

XTRA™ Series

AUDIO POWER AMPLIFIERS

Professional Grade Power Amplifiers
Engineered for Efficiency



- ▶ **XTRA Power**
200 watts rms output power
- ▶ **XTRA Efficient**
ENERGY STAR® qualified amplifiers
- ▶ **XTRA Cool**
No fans or vents
- ▶ **XTRA Small**
Compact 1U, half rack enclosure
- ▶ **XTRA Performance**
Very low THD
 - 105 dB signal-to-noise - XPA 1002
 - 100 dB plus signal-to-noise - XPA 2001
- ▶ **XTRA Clean Output**
Patented CDRS™ - Class D Ripple Suppression eliminates EMI and dramatically improves audio performance
- ▶ **Plenum Rated**
UL 2043 plenum rated with optional kit for above-ceiling installation



Extron® Electronics

www.extron.com

Introduction

The Extron **XPA 1002** and **XPA 2001** are compact power amplifiers in the XTRA Series, designed for installation in racks, lecterns, or above the ceiling. These ENERGY STAR qualified amplifiers feature an Extron exclusive, highly efficient, advanced Class D amplifier design with patented CDRS™ - Class D Ripple Suppression technology that eliminates EMI emissions and interference with sensitive A/V equipment. This high efficiency design allows the amplifiers to be fanless and operate in environments with little or no ventilation. These professional grade amplifiers deliver 200 watts of continuous output power. The XPA 1002 stereo power amplifier offers 100 watts per channel output into 4 ohms, a 105 dB signal-to-noise ratio, and THD of less than 0.05%. The XPA 2001 mono 70 volt or 100 volt power amplifier models offer 200 watts output, a 100 dB plus signal-to-noise ratio, and THD of less than 0.1%. The XTRA Series amplifiers are housed in compact, plenum-rated 1U, half rack width enclosures.



ENERGY STAR Qualified Amplifiers with Auto-Standby

The XPA 1002 and XPA 2001 ENERGY STAR qualified amplifiers are energy efficient products that conserve energy and reduce costs. With an Extron exclusive auto-standby feature that automatically enters the amplifiers into standby after one hour of inactivity, they consume just 10 watts when idle and less than 1 watt in standby mode. XTRA Series amplifiers exceed ENERGY STAR qualification requirements.

XPA 1002

Stereo Power Amplifier - 100 Watts Per Channel

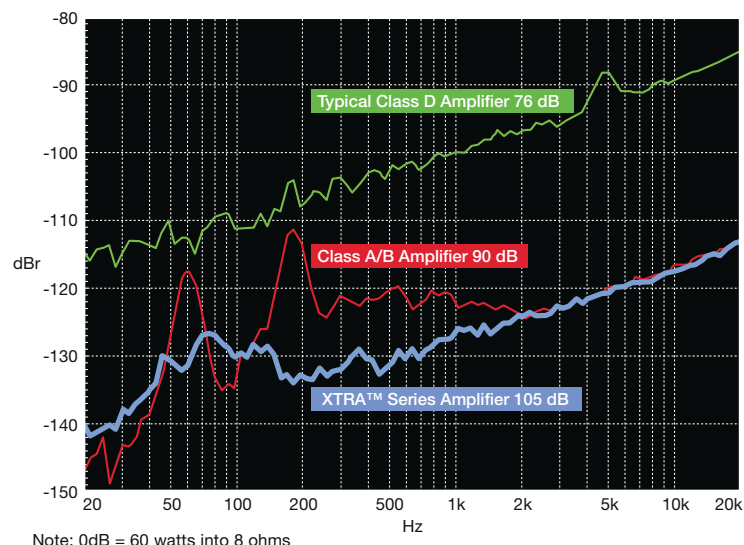
The XPA 1002 two channel amplifier delivers 100 watts rms per channel into 4 ohms, and 60 watts rms per channel into 8 ohms for amplification of voice or program audio content to stereo speakers, or two sets of 8 ohm ceiling speakers in a dual zone application.

XPA 2001

Mono 70 Volt / 100 Volt Power Amplifiers - 200 Watts

The XPA 2001 delivers 200 watts rms for high impedance speaker systems in voice reinforcement and distributed audio applications. The XPA 2001 is available in 70 volt and 100 volt models.

