

# DLS CC-4

4-CHANNEL AMPLIFIER

AUDITION

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## AMPLIFIED RESPLENDENCE.

» Things have been a little quiet on the Scandinavian front of late, thanks by in large to Swedish manufacturer DLS taking a stay of absence from the Australian car audio market; albeit through no fault of its own. That doesn't mean this maestro of audio has been resting on its laurels procrastinating; anything but actually.

The good news for us is that DLS has returned to Australia, bringing with it a dazzling new range of audio goodies. Just in case you've been caught unawares, DLS has been producing stunning audio products since its conception in 1979 by three audiophiles Dawid, Leif and Stefan (yes of course one of them is named Stefan). Since these humble beginnings the company has grown exponentially to become one of the most successful audio competitors in all of Europe, producing more hits than the Beatles and amassing a gargantuan number of awards in the process.

### SAY CC

Well, the DLS stable is simply enormous, ergo choosing one single item to review was fraught with careful evaluation. However, rather than instinctively reaching for the largest and shiniest object, we instead chose to have a closer look at a clever little range of amplifiers making waves

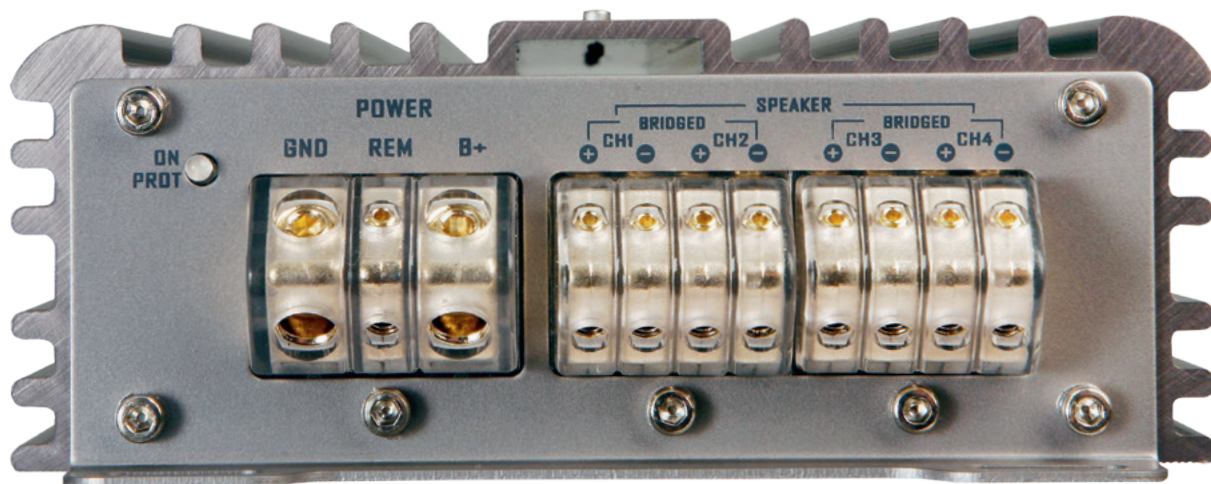
around the world. The CC series; specifically the new CC-4. The reasoning they're so fascinating is this; while every other manufacturer is taking the easier route in the 'size vs power ratio' game, DLS instead relied on almost half a century of experience, and developed the CC-4 amplifier to not only be minute, but also to retain Class-AB switching for a super natural sound, as DLS' by-line proclaims.

Before we delve further, let us first discuss amplifier classes and just why it is that we're excited about this amplifier retaining its Class-AB switching. Analogue amplifiers are classed depending on how much current they flow during each wave cycle (or Hz). The cycle is measured in degrees; with 360 degrees meaning the current is flowing during the entire cycle. Class-A switching utilises the same output transistor to reproduce both top and bottom halves of the audio waveform, meaning it's always switched on (i.e. full current flowing through it); even with no audio signal. This methodology results in electrical inefficiency, therefore leading to thermal inefficiency. However Class-A amplifiers tend to sound more natural in comparison to other classes, hence the reason why audiophiles not only endure these inefficiencies but actually seek them out.

Class-B amplifiers use twin transistor groups where one reproduces the positive top portion of the waveform while the second produces the negative bottom portion of the waveform – basically 180 degrees per side. This design is the diametric opposite to Class-A where current is concerned in that it's ultra-efficient due to there being no idle current flowing through the output transistors when there is no audio waveform to reproduce. Perfect except then reality rears its ugly head.

See, all transistors require a small amount of current to turn on and consuming this power produces a small step in the waveform to occur – not ideal for true sound quality. Therefore the vicissitudes of time have seen the development of the Class-AB switching design. These amplifiers also employ two groups of transistors and for all intents and purposes are very similar in design to Class-B. However, in order to get away from that waveform discrepancy Class-AB units have a small amount of bias current constantly running through the transistors so they remain switched on, eradicating that blip in the waveform. Consequently, [on paper] in employing Class-AB switching you retain the trademark warm and smooth sound but without too hideous an inefficiency.

