AP4-CH31

Advanced Amplifier Interface for
Select Chrysler / Dodge Vehicles
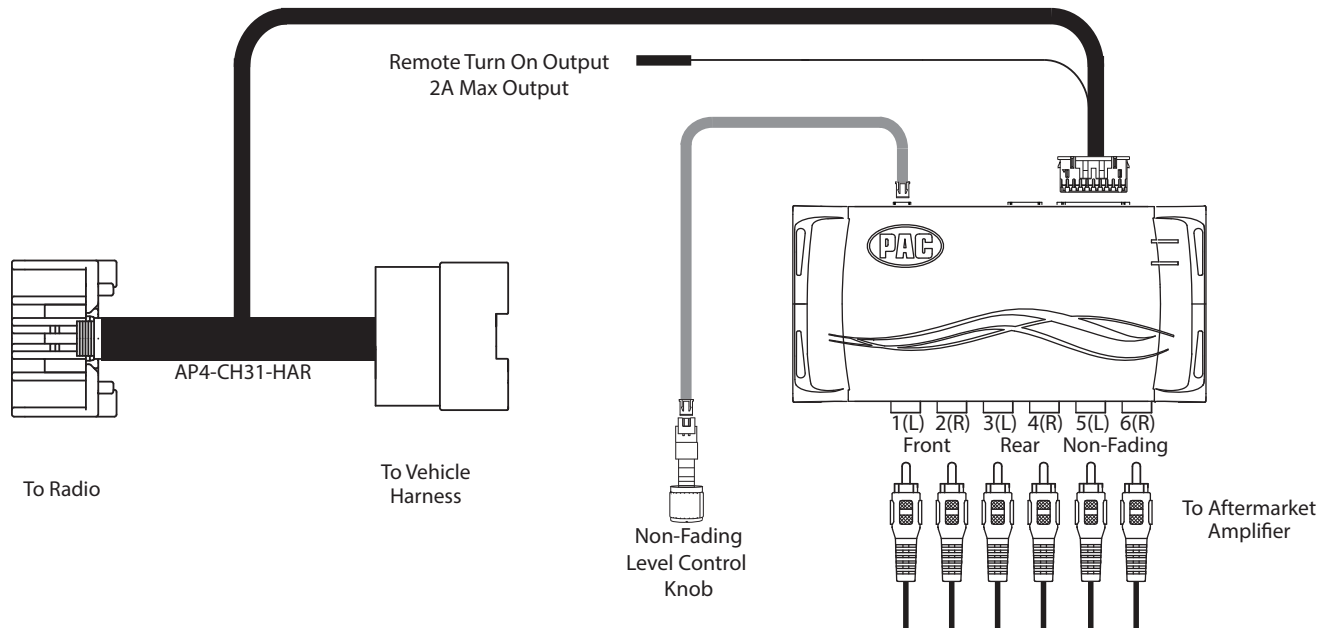
Introduction and Features

The AP4-CH31 provides a 6-channel pre-amp output for use with aftermarket audio equipment. Using the full range, fixed level head unit output, in conjunction with CAN messages, the AP4-CH31 delivers a variable 5v RMS pre-amp output with fading, balance, equalization, and level control capabilities. The module also retains all audio from other vehicle features such as factory Navigation Prompts, Bluetooth, uConnect, and parking sensor chimes. A data controlled remote amplifier turn on wire is also provided by the AP4-CH31. When used in conjunction with the APA-TOS1 (sold separately), the module can provide a variable 2-channel fiber optic digital audio output (TOSLINK).
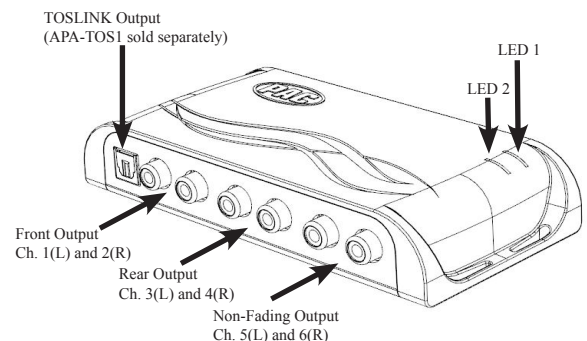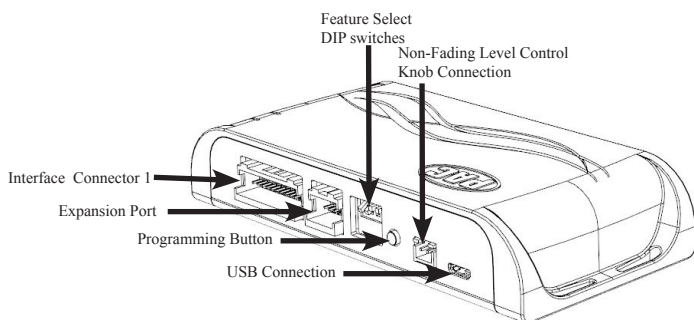
Important Notes

