PHOENIX GOLD®

AMPLIFIER MANUAL

Model: Ti1600.5

Features:

- Uncompromised Five Channel Performance in a Single Chassis
- High, Band and Low Pass Crossovers
- Crossovers feature 41 Detents for Exact Frequency Selection
- Audiophile Bi-Polar Output Transistors (Front and Rear Channels)
- High Efficiency Class D Topology (Subwoofer Channel)
- Massive Dual Unregulated Power Supplies featuring Hand Wound Transformers
- Extruded Aluminum Heatsink with Evenflow Technology
- Dual Fan Cooling System
- Power Output Peak Indicators
- 1/0 Gauge Direct Insert Power Terminals
- Panel Mounted RCAs
- LPL44 - Low Pass Level Control Ready
- RMD - Remote Monitoring Display Port
- Advanced Thermal and Protection Circuitry

SPECIFICATIONS

FRONT AND REAR CHANNEL SPECIFICATIONS

Frequency Response:	± 1dB from 20Hz to 20kHz
Signal to Noise Ratio:	>110dB
High and Low Pass Crossovers:	18dB per octave
Front High Pass Crossover Range:	40Hz to 4kHz
Rear High Pass Crossover Range:	10Hz to 300Hz
Rear Low Pass Crossover Range:	40Hz to 4kHz
Low Level Input Range:	200 millivolts to 8 volts
Lowest Recommend Load:	4 ohm Bridged or 2 ohm Stereo
Typical Efficiency:	50%
Damping Factor	Greater than 200
Dynamic Power 14.4Vdc >1% THD	100 x 4 @ 4 ohm Stereo 150 x 4 @ 2 ohm Stereo 300 x 2 @ 4 ohm Bridged
RMS Power 14.4Vdc ≤1% THD	90 x 4 @ 4 ohm Stereo 120 x 4 @ 2 ohm Stereo 240 x 2 @ 4 ohm Bridged

SUBWOOFER CHANNEL SPECIFICATIONS

Frequency Response:	± 1dB from 20Hz to 300Hz
Signal to Noise Ratio:	>90dB
Subsonic and Low Pass Crossovers:	24dB per octave
Low Pass Crossover Range:	30Hz to 300Hz
Subsonic Crossover Range:	10Hz to 55Hz
Bass Boost @ 45Hz:	0 to +18dB
Low Level Input Range:	200 millivolts to 8 volts
Lowest Recommend Load:	1 ohm
Typical Efficiency:	80%
Damping Factor:	Greater than 200
Dynamic Power 14.4Vdc >1% THD	800 x 1 @ 2 ohm 1000 x 1 @ 1 ohm
RMS Power 14.4Vdc ≤ 1% THD	550 x 1 @ 2 ohm 800 x 1 @ 1 ohm

OVERALL SPECIFICATIONS

Recommended Fuse Size:	150A
Minimum Power/Ground Wire Size:	1/0 Gauge
Dimensions:	28.2" L x 9.8" W x 2.5" H 716mm x 252mm x 62mm

CROSSOVER SETTINGS

All crossover frequency potentiometers have 41 detents or "clicks" so the end user can set the exact cross over frequency desired.

