Violin.

User manual.

A practical guide to playing the instrument and preparing a repeatable MIDI performance.



Version 0.2.19

Updated November 10, 2026

AU and VST3 on Apple Silicon macOS 14 or later. VST3 on Windows 11 x64.

Tested in Logic Pro and REAPER.

bovo.ai/instruments/violin/manual

Future sound,
human soul.

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Contents.

01 **Getting started** 3
Load the violin, play your first phrase, explore its six pages, and bring in a Music Agent performance.

02 **Installation and DAW setup** 6
Install on macOS or Windows, then set up Logic Pro, REAPER, or another compatible host.

03 **Playing setups and controllers** 8
Choose a performance profile, connect your keyboard, and learn the grouped keyswitches and Auto controls.

04 **Bowing and legato** 14
Shape separate strokes, connected phrases, retakes, and long sustained notes.

05 **Left hand and articulations** 16
Shape vibrato, shifts, portamento, pizzicato, tremolo, and harmonics.

06 **Strings and resonance** 20
Choose strings, play multiple stops, and shape ringing, body, and tone.

07 **Space and output** 23
Choose a room, place microphones, and prepare a solo sound or a mix.

08 **MIDI and automation reference** 26
Record a repeatable performance and look up every documented CC, range, default, and automation ID.

09 **Troubleshooting** 35
Find checks for missing plug-ins, silent tracks, keyswitches, bowing, vibrato, and playback.

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Getting started

Load the violin, play your first phrase, explore its six pages, and bring in a Music Agent performance.

Bovo Violin is a free, physically modeled four-string instrument calibrated by experts using recordings of our S.A. Deroux violin. Bow strokes, finger contact, and shared string resonance shape its sound in real time.

Quick start

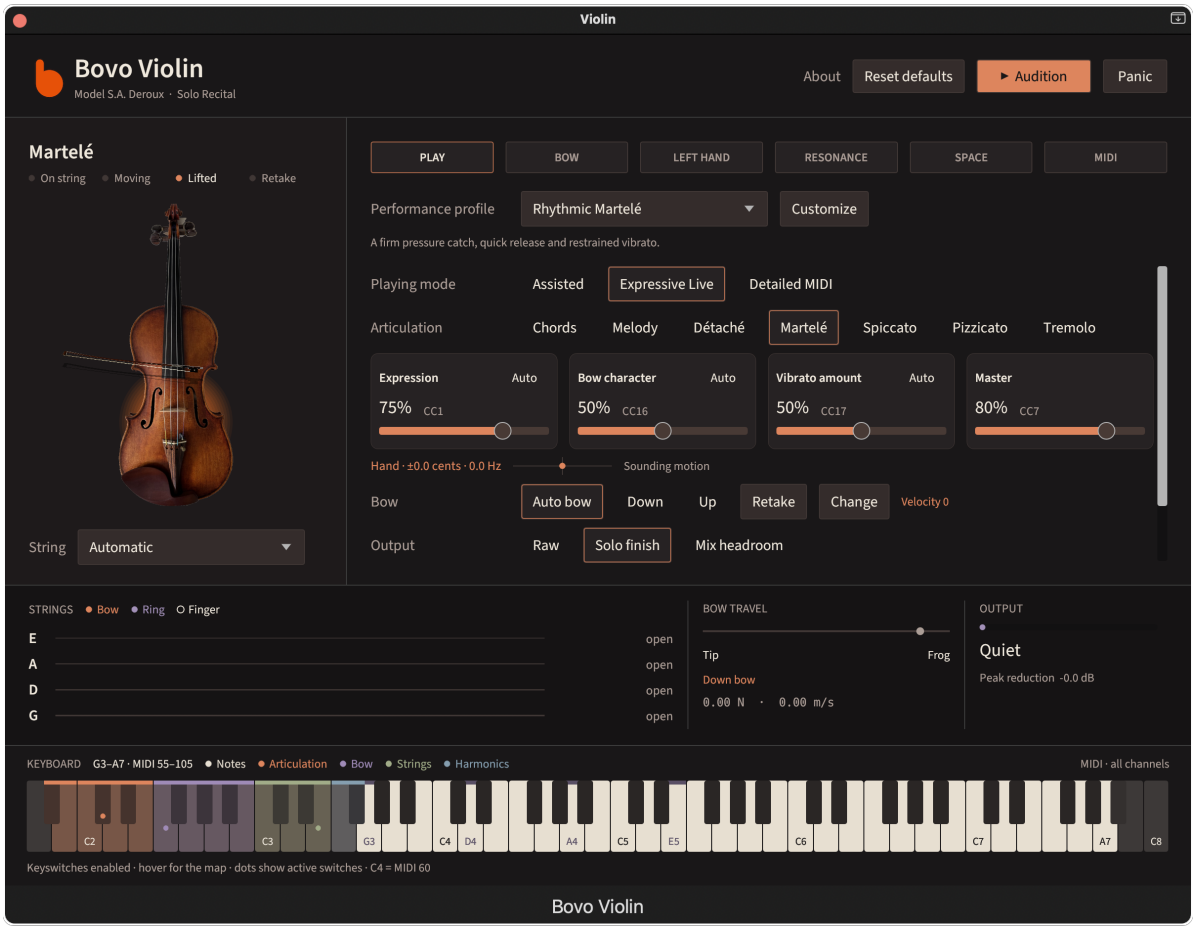
1. Load **Bovo Violin** on a stereo software-instrument/MIDI track. Logic Pro uses AU; Ableton Live can use VST3 or AU.
2. Enable the keyboard's MIDI input and arm or monitor the track. Start with **All MIDI channels** in the plug-in.
3. In **Play to Performance profile**, choose **Classical Cantabile**. Choose **Assisted** to let expression, bow character and vibrato develop automatically.
4. Play within **MIDI 55-105**, G3-A7 when middle C is C4. The four open strings are G3/55, D4/62, A4/69 and E5/76.
5. Overlap notes for a connected melody. Play separate notes for separate bow strokes. A sustain pedal sending **CC64** extends a slur through gaps between keys.
6. Move the **mod wheel, CC1**, to shape dynamics. It takes control of expression. Click that control's **Auto** button to return it to the performer.
7. Start with **Solo Recital** and **Solo finish** for space and output. The instrument uses its fixed **Air & wood** body model. Keep the DAW track pan centered.

Fresh instances already use **Assisted Live Keyboard**, **Classical** vibrato character, standard bow phrasing, the **Air & wood** body model, **Solo Recital** space and **Solo finish**. The named performance profiles provide additional starting points.

Reset defaults, in the top bar on every page, restores the complete factory setup: sound, performance, room, microphones, output and MIDI settings. It clears CC overrides, keyswitch selections, pedals and pitch bend, and stops sounding notes. The current page and window size stay in place. A single slider can still be reset by double-clicking it.

For a chord, select **Chords** on Play or tap **MIDI 34**, then hold the pitches together. The normal **Melody** selection is a single line.

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Play page: the instrument, performance controls and grouped keyboard.

Read the interface

Page	Use it for
Play	Performance profile, Assisted/Expressive Live, articulation, expression, bow character, vibrato amount, master, bow commands and output finish
Bow	Force, speed, sounding point, hair, stroke variation, engagement, tremolo, spiccato and continuous bow
Left Hand	Vibrato character and detailed motion, harmonic touch, finger contact, shifting and portamento
Resonance	Tone, body contribution, shared string ringing, chord balance and roll, G depth, upper E response and mute
Space	Venue, room return, microphone perspective, room setups and output finishing
MIDI	Input channel, bend range, string channels, keyswitch bank, aftertouch, controller reset and the active map

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The violin shows each active string and planted finger contact. Multiple planted contacts can be visible together. The separate string display reads **G, D, A, E from bottom to top** and distinguishes bowed, held and ringing strings.

