PERTRONIC INDUSTRIES LTD

DATASHEET

EA Series 60 Watt and 120 Watt Amplifiers

EA60 & EA120

Overview

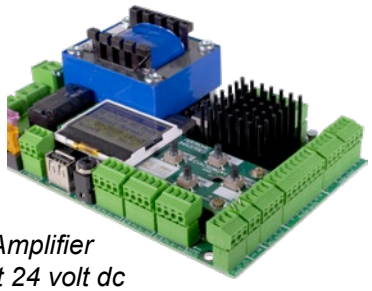
Pertronic EA series amplifiers are high performance amplifiers for Pertronic F220, F100A, and F16e fire alarm systems.

With excellent sound clarity, these amplifiers are suitable for all non-emergency and emergency applications including occupant warning, public address, and background music.

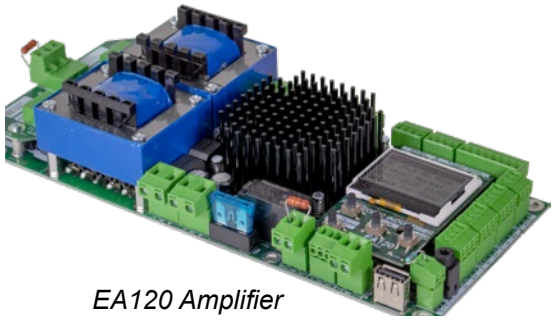
The on-board keyboard and LCD display provide speaker load measurement and other menu-driven test and management features, together with user-friendly configuration of operating settings, announcements, and signals. Configuration files can be saved and loaded via USB, allowing a single configuration file to be copied to multiple amplifiers.

The built-in audible signal generators produce signals and announcements for many purposes including the evacuation and alert signals specified in AS 4428.16 and NZS 4512. The Pertronic Text to Speech tool makes it easy to create pre-recorded natural speech messages for the EA series amplifiers.

These amplifiers feature three audio inputs suitable for local and/or remote microphones and external audio sources including background music. With a large number of easily configurable options, Pertronic EA series amplifiers satisfy a wide range of audio system requirements.



EA60 Amplifier
60 watt 24 volt dc



EA120 Amplifier
120 watt 24 volt dc

Features

- 60 watt rms and 120 watt rms class D amplifiers with supervised 100 volt rms line output
- EA120 provides one 120 watt or dual 60 watt outputs
- Excellent sound clarity for maximum intelligibility
- Resettable country presets for AU or NZ standards
- Library of pre-defined audible signals including AS 4428.16 and NZS 4512 evac. and alert signals
- Online Pertronic Text to Speech tool economically generates pre-recorded custom speech messages
- Custom speech messages and tones may be added to the on-board library via USB stick
- User-friendly system for combining speech messages and tones to create custom audible signals
- Fully configurable signal priority system
- Fire evacuation signal may be disabled or over-ridden with “Priority 1” signal (See note 4 page 3)
- Three individually controlled audio inputs:
  - Input 1, PTT controlled, configurable as “Fire Mic”, “PA Mic”, or “Aux” input
  - Input 2, PTT controlled, configurable as “PA Mic” or “Aux” input
  - Input 3, Vox controlled “Aux” input
- Inputs 1 and 2 may be independently configured with or without fault supervision
- All inputs are configurable as balanced mono, unbalanced mono, or unbalanced stereo with built-in audio mixer to combine left and right stereo channels
- User-friendly configuration with on-board keyboard and 5 x 16 character backlit display
- Multiple EA series amplifiers may be factory-fitted to a single Pertronic fire panel
- Master-Repeater mode allows one master to drive up to seven repeater amplifiers
- ADM-4 interface provides up to 4 channels per line output, individually selectable by the fire panel
- Menu-controlled power measurement allows output load to be checked during installation or maintenance
- Supervised 24 V dc 2-wire strobe (VAD) output:
  - Supports single or dual strobe systems
  - Configurable to activate on any fire panel event
  - Dual VAD colour determined by output polarity
- Assignable form C relay, configurable to activate on any combination of Common Fault, Amplifier Active, Amplifier Disabled or Isolated, Test Alarm, PTT, FIP Active, Strobe On, or Bell-In Active
- Configuration may be cloned via USB stick
- Twenty-event time-stamped history log
- Isolated RS-485 interface to Pertronic F220 or F100A
- Compatible with Pertronic F220, F100A, F16e, F120A and third party fire panels (Note 1, page 3)
- The EA60 can be configured as a replacement for the Pertronic EVAC50W24V (AU or NZ)
- EA60, EA120, and EAMIC, have been independently tested to AS 4428.16:2020 (Grade 3) and NZS 4512:2021 by an IANZ-Accredited laboratory
- ActivFire listing number afp-3779
- Training material and keyboard-display simulator available on Pertronic website

