X-Series Professional Class-D Power Amplifiers

The JAM Systems X-Series is a compact 1U range of professional power amplifiers designed for high efficiency, reliability, and clean audio reproduction. Each model uses a Class-D output stage combined with an LLC resonant switch-mode power supply featuring active Power Factor Correction (PFC), ensuring stable performance across worldwide mains voltages.

The X-Series is intended for professional audio applications including PA systems, installed sound, and touring use where high power density and dependable operation are required.

Key Features

- Compact 1U chassis, lightweight and portable
- High-efficiency Class-D amplifier module
- Soft-start LLC resonant switch-mode power supply
- Active Power Factor Correction (PFC) for 90–264V AC operation
- High damping factor for accurate loudspeaker control
- Integrated peak limiter for output protection
- Output LC filtering to reduce switching noise
- Temperature-controlled variable-speed cooling fan with front-to-rear airflow
- Selectable operating modes: Stereo, Parallel Mono, and Bridge
- Input sensitivity options: 0.775V, 1V, or 32dB
- Comprehensive protection circuitry including soft-start, DC, subsonic, VHF, thermal, short-circuit, overload, and clip protection

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Safety Information

Read this manual carefully before installing or operating the amplifier.

Ensure the mains supply voltage matches the voltage rating of the amplifier.

This amplifier is intended for indoor use only. If used outdoors, it must be adequately protected from rain, moisture, and condensation.

Ensure adequate ventilation at all times. Do not obstruct the front or rear airflow openings.

Do not install the amplifier near heat sources such as radiators, heaters, or other equipment that produces heat.

Always observe the minimum load impedance specified for each operating mode. Operating below the rated impedance may cause damage or trigger protection circuits.

Use only the supplied mains power cord, or an equivalent approved IEC or locking mains power cable as appropriate to the model.

If the power cord is damaged, disconnect the amplifier immediately and replace the cable, or consult a qualified electrician or competent service technician.

Do not operate the amplifier if the mains inlet, power cable, speaker connectors, or signal connectors appear damaged. The unit must be inspected and repaired by a qualified service technician before use.

Disconnect mains power before making or changing any signal or loudspeaker connections.

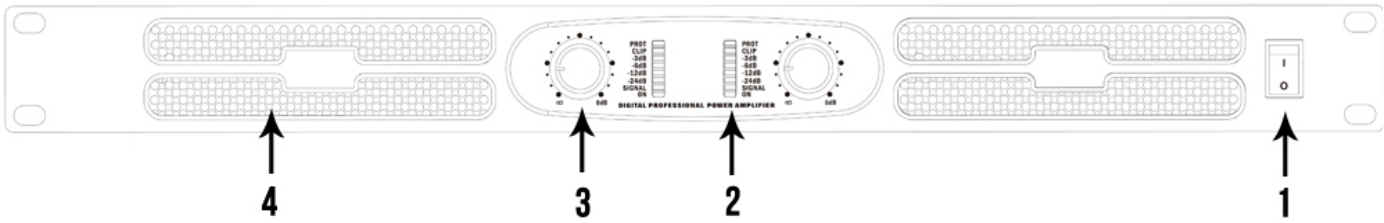
Do not open the amplifier chassis. There are no user-serviceable parts inside. Servicing must be carried out by qualified personnel only.

To reduce the risk of electric shock, do not expose the unit to liquids and do not place containers filled with liquids on or near the amplifier.

Environmental Conditions

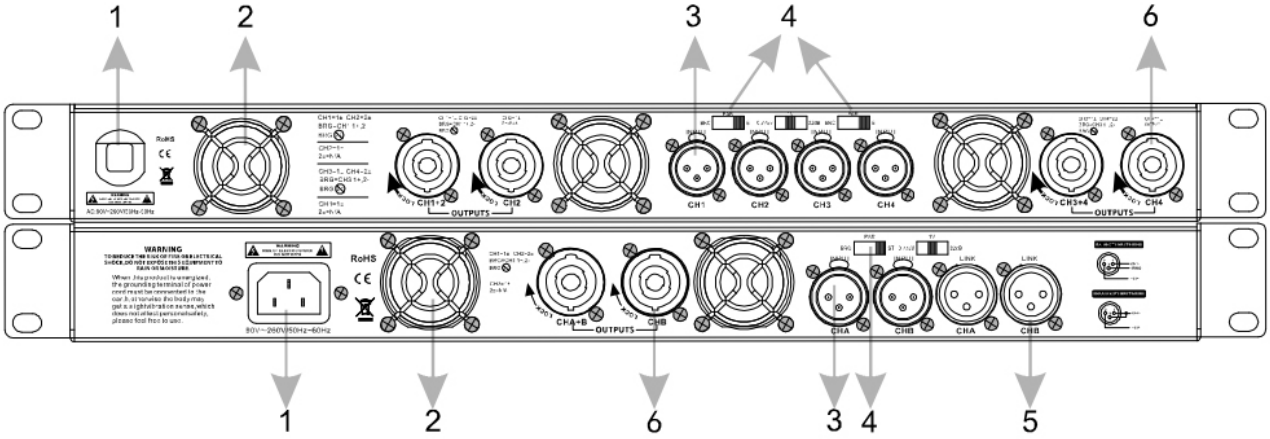
Operating temperature: 0°C to 40°C
Storage temperature: −20°C to 60°C
Relative humidity: less than 90%, non-condensing

Front Panel Overview



1. **Power Switch**
   Turns the amplifier on or off.
2. **Status LEDs**
   Signal: Indicates the presence of an input signal.
   Clip: Indicates the amplifier is approaching maximum output or the limiter is active.
   Protect: Indicates that a protection circuit has been engaged.
3. **Channel Gain Controls**
   Adjust the output level for each channel.
   In Parallel Mono or Bridge mode, only the Channel 1 gain control is active.
4. **Air Intake / Ventilation**
   Front-panel air intake for the cooling system.
   Do not obstruct this opening, as proper airflow is required for safe operation.

