



## DSP8.8 Manual

### Digital Signal Processor

#### FEATURES

- 8-channel high level inputs with signal sense turn on and load resistors
- 6-channel low level inputs
- Aux input (3.5mm, high level for external NAVI/hands-free)
- USB input for uncompressed hi-res audio from iOS/Android smart devices/thumb drives up to 24bit/192kHz
- Wi-Fi input for wireless connectivity and uncompressed hi-res audio streaming up to 24bit/192kHz
- Toslink optical hi-res audio input up to 24bit/192kHz
- 8-channel 5 volt low level outputs
- Real time DSP tuning via DSP8.8 configurator app for iOS, Android, Mac and Windows PC
- 240 bands of 1/3 octave parametric EQ adjustment (30 bands per channel)
- DRC Included (Dash Mount Remote Control): multi-function remote for source select, volume, sub level, 6 selectable presets, and custom illumination
- DSP8.8 RC remote control app for iOS and Android phones/tablets for source select, volume, sub level, and 6 selectable presets
- Dimensions (WxHxD): 7.5" x 2" x 7.75" 190.5 x 51 x 197mm

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DSP8.8

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## Product Overview

DSP8.8

The DSP8.8 is a very sophisticated digital signal processor, that has been engineered to enhance the acoustical performance of your audio system to its maximum capabilities. Zero compromises were made to ensure that only the highest quality components were used to make such a technologically advanced product. The heart of this high-resolution audio processor starts with a very powerful 64-bit DSP processor chip, supported by high quality 24-bit AD & DA converters. System versatility can be optimized through utilization of the 5 available audio source inputs. Lastly, what makes the DSP8.8 transcend above all other automotive DSPs is that the DSP8.8 is the **WORLD'S FIRST** Wi-Fi streaming DSP for any device using iOS, Android, Mac or Windows PC. This allows users full access of the most ergonomic, user friendly setup/tuning interface to date that makes tuning the DSP8.8 a very simple and precise process no matter if you're using a computer running on Windows PC, Mac OS, tablets or smartphones running on iOS, or Android operating systems.

### General Safety Instructions

Before starting installation of the DSP8.8, disconnect the vehicle's negative battery terminal to prevent damage to the unit, or possible fire and/or risk of injury. For the best performance and to ensure full warranty coverage, we highly recommend getting this product installed by an authorized PHOENIX GOLD dealer. Please only use the enclosed specified harnesses for proper installation of the DSP8.8. The use of other harnesses could result in permanent unwarrantable damage of the processor, and/or the source and connected high quality audio equipment. Mount the DSP8.8 using the supplied mounting screws to a very solid, well-ventilated area in the vehicle that allows proper cooling and is free of moisture and vibration.

### Box Contents:

- 1- DSP8.8 Processor
- 1- DRC/Wi-Fi module (Dash Remote Control)
- 1- Power Harness (4-pin)
- 1- High Level Input Harness (16-pin)
- 1- Aux Input Harness (6-pin)
- 1- Micro-USB Cable 5m (Wi-Fi to DSP)
- 1- RJ11 Remote Control Cable 5m (RJ11)
- 4 - Mounting Screws
- Quick Start Guide

DSP Features

DSP8.8

INPUTS

- 6 RCA preamp inputs
- 8 High level inputs w/ load resistors
- 1 Stereo aux input 3.5mm jack
- 1 Telephone/navigation input
- 1 Micro-USB input
- 1 SPDIF optical input

OUTPUTS

- 8 RCA preamp outputs
- 1 SPDIF optical output

Wi-Fi Functionality

- 2.4 GHz Wi-Fi Module built into the DRC
- Real time DSP configuration over Wi-Fi with smart device app for iOS and Android
- Real time DSP configuration over Wi-Fi with Mac OS software
- Real time DSP configuration over Wi-Fi with Windows PC software
- Audio streaming from Mac OS using Airplay
- Audio streaming from iOS using Airplay\*
- Audio streaming from Android devices using casting apps that UPnP/DLNA formats\*

*\*Hi-Resolution audio streaming apps required for 24-bit/92-196kHz audio files*

Micro-USB

- Real time DSP configuration through Windows PC software
- Uncompressed hi-res audio streaming from Windows PC
- Uncompressed hi-res audio streaming from iOS device with iOS Camera Connection Kit
- Uncompressed hi-res audio streaming from Android device with OTG adapter

APP/Software Features

- 30 band parametric equalizer per channel
- Selectable crossovers: High/Low/Band-Pass slopes 0 – 30dB, Butterworth/Bessel/Linkwitz Riley
- Time delay: automatic or manual setup 0 to 5 meters or 14.6ms adjustable in 0.01ms steps
- Large setup overview page for fast check of current system settings
- DSP configuration files can be saved, imported, exported, copied and reloaded
- Autoremove for customizable thresholds and timing for system on and off
- Input Vu Meters for RCA and high level sources
- Software controllable analog attenuation on preamp and high level inputs
- Customizable name/alias on each preset and output channel
- DRC backlight color customization through app and configuration software

Technical Specifications

DSP8.8

- Analog Devices 64Bit Sigma Digital Signal Processor Chip
- High Resolution Compatibility up to 24 bit/192kHz
- Burr Brown High Quality Analog to Digital Convertors
- Burr Brown High Quality Digital to Analog Convertor
- Burr Brown High Quality Operational Amplifiers
- Burr Brown High Quality Differential Rectifiers
- WIMA High Quality Polyester Output Capacitors
- ELNA High Quality RFS SILMIC II Miniature Silk Audio Capacitors
- Resonance Conversion Power Supply that Supports Start-Stop Vehicles

Technical Data

Signal-to-noise ratio (S/N) RCA input:	>103 dBA
Signal-to-noise ratio (S/N) AUX input:	>103 dBA
Signal-to-noise ratio (S/N) Toslink input:	>110 dBA
Signal-to-noise ratio (S/N) USB/Wi-Fi input:	>110 dBA
Channel separation digital inputs:	>95 dBA
Channel separation analog inputs:	>72 dBA
THD digital:	0.003%
THD analog:	0.01%
Frequency Response:	15 Hz – 25 kHz
Input impedance high level:	33 ohm
Input voltage high level:	max. 20 Vrms
Input impedance RCA:	>47 ohm
Input voltage RCA 0dB Attenuation:	max. 4 Vrms
Input voltage RCA MAX Attenuation:	max. 8 Vrms
Output impedance RCA:	50 ohm
Output voltage RCA:	max. 5 Vrms
USB input streaming bitrate:	24bit/192kHz
Wi-Fi input streaming bitrate:	24bit/192kHz
Toslink input bitrate:	24bit/96kHz
Toslink output up-sampling bitrate from analog inputs:	24bit/48kHz
Operating voltage:	6.5V - 16V DC
Current draw:	<400mA
Remote output current:	max 1.3 A
Dimensions: W x H X D	7.5" x 2" x 7.75" 190.5 x 51 x 197mm
Weight:	2.15 lbs. 1326 kg



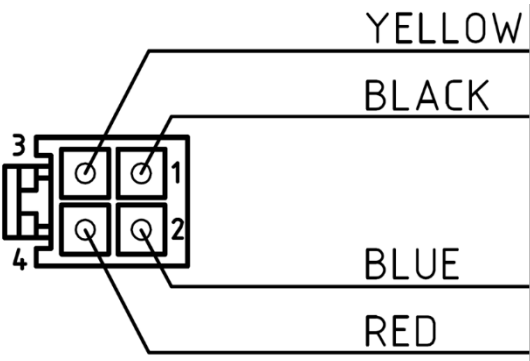


- 1. S/PDIF Toslink optical input
- 2. S/PDIF Toslink optical output
- 3. PC input Micro-USB Mac/Windows PC/Android OTG adapter/Apple iOS Camera Connection Kit
- 4. USB host port (thumb drive or hard drive)
- 5. DRC remote cable port
- 6. DRC Wi-Fi USB port
- 7. AUX input for 3.5mm
- 8. Status LED (red: error/clipping, green: operating/data, yellow: USB connection)
- 9. Power supply harness connector