The bow remains visible when lifted. **On string**, **Moving**, **Lifted** and **Retake** indicate its actual contact state. A stationary martelé pressure catch should not look like a moving stroke.

The lower keyboard shows playable notes and the colored switch groups. You can audition notes and switches with the mouse; the same actions respond to incoming MIDI.

The **Hand** readout on Play shows the sounding vibrato width, rate and moving pitch offset. Detailed sliders show settings or incoming controller targets; they are not plots of every internal oscillation.

Hover a control to see its CC and automation name. Double-click a continuous slider to restore its factory value. **Panic** stops the current performance and clears its acoustic memory; use it for a stuck note, rather than as the normal end of a phrase.

Playing a Music Agent export

Bovo Music Agent's violin stems are performed with Bovo Violin. The exported MIDI carries CCs and keyswitches for dynamics, vibrato, bowing, and articulation changes.

1. Export your chosen violin performance as MIDI from **Bovo Music Agent**. Keep the original file as a reference.
2. Load a fresh **Bovo Violin** instance on a software-instrument track. Start with **All MIDI channels**, keyswitches enabled, and the default **First live switch**, MIDI 34.
3. Import the MIDI at the song's tempo. Preserve its controller events, keyswitch notes, note-offs, and timing. Leave the keyswitch notes untransposed; the low notes select playing actions rather than sounding violin pitches.
4. Start playback from the beginning of the clip so its initial controller values and switches arrive before the affected notes. Incoming CCs can take control of settings shown in the interface. Avoid loading another performance profile after playback begins, because it resets performance controls.
5. Edit the notes and controller lanes in your DAW to refine expression, vibrato, and bowing. Keep articulation switches before the notes they affect, with their matching note-offs. Leave enough time after the last note for the instrument and room tail.

MIDI carries the performance; the plug-in's tone, room, microphone, and output settings also affect the sound. Adjust these for your mix. For control assignments, see MIDI and automation reference. For playing actions, see Grouped keyswitches.

You can also import ordinary note MIDI and use **Assisted** for automatic expression, bow character, and vibrato. Prepared CCs and keyswitches give you direct control over more of the performance.

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Installation and DAW setup

Install on macOS or Windows, then set up Logic Pro, REAPER, or another compatible host.

Bovo Violin 0.2.19 is available as a macOS `.pkg` installer and a Windows `.exe` installer. Install the package for your system, then open your DAW and rescan its plug-ins. No recording-library drive is required to play the instrument.

System requirements and formats

System	Architecture	Installer	Included formats
macOS 14 or later	Apple Silicon	`.pkg`	AU and VST3
Windows 11	x64	`.exe`	VST3

Download the current installers and their matching build-generated checksums from the Bovo Violin release page.

The macOS installer places the plug-ins in `/Library/Audio/Plug-Ins/Components/` and `/Library/Audio/Plug-Ins/VST3/`. The Windows installer places VST3 in the standard system folder, normally `C:\Program Files\Common Files\VST3\`. Search your host for **Bovo Violin**.

The released installers provide the formats listed above. Intel Mac, Linux, AAX, and standalone CLAP downloads are not part of this release.

Logic Pro

Create a Software Instrument track and choose **AU Instruments to Bovo to Bovo Violin to Stereo**. Enable the intended MIDI input and select the track for live playing.

If the instrument is missing, open Logic's **Plug-in Manager**, find the Bovo instrument and use **Reset & Rescan Selection**. Restart Logic after installation or replacing a plug-in. A plug-in instance already loaded into a project can continue running the previous binary until the host reloads it.

REAPER

Create a track, open its **FX** browser, and search for **Bovo Violin**. Load the VST3 instrument, choose your keyboard as the track's MIDI input, arm the track, and enable input monitoring.

If it is missing, check **Preferences to Plug-ins to VST**, rescan the plug-ins, and restart REAPER if needed. The installer uses the standard VST3 location for your system.

The product owner has tested Bovo Violin in **Logic Pro and REAPER**. These instructions do not specify a tested DAW version.

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Ableton Live

In **Settings to Plug-Ins**, enable the relevant AU or VST3 system-folder option and use **Rescan**. AU is available on macOS; VST3 is available on macOS and Windows. Find Bovo Violin in the Plug-Ins browser and place it on a MIDI track.

Set the track's MIDI input to the keyboard, then enable monitoring or arm the track. On macOS, if an ordinary rescan does not find a replaced plug-in, hold **Option** while clicking Rescan for a full rescan. These menu labels can vary slightly with the Live version. This is setup guidance; Ableton Live is not included in the confirmed tested-host list.

Saved projects

Bovo Violin uses the **Air & wood** body model, with the **Open resonance** setting fixed at **1**, including in saved projects. Your saved performance, room and microphone settings still apply. Create a fresh instance to start with the complete factory setup.

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Playing setups and controllers

Choose a performance profile, connect your keyboard, and learn the grouped keyswitches and Auto controls.

Choose a playing setup

Performance profiles

Choose a profile before recording. It prepares the musical hand and bow setup, Live Keyboard, automatic string choice and automatic direction. It turns the three performance intentions to Auto and starts with audible portamento off.

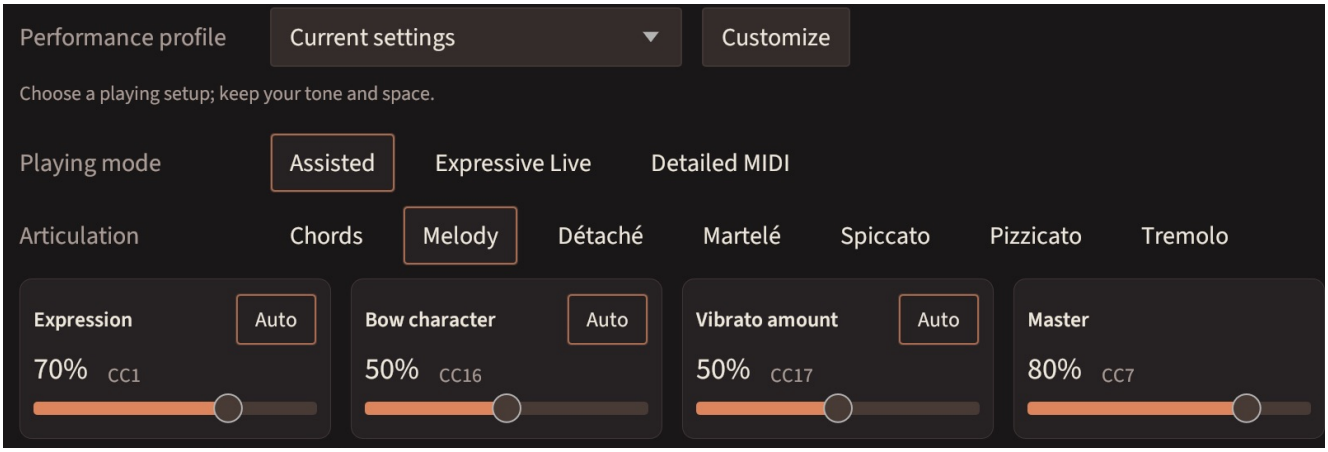
Profile	Initial articulation	Character
Baroque Style	Legato / Melody	Restrained vibrato ornaments and clear phrasing
Classical Cantabile	Legato / Melody	Clear arrivals, supple connections and modest vibrato growth
Romantic Singing	Legato / Melody	Supported long lines; broader arrival followed by a narrower continuation
Romantic Dolce	Legato / Melody	Lighter contact and intimate singing color
Pop Lead	Legato / Melody	Direct arrivals with delayed, focused vibrato
Rhythmic Détaché	Détaché	Separate strokes with body; velocity supplies accents
Rhythmic Martelé	Martelé	Pressure catch, released travel and restrained vibrato
Dancing Spiccato	Spiccato	A fuller dance bounce with 136 ms nominal contact

A profile resets its performance controls, including finger/shift timing and vibrato settings. It preserves the selected body, tone, bow-hair sound level, room, microphones, master level, output finish and keyswitch bank.

