

ELITE

PHOENIX GOLD[®]



**AMPLIFIER
OWNER'S MANUAL**

FEATURES

INTRODUCTION:

Thank you for purchasing a Phoenix Gold Elite amplifier, we are confident it will be the finest amplifier you have ever owned.

The Elite amplifiers feature only the highest grade of audio components such as Burr Brown op-amps, Monolithic signal capacitors, and dual-package Sanken output transistors. The result is unparalleled sonic performance in a mobile audio amplifier. With proper installation this amplifier is overbuilt to last a lifetime, thank you for choosing Phoenix Gold.

ELITE.1

- Class D Topology
- Overbuilt Quad Unregulated Power Supplies
- Handwound Power Supply Transformers
- Isolated Pre-Amp Section
- Crossovers have 41 Detents for Exact Frequency Selection
- Aluminum Shaft Potentiometers
- Panel Mounted RCAs
- Clip Indicators
- Extruded Aluminum Heatsink with Evenflow Technology
- Integrated Cooling via Endcap Vents
- Each Amp is Shipped in its Own Soft Felt Protective Cover
- High Temperature Plexiglass Cover
- RMD - Remote Voltage Display Ready
- Remote Level Control with Clip Indicator Included
- Linkable or strappable to an additional Elite.1
- Audio Precision Quality Control Verification
- Power Output Birth Certificate

ELITE.2/4

- Class A/B Topology
- Burr Brown Operational Amplifiers
- Monolithic Signal Capacitors
- Massive Dual Package Sanken Output Devices
- Overbuilt Dual Unregulated Power Supplies
- Handwound Power Supply Transformers
- Triple Darlington Output Stage
- Isolated Pre-Amp Section
- Crossovers have 41 Detents for Exact Frequency Selection
- Aluminum Shaft Potentiometers
- Panel Mounted RCAs
- Clip Indicators
- Extruded Aluminum Heatsink with Evenflow Technology
- User Adjustable Temperature Controlled Fan Cooling System
- Integrated Cooling via Endcap Vents
- Each Amp is Shipped in its Own Soft Felt Protective Cover
- High Temperature Plexiglass Cover
- RMD - Remote Voltage Display Ready
- Remote Level Control with Clip Indicator Included
- Audio Precision Quality Control Verification
- Power Output Birth Certificate

SPECIFICATIONS

ELITE.1

Frequency Response:	± 1dB from 20Hz to 300Hz	RMS Power 14.4Vdc ≤ 1% THD	2400 x 1 @ 2 ohms
Signal to Noise Ratio:	>100dB		3200 x 1 @ 1 ohm
Low Pass Crossover:	24dB per Octave		
Subsonic Filter:	24dB per Octave	Note: A power birth certificate is included for each amplifier. Elite amplifiers are VERY CONSERVATIVELY rated and will exceed the RMS power rating by up to 30%.	
Low Pass Crossover Range:	30Hz to 300Hz		
Subsonic Crossover Range:	10Hz to 55Hz		
Bass Boost @ 45Hz:	0 to +18dB	Recommended Fuse Size:	300 amp
Low Level Input Range:	200 millivolts to 8 volts	Power/Ground Wire Size:	1/0 Gauge
Lowest Recommend Load:	1 ohm	Dimensions:	23.3" L x 10.5" W x 2.6" H
Typical Efficiency:	85%		592mm L x 267mm W x 66mm H
Damping Factor:	Greater than 200		

ELITE.2

Frequency Response:	± 1dB from 10Hz to 50kHz	RMS Power 14.4Vdc ≤ 1% THD	250 x 2 @ 4 ohms Stereo
Signal to Noise Ratio:	>110dB		400 x 2 @ 2 ohms Stereo
High and Low Pass Crossovers:	18dB per Octave		500 x 2 @ 1 ohm Stereo*
High Pass Crossover Range:	20Hz to 4kHz		
Low Pass Crossover Range:	40Hz to 4kHz		800 x 1 @ 4 ohms Bridged
Low Level Input Range:	200 millivolts to 8 volts		1000 x 1 @ 2 ohms Bridged*
Lowest Recommend Load:	2 ohms Bridged or 1 ohm Stereo	Note: A power birth certificate is included for each amplifier. Elite amplifiers are VERY CONSERVATIVELY rated and will exceed the RMS power rating by up to 30%.	
Typical Efficiency:	55%		
Damping Factor:	Greater than 200	*Reactive Load Measurement	

