

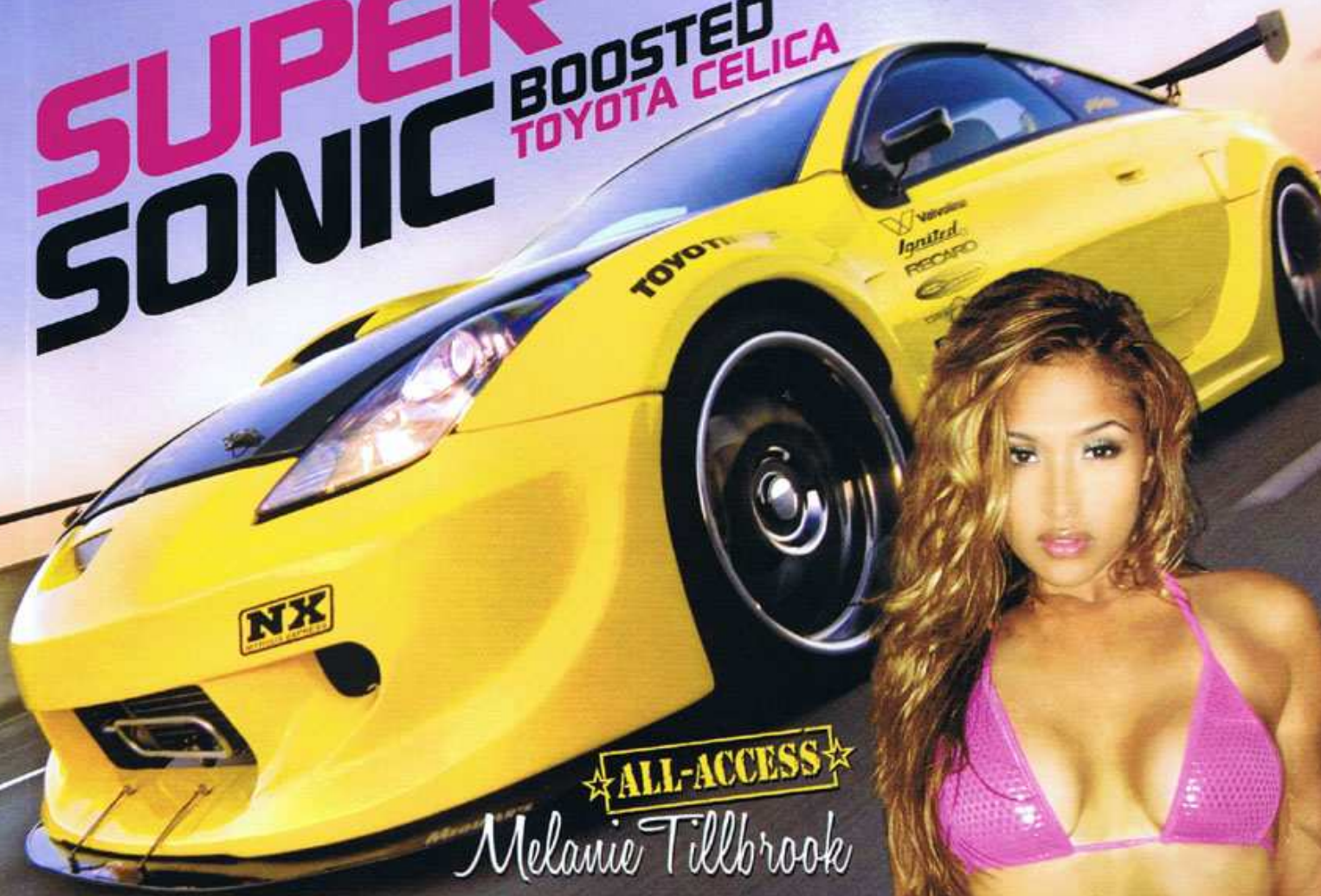
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Melanie Tillbrook



TESTED:



PHOENIX GOLD
RSD 500.4 AMP

ECLIPSE
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ARC AUDIO
4000SE AMP

JUNE / JULY 2007 :: DISPLAY UNTIL JULY 15/07

\$6.50 CANADA / \$5.99 U.S.

