

USER MANUAL

MODEL:

PA-240Net
240W Power Amplifier

PA-120Net
120W Power Amplifier



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Introduction

Welcome to Kramer Electronics! Since 1981, Kramer Electronics has been providing a world of unique, creative, and affordable solutions to the vast range of problems that confront the video, audio, presentation, and broadcasting professional on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better!

Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment.
- Review the contents of this user manual.



Go to www.kramerav.com/downloads/PA-240Net or www.kramerav.com/product/PA-120Net to check for up-to-date user manuals, application programs, and to check if firmware upgrades are available (where appropriate).

Achieving the Best Performance

- Use only good quality connection cables (we recommend Kramer high-performance, high-resolution cables) to avoid interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables).
- Do not secure the cables in tight bundles or roll the slack into tight coils.
- Avoid interference from neighboring electrical appliances that may adversely influence signal quality.
- Position your Kramer **PA-240Net/PA-120Net** away from moisture, excessive sunlight and dust.



This equipment is to be used only inside a building. It may only be connected to other equipment that is installed inside a building.

Safety Instructions



Caution: There are no operator serviceable parts inside the unit.

Warning: Use only the power cord that is supplied with the unit.

Warning: Do not open the unit. High voltages can cause electrical shock! Servicing by qualified personnel only.

Warning: Disconnect the power and unplug the unit from the wall before installing.

Recycling Kramer Products

The Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC aims to reduce the amount of WEEE sent for disposal to landfill or incineration by requiring it to be collected and recycled. To comply with the WEEE Directive, Kramer Electronics made arrangements with the European Advanced Recycling Network (EARN) and will cover any costs of treatment, recycling and recovery of waste Kramer Electronics branded equipment on arrival at the EARN facility. For details of Kramer's recycling arrangements in your country, go to our recycling pages at www.kramerav.com/support/recycling.

Overview

Congratulations on purchasing your Kramer **PA-240Net 240W Power Amplifier** and/or **PA-120Net 120W Power Amplifier**.



Although this user manual describes the **PA-240Net** it refers to both **PA-240Net** and **PA-120Net**, unless specified otherwise.

PA-240Net is a high-performance Hi-Z (70V/100V) and Lo-Z (4/8Ω), network controllable power amplifier featuring balanced & unbalanced inputs, and a line-level balanced output. This powerful amplifier is suitable for large-scale applications.

PA-240Net is housed in a desktop sized enclosure and can be setup using one of the following methods:

- Mount the unit in a rack using the recommended rack adapter (see www.kramerav.com/product/PA-120Net).
- Attach the rubber feet and place the unit on a flat surface.

PA-240Net provides exceptional quality and user-friendly operation.

PA-240Net features control via the Dante™ IP control matrix or Kramer Protocol 3000 via RS-232 or USB connections

Exceptional Quality

- For **PA-240Net**:
 - A single channel of 240W into a 70V/100V line.
 - 2 channels of 120W into 4/8Ω.
- For **PA-120Net**:
 - A single channel of 120W into a 70V/100V line.
 - 2 channels of 60W into 4/8Ω.
- Individual input mix, EQ and HPF (High-Pass Filter) per output.
- Built-in 3-band parametric EQ.

User-friendly Operation

- Status LED indicators for the selected input, output muted and clipped signal on the output.
- Over-current, short circuit or over-heat protection – The PROTECT LED lights and the device shuts down until correct operational conditions are regained.
- Dante LED indicator for Dante network availability.
- Digital audio normal operation LED.
- Auto-standby with adjustable threshold.
- Controllable via RS-232 and IP.

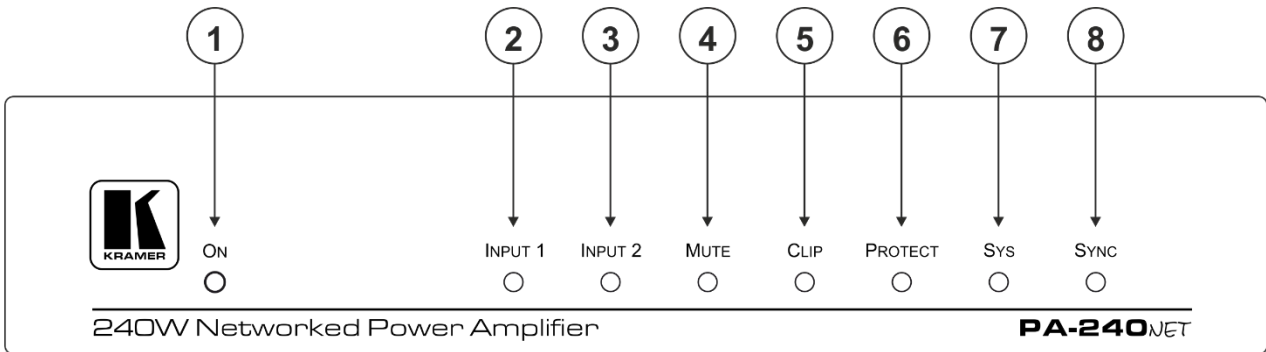
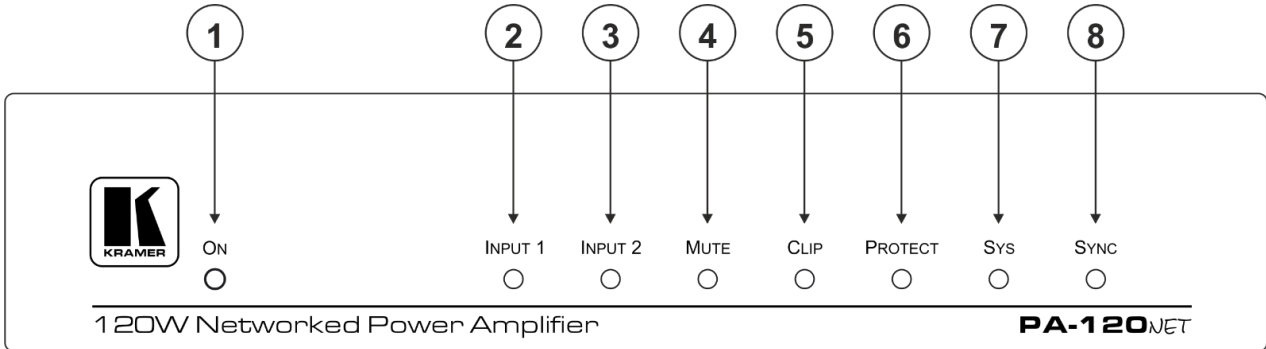
Typical Applications

The PA-240Net is ideal for the following typical applications:

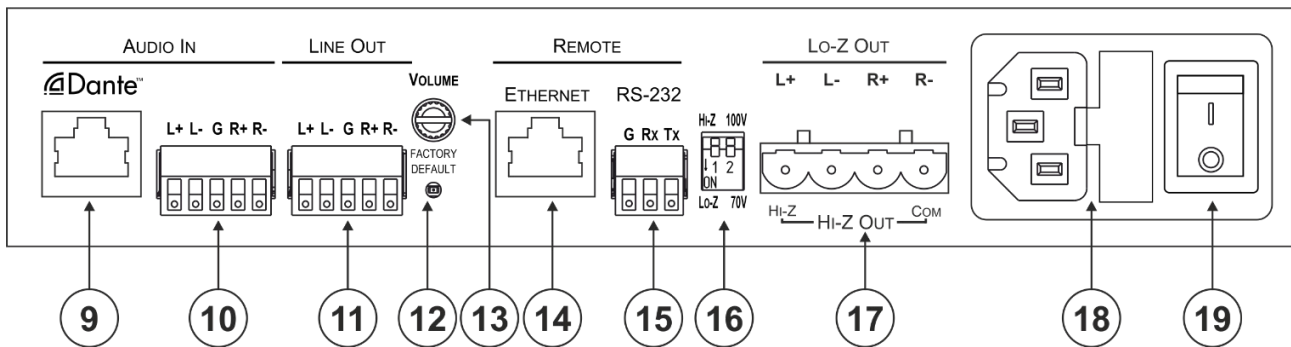
- Medium to large meeting rooms.
- Auditoriums and lecture halls.
- Court rooms.
- Retail stores and shopping centers.
- Hotel lobbies.
- Transportation hubs.

Defining the PA-240Net and PA-120Net Power Amplifier

This section defines the PA-240Net.



| # | Feature | Function |
|---|-------------|--|
| ① | ON LED | Lights green when powered on, orange when in standby. |
| ② | INPUT 1 LED | Lights green when a signal is present on input 1. |
| ③ | INPUT 2 LED | Lights green when a signal is present on input 2. |
| ④ | MUTE | Lights red when the speaker output is muted, off when unmuted. |
| ⑤ | CLIP LED | Lights red when the signal is clipped on the output and creating distortion. (When clipping is detected, lower the volume until the LED turns off.) |
| ⑥ | PROTECT LED | Lights red in case of over-current / short / over-heating. The device powers down until operation conditions are corrected and then powers up again. |
| ⑦ | SYS LED | Lights green when Dante network is available. Lights red if an error has occurred. |
| ⑧ | SYNC LED | Lights green for digital audio normal operation. Flashes green when this unit is the Master clock. Lights red if an error has occurred. |



| # | Feature | Function |
|----|---|---|
| 9 | Dante RJ-45 Port | Connect to the Dante™ audio source via the Network. By default, DHCP is enabled. |
| 10 | AUDIO IN Balanced/Unbalanced Stereo Audio 5-pin Terminal Block Connector | Connect to a line-level, balanced/unbalanced, stereo audio source. |
| 11 | LINE OUT Balanced Stereo Audio 5-pin Terminal Block Connector | Connect to a balanced, stereo audio acceptor (for example, amplified speakers). |
| 12 | FACTORY DEFAULT Button | Press to return to the factory default settings, including all the configurations and network settings. |
| 13 | VOLUME Attenuator | Master volume for speaker output – rotate to set the maximum amplifier volume. |
| 14 | ETHERNET RJ-45 Connector | Connect to an ETHERNET LAN to control the PA-240Net via built-in web page. By default, IP is fixed at 192.168.1.39. |
| 15 | RS-232 (G, Tx, Rx) Port | Connect to an RS-232 connector on AV equipment or a PC or other Serial Controller. |
| 16 | Hi-Z/Lo-Z and 100V/70V DIP-Switches | DIP-Switch 1: Set to Hi-Z for high impedance or Lo-Z for low impedance. DIP-Switch 2: In Hi-Z mode, select 70V or 100V operation. |
| 17 | Lo-Z and Hi-Z Speaker Output Terminal Block Connector | Lo-Z – Connect left +, left -, right +, and right - to Lo-Z (4Ω or 8Ω) speakers. Hi-Z – connect Hi-Z and COM to 70V or 100V Hi-Z speakers. In Hi-Z mode, the output is mono and can be selected via webpage – Left channel to mono, or stereo to mono summing |
| 18 | Power Connector with Fuse | AC connector, enabling power supply to the unit. |
| 19 | Mains Power Switch | Switch for turning the device on or off. |

Connecting the PA-240Net



Always switch off the power to each device before connecting it to your **PA-240Net**. After connecting your **PA-240Net**, connect its power and then switch on the power to each device.