1. This interface is only compatible in vehicles equipped with a data-bus controlled premium sound system. To verify compatibility, look for an Alpine, Beats, or Harmon Kardon badge on the door speakers, center speaker, or factory sub woofer. If none of these brands are shown, check for the presence of a center speaker or sub woofer.
2. The factory amplifier must remain connected, and in the vehicle after the AmpPRO has been installed.
3. The remote output is rated at 2A of current. If more current is needed an external relay must be used.
4. Channels 5 and 6 are non-fading outputs. The output level of channels 5 and 6 can be controlled using the supplied level control knob.
5. The minimum volume level is set to 0 dB by default. If you are happy with this level in your particular application then additional adjustment is not required. The level control knob must be connected in order to manually adjust the minimum volume setting.
6. No adjustments can be made manually using the programming button, or the factory SWC when the module is connected to a PC.
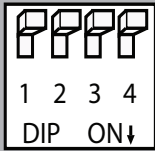
Wiring Connection Chart

Remote Turn On Output
2A Max Output

AP4-CH31-HAR

To Radio

To Vehicle Harness

Non-Fading Level Control Knob

1(L) 2(R) 3(L) 4(R) 5(L) 6(R)
Front   Rear   Non-Fading

To Aftermarket Amplifier

Module Layout

Feature Select DIP switches

Non-Fading Level Control Knob Connection

Interface Connector 1

Expansion Port

Programming Button

USB Connection

TOSLINK Output
(APA-TOS1 sold separately)

LED 1

LED 2

Front Output
Ch. 1(L) and 2(R)

Rear Output
Ch. 3(L) and 4(R)

Non-Fading Output
Ch. 5(L) and 6(R)

AP4-CH31

Installation

Set DIP switches to the ON position to activate the corresponding features.	
Set DIP switches to the OFF position for any features that are not desired.	**DIPSWITCH ON = DOWN**

Rear Chime Path	5v / 4v Preout	No Function	No Function
1	2	3	4

1. Remove factory radio.
2. Disconnect the main 22-pin factory harness from radio.
3. Connect AmpPRO harness to vehicle harness.
4. Connect AmpPRO harness to factory radio.
5. Set any feature DIP switches that apply to your install.
   a. Set DIP switch 1 on (down) to send all rear parking sensor chimes through the front channel. This should be used when the vehicle is equipped with rear parking sensors and you are either using the TOSLINK output, or running all cabin speakers off of the front outputs of the AP4.
   b. Set DIP switch 2 on (down) to lower the RCA output voltage to 4v. Leave DIP switch 2 off (up) to keep the RCA output voltage at 5v. See troubleshooting section on page 4 for more details.
   c. DIP switches 3 and 4 are not used.
6. If you are using the APA-TOS1 (sold separately) refer to the instructions included with that product for its installation.
7. Connect the AmpPRO harness to the module.
8. Connect the level control knob to the module and install in an accessible location.
9. Connect the signal cables and remote input from the aftermarket amplifier.

Setup and Configuration

1. Turn the ignition on. LED 1 on the interface will turn on and the +12v remote output will turn on.
2. Set the amp gain(s) to the desired level. We recommend using an oscilliscope and test tones to set the amp gain(s). Please refer to the MECP Advanced study guide (p. 360) if you are unfamiliar with this process.
3. Check volume, balance, fade and EQ settings.
4. If you would like to adjust the minimum volume, do so using one of the methods outlined below. If you are happy with the default level, no adjustment is necessary.

Manually Setting the Minimum Volume
If the minimum volume of the radio (factory radio volume level 1) is too loud, you can manually set the level of the minimum volume using either the programming button on the side of the interface or the factory SWC. If you would like to set the minimum volume using the AmpPRO PC app, please proceed to the AmpPRO PC app section on page 3.
PLEASE NOTE: Level control knob must be connected to module for either of the following methods.

