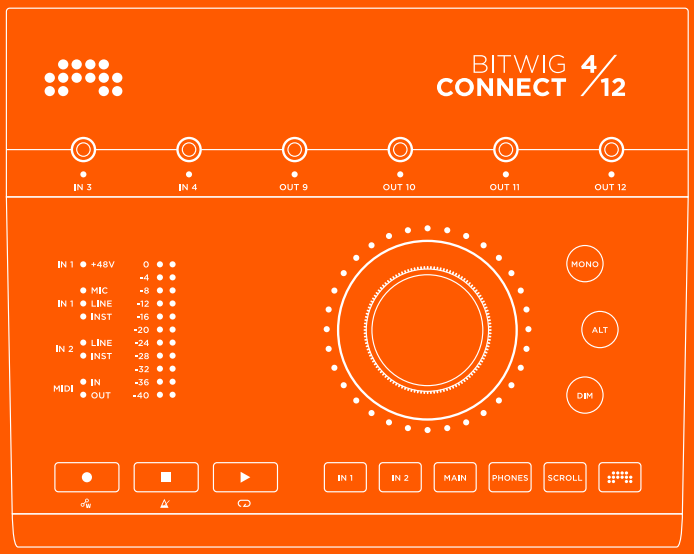
BITWIG CONNECT

User Guide



BITWIG

BITWIG CONNECT 4/12

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0. Welcome to Bitwig Connect 4/12

Hello and thank you for purchasing Bitwig Connect 4/12! This device is more than an audio interface: with monitor- and DAW-controlling functionalities and a unique Bitwig mode, it's designed to be a versatile studio sidekick.

This User Guide explains Bitwig Connect 4/12's panel components and functions in detail. It's intended to help you get the most out of your device in a variety of use cases.

0.1. Safety Information

› Do not use the unit near water

› Do not use the unit near heat sources such as radiators, heat registers, stoves, or another apparatus (including an amplifier) that produces heat

› Clean the unit only with dry cloth. Do not use liquid or aerosol cleaners

› Only use accessories specified by the manufacturer

› Do not open the unit, there are no user serviceable parts inside

› Refer all servicing to qualified service personnel. Servicing is required when the equipment has been damaged in any way, such as liquid has been spilled or objects have fallen into the equipment, the equipment has been exposed to rain or moisture, does not operate normally, or has been dropped

0.2. Declaration of Conformities

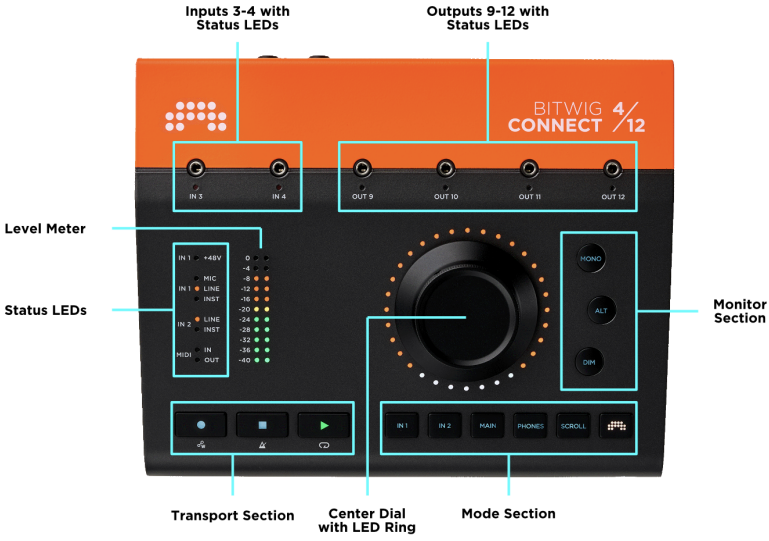
This device complies with part 15B of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Do not open this device.

1. Overview

Bitwig Connect 4/12 is a 4 input / 12 output class-compliant USB audio interface. Besides its core functionality of sending audio signals into and out of the computer, Bitwig Connect 4/12 can also be used to control synthesizers using CV/Gate signals via the DC-coupled 3.5mm jacks. Additionally, the device can be used as a monitor controller (thanks to its built-in dynamic signal routing and mixing capabilities) and a DAW Controller (via the transport buttons and Center Dial).

This chapter will give you a brief overview of the device's functions and panel elements. You will find a more detailed description of each function from chapter 3 onwards.

1.1. Top Panel



1.1.1. Center Dial

The main control element on the top panel is the Center Dial. This is a 360° potentiometer capable of sending high resolution control data. The LED ring around it provides visual feedback for the currently controlled

parameter value. In Bitwig mode, parameters are also color-coded. The touch-sensitive aluminium dial makes it easy to precisely write and overwrite automation data.

1.1.2. Mode Section

The function of the Center Dial can be assigned by pressing one of the six mode buttons:

› INPUT 1 and INPUT 2 control the input gain

› MAIN and PHONES control the Main output/speaker volume and headphone volume respectively

› SCROLL controls the playhead position or horizontal zoom

› BITWIG activates Bitwig mode, in which the dial acts as a special MIDI controller

1.1.3. Monitor Section

Next to the Center Dial is the monitor section:

› MONO sums the Main output signal to mono

› ALT routes the Main output signal (1+2) to a different hardware output

› DIM decreases the Main output signal by an adjustable amount

1.1.4. Level Meter

The level meter shows signal level information depending on the currently selected mode:

› When INPUT 1 or INPUT 2 are selected, the meter shows the input level, which can be adjusted with the Center Dial

› When MAIN or PHONES are selected, the meter shows the Main output level (pre-fader), which can be adjusted with the Center Dial

› In SCROLL and BITWIG mode the meter shows the Main output level (pre-fader)

1.1.5. Status LEDs

The status LEDs show information about the current status of phantom power, input settings, and MIDI I/O activity.

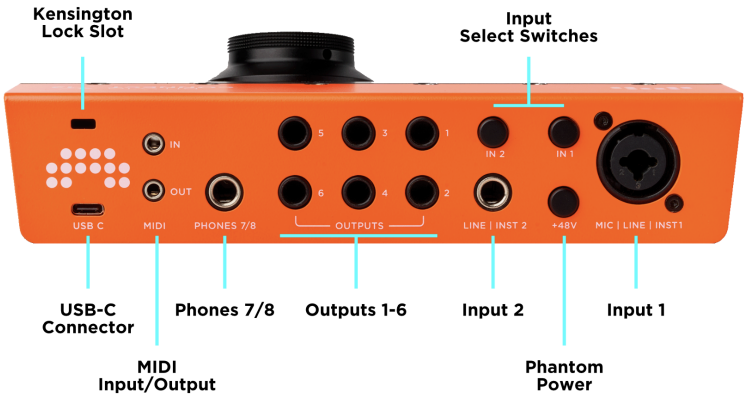
1.1.6. Transport Section

RECORD, STOP, and PLAY control the transport in Bitwig Studio (or other DAWs). When the BITWIG button is held down, these buttons have a secondary function: AUTOMATION WRITE, METRONOME, and LOOP.