SUB CHANNEL

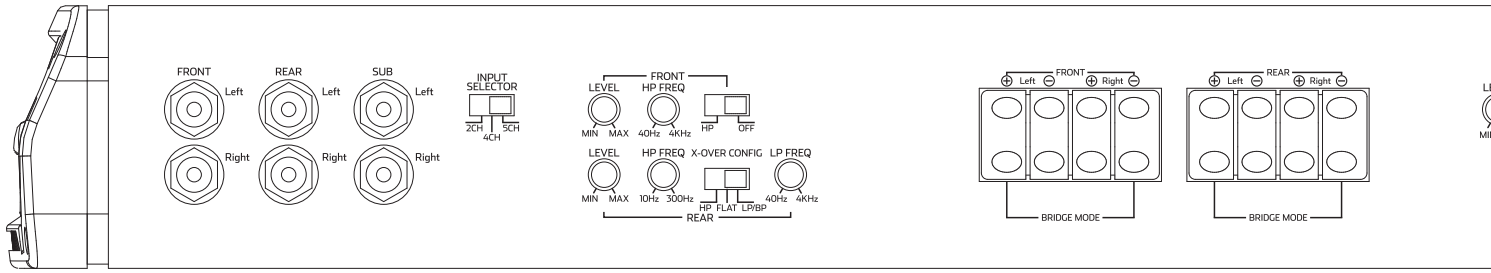
clicks	Subsonic (10~55hz)	LP (30~300Hz)	Bass Boost
1	58	300	0.0
2	58	300	0.0
3	58	296	0.0
4	56	284	0.1
5	55	274	0.1
6	54	266	0.2
7	53	248	0.2
8	53	242	0.4
9	52	234	0.5
10	51	227	0.6
11	49	198	0.9
12	46	178	1.5
13	43	160	2.1
14	41	146	2.6
15	39	135	3.1
16	37	125	3.4
17	36	116	4.2
18	38	108	5.0
19	34	102	5.4
20	32	96	6.3
21	31	87	6.9
22	30	75	7.6
23	26	66	8.4
24	25	59	9.2
25	22	53	10.0
26	22	48	10.8
27	21	44	11.6
28	20	42	12.5
29	19	39	14.2
30	18	36	14.6
31	17	34	15.9
32	16	32	16.3
33	15	30	16.6
34	14	29	16.9
35	14	27	17.1
36	13	26	17.2
37	12	26	17.4
38	12	26	17.6
39	12	26	17.6
40	12	26	17.7
41	11	25	17.8

FRONT AND REAR CHANNELS

clicks	FRONT HP (40~4kHz)	REAR HP (10~300Hz)	REAR LP (40~4kHz)
1	4.0k	304	4.2k
2	3.9k	303	4.1k
3	3.9k	303	4.0k
4	3.8k	302	2.9k
5	2.7k	299	2.5k
6	2.1k	268	2.0k
7	2.0k	241	1.7k
8	1.51k	221	1.5k
9	1.34k	205	1.3k
10	1.19k	191	1.1k
11	1.06k	178	1.0k
12	973	167	800
13	676	154	586
14	533	112	486
15	434	91	395
16	365	82	340
17	310	72	295
18	272	65	265
19	238	59	238
20	219	54	216
21	198	50	198
22	181	43	184
23	163	39	152
24	136	32	125
25	118	28	108
26	103	25	95
27	92	23	84
28	83	20	76
29	76	17	69
30	69	16	62
31	63	16	59
32	58	14	55
33	55	13	51
34	51	12	48
35	49	12	45
36	45	11	43
37	43	11	40
38	41	11	40
39	41	11	40
40	41	11	39
41	40	10	39

PHOENIX GOLD

T1600.5 - OPERATIONAL DETAILS



FRONT/REAR/ SUB INPUT
Connect signal cables from the head unit to these terminals.

2ch/4ch/5ch INPUT SELECTOR
2ch: Headunit has one pair of cables into front Input.
4ch: Headunit has two pairs of cables into front and rear inputs.
5ch: Headunit has three pairs of cables into front, rear and sub inputs.

HP/LP CROSSOVER FREQUENCY
Controls the crossover point for the speaker outputs.

CONFIG
FLAT/OFF: Crossovers are turned off
HP: High pass crossover is on
LP/BP: Low and High Pass crossovers are both on, creating a Bandpass (BP) setting for midbass drivers.