ELITE.4

Frequency Response:	± 1dB from 10Hz to 50kHz	RMS Power 14.4Vdc ≤ 1% THD	150 x 4 @ 4 ohms Stereo
Signal to Noise Ratio:	>110dB		250 x 4 @ 2 ohms Stereo
High and Low Pass Crossovers:	18dB per Octave		300 x 4 @ 1 ohm Stereo*
High Pass Crossover Range:	20Hz to 4kHz		
Low Pass Crossover Range:	40Hz to 4kHz		500 x 2 @ 4 ohms Bridged
Low Level Input Range:	200 millivolts to 8 volts		600 x 2 @ 2 ohms Bridged*
Lowest Recommend Load:	2 ohms Bridged or 1 ohm Stereo	Note: A power birth certificate is included for each amplifier. Elite amplifiers are VERY CONSERVATIVELY rated and will exceed the RMS power rating above by up to 30%.	
Typical Efficiency:	55%		
Damping Factor:	Greater than 200	*Reactive Load Measurement	

A NOTE ABOUT SPECIFICATIONS....

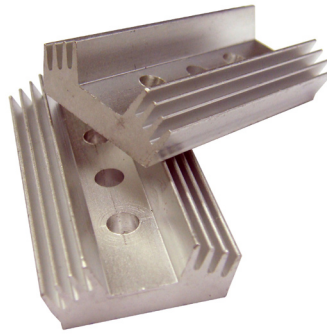
Elite amplifiers were engineered to be the best sounding mobile amplifiers on the planet. Numbers on this sheet of paper can not truly convey the dynamics and realism these amplifiers can deliver. Enjoy!

Recommended Fuse Size:	100 amp
Power/Ground Wire Size:	1/0 Gauge
Dimensions:	23.3" L x 10.5" W x 2.6" H
	592mm L x 267mm W x 66mm H

INTERNAL BREAKDOWN

PHOENIX GOLD

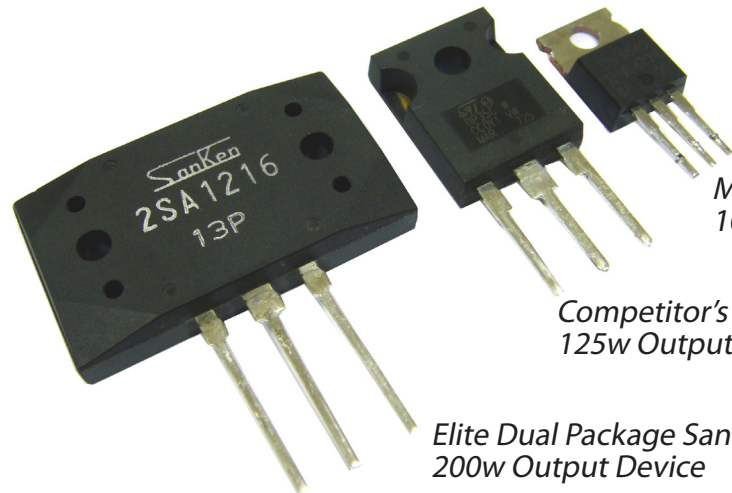
Dual Heatsink MOSFET Clamp



The power supply is loaded with 16 units of IRF-3205 high current/speed MOSFETs. They are clamped to the heatsink using precision aluminum extrusions for dual heatsinking and lower power supply operating temperatures.

Legendary Phoenix Gold massive dual unregulated power supplies are built for dynamic headroom and to drive low 1 ohm impedance loads.

High current nickel plated buss bars connections ensure proper energy transfer.



Mid to Low Level 100w Output Device

Competitor's "High End" 125w Output Device

Elite Dual Package Sanken 200w Output Device

High temperature and heavy duty "Tombstone" balancing resistors buffer the Sanken output devices.

