

PHOENIX GOLD



Titanium
DEQ
COMP

Titanium
series
PG
Phoenix Gold



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TIDEQ INTRODUCTION

Thank you for purchasing the Phoenix Gold TiDEQ Comp. By doing so, you have demonstrated a desire to own the finest audio components available for your vehicle. At Phoenix Gold, we use state of the art design, engineering and production methods to continually improve the quality, reliability and performance of our products.

The TiDEQ Comp was designed for the demanding competitor or serious enthusiast. When properly installed by an Authorized Phoenix Gold Mobile Electronics Retailer, this equipment will provide years of enjoyment. For proper operation, please read this manual carefully and keep it for future reference.

TIDEQ OVERVIEW OF OPERATION

The TiDEQ Comp has 4 separate presets built into one unit. Each preset contains a stereo 30 band 1/3 Octave equalizer. The four separate 30 band equalizer presets are labeled RTA, SPL, SQ, or USER. All four presets are stored in the TiDEQ comp at the same time, this allows users to toggle through the 4 presets. Interfacing the TiDEQ Comp with a Personal Computer gives the user several more control functions: adjustable Q for all 30 bands, 3 more bands of parametric equalization per channel, Time Delay for left and right channels. All changes and equalization to the signal will be done on the TiDEQ Comp software and then transmitted to the TiDEQ Comp. The changes will only take affect in the vehicle when the information is transmitted from the TiDEQ software to the TiDEQ Comp.

The TiDEQ software is optimized to run with nearly any speed of Personal Computer such as a Pentium 90 or faster with Windows 98 or 2000.

Please note that the TiDEQ software CD-ROM includes a comprehensive Help file and Adobe Acrobat version of this manual.

TIDEQ FEATURES

- 24 bit 96kHz AD/DA Convertors for the ultimate sound fidelity
- 48 bit Internal Arithmetic Digital Signal Processing
- 30 bands of 1/3 Octave spaced equalization per channel per preset
- Variable Q for all 30 bands of equalization per channel per preset*
- 3 additional bands of parametric equalization per channel per preset*
- 4 presets: RTA, SPL, SQ, and USER
- 4 Ground Triggered Outputs for activating external relays
- 6 Sensor Inputs for monitoring other 12 volt components on the optional TiDEQ Comp Remote**
- High or Low Pass Filter selectable at 12 or 24dB per octave from 20Hz to 20kHz per channel*
- Digital Time Delay for each channel adjustable from 0 to .1 seconds*
- Delayed Remote Output for connecting multiple system components
- Built in Pink Noise Generator*

* (Additional features for use with TiDEQ Comp software only)

** (Additional features for use with TiDEQ Comp software and Remote Control only)

TIDEQ SPECIFICATIONS

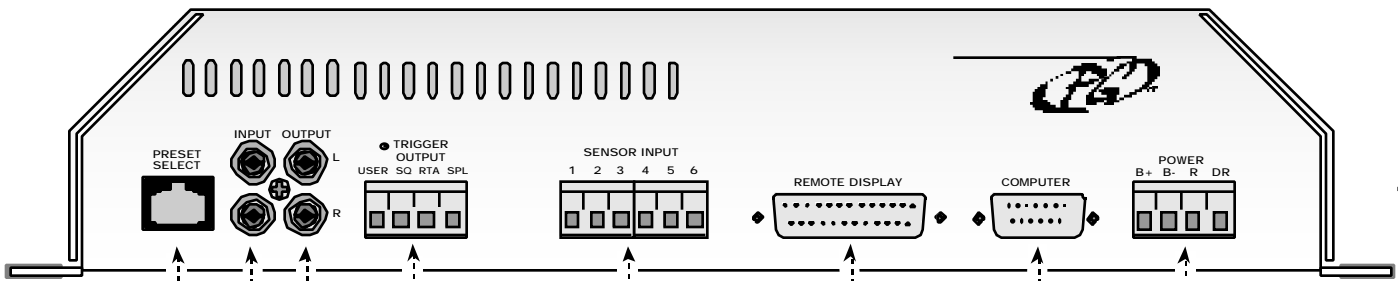
Frequency Response	+/-1dB, 20Hz to 20kHz
S/N Ratio (A-weighted)	>115dB
Total Harmonic Distortion . . . . .	.0.07%
Input Impedance . . . . .	.30k ohms
Output Impedance . . . . .	.37 ohms
Input Signal Range . . . . .	.1 to 4 Vrms
Maximum Output Level . . . . .	.4 Vrms
Slider Filter Q . . . . .	.Variable from 1 to 17
Slider Filter Boost/Cut Range	-.18dB to +6dB
Slider Filter Center Frequency Spacing . . . . .	.1/3 Octave
Power Supply Operating Range . . . . .	.10.5 Vdc to 15.5 Vdc
Typical DC Current Draw . . . . .	.1 amp
Dimensions, Chassis (inches) . . . . .	.13.5 L x 10.00 W x 2.25 H
Dimensions, Overall (inches) . . . . .	.14.0 L x 10.25 W x 2.25 H

* Due to continuous product development, features and specifications are subject to change without notice.

COMPUTER MINIMUM REQUIREMENTS

Pentium 90 or faster
 32 megs of ram
 30 Megs Free of Hard Drive Space
 CD Rom Drive
 Windows 98 or 2000 Software
 Mouse/Keyboard
 Unused Serial Port

Windows 98 and 2000 are registered trademarks of Microsoft Corporation



INPUTS

Connect pre-amp signal cables from the headunit to these terminals. To maximize noise rejection, we recommend using Phoenix Gold ZEROpoint Musical Reference, ZEROpoint Pro, ZEROpoint QLX, ZEROpoint TRX, XS560 or XS460 series twisted pair interconnects. Do not use a line driver to drive the inputs of the TiDEQ Comp.

