KRAMER

USER MANUAL

NT-52P Quick Start Guide
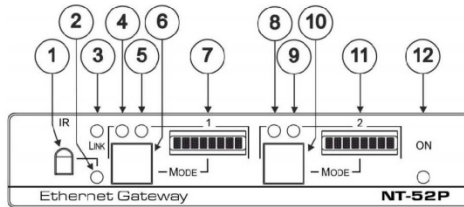
This guide helps you install and use your **NT-52P** for the first time.

Go to **www.kramerav.com/downloads/NT-52P** to download the latest user manual and check if firmware upgrades are available.

Step 1: Check what's in the box
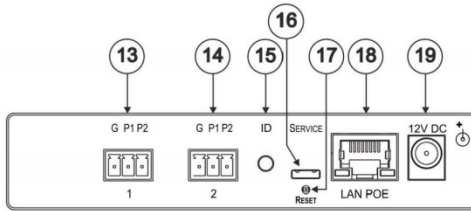
- ☑ **NT-52P** Ethernet Gateway
- ☑ 1 Power supply (12V DC)
- ☑ 4 Rubber feet
- ☑ 1 Quick start guide
- ☑ 1 Bracket set

Step 2: Get to know your NT-52P

#	Feature	Function
1	IR Sensor	Sensor for IR learning
2	IR LED	Lights blue to indicate IR activity
3	LINK LED	Lights blue to indicate Ethernet link activity
4	Port 1 Blue LED	Port 1 activity left indication. For functionality, see the function table
5	Port 1 White LED	Port 1 activity right indication. For functionality, see the function table
6	Port 1 MODE Button	Press to cycle through and select Port 1 mode function
7	Port 1 MODE LCD Display	Displays selected Port 1 mode function: RS-232, RS-232 Cross, RS-485, Relay, IR, GPIO
8	Port 2 Blue LED	Port 2 activity left indication. For functionality, see the function table
9	Port 2 White LED	Port 2 activity right indication. For functionality, see the function table
10	Port 2 MODE Button	Press to cycle through and select Port 2 function
11	Port 2 MODE LCD Display	Displays selected Port 2 mode function: RS-232, RS-232 Cross, RS-485, Relay, IR, GPIO
12	ON LED	Lights green when unit power is on

#	Feature	Function
13	Port 1 I/O 3-pin Terminal Block	Port 1 terminal block
14	Port 2 I/O 3-pin Terminal Block	Port 2 terminal block
15	ID	Press to broadcast ID message for auto-discovery of the device
16	SERVICE Mini USB Connector	Connects to a PC for a local firmware upgrade
17	RESET Button	Press and hold while cycling the device power to reset to factory default parameters
18	LAN/POE RJ-45 Connector	Connects to a PoE source (Power over Ethernet) for powering and an IP client or other controller, either directly or via a LAN
19	12V DC Connector	Connects to the 12V DC power supply, center pin positive. Not needed when the device is supplied power by a PoE power source

NT-52P Function Table

| Port IO Function	8-Char Display Text*	Terminal Block Connections			IO Port Default	TCP Default Port [P1/P2]	Mode Button LED color	Blue Activity LED [left]	White Activity LED [right]
		G	P1	P2					
RS-232	RS-232	Ground	Rx	Tx	9600,8,N,1	5001/2	Yellow	Flashes when receiving data	Flashes when transmitting data
Crossed RS-232	RS-232X	Ground	Tx	Rx	9600,8,N,1	5001/2	Green	Flashes when receiving data	Flashes when transmitting data
RS-485	RS-485	Ground	Rx (+)	Tx (-)	9600,8,N,1	5001/2	Pink	Flashes when receiving data	Flashes when transmitting data
IR	IR+IR	Ground	IR_1	IR_2		5000	Red	ON when transmitting IR_1 data	ON when transmitting IR_2 data
IO	IO+IO	Ground	IO_1	IO_2	Digital In x 2	5000	Blue	ON when IO_1 is active	ON when IO_2 is active
Relay	Relay	Common	Normally Open	Normally Closed	Normally Open	5000	White	N/A	ON when Relay is active

Key:
Tx – Transmit, Rx– Receive
9600, 8, N, 1 – 9600 baud, 8-bits, no parity, 1 stop bit
P1 / P2 – Port 1 / Port 2
IR_1 / IR_2 – IR Port 1 / IR Port 2
IO_1 / IO_2 – IO Port 1 / IO Port 2
*This text can indicate different configurations set using the Web UI

Step 3: Install the NT-52P

Install **NT-52P** using one of the following methods:

- Attach the rubber feet and place the unit on a flat surface.
- Fasten a bracket (included) on each side of the unit and attach it to a flat surface.
  For more information go to **www.kramerav.com/downloads/NT-52P**.
- Mount the unit in a rack using an optional **RK-3T** rack adapter.
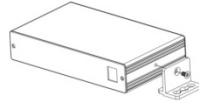
Step 4: Connect the ports

Always switch OFF the power on each device before connecting it to your **NT-52P**. For best results, we recommend always to use Kramer high-performance cables to connect AV equipment to the **NT-52P**.

The **NT-52P** can be connected as shown in the following example. Note that Ports 1 and 2 need not have the same configuration and can be different. For example, Port 1 can be a Relay and Port 2 can be RS-232.
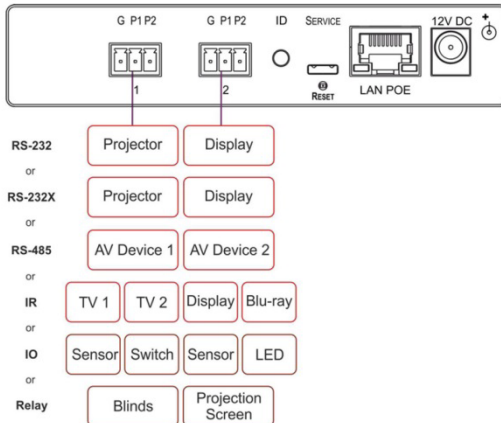
Step 5: Connect the power

Connect the PoE power source and/or a 12V DC power supply to the **NT-52P** and plug it into the mains electricity.

Safety Instructions

Caution: There are no operator serviceable parts inside the unit.
Warning: Use only the Kramer Electronics power supply that is provided with the unit.
Warning: Disconnect the power and unplug the unit from the wall before installing.
See www.KramerAV.com for updated safety information.

Step 6: Configure and operate the NT-52P

Note: The **NT-52P** is shipped from the factory with DHCP enabled and a random IP address. To connect the **NT-52P** on first installation, you must identify what IP address has been automatically assigned to the **NT-52P**. To discover the IP address of **NT-52P**, use **K-LAN Configurator**, available for download from our website at www.kramerav.com.

To reset the device to its factory default settings:

1. Turn off the power to the device.
2. Press and hold the Reset button on the rear panel.
3. Turn on the power to the device while holding down the Reset button for a few seconds.
4. Release the button.
   The device is reset to the factory default settings.

To browse the NT-52P Web UI (User Interface) using factory default settings:

Use the default host name: **NT-52P-xxxx**, where xxxx are the last four digits of the serial number of the device.

To select the port operating Mode:

1. Press the front panel port MODE button to cycle through modes in the following order:
   RS-232 > **RS-232 Cross** > **RS-485** > **Relay** > **IR** > **IO**
2. Press the MODE button until the desired mode is reached.
3. After stopping, there is a 5 second delay, then "Save?" is displayed for another 5 seconds, during which press the MODE button again to save the mode.
4. If no additional button press was detected, "Unsaved" is displayed for 5 seconds and the device returns to the last saved mode.

To configure and operate the NT-52P:

1. Using the device Web UI, configure the control gateway:
   - Set DHCP or assign a static IP address
   - Associate IP port(s) with the relevant port(s)
   - Configure the relevant port parameters
2. Configure IP client connection port(s) on a Kramer control or any other control software application.
3. Set the control application to use the control gateway ports for sending and receiving control communication over the IP

To lock and unlock the port Mode buttons:

1. Press the MODE button for more than 5 seconds.
2. The button locks and the port displays "Locked" after pressing the button again.
3. To unlock the button, press it for over 5 seconds.

Contents

Figures

1   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 video, audio, presentation, and broadcasting professionals on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better!

Our 1,000-plus different models now appear in 14 groups that are clearly defined by function: GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Routers; GROUP 3: Control Systems; GROUP 4: Format/Standards Converters; GROUP 5: Range Extenders and Repeaters; GROUP 6: Specialty AV Products; GROUP 7: Scan Converters and Scalers; GROUP 8: Cables and Connectors; GROUP 9: Room Connectivity; GROUP 10: Accessories and Rack Adapters; GROUP 11: Sierra Video Products; GROUP 12: Digital Signage; GROUP 13: Audio; and GROUP 14: Collaboration.

