

Axton A544DSP + A594DSP: affordable DSP power amps



DSP for newcomers

► With the DSP amplifiers A544DSP and A594DSP Axton has an offering that smart buyers can hardly dismiss. Here we compare the two sister power amps.

Whether a DSP amp is an amplifier with integrated DSP or a DSP device with integrated amplifier can be debated. The fact is that this type of device is a very useful tool for getting a good sound in the car. A DSP amp gives you perfect control over all speakers in the audio system and a pair of amplifier channels for a small or even a fully-fledged HiFi system as appropriate. Axton services the lower price segment with the tiny A544DSP and A594DSP. They cost just 250 and 340 euros respectively.

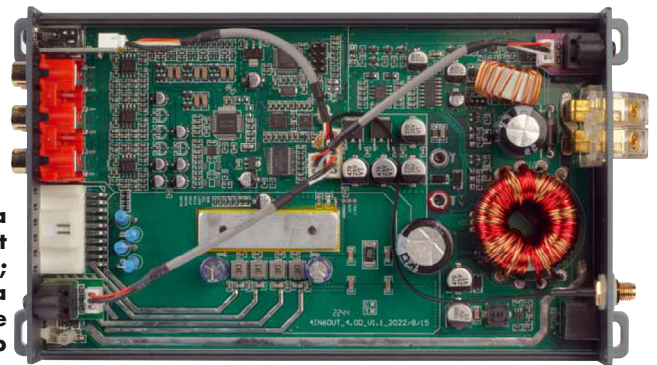
For that we do not expect a high end device: neither overwhelming amplifier performance nor DSPs with all the bells and whistles. Our assessment of the feature lists of the two Axtons made us all the more pleased. Although they look almost identical for the 544 and 594, in actual fact they are two rather unequal sisters. Common to both are the already integrated 4 amp channels, 4 analog high-level inputs for a factory radio, digital inputs and outputs, and Bluetooth. These prices are enough to

make your mouth water – both of them are almost shamelessly cheap. Neither are they bothered that the accessories should be subject to a surcharge. We found no less than 27 vehicle-specific plug & play cables on the homepage, even covering adapters for factory radios with speaker diagnostics. As a result these small DSP amps are ideal as simple sound boosters. Also very interesting as an accessory is the streaming adapter ABT50, which is also Bluetooth capable. Indeed it offers high resolution digital inputs and outputs so that it is a great HiRes streaming adapter, and not only for our two Axton devices here. A look inside the enclosure and it is clear that both are also closely related technically. We find a Bluetooth chip next to the receiver, a sample rate converter for the digital input, and a 4-channel amplifier chip, which turns out to be a size bigger in the A594DSP than in its smaller sister. For DSP an AK7735 from AKM is used that already has integrated converters. We have seen a lot worse than that, and in view of the prices Axton has no need to fear comparison.

Let us come to the differences between A544DSP and A594DSP, because here it is evident that the power amps follow different concepts although at first glance they seem similar. First off, the 594 has more power, namely 4 x 50 watts compared to 4 x 30 watts for the 544. Neither is therefore a power monster, and in fact the A544DSP can only be supplied with power via the vehicle connector. However, with DSP the smaller A544DSP outdoes its bigger sister: The A544DSP has 10 DSP channels, the A594DSP only 6. At first sight it seems perplexing that the larger power amp is worse equipped, but there is a reason. Only the A594DSP is blessed with a HiRes frequency range up to 40 kHz. The A544DSP runs at a lower sample rate and manages only 22 kHz. At double the sampling rate (96 relative to 48 kHz) the 594 unfortunately devours twice the processor power so that the number of channels being processed has to be lower. Consequently both have different task areas. The 10-channel A544DSP is the control center for a comprehensive HiFi



In the A544DSP located at top center are the DSP, controller and the helpers for Bluetooth and digital inputs

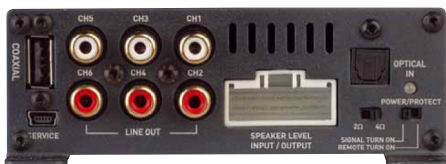


The A594DSP has a small power supply unit with power terminals; at the bottom under a small heat sink sits the 4-channel amp chip

system. The built-in amplifiers are adequate for tweeters, mid-range speakers or for a rear system. Naturally as small plug & play sound boosters they can also drive factory speakers in the doors at the front and rear if your level demands are not too high. One should definitely consider using an additional power amp in tandem. As if on cue, here the Axton AT601 with 6 x 100 watts for 340 euros comes immediately into the reckoning so that you would get a powerful 10-channel system for 600 euros! The A594DSP on the other hand has enough power to drive all speakers down to the woofer and a small subwoofer. It is an obvious choice for adequately driving door speakers or controlling an active front system. Again, for a fully-fledged system an additional power amp is not wrong: for example, a mono or 2-channel for woofers in a BMW or Mercedes, or for a subwoofer. These two extra channels can be covered by the DSP.

