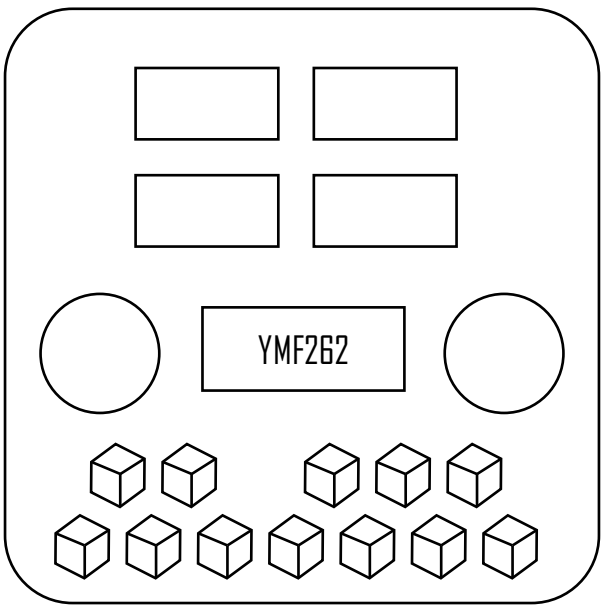
# dafm synth
# blaster ymf262

**user manual**

firmware v 2.00

KASSER SYNTHS



# introduction

thank you for purchasing the DAFM synth blaster YMF262 synthesizer. this FM multitimbral synthesizer allows you to create unique sounds using the Yamaha chips that were used in the PCs videogames during the 90s.

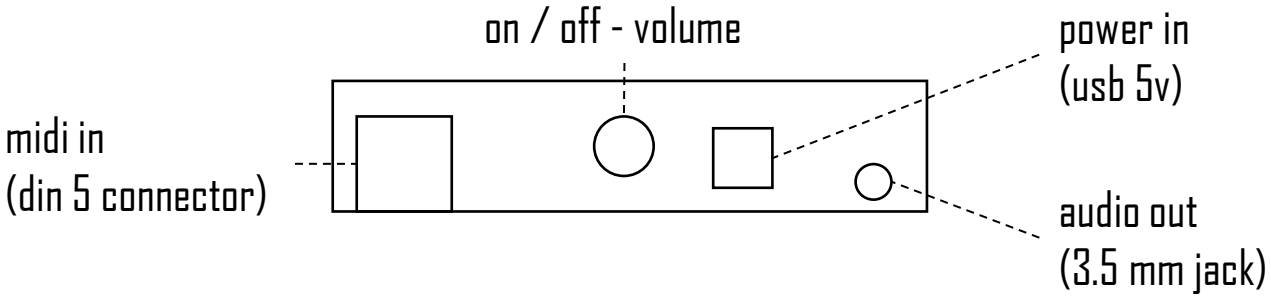
this manual will help you to get started with the DAFM synth blaster YMF262, including information about how to control the synth through an external MIDI controller. it will cover the basic features of the synthesizer, including how to navigate the menu, use the rotary encoders, and modify the ADSR envelopes, frequencies, and LFOs.

now it's time to dive in and explore the capabilities of your DAFM synth blaster YMF262! Experiment with the various patches and presets, modify the settings to create your own unique sounds, and see what kind of music you can create using the iconic sound of 90's PCs videogames. we challenge you to push the limits of this powerful FM multitimbral synthesizer and unleash your creativity to make something truly unique and amazing!

# get started

to get started with your DAFM synth blaster YMF262, you'll need to connect it to your power source and audio output. Use the USB Type B cable (5V) to power the synthesizer, and connect the stereo sound output to a 3.5 mm audio jack.

if you want to control the synth through an external MIDI controller, connect the MIDI input to your keyboard, sequencer, or other MIDI instrument. once you've made these connections, you're ready to turn on your DAFM synth blaster YMF262 and start exploring its features!