Audible Signal Library

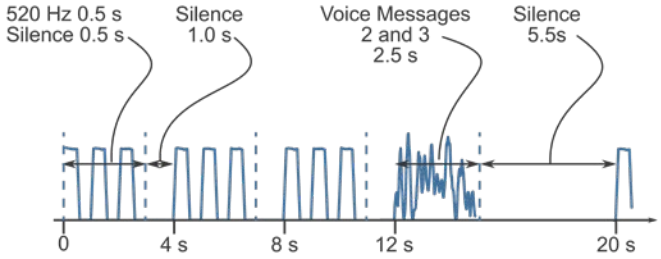
Pertronic EA series amplifiers feature a library of audible signals and messages suitable for fire alarm incidents and other situations such as lockdown, bomb alert, and tsunami. Each signal is a sequence of tones, speech messages, and/or silence periods.

Pre-defined speech messages are available in four voice profiles: AU Male, AU Female, GB Male, and GB Female. The voice profile is configured using the on-board keypad and LCD display. This setting applies to all speech messages. For example, if the profile is configured as AU Male, all speech messages will be broadcast with the AU Male voice.

Custom Signals

A custom signal may have any combination of pre-defined or custom segments, up to a maximum of nine segments. The sequence is defined using the built-in keyboard and display.

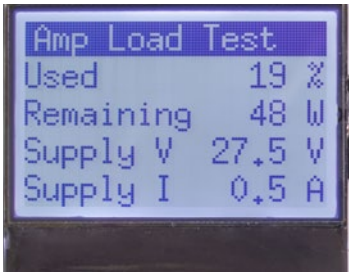
Pertronic websites provide a Text to Speech tool which provides an economical method of creating pre-recorded custom speech messages for the EA series amplifiers



Above: A custom audible signal with 3 cycles of ISO 8201 T3, followed by a speech message. The T3 tone is a 520 Hz square wave ("Tone 47")

Load Measurement & Audio Test Facilities

The audio test menu on EA series amplifiers provides a load measurement facility.



During load measurement, the amplifier plays a 1 kHz tone and calculates the speaker load and remaining capacity, based on the power supply voltage, current, and the amplifier's operating characteristics.

"Speaker walk test" is also available from the audio test menu. When initiated, the walk test signal plays until manually stopped. The walk test sequence is a 0.55 second burst of 554 hertz, once every two seconds. The walk test volume (but not the tone) is configurable from the menu.

The "play library" option allows a user to select and play any tone, speech message, or audible signal stored in the amplifier (including custom sequences of tones and/or messages).

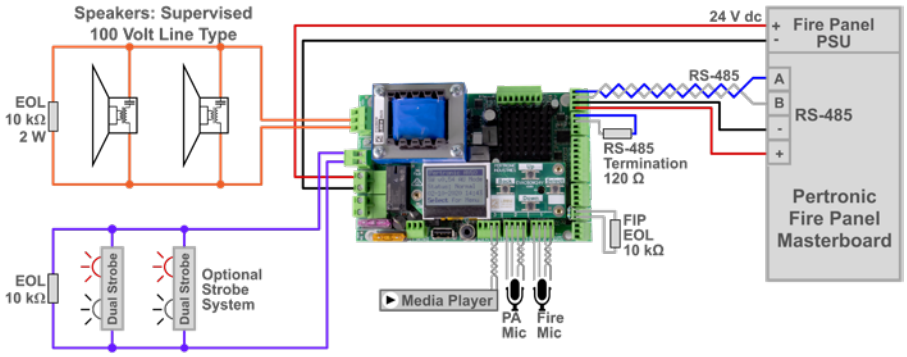
The audio test menu also provides the "test alarm start", "test alarm end", and "false alarm" signals; together with a 1 kHz calibration tone.

