

- ✓ Compact design: All-in-one 1U 19" enclosure
- ✓ High power density delivering up to 1000 W
- ✓ Flexible amplification: 4 duty amplifier channels, 1 standby, with power partitioning up to 500 W
- ✓ Energy efficiency with minimal power consumption
- ✓ Integrated supervision with built-in system monitoring with redundancy for enhanced reliability.
- ✓ Superior audio quality for exceptional clarity
- ✓ IP-enabled with seamless Audio and System Control
- ✓ EN 54-16 and 4 Certified



VAIA

4 Channel PAVA **Amplifier and Controller**

VAIA is designed to meet the highest industry standards, combining amplification, digital signal processing, a universal AC power supply, DC power supply, battery charger, and comprehensive control in a compact 1U form factor. This innovative design offers a cost-effective solution for delivering flexible zoned live and automated emergency paging, as well as background music, in small, centralised installations.

With built-in IP networking capabilities, VAIA simplifies the creation of distributed systems that can scale. Its advanced low-distortion Class D amplifiers, integrated redundancy, and comprehensive monitoring ensure exceptional performance. This makes VAIA the ideal choice for installations that demand redundancy, high audio quality, and maximum efficiency.

Adhering to strict industry safety standards, VAIA is fully EN 54-16 and EN 54-4 certified. It offers comprehensive monitoring throughout the entire signal chain—from microphone to loudspeaker. Detected faults are reported and categorized in compliance with the standard, streamlining maintenance and fault resolution.

Compact Package

This compact 1U design maximizes the use of available space in any installation cabinet. Additionally, the all-in-one approach significantly simplifies installation by minimising the need for complex interconnecting cable looms, making delivery, setup, and testing faster and more efficient.

Enhanced Audio Performance

The patented next-generation amplifier topology, combined with advanced 32-bit internal processing, delivers a high signal-to-noise ratio, minimal distortion, and a full 20 Hz to 20 kHz frequency response. This ensures exceptional audio quality, enhancing intelligibility and creating an improved listening experience across all applications.

Versatile Power

Utilizing a compact and patented architecture to deliver a total of 1000 W across four independent amplifier channels, with each channel capable of providing up to 500 W. An innovative auto-sleep feature enhances energy efficiency by reducing quiescent power consumption, meeting the demands of modern systems without compromising reliability or audio performance.

Typical Voice Alarm Applications

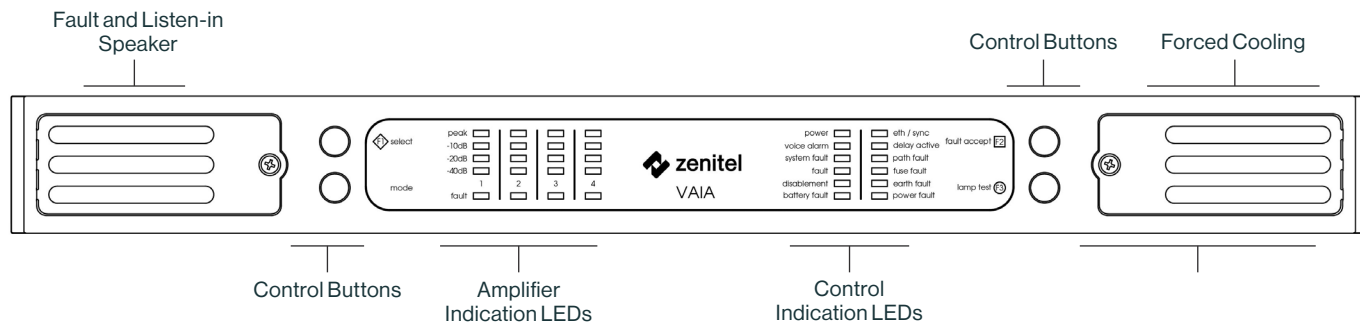
Built to bridge the gap between IP speaker systems and large-scale VA solutions, VAIA ensures that you receive robust, reliable performance without the complexities and cost of larger setups.