Congratulations on purchasing your Kramer **NT-52P** *2-Port Universal I/O PoE Control Gateway* that is ideal for use in the following applications:

- Remote IP control of any controlled devices

- Fast field replacement of any I/O control gateway

- Remote upgrade of any control I/O interface

- Control system with multiple IP clients

- LAN-based I/O-ports expansion of control systems

2 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/NT-52P to check for up-to-date user manuals, application programs, and to check if firmware upgrades are available (where appropriate).

2.1 Achieving the Best Performance

To achieve the best performance:

- For optimum range and performance, use the recommended Kramer cables available at www.kramerav.com/product/NT-52P

- Do not secure the cables in tight bundles or roll the slack into tight coils

- Avoid interference from neighbouring electrical appliances that may adversely influence signal quality

- Position your **NT-52P** 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.

2.2 Safety Instructions

Caution: There are no operator serviceable parts inside the unit

Warning: Use only the Kramer Electronics power supply that is provided with the unit

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

2.3   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 has 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 particular country go to our recycling pages at *www.kramerav.com/support/recycling/*.

3 Overview

The **NT-52P** is a compact universal−I/O PoE control gateway, capable of plug and play deployment over an existing LAN for remote control of customer−controlled devices via two universal I/O ports. The ports can be configured as bidirectional RS−232, crossed RS−232, RS−485, IR, GPI/O or relay control connections. Multiple control clients can be connected over IP to the **NT-52P** control gateway for concurrent control of devices, such as AV scalers, video projectors and displays, audio amplifiers, DVD players, sensors, screens, shades, door locks, and lighting.

The **NT-52P** features:

- Innovative Universal I/O Ports – Remote IP-based control of any device connected to the control gateway universal I/O ports, with selectable port configuration to bidirectional RS−232, RS−232 cross, RS−485, IR, GPI/O or relay control. Each port is adaptable for any room device control simply by toggling a button.

- Multiple IP Connected Clients – Remotely connected over an existing Ethernet network, concurrently controlling any devices connected to control gateway universal I/O ports.

- Easy & Reliable Installation:

    - Plug-and-Play IP Installation with dynamic (DHCP) address resolution and auto device discovery over existing LAN.

    - Compact, designed for piggy−back installation, such as behind a TV or display, with the ability to draw power over Ethernet.

- Remote Management:

    - Single PoE cable for both, powering and connectivity, and Plug and Play IP installation with dynamic (DHCP) address resolution and auto device discovery over existing LAN.

    - Highly−resilient powering with multiple power options — Power over Ethernet per IEEE 802.3af standard, and/or PSU (included).

- Built−in web UI for remote browser−based management and support, by multiple IP−clients over existing LAN.

- Easy firmware upgrades, either remotely via existing LAN, or locally via USB device port.

- Size – DigiTOOLS™ – Mount 3 units side-by-side in a 1U rack space with the optional RK−3T rack adapter.

4 Defining the NT-52P 2-Port Universal I/O PoE Control Gateway

This section defines the **NT-52P**.
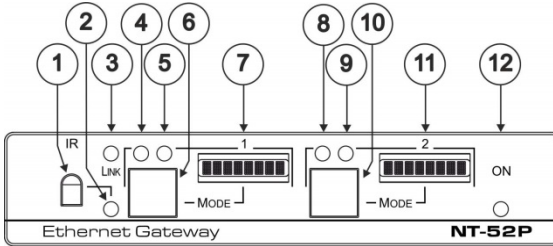
Figure 1: NT-52P 2-Port Universal I/O PoE Control Gateway

#	Feature	Function
1	IR Sensor	Sensor for IR learning
2	IR LED	Lights blue to indicate IR learning activity
3	LINK LED	Lights blue to indicate Ethernet link activity
4	Port 1 Blue LED	Port 1 activity left indication. For functionality, see Table 1
5	Port 1 White LED	Port 1 activity right indication. For functionality, see Table 1
6	Port 1 MODE Button	Press to cycle through and select Port 1 mode function. See Table 1 for selected mode button color. Wait ~5sec until 'Save?' is displayed on LCD display, and press again within ~5sec to save the selected mode, otherwise 'Unsaved' is displayed. A long press >5sec locks the saved mode or unlocks the locked mode.
7	Port 1 MODE LCD Display	Displays selected Port 1 mode function: RS-232, RS-232 Cross, RS-485, Relay, IR, GPIO. See Table 1 for the mode of displayed text. When pressing a locked button, 'Locked' is displayed.
8	Port 2 Blue LED	Port 2 activity left indication. For functionality, see Table 1
9	Port 2 White LED	Port 2 activity right indication. For functionality, see Table 1
10	Port 2 MODE Button	Press to cycle through and select Port 2 mode function. See Table 1 for selected mode button color. Wait ~5sec until 'Save?' is displayed on LCD display, and press again within ~5sec to save the selected mode, otherwise 'Unsaved' is displayed. A long press >5sec locks the saved mode or unlocks the locked mode.
11	Port 2 MODE LCD Display	Displays selected Port 2 mode function: RS-232, RS-232 Cross, RS-485, Relay, IR, GPIO. See Table 1 for the mode of displayed text. When pressing a locked button, 'Locked' is displayed.
12	ON LED	Lights green when unit power is on

#	Feature	Function
13	Port 1 I/O 3-pin Terminal Block	Port 1 terminal block
14	Port 2 I/O 3-pin Terminal Block	Port 2 terminal block
15	ID	Press to broadcast ID message for auto-discovery of the device
16	SERVICE Micro USB Connector	Connects to a PC for a local firmware upgrade
17	RESET Button	Press and hold while cycling the device power to reset to factory default parameters
18	LAN/POE RJ-45 Connector	Connects to a PoE source (Power over Ethernet) for powering and an IP client or other controller, either directly or via a LAN
19	12V DC Connector	Connects to the 12V DC power supply, center pin positive. Not needed when the device is supplied power by a PoE power source

Port I/O Function	8-Char Display Text	Terminal Block Connections			IO Port Default	TCP Default Port [P1/P2]	Mode Button LED color	Blue Activity LED [left]	White Activity LED [right]
		G	P1	P2					
RS-232	RS-232	Ground	Rx	Tx	9600,8,N,1	5001/2	Yellow	Flashes when receiving data	Flashes when transmitting data
Crossed RS-232	RS-232X	Ground	Tx	Rx	9600,8,N,1	5001/2	Green	Flashes when receiving data	Flashes when transmitting data
RS-485	RS-485	Ground	Rx (+)	Tx (-)	9600,8,N,1	5001/2	Pink	Flashes when receiving data	Flashes when transmitting data
IR	IR+IR	Ground	IR_1	IR_2		5000	Red	ON when transmitting IR_1 data	ON when transmitting IR_2 data
IO	IO+IO	Ground	IO_1	IO_2	Digital In x 2	5000	Blue	ON when IO_1 is active	ON when IO_2 is active
Relay	Relay	Common	Normally Open	Normally Closed	Normally Open	5000	White	N/A	ON when Relay is active

Table 1: NP-52P Function Table

Legend:
Tx – Transmit, Rx – Receive
9600, 8, N, 1 – 9600 baud, 8-bits, no parity, 1 stop bit
P1 / P2 – Port 1 / Port 2
IR_1 / IR_2 – IR Port 1 / IR Port 2
IO_1 / IO_2 – IO Port 1 / IO Port 2

NT-52P - Defining the NT-52P 2-Port Universal I/O PoE Control Gateway

5 Initial Configuration and Use Overview

This chapter provides an overview of the initial configuration and basic operation of the **NT-52P** and comprises:

- Configuring the **NT-52P** (see Section 5.1)
- Configuring an Ethernet connection on the PC (see Section 5.2)
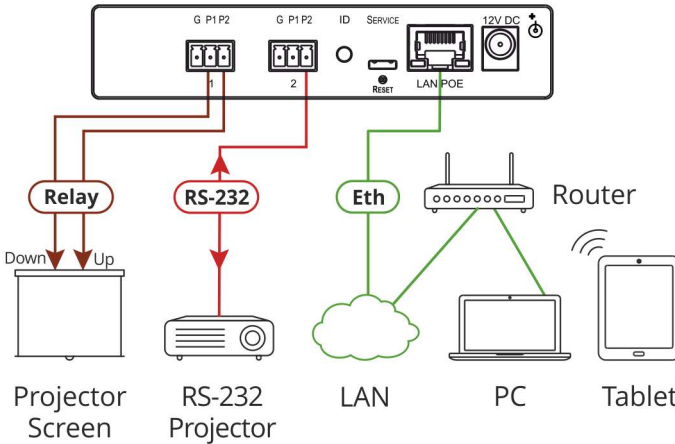
Figure 2: Connecting the NT-52P for Initial Configuration

5.1 Configuring the NT-52P 2-Port Universal I/O PoE Control Gateway

The **NT-52P** is shipped from the factory with DHCP enabled (off by default) and a random IP address. To connect the **NT-52P** on first installation, you must identify the IP address that was automatically assigned to the **NT-52P**. To discover the IP address of **NT-52P**, use **K-LAN Configurator**, available for download from our website at www.kramerav.com..