The XPA 1002 and XPA 2001 accept balanced and unbalanced input signals and include a recessed, detented level control located on the rear panel to prevent tampering. This control allows for adjusting audio system gain structure. For applications requiring volume adjustment and muting control from a location other than the amplifier, remote control capability is available using the optional Extron VCM 100 analog volume and mute controller or VC 50 analog volume controller. Additionally, the XTRA Series amplifiers include multiple protection circuits that momentarily activate when an abnormal condition, such as overheating, is detected. An advanced, automatic clip limiter protects speakers from clipping distortion.



A signal-to-noise specification is useful when comparing amplifiers, but it doesn't tell the full story. This noise floor graph shows the signal-to-noise performance of the Extron XPA 1002 and other typical amplifiers across the entire audio band. This graph demonstrates the professional grade performance of the XPA 1002, showing it actually performs better than a traditional Class A/B amplifier, and dramatically better than a typical Class D amplifier.

Overview

ENERGY STAR® qualified amplifier
Meets green building requirements and saves system operation costs

Over Temp LED
Indicates enclosure has exceeded optimal operating temperature

Extron Patented CDRS™
Class D Ripple Suppression eliminates high frequency switching ripple and EMI emissions

Extron exclusive auto-standby mode with fast power-up
Automatically enters standby after one hour of inactivity to dramatically reduce power consumption

Compact 1U, half rack width metal enclosure
Reduces rack space requirements

Front and rear-mounted signal and protection LEDs
Provide indication from both sides of an equipment rack

XPA 1002 - Front

The XPA 1002 offers 100 watts rms per channel into 4 ohms or 60 watts rms into 8 ohms. Also available is the XPA 2001, a 200 watt mono amplifier in a 70 volt or 100 volt model.

105 dB signal-to-noise ratio and THD less than 0.05%

Bridgeable outputs
The XPA 1002 delivers 200 watts into 8 ohms or 120 watts into 16 ohms when output is wired for bridged mono operation

Screw-lock 5 mm captive screw speaker connectors
For simple, secure connections with speaker cables up to 12 AWG

Plenum rated when used with optional Flexible Conduit Adapter Kit
Enables concealment above the ceiling to prevent theft or save space inside the room

Rear panel recessed, detented level controls
Prevents tampering and accidental gain adjustments

Accepts balanced or unbalanced stereo or mono audio signals

Remote volume and mute port
For use with optional Extron analog Volume and Mute Controllers

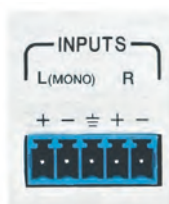
Remote standby port
For remotely powering down amplifier to reduce operating costs

XPA 1002 - Back

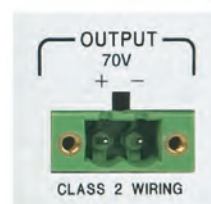
Additional features found on the XPA 2001



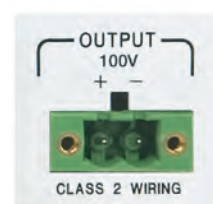
High pass filter
Prevents saturation of speaker transformers



Input summing
Accepts stereo sources for mono amplification



Mono, high impedance output
The XPA 2001 is available in 70 volt and 100 volt versions



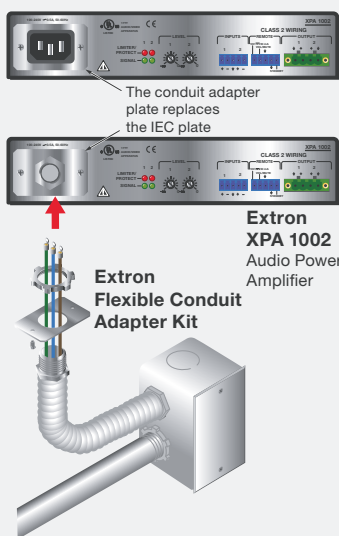
Features

Plenum Rated When Used with Optional Flexible Conduit Adapter Kit

In many rooms, the space above the ceiling is used as a return air plenum. To ensure safety from potentially harmful heat and smoke release in the event of a fire, A/V products installed in ceilings of this type must comply with safety codes and be specifically rated for use in plenum environments. When used with the optional Flexible Conduit Adapter Kit, part # 70-228-02, and plenum-rated signal and speaker cables, the XTRA Series power amplifiers are UL 2043 rated to conform to heat and smoke release codes for plenum environments.

