

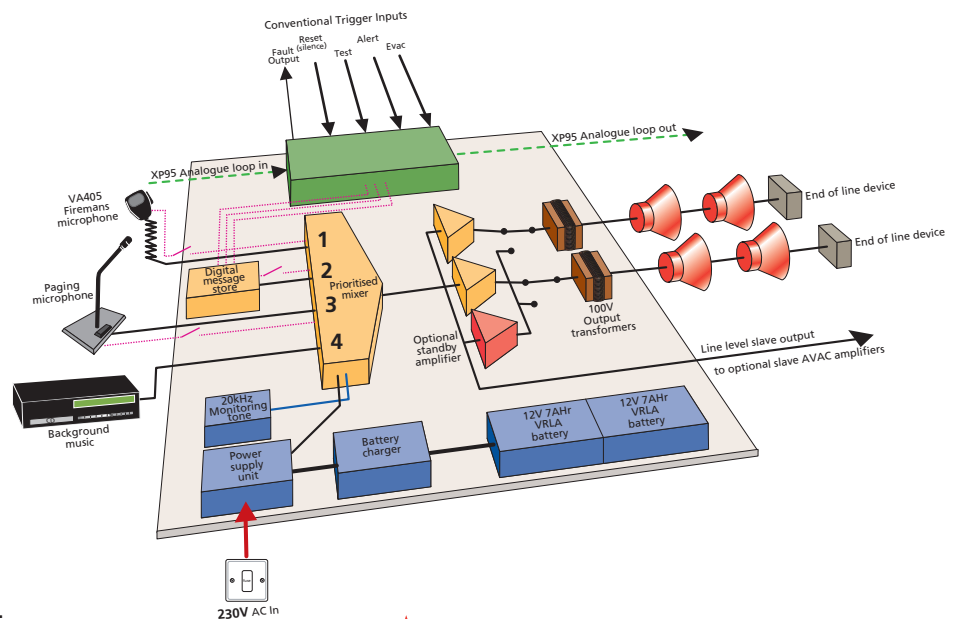
AVAC Voice Alarm System

The AVAC is a new low-cost, high-quality modular voice alarm system, purposely designed to simplify the provision of a fully BS5839 part 8 (1998) compliant voice alarm system. The fact that multiple AVACs (and slaves) can be connected to one host fire detection system makes AVAC ideal not just for simple one zone installations but for virtually all small to medium sized applications (including phased evacuation projects) in offices, shopping centres, hotels, leisure centres, etc.



In one compact wall-mountable enclosure, the AVAC comprises:-

- Conventional and analogue (Apollo XP95/Xplorer/Discovery) fire alarm interfaces
- A high-quality digital message store containing programmable Evacuate, Alert and Test messages.
- A prioritised mixer.
- Two x 60-Watt max. peak Class D amplifiers (plus an optional standby amplifier), each of which will accommodate up to 30 Watts (1KHz) of loudspeaker load.
- An EN54-4 compliant switch mode power supply and battery charger.
- Three balanced line level inputs for the (optional) connection of a firefighter's microphone, paging/public address equipment and a background music source.
- Space for 2 x 7Ahr VRLA batteries typically providing at least 24 hours standby and 30 minutes alarm running time.
- A slave line level output allowing the connection of up to 10 slave AVAC amplifiers. (Slave amplifiers are typically used to extend loudspeaker coverage in areas such as large warehouses. They also allow greater flexibility in the segregation of public address paging and background music distribution as they have their own paging and background music inputs).



▲ An overview of the AVAC voice alarm system



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SP203 APPROVED

Operation

The principal function of the AVAC voice alarm system is to generate clear, intelligible voice messages to alert people to the presence of fire, normally under the control of a host fire detection system. When the AVAC receives a message trigger from the host fire detection system, it responds by playing an appropriate message (Evacuate, Alert or Test) from its digital message store. This message is amplified and broadcast around the site via the system's loudspeakers. Three balanced line level audio inputs are also provided for the connection of optional third party equipment such as a fireman's microphone (to allow live directive announcements by the emergency services), public address paging equipment and a background music (BGM) source such as a CD player or radio tuner. The level of all four audio channels (digital message store, fire mic., paging and BGM) can be set using four internal level controls. If multiple inputs and/or digital message triggers are active at the same time, the AVAC's prioritized mixer ensures that only the most urgent audio signal is broadcast, as indicated on the chart below:-

| Priority | Description |
|----------|---|
| 1 | Fireman's microphone |
| 2 | Evacuate, Alert or Test message (Evacuate overrides Alert, Alert overrides Test) |
| 3 | Paging / public address microphone(s) |
| 4 | Background music source(s) |

The AVAC's fire alarm interface

The host fire detection system can be connected to the AVAC via three polarized, opto-isolated trigger inputs. These inputs are designed to control the AVAC's digital message store and will activate when a steady voltage of 24V d.c. is applied to them. All inputs are prioritized according to the messages they trigger. The AVAC can also be connected directly to any Apollo protocol XP95, Discovery or Xplorer analogue addressable fire alarm loop via its LOOP input. When connected in this way, the AVAC emulates an Apollo sounder control module and must be addressed as such. Once addressed, the AVAC responds to the host panel's commands by activating its Evacuate message when it receives a continuous sounders command and its Alert message when it receives an intermittent sounders command. It also reports any fault conditions back to the analogue loop as a general fault allowing the host fire detection system to annunciate the fault location accordingly.

