

AP4-FD21

Amplifier Integration Interface for Ford

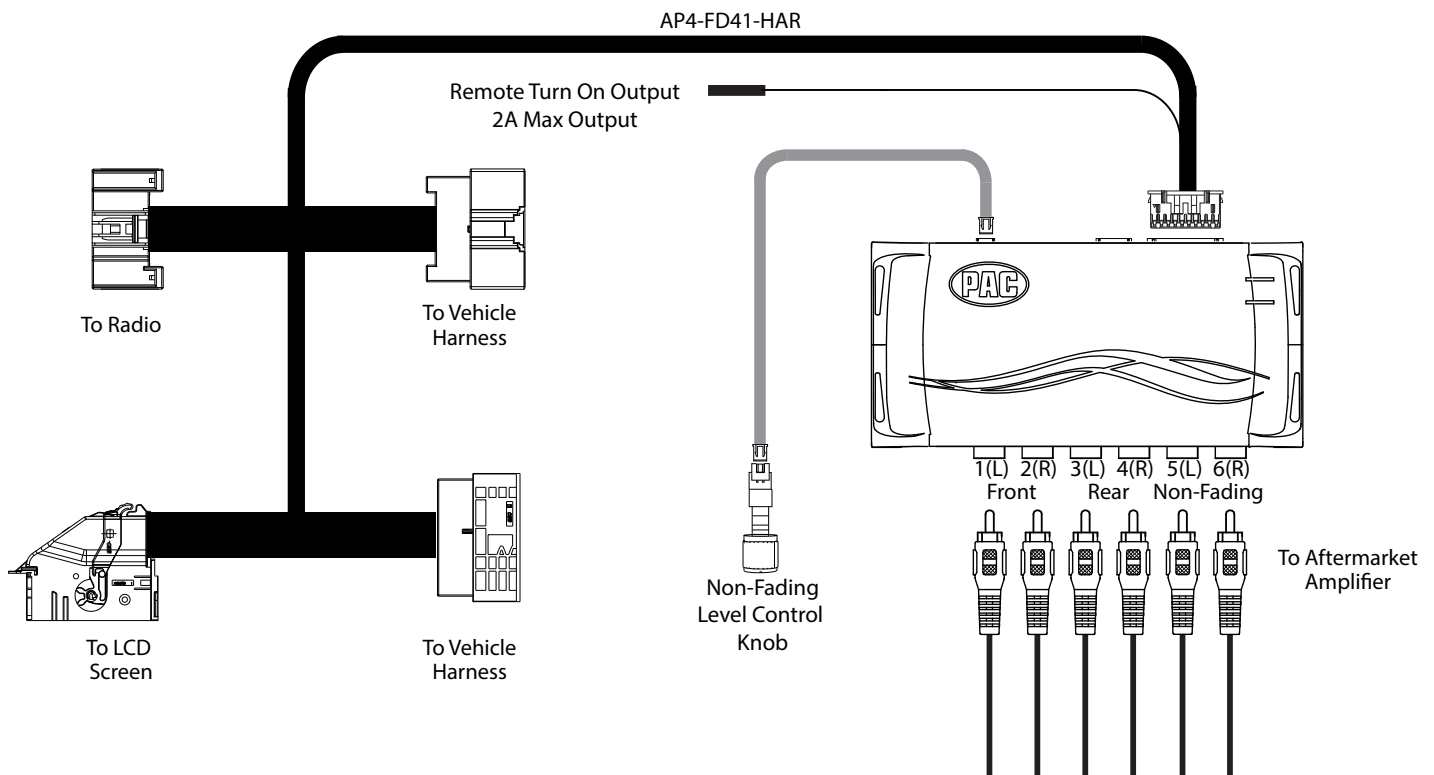
Introduction and Features

The AP4-FD21 provides a 6-channel pre-amp output for use with aftermarket audio equipment. Using the full range, fixed level headunit output, in conjunction with CAN messages, the AP4-FD21 delivers a variable 5v RMS (max) pre-amp output with fading, balance, equalization, and level control capabilities. The module also retains all audio from other vehicle features such as factory Bluetooth, SYNC, and parking sensors. A data controlled remote turn on wire is also provided by the AP4-FD21. When used in conjunction with the APA-TOS1 (sold separately), the module can provide a variable 2-channel digital (TOSLINK,S/PDIF) audio output.

Important Notes

1. The remote output is rated at 2A of current. If more current is needed an external relay must be used.
2. The remote output may remain active once the key has been removed if the vehicle needs to pass chime or SYNC audio.
3. If all speakers have been disconnected from the factory amp, all chimes will then play through the speaker in the dash.
4. Channels 5 and 6 are non fading outputs. The output level of channels 5 and 6 can be controlled using the supplied level control knob.
5. The chime volume and minimum volume levels are set to 0 dB by default. If you are happy with these levels it is not necessary to make any adjustments. Please refer to the Setup and Configuration section on page 2 for more details.
6. **Ford Expedition, Taurus, and Focus:** You cannot enable/disable chimes. All chimes come through the speaker in the dash. However, the radio button chime is still generated by the AmpPRO, and can be turned off in the factory radio settings or by disabling the chimes in the AmpPRO app.
7. **Ford Focus:** You cannot use the steering wheel controls to activate the chime and minimum volume adjustment.
8. The level control knob must be connected in order to manually adjust the chime volume and minimum volume settings.
9. The factory radio's speed controlled volume and surround sound mode are not supported by the AP4 outputs.
10. No adjustments can be made manually using the programming button, or the factory SWC when the module is connected to a PC.