The dual package Sanken output devices are usually only reserved for the highest end of home amplifiers. They are more than 12 times faster compared to most competitor's output devices (40MHz vs 3MHz). The Sanken devices are rated at higher power levels, drive lower impedance loads better and have 2.5 times the surface mounting area to transfer heat. The end result is the highest possible sound quality, dynamic performance and reliability.

Power supply transformers are hand wound and feature a third winding (nearly all amplifiers only have two) for higher efficiency and lower operating temperatures.

All crossovers feature aluminum shaft precision potentiometers with 41 detents for exact crossover frequency selection.

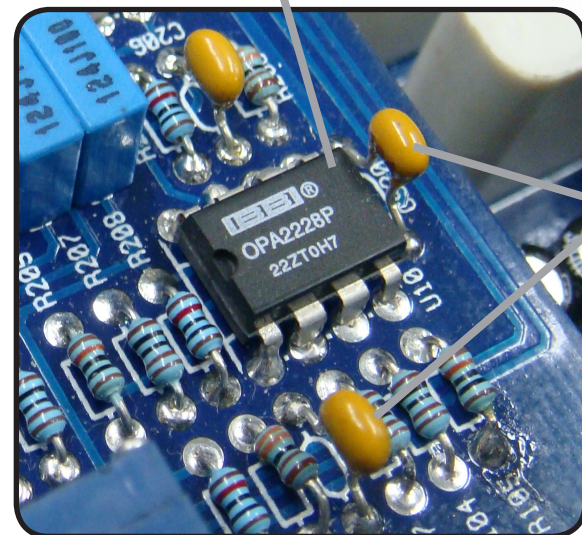
Ultra low ESR and high energy secondary capacitors deliver maximum dynamic performance.



Subwoofer level control featuring clip and power indicators is included with each Elite amplifier.

Burr Brown op-amps provide ultra low distortion and maximum resolution in the pre-amp circuitry.

The fan cooling system is ultra quiet and its speed is temperature controlled. Air is forced across the internal heatsink and exhausts out the sides. The end user has the option to manually control the fan mode via the endpanel switch.



Audiophile monolithic signal capacitors provide frequency response past 50kHz, well past the ability of human hearing.

Clip indicators light when the amplifier reaches maximum output.

High density extruded aluminum heatsink features 13 grams per mm of mass. Most normal amplifiers have only 6 grams per mm.

Exhaust vents are built into the endcaps. Airflow from the cooling system is pushed across the internal heatsink fins and exhausts out these side vents.

Nickel plated panel mount RCA connections ensure signal purity and a high quality connection.



ELITE.1 FUNCTIONS

INPUT

Connect preamp signal cables from the head unit to these terminals.

LP CROSSOVER FREQUENCY

Controls the lowpass crossover point for the speaker outputs. See page 8 for exact crossover settings.

BASS BOOST

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

REMOTE LEVEL CONTROL

This port is for connecting the subwoofer remote level control. This is not a bass boost, it controls the level of the low pass signal. This control is not compatible with the Phoenix Gold LPL or RBC level controls.

OUTPUT MASTER/INPUT SLAVE

See page 11 for details how to link two Elite.1s together. **IMPORTANT: FOR NORMAL USE, MAKE SURE THE SWITCH IS SET TO OUTPUT MASTER.** If its set to INPUT SLAVE during normal use the amplifier will have no output.

