



HARMONY H224

AUDIO INTERFACE

OWNER'S MANUAL

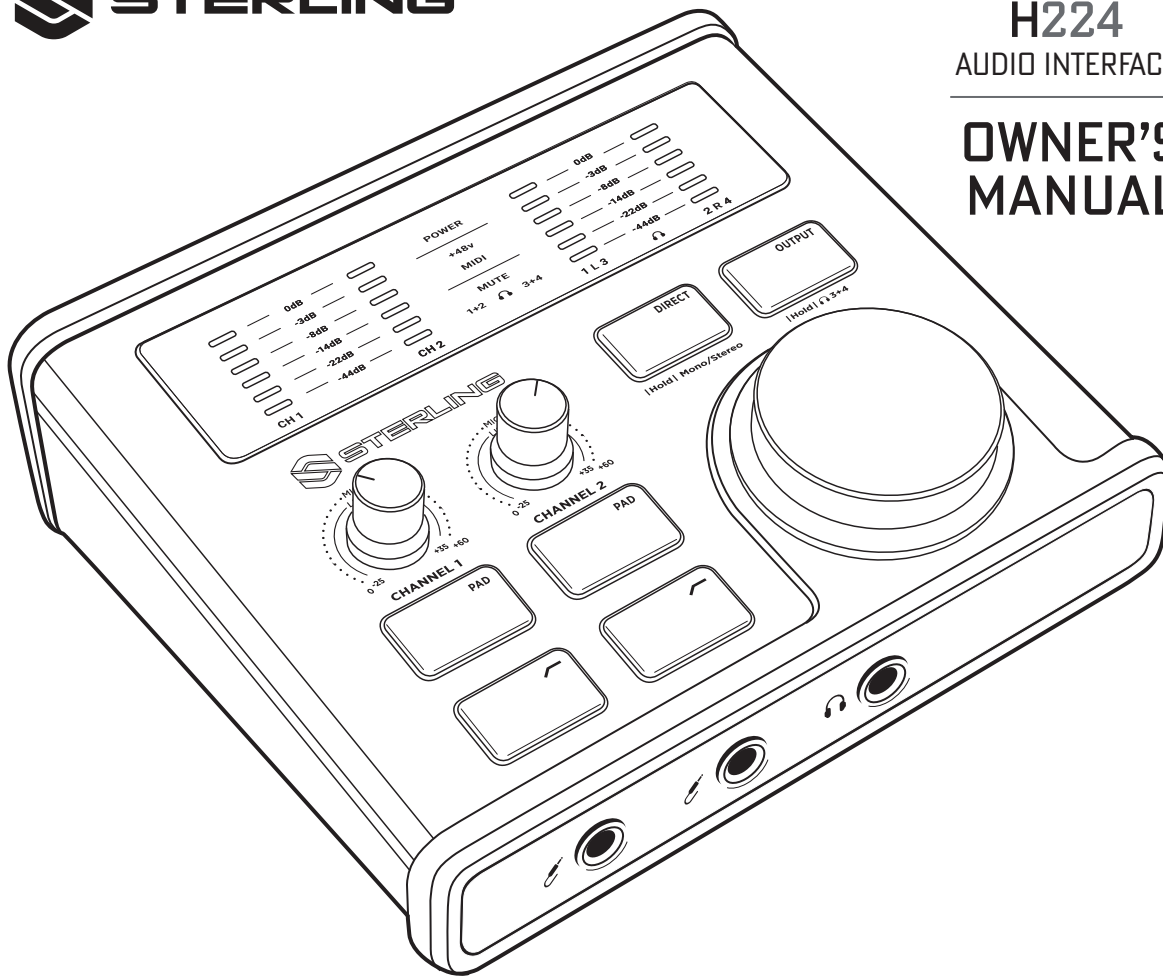


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DOWNLOADS & SOFTWARE REQUIREMENTS

Your Harmony H224 Professional Audio Interface has been designed to work with macOS operating systems, as well as Microsoft Windows operating systems.

Please note that your Harmony H224 hardware requires software downloads to work with all features designed for the product, it is important to follow the directions below as indicated on the included card in your Harmony H224 packaging.

Before use, please take a moment to access the most current driver and software updates for installation:

<https://sterlingaudio.net/downloads/harmonyH224>

If you require assistance for customer support with installation, please contact us:

Web Support: <https://sterlingaudio.net/contact-us/>

Phone Support: (888) 621-2154

INTRODUCTION

Thank you for purchasing this Harmony H224 USB Audio Interface — a studio quality, compact and portable solution for routing high quality audio to and from your computer with high quality Class-A discrete microphone preamplifiers, just like a professional recording console.