1.1.7. 3.5mm I/Os

Two inputs and four outputs via 3.5mm jack are available on the top panel for easy patching of modular synthesizers. These I/Os are DC coupled and intended to be used with synthesizers and modular systems. But they can also be used as standard audio inputs and outputs. These I/Os are factory calibrated so that Bitwig Studio will always send and receive 1V/oct signals (without the need to manually calibrate) with the lowest possible DC offset on the outputs.

1.2. Connectivity



Most of the connectors are located on the back of the unit.

Table 1.1. Audio I/O Overview

Channel	Connector	Function	Balanced	DC Coupled
In 1	XLR Combo	Mic / Line / Instrument Level Input	yes	no
In 2	6.35mm Jack	Line / Instrument Level Input	yes	no
In 3/4	3.5mm Jack	Line / Modular Level Inputs	no	yes
Out 1-6	6.35mm Jack	Line Level Outputs	yes	no
Out 7/8	6.35mm Jack	Stereo Headphone Output	no	no
Out 9-12	3.5mm Jack	Line / Modular Level Outputs	no	yes

Additionally, the back of the device houses select switches for Inputs 1 and 2; a phantom power switch; a MIDI input and output via 3.5mm stereo jack (MIDI DIN adapters are included); a slot for a Kensington lock; and the USB-C connector.

1.2.1. USB Connector

The physical connector is USB Type-C. The data protocol conforms to USB 2.0, which makes the unit compatible with any computer with a USB 2.0 port. A USB-A to USB-C adapter is included. USB 2.0 provides perfectly adequate bandwidth for 16 channels of audio. The unit's power consumption is within USB 2.0 limits (500 mA max.).

2. First Steps

2.1. System Requirements

Bitwig Connect 4/12 runs on all major operating systems: macOS, Windows, Linux (Ubuntu), and iOS. Please make sure your system conforms to these minimum requirements.

macOS

macOS 10.15 (“Catalina”) or later

64-bit Intel or Apple silicon CPU

Minimum 4GB RAM

USB-A 2.0 or 3.0 or USB-C

Windows

Windows 10 or 11 (64-bit)

Dual-core AMD or Intel CPU or faster with SSE4.1 support

Minimum 4GB RAM

USB-A 2.0 or 3.0 or USB-C

Linux

Ubuntu 22.04 or later, or any modern distribution with Flatpak installed

64-bit dual-core or better x86 CPU with SSE4.1 support

Minimum 4GB RAM

USB-A 2.0 or 3.0 or USB-C

iOS

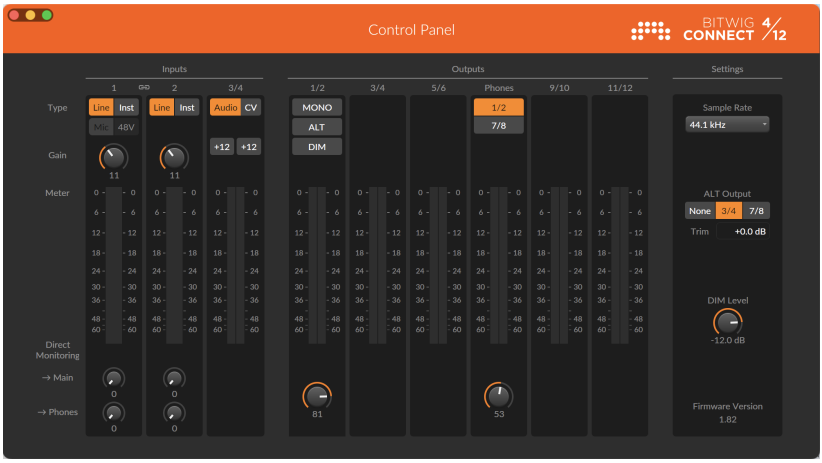
Any USB-C equipped iPad*

Note

*The device will not work on a non-USB-C iPad via a Lightning to USB adapter (like the Apple Camera Connection Kit).

2.2. Software Installation

Bitwig Connect 4/12 comes with a dedicated **Control Panel** application, which gives you an overview of all inputs and output levels as well as access to every parameter of the audio interface including gain, volume control, and sample rate settings.



The Control Panel is available for macOS, Windows, and Linux. Please go to the Bitwig Connect Support Page [http://www.bitwig.com/get-connected] and download the Bitwig Connect installer for your operating system. After downloading the file, double-click the installer to install the Control Panel and other necessary files on your computer.

On **Windows** systems, dedicated ASIO and MME drivers will be installed together with the Control Panel. Please run the installer before you connect the Connect 4/12 to your computer. Without these drivers, Connect 4/12 won't be recognized correctly on Windows.

Bitwig Connect 4/12 is a class-compliant audio device. On **macOS** and **Linux**, the operating system's USB class-compliant audio driver will be used automatically. There's no need to install dedicated drivers.

If you want to use Bitwig Connect 4/12 with **Bitwig Studio**, you need to install Bitwig Studio version 5.3.4 or higher. Earlier versions will likely work fine for basic audio functionality, but you will miss out on unique features such as calibrated CV I/Os, Bitwig controller mode, and other integration features.

2.3. Connecting a Computer

Start the Control Panel application that you installed in the previous step. Without Connect 4/12 plugged in, the software should display an animated outline of the device. Use the orange braided USB-C cable included with your Connect 4/12 to connect the device to a USB-C port on your computer. If your computer only has USB-A ports, please use the USB-C to USB-A adapter included in the box.

When the USB cable is plugged in, the LEDs on Connect 4/12 will show a startup animation. The Control Panel application will then display all level meters and available parameters. The device is now ready to use.

When Bitwig Connect 4/12 is powered up, it will load its last used settings. Your input selection, gain settings, and headphones source selection will be recalled. For safety reasons, the monitor section and phantom power are excluded from this rule. After startup, the Center Dial is assigned to Main mode by default. This means that when Connect 4/12 is powered up, the Center Dial will always control the volume of your main speakers.

2.3.1. A Note on USB Connections

We highly recommend that you plug Connect 4/12 directly into a computer, or at least use a good-quality powered USB Hub. Connect 4/12 is a bus-powered device that offers a lot of functionality in a compact form factor. The power delivered via the USB connection is crucial for flawless operation. Unpowered (passive) USB hubs are not supported.

The quality of your USB cable is also important. Poorly shielded cables or low quality connectors will result in unreliable operation and may cause audio drop-outs or startup problems. We highly recommend using the orange braided USB-C cable supplied with Connect 4/12.