LEVEL

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

SUBSONIC CROSSOVER FREQUENCY

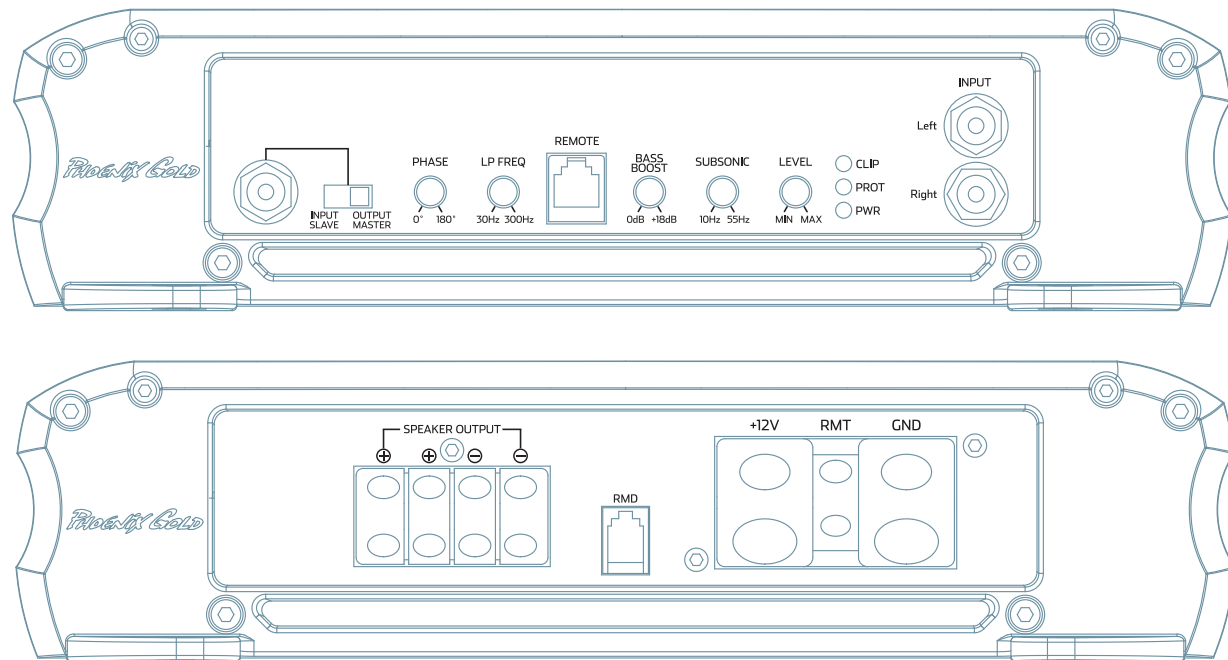
Controls the highpass crossover point for the speaker outputs to eliminate extreme low frequencies.

CLIP INDICATOR

Lights when the amplifier reaches near maximum output. Under normal operation the clip indicator should be flashing during the peaks of the music. The clip 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. For example, a speaker wire is pinched/shorted, the amplifier is running too low of an impedance or reached an unsafe temperature.



+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.

REMOTE

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

GROUND

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.

SPEAKER OUTPUTS

Used to connect the amplifier to subwoofers. Minimum impedance is 1 ohm. Minimum speaker wire size is 12 gauge.

RMD

Optional RMD Voltage Display plugs into this port. Sold separately.

PHASE

This allows the phase of the amplifier output to be adjusted from 0 to 180 degrees. This adjustment can help achieve better "up front" subwoofer bass and resolve subwoofer cancellation problems in certain installations. Each installation is different, slowly adjust and listen for best results.

ELITE.2 FUNCTIONS

INPUT

Connect preamp signal cables from the head unit to these terminals. 200mV to 8v is the input voltage range.

FAN

The internal fan is nearly inaudible but the end user can control the fan's mode via the endpanel switch.

ON: Fan runs at full speed at all times regardless of the heatsink temperature. This is recommended for heavy users or low impedance loads such as 1 ohm stereo/2 ohms bridged.

OFF: Internal fan is off. This is only recommended for short periods of time. For example, a sound quality competition.

AUTO: Best setting for most users. Internal fan is off until the heatsink temperature reaches 50°C/120°F then the variable fan turns on and its speed is controlled by the heatsink temperature.

REMOTE LEVEL CONTROL

This port is for connecting the subwoofer remote level control. This is not a bass boost, it controls the level of the low pass signal only. Config switch must be set to "LP/BP" for the remote to operate.

HP AND LP CROSSOVER FREQUENCY

Controls the crossover point for the speaker outputs. See page 8 for exact crossover settings.

