MRTAUDIO

MUSIC TECHNOLOGY

USER GUIDE

STANDARD

USB MIDI Breath Controller

User Guide

English

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MRTAUDIO Standard USB MIDI Breath Controller

Thank you for choosing the MRTAUDIO Standard USB MIDI Breath Controller. This model translates breath pressure into configurable MIDI control data, allowing compatible instruments to respond with expression, volume, modulation, vibrato or filter movement while your hands remain on the instrument.

Start Here: Your First 60 Seconds

> Before you turn the encoder: After every normal power-up, the encoder is assigned to Gain (breath sensitivity). Turning it changes the sensitivity immediately and saves the new value automatically after a short pause. Turning the encoder does not select a preset. To select P1, P2 or P3, first press and release the encoder once, then turn it; press once more to return.

1. Connect the headset first. Insert its 3.5 mm plug fully into BC IN and leave the mouthpiece idle.
2. Choose one MIDI path for the first test. For a computer or compatible USB host, connect USB-C and select MRTAUDIO BC as the MIDI input. For hardware MIDI, power the controller by USB and connect MIDI OUT to the instrument's MIDI IN with a 3.5 mm TRS MIDI Type A to 5-pin DIN adapter/cable.
3. Know the factory signal. A new or factory-reset unit starts on P1 Green. Only Layer 1 is active; it sends CC7 Channel Volume, values 0-127, on MIDI channels 1, 2 and 3. The controller sends MIDI data and does not produce sound by itself.
4. Calibrate the playing range. Keep the mouthpiece idle and hold the encoder for about 2 seconds. Release when calibration starts. When Red pulses, use the highest breath pressure you can comfortably repeat while playing; hold it while Green is on. Two fast Green pulses confirm completion.
5. Test before editing. Hold or play a note on the receiving instrument, then apply breath. If that instrument does not respond to CC7, assign a supported MIDI controller in Web Configurator. Do not turn the encoder merely to test whether the device is working.

All three factory presets initially contain the same profile. Changing from Green to Amber or Red will therefore not change the sound until you save different settings to those presets.

Controls at a Glance

- Select P1, P2 or P3: Press and release the encoder, turn, then press again. The selected Green, Amber or Red LED repeats a soft fade while Preset Select is active.
- Change breath sensitivity: Short-press MODE until Gain is selected, then turn the encoder. The chosen Gain step is saved automatically after a short pause.
- Change Layer 1's minimum output: Short-press MODE until OUT MIN is selected, then turn the encoder. The change affects only Layer 1 of the active preset and is saved automatically.
- Calibrate: Hold the encoder for about 2 seconds. Amber indicates the hold; Red asks for breath; two fast Green pulses confirm completion.
- Lock or unlock the panel: Hold MODE for about 1 second. All LEDs flash for lock; two Green pulses confirm unlock.

Two terms to remember: Gain / SENS controls how readily breath pressure is converted into movement. OUT MIN sets Layer 1's lowest MIDI output value; it is not a master-volume control.

Power-On Shortcuts: Read the Confirmation

For normal playing, connect USB without pressing either button. The MODE button on the side/rear and the push switch in the rotary encoder have different power-on functions.

Hold while connecting USB power	Action after release	Confirmation
MODE only, about 2 seconds	Toggles the saved USB data state; power remains on	Three Green pulses: USB data ON. Three Red pulses: OFF.
Encoder push switch only, about 2 seconds	Rebuilds all three presets with the CC7 or CC11 one-layer profile	Three Green pulses: CC7. Three Amber pulses: CC11.
MODE and encoder together, about 5 seconds	Factory reset; replaces saved settings	Accelerating Red countdown, Amber while writing, then Green completion.

For either single-button shortcut: Keep holding while Amber is steady. When Amber goes out after about 2 seconds, release the button. The three confirmation pulses appear after release, not while you keep holding. Let the confirmation finish before disconnecting power. Releasing too early, or pressing the second button during the hold, cancels the shortcut with two Amber pulses; no setting is changed.

Read the number of pulses and the button used, not the color alone. Three Green pulses after MODE confirm USB data ON; after the encoder they confirm CC7. The later startup fade and normal Gain/VU display are not shortcut confirmations. Holding both buttons from power-on is a factory reset, not a stronger version of either shortcut.

In the Box

Included items depend on the selected product option. The Standard controller option includes:

- MRTAUDIO Standard controller
- USB-A to USB-C data and power cable
- 3.5 mm TRS MIDI Type A to 5-pin DIN male MIDI cable
- Printed quick-start and care information

The MRTAUDIO breath headset is included when the headset option or complete set is selected. It is not included with a controller-only order.

