

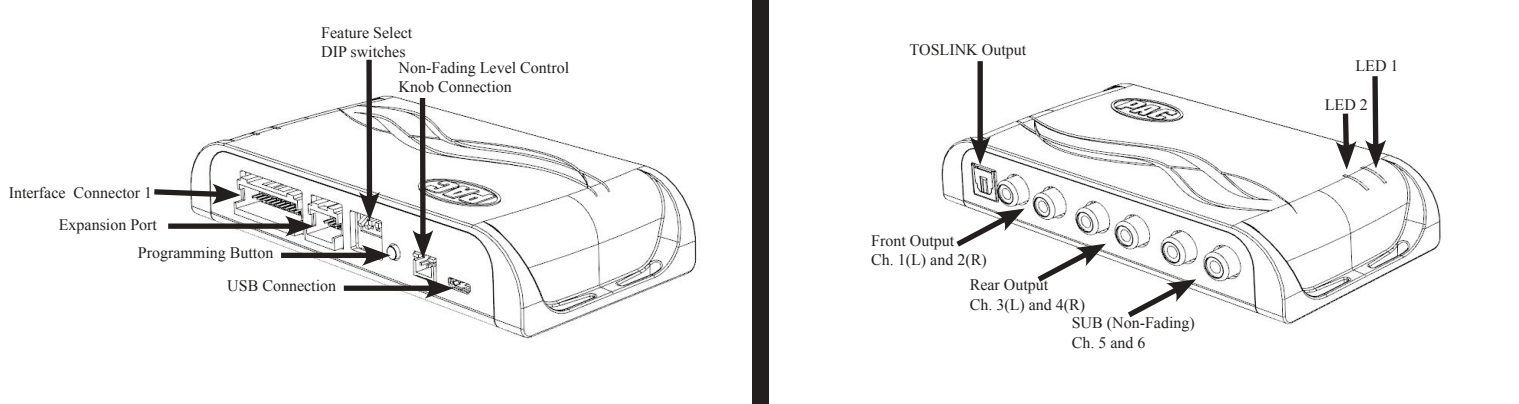
Introduction and Features

The AP4-GM81 provides a 6-channel pre-amp output for use with aftermarket audio equipment. The AP4-GM81 delivers a variable 5v RMS pre-amp output with fading, balance, equalization, and level control capabilities. The module retains all audio from other vehicle features such as factory navigation prompts, Bluetooth, OnStar, and parking sensor chimes. A data controlled remote amplifier turn on wire is provided by the AP4-GM81. The module provides a variable 2-channel fiber optic digital audio output (TOSLINK).

Important Notes

1. This interface is only compatible in vehicles with a BOSE factory amplifier (RPO code UQA or UQS).
2. The factory amplifier must be disconnected removed from the vehicle when 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. The remote output is active any time the vehicle data bus is active. Any vehicle interaction like opening a door or pressing a button on the key fob will activate the data bus.
5. Channel 5 & 6 are non-fading outputs. The output level of channels 5 & 6 can be controlled using the supplied level control knob.
6. When the non-fading level control knob is not connected to the AP4-GM81, the output level of channels 5 & 6 will default to 100 percent.
7. To adjust minimum volume without using the PC APP, the level control knob must be connected.
8. While adjusting the minimum volume with the USB cable plugged in, the level control knob will not function.
9. To adjust chime volume, the PC APP must be used.
10. Chime volume (Front & Rear) can be adjusted through OE Radio under "Settings > Vehicle > Comfort and Convenience > Chime Volume." Before making additional chime volume adjustments with the PC APP, set the OE volume to the middle.
11. The chime volume and minimum volume levels are set to a typical level by default. If you are happy with this level in your particular application, then additional adjustment is not required. Please refer to the Setup and Configuration section on page 4 for more details.
12. Front and rear chimes are independently adjustable to compensate for difference in power levels between front and rear installs.
13. The factory radio's speed controlled volume and surround sound mode are not supported by the AP4 outputs.
14. When using the TOSLINK output, all chimes must be routed through the front output by setting DIP switch 1 ON (down).
15. No adjustments can be made manually using the programming button, or the factory SWC, when the module is connected to a PC.
16. The AP4-GM81 is designed to be installed in the factory amplifier location, NOT behind the radio. It will replace the factory amplifier which will no longer be used.