LEVEL

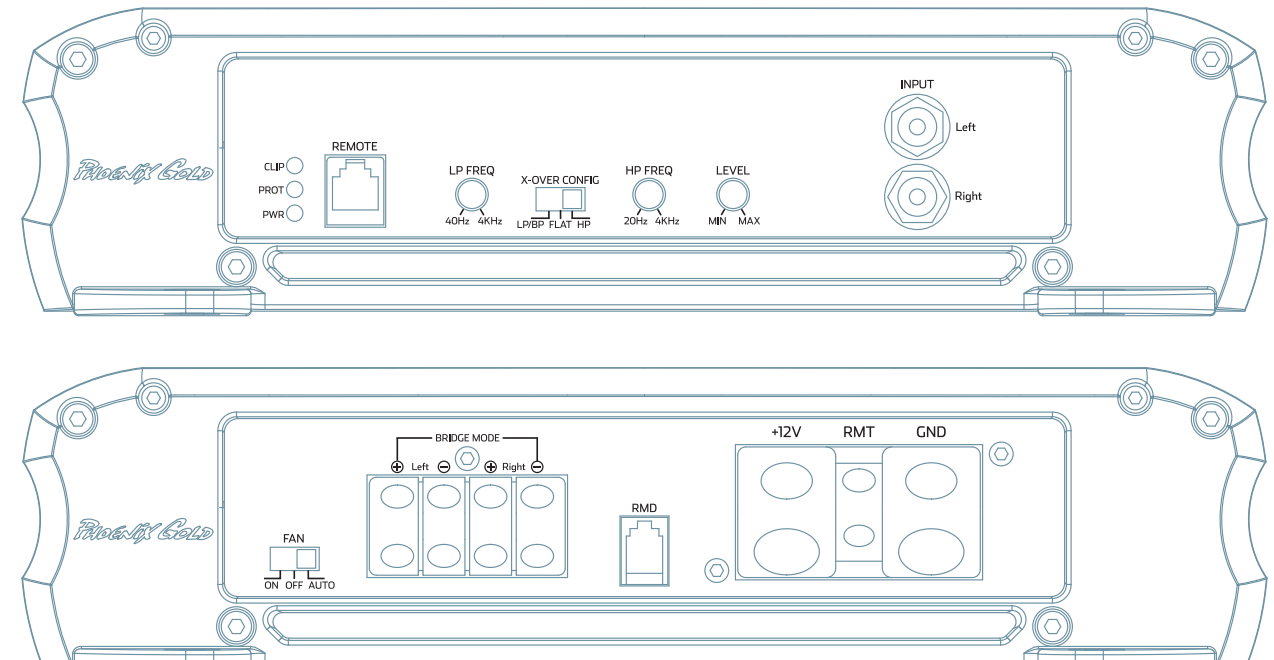
Used to reach maximum amplifier power with a wide variety of headunits.

CONFIG

FLAT: Crossovers are turned off

HP: High pass crossover is on

LP/BP: Low and High Pass crossovers are on, creating a Bandpass (BP) setting for midbass drivers or subwoofers. For a standard subwoofer system, the high pass frequency now becomes a subsonic filter. To turn subsonic filter off, turn the HP FREQ (Subsonic Filter) to 20Hz.



+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.

REMOTE

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

GROUND

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.

RMD

Optional RMD Voltage Display plugs into this port. Sold separately.

CLIP INDICATOR

Lights when the amplifier reaches near maximum output. Under normal operation the clip indicator should be flashing during the peaks of the music. The clip 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. For example, speaker wire is pinched/shorted, the amplifier is running too low of an impedance or reached an unsafe temperature.

SPEAKER OUTPUTS

Used to connect the amplifier to speakers. Minimum impedance is 2 ohms bridged or 1 ohm stereo. Minimum speaker wire size is 16 gauge. Use Left + and Right - to bridge the channels.

ELITE.4 FUNCTIONS

FRONT AND REAR INPUTS

Connect preamp signal cables from headunit to these inputs. The front and rear inputs must be used, if only the front input is used then the rear speaker outputs will have no output signal.

FAN

The internal fan is nearly inaudible but the end user can control the fan's mode via the endpanel switch.

ON: Fan runs at full speed at all times regardless of the heatsink temperature. This is recommended for heavy users or low impedance loads such as 1 ohm stereo/2 ohms bridged.

OFF: Internal fan is off. This is only recommended for short periods of time. For example, a sound quality competition.

AUTO: Best setting for most users. Internal fan is off until the heatsink temperature reaches 50°C/120°F then the variable fan turns on and its speed is controlled by the heatsink temperature.