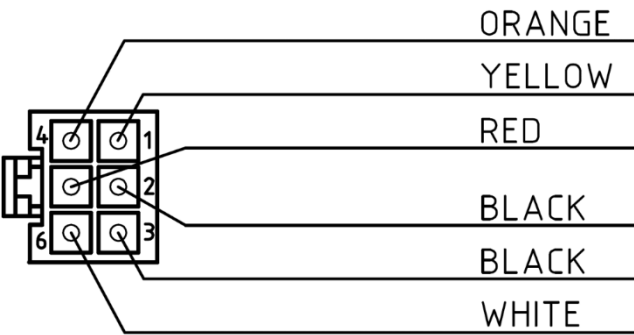
- 1. 8 RCA outputs
- 2. Aux input for phone/nav
- 3. 6 RCA inputs
- 4. 8 High level inputs w/ load resistors

POWER HARNESS



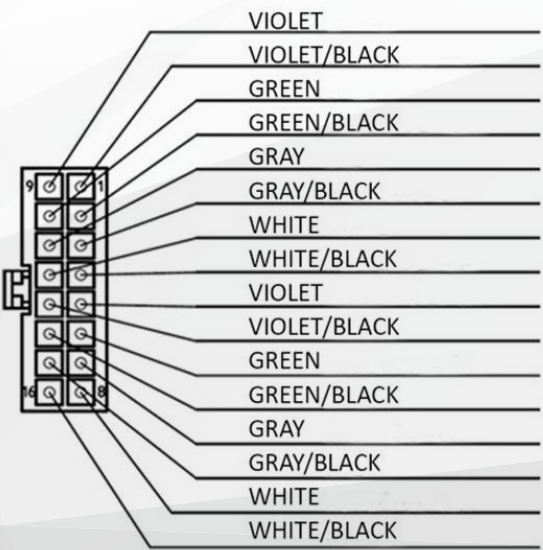
PIN	COLOR	FUNCTION
1	BLACK	GROUND
2	BLUE	REMOTE OUT
3	YELLOW	12v + BATTERY IN
4	RED	ACC/REMOTE IN

AUX INPUT HARNESS



PIN	COLOR	FUNCTION
1	YELLOW	PHONE MUTE
2	BLACK	CH 2 -
3	BLACK	CH 1 -
4	ORANGE	NAV MUTE
5	RED	CH 2 +
6	WHITE	CH 1 +

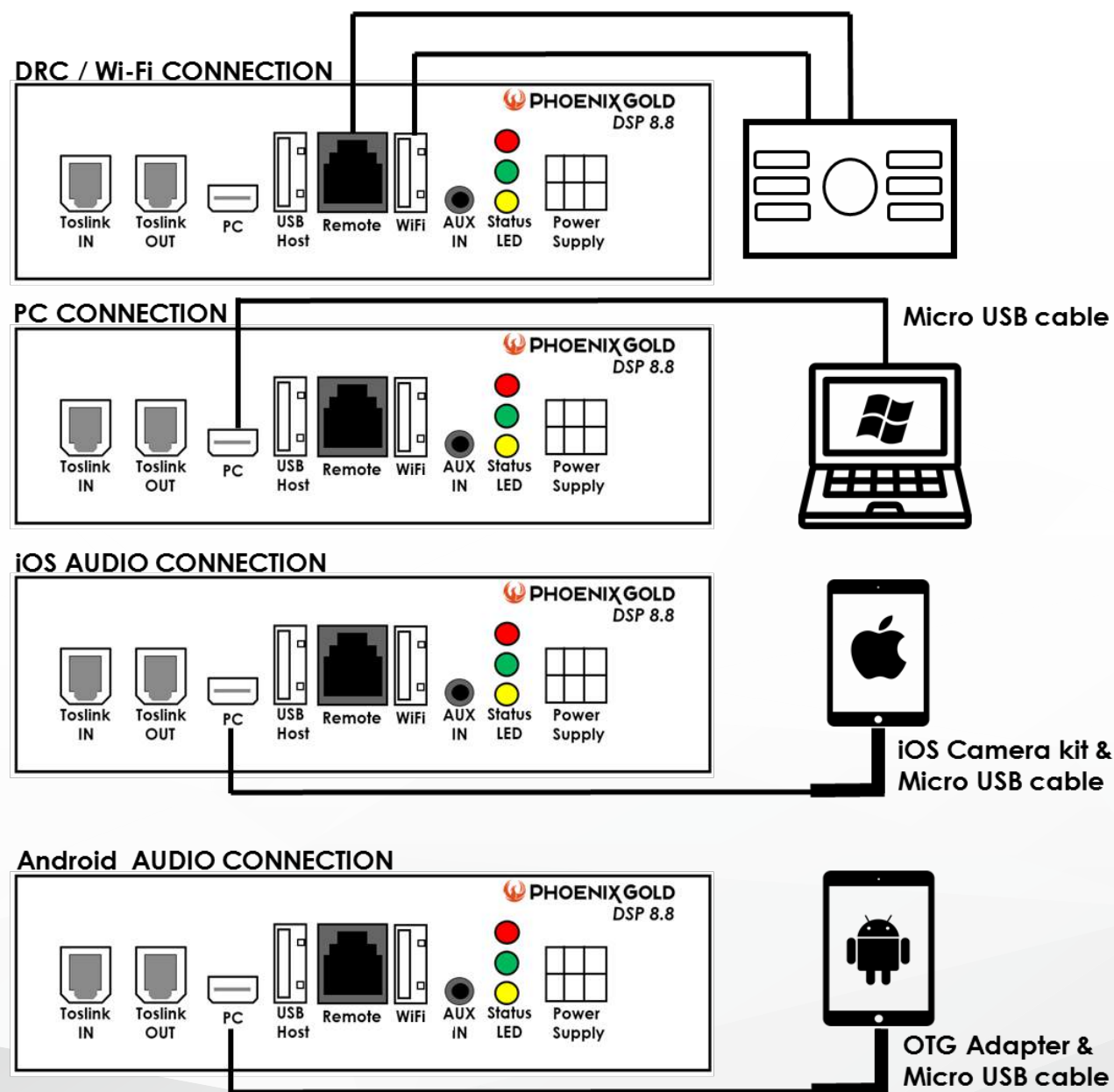
HIGH LEVEL INPUT HARNESS (33 ohm load resistors inside DSP8.8 on each input channel)



PIN	COLOR	CHANNEL
1	VIOLET/BLACK	CH 8 -
2	GREEN/BLACK	CH 7 -
3	GRAY/BLACK	CH 6 -
4	WHITE/BLACK	CH 5 -
5	VIOLET/BLACK	CH 4 -
6	GREEN/BLACK	CH 3 -
7	GRAY/BLACK	CH 2 -
8	WHITE/BLACK	CH 1 -
9	VIOLET	CH 8 +
10	GREEN	CH 7 +
11	GRAY	CH 6 +
12	WHITE	CH 5 +
13	VIOLET	CH 4 +
14	GREEN	CH 3 +
15	GRAY	CH 2 +
16	WHITE	CH 1 +

## Connecting Wi-Fi Module/PC/iOS and Android Smart Devices DSP8.8

- Option 1: Connect DRC/Wi-Fi module with both supplied cables into the DSP8.8  
 Option 2: Connect a Windows PC to Micro-USB port labeled PC on the DSP8.8  
 Option 3: Connect an Apple device via Apple's Camera Connection Kit to Micro-USB port labeled PC on the DSP8.8 (iOS Version 9 or higher needed)  
 Option 4: Connect an Android device via OTG adapter to Micro-USB port labeled PC on the DSP8.8 (Android OS version 5 or higher needed)



\*Make sure that only one device is connected to the PC port at a time! \*

## Connecting Analog Sources DSP8.8

The Phoenix Gold DSP8.8 has 5 selectable source inputs. The following inputs are electrically connected internally. Do not try to operate these inputs simultaneously as this may cause audible distortions or inoperability of the processor. Please disable any unused sources.

**RCA:** (6 inputs) Most commonly used to connect the DSP to aftermarket head units.

**HIGH LEVEL:** (Molex Harness) Most commonly used to connect to an aftermarket radio without pre-amp/line outputs.

**AUX:** (3.5mm jack) & (Molex Harness) Most commonly used for portable Nav/BT phone kits or low level sources.

## Connecting Digital Sources

Two of the 5 selectable sources are digital, offering the highest level of audio resolution on the DSP8.8.