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Volume 9 Issue 3

PHOENIX GOLD RSD 500.4

Text and Measurements by Garry Springgay
Photos provided by Phoenix Gold



Sure, I'm an audio geek, but I'm also a pretty serious car-/motorcycle enthusiast. So when I get together with my like-minded buddies, the conversation is almost always going to lead to, and then focus on, one of those gear head subjects (much to boredom of our wives and girlfriends.) How long the session lasts usually is determined by the square root of the female patience, divided by the sum of cold ones still left in the beer fridge.

One of our frequent topics involves reminiscing about our favourite items from the past. Whether it's the '71 Roadrunner I stupidly sold for 3 grand in 1979, my buddy's 1942 Harley, or my very first under-dash car stereo system, I've noticed there are always a few classic and sought after brands you'd do anything to get your hands on.

These "legacy brands" have led and paved the way for the industry to move forward over the years, and look how far we've come! During the last decade or so, some of these brands have thrived, some struggled, and a few, sadly, have completely disappeared.

This month we're going to have a look at a four-channel amp from one of those legacy brands, Phoenix Gold. Some of you may have already noticed that when it comes to the car audio market, Phoenix Gold is in the middle of a revival of sorts. In the last 15 years or so, the company went from being a highly regarded industry player, to being more focused on home and pro audio. But now, with all new

The following power measurements were obtained using industry standard methods. (1kHz @ 1.0% THD+N - Battery voltages shown +/- 0.2V)

MEASURED PERFORMANCE SPECIFICATIONS

Manufacturer's Rating	Measured Power @ 1.0% THD+N	Measured Power @ 1.0% THD+N
Power	@ 14.4V Battery	@ 12.6V Battery
Front/Rear	84 x 4 @ 4 Ω	63 x 4 @ 4 Ω
78 x 4 @ 4 Ω	136 x 4 @ 2 Ω	101 x 4 @ 2 Ω
135 x 4 @ 2 Ω		
Signal to Noise Ratio referenced to 2V output.		-87.2dB
(CEA-2006A) (1 watt @ 4 ohms)		
Signal to Noise Ratio referenced to full output.		-106.3dB
(64 watts @ 4 ohms)		
Distortion at rated power		0.1%
CEA-2006A rated 4 ohm Power (minimum power per channel developed over the entire audio bandwidth)		78 watts/ch
Maximum Efficiency at full 2 ohm power per ch.		58.5%
Idle Current		1.4A
Input Sensitivity		197mV - 9.3V
Maximum Current @ full power 1 ohm		65.1A
Frequency Response (-3dB)		<10Hz - 47kHz
High Pass Crossover		40Hz - 400Hz -18dB/oct
Low Pass Crossover		40Hz - 400Hz -18dB/oct
Bass EQ boost		+18dB @ 45Hz
Stereo Separation (Crosstalk)		-64dB @ 5kHz

management at the helm and a refocused energy, they seem very committed to making a strong comeback in the 12V arena. Competition improves the breed, and this new team is dedicated to bringing it.

And I'm glad to see it happening - maybe because I'm an old dude - but these legacy brands will always mean something to enthusiasts like me, our industry in general and a lot of you readers as well. Okay, I'll quit waxing nostalgic... Lets have a look at the biggest four channel in this series, the Phoenix Gold RSD 500.4 >>

PHOENIX GOLD RSD 500.4

COSMETICS

The RSD amplifiers from Phoenix Gold have a very unique and "modern / high-tech" look to them. They incorporate uncommon shapes for amplifiers, and blend matte black paint with unique shiny clear acrylics, and really don't look like anything else out there. The amp is rather large in size, at 19.25 inches long, and a touch over 11 inches wide, but the RSD 500.4 has a fairly low profile, and is only 2.375 inches tall.

The ends of the amp have the terminals located on opposite corners, at 45-degree angles to the main body of the amplifier. Each amplifier has no less than three round logos, all illuminated by blue LED lighting. I've had the opportunity to take several different models from the RSD series apart, and I have to say the fit and finish of this series is excellent. The amplifier uses all machine screws to hold the end caps and top cover in place, and after taking them apart, they went back together perfectly, without any misalignment or fitment issues.

