PERTRONIC INDUSTRIES LTD

EVAC20W24V and EVAC20W24V-T3
AMPLIFIER INSTALLATION NOTE

Overview:

The 20W 24V Amplifier is one of a range of Amplifiers manufactured by Pertronic Industries. The 20W 24V Amplifier generates the Evacuate tone and verbal message as per NZS4512:2003, AS2220 or ISO8201 (T3)—dependent on firmware version fitted.

The 20W 24V Amplifier has a monitored 100Vrms output that can provide up to 20W of power (27.4V supply) to connected PA loud speakers. The output is short-circuit protected.

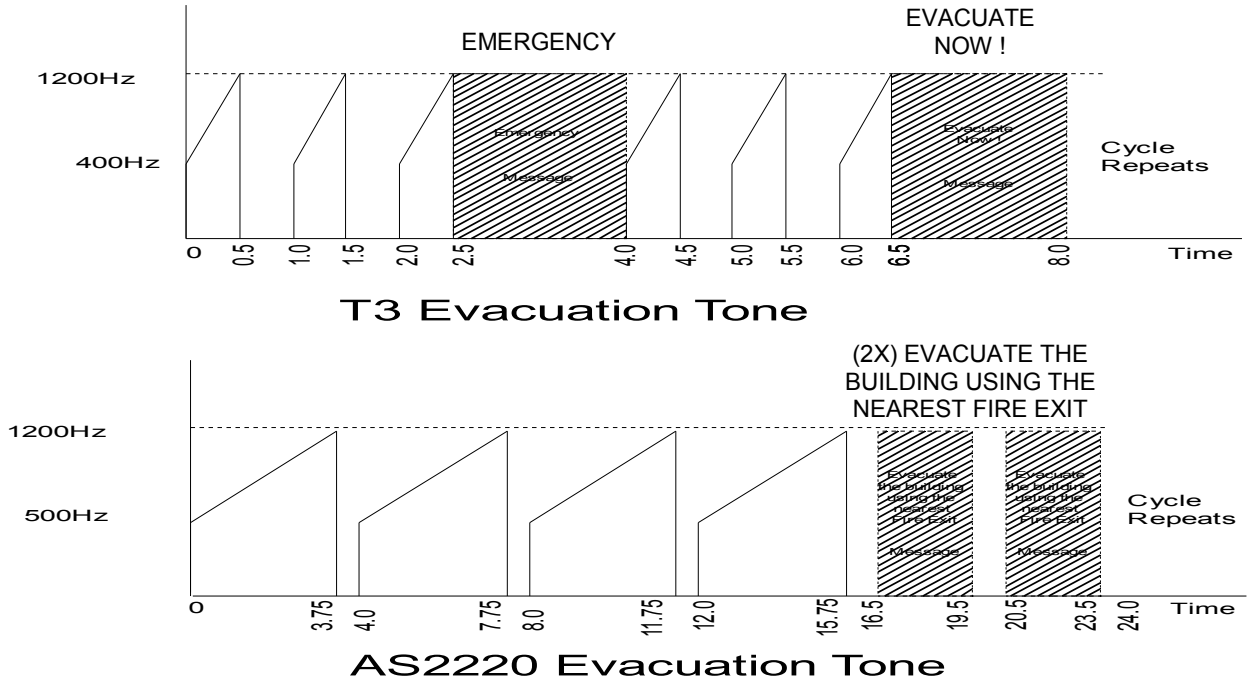
The 20W 24V Amplifier is designed for connection to the monitored sounder output of an F16e, F100, or F120 Fire Alarm Panel; it is activated when the sounder circuit voltage polarity is changed to the alarm state.

In the normal state, the amplifier 100Vrms line is internally connected to the to the panel sounder circuit. The amplifier draws virtually no current (less than 0.2uA) and appears transparent to the panel. If there is a wiring fault on the 100Vrms line or between the amplifier and the panel bell circuit, the Fire Alarm Panel goes into fault.