2.4. Connecting a Basic Setup

Let's get started by connecting a speaker system and headphones to Connect 4/12. All necessary outputs are located on the back of the unit. To avoid loud pops when connecting your gear, press the MAIN mode button and turn the dial counterclockwise until Main output volume is at zero. Do the same in PHONES mode. Please also make sure your active speakers or amplifier are turned off when plugging in cables.

Connect two cables from Main Output 1/2 to the inputs of your speakers or amplifier. (Please read section 4.1.1 to learn more about using appropriate cables.) Connect your headphones to the Output 7/8 stereo jack.

In **macOS**, click the speaker icon in the menu bar at the top right of your screen and select *Connect 4/12* as the default system output. All system sounds and audio output from all applications that don't use a dedicated driver will now be played back from your Connect 4/12. If you use a professional audio application with dedicated audio device selection, make sure to select Connect 4/12 as your audio device in this application.

In **Windows**, click the speaker icon in the Windows system tray, usually located at the bottom right of your screen. Select *Connect 4/12 Output 1/2*. All system sounds and audio output from all applications that don't use a dedicated driver will now be played back from your Connect 4/12. If you use a professional audio application with dedicated audio device selection, make sure to select the Connect 4/12 ASIO driver as your audio device in this application.

In **Ubuntu**, open the settings panel and click Sound on the left side. Scroll down to the input and output section and select *Bitwig Connect 4/12* as the input and output device. All system sounds and audio output from all applications that don't use a dedicated driver will now be played back from your Connect 4/12. If you use a professional audio application with dedicated audio device selection, make sure to select Connect 4/12 as your audio device in this application.

Play a sound from your audio application and press the MAIN button on your Connect 4/12. The LED meter will show the signal level going to your speaker system "pre-fader" (before the output level setting is applied). Turn the Center Dial clockwise to increase the Main output level.

Controlling the headphone volume works in the same way: press PHONES and turn the Center Dial to adjust the headphone volume. By default, the headphone signal is the same as that of Main Outputs 1/2. Please read section 4.2 and section 5.2 for more options on headphone signal sources.

3. Inputs

Bitwig Connect has four physical input channels that can be used to record a variety of different signal types.

3.1. Inputs 1 and 2

Input 1 has an XLR Combo jack that accepts microphone, line, or instrument input signals. Input 2 accepts line or instrument input signals. Both channels can be toggled between line or instrument level by either pressing the IN1 or IN2 buttons on the back of the device, or clicking the *LINE* or *INST* buttons in the Control Panel application. The status LEDs on the top panel of Connect 4/12 will show the currently selected input settings.

To adjust the input gain, press the IN1 or IN2 button. The level meters next to the Center Dial will show the input signal level. Turn the Center Dial to adjust the gain. To adjust the input gain in the Control Panel application, turn the gain knob above the level meter.

3.1.1. Microphones

Input channel 1 features a digitally controlled microphone preamp with 60dB of gain, adjustable in 1dB increments. Connect your microphone to Input 1 with a balanced XLR cable. Please note that Input 1 has an automatic switching feature: When you plug in an XLR connector, it automatically switches to microphone level. You cannot select MIC when no XLR cable is plugged in.

If you connect a condenser microphone, you need to activate **phantom power** by pressing the +48V button on the back of the device or clicking the *48V* button in the Control Panel application. If you want to disconnect your condenser microphone, deactivate phantom power and wait a few seconds before unplugging the cable. Please make sure that you do not activate phantom power for other types of microphones. Ribbon mics in particular are sensitive to phantom power and might be damaged.

3.1.2. Instruments

Use the instrument level setting to record high impedance sources like an electric guitar or bass, a Rhodes electric piano, or any other

instrument with (passive) pickups. You can vary the gain by 30 dB to adapt the input level to your instrument output.

Instrument Input 2 is less sensitive than Input 1: it can handle signals that are 6dB louder. This is intentional. Use instrument Input 2 to record instruments with a very high output signal (like guitars with double humbuckers, etc.).

3.1.3. Line Level Sources

Use the line setting to record line level sources like the outputs of mixing desks, effect units, and most modern synthesizers. You can vary the gain by 30 dB to adapt the input level to your sound source.

If you want to record stereo line level sources, you can pair input channels 1 and 2. When **Stereo Pairing** is activated, the gain is adjusted for both channels simultaneously, so that input channels 1 and 2 will always have the same gain value.

To activate Stereo Pairing, hold down IN1 and press IN2 (or vice versa). If one or both channels were set to instrument, they will automatically switch to line level. When pairing is engaged, both buttons will blink green twice. You will notice that the Control Panel application now shows only one combined input channel. The meters on the device and in the Control Panel will now show the stereo input signal.

To disengage Stereo Pairing, hold down IN1 and press IN2 (or vice versa). When pairing is disengaged, both buttons will blink red twice. You can also toggle Stereo Pairing in the Control Panel by clicking the *link* icon located in the track header.

3.2. Inputs 3 and 4

Input channels 3 and 4 are located on the top panel of the device. Their main purpose is to receive control voltage (CV) signals from a modular system. These signals can be significantly higher than line level sources, and certain CV signals can go below the audio range, down to static voltages (DC). Therefore Inputs 3 and 4 are DC coupled and can handle high input level signals. Please read section 7.3 and section 7.4 to learn more about using CV signals with Bitwig Studio.

If you don't intend to use a modular system, you can use input channels 3 and 4 as additional line level inputs for audio signals. When doing this, you might want to increase the input gain of channels 3 and 4. Open the Control Panel application and activate the +12 button for one or both

channels. This will increase the gain by 12 dB. Even audio signals from a modular system might benefit from the added gain.

Note

Inputs 3 and 4 will be disabled when the sample rate is set to 176.4 or 192 kHz.

3.2.1. Audio/CV Setting

Inputs 3 and 4 have a switchable DC filter that blocks any frequency below 20 Hz. By default, this filter is activated (setting: *Audio*). This ensures that there is no DC offset in your audio recordings.

However, for control voltages that have a very low frequency or don't move at all, this filter must be deactivated (setting: *CV*) to avoid these signals being filtered out. As a rule of thumb, always set Inputs 3 and 4 to *CV* for signals like LFOs, envelopes, and pitch signals. When working with audio signals, set Inputs 3 and 4 to *Audio* to get clean, offset-free recordings. Audio-rate control voltages might also benefit from the DC Filter.

To toggle the DC Filter, open the Control Panel application and click on the *Audio/CV* button below Inputs 3/4. The filter can only be activated for both channels at the same time.

Please note that there is a low level signal present when the filter is deactivated. This is expected behavior and simply shows that there is a small portion of DC voltage present at the inputs. The level of this DC offset will decrease after a couple of minutes once the unit is warmed up, similar to an analog synthesizer.