REMOTE LEVEL CONTROL

This port is for connecting the subwoofer remote level control. This is not a bass boost, it controls the level of the low pass signal of rear channels only. Rear channels' config switch must be set to "LP/BP" for the remote to operate.

CROSSOVER FREQUENCY

Controls the crossover point for the speaker outputs. See page 8 for exact crossover settings.

LEVEL

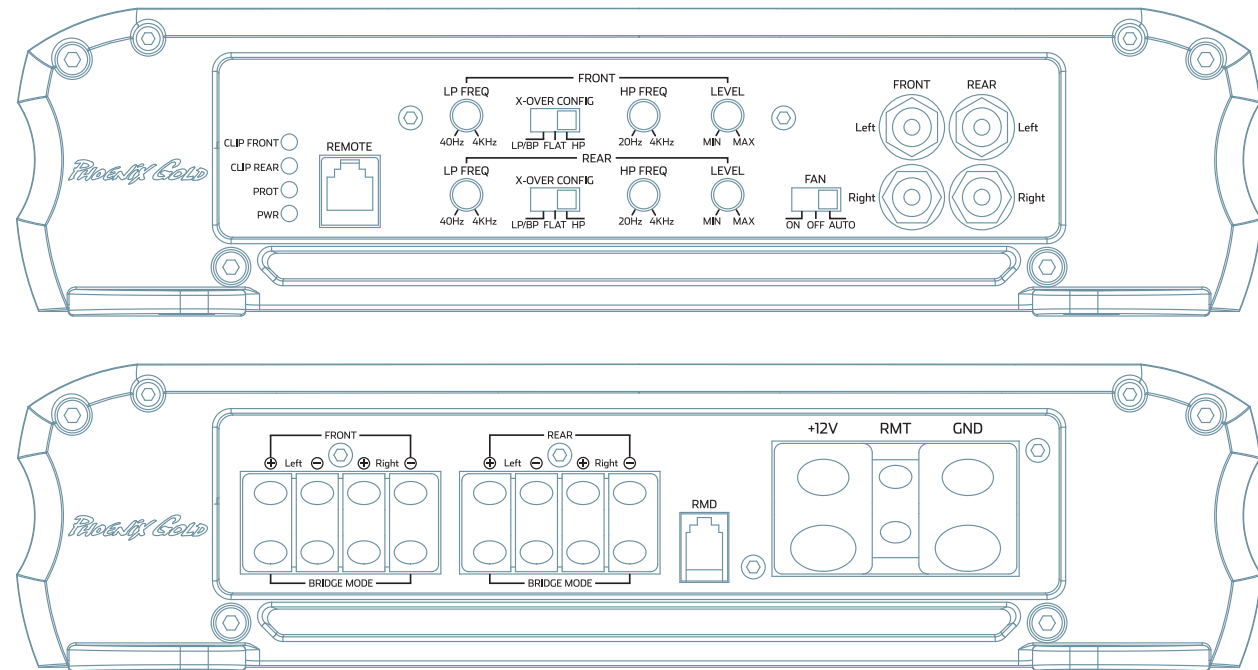
Used to reach maximum amplifier power with a wide variety of headunits.

CONFIG

FLAT: Crossovers are turned off

HP: High pass crossover is on

LP/BP: Low and High Pass crossovers are on, creating a Bandpass (BP) setting for midbass drivers or subwoofers. For a standard subwoofer system, the high pass frequency now becomes a subsonic filter. To turn subsonic filter off, turn the HP FREQ (Subsonic Filter) to 20Hz.



+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.

REMOTE

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

GROUND

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.

RMD

Optional RMD Voltage Display plugs into this port. Sold separately.

CLIP INDICATOR

Lights when the amplifier reaches near maximum output. Under normal operation the clip indicator should be flashing during the peaks of the music. The clip 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. For example, speaker wire is pinched/shorted, the amplifier is running too low of an impedance or reached an unsafe temperature.

SPEAKER OUTPUTS

Used to connect the amplifier to speakers. Minimum impedance is 2 ohms bridged or 1 ohm stereo. Minimum speaker wire size is 16 gauge. Use Left + and Right - to bridge the channels.