To connect the **PA-240Net** as illustrated in the example in [Figure 1](#):

1. Connect the balanced stereo audio source to the AUDIO IN 5-pin terminal block connector [\(10\)](#) (for example, a Kramer Switcher/Scaler).
2. Connect the LINE OUT balanced stereo audio 5-pin terminal block connector [\(11\)](#) to a balanced stereo acceptor (for example, an additional **PA-240Net** device).
3. Connect the Hi-Z OUT or Lo-Z OUT 4-pin terminal block connector [\(17\)](#) as follows:
 - For Hi-Z connection: connect Hi-Z and COM terminal blocks to the + and – terminals of a mono speaker (for example, the **Galil 8-C** ceiling speakers, daisy chained). The speakers either output the left side (L+, L-) of the audio input or the stereo input reduced to a mono signal (see [Selecting Hi-Z Mono Settings](#) on page [16](#)).
 - For Lo-Z connection: connect the L+ and L- connectors to the left-side speaker and the R+ and R- connectors to the right-side.
4. Set the Hi-Z/Lo-Z and 100V/70V DIP-Switches [\(16\)](#):
 - For Hi-Z operation: Set DIP-switch 1 to Hi-Z and then set DIP-switch 2 to 70V or 100V.
 - For Lo-Z operation: Set DIP-switch 1 to Lo-Z.
5. Connect the Dante RJ-45 connector to any available IP network.
6. If required, connect:
 - A PC via RS-232 [\(15\)](#), see [Connecting to PA-240Net via RS-232](#) on page [8](#).
 - The ETHERNET port [\(14\)](#), see [Connecting PA-240Net via the Ethernet Port](#) on page [9](#).
7. Connect the power cord (not shown in [Figure 1](#)).

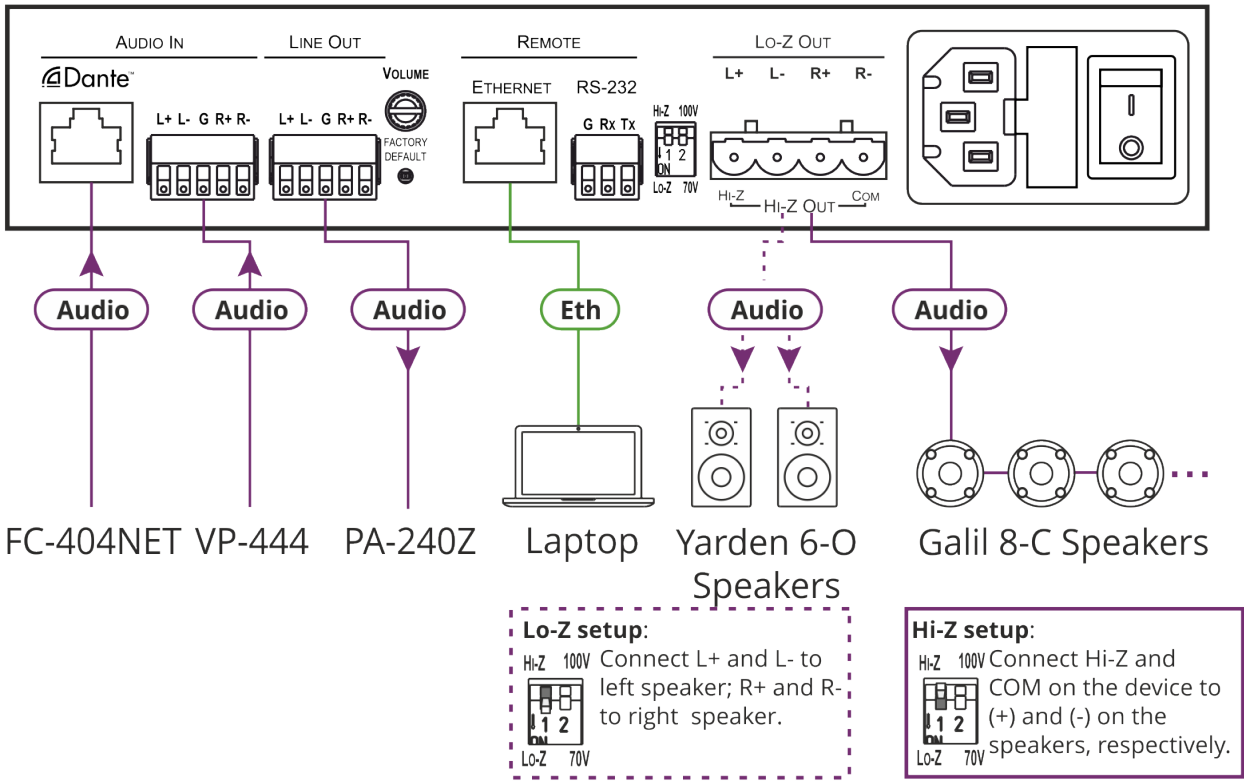


Figure 1: Connecting to the PA-240Net Rear Panel

Connecting the Output to a Balanced/Unbalanced Stereo Audio Acceptor

The following are the pinouts for connecting the output to a balanced or unbalanced stereo audio acceptor:

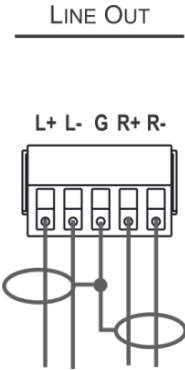


Figure 2: Connecting the output to a balanced stereo audio acceptor

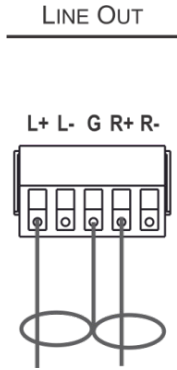


Figure 3: Connecting the output to an unbalanced stereo audio acceptor

Connecting a Balanced/Unbalanced Stereo Audio Source to the Balanced Input

The following are the pinouts for connecting a balanced or unbalanced stereo audio source to the balanced input:

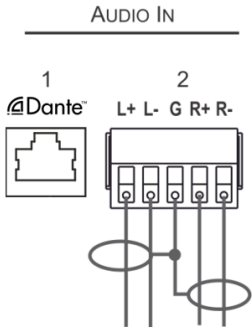


Figure 4: Connecting a balanced stereo audio source to the balanced input

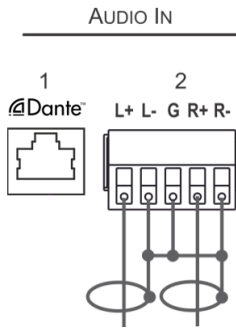


Figure 5: Connecting an unbalanced stereo audio source to the balanced input

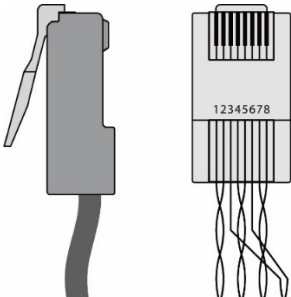
Connecting to PA-240Net via RS-232

You can connect to the PA-240Net via an RS-232 connection (15) using, for example, a PC.

From the RS-232 9-pin D-sub serial port connect:

- Pin 2 to the TX pin on the PA-240Net RS-232 terminal block.
- Pin 3 to the RX pin on the PA-240Net RS-232 terminal block.
- Pin 5 to the G pin on the PA-240Net RS-232 terminal block.

RJ-45 Pinout



| PIN EIA /TIA 568B | |
|-------------------|----------------|
| PIN | Wire Color |
| 1 | Orange / White |
| 2 | Orange |
| 3 | Green / White |
| 4 | Blue |
| 5 | Blue / White |
| 6 | Green |
| 7 | Brown / White |
| 8 | Brown |

Connecting PA-240Net via the Ethernet Port

You can connect to the PA-240Net via Ethernet using either of the following methods:

- Directly to the PC using a crossover cable (see [Connecting the Ethernet Port Directly to a PC](#) on page 9).
- Via a network hub, switch, or router, using a straight-through cable (see [Connecting the Ethernet Port via a Network Hub or Switch](#) on page 11).



If you want to connect via a router and your IT system is based on IPv6, speak to your IT department for specific installation instructions.

Connecting the Ethernet Port Directly to a PC

You can connect the Ethernet port of the PA-240Net directly to the Ethernet port on your PC using a crossover cable with RJ-45 connectors.



This type of connection is recommended for identifying the PA-240Net with the factory configured default IP address

After connecting the PA-240Net to the Ethernet port, configure your PC as follows:

1. Click **Start > Control Panel > Network and Sharing Center**.
2. Click **Change Adapter Settings**.
3. Highlight the network adapter you want to use to connect to the device and click **Change settings of this connection**.

The Local Area Connection Properties window for the selected network adapter appears as shown in [Figure 6](#).

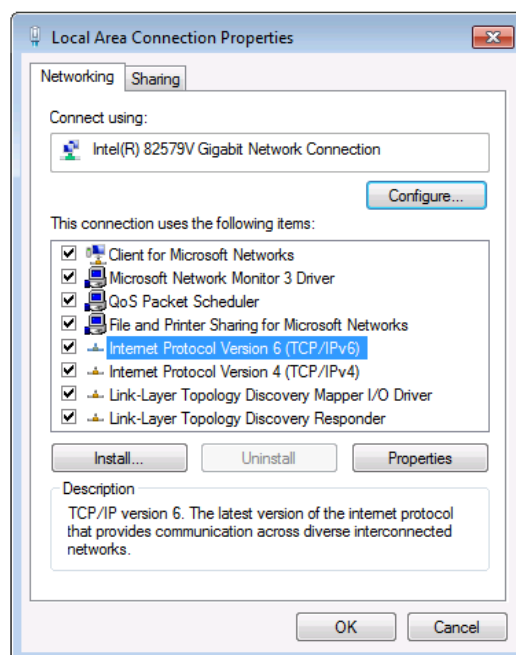


Figure 6: Local Area Connection Properties Window

4. Highlight either **Internet Protocol Version 6 (TCP/IPv6)** or **Internet Protocol Version 4 (TCP/IPv4)** depending on the requirements of your IT system.
5. Click **Properties**.
The Internet Protocol Properties window relevant to your IT system appears as shown in [Figure 7](#) or [Figure 8](#).