The XTRA Series amplifiers feature a built-in power supply with a modular power connection. In a rack installation, these amplifiers would be powered from an AC receptacle. However, when the amplifier is to be permanently installed above a drop ceiling, the XTRA Series can be directly hardwired for AC power when the optional Flexible Conduit Adapter Kit is used in place of a conventional power cord. With this kit, the wiring is encased in flexible conduit, which connects directly to the amplifier and a local junction box. This can simplify installation without the necessity to provide an AC receptacle above the drop ceiling.

Installing an amplifier above a drop ceiling offers flexibility for integrators wanting to conserve rack space and achieve a clean, streamlined installation free of visible cable runs. An amplifier situated above the ceiling is also concealed from view, which reduces the possibility of theft.



When used with the optional Flexible Conduit Adapter Kit, the XTRA Series power amplifiers are UL 2043 rated for plenum environments.

XTRA Performance

The XTRA Series amplifiers deliver professional grade performance with 105 dB signal-to-noise ratio and THD of less than 0.05% for the XPA 1002, and 100 dB plus signal-to-noise ratio and THD of less than 0.1% for the XPA 2001.

XTRA Efficient

The XPA 1002 and XPA 2001 are ENERGY STAR qualified amplifiers and energy efficient products that conserve energy and reduce costs.

XTRA Cool

The XTRA Series amplifiers generate substantially less heat than similar power amplifier designs, making them ideal for installation in credenzas, lecterns, and racks without the need for an external fan to provide forced air circulation.

XTRA Clean Output

CDRS - Class D Ripple Suppression is an Extron Patented technology that eliminates the high frequency switching ripple and EMI emissions found in all Class D amplifiers. CDRS enables Extron power amplifiers to be installed near sensitive A/V devices without RF interference, and dramatically improves audio performance over conventional Class D amplifier designs.

XTRA Small

With the capability to deliver full-sized amplifier power in one quarter to one half the size of many comparable power amplifiers, the XTRA Series amplifiers reduce rack space requirements for many installations.

Plenum Rated

The XPA 1002 and XPA 2001 meet UL 2043 for smoke and heat release for installation within a plenum airspace above a drop ceiling. Above-the-ceiling placement conceals the amplifier to prevent theft, and is convenient for installing equipment when space inside the room is limited.

Fanless Design

The XPA 1002 and XPA 2001 do not require fans or vents for cooling, ensuring quiet, reliable operation.

Extron Exclusive Auto-Standby with Fast Power-Up

The XTRA Series amplifiers exceed ENERGY STAR qualification requirements with an auto-standby feature that automatically enters the amplifiers into standby after one hour of inactivity, dramatically reducing power consumption. They quickly return to full power status in less than one second upon signal detection.

Rear Panel Recessed, Detented Level Controls

These controls provide attenuation of input signals for adjusting audio system gain staging. They are located on the rear panel to prevent users from tampering with level adjustments.

Automatic Clip Limiter

Detects actual onset of clipping by comparing input and output waveforms. Gain is automatically reduced with a slow attack and fast release to eliminate clipping.

Multiple Protection Circuits

These circuits activate during output shorts, thermal overload, or DC faults to prevent damage to the amplifier and speakers.

Remote Volume and Mute Control Port

In basic installations without third-party control systems, this port allows the XTRA Series amplifiers to be remotely controlled using the optional Extron VCM 100 analog volume and mute controller or VC 50 analog volume controller.

Front and Rear-Mounted Signal and Protection Indication LEDs

These LEDs provide convenient indication of input signal presence and protection circuit activation from both sides of an equipment rack.

Front Panel Over-Temperature LED

This LED provides visual indication that the enclosure temperature has exceeded the optimal value, well in advance of the onset of thermal protection circuitry.