Setting the minimum volume using the programming button
1. Start with the level control knob turned all the way down (counter-clockwise).
2. Set the amp gains to the desired level.
3. Set the volume on the factory radio to 1.
4. Press the programming button on the side of the interface once.
5. LED 1 will turn amber and the chimes will begin beeping every five seconds.
6. Turn the level control knob clockwise until the desired minimum volume level is reached.
7. You can now either press the programming button once or wait ten seconds to exit the settings.

Setting the minimum volume using factory buttons
1. Start with the level control knob turned all the way down (counter-clockwise).
2. Set the amp gains to the desired level.
3. Set the volume on the factory radio to 1.
4. Press and hold the Enter / Browse button on the factory radio (middle button on right knob) for approximately ten seconds.
   PLEASE NOTE: The radio may respond to the button press during this process, this is normal and has no effect on the AP4 operation.
5. LED 1 will turn amber and the chimes will begin beeping every five seconds.
6. Turn the level control knob clockwise until the desired minimum volume level is reached.
7. You can now either press the programming button once or wait ten seconds to exit the settings.
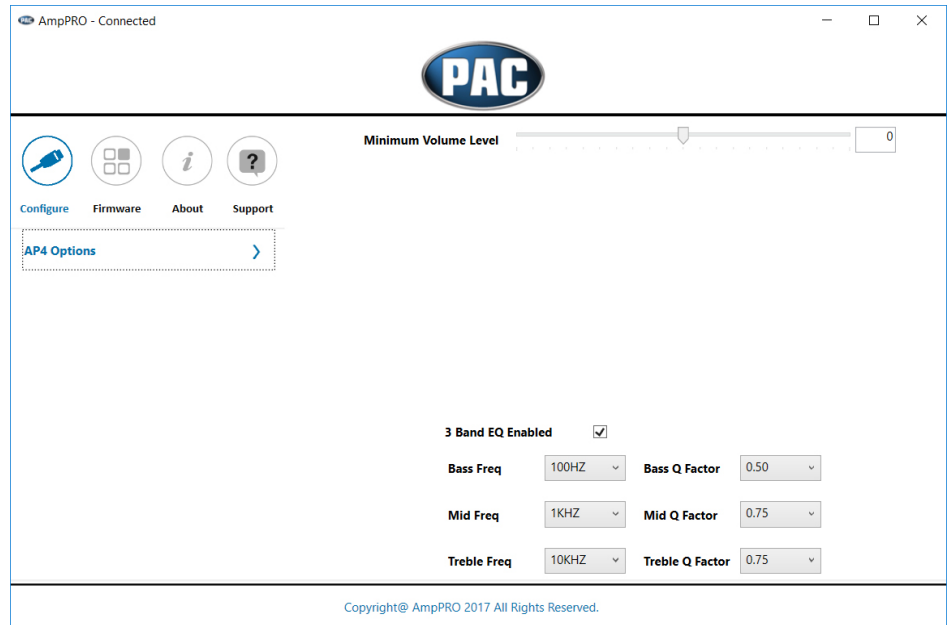
AmpPRO PC App

Use of the AmpPRO PC App allows you to do the following:

- Configure User Interface Options such as:
  - Minimum Volume Level
  - Enable / Disable factory EQ
  - Set Bass / Mid / Treble center frequencies and Q factor
- Update Product Firmware
- Read Firmware / Hardware Versions
- You can download the AmpPRO app at : **http://aampglobal.com/appdownloads**

PLEASE NOTE: These settings can be adjusted with the module installed in the vehicle or on the bench. However, it is recommended to make the adjustments with the module installed, and the factory radio on so that the changes can be heard.

Minimum Volume Level - This allows you to set the minimum volume level of the factory radio (factory radio volume level 1)

3 Band EQ Enabled - This allows you to enable / disable the 3 band factory EQ.

Bass / Mid / Treble Freq / Q Factor - This allows you to set the center frequency that will be adjusted when setting the 3 band factory EQ, as well as the Q Factor for each frequency. The Q Factor determines how many of the adjacent frequencies will be affected when adjusting the selected frequency. The lower the Q Factor, the more frequencies will be affected.