Optional Headset Package

When the compatible headset is selected, its package contains:

- 1 x MRTAUDIO Breath Headset headband and sensor assembly
- 1 x flexible air tube with threaded connector
- 2 x detachable mouthpieces (one primary and one spare)

Hardware Overview

The Standard model has a compact hardware layout:

- One rotary encoder with push switch: Turn to adjust the MODE-selected Gain or Layer 1 OUT MIN value. Click to enter or leave preset selection; hold deliberately for about 2 seconds to start calibration.
- One side/rear MODE button: Short press selects Gain or OUT MIN. A deliberate hold of about 1 second toggles panel lock. Power-on holds provide protected access to USB data and factory reset functions.
- Three status LEDs: Green, Amber and Red indicate breath level, preset selection, calibration, USB status and errors.
- USB-C port: Provides power and class-compliant USB MIDI data when USB data is enabled.
- BC IN jack: 3.5 mm analog input for the MRTAUDIO breath headset.
- MIDI OUT jack: 3.5 mm TRS MIDI Type A output for connection to hardware MIDI equipment through a compatible Type A to 5-pin DIN adapter/cable. The Standard model does not have MIDI IN.
- Mouthpiece vent cap: The small manual plastic cap beside the mouthpiece rotates to adjust the air-exhaust opening. This changes the physical airflow and can alter the perceived blowing resistance; it does not change the stored MIDI gain or curve settings.

Safety, Care & Cleaning

Moisture and Condensation Warning

The pressure sensor is inside the headset sensor housing. Keep this housing and the controller unit dry. Allow detachable air-path parts to dry fully before reconnecting them.

- Air Exhaust & Drain Cup: Rotate the small plastic cap beside the mouthpiece to adjust the air-exhaust opening. The vent and drain cup help air and natural condensation escape. Avoid blowing excess moisture or saliva into the mouthpiece. Liquid reaching the headset sensor housing may damage the pressure sensor or cause unstable readings.
- Hygiene & Washing: Disconnect the flexible air tube from the headset sensor housing before washing the detachable tube and mouthpiece parts with warm soapy water. Let them dry completely before reassembly. Do not wash or submerge the sensor housing, cables, connectors or controller unit.

Storage and Handling

Keep the controller away from temperature extremes, direct sunlight in a closed vehicle and heating equipment. After moving the unit between substantially different environments, let it reach stable room conditions before calibrating or playing. Do not disassemble the main unit. It contains no user-serviceable parts; contact MRTAUDIO support if service is required.

Power & Cable Safety

The MRTAUDIO controller is strictly USB bus-powered and does not contain an internal battery. It requires no charging. Only use high-quality, undamaged USB cables. Do not use cables with visible fraying or bent connectors, as this may cause power fluctuations that interrupt your MIDI stream. The headset should rest comfortably around the head, with the mouthpiece positioned without forcing the frame. Route the 3.5 mm cable with enough slack that head movement does not pull the headset or controller.

Setting Up & Connections

1. Computer / DAW Connection

1. Connect the supplied USB data/power cable between the controller's USB-C port and the computer.
2. The unit powers on automatically. All three status LEDs make one brief, synchronized soft fade to confirm a normal startup, then return to the active performance display. There is no battery to charge.
3. Connect the breath headset to the 3.5 mm BC IN port.
4. Launch your DAW, software instrument or standalone plug-in host.
5. In your DAW's MIDI preferences, enable MRTAUDIO BC as the MIDI track input. MRTAUDIO Config is reserved for Web Configurator communication and diagnostics.
6. If the controller does not appear as a USB MIDI device, check that USB data has not been disabled with the protected power-on control.

2. Hardware Synthesizer Connection (DAWless)

1. Provide power to the MRTAUDIO controller through a regulated 5 V USB power source. The unit powers on automatically.
2. Connect the breath headset to the 3.5 mm BC IN port.
3. Use a compatible 3.5 mm TRS MIDI Type A to 5-pin DIN adapter/cable to connect the controller's MIDI OUT jack to your synthesizer's MIDI IN port.
4. Match the receiving channels to the active preset. The factory profiles send their primary layer on MIDI channels 1-3.
5. When using a separate USB power supply, USB data can remain enabled. Disable it only when the chosen power source tries to enumerate an unsupported USB device.

Keyboards Without USB MIDI Host Support

A USB socket does not necessarily accept a USB MIDI controller. Some workstation and arranger keyboards use USB HOST only for supported storage or accessories; a USB DEVICE port usually connects the keyboard itself to a computer. If the instrument does not explicitly support this type of USB MIDI device, use MIDI OUT to MIDI IN with separate USB power. USB data on MRTAUDIO can remain enabled.

The three power options below also apply to other keyboards with MIDI IN but no compatible USB MIDI host support. Check the exact model's manual; do not assume that all models from the same brand share USB capabilities. Pa3X is an example, not the only affected instrument.

Korg Pa3X: MIDI OUT and USB Power Options

For the Pa3X, use the controller's MIDI OUT, not a direct USB MIDI connection. Korg documents USB MIDI through the Pa3X USB DEVICE port for connection to a computer; do not treat its USB HOST ports as compatible USB MIDI inputs for this controller.

