

PERTRONIC INDUSTRIES LTD

20W 12V AMPLIFIER INSTALLATION NOTE



Overview:

The 20W 12V Amplifier is one of a range of Amplifiers manufactured by Pertronic Industries.

The 20W 12V Amplifier generates the evacuation tone and verbal message as specified by NZS4512:2003.

The 20W 12V Amplifier has a monitored 100Vrms output that can provide up to 20W of power (13.7V supply) to connected PA loud speakers. The output is short-circuit protected.

The 20W 12V Amplifier is designed for connection to the monitored Bell output of a F1 or F4 panel and 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 F1 or F4 Bell circuit. The amplifier draws minimal current (less than 0.2uA), and it 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 F4 signals a 'Defect'.

Specifications:

Targeted Panel:	F1 or F4 Conventional Panel.
Board Dimensions:	97mm x 74mm. Height = 35mm from bottom side of PCB.
Mounting Dimensions:	83mm x 57mm (compatible with existing mounting plate).
Operating Voltage:	Nominal 12Vdc \pm 20%.
Operating Current:	2.0A @ 13.7Vdc nominal with 20Wrms load.
Power Output:	13.7Vdc Supply: 20Wrms @ 100V line at nominal voltage. 10.5Vdc Supply: 15Wrms @ 100V line at nominal voltage.
Tone:	Evacuation tone and verbal message, compliant to NZS4512:2003. (Refer to Fig 1.)
Monitoring (by panel):	10k Ω 2W EOL resistor

NZS4512:2003 Tone Characteristics:

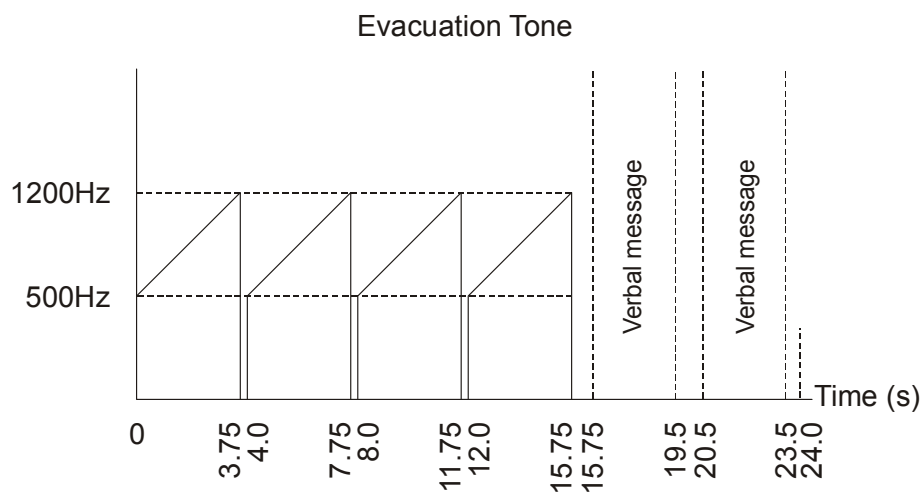


Fig 1.

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Operation:

The Amplifier is connected to the F1 or F4 panel Bell circuit output as shown in the connection diagrams. Bell terminals '+' and '-' are connected to the corresponding '+' and '-' terminals on the amplifier.

In the 'Normal' state, the bell circuit of the F1 or F4 monitors the 100V line 10 kΩ 2W EOL resistor by applying an inverted voltage to the amplifier input terminals. In this state, the amplifier connects the 10 kΩ 2W EOL line resistor to the Bell input. A 10 kΩ 2W EOL resistor must be used across the 100Vrms line for correct operation of the amplifier monitoring circuit.

In the 'Alarm' state, the F1 or F4 panel reverses the bell voltage, causing the amplifier to activate and output a repeating 'Evacuation Tone followed by a voiced Evacuation Message' onto the 100Vrms loudspeaker circuit. The amplifier is NOT monitored during the 'Alarm' state.

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
1 st flash is long	Off	Supply Voltage is out of range
2 nd flash is long	Off	Input current is too high
3 rd flash is long	Off	Output voltage too low, short detected

The 100Vrms 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. (See Table 2.)