Rear Panel Overview



top: larger models with locking mains inlet, bottom: smaller models with IEC inlet

1. **Mains Input**
   X16, X35, X44: IEC mains inlet for AC power connection.
   X72, X80, X100, X110: Industry-standard locking mains inlet for AC power connection.
2. **Cooling Fan**
   Rear air outlet for the temperature-controlled cooling fan.
   Airflow is from front to rear. Do not obstruct ventilation openings.
3. **XLR Inputs**
   Balanced input connectors.
   Pin 1: Ground
   Pin 2: Hot (+)
   Pin 3: Cold (−)
4. **Mode Selector Switch and Sensitivity Switch**
   Selects the amplifier operating mode:
   ST – Stereo
   PAP – Parallel Mono
   BRG – Bridge

   Input sensitivity options: 0.775V / 1V / 32dB.
5. **XLR Outputs** (2-channel models only)
   Balanced XLR outputs for signal linking (daisy-chaining) to additional amplifiers.
6. **Speaker Outputs**
   Industry-standard 4-pole locking loudspeaker connectors.

Operating Modes

Stereo Mode
Each channel operates independently and drives its own loudspeaker load.

Parallel Mono Mode

Both output channels receive the same input signal.
The Channel 1 gain control adjusts the output level for both channels.

Bridge Mode
Both amplifier channels are combined to deliver higher output power to a single loudspeaker load.

Always observe the minimum load impedance specified for Bridge mode.

Disconnect all loudspeakers and power down the amplifier before selecting Bridge mode.

In Bridge mode, the loudspeaker must be connected between Pin 1+ and Pin 2+ of the left output connector (Channel 1).
On four-channel models, this is repeated using Pin 1+ and Pin 2+ of Channel 3.

The speaker is connected between the outputs of Channel 1 and Channel 2.
On four-channel models, this applies to Channel 3 and Channel 4.

Do not connect either output to ground, as this may damage the amplifier.

Incorrect wiring in Bridge mode may result in amplifier damage.

Power-Up Sequence

1. Ensure all gain controls are turned down.
2. Power on upstream equipment (mixers, processors).
3. Switch on the amplifier, then increase the gain controls as required.

Power-down sequence should be performed in reverse order.

Output Power Ratings

Model	8Ω Stereo	4Ω Stereo	2Ω Stereo	8Ω Bridge
X16	2 × 350 W	2 × 580 W	2 x 800 W	1 × 1160 W
X35	2 × 800 W	2 × 1300 W	2 × 1750 W	1 × 2600 W
X44	2 × 1100 W	2 × 1800 W	2 × 2200 W	1 × 3600 W

Notes:
Minimum load per channel (stereo mode): 2Ω
Recommended minimum load for long-term operation: 4Ω per channel

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Load Impedance and Operating Notes

4Ω per channel is stable for all normal applications and is the recommended minimum load for long-term operation and maximum thermal reliability.
2Ω per channel operation is supported, but should only be used with high crest-factor programme material such as live music or speech.
Operation at 2Ω with heavy continuous low-frequency content or sustained high output levels may result in

increased thermal stress and possible overheating.
Adequate ventilation must be ensured when operating at low impedances.

Performance Specifications

Frequency Response: 20 Hz – 20 kHz (±0.5 dB)
THD+N: ≤ 0.05%
Signal-to-Noise Ratio: >104 dB (A-weighted)
Damping Factor: ≥ 600
Slew Rate: >20 V/µs
Input Sensitivity: 0.775 V / 1 V / 32 dB
Input Impedance: >20 kΩ (balanced)
Cooling: Front-to-rear forced air

Mechanical Specifications

Dimensions (X16, X35, X44): 482 × 251 × 44 mm
Dimensions (X72 and above): 482 × 350 × 44 mm
Net Weight (X16–X44): approximately 5.0 – 5.7 kg

Compliance

This product is designed to comply with applicable UK and EU safety, EMC, and environmental regulations, including UKCA, CE, and RoHS directives.
Declarations of Conformity are available from the manufacturer’s website.

Warranty

This amplifier is covered by a 1-year limited warranty against defects in materials and workmanship.

The warranty does not cover damage caused by misuse, operation outside stated specifications, or unauthorised repairs.

Disposal and Recycling (WEEE)

This product must not be disposed of with household waste.
Electrical and electronic equipment should be recycled in accordance with local environmental regulations.

At end of life, this product should be taken to an appropriate collection facility for the recycling of electrical and electronic equipment. Proper disposal helps conserve natural resources and prevents potential negative effects on human health and the environment.