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Guide Part Number 9329-66351-00 REV B 12/21

Safety Instructions

Read and Keep these Instructions



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.



The garbage bin with a cross is intended to alert the user that the product may not be disposed of by regular garbage, but as electronic equipment.

Product Safety Warning



Important Safety Instructions

- 1 Read these instructions.
- 2 Keep these instructions.
- 3 Heed all warnings.
- 4 Follow all instructions.
- 5 Do not use this equipment near water.
- 6 Clean only with dry cloth.
- 7 Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- 8 Do not install near any heat sources such as radiators, heat registers, stoves, or other equipment (including amplifiers) that produce heat.
- 9 Protect power cords from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the equipment.
- 10 Only use attachments/accessories specified by the manufacturer.
- 11 For products that are not rack mountable: Use only with a cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the equipment. When a cart is used, use caution when moving the cart/equipment combination to avoid injury from tip-over.
- 12 Unplug this equipment during lightning storms or when unused for long periods of time.
- 13 Refer all servicing to qualified service personnel. Servicing is required when the equipment has been damaged in any way, such as power-supply cord or plug is damaged, 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.
- 14 For products that are a Mains powered device:

The equipment shall not be exposed to dripping or splashing and no objects filled with liquids (such as vases) shall be placed on the equipment.

WARNING! To reduce the risk of fire or electric shock, do not expose this equipment to rain or moisture.

Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

15 For products containing a lithium battery:

CAUTION! Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type.

16 For products with a power switch: It should remain accessible after installation.

17 The equipment shall be used at a maximum ambient temperature of 40° C.

18 This unit is provided with a power supply cord set suitable for 120V AC input only (for U.S.A. and Canada). For other than U.S.A. and Canada, a qualified person must provide for use with this unit, an appropriate, approved power supply cord set which is in compliance with the end use country requirements and has a minimum cross-sectional area of 1.0mm².

19 For products with more than one power cord:

CAUTION: This unit has more than one power supply cord. Disconnect two power supply cords before servicing to avoid electrical shock.

ATTENTION: Cet appareil comporte plus d'un cordon d'alimentation. Afin de prévenir les chocs électriques, débrancher les deux cordons d'alimentation avant de faire le dépannage.

20 For products with an operator-accessible fuse:

CAUTION: For continued protection against risk of fire, replace only with same type and rating of fuse.

ATTENTION: Pour ne pas compromettre la protection contre les risques d'incendie, remplacer par un fusible de même type et de même caractéristiques nominales.

Rack Mount Safety Instructions

- 1 **Elevated Operating Ambient**—If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment might be greater than room ambient. Therefore, consider installing the equipment in an environment compatible with the maximum ambient temperature (T_{ma}) specified by the manufacturer.
- 2 **Reduced Air Flow**—Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised. Make allowances for cooling air to be available to the front panel surface and no restrictions at the rear.
- 3 **Mechanical Loading**—Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- 4 **Circuit Overloading**—Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on over-current protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
- 5 **Reliable Earthing**—Reliable Earthing of rack mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (for example, use of power strips).

LED Safety Notices

Avid hardware might contain LED or Laser devices for communication use. These devices are compliant with the requirements for Class 1 LED and Laser Products and are safe in the intended use. In normal operation the output of these laser devices does not exceed the exposure limit of the eye and cannot cause harm.

Environmental Compliance

Proposition 65 Warning



Warning This product can expose you to chemicals including Pb and Pb compounds, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Perchlorate Notice

This product may contain a lithium coin battery. The State of California requires the following disclosure statement: “Perchlorate Material—special handling may apply, see www.dtsc.ca.gov/hazardous_waste/perchlorate.”

Recycling Notice



Disposal of Waste Equipment by Users in the European Union



This symbol on the product or its packaging indicates that this product must not be disposed of with other waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city recycling office or the dealer from whom you purchased the product.

EMC (Electromagnetic Compliance)

Avid declares that this product complies with the following standards:

- FCC Part 15 Class A
- ICES-003 Class A
- EN 55032 Class A
- AS/NZS CISPR 32 Class A
- CISPR32 Class A
- EN 61000-3-2
- EN 61000-3-3
- EN 55035
- EN 55103-2 E2, E3, E4

FCC Notice: Class A Equipment

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at personal expense.

Cables

Connections to Avid hardware must be made with shielded cables with metallic RFI/EMI connector hoods in order to maintain compliance with FCC Rules and Regulations.

Any modifications to the unit, unless expressly approved by Avid, could void the user's authority to operate the equipment.

Canadian ICES-003 Class A Notice

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Australian Compliance



Korean EMC Compliance

이 기기는 업무용 (A 급) 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.

Safety Compliance

This equipment has been tested to comply with USA, Canadian, EU and International safety certification standards: UL 60065:2015, CAN/CSA C22.2 No. 60065:16, IEC/EN 60065:2014 (8th Edition), UL 62368-1:2014, CAN/CSA 62368-1-14 and IEC/EN 62368-1:2014 (2nd Edition).

Avid Technology Inc., has been authorized to apply the appropriate NRTL mark on its compliant equipment.

Power Safety Input Rating

Regulatory Model Number (RMN) 9100-74077: AC~100-240V, 50-60Hz, 1.0A

CE Compliance

(EMC, Safety and RoHS)



Avid is authorized to apply the CE (Conformite Europeenne) mark on this compliant equipment thereby declaring conformity to EMC Directive 2014/30/EU, Low Voltage Directive 2014/35/EU and RoHS Recast Directive 2011/65/EC.

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Introduction

Pro Tools | Carbon



Welcome to Pro Tools | Carbon™ by Avid®. Pro Tools | Carbon is a versatile multi-channel audio interface for use with Pro Tools® and Pro Tools | Ultimate™ software or other Core Audio-compatible software. It provides exceptional AD/DA audio conversion with 8 mic/line inputs (combo XLR/TRS or DB25), 2 instrument inputs (TS), 8 line outputs (DB25), 2 dedicated outputs for stereo monitoring (TRS), 4 independent headphone outputs, an integrated talkback mic, ADAT™ I/O, Word Clock, AVB, and dedicated HDX DSP for low-latency monitoring with AAX DSP plug-ins.

Pro Tools | Carbon Features


Pro Tools | Carbon provides:

- Up to 192 kHz
- 32-bit AD/DA conversion
- Low latency tracking workflows with on-board HDX DSP
- 8 analog preamp inputs with
 - Variable Z (impedance) on INST inputs 1–2 (front panel)
 - Variable Z (impedance) on MIC inputs 5–8 (back panel)
- 8 line inputs (DB25 or TRS 1/4-inch) with
 - True preamp bypass option
- 18 channels digital-to-analog conversion
 - 8 line outputs (DB25)
 - Dedicated stereo (L–R) monitor outputs (TRS 1/4-inch)
 - 4 stereo headphone outputs
- Multichannel ADAT I/O:
 - 16 channels ADAT at 44.1/48 kHz
 - 8 channels ADAT at 88.2/96 kHz
 - 4 channels ADAT at 176.4/192 kHz
- Stereo Optical S/PDIF I/O at 44.1/48 kHz and 88.2/96 kHz
- 8 channel I/O metering
- Stereo monitor output metering
- Front panel control over monitor sets, headphone outputs, input channel settings, input and output metering, and talkback mic
- Integrated talkback mic
- Footswitch to toggle talkback on and off
- Gigabit AVB-capable Ethernet

Included Software, Plug-ins, and Sound Libraries

With your purchase and registration of Pro Tools | Carbon, you are entitled to the following:

- Pro Tools software, with:
 - 1-year subscription with a “perpetual parachute” (an off-plan perpetual license)
 - Standard Avid support contract
- Bundled effects and instrument plug-ins from Avid and several of our Development Partners.
- Sound libraries that include samples for almost all of your music production needs, including sound effects, hits, loops, and phrases of a wide variety of instruments, a range of tempo options (for rhythmic material), in many different styles.

 For complete, detailed information about what you get with Pro Tools | Carbon, visit www.avid.com/carbon-support.

System Requirements and Compatibility Information


Pro Tools | Carbon is supported by Pro Tools and Pro Tools | Ultimate 2020.11 or later.

For complete Pro Tools system requirements and a list of qualified computers, operating systems, hard drives, peripherals, and third-party devices, visit www.avid.com/compatibility.

For detailed Pro Tools | Carbon system requirements, visit www.avid.com/carbon-support.

Avid can only assure compatibility and provide support for hardware and software it has tested and approved.

For a complete list of optimizations for your Pro Tools computer, visit: [Pro Tools Computer Optimizations](#).

 *If your computer only has Thunderbolt ports, an Avid-qualified AVB-capable Thunderbolt to Ethernet adapter is required.*

 *In the unlikely event that you experience audio drop-outs with Pro Tools | Carbon, try disabling Wi-Fi on the Mac and reduce the Mac temperature by increasing airflow.*

Conventions Used in Pro Tools Documentation

Pro Tools documentation uses the following conventions to indicate menu choices, keyboard commands, and mouse commands:


Convention	Action
File > Save	Choose Save from the File menu
Command+N	Hold down the Command key and press the N key
Command-click	Hold down the Command key and click the mouse button
Right-click	Click with the right mouse button

The names of Commands, Options, and Settings that appear on-screen are in a different font.

The names of physical controls on Pro Tools | Carbon are in displayed **in bold text**.


Hyper-links and cross-reference links are displayed [in blue text](#).

The following symbols are used to highlight important information:

 *User Tips are helpful hints for getting the most from your Pro Tools system.*

 *Important Notices include information that could affect your Pro Tools session data or the performance of your Pro Tools system.*

 *Shortcuts show you useful keyboard or mouse shortcuts.*

 *Cross References point to related sections in this guide and other Avid documentation.*

Resources

The Avid website (www.avid.com) is your best online source for information to help you get the most out of your Avid system.

Account Activation and Product Registration

Activate your product to access downloads in your Avid account (or quickly create an account if you do not have one). Register your purchase online, download software, updates, documentation, and other resources.

www.avid.com/account

Support and Downloads

Contact Avid Customer Success (technical support), download software updates and the latest online manuals, browse the Compatibility documents for system requirements, search the online Knowledge Base or join the worldwide Avid user community on the User Conference.

www.avid.com/support

Training and Education

Study on your own using courses available online, find out how you can learn in a classroom setting at an Avid-certified training center, or view video tutorials and webinars.

www.avid.com/education

Video Tutorials

The *Get Started Fast with Pro Tools* series of online videos provide tutorials to help if you are new to Pro Tools. Videos for the experienced user that introduce new features found in the latest versions of Pro Tools are also available.

www.avidblogs.com/get-started-fast-with-pro-tools

View [Pro Tools Tech Tips](#) on YouTube for the latest tips and tricks with Pro Tools.

For Pro Tools | Carbon-specific tutorials, visit www.avid.com/carbon-support.

Products and Developers

Learn about Avid products, download demo software, or learn about our Development Partners and their plug-ins, applications, and hardware.

www.avid.com/products

Avid Store

Visit the Avid store for plug-ins and control surfaces to extend the capabilities of your Pro Tools | Carbon system.

shop.avid.com

For more information about specific AAX Native/DSP plug-ins for use with Pro Tools | Carbon in DSP Mode, visit www.avid.com/products/pro-tools-carbon/aax-dsp-plugins.

Installation and Setup

Installing and setting up Pro Tools | Carbon involves the following:

- 1 Unpacking Pro Tools | Carbon from the box.
- 2 Rack mounting Pro Tools | Carbon (optional).
- 3 Connecting cables.
- 4 Registering Pro Tools | Carbon.
- 5 Downloading and installing Pro Tools and bundled software.
- 6 Authorizing your software with iLok License Manager.
- 7 Enabling AVB in Audio MIDI Setup.
- 8 Launching and configuring Pro Tools.

What's in the Box?

Before you get started installing Pro Tools | Carbon, unpack the box, which contains the following:

- Pro Tools | Carbon audio interface
- Power cable
- Ethernet cable (CAT6)
- 4 rack mount screws with washers
- 4 adhesive rubber pads
- Registration card with redemption code, QR code, and serial number
- Warranty Claims Information card
- Avid Health and Safety Guide

Keep the Registration card on hand to register Pro Tools | Carbon and access software, sound libraries, and documentation downloads. Set the cables aside until you are ready to start making cable connections. Remove Pro Tools | Carbon from the box and packaging, and place it on a hard, dry surface.

Rack Mounting Pro Tools | Carbon

If you install Pro Tools | Carbon into a 19-inch rack, you can use the included rack mount screws and washers. Pro Tools | Carbon, as with all Avid audio interfaces, needs room at the front and back of the unit to maintain proper air flow for cooling. Do not block the front or back of the unit, or disconnect the internal fan. If the unit is rack mounted in a case, remove the case lids or doors before operating the system. Failure to do so can result in the unit overheating, which can permanently damage sensitive components.

If you decide to not install Pro Tools | Carbon in a rack, you can affix the included adhesive rubber pads to the bottom of the unit to protect whatever surface you decide to set it on (for example, if you decide to use it as a desktop unit).

Connecting Cables

Once you have installed Pro Tools | Carbon in a rack (optional), you are ready to start connecting cables.



In order to meet EMC requirements and in order to obtain the highest performance of Pro Tools | Carbon, use high-quality, properly shielded cables for all external connections.



To orient yourself with Pro Tools | Carbon front panel connections, see [Pro Tools | Carbon Front Panel](#). For information about back panel connections, see [Pro Tools | Carbon Back Panel Connections](#).

Connect Power

Connect the included power cable to Pro Tools | Carbon. Then connect the cable to a grounded AC power outlet. It is recommended that you use a grounded power switch or power conditioner.

Connect Ethernet

Connect Pro Tools | Carbon Ethernet port 1 or 2 directly to your computer using the included Ethernet cable.



A direct Network Interface connection between Pro Tools | Carbon and your computer is required. Network equipment such as routers, hubs, and switches are not supported.

If your computer only has Thunderbolt ports, use an AVB-capable Thunderbolt to Ethernet adapter.

Thunderbolt 2 Use an AVB-capable Thunderbolt 2-to-Gigabit Ethernet adapter, such as the Apple Thunderbolt to Gigabit Ethernet Adapter.

Thunderbolt 3 (USB-C) Use an AVB-capable Thunderbolt 3-to-Gigabit Ethernet adapter, such as the Apple Thunderbolt 3 (USB-C) to Thunderbolt 2 Adapter connected to the Apple Thunderbolt to Gigabit Ethernet Adapter.



Not all Thunderbolt to Ethernet adapters are AVB-capable. For the latest compatibility information and system requirements, visit www.avid.com/carbon-support.



When using Pro Tools | Carbon with EUCON peripherals (such as S1), use a dedicated Network Interface to your Mac for Pro Tools | Carbon.

Connect Audio

Make sure that your sound system is powered off. Make the appropriate analog and digital audio cable connections for your system. In addition to the digital and analog inputs and outputs on the back panel, there are two quarter-inch jacks for instrument input on the front panel. The front panel also provides four 1/4-inch headphone jacks.

Connect Clock Sync

If you are installing Pro Tools | Carbon in a system with multiple audio interfaces and/or a synchronization peripheral, make the appropriate Word Clock connections using shielded BNC cables (not included) or connections for clocking over ADAT using optical cables (not included).

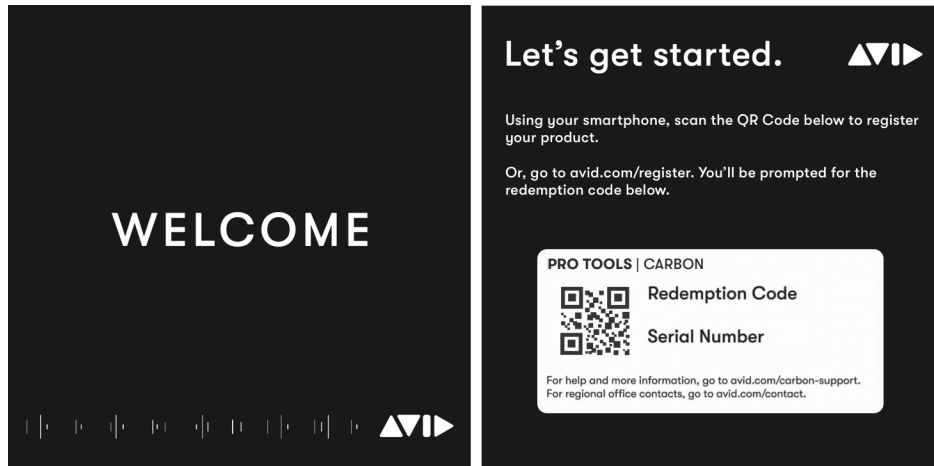
Connect a Footswitch

(Optional)

You can connect an optional footswitch (not included) to the back of Pro Tools | Carbon (1/4-inch jack) to toggle talkback on and off. Both momentary/latching and normally open/normally closed footswitches are supported.

Register Pro Tools | Carbon and Activate your Avid Master Account

Pro Tools | Carbon includes a Registration card with a redemption code and a QR code that lets you register the unit. Registering lets you access software and PDF documentation through your online Avid Master Account.



Registration card

To register your Pro Tools | Carbon unit and access Pro Tools | Carbon-related downloads through your Avid Master Account:

- 1 Locate the Registration card.
- 2 Do one of the following:
 - With your mobile device, scan the QR code on the Registration card. Follow the on-screen instructions and then continue with the next step.
 - Visit <https://www.avid.com/register> and continue with the next step.
- 3 Log in to your Avid Master Account. If you do not already have an Avid Master Account, create a new one and log in.
- 4 Enter the redemption code on the Registration card and click Register. If you scanned the QR code, your redemption code is entered automatically.
- 5 Select your iLok.com account and click Use This Account, or create a new iLok account by following the on-screen instructions.

You are directed to the My Products page for your Avid Master Account.

Download and Install Software

Once you have registered Pro Tools | Carbon, you can download and install Pro Tools software, including plug-ins, and sound libraries, from your Avid Master Account. PDF documentation for Pro Tools | Carbon and Pro Tools software is also available through your Avid Master Account.