Engineered For Efficiency

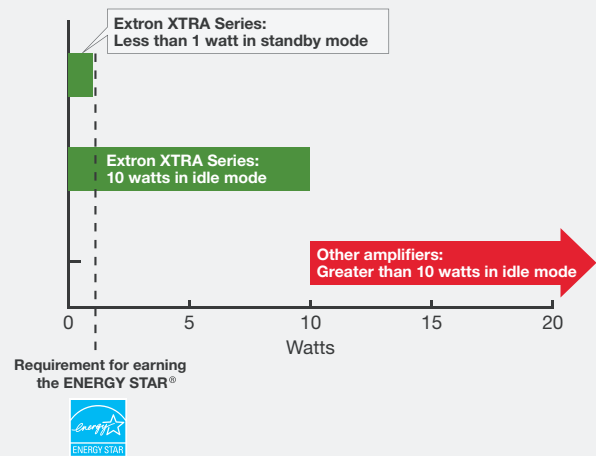
Extron XTRA Series amplifiers have been engineered to deliver energy, thermal, and space efficiency. This combination results in an amplifier that draws less power, runs at cooler temperatures, and consumes much less rack space than many similar power amplifiers. XTRA Series amplifiers therefore offer expanded opportunities for integration in a wide variety of applications where audio amplification is desired but installation is not practical due to limited equipment space or air circulation.

XTRA Energy Efficiency

As ENERGY STAR qualified amplifiers, the XTRA Series are energy efficient products designed to meet green building requirements, including low power consumption. In order to earn the ENERGY STAR, an audio product must feature a standby mode that draws less than 1 watt of AC power. The XPA 1002 and XPA 2001 draw just 10 watts when idle, and less than 1 watt of power when in standby mode. With an Extron exclusive auto-standby feature, the amplifiers automatically enter into standby mode after one hour of inactivity, or when triggered by contact closure. Overall, the XTRA Series requires substantially less power than similar power amplifiers, which are a significant source of power consumption in an AV system.

Since the XTRA Series amplifiers draw very little power in standby mode, operating costs can be greatly reduced in many A/V systems where the amplifiers are continuously powered.

XTRA Low Power Consumption

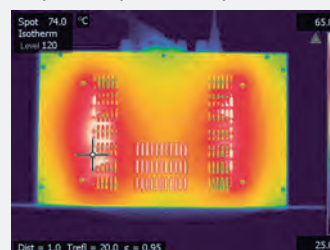


With both an idle and stand-by mode, XTRA Series Amplifiers are more efficient than similar power amplifier designs to reduce operational costs.

XTRA Thermal Efficiency

The XTRA Series feature an exclusive Extron Class D amplifier design that delivers very high efficiency with low distortion and a professional grade signal-to-noise ratio. These Extron amplifiers deliver far more of the incoming power – up to 90% – to the outputs and produce far less heat than conventional power amplifier designs. Because Extron Class D amplifiers produce little heat, the XPA 1002 and XPA 2001 do not require internal fans for cooling, and can be installed in racks, credenzas, and lecterns without the need for an external fan to provide forced air circulation. This allows integrators to build in sound systems with the amplifier installed in airflow-restricted spaces where many similar power amplifiers cannot be used.

Competitive Amplifier at 1/8th power



Series XPA 1002 at 1/8th Power



IR photography demonstrates how cool the XTRA Series operates compared to similar power amplifiers, lowering energy costs to cool equipment racks.

XTRA Space Efficiency

In addition to generating little heat, Extron thermally efficient amplifiers do not require fans and heat sinks. When combined with an Extron-designed compact power supply, the size of the chassis can be significantly reduced. Most 200 watt amplifiers have an enclosure that is 1U or 2U high and spans an entire rack width. However, the XPA 1002 and XPA 2001 feature a very compact enclosure that occupies 1U and just a half rack width of space, as little as one-fourth the size of comparable amplifiers. These space-efficient amplifiers reduce costs associated with equipment racks and placement.