To browse the NT-52P Web UI on taking the device out of the box:

Use the default host name: **NT-52P-xxxx**, where xxxx are the last four digits of the serial number of the device**.**

To configure the NT-52P:

1. Connect the Ethernet port on the rear panel of the **NT-52P** to a PC, either directly or via a LAN, (see <u>Section 6.1</u>).

2. Using a Web browser and the relevant IP address or host name (see <u>Section 9.1</u>), browse the General Info home page (see <u>Figure 9</u>).

3. Click **Device Settings** to browse to the Device Settings page, (see <u>Figure 12</u>).

4. Enter the time and date manually, or enter the Time server address for automatic time and date synchronization.

5. Click **Save Changes**.

6. Click **Communication** to browse to the Communication page, (see <u>Figure 13</u>).

7. Enter the IP address, mask and gateway for static IP addressing and click **Set**. We recommend that you set a meaningful host name.

> If you have changed the IP address from the default setting, you must reload the General Info home page again using the new IP address.

8. Click **GPIO Port Settings** to browse to the GPIO Port Settings page, (see <u>Section 7.6</u>). Here you can configure digital in, digital out and analog in port parameters.

9. Set the trigger type, voltage levels and status of each port.

10. Click **Save Changes**.

11. Click **Relay Port Settings** to browse to the Relay Port Settings page, (see <u>Section 7.8</u>). Here you can set the relays on or off.

12. If required, click **Security** (see <u>Section 7.9</u>) to browse to the Security page.

13. Click **ON** to activate security.
    The user name and password credentials popup appears.

14. Enter the required user name and password. (The default user name is **Admin** and the password is **Admin**).

5.2   Setting Up an Ethernet Connection on the PC

If the control application can directly connect to the Ethernet driver, select the host IP and port number according to your **NT-52P** configuration, as illustrated in .
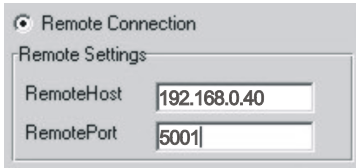
Figure 3: Configuring a Remote Connection

6 Connecting the NT-52P

> Always switch off the power to each device before connecting it to your **NT-52P**. After connecting your **NT-52P**, connect its power and then switch on the power to each device.
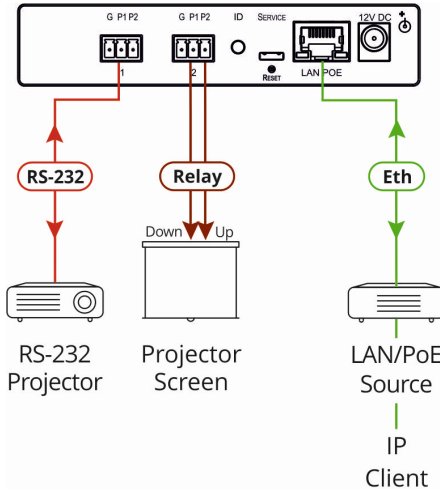
Figure 4: Connecting the NT-52P 2-Port Universal I/O PoE Control Gateway

To connect the NT-52P as illustrated in the example in Figure 4:

1. Connect the device to a LAN or PC via the RJ-45 Ethernet connector.

2. Following the Save Settings Procedure, set and save **RS-232** to Mode 1.

3. According to the connections shown in Table 2, connect an RS-232-controlled device, (for example, a projector) to terminal block 1.

4. Following the Save Settings Procedure, set and save **Relay** to Mode 2.

5. According to the connections shown in Table 2, connect a relay-controlled device, (for example, a projection screen) to terminal block 2, Common pin and either Normally Open or Normally Closed pin per needed operation mode.

6. If the **NT-52P** does not receive power from a PoE provider, connect the device to the power supply and connect the power adapter to the mains electricity (as shown in Figure 4).

(i) Changing the port mode resets the ports to their default state: GPIO goes to its low state and the relay goes to its open state.

Save Settings Procedure:

- Press to cycle through and select a Port 1 or 2 mode function.
  See Table 1 for selected mode button color.

- Wait approximately 5 seconds until 'Save?' appears on LCD display

- Press again within about 5 seconds to save the selected mode, otherwise 'Unsaved' displays.

- A long press of over 5 seconds locks the saved mode – 'Locked' appears on the LCD display – or unlocks the locked mode – 'Unlocked' appears on the LCD display.

	8-Char Display Text	Terminal Block Connections		
		G	P1	P2
RS-232	RS-232	Ground	Rx	Tx
Crossed RS-232	RS-232X	Ground	Tx	Rx
RS-485	RS-485	Ground	Rx (+)	Tx (-)
IR	IR+IR	Ground	IR_1	IR_2
IO	IO+IO	Ground	IO_1	IO_2
Relay	Relay	Common	Normally Open	Normally Closed

Table 2: NP-52P Terminal Block Connections

6.1 Connecting via Ethernet

You can connect to the **NT-52P** via Ethernet using either of the following methods:

- Directly to the PC using a crossover cable (see Section 6.1.1)

- Via a network hub, switch, or router, using a straight-through cable (see Section 6.1.2)

> 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.

6.1.1 Connecting the Ethernet Port Directly to a PC

You can connect the Ethernet port of the **NT-52P** directly to the Ethernet port on your PC using a crossover cable with RJ-45 connectors.

> This type of connection is recommended during installation, following a factory reset that restores the default IP address.

After connecting 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 5.
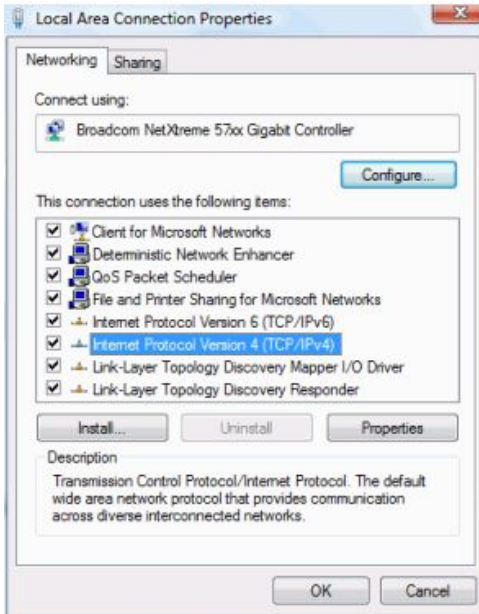
Figure 5: Local Area Connection Properties Window

4. Highlight **Internet Protocol Version 4 (TCP/IPv4)** and click **Properties**.
    The Internet Protocol Properties window relevant to your IT system appears
    as shown in Figure 6 or Figure 7.
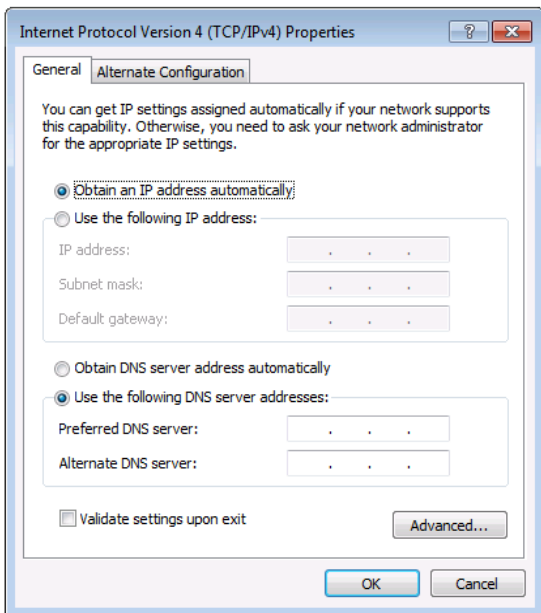
Figure 6: Internet Protocol Version 4 Properties Window
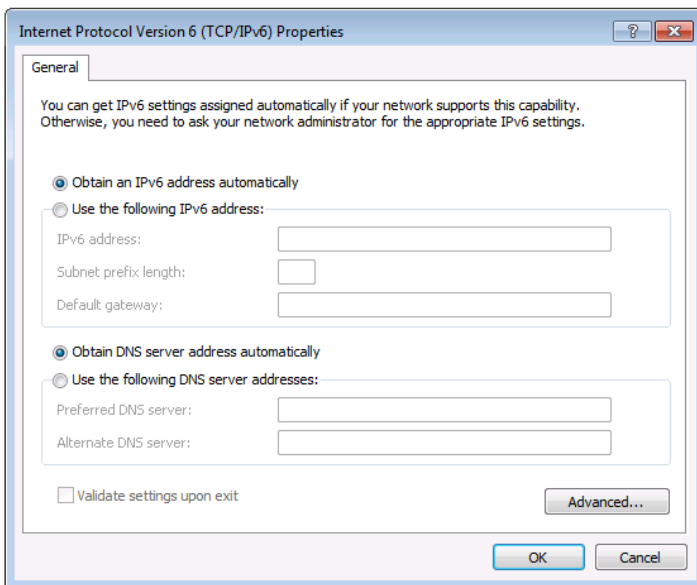
Figure 7: Internet Protocol Version 6 Properties Window