If you are an existing customer who already owns an eligible Pro Tools product, you may choose between getting an additional Pro Tools license or extending the duration of the term of your current product.

Download and Review PDF Documentation

Download and review PDF documentation for Pro Tools | Carbon and Pro Tools software from your Avid Master Account. Be sure to consult any Read Me documentation for the latest known issues.

Download and Install Pro Tools Software

To download Pro Tools software:

- 1 From the computer where you will be installing Pro Tools, log in to your Avid Master Account (if you are not already).
- 2 Under My Products, locate and click Pro Tools | Carbon in the Products list.

- 3 Click the **View Software Download Links & Product Details** link to show download links for all software installers and PDF documentation included with Pro Tools | Carbon.
- 4 Download the Pro Tools installer.
- 5 Locate and launch the downloaded installer.
- 6 Follow the on-screen instructions to complete the installation.
- 7 Download and install plug-ins and sound libraries bundled with Pro Tools | Carbon from your Avid Master Account (you can also do this using the Avid Link desktop application that is installed with Pro Tools).
- 8 Before launching Pro Tools for the first time, enable AVB for Pro Tools | Carbon in Audio MIDI Setup (see [AVB Connections and Settings](#)).

AVB Connections and Settings

Pro Tools | Carbon requires a direct connection to your computer using AVB Ethernet. The AVB Ethernet connection provides up to 56 input channels and 84 output channels of AVB audio between Pro Tools | Carbon and Pro Tools, and up to 28 input channels and 28 output channels of AVB audio between Pro Tools | Carbon and third-party Core Audio-compatible software. The number of available AVB input and output channels is reduced at higher sample rates.


Before you can use Pro Tools | Carbon with your Mac, do each of the following:

- Make sure you have met all the System Requirements (see [System Requirements and Compatibility Information](#)).
- Make sure that you have connected Pro Tools | Carbon to your computer using a direct connection to one of the computer's Ethernet ports or Thunderbolt ports using an AVB-capable Thunderbolt adapter (see [Connect Ethernet](#)).
- Enable AVB in Audio MIDI Setup (see [Enable AVB](#)).
- Select Pro Tools | Carbon as the Pro Tools Playback Engine (Setup > Playback Engine) (see [Playback Engine](#)).
- Update Pro Tools | Carbon firmware when prompted. This is absolutely required for your system to perform properly (see [Firmware Update](#)).

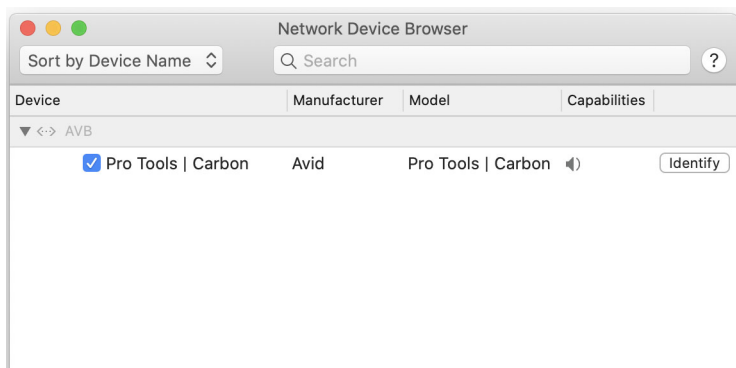
Enable AVB

To enable AVB on the Pro Tools computer:

- 1 Make sure Pro Tools | Carbon is connected by Ethernet to your computer and that both are powered on.
- 2 Go to Applications > Utilities and launch Audio MIDI Setup (AMS).
- 3 In Audio MIDI Setup, choose Window > Show Network Device Browser (or press Command+3). If Pro Tools | Carbon is correctly connected and powered-on, it appears in the Device list as “Pro Tools | Carbon.”

 *If Pro Tools | Carbon does not appear in the Network Device Browser, double check the Ethernet cable connections and make sure that you are using an AVB-compatible connection (Ethernet port or qualified adapter) and that your Mac is AVB-compatible. In addition to checking cable connections, you may need to disable any active VPN (depending on the specific VPN configuration) or network proxy. For more information on troubleshooting Pro Tools | Carbon, visit www.avid.com/carbon-support.*

- 4 Click to enable Pro Tools | Carbon in the Device list.



Pro Tools | Carbon enabled as a network audio device in AMS

Pro Tools | Carbon Audio Devices in AMS


Pro Tools | Carbon presents two separate Audio Devices in the Audio Devices list in AMS:

- The Pro Tools | Carbon: I/O device for use with macOS System Sound and third-party Core Audio applications.
- The Pro Tools | Carbon: Reserved for Pro Tools device.

 For more information, see [Pro Tools | Carbon Core Audio Devices](#).

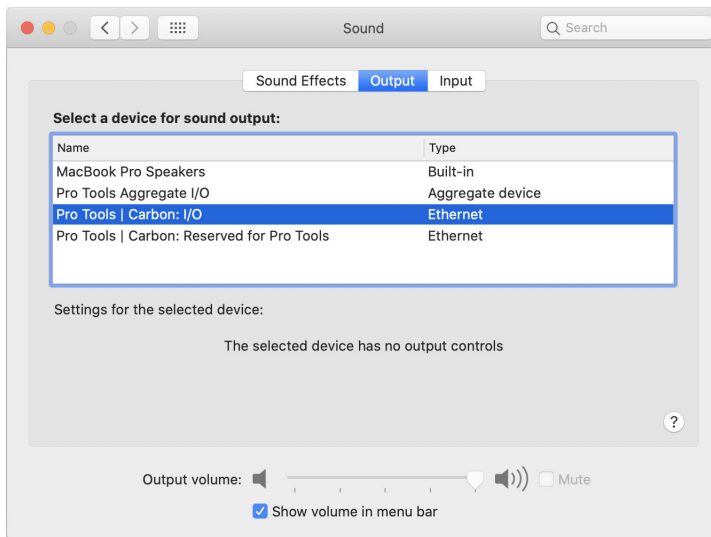
Setting Up Pro Tools | Carbon for macOS System Sound Input and Output

You can use Pro Tools | Carbon for macOS System Sound Input and Output. Select Pro Tools | Carbon: I/O as the Sound Input device for recording audio with third-party Core Audio audio applications. Select Pro Tools | Carbon: I/O as the Sound Output device to play back third-party Core Audio audio applications and websites through the Main Monitor (MON L–R) outputs on the back of Pro Tools | Carbon as well as headphones that are assigned to the Main Monitor output path (configured in the Pro Tools Hardware Setup).

 You can use the *Configure Speakers* feature in AMS to change the Pro Tools | Carbon: I/O outputs that are used for macOS System Sound or to configure the Pro Tools | Carbon: I/O for greater-than-stereo formats. For AVB channel mappings to Pro Tools | Carbon physical outputs, see [Pro Tools | Carbon Core Audio Devices](#).

To set up Pro Tools | Carbon for macOS System Sound Input and Output:

- 1 Launch the macOS System Preferences.
- 2 Open the Sound preferences.
- 3 Click the Input tab.
- 4 In the device list, select Pro Tools | Carbon: I/O in the Device list.
- 5 Click the Output tab.
- 6 In the device list, select Pro Tools | Carbon: I/O in the Device list.




Pro Tools | Carbon: I/O selected for macOS System Sound Output

⚠ *Never use Pro Tools | Carbon: Reserved for Pro Tools for the macOS System Sound or other third-party audio applications. Only use Pro Tools | Carbon: I/O for macOS System Sounds and other third-party audio applications.*

AVB Device Configuration in AMS

Pro Tools | Carbon provides six different device configurations for Pro Tools input and output channels. The selected configuration determines the maximum sample rate and the complexity of DSP Mode track routing that is possible in Pro Tools. Certain configurations also affect the number of available channels when using the Pro Tools | Carbon: I/O device with third-party Core Audio applications. Use a smaller configuration to reduce the load on the host processor. Use a larger configuration to increase mixing capacity in Pro Tools for more complex routing of low latency paths using DSP Mode.

 For more information, see [AVB Device Configuration](#).

Launch Pro Tools

After you have installed Pro Tools software, bundled plug-ins, and sound libraries, and have enabled AVB for Pro Tools | Carbon, launch Pro Tools. When launching Pro Tools for the first time, you are prompted to Activate your Pro Tools software license and licenses for any newly installed plug-ins. Follow the on-screen instructions to activate your iLok licenses. You may also be prompted to update the firmware for Pro Tools | Carbon.


To launch Pro Tools:

- 1 Double-click the Pro Tools icon in the Applications folder or single-click the icon in the Dock.



Pro Tools application icon

- 2 When prompted to Activate your Pro Tools software license, follow the on-screen instructions.
- 3 If you are prompted to update Pro Tools | Carbon Firmware, do so by following the on-screen instructions.

 *Note that if you select Pro Tools | Carbon in the Playback Engine after Pro Tools is launched, you may be prompted to update the firmware.*



Press and hold the N key when launching Pro Tools to open the Playback Engine dialog. If Pro Tools | Carbon is not selected as the Playback Engine, select it and click OK. Alternatively, you can select Pro Tools | Carbon in the Playback Engine after you have launched Pro Tools (Setup > Playback Engine). For more information, see [Playback Engine](#).

iLok Authorization

Once you have registered Pro Tools | Carbon and downloaded and installed software from your Avid Master Account, use iLok License Manager to authorize iLok Cloud or your physical USB iLok (purchased separately) with your entitlements. When launching Pro Tools for the first time, you are prompted to Activate your software license using your registered iLok account.

Firmware Update

Required firmware updates are included with Pro Tools software. When you first launch a new version of Pro Tools you may be prompted to update the firmware for Pro Tools | Carbon. If prompted, follow the on-screen instructions to update Pro Tools | Carbon firmware.

Note that if you launch Pro Tools, but Pro Tools | Carbon is not selected as the **Playback Engine**, you are prompted to update the firmware for Pro Tools | Carbon when it is selected as the **Playback Engine** if necessary (see [Playback Engine](#)).

Starting Up or Shutting Down Your System

To ensure that the components of your Pro Tools system communicate properly with each other, it is advised that you power them on in the following order.

Start up your Pro Tools system in this order:

- 1 Make sure all your equipment (including your computer) is off.
- 2 Mute your Pro Tools | Carbon monitor speakers.
- 3 Lower the volume of all output devices in your system.
- 4 Turn on any external hard drives.
- 5 Turn on any control surfaces (such as S1).
- 6 Turn on any MIDI interfaces, MIDI devices, or synchronization peripherals.
- 7 Power on Pro Tools | Carbon. Wait at least fifteen seconds for your system hardware to initialize.



The front panel display on Pro Tools | Carbon may contain some inconsistencies, such as incorrect colors or fields not illuminating, until the device firmware has been updated by Pro Tools. See [Launch Pro Tools](#).

- 8 Turn on your computer.
- 9 Launch Pro Tools or any third-party audio or MIDI applications.
- 10 Unmute your Pro Tools | Carbon monitor speakers.

Shut down your Pro Tools system in this order:

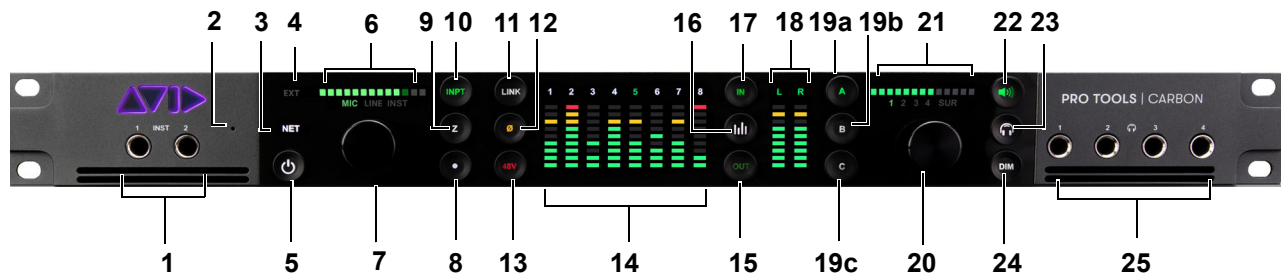
- 1 Quit Pro Tools and any other running applications. To quit Pro Tools, choose Pro Tools > Quit (Mac) or File > Exit (Windows).
- 2 Mute your Pro Tools | Carbon monitor speakers.
- 3 Turn off or lower the volume of all output devices in your system.
- 4 Turn off your computer.
- 5 Turn off Pro Tools | Carbon (press and hold the power button for 2 seconds).
- 6 Turn off any MIDI interfaces, MIDI devices, or synchronization peripherals.
- 7 Turn off any control surfaces (such as S1).
- 8 Turn off any external hard drives.

Pro Tools | Carbon Front Panel Operation

The front panel of Pro Tools | Carbon provides indicators and controls for input settings and monitoring functions.


Pro Tools | Carbon Front Panel


The front panel of Pro Tools | Carbon provides various jacks, controls, and indicators. To the left of the segmented I/O Meters are controls and indicators for inputs, as well as 2 instrument input jacks. To the right of the I/O Meters are controls and indicators for monitoring outputs, as well as 4 headphone jacks.



Pro Tools | Carbon front panel

- 1 INST inputs 1 and 2** (mono 1/4-inch unbalanced) — Connect instruments, such as guitars or keyboards. The **INPUT** setting automatically switches to **INST** when a 1/4-inch cable is connected to the **INST** input jack. You can still switch the inputs to **MIC** or **LINE** (back panel inputs 1 and 2) while an instrument is plugged into either of the front panel **INST** inputs.
- 2 Talkback Mic** — The built-in talkback mic is located within a small hole to the right of the **INST** inputs. In Pro Tools, you can route the Talkback signal to any output using an Auxiliary Input track. To use the talkback mic with third-party audio software, use the AVB channel for the talkback mic (for AVB channel mappings, see [Pro Tools | Carbon Core Audio Devices](#)).
- 3 NET indicator** — Indicates the status of the AVB connection to host computer. It lights white when the device is connected using AVB and recognized by your computer.
- 4 EXT indicator** — Indicates status of the external clock. It lights green when either ADAT or Word Clock is the selected clock source and the clock is valid. It flashes green when either ADAT or Word Clock is the selected clock source and clock is not valid (internal clocking is used instead).
- 5 Power button** — The power button lights amber when connected to power, but not powered on. It lights white when powered on. It is unlit when power is disconnected. Press and hold the button for two seconds to power off the unit.
- 6 Input Level Strip and Input Source** — Displays the input source (**MIC**, **LINE**, or **INST**) for the selected input channel. The Input Level Strip displays the amount of gain (preamp) applied to the selected input channel. The Input Level Strip LEDs light green when the selected input channel is set to **MIC**, yellow when the selected input channel is set to **LINE**, and amber when the selected input channel is set to **INST**. When an input channel is set to **LINE** and the preamp is bypassed, the Input Level Strip fully lights. Increase the gain for the selected input channel by turning the encoder dial (7) clockwise—the LEDs light from left to right.
- 7 Input Encoder** — Turn to adjust input gain for the selected input channel. Press the encoder to cycle through and select input channels for encoder control focus. The Channel Number indicator for the selected channel lights green over the I/O Meters (14). You can also press and hold the encoder while turning it clockwise or counter-clockwise to select channels. Linked channels are selected as a stereo input pair when cycling through channels.

 For more information on configuring inputs, see [Configuring Inputs](#).

 When Output metering is enabled, the input section is disabled and the relevant buttons are unlit except for the Talkback button. Pressing any button or input encoder in the input section switches back to Input metering and re-activates the input section.

8 Talkback button — A single press latches Talkback on (unmute the Talkback mic input). Press the button again to unlatch and turn Talkback off (mute the Talkback mic input). Press and hold the **Talkback** button to engage Talkback temporarily and release to disengage. The button flashes red when Talkback is engaged. **DIM** (24) is engaged while the talkback mic is active. You can also use a Footswitch to engage and disengage Talkback (see [Footswitch](#)).

9 Z button — Press to cycle through the available impedance settings (Variable Z) for the selected input (the **Z** button changes color to indicate the impedance setting for the input):

- **MIC** inputs 5–8 on the back panel.

Variable impedances for Mic channel inputs 5–8

Impedance	Color
5k Ohm	White (default)
50k Ohm	Cyan
1k Ohm	Fuchsia

- **INST** inputs 1–2 on the front panel

Variable impedances for Instrument channel inputs 1–2

Impedance	Color
1M Ohm	White (default)
230k Ohm	Cyan
90k Ohm	Blue
70k Ohm	Violet
32k Ohm	Fuchsia



Use Variable Z on INST inputs when connecting guitar or bass with passive pickups. Variable Z alters the frequency response by loading the pickups in the same manner as plugging in to different real amps or effects.

10 INPT (Input) button — Cycles between the available inputs for the selected channel: **MIC**, **LINE**, **INST**. Use the Input encoder button (7) to select the desired input channel. The selected input channel lights above the I/O Meters (14).

11 LINK button — Links odd (left) and even (right) channel input pairs for stereo linking. When linked, preamp controls affect both channels identically. The even channel inherits the settings of the odd channel settings when linked. When enabled, the **LINK** button lights green.

12 Ø button — Toggles the polarity of the selected input channel. The button lights amber when the polarity is inverted.

13 48V — Press to enable or disable phantom power for the selected **MIC** input. Phantom power can only be enabled when there is an XLR connection for the selected input. When phantom power is enabled for the selected input, the **48V** button lights red. If there is an XLR connection for the selected input and phantom power is disabled, the button lights white. The button is unlit when there is no XLR connection, or if there is an XLR connection but the input is set to **INST** or **LINE** and phantom power is disabled.


For linked channels, phantom power behaves as follows:

- If both linked channels have XLR connections, phantom power works the same as with one channel.
- If only the first linked channel has an XLR connection, the **48V** button lights white but pressing the button has no effect.
- If only the second linked channel has an XLR connection, the **48V** button does not light.
- If either XLR connection is broken while phantom power is enabled on linked channels, phantom power is disabled for that channel.
 - If the connection to the second linked channel is broken, the **48V** button lights red and phantom power is disabled for the second channel.
 - If the connection to the first linked channel is broken, the **48V** button does not light and phantom power remains on for the second channel.