OUTPUTS

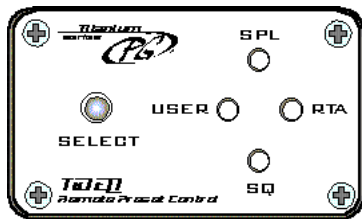
Connect pre-amp signal cables to the amplifiers to these terminals

GROUND TRIGGER OUTPUTS

Ground will be shown to the preset terminal that is selected on the TiDEQ Comp. This can be used to trigger relays for multiple applications. For more information see the Ground Trigger Outputs page 5 of the manual.

REMOTE PRESET CONTROL (SEE BELOW)

This port is for connecting the remote preset control. Pressing the select button will toggle through the four presets: SPL, SQ, RTA, USER. Please wait at least 10 seconds after you have changed presets with the remote before you turn your audio system off.



COMPUTER PORT

This port is for connecting the TiDEQ Comp to a computer. The connection is made via the serial port using a RS232 cable. Please consult your computer's hardware setting to configure what COMM port your computer will be using to communicate with the TiDEQ Comp.

REMOTE DISPLAY PORT

This port is for connecting the optional TiDEQ Comp Remote Control Unit.

POWER TERMINAL

- B+: Fused +12 volt lead from the battery
- B-: Chassis Ground
- R: Remote turn-on lead from your headunit
- DR: Delayed remote output for turning on other equipment 3 seconds after the TiDEQ COMP turns on.

SENSOR INPUTS

These inputs are used to display the status of any 12 volt source on the optional TiDEQ Comp Remote Control. The TiDEQ Comp Remote and Software must be used in order for the sensor inputs to operate. The TiDEQ Comp remote control manual illustrates how to use these inputs.

IMPORTANT INSTALLATION NOTES:

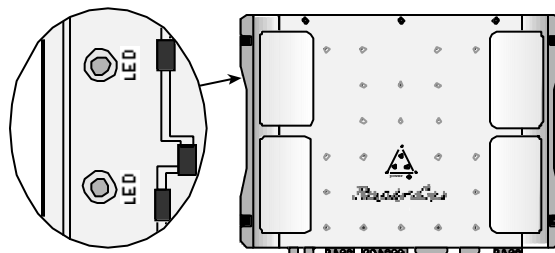
- Do not use a line driver to drive the inputs of the TiDEQ Comp. A line driver is not needed for the TiDEQ Comp to reach full output.
- Do not mount the TiDEQ Comp to any metal part of the vehicle's chassis this can cause system noise in some cases.
- Do not plug or unplug the serial port cable or RCA input cables while the TiDEQ Comp is ON this can damaged the EQ.

STATUS LEDs

Visible through the window are two dual color LEDs. One for each channel.

GREEN: TiDEQ Comp is on and operating normally.

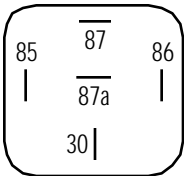
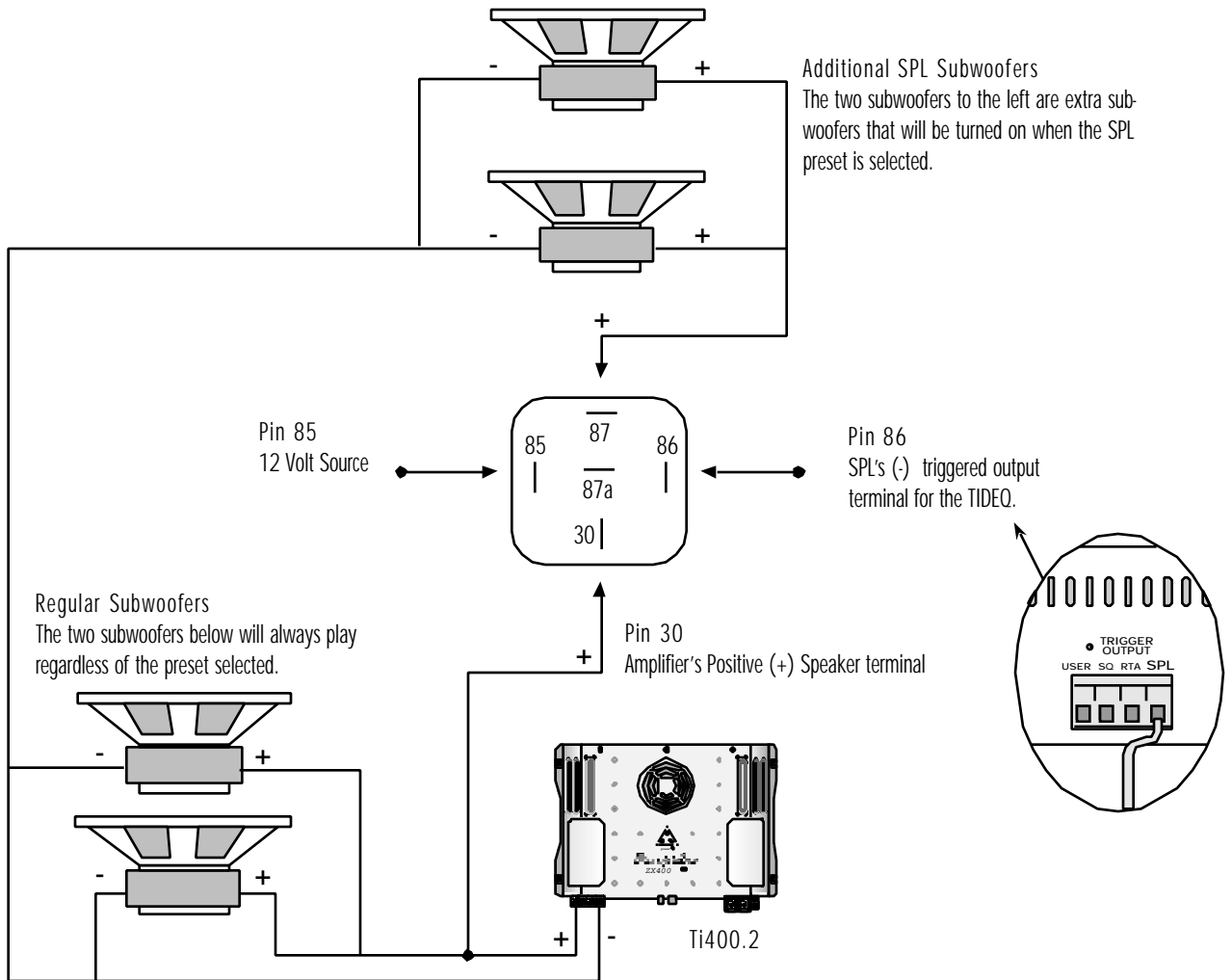
ORANGE: Receiving data from the TiDEQ Comp software or the output signal of the TiDEQ Comp is being clipped.



