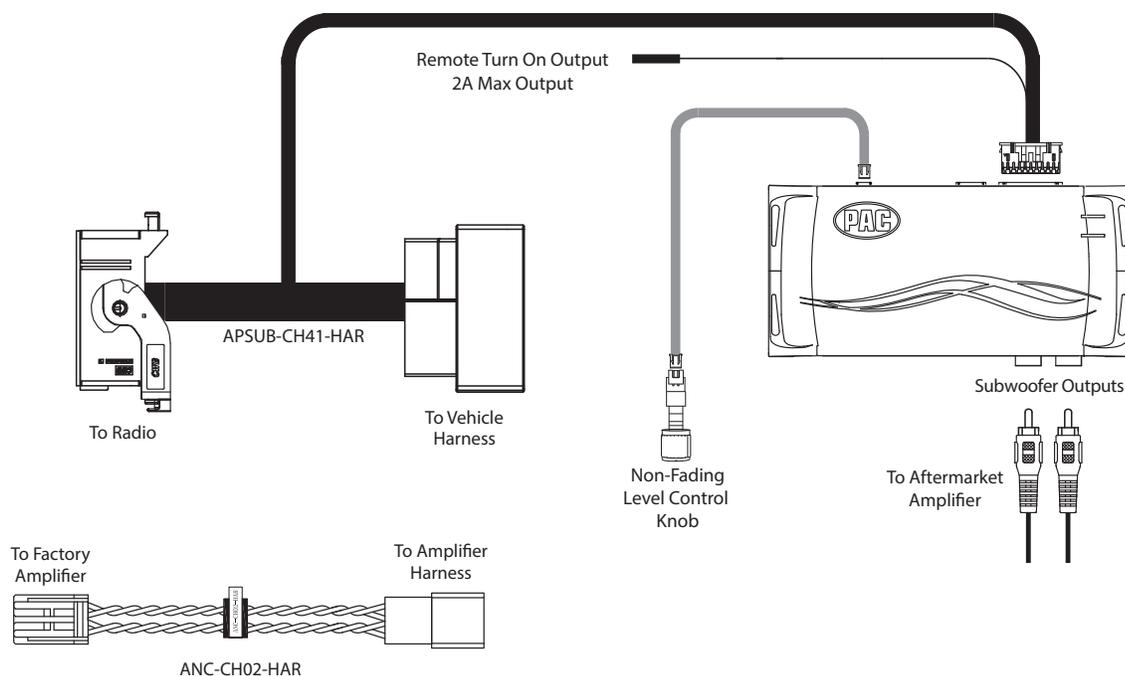# APSUB-CH41

Introduction and Features

The APSUB-CH41 provides a 2-channel non-fading pre-amp output for use with an aftermarket amplifier and subwoofer. Using the full range, fixed level head unit output, in conjunction with CAN messages, the APSUB-CH41 delivers a low pass 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-CH41.

Important Notes

1. These instructions only apply to R1.1.4.6 or later revisions of the APSUB-CH41.
2. This interface is only compatible in vehicles equipped with a data-bus controlled amplified sound system. To verify compatibility, look for an Alpine, Beats, or Harmon Kardon badge on the door speakers, center speaker, or factory subwoofer. If none of these brands are shown; check for the presence of a center speaker or subwoofer.
3. The factory amplifier must remain connected, and in the vehicle after the APSUB-CH41 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. The subwoofer outputs are non-fading. The output level of the subwoofer channel can be controlled using the supplied level control knob. If the level control knob is not connected the output level will default to 100%.
6. The minimum volume level is set to a 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 3 for more details.
7. The level control knob must be connected in order to manually adjust the minimum volume setting.
8. No adjustments can be made manually using the programming button or the factory SWC when the module is connected to a PC.
9. If the vehicle is equipped with Active Noise Cancellation (ANC), the ANC can be disabled using the included ANC-CH02 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-CH41
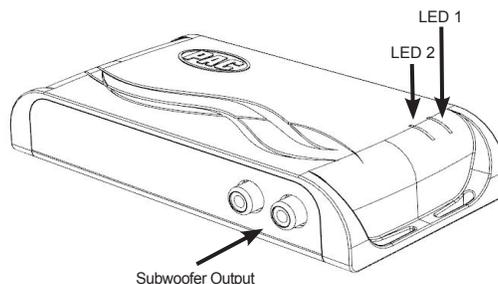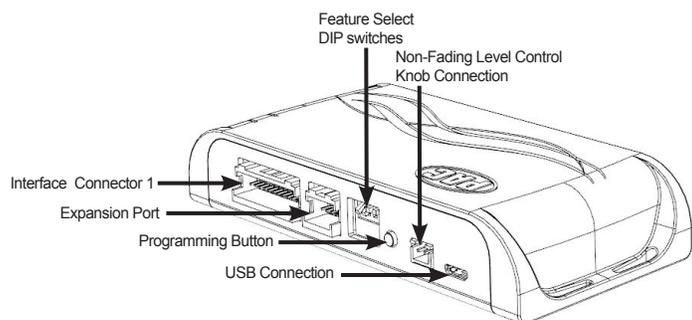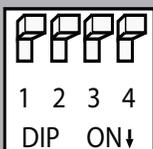
Wiring Connection Chart

