

# 20W 24VDC 100VRMS Line Amplifier (EVAC20W24V)

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## Product Overview:

The Pertronic 20W Amplifier (**EVAC20W24V**) is an evacuation amplifier with integral evacuation tone and message generator and fault detection system. It is designed for use in emergency warning systems with supervised 100 Volt Line distribution systems. The amplifier delivers up to 20 Watts of audio power to the 100 Volt line.

The **EVAC20W24V** generates an evacuation tone with a voice message as specified in NZS 4512:2010.

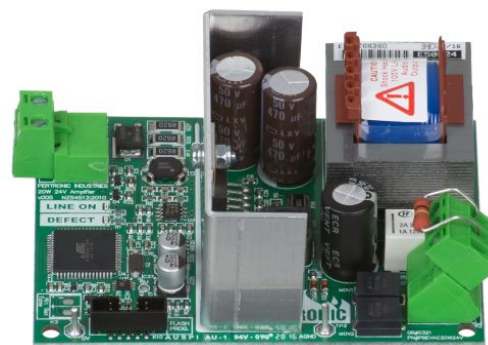
The amplifier is controlled by the BELL output of a fire alarm panel such as the **Pertronic F16e, F100** or **F120**.

When in standby, the 100 Volt line is connected to the BELL circuit. This allows the fire alarm panel to detect short or open circuit faults on the 100 Volt line. The BELL circuit drives a small dc current through the 100 Volt line, which must be terminated with a suitable end of line resistor. It is important to note that every speaker connected to the supervised 100 Volt Line must be specially designed for emergency warning systems, with each speaker incorporating a DC blocking capacitor.

The fault monitoring system also monitors for power supply faults, overload conditions, low power output.

## Features:

- ▶ Generates the 'Evacuation' tone with verbal messages as specified by NZS 4512:2010
- ▶ Designed for connection to the monitored sounder output of an F16e, F100 or F120 Fire Alarm Panel and is activated when the sounder circuit voltage polarity reverses to the 'Alarm' state
- ▶ In the 'Normal' state, the amplifier draws practically no current (less than 0.2  $\mu$ A) and appears transparent to the Fire Alarm panel
- ▶ The 100 Vrms line is internally connected to, and monitored by, the panel's Sounder circuit
- ▶ The amplifier's 100 Vrms line is short-circuit protected and is capable of driving up to 20W (27.4 Vdc supply) into connected PA loud speakers, eg. Pertronic PSS1 and PSSB401



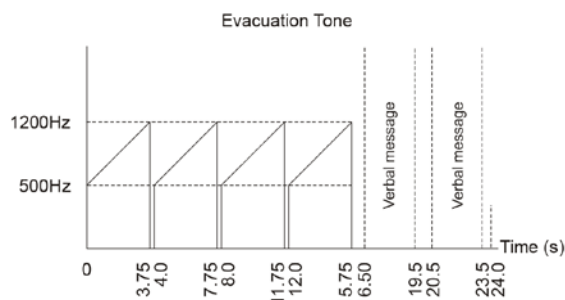
**Pertronic 20W, 24V Amplifier  
EVAC20W24V**

## Specifications:

<b>Electrical:</b>	<b>Operating Voltage</b> 19.2 to 28.8 Vdc Reference 27.4 Vdc	<b>Quiescent Current</b> 0.2 $\mu$ A @ 24 Vdc	<b>Alarm Current</b> 1.2 A @ 27.4 Vdc - with 20 Wrms load
<b>Power Output</b>	20 W @ 100 Vrms line : 27.4 Vdc Supply		
<b>Environmental:</b>	<b>Operating Temperature Range</b> 0 to 30 °C	<b>Humidity</b> 10 to 95 % RH (non-condensing)	
<b>Mechanical:</b>	<b>Dimensions</b>		<b>Weight</b>
Board Dimensions	106 x 77 x 38 (L x W x D mm)		230 g
Mounting Hole Patten	93 x 69 (L x W mm)		

- ▶ Monitoring: Monitored for open and short-circuit (10 k $\Omega$ , 2 W EOL resistor)
- ▶ Tone: Evacuation tone and verbal message, compliant to NZS 4512:2010

## NZS 4512:2010 Tone Characteristics:



Product Codes	Description
EVAC20W24V	EVAC Amplifier, 20W 24V, SMD version
PSS1-R	Pert Sounder Speaker 1W Flush - Red
PSSB501	Pertronic Speaker with B501 Base
PSSB401	Pertronic Speaker with B401 Base

**Operation:**

The Amplifier is connected to the Fire Alarm panel sounder circuit output. The Sounder (Bell) terminals '+' and '-' are connected to the corresponding '+' and '-' terminals on the amplifier.