USING GROUND TRIGGERED OUTPUTS

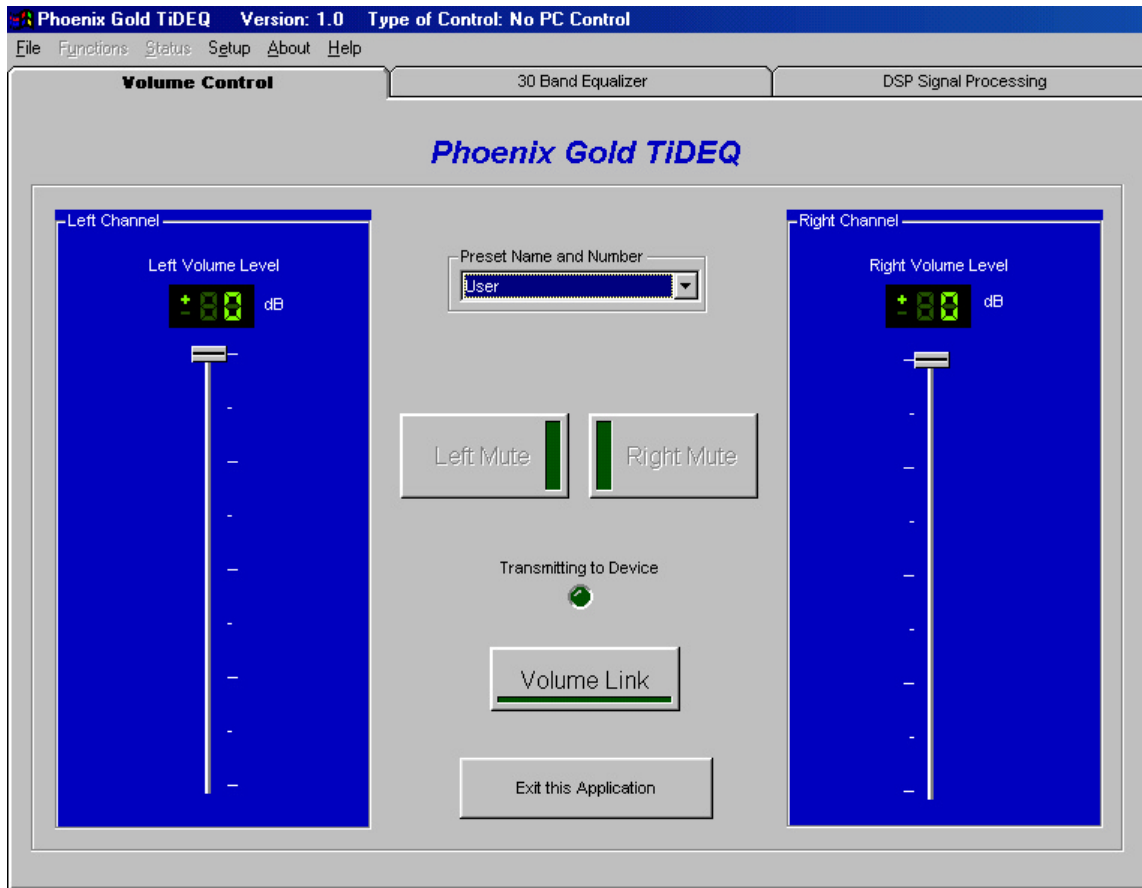
Each time the preset is changed the corresponding output trigger will show ground. This can be used to wire relays that will only trigger when that preset is activated. The following example shows how to turn on extra subwoofers during the SPL portion of a competition. This is just one small example of what the triggered output could be used for. The wiring options are limitless.

In the example below, when the SPL preset is selected the relay will be activated and wire the additional two subwoofers in parallel to the amplifier. When in preset RTA, USER, or SQ the Titanium 400.2 is wired to two subwoofers in bridged mode using the Left Channel's Positive (+) and the Right Channel's Negative (-). When in the SPL preset the two additional SPL Subwoofers are wired in parallel with the existing two regular subwoofers. Note: All subwoofers in this example are 8 ohm models.