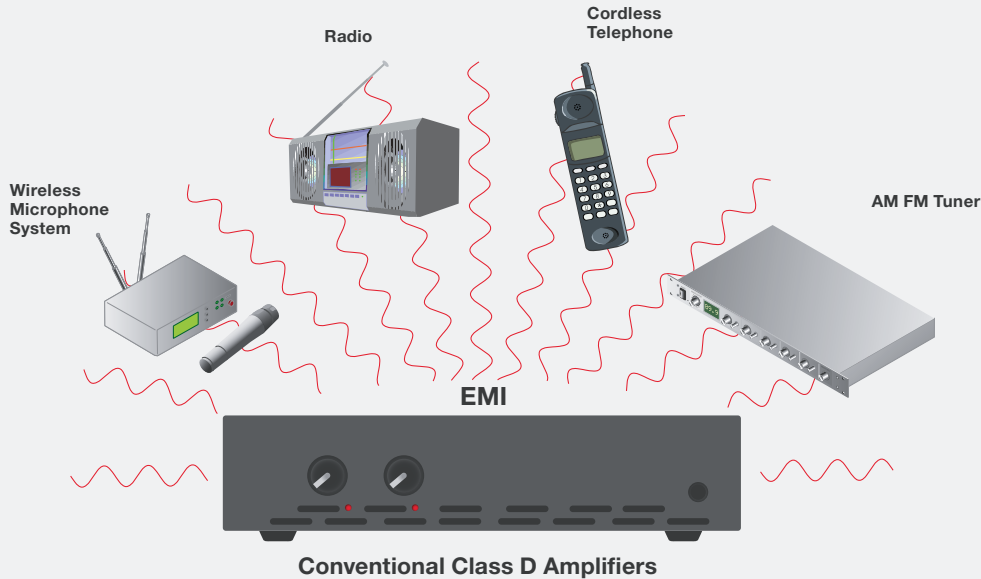


The 1U, half rack width XTRA Series versus a competitive 2U, full rack amplifier allows more amplification to be installed in smaller spaces to save installation equipment costs.

CDRS - Class D Ripple Suppression

Reduced EMI Emissions

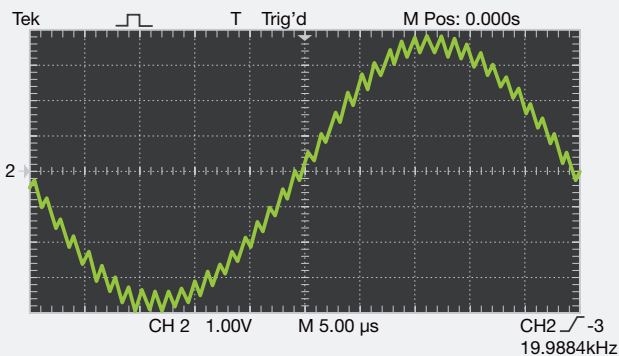
Only Extron Class D audio power amplifiers offer very high efficiency, low heat, low distortion, and long lifespan. Conventional designs emit significant amounts of EMI – Electromagnetic Interference emissions that often impacts sensitive nearby electronic equipment. Extron's advanced Class D design incorporates our patented CDRS – Class D Ripple Suppression to eliminate EMI interference problems and produce a clean ripple-free output.



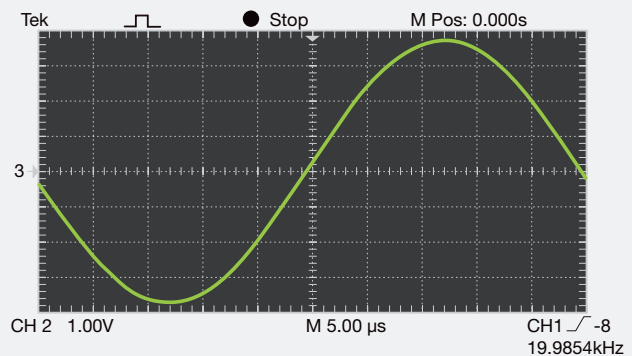
EMI is emitted by conventional Class D amplifiers from connected speaker cables, and leads to interference or noise issues with radio receivers and wireless products. Extron's Patented CDRS technology greatly improves EMI performance by suppressing the switching frequency, or ripple, eliminating EMI emissions. All XTRA Series amplifiers are equipped with CDRS technology and can be installed near other A/V equipment without creating interference.

No Switching Ripple

In addition to EMI emissions, the switching ripple at the audio output distorts the audio waveform and may impact audio performance. As a result, the switching ripple can compromise the capability of a Class D amplifier to deliver natural sound reproduction.