Customize to Vibrato character changes the hand's expression. **Customize to Bow phrasing** selects Standard, Classical, Singing or Dolce bow support. You can combine them: for example, Singing bow phrasing with Baroque vibrato.

Current settings means the controls form a custom combination rather than an exact named profile. It is not an error. Profiles are starting points; they do not infer a score's bar accents, write rubato or quantize your playing.

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Play page: profiles, playing modes and the three Auto controls.

Assisted, Expressive Live and Detailed MIDI

Choice	What you supply	What the plug-in supplies
Assisted	Notes, velocity, timing, articulation and optional gestures	Automatic expression, coordinated bow character and vibrato intensity, with phrase development
Expressive Live	Notes plus expression, bow character and vibrato gestures	The live bow/finger behavior and velocity response remain active; the three macro intentions are manual
Detailed MIDI	Independently authored MIDI controls	Detailed physical response to the prepared performance

Assisted and Expressive Live use the **same grouped keyboard map**. You can also keep just one or two intentions automatic by using their individual Auto buttons.

Connect a MIDI keyboard

A practical KeyLab 88 setup

Use the keyboard's User/MIDI configuration and send **absolute CC values, 0-127**. Configure the controls through the appropriate Arturia MIDI Control Center/User preset for your model. The plug-in does not require aftertouch or a proprietary keyboard script.

Hardware control	Assignment	Musical use
Pitch wheel	Pitch bend	Pitch and intentional inflection
Mod wheel	**CC1**	Phrase dynamics
Fader	**CC17**	Vibrato amount, while musical development continues
Knob	**CC16**	Coordinated bow color and articulation character

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Hardware control	Assignment	Musical use
Sustain pedal	**CC64**	Hold a slur across changing notes and key gaps
Optional knob	**CC22**	Sul tasto / sul ponticello sounding point
Optional knob	**CC23**	Full hair to edge hair
Optional knob	**CC82**	Tremolo speed
Optional button	**CC69**	Retake; send 127, then 0 before the next trigger
Optional button	**CC31**	Change bow; send 127, then 0 before the next trigger

Send keyswitches and musical notes on an accepted input channel. Start with All MIDI channels and leave the keyboard untransposed; hardware transposition also moves the switch notes.

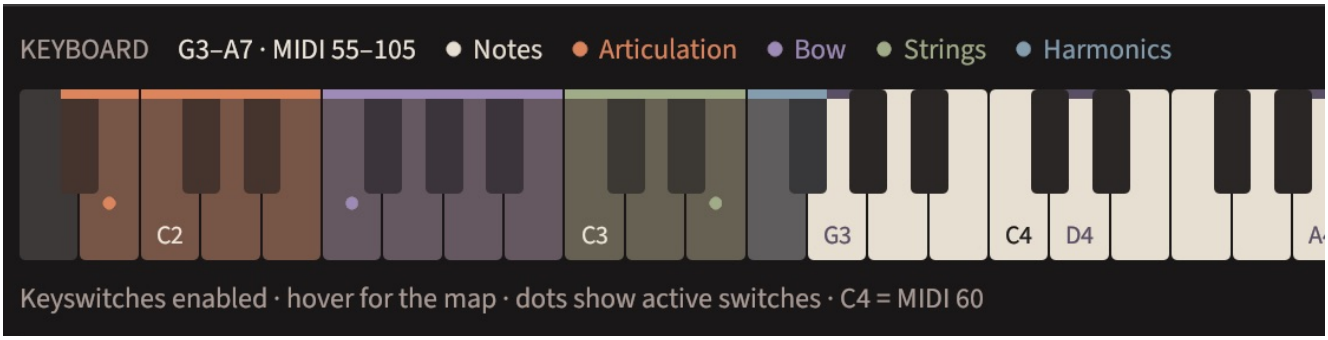
Aftertouch can be **Off**, **Vibrato** or **Bow intensity**. For predictable vibrato from a fader alone, choose Off and use CC17. Keep pitch bend assigned to pitch.

Do not use a relative encoder mode for these absolute controls. Avoid a DAW-control preset that redirects the wheel, faders or pedal away from the instrument track.

Grouped keyswitches

The live bank is **MIDI 34-54** by default. There is one grouped map and no layout selector.

MIDI numbers are authoritative. The note names here use middle C = C4/MIDI 60. Logic and other hosts may display a different octave number for the same key.



The four colored keyswitch groups sit below the playable notes.

Articulations - terracotta

MIDI	Key	Action	Operation
34	Bb1	Arco / chords - Chords on Play	Tap to select
35	B1	Legato - Melody on Play	Tap to select

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MIDI	Key	Action	Operation
36	C2	Détaché	Tap to select
37	C#2	Martelé	Tap to select
38	D2	Spiccato	Tap to select
39	Eb2	Pizzicato	Tap to select
40	E2	Tremolo	Tap to select

Bow - lavender

MIDI	Key	Action	Operation
41	F2	Auto bow direction	Tap; keep this stroke and resume automatic direction for following separate notes
42	F#2	Down bow	Tap to select; repeating it retakes
43	G2	Up bow	Tap to select; repeating it retakes
44	Ab2	Retake	Tap for an airborne return in the current direction
45	A2	Change bow	Tap to reverse on the string
46	Bb2	Slur	Hold through the connected passage
47	B2	Lift	Hold to raise the bow; release to re-engage

Strings - sage

MIDI	Key	Action	Operation
48	C3	G string	Tap to latch
49	C#3	D string	Tap to latch
50	D3	A string	Tap to latch
51	Eb3	E string	Tap to latch
52	E3	Auto string	Tap to restore automatic choice

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Harmonics - blue

MIDI	Key	Action	Operation
53	F3	Natural harmonic	Hold, then play an open-string base key
54	F#3	Harmonic touch	Hold; follows the selected harmonic type

Tap selections persist after the switch key is released. Hold actions remain active only while held, unless an equivalent pedal/controller is also active. Switch notes themselves are silent.

Move the bank

MIDI to First live switch moves all 21 switches together. Its range is MIDI 0-34, so the bank stays below the lowest violin note. After moving it, use the displayed map; all numbers in this manual assume the default first switch, 34.

Moving the bank clears old switch holds and preserves held musical notes and controller pedals. Prefer setting it before a take.

Dynamics and automatic control

What changes the sound

Control	Effect
Note velocity	Changes engagement, contact power and sustained excitation; it supplies attack weight and accents
Expression / CC1	Shapes the musical energy and coordinated bow response through a phrase
Bow character / CC16	Moves several bow settings together; lower values are gentler, higher values more focused and firm
Vibrato amount / CC17	Steers the hand's intensity without requiring a new width/rate curve for every note
Expression trim / CC11	Scales expression for an additional performance trim
Master / CC7	Sets the overall level

Live • Touch response / CC9 sets how strongly keyboard velocity influences the live response. Its factory setting is 0.85. A value of zero reduces the additional live sensitivity; it does not remove every velocity-dependent behavior in the instrument.

Dynamics do not require the master slider to move. A held note can grow through CC1 and bow work while Master stays fixed. Likewise, a MIDI clip can have little velocity variation but still contain a large dynamic shape in its expression and bow data.

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Taking over and returning to Auto

Moving a slider, sending its CC or changing its DAW automation takes ownership of that control or intention. The instrument does not immediately fight the new value.

