

## Introduction and Features

The AP4-GM71 provides a 6-channel pre-amp output for use with aftermarket audio equipment. The AP4-GM71 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-GM71. The module provides a variable 2-channel fiber optic digital audio output (TOSLINK).

## Important Notes

1. This interface is only compatible in vehicles with BOSE that are equipped with IOS, IOT and IOK Infotainment.
2. The factory amplifier must be disconnected and 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-GM71, 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. If 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." Set OE volume to the middle before adjusting any volume adjustments.
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-GM71 is designed to be installed in the factory amplifier location, NOT behind the radio. It will replace the factory amplifier and it will no longer be used.

## Speaker ID Chart

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

**"Speaker 1"** in some vehicles is also the main power for the OEM amplifier. **Please test with a multi meter before using tone generator to avoid damage to vehicle or wiring.**

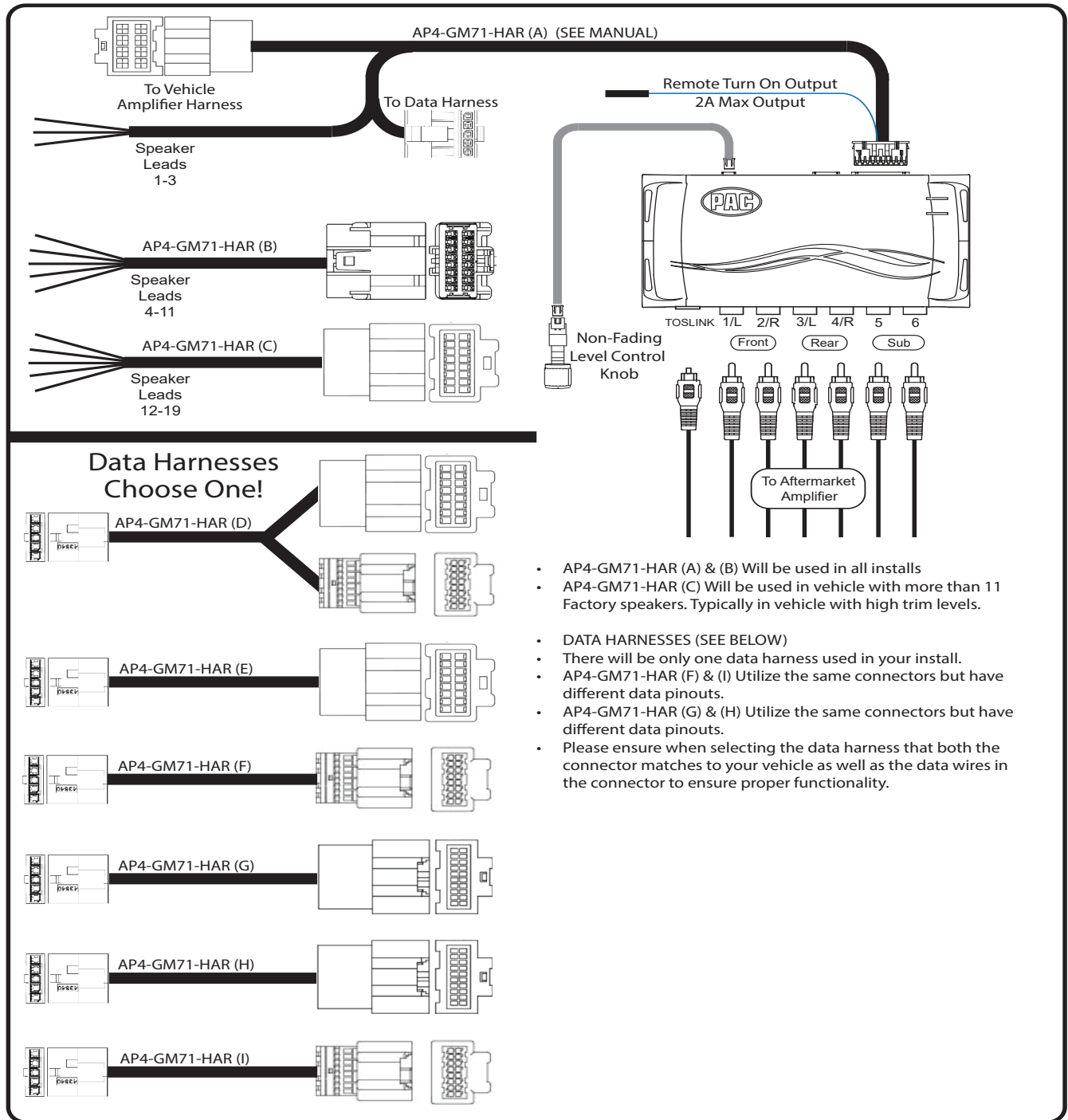
Speaker ID Chart			
Label on Harness	Speaker Location / Type	Label on Harness	Speaker Location / Type
* Speaker 1 *	SEE NOTE ^	Speaker 11	
Speaker 2		Speaker 12	
Speaker 3		Speaker 13	
Speaker 4		Speaker 14	
Speaker 5		Speaker 15	
Speaker 6		Speaker 16	
Speaker 7		Speaker 17	
Speaker 8		Speaker 18	
Speaker 9		Speaker 19	
Speaker 10		Notes	