For all three options below, connect MRTAUDIO MIDI OUT to Pa3X MIDI IN with a 3.5 mm TRS MIDI Type A to 5-pin DIN cable/adapter. Match the receiving channels and controller assignment. Select an MRTAUDIO output mode that includes DIN, such as Auto Safe or DIN Safe Only, not USB Only.

1. Separate USB power adapter (recommended): Power MRTAUDIO from a separate regulated 5 V USB supply, with no USB cable connected to the Pa3X. No USB-data setting needs to change.
2. Power-only USB cable: If taking power from the Pa3X, use a cable explicitly specified as carrying power only, with no USB data lines. A cable that can charge a device is not necessarily power-only. The Pa3X supplies power; DIN carries MIDI. Replace it with a known USB data cable when using a computer for configuration or updates.
3. Disable USB data on MRTAUDIO: First disconnect from the Pa3X. Using a separate USB supply, hold only MODE while connecting power. Keep holding until the steady Amber light goes out after about 2 seconds, then release. Three Red pulses confirm USB data off; three Green pulses mean it is on. This toggles the saved state: do not repeat after Red confirmation. Wait for the indication to finish before moving the USB cable to the Pa3X. DIN remains the MIDI connection.

Return to Web Configurator or firmware updates: USB data off is reversible; it does not permanently disable updates. Disconnect from the Pa3X. If you used option 3, repeat the MODE power-on gesture on a separate supply until three Green pulses confirm USB data on. Then connect to a computer with a USB data cable. If a Pa3X USB warning persists, use option 1.

Auto Safe and DIN Safe Only do not disable USB device detection. They select performance MIDI routing, not USB data off. Factory reset enables USB data again; check this setting before reconnecting directly to the Pa3X for power.

3. iOS / iPad Connection

The controller can be used with an iPad or iPhone when the Apple device, adapter and MIDI app support class-compliant USB MIDI and provide sufficient power. A powered USB hub may be required. Web Configurator is not available in iOS/iPadOS browsers; save the device configuration from a supported desktop or Android Chromium browser first.

4. Breath Sensor Calibration (Auto-Calibrate)

Breath controllers measure small changes around the current atmospheric pressure. Room temperature, altitude, and humidity can shift the baseline, so calibrate the sensor before important sessions or whenever the response feels different.

1. Power on the connected controller.
2. Connect the headset and make sure the mouthpiece is idle. Do not blow into it while the zero point is being measured.
3. During normal operation, press and deliberately hold the encoder push switch. Amber hold feedback begins after about 1 second. Keep holding until calibration starts at about 2 seconds, then release the switch while keeping the mouthpiece idle.
4. After the resting pressure is measured, the Red LED pulses for approximately 9 seconds while the device waits for you to begin the peak-breath measurement.
5. While Red is pulsing, begin one controlled breath at the maximum pressure you can use comfortably and repeatedly while playing. The Green LED remains on while the device captures the peak. Keep the breath steady until two fast Green pulses confirm that the calibration was saved.
6. If the headset is not connected when calibration is requested, two slow Red pulses cancel the operation. A disconnect, invalid reading or timeout after calibration has started produces three slow Red pulses and restores the previous calibration.

In Web Config, Calibration Link controls how the measured playing range is stored. It is enabled by default:

- All Presets: A successful calibration from Green, Amber or Red applies the same measured breath range to all three presets. On-device calibration follows the same rule even when Web Config is not open.
- Per Preset: Green, Amber and Red retain separate measured breath ranges. Select the preset before calibrating it.

Calibration Link does not copy Gain steps, Breath Onset, layers, MIDI channels or routing. Those performance settings remain independent in every preset. The idle sensor baseline is shared because it represents the same physical headset and ambient pressure. Every successful calibration sets the active preset's Gain to CAL and Breath Onset to Auto before saving the measured range.

5. BC IN Jack Sense and Headset Changes

The Standard firmware monitors the BC IN jack. If the headset is unplugged, the breath output is brought back to a safe idle value so connected instruments do not keep receiving a hanging controller value.

When a headset is plugged in, the device briefly profiles the idle sensor level and adapts the breath baseline. This helps when replacing a headset or when a different approved sensor type is used. If the response still feels too strong or too light after changing the headset, run Auto-Calibrate again.

6. Workstation Multi-Channel Routing (Korg / Yamaha)

Some arranger workstations layer sounds across several MIDI channels. The MRTAUDIO Standard controller can transmit breath data to up to 3 MIDI channels simultaneously for layered performance setups.

IMPORTANT NOTE FOR DIN USERS
When broadcasting across 3 channels through the Standard model's MIDI OUT port, use standard 7-bit CC messages (0-127) for the most reliable operation. Avoid sending high-resolution streams or heavy Pitch Bend data on all channels at once, as older MIDI devices may have limited input buffer capacity.

Panel Layout & Ports

Top / I/O Panel

- USB-C (Power / Data): Provides 5 V power and, when enabled, class-compliant USB MIDI data to a computer, tablet adapter or compatible USB host.
- BC IN: 3.5 mm analog input for the MRTAUDIO breath headset.
- MIDI OUT: 3.5 mm TRS MIDI Type A output for DAWless routing through a compatible Type A to 5-pin DIN adapter/cable. The Standard model does not provide MIDI IN.