Unlike other input channel parameters, phantom power is not restored when the device is powered off and back on. This protects connected microphones and equipment which may be configured differently when the device is powered back on.

- 14 I/O Meters** — 9-segment LED meters display peak metering with peak hold (3 seconds) for input or output channels. Above each meter are Channel Number indicators for each I/O channel. Channel Number indicators for the selected channel (or channel pairs when stereo linked) light green. Non-selected channels light white.
- 15 OUT button** — Press to select analog output metering.
- 16 Meter button** — Can be used to reset the device settings (see [Default Device Settings](#)).
- 17 IN button** — Press to select analog input metering.
- 18 Stereo Monitor Meter** — This 9-segment LED stereo meter displays peak metering with peak hold for the output level of the selected monitor or headphone output. Meter levels are pre-fader (showing the signal level before the monitor output control).
- 19 A, B, and C buttons** — These three buttons are assigned to control the Main (MON L–R), Alt 1 (LINE 1–2), and Alt 2 (LINE 3–4) monitor sets respectively. The buttons light white if the corresponding monitor set is available (enabled in the Pro Tools Hardware Setup). The **A** button lights green when selected, the **B** button yellow, and the **C** button amber. If a monitor set is not enabled in the Pro Tools Hardware Setup, the corresponding button is unlit and the monitor set cannot be selected. Press the corresponding button to select the desired monitor set and mute the other sets.

 For information on enabling monitor sets in the Pro Tools Hardware Setup, see [Monitors](#).

- 20 Output Encoder** — Turning the knob increases or decreases the signal level for the currently selected monitor or headphone output. Press the Output Encoder to change control to the next available monitor set or headphone output. Press and hold the Output Encoder while rotating to cycle control through the available monitor sets or headphone outputs.
- 21 Output Level Strip and Monitor Indicators** — The Output Level Strip shows the output level applied by the Output Encoder (20) for the selected monitor set or headphone output. The numbers below the Input Level Strip indicate which monitor set or headphone output is selected for control.
- 22 Monitor (Speaker icon) button** — Press the Monitor button to select a monitor set for front panel control. While a monitor set is selected, press the Output Encoder (20) to cycle through enabled monitor sets (monitor sets are enabled in the Pro Tools Hardware Setup, see [Monitors](#)), or press and hold the encoder while turning it to change the selection. Turn the Output Encoder to increase or decrease the output level for the selected monitor set. Press the Monitor button while a monitor set is selected to mute or unmute the monitor output. The output section indicators turn red when the monitor output is muted. The Monitor button (22) is color coded to indicate the currently selected monitor set:

Selected Monitor Set	Color
Main (A)	Green
Alt 1 (B)	Yellow
Att 2 (C)	Amber
Monitor output muted	Red

- 23 Headphone button** — Press the **Headphone** button to select a headphone output for front panel control. When a headphone output is selected, press the Output Encoder (20) to cycle through the connected headphone outputs, or press and hold the encoder while turning it to change the selection. Turn the Output Encoder to increase or decrease the output gain for the selected headphone output. Headphone outputs can only be selected when headphones are actually plugged into the corresponding headphone jack. If no headphones are currently plugged in, the HP 1 output is selected. Pro Tools routing to headphone outputs is configured in the Hardware Setup (see [Headphone Sources](#)). The Headphone button (23) is color coded to indicate the currently selected headphone set:

Selected Headphone Output	Color
HP 1	Cyan
HP 2	Blue
HP 3	Violet
HP 4	Fuchsia

- 24 DIM button** — Press to dim (attenuate) the signal level of the selected monitor set by the amount (in dB) configured in the Pro Tools Hardware Setup (see [Main Page](#)). The default Dim value is –15 dB. When enabled, the button lights amber. When disabled, the button lights white. **DIM** does not apply to Headphone outputs.
- 25 Headphone outputs 1–4** (stereo 1/4-inch).

Configuring Inputs

You can select the input (microphone, line, or instrument) and configure the input settings for channels 1–8 (front panel instrument inputs or back panel mic/line inputs) on the front panel of Carbon.



Input configurations can also be made from Pro Tools software with Mic Pre view in the Mix or Edit windows. For more information, see [Pro Tools Mic Preamps Control](#).

To select the input source for any analog input channel:

- 1 Press the Input Encoder (7) to cycle through and select any of input channels 1–8 as the source.
- 2 Press the **INPT** button (10) to select **MIC** (back panel), **LINE** (back panel), or **INST** (front panel, input channels 1–2 only) for the selected channel.



INST is only available if a 1/4-inch cable is connected to the corresponding INST input jack on the front panel.

To adjust the input gain for any analog input channel:

- 1 Press the Input Encoder (7) to cycle through input channels 1–8 and select the desired channel you want to adjust.
- 2 Turn the encoder (7) to boost or attenuate the input gain for the selected channel.



It is not possible to adjust input gain for LINE inputs if the preamp gain is bypassed for that input (see [Line Input Gain](#)).

To link (or unlink) input channels:

- 1 Press the Input Encoder (7) to cycle through input channels 1–8 and select one of the channels you want in the linked pair. Input channels can only be linked in adjacent odd and even pairs (1 and 2, 3 and 4, 5 and 6, or 7 and 8).
- 2 Press the **LINK** button (9) so that it is lit (linked) or so that it is unlit (unlinked).

The selected input channel and its neighbor are linked. For example, if you selected input channel 3, channels 3 and 4 are linked; or if you selected input channel 8, channels 7 and 8 are linked.

To select the impedance for Instrument input channels 1–2:

- 1 Press the Input Encoder (7) to cycle through and select input channel 1 or 2.
- 2 Ensure that the selected input channel is set to **INST**.
- 3 Press the **Z** button (11) to cycle through and select the desired impedance for the selected channel.



It is expected to have higher input gain levels with higher impedance settings.

To select the impedance for the selected MIC input channel (channels 5–8 only):

- 1 Press the Input Encoder (7) to cycle through and select an input channel (5–8 only).
- 2 Ensure that the selected input channel is set to **MIC**.
- 3 Press the **Z** button (11) to cycle through and select the desired impedance for the selected channel.

To switch polarity for the selected input channel (1–8):

- 1 Press the Input Encoder (7) to cycle through and select an input channel.
- 2 Press the **Ø** button (12) to toggle polarity for the selected channel.

To enable phantom power for the selected input channel:

- 1 Press the Input Encoder (7) to cycle through and select an input channel.

- 2 Ensure that the selected input channel is set to **MIC** and that an XLR cable is plugged into the physical input.
- 3 Press the **48V** button (13) to toggle phantom power on and off for the selected channel.

Device Reset

If you encounter a problem with Pro Tools | Carbon and Avid customer support advises that you reset the device, you can reset to the default device settings or revert to the default firmware image.

Default Device Settings


If necessary, you can restore the default system settings (such as preamp gain, monitor gain, and so on).

To restore the default system settings for Pro Tools | Carbon:

- 1 Lower the volume on all output devices and mute your speakers.
- 2 Power off the unit.
- 3 Press and hold the **Meter** button for 5 seconds while powering on the unit.
- 4 Release the **Meter** button.
- 5 All buttons illuminate green for approximately 10 seconds.

The device settings are now reset.

Default Firmware Image

 *When resetting Pro Tools | Carbon to its factory default firmware image, disconnect the Ethernet cable from the device to ensure that the Internet is not at all visible to unit. Reconnect the Ethernet cable after completing the following procedure.*

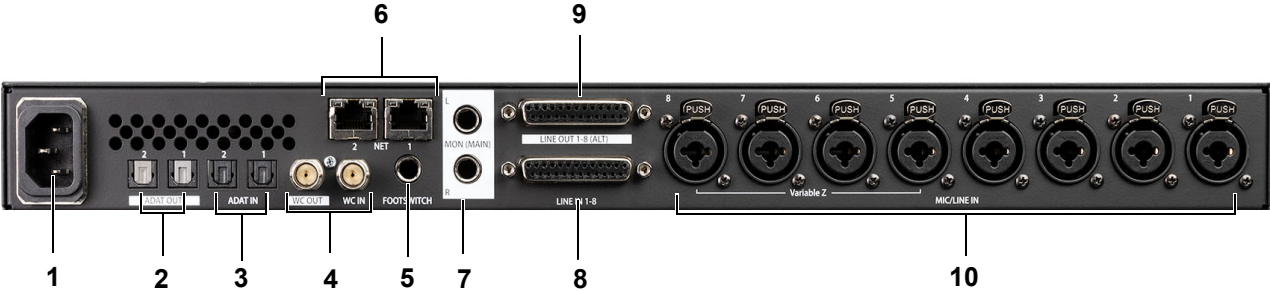
To reset Pro Tools | Carbon to its default firmware image:

- 1 Lower the volume on all output devices and mute your speakers.
- 2 Power off the unit.
- 3 Press and hold the **Dim** button for 10 seconds while powering on the unit.
- 4 Release the **Dim** button.
- 5 All buttons illuminate green for approximately 10 seconds.
- 6 The unit shuts down for approximately 10 seconds and then reboot.
- 7 All buttons illuminate green for approximately 10 seconds.

The default firmware is now loaded on the unit. Launch Pro Tools to update the firmware to the matching version.

Pro Tools | Carbon Back Panel Connections

Pro Tools | Carbon Back Panel



Pro Tools | Carbon back panel

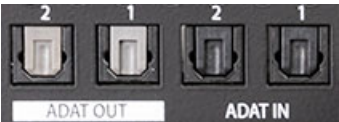
- 1 IEC power connector.
- 2 ADAT Out 1 and 2.
- 3 ADAT In 1 and 2.
- 4 Word Clock In and Out (BNC).
- 5 Footswitch — the footswitch can be used for toggling talkback on and off (see [Footswitch](#)).
- 6 Ethernet 1 and 2 (AVB) — Two RJ45 Ethernet ports for control and AVB.
- 7 Main Monitor Out L and R (TRS balanced 1/4-inch).
- 8 Line In 1–8 (DB25).
- 9 Line Out 1–8 (DB25).
- 10 Mic/Line Inputs 1–8 (combined XLR/TRS 1/4-inch).

Digital I/O Connections

Optical ADAT

Pro Tools | Carbon provides two pairs of optical ADAT in and out ports for a total of 16 channels of ADAT I/O at 44.1/48 kHz, 8 channels at 88.2/96 kHz, and 4 channels at 176.4/192 kHz. Audio channels are split across both ADAT ports at all sample rates.

Alternately, in the Pro Tools Hardware Setup, you can set either or both pairs of the optical ADAT in and out ports to send and receive stereo optical S/PDIF instead of ADAT signal. For more information, see [Optical I/O Page](#).



ADAT channel routing by port at different sample rates

Sample Rate	ADAT Port 1 In	ADAT Port 2 In	ADAT Port 1 Out	ADAT Port 2 Out
44.1/48 kHz	1–8	1–8	1–8	1–8
88.2/96 kHz	1–4	1–4	1–4	1–4
176.4/192 kHz	1–2	1–2	1–2	1–2

Optical S/PDIF channel routing by port at different sample rates

Sample Rate	ADAT In: Port 1	ADAT In: Port 2	ADAT Out: Port 1	ADAT Out: Port 2	Total Channels
44.1/48 kHz	1–2	1–2	1–2	1–2	4 In, 4 Out
88.2/96 kHz	1–2	1–2	1–2	1–2	4 In, 4 Out

Analog I/O Connections

Monitor L–R Outputs

The Monitor L–R outputs on the back panel are independent of Line Out 1–8 (DB25). Use 1/4-inch TRS (balanced) or 1/4-inch TS (unbalanced) cables to connect these line level outputs to loudspeakers for stereo monitoring. These outputs can be configured to operate at +4 dBu or –10 dBV, and have a maximum operating level of +24 dBu.

Mic/Line Inputs XLR/TRS Combo Jacks 1–8

Both the XLR/TRS combo jacks and DB25 inputs can be used for simultaneous connection of mic and line cables to the same input channel. This allows mic and line inputs to be switched without cable re-patching. 1/4-inch connections to the combo jacks always use the Line input, while XLR connections always use the Mic input. If a 1/4-inch connection is made to a combo jack, that connection takes precedence over the DB25 connection for that channel input.

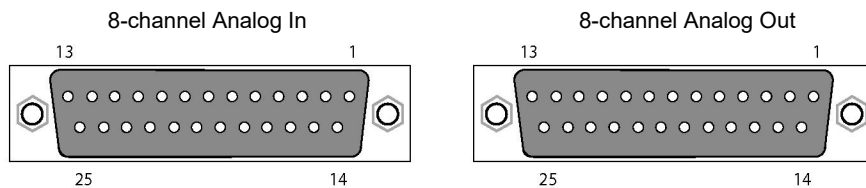
The preamp gain on Line inputs 1–8 can be bypassed on a channel-by-channel basis in the Pro Tools Hardware Setup (see [Line I/O Page](#)).

Analog I/O 25-pin D-sub Connectors

Pro Tools | Carbon uses 25-pin D-sub connectors on the back panel for both analog line input (channels 1–8) and analog line output (channels 1–8).

The DB25 line inputs 1–8 are normalled to the TRS combo jacks. If a DB25 line input is active and a 1/4-inch cable is plugged into the combo jack for the same input channel, the DB25 input is disconnected and the combo jack input is used instead.

The DB25 outputs can be configured to operate at +4 dBu or –10 dBV, and have a maximum operating level of +24 dBu (see [Line I/O Page](#)).



Footswitch

A latching or momentary footswitch can be connected to the back of Pro Tools | Carbon and can be used to engage or disengage Talkback. Both momentary/latching and normally open/normally closed footswitches are supported. Footswitch polarity is automatically detected when Pro Tools | Carbon is powered on.

Configuring Pro Tools

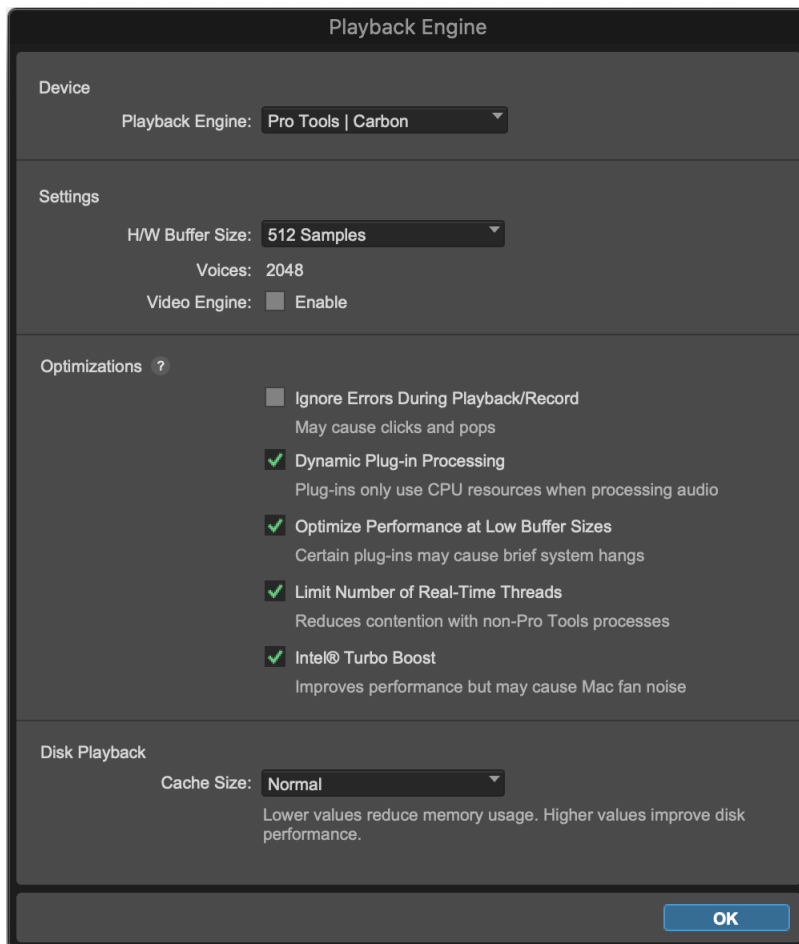
Once you have made the necessary cable connections for your studio and have enabled Pro Tools | Carbon for AVB in AMS, launch and configure Pro Tools:

- 1 Launch Pro Tools. If the Dashboard appears, click **Cancel** to proceed without opening or creating a session.
- 2 Select Pro Tools | Carbon as the Playback Engine (Setup > Playback Engine). You may be prompted to quit and relaunch Pro Tools to use Pro Tools | Carbon.
- 3 Configure Pro Tools | Carbon in the Hardware Setup (Setup > Hardware).
- 4 Configure the I/O Setup for use with Pro Tools | Carbon (Setup > I/O).

Playback Engine

To select Pro Tools | Carbon as the Playback Engine for Pro Tools:


- 1 Launch Pro Tools if it is not already running.
- 2 Choose Setup > Playback Engine.




Playback Engine dialog

- 3 Select Pro Tools | Carbon as the Playback Engine.

- 4 Configure the rest of the Playback Engine dialog as desired.

 For most installations, the default settings are recommended. You can optimize performance later by returning to the Playback Engine dialog.

- 5 Click OK.