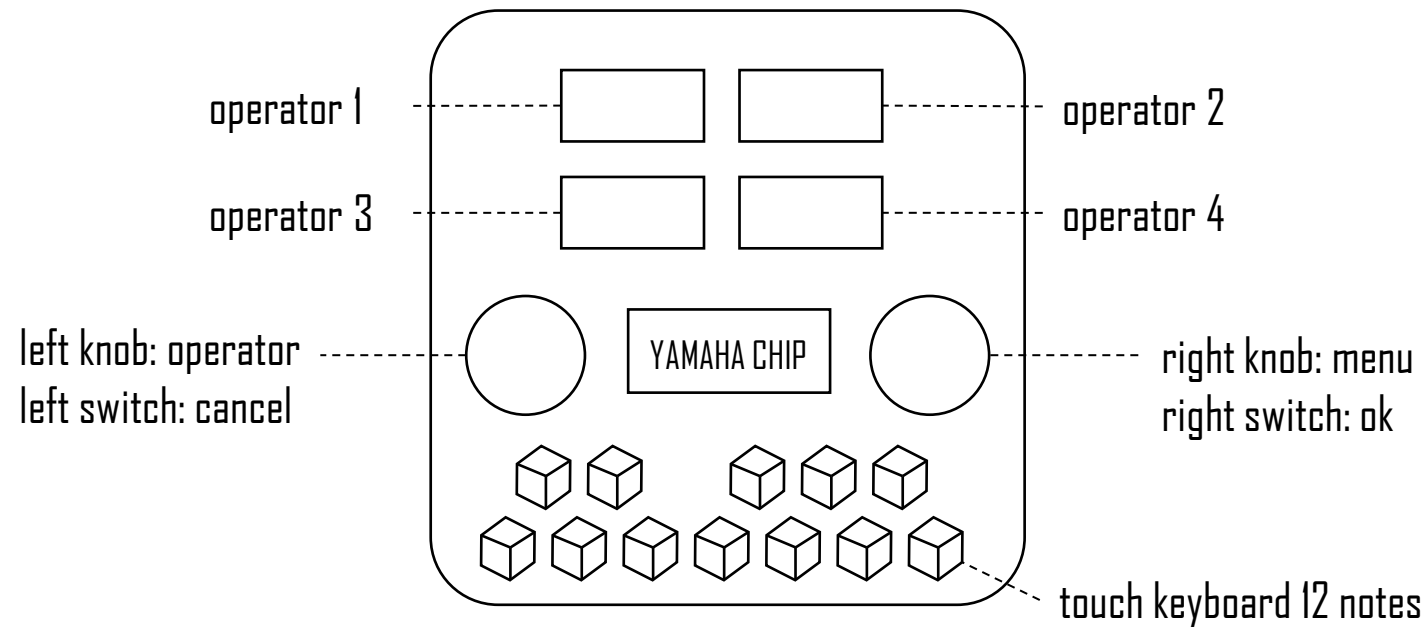


# how to navigate the menus

to navigate the menus on the DAFM synth blaster YMF262, you will need to use the right knob and right switch. The right knob allows you to scroll through the different menu options, while the right switch selects the option that is currently highlighted.

the left knob is used to select the operator, while the left switch is used to cancel an action. if you hold the left knob and turn the right knob, you can change the octave. if you hold the left switch and press the right switch, you can adjust the display brightness to reduce noise at the sound output.

the touch keyboard of the DAFM synth blaster YMF262 allows you to play and experiment with different patches, making it easy to explore the full sound spectrum of the Yamaha chip.



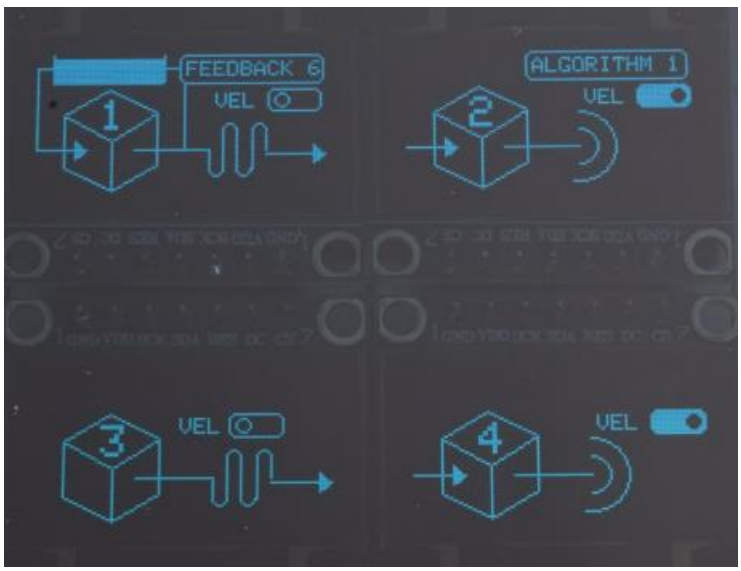
# menu 1. feedback, algorithm and velocity control

menu 1 gives you access to important parameters that shape the sound of your FM synthesizer. this menu has two submenus

once you press the right switch you enter the first submenu. in this submenu 1 the left knob controls the feedback or the degree of modulation of operator 1 to itself, adding complexity and depth to your sound.