Front & Side Controls

- Multi-Function Encoder: Rotary encoder with push switch. It adjusts the selected Gain or Layer 1 OUT MIN target and handles preset selection and calibration.
- Green / Amber / Red LEDs: Three physical LEDs used for breath-level feedback, selected preset color, calibration prompts, USB status and error feedback.
- Side / Rear MODE Button: Recessed MODE control. A short press selects Gain or OUT MIN; a deliberate hold of about 1 second toggles panel lock. Hold only this button while connecting USB power to change USB MIDI data state. For factory reset, hold this button and the encoder push switch together while connecting power.

Hardware & Controls

Multi-Function Encoder

The MRTAUDIO Standard controller is designed for fast on-stage use without needing a computer screen. The physical rotary encoder manages everything via clicks, turns, and long presses.

Turning the Encoder: Gain or OUT MIN

The encoder starts in Gain after power-up. Press and release the side MODE button before the 1-second lock threshold to switch the encoder target between Gain and OUT MIN. One Green pulse confirms Gain; one Amber pulse confirms OUT MIN. After the confirmation, the selected target remains identifiable at rest.

- Gain: Turn the encoder to choose CAL, EASY, EASY+, LIGHT or MAX. Their steady LED patterns are Green; Green + Amber; Amber; Amber + Red; and Red, respectively. After the 2-second edit preview, live breath temporarily shows the VU; releasing the breath restores the selected Gain pattern.
- OUT MIN: Turn the encoder to adjust the selected preset's Layer 1 minimum MIDI output. Slow turns change one step at a time; continuous faster turns accelerate. The permitted range is 0 through one step below that layer's Output Max. A repeating pair of soft Amber fades, followed by a clear dark interval, identifies this persistent mode. While turning, Green, Green + Amber, then all three LEDs give a coarse indication of the setting. Continuing below 0 produces two slow Green pulses; continuing above the permitted maximum produces two slow Red pulses.

OUT MIN affects only Layer 1 of the currently selected P1, P2 or P3 preset. It does not change the layer maximum or the other two layers. The shortcut is available only when Layer 1 is enabled as a compatible 7-bit, non-note output with a valid maximum; otherwise two fast Red pulses indicate that no change was made. Make large output-floor changes while not playing, then verify the result at a low listening level. Hardware Gain and OUT MIN changes are saved automatically after a short pause.

Single Click: Preset Select

A single click enters Preset Select. Any recognized encoder release before calibration begins at about 2 seconds performs exactly one preset-select click; once calibration has started, releasing the encoder is consumed by calibration and does not change the preset mode. Only the selected P1/P2/P3 LED performs a calm repeating fade in and fade out, followed by a brief dark interval: P1 Green, P2 Amber or P3 Red. The unselected LEDs remain off. This continuous temporal cue is deliberately different from the steadily lit one- or two-LED Gain pattern and short, finite alert flashes. Click again to leave Preset Select and return to the Gain or OUT MIN target previously selected with MODE.

Long Press: Auto-Zero Calibration

If the breath response changes during use, press and deliberately hold the encoder for about 2 seconds. Amber hold feedback begins after about 1 second; keep holding until calibration starts, then release without blowing. When Red pulses, begin one controlled breath at your maximum comfortable playing pressure. Keep the breath steady while Green is on; two fast Green pulses confirm completion.

> **IMPORTANT NOTE**
> Ensure you are not blowing into the mouthpiece while holding the button to avoid miscalibrating the sensor.

Side / Rear MODE Button

The side/rear MODE button selects the encoder target and protects the panel. It does not turn hardware power on or off; the unit remains powered whenever USB power is present.

- Press and release before 1 second: Selects Gain or OUT MIN. One Green pulse confirms Gain; one Amber pulse confirms OUT MIN. There is no silent timing band: every recognized release before the lock threshold performs exactly one short-press action. A press during preset selection or calibration is ignored and acknowledged with Amber feedback.
- Hold for about 1 second: Toggles panel lock. Amber hold feedback appears after about 0.6 seconds. Lock is confirmed by one all-LED flash, followed by a persistent low three-LED lock background; two Green pulses indicate unlocked. A short MODE press or an encoder click/turn while locked produces two Amber pulses without changing a setting. The panel starts unlocked after USB power is disconnected and reconnected.
- Hold only the side button while connecting USB power for about 2 seconds, then release: Toggles USB MIDI data. Amber remains on while the gesture is being validated. Three Green pulses indicate USB data enabled; three Red pulses indicate USB data disabled. USB power remains active in either state.
- Hold the side button and encoder push switch together while connecting power for about 5 seconds: Performs a factory reset. The Red LED countdown accelerates, Amber indicates that factory defaults are being written, and Green confirms completion. Releasing either button during the Red countdown cancels the reset and produces two Amber pulses. Pressing both buttons together while the unit is already running is reserved and ignored; two fast Amber pulses confirm that no action was taken.