Typical Applications:

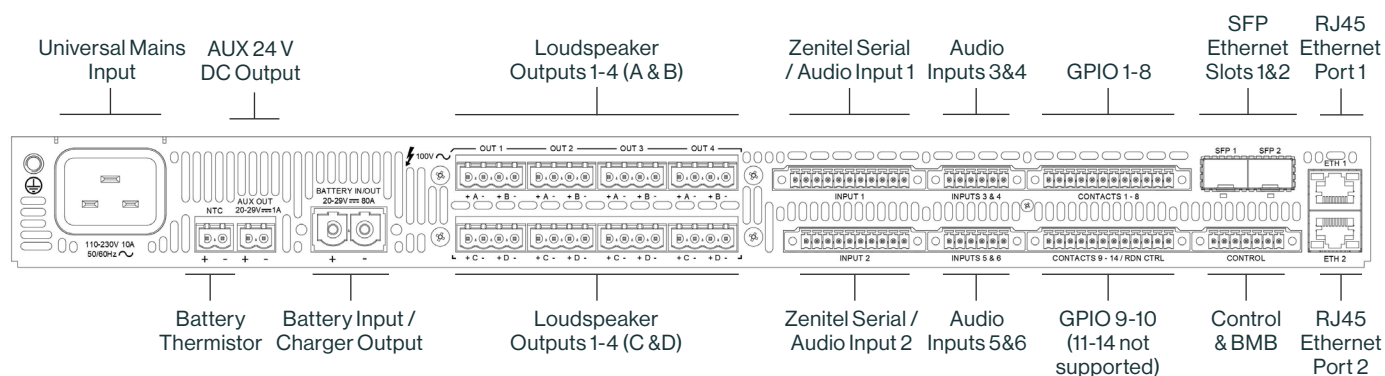
- Metro & Rail Stations
- Tram and Bus Stops
- Airports