INSIDE THE BOX

Inside your new H224 packaging, you should find the following:

- Harmony H224, 24-bit, 192 kHz audio interface
- Harmony H224 Product User's Manual
- 1 Meter length USB-C to USB-A cable

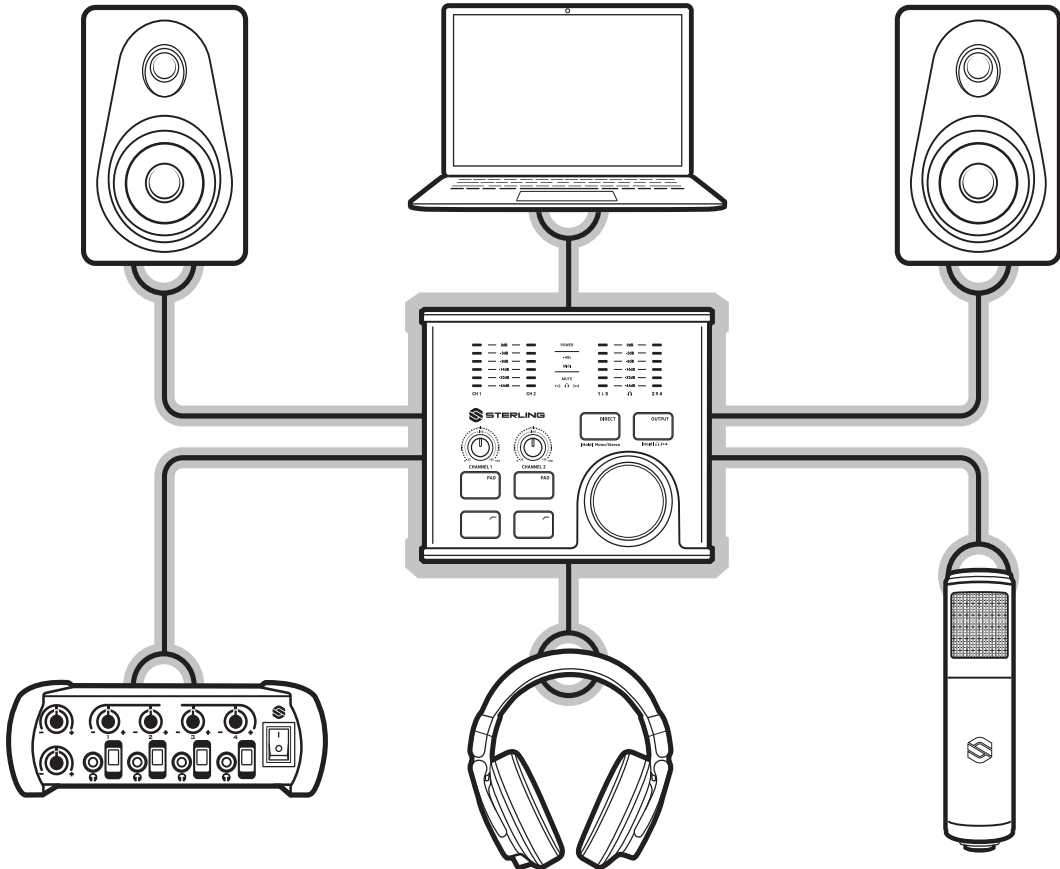
Included Free Software: All complementary software for your Harmony H224 are found inside this box, please use the included serialized redemption cards on-line with the respective product websites to acquire the software and activate per the manufacturers guidelines.

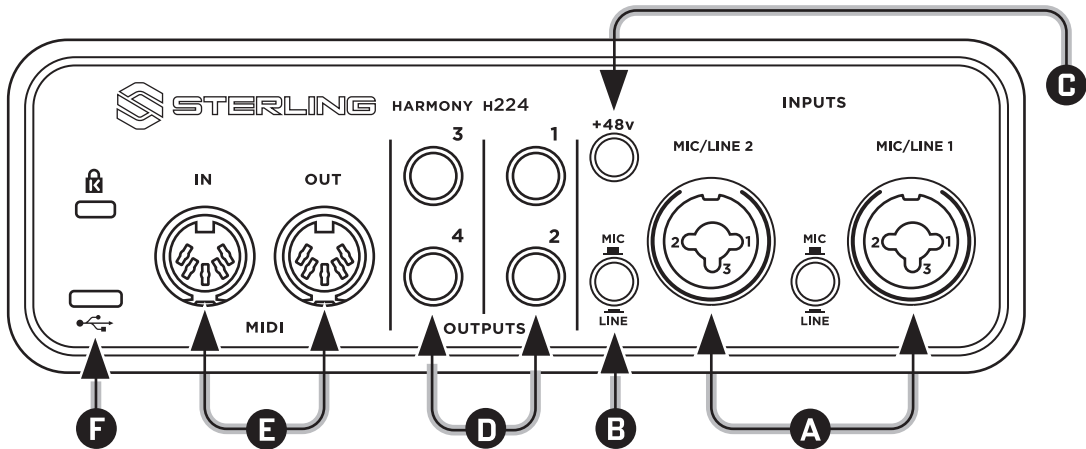
STERLING PRODUCTS FOR RECORDING INTEGRATION

As a recording solutions company, we believe the best way to take care of our customers (that's you) is to ensure that you have the best possible experience from the beginning of your signal chain to the end — what we call our Unified Signal Path.

To achieve this goal, we've prioritized seamless integration throughout every design phase of these products from day one. The result is systems that complement each other as intended — straight out of the box — without excessive configuration hassles.

Product Integration





BACK PANEL CONNECTIONS

A. Microphone & Balanced Line Level Inputs: The Harmony H224 audio interface is equipped with two (2) high-quality microphone preamplifiers for use with all types of microphones, Dynamic, Condenser, and Ribbon Microphones. The Harmony H224 microphone preamps are designed with Class-A discrete circuitry, which gives you premium amplification with very low distortion, very low self-noise, and clarity, to reveal the true sound of your instruments or sound source.