**TOSLINK IN:** (S/PDIF) connector accepts a 2-channel digital audio signal from any device's optical output via S/PDIF connector, with a sampling rate of 24bit/96kHz.

**STREAM:** This input covers the hi-res wireless streaming to the DRC Wi-Fi module, the wired hi-res streaming into the Micro-USB (PC) and the USB host port for thumb or pin drives up to 16gb.

**\*TOSLINK OUT:** (S/PDIF) connector provides a pass-through digital audio output, with no signal processing applied. This can be used to send audio signals to a second processor for 8 additional channels.

## Installing Software and Apps

The DSP8.8's software and links to the mobile apps can be found or downloaded directly from the Phoenix Gold website:  
<http://www.phoenixgold.com/dsp>

**iOS:** Download and install the DSP8.8 apps via **App Store**.

**DSP8.8** -(iPad) Full setup/tuning app for professionals to set up the DSP8.8

**DSP8.8RC**-(iPhone/iPad) Remote Control app for adjusting Vol/Sub level/Source/Preset

**Android:** Download and install the DSP8.8 apps via **Google Play Store**.

**DSP8.8:** (tablet) Full setup/tuning app for professionals to set up the DSP8.8

**DSP8.8RC:** (phone/tablet) Remote Control app for adjusting Vol/Sub level/Source/Preset

**Mac:** Download and install the DSP8.8 app via the **Mac App Store**.

**DSP8.8** Full setup/tuning app for professionals to set up the DSP8.8

**Windows PC:** Download and install the DSP8.8 app software/USB drivers via Phoenix Gold website

**DSP8.8** Full setup/tuning app for professionals to setup the DSP8.8

\*Windows XP, 7, 8 users must install the USB drivers before the DSP8.8 app\*

\*Windows 10 and Mac users DO NOT need to download the USB drivers\*

\*Do not connect the USB cable to the DSP8.8's PC port until you have successfully installed the app software and/or required USB drivers.

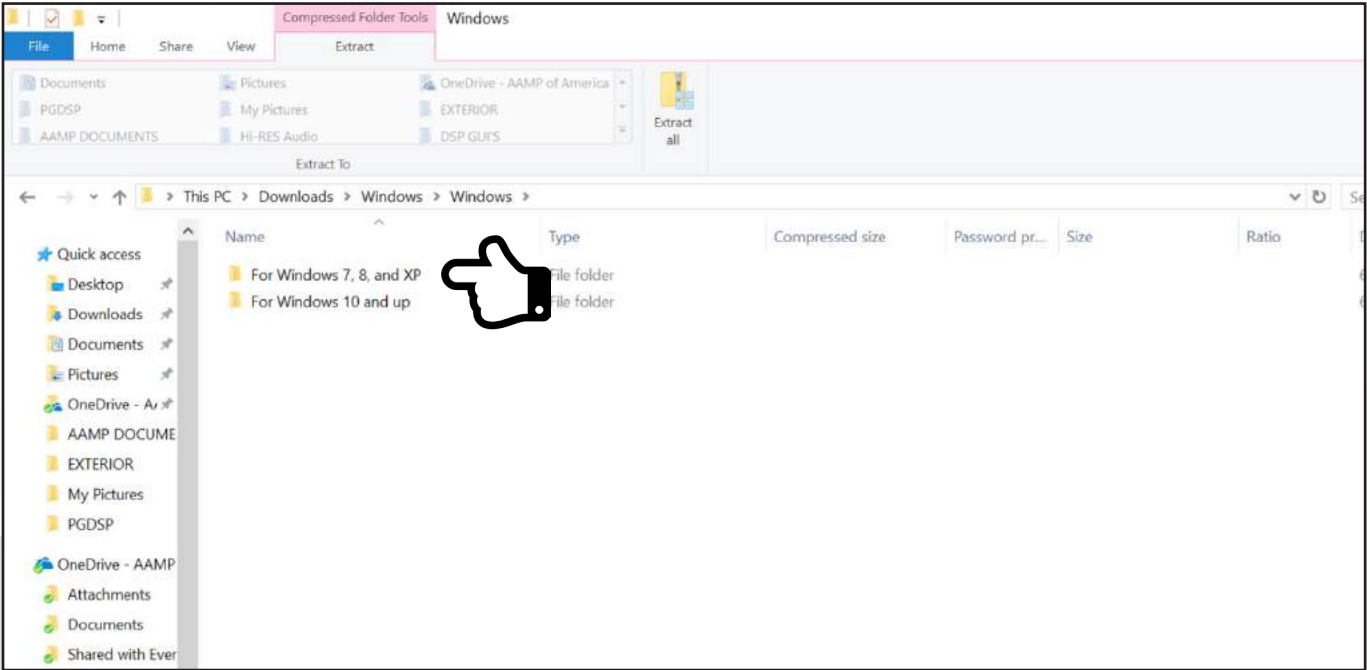
Windows Installation for XP,7, 8

DSP8.8

Step 1: Download file from [www.phoenixgold.com/dsp](http://www.phoenixgold.com/dsp). The file will be in the downloads folder and will appear like below.



Step 2: Open the folder and choose your operating system.



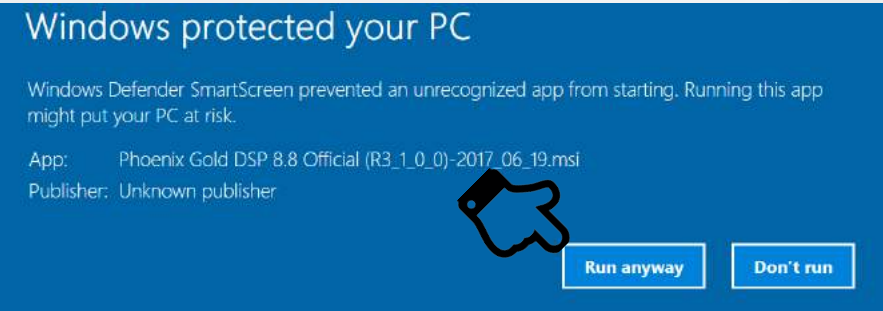
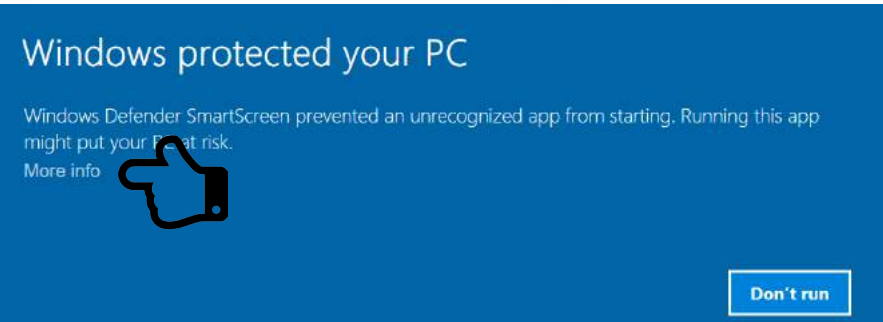
Windows XP, 7, 8 Software and USB drivers will appear like this. **\*\*Install the drivers on the bottom first\*\***



Windows 10 Software will appear like this. **\*\*Windows 10 does NOT need or require any drivers\*\***