USB data does not need to be disabled for DIN operation with a separate USB power supply. Use the saved USB-data OFF setting only when needed for the chosen host/power connection.

3 Preset Slots (Green, Amber, Red)

The controller saves settings into three independent color-coded memory slots. A new or factory-reset device starts on P1 Green. P1 Green, P2 Amber and P3 Red deliberately begin with the same predictable profile: only Layer 1 is enabled, breath sends CC7 Channel Volume with a 0-127 output range, and Multi routing sends it to MIDI channels 1, 2 and 3. Layers 2 and 3 are disabled. The three slots remain separate save destinations so they can later hold different Web Configurator setups.

Other factory defaults include Gain CAL, Breath Onset Auto, Calibration Link enabled and MIDI output mode Auto Safe.

Primary MIDI Profile: CC7 or CC11

The protected startup profile can rebuild all three slots with either CC7 Channel Volume or CC11 Expression as Layer 1. CC7 is the factory default. To apply the alternate one-layer profile without the Web Configurator:

1. Disconnect USB power.
2. Hold only the encoder push switch while reconnecting USB power.
3. Keep holding while Amber is steady. When it goes out after about 2 seconds, release the button. The confirmation follows the release.
4. Three Green pulses confirm CC7; three Amber pulses confirm CC11.

Starting from factory CC7: One completed encoder power-on gesture selects CC11 for P1, P2 and P3; look for three Amber pulses. Repeat the gesture to return to CC7; look for three Green pulses. Each preset has one enabled layer, sent to MIDI channels 1, 2 and 3. These are not three enabled layers.

The decision is based on P1 Green's Layer 1 CC, even if another preset was active: CC7 changes to CC11; CC11 or any other CC changes to CC7. If P1 was customized to another CC, the first gesture therefore selects CC7. Confirm the result before deliberately repeating it for CC11. This shortcut works without a computer and does not change the USB-data ON/OFF state.

> Warning - this operation replaces custom layer settings: It rebuilds layer routing, MIDI channels, input/output ranges, response curves and Attack/Release settings in all three presets. Only Layer 1 is enabled with CC7 or CC11, output 0-127 and channels 1-3; Layers 2 and 3 are disabled. Calibration and Gain are retained. Back up a custom setup with PULL and SAVE before using the shortcut. Use Web Configurator to change only a CC while retaining custom layers.

After confirmation, play a held note at a low listening level and apply breath. The receiving sound must respond to the selected CC and channels. CC7 sets channel volume; CC11 controls expression relative to that volume. Selecting CC11 does not make an instrument respond to it if its current sound or MIDI filtering ignores CC11.

> **IMPORTANT MEMORY RULE**
> When altering the behavior of a Green, Amber, or Red slot in the Web Configurator, those changes first live in temporary memory. Click PUSH (Save to Device) in the top menu to write the settings to the selected memory slot. Otherwise, settings are lost when the USB cable is unplugged.

Hardware encoder Gain, OUT MIN and preset changes are saved automatically after a short pause. Web Configurator edits still require PUSH because the browser can stage many changes before writing them to the device.

USB Data Configuration

USB-C always powers the unit, but USB MIDI data can be enabled or disabled. This is useful when you want to power the controller from USB while sending performance MIDI through the 3.5 mm TRS MIDI Type A OUT jack only.

- Hold only the side/rear MODE button while connecting USB power for about 2 seconds, then release, to toggle USB data safely.

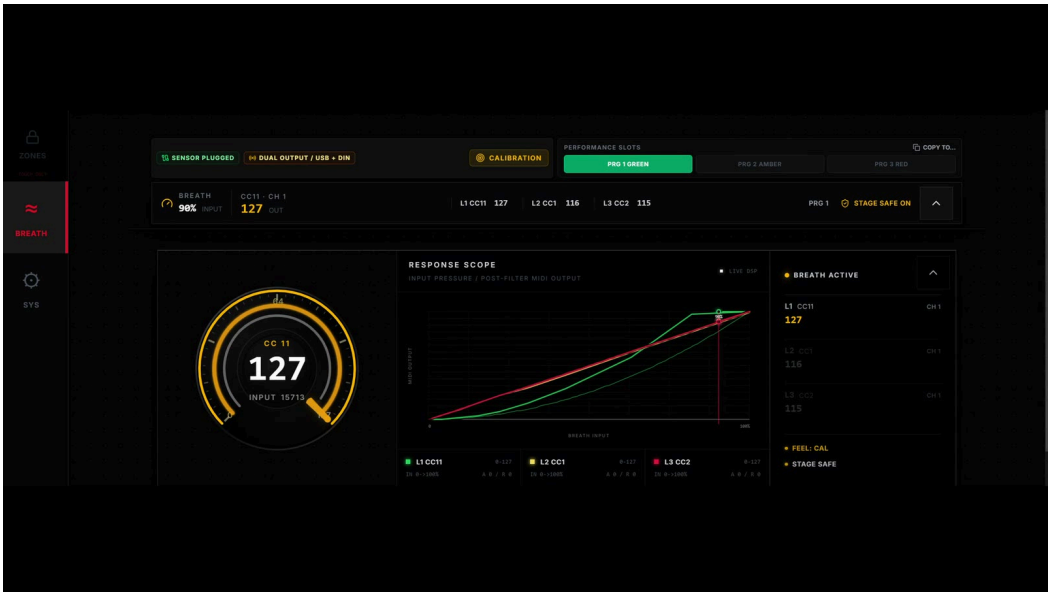
- The selected state is stored in the device. Three Green pulses confirm USB data on; three Red pulses confirm it is off. Factory reset enables USB data again.
- If USB data is disabled, the controller will not appear as a USB MIDI device until USB data is enabled again.