RELAY PIN ASSIGNMENTS:

- Pin 85: 12 Volt Source
- Pin 86: TIDEQ's SPL (-) Triggered Output Terminal
- Pin 30: Amplifier's Positive Speaker Terminal
- Pin 87: Speaker's Positive Speaker Terminal
- Pin 87a: Not Used



VOLUME SLIDERS

These are used to adjust the overall levels of the equalizer's outputs. Both sliders can be moved simultaneously by clicking on the Volume Link Button. This setting is individually saved for each preset so volume levels can be different for the four separate presets. These sliders will control the pink noise generator's volume.

PRESET NAME AND NUMBER

This allows the preset to be changed. There are 4 presets: RTA, SPL, SQ, and USER.

LEFT AND RIGHT MUTE

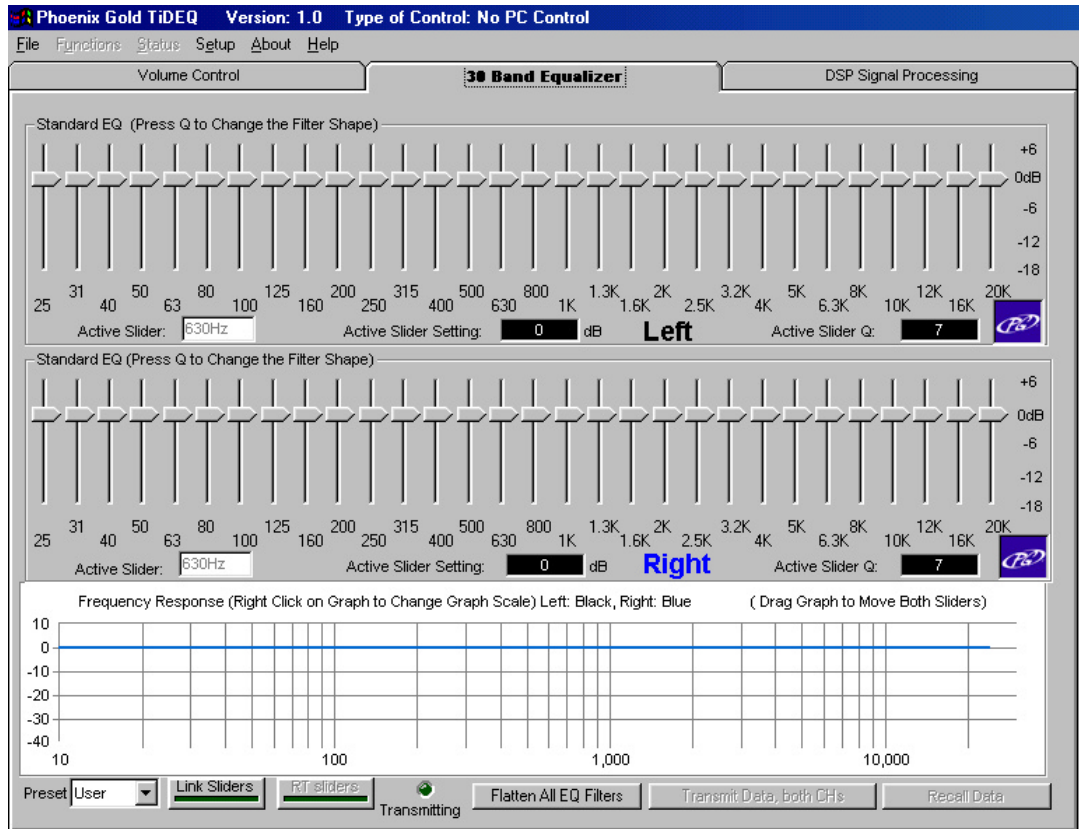
Clicking on these buttons allows you to mute one or both of the outputs of the TiDEQ Comp. Note that settings for the mute buttons are not saved for each individual preset. If the a mute button is activated then all four of the presets will be muted, the mute function is not individually saved for each preset.

VOLUME LINK

Clicking on this button allows both left and right channel sliders to be adjusted simultaneously.

EXIT APPLICATION

Clicking on this button will exit and close the TiDEQ Comp program.



PRESET

Allows a different preset to be selected: RTA, SPL, SQ, USER

LINK SLIDERS

This will link the left and right channel sliders, allowing them to be simultaneously adjusted.

RT SLIDERS

Clicking this button activates Real Time Sliders. This allows the changes made on the TiDEQ Comp software sliders to automatically be sent to the TiDEQ Comp. When activated the TiDEQ Comp in the vehicle will automatically receive the changes made on the screen. This eliminates the need to click on the "Transmit Data both CHs" button every time you make a small adjustment.

FLATTEN ALL FILTERS

Clicking on this button will flatten all slider and parametric filters for the current preset back to 0dB.

TRANSMIT BOTH CHANNELS

Clicking on this button will send all changes for the current preset to the TiDEQ Comp. It will not transmit changes for all 4 presets at the same time. Changes for each preset must be transmitted individually.

