

PS8-50 – 8-channel DSP amplifier from Arc Audio



Powerful Beauty

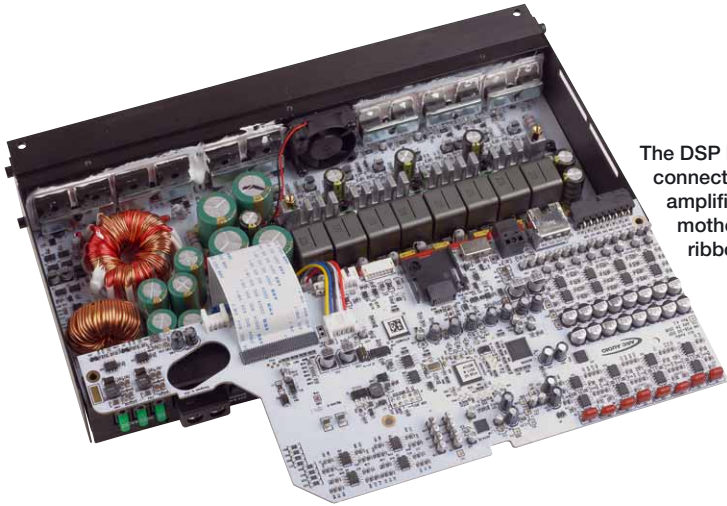
► With the new DSP Pro platform, Arc Audio is pushing into the top group of DSP manufacturers. We have the 8-channel PS8-50 power amplifier for testing in the editorial office.

The American company Arc Audio is famous for its first-class amplifiers. The legendary Signature series is still in our best memory, because even the smallest model excelled itself so far in our test that we almost couldn't believe it. The mind behind the Signature Amps (and behind a whole range of Arc audio products) is the legendary developer Robert Zeff, who has been offering his services for quite some time with his design office Nikola Engineering. Arc Audio is eagerly using this, and not just in the Signature series. Robert Zeff also plays a part in the game on the new DSP platform. There are three new products: the stand-alone PS8 Pro processor, our PS8-50 and the IPS8.8 built-in module, which can be used to retrofit the three ARC series amplifiers. The extra charge is 550 euros, which is not cheap, but it seems perfectly fair considering the premium performance of the processor. The PS8 Pro alone costs 1000 euros, which makes our PS8-50 a good deal, because for 100 more euros we get full eight amplifier channels.

The PS8-50 is a small amplifier, but not really micro with its long edge of good 10 inches. On the connection side we find a variety of sockets, besides the power supply, which is featured as a conventional terminal, there are, of course, space-saving Molex connectors for inputs and speakers. Inside, the DSP presents itself as a slightly modified installation module IPS8.8. On the large board we find the finest components, including hordes of very good op amps from Texas Instruments. The chief position is occupied by a 32-bit ARM controller of the latest design from Atmel, while the DSP uses a popular and, most importantly, very good ADAU1452 from Analog Devices. The AD converter comes from AKM's noble premium series, while its DA colleague comes from the Advanced series, both of which enable superior performance with 32-bit word size and thus belong to the premium range of the car audio market. The eight-channel amplifier, which is hidden un-



The PS8-50 is extremely connective. In addition to the inputs and outputs, there are interfaces for remote control, Bluetooth, Wi-Fi and much more



The DSP board is connected to the amplifier on the motherboard via ribbon cable

der the DSP, also makes an excellent impression. There is a generous transformer power supply and a whole series of transistors on the heatsink. However, the output amplification is provided by four two-channel ICs under the motherboard. These are from Infineon/International Rectifier and are bridgeable types. They are rated up to a maximum of 100 watts per channel, so they are firmly attached to the housing with highly stable heatsink strips to achieve optimum heat transfer.

