

483 L'OFFICIEL DU SON & DE LA LUMIERE

réalisa sonalumi

WWW.SONOMAG.FR

P36

6.00 € - RD

ů.

- 483

5394

0

PANTHER

SYSTEM

AT MONTREUX

**JAZZ FESTIVAL** 

G

SONOMAG OCTOBER



BLAZE POWERZONE connect 504 Amplifier



FOCAL SOLO6 + SUB12 System 3.1

P72

Couv Sono 483 v3indd.indd 1

# Blaze Audio PowerZone Connect 504



Pascal A/S sells its own products under the name Blaze Audio. Behind this localsounding name is a young company based in Denmark and well known for supplying amplifier modules as OEM or ODM (Original Design Manufacturer), i.e., to be integrated into other brands' finished products.

## WHAT WE THINK

#### THE PLUSES

- Manufacturing quality
- Simplicity of configuration
- Its compact size
- 70 V/100 V line mode
- Built-in Wi-Fi
- Numerous speaker presets

#### THE MINUSES

- Nothing in particular

#### WHO IS IT FOR? WHY?

- Fixed installations, multi-zone sound systems for bars, restaurants, shopping areas, etc.

Pascal has therefore decided to integrate its modules under the Blaze name, and offers a wide range of amplifiers for system integration (sometimes referred to as installation amplifiers). The small 1U models are offered in a basic unconnected version with 'standard' potentiometer controls or in an Ethernet and Wi-Fi connected version, and the 2U models can reach 4 x 750 W for the PowerZone Connect 3004. In short, there is something for all applications and budgets. All amps can be used in 100 V or 70 V line mode, which allows long-distance connections to the loudspeakers (equipped with matching transformers).

### EQUIPMENT

The model provided by MID is the Powerzone Connect 504, the most powerful of small Blaze compacts



The front panel is simple and tasteful. All essential information, including network and Wi-Fi connections, can be found at a glance.

Audio. It comes as a solid 1U half-rack metal case, which will eventually allow two of them to be installed side by side in a rack. A number of optional mounting accessories are provided by Blaze Audio. Of particular note are the two 'ears' that allow them to be fixed to a flat surface such as a ceiling or wall. The front of the unit is very simple: five LEDs give immediate status of the amp, including the Ethernet and Wi-Fi status. At the back, we find all the connections. As an installation amplifier, most of the connections can be made using Euroblock connectors that can be easily mounted and removed. We notice a GPIO connector which will allow the remote control of some configurable functions. However, analogue and digital audio inputs and outputs are still accessible via standard cinch connectors. The small black protrusion occupying a hole in the cooling grid is the tiny Wi-Fi antenna.



A FEW WORDS FROM THE product manager, Flavien

The PowerZone Connect series of amplifiers, including the Powerzone

Connect 504, are DSP matrix amplifiers designed to make life easier for system integrators in their multizone sound projects. These amplifiers can be set up in minutes using their intuitive web application. From this simple interface, you can control the audio system from any device, on any platform, and manage all inputs, outputs and multi-zone speakers.

The management of input level, routing and audio processing is done from this web application. It is accessible from the amp's Wi-Fi hotspot or via the machine's RJ45 port. The graphical interface follows the logic of the audio signal, which I find very relevant and intuitive. With its ultra-compact size and flexible installation, PowerZone Connect is the ideal choice for many commercial-audio projects.