** Both input channels on your Harmony H224 audio interface are equipped with combination connectors that can connect both standard XLR, and ¼" TRS connector cables.*

*** Both combination input connectors have been designed & wired for maximum flexibility in recording workflow, this means you can plug in a XLR or ¼" TRS cable for either "MIC" or "LINE" input and you are not limited to a single connector style for either input connector.*

B. Mic / Line Input Switches: The MIC or LINE input switches are located on the back panel, to the bottom right of each Combination connector for their respective channel, and help control the type of signal the preamplifier will expect to see at input.

C. 48 Volt Phantom Power: The Harmony H224 provides 48V phantom power for the microphone inputs; pressing the 48V button switches phantom power 'on' and 'off' for all microphone inputs; the +48V LED will illuminate on the display Lens when phantom power is activated.

INPUT Connector Wiring for Phantom Power: Pin 1 = GN, Pin 2 = +48V DC, Pin 3 = - 48V DC

Please Note: Turning (+48V DC) Phantom Power "ON" or "OFF", will create a momentary spike in the audio output. Because of this, we strongly recommend that you turn down both preamplifiers' gain potentiometers, or muting your Headphones and Studio Monitors before activation of Phantom Power

WARNING: Phantom power is required for all microphones with active circuitry. Condenser microphones always need phantom power. Dynamic and Ribbon mics can also require Phantom Power depending on their design; check your microphone manufacturers manual if you are unsure about respective microphone power requirements. Therefore, switch Phantom Power "OFF" when it is not required to power microphones for recording purposes.

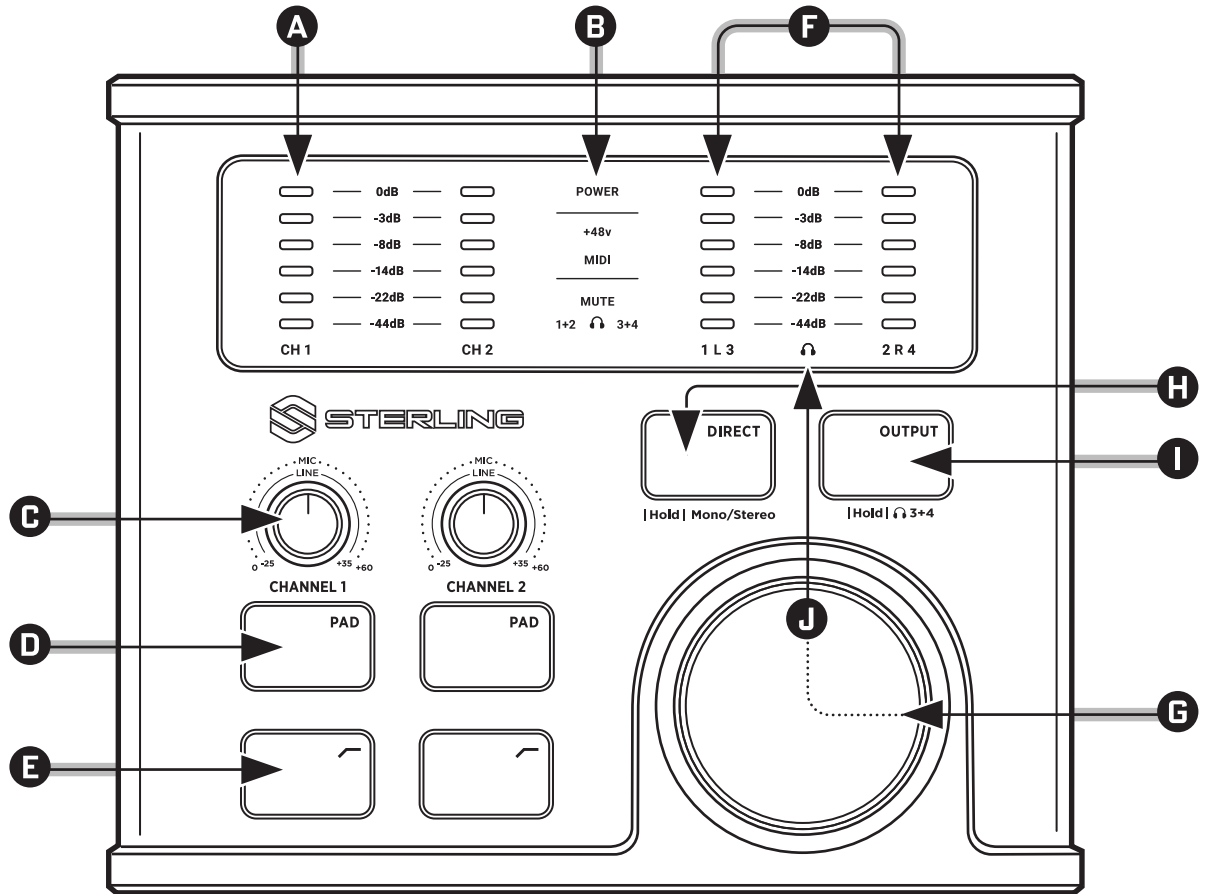
D. Balanced Line Level Outputs: The Harmony H224 audio interface is equipped with four (4) analog output connectors, all using ¼" TRS output connectors. The signals that will come from these output connectors are fully balanced, Line-Level audio (+4dBu) outputs, capable of feeding studio monitors, headphone amplifiers, as well as outboard processing equipment like effects processors.