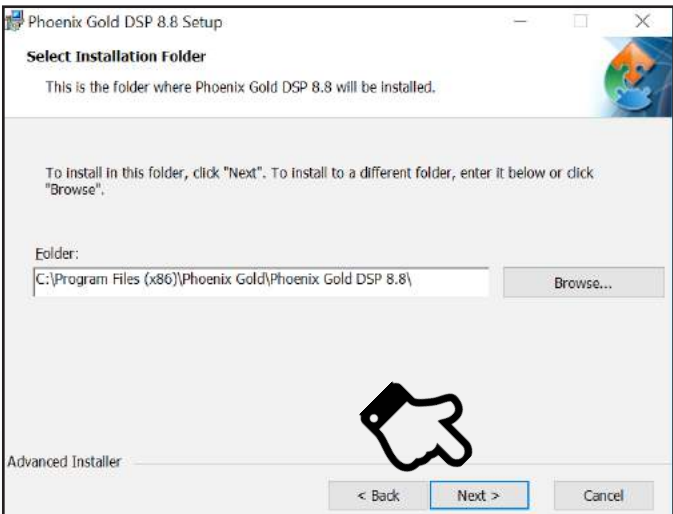


After double clicking on either of the above operating systems the automatic program installation will start. When the security pop-up appears, click "more info" (Win 10) this will allow the option for "Run anyway" (Win 10) or "Continue Anyway" (Win XP,7,8)



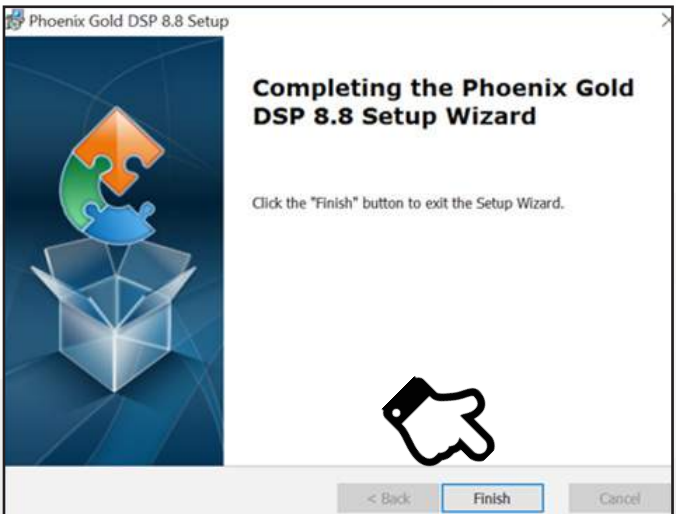
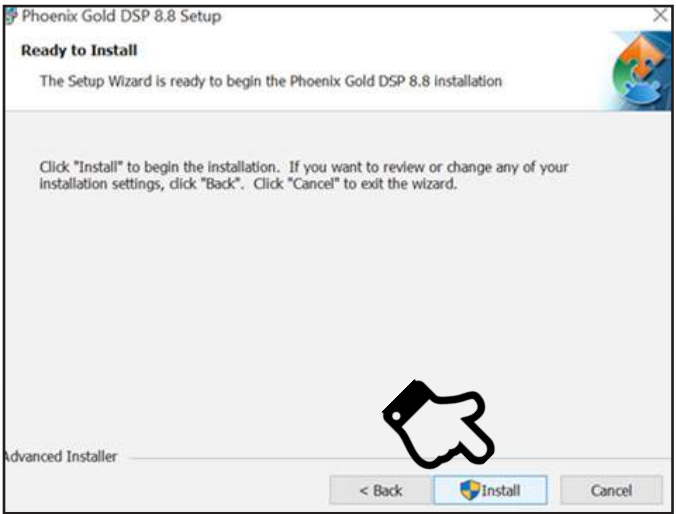


Next the windows setup wizard begins, you must confirm installation by clicking on “Next” tab.



The next window will confirm the folder location of installation files by clicking on “Next” tab.

The next window allows the setup wizard confirm installation of the DSP8.8 program by clicking the “Install” tab.



DSP8.8 software installation is complete when you confirm and click the “Finish” tab. The Phoenix Gold DSP exe. icon will appear on the desk top now. Double click on it to open the program and begin the setup/tuning process.

Mac App Installation

DSP8.8

Step1: Locate the Phoenix Gold DSP8.8 app in the **Mac App Store**. Click on the “Get” button beneath the app's star rating since the app is free.



Step 2: Click on the green “Install App” button that appears. Enter your Apple ID password if prompted.



The app you just downloaded from the Mac App Store should automatically show up in Launchpad, ready for you to open with a single click.

Establishing a Connection

DSP8.8

**(iOS/Android):** When connecting via the DRC/Wi-Fi module, a connection to this module must be established via the Wi-Fi settings of your smart device. Activate the Wi-Fi network search on your smart device, and search for “**PhoenixDSP**” network. The default password to the network is “**PGDSP8.8**”. This connection process may take 30-90 seconds before the (✓ **PhoenixDSP**) appears (see image1). When this symbol appears, a Wi-Fi connection has been established. Wi-Fi logo on the main configuration screen will change from “**Wi-Fi NOT connected**” to “**Wi-Fi**”. Connection via the PGDSP8.8 app to the DSP is now possible. Android tablets also can connect and control the DSP8.8 via the PC port using an OTG cable and a Micro-USB cable. The “**Wi-Fi NOT connected**” logo will be present until this USB connection is made, it will then change to a **USB** logo.

IMAGE 1

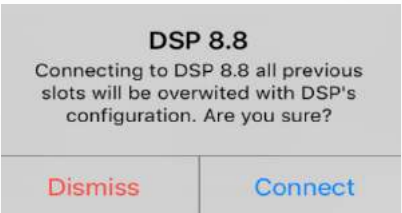


To activate communication on the app, simply press the power icon. The power icon will change from being greyed out to being orange when the processor is on and ready to begin communication (see image 2). A pop-up window will appear, press “connect” for communication between your device and the DSP8.8 can begin (see image 3).

IMAGE 2



IMAGE 3



When actively connected to the DSP8.8, the Phoenix icon will continuously blink while data is being streamed between the smart device and the DSP8.8. This can also be seen on the DRC as the LED for button #1 (see image 4). The DSP8.8 is now ready for system configuration to begin.

IMAGE 4



**(Mac/PC):** When connecting to the DSP8.8 to a laptop/desktop computer a connection must be made via Wi-Fi or by connecting to the PC port with a micro-USB cable. To activate communication on the DSP8.8 software simply press the power icon and select connect on the pop-up window. The power icon will also change from being greyed out to being orange. When connected to the DSP8.8 the Phoenix icon will blink every time the data is sent between the computer and the DSP8.8. The DSP8.8 is now ready for system configuration to be started.





**1) Volume:** Allows adjustment of the master volume of the entire audio system by rotating the volume knob. Double tapping for tablets or double mouse clicks on Mac/PC of the rotary knob will mute the entire audio system. The red radio button also activates and deactivates muting of the entire audio system (see image 5). Muted channels will appear to be transparent. A single press on a tablet or a single mouse click for Mac/PC on the volume's numerical display will reveal the pop-up window for exact adjustments in .50db increments (see image 6). Subwoofer level control from the DSP8.8 is off by default. To activate the sub level control for use in the app and for use on the DRC, a long press on a tablet or a right mouse click for Mac/PC on Ch7 and or Ch8 to reveal the pop-up window for channel configuration, select "SUB" instead of "NORMAL" (see image 7). The master/subwoofer volume levels can be locked by a long press on the volume knob on a tablet or a right mouse click for Mac/PC on the lock icon. This feature can be used to set output limits or to prevent damage from excessive volume of the audio system.