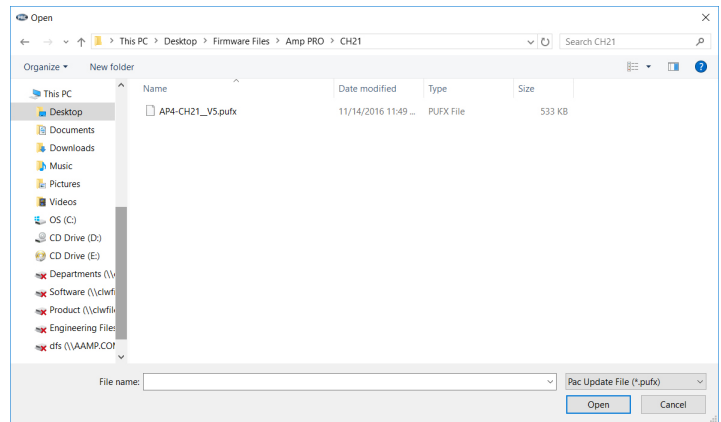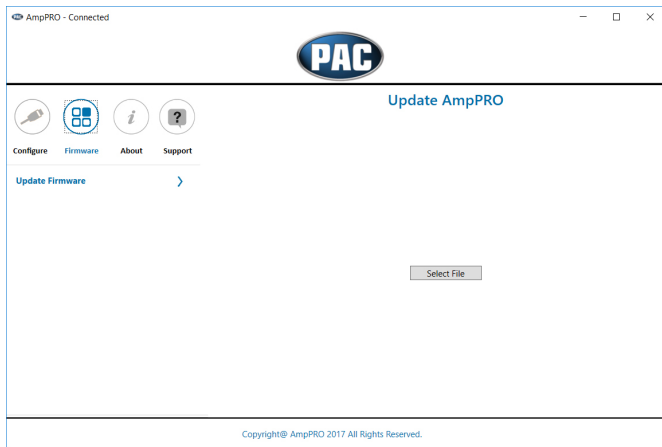| Available Frequencies and Q Factors					
Bass Frequency	60HZ	**Mid Frequency**	500HZ	**Treble Frequency**	7.5KHZ
	80HZ		1KHZ		10KHZ
	100HZ		1.5KHZ		12.5KHZ
	120HZ		2.5KHZ		15KHZ
Bass Q Factor	0.50	**Mid Q Factor**	0.75	**Treble Q Factor**	0.75
	1.00		1.00		
	1.50		1.25		
	2.00		1.50		1.25

AmpPRO PC App (cont.)

Firmware Updates

The AmpPRO app will also allow you to update the interface with new firmware as it becomes available. Please visit www.pac-audio.com or contact our tech support department to see if there is a firmware update for your interface.

Connect the interface to your PC and select "Firmware", then "Update Firmware". Now select "Select File". Finally, browse to the place where you saved the file and select it. This will begin the updating process. Once finished, disconnect the interface from the PC and resume normal operation.

Restoring Factory Settings

You can restore the interface to factory default settings by pressing and holding the programming button on the side of the module until the status LEDs start blinking red. Once the LEDs start blinking red, release the button.

This reset will restore the following settings to their factory defaults:
• Minimum volume level
• Enable / Disable factory EQ
• Factory EQ frequency
• Factory EQ Q factor

Troubleshooting

1. Hiss at high amp gain - Set feature DIP switch 2 to the on (down) position to lower the output voltage of the AP4 to 4v. If you still hear the hiss, lower your amp gains until the hiss is gone.
2. Cannot hear uConnect or nav voice - Use the volume knob while either of these voice prompts are active to adjust voice volume.
3. Low volume setting on radio is too loud - Set minimum volume using process outlined in Setup and Configuration or using the AmpPRO application.
4. If for any reason the AmpPRO module becomes unresponsive, or will not power up with the key on, you can always reset the interface by turning the key to the ignition position, then pressing and holding the Power button on the factory radio for 12 seconds until a tone is heard.

LED Legend		
	Action / Color	**During Normal Operation**
LED 1	Solid Red	Module Active
	Solid Green	Chime Volume Adjustment Mode
	Solid Amber	Minimum Volume Adjustment Mode
	Rapid Blink Any Color	DSP Activity
LED2	Blink Amber	USB Connection Detected
Both LEDs	Alternate Blinking Red	Performing Memory Reset