MANUAL

The eight-page manual for the Phoenix Gold RSD 300.4 and 500.4 amps is a pretty complete and informative manual. It includes everything you'd need to know to install the amp, wire it properly and make the basic adjustments. I thought the large clear drawings were a good idea too, for those installers out there who usually prefer pictures over words, and don't read manuals anyway. You know who you are! Also included in the manual are full CEA-2006A specifications, as well as warranty, tuning, and troubleshooting information. There is even a handy wire gauge chart to help you decide what gauge wire is appropriate for your installation. If you need a manual to install this amp, you should find answers to most any common question in here. And if you don't find the answer, they provide a phone number where you can call for help, in case you're "special". Yeah, you still know who you are.

FEATURES

The Phoenix Gold RSD 500.4 is a reasonably full-featured four-channel amp. It includes the usual gain and crossover controls, with each end of the amp having independent high pass, low pass, or all pass settings. The filter frequency adjustment range covers 40Hz to 400Hz, with the slopes set to -18dB / octave. There is also a bass EQ control for each set of channels, allowing up to a maximum of 18dB of boost at about 45Hz. Auxiliary full range RCA outputs allow the connection of signal to a second amp. An RJ45 port allows the connection of an optional remote voltage display, allowing real-time monitoring of the amplifier's supply voltage. The amp's channels are also bridgeable, so it can be used in 4-, 3-, or 2-channel configurations.

My only small gripe with this amp, and also with most other four-channel designs these days, is that they lack a signal routing switch allowing the user to drive all four channels with a single pair of RCAs. C'mon guys, it's not rocket science. I hate Y cords!

Many brands could really take lessons from the level of mechanical engineering that went into the Phoenix Gold RSD series. The assembly and build quality from a cosmetic and mechanical standpoint is very well executed.

▶ **This basic configuration has been the backbone of many well-respected designs over the years, including the highly regarded Phoenix Gold amps of the early '90s. The design is stable and is highly regarded as a good-sounding platform.**

DESIGN

Internally, the Phoenix Gold RSD 500.4 is a pretty straightforward amplifier design; using two of the expected PWM MOSFET-powered switching power supplies, (one for each set of channels) and Triple Darlington bi-polar output sections.

The amp is nicely laid out inside, and the high-current PCB traces are wide and well isolated from the low-level signal-carrying sections. The PCB itself is a double-sided affair, eliminating jumpers and noise-inducing sky-wiring. Where signal is routed to a daughter board for the rear channels, the cabling is short and shielded from the high-frequency switching noise of the power supply. Overall, nice attention to detail like this results in a better-sounding, more reliable product.

PERFORMANCE / LISTENING

This is always the best part of the my evaluation, because I get to

sit back and listen to my favourite music. I hooked up the Phoenix Gold RSD 500.4 to my reference speaker systems. The signal came from a Denon DVD / SACD player, through a Hafler preamplifier, to the inputs of the RSD 500.4.

Because the steep -18dB slopes allow you to use higher frequency settings, I dialed in the woofer low pass filter at about 100Hz, and left the front channels full range to my Focal 908s. I like to do the listening in my lab for several reasons, not the least of which is to eliminate other variables. I never have the same system in my car long enough to get really used to it! I also prefer it because it's quiet and comfortable, and it's no fun trying to evaluate a system in the Arizona summer when you don't want to run the car because of noise, and the interior temp is 130 degrees! I'm sure those of you who have some sound Q judging experience can relate! ▶▶



PHOENIX GOLD RSD 500.4

Sitting down to audition the Phoenix Gold RSD 500.4 proved to be quite a pleasant experience. I like to listen to a wide variety of music, and if you have a properly designed system there should be no need to have to make adjustments when changing genres. The system should sound the way the recording was intended, without corrections, regardless of the music type.