Specifications:

Targeted Panel:	F16e, F100, and F120 Fire Alarm Panels.
Board Dimensions:	100mm x 77mm. Height 35mm from bottom of PCB.
Mounting Dimensions:	93mm x 69mm.
Operating Voltage:	Nominal 24V ± 20%.
Operating Current:	1.2A @ 27.4V nominal with 20Wrms load.
Power Output:	27.4Vdc Supply: 20Wrms @ 100V line at nominal voltage.
Tone:	Evacuation tone and verbal message, compliant to AS2220 or ISO 8201 T3. See Fig 1.
Monitoring (by panel):	10 kΩ 2W EOL resistor supplied.

(Fig 1) AS2220 and T3 Tone Characteristics:



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Operation:

The Amplifier is connected to the panel sounder circuit output as shown in the connection diagrams. Sounder terminals '+' and '-' are connected to the corresponding '+' and '-' terminals on the amplifier.

In the normal state, the Panel monitors the 100V line 10 kΩ 2W EOL resistor by applying a reversed voltage to the amplifier input terminals. In this state, the amplifier connects the 10 kΩ 2W EOL line resistor to the Warning System output. A 10 kΩ 2W resistor must be used across the 100Vrms line for correct operation of the amplifier's monitoring circuit.

In the alarm state, the panel reverses the bell voltage, causing the amplifier to activate and to put a 100Vrms evacuation tone and voice message on the loudspeaker circuit. During the Alarm state, monitoring of the amplifier ceases.

If the amplifier's output is overloaded or if the supply voltage becomes off-normal, the amplifier will signal a defect by flashing the Fault LED, in a sequences of 3 flashes; see Table 1.

Table 1. LED Decoding

Fault LED	ON LED	Defect Description
Off	Off	Amplifier inactive
Off	Steady	Amplifier active
1st flash is long	Off	Supply Voltage is out of range
2nd flash is long	Off	Input current is too high
3rd flash is long	Off	Output voltage too low, short detected

The 100Vrms Line may be spurred provided the total number of system spurs does not exceed three. In these configurations, the EOL resistor value must be changed to provide the correct monitoring to the panel (See table 2).

Table 2. Spurring

NUMBER OF SPURS	EOL RESISTOR VALUE FOR EACH SPUR
1	1x 10 kΩ 2W
2	1x 22 kΩ 1W on each spur
3	1x 33 kΩ 1W on each spur

Capacitively-coupled 100Vrms PA Speakers must be used with the 20W Amplifier. The capacitor must be bipolar and able to withstand 200V peak line voltage. The value should be around 1uF per watt of power for each speaker.

A common problem of 100Vrms PA installations is the coupling of unwanted noise into the 100V line. Although the 20W Amplifier has been designed to reduce the effects of coupled noise, it is recommended practice that all 100V line wiring be separated from all other wiring by at least 1m. This includes mains wiring, ELV wiring, loop wiring, and telephone wiring.

This is a Class A product. In a domestic environment; in such a situation, the user may need to relocate the amplifier to minimize or eliminate such interference.

Loading of the 100Vrms line must not exceed 20W. Maximum cable capacitance must remain below 80nF (when supply is less than 28V). Excessive load or cable capacitance may cause the amplifier to current-limit and shut down.

It is recommended that suitable Cable be used when installing 100Vrms Speaker lines.
See Table 3 for the cable specification.

Table 3. Evac Cable

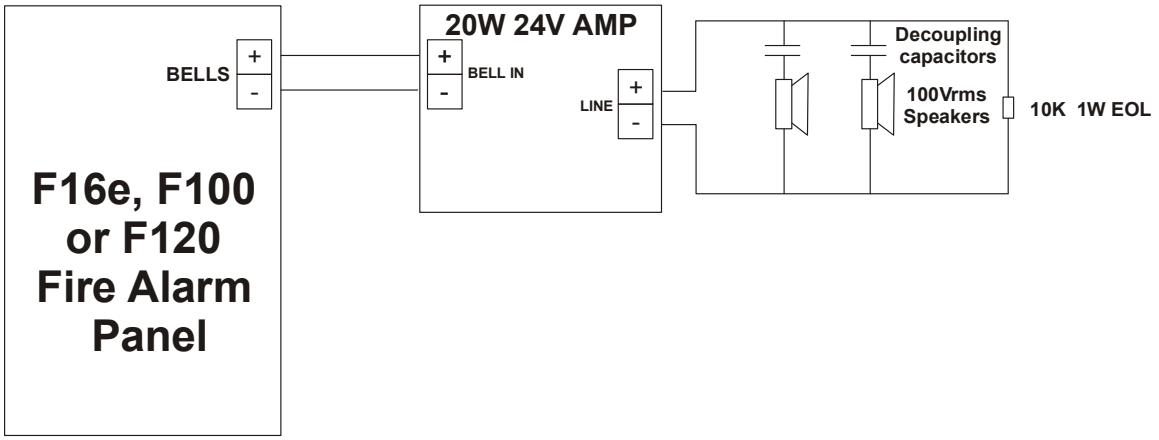
Resistance	0.032ohms/m(return)
Capacitance	80pF/m
Maximum cable run	750m