DISTRIBUTOR: WARRANTY PERIOD: DEVELOPED IN: MANUFACTURED IN: LIST PRICE EXCL. VAT

MUSIC INDUSTRY DEVELOPMENT (MID) 5 YEARS DENMARK CHINA €899

#### MANUFACTURER FEATURES

BRAND:	Blaze
MODEL:	PowerZone Connect 504
INPUTS:	4 x symmetrical analogue (Euroblock), 4 x asymmetrical analogue (RCA), 1 x Digital S/PDIF (RCA)
OUTPUTS:	4 x HP (Euroblock), 1 x Digital S/PDIF (RCA)
GPIO:	5 x configurable per menu (Euroblock)
NETWORK CONNECTOR:	Yes
Wi-Fi:	Yes
USB:	No
ALARM OUTPUTS:	No
BENCHMARKS:	Status, input, output, network, Wi-Fi
DISPLAY:	Without
POWER PER CHANNEL:	125 W/80, 125 W/40 (250 W in 70/100 V line mode)
AMPLIFICATION TYPE:	Class D (clamped in 70/100 V line mode)
THD+N:	<0.05 % (20 Hz - 20 kHz, 8 0, rated power -3 dB)
FREQUENCY RESPONSE:	20 Hz to 20 kHz, +0/-0.25 dB, 8 0, rated power -3 dB
S/N RATIO:	>106 dB(A) (20 Hz - 20 kHz, 80)
OUTPUT EQUALIZATION:	Parametric 10 bands, LPF, HPF, BPF, Shelf (6 dB/oct, 12 dB/oct, with or without Q), all pass ( <sup>1st</sup> and <sup>2nd</sup> order), notch
CROSSOVER FILTERS:	Butterworth, Bessel, Linkwitz-Riley (from 6 dB/oct to 48 dB/oct)
SPEAKER EQUALIZATION:	Parametric 10 bands, LPF, HPF, BPF, Shelf (6 dB/oct, 12 dB/oct, with or without Q), all pass ( <sup>1st</sup> and <sup>2nd</sup> order), notch
FIR:	Importable as a csv or txt file.
DYNAMIC PROCESSING:	Compressor, limiter (clip, peak, rms)
AMP PROTECTION:	Short circuit, undervoltage, temperature, overload
HV PROTECTION:	Direct current
OPERATING TEMPERATURE:	0-40°C
WEIGHT:	2.8 kg
DIMENSIONS (MM):	44 x 220 x 319 (1 U, half-rack)
POWER SUPPLY:	100 V - 240 V/50 Hz-60 Hz
ELECTRICAL POWER:	150 W







The rear panel features Euroblock connectors, the ideal solution for fixed installations. The GPIO connector offers interesting possibilities for remote control.

BLAZE POWERZONE CONNECT 504 - S/N:2151023302X00012 - FW 1.2.0

		DUT			
	CHANNEL 1 - SYMMETRIC EUROBLOCK ANALOG INPUT			4	
LOAD IMPEDANCE (12):	8 4 CH1&2&3&4=80 CH1&2=40			$\frac{1}{2} = 40$	
	0111020		01110		
POWERS					
RMS power (W)	13	31	1:	30	
Input level:	+ 4 0	dBu	+ 4	dBu	
DIRECT EFFECTIVE POWER (W)	10	6	8	2	
	-10 (	dBu	-10	dBu	
DIRECT EFFECTIVE FOWER (W)	10	12	· · · · · · · · · · · · · · · · · · ·	9	
Input level (Vpp)	3	8	2.	35	
Vrms level (Tone)	1.0	06	0.	83	
dBu level (Tone)	2.	7	0	.6	
Vrms level (burst period)	0.3	38	0.	29	
dBu level (burst period)	- 6	.3	- 8	3.4	
Peak output voltage (Vpeak)	5	6	42	2.5	
PEAK POWER (W)	39	02	4:	52	
MAX INPUT LEVEL					
Max Input Level (dBu)	+12	2.9	+1	2.9	
DISTORTIONS					
Input level:	+ 4 (	dBu	+ 4	dBu	
50 Hz (%)	0.0	15	0.0	)15	
1 kHz (%)	1 kHz (%) 0.015 0.015		01		
10 kHz (%) 0.01		24	0.	09	
10 kHz (%)	0.0	07	0.009		
Noios	L		L		
NOISE	-	0	-	20	
Onweighted (dBu)	-70		-72		
A-weighting (dBu)	-75		-76		
Onweighted (dBu)	-75		-74		
A-weighting (dBu)	-75		-77		
Background noise at the input 400 -97.4		7 <u>4</u>			
Input weighted background noise	-100 -100.4		0.4		
		<i>JL</i>			
OVERSHOOT - RISE TI	ME		[		
Overshoot	8 10		0		
((Vmax-Vhigh)/Vpp)x100 (%)					
Rise time (ps)	20 20				
MICRO SENSITIVITY GA	IN				
Gain (dB)		5.	24		
LINE 70 V/100 V					
RMS voltage 100 V mode (V) 91.7					
RMS voltage 70V mode (V)	71.8				
INPUT IMPEDANCE					
Z out: 100 ohms - Output voltage					
Z out: 600 ohms - Output voltage	19 260				
Z in (ZA-ZB) VA / (VA-VB) ohms	is 19235				
	DIA/M				
330 mVms/430 kHz					
POWER SUPPL	T				
Standby	<10 mA	<1 W	<1 VA		
ON mute	0.13 A	16 W	38 VA	PF 0.51	
8-ohm 100 W (4 channels)	2.3 A	496 W	548 VA	PF 0.95	