And with the Phoenix Gold RSD 500.4, that's precisely what happened. I could go from 50 Cent to Bach to ZZ Top without any issues. Low bass was loud, clean, and tight, while the amp still maintained smooth and detailed high frequencies with no harshness or edginess.

During several hours of focused listening, the Phoenix Gold amplifier sounded very natural and uncoloured regardless of the musical selection, and handled dynamics and my reference woofer's current demands with ease.

A couple of times I did notice a slight lack of focus in the stereo image, but you'll remember I'm listening in a quiet room, seated perfectly between very good imaging speakers at an optimum distance. In a vehicle, the amount of difference I'm talking about here would be difficult to hear even sitting still with the engine off.

PERFORMANCE / BENCH MEASUREMENTS

On the unbiased Cogent Audio Labs test bench, the Phoenix Gold amp lived up to its high performance heritage. In every case, the amplifier met or exceeded its CEA-2006A specifications, and during high-power testing at various load impedances, showed no sign of stress or strain.

The distortion at rated 4Ω power was 0.1%, and I found the amplifier's full power efficiency about average for a 4-channel design, at just over 58%. With a very wide range of adjustment, the input sensitivity control allows the amp to be driven into clipping with any signal level between 200mV to over 9 volts! This kind of adjustment capability allows full compatibility with almost any source.

Frequency response measured flat within 3dB from below 10Hz to 47kHz. I did notice that because of tolerances in the ganged gain pots, there could be as much as 1dB of gain imbalance between channels, depending on where the pot was in its rotation. While this is of little consequence in a vehicle, it may be the cause of the small lack of focus I noticed earlier in the stereo image. In any case, one could always run the slightly higher output channel to the channel furthest away in the car, and this rather insignificant sonic difference would then be even more minimal.

The signal to noise ratio measured a very quiet -87.2dBA referenced to 1 watt. (CEA-2006A) Referenced to full power as some others spec it, this amp would come in at better than -106dBA. Stereo separation was also very good at -64dB.

While not a real indication of any perceptible sonic performance, the stereo separation or "crosstalk" specification of an amplifier does show an indication of attention to detail in PCB layout and other factors that can contribute to sonics. A low number here does not mean a bad amp, but a high number can indicate more care and attention went into the design.

The Phoenix Gold RSD 500.4 showed no sign of turn-on or turn-off noises, and it protected properly when deliberately dead-shortened on the test bench.

CONCLUSION

Based on the performance of the Phoenix Gold RSD 500.4, it looks like another legendary brand is poised to make a strong comeback. With this kind of performance and build quality at reasonable prices, I can certainly see them winning back another generation of loyal Phoenix Gold customers. **PAS**

THE SOURCE

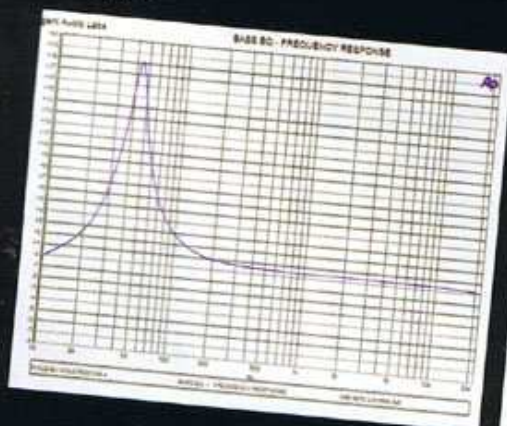
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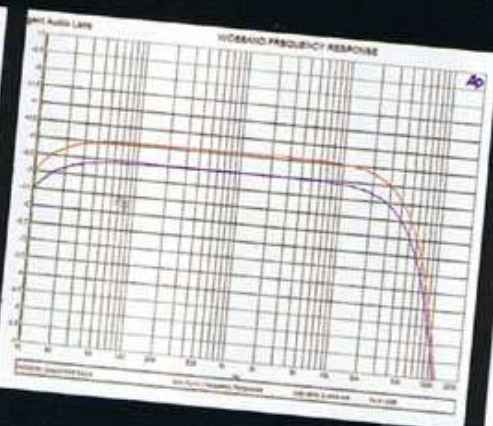
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