3.3. Loopback Inputs

There is an additional audio input pair available called Loopback L/R. These are virtual inputs and carry the output signal of the Main output channels 1/2. This makes it possible to record the output signal of the computer (the same signal that goes out to the speakers). This can be handy when creating podcasts or recording screencasts for video content.

Warning: Before you select Loopback L/R as an input in your recording software, turn off any input monitoring and/or mute the channel you

want to record on. If the Loopback L/R input is monitored, it will create a perfect feedback loop with probably dangerously high levels!

If you are using Bitwig Studio and don't intend to use the Loopback L/R inputs, you can deactivate them in the audio settings in the dashboard by clicking on the red X next to the name of the input.

3.4. Direct Monitoring

Connect 4/12 offers a direct monitoring function for input channels 1 and 2. This allows you to listen to your input signal(s) with near zero latency. This is important for recording timing-critical content like drums, percussion, and other rhythmic parts. Direct monitoring sends the input signal straight to the Main or Headphone output, without the latency added by a trip to the computer and back.

To activate direct monitoring, select IN1 or IN2 mode, then press and hold MAIN or PHONES and turn the Center Dial to send the input signal straight to this output. The LED ring will be red while adjusting. This also works in reverse: when MAIN or PHONES is selected, press and hold IN1 or IN2 and turn the dial to set the direct monitoring level for this output. Hold the button for one second without turning the Center Dial to see the current direct monitoring level on the LED ring.

You can also set direct monitoring levels in the Control Panel application. Simply turn the *-> Main* or *-> Phones* knob on your chosen input channel.

Note

At high sample rates (176.4 and 192 kHz) the direct monitoring function is disabled.

4. Outputs

To cater to a range of use cases, Bitwig Connect has a total of 12 output channels for connecting different pieces of equipment: speakers or other line level equipment, headphones, and CV/Gate connections for controlling synthesizers.

4.1. Outputs 1–6

Outputs 1 to 6 are 6.35 mm TRS jacks located on the back of the unit, offering an electronically balanced output stage. They are intended to be connected to speakers or other devices that use line level signals.

Output 1/2 is the Main output. In most cases, this will be used to connect speakers to Bitwig Connect 4/12. The volume can be changed by pressing the MAIN button and turning the Center Dial. Outputs 3/4 and 5/6 can be used to connect additional line level devices. Thanks to the alternative output function (see section 5.2), Outputs 3/4 are also ideal for connecting a second set of speakers.

Please read chapter 5 to learn more about different output routing and monitoring options.

4.1.1. Balanced vs Unbalanced Connections

Inputs 1 and 2 as well as line outputs 1–6 can be used with both unbalanced and balanced cables. If the device you want to connect has balanced inputs and outputs, we highly recommend using balanced cables whenever possible.

Balanced connections have various benefits over unbalanced ones: The level of Connect 4/12's outputs is 6dB higher; the signal is less vulnerable to outside noise, especially on longer cable runs; and noise introduced when powering on the interface or other devices is greatly reduced. The latter issue is independent of the cable length, so even short balanced cables from the interface to the speakers will significantly reduce that particular kind of noise.

4.2. Headphone Output

Output 7/8 is a 6.35 mm TRS jack located on the back of the unit, providing an unbalanced stereo signal. Its main purpose is to connect

headphones. It can also be used as an additional stereo line output, using a stereo to 2x mono cable (commonly known as an “insert cable”).

The headphone source signal can be toggled between output channels 1/2 (default) and 7/8. When set to 1/2, the headphone signal mirrors the Main output. When set to 7/8, the headphone signal is a separate output channel, independent of the Main output signal. Regardless of the source setting, the headphone volume can always be controlled separately.

Please read section 5.2 to learn more about different output routing and monitoring options.

4.3. Outputs 9–12

Outputs 9 to 12 are 3.5 mm unbalanced jacks located on the top of the unit. Their main purpose is to send CV, Gate, and Clock signals to a modular system, semi-modular synthesizers, drum machines, and anything in between.

Outputs 9–12 are DC coupled. This means they are capable of sending audio signals as well as slow moving control voltages or even static DC voltages (for controlling the pitch of a synthesizer, for example). The outputs are factory calibrated to have the lowest possible DC offset and a precisely defined maximum output voltage. Software that supports CV functionality (Bitwig Studio, VCV Rack, Ableton CV Tools, Softube Modular etc.) can use outputs 9–12 to control external gear.

Please read section 7.3 and section 7.4 to learn more about the integration of the DC coupled I/Os in Bitwig Studio and The Grid.

If you don’t intend to use software with CV support, you can use outputs 9–12 as regular unbalanced line outputs.

Note

Outputs 9–12 will be disabled when the sample rate is set to 176.4 or 192 kHz.

5. Monitor Section

Bitwig Connect 4/12 includes a fully featured monitor section that allows you to route signals to different speakers or headphones and control the volume at various points in the signal path. The three monitoring buttons are located to the right of the Center Dial.

5.1. Mono

Press the MONO button (or click the Mono button in the Control Panel application) to sum the Main output signal to mono. Both channels will be mixed together at 50% of their signal level.

This is a quick way to check the mono compatibility of your mix. It might also be useful if you want to find phase problems in your signal chain (e.g. out-of-phase wired speakers).

5.2. Alternative Output

The alternative output function lets you reroute the Main output signal to a different output. Press the ALT button (or click the ALT button in the Control Panel application) to easily toggle between two sets of speakers. There are also other useful purposes for this function.

In the Control Panel you can select between three different destinations for the ALT output:

None simply mutes the main output signal, effectively turning the ALT button into a mute switch.

Channel 3/4 (default) sends the Main output signal to Output 3/4. This is the standard setting for a second pair of speakers.

Channel 7/8 sends the Main output signal to the headphones (and mutes the main speakers). This comes in handy if you want to switch between speakers and headphones with a single button press.

5.2.1. ALT Output Compensation

You can adjust the level of the ALT output to match the differing levels of two speaker sets. The ALT output level can be adjusted by +/- 12 dB. The default is 0 dB.

To adjust the ALT output level, press ALT to activate ALT mode. Then press and hold ALT again and turn the Center Dial to set the compensation level. The LED ring will show the compensation level in blue. At the default setting (0 dB), the top LED of the ring shows blue. Turn the dial clockwise to increase the level by up to +12 dB, turn counterclockwise to decrease by up to -12 dB.

Press and hold ALT for three seconds without turning the dial to see the current setting on the LED ring.

In the Control Panel application, you can adjust the ALT compensation by either clicking and dragging the value or double-clicking on the number and typing in the value.

Note

If you boost the ALT output level, this increase is not shown by the LED meter. When doing so, it is possible to clip the output signal without this being shown by the meter (although this will only happen when the output volume is close to maximum). Best practice is to match the speaker sets as closely as possible using their own level controls, and use ALT volume compensation for fine tuning if necessary—preferably by decreasing the volume.