In the 'Normal' state, the panel monitors the 100V line EOL (10 kΩ, 2W) resistor by applying an inverted voltage to the amplifier input terminals. In this state the amplifier connects the EOL resistor to the Sounder. A 10 kΩ, 2W EOL resistor must be used across the 100 Vrms line for correct operation of the amplifier monitoring circuit.

In the 'Alarm' state, the Fire Alarm panel reverses the Sounder voltage causing the amplifier to activate and output a repeating 'Evacuation Tone, followed by a voiced Evacuation Message' onto the 100 Vrms loud speaker circuit. The amplifier is NOT monitored during the 'Alarm' state.

If the amplifier output is overloaded, or the supply voltage becomes 'Off-Normal', the amplifier will signal a defect by turning the Defect LED ON (refer to Table 1).

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

**Table 1: LED Decoding**

The 100 Vrms Line may have a maximum of three spurs. For these configurations an EOL resistor of the appropriate value must be installed at the end of each spur (refer to Table 2).

Number of Spurs	EOL Resistor Value for Each Spur
1	1 x 10 kΩ, 2W
2	1 x 22 kΩ, 1 W on each spur
3	1 x 33 kΩ, 1 W on each spur

**Table 2: Spurs**

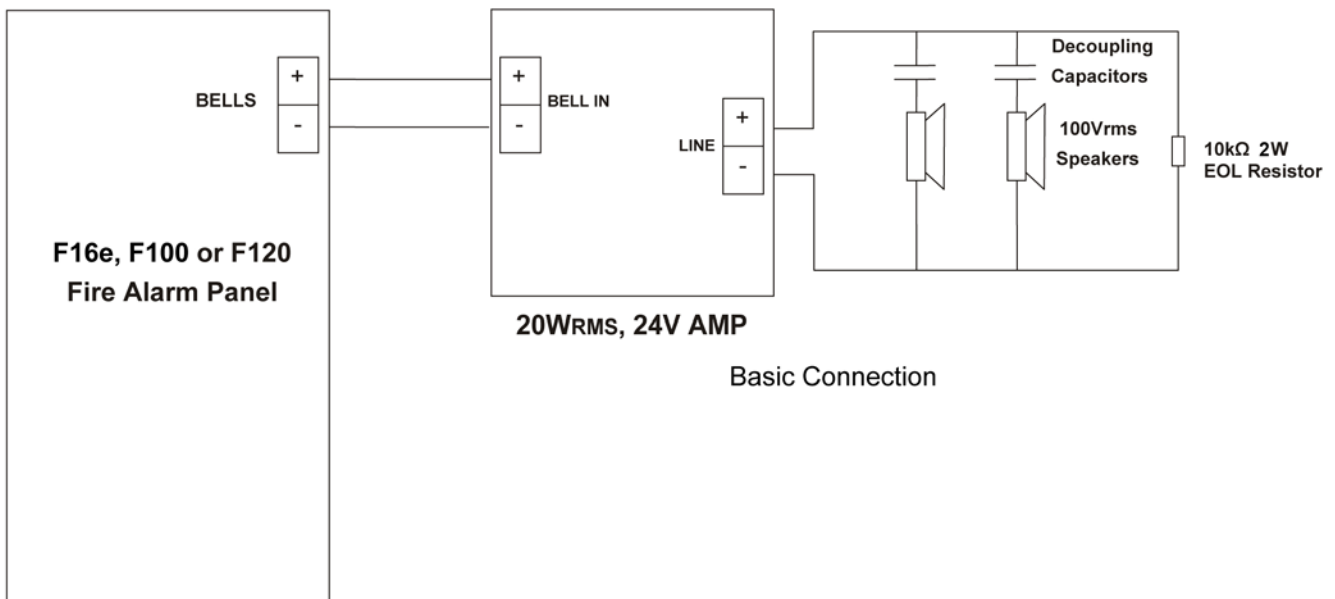
Capacitively-coupled 100 Vrms PA Speakers must be used with the 20 W, 24 V Amplifier. The capacitor must be bipolar and able to withstand 250 V peak line voltage. The value should be approximately 1 μF per watt of power for each speaker.

The 100 Vrms speaker wiring must be separated from ELV (Extra Low Voltage) wiring to prevent interference from cross-talk. Loading of the 100 Vrms line must not exceed 20W.

An excessive load will cause the Amplifier to current limit and shutdown. The symptoms for this may be interruptions in the audio output and two or more amplifiers broadcasting out of synchronization.

Loading of the Bell output must not exceed the maximum fuse or relay ratings

**Connection Diagram:**



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