CROSSOVER SETTINGS

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

ELITE.1

clicks	Subsonic (10~55Hz)	LPF (30~300Hz)
1	12	30
2	12	30
3	12	30
4	12	30
5	12	30
6	12	31
7	13	32
8	13	33
9	14	35
10	15	37
11	16	39
12	16	42
13	18	45
14	19	49
15	20	52
16	22	56
17	24	62
18	26	69
19	28	77
20	31	87
21	32	102
22	34	114
23	35	120
24	36	126
25	38	134
26	39	143
27	40	152
28	42	163
29	44	214
30	45	230
31	47	248
32	47	251
33	48	253
34	48	260
35	49	273
36	49	280
37	49	289
38	49	295
39	50	304
40	50	305
41	50	306

ELITE.2

clicks	LPF (40Hz~4kHz)	HPF (20Hz~4kHz)
1	37	23
2	37	24
3	38	24
4	38	25
5	41	27
6	44	29
7	48	30
8	51	31
9	56	33
10	62	37
11	68	40
12	76	44
13	88	50
14	96	55
15	110	58
16	130	67
17	160	78
18	180	99
19	190	120
20	220	121
21	250	150
22	290	170
23	330	200
24	360	220
25	430	260
26	480	360
27	560	390
28	620	430
29	720	450
30	970	631
31	1.18k	790
32	1.3k	890
33	1.5k	1k
34	1.7k	1.18k
35	2k	1.4k
36	2.45k	1.7k
37	2.7k	2.2k
38	3.2k	3.2k
39	3.5k	4.15k
40	3.85k	4.2k
41	3.9k	4.4k

