



“Tiny differences matter most”

Isomorphic, Polyphonic, Microtonal, Just Intonation,
Musical Instrument & MIDI Controller for tablets & mobile phones

- Touch & Tilt - Intuitive playing mechanism
- Isomorphic Keyboard - precision numeric & graphic display
- Play melodies, chords, scales, instant inversions, effortless Arpeggios
- 4 Distinct Playing Modes - Polyphonic / Monophonic x Touch / Hold
- Expressive - realtime FX Box controls. User configurable volume settings.
- Quantized Output for Rhythmic Effects

- Microtonal Capabilities - explore Just Intonation & Pythagorean Tunings
Includes Harmonic Table, Tonnetz, Wicki-Hayden + more
Create your own microtonal mappings

iotaTONE combines touchscreen technology with mobile hardware device orientation & continuous controls to define a distinct new paradigm in music instrument design.



iOTATONE

User Guide



Settings

Controls

Ratio Matrix

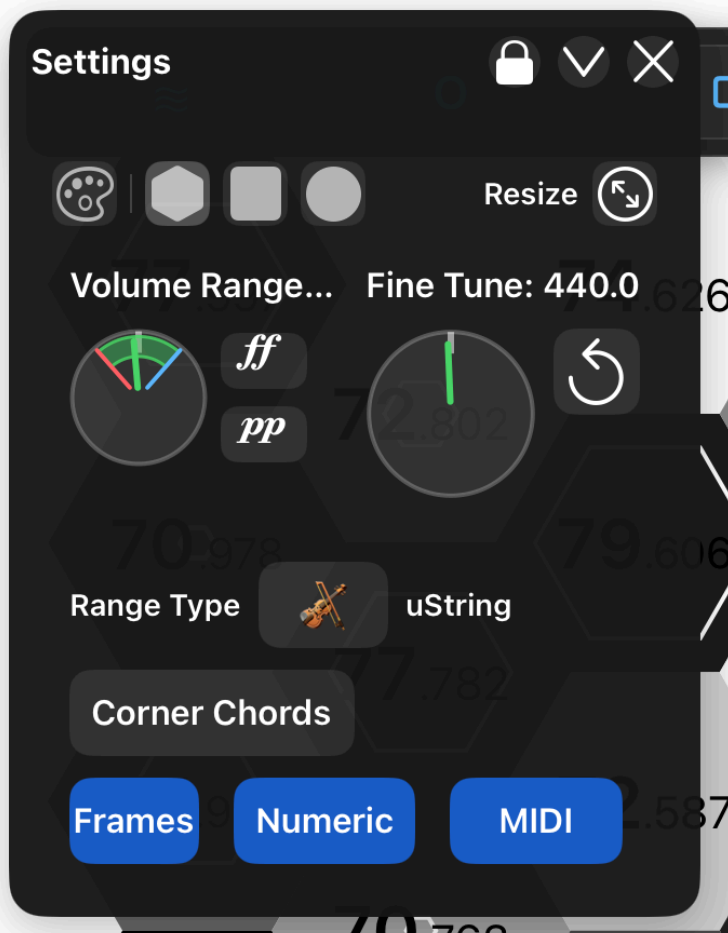
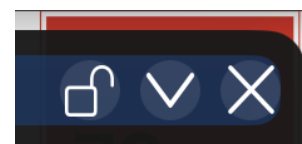
Transpose

FX Box

Extras

Top Menu bar opens & closes \approx \circ \square \times $+$ panels. \triangle to Transpose.

Unlocked **panels** can be resized (drag bottom right corner), moved to anywhere on screen (drag title bar). Triangle to collapse. X to close.



\approx Settings

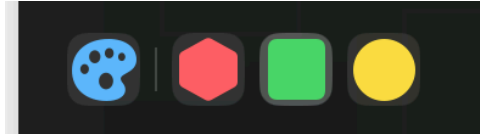
- 1. Select B/W or Color**
Shape: Hexagon, Square, Circle
- 2. Resize TouchPad**
(directions below)
- 3. Set Volume Range** Tilt Y-axis
Select tilt position for Loud (Red)
Select tilt position for Silent (Blue)
- 4. Fine Tune Dial**
Adjust $\pm 1/4$ tone. Reset to 440.0
- 5. Instrument Range Type**
Select **uString** = Universal String
or **Linear** = Piano style
then set Linear **Octave Range**
- 6. Corner Chords**
Enable one touch Major & Minor chords.
- 7. Show / Hide UI**
Octave Frames, Numeric Labels,
Select MIDI note values, Ratios or
Note Names (approximate)

! Bluetooth audio is not recommended due to latency.