Gesture	Ownership
Move CC1	Expression becomes manual
Move CC16	Bow character becomes manual
Move CC17	Vibrato intensity becomes manual; musical phrase shaping can continue
Move CC20/CC21	Physical bow force/speed becomes manual; automatic bow distribution respects that choice
Move CC76/CC77	Direct vibrato rate/width takes over the automatic contour
Move CC22/CC23/CC82 with Refined articulation response enabled	Sounding point, hair or tremolo rate takes an independent override

The **Auto** buttons above Expression, Bow character and Vibrato amount return the corresponding intention to the performer. Vibrato Auto also restores musical automatic shaping.

After an independent sounding-point, hair or tremolo edit, the Bow page offers **Automatic point**, **Automatic hair** or **Follow dynamics**. Use those buttons to release the individual override.

Auto bow direction, MIDI 41, only changes direction policy. It does not erase a manual speed, force, sounding point or hair setting. Use the performance Auto buttons and independent Bow buttons for those controls.

The Play macro sliders show effective automatic values while Auto is active and incoming/manual targets when you take over. The Hand readout reports the evolving vibrato motion. Internal automatic motion is calculated in audio; it is not emitted as a stream of new MIDI CC events.

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Bowing and legato

Shape separate strokes, connected phrases, retakes, and long sustained notes.



Bow page: connection and the four contact controls.

Choose the stroke

Legato / Melody is a single line. Overlapping notes keep a connected gesture; separate key attacks can make separate strokes. Last-note priority means lifting a newer key can return to an older key that is still held.

Arco / Chords retains independent string parts. Use it for drones, double stops and rolled chords.

Détaché gives separate on-string strokes. Short note lengths can produce a detached or staccato phrase without requiring another articulation switch.

Martelé prepares pressure while the bow is still, releases into travel and separates the following stroke. Use velocity for accents; holding a slur temporarily connects the passage.

Spiccato gives a bouncing contact. **Spiccato length / CC4** allows 60-180 ms contact; Dancing Spiccato starts at 136 ms. Releasing a key can still end its contact earlier. A very long held key does not turn a bounce into a sustained legato stroke.

Make a slur

For a simple melody, select MIDI 35 and overlap the next note before releasing the previous one.

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For a passage with small keyboard gaps, hold **Slur/MIDI 46** or **CC64** throughout it. The last bowed pitch can remain held through the gap. Release both the Slur key and slur pedal when the phrase should end.

Continuous bow / CC66 keeps the stroke across notes and chords. It controls bow connection; the Keyboard slur pedal additionally bridges key gaps. A string crossing does not inherently require a direction change.

Retake versus change

- **Retake/MIDI 44/CC69** lifts and returns the bow near the frog for another down bow, or near the tip for another up bow. The next note uses the prepared direction.
- **Change bow/MIDI 45/CC31** reverses on the string. At rest it prepares the opposite direction for the next note.
- Repeating **Down/MIDI 42** or **Up/MIDI 43** requests a retake in that direction.
- **Auto bow/MIDI 41** keeps the current stroke and resumes automatic direction for later separate strokes.

A retake has an airborne interval. A note pressed during the return waits for contact while existing resonance continues. Trigger it just before an intended new same-direction stroke if you need a clean arrival.

Long sustained notes

Automatic bow control conserves travel progressively during quiet and strong sustained playing, including held détaché. It can keep a long line developing without a fresh attack on every finger change.

Available bow travel is finite. Very long or forceful holds can still require a turn. If the bow runs out much too soon, check for a manual high speed/force command or a reduced **Available bow travel / CC86**. Return Bow character to Auto to restore automatic physical support.

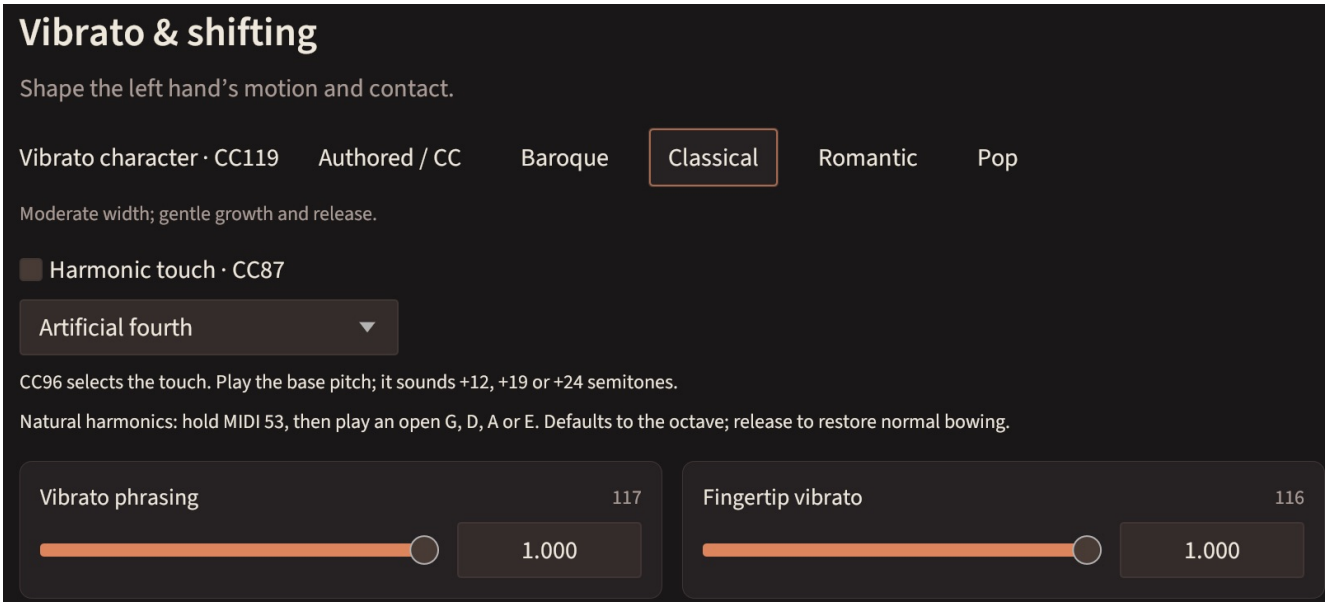
In **Bow to Direct**, speed and force are independent. This is useful for authored gestures and extreme bow experiments; Musical mode is the practical starting point for keyboard performance.

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Left hand and articulations

Shape vibrato, shifts, portamento, pizzicato, tremolo, and harmonics.

Vibrato



Left Hand page: vibrato character, harmonic touch and hand motion.

Musical automatic vibrato

Keep **Musical automatic vibrato** enabled for the current phrase behavior. During a sustained stopped pitch, width and speed can bloom, retreat and change their relationship. Across a legato line, hand motion continues between notes. Separate contacts allow a brief settling of the hand.

Velocity, expression and phrase direction contribute to the result. The performer follows the actual note/touch history; it does not know a notated beat hierarchy or invent score accents. Supply important emphasis through velocity, expression and timing.

Vibrato character	Typical use
Baroque	Brief, restrained ornaments; useful for transparent contrapuntal lines
Classical	Moderate width with gentle growth and release
Romantic	Broader arrival, followed by faster, narrower continuation
Pop	Delayed, focused motion around an established pitch
Authored / CC	Directly programmed rate and width

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Open strings have no left-hand vibrato. A straight open note is expected.

Control it without aftertouch

Assign a fader to **CC17**. Move it to emphasize or calm the hand while the profile continues shaping the sustained note. This is the normal live control.

For a straight stopped tone, send CC17=0 and set the aftertouch route to Off. Aftertouch routed to Vibrato can otherwise add motion.

For a precisely authored contour, use **CC76 rate** and **CC77 width**. These direct controls take over the automatic shape. Use Vibrato Auto to return to phrase-based development.