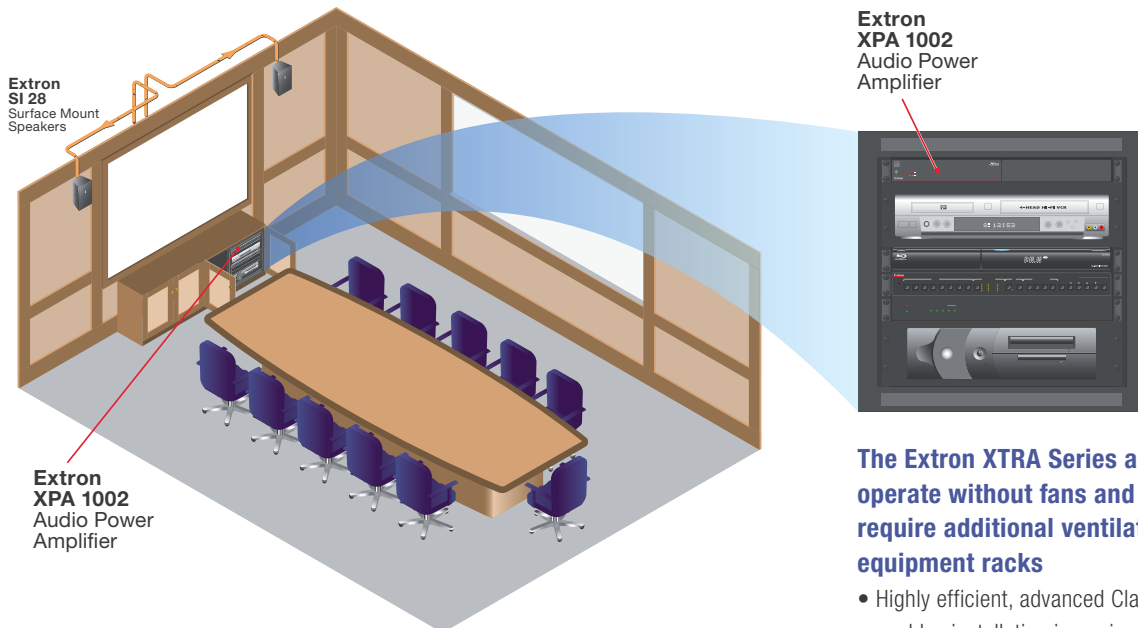
In a conventional Class D amplifier the switching ripple is present on the output audio waveform as a superimposed high frequency ripple.



CDRS removes the switching ripple from the audio output waveform, so that the signal is pure, and on par with that of a conventional linear amplifier. The result is a Class D amplifier design with dramatically improved audio performance. With CDRS, the XTRA Series amplifiers deliver high quality reproduction of music and voice, and also the efficiency of a Class D amplifier.

Applications

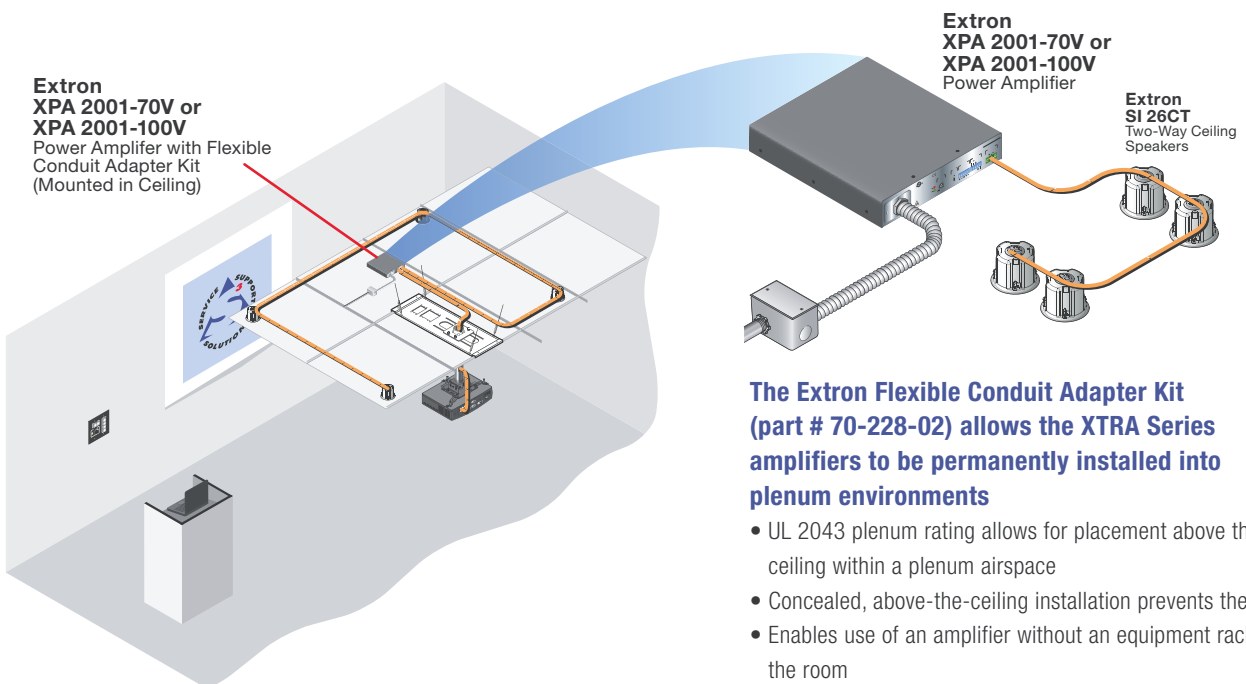
XPA 1002 Stereo Power Amplifier - 100 Watts Per Channel