≡ Settings

1. Choose: Color & Shape

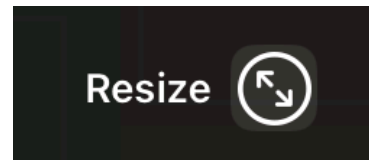
- Black/White — Color
- Hexagon, Square, Circle



2. Resize screen

To change the size of the touch pad,

- tap 'Resize' Icon.
 'Settings' panel will close.
 Touch pad resizing is now unlocked.
- Pinch to zoom in & out.
- Touch & drag to move left & right.



Important: Once positioned, **DOUBLE TAP** anywhere to re-lock screen in place.

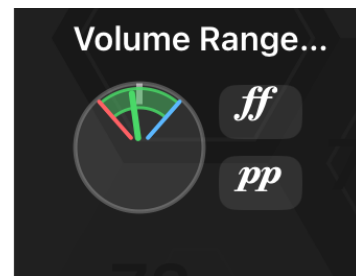
3. Set Volume Range

By default, when flat on a table your device will play at medium volume, **mf**

Tilt the device upwards (towards you) & the volume will increase. Tilt down (& away) to decrease.

This range can be set to any size between -180° to 180°

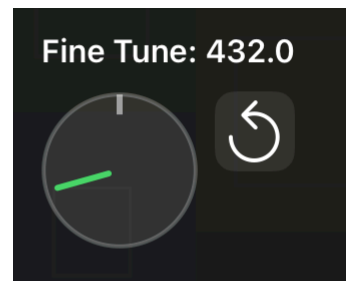
- Position the device to its desired loudest. Tap **ff**
- Position the device where you want the sound off. Tap **pp**



If you find the instrument has suddenly fallen silent, check these volume settings first. Make sure a range is set & the device is oriented correctly.

4. Fine Tuning Slider

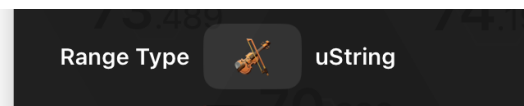
For precise tuning (for example, set the instrument to 432.0)
Range is $\pm 1/4$ tone. Circular button resets to 440.0



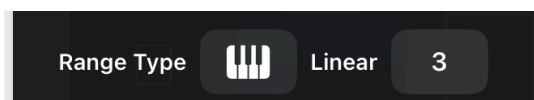
5. Range Type & Size

Controls how tilt affects instrument range.

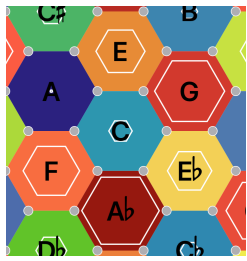
- **uString** - the 'universal string' [Violin Icon] is logarithmic, stretches from 0 to infinity. The mathematical union of the physical string & its inversion. Covers the entire audible range.



- **Linear mode** equidistant octaves [Piano Icon]— set the Tilt range from 2 to 5 octaves.



6. Corner Chords



Enabling Corner Chords adds small target circles at every intersection point (where 3 shapes touch)

This button allows for Major & Minor chords to be played with one finger.

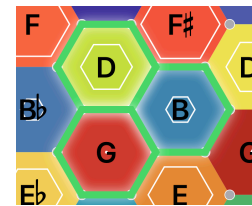
Then other notes can be added, for example, 7th for a dominant chord.

Multiple corners can be played at the same time, allowing for easy input of Pentatonic scales, six note configurations. Touching 3 points can create scales.

Corner chords work best with Harmonic Table & Tonnetz.

Combine Corner Chords with custom Ratio Matrix settings to design microtonal clusters of arbitrary complexity.

Try using this feature on “Touch” mode “Monophonic”



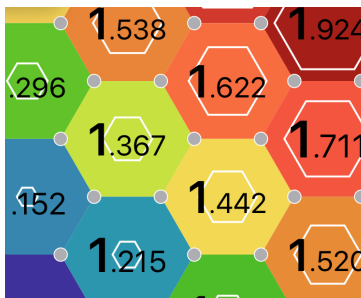
One touch chord

7. Touch Pad UI

Frames indicate the relative position of the pitch class to the current X tilt position.