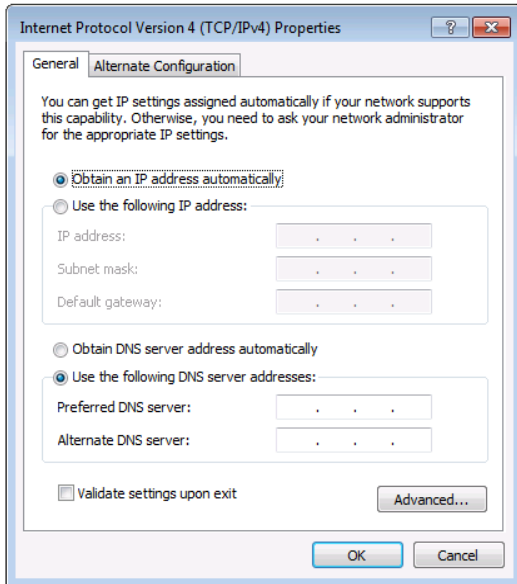


Figure 7: Internet Protocol Version 4 Properties Window

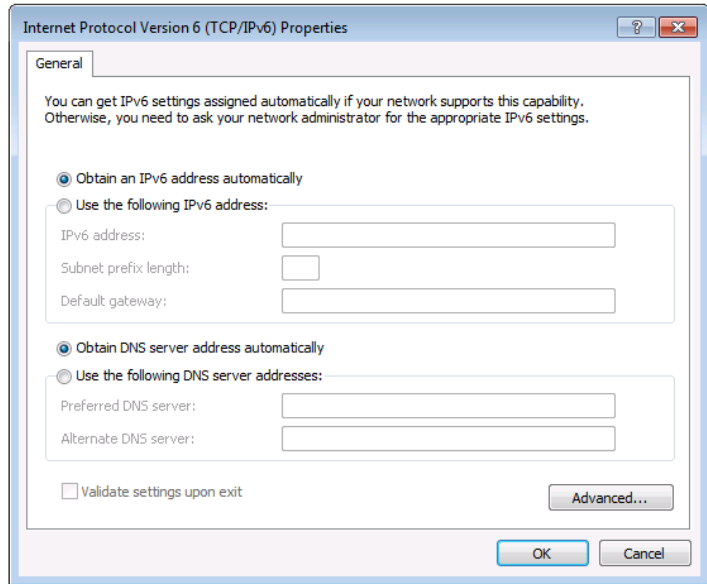


Figure 8: Internet Protocol Version 6 Properties Window

6. Select **Use the following IP Address** for static IP addressing and fill in the details as shown in [Figure 9](#).
For TCP/IPv4 you can use any IP address in the range 192.168.1.1 to 192.168.1.255 (excluding 192.168.1.39) that is provided by your IT department.

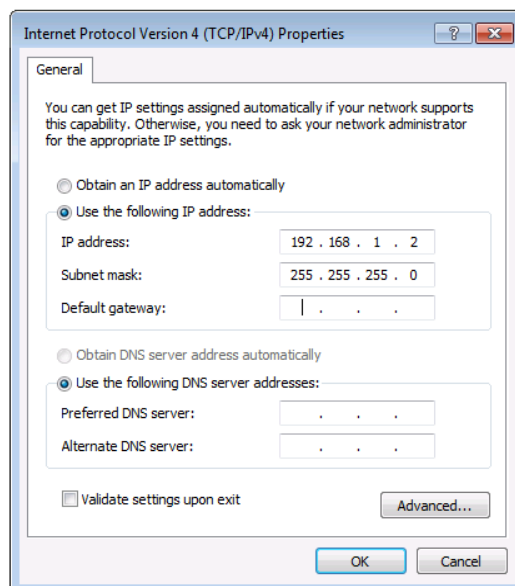


Figure 9: Internet Protocol Properties Window

7. Click **OK**.
8. Click **Close**.

Connecting the Ethernet Port via a Network Hub or Switch

You can connect the Ethernet port of the PA-240Net to the Ethernet port on a network hub or using a straight-through cable with RJ-45 connectors.

Control Configuration via the Ethernet Port

To control several units via Ethernet, connect the Master unit (Device 1) via the Ethernet port to the Ethernet port of your PC. Use your PC provide initial configuration of the settings (see [Connecting PA-240Net via the Ethernet Port](#) on page 9).



Operating the PA-240Net

This section describes the following operations:

- [Setting the DIP-Switches](#) on page 11.
- [Adjusting the Master Volume](#) on page 11.

Setting the DIP-Switches

By default, the DIP-switches (16) are set to Hi-Z and 100V.

| DIP-Switch # | Setting |
|--------------|---|
| 1 | Set to Hi-Z (up) for high impedance configurations.  Use when connecting mono speakers in daisy-chain. |
| | Set to Lo-Z (down) for low impedance configurations.  Use when connecting to a single pair of speakers, one to the left and one to the right. |
| 2 | When DIP-switch 1 is set to Hi-Z (up), set DIP-switch 2 either to 70V (down) or 100V (up), according to your requirements. |

Adjusting the Master Volume

Use the VOLUME attenuator (13) on the rear panel to set the maximum level for the speaker output. Adjust the master volume (speaker output) via the web pages, see [Setting the Master Volume and Balance](#) on page 14.

Using the Embedded Web Pages

Control the PA-240Net via the web pages which are accessed using a Web browser and an Ethernet connection.

Before attempting to connect:

- Perform the procedures described in [Connecting PA-240Net via the Ethernet Port](#) on page 9.
- Ensure that your browser is supported.

The following operating systems and Web browsers are supported:

| OS | Browser |
|------------------------|---------|
| Windows (7 and higher) | IE |
| | FireFox |
| | Chrome |
| Mac/iOS | Safari |
| Android | Chrome |

The PA-240Net web pages enable performing the following:

- [Setting the Speaker Output Parameters](#) on page 13.
- [Setting the Line Level Output Parameters](#) on page 15.
- [Selecting Hi-Z Mono Settings](#) on page 16.
- [Changing Standby Settings](#) on page 16.
- [Setting Device Parameters](#) on page 17.
- [Managing Web Page Security](#) on page 19.
- [Viewing the About Page](#) on page 21.
- [Using the Web-based Dante Controller](#) on page 21.

To browse the PA-240Net web pages:

1. Open your Internet browser.
2. Type the IP address of the device in the address bar of your browser. For example, the default IP address:



The Authentication window appears (if security is enabled).

3. Enter the User Name (Admin, by default) and Password (Admin, by default) and click **OK**.

The Speaker Output page appears:

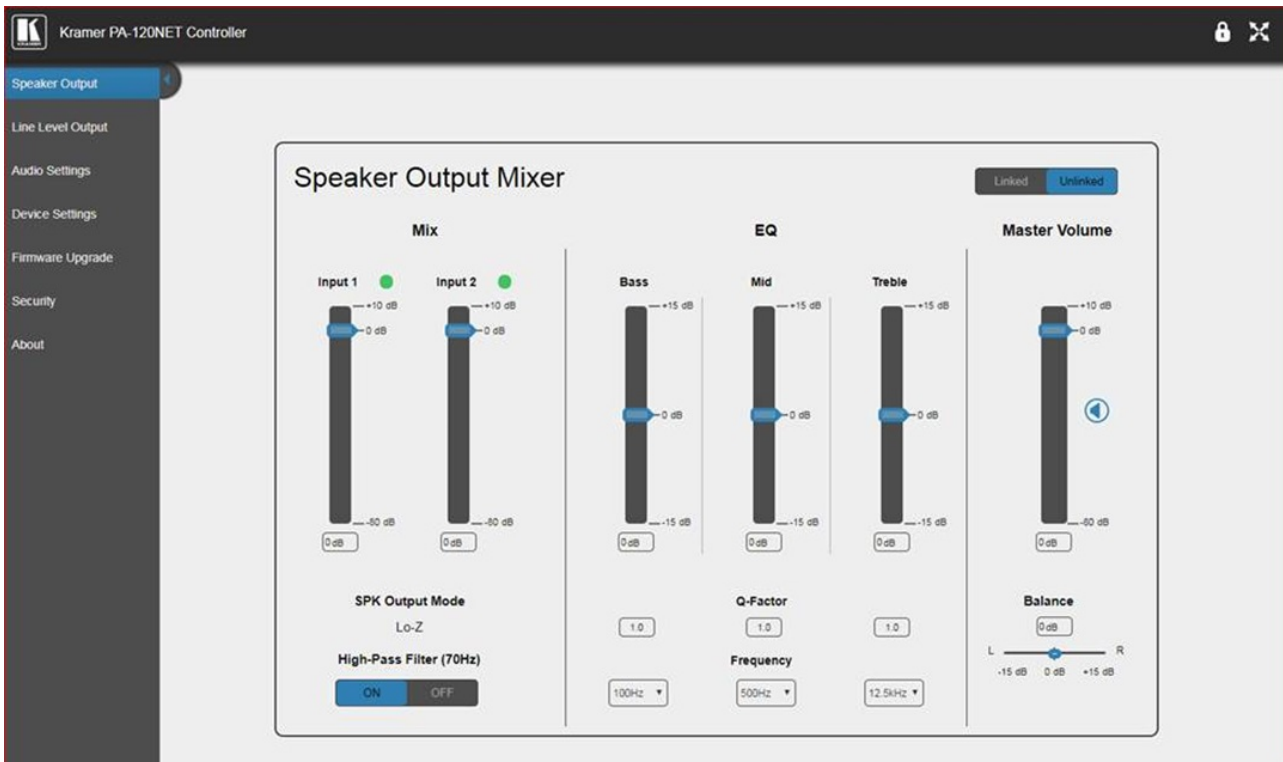


Figure 10: Speaker Output Page

4. Click the desired web page using the navigation list on the left or click the arrow at the top to hide the navigation list.