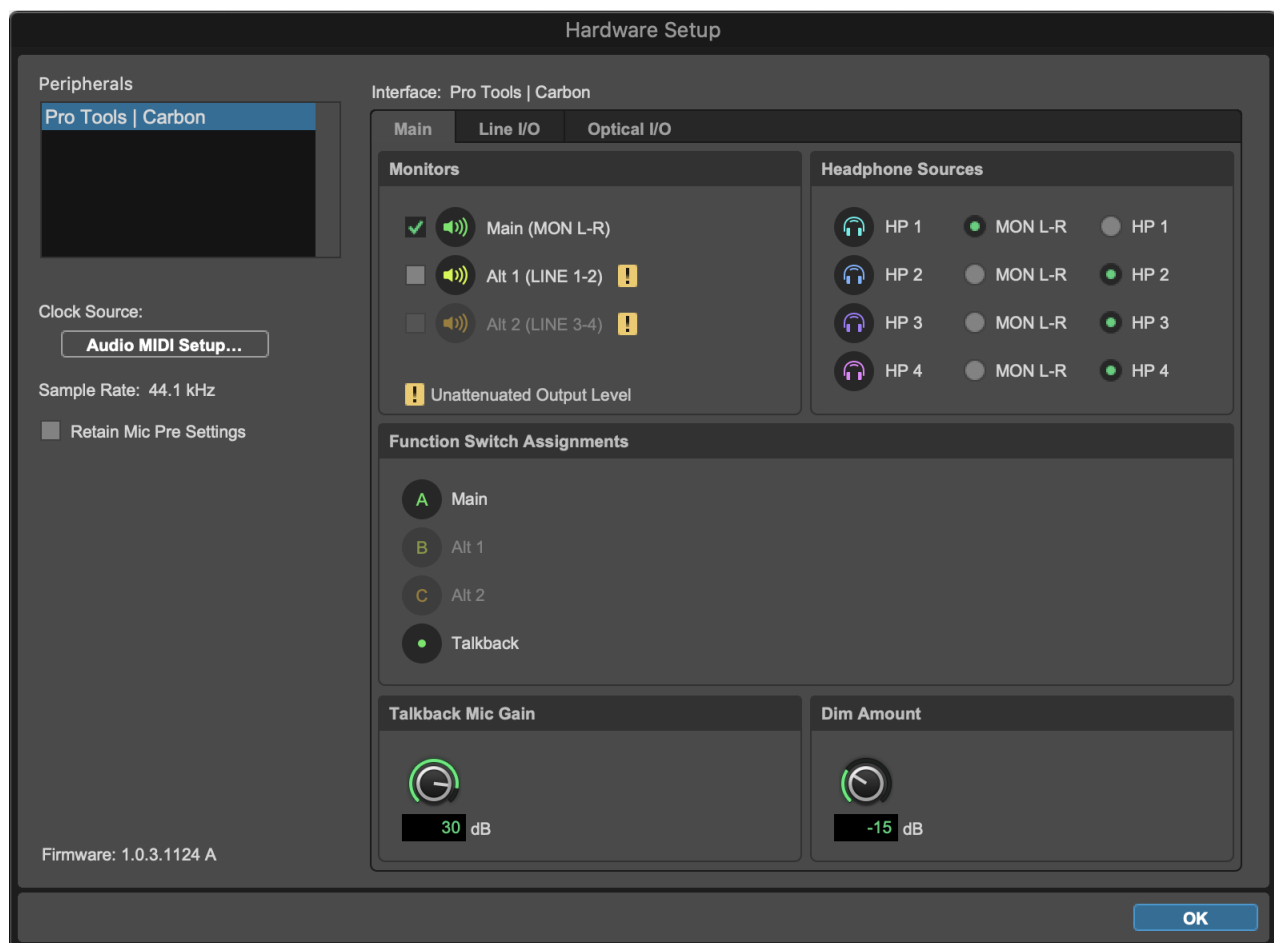
 To open the Playback Engine dialog when launching Pro Tools, press and hold the N key.

Hardware Setup

When Pro Tools | Carbon is connected to your Pro Tools system, the Hardware Setup provides two pages specifically for setting up Pro Tools | Carbon.

To configure Pro Tools | Carbon in the Hardware Setup dialog:

- 1 Launch Pro Tools if it is not already running.
- 2 Choose Setup > Hardware.
- 3 Configure the settings for Pro Tools | Carbon, which are described in detail below.



Hardware Setup, Pro Tools | Carbon

4 Click OK when you are done to close the Hardware Setup dialog.

! When a monitor set is enabled, the audio signal from the respective physical outputs is attenuated. When a monitor set is not enabled, the audio signal from the respective physical outputs is not attenuated. This is indicated in the Hardware Setup by a “!” to the right of the monitor set icon. Do not connect speakers to physical outputs where a monitor set is not enabled. Doing so will result in a very loud, unattenuated output level.

Peripherals

The Peripherals list displays the connected Pro Tools | Carbon unit.

Clock Source

Click Audio MIDI Setup to see the clock source settings for Pro Tools | Carbon.

Sample Rate

Displays the current Sample Rate for Pro Tools | Carbon.

Retain Mic Pre Settings

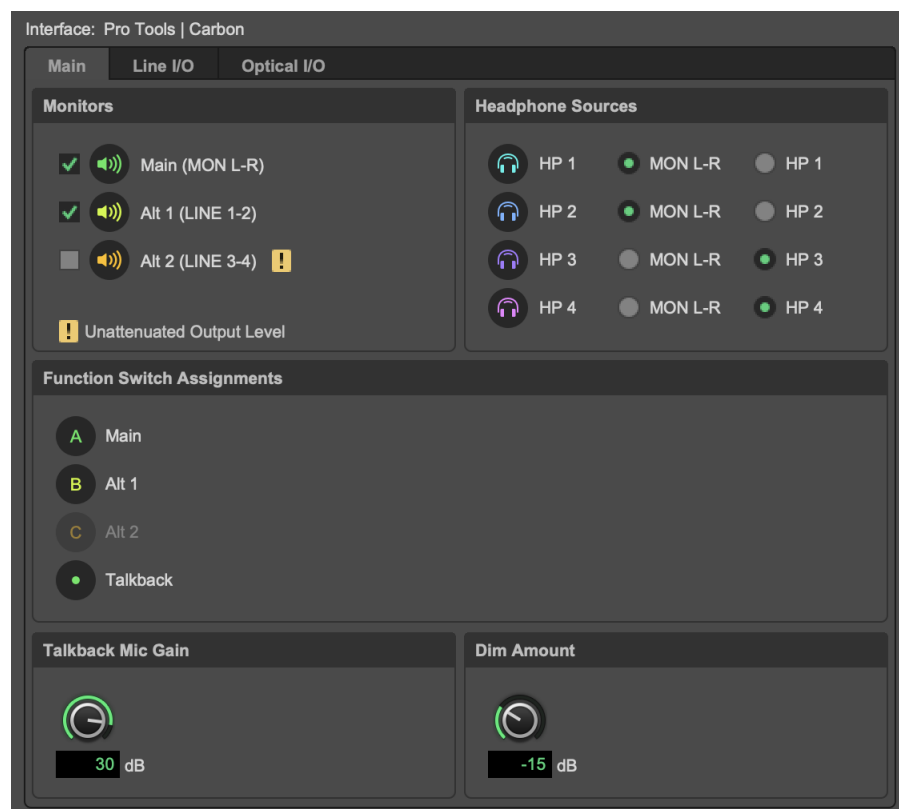
To retain the current Mic Pre settings for Pro Tools | Carbon when switching between different sessions, enable the Retain Mic Pre Settings option.

Firmware

Displays the Firmware version for the Pro Tools | Carbon. The letter suffix indicates which version of the main board is installed in the chassis. Different board versions may have slightly different specifications.

Main Page

Click the Main tab in the Hardware Setup to view the Main page.



Hardware Setup, Pro Tools | Carbon Main page

Monitors

The Monitors section lets you enable or disable the following Monitor options:

Main (MON L–R) When enabled, the Main monitor set can be selected for monitoring on the front panel of Pro Tools | Carbon. The Main monitor uses the Monitor L–R outputs on the back panel.

Alt 1 (LINE 1–2) When enabled, the Alt 1 monitor set can be selected for monitoring on the front panel of Pro Tools | Carbon. Alt 1 uses channels 1 and 2 of the DB25 line outputs on the back panel.

Alt 2 (LINE 3–4) When enabled, the Alt 2 monitor set can be selected for monitoring on the front panel of Pro Tools | Carbon. Alt 2 uses channels 3 and 4 of the DB25 line outputs on the back panel.



With Pro Tools | Carbon, you can mirror the main stereo analog monitoring output with optical S/PDIF output for external digital metering (such as with a Logitek Ultra VU Bargraph Meter). Set one of the ADAT ports to Optical S/PDIF in the Hardware Setup and connect that ADAT port to your external digital VU metering device. Then, in the Bus page in the I/O Setup, assign the main monitoring bus output path to both the analog outputs used for monitoring and also to the digital outputs connected to your external digital VU metering device.

Headphone Sources

The Headphone Sources section lets you select the source for each of the four headphone outputs on the front panel of Pro Tools | Carbon.

MON L–R When this option is selected, the corresponding headphone output mirrors the signal of the currently selected Monitor set. If no Monitor set is enabled, the headphone output mirrors the signal of the MON L–R outputs on the back panel.



This is useful when you want the listener to hear the same audio material as the main mix in both Pro Tools and Core Audio output.

HP 1–4 When a source is set to a headphone output (HP 1–4), any Pro Tools track (or other Core Audio software audio channel) that is routed to that Headphone output passes audio to that Headphone output.



This is useful when you want the listener to hear different audio material from the main mix in Pro Tools and Core Audio output, such as for a unique cue mix.

Function Switch Assignments

The Function Switch Assignments section shows whether or not the control assignments for the front panel buttons are enabled. If a control assignment is not available, such as if Alt 2 (3–4) is disabled, the button on the front panel is unlit and the corresponding icon in the Hardware Setup is grayed out.

Talkback Mic Gain

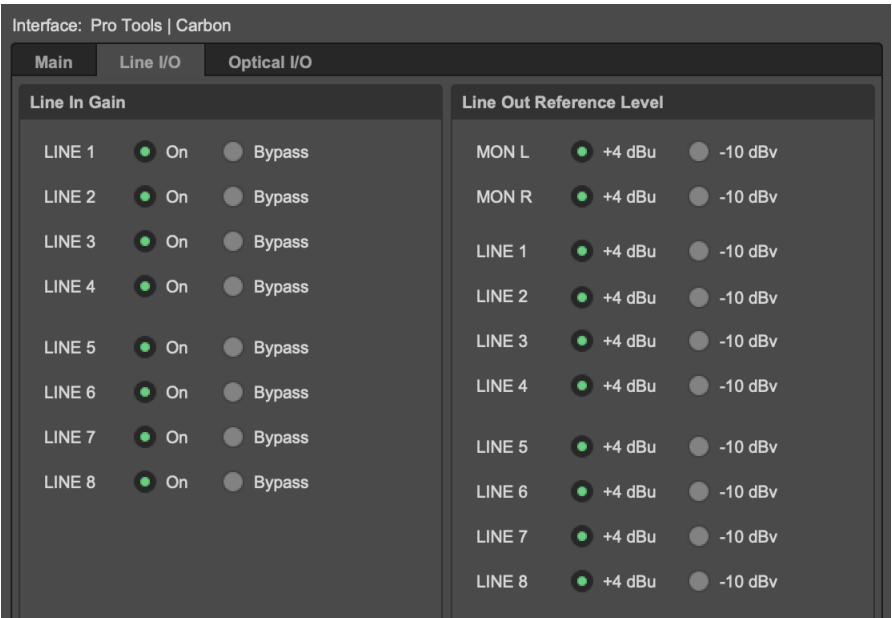
Adjust the knob or type a value (in dB) to set the talkback mic gain for when Talkback is engaged. Talkback mic gain can be set to the following fixed values: 0, 6, 12, 18, 24, 30, or 36 dB. It defaults to 30 dB.

Dim Amount

Adjust the knob or type a value (in dB) to set the Dim level for when the **DIM** button is pressed on the front panel or when Talkback is engaged.

Line I/O Page

Click the Line I/O tab in the Hardware Setup to view the Line I/O page. You can set whether each of the Line input channels bypass input gain control. You can also set the reference level (+4 dBu or –10 dBV) for each of the analog outputs.



Hardware Setup, Line I/O page

Line Input Gain

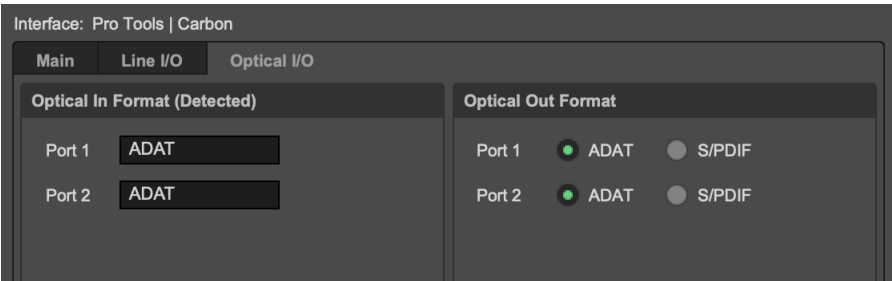
Select On to apply input gain control to the corresponding Line input (either XLR/TRS or DB25 inputs). Select Bypass to bypass the input preamp for the corresponding Line input channel. Enable Bypass when connecting an external preamp or line-level source, and the most transparent signal path is desired. For any linked input pairs, the Line In Gain setting is linked. You can also bypass (or unbypass) Line input gain from Mic Preamps view on tracks in the Mix or Edit windows.

Line Output Reference Level

Select either +4 dBu or –10 dBV as the reference level for each analog output: MON L–R (TRS outputs) and LINE 1–8 (DB25 outputs). When connecting balanced audio gear, use +4 dBu. When connecting unbalanced audio gear, use –10 dBV.

Optical I/O Page

Click the Optical I/O tab in the Hardware Setup to view the Optical I/O page.



Hardware Setup, Optical I/O page

Optical In Format (Detected)

Pro Tools | Carbon automatically detects the digital format of the incoming signal on optical ports 1 and 2 (labeled ADAT In 1 and 2 on the back panel). The detected format is displayed for each port: ADAT, S/PDIF, or N/A.

Optical Out Format

Pro Tools | Carbon provides two pairs of optical in and out ports (labeled ADAT Out 1 and 2 on the back panel). The Optical I/O page of the Hardware Setup lets you set the digital format of each output port to either ADAT or Optical S/PDIF. When set to ADAT, each port provides up to 8 channels of digital audio depending on the sample rate. When set to Optical S/PDIF, each port provides up to 2 channels of digital audio up to 96 kHz.

ADAT channel routing by port at different sample rates

Sample Rate	ADAT In: Port 1	ADAT In: Port 2	ADAT Out: Port 1	ADAT Out: Port 2	Total Channels
44.1/48 kHz	1–8	1–8	1–8	1–8	16 In, 16 Out
88.2/96 kHz	1–4	1–4	1–4	1–4	8 In, 8 Out
176.4/192 kHz	1–2	1–2	1–2	1–2	4 In, 4 Out

Optical S/PDIF channel routing by port at different sample rates

Sample Rate	ADAT In: Port 1	ADAT In: Port 2	ADAT Out: Port 1	ADAT Out: Port 2	Total Channels
44.1/48 kHz	1–2	1–2	1–2	1–2	4 In, 4 Out
88.2/96 kHz	1–2	1–2	1–2	1–2	4 In, 4 Out



The default ADAT 1 and 2 channel names in I/O Setup do not change when the S/PDIF is selected. For example, select ADAT 1–2 In/Out on Pro Tools tracks for routing Optical S/PDIF audio. However, channel names can be edited in I/O Setup to display “Optical S/PDIF 1–2” when the S/PDIF format is selected, if desired.

Sample Rate

The Sample Rate indicator displays the current sample rate of the session for reference. The interface sample rate is determined by Pro Tools or Core Audio. When Pro Tools is running, the sample rate is set by Pro Tools. When Pro Tools is closed, the sample rate for Pro Tools | Carbon can be set in AMS. Pro Tools and third-party Core Audio applications cannot use different sample rates for Pro Tools | Carbon at the same time. The default sample rate for Pro Tools | Carbon is 48 kHz.



Do not attempt to change the device sample rate using AMS or a third-party Core Audio application while Pro Tools is running.

Clock Source

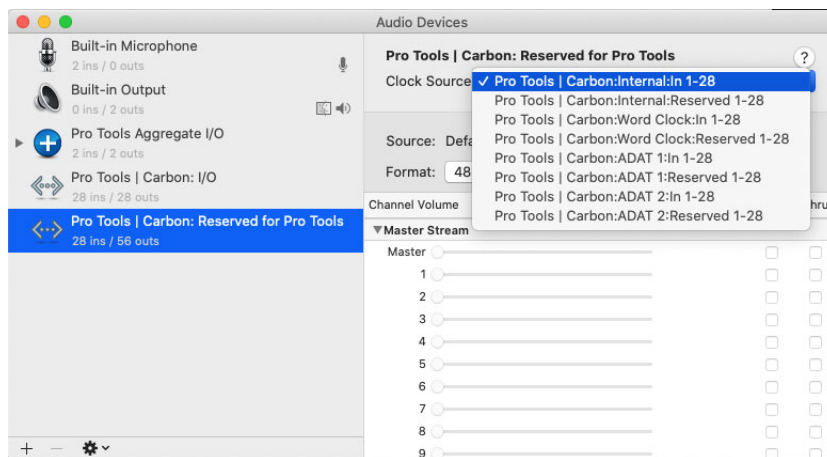
You can set the Clock Source for Pro Tools | Carbon in the Audio window of AMS, which can be accessed from the Hardware Setup dialog. The Clock Source defaults to the internal clock. If other digital devices are connected to Pro Tools | Carbon that can be set to follow the internal clock of Pro Tools | Carbon, you can leave Pro Tools | Carbon set to the default Internal option. However, if you need Pro Tools | Carbon to follow an external clock source, such as a connected synchronization peripheral that generates Word Clock or a digital device that sends clock over ADAT optical, you will need to set Pro Tools | Carbon to follow that clock source.

To select the appropriate Clock Source for Pro Tools | Carbon:

- 1 Do one of the following:
 - In macOS, launch AMS.
 - In Pro Tools, choose Setup > Hardware and click Audio MIDI Setup.
- 2 Choose Window > Show Audio Devices.
- 3 Select Pro Tools | Carbon: Reserved for Pro Tools in the Audio Device list.

4 From the Clock Source selector, select the clock source that Pro Tools | Carbon should follow:

- Internal (default)
- Word Clock
- ADAT 1
- ADAT 2



Selecting the Clock Source for Pro Tools | Carbon in AMS

Each possible internal and external Clock Source is listed once for each AVB input stream in the current Pro Tools | Carbon AVB configuration. There is no functional difference between the listed options for each individual internal or external Clock Source.