Software

Let's take a closer look at the of the processor capacities - these are immense. First of all, we have eight DSP channels available. There is a full set of eight inputs that can be adjusted in sensitivity, up to 32 volts, so that factory equipment with amplifiers can also be connected. However, there is no anti-diagnostic circuit or a trick for the new VW radios. However, there is an automatic source

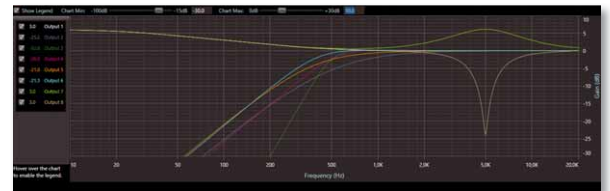
switching, even with preset selection, and a configurable switching of vehicle sounds or navigation announcements. Arc Audio also thought about start-stop vehicles and radio reception, for the latter, even the PWM frequency of the amplifier chips in the software can be changed. Normally, the 8 DSP channels are allocated to the 8 amplifier channels and off you go. But the software also offers the possibility to set up a bridge operation very conveniently. All channel pairs are bridgeable, and if you bridge channels 5-8, a hardware switch also allows the two RCA outputs to have their own DSP channels. So we have a six-channel amplifier with two powerful bridge channels and two processed outputs in front of us. Another extra feature are the two switch inputs, when grounded able to switch between the four setups — a



Slim beauty: With 26 cm length, the Arc Audio is so compact that it allows a hidden installation



The setup screen allows configuration of each channel and special features

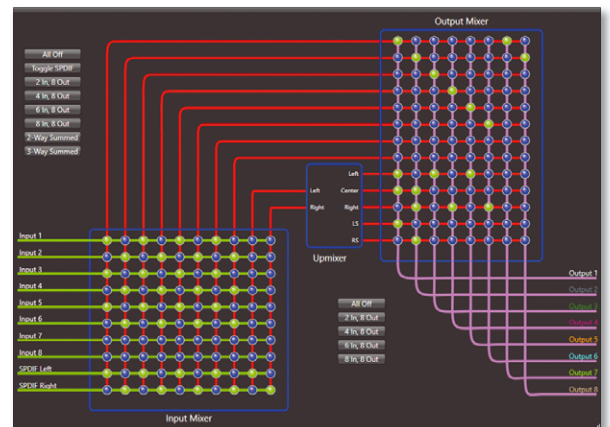


The frequency responses resulting from the settings are displayed in a separate window



A nice goodie: The VU meter shows the levels at the inputs, before and after the EQ and at the outputs

nice thing for convertibles or any gadgets. The eight analog and two digital inputs can be routed in the mixer as it must be and as you know it from other DSPs. On the PS8-50 there is also an "Advanced Mixer" output including the upmix function, where surround channels can be generated and placed on the outputs. Of course, in the setup menu you can give names to all channels, inputs and out-



The advanced mixer of the Pro DSP software includes input mixer, output mixer and an upmixer for surround channels



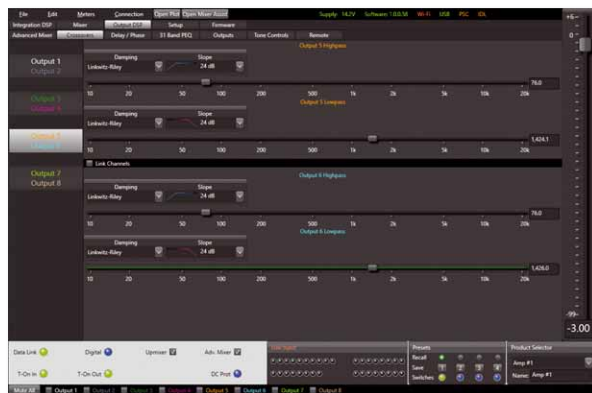
The input EQ offers 12 bands per channel, that also serve as an all-pass. In the output EQ there are 31 bands per channel

puts and even choose your colors. Turning on/off can also be set in a variety of ways and a variety of additional features can be activated. The adjusting process of the audio channels starts logically in the "Integration DSP", where the channels can be set with delay and EQs if the factory system does not deliver a usable signal. Allpass filters of 1st order can also be set, which can be a helpful feature with many US vehicles. Then we go through the "Output DSP", where we find the usual crossovers, equalizers and time alignment. Since the PS8-50 is limited to eight channels, the equipment per channel is very lush. Full-parametric EQ bands are available for all channels 12 in the input and 31 in the output, while the delay using 96 kHz sampling rate (i.e. 0.01 millisecond steps and an audio frequency response up to 40 kHz) reaches in the input up to 11 and in the output up to 30 milliseconds — this parameter can be not only seen. There are also nice things in the form of balance, fader and 3-band sound sliders, the latter consist of a low-shelf, a P-EQ and a high-shelf, so that you can build your sound quickly and easily. These nice features can also be operated by a wired controller PSC, a very clever remote control with color display, which, in addition to the usual levels, sources and presets, also covers a large part of DSP programming. Thus, once all inputs and outputs have been routed, you can make all audio settings even without a PC connection. As a wireless alternative to the PC, there is also a Wi-Fi module that allows the complete configuration with the appropriate smartphone app. If you want to stream music, you can do this via