Setting the Speaker Output Parameters

Use the Speaker Output page to set the speaker input signals mixing and the output parameters.



PA-240Net can automatically set the line level output parameters according to the speaker output parameters (see [Setting the Line Level Output Parameters](#) on page 15).

The Speaker Output Mixer enables performing the following operations:

- [Mixing the Input Signal Levels](#) on page 14.
- [Setting Equalization Levels](#) on page 14.
- [Setting the Master Volume and Balance](#) on page 14.

Mixing the Input Signal Levels



The indication buttons next to Input 1 and Input 2 appear green when there is an active signal on that input.

To set the Mixing Level:

1. In the Navigation pane, click **Speaker Output**.
The Speaker Output page appears (see [Figure 10](#)).
2. In the Mix column, use the sliders to set the mixing level for each input or enter their value below the sliders.
3. Set the High-Pass Filter **ON** or **OFF** to cut-off frequencies lower than 70Hz.



To save energy, enable the High-Pass Filter when outputting soft background music or speech sources.

Setting Equalization Levels

We recommend that you first set the frequencies, then the Q and finally the Bass Mid and Treble ranges.


To set EQ levels:

1. In the navigation pane click **Speaker Output**. The Speaker Output page appears.
2. In the EQ column set the following:
 - Frequency: Bass [60Hz, 80Hz, 100Hz or 200Hz] Mid [500Hz, 1kHz, 1.5kHz or 2.5kHz] and Treble [10kHz, 12.5kHz, 15kHz or 17.5kHz] frequency.
 - Q-Factor: Bass, Mid and Treble [0.1 to 16].
The lower the Q value, the wider the bandwidth.
 - Equalization: Bass, Mid and Treble via the sliders or enter their value [dB] below the sliders.

Setting the Master Volume and Balance

The maximum master volume level of the speaker output is set via the VOLUME attenuator ⁽¹³⁾ on the rear panel, see [Adjusting the Master Volume](#) on page [11](#).

In the Master Volume column:

- Use the slider to set the speaker audio level or enter the value [dB] below the slider.
- Click  to mute/unmute the output volume.
- Set the left right balance on the speaker output.

Setting the Line Level Output Parameters

PA-240Net can automatically set the line level output parameters according to the speaker output parameters (see [Setting the Speaker Output Parameters](#) on page 13), or they can be set manually via the Line Level Output page.

To set the line level output parameters independently (unlinked to speaker output parameters):

1. In the Navigation pane, click **Speaker Output**. The Speaker Output page appears.
2. Click **Unlinked**.
3. In the Navigation pane, click **Line Level Output**. The Line Level Output page appears.

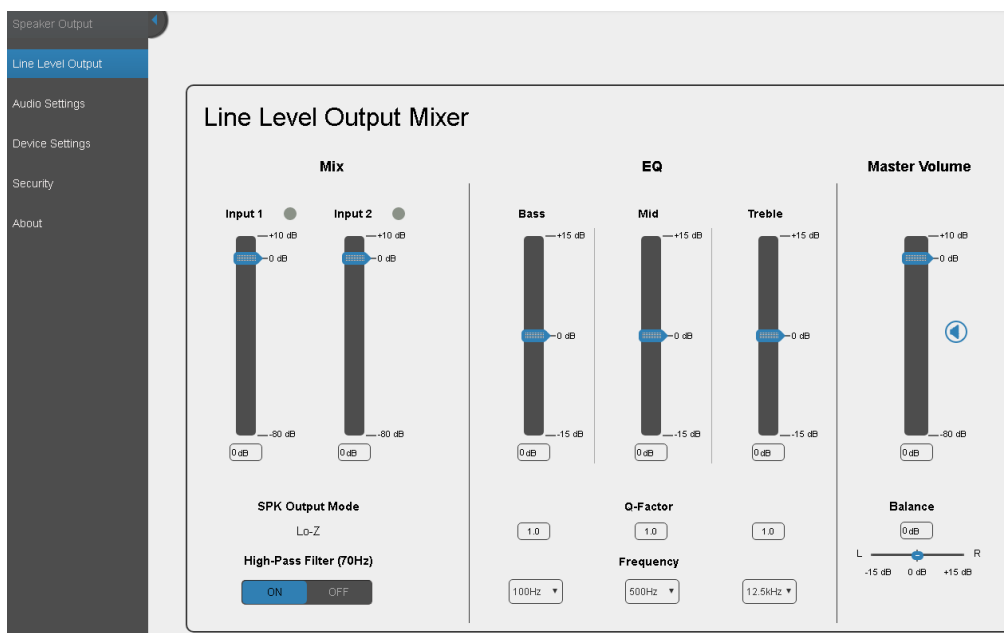


Figure 11: Line Level Output Page

4. Set the line level parameters (see [Setting the Speaker Output Parameters](#) on page 13).

Selecting Hi-Z Mono Settings

To Select Hi-Z Mono Settings:

1. In the Navigation pane, click **Audio Settings**. The Audio Settings page appears.

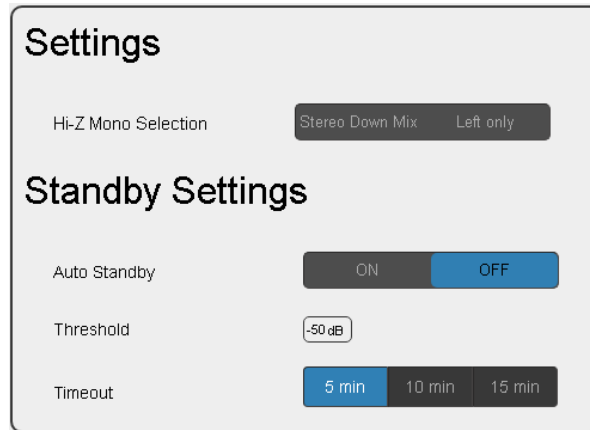


Figure 12: Audio Settings Page

2. Set the Hi-Z reduction to mono to one of the following:
 - Select **Left only** to use left audio in connectors.
 - Select **Stereo Down Mix** to reduce the stereo input to mono.

Changing Standby Settings

To change standby settings:

1. In the Navigation pane, click **Audio Settings**.
The Audio Settings page appears (see [Figure 12](#)).
2. Define the Standby Settings:

- Set auto standby to **ON** or **OFF**.
- Type the audio threshold to initiate auto standby.



The "threshold" sets what is considered a valid input signal by the amplifier, and what is considered noise.

This will also influence the front panel LEDs. If the input signal becomes lower than the threshold, the LEDs will not illuminate.

- Set the standby timeout to **5**, **10** or **15** minutes.

Setting Device Parameters

The Device Settings Web page shows the device details, such as name, MAC address and firmware version. It also allows the following functions:

- Changing the name of the unit by typing the name in the Unit name text box.
- [Changing the Ethernet Controller/Ethernet Dante Settings](#) on page [17](#).
- [Saving and Loading Settings](#) on page [18](#).
- [Performing a Factory Reset](#) on page [18](#).

Changing the Ethernet Controller/Ethernet Dante Settings

To change the Ethernet settings, if required:

1. In the Navigation pane, click **Device Settings**. The Device Settings page appears:

The screenshot shows the 'Device Settings' web page. At the top, the 'Unit name' is 'PA-120NET-' with a 'Set' button. Below this, the 'Model' is 'PA-120NET' and the 'Serial number' is blank. The page is divided into two main sections: 'Ethernet - Controller' and 'Ethernet - Dante'. Each section has a 'DHCP' toggle (OFF for Controller, ON for Dante), an 'IP address' field, a 'Mask address' field, and a 'Gateway address' field, each with a 'Set' button. The 'Mac address' is displayed as '00-1d-56-00-34-9e' for the Controller and '00-1d-c1-80-53-f7' for Dante. At the bottom, there are 'UDP port' (50000) and 'TCP port' (5000) fields with 'Set' buttons, and 'All settings' buttons for 'Load...', 'Save...', and 'Factory reset'.

Figure 13: Device Settings Page

2. Set DHCP to **ON** or **OFF**.
3. If DHCP is set to **OFF**, change any of the parameters (IP Address, Netmask and/or Gateway).
4. Click **Set**.



- After changing the IP number, reload the web page with the new IP address.
- After changing the Subnet mask you need to restart the **PA-240Net**.
- If DHCP is checked, reload the web page with the new IP address.

5. Set the UDP and TCP port numbers and click **Set**.

Saving and Loading Settings

To save a configuration:

1. In the Navigation pane, click **Device Settings**.
The Device Settings page appears (see [Figure 13](#)).
2. Click **Save**. The following message appears:
“Configuration file is ready, [right-click here](#) to download”
3. Right-click the link ([right-click here](#)) and click **Save link as**.
The configuration is downloaded to your PC.

To load a configuration:

1. In the Navigation pane, click **Device Settings**.
The Device Settings page appears (see [Figure 13](#)).
2. Click **Load** and browse for the configuration file.
3. Click **Open**.
The configuration loads (this process may take a few minutes to complete)
A message indicating that the configuration uploaded successfully appears.

Performing a Factory Reset

To reset the device to its factory default values:

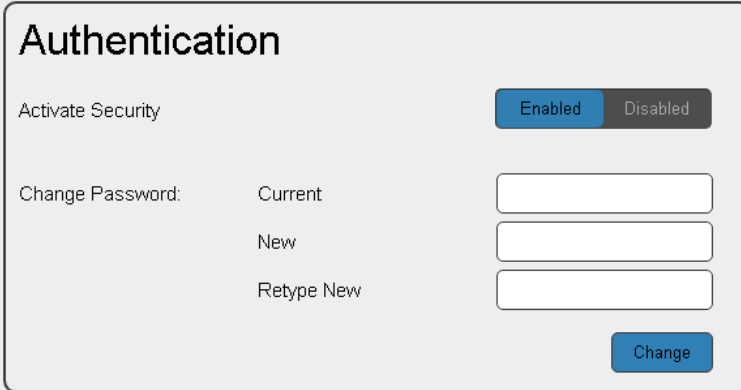
1. In the Navigation pane, click **Device Settings**.
The Device Settings page appears (see [Figure 13](#)).
2. Click **Factory reset**.
A confirmation warning message appears.
3. Click **OK** to start factory reset and follow the instructions on-screen.