Default Audible Signals

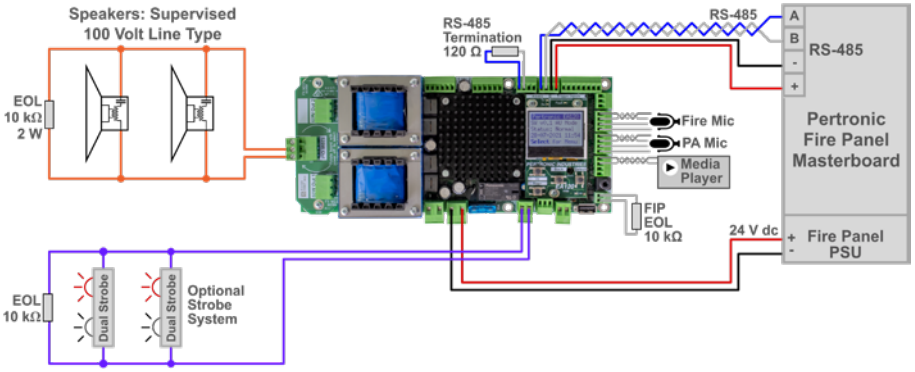
A+*	Purpose	Description
0	**AU: Evacuate (AS 4428.16:2020)**	(ISO 8201 T3 temporal pattern, 520 Hz square wave) x 3 + "Emergency, evacuate now"
	NZ: Evacuate (NZS 4512:2021)	(500 to 1200 Hz sweep 3.75 s) x 4 + ("Evacuate the building using the nearest fire exit") x 2
1	**AU: Alert (AS 4428.16:2020)**	(520 Hz 0.5 s + 3.5 s silence) x 3 + "Warning, the fire alarm system has operated. Stand by for further instructions"
	NZ: Alert (NZS 4512:2021)	(420 Hz 0.625 s intermittent) x 12 + "Warning, the fire alarm system has operated. Stand by for further instructions"
2	**AU: Test Alarm Start**	(1000 & 650 Hz two-tone chime) x 2 + "May I have your attention please. We will be testing the fire alarm system. Please disregard all visual and audible alarms, and do not evacuate the building"
	NZ: School Bell	Simulated bell tone (class change)
3	**AU: Isolate Audio**	If the fire panel activates this RS-485 address, all audio inputs are disabled
	NZ: Test Alarm Start	(1000 & 650 Hz two-tone chime) x 2 + "May I have your attention please. We will be testing the fire alarm system. Please disregard all visual and audible alarms, and do not evacuate the building"
4	**Lockdown**	Lockdown tone and speech message
5	**Tsunami**	Tsunami warning tone and speech message
6	**Bomb Alert**	Bomb Alert warning tone and speech message
7	**Tone RH3**	500 to 1400 Hz sweep 0.2 s repetition rate
8	**AU: Tone PA400**	Intermittent 3200 Hz 0.1 s on, 0.04 s off
	NZ: Alert tone only	(T3, 520 Hz sq.) x 3 + "A smoke alarm has activated. Press the fire alarm hush button and investigate the cause of alarm
9	**Priority 1**	Priority 1 tone and speech message
10	**Test Alarm End**	(1000 & 650 Hz two-tone chime) x 2 + "May I have your attention please. The fire alarm test is now complete. Please respond to all future fire alarms"
11	**False Alarm**	(1000 & 650 Hz two-tone chime) x 3 + "May I have your attention please. There has been a false alarm. Please disregard all visual and audible alarms and do not evacuate the building"