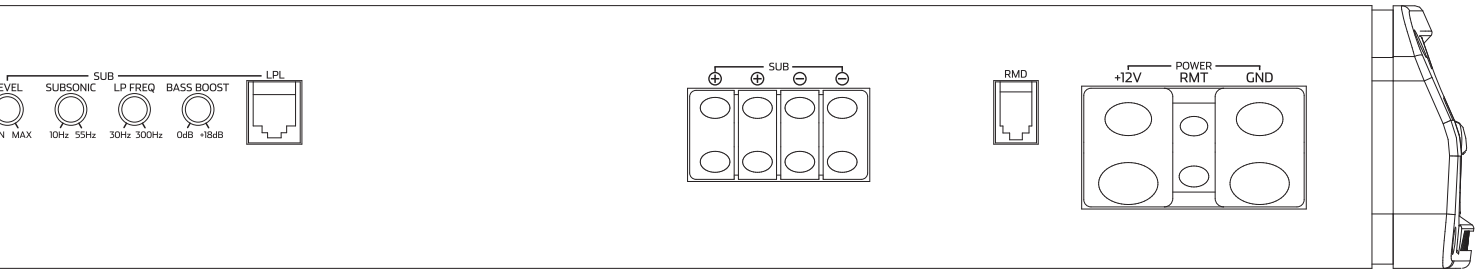
Notes: The front HP and rear LP crossovers extend to 4kHz, so its possible to run a component speaker system fully active. The tweeters would be powered by the front channels and the midbasses by the rear channels. Be sure to check with your speaker's manufacture for the correct tweeter and midbass crossover points to avoid speaker damage.

Subwoofer channel LP crossover and subsonic filter are always on.

LEVEL
Used to reach maximum amplifier power with a wide variety of headunits.

FRONT AND REAR SPEAKER OUTPUTS
Used to connect the amplifier to speakers. Minimum impedance is 2 ohm stereo/4 ohm bridged. Use left channel + and right channel - for bridged mode.

SUB CHANNEL SPEAKER OUTPUTS
Used to connect the amplifier to subwoofers. Minimum impedance is 1 ohm.



BASS BOOST
Variable bass boost from 0 to +18dB @ 45 Hz.

SUBSONIC CROSSOVER FREQUENCY
Controls the highpass crossover point for the speaker outputs to eliminate extreme low frequencies.

12V+
This must be connected to the fused positive terminal (+12V) of the car's battery. The fuse must be located within 18 inches of the battery. 1/0 gauge wire REQUIRED.

REMOTE
This must be connected to switched +12V, usually a trigger wire coming from the head unit or ignition.

GND
This must be connected to the negative terminal of the car's battery or bolted to a clean, unpainted part of the chassis of the vehicle. 1/0 gauge wire REQUIRED.

LOW PASS LEVEL CONTROL (LPL)
This port is for connecting the optional remote level control (LPL44). This allows up to 20dB of volume adjustment. This is not a bass boost, it controls the level of the sub channel.

REMOTE MONITORING DISPLAY (RMD)
Connect optional RMD Voltage Display to this port.

PEAK INDICATOR
Lights when the amplifier reaches near maximum output. Under normal operation the peak indicator should be flashing during the peaks of the music. Peak indicator should not stay lit for long periods of time (more than 2 or 3 seconds), if this is the case you need to reduce system volume or level of the amplifier.

PROTECT INDICATOR
Lights red if there is a problem with the audio system, see the troubleshooting page.

SYSTEM TUNING

1. Install all system fuses.

2. Set the amplifier's input sensitivity controls to their minimum positions (full counterclockwise).

3. Set all amplifier crossover switches according to your system's design.

4. Make preliminary adjustments to the crossover frequency, usually 80Hz is good starting point for high and low pass. It may be necessary to fine tune the crossover frequency later for the best overall sound quality.

5. If using a Remote Subwoofer Level Control, set it to maximum (full clockwise).

6. Turn the headunit on with the volume set to minimum.

7. Visually check the amplifier's has powered on by the power LED.

8. Check the condition of all other components to make sure they are powered up.

9. Set the headunit's tone controls, balance, and fader to the center (flat) position. Turn off any loudness or other signal processing features.