Measurements and Sound

The most important results have already been anticipated, namely on the one hand the 50 to 30 watts channel

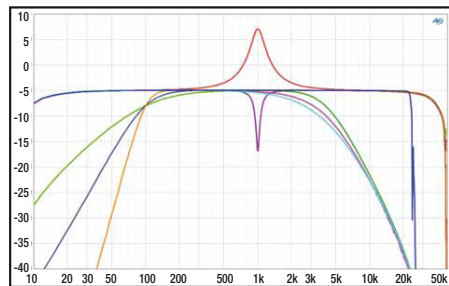


The A594DSP offers 6 processed outputs, the first four being identical with the amp channels. Both amps have two digital inputs, USB and optical

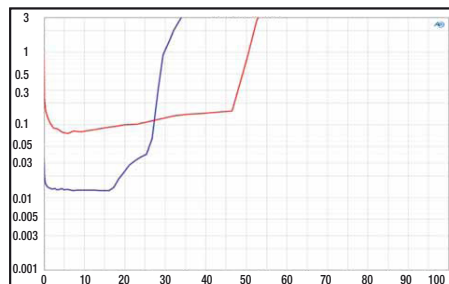


The A544DSP offers 6 processed outputs in addition to the 4 amp channels

output. In addition the A594DSP is 2-ohm stable, though it does not produce more power compared with 4 ohms. Both Axtons also produce very little noise, and distortion is not an issue, particularly with the A544DSP. The extended frequency response of the A594DSP for HiRes applications shows up in the frequency response measurement. The DSPs offer the same functionality except for the number of channels. Crossovers can be switched up to 24 dB per octave and even with three characteristics. There are two EQs, in the input and at the outputs. The input EQ has 9 bands to correct deformed factory frequency responses for the analog inputs and, separately from that, 9 bands for digital and Bluetooth. The output EQ comprises the standard 31 bands per channel. The time align-



DSP with crossovers up to 24 dB/octave and EQs. The A544DSP calls it a day at 22 kHz. The A594DSP offers 40 kHz for HiRes applications



The A544DSP (blue) outputs 30 watts with very low distortion. The A594DSP manages 50 watts with somewhat more distortion

ment works in 1-cm steps. Here the A594DSP does not take advantage of its higher sampling rate – a concession to newcomer friendliness and ease of use. That is also why the 1 cm steps are arbitrarily displayed: a sample would be 7 mm and the software roughly constructs the distances to suit – a usual ap-

Technical Data

Inputs

- 4-CH high-level
- 4-CH RCA (A544DSP)
- 1 x digital S/PDIF (optical)
- 1 x digital Bluetooth streaming
- 1 x digital "coax" (USB)

Outputs

- 6-CH RCA
- 1 x digital S/PDIF (optical)
- Remote-out

DSP-channel

- 6 (A594), 10 (A544)

DSP-Software

- App (Android 13 V1.0.4/1.0.6 wihle)

Equalizer

Inputs:

- 9 band for each analog, Bluetooth, digital
- Parametrical, +12 -- -12 dB
- 20 – 20k Hz, 1 Hz steps, Q 0,3–9,9

Outputs:

- 31 band for each channel
- Parametrical, +12 -- -12 dB
- 20 – 20k Hz, 1 Hz steps, Q 0,3–9,9

Crossover

- 20 – 20k Hz, 1-Hz-steps
- Butterworth, 6-24 dB/oct.

Time and level

- Sampling rate 48/96 kHz, 10 mm steps (0,03 ms)

Outputs

- 0 – 550 cm (15,90 ms), 1024 samples
- Phase 0, 180°
- Level for input pairs and single outputs, adjustable in 0.1 dB steps

Equipment

- App control (iOS and Android)
- 5 setups storable
- Bluetooth audio streaming with
- Automatic source changeover
- 'Dynamic bass', adjustable
- 'Dynamic treble', adjustable
- Noise gate, adjustable
- Limiter, adjustable

Optional accessories

- Remote control A592DSP-RC (level, bass level, mute)
- Hi-Res streaming module ABT50
- Vehicle specific cable harness
- Adapter for diagnostic headunits