Breath Sensors & Layers

Raw Input Configuration

- Gain: Adjusts sensitivity. On the hardware encoder, gain is available as five practical levels. In the Web Configurator, the stored gain can be edited in more detail.
- Breath Onset: Sets how far the measured pressure must move above the resting baseline before breath becomes active. Raise it for stronger rejection of small idle movements; lower it for a lighter start.
- Stage Safe: When enabled, an intentional inhale can hold the configured idle value. A deliberate forward breath releases the hold. Leave it off when this performance behavior is not required.

Tri-Layer Output Architecture



The MRTAUDIO controller manages 3 independent MIDI layers from a single analog breath.

Independent Routing (Single/Multi Mode)

Channel mode is configured independently for each layer:

- Single: The selected layer sends to one MIDI channel.
- Multi: The selected layer is duplicated across a consecutive channel group. For example, CH START 1 with COUNT 3 sends that layer to channels 1, 2 and 3. Other layers keep their own routing settings.

Input Range and Limit Behavior

Each layer has its own START and END points. Hold keeps the mapped value at Output Max beyond END. Mute sends absolute zero below START and beyond END, while START maps to Output Min and END reaches Output Max. When END is 100%, the physical maximum remains at Output Max. Foldback rises to Output Max at END and then decreases as breath continues beyond the selected range. Test Mute and Foldback with the receiving sound before stage use.

Response Curves & Dynamics

Each layer has its own response curve:

- LIN (Linear): Proportional input-to-output response.
- S-SOFT / S-HARD: Two S-shaped responses with different emphasis through the middle of the range.
- LOG (Logarithmic): Produces more output in the lower part of the breath range.
- EXP (Exponential): Reserves more of the output change for stronger breath.

Dynamics (Attack / Release)

- Attack: Controls how fast MIDI values rise.
- Release: Controls how fast MIDI values return toward the layer's configured resting output when breath decreases.

Input Filtering

- Input filtering: Reduces small sensor fluctuations before the configured layer response is applied.

Using the Web Configurator

The MRTAUDIO Web Configurator uses a direct, two-way Web MIDI connection through the browser to read, edit and save Standard controller settings.

Access and Browser Compatibility

Your MRTAUDIO controller uses class-compliant USB MIDI; no separate configuration driver is required. The browser must support the Web MIDI API. Use a current Chromium-based browser such as Google Chrome, Microsoft Edge or Opera on macOS, Windows or Android.

> iPad and iPhone iOS and iPadOS browsers do not provide the Web MIDI access required by the Configurator. Complete configuration and firmware updates on a supported macOS, Windows or Android device. After saving settings with PUSH, you can use the controller with a compatible iPhone or iPad MIDI setup and suitable USB adapter.

Step 1: Connecting

If you see a MIDI API ERROR on the connect screen, your current browser does not allow the required Web MIDI hardware access. Use a Chromium-based browser.

1. Launch Google Chrome, Microsoft Edge, or Opera (Safari and Firefox are not natively supported).
2. Connect the MRTAUDIO hardware via USB. Wait for the initial LED boot sequence.

3. Click "Launch App" in the sidebar of this manual.
4. Select the connected MRTAUDIO ports in both the Input and Output lists, then choose Connect. Configuration tools open after the device is verified.

The Universal Command Bar

The command bar controls how settings move between the controller, browser and a local backup file.

PULL (Device to Browser): Requests the current saved configuration from the device and loads it into the browser. Use PULL after connecting whenever you need the screen to match the controller's memory. PUSH / Save to Device (Browser to Device): Writes the edited configuration to the controller's non-volatile memory. Some controls may preview live while editing, but browser changes are not retained through a power cycle until PUSH completes. Save (To Computer): Downloads the current configuration as a .json backup file. Keep a backup before changing a working performance setup or updating firmware. Load (From Computer): Reads a previously saved .json file and applies it to the Configurator screen. You must still press PUSH to save the loaded settings to the controller.

Real-Time Visual Feedback & Diagnostics

Live Telemetry Graphs

The Configurator provides live breath feedback. Use the graphs to verify the processed controller response while adjusting ranges and curves. This diagnostic stream is separate from performance MIDI output.