Managing Web Page Security

Use the Authentication page to set Web access permission.


To access Web pages without using the password:

1. In the Navigation pane, click **Security**.
The Authentication page appears (see [Figure 14](#)).



The screenshot shows a web interface titled "Authentication". At the top, there is a section for "Activate Security" with two buttons: "Enabled" (which is highlighted in blue) and "Disabled". Below this, there is a "Change Password:" section with three input fields labeled "Current", "New", and "Retype New". A blue "Change" button is positioned at the bottom right of the form area.

Figure 14: Authentication Page

2. Set Activate Security to **Disabled**.
A message prompting for your password appears.
3. Type the current password (Admin by default) and click **OK**.
A message indicating that the password was changed successfully appears.
4. Click **OK**.
The Web page reloads and the web pages are unlocked .

To access Web pages using the password:

1. In the Navigation pane, click **Security**.
The Authentication page appears (see [Figure 14](#)).
2. Set Activate Security to **Enabled** for Web page password protection.
A confirmation warning message appears:
3. Click **OK**.
The connection is interrupted and authentication is required to access web pages.

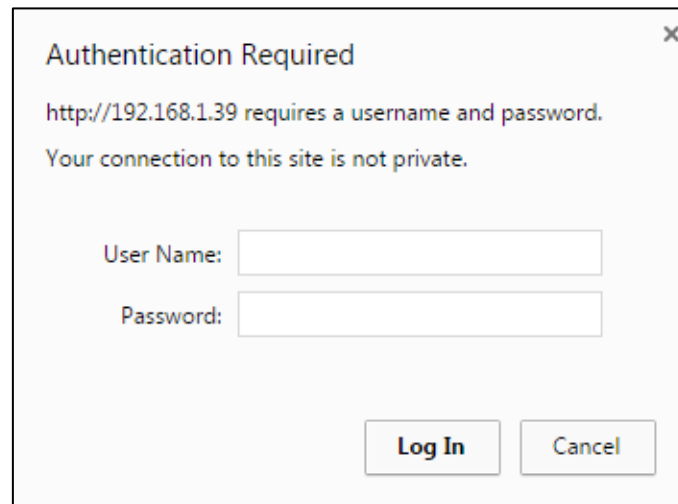




Figure 15: Password Settings Page – Security Log In

4. Type the User Name (Admin, by default) and Password (Admin, by default).
5. Click **Log In**.
6. Select **Security** from the Navigation pane.
The Authentication page appears (see [Figure 14](#)).
7. Type the new authentication password twice in both New and Retype New text boxes.
8. Click **Change**.
A confirmation warning message appears.
9. Click **OK**. The following message appears.
A message indicating that the password was changed successfully appears.
10. Click **OK**.

The web pages are locked  .

Viewing the About Page

The About page lets you view the web page version and Kramer Electronics Ltd details.

Using the Web-based Dante Controller

The PA-240Net can be operated using the Dante Controller, a Web-based software controller application from Audinate. Use the controller to route audio and configure devices on a Dante network. It features automatic device discovery, one-click signal routing and user-editable device and channel labels as well as providing essential device status information and powerful real-time network monitoring.

- Download the Dante Web-based Controller from:
www.audinate.com/products/software/dante-controller
- Download the Dante Web-based controller User Guide from:
<https://dev.audinate.com/GA/dante-controller/userguide/pdf/latest>

Technical Specifications

| | | PA-240Net | PA-120Net |
|---|-------------------------------|--|---|
| Inputs | 2 Channels, on a Dante™ Net | On an RJ-45 connector | |
| | 1 Balanced Stereo Audio | +4dBu/10kΩ, on a 5-pin terminal block | |
| Outputs | 1 Balanced Stereo Audio | Line level, on a 5-pin terminal block | |
| | 1 Speaker | On a 4-pin large terminal block | |
| Ports | 1 Control via IP | On an RJ-45 connector | |
| | 1 RS-232 | On a 3-pin terminal block | |
| Amplifier | Input Sensitivity: | Full power @ 0.3V (–10dBV) | |
| | Output Power: | 2 x 60W @ 4Ω or 8Ω 1 x 120W @ 70V or 100V | 2 x 120W @ 4Ω or 8Ω 1 x 240W @ 70V or 100V |
| | Class | D | |
| | Maximum Voltage Gain: | 26dB SE / 32dB BTL | |
| | Dynamic Range | 119dB | |
| | Frequency Response | 20Hz to 20kHz @ +/-1dB | |
| | S/N Ratio: | 80dB, 20Hz - 20kHz | |
| | Audio THD + Noise: | THD+N (1kHz @ 1W) 0.003 % | |
| | Audio 2nd Harmonic: | 0.08% @ 75W RMS @ 4Ω 6.67kHz | |
| Controls | | Output volume attenuator, IP and RS-232 | |
| Power | Source: | Universal mains operational voltage 85V AC – 265V AC | Universal mains operational voltage 85V AC – 265V AC (full power at 120V – 230V) |
| | Consumption | 195VA | 265VA |
| | Total System Efficiency | 89% | 90% |
| Environmental Conditions | Operating Temperature | 0° to +40°C (32° to 104°F) | |
| | Storage Temperature | –40° to +70°C (–40° to 158°F) | |
| | Humidity | 10% to 90%, RHL non-condensing | |
| Regulatory Compliance | Safety | CE, FCC | |
| | Environmental | RoHs, WEEE | |
| Enclosure | Size | Desktop | |
| | Type | Aluminum | |
| | Cooling | Convection ventilation | |
| General | Net Dimensions (W, D, H) | 21.5cm x 16.3cm x 4.4cm (8.5" x 6.4" x 1.7") | |
| | Shipping Dimensions (W, D, H) | 40.5cm x 29.7cm x 9cm (15.9" x 11.7" x 3.5") | |
| | Net Weight | 1.05kg (2.3lbs) | |
| | Shipping Weight | 1.65kg (3.6lbs) approx. | |
| Included Accessories | | Power cord | |
| Specifications are subject to change without notice at www.kramerav.com | | | |

Default Communication Parameters

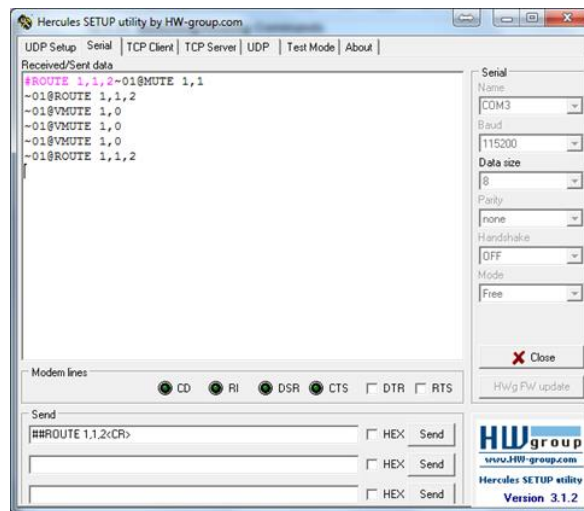
| RS-232 | | |
|---|---|-------------------------|
| Protocol 3000 | | |
| Baud Rate: | 115,200 | |
| Data Bits: | 8 | |
| Stop Bits: | 1 | |
| Parity: | None | |
| Example (change the volume of input 2 to -10 dB): | #AUD-LVL 1,2,-10 | |
| TCP/IP Parameters | Ethernet - Controller | Ethernet - Dante |
| IP Address: | 192.168.1.39 | DHCP |
| Subnet Mask: | 255.255.000.000 | N/A |
| Default Gateway: | 192.168.0.1 | N/A |
| Maximum UDP Connections: | Unlimited | N/A |
| Maximum TCP Connections: | Unlimited | N/A |
| UDP Port #: | 50000 | N/A |
| TCP Port #: | 5000 | N/A |
| Default Username / Password: | Admin / Admin | N/A |
| Full Factory Reset | | |
| Protocol 3000 | Excluding ETH: use "#FACTORY" command and use "#RESET" to restore the factory default values. | |

Protocol 3000

The PA-240Net 240W Power Amplifier can be operated using the Kramer Protocol 3000 serial commands. The command framing varies according to how you interface with the PA-240Net.

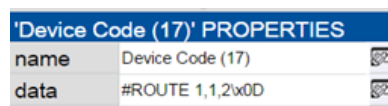
Generally, a basic video input switching command that routes a layer 1 video signal to HDMI out 1 from HDMI input 2 (ROUTE 1, 1, 2), is entered as follows:

- Terminal communication software, such as Hercules:

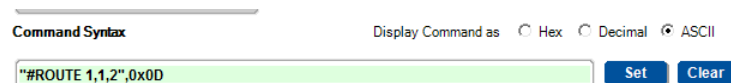


The framing of the command varies according to the terminal communication software.

- K-Touch Builder (Kramer software):



- K-Config (Kramer configuration software):



All the examples provided in this section are based on using the K-Config software.

You can enter commands directly using terminal communication software (e.g., Hercules) by connecting a PC to the serial or Ethernet port, depending on your device. To enter `CR` press the Enter key (`LF` is also sent but is ignored by the command parser).

Commands sent from various non-Kramer controllers (e.g., Crestron) may require special coding for some characters (such as, `/X##`). For more information, refer to your controller's documentation.

For more information about Protocol 3000 commands, see:

- [Understanding Protocol 3000](#) on page [25](#).
- [Kramer Protocol 3000 Syntax](#) on page [26](#).
- [Protocol 3000 Commands](#) on page [27](#).

Understanding Protocol 3000

Protocol 3000 commands are structured according to the following:

- Command – A sequence of ASCII letters (A-Z, a-z and -). A command and its parameters must be separated by at least one space.
- Parameters – A sequence of alphanumeric ASCII characters (0-9, A-Z, a-z and some special characters for specific commands). Parameters are separated by commas.
- Message string – Every command entered as part of a message string begins with a message starting character and ends with a message closing character.



A string can contain more than one command. Commands are separated by a pipe (|) character.