NT-52P - Connecting the NT-52P

5. Select **Use the following IP Address** for static IP addressing and fill in the details as shown in <u>Figure 8</u>.

   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.
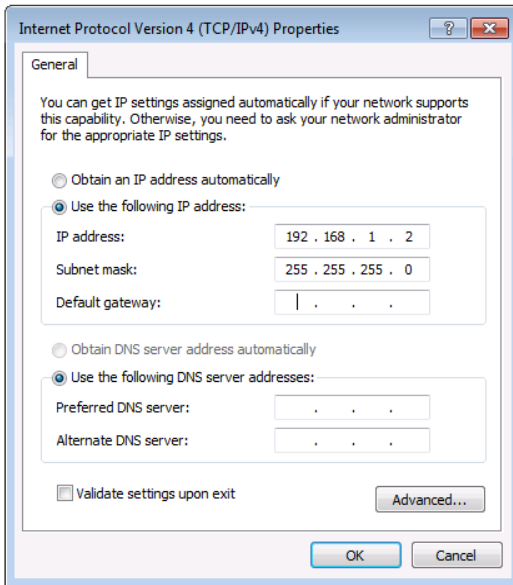
Figure 8: Internet Protocol Properties Window

6. Click **OK**.

7. Click **Close**.

6.1.2   Connecting the Ethernet Port via a Network Hub or Switch

You can connect the Ethernet port of the **NT-52P** to the Ethernet port on a network hub or switch using a straight-through cable with RJ-45 connectors.

6.1.3 Connecting an RS-232/RS-485 Controlled Device

To connect an RS-232/RS-485 device:

- Following the Save Settings Procedure, set and save **RS-232** or **RS-232X** or **RS-485** in Mode 1 or Mode 2.

- Connect the serial-controlled device to the configured port 1 or 2 terminal block, according to the connections shown in Table 2.

- When RS-232 device connecting cable needs to be wired-crossed, such as using straight-through cable instead of crossed cable, press the Mode button until **RS-232X** displays in the LCD display and save the setting, to eliminate need for actual cable replacement.

- When RS-485 device is connected, set the right RS-485 termination mode as shown in Section 7.6.

6.1.4 Connecting an IR Device

To connect an IR device:

- Following the Save Settings Procedure, set and save **IR** in Mode 1 or Mode 2.

- Connect the IR device to the configured port 1 or 2 terminal block, P1 or P2 sub-port, according to the connections shown in Table 2.

6.1.5 Connecting a GPIO Device

To connect a GPIO device:

- Following the Save Settings Procedure, set and save **GPIO** in Mode 1 or Mode 2.

- Connect the GPIO device to the configured port 1 or 2 terminal block, P1 or P2 sub-port, according to the connections shown in Table 2.

6.1.6 Connecting a Relay Controlled Device

To connect a relay-controlled device:

- Following the Save Settings Procedure, set and save **Relay** in Mode 1 or Mode 2.

  Connect the relay-controlled device to the configured port 1 or 2 terminal block, Common pin and either Normally Open or Normally Closed pin per needed operation mode, according to the connections shown in Table 2.

7 Remote Operation via the Web UI

The embedded Web UI can be used to remotely operate the **NT-52P** using a Web browser and an Ethernet connection.

Before attempting to connect:

- Perform the initial configuration in Section 5.1 and connecting via Ethernet in Section 6.1

- Ensure that your browser is supported (see Section 9)

7.1 Browsing the Web UI

To browse the Web UI:

1. Open your Internet browser. Type the IP address or host name of the device (see Section 5.1) in the Address bar of your browser.

The Loading page appears followed shortly by the General Info page shown in Figure 9.

The General Info page displays the following:

- Model Name

- Firmware version

- Device serial number

- Web UI version
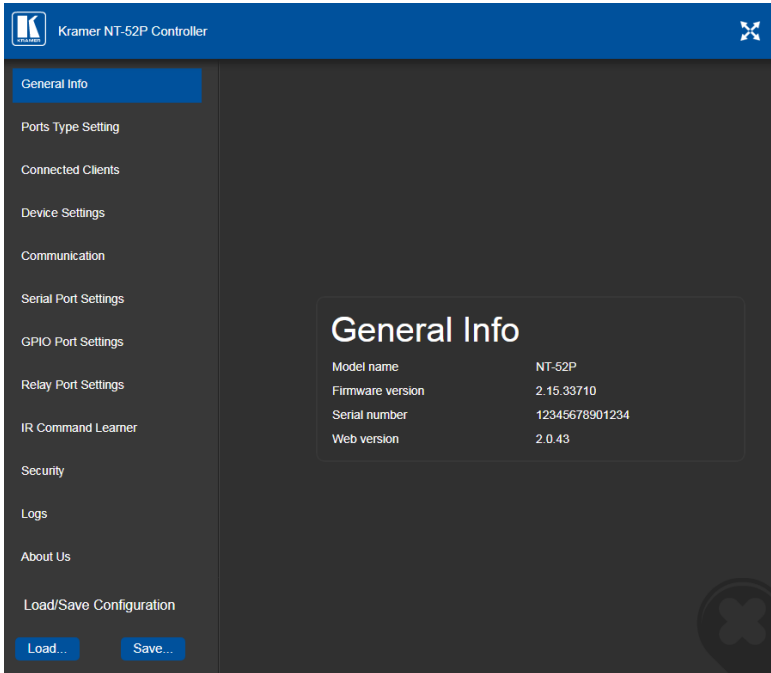
Figure 9: General Info Page

Loading and Saving Configurations

Loading and saving configurations is used for duplicating multiple device definitions for easy system configuration. The configurations are loaded and saved to a local PC. Load and save is performed using the buttons at the bottom left-hand side of the screen for all pages displayed.

To load a configuration:

1. Click **Load**.
   The Explorer window opens.

2. Browse to the required file.

3. Select the required file and click **Open**.
   The device is configured according to the saved preset.

To save the current configuration:

1. Configure the device as required.

2. Click **Save**.
   The Save File window opens.

3. Browse to the required location to which to save the file.

4. Enter the required name for the saved preset.

5. Click **OK**.
   The current configuration is saved.

   When using Chrome, the file is automatically saved in the Downloads folder.

The following parameters are saved to the configuration file:

UI Page	Parameter
Device Settings (Figure 7.4)	Model Name Time Zone Daylight Savings Time mode Use Time Server mode Time Server Address Sync Every Day time
Communication (Figure 7.5)	UDP Port TCP Port
Serial Port Setting (Figure 7.6)	Serial Port Protocol IP Port TCP Keep Alive Parity Data Bits Baud Rate Stop Bits Send Replies to New Client by Default
GPIO Port Settings (Figure 7.7)	GPIO Port Trigger Type Pull-up Resistor Threshold VDC Range Min Threshold VDC Range Max Maximum Reported Steps

7.2 Setting the Port Types

The Ports Type Setting matrix displays the current port mode and locking state
settings, as set via the front panel buttons.

To set the port mode:

- Click the table at the intersection of the port and the desired mode.
  The selected table cell turns blue.