10. Set the volume control of the headunit for maximum undistorted output (on most headunits this will be approximately 7/8 of maximum volume). Use a very clear, dynamic recording and begin to listen.

11. Turn up the sensitivity or input level control on the amplifier until the speakers reach maximum undistorted output.

12. Repeat sensitivity level adjustments one at time for each set of channels.

13. Reduce the headunit's volume to a comfortable level.

14. Listen to various musical selections to check the overall system balance. Compare front to rear, midbass to midrange, etc. If one speaker set is too loud compared to another, then its level must be lowered to blend correctly with the other speakers.

    Note: For subwoofers controlled by the Remote level control, keep the level setting from step 11 or 12. Use the control to blend subwoofers with the rest of the system. The correct subwoofer volume will change depending on road noise and differences in recordings.

15. Fine tune crossover frequencies to achieve the smoothest possible blending of each speaker set.

16. Adjust the Bass Equalization/Boost Controls on the amplifier, headunit or processor upstream if necessary to increase output.

    Note: Use these controls sparingly. Every 3dB of boost requires double the power at 45Hz. If your subwoofer system requires a lot of boost to sound good, there may be a problem. Look for out-of-phase woofers, a leaking subwoofer box, or incorrect box size.

17. With all levels set correctly, the system will reach overall maximum undistorted output at the volume level set in step 10.

TROUBLESHOOTING

NO POWER:
Check voltage at amplifier with a DMM (volt meter), +12v and R (with head unit on) the voltage should register between 12.2V and 14.6V when using the ground lead of the amplifier. Check fuse at amplifier and at the battery. Use a meter to verify connection from one end of the fuse to the other, breaks may not always be visible. If the fuse is blown, check the power wire and also the amplifier for a short. If the short is in the amplifier itself, see your Phoenix Gold dealer. If no short is present, replace the fuse.

POWER WITHOUT SOUND:
Turn the amplifier off and check all input and output signal cables and power connections. Check the speakers for shorts with a DMM (volt meter) or by connecting them to another audio source. After making sure everything is correct, turn the amplifier on again.

POWER BUT PROTECT LED IS ON:
The red PROTECT LED lights when the amplifier shuts down for either thermal or over-current protection. A high internal amplifier operating temperature will trigger thermal shutdown: after it cools about 5°C, the amplifier will restart.

A shorted speaker lead or operation into unusually low impedance loads will trigger over-current shutdown: cycle power at the amplifier remote terminal to restore operation. Check for shorted speaker wiring or damaged speakers or crossover systems if over-current shutdown occurs.

NO SOUND FROM ONE SIDE:
Check the balance control in the head unit. Check speaker connections. Check signal input connection.

VERY LOW OUTPUT:
Check your head unit's fader control or the amplifier's input sensitivity level. Make sure subsonic frequency control is not set too high and LP frequency control is not set too low at the same time.

FREQUENT AMPLIFIER SHUTDOWN:
This indicates chronic amplifier thermal shutdown because of operation at consistently high internal temperatures. High operating temperature can be caused by inadequate ventilation. Make sure you are not running a lower than recommend impedance. Also check for damaged speakers or passive crossover systems. Finally, chronic thermal shutdown may result from otherwise normal operation of the amplifier at elevated output power levels, which can be resolved by providing additional amplifier cooling, installing a higher-power amplifier, or reducing amplifier output level.

AMPLIFIER QUICKLY CYCLING ON AND OFF:
Check the amplifier's connection to the battery. Check battery voltage. If low, recharge or replace the battery. Check all ground connections.

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Designed and Engineered in the USA

Phoenix Gold Product Warranty

LIMITED WARRANTY ON AMPLIFIERS

Phoenix Gold warrants this product to be free of defects in materials and workmanship for a period of one (1) years 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.