Ensure that **Internal** is selected if you are not clocking to an external source. If you need to clock to an external source, ensure that the proper cable connections are robust and that the external clock source is providing clock data at the appropriate sample rate, then select the Clock Source that matches your system configuration.

I/O Setup

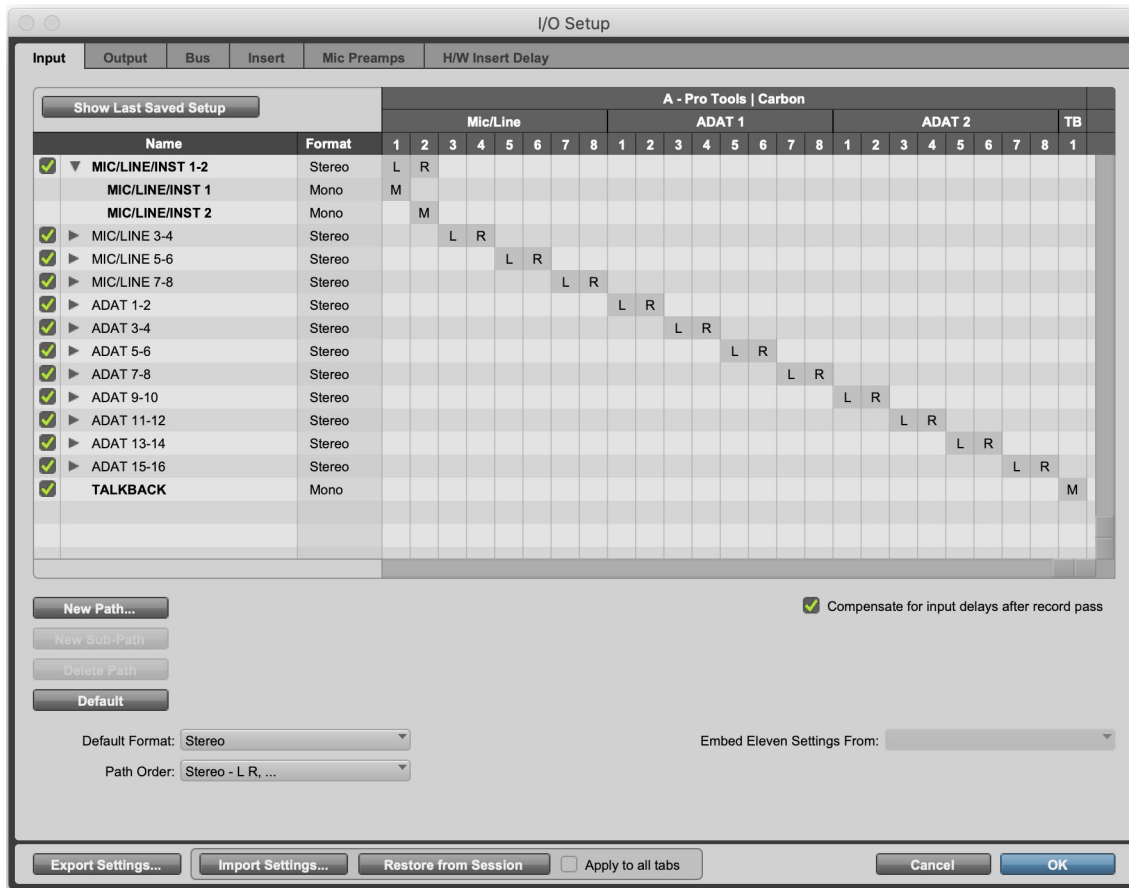
Configure the Pro Tools I/O Setup for input and output routing for Pro Tools | Carbon.



At higher sample rates, the number of available ADAT Inputs and Outputs are reduced for each port. At 88.2/96 kHz, only ADAT channels 1–4 are available, and at 176.4/192 kHz, only ADAT channels 1–2 are available. Unavailable ADAT channels are indicated in italic text in the Input, Output, Bus, and Insert pages of the I/O Setup.

Pro Tools | Carbon Input Setup

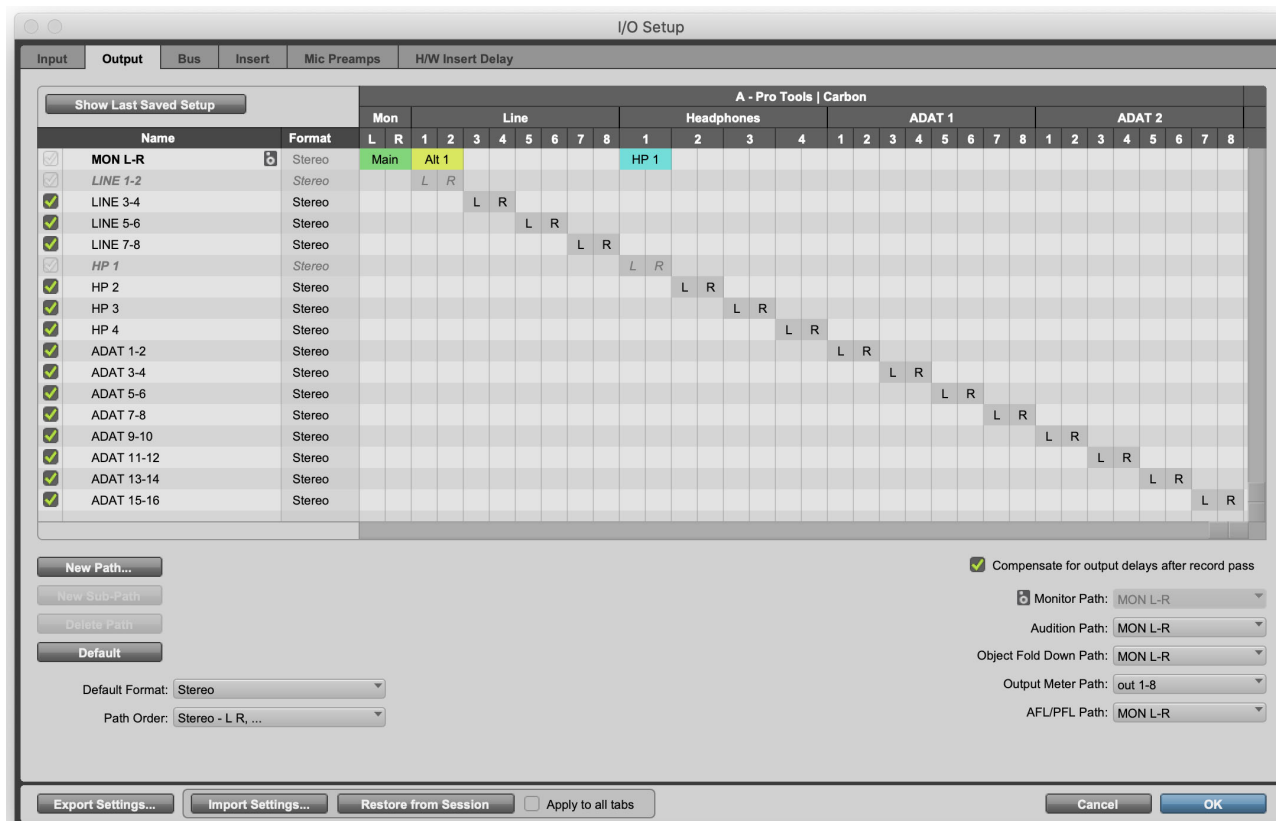
Pro Tools | Carbon provides Mic, Line, Instrument, ADAT, and Talkback mic inputs.



I/O Setup, Input page (default Input configuration for Pro Tools | Carbon using the Stereo format)

Pro Tools | Carbon Output Setup

In addition to line and ADAT outputs, Pro Tools | Carbon has a dedicated Main stereo monitor output, two additional Alternate stereo monitor output paths, and four dedicated Headphone outputs.



I/O Setup, Output page

Main and Alt Monitor Paths

The Main monitor output path and the two Alt monitor paths can be enabled or disabled in the Hardware Setup. When enabled, each appears color coded in the Output page of the I/O Setup. Each stereo monitor path has a fixed output assignment:

Main The Main monitor path is always assigned to the 1/4-inch TRS stereo monitor outputs.

Alt 1 The Alt 1 monitor path is always assigned to the DB25 line outputs 1–2.

Alt 2 The Alt 2 monitor path is always assigned to the DB25 line outputs 3–4.

Headphone Outputs

Each Headphone output can be assigned to either mirror the Main monitor path or use its own dedicated path.

AFL/PFL Path and Pro Tools | Carbon

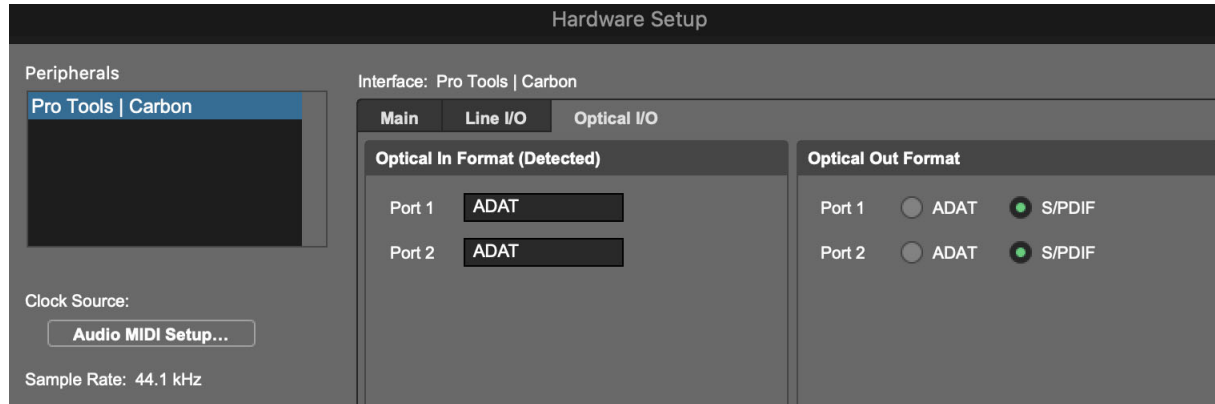
The AFL/PFL Path is used only for AFL and PFL Solo Modes. If you do not intend to use Pro Tools AFL and PFL Solo Mode features, disable the AFL/PFL Path to make more system resources available for other audio routing and processing tasks.

Analog Monitoring with Digital Metering

With Pro Tools | Carbon, you can mirror the main stereo analog monitoring output with optical S/PDIF output for hardware metering with an external digital metering device.

To configure Pro Tools | Carbon for analog monitoring with an external digital metering device:

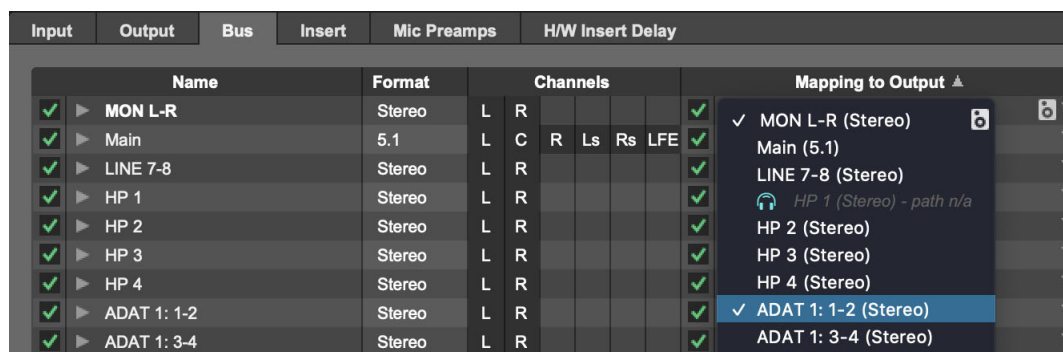
- 1 In Hardware Setup (Setup > Hardware), set one of the ADAT ports to Optical S/PDIF.



Hardware Setup, Optical Out Format set to S/PDIF for both ports

- 2 Click OK to close the Hardware Setup.
- 3 Connect that ADAT port to your external metering device.
- 4 On the Bus page of the I/O Setup (Setup > I/O > Bus), do the following:
 - Hold the Control key (Mac) or Start key (Windows).
 - Click on the assigned monitor output (MON L-R) in the Mapping to Output column.
 - Select ADAT 1: 1-2 or ADAT 2: 1-2 (depending on which ADAT port is set to S/PDIF and is connected to your metering device) to multi-assign the monitor path outputs.

Once assigned, Pro Tools audio output is routed to both pairs of outputs.



I/O Setup Bus page, setting MON L-R bus to both MON L-R and ADAT 1: 1-2 outputs

- 5 Click OK to close the I/O Setup.

⚠ This Pro Tools | Carbon routing configuration only works with Pro Tools software. It is not supported with other CoreAudio applications using Pro Tools | Carbon.

DSP Mode for Low-Latency Monitoring

DSP Mode ensures that low-latency monitoring is maintained during recording with Pro Tools | Carbon. You can enable or disable DSP Mode on a track-by-track basis. DSP Mode can be enabled for Audio, Auxiliary Input, Instrument, Routing Folder, and Master Fader tracks. For tracks with DSP Mode enabled, all plug-ins on the track switch from Native to DSP (if a DSP version is available), and all track inputs and outputs, including sends, run on the HDX DSP mixer in Pro Tools | Carbon itself. To ensure the lowest possible latency for monitoring, DSP and Native plug-ins cannot be active on the same track while DSP Mode is enabled. Any Native-only plug-ins are automatically bypassed in DSP Mode.

💡 *You can also use DSP Mode on audio tracks that are not record-armed or input-enabled if you want to offload Native processing on the host CPU to HDX DSP processing on Pro Tools | Carbon when mixing.*

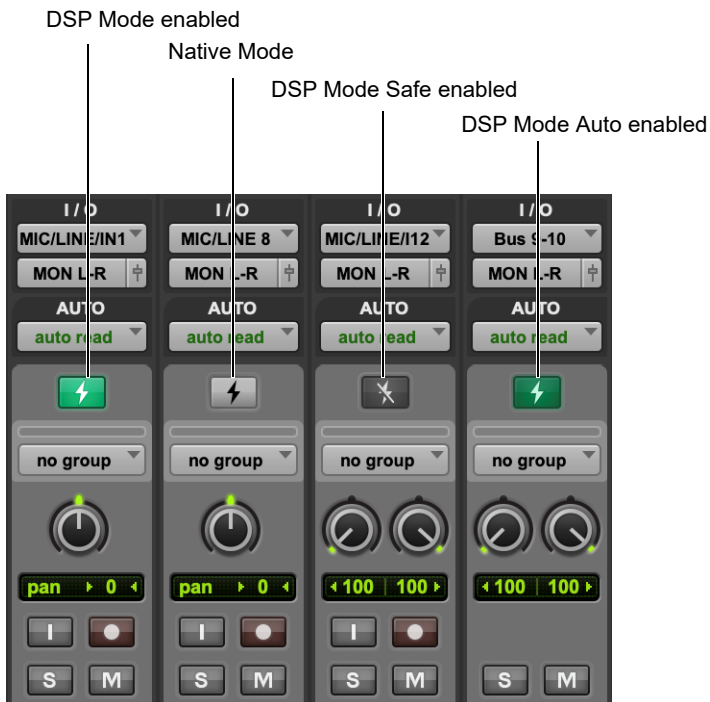
The following DSP Mode states are possible, as indicated by the DSP Mode icon:

Native Mode (DSP Mode Disabled) When DSP Mode is disabled on a track it is in Native Mode and the DSP Mode button is gray. All plug-ins on the track are Native only.

DSP Mode Enabled When DSP Mode is enabled on a track, the DSP Mode button turns bright green. All Native plug-ins with DSP versions switch to DSP while Native only plug-ins are bypassed. The entire signal path for the track runs on the DSP mixer in Pro Tools | Carbon.

DSP Mode Auto Enabled If any track is part of the signal chain of another track that is set to DSP Mode, it is automatically set to DSP Mode. When DSP Mode is automatically enabled on a track, the DSP Mode button turns dim green.

DSP Mode Safe When DSP Mode Safe is enabled on a track, DSP Mode will not be automatically enabled on that track.



DSP Mode button states

Enabling DSP Mode

Enable DSP Mode on tracks for low-latency monitoring during recording or input monitoring. With DSP Mode enabled:

- Protecting low latency is the highest priority.
- The track and its entire signal chain run on the HDX DSP in Pro Tools | Carbon.
- Any plug-ins on the track that are not available in DSP format are bypassed.
- HEAT is not supported on audio tracks in DSP Mode. In the Mix window, HEAT is bypassed for all audio tracks in DSP Mode.

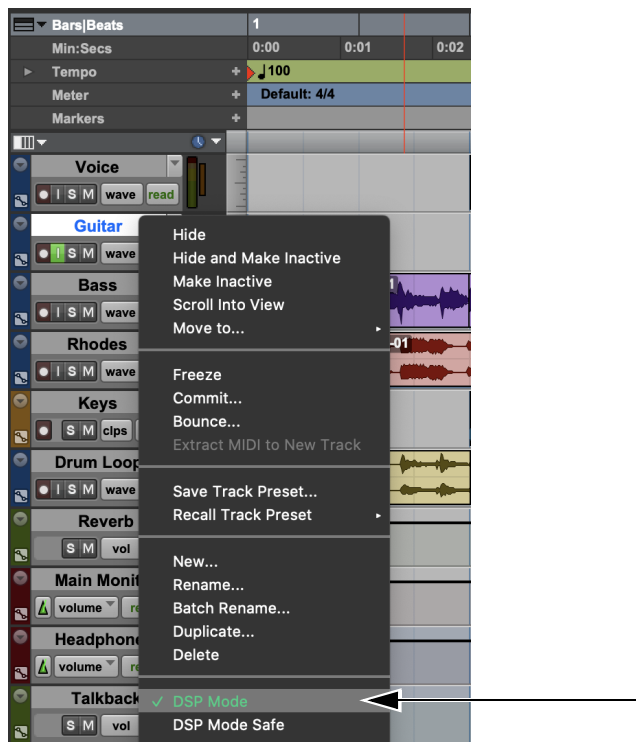
To enable DSP Mode on a track, do one of the following:

- In the Mix or Edit window, click the DSP Mode button on the track so that it lights bright green.