- To lock or unlock the setting, click the Locked or Unlocked port button.
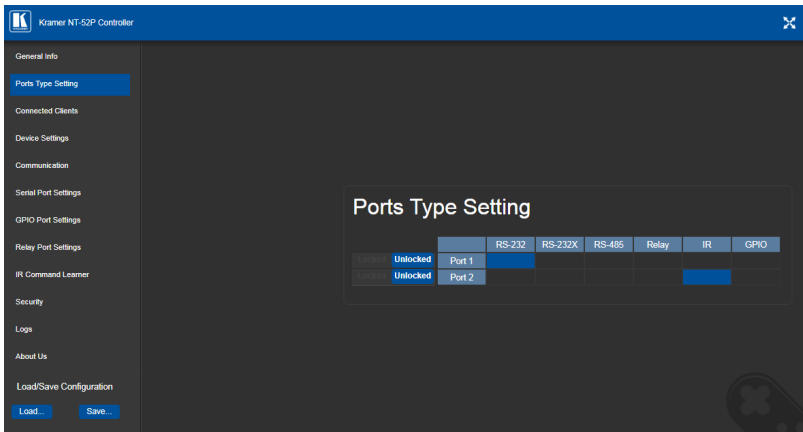
Figure 10: Ports Type Setting Page

The text on the LCD displays can indicate different configurations set using
the Web UI.

7.3 Displaying Connected Clients

The Connected Clients page (Figure 11) allows you to view the following details of
any client devices connected via Ethernet to the **NT-52P**:

- IP address

- The port it is connected to

- Method of connection

- Whether or not Send Replies is enabled for the port
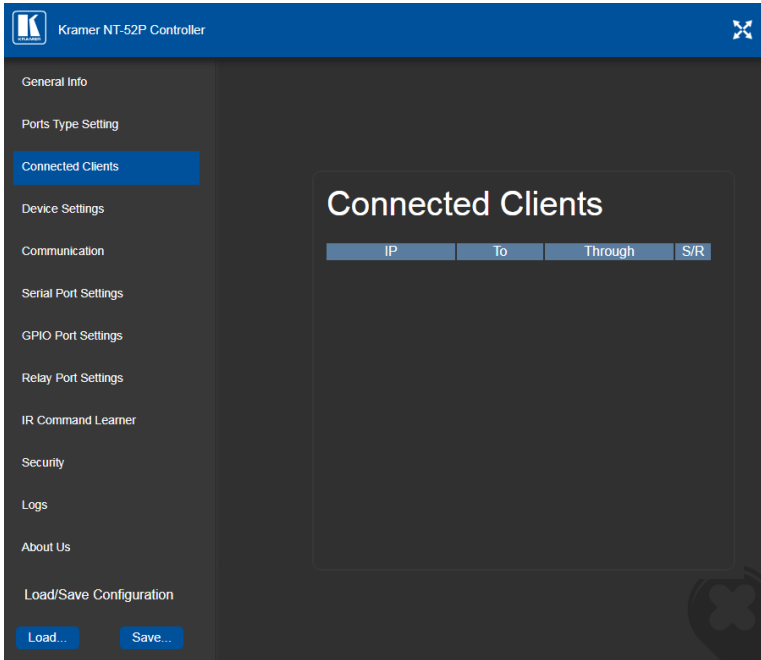
Figure 11: Connected Clients Page

7.4 Setting Device Name and Time Functions

The Device Settings page (Figure 12) allows you to view the model name and time server status. You can also modify the following fields:

- Device name

- Device time, date, and time zone

- Use a timeserver to set the time and date automatically using a (if the device is connected to the Internet), including the Time Zone and daylight savings time
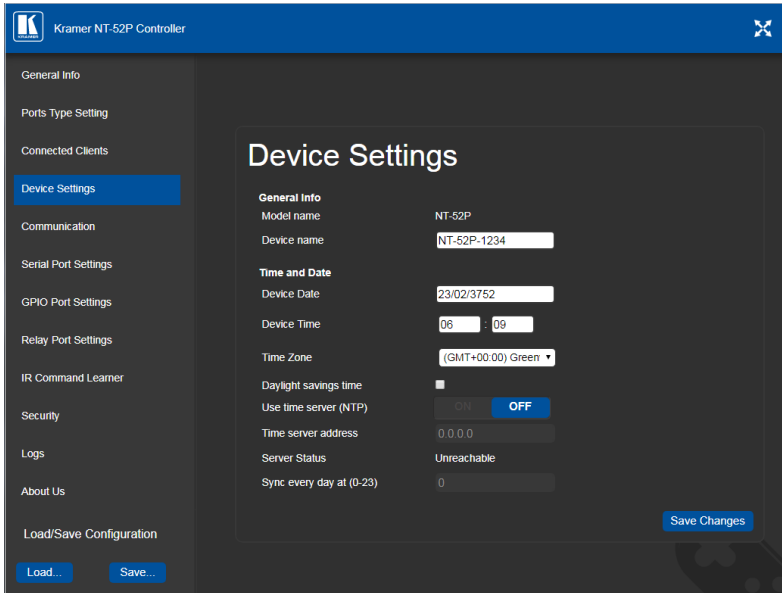
Figure 12: Device Settings Page

The **NT-52P** has a built-in clock that can synchronize with a Time Server if required.

To enable Time Server synchronization:

1. Browse to the Device Settings page by clicking Device Settings.
   The Device Settings page is displayed as shown in Figure 12.

2. Click the Use Time Server **ON** button.

3. Enter the IP address of the Time Server.

4. Enter the time of day at which the **NT-52P** should synchronize with the Time Server.

5. Click **Save Changes**.

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7.5 Setting Communication Parameters

The communication page allows you to:

- Turn DHCP for the device on and off

- Edit the IP settings for static IP addressing

The default IP address setting for the device is DHCP.
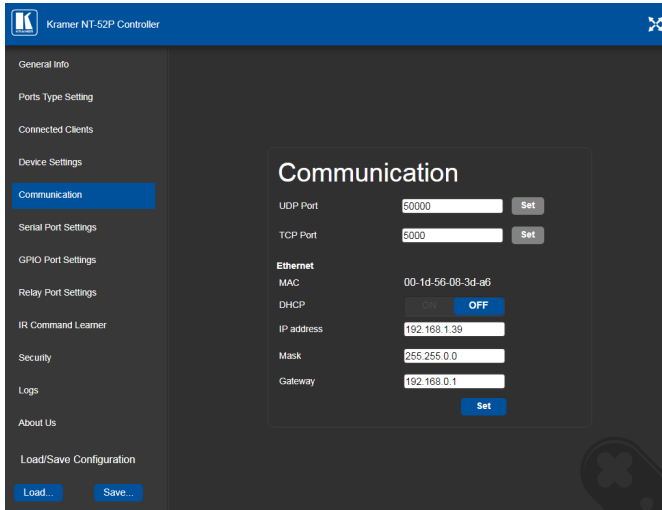
Figure 13: Communication Page

After modifying any of the IP settings, click **Set** to save the changes.

7.6 Setting Serial Port Parameters

The Serial Port Settings page differs according to the selected port type and allows you to:

- Select the serial port

- Set the following Ethernet parameters for each selected serial port:

  - Select TCP or UDP

  - IP port label

  - Enable or disable RS-485 termination

- TCP keep alive time – 0-3600sec (default 60sec) internal time, after which detected idle connection is disconnected

- Set the following serial parameters for each serial port:

  - Parity

  - Data bits

  - Baud rate

  - Stop bits

- Select whether or not to send replies on the port to the new client
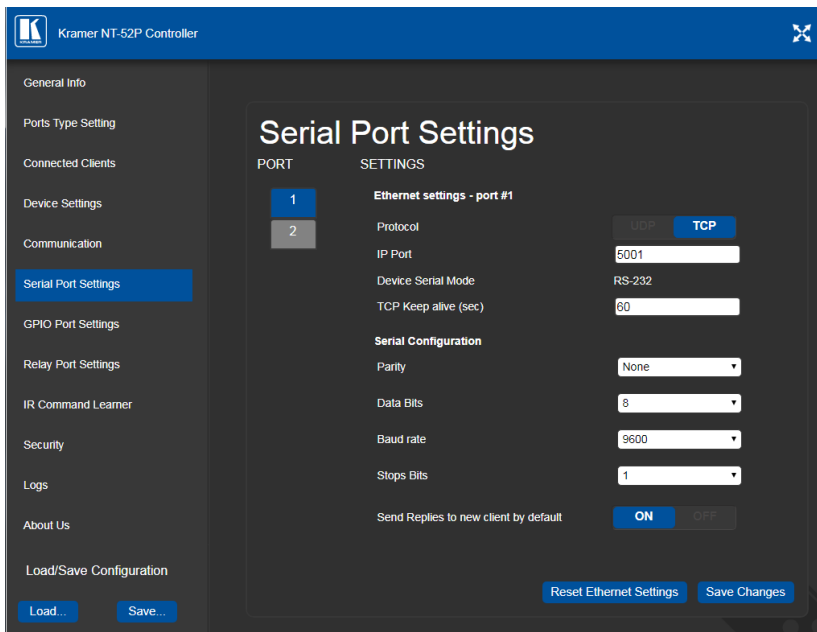
Figure 14: Serial Port Settings Page – RS-232 Port Type