5.3. Dim

The Dim function attenuates the output level of the Main outputs by a set amount. Press the DIM button (or click the DIM button in the Control Panel application) to toggle the output level between full or dimmed level.

The Dim level is freely adjustable between 0 dB and -inf. When set to -inf, the DIM button effectively becomes a mute switch. The default value is -20 dB.

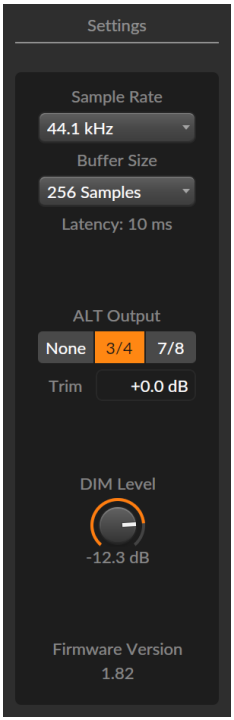
To set the Dim level, press the DIM button to activate Dim mode. Then press and hold DIM again and turn the Center Dial to set the Dim level. The LED ring will show the Dim level in turquoise. Turn the dial clockwise to decrease the Dim attenuation, and counterclockwise to increase the attenuation. If the LED ring is fully lit, there is no attenuation. If the LED ring is unlit, the Dim button will mute the output.

Press and hold DIM for three seconds without turning the dial to display the current setting on the LED ring.

In the Control Panel application, you can adjust the Dim Level with the Dim knob on the right side.

6. Device Settings

On the right side of the Control Panel application you will find settings concerning the general performance of the device: *Sample Rate* and *Buffer Size* (depending on the operating system) as well as information about the *Firmware Version*.



6.1. Sample Rate

You can set the sample rate that the device is operating with. The sample rate can be changed using the Control Panel application, an audio application like Bitwig Studio, or an application provided by the operating system (like the Audio MIDI Setup application in macOS).

Bitwig Connect 4/12 supports all common sample rates up to 192 kHz:

› 44.1 kHz

› 48 kHz

› 88.2 kHz

› 96 kHz

› 176.4 kHz*

› 192 kHz*

Note

At high sample rates the following features will not be available:

› Inputs 3–4 (will be muted)

› Outputs 9–12 (will be muted)

› Direct monitoring (disabled)

6.2. Buffer Size (Windows only)

The buffer size is the amount of time your computer takes to process audio signals. If you experience audio glitches or drop-outs, you might want to increase your buffer size. You can select one of the following buffer sizes for your device: 32, 64, 128, 256, 512, and 1024 samples.

Please be aware that higher buffer sizes will cause a noticeable delay when playing software instruments or monitoring input signals while recording. To avoid delays during audio recording you might want to use the direct monitoring feature (see section 3.4).

On macOS and Linux the buffer size can only be set directly in an audio application.

7. Using Connect 4/12 with Bitwig Studio

Bitwig Connect 4/12 is tightly integrated with Bitwig Studio. Using the device with Bitwig Studio gives you unique controller features and workflow benefits, which we'll explain in this chapter.

7.1. Setup in Bitwig Studio

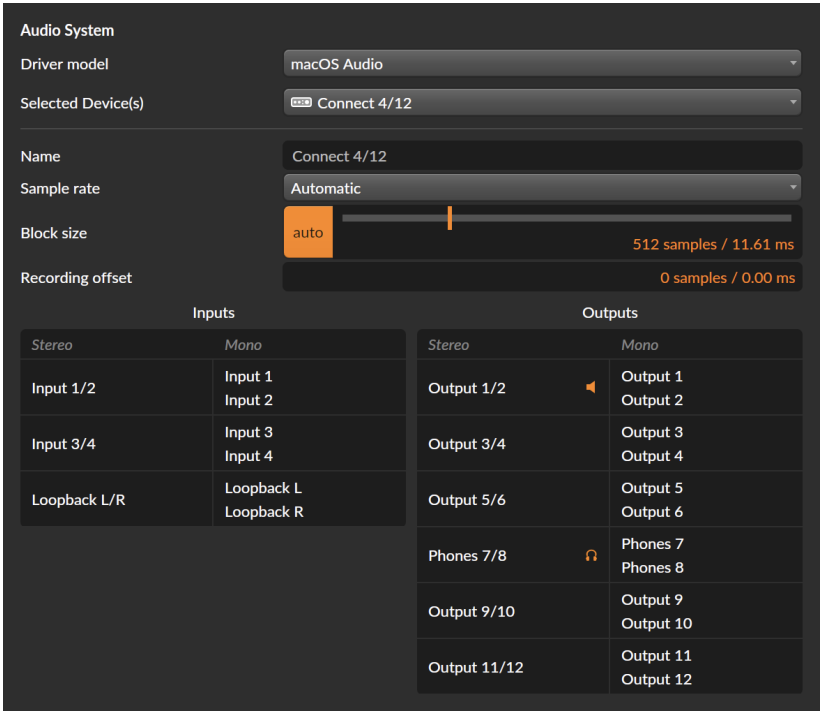
Setting up Bitwig Connect 4/12 in Bitwig Studio involves two steps. You need to set up the audio system—for making Connect's audio inputs and outputs available in the software—and the controller extension, for using the transport keys and other controller functions like Bitwig mode.

7.1.1. Audio System

To set up the audio system, start Bitwig Studio and plug in Connect 4/12. A notification will show that a new audio device has been connected. Click *Use Bitwig Connect* to select Bitwig Connect 4/12 as your audio interface.

To manually select Bitwig Connect 4/12 as your audio interface, navigate to *Dashboard > Settings > Audio* and select *macOS Audio* (on macOS), *ASIO* (on Windows), or *Pipewire* (preferred on Ubuntu) as the driver model, then select *Connect 4/12* as your input and output device.

If Bitwig Connect 4/12 has been correctly set up as your audio device, all the inputs and outputs should appear in the Audio System window:

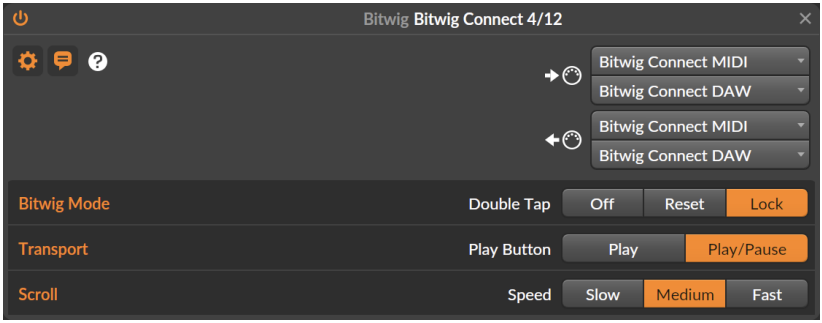


If you are using macOS or Linux, you can increase the number of inputs and outputs by using Bitwig Connect 4/12 in combination with other audio interfaces connected to your computer. Instead of choosing Connect 4/12 as your selected device, open the device menu and select *Create New Combined Device*. A list with available audio interfaces will appear below the chooser. Select the audio interfaces you want to use.