The Left Hand page also exposes onset, development, asymmetry, variation, fingertip motion and phrasing amount. A fixed width/rate target need not make the Play amount slider oscillate; look at the Hand readout to see the actual motion.

Shifting and portamento

Normal finger changes, an anchored reach and an audible position shift are different gestures.

Enable **Portamento/CC65** when you want a shift to be audible. Overlap notes on the same string. Latch that string first if Auto would choose a crossing instead.

Shift gesture	Result
Light shift	A lighter transition and clear arrival
Singing slide	A more audible connection with supported arrival
Anchored reach	A reach within the hand frame, using Finger change time
Previous guided	The manually guided contour for prepared performances

Position shift time / CC5 sets 15-300 ms. **Finger change time / CC83** sets 2-24 ms for the smaller contact transition. **Shift contact motion / CC30** controls the contact change that lightens a shift.

Start with Light shift and a moderate time. Use Singing slide for a deliberate expressive connection. Leave portamento off for a discreet phrase unless you want an audible glide; a pitch interval alone does not establish a same-finger position shift.

Pizzicato, tremolo and harmonics

Pizzicato

Tap **MIDI 39**. Note velocity shapes the pluck. **Pizzicato projection / CC8** adds 0-12 dB of displacement strength; it is useful for a concluding accent without raising the whole instrument.

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Pluck point / CC84 changes the location along the speaking string. Finger damping and string position influence the release. High-register pizzicato naturally has a shorter body-supported decay than low pizzicato; holding a MIDI key is not a request for an indefinite plucked sustain.

Return to a bowed articulation for the next arco phrase. Pizzicato does not consume an automatic bow stroke.

Tremolo

Tap **MIDI 40** and hold the musical pitch. **Tremolo rate / CC82** spans **3-16 individual strokes per second**. A down-and-up pair therefore counts as two strokes.

Automatic tremolo can respond to dynamics. Sending CC82 gives a fixed manual rate; **Bow to Follow dynamics** releases that override.

Use **Hair tilt / CC23** to change the contact: 0 is full hair, 1 is edge hair. Sounding point and pressure also influence the texture. Keep **Acoustic pizzicato / tremolo** and **Refined articulation response** enabled for the current behavior.

Natural harmonics

Hold **MIDI 53**, then play an open-string base key:

String	Base input	Default sounding octave
G	G3 / 55	G4 / 67
D	D4 / 62	D5 / 74
A	A4 / 69	A5 / 81
E	E5 / 76	E6 / 88

Release the harmonic hold to return to ordinary touch. The open input identifies its physical string even if a different string was previously latched. This dedicated natural-harmonic hold requires Refined articulation response.

Artificial and selected harmonics

Hold **MIDI 54**, or turn on **Harmonic touch/CC87**, and select the harmonic type on Left Hand or with CC96.

CC96 value	Type	Sounding interval above the base
0-31	Artificial fourth	+24 semitones
32-63	Natural octave	+12 semitones
64-95	Natural twelfth	+19 semitones

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CC96 value	Type	Sounding interval above the base
96-127	Natural double octave	+24 semitones

Input the **base pitch**, not the resulting harmonic. For example, artificial fourth touch on A4/69 produces A6/93; you do not need to enter both finger pitches as a chord.

The dedicated MIDI 53 hold defaults to a natural octave; the natural twelfth and double octave selections choose the higher partials. If using latched CC87, send 0 to restore normal touch.

Harmonics are modeled approximations. Bow point, load and touch can make their response more or less stable; they should not be treated as ordinary stopped notes with the same aggressive bow settings.

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Strings and resonance

Choose strings, play multiple stops, and shape ringing, body, and tone.

Strings, chords and ringing

Automatic and explicit strings

Auto string weighs the current hand position, finger reach, string crossings and held voices. It remembers a recent hand position across short releases and open strings. It uses the played history without future-note lookahead, so it cannot know an upcoming phrase before you play it.

Tap a string switch when color or fingering requires a specific string. For **F#5/MIDI 78 on A**, tap **MIDI 50**, then play 78. Tap **MIDI 52** to return to Auto.

A latched string must be able to produce the requested pitch. A note below that string's open pitch cannot be stopped on it. A large pitch jump may require a high position; use an adjacent string when that is the intended fingering.

The current model accepts these per-string input ranges:

String	MIDI range	Note range, middle C = C4
G	55-79	G3-G5
D	62-86	D4-D6
A	69-93	A4-A6
E	76-105	E5-A7

Hold one part while another moves

For a drone and melody:

1. Select **Chords/MIDI 34** and **Auto string/MIDI 52**.

2. Hold **A4/MIDI 69**.

3. Play **E5/76 to F#5/78 to G5/79**, releasing the outgoing upper note as the next arrives.

4. Hold Slur or CC64 if you want the changing upper part to remain in one bow.

5. Release the phrase and the slur hold deliberately.

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For a lower-string example, hold **G3/55** and move **Eb4/63 to D4/62 to Eb4/63** above it. Chords retains the G drone while the changing finger stays on D.

Double, triple and quadruple stops

The instrument has four physical strings, rather than unrestricted keyboard polyphony. Chords allocate feasible notes to them. Brief finger overlaps can replace a moving voice while preserving an unrelated held voice.

The upper voice is normally favored in a double stop. In a two-note octave, the lower voice is favored. **Preferred chord voice / CC27** sets the balance difference, 0-6 dB.

Chord roll / CC28 sets the lower-to-upper progression of larger chords, 10-1000 ms. The lower contact can continue ringing after the bow has moved to the upper pair. Increase the roll for a deliberate slow chord arrival; shorten it for a quick gesture. The one-second maximum allows an especially deliberate lower-to-upper spread. The slider gives more travel to shorter values for fine adjustment; MIDI CC28 remains linear across the full range.

Shared string resonance and body response remain active during runs and string crossings. Lower stopped positions generally ring more than very high stopped positions; open strings and harmonic relationships can add stronger sympathetic support. **Finger damping / CC72** controls release damping. Higher values shorten stopped-string release.

One track with explicit string channels

For prepared polyphony, enable **MIDI to Channels 2-5 select G / D / A / E** and preserve the MIDI event channels:

MIDI channel	String
2	G
3	D
4	A
5	E

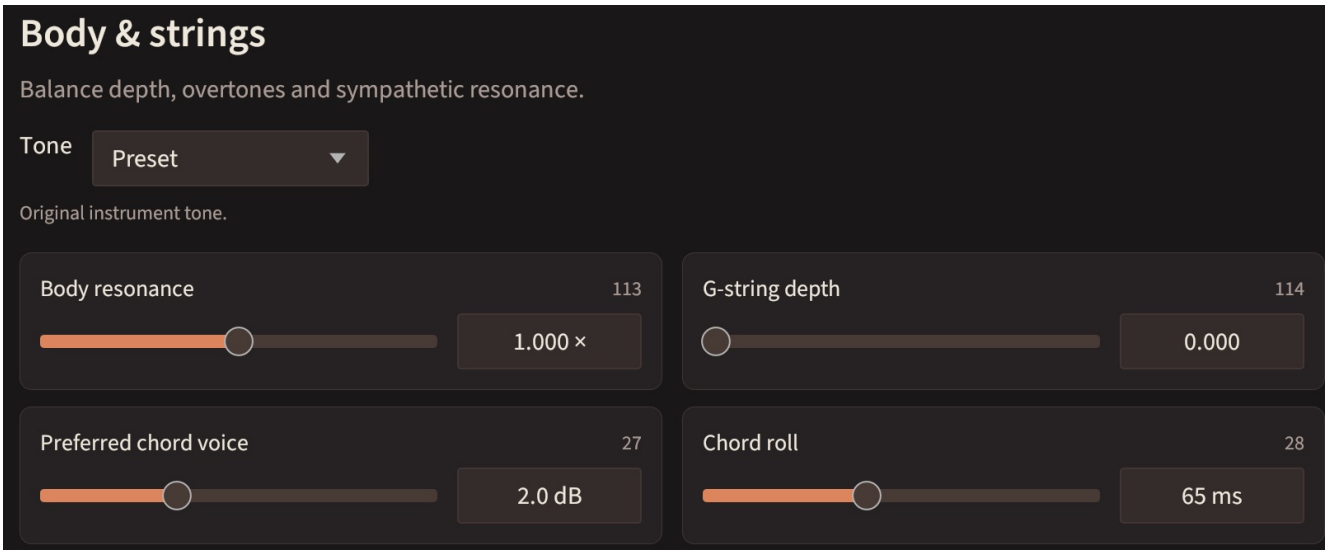
A single MIDI track can contain all four channels. Make sure the DAW does not force its events onto one output channel. Keep the plug-in's input accepting the channels you use.

