APSUB-GM61

Advanced Subwoofer Amplifier Interface
for Select General Motors Vehicles

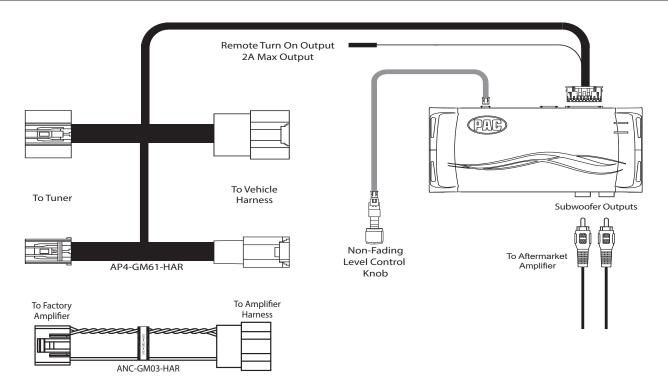## Introduction and Features

The APSUB-GM61 provides a 2-channel non-fading output for use with an aftermarket amplifier and subwoofer. Using the full range, fixed level head unit output, in conjunction with MOST data, the APSUB-GM61 delivers a variable 5v RMS pre-amp output with bass equalization and level control capabilities. The signal has a 350Hz / 24dB Linkwitz-Riley low pass filter applied. A data controlled remote amplifier turn on wire is also provided by the APSUB-GM61.

Important Notes

1. This interface is compatible in vehicles with or without Bose that are equipped with IO4, IO5 or IO6 model radios.
2. In some non-Bose radios, there may be absence of audio from the left channel when in AM, FM, and XM sources. The APSUB-GM61 is capable of providing a work-around by passing the right channel audio through the left and right channels when in the AM, FM and XM sources. All other sources will still offer left and right separation. See the troubleshooting section on page 6 for additional details.
3. If originally equipped, the factory amplifier must remain in the vehicle, and connected after the APSUB-GM61 has been installed.
4. The remote output is rated at 2A of current. If more current is needed, an external relay must be used.
5. When the bass level control knob is not connected to the APSUB-GM61, the output level will default to 100%.
6. The level control knob must be connected in order to manually adjust the minimum volume settings.
7. The minimum volume level is set to a default value. 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 APSUB-GM61 outputs.
9. No adjustments can be made manually using the programming button or the factory SWC when the module is connected to a PC.
10. If the vehicle is equipped with Active Noise Cancellation (ANC), the ANC can be disabled using the included ANC-GM03 harness. See page 3.

The aftermarket amplifier must have a very solid ground and the amplifier power/ground connections should be made before connecting the RCA's or Remote Turn On to the APSUB-GM61
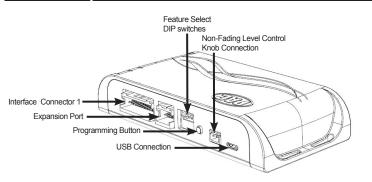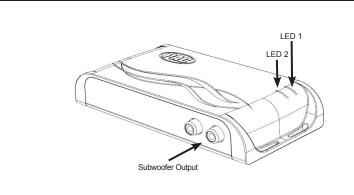
Wiring Connection Chart

Remote Turn On Output
2A Max Output

To Tuner

To Vehicle Harness

AP4-GM61-HAR

Non-Fading Level Control Knob

Subwoofer Outputs

To Aftermarket Amplifier

To Factory Amplifier

To Amplifier Harness

ANC-GM03-HAR

Rev: V1
Date: 091120

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Module Layout

- Feature Select DIP switches
- Non-Fading Level Control Knob Connection
- Interface Connector 1
- Expansion Port
- Programming Button
- USB Connection
- LED 1
- LED 2
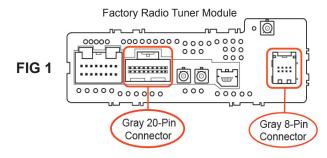- Subwoofer Output

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

1 2 3 4
DIP ON↓

No Function	5v / 4v Preout	Troubleshooting	No Function
1	2	3	4

1. Access the factory tuner module (see location info to the right).
2. Disconnect the Gray 20-pin factory harness and the Gray 8-pin harness from the tuner module (Figure 1).
3. Connect the APSUB harness to vehicle harness.
4. Connect the APSUB harness to factory tuner module.
5. Set any feature DIP switches that apply to your install. 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.
6. Connect the APSUB harness to the APSUB module.
7. Connect the level control knob to the module and install in an accessible location.
8. After the aftermarket amplifier power/ground connections are made, connect the signal cables and remote input from the aftermarket amplifier to the APSUB.
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	Tuner Module Location
Cadillac CT6	Back Passenger Sidewall of Trunk
Cadillac (others)	Above Passenger Kick Panel
Chevrolet Corvette	Passenger Footwell on Firewall
Chevrolet Impala Chevrolet Camaro	Above Passenger Kick Panel
Full/Mid Size Trucks	Behind Radio Display
Full Size SUV	Behind Radio Display, Lower Dash
Chevrolet Equinox Chevrolet Traverse GMC Acadia GMC Terrain	Behind Glove Box- By Passenger Kick Panel

Factory Radio Tuner Module

FIG 1

Gray 20-Pin Connector

Gray 8-Pin Connector

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 oscilloscope 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 on the next page. If you are happy with the default levels, no adjustments are necessary.

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Setup and Configuration (cont.)