E. MIDI I/O CONNECTIONS: The Harmony H224 comes equipped with a single port of MIDI Input and MIDI Output, and acts as a MIDI interface. Both MIDI connectors offer 5-pin DIN style connectors found on many classic and modern digital music instruments, controllers, and peripherals. The "MIDI" LED on the display Lens will illuminate when MIDI data is received at the input or output port.

Note(s): Some MIDI devices produce Active Sense MIDI data as part of the MIDI protocol. Some manufactures choose not to transmit Active Sense messages. MIDI devices that do produce Active Sense MIDI data will trigger the MIDI LED to always be illuminated on the display Lens when connected to the MIDI Input connector.

MIDI does not carry audio signals but is frequently used to control or trigger an audio source, like a virtual instrument or hardware synthesizer. You should ensure that MIDI data is correctly sent and received by the appropriate hardware or software instrument.

F. USB Type-C Port: The H224 uses a USB Type-C port in its back panel for computer connectivity. The USB connection uses a USB 2.0 protocol and can be connected to any host computer that has a USB 2.0 port or a USB 3.0 port. The H224 hardware comes with a USB Type-C to USB Type-A cable.



TOP PANEL FUNCTIONS

A. Input Meters: The H224 has six (6) segment LED meters for monitoring your input signals, on each input channel. The LED meters for input show the input level of the pre-amplifiers' before the signal is transmitted to your recording software. The red '0dB', or 'Clipping' LED will illuminate when your input signal reaches 0dBFS. At this level, the signal will begin to overload the analog-to-digital converters and exhibit signs of clipping and distortion. Use the gain controls or PAD to help keep the signal below the "0dB" level.

B. Power LED: This light indicates if your H224 hardware is correctly receiving power from the host computer.

C. Input Gain Control: These knobs provide 60dB of variable gain (0dB to +60dB for microphones, -25dB to +35dB for Line Level).

D. PAD Switch: PAD switches provide attenuation (reduction) of the audio signal being passed through the NXS Mic/Line preamplifiers. The PAD switches reduce the incoming signal by -10dB before transmitted to the Analog-to-Digital converter (ADC). This may be helpful in recording situations where the sound source is very loud and needs to be reduced to avoid clipping of the signal or reducing distortion.

Technical Note:

The PAD switches on the H224 preamplifiers have been carefully engineered to not compromise your signal-to-noise ratio like on traditional PAD circuits. This means when using dynamic processors like Compressor/Expanders your recorded signal will not have increased noise in the recording like traditional PAD circuitry.

E. High-Pass Filter Switch: The High-Pass Filter switch allows for low frequency reduction of the incoming signal as needed. When engaged the High-Pass Filter will reduce the signal by -12dB per octave starting at 100Hz and below.

F. Output Meters: Output Meters: The H224 has two, six (6) segment LED meters for monitoring your playback/output signals from your computer or digital audio workstation (DAW). These meters display the signal levels reproduced from your audio recording software (DAW), or from other computer-based applications like digital music players. These meters have the same range as the input meters and display the signal level of the recording itself, and is not influenced by the set output volume.

G. Master Control Knob: The Master Control Knob is your primary control feature for Volume and Mute on your H224 hardware. This feature controls no other functions. The Master Control Knob is an Encoder and not a simple Potentiometer. This means the Master Knob can be turned 360* degrees in either direction continuously and not stop. The Encoder also has a ‘Push’ feature designed for it that you can hear ‘click’ when articulated. This enables the Master Knob to function with two (2) purposes; volume control, and (push) to Mute, or (push) to Unmute an Output Path.

H. DIRECT Switch: This button allows you to route your input signals with the playback streams from your computer and DAW so you can monitor your input signals without any latency. (delay).

Technical Note:

The DIRECT button can also be configured to output Mono or Stereo panning for use in Direct Monitoring. (The default state of the Direct Monitor function is MONO output.)

To change the monitoring state of the Direct Monitor feature, ‘Press and Hold’ the “DIRECT” button for two (2) seconds to change the state of the feature; when you do this you will see the DIRECT button LED flash 3-times informing you the state has changed. If you would like to switch back to the previous state, press and hold the “DIRECT” button again for two (2) seconds.

Switching between Mono or Stereo Direct Monitor output is possible when “DIRECT” button is ‘activated’ (On) or when it is deactivated (Off).

I. OUTPUT Switch: The OUTPUT button functions to give you flexibility in monitoring all Output ports. The OUTPUT button will allow you to switch the selected Output path on your H224 hardware so you can adjust Volume & Mute control from Outputs 1+2, Headphone Output, or Outputs 3+4 via the large Master Knob. Only one Output path is active at any given time for Volume & Mute control. If an Output path is ‘Muted’, the selected Output path will not be available for Volume change by the Master knob until that path is unmuted.