MECHANICAL

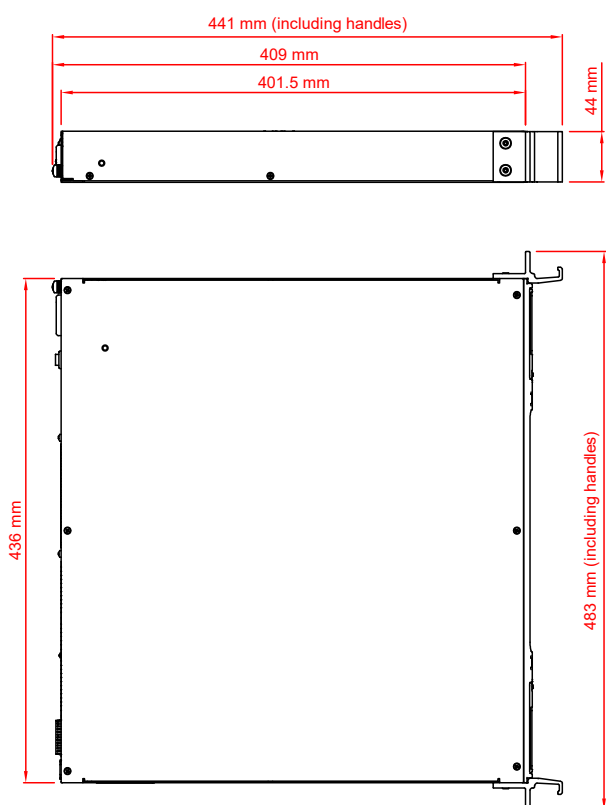
Front Panel



Rear Panel



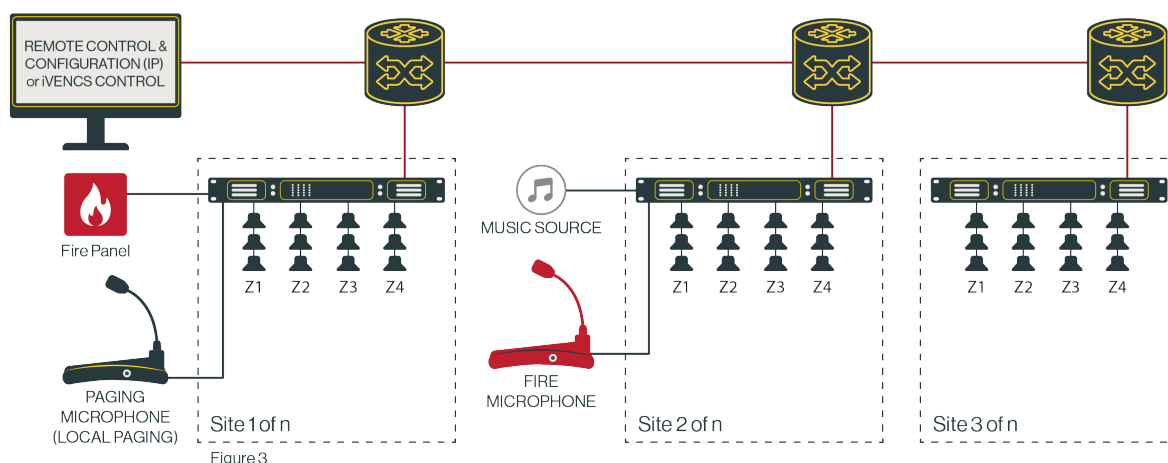
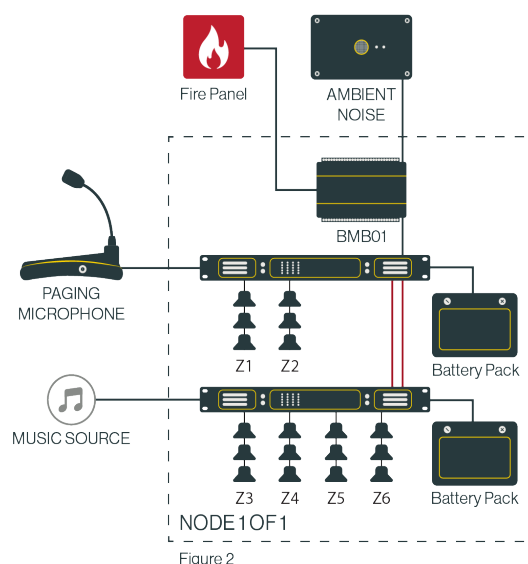
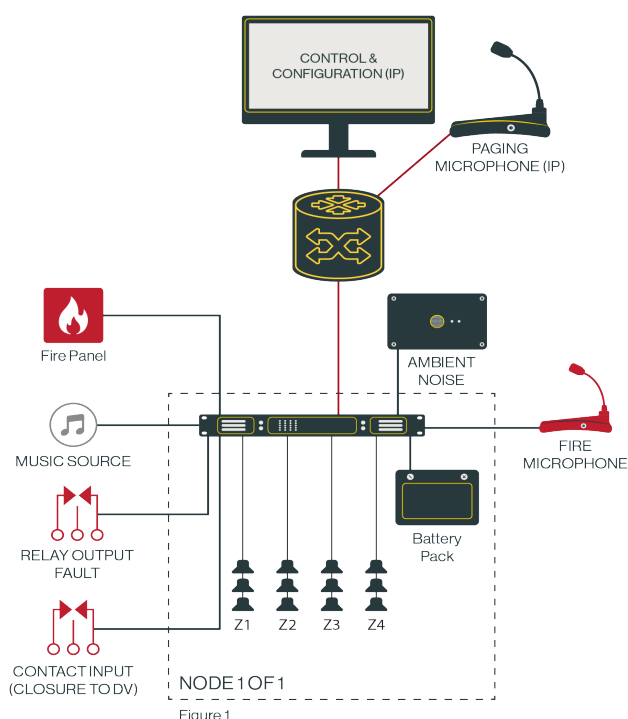
Dimensions



SCALABLE AND VERSATILE ARCHITECTURE

The VAIA is an ideal solution for smaller fixed Public Address and Voice Alarm installations, such as metro/rail stations, restaurants, retail shops, offices, or bars (see Figure 1). Despite its compact size, the VAIA is built for scalability. For larger single-site applications, multiple VAIA units can be networked together either peer-to-peer or through dedicated IP switches using standard Cat 5/6 cables or multi-mode/single-mode fiber (see Figure 2).

For extensive multi-site applications or operations requiring remote control, the VAIA integrates seamlessly with Zenitel's VIPA Audio Platform. This platform delivers uncompressed, low network bandwidth, multi-channel high-quality audio and control over IP. Operators can simultaneously address, monitor, and control multiple sites from a centralized location. Utilizing a standard Layer 2/3 IP network, the system connects sites via existing infrastructure, providing exceptional flexibility and cost efficiency (see Figure 3).



KEY

— General Cabling
 - - - Node or Cabinet

— IP Ethernet Cabling
 — Loudspeaker Line

SPECIFICATIONS

Amplification

Amplifiers	Built in - High Efficiency Class D
Amplifier Efficiency	>91% @ 100 V
Duty Amplifiers	4
Standby Amplifiers	1 Automatic Fail-Over
Maximum Power per VAIA	1000 W @ 100 V (Sine Signal)
Maximum Power per Amplifier	500 W RMS @ 100 V (Sine Signal)
Amplifier Power Partitioning	Software Controlled
Monitored Speaker Circuits per Duty Amplifier	4 (A / B / C / D)
Speaker Circuit Monitoring	DC End of Line or Impedance
Load Capacitance	220 nF
Load Resistance	20 Ω @ 500 W
Speaker Circuit Isolation	Pseudo-floating Outputs