IMAGE 5



IMAGE 6

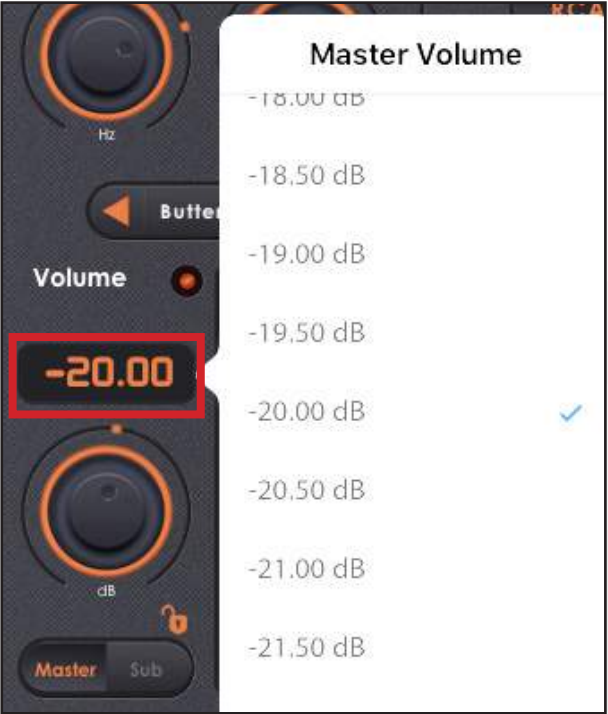


IMAGE 7





**2) Crossovers:** Each output channel features a pair of fully adjustable crossover filters. Crossover functions can be activated or deactivated by a single press on a tablet or single mouse click for Mac/PC on the red radio buttons (see image 8). The low pass filter is located on the upper left corner, high pass filter is located on the upper right corner. Both filters must be activated to create a bandpass crossover. Crossover frequency from 20hz - 20480hz (see image 9) along with crossover slopes from 0dB, 6dB, 12dB, 18dB, 24dB, and 30dB per octave (see image 10) can be adjusted by using the rotary knob or by a single press on a tablet or a right mouse click for Mac/PC on the numerical displays to reveal a pop-up window for each section of the crossover. Filter types can be selected (Butterworth, Bessel, and Linkwitz Riley) by using the left and right arrows or single clicks for both tablets and Mac/PC to reveal a pop-up window. For safe system testing during initial set up the crossover frequency, slope and filter types have been set by default as follows:

- Ch. 1 - 2 High Pass 3199hz @ 12dB Butterworth typically for tweeters
- Ch. 3 - 6 Bandpass 3199hz - 80hz @ 12dB Butterworth typically for midrange or midbass drivers
- Ch. 7 - 8 Low Pass 80hz @12dB Butterworth typically for subwoofers.

IMAGE 8



IMAGE 9

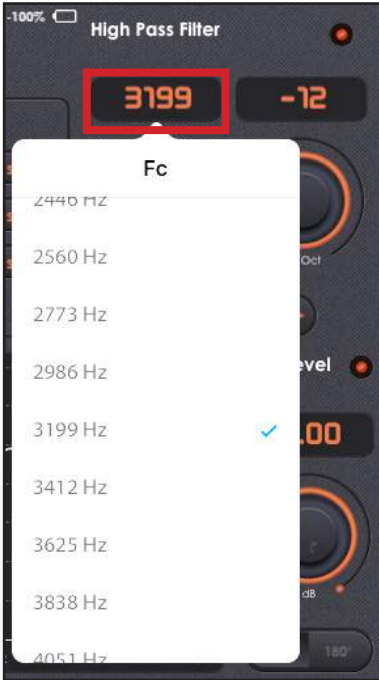
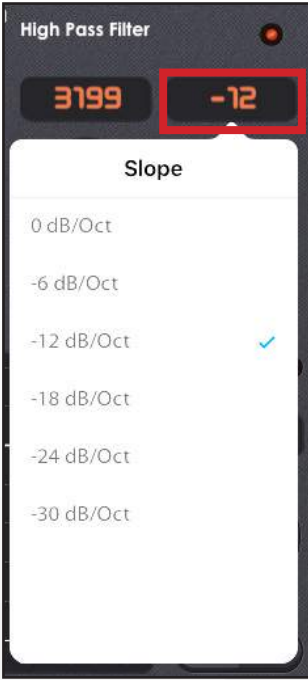


IMAGE 10



**3) Source input selection/setup:** There are 5 input sources available for use: RCA, Hi-Level, AUX, Stream, and Toslink (see image 11). The RCA, Hi-Level, and AUX sources have sub menus that allow the selection of input configurations and independent channel level adjustments to fine tune the input source and to prevent clipping. These sub menus can be accessed by right clicking on Mac/PC or long pressing the input's icon on tablets (see image 12). Please remember to disable any source that isn't being used.



IMAGE 11



IMAGE 12

**RCA input/output configurations** (see image 13)

- Stereo:** Input on Ch 1-2 is passed to output Ch 1-8
- Front+Rear:** Input on Ch 1-2 is passed to output Ch 1-4, Input on Ch 3-4 is passed to output Ch 5-8
- 3 Ways:** Input on Ch 1-2 is passed to output Ch. 1-6, Input on 5-6 is passed to output Ch. 7-8
- F+R+S+C:** Input on Ch 1- 4 is passed directly to Ch. 1-4, Input on Ch. 5 is mono to output Ch 5 & 7, Ch 6 is mono to output to Ch 6 & 8

**Hi-Level input/output configurations** (see image 14)

- Stereo:** Input on Ch 1-2 is passed to output Ch 1-8
- Front+Rear:** Input on Ch 1-2 is passed to output Ch 1-4, Input on Ch 3-4 is passed to output Ch 5-8
- Sum 4:** Band limited inputs on Ch 1-4 are combined to output Ch 1-8 to create a full range signal
- Sum 6:** Band limited inputs on Ch 1-6 are combined to output Ch 1-8 to create a full range signal
- Sum 8:** Band limited inputs on Ch 1-8 are combined to output Ch 1-8 to create a full range signal

**AUX input configurations**

- 3.5mm:** Input on the 3.5mm jack is passed to output Ch 1-8
- Navi:** Input on the aux harness is mixed into output Ch 1-2, Ch 3-8 audio in attenuated now
- Phone:** Input on the aux harness is passed to output Ch1-2, Ch 3-8 are muted

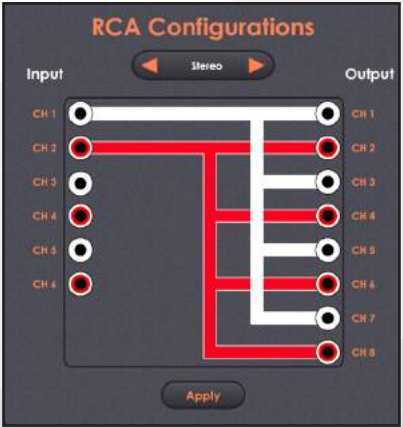


IMAGE 13

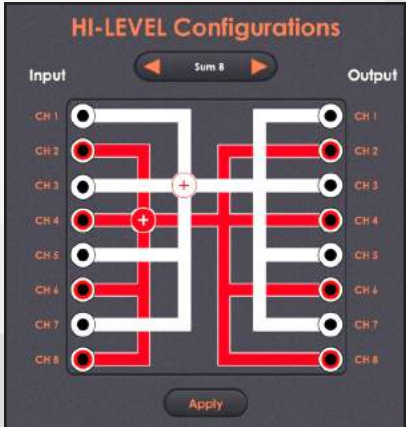


IMAGE 14



**Autoremove:** This feature is used to automatically turn on/off the DSP8.8 using signal sensing. To activate this, a single press of the autoremove icon (see image 15) on a tablet or a single mouse click for Mac/PC will reveal a pop-up window that allows adjustment of these delays based upon audio signal detection from RCA/Hi-LEVEL sources only. The red radio button must be activated before setting up the system delays (see image 16). The audio signal threshold trigger levels are measured in decibels, from -30dB (highest sensitivity) to -80db (lowest sensitivity). The on-threshold can be delayed from 1-5 seconds (see image 17), the off-threshold can be delayed from minutes 1-5 (see image 18). When the autoremove adjustments are finished, press the apply button and the autoremove icon will illuminate orange to show that is now active. The red ACC/Remote input (pin 4) wire on the power harness will not be connected after this feature is activated.



IMAGE 15



IMAGE 16



IMAGE 17

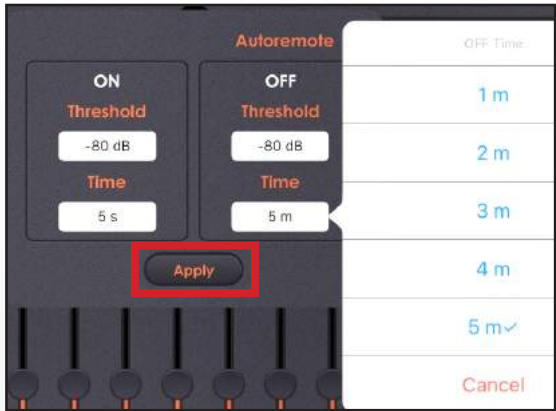


IMAGE 18

**4) Channel configuration:** This is where each of the 8 independent output channels can be customized for sophisticated system setup and tuning. All output channels have an editable name button, along with a colored LED (see image 19).