The most common ‘mistake’ on the iotaTONE is playing a note in the wrong octave. Frames allow the user to see in advance which octave any given pitch will be in before it is played.

Numeric Display can be disabled for the clean “Classic” look.

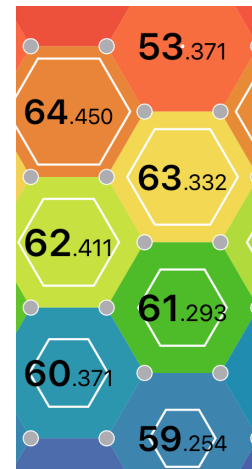


Ratio A = 1.0

- Choose **MIDI** note for precision pitch values. UI displays 3 decimal places (the app is more accurate than indicated).

- Choose **Ratio** to see the pitch as a ratio in relation to A = 1.0. Octave shifts are seen as doublings.

- Choose **Notes** to apply traditional note names to Touch Pad cells.

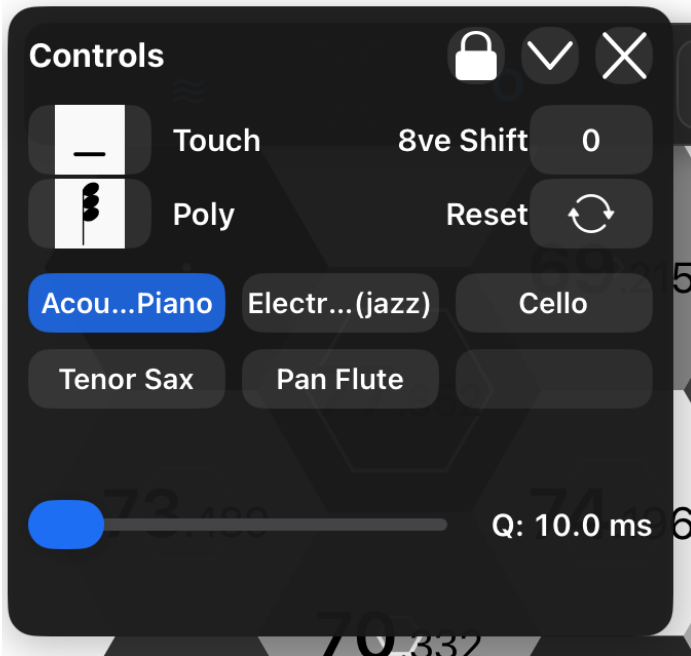


Impeccable precision

Please note: ‘Note names’ are approximations only. The prime number values > 5 (eg. 7, 11, 23) are not exact matches to ET note names. This error grows exponentially as one proceeds outwards from the center.

Note names are for convenience. The naming system is consistent, but not necessarily accurate.

○ Controls



1. Playing Modes

Touch | Hold
Polyphonic | Monophonic

2. Octave Shift:

Adjust base octave

3. Transpose Mode

Reset
Iterative

4. Quick Select Instrument

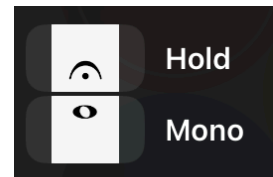
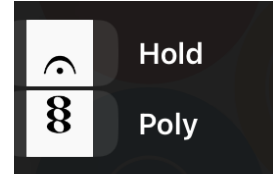
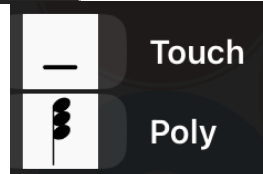
6 instrument slots
long press to select new voice.

5. Quantization Value

Set time interval in milliseconds.

1. Playing Modes

- **Touch Mode** piano style keyboard — touch & lift, trigger & release notes.
- **Hold Mode:** a.k.a. “latch mode”. Screen touches toggle regions active & inactive.
- **Polyphonic** - any & all notes that are touched or activated are played & updated.
- **Monophonic** - only one note sounded at a time. While many regions may be active, only the one nearest to Tilt value is played. (Please note, in this mode the Octave Frames visuals may not exactly line up).

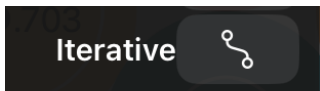


2. **Octave Shift** — raise or lower the base octave + or - up to 2 octaves. N.B. Soundfonts are configured for keyboards. It is often desirable, for example, to lower bass instruments.