RECALL DATA

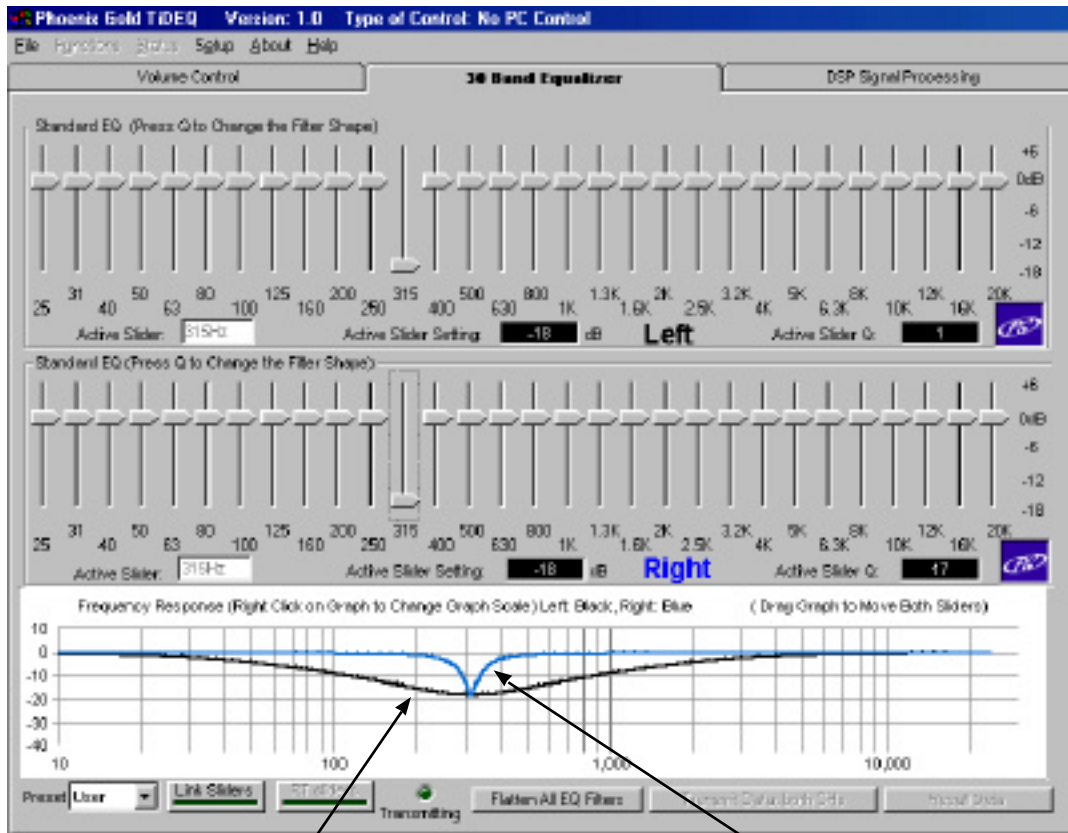
Clicking on this button will recall the information from the current preset stored in the TiDEQ Comp.

ADJUSTING SLIDERS

Keyboard: The left and right arrows will change sliders. The up and down arrow keys will also adjust the sliders' boost/cut value in 1 dB increments.

Mouse: Sliders can also be adjusted by clicking and dragging the slider to a new boost/cut value.

REMINDER: If the Real Time Sliders are turned OFF. Changes will not take affect inside the vehicle until you click on the Transmit Both Channels Button.



Left: Q=1

Frequency Slider:
315Hz @ -18dB

Right: Q=17

This feature allows users to change the Q value for any of the sliders on the TiDEQ Comp. Changing this value will affect how narrow or wide of a frequency range will be affected by the slider's adjustment.

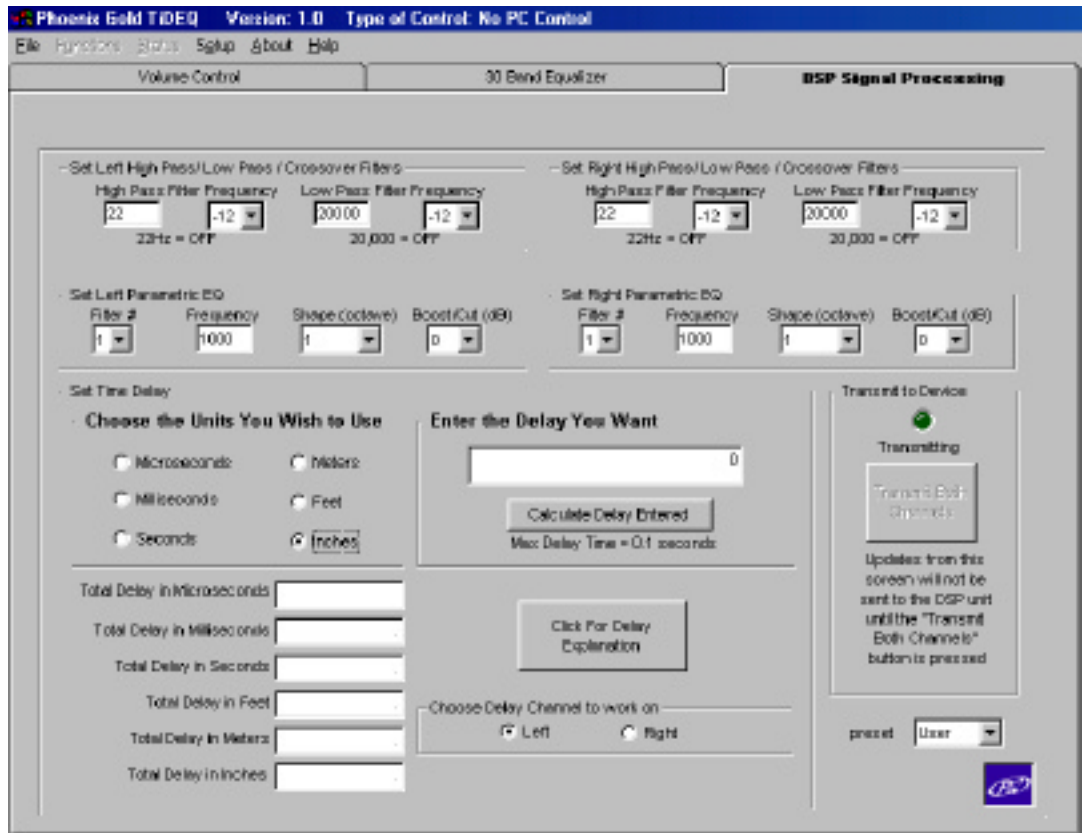
The example above shows the difference the Q value can make. The 315Hz slider is set to -18dB for both the left and right channels but the graph above shows a drastic difference in the system response. The black or left channel's response has a Q value of 1 or very wide. The blue or right channel's response has a Q value of 17 or very narrow.