7.1.2. Controller Extension

The Connect 4/12 controller extension should be set up automatically when you connect the device for the first time. A notification will inform you that the Bitwig Connect 4/12 extension is ready to be used.

If you need to set it up manually, open the *Dashboard* and navigate to *Settings > Controllers*. Click *Add Controller* at the bottom of the page, select *Bitwig* as the hardware vendor, select *Connect 4/12*, and click *Add*. Make sure the MIDI input and output ports are selected in the correct order:

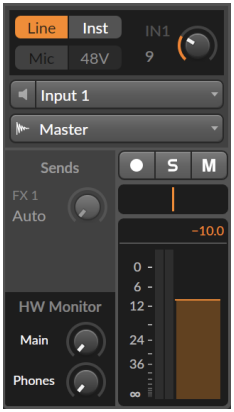


Below the MIDI port menus you'll find additional options for *Bitwig Mode*, *Transport* and *Scroll Speed*. Please read section 7.5 and section 7.6 for information on these settings.

After you have set up the Controller extension correctly, you will notice that the Bitwig mode button on the device will be lit and Bitwig mode can be selected.

7.2. Hardware Controls in Bitwig Studio

Audio tracks in Bitwig Studio will show additional controls in the track inspector if any of Connect's inputs have been selected as the audio input. The controls have a dark background to distinguish between hardware controls and DAW features:

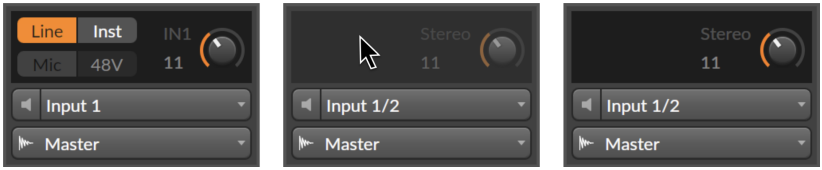


When input channel 1 or 2 is selected, you can toggle the input type, toggle phantom power (only on channel 1), and adjust the gain. When input channel 3 or 4 is selected you can toggle the DC filter and the +12

dB gain setting. All these controls are located in the space above the input channel selector.

For input channels 1 and 2, direct monitoring controls will appear below the FX Sends. These controls allow you to send the input signal straight to the Main or Headphone output of Bitwig Connect 4/12. Please keep in mind that this signal routing happens inside the device—you won't hear any effects or other processing applied in Bitwig Studio on these signals.

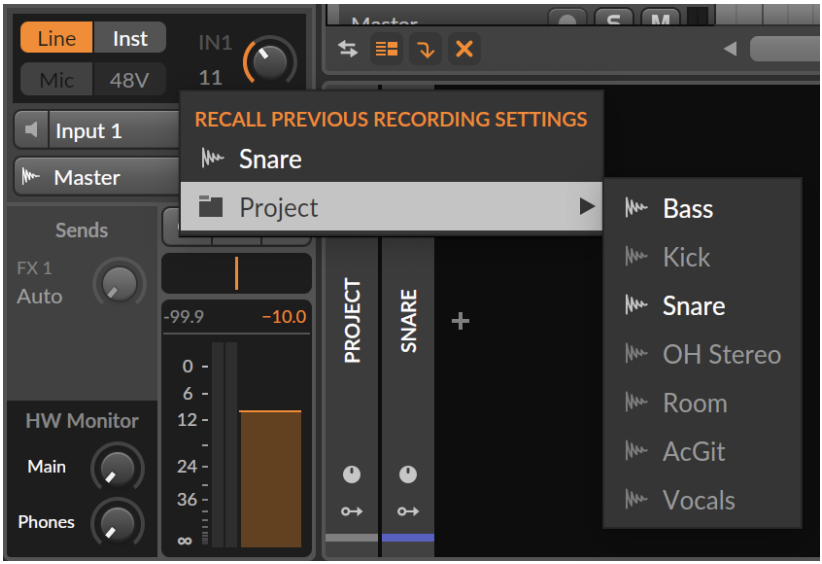
When you switch a track from a mono to a stereo input, or select another track that has a different mono/stereo configuration than the last one used, the hardware controls in Bitwig Studio will be greyed out. To activate them (i.e. enable or disable stereo pairing), simply click in the greyed out area.



7.2.1. Recalling Hardware Settings

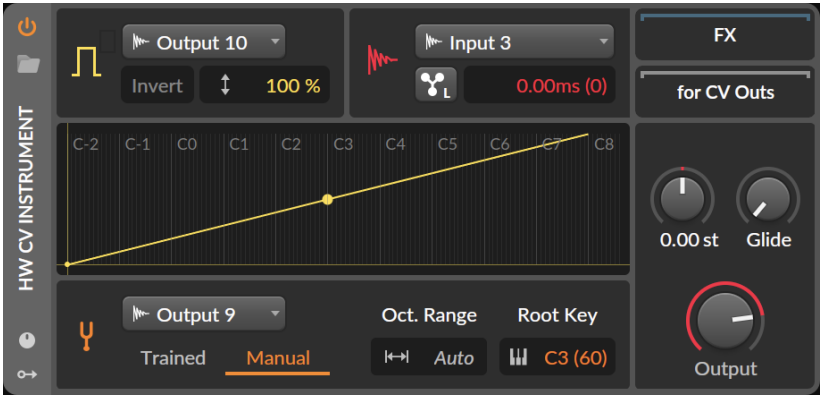
When using Bitwig Connect 4/12 with Bitwig Studio, you are most likely using the same hard channel input(s) to record to multiple different tracks. You might have used different input types and gain settings for each of these recordings. In some cases, it might be useful to recall these settings so you can continue working on these tracks.

To do this, right-click anywhere inside the black hardware controls area above the input channel chooser to open the *Recall Recording Settings* pop-up window. Click on the top entry to recall the input and gain settings of the last recording made on this track. When you open the Project subfolder you can select the most recent input and gain settings of all the tracks in your project.



7.3. HW CV Instrument

The **HW CV Instrument** in Bitwig Studio allows you to control external hardware synths or modular systems by sending control voltages out of a DC-coupled audio interface. Bitwig Connect 4/12 outputs 9–12 (on the top panel) are specifically made for this purpose.