The optional remote control also allows you to adjust delay, crossovers, EQs and more on the DSP

The Arc is capable of slope steepness up to 48 dB/oct., and this in a wide range of filter characteristics



Arc Audio PS8-50

Distribution	Fortissimo, Friedrichshafen
Hotline	07544 7414750
Website	www.arcaudio.eu
Preis	ca. 1,100 Euro

Technical parameters

Dimensions 263 x 145 x 52 mm

Input

- 8-channel high level
- 8-channel RCA
- 1 x digital S/PDIF (optical)

Output

- 2-channel RCA
- Remote Out

DSP software (V 1.0.0.57 under test)

Equalizer

- full parametric EQ with graphical display, 31 bands per channel, +20 – -24 dB
- 20 – 20k Hz, 0.1 Hz steps, Q 0.05 – 20
- Shelf 25 – 10k Hz, Q 0.1-2
- Input EQ, 12 bands per channel, Allpass 1st order
- Fader, balance, 3-band sound control with shelf and P-EQ

Crossovers

- 10-20k Hz, 0.1-Hz steps
- Bessel, Butterworth, Chebychev, Linkwitz, User, 6-48 dB/Oct.

Time and Level

- Time alignment 96 kHz, 2880 samples
- Delay 0 – 1029 cm (30 ms), 3.5 mm steps (0.01 ms)
- Input Delay 0 – 11 ms
- Phase 0, 180°
- Level steps 0.5 dB, master, center, bass

Features

- 4 setups, changeable with ground switch
- Inputs and outputs can be routed freely
- Start-stop capable down to 6 V
- Signal dependent switching to digital inputs
- Automatic switching of vehicle sounds
- PWM frequency adjustable 323 – 439 kHz
- Level/control display of inputs to outputs
- Upmixer for surround channels
- Switch-off delay, input sensitivity adjustable
- Undo and restore 50 settings

Optional accessories

- Display Remote Control PSC (Level, Sound, Presets, Partial DSP Functions)
- Cable remote control LR-1 (programmable)
- Bluetooth audio streaming
- AXP WiFi Control
- Maestro AR Link



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Bluetooth, which is also the right accessory in the pipeline. For the American market, Arc Audio is also part of Maestro/iDataLink, which is an car interface allowing you to use the CAN bus, steering wheel buttons, etc. A great thing, that is however stuck in it's infancy in Germany - and, respectively, for German cars, so that almost nothing is available here. Generally, with the Arc Audio software, we are looking at an extremely powerful and



The input mixer offers all the possibilities of routing and summing, the master slider remains in all menus

you hear that everything is right, nothing can stand in the way of enjoying the sound.

Conclusion

The Arc Audio PS8-50 is a beautiful piece, and it's interior is just as fascinating. Both the DSP and the power amplifier itself are among the finest available on the market.

Of course, the PS8-50 can not be a cheap product, but it is worth every cent.

Elmar Michels

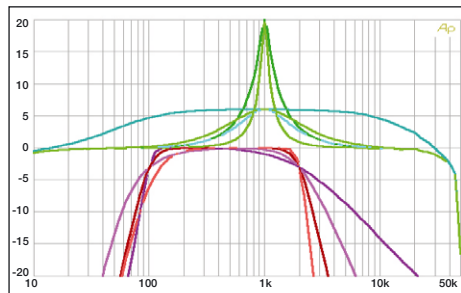
very successful tool, which shows in a truly impressive way that people who created it were the ones very proficient in their craft.