Voice Messages:

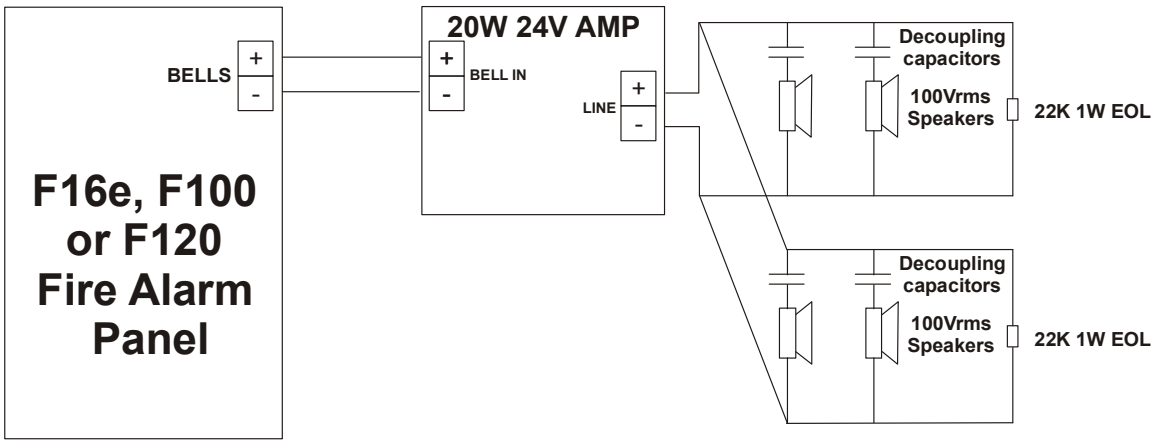
Evacuation tone for the EVAC20W24V: "Evacuate the building using the nearest fire exit."
Evacuation tone for the EVAC20W24V-T3: "Emergency," followed by, "Evacuate now."

Connection Diagrams:

Basic Connection Diagram



Spurred Speaker Wiring Connection



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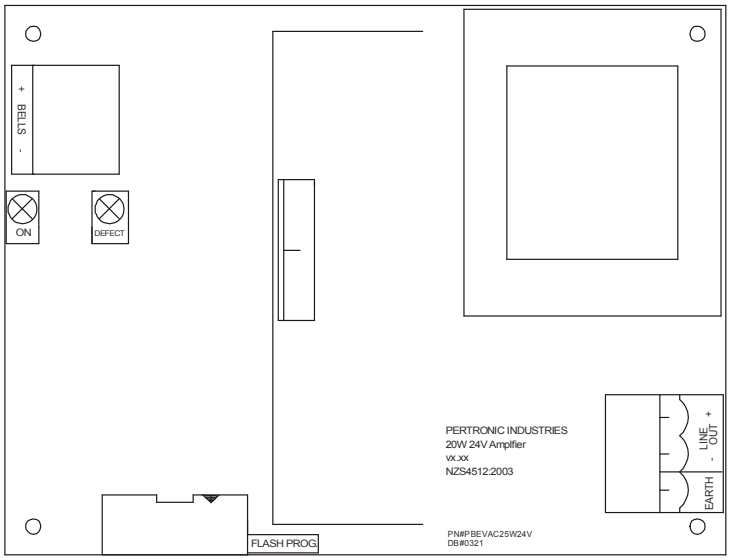
Circuit Board Layout



Order codes

20W 24V Amplifier with NZS4512:2003 or AS2220 tone	EVAC20W24V
20W 24V Amplifier with T3 tone	EVAC20W24V-T3