# AP4-GM71

Advanced Amplifier Interface for  
General Motors

## Wiring Connection Chart



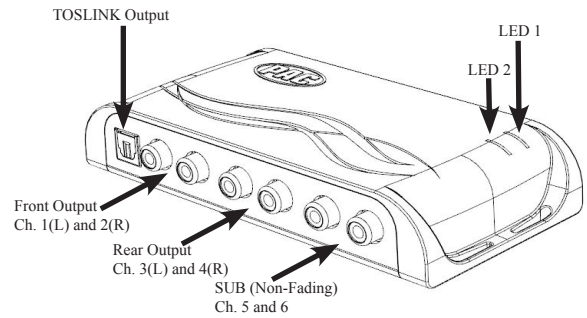
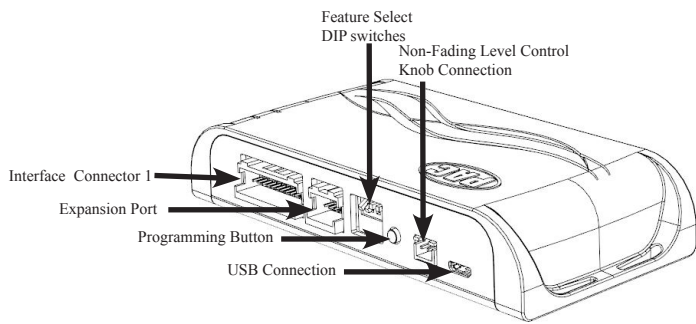
- AP4-GM71-HAR (A) & (B) Will be used in all installs
- AP4-GM71-HAR (C) Will be used in vehicle with more than 11 Factory speakers. Typically in vehicle with high trim levels.
- DATA HARNESSES (SEE BELOW)
- There will be only one data harness used in your install.
- AP4-GM71-HAR (F) & (I) Utilize the same connectors but have different data pinouts.
- AP4-GM71-HAR (G) & (H) Utilize the same connectors but have different data pinouts.
- Please ensure when selecting the data harness that both the connector matches to your vehicle as well as the data wires in the connector to ensure proper functionality.



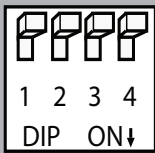
# AP4-GM71

## Advanced Amplifier Interface for General Motors

### 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

1. Access the factory amplifier (see location info to the right).
2. Disconnect all of the factory connectors from the factory amplifier as it must remain disconnected.
3. Connect the AmpPRO harness to vehicle amplifier harness.
4. Make sure you are using the right data harness marked (D-I). Failing to do so will result in no operation. See page 2.
5. 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.
6. Connect the AmpPRO harness to the module.
7. Connect the level control knob to the module and install in an accessible location.
8. Connect the signal cables and remote input from the aftermarket amplifier.
9. Turn the vehicle off, shut the doors and lock the vehicle with the factory key fob. Wait 5 minutes. After 5 minutes, turn vehicle back on, and proceed with setup and configuration.

Vehicle	Factory Amplifier Location
Silverado / Sierra	Back wall of cab
Silverado / Sierra HD	
Colorado / Canyon	Behind glove box on right side
Tahoe / Yukon	Left rear quarter in cargo area
Suburban / Escalade	
Camaro	Under center area of trunk
Corvette	Under passenger front carpet
Equinox / Traverse / Blazer / Acadia / Terrain	Under front center console access from passenger side
Malibu / Trailblazer	Right rear quarter in trunk
Cadillac ATS / CTS / XT4 / XTS	Right rear quarter in trunk
Cadillac CT6 / CT5	Left rear quarter in trunk

### Initial Start

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 oscilloscope and test tones to set the amp gain(s). Please refer to the MECAP 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 chime volume or minimum volume, do so using one of the methods outlined on the next page. If you are happy with the default levels, no adjustments are necessary.