3. There are 2 **Transpose modes:**



• **‘Reset’** — touch pad resets to A = 1.0 before transposing. TouchPad displays default values in advance of selection. The 1st tap transposes the surface. MainKey rooted to 1.0 & vicinity.



• **‘Iterative’** — touch pad maintains current state. Any visible cell may transpose the surface. MainKey can drift & roam freely.

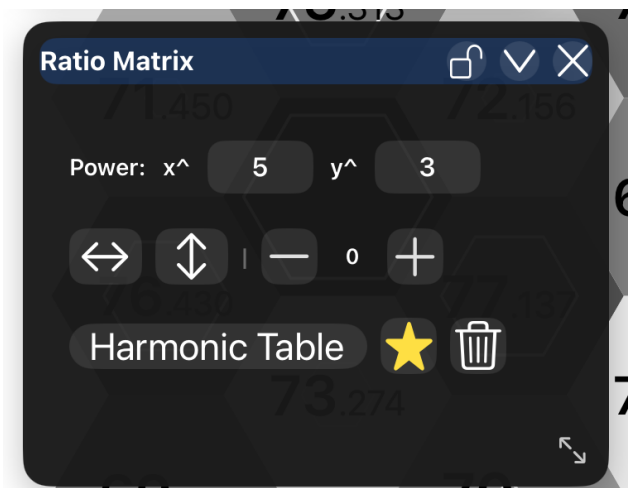
4. **Quick Select Instrument** menu— a place to store & recall your favourite instruments. Long press on a slot to open Instrument list & select a new instrument.

5. **Q - Value** - Quantization Value

Sets a limit on how often notes can be triggered. At default 10 ms, the instrument responds instantly. At higher values, rhythm appears, steady tempo, melodies, regular “noteStreams”, & a new playing technique “haptic counterpoint” emerges. Experiment with different values. Shake it up!

☐ **Ratio Matrix**

Advanced Custom Ratio Matrix Settings



1. **Enter power series** ratios for custom layouts. Select any odd number from 3 to 31.

2. **Invert Rows**
(by default rows skew upwards to the right)

Invert Columns
(eg. stack of Fifths (3/2) inverts to a stack of Fourths (4/3))

3. **-** or **+** to shift columns down or up.
“Vertical Shear Transformation”

4. Choose an **Isomorphic Keyboard Layout**

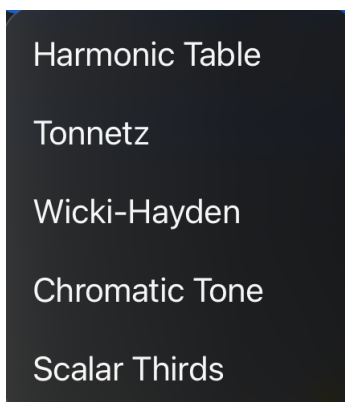
5. **“Save”** & **“Delete”** User Settings

Built-in presets:

- Harmonic Table & Tonnetz are morphologically identical.
- Wicki-Hayden is an Equal Temperament configuration used in concertinas & bandoneons. 2 variants: Wicki Pythagorean & Wicki-Just 5-Limit
- “Chromatic Tone” & “Scalar Thirds” are presented here as useful discoveries arising from the capabilities of the instrument.

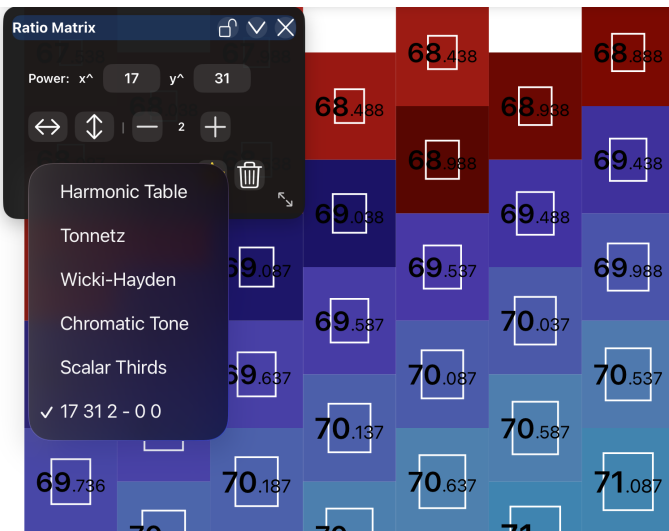
Use “Save” dialogue to name Saved presets.