Insert a **HW CV Instrument** device on an instrument track and switch to *Manual* tuning mode. Select one of the Outputs 9 to 12 as the *Pitch*

CV Out in the drop-down menu. You will notice that *Auto* appears in the *Oct. Range* section instead of a user-definable number. Bitwig Studio can now send pitch voltages that comply with the 1V/Oct standard without the need to run a tuning process first (which often means a bit of repatching for the tuning to work). This is quite handy when you need to tune after the patch on your modular system has been made.

Trained tuning mode is of course still available, and in certain cases preferable to *Manual* tuning mode. If your synthesizer or module is not well calibrated or does not comply with the 1V/Oct standard at all (Buchla Synthesizers use 1.2V/Oct, Korg and Yamaha use Hz/Volt), *Trained* tuning mode will give the best possible results.

You can use any of Bitwig Connect 4/12's inputs as the *Audio Input*, but for modular synthesizers it is advisable to use Input 3 or 4. The sensitivity of these inputs is designed to match the high output levels of modular synthesizers.

7.4. CV-enabled Grid Modules

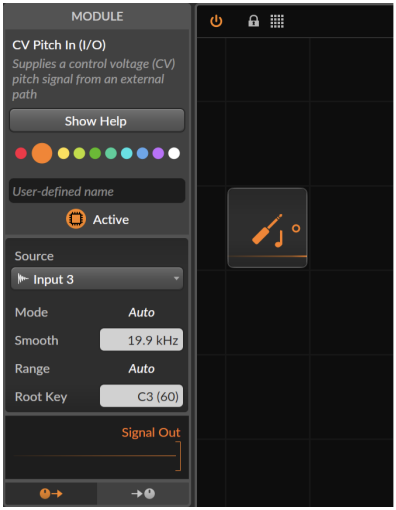
Similar to the HW CV Instrument device, you can control hardware with CV/Gate inputs from within **The Grid**. Use a **CV Out (I/O)** module and set the *Destination* to any of Bitwig Connect's Outputs 9 to 12. This allows you to send any signal from **The Grid** to your hardware: audio signals, low frequency signals, or static DC voltages.

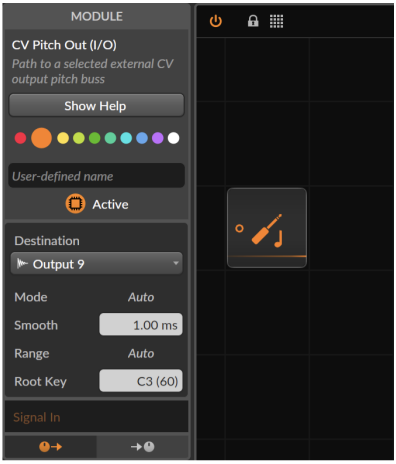
If you want to send pitch information to your hardware, use the **CV Pitch Out (I/O)** module. Like the HW CV Instrument device, this module has automatic switching functionality built in: when Output 9–12 is selected in the *Destination* drop-down menu, the *Range* and *Mode* parameters switch automatically to *Auto*. This allows you to send pitch signals that comply with the 1V/Oct standard to your hardware, thanks to the calibrated voltage levels of Outputs 9–12.

It's also possible to send control voltages from a hardware device into **The Grid**. To do this, use a **CV In (I/O)** module and select Input 3 or 4 as the *Source*. You can now receive any form of control voltage in **The Grid**: audio-rate signals, low frequency signals, or static DC voltages. Please make sure that you have deactivated the DC filter for Inputs 3 and 4 in the Control Panel application (see section 3.2.1)

If you want to receive CV signals to control pitch inside **The Grid** (e.g. from external sequencers), use the **CV Pitch In (I/O)** module and select Input 3 or 4 as the *Source* input. Please make sure that you have deactivated the DC filter for Inputs 3 and 4 in the Control Panel. You will notice that *Auto* appears in the *Mode* and *Range* sections. This

automatic switching ensures that 1V/Oct signals will be transformed into the correct pitch information inside **The Grid**.





All of Bitwig Connect 4/12's top panel I/Os can be color coded: if you assign these ports to an input or output module and give that module a certain color, the level LED of the input or output will light up in the same color. Please note that clipping levels are always indicated in red, regardless of the color assigned to an input or output.

7.5. Transport Buttons and Scroll/Zoom Mode

When Connect 4/12 has been correctly set up as a MIDI Controller in Bitwig Studio, the transport buttons (incl. their secondary functions) will automatically work, regardless of the currently selected Center Dial mode.

› Press PLAY to start/pause* the transport of Bitwig Studio. Press again to stop the transport.

› Press STOP to stop the transport of Bitwig Studio. If the transport is already stopped, press STOP again to set the playback start time to 1.1.1.00.

› Press RECORD to activate recording in the Arranger timeline.

*You can change the behavior of the Play button in the *Controller Preferences*:

› **Play** will start or stop the transport, keeping the play start marker at its original position

› **Play/Pause** will start or pause the transport, moving the play start marker to the position where playback was paused

The transport buttons have secondary functions which can be activated by holding the BITWIG button and pressing a transport button. The icons below the buttons illustrate their secondary function.

› Hold BITWIG and press PLAY to toggle the Transport Loop

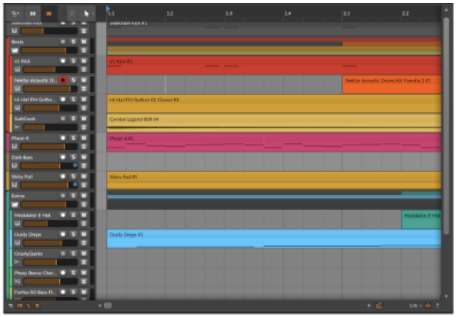
› Hold BITWIG and press STOP to toggle the Metronome

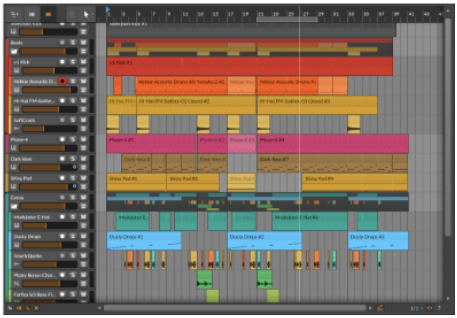
› Hold BITWIG and press RECORD to toggle Arranger Automation Write

In Scroll mode, the Center Dial controls the position of the playback start marker or the horizontal zooming of the currently focussed window.

To activate Scroll mode, press the SCROLL mode button and turn the dial. Two or more ring LEDs will light up in turquoise and move around in sync with the movement of the dial. Turn the Center Dial clockwise to move the start marker forward in the timeline, turn the dial counterclockwise to move the marker backwards. The number of lit up LEDs depends on the current zoom level of the timeline.