### Setup and Configuration

Please ensure your aftermarket amplifier gains are set to your desired level before proceeding.

#### 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

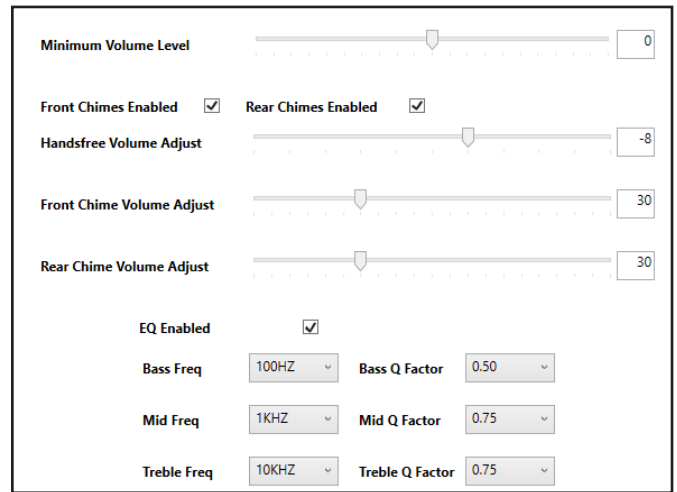
1. Set the volume on the factory radio to 1.
2. Adjust "**Minimum Volume Level**" slider to desired level

##### 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: Handsfree Volume Adjust (PHONE CALLS)

If volume control on OE radio during a call does not give suitable listening range, adjust the "**Handsfree Volume Adjust**" slider.

1. Ensure **MINIMUM VOLUME LEVEL** was set before proceeding.
2. If an ECHO is heard by the call recipient then lower the "**Handsfree Volume Adjust**" slider.
3. By default this is set at **-8** to ensure there is no phone call **ECHO** in a typical install.

#### Step 3: 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 **30**.

#### Step 4: OE EQ Settings

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

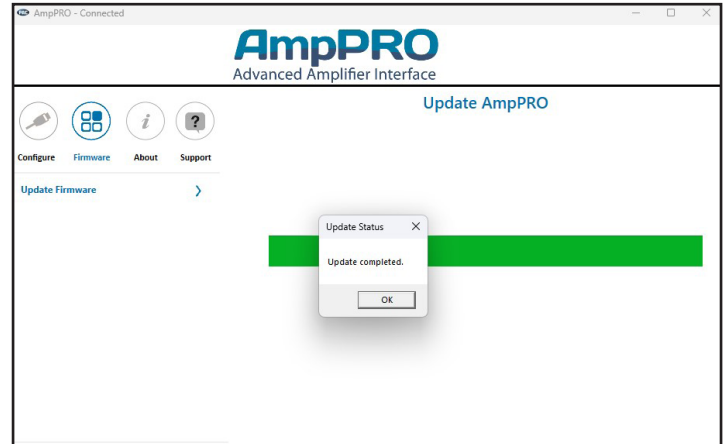
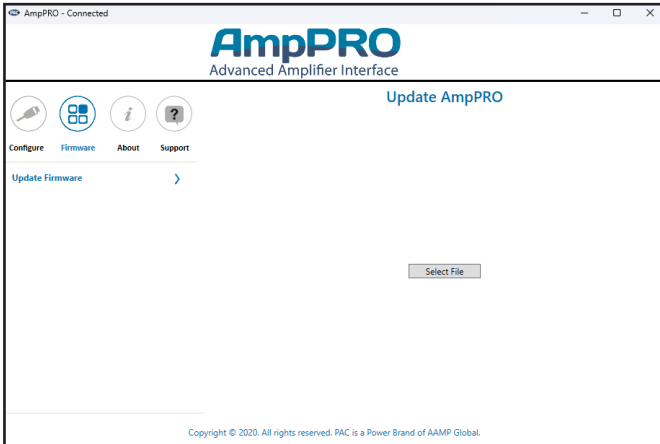
**Bass / Mid / Treble Freq / Q Factor** - This allows you to set the center frequency that will be adjusted when setting the 3 band factory EQ, as well as the Q Factor for each frequency. The Q Factor determines how many of the adjacent frequencies will be affected when adjusting the selected frequency. 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		
	2.00		1.50		

### 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](http://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.



### 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
- Handsfree volume
- 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 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.
5. ECHO on phone calls - Set Handsfree Volume Adjust using the process outlines in Setup and Configuration.

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