[Default naming convention “Xvalue Yvalue ±Shear - invertRow invertColumn” (1=True, 0=False)]

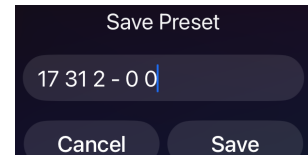


Create & Save your own TouchPad Layouts

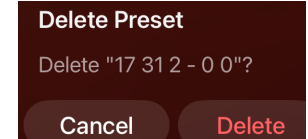
Not Just Primes. All Odd integers from 3-31 available.



Skew, invert, rotate, transform the matrices.



Explore the many available "Generalized Isomorphic Just Intonation Ratio Matrices"



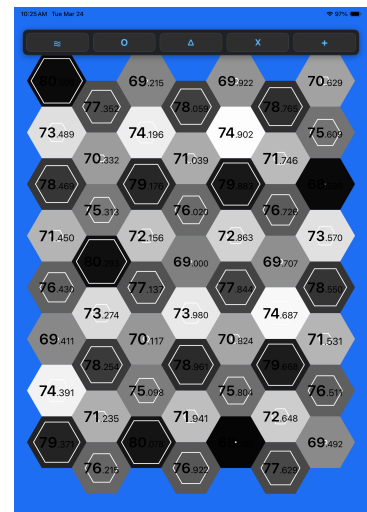
△ Transpose

Tap the top menu bar transpose button to open & close the floating Transpose Button. This button can be positioned anywhere on screen.

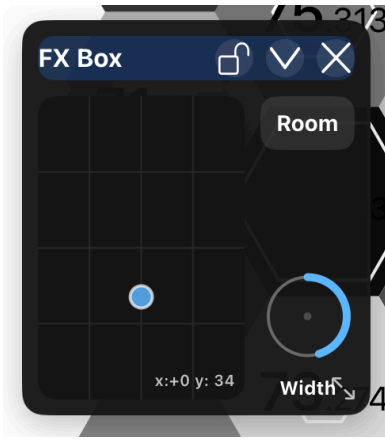
* There are 2 Transpose Modes (Reset & Iterative). see Control panel.

To change the Main Key:

- **Tap** the floating button. If visible, the background turns blue to indicate touch pad is waiting for input.
- The **next touch** will transpose the playing surface to the value of the cell tapped.
- The graphical interface will be updated.
- Once a new key has been selected keypad resumes normal operations.



X FX Box



Room - select size

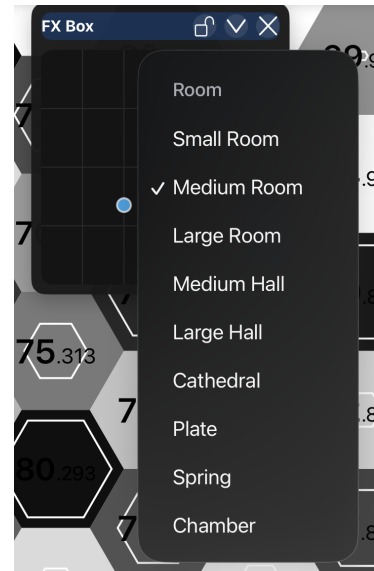
X-Y TouchPad

Tone - brightness / color

Space - room size / depth

Width dial- stereo spread

FX Box can be positioned anywhere on the instrument to use as a real-time controller in performance.



+ Extras

Here is where to find:

- [iotaTONE User Guide](#)
- [Licenses & Legal](#)
- [Links to Website / Contact Support](#)
- [In-app purchases](#) — currently N/A.

(Future plans to offer app extras: SoundPack Expansions, Tutorials & Lessons.)

MIDI Connection

iotaTONE sends MIDI via Bluetooth



How to connect to your Mac via wireless MIDI

Steps:

1. On your Mac, open Audio MIDI Setup (found in Applications > Utilities).
2. In the menu, choose Window > Show MIDI Studio.
3. In the MIDI Studio window, double-click Network to open MIDI Network Setup.
4. Under My Sessions, select Session 1, then click Enable.
5. In the Directory, select your iOS device.
6. Click Connect to link your iOS device to the session.

