AP4-GM71

Advanced Amplifier Interface for
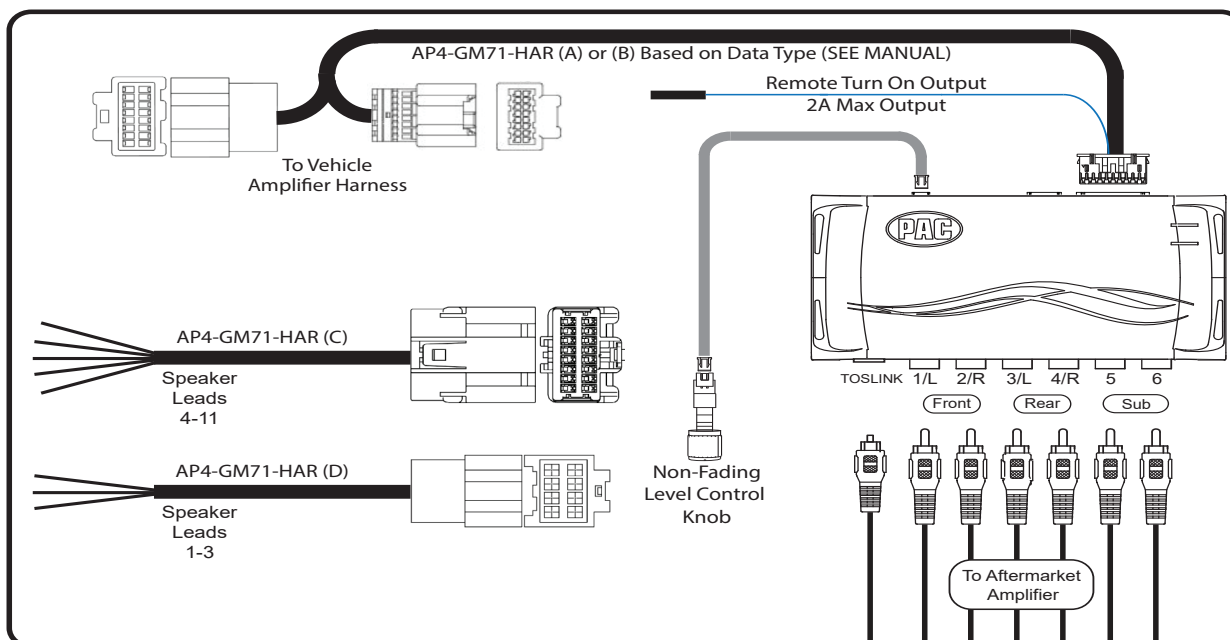General Motors

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 also 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 also provided by the AP4-GM71. The module also 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 disconected 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. Channel 5 & 6 are a non-fading outputs. The outputs level of channel 5 & 6 can be controlled using the supplied level control knob.
5. 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.
6. To adjust mininum volume or chime volume without using the PC APP the level control knob must be connected.
7. The chime volume and minimum volume levels are set to a sutiable 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 2 for more details.
8. The factory radio's speed controlled volume and surround sound mode are not supported by the AP4 outputs.
9. When using the TOSLINK output, all chimes must be routed through the front output by setting DIP switch 1 on (down).
10. No adjustments can be made manually using the programming button, or the factory SWC when the module is connected to a PC.
11. 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.
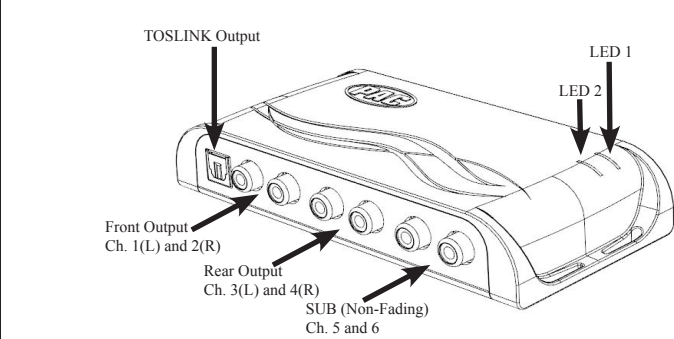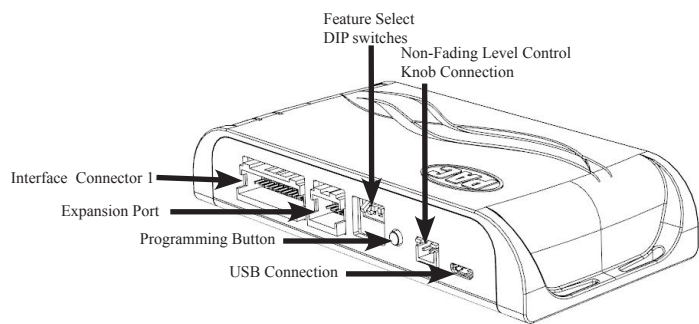
Wiring Connection Chart