Measurements and sound

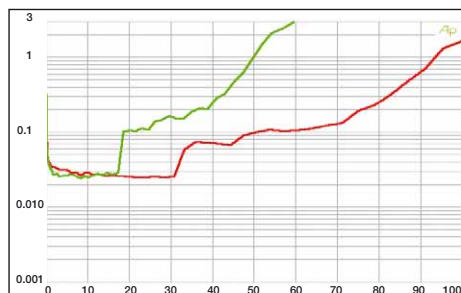
On our lab table, the Arc showed a very clean performance. A small bug with the 12 dB filters was fixed within one day by an update, which once again shows that a completely in-house developed product is a great thing. All 8 amplifier channels are the same and deliver 48 watts at 4 ohms, pretty clean. At 2 ohms it is full 92 watts, so that in bridge operation there are good 180 watts, and thus everything can be driven from the fat mid-woofer to the smaller subwoofer. In terms of sound, the Arc is much more impressive than the "only" 48 watts suggest. She gives a sparkling and highly dynamic performance, apparently there was some magic used by Robert Zeff. Voices and instruments are located perfectly lifelike and the tonality of male and female voices is preserved with superb fidelity. In terms of the level, it's more than enough for a human ear, so you can rather doubt your loudspeakers than the Arc. The one thing that always feels right is the overall musical impression that manifests itself immediately. If in the very first moment



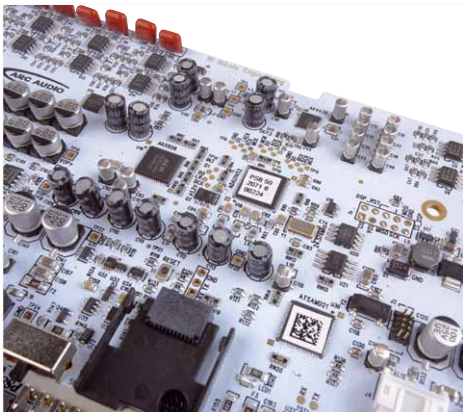
The four amplifier ICs are screwed to the housing with a ribbed heatsink strip



The Arc offers a HiRes-compatible frequency range up to over 40 kHz. With filters and EQs it has everything on board, the EQs can be ripened up to +20 dB, which can get dangerous



The distortion of small range performance is very low, then it is continuously increasing. The distortion level at 2 ohms is identical.



The DSP is equipped with a 32-bit controller, ADAU1452-DSP and 32-bit converters

Arc Audio PS8-50

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Sound	40 %	1,1	■■■■■
Bass	8 %	1,5	■■■■■
Neutrality	8 %	1,0	■■■■■
Transparency	8 %	1,0	■■■■■
Spatial imaging	8 %	1,0	■■■■■
Dynamics	8 %	1,0	■■■■■

Lab	35 %	1,5	■■■■■
Power	20 %	1,5	■■■■■
Damping factor	5 %	—	■■■■■
Signal-to-noise ratio	5 %	1,5	■■■■■
Noise	5 %	1,5	■■■■■

Practice	25 %	0,6	■■■■■
Features	15 %	0,5	■■■■■
Build quality electronics	5 %	0,5	■■■■■
Build quality mechanics	5 %	1,0	■■■■■

Specifications

Channels	8
Power 4 Ohm	8 x 48
Power 2 Ohm	8 x 92
Power 1 Ohm	0
Bridged Power 4 Ohm	4 x 184
Bridged Power 2 Ohm	0
Sensitivity max. mV	500
Sensitivity min. V	>13,3
THD+N (<22 kHz) 5 W	0,026
THD+N (<22 kHz) Half Power	0,106
Signal-to-noise ratio dB(A)	83
Damping factor 20 Hz	83
Damping factor 80 Hz	83
Damping factor 400 Hz	80
Damping factor 1 kHz	75
Damping factor 8 kHz	13
Damping factor 16 kHz	3

Features

Low pass	10 – 20k Hz
High pass	10 – 20k Hz
Band pass	10 – 20k Hz
Bass boost	-24 – 20 dB/10 – 20k Hz
Subsonic filter	via HP
Phase shift	0, 180°, LZK via DSP
High-level inputs	•
Separate gain control (Autosense)	•, DC or signal
RCA outputs	•
Start/stop capable	• (6 V)
Dimensions (L x W x H in mm)	263 x 145 x 52
Others	8 channel DSP, Switching inputs for presets

Ratings

Price	ca. 1,100 Euro		
Sound	40 %	1,1	■■■■■
Lab	35 %	1,5	■■■■■
Practice	25 %	1+	■■■■■

Arc Audio PS8-50

Absolute Top Class

Top Class
Upper Class
Middle Class
Entry Level

1,1

Price-Performance:
very good

CAR & HiFi

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"First-class 32-bit hardware and powerful software."