- Message starting character:
 - # – For host command/query
 - ~ – For device response
- Device address – K-NET Device ID followed by @ (optional, K-NET only)
- Query sign – ? follows some commands to define a query request
- Message closing character:
 - CR – Carriage return for host messages (ASCII 13)
 - CR LF – Carriage return for device messages (ASCII 13) and line-feed (ASCII 10)
- Command chain separator character – Multiple commands can be chained in the same string. Each command is delimited by a pipe character (|). When chaining commands, enter the message starting character and the message closing character only at the beginning and end of the string.



Spaces between parameters or command terms are ignored. Commands in the string do not execute until the closing character is entered. A separate response is sent for every command in the chain.

Kramer Protocol 3000 Syntax

The Kramer Protocol 3000 syntax uses the following delimiters:

- **CR** = Carriage return (ASCII 13 = 0x0D)
- **LF** = Line feed (ASCII 10 = 0x0A)
- **SP** = Space (ASCII 32 = 0x20)

Some commands have short name syntax in addition to long name syntax to enable faster typing. The response is always in long syntax.

The Protocol 3000 syntax is in the following format:

- **Host Message Format:**

| Start | Address (optional) | Body | Delimiter |
|-------|--------------------|----------------|-----------|
| # | <i>Device_id@</i> | Message | CR |

- **Simple Command** – Command string with only one command without addressing:

| Start | Body | Delimiter |
|-------|---|-----------|
| # | Command SP <i>Parameter_1,Parameter_2,...</i> | CR |

- **Command String** – Formal syntax with command concatenation and addressing:

| Start | Address | Body | Delimiter |
|-------|-------------------|---|-----------|
| # | <i>Device_id@</i> | Command_1 <i>Parameter1_1,Parameter1_2,...</i> Command_2 <i>Parameter2_1,Parameter2_2,...</i> Command_3 <i>Parameter3_1,Parameter3_2,...</i> ... | CR |

- **Device Message Format:**

| Start | Address (optional) | Body | Delimiter |
|-------|--------------------|----------------|---------------------|
| ~ | <i>Device_id@</i> | Message | CR LF |

- **Device Long Response** – Echoing command:

| Start | Address (optional) | Body | Delimiter |
|-------|--------------------|---|---------------------|
| ~ | <i>Device_id@</i> | Command SP [<i>Param1 Param2 ...</i>] result | CR LF |

Protocol 3000 Commands

This section includes the following commands:

- [System Commands](#) on page [27](#).
- [Audio Commands](#) on page [31](#).
- [Communication Commands](#) on page [39](#).

System Commands

All devices running Protocol 3000 use these commands.

| Command | Description |
|-------------|--|
| # | Protocol handshaking |
| BUILD-DATE? | Get device build date |
| FACTORY | Reset to factory default configuration |
| HELP | Get command list |
| MODEL? | Get device model |
| PROT-VER? | Get device protocol version |
| RESET | Reset device |
| SN? | Get device serial number |
| NAME | Set/get machine (DNS) name |

#

| Functions | | Permission | Transparency |
|---|----------------------|-------------------------------|--------------|
| Set: | # | End User | Public |
| Get: | - | - | - |
| Description | | Syntax | |
| Set: | Protocol handshaking | # <input type="checkbox"/> CR | |
| Get: | - | - | |
| Response | | | |
| ~nn@SPOKCR LF | | | |
| Notes | | | |
| Validates the Protocol 3000 connection and gets the machine number Step-in master products use this command to identify the availability of a device | | | |
| K-Config Example | | | |
| "#", 0x0D | | | |

BUILD-DATE?

| Functions | | Permission | Transparency |
|--|-----------------------|--|--------------|
| Set: | - | - | - |
| Get: | BUILD-DATE? | End User | Public |
| Description | | Syntax | |
| Set: | - | - | |
| Get: | Get device build date | # BUILD-DATE? <input type="checkbox"/> CR | |
| Response | | | |
| ~ <input type="checkbox"/> <input type="checkbox"/> @ BUILD-DATE <input type="checkbox"/> SP <code>date</code> <input type="checkbox"/> SP <code>time</code> <input type="checkbox"/> CR LF | | | |
| Parameters | | | |
| <code>date</code> – Format: YYYY/MM/DD where YYYY = Year, MM = Month, DD = Day | | | |
| <code>time</code> – Format: hh:mm:ss where hh = hours, mm = minutes, ss = seconds | | | |
| K-Config Example | | | |
| "#BUILD-DATE?", 0x0D | | | |

FACTORY

| Functions | | Permission | Transparency |
|---|---|--|--------------|
| Set: | FACTORY | End User | Public |
| Get: | - | - | - |
| Description | | Syntax | |
| Set: | Reset device to factory default configuration | # FACTORY <input type="checkbox"/> CR | |
| Get: | - | - | |
| Response | | | |
| ~ <input type="checkbox"/> <input type="checkbox"/> @ FACTORY <input type="checkbox"/> SPOK <input type="checkbox"/> CR LF | | | |
| Notes | | | |
| This command deletes all user data from the device. The deletion can take some time. Your device may require powering off and powering on for the changes to take effect. | | | |
| K-Config Example | | | |
| "#FACTORY", 0x0D | | | |

HELP

| Functions | | Permission | Transparency |
|---|---|---|--------------|
| Set: | - | - | - |
| Get: | HELP | End User | Public |
| Description | | Syntax | |
| Set: | - | - | |
| Get: | Get command list or help for specific command | 2 options: 1. # HELP <input type="checkbox"/> 2. # HELP <input type="checkbox"/> SP <code>command_name</code> <input type="checkbox"/> CR | |
| Response | | | |
| 1. Multi-line: ~ <input type="checkbox"/> <input type="checkbox"/> @Device available protocol 3000 commands: <input type="checkbox"/> CR LF <code>command</code> , <input type="checkbox"/> SP <code>command...</code> <input type="checkbox"/> CR LF To get help for command use: <code>HELP (COMMAND_NAME)</code> <input type="checkbox"/> CR LF | | | |
| 2. Multi-line: ~ <input type="checkbox"/> <input type="checkbox"/> @ HELP <input type="checkbox"/> SP <code>command</code> : <input type="checkbox"/> CR LF <code>description</code> <input type="checkbox"/> CR LF USAGE : <code>usage</code> <input type="checkbox"/> CR LF | | | |
| Notes | | | |
| To get help for a specific command use: <code>HELP</code> <input type="checkbox"/> SP <code>COMMAND_NAME</code> <input type="checkbox"/> CR LF | | | |
| K-Config Example | | | |
| "#HELP", 0x0D | | | |

MODEL?

| Functions | | Permission | Transparency |
|---|------------------|---|--------------|
| Set: | – | – | – |
| Get: | MODEL? | End User | Public |
| Description | | Syntax | |
| Set: | – | – | |
| Get: | Get device model | # MODEL? <input type="checkbox"/> CR | |
| Response | | | |
| ~nn@ MODEL? <input type="checkbox"/> SPmodel_name <input type="checkbox"/> CR LF | | | |
| Parameters | | | |
| model_name – string of up to 19 printable ASCII chars | | | |
| Notes | | | |
| This command identifies equipment connected to Step-in master products and notifies of identity changes to the connected equipment. The Matrix saves this data in memory to answer REMOTE-INFO requests | | | |
| K-Config Example | | | |
| "#MODEL?", 0x0D | | | |

PROT-VER?

| Functions | | Permission | Transparency |
|--|-----------------------------|--|--------------|
| Set: | – | – | – |
| Get: | PROT-VER? | End User | Public |
| Description | | Syntax | |
| Set: | – | – | |
| Get: | Get device protocol version | # PROT-VER? <input type="checkbox"/> CR | |
| Response | | | |
| ~nn@ PROT-VER? <input type="checkbox"/> SP3000:version <input type="checkbox"/> CR LF | | | |
| Parameters | | | |
| version – XX.XX where X is a decimal digit | | | |
| K-Config Example | | | |
| "#PROT-VER?", 0x0D | | | |

RESET

| Functions | | Permission | Transparency |
|--|--------------|--|--------------|
| Set: | RESET | Administrator | Public |
| Get: | – | – | – |
| Description | | Syntax | |
| Set: | Reset device | # RESET <input type="checkbox"/> CR | |
| Get: | – | – | |
| Response | | | |
| ~nn@ RESET <input type="checkbox"/> SPOK <input type="checkbox"/> CR LF | | | |
| Notes | | | |
| To avoid locking the port due to a USB bug in Windows, disconnect USB connections immediately after running this command. If the port was locked, disconnect and reconnect the cable to reopen the port. | | | |
| K-Config Example | | | |
| "#RESET", 0x0D | | | |

SN?

| Functions | | Permission | Transparency |
|---|--------------------------|----------------------------------|--------------|
| Set: | – | – | – |
| Get: | SN? | End User | Public |
| Description | | Syntax | |
| Set: | – | – | |
| Get: | Get device serial number | #SN? <input type="checkbox"/> CR | |
| Response | | | |
| ~nn@SN ^S serial_number ^{CR LF} | | | |
| Parameters | | | |
| serial_number – 14 decimal digits, factory assigned | | | |
| K-Config Example | | | |
| "#SN?",0x0D | | | |

NAME

| Functions | | Permission | Transparency |
|---|------------------------|---|--------------|
| Set: | NAME | Administrator | Public |
| Get: | NAME? | End User | Public |
| Description | | Syntax | |
| Set: | Set machine (DNS) name | #NAME ^S machine_name ^{CR} | |
| Get: | Get machine (DNS) name | #NAME? ^{CR} | |
| Response | | | |
| Set: ~nn@NAME ^S machine_name ^{CR LF} | | | |
| Get: ~nn@NAME? ^S machine_name ^{CR LF} | | | |
| Parameters | | | |
| machine_name – string of up to 15 alpha-numeric chars (can include hyphen, not at the beginning or end) | | | |
| Notes | | | |
| The machine name is not the same as the model name. The machine name is used to identify a specific machine or a network in use (with DNS feature on) | | | |
| K-Config Example | | | |
| Set the DNS name of the device to "room-442": "#NAME room-442",0x0D | | | |

Audio Commands

These commands are used by audio devices running Protocol 3000.