Use this when you need explicit string placement, separate channel bends or detailed per-string preparation. The ordinary grouped map remains the live keyboard workflow.

Body and tone

The instrument uses the **Air & wood** body model, with fuller lower radiation and open upper projection. The **Open resonance** setting is fixed at **1**. These settings apply to every instance.

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Resonance page: tone, body response and chord controls.

Choose **Resonance to Tone** to adjust the overall sound:

Tone	Sound
Preset	The original instrument tone; selected by default
Focused	Less upper buzz, keeping the low register intact
Round	Fuller low register and a softer upper edge
Responsive	Softens the upper edge more as you play louder

Tone changes blend smoothly during playback. The choice is saved with your project and can be automated using **Tone** in your DAW. It leaves the performance profile and MIDI controls in place. **Reset defaults** returns it to **Preset**. There is no dedicated Tone keyswitch or CC.

Use **Body resonance / CC113**, limited to **0.8-1.2 x** with a default of **1 x**, for the body contribution and **Shared string resonance / CC71** for interaction and ringing between strings. These have different roles.

G-string depth / CC114 adds warmth and weight to low G-string notes. Try G3 (MIDI55) to hear the range. At 0 it preserves the factory tone; increasing it supports the lower overtones without changing pitch. The effect gradually withdraws in higher positions and does not recolor other strings or harmonics. **Upper E response / CC118** controls the dedicated upper response. **Body brightness / CC74** is a broad tonal adjustment. Raise them gradually while listening to both held notes and runs.

Bow hair sound / CC24 adjusts the audible contact layer; its factory level is 0.08. **Finger force / CC25** changes physical contact. For a rougher bow experiment, combine speed, force, point and hair instead of only increasing the noise slider.

Con sordino / CC67 applies the mute.

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Space and output

Choose a room, place microphones, and prepare a solo sound or a mix.

Rooms, microphones and output

Choose a space

Venue	Perspective
Studio	Close, controlled reflections and a short, dense tail
Small hall	Chamber clarity with a warm bloom
Concert hall	A wider stage and spacious orchestral tail
Church	Tall, reflective architecture and a gradual, enveloping decay

Selecting a venue changes the room model while keeping your microphone and return controls. Click **Load [venue] setup** to apply that venue's recommended complete microphone, reflection, diffusion and tail-EQ settings.

Solo recital loads the concert-hall solo perspective, enables distance level compensation, and sets Body resonance=1 and G depth=0.

Freeplay space loads the lighter Freeplay room/microphone settings. **Room off** sets Reverb amount to 0. It does not disable instrument resonance, microphone color or output finishing.

Shape the room

- **Reverb amount / CC91** sets the return level.
- **Early reflections / CC93** adds the nearby reflected structure around an attack.
- **Late reverb / CC94** controls the diffuse tail.
- **Decay length / CC92** scales the room's decay; **Treble decay / CC107** shapes high-frequency persistence.
- **Pre-delay / CC95** separates the reflected return from the direct arrival.
- **Diffusion / CC110** fills the tail; **Reverb width / CC108** changes its stereo spread.
- **Reverb low-cut / CC111** and **high-cut / CC112** filter the room return.

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For running passages that become cloudy, reduce Late reverb or Decay length before removing the instrument's own resonance.

Microphones

Distance, pair spacing, height, off-axis angle and pattern change the modeled perspective. Pattern runs from **0 figure-eight**, through **0.5 cardioid**, to **1 omni**.



Space page: microphone geometry and placement controls.

Match level with distance / CC89 keeps the direct level steady while moving the microphones; the room becomes more prominent with distance. Turn it off when you want distance to reduce the direct level naturally.

Leave the DAW track pan centered. String image width and room width create a stereo image around it. **CC10 is not the plug-in's pan control**: it controls Refined articulation response. Standard center-pan CC10=64 keeps that response enabled.

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Output finishing

Output	Use
Solo finish	The default polished solo output: broad tone shaping, gentle stereo-linked compression, calibrated gain and look-ahead peak control
Mix headroom	Finishing without the solo makeup gain, with more peak headroom for a larger arrangement
Raw	Bypass the finishing stage for your own processing or direct comparison

Output polish / CC19 adjusts the finishing amount. Peak protection remains active in the enabled finishing modes even with low polish. Raw is a finishing bypass; use Room off separately if you also want no reverb return.

Finishing is for the instrument's own output. It does not master the rest of your DAW session. If the host bus overloads after other effects or instruments are added, adjust the session levels.

Solo finish and Mix headroom report a small look-ahead latency to the host. Keep the DAW's plug-in delay compensation enabled and choose a suitable audio buffer for live playing.

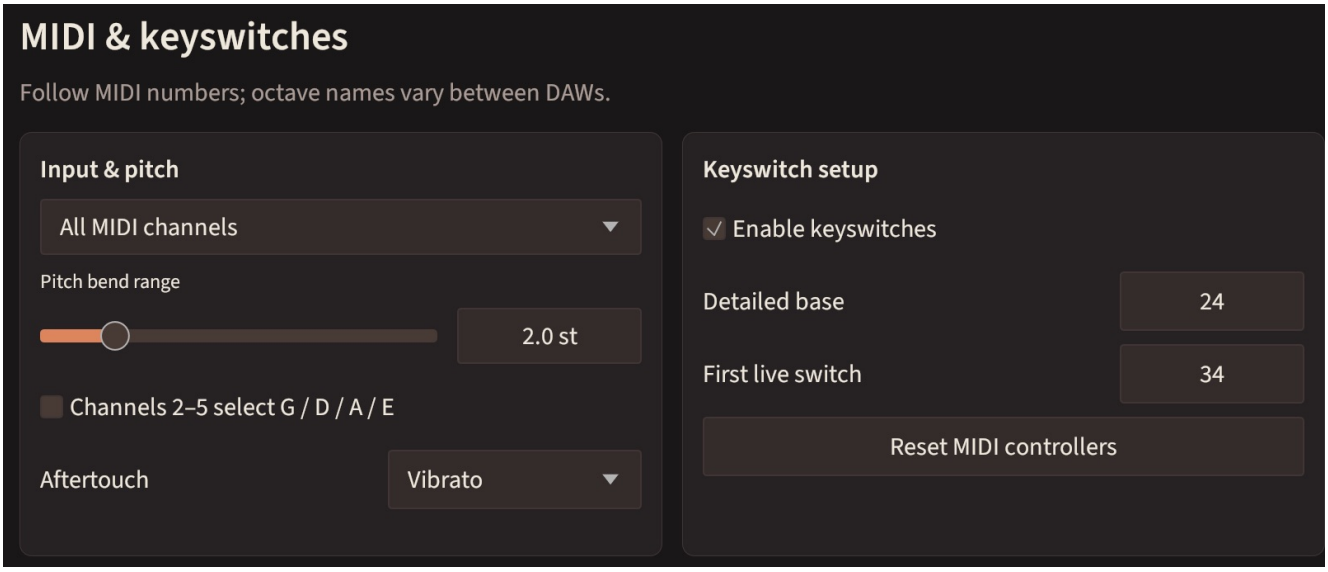
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MIDI and automation reference

Record a repeatable performance and look up every documented CC, range, default, and automation ID.