Track DSP Mode button enabled: in the Edit window (left) and in the Mix window (right)

- In the Mix or Edit window, right-click the DSP Mode button on the track and select DSP Mode.
- Right-click the Track name in the Track List, or in the Edit or Mix window, and select DSP Mode. The DSP Mode button is not shown when the Track Height is set to Small, Mini, or Micro in the Edit window. In this case, use this method to enable (or disable) DSP Mode, or do so in the Mix window.



Right-click a track name to enable DSP Mode in the Edit window

Enabling DSP Mode Safe

Use DSP Mode Safe to prevent DSP Mode from being automatically enabled on a track. This is useful if you want to route any audio from a DSP Mode-enabled track with any plug-ins that are only available in Native format. For example, you might want to send audio from a DSP Mode-enabled audio track to a DSP Mode Safe-enabled Auxiliary Input track for processing with a reverb plug-in that is only available as a Native plug-in. DSP Safe Mode can also be useful if you just need to avoid using DSP for plug-ins on a track for any reason.

To enable DSP Mode Safe on a track, do one of the following:

- Right-click the Track name in the Track List, or in the Edit or Mix window, and select DSP Mode Safe.



Enabling DSP Mode Safe on a track in the Mix window

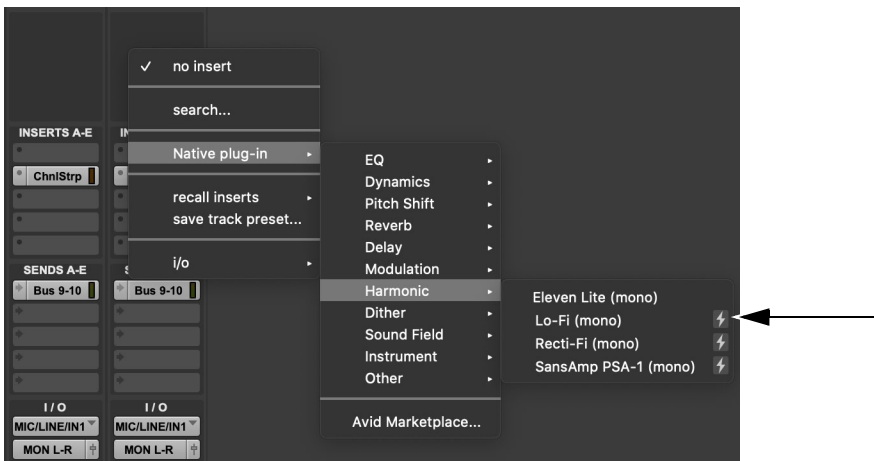
- In the Mix or Edit window, right-click the DSP Mode button on the track and select DSP Mode Safe.
- In the Mix or Edit window, Command-click the DSP Mode button on the track.

⚠ Tracks in DSP Mode provide ultra-low-latency monitoring, whereas tracks in Native Mode introduce latency when monitoring live inputs. Consequently, live audio monitored both through tracks in DSP Mode and tracks in Native Mode (including DSP Mode Safe-enabled tracks) may not be aligned.

Indicators for DSP Plug-ins, Inserts, Sends, and Outputs

DSP-Compatible Badge for Plug-ins

For plug-ins that are available in both Native and DSP formats, the DSP-Compatible Badge appears to the right of plug-in name in the Plug-in Insert selector. Plug-ins without this badge are only available in Native format and, if inserted on a track, are automatically bypassed when DSP Mode is enabled on that track.



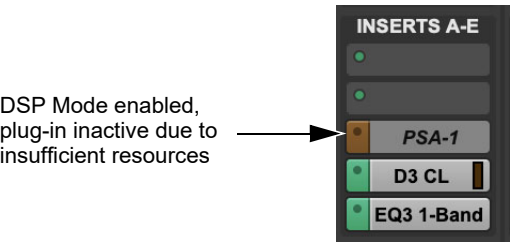
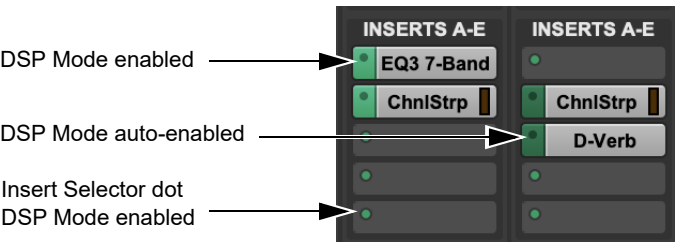
DSP-Compatible Badge

DSP Mode Insert Indicator

Plug-in Insert selectors change color to indicate whether DSP plug-ins are inserted on a track that is DSP Mode enabled or DSP Mode auto-enabled, or if a plug-in has been made inactive due to insufficient DSP resources.

DSP Mode Insert indicator color coding

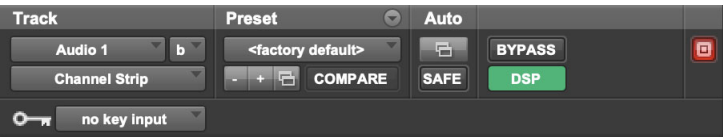
DSP Mode	Color
Enabled	Green
Auto-enabled	Dark Green
Inactive due to insufficient resources	Dark Orange



Insert DSP Mode indicators

Plug-in Format Indicator in Plug-in Windows

The Plug-in Format indicator is color coded to indicate whether DSP plug-ins are inserted on a track that is DSP Mode-enabled or DSP Mode-auto enabled, or if a plug-in has been made inactive due to insufficient DSP resources. Similarly, with Dynamics plug-ins, the Key Input selector turns dark orange to indicate that there are insufficient DSP resources.



DSP Mode enabled



DSP Mode automatically enabled



DSP Mode, DSP plug-in inactive due to insufficient DSP resources



DSP Mode, Key Input inactive due to insufficient DSP resources

Send Selector DSP Mode Indicator

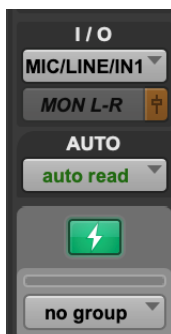
When a Send is made inactive due to insufficient DSP resources, the Send selector appears dark orange and any text is italicized.



DSP Mode-enabled, send inactive due to insufficient resources

Output View Selector DSP Mode Indicator

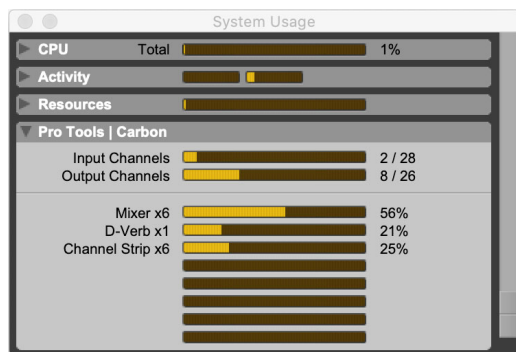
When a track output is made inactive due to insufficient DSP resources, the Output View selector appears dark orange and any text is italicized.



DSP Mode-enabled, track output inactive due to insufficient resources

System Usage

The System Usage window in Pro Tools provides a Pro Tools | Carbon pane that lets you monitor the number of available AVB Input and Output channels in use, and how much DSP is being used by plug-ins and the mixer.



System Usage window, Pro Tools | Carbon pane

Input Channels Shows the number of AVB channels dedicated to audio streams from Pro Tools | Carbon to Pro Tools.

Output Channels Shows the number of AVB channels dedicated to audio streams from Pro Tools to Pro Tools | Carbon.

DSP Meters Show how much of the 8 HDX DSPs on Pro Tools | Carbon are being used by the mixer and DSP plug-ins.

💡 *Pro Tools reserves certain channels for internal communication. As a result, the number of Output Channels shown in the System Usage window is always two fewer than the number of channels shown in AMS.*

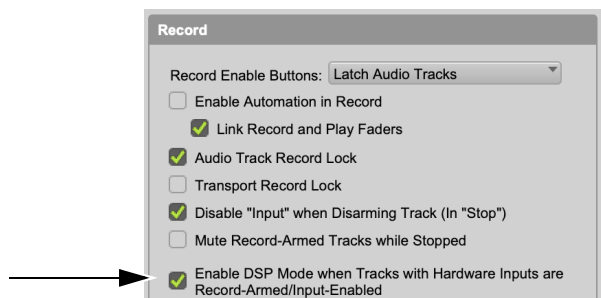
📖 *A larger or smaller AVB configuration can be selected in AMS to suit your input and output channel requirements. For more information, see [AVB Device Configuration in AMS](#).*

Enable DSP Mode Preference

The Enable DSP Mode when Tracks with Hardware Inputs are Record-Armed Input-Enabled preference automatically sets audio tracks to DSP Mode when they are record-armed or input-enabled. This ensures low-latency monitoring using DSP Mode for all live signal paths. This option is enabled by default.

To enable (or disable) DSP Mode automatically on audio tracks that are enabled for Input Monitoring or recording:

- 1 Choose Setup > Preferences > Operation.
- 2 In the Record section, select (or deselect) the Enable DSP Mode when Tracks with Hardware Inputs are Record-Armed/ Input-Enabled option.



Enable DSP Mode when Tracks with Hardware Inputs are Record-Armed/ Input-Enabled option selected

- 3 Click OK.

💡 *Any track that is automatically DSP Mode-enabled due to this preference remains DSP Mode-enabled until it is manually set to Native Mode.*

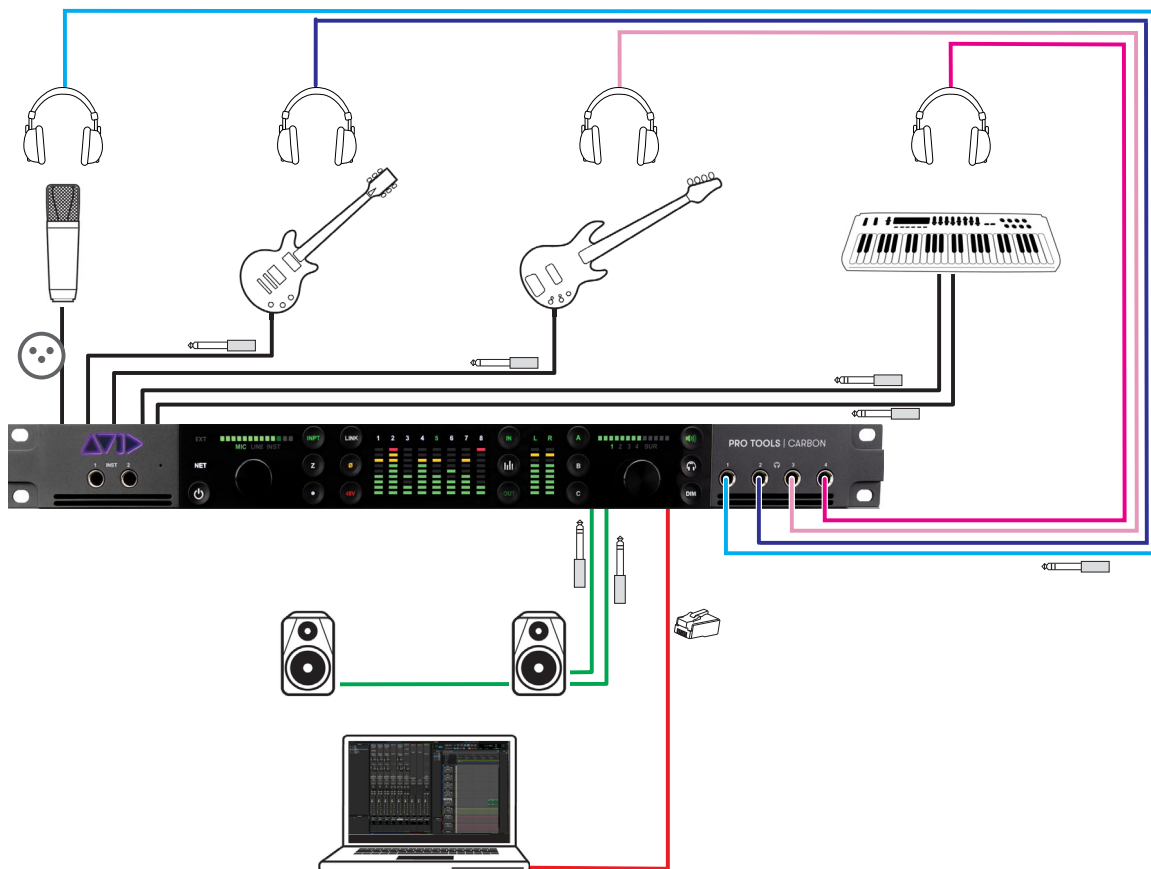
Workflow Example: Recording in DSP Mode for Low-Latency Monitoring

The following workflow example uses DSP Mode for recording a singer with DSP plug-in processing and low-latency monitoring.

This example session is made up of the following tracks (see the graphic on the next page):

- 3 mono audio tracks for vocals, guitar, and bass. Each track has EQ and dynamics plug-ins, and the vocal track also has a slap-back delay.
- 2 stereo audio tracks, one for electric piano and another for drum loops. Each track has EQ and dynamics plug-ins.
- 1 stereo Auxiliary Input track for reverb processing.
- 2 Master Fader tracks, one for control room monitoring and the other for the singer's headphones. Each has a limiter on it.
- 1 mono Auxiliary Input track for the built-in talkback mic.

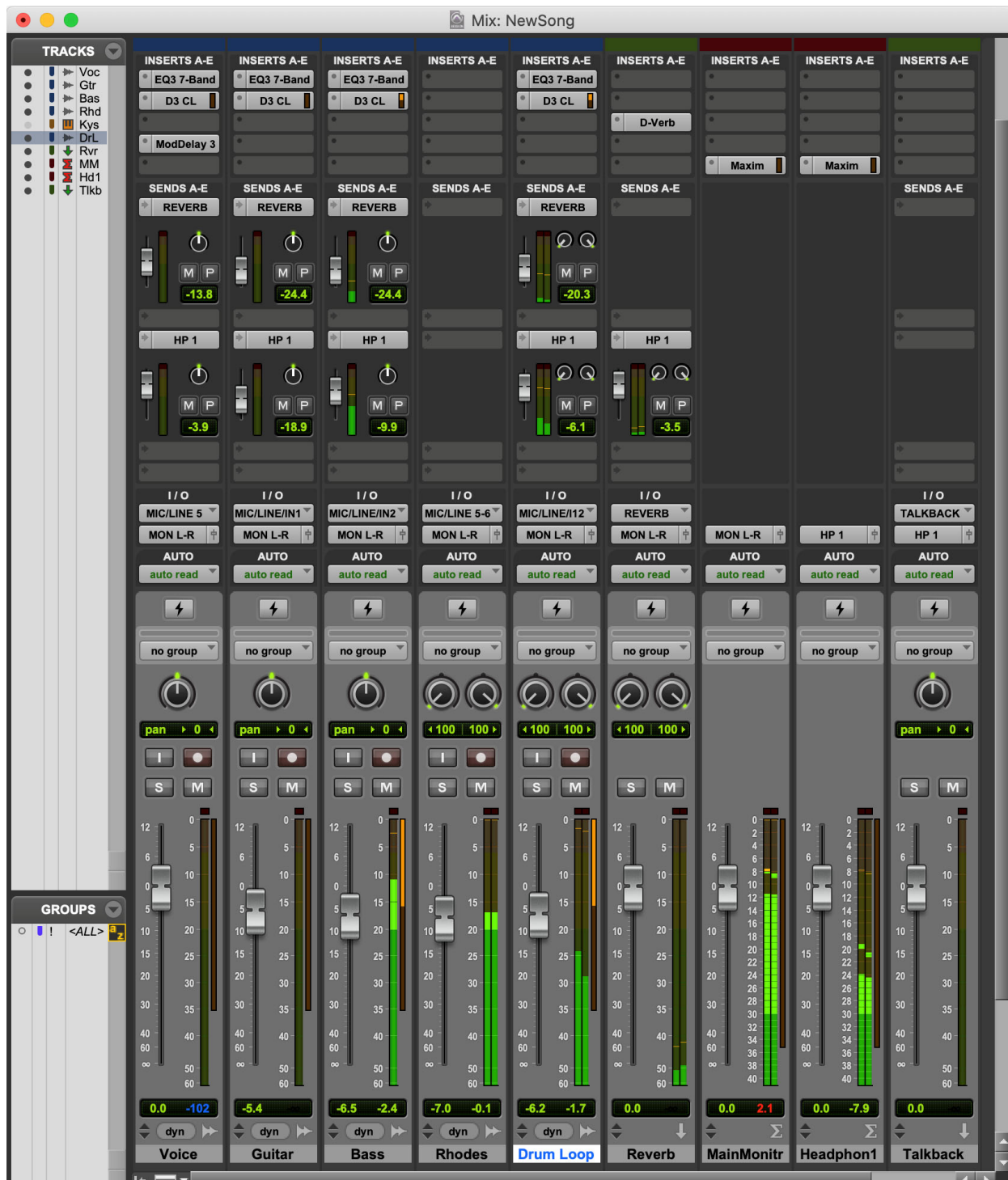
The following diagram shows the physical studio connections for this workflow example. While this workflow example only re-views recording vocals in DSP Mode with a dedicated headphone mix, you can just as easily have independent headphone mixes for the rest of the band.



Physical studio connections

Adjust the Mix for Recording

Start playback to set the levels and panning of the instruments to get the mix you want in the control room monitors. Set the send levels from each track to balance the headphone mix. Input-enable the vocal track and use the talkback mic to communicate with the singer and adjust the headphone mix to the singer's liking. Once the singer is happy with the headphone mix, you are ready to record some vocals.