the right knob lets you choose the algorithm or how the operators interact with each other. modulators are the operators that modulate the carriers, which are the operators you can hear. choosing the right algorithm can completely transform the character of your sound.

if you select the second submenu with the right knob and press the right switch you enter the velocity control submenu. here the right knob controls the on/off switch for MIDI velocity-controlled operators. this allows you to shape the sound based on how hard you play the keys, adding expressiveness to your performance.

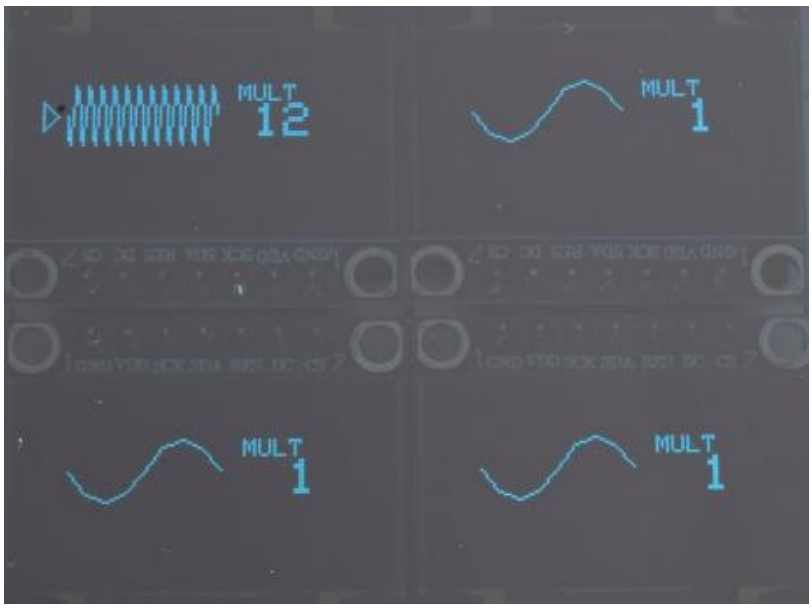


# menu 2. frequency ratio

in FM synthesis, the frequency ratio determines the relationship between the carrier and modulator frequencies. changing the frequency ratio can create unique and interesting sounds.

once selected this menu with the right switch, the right knob controls the operator's frequency multiplier. this determines the pitch of the operator and how it will interact with the other operators in the synth.

remember that different frequency ratios between the carrier and its modulator will produce different overtones, giving you a wide range of sounds to experiment with.



# menu 3. envelope ADSR

welcome to menu 3 where we'll explore the **ADSR** envelope in FM synthesis. the envelope is like a roadmap for the sound, determining how it evolves over time. here's a breakdown of the different parameters:

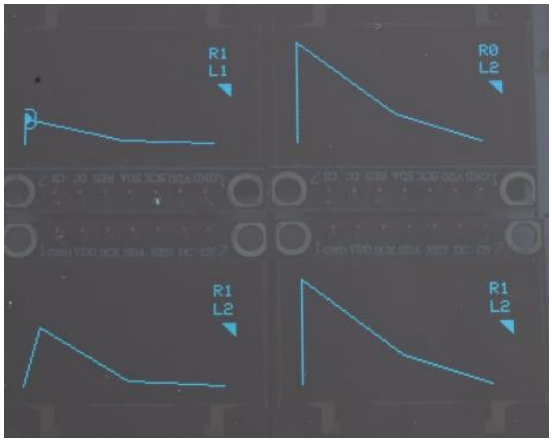
**attack**: determines how quickly the sound reaches maximum volume when a key is pressed. **decay**: determines how quickly the sound drops from maximum volume to the sustain level. **sustain**: determines the volume level that the sound will sustain at while a key is held down. **release**: determines how quickly the sound fades out after a key is released. additionally, we have the **total level** parameter, which sets the overall volume of the operator. the **envelope generator type** allows to activate or deactivate the sustain. **key scale level** represents the decrease in volume as pitch increases and finally, the **key scale rate** is the degree to which the envelope becomes narrower as the frequency becomes higher.