Monitoring

In order to comply with current British and European life safety standards, the AVAC's speaker lines, PSU, batteries, fireman's microphone and digital message store are all

monitored for short circuits, open circuits, earth faults, discharge, disconnection and data corruption as appropriate. Non-critical inputs such as public address paging and background music are not monitored and, in the event of Mains failure, are automatically cut off to conserve battery life. This contributes to the AVAC's extremely efficient standby time - typically 24 hours (plus 30 minutes running) using 2 x 7A Hr VRLA batteries. Provided the system is wired as detailed in the AVAC's installation manual, a fault condition on the AVAC will be reported as a sounder fault on the host fire detection system to which it is connected, with more detailed fault indication provided on the front of the AVAC itself.

Digital message selection

All of the AVAC's digital messages are stored in MP3 format on a monitored, non-volatile memory card that plugs directly onto the AVAC's Main PCB. The content of these messages can be adjusted to suit the application using a series of internal links. For example, the Evacuate message can be configured to state that 'a situation has arisen' or 'a fire has been reported' and to warn people - if appropriate - not to use the building's lifts.

Amplifier and speaker circuits

The AVAC is supplied with a minimum of two separate 60-Watt max. peak Class D amplifiers (A and B). These are designed to drive the AVAC's two loudspeaker circuits, each of which will accommodate up to 30 Watts (1KHz) of loudspeaker load, through 100V line transformers, which step up the voltage for distribution around the site.

An end of line device must be connected across the terminals of the last loudspeaker on each circuit and both circuits must be calibrated at commissioning using the AVAC's calibrate button to ensure correct monitoring. Some AVACs feature an additional 'hot-swap' standby amplifier that will switch in if either of the AVAC's regular amplifiers (A or B) fail, a requirement of some life safety voice alarm specifications.

Multiple AVACs and slave amplifiers

There is no limit to the number of master AVACs that can be used per system although it should be noted that the VA405 fireman's microphone can be daisy chained to a maximum of 10 master AVACs only. To increase audio coverage in areas such as warehouses, etc., up to 10 slave AVACs can be connected to one master AVAC. Slave AVACs repeat all fireman's microphone and digital message broadcasts that are made at the master to which they are connected. They also feature their own paging and BGM inputs. Therefore, if multiple master AVACs and/or slave AVACs are used, localized paging and background music can be easily implemented.

AVAC Part numbers

AVAC MODULES, AMPLIFIERS & ANCILLARIES

| | |
|--------|--|
| VA403 | Master AVAC dual 60W max peak amplifier, charger & PSU includes fire alarm interface, fire microphone, paging and BGM connections |
| VA403H | Master AVAC dual 60W max peak amplifier, charger & PSU c/w 'hotswap' standby amp. includes fire alarm interface, fire microphone, paging and BGM connections |
| VA402 | Slave AVAC dual 60W max peak amplifier, charger & PSU includes local paging and BGM connections |
| VA402H | Slave AVAC dual 60W max peak amplifier, charger & PSU c/w 'hotswap' standby amp, includes local paging and BGM connections |
| VA405 | Fireman's microphone (max. 1 per system) |
| VA405X | Fireman's microphone (up to 4 per system) |
| VA406 | Line level paging microphone (max. 1 per system) |
| VA406X | Line level paging microphone (up to 4 per system) |

LOUDSPEAKERS (TO BS 5839-8)

| | |
|--------|--|
| VA421A | 6" 6W ceiling speaker c/w steel fire dome & ceramic terminal block |
| VA422A | 8W wall mounting metal cabinet speaker c/w ceramic terminal block |
| VA423 | 8W wall mounting bi-directional metal speaker c/w ceramic terminal block |
| VA428 | 30W pendant loudspeaker c/w 8m cable and internal stress wire (requires VA490 or VA492) |
| VA430 | 6W round wall/ceiling speaker in metal cabinet c/w ceramic terminal block |
| VA490 | Ceramic terminal block and thermal fuse assembly (use to convert wire-end sealers to BS5839-8, needs adaptable back box) |
| VA492 | VA loudspeaker metal termination box c/w 2 x ceramic terminal blocks and thermal fuses |
| | Special application speakers - column, horn, sound projection, etc - available to order |