## **OPERATION**

manufacturer's website. There is even a short video to help with the installation. The amp's graphical user interface (GUI) can be opened with any standard web browser. The The 'Output' tab makes it possible to assign the four essential information about the machine.

As the amp is intended for multi-zone installations such as Since the appliance is intended to be installed permanently, restaurants or shops, we will go directly to the 'Zone' tab to it does not have a start-up switch. The start-up is fast configure them. Four zones can be defined and assigned a (about eight seconds). The first step is of course the remote volume control via GPIO as well as a compressor. network connection, as this is the only way to communicate The 'Input' tab allows the configuration of inputs, either with the amplifier. This is easily done by following the analogue or digital (mono or stereo). It is even possible to procedure in the manual. The next essential step is to use the analogue inputs with a high gain (52 dB) for a update the firmware, which is available on the microphone type source. This may be interesting in some configurations. Note that a noise generator is integrated into the amplifier, useful for locating who goes where.

first page displayed will be the dashboard, which contains amplifiers (or two in 100 V line mode) to the corresponding zone (routing) and also to apply various corrections (delay, equalizer). The equalizer is particularly comprehensive, it has 10 bands that can be used for any purpose



The dashboard displays the levels and other status information of the amp. It is also possible to act directly on the volumes.



topology. Here, the section for assigning a GPIO input for remote volume control.



- A. \$741. -



The configuration tab of the four zones, which can be named according to the site's The page for loading speaker preset files, available for download from the Blaze Audio website for a wide range of manufacturers. It is also possible to export and create your own files.

SONOMAG	48:

3



# AMPLIFIER//BLAZE POWERZONE CONNECT 504

a range of filters, from parametric to high-pass and lowpass to notches and all-pass.

It is possible to manually configure the parameters associated with each speaker model, but this can be risky if the exact technical characteristics are not known. Blaze Audio provides configuration files for a wide range of commercial speakers on its website. When you install a 'Speaker Preset' file, this whole section disappears from the GUI. It is not possible to edit them, but you can choose which parameters to import. Note that if you create a speaker preset from scratch, it is possible to export it as a file for possible import into another installation.

Let's finish with the Settings tab, which is extremely standard. There is also a page dedicated to GPIO (General Purpose Input Output) configurations, which make it possible to control volumes or amp power remotely.