When Scroll mode is already activated, press the SCROLL button again to switch to Zoom mode. Two or more ring LEDs will light up in violet. Turn the Center Dial clockwise to zoom in horizontally, or counterclockwise to zoom out horizontally. The number of lit up LEDs will change depending on the current zoom level: the more you zoom out, the more LEDs will light up.





It's also possible to combine scrolling and zooming with a special gesture. When Scroll mode is activated, double tap the dial and keep your finger on the dial. You will notice that the LEDs light up in violet. Turn the dial to temporarily zoom in or out. As soon as you release your fingers the dial will return to Scroll mode.

7.5.1. MCU Mode

The transport buttons and Scroll mode are compatible with the Mackie Control standard. This allows you to use the transport functions of Bitwig Connect 4/12 with any DAW that supports the Mackie Control (MCU) protocol.

Please consult the documentation of your DAW on how to set up an MCU controller. The MIDI port you need to select is called **Bitwig Connect DAW** (macOS/Linux) or **Bitwig Connect Control** (Windows) for both input and output.

7.6. Bitwig Mode

In Bitwig mode, the Center Dial becomes a universal MIDI controller. This allows you to control any parameter you see in Bitwig Studio instantly, without tedious manual mapping.

Press the BITWIG button to enter Bitwig mode. Hover the mouse cursor over a parameter and turn the Center Dial to control it instantly. You will notice that the LED ring shows the current value and color of the parameter as soon as you hover over it.

If you want to dedicate the Center Dial to one parameter, you can “lock” the parameter in one of the following ways:

› double tap the dial

› press the BITWIG button again

› right-click on the parameter and select *Center Dial* in the pop-up menu

The bottom ring LEDs will light up in white, indicating that lock is now activated. Additionally, the locked parameter in Bitwig Studio will be highlighted in the color of the LED ring. You can continue to work with your mouse while still controlling the locked parameter.

If you want to lock the dial to another parameter, move the cursor over the parameter you wish to control and double tap the dial (or press the BITWIG button) again.

To unlock, simply double tap the dial (or press the BITWIG button) again while the mouse cursor is not over a particular parameter.

To change the double tap behavior, open the *Dashboard* in Bitwig Studio and navigate to *Settings > Controllers*. In the *Bitwig Connect 4/12* entry you will see three double tap options:

› **Off** deactivates any double tap actions

› **Reset** will reset a parameter to its default value when you double tap it

› **Lock** will lock a parameter to the Center Dial

If you use the Center Dial to enter automation data in the Arranger, the preferred mode for this is *Touch* automation mode. If *Touch* is activated, automation data will only be written when you are touching the dial. When you release the dial, existing automation data will not be overwritten. This method works particularly well when you want to adjust existing automation data. To activate *Touch* automation mode, open the *PLAY* menu in Bitwig Studio and select *Touch* in the *Arrange Automation Write* section.

Please note that Bitwig mode works exclusively with Bitwig Studio. If Bitwig Studio is not running, Bitwig mode cannot be activated.

8. Technical Specifications

Table 8.1.

Overview	
Inputs	1x Mic (phantom powered) / Line / Instrument (bal. and unbal.)
	1x Line / Instrument (bal. and unbal.)
	2x Line / Modular Level (unbal., AC or DC coupled)
	1x Stereo Loopback Signal from Output 1/2
Outputs	6x Line Level (bal.)
	1x Stereo Headphone Output
	4x Line / Modular Level (unbal. DC coupled)
Supported Sampling Rates	44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz, 176.4 kHz, 192 kHz
Bit Depth	24 bit
MIDI	1x MIDI input (3.5 mm jack)
	1x MIDI output (3.5 mm jack)
USB Port	USB Type-C
USB Protocol	USB 2.0
Power	USB bus powered
Dimensions	163 x 52 x 205 mm
Weight	1480 g

Table 8.2.

Input 1	
Connector (Type)	XLR / 6.35 mm TRS Combo (electronically balanced)
Input Impedance	5 kOhm (MIC)
	20 kOhm (LINE)
	1 MOhm (INST)
Dynamic Range	113 dB (A-weighted) (MIC/LINE)
	110 dB (A-weighted) (INST)
THD+N	0.001 % (MIC/LINE balanced)
	0.003 % (INST unbalanced)
Frequency Response	20 Hz - 20 kHz +/- 0.1 dB
Max. Input Level	-2 dBu (MIC balanced)
	+12 dBu (LINE balanced and unbalanced)
	+ 6 dBu (INST unbalanced)
Adjustable Gain Range	60 dB (MIC)
	30 dB (LINE/INST)

Table 8.3.

Input 2	
Connector (Type)	6.35 mm TRS (electronically balanced)
Input Impedance	20 kOhm (LINE)

Input 2	
	1 MOhm (INST)
Dynamic Range	112 dB (A-weighted) (LINE)
	110 dB (A-weighted) (INST)
THD+N	0.001 % (LINE balanced)
	0.003 % (INST unbalanced)
Frequency Response	20 Hz - 20 kHz +/- 0.1 dB
Max. Input Level	+12 dBu (LINE balanced)
	+12 dBu (INST unbalanced)
Adjustable Gain Range	30 dB (LINE/INST)

Table 8.4.

Input 3/4	
Connector (Type)	3.5 mm TS (unbalanced)
Input Impedance	80 kOhm
Dynamic Range	101 dB (A-weighted)
THD+N	0.007 %
Frequency Response	20 Hz - 20 kHz +/- 0.15 dB
Max. Input Level	+18 dBu
Gain Range	0 dB / +12 dB (switchable)

Table 8.5.

Output 1-6	
Connector (Type)	6.35 mm TRS (electronically balanced)
Output Impedance	600 Ohm
Dynamic Range	116 dB (A-weighted)
THD+N	0.0006 %
Frequency Response	20 Hz - 20 kHz +/- 0.05 dB
Max. Output Level	+12 dBu

Table 8.6.

Output 7/8 (Phones)	
Connector (Type)	6.35 mm Stereo TRS (unbalanced)
Output Impedance	4 Ohm
Dynamic Range	110 dB (A-weighted)
THD+N	0.002%
Frequency Response	20 Hz - 20 kHz +/- 0.2 dB
Max. Output Power	2x 40 mW @ 32 Ohm Load

Table 8.7.

Output 9-12	
Connector (Type)	3.5 mm TS (unbalanced)
Output Impedance	300 Ohm
Dynamic Range	104 dB (A-weighted)
THD+N	0.002 %
Frequency Response	20 Hz - 20 kHz +/- 0.3 dB
Max. Output Level	+12 dBu

9. Warranty and Support

The product is covered by a limited warranty. For the current terms of such warranty, please visit the Bitwig Connect Support Page [http://www.bitwig.com/get-connected]

For technical support issues, please visit the Bitwig Connect Knowledge Base [http://www.bitwig.com/get-connected] or contact Bitwig directly, using the Support Form [http://www.bitwig.com/contact]