The Extron XTRA Series amplifiers operate without fans and do not require additional ventilation spaces in equipment racks

- Highly efficient, advanced Class D design enables installation in equipment credenzas and lecterns with limited ventilation
- Convection cooled without the need for fans to ensure quiet, reliable operation
- Compact 1U, half rack width metal enclosure reduces rack space requirements.

XPA 2001-70V 70 Volt Mono Power Amplifier - 200 Watts XPA 2001-100V 100 Volt Mono Power Amplifier - 200 Watts



The Extron Flexible Conduit Adapter Kit (part # 70-228-02) allows the XTRA Series amplifiers to be permanently installed into plenum environments

- UL 2043 plenum rating allows for placement above the ceiling within a plenum airspace
- Concealed, above-the-ceiling installation prevents theft
- Enables use of an amplifier without an equipment rack in the room
- Remote control capability for adjusting volume and mute, and shutting down amplifier

Specifications

AUDIO

Voltage gain	
XPA 1002	16x (24 dB)
XPA 2001-70V	57x (35 dB)
XPA 2000-100V	81x (38 dB)
Stereo channel separation	>75 dB @ 1 kHz
CMRR	75 dB @ 1 kHz (typical)

AUDIO INPUT

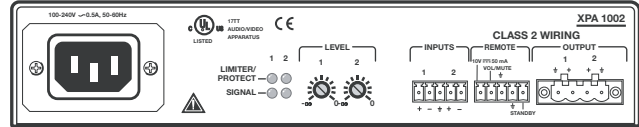
Number/signal type	1 stereo or 2 mono, balanced/unbalanced
Connectors	(1) 3.5 mm captive screw connector, 5 pole
Impedance	>10k ohms unbalanced/balanced, DC coupled
Nominal level	+4 dBu (1.23 Vrms), balanced
Maximum level	+20 dBu (7.75 Vrms), balanced
Input sensitivity	
XPA 1002	+4 dBu (1.23 Vrms)
XPA 2001-70V, XPA-2001-100V	+4 dBu (1.23 Vrms) if driven by one input
	-2 dBu (0.615 Vrms) if both inputs are summed
NOTE: 0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV ≈ 2 dBu	

AUDIO OUTPUT

Number/signal type	
XPA 1002	1 stereo, 4- or 8-ohm direct
XPA 2001-70V	1 mono, 70 V line
XPA 2001-100V	1 mono, 100 V line
Connectors	
XPA 1002	(1) 5 mm screw lock captive screw connector, 4 pole
XPA 2001-70V, XPA-2001-100V	(1) 5 mm screw lock captive screw connector, 2 pole
NOTE: These connectors accept wires of 22 AWG to 12 AWG.	
Load impedance	
XPA 1002	4 ohms minimum
XPA 2001-70V	25 ohms minimum
XPA 2001-100V	50 ohms minimum
Amplifier type	Class D
Output power	
XPA 1002	60 watts rms per channel, 8 ohms, 1 kHz, <0.05% THD
	100 watts rms per channel, 4 ohms, 1 kHz, <0.05% THD
XPA 2001-70V	200 watts rms, 70 V, 1 kHz, <0.1% THD
XPA 2001-100V	200 watts rms, 100 V, 1 kHz, <0.1% THD
Frequency response	20 Hz to 20 kHz, ±1 dB
THD + Noise	
XPA 1002	0.05% @ 20 Hz-20 kHz, 8 ohms, at 3 dB below clipping
XPA 2001-70V, XPA-2001-100V	<0.1% @ 1 kHz at 3 dB below clipping
S/N	
XPA 1002	105 dB, 20 Hz - 20 kHz, unweighted
XPA 2001-70V, XPA-2001-100V	100 dB, 20 Hz - 20 kHz, unweighted
Damping factor	
XPA 1002	>100 @ 8 ohms
High pass filter	
XPA 2001-70V, XPA-2001-100V	80 Hz, 12 dB per octave rolloff (switch selectable)