Audio Performance

Input Resolution	24-bit
Processing Resolution	32-bit @ 48 kHz
Bandwidth (Monitoring Disabled)	20 Hz to 20 Hz+0/-3 dB
Bandwidth (Monitoring Enabled)	70 Hz to 20 Hz+0/-3 dB
Total Harmonic Distortion (THD)	<0.15% at 1 kHz (End to End)
Crosstalk Between Channels	Better than -75 dB @1 kHz
Amplifier Signal to Noise Ratio (SNR) 100 V	>100 dB (A weighted)
Router Signal to Noise Ratio (SNR)	>80 dB (A weighted)
Residual Noise 100 V	>95 dB

Audio Outputs

Level Control	+20 dB, mute-60 dBu (1 dB steps)
EQ	3 Band Parametric
Delay	1 ms to 1 sec (1 ms Steps)
Signal Processing	Sample & Hold and Dynamic Ambient Noise Control / Night Time Volume
Surveillance Tone Generation	30 Hz

Audio Inputs

Zenitel IP Microphones	4
Zenitel Serial Microphones	2
Mic / Line Level Inputs	4
EQ	3 Band Parametric
Surveillance Tone Detection	20 Hz
Filters	High Pass (Filter out monitoring tones)

Digital Voice Announcements (DVA)

On-board Storage Capacity	1 GB (Approx. 173 mins of Messages)
Simultaneous Message Players	4
File Format	48 kHz, 16 bit, WAV

General Connectivity

General Purpose Contacts	10 Inputs (Contact Closure to 0 V)
General Purpose Fault Relay	1 A @ 30 V DC
IO Expansion Options	Connect up to 9x BMB01

Tools and Management

Configuration Tools	IP based Windows PC Application
System Overview	Web-server

IP Connectivity

Number of units in a system	≤4
Audio and Control Protocol	PMC (48 kHz, 16 bit) & VIPA
Protocols for Audio Data	UDP IP / Layer 2 / Multicast
Protocols for Control Data	UDP IP / Layer 2 / Unicast
Ethernet Ports 100/1000 Mbps	2x Copper + 2x SFP Slots
NTP	External Source
Third Party Control Options	VIPA-API / SIP via Connect-Pro

Power Supplies

Mains Input	88 to 288 V AC @ 50-60 Hz
Battery / DC Input	21 to 30 V DC
Battery Charger Output	3 A DC
Power Consumption (Sleep Mode with Monitoring)	250mA @ 230V AC / 470mA @ 24V DC
Power Consumption (Rated Power)	5.1A @ 230V AC / 52A @ 24V DC
Axillary Output	1 A @ 30 V DC

Heat (4 active amplifiers in use)

Heat Generation (Sleep Mode with Monitoring)	22 W (75 BTU) AC / 12 W (41 BTU) DC
Heat Generation (Rated Power)	198 W (676BTU) AC / 222 W (757 BTU) DC

Mechanical

Dimensions	44 mm (h) x 436 mm (w) 412 mm (d)
Weight	8 kg
Ingress Protection	IP30
Mounting Options	Standard 19" Rack
Air Flow	Intelligent forced Cooling Front to Rear

Environmental

Temperature (Operational)	-10° C to +50° C
Temperature (Operational / Sine Signal)	-10° C to +40° C
Temperature (Storage)	-20° C to +40° C
Humidity (Operational & Storage)	0 % to 95 % non-condensing

Reliability

MTBF MIL-HDBK-217F	>200,000 h
Percentage Availability MIL-HDBK-217F	99.99 (Based on 4 hour MTTR)

Approval and Standard Compliance

Railway Applications	EN 50121-4
Voice Alarm	EN 54-16 / EN 54-4
Low Voltage Directive (Safety)	EN / IEC / UL 62368-1
Electromagnetic Compatibility (Immunity)	EN 55035 / EN 55130-4 / EN 61000-6-1 / EN 61000-6-2
Electromagnetic Compatibility (Emissions)	EN 55032 (Class B) / EN 61000-6-3 EN 61000-6-4 / FCC Part 15 Subpart B Class A
Environmental	RoHS / REACH
Conformity Europe	CE / CPR / UKCA

Part Code

VAIA	4 Channel PAVA Amplifier and Controller
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Compatible Products

VAIA-AC / VAIA-48V	4 Channel PA Amplifier and Controllers
ANS04-ES / DANS01	Noise Sensors
BMB01 / BMB02	GPIO Expanders
MPS / EMS / SAP03 / VRMS Ranges	Microphones
EOL10K / EOLZ01	Loudspeaker End of Line Monitoring
SFP-MM1GC / SFP-SM1G	Networking SFP Modules
iVENCs / VIPA-WS	Control and Monitoring Software
ICX-510	Connect-Pro Server

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