MIDI Monitor / Terminal (DATA LINK)

The MIDI Monitor is located at the bottom of the Configurator interface. Use it to confirm that the controller is sending data before troubleshooting a DAW or external MIDI setup. If breath or touch values appear in the monitor, the controller, cable, and browser connection are communicating correctly.

Breath Input & Response

Play Feel adjusts sensitivity around the measured calibration range. Begin with CAL, then increase sensitivity only when lighter breath should reach the same MIDI range:

CAL: Uses the calibrated response as measured. EASY / EASY+: Reaches higher values with progressively lighter breath. * LIGHT / MAX: Provides the highest sensitivity. Check the idle output after selecting either level and raise Breath Onset if needed.

Breath Onset: Sets how far the signal must move above the calibrated baseline before a breath begins. Raise it if idle movement causes unwanted output; lower it when very light breath should respond sooner.

Per-layer Attack and Release: Each active layer has its own timing. Attack controls how quickly that layer follows a rising breath, while Release controls how quickly it follows a falling breath. The cockpit and layer meters show the processed layer outputs, so layers with different timing may move differently.

Output Mapping & Layers (Multi-CC)

A single breath signal can control more than volume. The Param Matrix lets you layer multiple MIDI outputs using separate INPUT RANGE (Start-End) and OUTPUT RANGE (Min-Max) values per layer.

Layer 1: Map to CC11 (Expression) to handle the main volume swell. Layer 2: Map to CC74 (Cutoff/Timbre) to shape brightness on a compatible instrument. * Layer 3: Map to CC1 (Modulation) and set a higher Input Start value when modulation should enter later in the breath range.

> **TIP**
> Inversion & Crossfade Effects: By default, Output changes from Min 0 to Max 127. If you reverse this in the GUI to Min 127 and Max 0, the layer becomes inverted. Using one layer as 0 to 127 and another as 127 to 0 can create a breath-controlled crossfade between two destinations.

Breath-Layer Limit Behavior

The Out of Range Behavior (or Limit Mode) defines what the layer does when processed breath exceeds the configured input range. Hold keeps the layer at its maximum value, while other modes can be used for performance effects with compatible instruments:

Mute (Drop): Sends absolute zero below START and after the input has moved beyond END. START itself maps to Output Min, and END remains a playable endpoint that reaches Output Max. If END is set to 100%, the physical maximum therefore remains at Output Max instead of dropping to zero. Use this for a defined breath window or an intentional overblow cutoff. Foldback (Rebound): Folds values back from the top of the range instead of clipping. This is useful for expressive peak behavior, but it should be tested with the target instrument because not every synth responds musically to folded expression data.

Mute and Foldback apply independently to each configured breath layer.

Performance Slots & Quick Presets

The Standard controller stores three independent breath-performance slots: P1 Green, P2 Amber and P3 Red. A JSON backup lets you return to a verified setup quickly.

On Standard, Calibration Link is enabled by default. A successful calibration then shares only the measured sensor range across Green, Amber and Red. Gain steps, Breath Onset, layers, channels and routing remain independent. Turn Calibration Link off when each preset needs its own measured range. Hardware Gain and OUT MIN edits save automatically after a short pause; browser edits still require PUSH.

1. Hit PULL to sync the current hardware state.
2. Select the required Standard slot, then edit it or load a saved .json backup.
3. Review routing warnings, then click PUSH to write the preset to hardware memory.

Firmware Updates

The Web Configurator contains a guided firmware updater for supported MRTAUDIO hardware through Google Chrome or another Web MIDI-capable Chromium browser.

Use only the model-specific application file ending in _RELEASE.hex with the Web Configurator. Files ending in _FULL.hex also contain the bootloader and are reserved for ISP/production programming; the Web Configurator rejects them to protect the installed bootloader.

1. Ensure the hardware is securely connected via USB.
2. Open Advanced, then use the Firmware Update control in the System section.

3. The updater detects the connected model and fetches the official firmware package when an update is available.
4. Execute the flash. Do not unplug the USB cable or close the browser tab until the progress completes and the controller reboots itself.

Factory Reset

> **WARNING**
> Factory reset returns the controller to its original out-of-the-box configuration and overwrites the current user slots. Back up any important settings first.

Standard: Connect the controller and use PULL, then SAVE, first if you need a JSON backup. Open PRESETS, choose Standard Factory Reset, and confirm Reset Device. The firmware writes its canonical defaults, restarts and returns on P1 Green; keep USB connected until the device is available again. For the protected hardware reset, disconnect USB power, hold the side/rear MODE button and encoder push switch together while reconnecting power, and keep both held through the approximately 5-second accelerating Red countdown. Amber indicates writing and Green confirms completion. Releasing either control during the Red countdown cancels the reset.

Maintenance & Cleaning

Cleaning the Headset Assembly

Saliva and natural breath condensation will accumulate inside the Gooseneck pipe, Mouthpiece, and Drain cup over extended playing sessions. These parts are completely detachable and washable.