- **GREEN** LED = Normal Configuration
- **ORANGE** LED = Sub Configuration
- **Only Channels 7-8 can be configured as Sub**

The Configuration sub menu can be accessed with right click for Mac/PC or long pressing with a tablet on the channel button that you want to modify (see image 18).

- **Change alias:** Allows renaming of the channel for custom identification. The alias can be saved in the configuration file for import/export but not in the DSP8.8.
- **Default configuration:** Allows each channel to be reset to its original stock setting.
- **Link to:** Allows channels to be connected in two very different ways. "Copy configuration" will copy the channel's output configuration, crossover settings, muting, EQ Q factor, EQ center frequency, EQ output level to from channel to channel. But not delay or phase. "Copy configuration" should be selected before setup/tuning begins if the desired result is for the linked channels to be the same. The "Just link" option is used after the output channels have been setup/tuned independently. This will join the selected channels together while making global adjustments. For example: an EQ band on Ch.1 is 100hz set to -5dB, Ch.2 100hz is set to -1 dB before "just link" is selected. After "just link" is selected the same EQ band on Ch.1 is decreased by 1dB to -6dB, this -1db decrease is copied to Ch.2 and show -2dB. The -4dB difference is retained between both channels. Any channel that is linked to another will have an orange illuminated chain link icon. Linked groups of channels will have an orange border around the channel button (see image 19).
- **Copy to:** Export the configuration from one channel to another channel.
- **Copy from:** Import the configurations from one channel to another channel.
- Individual channel muting can be activated or deactivated within this screen as well by the speaker icon.



IMAGE 18



IMAGE 19



**5) Presets:** There are six internal memory slots for saving your extremely important system setup/tuning configurations (see image 20). Each of these presets can have a different configuration stored and recalled at any time. Preset configuration is possible within a sub menu that can be accessed by right clicking on Mac/PC or long pressing the preset's button on tablets (see image 21). There is an editable title/name button, along with an LED for easy preset identification and configuration status. Each preset button's title/name by default is light orange in color and there is no LED present. When connected to the DSP8.8 and any changes are made such as (X-over, EQ, T/A, phase, etc.) to the channel's default configuration, causing the preset button's title/name color to change from light orange to a dark orange color (see image 22). This simply means that preset has been changed but not exported or saved locally into the device memory. When setup/tuning adjustments have been completed, export the preset file to the device's local memory and then save this file to a preset. Now the color of the preset button's title/ name will return to a light orange color and the orange LED that indicated the preset stored into the DSP8.8's memory will appear (see image 23).

**PRESET SUB MENU:**

- **Import/Load:** Preset's configuration stored locally in the DSP8.8's memory slots.
- **Export/Save:** Preset configurations to be stored locally and saved into current files.
- **Copy/Copy to:** Current preset configuration is copied from one preset to another preset.
- **Store in DSP:** The current preset configuration is stored into one of the six memory slots.
- **Delete from DSP:** Current preset configuration is removed from one of the six memory slots.
- **Edit/Change Title:** Custom preset title/name is saved in the import/export file, not in the DSP8.8.
- **Factory setup:** Allows each channel to be reset to its factory default setting.

ATTENTION! ALWAYS USE "SAVE" OTHERWISE THERE IS A RISK OF DATA LOSS!



IMAGE 20



IMAGE 21



IMAGE 22



IMAGE 23

**6) Output level:** Allows independent output level and phase adjustment of each channel. Level adjustments are made by rotating the volume knob, or by a single press on a tablet or a single mouse right click for Mac/PC on the output level's numerical display, revealing the pop-up window for exact level adjustment from 0dB to -15dB. These adjustments are in .50db increments for precise control (see image 24). The red radio button activates and deactivates muting of this channel only. The muted channel will appear to be transparent. Phase is adjusted by a press on a tablet or a single mouse click on Mac/PC of the 0/180 button (see image 25). This adjustment helps to acoustically align each independent output for better overall sound quality.

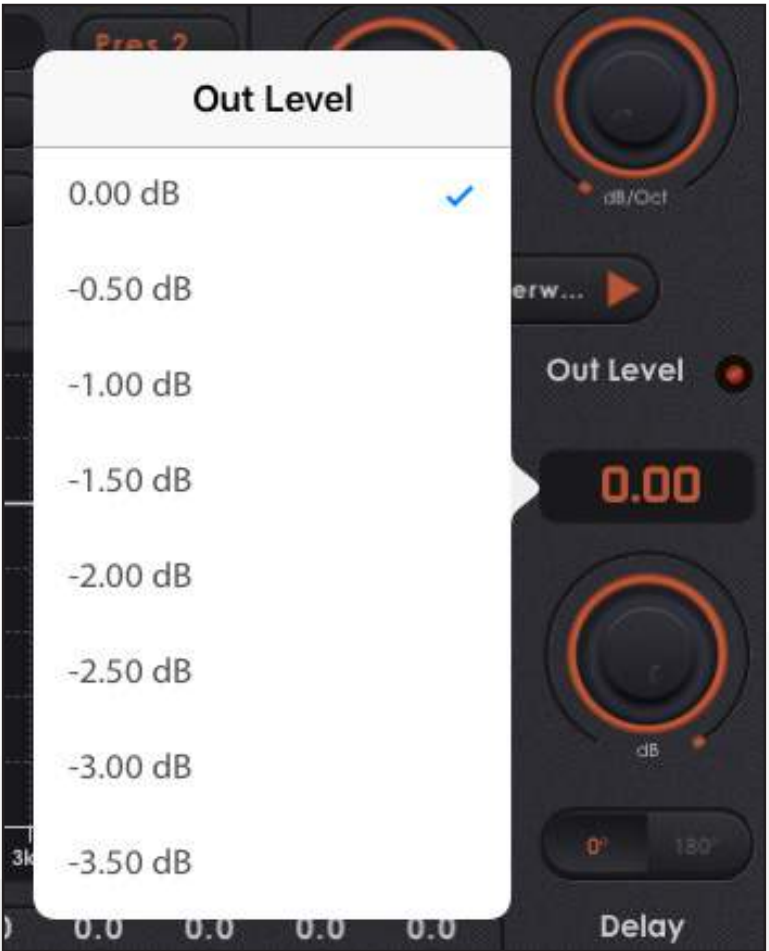


IMAGE 24

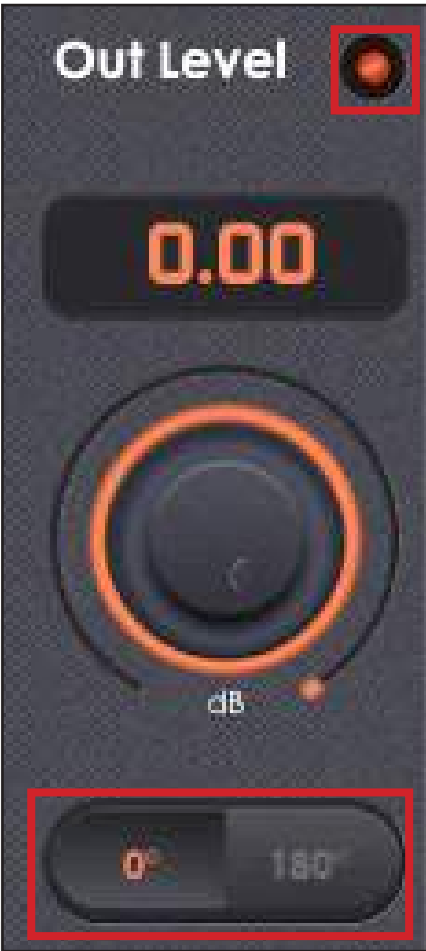


IMAGE 25

**7) Time delay:** Allows adjustment of each independent output channel's audio signal to compensate for the differences of poor speaker placement, relative to the driver's seating position in a vehicle. These differences cause the output of each speaker to arrive at the driver's seat at different times, which is not ideal for creating a natural and precise sound stage in your vehicle. Adjustments are made by rotating the delay knob, or by a single press on a tablet or a single mouse right click for Mac/PC on the delay's numerical display, revealing the pop-up window for exact delay adjustment from 0 – 14.75ms (see image 26). A long press on a tablet or a single right click on the rotary knob will allow selection of these measurements to be entered in different values: Milliseconds (ms), Centimeters (cm), or Inches (in). The selected value will be displayed below the rotary knob. To begin this setup, you must first measure the physical distance of each speaker in the system that has been assigned to an output channel to the driver's seat headrest. To avoid all the manual calculation errors in this process, a very accurate automatic time delay calculator is built directly into the app. To use this calculator simply press the calculate button below the rotary dial and a pop-up window will appear (see image 27). First verify that your measurement value is correct at the top of the window. Assign each speaker location to an output channel. Enter the measurement of that speaker distance to the driver's seat headrest. When all values have been entered simply press the compute button and the calculated measurements will be displayed (see image 28). Press the apply button to store these measurements into each output channel the DSP8.8. The rotary knob can still be used to make even more detailed adjustments, if required.