Once connected, your iOS app will appear as a MIDI source and can transmit wirelessly to any MIDI-enabled software on your Mac. Rudimentary MIDI only. Advanced functions In development (& at user request - contact 'Support').

Troubleshooting

 **Bluetooth audio is not recommended due to latency.**

No Sound?

If the app stops producing audio:

- Quit the app completely (Swipe up from the app switcher)
- Reopen the app
- Ensure Silent Mode is OFF
- If using Bluetooth speakers/headphones:
Turn Bluetooth off, relaunch the app, then try again.

Why this can happen:

iOS sometimes gets “stuck” when switching audio between apps or Bluetooth devices. Restarting resets the audio session.

Sound Stops After Switching Apps

Sometimes when returning from a game, social media, or another audio-heavy app, the sound may not resume immediately.

Fix:

- Minimize the app and reopen it
- Or briefly switch to another system app (e.g., Music), then back

This refreshes iOS’s audio routing.

Lag, Delay, or Response Feels Slow

If **iotaTONE** seems sluggish:

Set Quantization value to its lowest value for fastest response.

Increase Octave Range, or set to uString.

Ensure battery is sufficiently charged. Close unnecessary background apps.

Audio Initialization

When first loading, iOS may place sampler instances in a dormant state until they are used.

This can result in:

- temporary slowdown
- audible pops as voices are activated

This behaviour is system-level & will resolve during use.

Recommendation:

Before performance or recording, play some notes & briefly move (tilt) through the full range of the instrument to activate all voices.

When in Doubt

A restart of the app or the device solves almost all rare iOS audio/touch inconsistencies.

⚠ Data & Deletion Warning

- Deleting the app will permanently remove all of its save data from this device.
- Saves are stored locally unless otherwise backed up via device or iCloud backup.

ℹ First-Time UI Behaviour

When certain interface elements are loaded for the first time, you may notice a brief pause. After initial use, performance should remain smooth and stable.

We have found no other issues when this app is used as directed.

Please report any unexpected behaviours so it can be addressed in future updates.

*Download our free reference:
"Harmonic Table Chord Chart"*



Licenses

FluidR3_GM SoundFont. Licensed under the MIT License
© 2000-2002 Frank Wen

Apple Licenses

<https://developer.apple.com/terms/>

Bond Institute Music Corporation

<https://bondinstitute.io>

iotaTONE is built on a proprietary, patent-pending interaction model.

Fun things to try:

- Hear the difference between F# & G \flat (or any enharmonic pair). Notice there is more than one A (or any other note name).
- Harmonic table, hold down a triangle pointed left or right with 3 fingers & tilt to play arpeggios. Octave range is adjustable!
- In Hold mode, drag your finger to turn regions on & off. Move smoothly from chord to chord.
- Use monophonic mode for scales & melodies. Add & subtract notes in Hold mode. Anticipate your next move in Touch mode.

Hold Mode Mono Magic:

- Vibraphone, Major Scale, Q value = 200
- Clarinet, Gypsy scale, Q value = 120
- Saxophone, Blues scale, Q value = 60



iotaTONE — MIDI Specification Sheet

This document outlines the MIDI messages sent by iotaTONE for integration with external MIDI devices, DAWs, or recording software.

1. MIDI Messages Sent

MIDI Message	Purpose	Channel(s)	Trigger / Event
Note On (0x9x)	Plays note	Per voice / per internal channel (0–31)	Note start (touch input)
Note Off (0x8x)	Stops note	Per voice / per internal channel (0–31)	Note release / stop
Pitch Bend (0xEx)	Continuous pitch control / tuning	Per voice / per internal channel (0–31)	Continuous / tuning
Control Change – CC7	Main volume	Global (default ch. 0)	Volume control
Control Change – CC16	Tone	Global (default ch. 0)	Tone control
Control Change – CC17	Space	Global (default ch. 0)	Reverb control
Control Change – CC18	Width	Global (default ch. 0)	Width control

2. Technical Notes

- MIDI output only; incoming MIDI is not required.
- Supports Note and Pitch Bend messages across up to 32 MIDI channels (0–31).
- Pitch Bend is used for continuous pitch control.
- Internal pitch bend range: ± 1 semitone.
- External devices should match pitch bend range for accurate tuning.
- Instrument selection is handled internally; no Program Change messages are sent.

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* Rudimentary MIDI only. Advanced MIDI functions in development.