AP4-GM71-HAR (A) or (B) Based on Data Type (SEE MANUAL)
Remote Turn On Output
2A Max Output

To Vehicle Amplifier Harness

AP4-GM71-HAR (C)
Speaker Leads 4-11

AP4-GM71-HAR (D)
Speaker Leads 1-3

Non-Fading Level Control Knob

TOSLINK 1/L 2/R 3/L 4/R 5 6
Front Rear Sub

To Aftermarket Amplifier

AP4-GM71

Module Layout

Feature Select DIP switches
Non-Fading Level Control Knob Connection
Interface Connector 1
Expansion Port
Programming Button
USB Connection

TOSLINK Output
LED 1
LED 2
Front Output Ch. 1(L) and 2(R)
Rear Output Ch. 3(L) and 4(R)
SUB (Non-Fading) Ch. 5 and 6

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

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 disconected.
3. Connect the AmpPRO harness to vehicle amplifier harness.
4. Make sure you are using the right data harness marked (A) or (B). Failing to do so will result in failed operation.
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 keyfob. Wait 5 minutes. After 5 minutes, turn vehicle back on, and proceed with setup and configuration.

Vehicle	Factory Amplifier Location
Silverado / Sierra Silverado / Sierra HD	Back wall of Cab
Colorado / Canyon	Behind glove box on right side
Tahoe / Yukon Suburban / Escalade	Left rear quarter in cargo area
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	Left rear quarter in trunk

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 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.
5. Please ensure your aftermarket amplifier gains are set to your desired level before proceeding to the next steps.

Setup and Configuration (cont.)

Manually Setting the Chime Volume (optional)
You can manually set the level of the factory chime using the programming button on the side of the interface, or the steering wheel controls. If you would like to set the chime volume using the AmpPRO PC app please proceed to the AmpPRO PC app section. **PLEASE NOTE: Knob must be connected to module for either of the following methods.**

Setting the chime volume using the programming button
1. Start with the level control knob turned all the way down (counter-clockwise).
2. Press the programming button on the side of the interface.
3. LED 1 will turn green and the chimes will begin continuously sounding.
4. Turn the level control knob clockwise until the desired chime level is reached.
5. You can now either press the programming button twice or wait ten seconds to exit the settings.

Setting the chime volume using the radio steering wheel controls
1. Start with the level control knob turned all the way down.
2. Press and hold the track down button on the steering wheel panel 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.
3. The chimes will begin continuously sounding.
4. Turn the level control knob clockwise until the desired chime level is reached.
5. Wait ten seconds to exit the settings.

Manually Setting the Minimum Volume (optional)
If the minimum volume of the radio (factory radio volume level 1) not sutiable, you can manually set the level of the minimum volume using either the programming button on the side of the interface or the radio steering wheel controls. If you would like to set the minimum volume using the AmpPRO PC app, please proceed to the AmpPRO PC app section.
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 volume on the factory radio to 1.
3. Press the programming button on the side of the interface twice.
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. You can now either press the programming button once or wait ten seconds to exit the settings.

Setting the minimum volume using the 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 exit the settings.