Remote Turn On Output
2A Max Output

APSUB-CH41-HAR

To Radio

To Vehicle Harness

Non-Fading Level Control Knob

Subwoofer Outputs

To Aftermarket Amplifier

To Factory Amplifier

To Amplifier Harness

ANC-CH02-HAR

APSUB-CH41

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	No Function	No Function
1	2	3	4

1. Remove factory radio.
2. Disconnect the main 52-pin factory harness connector from radio.
3. Connect APSUB harness to vehicle harness.
4. Connect APSUB harness to factory radio.
5. Set any feature DIP switches that apply to your install.
   a. 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.
   b. DIP switches 1, 3, and 4 are not used.
6. Connect the APSUB harness to the 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. Reconnect any additional harnesses removed from the radio.
10. Turn the vehicle on and complete the "Radio Reset Procedure" (see page 6 for more information)
    a. Make sure the radio is fully booted and LED 1 is on. Press and hold the "Programming Button" until the LEDs alternate flashing amber, then release.
    b. The LEDs will alternate flashing green and the radio will re-boot
11. Once the radio is fully booted, turn the vehicle off, close the doors and let the vehicle sit for 10 minutes

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.

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 down button on the factory SWC (Back left of steering wheel) 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 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.

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
Vehicles with multiple microphones located in the door panels or headliner locations will usually be equipped with ANC. If you are unsure, the ANC-CH02 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 10-pin factory harness from the amplifier.
3. Plug in the ANC-CH02 harness into the amplifier.
4. Connect the 10-pin factory harness to the ANC-CH02.

Vehicle	Amplifier Location
Jeep Gladiator Jeep Wrangler JL RAM Truck 2500+	Driver Side of Dash
RAM Truck 1500	Under Driver Seat
Chrysler Pacifica Jeep Cherokee	Passenger Side of Dash
Dodge Durango* Jeep Grand Cherokee*	Driver Side Rear Quarter Panel

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

TO AMPLIFIER   TO AMPLIFIER HARNESS

*On some Grand Cherokee and Durango models, the vehicle may be equipped with a factory amplifier and a separate ANC module and the ANC-CH02 will not fit into any connector on the amplifier. The ANC module will be behind the Passenger Side Rear Quarter Panel. Please contact tech support if you have one of these vehicles for further instructions on how to disable the ANC system.
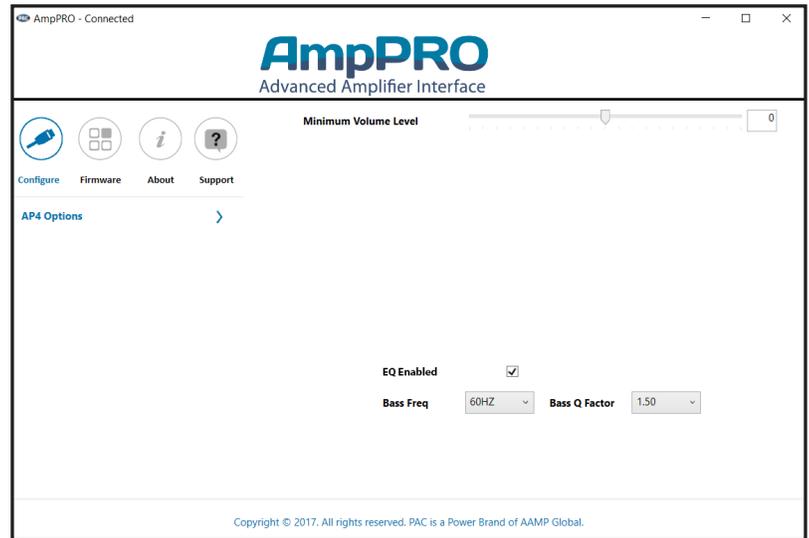
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APSUB-CH41