Record and replay a performance

Record the musical notes, their velocity, your wheel/fader gestures, pedals, switches and intentional bends. Automatic playing develops the audio internally; it does not write generated bow or vibrato CC data into the clip.



MIDI page: input, pitch, aftertouch and keyswitch setup.

Save the plug-in state with the project or a host preset. Include:

- Plug-in version and performance mode.

- Performance profile/custom bow and vibrato choices.

- Which intentions and independent bow controls are Auto or manual.

- The **First live switch** setting.

- String-channel settings, pitch-bend range and aftertouch route.

- Body, room, microphones, master and output finish.

For reliable clip playback, place required articulation/string switches and controller values before the first affected note. Include note-offs for switches and musical notes. Release slur/harmonic pedals at the intended ending and leave time for the instrument and room tail.

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Do not initialize every CC by habit in an Assisted clip: a stored CC1, CC16, CC17, CC20, CC21, CC76 or CC77 event can take ownership even if the value looks like a default.

Use DAW automation when you want an editable parameter lane. Use recorded MIDI CC when the gesture belongs to the keyboard performance. The interface shows the active result; merely receiving MIDI does not guarantee that the host will record it as parameter automation.

Reset MIDI controllers/CC121 returns MIDI controller values to the current GUI/automation settings, resets bends and releases pedal holds while preserving articulation and string selections. It is not a factory-preset reset. Auto buttons are the focused way to return an intention to automatic control.

MIDI and automation reference

Controller values are **0-127**. Unless specified otherwise, continuous CCs map linearly to their physical ranges. DAW automation uses the named parameter and its host range.

CC113 is the exception: MIDI value 64 gives exact Body resonance=1; 0-64 spans 0.8-1 and 64-127 spans 1-1.2.

Pitch bend defaults to **+/-2 semitones**, with a configurable range of 0-12 in each direction. MIDI RPN 0 can set a per-channel bend range with CC101/100 selection and CC6/38 data entry; deselect the RPN afterward. Ordinary use needs only the pitch wheel.

High-resolution MSB/LSB pairs are supported for applicable continuous controls below CC32. The basic keyboard setup uses ordinary absolute 7-bit CCs.

Switches and actions

CC	Function	Values
2	Breath-controller alias for bow force	Same physical range as CC20
10	Refined articulation response	0-62 off; 63-127 on; keep64 or higher for the current response
12	Keyboard note actions	0-63 off; 64-127 on; keep enabled for grouped keyswitches and the slur pedal
13	Acoustic pizzicato / tremolo	0-63 off; 64-127 on
14	Musical automatic vibrato	0-63 off; 64-127 on
15	Performance mode	0-63 Detailed MIDI; 64-127 Live Keyboard
18	Bow phrasing	0-31 Standard; 32-63 Classical; 64-95 Singing; 96-127 Dolce

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CC	Function	Values
29	Shift gesture	0-31 Previous guided; 32-63 Light shift; 64-95 Singing slide; 96-127 Anchored reach
31	Change bow	Crossing from below 64 to 64 or higher triggers; release below 64 to rearm
64	Keyboard slur pedal	0-63 release; 64-127 hold
65	Portamento	0-63 off; 64-127 on
66	Continuous bow	0-63 release; 64-127 hold
67	Con sordino	0-63 off; 64-127 on
68	Temporary melody/legato priority	0-63 release; 64-127 hold
69	Retake	Crossing from below 64 to 64 or higher triggers; release below 64 to rearm
87	Harmonic touch	0-63 off; 64-127 on
88	Saved three-room selection	0-42 Studio; 43-85 Small hall; 86-127 Concert hall; returns Venue to the saved-room path
89	Microphone distance level compensation	0-63 off; 64-127 on
90	Bow control	0-63 Musical; 64-127 Direct
96	Harmonic type	0-31 artificial fourth; 32-63 natural octave; 64-95 natural twelfth; 96-127 natural double octave
109	Venue	0-31 Studio; 32-63 Small hall; 64-95 Concert hall; 96-127 Church
119	Vibrato character	0-25 Authored / CC; 26-51 Baroque; 52-77 Classical; 78-103 Romantic; 104-127 Pop
120	All sound off	Immediate stop and acoustic reset
121	Reset MIDI controllers	Return controller values to current GUI/automation settings
123	All notes off	Release current musical notes; natural releases can continue

Advanced fingering preparation uses **CC3** for a guide pitch, accepting 0 or MIDI 55-105, and **CC70** for arriving finger, accepting 0-4. Their instructions apply to the next prepared note on that channel. These are optional authoring tools rather than required live controls.

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Continuous controls

The following tables list the exact automation identifiers and base factory settings. Loading a performance or space profile can change these settings. Auto and live macros can produce an effective physical value different from a stored base target.

Dynamics

CC	Control	Range	Base default	Automation ID
1	Expression • mod wheel	0-1	0.75	`expression`
7	Master volume	0-1	0.8	`volume`
11	Expression trim	0-1	1	`expression_trim`
85	Expressive emphasis	0-1	0.35	`emphasis`

Live macros

CC	Control	Range	Base default	Automation ID
16	Live • Bow character	0-1	0.5	`live_bow_character`
17	Live • Vibrato	0-1	0.5	`live_vibrato`

Touch response

CC	Control	Range	Base default	Automation ID
9	Live • Touch response	0-1	0.85	`velocity_response`

Bow controls

CC	Control	Range	Base default	Automation ID
4	Spiccato length	60-180 ms	112 ms	`spiccato_contact_ms`
20	Bow force	0-2.5 N	0.65 N	`bow_force_n`
21	Bow speed	0-0.8 m/s	0.18 m/s	`bow_speed_m_s`
22	Sounding point / speaking length	0.02-0.28	0.1	`sounding_point_ratio`
23	Hair tilt	0-1	0.12	`hair_tilt`

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CC	Control	Range	Base default	Automation ID
24	Bow hair sound	0-1	0.08	`bow_noise`
26	Stroke variation	0-1	0.35	`motor_variation`
73	Bow engagement	2-100 ms	24 ms	`bow_attack_ms`
82	Tremolo rate	3-16 strokes/s	9 strokes/s	`tremolo_rate_hz`
86	Available bow travel	0.1-0.65 m	0.52 m	`bow_travel_m`

Left-hand controls

CC	Control	Range	Base default	Automation ID
5	Position shift time	15-300 ms	65 ms	`portamento_ms`
8	Pizzicato projection	0-12 dB	6 dB	`pizzicato_projection_db`
25	Finger force	0.25-4 N	1.8 N	`finger_force_n`
30	Shift contact motion	0-1	1	`shift_contact_motion`
75	Vibrato asymmetry	0.3-0.7	0.54	`vibrato_fall_fraction`
76	Vibrato rate	3-9 Hz	5.7 Hz	`vibrato_rate_hz`
77	Vibrato width	0-70 cents	18 cents	`vibrato_depth_cents`
78	Vibrato onset	0-0.5 s	0.07 s	`vibrato_delay_s`
79	Vibrato development	0.01-0.8 s	0.18 s	`vibrato_rise_s`
80	Vibrato variation	0-1	0.35	`vibrato_variation`
83	Finger change time	2-24 ms	8 ms	`finger_change_ms`
84	Pluck point / speaking length	0.05-0.45	0.22	`pluck_point_ratio`
116	Fingertip vibrato	0-1	1	`fingertip_vibrato`
117	Vibrato phrasing	0-1	1	`vibrato_phrasing`