Session with the band already recorded

Record with Low-Latency Monitoring

Enable DSP Mode on the vocal track. Notice that all tracks that are part of the signal chain for the vocal track have DSP Mode enabled automatically: the reverb Auxiliary Input track and both Master Fader tracks. All plug-ins on these tracks switch from Native to DSP format (any Native only plug-ins on any of these tracks are automatically bypassed).

Record-arm the vocal track, and when the singer is ready, start recording. The singer will hear themselves in the mix with virtually no latency.




Recording vocals in DSP Mode for low-latency monitoring

Use DSP Mode Safe to Record with Native Reverb

Let's assume that you have a Native-only reverb plug-in that you really like. You can still record vocals with virtually no latency in their monitor mix while still using your favorite Native-only reverb plug-in to process all of the audio tracks. Enable DSP Mode Safe on the reverb track and set the wet/dry mix on the reverb plug-in to 100% wet. Enable DSP Mode on the vocal track—DSP Mode is enabled for all tracks in the signal chain of the vocal track except for the reverb track. Record-arm the vocal track and when the singer is ready, start recording. There will be latency on the reverb track, but given the nature of reverb processing it won't really be noticeable. The important thing is that the talent won't hear any latency in the mix with their performance.



Session configured for recording vocals, but with Auxiliary Input track in DSP Mode Safe for Native reverb processing

 For complete information about recording and mixing in Pro Tools, refer to the Pro Tools Reference Guide, which can be accessed from the Help menu in Pro Tools.

Tips for Using DSP Mode

To ensure optimal workflows in DSP Mode:

- Use input and output gain controls on Native-only plug-in inserts to make up for any undesirable changes in signal level when switching between Native Mode and DSP Mode.
- Since DSP Mode does not reduce latency for tracks that are not part of a live signal path, avoid enabling DSP Mode on tracks that are not part of the signal chain for recording and input monitoring. However, note that DSP Mode can be used to offload plug-in processing from the CPU when mixing without consequence.
- To avoid unnecessarily enabling DSP Mode automatically on tracks that are fed by other channels of a multi-channel bus, use dedicated mono bus paths instead of mono sub-paths of stereo busses when routing mono audio signals with tracks in DSP Mode. You will need to specifically create mono bus paths in I/O Setup since the default bus paths will always be stereo with mono sub-paths.
- Avoid routing unrelated signals to the channels of a multichannel bus. For example, avoid routing a guitar signal to the left channel and a bass signal to the right channel of the same stereo bus.

Pro Tools Mic Preamps Control

Pro Tools lets you control Carbon mic preamps from mono and stereo tracks in Pro Tools sessions using Mic Preamps view. Mic Preamps control for Pro Tools | Carbon is not available with greater-than-stereo tracks (such as LCR or 5.1).

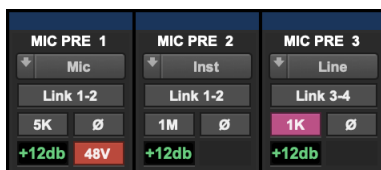
💡 *Carbon preamp control is compatible with Avid PRE. Any Avid PRE assignments to analog inputs 1–8 override Carbon preamp control on that channel. For example, if you map Avid PRE channels to analog inputs 1–4 then Avid PRE control appears for tracks with those inputs, and Carbon preamp controls appear only for tracks with inputs 5–8.*

Mic Preamps View

💡 *Unlike with Pro Tools | PRE, there is no need to configure Mic Preamps settings in the Peripherals dialog or in the I/O Setup for Pro Tools | Carbon. Pro Tools automatically recognizes Carbon preamps, so you only need to show Mic Preamps view in either the Mix or Edit windows to control Carbon preamps from Pro Tools.*

To show (or hide) Mic Preamps view in the Mix window, do one of the following:

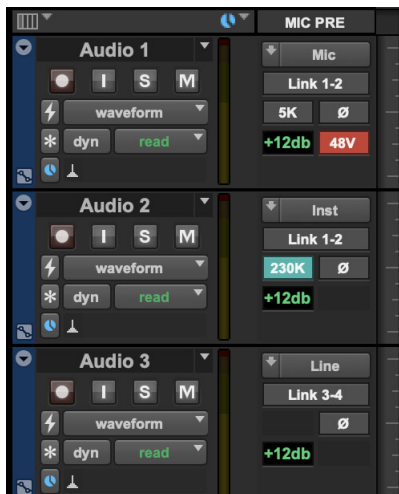
- Select (or deselect) View > Mix Window Views > Mic Preamps.
- Click the Mix Window View selector, and select (or deselect) Mic Preamps.



Mic Preamps view, Mix window

To show (or hide) Mic Preamps view in the Edit window, do one of the following:

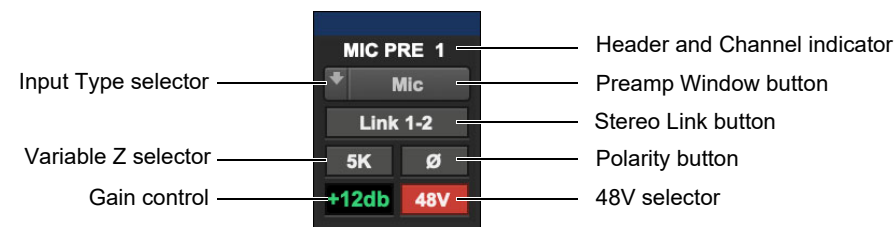
- Select (or deselect) View > Edit Window Views > Mic Preamps.
- Click the Edit Window View selector, and select (or deselect) Mic Preamps.



Mic Preamps view, Edit window

Mic Preamps View Controls

Mic Preamps view provides the same set of controls in both the Mix and Edit windows.



Mic Preamp view controls

💡 To retain the current Mic Pre settings for Pro Tools | Carbon when switching between different sessions, enable the Retain Mic Pre Settings option in the Hardware Setup (Setup > Hardware).

Header and Channel Indicator (Mix Window Only)

This indicates which MIC PRE channel on Pro Tools | Carbon is being controlled. This corresponds to the selected input channel for the track.

Input Type Selector

Select an available Input Type for the preamp on that channel: Mic, Line, or Inst. If there is no instrument cable plugged into the physical input, the Inst option is unavailable.

Preamp Window Button

Indicates the currently selected Input Type (Mic, Line, or Inst). Click to open a floating Mic Preamp window for the channel.



Mic Preamp windows: Mic, Inst, and Line (left to right)

💡 Click the red Target button in the upper right corner of the window to toggle focus on or off. When unfocused, additional Pre-amp windows can be opened.

Stereo Link Button

Indicates the current link state for pairs of channels. Click to link or unlink the corresponding stereo pair of channels (1–2, 3–4, 5–6, 7–8). For stereo tracks, each channel can be independently controlled when unlinked.

Preamp controls for a stereo track can be linked or unlinked. When unlinked, a Link button and Channel button appear. Click the Channel button (such as 1 or 2) to toggle control between odd and even channels. Click the Link button to link channels and display the Stereo Link button (for example, Link 1–2). The even channel inherits the settings from the odd channel when linked. Click the Stereo Link button again to disable stereo link and show the Link and Channel buttons.

Variable Z Button

Indicates the current impedance setting. Click to select from the available impedance options for the selected Input Type.

Polarity Button

Indicates the current polarity setting. Click the button to toggle polarity.

Gain Indicator and Mini Fader

The Gain indicator features a mini fader to adjust gain to the input signal. The gain range for each input (Mic, Line, and Instrument) is +3–60 dB, adjustable in 1 dB increments.


Bypass Line Input Gain

When input type is set to Line, you can right-click on the Gain indicator and select (or deselect) Bypass Line Input Gain. When bypassed, the gain value text is dimly lit and italicized. This setting is mirrored in the Line I/O page of the Hardware Setup dialog (Setup > Hardware).

48V Selector (Mic Only)

Click the 48V button and select 48V or Off from the pop-up menu to enable or disable phantom power. The 48V button lights when phantom power is enabled.

Appendix A: Specifications

 Specifications subject to change.

Audio Specifications

Microphone Preamp Inputs

Back panel: XLR inputs 1–8

Frequency Response	20 Hz to 20 kHz, ± 0.1 dB
Gain Range	3–60 dB in 1 dB steps
Equivalent Input Noise (EIN)	–129 dBu (A-weighted)
Signal to Noise Ratio (SNR)	–123.5 dB, –126 dB (A-weighted)
Dynamic Range	126 dB (A-weighted)
Total Harmonic Distortion (THD) 1 kHz @ –1 dBFS	–105 dB (0.00056%)
Maximum Input Level	+24 dBu
Crosstalk	–145 dB @ 1 kHz
Phantom Power	+48V
Connector Type	8 XLR (XLR/TRS Combo)

Line Inputs

Back panel: DB25 inputs 1–8 and 1/4-inch TRS inputs 1–8

Frequency Response	20 Hz to 20 kHz, ± 0.1 dB
Gain Range	6–60 dB in 1 dB steps
SNR	–122 dB, –125 dB (A-weighted)
Dynamic Range	123 dB, 125 dB (A-weighted)
THD 1 kHz @ –1 dBFS	–106 dB (0.0005%)
Maximum Input Level	+24 dBu
Crosstalk	–145 dB @ 1 kHz
Connector Type	1/4-inch TRS Balanced (Combo XLR/TRS) DB25 (Tascam wiring), normalised

Line Inputs (True Bypass)

Back panel: DB25 inputs 1–8 and 1/4-inch TRS inputs 1–8

Frequency Response	20 Hz to 20 kHz, ± 0.1 dB
Gain Range	0 dB fixed
SNR	–123 dB, –126 dB (A-weighted)
Dynamic Range	123 dB, 126 dB (A-weighted)
THD 1 kHz @ –1 dBFS	–113 dB (0.00022%)
Maximum Input Level	+24 dBu
Crosstalk	–145 dB @ 1 kHz
Connector Type	1/4-inch TRS Balanced (Combo XLR/TRS) DB25 (Tascam wiring), normalled

Instrument Inputs

Front panel 1/4-inch TS inputs 1–2

Frequency Response	20 Hz to 20 kHz, ± 0.1 dB
Gain Range	3–60 dB in 1 dB steps
SNR	–120 dB, –122 dB (A-weighted)
Dynamic Range	123 dB, 125 dB (A-weighted)
THD 1 kHz @ –1 dBFS	–103 dB (0.0007%)
Maximum Input Level	+15.7 dBV
Crosstalk	–145 dB @ 1 kHz
Connector Type	1/4-inch TS Unbalanced

Line Outputs

Back panel DB25 outputs 1–8

Frequency Response	20 Hz to 20 kHz, ± 0.1 dB
SNR	–124 dB (A-weighted)
Dynamic Range	124 dB (A-weighted)
THD 1 kHz @ –1 dBFS	–110 dB (0.0003%)
Maximum Output Level	+24 dBu
Crosstalk	–135 dB @ 1 kHz
Output Impedance	100 ohm balanced (50 ohm per leg)
Connector Type	DB25 (Tascam wiring)

Monitor Outputs

Back panel 1/4-inch TRS outputs L–R

Frequency Response	20 Hz to 20 kHz, ± 0.1 dB
SNR	–126 dB (A-weighted)
Dynamic Range	126 dB (A-weighted)
THD 1 kHz @ –1 dBFS	–110 dB (0.0003%)
Maximum Output Level	+24 dBu
Crosstalk	–135 dB @ 1 kHz
Output Impedance	100 ohm balanced (50 ohm per leg)
Connector Type	1/4-inch TRS Balanced

Headphone Outputs

Front panel 1/4-inch TRS stereo 1–4

Power	100 mW into 300 ohm; 200 mW into 32 ohm
Frequency Response	20 Hz to 20 kHz, ± 0.1 dB
SNR	–116 dB (A-weighted)
Dynamic Range	116 dB (A-weighted)
Total Harmonic Distortion + Noise Ratio	32 Ohm: –87 dB (0.0045%) 300 ohm: –100 dB (0.001%)
Connector Type	1/4-inch TRS Stereo

Digital I/O ADAT

Back panel optical ports 1 and 2

Format	ADAT Digital Lightpipe with S/MUX
Supported Sample Rates	44.1, 48, 88.2, 96, 176.4, 192 kHz
Channel Assignments (44.1–48 kHz)	Port 1 = Channels 1–8, Port 2 = Channels 1–8
Channel Assignments (88.2–96 kHz)	Port 1 = Channels 1–4, Port 2 = Channels 1–4
Channel Assignments (176.4/192 kHz)	Port 1 = Channels 1–2, Port 2 = Channels 1–2
Connector Type	Optical TOSLINK

Digital I/O Optical S/PDIF

Back panel optical ports 1 and 2

Format	Optical S/PDIF
Supported Sample Rates	44.1, 48, 88.2, 96 kHz
Channel Assignments (44.1–48 kHz)	Port 1 = Channels 1–2, Port 2 = Channels 1–2
Channel Assignments (88.2–96 kHz)	Port 1 = Channels 1–2, Port 2 = Channels 1–2
Connector Type	Optical TOSLINK

Synchronization and Network Specifications

Synchronization

Connector Types	Optical or BNC
Synchronization Sources	Internal, ADAT, Word Clock

Network Interface

Interface	1000BASE-T, RJ45 connector, 4-pair connection
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Mechanical Specifications

Chassis standard	19", 1 RU
Chassis depth, without connectors mounted	34.8 cm / 13.5"
Chassis body width	44.2 cm / 17.4"
Weight	5.44 kg / 12 lbs.

Environmental Specifications


Operating Temperature	4–40° C / 39.2–140° F
Humidity	20–85% (non-condensing)

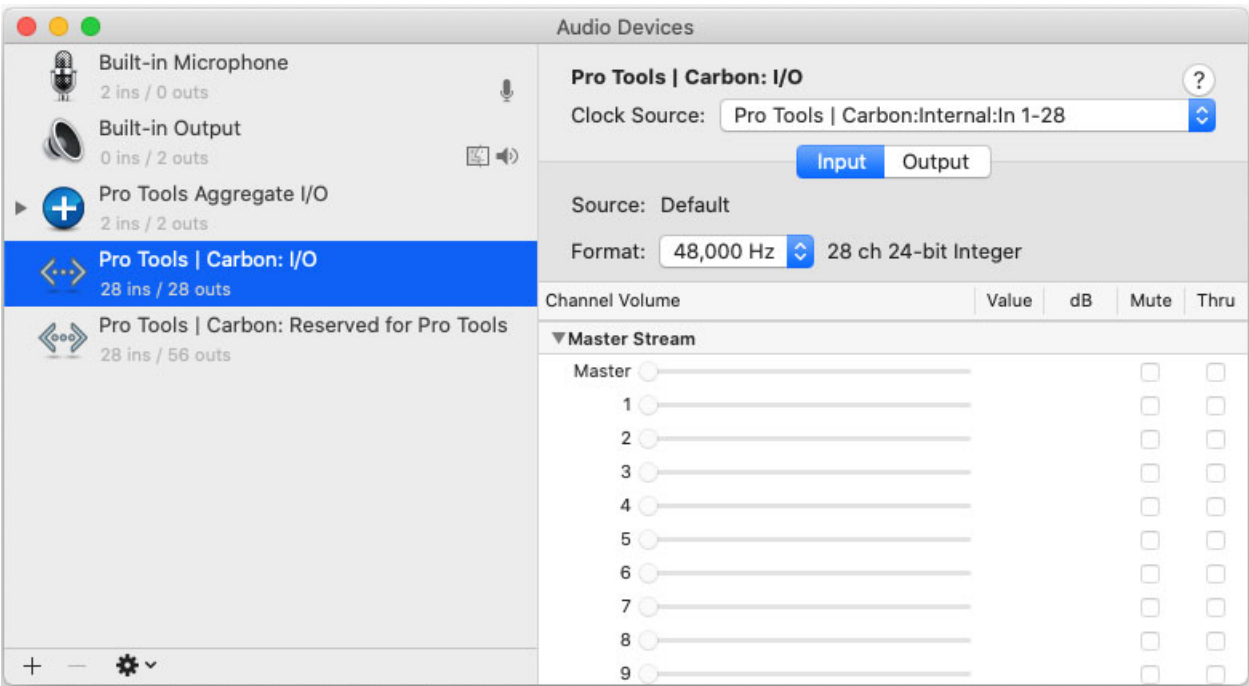
Appendix B: Pro Tools | Carbon Core Audio Devices

Pro Tools | Carbon presents two separate AVB Audio Devices in the Audio Devices list in AMS: Pro Tools | Carbon: I/O and Pro Tools | Carbon: Reserved for Pro Tools. Note that when setting the Clock Source, default Sample Rate, or AVB Configuration for Pro Tools Carbon, any changes you make to one device affects the other.

Pro Tools | Carbon: I/O

When using Pro Tools | Carbon with third-party Core Audio applications or for macOS system audio, the Pro Tools | Carbon: I/O device must be used. The available AVB input and output channels are determined by the selected AVB Device Configuration (see [AVB Device Configuration](#)).

 To use Pro Tools | Carbon for Mac System Sound Input and Output, select the “Pro Tools | Carbon: I/O” device in the Output and the Input pages of the Sound System Preferences.