As the amp is permanently powered, it will be interesting to configure the "Power management" section so that it switches

PowerZone	K 8 X X
Testines	
8 her	O sugget (v )
e ans	Signal Stars (TEE)
e ner	Taxon v CRUDA
THE BARRY	III Charles
To one	El output serve
A specie	o. 64
22 Rents Prof.	C. Mart Band a set and
C Creative & Lam	B Mell Second Autor War the elses of the second star summer.
∕_ tunine Bi	D #0-100
A 111	Self Self of particular in a construction of the self-self self-self-self-self-self-self-self-self-
Ser care Algories	O lagrent and the second secon
(D) Premety	
A lander	
Constant	
A lines	

The selection of amplifier operating modes. In 70 V/100 V mode, the amplifier works as a bridge (BTL) to obtain a high output voltage. In this case, the number of amplification channels available increases to two.



standby are remotely controllable after wiring the rear connector as outlined in the manual



It is possible to control the switching on and off of the amplifier in different ways. This is more than advisable, both in terms of energy savings and to ensure its longevity.

automatically go into standby after a set time, and be 'woken up' by an audio signal, by action on the GPIO input, or even by a network command.

#### **MEASUREMENTS**

Measuring the power of an amplifier working in class D (i.e. in switching mode, i.e. non-linear) is not an easy task. You have to forget the habits and principles of analogue linear amplifiers. The notion of power here is more related to an impulse mode of operation, trying to get as close as possible to the real music signal. The factor to be taken into account here is more the peak factor (ratio between the peak value of the signal and its RMS value) than the average or RMS value. The debate is as old as power amplification in audio: what type of measurement signal to choose to get as close as possible to the real musical content?

**Power:** The measured powers are within or slightly above the specifications. In impulse operation, considerable power is obtained for such a compact amp. When a sinusoidal continuous signal is injected, the power decrease which usually appears on amplifiers of this type is not observed, the power remains constant. However, care should be taken not to push the amp to its limits; under these conditions the clip alarm lights up and the output cuts out after about one minute for ten seconds. If the levels are not reduced, this cycle repeats itself and there will be a regular interruption of sound. It is clear that this kind of amp, given its compactness and purpose, is not designed to operate in these conditions. The amp is equipped with an 'intelligent power sharing' system that allows power to be distributed according to demand between the channels. As the Connect 504 consists of two independent stereo modules, this feature is only available between channels 1 and 2 or 3 and 4, but not for all four simultaneously.









Distortion, noise: The measured distortion is better than supply, there are actually two independent power factor Nothing to say on this level.

reduced.

equivalent amplifiers.

**Power supply:** The amp is equipped with a power factor correction (PFC) which is effective as it measures a power factor of 0.95 (ideally a value of 1). The amplifier consisting of two stereo modules each equipped with their own power



the specifications, the noise remains extremely low correction circuits. With the four amps loaded at 8 ohms although slightly above the manufacturer's specifications, and outputting 100 W, the total power consumption is about 500 W. It is unlikely, however, that these levels will be Residual switching: Class D power amplifiers are based reached in normal use. Line 70 V/100 V: In 70 V mode, the on the principle of Pulse Width Modulation (PWM). The nominal voltage is respected. In 100 V mode, this is slightly transistors are used for switching, which leads to low below the nominal voltage by about 10%, but this is temperature rise and high efficiency. The frequency used specified in the manufacturer's specifications (-1 dB at 100 for the modulation pulses is high (around 430 kHz), thus V). Remember that the 100 V line (called high impedance well above the sound spectrum, but the level remains transformer coupling by Blaze Audio) is a way of distributing consistent (330 mVrms). It is therefore necessary to use a audio to several speakers wired in parallel (within the low-pass filter at the output to filter out this component and maximum power the amp can deliver), over long distances reconstruct the continuous signal that will drive the and with a reduced cable section. Typical use is street speakers. In the case of the Connect 504, the high sound during commercial events. The loudspeakers to be frequency of 430 kHz allows the filtering dimensions to be used will be of a special type as they are equipped with transformers. The Connect 504 does not use a step-up Square signal response: Rise times and overshoot, transformer itself, but switches to a clamped mode, which measured on a resistive load, are well within the range of makes it possible to obtain the desired voltage (at the cost of switching to two channels instead of four).