IMAGE 26

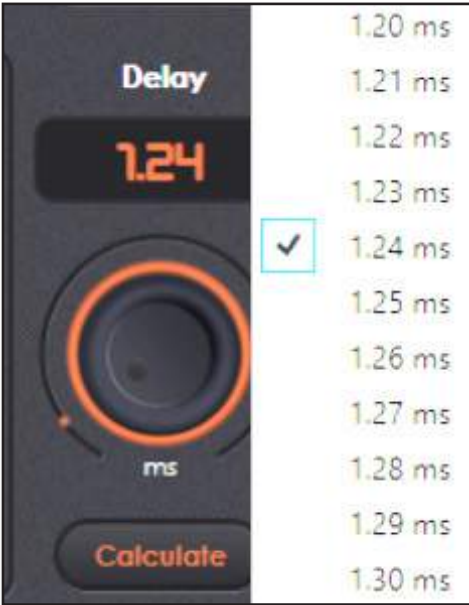
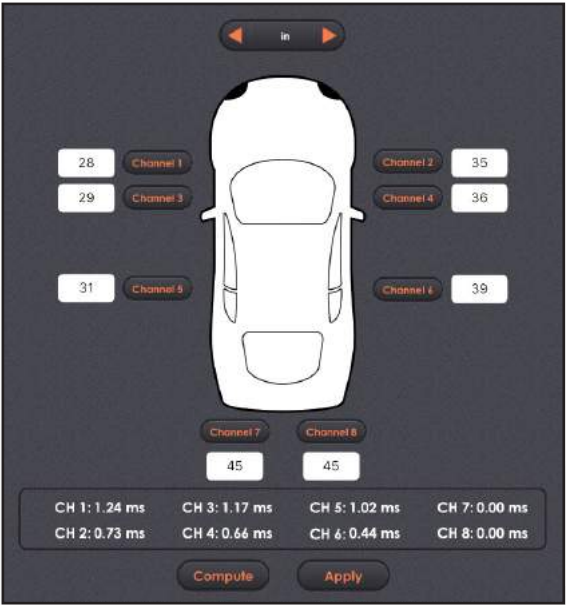


IMAGE 27



IMAGE 28



**8) Equalizer:** Equalizer adjustments are used to smooth the overall frequency response of your car audio system, dramatically improving the sound quality in your vehicle for your personal preferences. Each of the output channels has its own 1/3 octave, 30 band parametric equalizer that can be adjusted “real time” while listening. There only 15 bands visible at a time, use the button in the lower left corner of the screen to switch between Group1 25hz-630hz and Group2 800hz-20khz (see image 29). Each band's level can be adjusted with a finger slide on tablets or mouse slide, wheel rotations, and the up and down arrows on the keyboard, in .50dB increments from +10dB to -10dB. These adjustments can be seen in the bar graph about the EQ sliders for a visual reference. Parametric equalizers offer far more precise adjustment than a standard graphic equalizer. By long pressing on a tablet or a mouse right click for Mac/PC on the frequency number at the bottom of each band, a pop-up window will appear for fine tuning the GAIN, FREQUENCY, and Q of each band (see image 30). The “width or Q” of the center frequency of each band is adjustable from a narrow Q of 1 to a very wide Q of 15. This gives each band a very detailed amount of control. We highly recommend the use of an 1/3 octave real time analyzer for setting up the EQ correctly.

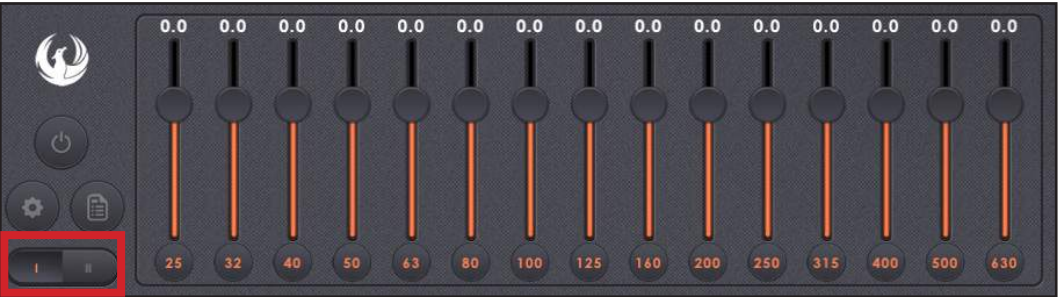


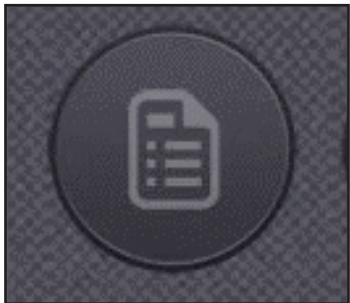
IMAGE 29



IMAGE 30



9) **Command central:** This is where you will find the following items to operate the DSP8.8.



The page icon will open the system overview screen. This screen will give you a visualization of the settings and adjustments for crossover, EQ, time delay, output level and phase for each output channel. You will also see how these adjustments affect the audio signal that you're hearing. You must press the channel button on the left of the screen (see image 31) to bring that channel's information up on the bar graph. When multiple channels are visible you must slide the screen in the lower box from left to right to access the additional channel's information. The Mode diagram toggle button (see image 31) allows detailed view of Crossovers, Equalization, and these two combined.

IMAGE 31



The gear icon will bring up the Wi-Fi settings screen. This screen is divided into 4 sections:

**Wi-Fi Module:** Displays the information about the DRC/Wi-Fi module IP, Mac address, and firmware status. iOS /Android versions of the DSP8.8 app has a copy of DRC/Wi-Fi module firmware embedded, so that direct infield updates are possible. When your smart device connects to the internet it will check to see if a new version is available on the cloud server.

**Wi-Fi Settings:** Displays the Wi-Fi network information. Updating and resetting the network is done here also. The default KEY or password of the DSP8.8 is PGDSP8.8, but it can be changed here to a more secure choice if you choose to do so. Please write it down in a secure place if you make this change. The Wi-Fi channel selection is automatic, but can be changed to a different channel if you experience connection issues. Press "APPLY" after any changes are made in this section.

**App:** Displays information about the app version of your connected device. When your smart device connects to the internet it will check to see if a new version is available on the cloud server. Mac/PC versions will display a language selection tab.

**DSP:** Displays information about the DSP8.8's firmware version and electronic serial number. The switch off tab is the selectable turn off delay of the DSP8.8's remote output. This is adjustable from 1-15 seconds.

**Help:** Will take you to the [www.phoenixgold.com](http://www.phoenixgold.com) website.

**Contact us:** Starts an email directly to the [DSPTech@phoenixgold.com](mailto:DSPTech@phoenixgold.com) for technical help.

**DSP F/W UPDATES:** Disconnect the power supply harness. Connect the DSP to PC (ONLY) with micro-USB to the PC port. PC recognizes DSP as USB mass storage. Delete old firmware file and then copy/paste new firmware file. Reconnect DSP8.8 and resume use.