| Command | Description |
|---------------|---|
| AUD-CH-LINK | Set/get link between master configuration and slave/state |
| AUD-CLIP? | Get clipping status |
| AUD-FILTER | Set/get filter/state |
| AUD-HI-Z? | Get High Z status |
| AUD-IN-CONF | Set/get threshold and time |
| AUD-LVL | Set/get audio level in specific amplifier stage |
| AUD-MIX | Set/get mixer level |
| AUD-MONO-MODE | Set/get output select state when audio in HI-Z mode only |
| AUD-SIGNAL? | Get audio input signal status |
| AUD-STANDBY | Set/get standby mode/state |
| BALANCE | Set/get balance level |
| EQ-FREQ | Set/get equalizer center |
| EQ-LVL | Set/get equalization level |
| EQ-Q | Set/get Q level |
| MUTE | Set/get audio mute |

AUD-CH-LINK

| Functions | | Permission | Transparency |
|---|---|--|--------------|
| Set: | AUD-CH-LINK | End User | Public |
| Get | AUD-CH-LINK? | End User | Public |
| Description | | Syntax | |
| Set: | Set link between master configuration and slave | #AUD-CH-LINK ^{SP} Ch1,Ch2,LinkState ^{CR} | |
| Get: | Get the configuration link state | #AUD-CH-LINK?Ch1 ^{CR} | |
| Response | | | |
| ~nn@AUD-CH-LINK ^{SP} Ch1,Ch2,LinkState ^{CR LF} | | | |
| Parameters | | | |
| Ch1 – 1 (Speaker Output) | | | |
| Ch2 – 2 (Line Level Output) | | | |
| LinkState – 1 (enable), 0 (disable) | | | |
| Notes | | | |
| Response if no link - AUD-CH-LINK 1,1,0 | | | |
| Response if link - AUD-CH-LINK 1,2,1 | | | |
| K-Config Example | | | |
| Set a link between the speaker output configuration and the line level output configuration: "#AUD-CH-LINK 1,2,1",0x0D | | | |

AUD-CLIP?

| Functions | | Permission | Transparency |
|--|---------------------|--|--------------|
| Set: | – | – | – |
| Get | AUD-CLIP? | End User | Public |
| Description | | Syntax | |
| Set: | – | – | |
| Get: | Get clipping status | #AUD-CLIP? [SP] Channel [CR] | |
| Response | | | |
| ~nn@AUD-CLIP [SP] Channel,ClipStatus [CR LF] | | | |
| Parameters | | | |
| Channel – 1 (Speaker Output), 2 (Line Level Output) ClipStatus – 1 (Clipping detected), 0 (Clipping not detected) | | | |
| K-Config Example | | | |
| Get the speaker output channel clipping status: "#AUD-CLIP? 1",0x0D | | | |

AUD-FILTER

| Functions | | Permission | Transparency |
|--|--------------------|---|--------------|
| Set: | AUD-FILTER | End User | Public |
| Get | AUD-FILTER? | End User | Public |
| Description | | Syntax | |
| Set: | Set filter | #AUD-FILTER [SP] Channel,FilterType,Freq,State [CR] | |
| Get: | Get filter state | #AUD-FILTER? [SP] Channel [CR] | |
| Response | | | |
| ~nn@AUD-FILTER [SP] Channel,FilterType,Freq,State [CR LF] | | | |
| Parameters | | | |
| Channel – 1 (Speaker Output), 2 (Line Level Output) FilterType – Filter type: 0 (High pass filter) Freq – Filter frequency: 0 (T: 10kHz, M: 500Hz, B: 60Hz), 1 (T: 12.5kHz, M: 1kHz, B: 80Hz), 2 (T: 15kHz, M: 1.5kHz, B: 500Hz), 3 (T: 17.5kHz, M: 2.5kHz, B: 200Hz) State – 1 (On), 0 (Off) | | | |
| Notes | | | |
| T=Treble, M=Middle, B=Bass | | | |
| K-Config Example | | | |
| Set the audio filter on the speaker output on to high-pass filter, T: 10kHz, M: 500Hz, B: 60Hz: "#AUD-FILTER 1,0,0,1",0x0D | | | |

AUD-HI-Z

| Functions | | Permission | Transparency |
|--|-------------------|---|--------------|
| Set: | – | – | – |
| Get | AUD-HI-Z? | End User | Public |
| Description | | Syntax | |
| Set: | – | – | |
| Get: | Get High Z status | #AUD-HI-Z? CR | |
| Response | | | |
| ~nn@AUD-HI-Z SP Channel,HiZState,HiZVolt CR LF | | | |
| Parameters | | | |
| Channel – 1 (Speaker Output), 2 (Line Level Output) HiZState – 1 (Hi-Z state high), 0 (Hi-Z state low) HiZVolt – Hi-Z volt level: 0 (70 Volt), 1 (100 Volt), 0xff (Ignore). Optional, active only in high state | | | |
| Notes | | | |
| Active only when state is high. Ignore everything else. | | | |
| K-Config Example | | | |
| Set the line level output to Hi-Z and 70V: "#AUD-HI-Z 2,1,0",0x0D | | | |

AUD-IN-CONF

| Functions | | Permission | Transparency |
|---|--|---|--------------|
| Set: | AUD-IN-CONF | End User | Public |
| Get | AUD-IN-CONF? | End User | Public |
| Description | | Syntax | |
| Set: | Set threshold and time to indicate when signal is presents or not. | #AUD-IN-CONF SP Channel,ThresholdDbLevel,TrigTimeDelay CR | |
| Get: | Get threshold and time | #AUD-IN-CONF? CR Channel | |
| Response | | | |
| ~nn@AUD-IN-CONF SP Channel,ThresholdDbLevel,TrigTimeDelay CR LF | | | |
| Parameters | | | |
| Channel – 1 (Speaker Output), 2 (Line Level Output) ThresholdDbLevel – input level indicating when a signal is not present, range -100 to 0dB TrigTimeDelay – 10 (fixed) | | | |
| K-Config Example | | | |
| Set the speaker output threshold level and time: "#AUD-IN-CONF 1,-50,10",0x0D | | | |

AUD-LVL

| Functions | | Permission | Transparency |
|--|------------------|---|--------------|
| Set: | AUD-LVL | End User | Public |
| Get: | AUD-LVL? | End User | Public |
| Description | | Syntax | |
| Set: | Set volume level | #AUD-LVL[SP]stage,channel,volume,mutebehavior[CR] | |
| Get: | Get volume level | #AUD-LVL?[SP]stage,channel[CR] | |
| Response | | | |
| ~nn@AUD-LVL[SP]stage,channel,volume[CR LF] | | | |
| Parameters | | | |
| <i>stage</i> – 1 (For output processing) <i>channel</i> – 1 (Speaker Output), 2 (Line Level Output) <i>volume</i> – volume level -80db to 10dB <i>mutebehavior</i> – optional, 1 (changing the volume does not affect the mute state) | | | |
| K-Config Example | | | |
| Set the speaker output audio level to -50dB: "#AUD-LVL 1,1,-50",0x0D | | | |

AUD-MIX

| Functions | | Permission | Transparency |
|--|-----------------|------------------------------------|--------------|
| Set: | AUD-MIX | End User | Public |
| Get: | AUD-MIX? | End User | Public |
| Description | | Syntax | |
| Set: | Set mixer level | #AUD-MIX[SP]channel,knob,level[CR] | |
| Get: | Get mixer level | #AUD-MIX?[SP]channel,knob[CR] | |
| Response | | | |
| ~nn@AUD-MIX[SP]channel,knob,level[CR LF] | | | |
| Parameters | | | |
| <i>channel</i> – 1 (Speaker Output), 2 (Line Level Output) <i>knob</i> – mixer knob number: 1 (Input 1), 2 (Input 2) <i>level</i> – mixer level: -80 to 10dB | | | |
| K-Config Example | | | |
| Set the input mixing level of input 2 on the speaker output to -48dB: "#AUD-MIX 1,2,-48",0x0D | | | |

AUD-MONO-MODE

| Functions | | Permission | Transparency |
|---|--|--------------------------------|--------------|
| Set: | AUD-MONO-MODE | End User | Public |
| Get | AUD-MONO-MODE? | End User | Public |
| Description | | Syntax | |
| Set: | Set output select state when audio in HI-Z mode only | #AUD-MONO-MODE[SP]MonoMode[CR] | |
| Get: | Get output select state when audio in HI-Z mode only | #AUD-MONO-MODE?[CR] | |
| Response | | | |
| ~nn@AUD-MONO-MODE[SP]MonoMode[CR LF] | | | |
| Parameters | | | |
| <i>MonoMode</i> – The mono output mode: 0 (output is "stereo mix to mono" – both left and right mix to one channel), 1 (output is "left to mono" – duplicate left channel information to the right and play both) | | | |
| Notes | | | |
| These commands are active only when the state is HI-Z, otherwise an error is returned. To set, the <i>MonoMode</i> parameter must be used. | | | |
| K-Config Example | | | |
| Set the output to mix to mono: "#AUD-MONO-MODE 0",0x0D | | | |

AUD-SIGNAL

| Functions | | Permission | Transparency |
|---|-------------------------------|----------------------------|--------------|
| Set: | – | – | – |
| Get | AUD-SIGNAL? | End User | Public |
| Description | | Syntax | |
| Set: | – | – | |
| Get: | Get audio input signal status | #AUD-SIGNAL?[SP]inp_id[CR] | |
| Response | | | |
| ~nn@AUD-SIGNAL[SP]inp_id,status[CR LF] | | | |
| Parameters | | | |
| <i>Inp_id</i> – input number: 1 (Input 1), 2 (Input 2) <i>status</i> – 0 (OFF, no signal), 1 (ON, signal present) | | | |
| Response Triggers | | | |
| After execution, response is sent to the com port from which the Get was received Response is sent to all com ports if audio status state was changed on any input | | | |
| K-Config Example | | | |
| get the status of input 1: "#AUD-SIGNAL? 1",0x0D | | | |

AUD-STANDBY

| Functions | | Permission | Transparency |
|--|------------------------|---|--------------|
| Set: | AUD-STANDBY | End User | Public |
| Get: | AUD-STANDBY? | End User | Public |
| Description | | Syntax | |
| Set: | Set standby mode | #AUD-STANDBY[SP]StandbyMode,TimeDelay[CR] | |
| Get: | Get standby mode state | #AUD-STANDBY?[CR] | |
| Response | | | |
| ~nn@AUD-STANDBY[SP]StandbyMode,TimeDelay[CR LF] | | | |
| Parameters | | | |
| <i>StandbyMode</i> – 0 (Off), 1 (Delayed, auto mode), 2 (Standby mode) | | | |
| <i>TimeDelay</i> – 5, 10, or 15 (time delay [min] to standby mode) | | | |
| Notes | | | |
| Active only in auto mode | | | |
| K-Config Example | | | |
| Set the standby delay time to 10 minutes: "#AUD-STANDBY 1,10",0x0D | | | |