To toggle RS-485 termination:

- Verify that an RS-485 port type is selected (see [Section 7.2](#)) and click to enable or disable termination.
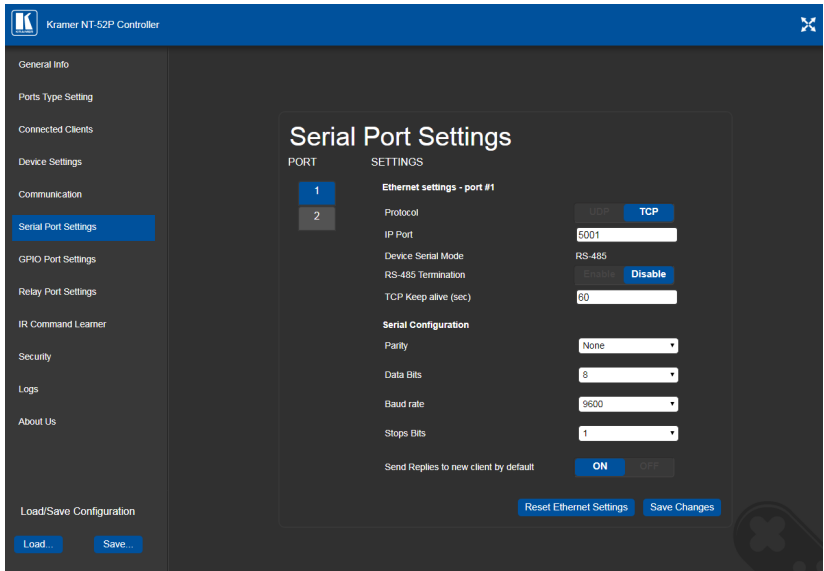
Figure 15: Serial Port Settings Page – RS-485 Port Type

7.7   Setting GPIO Port Parameters

GPIO ports are used to connect and control hardware devices to the **NT-52P** such as sensors, switches and LED indicators that input and output digital signals and input analog signals.
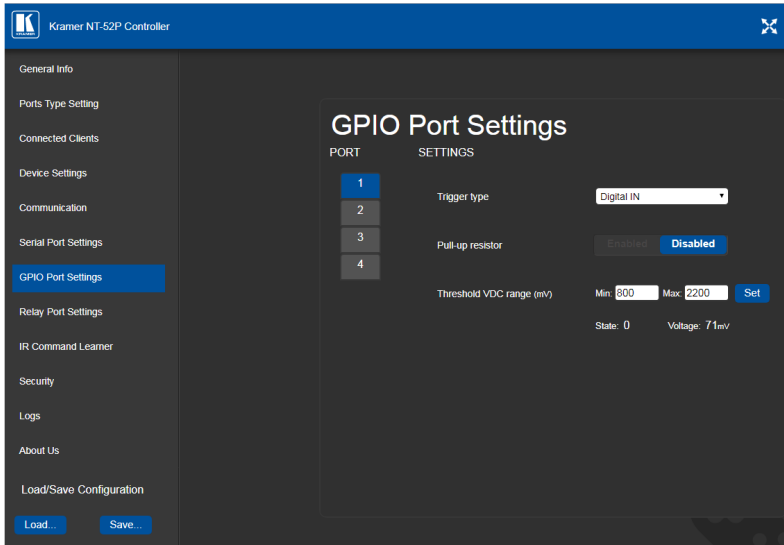
Figure 16: GPIO Port Settings Page

The GPIO Port Setting page allows you to configure the following for each selected GPIO port:

- Trigger type—digital input, digital output, or analog input

- Enable and disable the pull-up resistor for the digital input and output

- Set the threshold trigger voltage range for the digital input

- Set the current status for the digital output signal to high or low

- Set the maximum number of reported steps for the analog input

- Read—Press to read the state of the port

- State—Displays the digital state of the port, either 1 (high) or 0 (low)

GPIO sub-port states are displayed according to the mode settings of their associated port.

The default parameter settings change depending on which trigger type is selected.

7.7.1 Setting Digital In Trigger Parameters
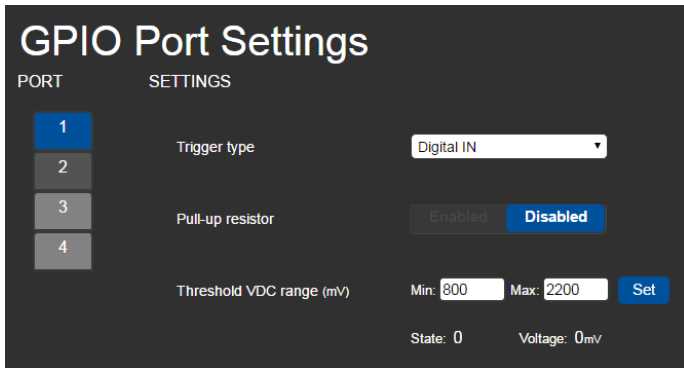
Figure 17: GPIO Port Settings Page Digital IN

Set the trigger type to Digital In (default). With this selection, the digital input trigger mode reads the digital input of an external sensor device that is connected to the GPIO port. It detects high (upon passing Max. threshold from Low state, default 2.2V) or low (upon passing Min threshold from High state, default 0.8V) port states according to the user defined voltage threshold levels:

- Pull-up resistor enabled (default)
  Detects an open circuit as High, or a short to ground as Low. This is suitable for example, for a pushbutton switch (connecting one terminal of the switch to ground, and the other to the input) or for an alarm closing a circuit that activates a series of actions.
  When the pull-up is enabled, the port state is high and to be triggered it must be pulled low by the externally connected sensor.

- Pull-up resistor disabled
  Suitable, for example, for a high-temperature alarm that exceeds the maximum voltage threshold.
  When disabled, the port state is low and to be triggered it must be pulled high by the externally connected sensor.

7.7.2   Setting Digital Out Trigger Parameters
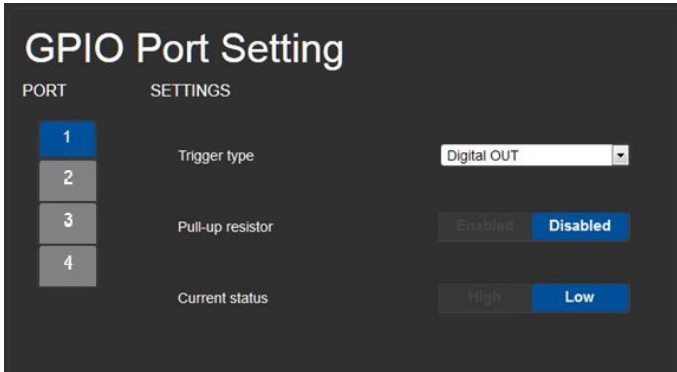
Figure 18: GPIO Port Settings Page Digital OUT

Set the trigger type to Digital Out. With this selection, the external device, (for example, an electric blind) is controlled by the **NT-52P**.

When selecting the Digital Out trigger type, the warning popup shown in Figure 19 is displayed.
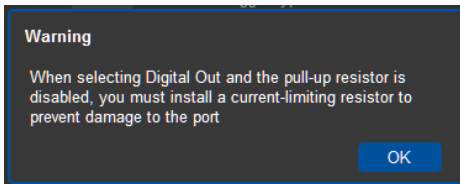
Figure 19: Digital Out Selection Warning Popup

The digital output mode function is defined by the pull-up resistor setup:

- Pullup resistor enabled:
  The port is used for controlling external devices such as room or light switches. The external source device determines the voltage output; the maximum voltage is 30V DC and the maximum current is 100mA.

Ensure that the current in this configuration does not exceed 100mA!

When enabled, the port state is high by default. For the state to be low, you must click Low from the Current Status.

- Pullup resistor disabled (default):
  The port can be used for controlling devices that accept a TTL signal such as for powering LEDs. The voltage output is TTL positive logic: open: ~ 3.5V; closed: ~ 0.3V.

When disabled, the port state is low by default and to set it high, you must click High from the Current Status.