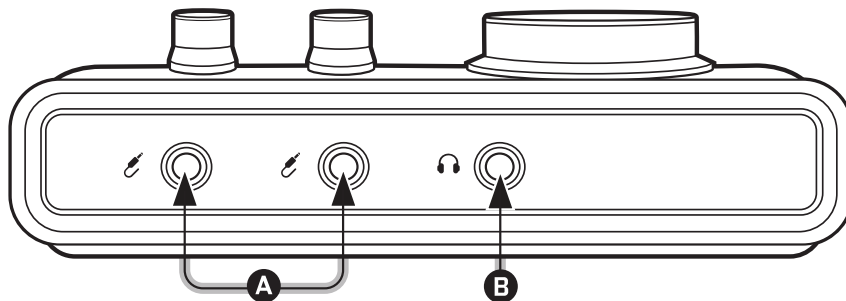
By default, at initial power-up, the Output Button will be set to monitor Outputs 1+2. When you push the OUTPUT switch to change the Output monitoring path you will see the OUTPUT switch illuminate when it is pressed, indicating an Output path change. You will also see the metering Lens output path change indicators at the bottom right-hand side of the display Lens, underneath the “L” and “R” channels respectively.

The OUTPUT switch also has the ability to change the Output path the Headphone output is monitoring. By

default, the Output path of the Headphone output is monitoring Outputs 1+2. If you “Press and Hold” the OUTPUT switch for 2 seconds, it will flash three (3) times and route audio from Outputs 3+4 to the Headphone Output connector, and the OUTPUT button will remain illuminated, indicating the audio from 3+4 is activated to the Headphone output path. To return to Output path 1+2 for Headphones, simply “Press and Hold” the OUTPUT switch for 2 seconds again, and it will return to its default state without being illuminated.

J. Headphone Level: The Headphone output level is controlled via the large master knob. To change the Headphone output level the Headphone Output path must be selected via the OUTPUT button. Referencing the Output path section on the H224 display lens, you will need to ‘click’ the OUTPUT button until you see the ‘Headphone’ symbol illuminated in the Lens section before a level change is made.

FRONT PANEL CONNECTIONS



A. Instrument Inputs: The H224 comes equipped with two (2) dedicated instrument level inputs with ¼” female unbalanced connectors. The electronic circuitry is optimized for use with Guitars, Basses, and many unbalanced Instrument sources like synths and drum machines.

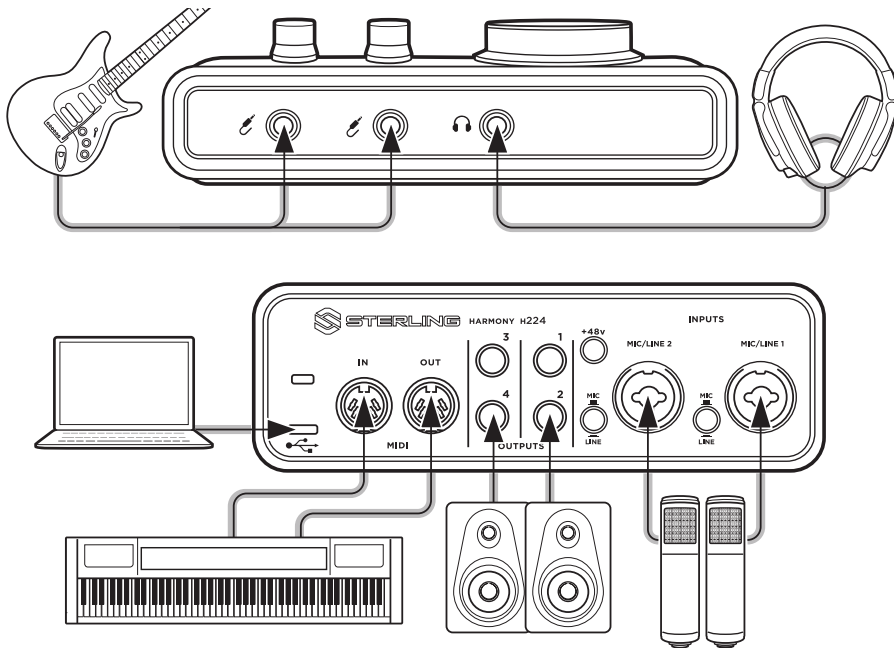
The inputs require no switches to operate, simply plug in your instrument to the corresponding input channel and set your gain and you are ready to record into your software. The instrument inputs have been designed to override the MIC/LINE inputs found on the rear panel, creating a ‘plug and play’ experience like the one you would find on stand-alone outboard-gear preamplifiers.

B. Headphone Output: The H224 comes equipped with a single headphone output connector via the front panel for use in monitoring audio when headphones are required. The output impedance accommodates the

widest range of headphone impedances typically used for Studio recording (between 30 Ohms to 300 ohms.) The headphone amplifier will provide high output power for demanding tracking and mixing environments, where louder volume may be advantageous.

Technical Note: Headphones with higher impedances will require more power to drive an equivalent volume than from a lower impedance headphone; therefore, you may require setting the volume higher on a higher impedance headphone to get the equivalent volume from a headphone with a lower driver impedance rating.