BALANCE

| Functions | | Permission | Transparency |
|---|-------------------|--------------------------------------|--------------|
| Set: | BALANCE | End User | Public |
| Get: | BALANCE? | End User | Public |
| Description | | Syntax | |
| Set: | Set balance level | #BALANCE[SP]channel,balancelevel[CR] | |
| Get: | Get balance level | #BALANCE?[SP]channel[CR] | |
| Response | | | |
| ~nn@BALANCE[SP]channel,balance_level[CR LF] | | | |
| Parameters | | | |
| <i>channel</i> – 1 (Speaker output), 2 (Line level output) | | | |
| <i>balancelevel</i> – -15 to +15 (audio parameter in Kramer units, minus sign precedes negative values) | | | |
| ++ increase current value | | | |
| -- decrease current value | | | |
| K-Config Example | | | |
| Set the speaker output balance to +12: "#BALANCE 1,12",0x0D | | | |

EQ-FREQ

| Functions | | Permission | Transparency |
|--|-------------------------|--|--------------|
| Set: | EQ-FREQ | End User | Public |
| Get | EQ-FREQ? | End User | Public |
| Description | | Syntax | |
| Set: | Set equalizer frequency | #EQ- FREQ[SP]Stage,Channel,EqType,EqFreq[CR] | |
| Get: | Get equalizer frequency | #EQ- FREQ?[SP]Stage,Channel,EqType[CR] | |
| Response | | | |
| ~nn@EQ- FREQ[SP]Stage,Channel,EqType,EqFreq[CR LF] | | | |
| Parameters | | | |
| <i>Stage</i> – 1 (Output) <i>Channel</i> – 1 (Speaker output), 2 (Line Level Output) <i>EqType</i> – 0 (Bass), 1 (Middle), 2 (Treble) <i>EqFreq</i> – 0 (T: 10kHz, M: 500Hz, B: 60Hz), 1 (T: 12.5kHz, M: 1kHz, B: 80Hz), 2 (T: 15kHz, M: 1.5kHz, B: 500Hz), 3 (T: 17.5kHz, M: 2.5kHz, B: 200Hz) | | | |
| Notes | | | |
| T=Treble, M=Middle, B=Bass | | | |
| K-Config Example | | | |
| Set speaker output equalizer frequency on the bass to 200Hz: "#EQ-FREQ 1,1,0,3",0x0D | | | |

EQ-LVL

| Functions | | Permission | Transparency |
|---|------------------------|---|--------------|
| Set: | EQ-LVL | End User | Public |
| Get: | EQ-LVL? | End User | Public |
| Description | | Syntax | |
| Set: | Set equalization level | #EQ-LVL[SP]Stage,Channel,EqType,Level[CR] | |
| Get : | Get equalization level | #EQ-LVL?[SP]Stage,Channel,EqType[CR] | |
| Response | | | |
| ~nn@EQ-LVL[SP]Stage,Channel,EqType,Level[CR LF] | | | |
| Parameters | | | |
| <i>Stage</i> – 1 (Output processing) <i>Channel</i> – 1 (Speaker output), 2 (Line level output) <i>EqType</i> – 0 (Bass), 1 (Middle), 2 (Treble) <i>Level</i> –equalizer level | | | |
| K-Config Example | | | |
| Set Bass EQ level of the speaker output to 12: "#EQ-LVL 1,1,0,12",0x0D | | | |

EQ-Q

| Functions | | Permission | Transparency |
|--|--------------|-------------------------------------|--------------|
| Set: | EQ-Q | End User | Public |
| Get: | EQ-Q? | End User | Public |
| Description | | Syntax | |
| Set: | Set Q level | #EQ-Q[SP]Channel,EqType,Q_level[CR] | |
| Get: | Get Q level | #EQ-Q?[SP]Channel,EqType[CR] | |
| Response | | | |
| ~nn@EQ-Q[SP]Channel,EqType,Q_level[CR LF] | | | |
| Parameters | | | |
| Channel – 1 (Speaker output), 2 (Line level output) | | | |
| EqType – 0 (Bass), 1 (Middle), 2 (Treble) | | | |
| Q_level – 0 to 15 (Q level) | | | |
| K-Config Example | | | |
| Set the line level output treble Q level to 8: "#EQ-Q 1,2,8 4",0x0D | | | |

MUTE

| Functions | | Permission | Transparency |
|---|----------------|--------------------------------|--------------|
| Set: | MUTE | End User | Public |
| Get: | MUTE? | End User | Public |
| Description | | Syntax | |
| Set: | Set audio mute | #MUTE[SP]channel,mute_mode[CR] | |
| Get: | Get audio mute | #MUTE?[SP]channel[CR] | |
| Response | | | |
| ~nn@MUTE[SP]channel,mute_mode[CR LF] | | | |
| Parameters | | | |
| channel – 1 (Speaker output), 2 (Line level output) | | | |
| mute_mode – 0 (Off), 1 (On) | | | |
| K-Config Example | | | |
| Set speaker output to mute: "#MUTE 1,1",0x0D | | | |

Communication Commands

These commands are used by network devices running Protocol 3000.

| Command | Description |
|------------|---------------------------------|
| NET-CONFIG | Set/get a network configuration |
| ETH-PORT | Set/get Ethernet port protocol |
| NET-DHCP | Set/get DHCP mode |
| NET-MAC? | Get MAC address |

NET-CONFIG

| Functions | Permission | Transparency |
|--|--|--------------|
| Set: NET-CONFIG | End User | Public |
| Get: NET-CONFIG? | End User | Public |
| Description | Syntax | |
| Set: Set a network configuration. | #NET-CONFIG <u>SP</u> <i>id,ip,net_mask,gateway</i> <u>CR LF</u> | |
| Get: Get a network configuration. | #NET-CONFIG? <u>SP</u> <i>id</i> <u>CR LF</u> | |
| Response | | |
| Get: ~ <u>nn</u> @NET-CONFIG <u>SP</u> <i>id,ip,net_mask,gateway</i> <u>CR LF</u> | | |
| Parameters | | |
| <i>id</i> – network ID <i>ip</i> – network IP <i>net_mask</i> – network mask <i>gateway</i> – network gateway | | |
| K-Config Example | | |
| "#NET-CONFIG 1,192.168.113.10,255.255.0.0,192.168.0.1",0x0D | | |

ETH-PORT

| Functions | Permission | Transparency |
|--|---|--------------|
| Set: ETH-PORT | Administrator | Public |
| Get: ETH-PORT? | End User | Public |
| Description | Syntax | |
| Set: Set Ethernet port protocol | #ETH-PORT <u>SP</u> <i>portType,ETHPort</i> <u>CR</u> | |
| Get: Get Ethernet port protocol | #ETH-PORT? <u>SP</u> <i>portType</i> <u>CR</u> | |
| Response | | |
| ~ <u>nn</u> @ETH-PORT <u>SP</u> <i>portType,ETHPort</i> <u>CR LF</u> | | |
| Parameters | | |
| <i>portType</i> – 0 (TCP), 1 (UDP) <i>ETHPort</i> – 0-65534 (TCP / UDP port number) | | |
| Notes | | |
| If the port number you enter is already in use, an error is returned. The port number must be within the following range: 2000-(2 ¹⁶ -1). UDP port 50001 and TCP port 5001 are reserved for internal use. | | |
| K-Config Example | | |
| Set the Ethernet port protocol for TCP to port 12457: "#ETH-PORT 0,12457",0x0D | | |

NET-DHCP

| Functions | | Permission | Transparency |
|---|------------------|------------------------------------|--------------|
| Set: | NET-DHCP | Administrator | Public |
| Get: | NET-DHCP? | End User | Public |
| Description | | Syntax | |
| Set: | Set DHCP mode | #NET-DHCP <i>SP</i> mode <i>CR</i> | |
| Get: | Get DHCP mode | #NET-DHCP? <i>CR</i> | |
| Response | | | |
| ~ <i>nn</i> @NET-DHCP <i>SP</i> mode <i>CR</i> LF | | | |
| Parameters | | | |
| <i>mode</i> – | | | |
| 0 (do not use DHCP. Use the IP address set by the factory or the NET-IP command), | | | |
| 1 (try to use DHCP. If unavailable, use the IP address set by the factory or the NET-IP command) | | | |
| Notes | | | |
| Connecting Ethernet to devices with DHCP may take more time in some networks | | | |
| To connect with a randomly assigned IP by DHCP, specify the device DNS name (if available) using the command "NAME". You can also get an assigned IP by direct connection to USB or RS-232 protocol port if available | | | |
| For proper settings consult your network administrator | | | |
| K-Config Example | | | |
| Enable DHCP mode, if available: "#NET-DHCP 1", 0x0D | | | |

NET-MAC?

| Functions | | Permission | Transparency |
|---|-----------------|---------------------|--------------|
| Set: | – | – | – |
| Get: | NET-MAC? | End User | Public |
| Description | | Syntax | |
| Set: | – | – | |
| Get: | Get MAC address | #NET-MAC? <i>CR</i> | |
| Response | | | |
| ~ <i>nn</i> @NET-MAC <i>SP</i> mac_address <i>CR</i> LF | | | |
| Parameters | | | |
| <i>mac_address</i> – Unique MAC address. Format: XX-XX-XX-XX-XX-XX where X is hex digit | | | |
| K-Config Example | | | |
| "#NET-MAC?", 0x0D | | | |

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3. All Kramer Cobra products, all Kramer Calibre products, all Kramer Minicom digital signage products, all HighSecLabs products, all streaming, and all wireless products are covered by a standard three (3) year warranty.
4. All Sierra Video MultiViewers are covered by a standard five (5) year warranty.
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3. Issue a refund of the original purchase price less depreciation to be determined based on the age of the product at the time remedy is sought under this limited warranty.

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P/N:



2900-301040

Rev:



1



SAFETY WARNING

Disconnect the unit from the power supply before opening and servicing

For the latest information on our products and a list of Kramer distributors, visit our Web site where updates to this user manual may be found.

We welcome your questions, comments, and feedback.