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 setting 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**
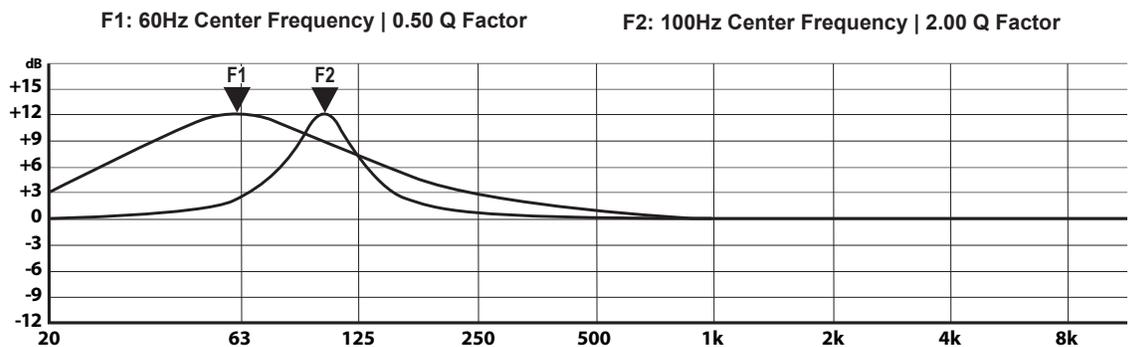
AmpPRO PC App (cont.)

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. The updates can be found on the product page under the "Firmware / Revisions" tab.

To view Product Software and Hardware Version, connect the interface to your PC and select "About".
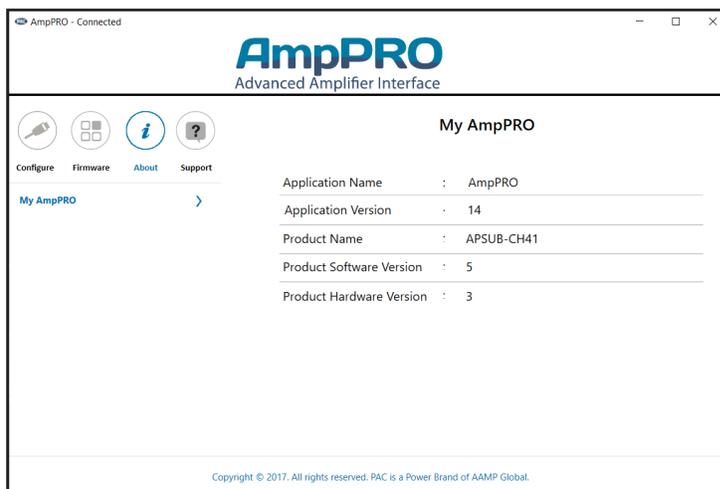
To update the firmware, connect the interface to your PC and select "Firmware", then "Update Firmware". Now select "Select File". Finally, browse to the place where you saved the file and select it. This will begin the updating process. Once finished, disconnect the interface from the PC and resume normal operation.
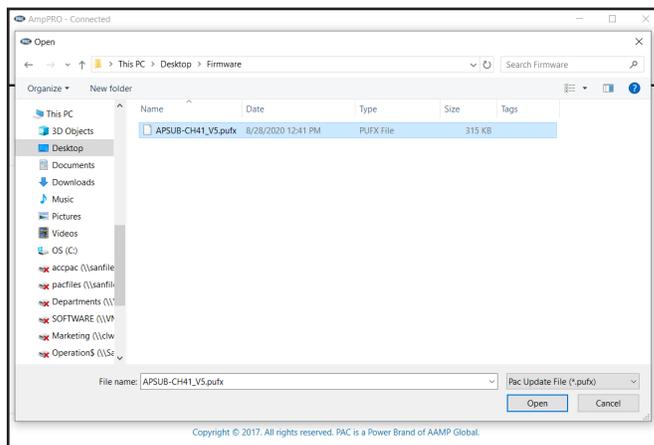
Radio Reset Procedure

The Radio Reset Procedure is used to speed up the installation process or when OEM features are lost after installation. We recommend doing this procedure during the AmpPRO installation. ("Installation," Step 10)
1. With the radio on (LED 1 red), press and hold the programming button until the LEDs are alternating flashing amber.
2. Release the programming button (you have 5 seconds before it moves to the next function)
3. The LEDs will start alternating flashing green and the radio will visibly restart.
In vehicles that do not support this reset, the LEDs will not flash amber.

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

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 reset the interface by turning the key to the ignition position, then pressing and holding the Volume Down button on the factory steering wheel controls for 12 seconds until a tone is heard or by pressing and holding the reset button on the side of the APSUB module for 10 seconds (until the LEDs alternate flashing red).

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	Blink Amber	USB Connection Detected
Both LEDs	Alternate Blinking Red	**Programming Button Being Held**: Performing EPROM Reset **No Action From User**: Vehicle Data-Bus Going to Sleep
	Alternate Blinking Amber	**Programming Button Being Held:** Entering Radio Reset
	Alternate Blinking Green	Performing Radio Reset

Technical Support

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