Reference Connection Diagram



CONNECTING TO A COMPUTER

Before connecting your Sterling H224 hardware to a computer, please visit www.sterlingaudio.net/products/downloads/H224 to check for the most current software and drivers for use with your computer.

Note: The speed of your computer processor, amount of RAM, and capacity, size, and type + speed of your hard drives will greatly affect the overall performance of your recording system. A faster processor and more RAM can reduce signal latency (delay) and improve overall system performance.

The Windows OS installer also includes a Windows ASIO driver for great low-latency throughput performance. No driver installation is necessary for Mac OS.

H224 CONTROL PANEL INSTALLATION FOR MAC OS

Your new H224 audio interface is a class-compliant Core Audio device in macOS. No driver installation is necessary.

To use the H224 for the audio output for your computer you will need to go to the System Preferences to the Sound preferences and select the Output tab. There you will see the Harmony H224 for the output choice. To set it for input select the Input tab and select it there. Note that you don't have to do this to use the H224 for your DAW (digital audio workstation software). The selection for inputs and outputs should be made in the DAW application.

Installing the H224 GUI (Graphic User Interface) Control Panel

The Control panel for the H224 allows you to control the hardware from your computer as well as set the sample rate for the interface.

1. Go to www.sterlingaudio.net/products/downloads/H224 to download the macOS H224 Control panel.
2. After downloading the file you will need to uncompress it. The file will have the extension .dmg.
3. Double-Click on the file and the file will uncompress itself and display a window showing the installer H224_Panel-xxxxx.pkg.
4. Double-click on the icon. You will now see a window pop with the Installer.
5. Click on the Continue button in the installer. A new window will pop up asking for you to install choose the installer location.

6. Click on the Install button. You will then be prompted to enter your computers administrator password.
7. Click on the Install Software button.
8. After the installation is complete the H224 Panel will appear on your desktop. You can begin to use it to control your H224 hardware.

STERLING H224 CONTROL PANEL FOR MAC OS

The Sterling H224 Control Panel has the ability to remember your hardware settings and store them for use later when you disconnect and reconnect your hardware, or resume recording or music playback during use. The H224 Control Panel can store: PAD, High-Pass Filter , Direct Monitor, Output Path, Volume, Mute, settings, as well as when Headphones have been set to monitor output path 3+4.

The H224 Control Panel has some options for use and configuration:

FILE allows for:

- Always On Top: (H224 Control Panel is always in foreground if multiple software window are open.
- Run On System Startup: H224 Control Panel will open and run if computer OS is turned 'ON' or restarted for any reason.

CONFIG allows for:

- Restore Defaults: (H224 Control Panel will erase its memory function and restart the control panel in factory default configuration.
- Sample Rate: Allows user to choose sample rate when needed deepening on media and software program use.

HELP allows for:

- About: Quick info on hardware firmware version, Software update links (when available), Support contact information.

After H224 Control Panel is launched the first time from your applications, the H224 Control Panel is able to be recalled via the Sterling Logo icon in the top of the macOS system menu bar.



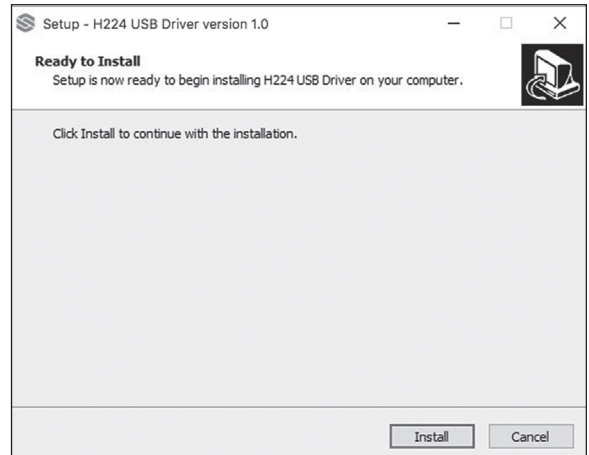
H224 DRIVER & CONTROL PANEL INSTALLATION FOR WINDOWS OS

Important Installation note: It is recommended that you temporarily disable or turn off any anti-virus programs you have running to prevent installation issues.

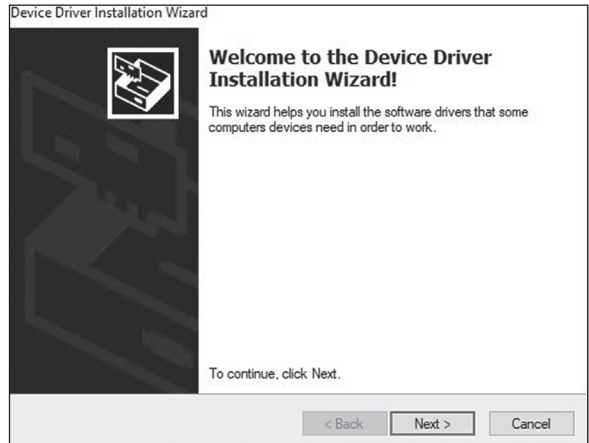
***Important:** Do not connect your interface to the computer yet! Install the driver first, then plug in the USB cable last. This app will install WDM and ASIO drivers, as well as the H224 Control Panel application.

It is recommended that you quit all applications before you start the installation.