**submenu 1:** you can control **attack rate** with left knob and **total level** with right knob

**submenu 2:** control **decay rate** with left knob and **secondary total level a.k.a. sustain** with right knob

**submenu 3 :** control **envelope generator type** with left knob and **release rate** with right knob

**submenu 4:** control the **key scale level** with the left knob and the **key scale rate** with the right knob



# menu 4. low frequency oscillator LFO

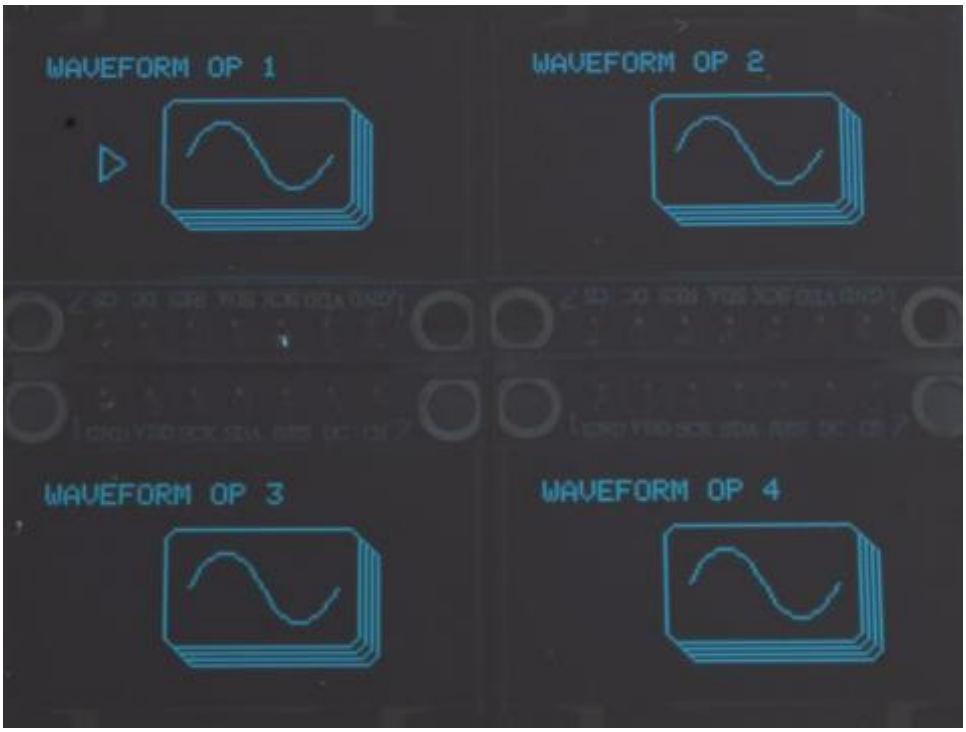
the low-frequency oscillator (LFO) in FM synthesis generates a wave that oscillates at a frequency below the audible range, typically less than 20 Hz. this wave can be applied to control the frequency in perc or the amplitude of the operators in dB. menu 4 allows you to control the LFO parameters of the DAFM synth blaster YMF262.

with the left knob of 4.1, you can control the LFO frequency modulation sensitivity in perc globally for all operators. the right knob turns the LFO on or off for every individual operator.

the left knob of 4.2 adjusts the global sensitivity in dB for all operators. the right knob turns on or off the amplitude modulation for each individual operator. with amplitude modulation, the LFO affects the amplitude or loudness of the operator's signal instead of the frequency. in summary by adjusting the frequency modulation sensitivity in menu 4, you can achieve vibrato, while adjusting the amplitude modulation sensitivity can give you tremolo.

# menu 5. operator waveform

menu 5 in the DAFM synth blaster YMF262 is dedicated to the operator waveform selection. the operator waveform allows you to create complex sounds quite easily. Use the right knob to select the waveform type.