CONTROL/REMOTE – AMPLIFIER

Control port	(1) 3.5 mm captive screw connector, 5 pole
Pin configurations	
DC volume control (analog)	Pin 1 = +10 VDC, 50 mA (max.), pin 2 = volume/mute (variable voltage), pin 3 = GND
Volume control voltage range	0 V (mute) to 10 V (maximum volume)
Standby power control (contact closure)	Pin 4 = GND, pin 5 = standby



XPA 1002

GENERAL

Power	100 VAC to 240 VAC, 50/60 Hz, internal
Typical	26 watts (1/8 power [pink noise] at 8 ohms)
Quiescent	10 watts
Standby	<1 watt - triggered by contact closure or after 1 hour with no signal
Temperature/humidity	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing
	Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Cooling	Convection, no vents, with internal heat sinks
Thermal dissipation	
Standby	<1 watt (3 BTU/hr)
Idle	10 watts (34 BTU/hr)
1/8 power (pink noise)	4 ohms (x2): 14 watts
	8 ohms (x2): 14 watts (48 BTU/hr)
	70 V (XPA 2001-70V): 14 watts (48 BTU/hr)
Protection	Clip limiting, thermal, short circuit, DC output
Indication	Limiter/Protect LED indicates the onset of clip limiting, thermal cycling, short circuit, or DC output protection
Mounting	
Rack mount	Yes, with optional 1U, 9.5" deep rack shelf (RSU 129, #60-190-01; RSB 129, #60-604-01)
Enclosure type	Metal
Enclosure dimensions	1.7" H x 8.7" W x 9.5" D (1U high, half rack wide) (4.3 cm H x 22.1 cm W x 24.1 cm D)
Product weight	2.5 lbs (1.1 kg)
Shipping weight	5 lbs (3 kg)
Vibration	ISTA 1A in carton (International Safe Transit Association)
Regulatory compliance	
Safety	CE, CUL, UL
	UL rated for use in plenum airspaces: meets UL 2043 for heat and smoke release; meets UL 60065, IEC 60065, and BSEN 60065 for A/V equipment.
EMI/EMC	CE, CISPR 22 Class B, C-tick, FCC Class B, ICES, VCCI Class B
Environmental	Complies with the appropriate requirements of CEC, ENERGY STAR® (ENERGY STAR® qualified amplifier), EU code of conduct, RoHS, WEEE
MTBF	250,000 hours
Warranty	3 years parts and labor
NOTE: All nominal levels are at ±10%.	

Model	Version Description	Part number
XPA 1002	Stereo Power Amp - 100 Watts Per Channel	60-849-01
XPA 2001-70V	70 Volt Mono Power Amp - 200 Watts	60-850-01
XPA 2001-100V	100 Volt Mono Power Amp - 200 Watts	60-850-11

Specifications are subject to change without notice.



Extron USA - West
Headquarters
+800.633.9876
Inside USA / Canada Only
+1.714.491.1500
+1.714.491.1517 FAX

Extron USA - East
+800.633.9876
Inside USA / Canada Only
+1.919.863.1794
+1.919.863.1797 FAX

Extron EMEA
+800.3987.6673
Inside Europe Only
+31.33.453.4040
+31.33.453.4050 FAX

Extron Asia
+800.7339.8766
Inside Asia Only
+65.6383.4400
+65.6383.4664 FAX

Extron Japan
+81.3.3511.7655
+81.3.3511.7656 FAX

Extron China
+400.883.1568
Inside China Only
+86.21.3760.1568
+86.21.3760.1566 FAX

Extron Middle East
+971.4.2991800
+971.4.2991880 FAX