1. * A+ = Offset from RS-485 base address

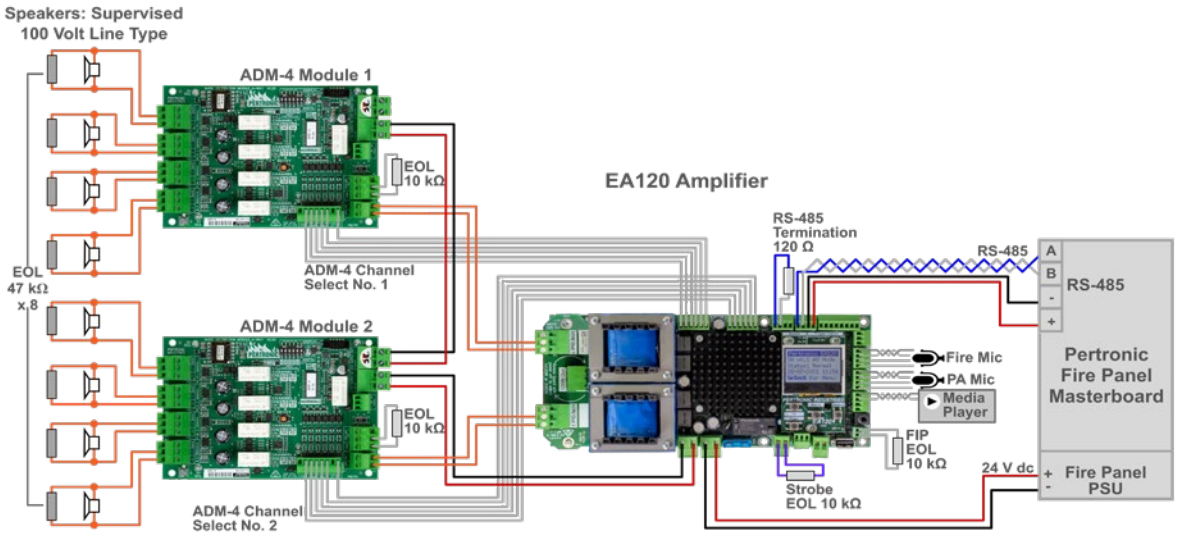
Connections: EA60 Amplifier in Pertronic Intelligent Addressable Fire Panel



Connections: EA120 Amplifier in Pertronic Intelligent Addressable Fire Panel



Connections: EA120 Amplifier with Dual 60 Watt Outputs and Dual ADM-4 Modules in Pertronic Intelligent Addressable Fire Panel



Notes

1. EA series amplifiers are designed to comply with AS 4428.16 only when installed in Pertronic fire panels. If an EA series amplifier is used with a third party fire panel in an AS 1670.1 or NZS 4512:2021 fire system, it will be necessary to independently verify compliance with AS 4428.16.
2. Each Pertronic EA series amplifier has two interchangeable “DC In / Out” connectors, and two interchangeable “RS-485 In / Out” connectors.
3. Pertronic EA60 and EA120 amplifiers must be mounted inside standards-compliant fire panels unless specifically exempt under local regulations. For more information, please refer to the “Pertronic EA60 60W, 24Vdc 100Vrms Line Amplifier Technical Manual”, and the “Pertronic EA120 120W, 24Vdc 100Vrms Line Amplifier Technical Manual”
4. A system configured with the “Priority 1” signal will not satisfy the requirements of fire alarm standards such as AS 1670.1 and NZS 4512. The “Priority 1” signal should be configured only when authorised by properly qualified persons with appropriate jurisdiction.
5. Unless stated otherwise, specifications are quoted for a reference supply voltage of 27.4 volts dc.
6. “Peak” current is the dc input current, rms averaged over 50 to 100 milliseconds, during the loudest part of the evacuation signal.
7. For systems with backup (“standby”) battery power supplies, battery size (“amp-hour”) calculations should be based on the amplifier’s average current consumption at 24 volts dc. Our websites have battery size calculators for Pertronic fire alarm systems. Visit https://pertronic.net to find the Pertronic website for your area.

Ordering Information

Product Code	Description	Activfire Listing	FPANZ Listing
EA60	Evac Amplifier 60W, 24V DC with Integral Tones, Speech Messages, & VAD O/P	afp-3779	PI/409
EA120	Evac Amplifier 120W, 24V DC with Integral Tones, Speech Messages, & VAD O/P	afp-3779	PI/410
DVAD-C-24V-2D	Dual Red & White Polarity-Reversal VAD 24V Ceiling Mount	Pending	PI/411 Provisional
DVAD-W-24V-2D	Dual Red & White Polarity-Reversal VAD 24V Wall Mount	Pending	PI/412 Provisional
EAMIC	PTT Fist Microphone for AS 4428.16 Emergency (OWS) and Public Address Applications. (Curly cord extends to approximately 2.3 metres)		