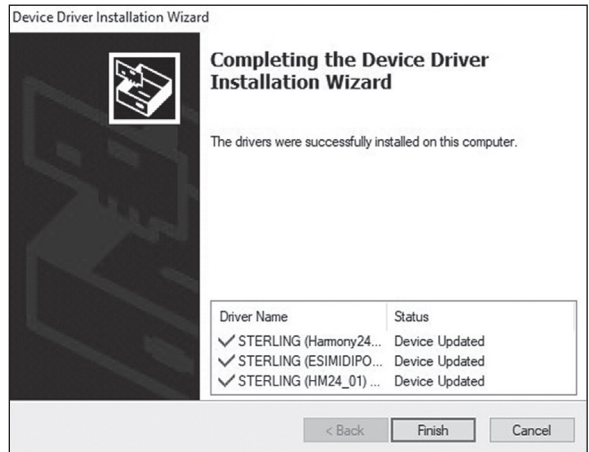
1. Download the Sterling H224 Control Panel App from: www.sterlingaudio.net/downloads/harmonyH224
2. Launch the H224 Control Panel App. Windows will ask, “Do you want to allow this app from an unknown publisher to make changes to your device?” Click **Yes**.
3. The window should say, “Click Install to continue with the installation.” Click the Install button.



4. Some drivers will install then you will see, "Welcome to the Device Driver Installation Wizard." Click Next and follow the instructions.



5. When the drivers have been installed, click Finish.



6. Finally, the driver setup app will ask you to restart your computer. Click finish and wait for the computer to restart.
7. After installing the drivers, connect your H224 hardware to an available USB-A (2.0 or 3.0) port.
8. The H224 Control Panel app will launch automatically after restarting. See the manual section on the H224 Control Panel App for more information.

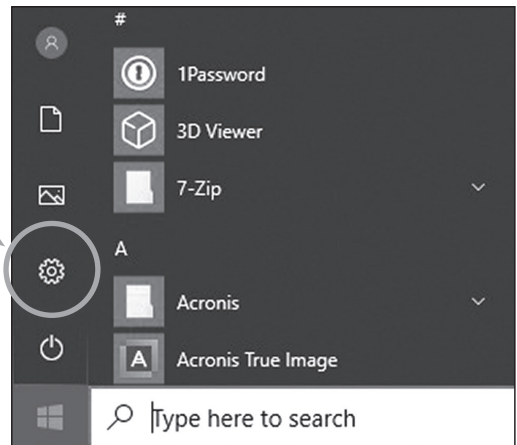
If you have any problems during the install, try disabling any antivirus software you might have running.



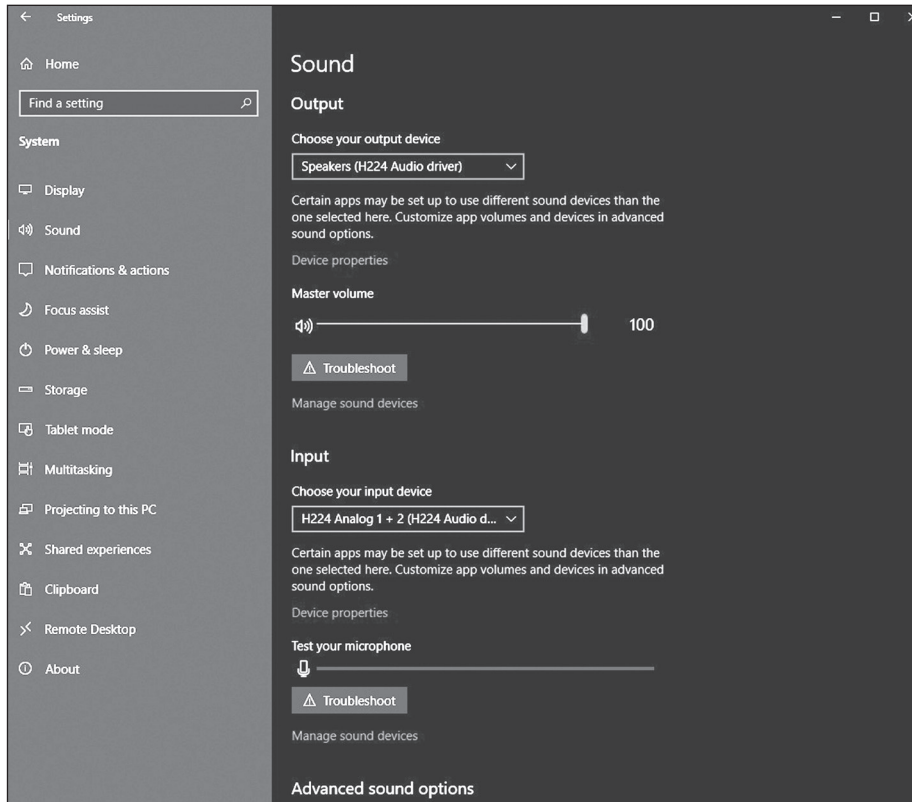
Mapping your Sound Output to the H224

You can set the H224 as your sound input and output device for use with web browsers and other system sounds.

1. Click the Windows Start button in the bottom left corner and select the Gear icon to the far left to open your computer Settings.
2. Click System in the top left corner of the Settings window, then Sound in the column to the left.