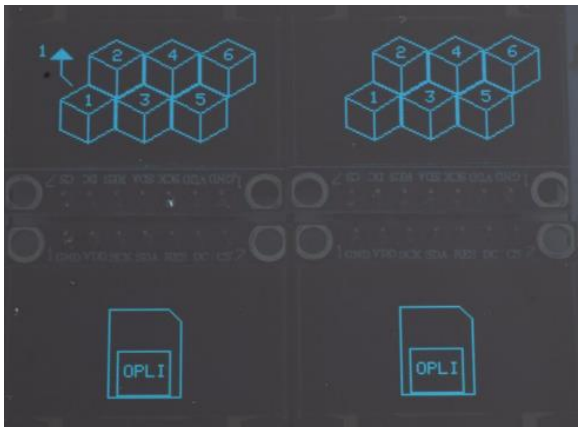
# menu 6. fm patches and midi channels

**the first submenu** allows you to load a preset to the DAFM synth so that you can play with it and tweak its parameters. There are two types of presets: unfilled circles represent the presets saved in each of the 6 MIDI channels that can be controlled through MIDI. If you load any of these presets, the MIDI channel can be controlled externally, but you can tweak the parameters locally. If you load the bank 0 presets (filled circles), you will select from a curated selection of presets coming directly from the 90's PCs videogames. these are exactly the same presets that were used in the videogames. check the last page of the manual to get the correspondence between the numbers, the presets and the videogames.

once you load or modify a preset, you can save it in the MIDI channel that you want using **the second submenu**. with this action, you can play the channel with the preset that you saved using the MIDI external controller.

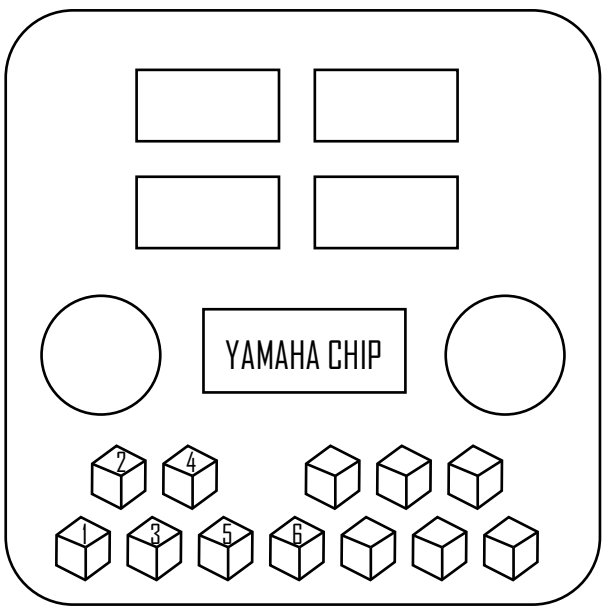
**the third submenu** allows you to load 6 presets from an SD card to the 6 MIDI channels. SD cards are easy to get, so you can prepare several SD cards with different sets of 6 presets to load on the fly. Remember to use the correct naming in the presets (patch0x.opli where x goes from 1 to 6).

in **the fourth submenu**, the DAFM synth makes a copy of all the presets saved currently in the 6 MIDI channels to an SD card. They are copied at once using the naming patch0x.opli (x from 1 to 6).



# menu 6. fm patches and midi channels.

the DAFM synth offers convenient shortcuts for quickly loading and saving presets to the six available MIDI channels. to load a preset, simply press and hold the left switch and touch the corresponding key on the keyboard (1 to 6) for the MIDI channel you want to load the preset to. to save a preset, press and hold the right switch and touch the corresponding key on the keyboard (1 to 6) for the MIDI channel you want to save the preset to. this way, you can easily switch between different presets without having to navigate through menus or use external controllers.



# external midi controller

the DAFM synth has two banks of presets - bank 0 and bank 1. You can load presets from either of these banks to one of the six MIDI channels of the synth using MIDI instructions. if you select bank 0 by sending the value 0 to the CC parameter 0 (Bank Select MSB), you can load any of the presets from the bank 0 to the MIDI channel you select by sending MIDI program change messages with the corresponding number (check the list in the last page). It's important to note that bank 0 corresponds to the list of curated presets coming directly from video games.

alternatively, you can use bank 1 to load up to 128 presets that you have saved in your SD card. to do this, you need to save *.opli files to the root of the SD card and name them as instrxxx.opli, where xxx ranges from 000 to 127. once you've inserted the SD card into the DAFM synth, send the value 1 to the CC parameter 0 (Bank Select MSB) to change the bank to 1. then, use a MIDI Program Change message to load that instrument preset to the related MIDI channel, with a value from 0 to 127 to select the corresponding preset.

in summary, the DAFM synth has two banks of presets, and you can load them to one of the six MIDI channels using MIDI instructions. bank 0 contains the curated presets from video games, while bank 1 can be used to load your own custom presets from an SD card.