7.7.3 Setting Analog In Trigger Parameters
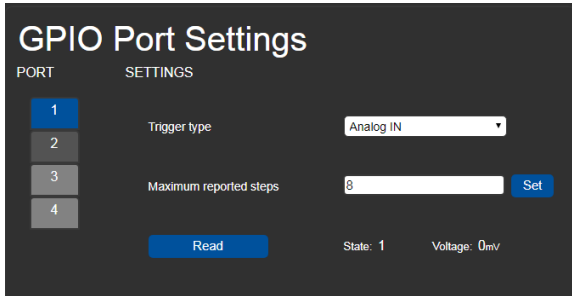
Figure 20: GPIO Port Settings Page Analog IN

Set the trigger type to Analog In. With this selection, the port is triggered by an analog external device, such as, a volume control device. The trigger is activated once when the detected voltage is within 0 to 30V DC voltage range.

You can select the number of steps, from 1 to 100 (default 8), into which the analog input signal is divided. The voltage of each step is dependent on the number of steps selected. Individual step voltage equals 30V divided by the number of steps.

When selecting the Analog In trigger type, the Pullup resistor and Threshold settings are disabled.

7.8 Setting Relay Port Status

The Relay Port Settings page allows you to turn the relay on and off to control relay-driven devices such as shades, projection screens and lighting systems, for each selected relay port.
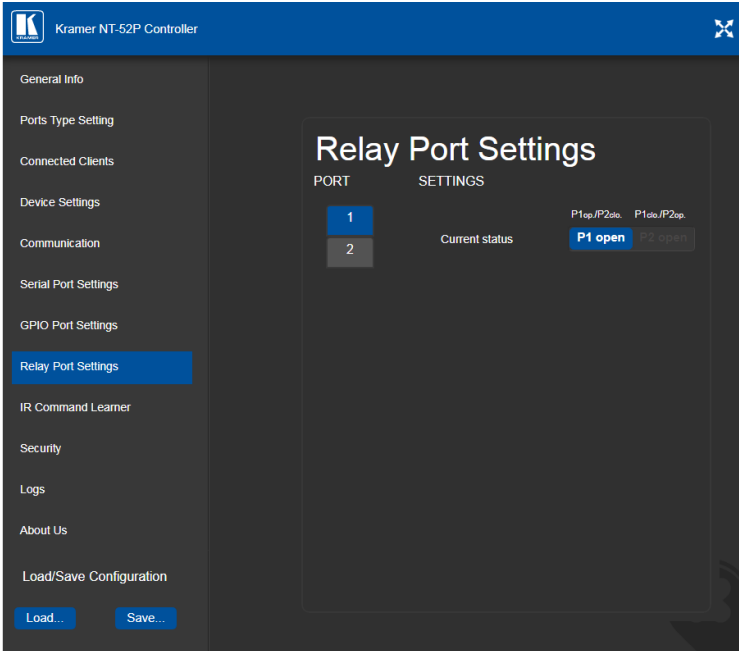
Figure 21: Relay Port Settings Page

The relay ports have the following characteristics:

- Rated at 30V DC and 1A

- Default state of normally open

- A non-latching relay function, that is, the contact is left open when unpowered or on power up state. This means that if a relay is closed and power is lost, the relay returns to its default state. To return it to its pre-power loss state, the setting must be changed using either the Web UI or a Protocol 3000 command

To close a relay, (for example, relay 2):

1. On the Relay Port Setting page, click Port button 2.
    The current relay status of port 2 is shown to the right of the button.

2. Click Close.
    The relay closes, the button changes color, and the port 2 white activity LED on the front panel lights. See Table 1 for more information.

7.9   Configuring IR Command Learning

The IR Command Learner page allows you to teach the **NT-52P** IR commands. These can be saved for later use.

> ⓘ While learning is in progress, the two blue and white activity LEDS of both ports light and the **NT-52P** is not available for normal operation.
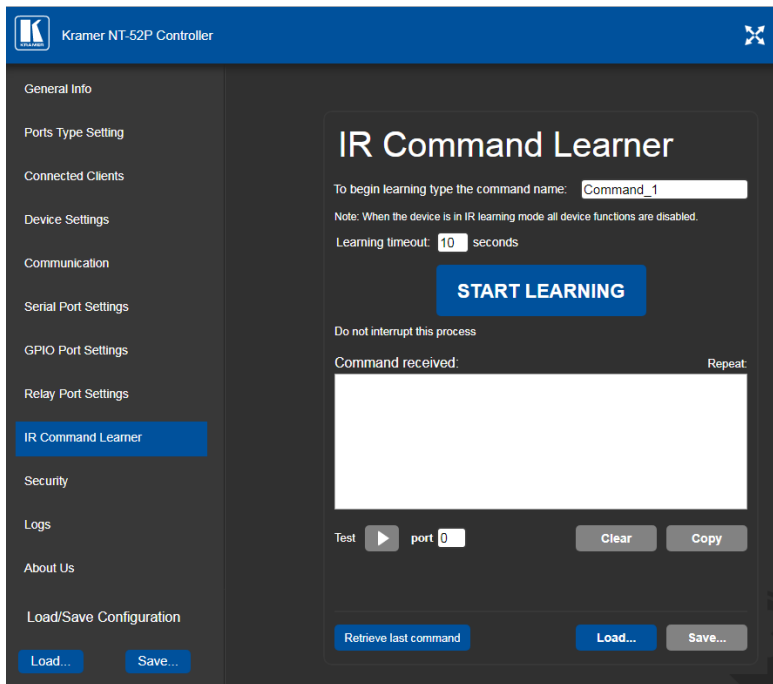
Figure 22: IR Command Learner Page

Feature	Function
Command Name Field	Enter the required name for the command
Learning Timeout	Set the time to elapse before the learning mode is exited if no command is received
Start Learning Button	Press to start the learning process. **Note**: While learning is in progress, the four IR Out LEDS light and the **NT-52P** is not available for normal operation.
Command Received Window	Displays the command string received during the process. This command can be copied/pasted to another application
Test Button and Port Selection Spinner	Select the port on which to test the learned command and press the Test button to start the test
Retrieve Last Command Button	Press to retrieve that last command learned
Clear/Copy Buttons	Press to clear or copy the command received
Load/Save Buttons	Press Load to retrieve a previously saved command. Press Save to save the current command

7.10   Activating Security

The Security page allows you to turn logon authentication on or off.
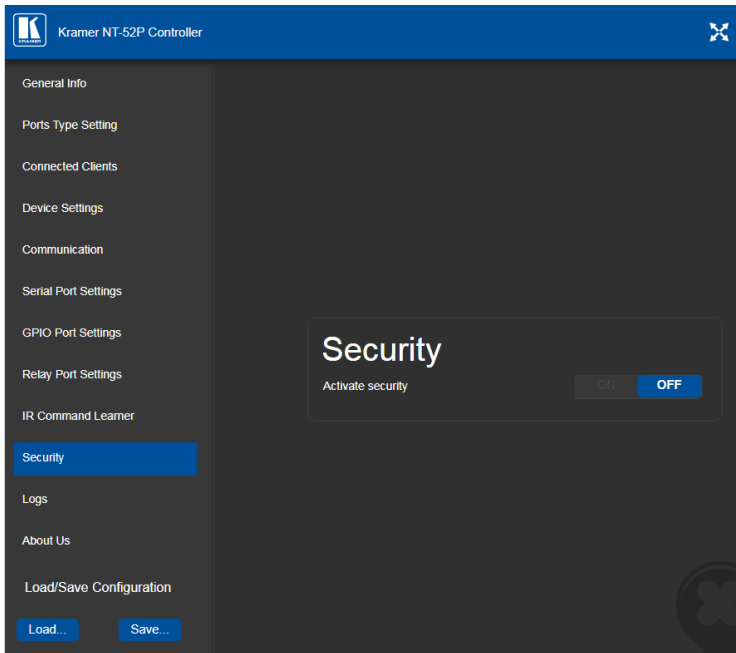
Figure 23: Security Page

When security is on, access to the Web UI is granted only on submission of a valid user and password. The default user ID is **Admin** and the password is **Admin**.