#### DESIGN

The Connect 504 is very easy to dismantle after removing a few screws from the cover. The design is very simple, the two Pascal Audio amplifier modules are connected to a motherboard providing input/output, signal processing and network/Wi-Fi connections. A quick search on the Pascal Audio website reveals amplifier modules that closely resemble those used here, the U-Pro2S. The modules are completely independent since they contain the stereo amplifier and its power supply at the same time. A small fan cools the unit.

characteristic of the class D amplification is around 430 kHz, the residual level is around -8 dBu



The response to a 1 kHz square wave signal at 4 ohms resistive. Rise time and overshoot are consistent with what is normally found in amps of this type



Overview of the interior of the Connect 504. Horizontally, the two home amplifie modules, which include their own power supply. Top right, the Wi-Fi module and below, the microcontroller and DSP/converters

Looking a little closer, the microcontroller is a model well always better when you do it yourself). Regular dusting of known to developers since it is an ARM of the STM32 family the air vents and fan is necessary given the compactness from STMicroelectronics. DACs and ADCs are Burr- of the unit Browns, a safe bet. The power part of the amplifier is provided by IRFR4615 power MOSFETs, associated with a **CONCLUSION** The Danish Pascal Audio offers a compact amplifier Pascal stamped circuit which probably takes care of the intended mainly for fixed multi-zone installations such as PWM/driver part. The power transistors are not mounted shopping centres, restaurants and others. The 100 V/70 V directly to a heatsink, but soldered to the printed circuit in-line capability and its four channels are perfectly suited which will act as an intermediary with the lower part of the for these applications. It should be noted that the Connect enclosure for heat dissipation. The fact that we are in class 504 cannot be used in installations where the voice alarm D and the use of modern components such as these type security function is required. Thanks to the built-in MOSFETs makes it possible to ensure minimal heating. DSP, several configuration possibilities are available; it is Infrared thermal imaging at maximum power at 8 ohms in no way inferior to larger amplifiers in this respect. shows that the area that heats up the most is the area Everything is accessible from its web interface; everything around the high-frequency power transformer. Given the is very clear and easy to use. Its excellent manufacturing small size of the transformer and the powers involved, this quality and modularity make it durable and very easy to is normal, and when the housing is closed, it comes into contact with the cover which will act as a heat sink thanks maintain. to the thermal pads. The two large filter capacitors, very close to the transformer, are high-temperature, long-life SUMMARY models, but from a generally considered second-tier manufacturer (Teapo Jamicon). It remains to be seen what this will do with permanently powered equipment, as their life expectancy is limited and depends greatly on the temperatures to which they are exposed. In all cases, good spacing and ventilation are absolutely necessary.

#### MAINTENANCE

The Blaze PowerZone Connect 504 will be extremely easy to maintain as it has a completely modular design. An outof-service amplifier module can be replaced in a few minutes by a module available from Pascal Audio (It's



Detail of the amplification part, with its home circuit stamped Pascal, probably dedicated to the management of amplification in PWM (Pulse Width Modulation) mode. The MOSFET power transistors are mounted directly on the printed circuit.

INNOVATION
The amp remains standard.
MANUFACTORING QUALITY
Good.
OPERATION
Simple and logical, can be configured very quickly thanks to the speaker presets.
PRICE/PERFORMANCE RATIO
Good.
VALUE FOR MONEY
Very good.
HANDLING AND TRANSPORT
2 22 222
INSTALLATION
2 22 222
LEVEL OF COMPETENCE APPLIED
<ul><li>[x] All</li><li>[ ] General-purpose technician</li><li>[ ] Qualified technician</li></ul>
LEVEL OF OPERATING COMPETENCE
<ul><li>[ ] All</li><li>[x] General-purpose technician</li><li>[ ] Qualified technician</li></ul>
OPERATIONAL PERFORMANCE * *This assessment takes into account ease of implementation, speed of installation and quantity of equipment required.

8