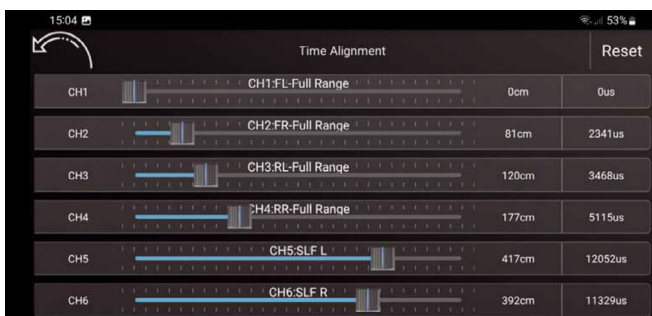


Main menu with subsections

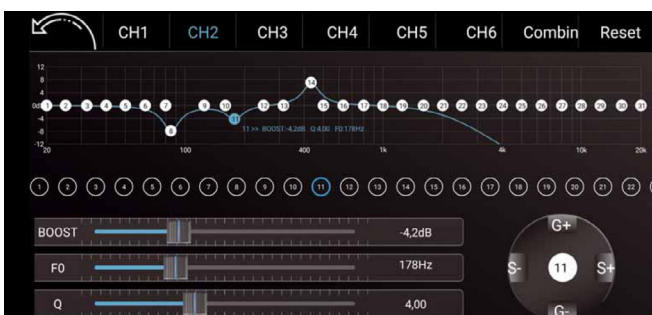
proach with low-price DSPs. Communicating over Bluetooth, the relevant app is responsible for control. The sources can be switched manually or automatically with the signal input. The Axton amps are thus able to do everything needed for controlling an audio system. Sonically the two chip power amps do quite well. As expected there is no high-end soundscape, but a fresh, solid sound that is certainly good enough for everyday. The little A544DSP certainly sounds attractive and convincing. It is just the limited maximum level that is noticeable. The A594DSP does that much better. Here the dynamics and undistorted playback of loud passages is how it should be. Moreover, both power amps ensure clear spatial depth and transparent overtones. All in all a very good performance.

Summary

With the A544DSP and A594DSP you have two fine little tools for bringing DSP controlled sound, including Bluetooth streaming, into the car for a small amount of money. The A544DSP together with a small 4 or 6-channel power amp forms the dream team for a low budget multi-channel system, whereas the powerful A594DSP with a bass enhancement produces a fully-fledged HiFi system.



Time alignment with sliders



Output EQ with 31 parametric bands and graphical display of the EQs and crossovers



PRICE-TIP
Upper-Class
CAR & HiFi 6/2023

PRICE-TIP
Top-Class
CAR & HiFi 6/2023

4-channel amps	Axton A544DSP	Axton A594DSP
Price	about 250 Euro	about 340 Euro
Distributor	ACR CH-5330 Zurzach info@acr.eu axton.de	ACR CH-5330 Zurzach info@acr.eu axton.de
Hotline		
Internet	www.	

Summary			
▶ Sound quality	40 %	1,2	1,2
Bass foundation	8 %	1,5	1,5
Pressure	8 %	1,0	1,0
Transparency	8 %	1,0	1,0
Accuracy	8 %	1,0	1,0
Dynamics	8 %	1,5	1,5
▶ Lab	35 %	2,1	2,0
Power	20 %	3,0	2,5
Damping factor	-	-	-
Distortion	5 %	1,0	1,0
Signal/Noise Ratio	10 %	1,0	1,5
▶ Practice	25 %	0,9	0,9
Features	15 %	0,5	0,5
Workmanship electr.	5 %	1,5	1,5
Workmanship mech.	5 %	1,5	1,5

Technical data

Channels	4	4
Power @ 4 ohms	30	51
Power @ 2 ohms	0	51
Power @ 1 ohms	0	0
Bridged power @ 4 ohms	0	0
Bridged power @ 2 ohms	0	0
Sensitivity max mV	-	-
Sensitivity min mV	5,0	-
THD+N (<22 kHz) 5W	0,012	0,055
THD+N (<22 kHz) half load	0,012	0,103
Signal/Noise Ratio DB(A)	97	93
Damping 20 Hz	-	-
Damping 80 Hz	-	-
Damping 400 Hz	-	-
Damping 1 kHz	-	-
Damping 8 kHz	-	-
Damping 16 Hz	-	-

Features

Lowpass	20 – 20k Hz	20 – 20k Hz
Highpass	20 – 20k Hz	20 – 20k Hz
Bandpass	20 – 20k Hz	20 – 20k Hz
Bass-boost	via DSP	via DSP
Subsonicfilter	via DSP	via DSP
Phaseshift	via DSP	via DSP
High-Level inputs	• 4CH	• 4CH
Autosense	• DC	• DC
RCA outputs	• 6CH	• 6CH
Start/Stop compatible	• (7,2 V)	• (7,2 V)
Dimensions (L x W x H in mm)	177 x 114 x 40	218 x 114 x 40
Other	-	-

Upper-Class 1,4
CAR & HiFi 6/23
Price/performance: very good

Top-Class 1,4
CAR & HiFi 6/23
Price/performance: very good

"Affordable plug&play upgrade with DSP and streaming"