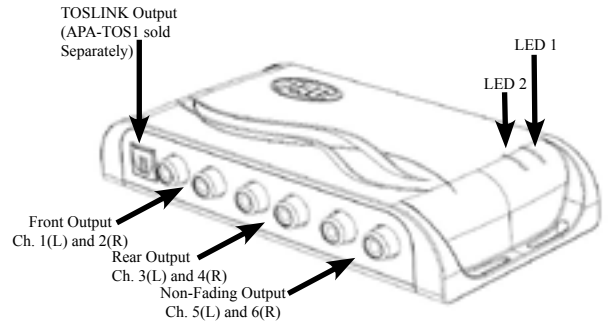
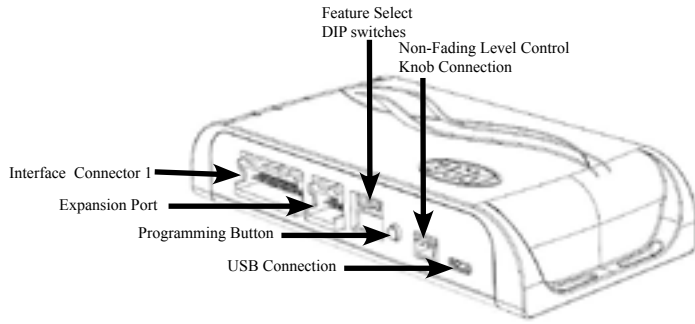
Wiring Connection Chart



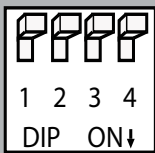
AP4-FD21

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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.



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

- Remove factory radio and LCD screen.
- Disconnect the 52-pin harness from the LCD screen and the 24-pin harness from the radio.
- Connect AmpPRO harnesses to vehicle harnesses.
- Connect AmpPRO harnesses to LCD screen and factory radio.
- Set any feature DIP switches that apply to your install.
 - DIP switch 1 is not used.
 - 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 troubleshooting section on page 4 for more details.
 - DIP switches 3 and 4 are not used.
- If you are using the APA-TOS1 (sold separately) refer to the instructions included with that product for its installation.
- Connect the AmpPRO harness to the module.
- Connect the level control knob to the module and install in an accessible location.
- Connect the signal cables and remote input from the aftermarket amplifier.
- Turn vehicle off, remove the key, lock the car using the factory keyfob, and let the car sit for 10 minutes. This will ensure that the vehicle data-bus goes to sleep and the AmpPRO will function as intended.

Setup and Configuration

- Turn the ignition on. LED 1 on the interface will turn on and the +12v remote output will turn on.
- 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 MECF Advanced study guide (p. 360) if you are unfamiliar with this process.
- Check volume, balance, fade and EQ settings.
- If you would like to adjust the chime volume or minimum volume, do so using one of the methods outlined below. If you are happy with the default levels, no adjustments are necessary.

Manually Setting the Chime Volume

You can manually set the level of the factory chime using either the programming button on the side of the interface or the factory SWC. If you would like to set the chime volume using the PC app please proceed to the PC App section on page 4.

PLEASE NOTE: Knob must be connected to module for either of the following methods.



Testing and Verification (cont)

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 beeping.
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 factory SWC (This method not available in Focus)

1. Start with the level control knob turned all the way down.
 2. 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 AP4 operation.
 3. LED 1 will turn green and the chimes will begin continuously beeping.
 4. Turn the level control knob clockwise until the desired chime level is reached.
- You can now either press the programming button twice or wait ten seconds to exit the settings.

Manually Setting the Minimum Volume

If the minimum volume of the radio (factory radio volume level 1) is too loud, you can manually set the level of the minimum volume using either the programming button on the side of the interface or the factory SWC. If you would like to set the minimum volume using the AmpPRO app, please proceed to the AmpPRO App section on page 4.

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 twice.
5. LED 1 will turn amber and the chimes will begin beeping 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 SWC (This method not available in Focus)

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 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 AP4 operation.
5. LED 1 will turn amber and the chimes will begin beeping 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.

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 SYNC or nav voice - Use the volume knob while either of these voice prompts are active to adjust voice volume. If you still do not hear voice prompts, be sure that the 10 pin connector is plugged in behind the radio.
3. Cannot hear chimes - Set chime volume using process outlined in Setup and Configuration or using the AmpPRO application. 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 Amp PRO application.

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

AmpPRO App

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

- Configure User Interface Options such as:
 - Minimum Volume Level
 - Chime Volume Level
 - Enable / Disable AP4 Chimes
 - Enable / Disable factory EQ
 - Bass / Mid / Treble boost frequencies and Q factor
- Update Product Firmware
- Read Firmware / Hardware Versions



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 (ie: park sensors).

Front / Rear Chimes Enabled - This allows you to enable/disable AP4 chimes (ie: park sensors). This is used when mixing factory and aftermarket speakers.



AmpPRO App (cont.)

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

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 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.