So with that explained allow us to return to the CC-4. As the name suggests it's a four channel amplifier with each channel's output just over 50 watts continuous when presented with a 4-ohms load, and with a total harmonic distortion of just 0.02 percent. Loading it down at 2-ohms



garners just over 70 watts per channel with distortion still remaining exceptional. The unit can also be bridged, with you receiving over 140 watts per channel pair for your trouble. Wisely, maximum power ratings are largely ignored; as well they should be, after all you don't have car manufacturers marketing their cars around the engine redline figures.

Control over unwanted cone movement and deceleration to the zero point is remarkable thanks to a damping factory of over 250 and reciprocating accuracy is maintained thanks to a most impressive slew rate of 20V/μs. The remaining ancillary specifications are also above average with a 55dB separation equating to very little channel bleed, weighted signal-to-noise ratio of 110dB meaning the amplifier has a very clean noise floor, and last but not least, frequency response is a low 10Hz through to a stunning 55kHz.

## NO BLING NO BLAND

Physically speaking DLS amplifiers tend to polarise people; they always have. This is because DLS chooses to run with a heavy industrial look rather than either bling or bland, meaning its amplifiers are always very serious looking, often bristling with heat sink fins. The CC-4 is no different.

Finished in the standard DLS brushed silver, it's a small affair; yet despite this the Class-AB unit still manages to outperform many thrice its size. Upon the top is a photo-etched plate presenting the DLS and 'Super Natural Sound' logos and lined along the far end are both low and high level pre-ins along with all aural controls ranging from gain through to high-pass and low-pass crossovers. The opposite end is home to gold plated power, remote and earth input blocks, in addition to twin speaker output blocks; one for front and one for rear. If you're looking for the fuse it resides within.

Speaking of within; the topology of the CC-4 is a clean design to behold, packed with quality hardware. Starting with a thick single-sided circuit board, the layout features twin 25V 2200uf stiffening capacitor banks behind the input blocks. From there the smoothened current is stepped up via an air core iron transformer before being stored in two large 35V

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2200uf power capacitors, ready to transfer at a moment's notice through the Sanken output transistors and onto your speakers. Exercising sensibility, all sound processing circuitry is kept at the opposite end well away from the current-handling hardware and, in order to achieve the maximum thermal coefficient, the FETs are actually bolted against the side case using cap-screwed alloy clamps. Finding space for the CC-4 is a no brainer, as it'll fit just about anywhere with its minute 51mm x 129 x 250mm footprint. That said, cooling airflow should be a top consideration given it's a Class-AB switcher. Locales such as under seats will see it happily living out what should be a long operational life provided air flow is adequate.

To be totally honest, I didn't have absolutely enormous hopes for the CC-4. Not that I've ever been left unimpressed by a DLS amplifier before; on the contrary the A3 is still to this day among my favourite amplifiers. It's just that with the CC-4 being small, being Class-AB not D, not to mention those specs looking a little too good to be true, even taking weighting into consideration; really could this little 'engine that could' be all it's cracked up to be?

Well folks; I must admit the answer is a resounding "my word it can!" It's not so much a powerful amplifier as it is clean. Don't misunderstand me here; the CC-4 can certainly output plenty of volume, however it's the clarity in which it plays which impresses.

Starting initially with the noise test and this is where we received the first hint that we'd stumbled onto something special. Even with the sensitivity turned to full there is very little hiss. Not quarter, not half – we're talking literally wound to maximum. It's one seriously quiet amplifier. Linearity-wise it presents a near flat response when feeding directly into the real time analyser and during playback of actual music provides gut punching bass, chest

thumping midrange, with treble lucidity to die for. No matter what genres of music you're into, be contemporary classical or country through to heavier genres like techno, rock and heavy metal the CC-4 can provide cool, smooth and controlled coverage with little difficulty.

In the interest of fairness, it must be mentioned that it does have limitations due to its size, so don't expect absolutely outrageous power from it – fair's fair people.

## CONCLUSION

Let us just reiterate that last point. If you're in the business of flirting with the lofty peaks of 180dB then stop the train right now and alight, as the CC-4 is not designed for you. The CC-4 is designed for those wanting top quality sound in a reasonably-sized package within a price point that won't atrophy your bank account. **ALF**

## DLS

### CC-4

#### 4-CHANNEL AMPLIFIER

**TYPE:** Class-AB 4-channel amplifier

**POWER RATING:** 4 x 50/70 watts continuous at 4/2-ohms (CEA2006)

**FEATURES:** High- and low-pass crossover

**COST:** \$399

**CONTACT:** Designer Listening Solutions on 1300 733 475

**WEB:** [www.dlsaudio.com.au](http://www.dlsaudio.com.au)

- Superbly clean & noise-free sound
- Small package is easily placed
- Well built

- Moderately powerful