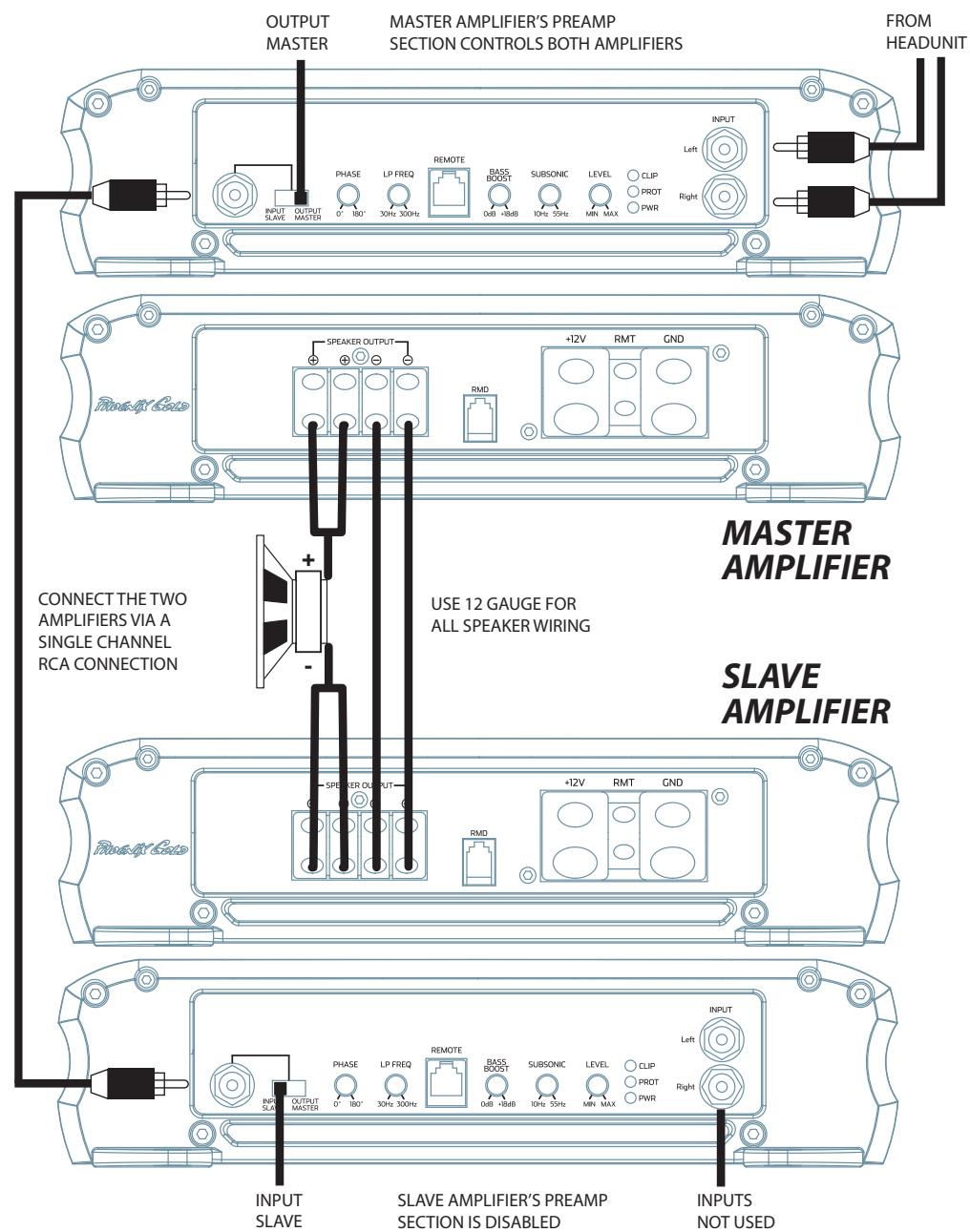
ELITE.4

clicks	LPF (40Hz~4kHz)	HPF (20Hz~4kHz)
1	36	24
2	37	25
3	38	27
4	41	30
5	44	33
6	48	38
7	52	41
8	55	46
9	61	51
10	65	60
11	67	71
12	73	83
13	86	96
14	93	106
15	99	122
16	107	129
17	127	134
18	162	143
19	186	155
20	220	170
21	251	187
22	282	207
23	317	235
24	365	264
25	430	286
26	517	330
27	666	353
28	860	393
29	1.05k	434
30	1.12k	455
31	1.32k	514
32	1.49k	583
33	1.65k	693
34	1.77k	876
35	2k	1k
36	2.3k	1.2k
37	2.5k	1.4k
38	2.9k	1.8k
39	3.2k	2.6k
40	3.6k	3k
41	3.9k	4.2k

LINKING OR STRAPPING TWO ELITE.1s

Strapping or linking two amplifiers allows you to deliver a ton of power into a single voice coil commonly used in SPL competitions. The example below shows two Elite.1s delivering a total of 6,400 watts RMS into a single 2 ohm voice coil.

- DO NOT STRAP AMPLIFIERS INTO A 1 OHM LOAD. Minimum load strapped is 2 ohms.
- The "Master" amplifier's preamp section controls both amplifiers. "Slave" amplifier's pre-amp controls are disabled.
- The negative or (-) speaker output terminals are connected together using 12 gauge wire as shown.



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 turned 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 and dynamic recording.
11. Turn up the sensitivity or input level control on the amplifier until the speakers reach maximum undistorted output.
12. Repeat sensitivity level adjustments for all other amplifiers.
13. Reduce the headunit's volume to a comfortable level.
14. Listen to various musical selections to check 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 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 the amplifier with a DMM (volt meter), +12v and R (with head unit on) the voltage should register between 11.5V and 14.4V when using the attached ground lead of the amplifier. Check fuse 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 without sound and the PROTECT LED is lit: The red PROTECT LED lights when the amplifier shuts down 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 R terminal to restore operation. Check for shorted speaker wiring or damaged speakers or crossover systems if over-current shutdown occurs.

No sound from one or more channels: Check for overvoltage on +12V and ground terminals. 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 with automatic recovery: 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.

Its critical that Elite amplifiers have the proper power and ground wiring from the vehicle's electrical system. Too small of power wire or improper terminations can cause voltage drops and the amplifier to engage its protection.

"Motor Boating": The power indicator going off repeatedly when the audio system is on. Check the amplifier's connection to the battery. Check battery voltage. If low, recharge or replace the battery. Check all ground connections.

PHOENIX GOLD

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Designed and Engineered in the USA

LIMITED WARRANTY ON AMPLIFIERS

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.