abrupt and robotic.

WIDTH [Div Trem]: Adjust the waveform of the DIV Trem's tremolo. Higher values result in short, subtle volume dropouts. Lower values create tight, choppy volume spikes.

WOW [Tape Mod]: Introduces pitch imperfections associated with a mechanical tape and cassette recorders. The amount of Wow corresponds to the depth of modulation.

22 - SPEC COMPARISON BETWEEN OTTOBIT JR. AND OTTOBIT X

SPECS	OTTOBIT JR.	OTTOBIT X
CRUSH	SAMPLE RATE AND BIT CRUSHING	SAMPLE RATE + BIT CRUSHING WITH VOLUME SCALING AND DRY BLEND CAPABILITIES.
STUTTER/GLITCH	QUARTER-NOTE, TEMPO SYNC'D STUTTER.	6 UNIQUE TYPES OF GLITCH INCLUDING AN EXPANDED OTTOBIT JR. STUTTER.
LOOPER	-	TWO UNIQUE, ONE BUTTON LOOPERS: PUSH LOOP AND WIKKI WIKKI
SEQUENCER	6 STEP SEQUENCER, ONLY ASSIGNABLE TO PITCH, FILTER, OR SAMPLE RATE	16 STEP SEQUENCER, ASSIGNABLE TO APPROX. 48 PARAMETERS (DEPENDING ON WHAT TYPES ARE SELECTED)
DELAY	-	DUAL 2500 MSEC VHS DELAY WITH PLAY SPEED MANIPULATION
REVERB	-	UNIQUE VHS REVERB WITH PLAY SPEED MANIPULATION
FILTER	LADDER FILTER WITH FIXED RESONANCE	LADDER, STATE VARIABLE, AND OTTO TRON WITH ADJUSTABLE RESONANCE
PITCH	MONO PITCH SHIFTER, ACCESSIBLE ONLY WITH SEQUENCER	POLY CHROMA, MONO CHROMA, OTTO TUNE, MICRO SHIFT, AND LO-FI
MODULATION	-	5 MODULATION TYPES
MODIFIERS	-	6 MODIFIERS
PRESETS	16 PRESET LOCATIONS	99 PRESET LOCATIONS
FACTORY PRESETS	16 FACTORY PRESETS	90 FACTORY PRESETS
ARTIST PRESETS	-	18 ARTIST PRESETS
FRONT PANEL CONTROL	-	BANK UP, BANK DOWN, + 3 PRESET SELECT BUTTONS
SPILLOVER BETWEEN PRESETS	-	SELECTABLE SPILLOVER FOR DELAY AND REVERB TRAILS
FAVORITE BANK	-	BOOKMARK YOUR 3 FAVORITE PRESETS
SCREEN	-	FULL COLOR LCD SCREEN
WHITE NOISE	-	NOISE CONTROL MIXES IN WHITE NOISE WITH THE INPUT BEFORE THE FILTER
GLOBAL TEMPO	-	SELECTABLE PRESET TEMPO OR GLOBAL TEMPO PER PATCH
MIDI BEAT CLOCK	ALWAYS ON	EACH PRESET CAN BE PROGRAMMED TO LISTEN OR IGNORE MIDI BEAT CLOCK
MIX	-	MIX KNOB WITH DRY AND WET TRIM FOR PRECISE LEVEL BALANCING
TUNER	-	ALWAYS AVAILABLE CHROMATIC TUNER FROM FRONT PANEL SWITCHES

23 - TECHNICAL SPECIFICATIONS

Conversion:	24 bit A/D and D/A
DSP:	32 bit floating point
Sample Rate:	48000 Hz
Input Impedance:	1 Meg Ohm
SNR:	115 dB Typical
Frequency Response:	20Hz-20kHz
Max Input Level:	+9 dBu (instrument level setting)
	+12.5 dBu (line/synth level setting)
Power:	9V DC center-negative, 300mA, 2.1mm jack
Bypass:	Selectable True Bypass (Relay) or Analog Buffered Bypass
Dimensions:	7.25" wide, 4.5" long, 2" tall
Weight:	24 ounces

Federal Communications Commission Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.

—Increase the separation between the equipment and receiver.

—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

—Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment requires shielded interface cables in order to meet FCC class B limit.

Any unauthorized changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.