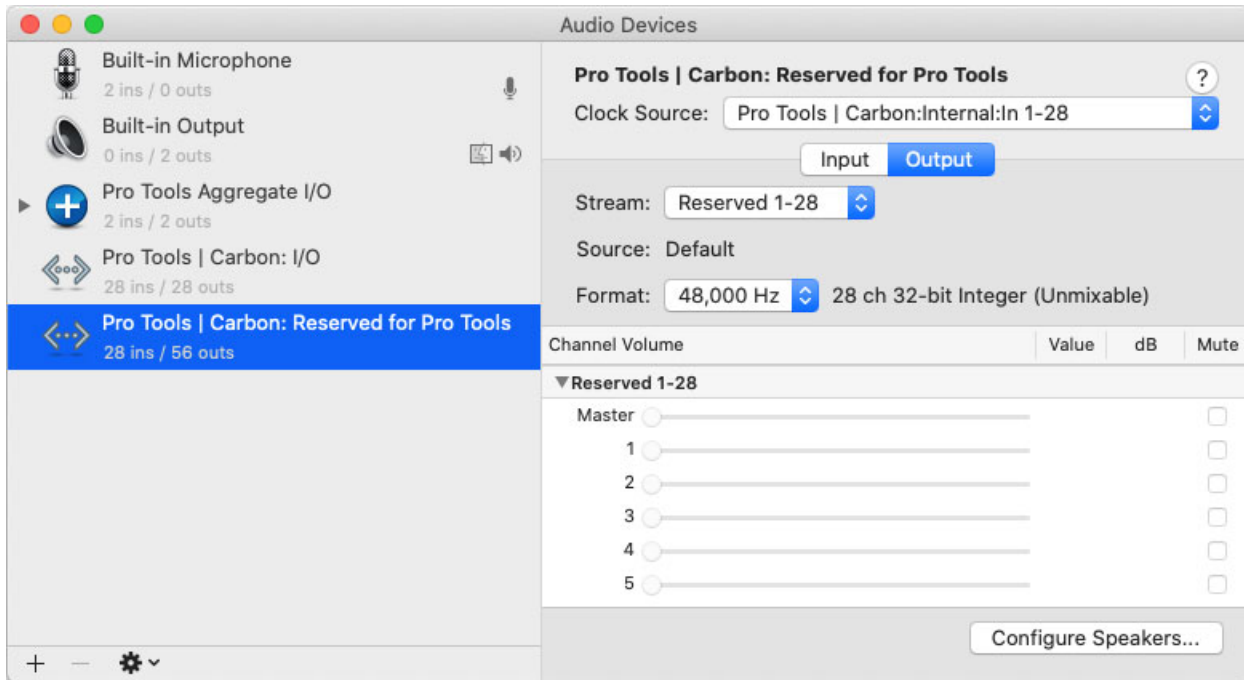


Pro Tools | Carbon: I/O device selected in AMS

Pro Tools | Carbon: Reserved for Pro Tools

The Pro Tools | Carbon: Reserved for Pro Tools device is dedicated to Pro Tools. The available AVB input and output channels are determined by the selected AVB Device Configuration (see [AVB Device Configuration in AMS](#)).

⚠ *Never use the “Pro Tools | Carbon: Reserved for Pro Tools” device for Mac System Sound Input or Output (System Preferences > Sound). Only use the “Pro Tools | Carbon: I/O” device for Mac System Sounds.*



Pro Tools | Carbon: Reserved for Pro Tools device selected in AMS

AVB Device Configuration

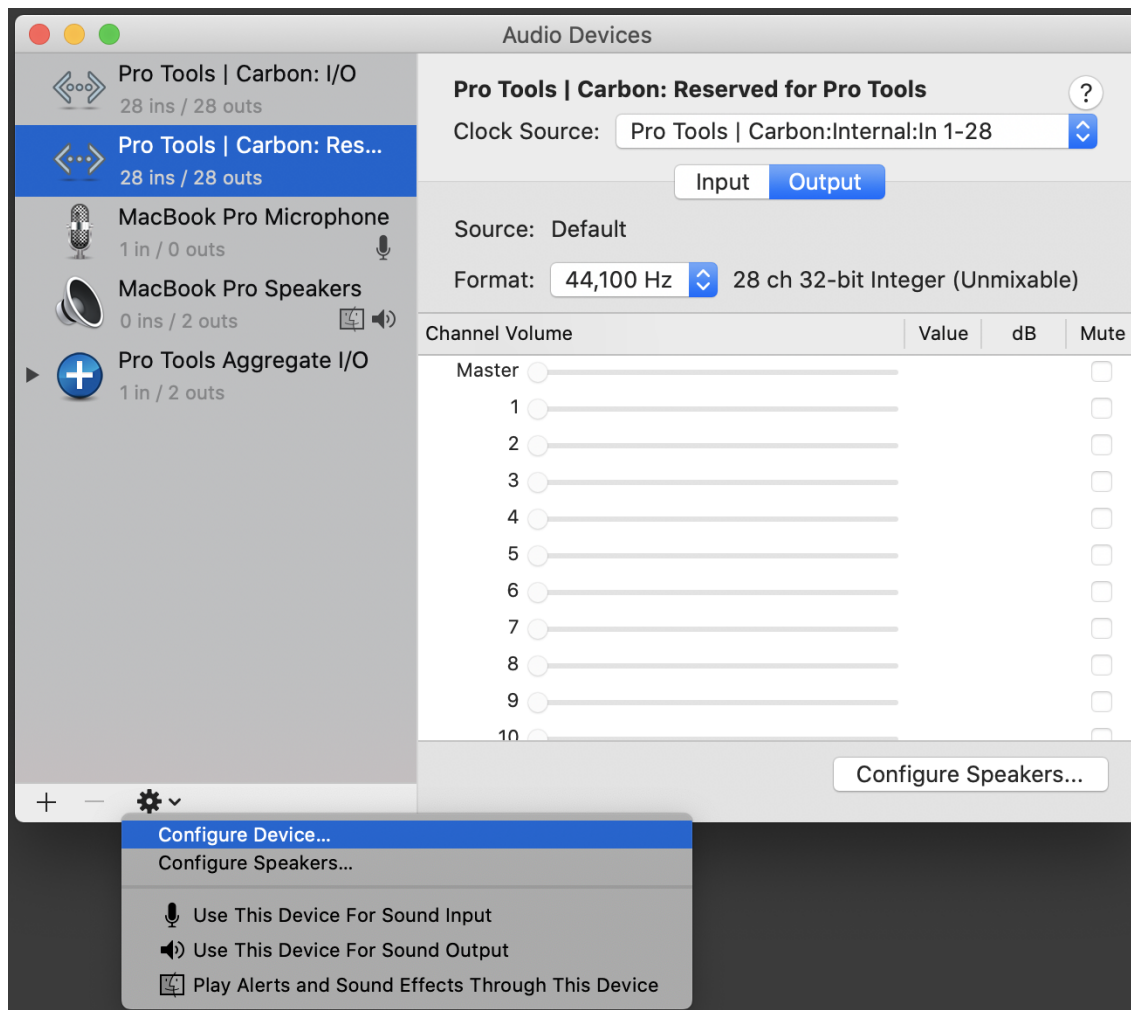
Pro Tools | Carbon requires a direct connection to a computer using AVB Ethernet. The AVB Ethernet connection provides up to 56 input channels and 84 output channels of AVB audio between Pro Tools | Carbon and Pro Tools, and up to 28 input channels and 28 output channels of AVB audio between Pro Tools | Carbon and third-party Core Audio-compatible software.

Pro Tools | Carbon provides six different AVB device configurations for input and output channels with Pro Tools or third-party Core Audio-compatible software. The selected configuration determines the maximum number of record-enabled input channels and the maximum number of output channels in DSP Mode available in Pro Tools.

Certain configurations also affect the number of available channels when using the Pro Tools | Carbon: I/O device with third-party Core Audio applications. Use a smaller configuration to reduce the load on the host processor. Use a larger configuration to increase mixing capacity in Pro Tools for more complex routing of low latency paths using DSP Mode.

To set the device configuration:

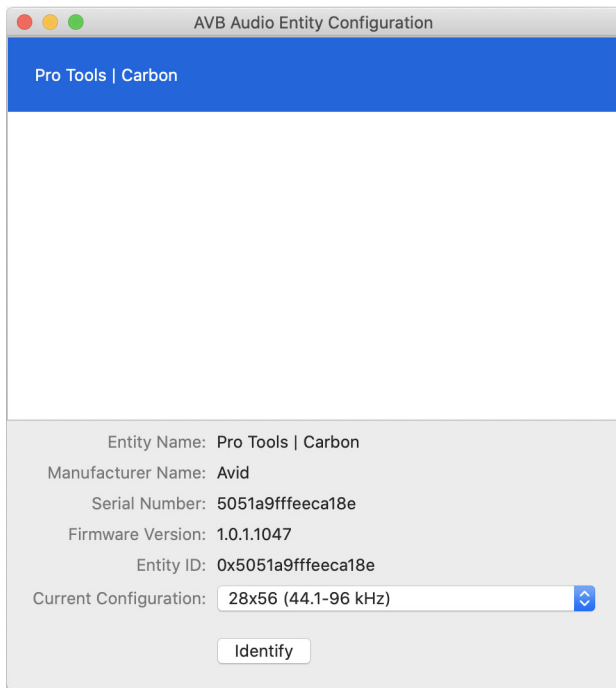
- 1 Launch Audio MIDI Setup (AMS).
- 2 In the Audio Devices window, select **Pro Tools | Carbon: Reserved for Pro Tools** in the Audio Devices list.
- 3 Do one of the following:
 - From the **Configure Selected Device** menu, choose **Configure Device**.
 - Right-click **Pro Tools | Carbon: Reserved for Pro Tools** in the Audio Devices list and choose **Configure Device**.



Choosing Configure Device for Pro Tools | Carbon: Reserved for Pro Tools device

4 In the resulting AVB Audio Entity Configuration window, select **Pro Tools | Carbon**.

💡 *If the AVB Audio Entity Configuration window does not appear automatically, choose **Window > Audio Entity Configuration** (or press **Command+I**).*



AVB Audio Entity Configuration window

5 From the **Current Configuration** selector, select the configuration that best suits your workflow:

- 28x56 (44.1–96 kHz)
- 56x56 (44.1–96 kHz)
- 56x84 (44.1–96 kHz)
- 28x42 (44.1-192 kHz)
- 28x56 / 14x14 (44.1-192 kHz)
- 42x56 / 14x14 (44.1-192 kHz)

💡 *In Pro Tools, the **System Usage** window shows the number of available **Input Channels** and **Output Channels** for the selected configuration, and how many are currently in use by the open session. See [System Usage](#).*

6 Quit the AVB Audio Configuration application (AVB Audio Configuration > Quit, or press **Command+Q**).

AVB Channel to Physical I/O Mappings for the Pro Tools | Carbon: I/O Device

The following table is for the Pro Tools | Carbon: I/O device with these AVB configurations:

- 28x56 (44.1–96 kHz)
- 56x56 (44.1–96 kHz)
- 56x84 (44.1–96 kHz)

AVB Channels	44.1–48 kHz		88.2–96 kHz	
	AVB In 1–28	AVB Out 1–28	AVB In 1–28	AVB Out 1–28
	Pro Tools Carbon I/O		Pro Tools Carbon I/O	
	In 1–28	Out 1–28	In 1–28	Out 1–28
1–2	Mic/Line/Inst 1–2	Mon L–R	Mic/Line/Inst 1–2	Mon L–R
3–4	Mic/Line 3–4	Line 1–2	Mic/Line 3–4	Line 1–2
5–6	Mic/Line 5–6	Line 3–4	Mic/Line 5–6	Line 3–4
7–8	Mic/Line 7–8	Line 5–6	Mic/Line 7–8	Line 5–6
9–10	ADAT 1 1–2	Line 7–8	ADAT 1 1–2	Line 7–8
11–12	ADAT 1 3–4	HP 1	ADAT 1 3–4	HP 1
13–14	ADAT 1 5–6	HP 2	—	HP 2
15–16	ADAT 1 7–8	HP 3	—	HP 3
17–18	ADAT 2 1–2	HP 4	ADAT 2 1–2	HP 4
19–20	ADAT 2 3–4	ADAT 1 1–2	ADAT 2 3–4	ADAT 1 1–2
21–22	ADAT 2 5–6	ADAT 1 3–4	—	ADAT 1 3–4
23–24	ADAT 2 7–8	ADAT 1 5–6	—	—
25–26	(25) Talkback (26) —	ADAT 1 7–8	(25) Talkback (26) —	—
27–28		ADAT 2 1–2		ADAT 2 1–2

The following table is for the Pro Tools | Carbon: I/O device with this AVB configuration:

- 28x42 (44.1–192 kHz)

AVB Channels	44.1–48 kHz		88.2–96 kHz		176.4–192 kHz	
	AVB In 1–28	AVB Out 1–28	AVB In 1–28	AVB Out 1–28	AVB In 1–28	AVB Out 1–28
	Pro Tools Carbon I/O		Pro Tools Carbon I/O		Pro Tools Carbon I/O	
	In 1–14	Out 1–14	In 1–14	Out 1–14	In 1–14	Out 1–14
	In 15–28	Out 15–28	In 15–28	Out 15–28	In 15–28	Out 15–28
1–2	Mic/Line/Inst 1–2	Mon L–R	Mic/Line/Inst 1–2	Mon L–R	Mic/Line/Inst 1–2	Mon L–R
3–4	Mic/Line 3–4	Line 1–2	Mic/Line 3–4	Line 1–2	Mic/Line 3–4	Line 1–2
5–6	Mic/Line 5–6	Line 3–4	Mic/Line 5–6	Line 3–4	Mic/Line 5–6	Line 3–4
7–8	Mic/Line 7–8	Line 5–6	Mic/Line 7–8	Line 5–6	Mic/Line 7–8	Line 5–6
9–10	ADAT 1 1–2	Line 7–8	ADAT 1 1–2	Line 7–8	ADAT 1 1–2	Line 7–8
11–12	ADAT 1 3–4	HP 1	ADAT 1 3–4	HP 1	—	HP 1
13–14	ADAT 1 5–6	HP 2	—	HP 2	—	HP 2
15–16	ADAT 1 7–8	HP 3	—	HP 3	—	HP 3
17–18	ADAT 2 1–2	HP 4	ADAT 2 1–2	HP 4	ADAT 2 1–2	HP 4
19–20	ADAT 2 3–4	ADAT 1 1–2	ADAT 2 3–4	ADAT 1 1–2	—	ADAT 1 1–2
21–22	ADAT 2 5–6	ADAT 1 3–4	—	ADAT 1 3–4	—	—
23–24	ADAT 2 7–8	ADAT 1 5–6	—	—	—	—
25–26	(25) Talkback (26) —	ADAT 1 7–8	(25) Talkback (26) —	—	(25) Talkback (26) —	—
27–28		ADAT 2 1–2		ADAT 2 1–2		ADAT 2 1–2

The following table is for the Pro Tools | Carbon: I/O device with these AVB configurations:

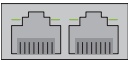
- 28x56 / 14x14 (44.1–192 kHz)
- 42x56 / 14x14 (44.1–192 kHz)

AVB Channels	44.1–96 kHz		176.4–192 kHz	
	AVB In 1–14	AVB Out 1–14	AVB In 1–14	AVB Out 1–14
	Pro Tools Carbon I/O	Pro Tools Carbon I/O	Pro Tools Carbon I/O	Pro Tools Carbon I/O
	In 1–14	Out 1–14	In 1–14	Out 1–14
1–2	Mic/Line/Inst 1–2	Mon L–R	Mic/Line/Inst 1–2	Mon L–R
3–4	Mic/Line 3–4	Line 1–2	Mic/Line 3–4	Line 1–2
5–6	Mic/Line 5–6	Line 3–4	Mic/Line 5–6	Line 3–4
7–8	Mic/Line 7–8	Line 5–6	Mic/Line 7–8	Line 5–6
9–10	ADAT 1 1–2	Line 7–8	ADAT 1 1–2	Line 7–8
11–12	ADAT 1 3–4	HP 1	—	HP 1
13–14	(13) ADAT 2 1 (14) Talkback	HP 2	(13) ADAT 2 1 (14) Talkback	HP 2

Appendix C: Pro Tools | Carbon Pin Out Diagrams

Ethernet, RJ45 Connector, Gigabit

Pro Tools | Carbon connects to your Pro Tools system using Ethernet. Pro Tools both controls the unit over Ethernet and streams audio over Ethernet using AVB (see [Connect Ethernet](#)).

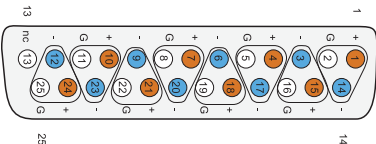


- Pin 1 BI_DA+
- Pin 2 BI_DA–
- Pin 3 BI_DB+
- Pin 4 BI_DC+
- Pin 5 BI_DC–
- Pin 6 BI_DB–
- Pin 7 BI_DD+
- Pin 8 BI_DD–

DB25 Pin Out Connections Channels 1–8

Connections for the 25-pin D-sub connector are listed in the table below. The pinning is according to the proprietary Tascam standard.

Pin number	Function	Pin number	Function
1	AIN/OUT 8 +	14	AIN/OUT 8 –
2	GND	15	AIN/OUT 7 +
3	AIN/OUT 7 –	16	GND
4	AIN/OUT 6 +	17	AIN/OUT 6 –
5	GND	18	AIN/OUT 5 +
6	DOU 2/6 +	19	GND
7	AIN/OUT 4 +	20	AIN/OUT 4 –
8	GND	21	AIN/OUT 3 +
9	AIN/OUT 3 –	22	GND
10	AIN/OUT 2 +	23	AIN/OUT 2 –
11	GND	24	AIN/OUT 1 +
12	AIN/OUT 1 –	25	GND
13	N.C.		



Appendix D: Network Port Usage

Required Access for Normal Operation

The following services are required for normal operation of Pro Tools | Carbon. The actual ports that are used in the reserved range may vary depending on the firmware version that is running on the device.

Port	Protocol	Purpose
5556	TCP	Diagnostics
6655-6670	TCP	Control and communication
5353	UDP	mDNS Discovery and connection

In addition, Pro Tool | Carbon requires an mDNS service to be running on the connected Mac host. mDNS is enabled by default on macOS.

Access for Customer Support

The following services are not required for normal operation of the device, but may be required for certain procedures requested by Avid customer support. Services that are disabled by default may be enabled when following instructions from Avid customer support.

Port	Protocol	Purpose	Enabled by Default
21	TCP	FTP for device firmware repair	No
22	TCP	SSH and SFTP for troubleshooting and firmware repair	Yes
23	TCP	Telnet for device access and diagnostics	No
80	TCP	HTTP for device status information and log collection	Yes

Network Security

Pro Tools | Carbon should not be made visible to network devices beyond the Mac host. Do not connect Pro Tools | Carbon to a bridged network interface on your Mac.



For Technical Support, visit
www.avid.com/support