Module Layout



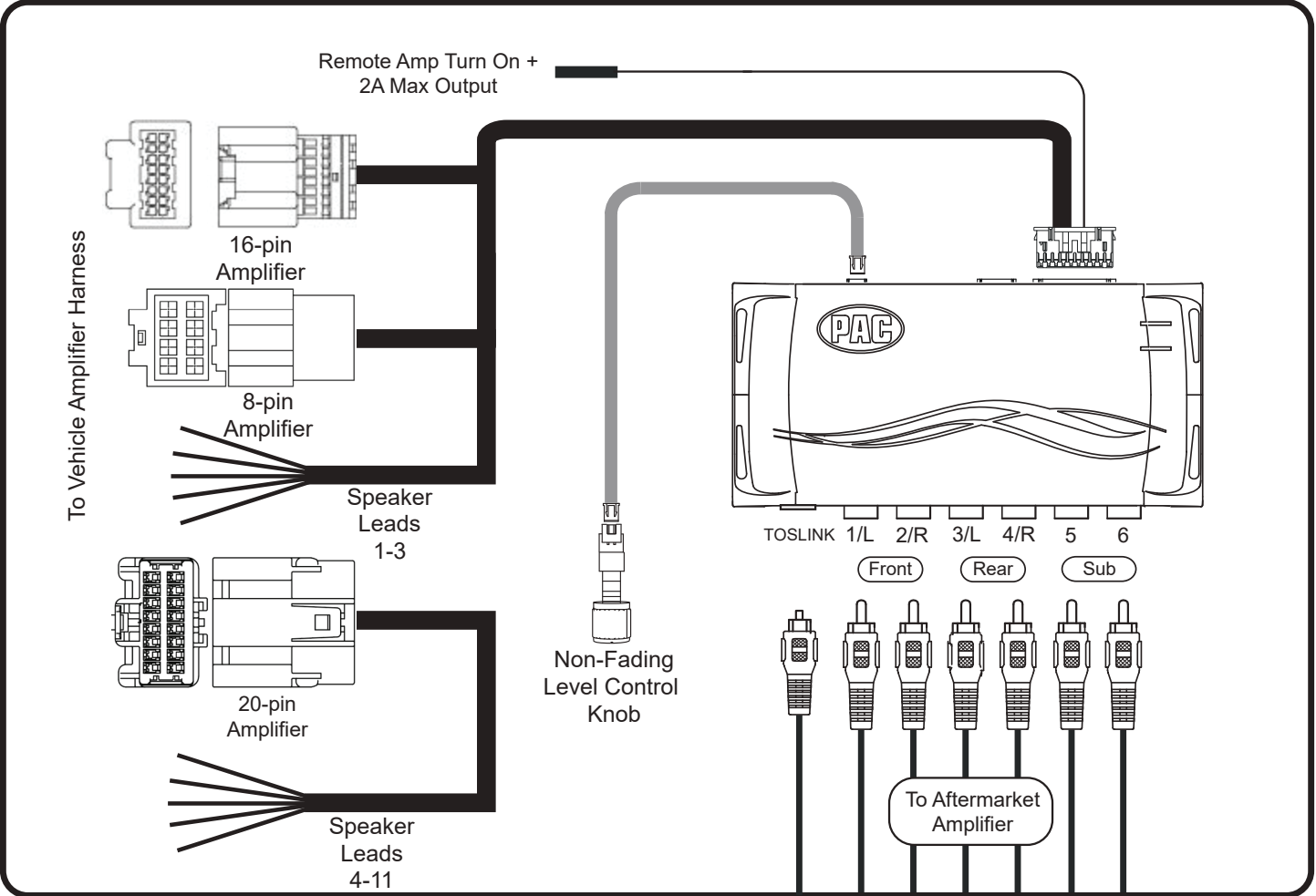
Installation

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.

Two Channel Mode	5v / 4v Preout	No Function	No Function
1	2	3	4

DIPSWITCH
ON = DOWN

Wiring Connection Chart



Speaker ID Chart

Please use this chart to identifying speakers in your vehicle using a tone generator to ensure proper connections and polarity. Not all application will use all wiring in this chart.

Speaker ID Chart	
Label on Harness	Speaker Location / Type
Speaker 1	
Speaker 2	
Speaker 3	
Speaker 4	
Speaker 5	
Speaker 6	
Speaker 7	
Speaker 8	
Speaker 9	
Speaker 10	
Speaker 11	



Installation

1. Access the factory amplifier.
2. Disconnect all harnesses from the factory amplifier.
3. Connect the AmpPRO harness to vehicle amplifier harness.
4. Set any feature DIP switches that apply to your install:
 - a. DIP switch 1 is used for two channel mode. In this mode, both the TOSLINK and front RCA outputs (1 and 2) become non-fading outputs. All rear chimes will also be routed through these outputs in two channel mode.
 - 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 the troubleshooting section on page 5 for more details.
 - c. DIP switch 3 & 4 are not used.
5. Connect the AmpPRO harness to the module.
6. Connect the level control knob to the module and install in an accessible location.
7. Connect the signal cables and remote output to the aftermarket amplifier.
8. Turn the vehicle off, shut the doors and lock the vehicle with the factory key fob. Wait 5 minutes.
9. After 5 minutes, turn vehicle back on, LED 1 on the interface will turn on and the +12v remote output will turn on.
10. Set the amp gain(s) to the desired level. We recommend using an oscilloscope and test tones to set the amp gain(s).
11. Check volume, balance, fade and EQ settings.
12. Check the chime volume levels for the front and rear chimes. If you are happy with the default levels, no adjustments are necessary. If you would like to adjust the chime volume or minimum volume, continue to the Setup and Configuration section below.