ADJUSTING THE Q VALUE

Select a slider by clicking on it then press the "Q" key. The screen to the left will appear. To adjust the Q of the slider simply select from one of the bullet presets or pick the specific value from the selection box below. After the value is selected click the OK button.

To change all 30 sliders' Q value with one adjustment. Simply check the "Change all sliders to this value" box. This will change all 30 sliders' Q value to the selected value.



HIGH PASS FILTER FREQUENCY

Adjusts the High Pass filter for each channel. Slope is adjustable as 12 or 24db per Octave. Setting the High Pass filter to 22Hz turns the filter off. Type in the crossover point in the High Pass Frequency Box for each channel.

LOW PASS FILTER FREQUENCY

Adjusts the Low Pass filter for each channel. Slope is adjustable as 12 or 24db per Octave. Setting the Low Pass filter to 20kHz turns the filter off. Type in the crossover point in the Low Pass Frequency Box for each channel.

PARAMETRIC EQ

Each channel has 3 parametric filters (6 total) that can be used to alter system response. The center frequency can be between 20Hz to 20kHz. Its Q is adjustable in 1/3, 1/6, 1/12, or 1/18 octave values. The signal can be changed from a range of +6dB to -18dB. Type in the centered frequency in the Frequency Box.

DELAY SETTINGS

Delay can be set individually for left or right channels in Microseconds, Milliseconds, Seconds, Meters, Feet, or Inches. For an explanation of how to use delay click on the Delay Explanation button.

TRANSMIT BOTH CHANNELS

Clicking on this button will send all changes for the current preset to the TiDEQ Comp. It will not transmit changes for all 4 presets at the same time. Changes for each preset must be transmitted individually.

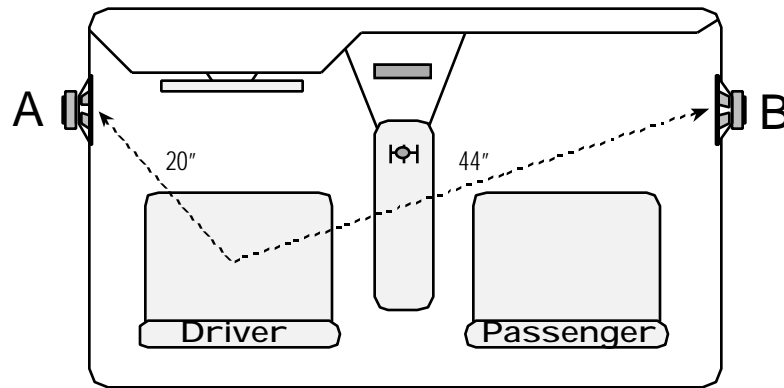
REMINDER: Changes will not take affect inside the vehicle until you click on the Transmit Both Channels Button.

TIME DELAY EXPLANATION

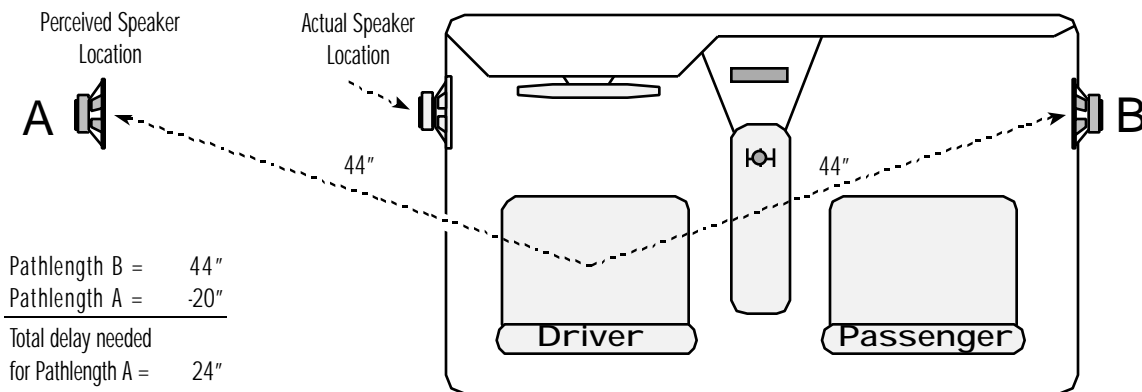
In Figure 1 below, speaker A is located closer to the Driver than speaker B. Naturally information from speaker A will reach the Driver before speaker B. This unequal pathlength, which is quite common in the car environment, leads to poor sound quality. Time Delay will correct this problem by allowing the musical information to reach the listener at the proper time without having to relocate the speakers within the vehicle.

By delaying only speaker A we can realign the musical information. For example, delaying speaker A will allow musical information from Speaker A and B to reach the driver at the same time as it was intended on the original recording. Figure 2 below illustrates this concept.

PATHLENGTH DIFFERENCE WITHOUT TIME DELAY. FIGURE 1.



PERCEIVED PATHLENGTH DIFFERENCE WITH TIME DELAY. FIGURE 2.