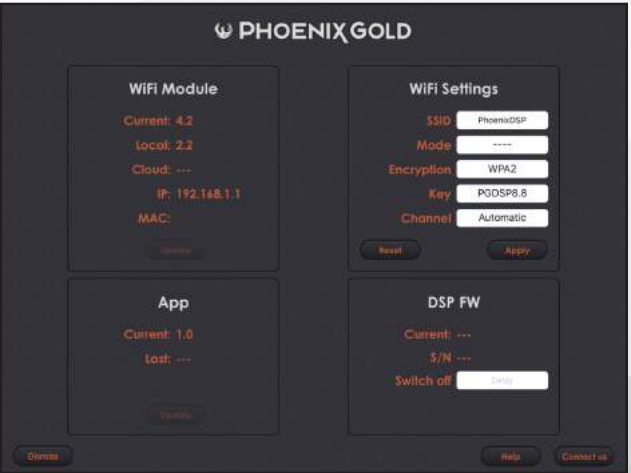


IMAGE 32





DRC icon will bring up the DRC settings screen for setting source presets and LED color selection.

**Rotary knob:** The default function of the rotary knob is master volume adjustment. Pressing the rotary knob for one second will mute the master volume, and the DRC's LEDs will change to an alternate color. Pressing rotary knob for 3 seconds will switch the rotary function to subwoofer level adjustment. The LEDs will change to green during sub level adjustments. After 10 seconds, this mode will timeout and return the rotary function back to master volume.

**Button 1: Wi-Fi/Dimmer status:** The default function is Wi-Fi communication status. The LED will blink during this process. Press button 1 once, the LED will illuminate solid and will allow LED dimmer adjustment. Use the rotary knob to adjust the LED brightness. Press button 1 again will exit dimmer mode.

**Button 2: Preset UP (+)** A single press will switch to the next preset stored in the DSP's memory by 1 position (1->2->3, etc.). If the selected preset is not stored it will be skipped. The LED for the corresponding preset will illuminate, indicating which preset has been selected.

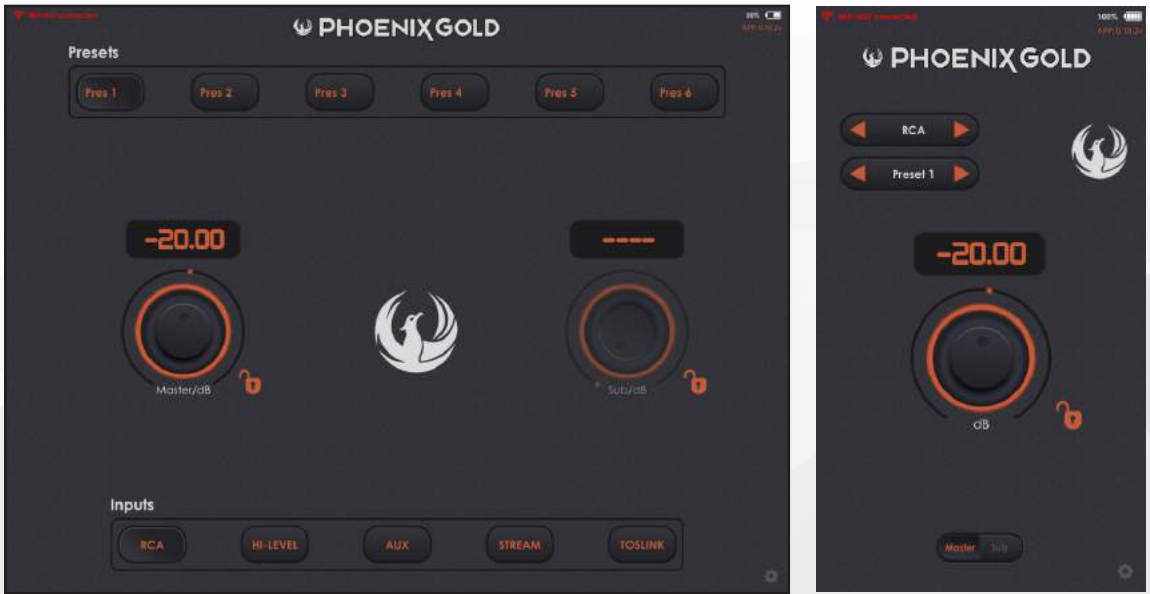
**Button 3: Preset down (-)** A single press will switch to the previous preset stored in the DSP's memory by 1 position (3->2->1, etc.). If the selected preset is not stored it will be skipped. The LED for the corresponding preset will illuminate which preset has been selected.

**Button 4, 5, 6:** These are direct source input assignments, they can be programmed via the remote icon on the app for iOS/Android/PC/Mac software (see image 34), by default they are set to:

**Button 4** = RCA, **Button 5** = Stream, **Button 6** = TOSLINK



The DRC RC (remote control) app is available for iOS and Android devices for users that do not need access to the configuration settings screen. This app only allows adjustments for volume, subwoofer level, source and preset selection of the DSP8.8. The gear icon will allow the connected DSP8.8's electronic serial number, DSP FW version and APP version to be displayed. A Wi-Fi connection to the DSP8.8 must be established to use this app. Touch the Phoenix logo icon to start this process. A pop-up window will appear, press "connect" for communication between your device and the DSP8.8. When actively connected to the DSP8.8, the Phoenix icon will continuously blink while data is being streamed between the smart device and the DSP8.8.



## DSP Troubleshooting

## DSP8.8

### No power at DSP

- Check DSP main fuse (yellow fuse holder)
- Check vehicle battery voltage
- Check DSP harness for a secure and low resistance ground point
- Check Autoremove status. The status should be set to "off" if using remote input wire. If this feature is on, the DSP is waiting for an audio signal trigger from Hi-level or RCA inputs.

### Low Volume while streaming from smart device

- Check device volume or streaming app volume
- Check DRC volume level

### No Wi-Fi network available

- Wi-Fi signal could be blocked or shielded due to installation, move DRC to another location
- Restart DRC/Wi-Fi module by cycling power to the DSP

### Wi-Fi connection is not stable

- DRC/Wi-Fi module cables must be extended as much as possible. DO NOT bundle excess cable near the DSP brain.
- Check if nearby Wi-Fi networks are transmitting on the same or neighbor channels. If so, configure the Wi-Fi module to another channel. Keep 5 channels distance to any other strong Wi-Fi network. 11 channels are available.
- Always check to see if your app firmware is up to date

### DSP app message "IN CONNECTION"

- DRC/Wi-Fi module is connected to another device already. Disconnect all device connections and reconnect with one device only.
- Close DSP8.8 app
- Cycle DSP power to restart it
- Reconnect DSP8.8 app

### Data connection to DSP not stable

- Data connection to DSP is active only when DSP App is active. Data connection is terminated on iOS and Android devices as soon as App is working in background
- Check if other apps in background may access the Wi-Fi data connection and terminate these Apps.

### No data connection to DSP, while Wi-Fi network connection is established successfully

- Use another USB cable
- Restart DRC/Wi-Fi module by cycling power to the DSP
- Try hard wired connection with Mac, Windows PC or Android tablet with high quality Micro-USB cable.

### Phoenix Gold Product Warranty

#### LIMITED WARRANTY ON DIGITAL SIGNAL PROCESSORS

Phoenix Gold warrants this product to be free of defects in materials and workmanship for a period of one (1) year from the original date of purchase. This warranty is not transferable and applies only to the original purchaser from an authorized Phoenix Gold dealer in the United States of America only. Should service be necessary under this warranty for any reason due to manufacturing defect or malfunction, Phoenix Gold will (at its discretion) repair or replace the defective product with new or remanufactured product at no charge. Damage caused by the following is not covered under warranty: accident, misuse, abuse, product modification or neglect, failure to follow installation instructions, unauthorized repair attempts, misrepresentations by the seller. This warranty does not cover incidental or consequential damages and does not cover the cost of removing or reinstalling the unit(s). Cosmetic damage due to accident or normal wear and tear is not covered under warranty.

#### INTERNATIONAL WARRANTIES:

Products purchased outside the United States of America are covered only by that country's Authorized Phoenix Gold reseller and not by Phoenix Gold. Consumers needing service or warranty information for these products must contact that country's reseller for information.