1. Disconnect: Unplug the headset from the controller. Unscrew the flexible air tube from the headset sensor housing. Remove the mouthpiece, vent cap and drain cup from the tube.
2. Wash: Submerge the mouthpiece, vent cap, drain cup, and the flexible gooseneck pipe in warm, mild soapy water. Gently rinse with clean water.
3. Dry: Allow all components to air-dry completely. Do not re-attach them if there is visible standing water inside the tube.

> **IMPORTANT CLEANING WARNING**
> Never wash or submerge the headset sensor housing, cables, connectors or controller unit. Liquid can damage the pressure sensor and electronics. Clean their external surfaces with a dry, soft cloth. Wash only the detached air-path parts listed above.

MIDI Implementation Chart

Function	Transmitted	Recognized	Remarks
Basic Channel	1 - 16	USB configuration only	Configurable via Web Configurator
Breath Sensor	CC, Pitch Bend, Aftertouch, NRPN or Note actions depending on layer setup	No	The factory profile sends CC7 Channel Volume to MIDI channels 1, 2 and 3. The protected startup gesture rebuilds all three presets with CC11 Expression when that alternate profile is selected. Layers can be reassigned in the Web Configurator.
Multi-Channel Output	Up to 3 channels	No	Available for layered workstation setups. Standard 7-bit CC messages reduce serial traffic over DIN MIDI.
SysEx Configuration	Yes, via USB Web MIDI	Yes, via USB Web MIDI	Used for configuration transfer, firmware tools and protected factory reset.
DIN MIDI IN	Not available	Not available	The Standard model has MIDI OUT only.

Troubleshooting

Q: My DAW is experiencing lag or unexpected MIDI activity when the controller is plugged in.

A: Close Live Diagnostics when it is not needed. Its USB diagnostic stream is separate from performance MIDI, but closing it removes unnecessary monitoring traffic while troubleshooting a host or DAW connection. Also check for duplicate USB and DIN routing in the DAW.

Q: The device outputs a constant breath value or a "hanging" note even when I am not blowing into it.

A: The atmospheric baseline may have shifted. Leave the headset stable and do not blow into it. During normal operation, deliberately hold the encoder push switch for about 2 seconds; Amber feedback begins after about 1 second. Release when calibration starts, then follow pulsing Red (begin one controlled breath at your maximum comfortable playing pressure), solid Green (keep the breath steady), and two fast Green pulses (saved).

Q: I made changes in the Web Configurator, but when I unplug and reconnect the device, the old settings return.

A: Web Configurator edits are temporary until you click the PUSH button in the main command bar. Hardware encoder Gain, OUT MIN and preset selections are saved automatically after a short pause, but browser-side edits must be pushed to the device.

Q: How do I perform a complete factory reset?

A: Disconnect USB power. Hold the side/rear MODE button and encoder push switch together while reconnecting power, then continue holding both through the approximately 5-second accelerating Red LED countdown. Releasing either button early cancels the reset. In Web Configurator, connect the Standard controller, back up with PULL and SAVE if required, open PRESETS, choose Standard Factory Reset, then confirm Reset Device. Keep USB connected while the controller writes its firmware defaults and restarts.

Q: The web browser says "MIDI Interface Not Found" or "Port in use".

A: Use a Chromium-based browser such as Chrome, Edge or Opera; Safari does not provide the Web MIDI API access required by the Configurator. On Windows, a MIDI port may be held by another application. If your DAW has the MRTAUDIO BC performance port or MRTAUDIO Config configuration port open, the browser cannot connect to that port. Close the DAW and refresh the browser.

Q: The device powers on, but it does not appear as a USB MIDI device.

A: USB data may be disabled. Disconnect power, hold only the side/rear MODE button, reconnect USB power, keep holding for about 2 seconds, then release. Three Green pulses indicate USB data is enabled; three Red pulses indicate it is disabled. USB-C still powers the unit even when USB MIDI data is turned off.

Technical Specifications

Feature	Specification
Sensor and Processing	Analog pressure sensor with a 14-bit internal breath-processing range
Hardware Controls	1 x rotary encoder with push switch, 1 x side/rear MODE button
LED Indicators	3 physical LEDs: Green, Amber, Red
Connectivity	1 x USB-C, 1 x 3.5 mm BC IN, 1 x 3.5 mm TRS MIDI Type A OUT; no MIDI IN
Power Supply	5 V USB bus power; no internal battery
Package Contents	Standard controller, USB data/power cable, 3.5 mm TRS MIDI Type A to 5-pin DIN male MIDI cable and printed setup material. When selected, the headset package adds the headband and sensor assembly, one flexible air tube with threaded connector and two detachable mouthpieces (one primary and one spare).
Operating System Compatibility	Class-compliant USB MIDI device on macOS, Windows, iOS, Android and compatible MIDI hosts
Software Environment	Web-based Configurator via Google Chrome, Microsoft Edge or Opera (Web MIDI API required)