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Resonance controls

CC	Control	Range	Base default	Automation ID
27	Preferred chord voice	0-6 dB	2 dB	`chord_balance_db`
28	Chord roll	10-1000 ms	65 ms	`chord_roll_ms`
71	Shared string resonance	0-1.5	1	`resonance_amount`
72	Finger damping	0-1	0.65	`finger_release_rate`
74	Body brightness	-4-4 dB	0 dB	`body_brightness_db`
81	String image width	0-1	0.16	`string_width`
113	Body resonance	0.8-1.2 x	1 x	`body_resonance`
114	G-string depth	0-1	0	`g_string_depth`
118	Upper E response	0-1	1	`upper_e_response`

Room controls

CC	Control	Range	Base default	Automation ID
91	Reverb amount	0-0.6	0.54	`room_send`
92	Decay length	0.4-2 x	0.85 x	`room_decay_scale`
93	Early reflections	0-2	0.95	`early_reflection_level`
94	Late reverb	0-2	1.6	`late_reverb_level`
95	Pre-delay	0-80 ms	14 ms	`room_predelay_ms`
107	Treble decay	0.25-1.25 x	0.94 x	`room_treble_decay_scale`
108	Reverb width	0-1.5	1.12	`room_stereo_width`
110	Diffusion	0-1	0.94	`room_diffusion`
111	Reverb low-cut	40-400 Hz	90 Hz	`room_low_cut_hz`
112	Reverb high-cut	2500-16000 Hz	9500 Hz	`room_high_cut_hz`

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Microphone controls

CC	Control	Range	Base default	Automation ID
102	Mic distance	0.3-4 m	3.1 m	`microphone_distance_m`
103	Pair spacing	0-1 m	0.6 m	`microphone_spacing_m`
104	Mic height	0.6-3 m	1.9 m	`microphone_height_m`
105	Off-axis angle	-90-90 °	8 °	`microphone_off_axis_deg`
106	Mic pattern	0-1	0.5	`microphone_pattern`

Output polish

CC	Control	Range	Base default	Automation ID
19	Output polish	0-1	1	`finish_amount`

Additional host parameters

These settings use host automation or the actions described above. Input-channel and keyswitch-bank settings are setup parameters rather than real-time automation lanes.

Automation ID	Control	Setting or action
`tone_profile`	Tone	0 Preset, 1 Focused, 2 Round, 3 Responsive; default 0
`articulation`	Articulation	0-6: Arco/chords, Legato, Détaché, Martelé, Spiccato, Pizzicato, Tremolo; see the switch map
`bow_control_mode`	Bow control	0 Musical, 1 Direct; CC90
`string_choice`	String choice	0 Automatic, 1 G, 2 D, 3 A, 4 E; live MIDI 48-52
`bow_direction`	Bow direction	0 Automatic, 1 Down, 2 Up; live MIDI 41-43
`bend_range_semitones`	Pitch bend range	0-12 semitones in each direction; MIDI RPN 0 can set a channel override
`con_sordino`	Con sordino	Off/on; CC67
`portamento`	Portamento	Off/on; CC65
`input_channel`	MIDI input channel (0 = omni)	0 All MIDI channels, 1-16 a single channel; setup parameter

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Automation ID	Control	Setting or action
`string_channels`	Channels 2-5 select G D A E	Off/on: channels 2-5 select G/D/A/E; setup parameter
`keyswitches_enabled`	Keyswitches enabled	Off/on; setup parameter
`artificial_harmonics`	Harmonic touch	Off/on; CC87; the selected type is separate
`connected_bow`	Connected bow across chords	Off/on; CC66 also provides a held request
`room_preset`	Room	0 Studio, 1 Small hall, 2 Concert hall; CC88
`space_venue`	Venue	0 Use saved room, 1 Studio, 2 Small hall, 3 Concert hall, 4 Church; CC109 selects 1-4
`mic_distance_compensation`	Compensate microphone distance	Off/on; CC89
`vibrato_style`	Vibrato style	0 Authored/CC, 1 Baroque, 2 Classical, 3 Romantic, 4 Pop; CC119
`shift_gesture`	Shift gesture	0 Previous guided, 1 Light shift, 2 Singing slide, 3 Anchored reach; CC29
`performance_mode`	Performance mode	0 Detailed MIDI, 1 Live Keyboard; CC15
`live_aftertouch`	Live aftertouch	0 Off, 1 Vibrato, 2 Bow intensity
`bow_retake`	Bow retake • trigger	Momentary request; return to off between triggers; CC69 or MIDI 44
`output_finish`	Output finish	0 Raw, 1 Solo finish, 2 Mix headroom
`auto_expression`	Auto expression	Off/on; Play Expression Auto
`auto_bow_character`	Auto bow character	Off/on; Play Bow character Auto; separate from direction
`auto_vibrato`	Auto vibrato intensity	Off/on; Play Vibrato amount Auto
`legato_character`	Legato character	0 Standard, 1 Classical, 2 Singing, 3 Dolce; CC18
`musical_vibrato`	Musical automatic vibrato	Off/on; CC14
`keyboard_string_keys`	Keyboard string keys and slur pedal	On for the grouped live switches and slur pedal; CC12
`acoustic_articulations`	Acoustic pizzicato and tremolo	Off/on; CC13
`bow_change`	Change bow • trigger	Momentary request; return to off between triggers; CC31 or MIDI 45

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Automation ID	Control	Setting or action
`refined_articulations`	Refined articulation response	Off/on; CC10
`harmonic_kind`	Harmonic type	0 Artificial fourth, 1 Natural octave, 2 Natural twelfth, 3 Natural double octave; CC96

Further reference

- Grouped keyswitch guide

- Performance profile reference

- Bovo Violin release page

This manual covers Bovo Violin 0.2.19. Keep the project's saved state with its MIDI when exchanging performances.

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Troubleshooting

Find checks for missing plug-ins, silent tracks, keyswitches, bowing, vibrato, and playback.

Symptom	Check
Plug-in is missing	Run the installer for your system; check macOS 14+ Apple Silicon or Windows 11 x64, enable AU/VST3 scanning as appropriate, then rescan and reload
No sound	Track monitoring/arming, MIDI input channel, musical range, Master and expression; release Lift and check manual force/speed are not zero
A keyswitch plays the wrong action	Use MIDI numbers, default first switch 34 and the current map; check hardware transpose and the clip's switch notes
A chord becomes one melody	Select Chords/MIDI 34; Melody is last-note priority
The string color is wrong	Tap the intended string/MIDI 48-51; restore Auto with 52; verify the note is playable on that string and channel routing is not overriding it
A phrase holds after key release	Release CC64 and Slur/MIDI 46, plus any other active hold; use Panic if necessary
Too many separate strokes	Overlap melody notes or hold the slur pedal/key; confirm intended connected bow
Retake starts another same-direction stroke	That is the retake action; use Change for an on-string reversal, or 41 to resume automatic direction
Long notes turn too soon	Check manual CC20/21 and available travel; return physical bow support to Auto
Vibrato appears unchanged	Check open versus stopped pitch, aftertouch route and the Hand readout; direct CC76/77 overrides the automatic contour
Tremolo no longer follows dynamics	CC82 has taken manual control; use Follow dynamics on Bow
Sul tasto or hair control seems overwritten	Send CC22/23 with Refined articulation response enabled; return using Automatic point/hair
Harmonics sound in the wrong octave	Enter the base pitch, check CC96/type and release old harmonic holds
Room is too cloudy	Reduce Late reverb, decay or send; load a tighter venue setup
Playback differs from a fresh instance	Use Reset defaults to restore the factory setup, then check whether incoming MIDI or DAW automation changes it again

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