# troubleshooting

Power issues: If the DAFM synth doesn't turn on or seems to have no power, check that the power supply is properly plugged in and that the power switch is in the "on" position. If the issue persists, try using a different power supply or contacting technical support.

Sound issues: If the DAFM synth isn't producing sound or the sound is distorted, first check that the audio cables are properly connected to the synth's output and to the speakers or mixer. If the issue persists, try adjusting the volume and tone controls. If there's still no sound, check that the synth is set to the correct MIDI channel and that the corresponding MIDI device is sending signals to that channel.

Parameter issues: If some of the synth's parameters don't seem to be working properly or the sound is not what you expect, make sure that you're using the correct settings and that you're not exceeding the synth's limits. Check the manual for information on the available menus, knobs, and switches, and try experimenting with different combinations until you achieve the desired result.

Preset issues: If you're having trouble loading or saving presets, make sure that you're following the correct procedures and that you're using the right file names and formats. Check the manual for information on how to navigate the preset menus and how to use MIDI commands to load and save presets. If the issue persists, try using a different SD card or contacting technical support.

MIDI issues: If you're having trouble controlling the DAFM synth with an external MIDI device or if you're not getting any response from the synth, check that the MIDI connections are properly set up and that the MIDI channels and parameters are correctly configured. Check the manual for information on the available MIDI options and how to use them.

Other issues: If you're experiencing other issues with the DAFM synth, such as unexpected behavior or malfunctioning components, try resetting the synth to its default settings or contacting technical support for further assistance. remember to provide as much information as possible about the issue and any steps you've already taken to troubleshoot

# further information

thank you for choosing the DAFM synth, a powerful FM synthesizer that can be used to create a wide variety of sounds, from classic video game music to modern electronic music. we hope that this manual has helped you to understand the various features and functions of the DAFM synth, and that you are now able to use it to its full potential.

if you have any questions or issues with the DAFM synth, please refer to the troubleshooting section of this manual. If you are still experiencing problems, please don't hesitate to contact us for further assistance.

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we are constantly working to improve and update the DAFM synth, and we welcome your feedback and suggestions for future updates. please visit our website or social media pages for the latest news and updates on the DAFM synth.

**THANKS** for joining the **DAFM synth** WAVE

# midi CC implementation chart

## global control

| parameter | cc | data range |
|---|---|---|
| vibrato depth | **28** | 2 |
| amplitude modulation depth | **29** | 2 |
| keyboard split (NTS) | **30** | 2 |

## channel voice control

| parameter | cc | data range |
|---|---|---|
| pitch bend amount | **81** | 12 |
| fm algorithm | **14** | 4 |
| fm feedback | **15** | 8 |
| stereo configuration | **77** | 4 |

# midi CC implementation chart

## operator control

| parameter | cc | data range |
|---|---|---|
| total level op1 | **16** | 64 |
| total level op2 | **17** | 64 |
| total level op3 | **18** | 64 |
| total level op4 | **19** | 64 |
| freq multiplier op1 | **20** | 16 |
| freq multiplier op2 | **21** | 16 |
| freq multiplier op3 | **22** | 16 |
| freq multiplier op4 | **23** | 16 |
| key scale rate op1 | **24** | 2 |
| key scale rate op2 | **25** | 2 |
| key scale rate op3 | **26** | 2 |
| key scale rate op4 | **27** | 2 |
| vibrato on/off op1 | **82** | 2 |
| vibrato on/off op2 | **83** | 2 |
| vibrato on/off op3 | **84** | 2 |
| vibrato on/off op4 | **85** | 2 |

## operator control

| parameter | cc | data range |
|---|---|---|
| attack rate op1 | **43** | 16 |
| attack rate op2 | **44** | 16 |
| attack rate op3 | **45** | 16 |
| attack rate op4 | **46** | 16 |
| decay rate op1 | **47** | 16 |
| decay rate op2 | **48** | 16 |
| decay rate op3 | **49** | 16 |
| decay rate op4 | **50** | 16 |
| sustain voice (EGT) op1 | **51** | 2 |
| sustain voice (EGT) op2 | **52** | 2 |
| sustain voice (EGT) op3 | **53** | 2 |
| sustain voice (EGT) op4 | **54** | 2 |
| sustain level op1 | **55** | 16 |
| sustain level op2 | **56** | 16 |
| sustain level op3 | **57** | 16 |
| sustain level op4 | **58** | 16 |