Manually Setting the Minimum Volume (optional)
If the minimum volume of the radio (factory radio volume level 1) is too loud or too quiet, you can manually set the level of the minimum volume using either the programming button on the side of the interface or the radio dash panel 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 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 sounding 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 the factory dash panel controls
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 track up button on the radio dash panel 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 APSUB-GM61 operation.
5. LED 1 will turn amber and the chimes will begin sounding every five seconds.
6. Turn the level control knob clockwise until the desired minimum volume level is reached.
7. You can now wait ten seconds to exit the settings.

Active Noise Cancellation (ANC) Bypass

When adding a subwoofer to a vehicle equipped with ANC, the ANC system will attempt to cancel out the bass frequencies being generated by the aftermarket subwoofer. This results in unwanted "noise" being produced by the factory speakers.

Identifying ANC in the Vehicle
GM vehicles with multiple microphones located in the door panels or headliner locations will usually be equipped with ANC. If you are unsure, the ANC-GM03 can be installed with no negative effect on vehicles not equipped with ANC.

Bypassing the ANC Signal

1. Access the factory amplifier (see location info to the right).
2. Disconnect the 16-pin factory harness from the amplifier.
3. Plug in the ANC-GM03 harness into the amplifier.
4. Connect the 16-pin factory harness to the ANC-GM03.

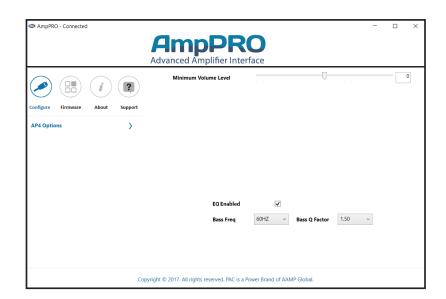| Vehicle	Amplifier Location
Chevrolet Equinox Chevrolet Traverse GMC Acadia GMC Terrain	Front of Center Console
Cadillac CT6 Chevrolet Camaro Chevrolet Corvette	Under Trunk Floor
Cadillac ATS Chevrolet Impala Chevrolet Malibu	Passenger Side of Trunk
Cadillac Escalade Chevrolet Suburban Chevrolet Tahoe GMC Yukon / XL	Driver Side Rear Quarter Panel
Chevrolet Silverado GMC Sierra	Behind Rear Seat Back

Note: Some models are not included in this table because ANC is not an available option for those vehicles.

TO AMPLIFIER   TO AMPLIFIER HARNESS

APSUB-GM61

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 Center Frequencies and Q Factor
- Update Product Firmware
- Read Firmware / Hardware Versions
- You can download the AmpPRO app at :
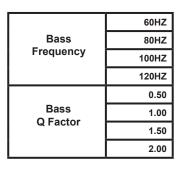   **https://pac-audio.com/app-downloads/**

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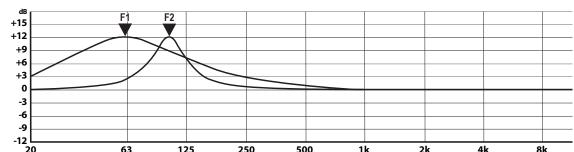
Minimum Volume Level - This allows you to set the minimum volume level of the factory radio (factory radio volume level 1).

EQ Enabled - This allows you to enable / disable the bass band factory EQ from adjusting the APSUB output.

Bass Freq / Q Factor - This allows you to set the center frequency that will be adjusted when using the bass band on the factory EQ, as well as the Q Factor for the 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. Note: This setting only affects the output of the APSUB and does not change the way that the factory EQ adjusts the factory speakers.

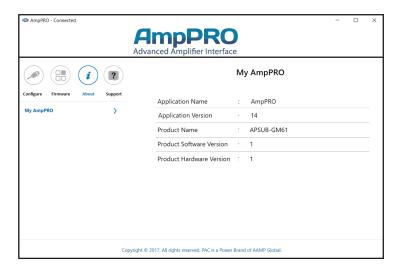| Bass Frequency	
	60HZ
	80HZ
	100HZ
	120HZ

Bass Q Factor	
	0.50
	1.00
	1.50
	2.00

F1: 60Hz Center Frequency | 0.50 Q Factor   F2: 100Hz Center Frequency | 2.00 Q Factor

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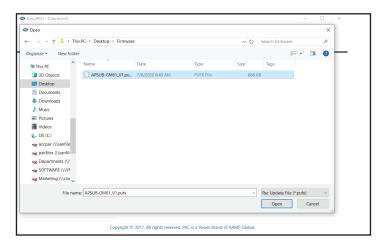## AmpPRO PC App (cont.)

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.

To view Product Software and Hardware Version, connect the interface to your PC and select "About".

To update the firmware, 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 for 10 seconds 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
- Radio Tuner Setting (when set by using the Home button). See Troubleshooting section 3 for more information.

Troubleshooting

1. Low volume setting on radio is too loud - Set the minimum volume using process outlined in Setup and Configuration, or using the AmpPRO PC app.
2. If for any reason the APSUB 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 or by pressing and holding the reset button on the side of the APSUB module for 10 seconds (until the LEDs alternate flashing red).
3. No audio out of the left channel when in AM, FM or XM bands (only seen in non-Bose applications) - If you have access to the APSUB-GM61, flip DIP switch 3 down (on). If you do not have access to the APSUB-GM61, press and hold the Home button (on the radio control panel) for 12 seconds until 2 chimes are heard through the radio. After this setting is enabled, when in AM, FM, or XM sources, the left channel audio is a duplicate of the right channel audio. The other audio sources will not be affected and will still have true stereo separation.

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	Blinking Amber	USB Connection Detected
Both LEDs	Alternate Blinking Red	Performing Memory Reset

Technical Support

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PAC

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