Table 2. Spurs

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

Capacitively-coupled 100Vrms PA Speakers must be used with the 20W 12V Amplifier. The capacitor must be bipolar and able to withstand 250V peak line voltage. The value should be around 1uF per watt of power for each speaker.

100Vrms speaker wiring must be separated from ELV (Extra Low Voltage) wiring.

Loading of the 100Vrms line must not exceed 20W.

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

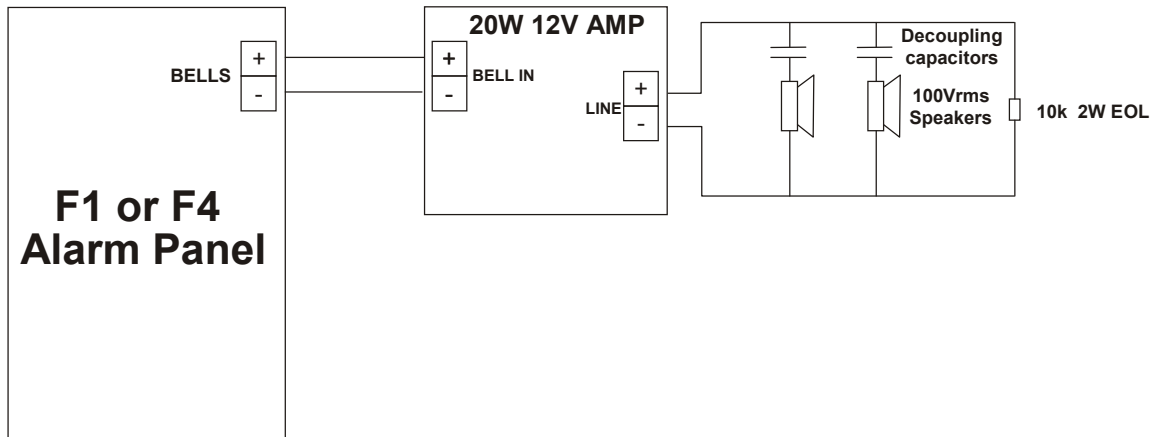
Loading of the bell output must not exceed the maximum fuse (F4 Panel Bell Circuit Fuse 1 = 5A) or relay (20W F4 Amplifier Line Relay maximum contact current = 3A) rating.

Voice Messages:

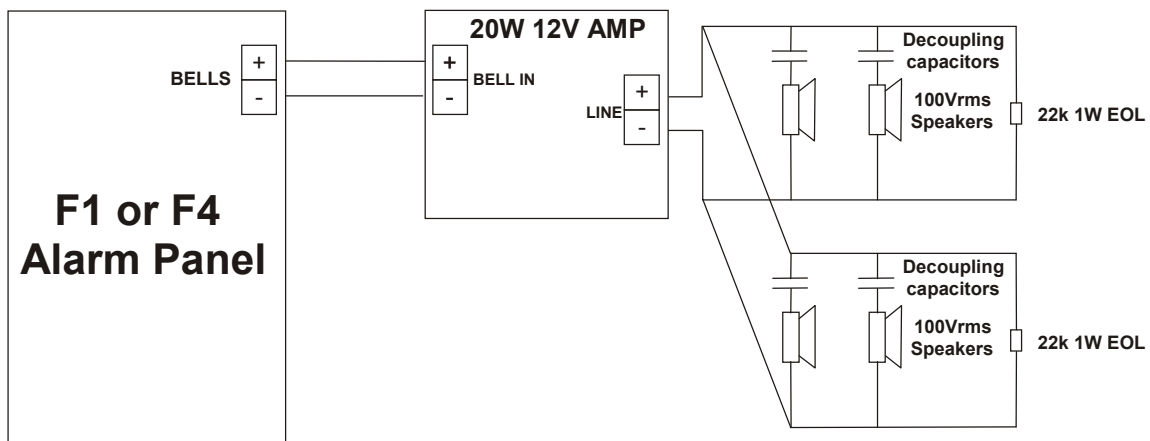
Evacuation tone for the EVAC20W12V: "Evacuate the building using the nearest fire exit."
Evacuation tone for the EVAC20W12V-T3: "Emergency," followed by, "Evacuate now."

Connection Diagrams:

Basic Connection Diagram



Spurred-Speaker Wiring Connection



Circuit Board Layout