# midi CC implementation chart

## operator control

| parameter | cc | data range |
|---|---|---|
| release rate op1 | **59** | 16 |
| release rate op2 | **60** | 16 |
| release rate op3 | **61** | 16 |
| release rate op4 | **62** | 16 |
| amplitude modulation on/off op1 | **70** | 2 |
| amplitude modulation on/off op2 | **71** | 2 |
| amplitude modulation on/off op3 | **72** | 2 |
| amplitude modulation on/off op4 | **73** | 2 |

## operator control

| parameter | cc | data range |
|---|---|---|
| key scale level op1 | **39** | 4 |
| key scale level op2 | **40** | 4 |
| key scale level op3 | **41** | 4 |
| key scale level op4 | **42** | 4 |
| wave select op1 | **110** | 8 |
| wave select op2 | **111** | 8 |
| wave select op3 | **112** | 8 |
| wave select op4 | **113** | 8 |

# bank 0 presets

## midi bank 0 presets

| instrument | preset |
|---|---|
| **piano** | **0:** acoustic grand **1 :** bright acoustic **2:** electric grand **3:** honky-tonk **4:** electric 1 **5:** electric 2 **6:** harpsichord **7:** clavinet |
| **chromatic percussion** | **8:** celesta **9**: glockenspiel **10**: music box **11**: vibraphone **12**: marimba **13**: xylophone **14**: tubular bells **15**: dulcimer |
| **organ** | **16:** drawbar **17:** percussive **18:** rock **19:** church **20:** reed **21:** accordion **22:** harmonica **23:** tango accordion |
| **guitar** | **24:** acoustic (nylon) **25:** acoustic (steel) **26:** electric (jazz) **27:** electric (clean) **28:** electric (muted) **29:** overdriven **30:** distortion **31:** harmonics |
| **bass** | **32:** acoustic **33:** electric (finger) **34:** electric (pick) **35:** fretless **36:** slap 1 **37:** slap 2 **38:** synth 1 **39:**synth 2 |
| **strings** | **40**: violin **41:** viola **42**: cello **43**: contrabass **44**: tremolo **45**: pizzicato **46:** orchestral harp **47:** timpani **48:** ensemble 1 **49:** ensemble 2 **50:** synth 1 **51:** synth 2 **52:** choir aahs **53:** voice oohs **54:** synth voice **55:** orchestra hit |
| **brass** | **56:** trumpet **57:** trombone **58:** tuba **59:** muted trumpet **60:** french horn **61:** brass section **62:** synth brass 1 **63:** synth brass 2 |
| **reed** | **64:** soprano sax **65:** alto sax **66:** tenor sax **67:** baritone sax **68:** oboe **69:** english horn **70:** bassoon **71:** clarinet |

| instrument | preset |
|---|---|
| **pipe** | **72:** piccolo **73:** flute **74:** recorder **75:** pan flute **76:** blown bottle **77:** shakuhachi **78:** whistle **79:** ocarina |
| **synth lead** | **80**: lead 1 (square) **81**: lead 2 (sawtooth) **82**: lead 3 (calliope) **83**: lead 4 (chiff) **84**: lead 5 (charang) **85**: lead 6 (voice) **86**: lead 7 (fifths) **87**: lead 8 (bass + lead) |
| **synth pad** | **88:** pad 1 (new age) **89:** pad 2 (warm) **90:** pad 3 (polysynth) **91:** pad 4 (choir) **92:** pad 5 (bowed) **93:** pad 6 (metallic) **94:** pad 7 (halo) **95:** pad 8 (sweep) |
| **synth effects:** | **96**: fx1 (rain) **97**: fx2 (soundtrack) **98:** fx3 (crystal) **99:** fx4 (atmosphere) **100:** fx5 (brightness) **101:** fx6 (goblins) **102:** fx7 (echoes) **103:** fx8 (sci-fi) |
| **ethnic** | **104:** sitar **105:** banjo **106:** shamisen **107:** koto **108:** kalimba **109:** bag pipe **110:** fiddle **111:** shanai |
| **percussive** | **112:** tinkle bell **113**: agogo **114:** steel drums **115:** woodblock **116**: taiko drum **117:** melodic tom **118:** synth drum |
| **sound effects** | **119:** reverse cymbal **120:** guitar fret noise **121:** breath noise **122:** seashore **123:** bird tweet **124:** telephone ring **125:** helicopter **126:** applause **127:** gunshot |