Specification

			EA60 Amplifier	EA120 Amplifier	
Operating Voltage			19.2 V dc to 28.8 V dc		Note 5, page 3
Operating Current, No Audio			40 mA	40 mA	
Operating Current, with Evac. Signal	**AS 4428.16, 520 Hz, Male, AU**		1.0 A average @ 24 V dc	2.2 A average @ 24 V dc	Note 7, page 3
			3 A peak	6 A peak	Notes 5 & 6, page 3
	Evac. Signal NZS 4512, Male, GB		2.5 A average @ 24 V dc	4.5 A average @ 24 V dc	Note 7, page 3
			3 A peak	6 A peak	Notes 5 & 6, page 3
Power Output			60 W @ 100 V rms	1 x 120 W @ 100 V rms, or 2 x 60 W @ 100 V rms	Note 8
Addressable Audible Signals	**Via RS-485**		Up to twelve, configured from the pre-defined library or custom signals		Note 8
	Via Direct Controls		Up to six, configured from the pre-defined library or custom signals		Note 10
Custom Audible Signals			Up to five		
Segments per Custom Audible Signal			Nine		
Pre-Defined Audible Signals			24 (including AS 4428.16 and NZS 4512 evacuation and alert signals)		
Pre-Defined Tones			50		
Pre-Defined Speech Messages			23		
Voice Profiles			Four: Australian male, Australian female. British male, British female		
Frequency Response			400 Hz – 12 kHz		Note 9
Total Harmonic Distortion			< 0.2%		Note 9
Signal to Noise Ratio			> 80 dB		Note 9
Load Measurement Accuracy			± 10 % of full scale		
Bell In, Bell Out			19 V dc to 32 V dc		Note 8
RS-485 Bus Input Current			12 mA		Note 8
RS485 Data Rate (configurable)			9.6 kb/s or 115.2 kb/s. Compatible with all F220 and F100A RS-485 buses.		
Inputs 1 - 3	**Sensitivity**		Configurable, 5 mV rms to 1 V rms (balanced)		Note 11
	Input Impedance		20 kΩ (10 kΩ to ground from each leg)		
PTT (Inputs 1 and 2)			3.3 volt active low		
Isolated 100 V rms Output			Continuously supervised for short-circuit, open-circuit, and overload.		10 kΩ, 2 W EOL
Audio 1 V Line Output			1 V rms, capable of driving up to 7 EA series repeater amplifiers		
Audio Active Sync ("AA")			Active low output, capable of activating up to 7 EA series repeater amplifiers		
Repeater Trigger Input			3.3 volt active low		
Direct Sound Controls			Six 3.3 volt active low inputs		Note 10
Supervised Fire Panel Input ("FIP")			Activate by switching a 10 kΩ resistor in parallel with the 10 kΩ EOL resistor		Notes 6 & 12
Dual Strobe Output			Dual polarity, 24 V dc (nominal), 3 amp, supervised		
Assignable Relay			1 x form C, 1 amp, 30 V dc		
USB Port			USB-A Host		
Input 3			3.5 mm Stereo Socket		
Screw Terminals	**DC In/Out, & VAD O/P**		0.5 to 2.5 mm² stranded cable		
	All other connectors		0.2 to 1.5 mm² stranded cable		
ADM-4 Channel Select Controls			One	Two	Note 11
Dimensions (L x H x D)			154 x 99 x 50 (mm)	226 x 99 x 50 (mm)	
Weight			0.66 kilogram	1.2 kilogram	
Operating Temperature			-10 °C to +50 °C		
Relative Humidity			≤ 95 % non-condensing		

Notes (continued from page 3)

8. If the supply voltage is less than 20 volts dc, the amplifier operates at reduced audio power output.
9. Audio performance and input sensitivity figures are referenced to maximum output power.
10. In AS 4428.16-compliant systems, the control inputs (RS-485, direct sound controls, warning system / bell, fire panel) should not be connected to external equipment.
11. Each ADM-4 channel select control provides five open collector (active low) outputs: One per ADM-4 output channel, plus one "all channel" output.

Ordering Information: Refer to page 3

Pertronic Industries Limited
https://pertronic.net
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