USING TIME DELAY WITH THE TIDEQ SOFTWARE

Figure 1 above illustrates a 24 inch or 2 feet difference between speaker A and B.

1. Select the "Left" bullet on the Choose Delay Channel.
2. Since we have 2 feet of pathlength difference. Select "Feet" in the unit bullets.
3. Enter "2" into the delay field and transmit your changes.

After the Time Delay changes have taken effect the car will respond similar to what is shown above in Figure 2. Due to unpredictable in car acoustics minor tweaking with the time delay value is highly recommend to achieve optimal results.

In this example, the driver's listening position is optimized for sound quality, however, the passenger's listening position results are unpredictable. Its nearly impossible to time align both seats at the same time for optimal sound quality. This is important to note because in most competitions judges will occupy both seats at the same time for sound quality judging.

FILE

RECALL SETTING FROM DISK

Loads a saved project from a storage disk.

SAVE SETTING TO DISK

Quickly saves the project to the disk without changing the Project's filename.

SAVE SETTINGS TO DISK AS

Saves the project to disk and allows the Project's filename to be changed.

PRINT PROJECT FILE

Prints project information to a printer.

PRINT GRAPH

Prints project graphics response to a printer.

IMPORT PC RTAJR CURVE

Imports the .dat file from PC RTAJr to the TiDEQ Comp software. The TiDEQ Comp software will then modify the sliders to the inverse of the PC RTAJr .dat file, this will create a nearly flat response curve for simple RTA or Sound Quality tweaking.

CALENDER

Allows the current date to be viewed.

COPY PRESET TO ANOTHER

Allows separate presets to be copied from one to another without manually changing sliders.

EDIT EXISTING PROJECT

Allows the existing project information to be edited.

EXIT

Exits the TiDEQ Comp program.

FUNCTION

TRANSMIT DATA TO DEVICE

Sends data from TiDEQ Comp software to the TiDEQ Comp.

RECALL DATA FROM DEVICE

Recalls the last stored data from the TiDEQ Comp to the TiDEQ Comp software.

MUTE ALL CHANNELS

Mutes the left and right channels of the TiDEQ Comp.

UNMUTE ALL CHANNELS

Disables the muting of the left and right channels of the TiDEQ Comp.

LOCK DEVICE TO DISABLE UNAUTHORIZED TAMPERING

Allows the TiDEQ Comp to be "locked" so settings are not able to be changed.

UNLOCK DEVICE

"Unlocks" the TiDEQ Comp so changes can be made to the settings.

PINK NOISE GENERATOR

Allows the pink noise generator to be turned ON or OFF for system tuning. Be sure to adjust your volume settings on the TIDEQ COMP before turning on.

STATUS

UPDATE DEVICE STATUS

Checks if the TiDEQ Comp is muted and or locked.

CHECK HARDWARE AND FIRMWARE VERSIONS

Displays the Hardware and Firmware versions on the TiDEQ Comp.

SETUP

SETUP RS232 COMM PORT

Selects which of the computer's COMM ports will be connected to the TiDEQ Comp.

TURN RS232 ON/OFF

DEMO MODE

This allows projects to be changed and saved without being connected to the TiDEQ Comp. When finished working in Demo Mode you must transmit the changes to the TiDEQ Comp in PC Serial Mode for the changes to take effect in the vehicle.

PC SERIAL PORT

The computer and TiDEQ Comp are connected together with a serial cable via the COMM port. This is the only mode in which changes can be transmitted from the TiDEQ Comp software to the TiDEQ Comp unit.

FACTORY CALIBRATION

For special use only by Phoenix Gold Factory Members.

ABOUT

PROJECT COMMENTS

Displays the current project's comments.

ABOUT SOFTWARE

Presents the TIDEQ COMP software version number and information.

HELP

Displays the TIDEQ COMP help file.

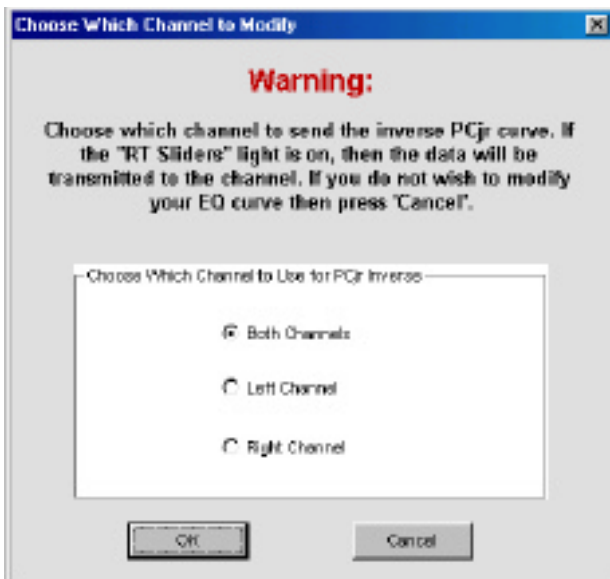
IMPORTING A PC RTAJR FILE

This feature allows users to import data files from Linear X's PC RTAJr software. Importing this data allows the TiDEQ Comp software to automatically modify the TiDEQ's sliders to the inverse of the PC RTAJr data file. The TiDEQ Comp software will then automatically adjust the sliders so the system's response with flatten with a click of a button. Keep in mind, the curve will not be perfectly flat in most cases due to in car variances. The purpose of this feature is to provide an excellent basis to begin tweaking for Sound Quality or RTA portions of competitions.

If only one serial port is present on the computer then the TiDEQ COMP software and PC RTAJr must be run at separate times. If two serial ports are present then you can measure the car's response with PC RTAJr and adjust the car's response with the TiDEQ Comp at the same time since they will be connected via two separate serial ports.