Setup and Configuration

Step 1: Set Minimum Volume

If the minimum volume of the radio (factory radio volume level 1) is not suitable, you can set the level using either the programming button on the side of the interface, steering wheel controls or PC app.

Setting minimum volume using the PC APP connected by USB

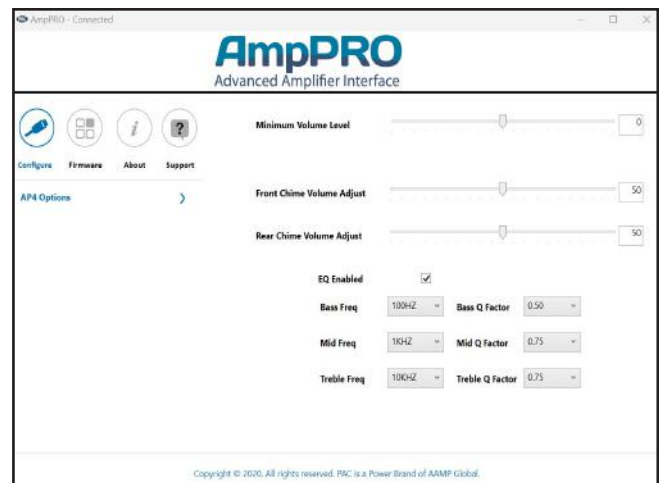
1. Set the volume on the factory radio to 1.
2. Adjust **"Minimum Volume Level"** slider to desired level.

Setting minimum volume using the programming button

1. Start with the level control knob turned all the way down (counter-clockwise).
2. Set the volume on the factory radio to 1.
3. Press the programming button on the side of the interface once.
4. LED 1 will turn amber and the chimes will begin sounding every five seconds.
5. Turn the level control knob clockwise until the desired minimum volume level is reached.
6. Wait ten seconds to complete.

Setting minimum volume with factory steering wheel controls

1. Start with the level control knob turned all the way down (counter-clockwise).
2. Set the volume on the factory radio to 1.
3. Press and hold the track up button on the radio steering wheel controls for approximately ten seconds. **PLEASE NOTE:** The radio will respond to the SWC commands during this process, this is normal and has no effect on the AP4 operation.
4. The chimes will begin sounding every five seconds.
5. Turn the level control knob clockwise until the desired minimum volume level is reached.
6. Wait ten seconds to complete.



Step 2: Chime Volume Adjust

If Chime volume adjustment through OE Radio **"Settings > Vehicle > Comfort and Convenience > Chime Volume"** does not give a suitable range, adjust through PC APP. The front and rear can be adjusted independently to account for differences in aftermarket system gains.

1. Set chime volume to the mid point on OE radio before adjusting sliders in PC APP. This will allow later adjustment up or down in the OE radio.
2. By default the front and rear chimes are set at **55**.
3. Adjust **"Chime Volume Adjust"** slider to desired level for front and rear chimes.

Setup and Configuration (continued)

Step 3: OE EQ Settings

EQ Enabled - This allows you to enable / disable the 3 band factory radio 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. See below for available frequencies and Q Factors.

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		1.25
	1.50		1.25		1.50
	2.00		1.50		1.25

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:

- Chime volume levels
- Minimum volume level
- Factory EQ Settings

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 OnStar or Nav Prompts - Use the OE volume knob, or headunit volume knob while either of these are active to adjust the volume.
3. Cannot hear chimes - Set chime volume using process outlined in Setup and Configuration.
4. Low volume setting on radio is too loud - Set minimum volume using process outlined in Setup and Configuration.

LED Legend		
Action / Color		During Normal Operation
LED 1	Solid Red	Module Active
	Solid Amber	Minimum Volume Adjustment Mode
	Rapid Blink Any Color	DSP Activity
LED 2	Sold Green	A2B Active
	Blink Amber	USB Connection Detected
Both LEDs	Alternate Blinking Red	Performing Memory Reset
	Alternate Blinking Amber	Preparing to sleep

Firmware Updates

The AmpPRO PC 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". Select "Select File", and browse to location file was saved, and select it. This will begin the updating process. Once finished, disconnect the interface from the PC and resume normal operation. Even if the green bar has reached the end, you must wait for the 'Update Complete' message before disconnecting the interface from the PC.