AmpPRO PC App

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

- Configure Interface Options such as:
  - Minimum Volume Level
  - Chime Volume Level
  - Enable / Disable AP4 Chimes
  - 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 :
  PAC-Audio.com

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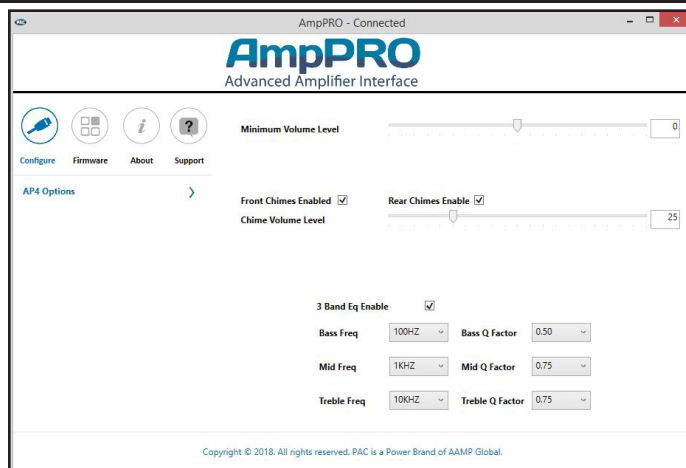
AmpPRO PC App (cont.)

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).

Chime Volume Level - This allows you to set the volume of the AP4 chimes (ex: park sensors).

Front / Rear Chimes Enabled - This allows you to enable / disable AP4 chimes (ex: park sensors).

3 Band 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**	
	1.00		1.00		0.75
	1.50		1.25		
	2.00		1.50		1.25

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". 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.

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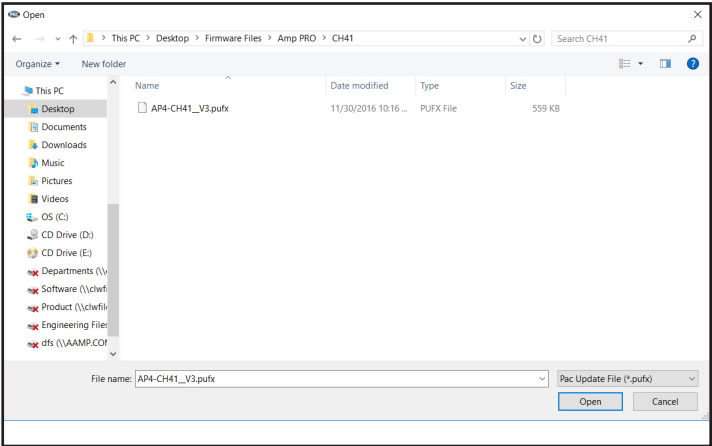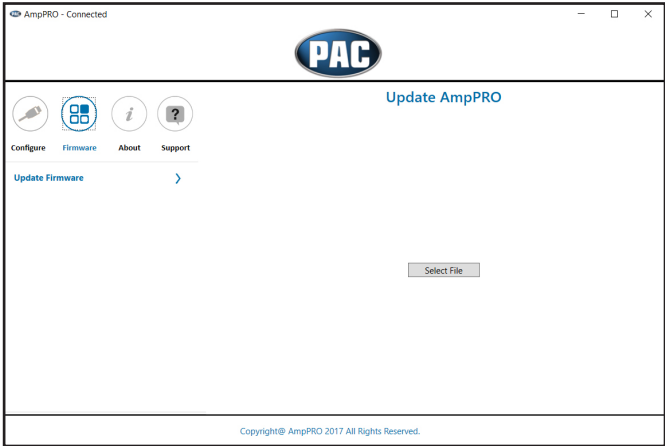
Restoring Factory Settings

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 level
• Enable / Disable Factory Chimes
• 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 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, or using the AmpPRO app. If you still do not hear chimes, be sure that you are using the remote output from the AP4 to turn on your aftermarket amplifier.
4. Low volume setting on radio is too loud - Set minimum volume using process outlined in Setup and Configuration, or using the AmpPRO PC app.

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