INSTRUCTIONS:

Open the PC RTAJr software. Place the microphone in the car and run pink noise through the system. Adjust the PC RTAJr software so the system's response is visible on the PC RTAJr software. Now save the current response shown on the screen as a (filename).dat file. In this example the file is called PC RTAJr.dat.



Turn off the car's audio system and connect the computer's serial port to the TiDEQ Comp if its not already connected.

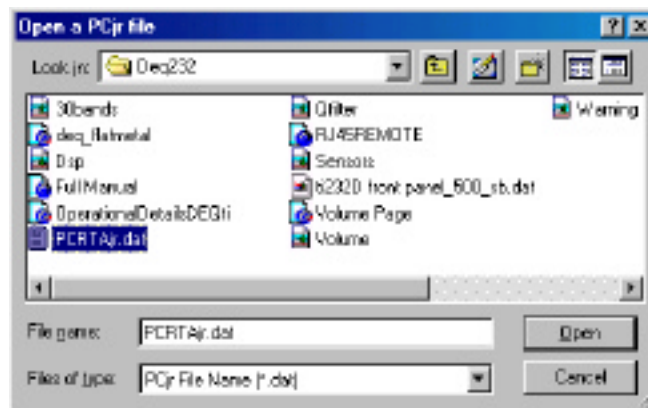
Turn on the car's audio system. Open the TiDEQ Comp software. Goto the 30 Band Tab and turn Real Time Sliders OFF. Make sure all sliders' Q value is set to the default value: 7. See page 8 for more information how to do this.

Goto File and select Import PC RTAJr Curve. A window will open giving the option of the changes to be made to both, left, or right channels.

Next select where the PC RTAJr.dat PC RTAJr file is located on your computer. Select the directory where the file is saved. If the file is not visible type *.* in the file name text box and hit enter. This will show all files stored in the directory, instead of just the files ending in .dat.

After the file has been selected, then click "Open". It will take a few seconds and then the sliders will adjust according to the information on the PC RTAJr file.

Transmit your changes to the TiDEQ Comp, so they will take effect in the car. In most cases, in car acoustics will cause slight variations in the frequency response. However, making adjustments to the sliders and/or the additional bands of parametric equalization will allow the curve to be flatten even further.



PROBLEM:	POSSIBLE CAUSE:	SOLUTION:
No output and Power-on LED is off	No battery, ground, or remote connection	Connect B+, B-, and a remote turn-on to the TiDEQ Comp. The TiDEQ Comp must have clean solid chassis ground connected to the B- terminal and receive at least 11 volts through the B+ and remote turn-on terminals.
	Blown power fuse	Use an ohm meter to check for a short to chassis ground in the B+ cable with the B+ cable disconnected from the TiDEQ Comp, battery and all other devices. Send the unit to an authorized Phoenix Gold Repair Center for repair, do not replace the blown fuse in the field.
No output and Power-on LED is on	No signal from the headunit Faulty input signal cables	Use an AC volt meter to check for voltage at the headunit's preamp outputs. The level should fluctuate with the peaks in music.
Distorted sound	Clipped input signal feeding the amplifier	Make sure the headunit is not producing a clipped signal. Most headunits clip their own output above 7/8 volume. Distorted signals coming into the TiDEQ Comp will sound distorted at any input sensitivity setting. Do not use a line driver to drive the inputs of the TiDEQ Comp.
Changes from TiDEQ Comp software don't take effect in car	Changes have not been transmitted	Click on the transmit changes button on the DSP or 30 band software tabs.
Can't find the PC RTAjr file to import	File may be named different File may be in different directory	Type *.* and hit enter in the file name text box. This will show all files stored in the directory, instead of just the files ending in .dat.
Sensored inputs won't work	TiDEQ Comp Software and Optional Remote Control are not being used	TiDEQ Comp Software and Remote Control must be installed together to in order for the sensed inputs to operate



WARRANTY INFORMATION

Phoenix Gold International, Inc. (or "Phoenix Gold") warrants its products against defects in materials and workmanship for a limited period of time.

For a period of one (1) year from date of original purchase, we will repair or replace the electronic product, at our option, without charge for parts and labor. The limited warranty period is EXTENDED to three (3) years from date of original purchase if the product was originally installed by an authorized Phoenix Gold electronics dealer and accompanied by a valid sales receipt showing a charge for installation. Customer must pay all parts and labor charges after the limited warranty period expires. The limited warranty period for factory refurbished products expires after ninety (90) days from date of original purchase. This limited warranty applies only to purchases from authorized Phoenix Gold Electronics and Speaker retailers.

This limited warranty is extended only to the original purchaser and is valid only to consumers in the United States. Consumers are required to provide a copy of the original sales invoice from an authorized Phoenix Gold dealer when making a claim against this limited warranty. This limited warranty only covers failures due to defects in materials or workmanship that occur during normal use. It does not cover failures resulting from accident, misuse, abuse, neglect, mishandling, misapplication, alteration, faulty installation, modification, service by anyone other than Phoenix Gold, or damage that is attributable to Acts of God. It does not cover costs of transportation to Phoenix Gold or damage in transit.

This warranty will become void if the serial number identification has been wholly or partially removed, altered or erased. Repair or replacement under the terms of this warranty does not extend the terms of this warranty.

Should a product prove to be defective in workmanship or material, the consumer's sole remedies will be repair or replacement as provided under the terms of this warranty. Under no circumstances shall Phoenix Gold be liable for loss or damage, direct, consequential or incidental, arising out of the use of or inability to use the product. There are no express warranties other than described above.



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