3. In the Output section, under “Choose your output device,” select “Speakers (H224 Audio Driver).”



4. If you want to use the mic inputs with apps like video conferencing, select “H224 Analog 1 + 2” under “Choose your input device.”

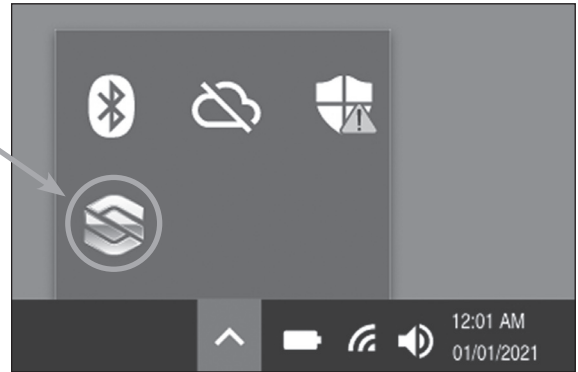
Note on the H224 Control Panel App for Windows:

If you close the H224 Control Panel and want to open it again, there are two ways to do this:

1. Click the “^” button on the bottom right corner of the Taskbar to expand the System Tray, and then click the Sterling logo.

*** Note: You can move the Sterling Icon in the system tray to be placed adjacent to it near the Wi-Fi and Power indicators if you prefer easier access.*

2. Click the Windows Start button, scroll down to Sterling, and click H224 Panel. **Tip:** Drag this icon to your desktop to create a shortcut.



STERLING H224 CONTROL PANEL FOR WINDOWS OS

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- Sample Rate: Allows user to choose sample rate when needed deepening on media and software program use.

HELP allows for:

- About: Quick info on hardware firmware version, Software update links (when available), Support contact information.



TECHNICAL INFORMATION AND SPECIFICATIONS

GENERAL	
Sample Rates	44.1, 48, 88.2, 96, 176.4, 192 kHz
Converter Resolution	24 bit
USB Communication Protocol	USB 2.0
MICROPHONE INPUTS	
Maximum Input Level	+12.4 dBu (Balanced, Minimum Gain)
Gain Range	0db to +60dB (Operational Range)
Frequency Response	20Hz - 20kHz (+/- 0.1dB Minimum Gain)
Dynamic Range	110.4 dB (A-Weighted, PAD On, Minimum Gain)
THD + N	0.0044% (1kHz, -1 dBFS, Unity Gain)
EIN	-129dBu (Maximum Gain, 150Ω Load, PAD On)
Input Impedance	3k Ohm
Phantom Power	+48V (+/- 0.5V), 10mA total
LINE INPUTS	
Maximum Input Level	+28 dBu (Balanced, Minimum gain)
Gain Range	-25dB to +35dB (Operational Range)
Frequency Response	20Hz-20kHz (+/-0.1dB) Minimum Gain
Dynamic Range	106dB (A-Weighted, Minimum Gain, PAD Off)
THD + N	0.0044%
Input Impedance	9K Ohm
INSTRUMENT INPUTS	
Maximum Input Level	+16.5 dBu (Unbalanced, Minimum Gain)
Gain Range	-10db to +30dB (Operational Range)
Frequency Response	20Hz-20kHz (+/-0.6dB) Minimum Gain
Dynamic Range	106dB (A-Weighted, Minimum Gain)

THD + N	0.0066%
Input Impedance	1M Ohm
MAIN OUTPUTS 1 & 2	
Maximum Output Level	+18dBu (Balanced, No Direct Monitor Engaged)
Frequency Response	20Hz-20kHz (+/-0.05dB) Maximum Output
Dynamic Range	115dB (A-Weighted)
THD + N	0.00047%
OUTPUTS 3 & 4	
Maximum Output Level	+18dBu (Balanced)
Frequency Response	20Hz-20kHz (+/-0.05dB) Maximum Output
Dynamic Range	115dB (A-Weighted)
THD + N	0.000602%
HEADPHONE OUTPUT	
Output Impedance	<1 Ω
Maximum Output Level	45mW/channel into 56 Ω (Maximum Output, no Direct Monitor engaged)
Frequency Response	20Hz-20kHz +/-0.05dB (Maximum Output)
Dynamic Range	113dB (A-Weighted)
THD + N	0.00077%
Optimum Headphone Impedance Range	30 Ω to 300 Ω (Recommended)

WARRANTY INFORMATION

2 YEAR LIMITED WARRANTY Subject to the limitations set forth below, Sterling Audio® hereby represents and warrants that the components of this product shall be free from defects in materials and workmanship, including implied warranties of merchantability or fitness for a particular purpose, subject to normal use and service, for 2 years to the original owner from the date of purchase, (proof of purchase required). Retailer and manufacturer shall not be liable for damages based upon inconvenience, loss of use of product, loss of time, interrupted operation or commercial loss or any other incidental or consequential damages including but not limited to lost profits, downtime, goodwill, damage to or replacement of equipment and property, and any costs of recovering, reprogramming, or reproducing any program or data stored in equipment that is used with Sterling Audio® products. This guarantee gives you specific legal rights. You may have other legal rights which vary from state to state. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

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