To activate Web UI security:

1. On the Security page, click ON.

    The confirmation popup is displayed as shown in Figure 24.
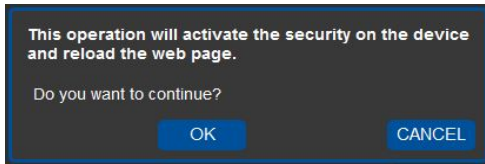
Figure 24: Security Confirmation Popup

2. Click **OK**.

    The Authentication Required popup is displayed as shown in Figure 25.
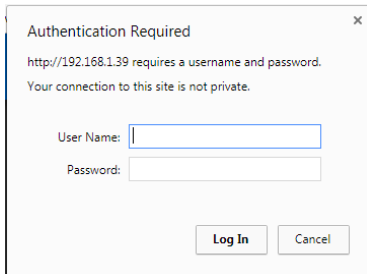
Figure 25: Authentication Required Popup

3. Enter the default username and password.

4. Click **OK**.

5. Wait until the Web UI has reloaded. Click the Security page button.

    The page show in Figure 26 is displayed.
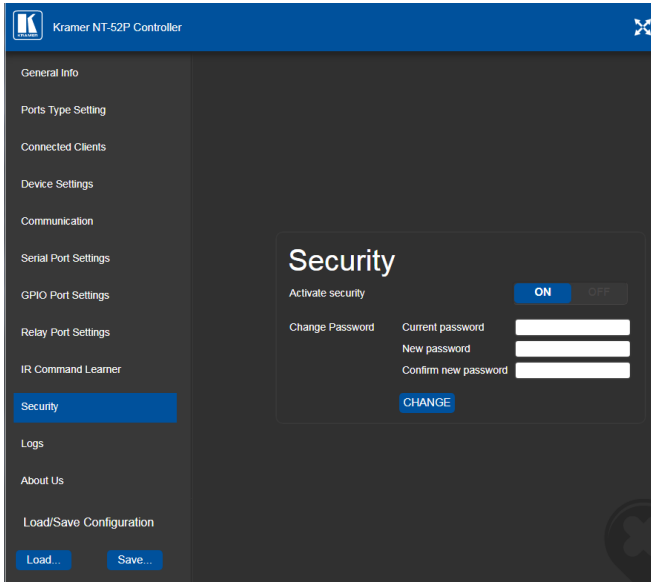
Figure 26: Security Activated Page

6. If required, click **OFF** to turn security off, or change the password and click **Change**.

7.11 Using the Logs Page

The Logs page allows you to:

- View current logs

- Configure the logs

- Filter the logs

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Figure 27: Logs Page

The display may not update automatically. Click Refresh to update the display.

Use the Log Filter check-boxes to select which events to display from the log. Use the Log Config check-boxes to select which events are recorded.

7.12 Kramer Information

The About Us page displays the Web UI version and the Kramer company details.

Figure 28: About Us Page

NT-52P - Remote Operation via the Web UI
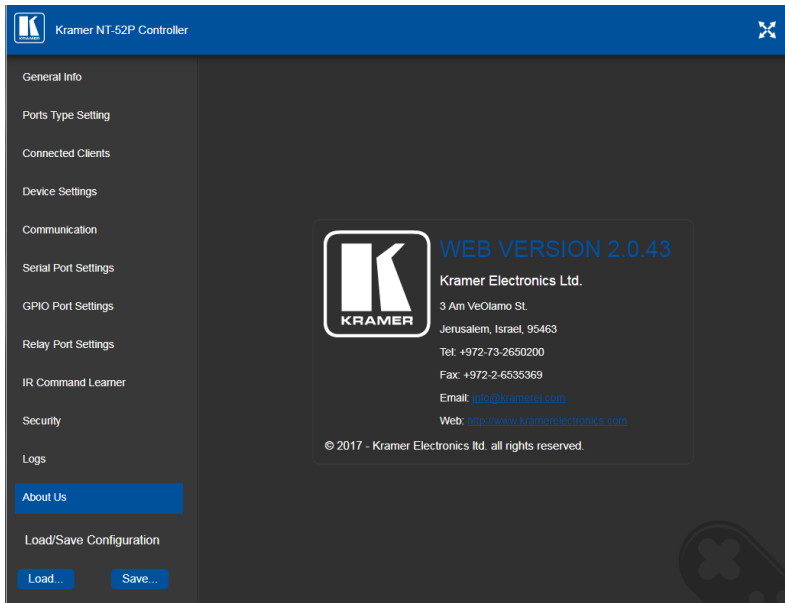
8 Using NT-52P Operations

This section explains how to use IR learning, reset the device and upgrade device firmware.

8.1 IR Learning

At the start and end of learning a message is sent to all attached clients.

To perform IR learning, the IR remote control must be approximately five to seven centimeters (2" and 2.7") from the **NT-52P** front panel.

While learning is in progress, the **NT-52P** is not available for normal operation.

To teach the NT-52P an IR command:

1. Put the **NT-52P** in IR Learning mode either by sending the Protocol 3000 command, (see Section 11.2) or by using the Web pages, (see Section 7.9). The device is no longer in normal operation, and the **NT-52P** sends an IR Learning start message to all connected clients.

2. Using the IR remote control, send the required command to the **NT-52P**. The **NT-52P** processes the IR detected signal and generates the signal-associated pronto code to be used by the driver. When using the Web page for IR learning, the **NT-52P** also displays the learned command code on screen. (This command can be copied/pasted to other applications, for example, control software when creating a driver.) The **NT-52P** then sends the IR Learning stop message to all connected clients to indicate return to normal operation.

3. Optional—Test the command if using the IR Learning Web page. Test results are displayed on screen.

4. Save the learned command.

8.2   Resetting to the Factory Default Settings

To reset the device to its factory default settings:

1. Turn off the power to the device.

2. Press and hold the Reset button on the front panel.

3. Turn on the power to the device while holding down the Reset button for a few seconds.

4. Release the button.
   The device is reset to the factory default settings.

8.3   Upgrading the Firmware

For instructions on upgrading the firmware see the "*Kramer K-Upload User Manual*".

9 Technical Specifications

Ports	2 RS−232/IR universal−IO ports on 3−pin terminal blocks each selectable as one of:	1 bidirectional RS-232 serial 1 crossed bidirectional RS-232 serial 1 bidirectional RS-485 serial 2 IR emitters 2 GPI/O 2 relays
	1 LAN	On an RJ-45 connector
	1 IR sensor	For IR learning
	1 micro USB connector	For programming
Serial	Serial port baud rates	1200, 2400, 4800, 9600, 19200, 38400, 57600, 15200bps
	RS-232 communication	Transparent up to 115200bps
IR	IR emitter cable range	80m (260ft)
	IR output frequencies	20kHz to 1.2MHz
	IR input frequencies	20kHz to 60kHz
Data and Connections	Maximum data handling of device	Up to 150kbps (summed on all ports, see Section 9.1)
	Maximum simultaneous IP-client connections	40
Power	Power consumption	12V DC, 220mA
Cooling	Convection ventilation	
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	Vibration	ISTA 1A in carton (International Safe Transit Association)
	Safety	CE
	Environmental	RoHs, WEEE
General	Enclosure type	Aluminum
	Net dimensions	12cm x 7.15cm x 2.44cm (4.7" x 2.8" x 1.0") W, D, H.
	Net weight	0.18kg (0.4lbs) approx.
	Shipping dimensions	15.7cm x 12cm x 8.7cm (6.2" x 4.7" x 3.4") W, D, H.
	Shipping weight	0.82kg (1.76lbs) approx.
Accessories	Included	12V DC power adapter, bracket set
	Optional	RK-3T 19" rack adapter, IR and serial cables – see www.kramerav.com/product/NT-52P
Specifications are subject to change without notice at www.kramerav.com		

9.1　Data Handling Performance

The **NT-52P** is designed to support mainly AV-relevant RS-232 communication.

These devices must have overall data bandwidth limits high enough in most AV installations to support the required communication bandwidth.

In extremely demanding cases, we recommend that you take into account the bandwidth limitations.

The total sustained data bandwidth that each device can handle for all ports simultaneously is 150kbps.

9.2　Example Bandwidth Calculation

The **NT-52P** has two serial ports. Each serial port can support up to:

- 150kbps / 2 = 75kbps

If each protocol command is 100 bytes, (that is, 800 bits), you can safely send and receive a minimum of 96 commands per second on each serial port. This is shown using the following calculation:

(150kbps * 1024) / 800 bits / 2 = 96

The same calculation applies to all devices. A similar calculation applies when fewer ports are used at the same time where a higher bandwidth per port can be achieved.

In critical applications requiring a lossless data transfer, we recommend that communication on all the other ports is stopped when making a long file transfer (for example, when performing a firmware upgrade via one of the serial ports).

10   Default Parameters

RS-232	
Baud Rate:	115200
Data Bits:	8
Stop Bits:	1
Parity:	None

The **NT-52P** is dispatched from the factory with DHCP enabled and a random IP address. After performing a factory reset, the DHCP and the IP address are set to the values shown below.

Ethernet	
DHCP:	Off
IP Address:	192.168.1.39
Host Name:	NT-52P-xxxx where xxxx are the last four digits of the serial number of the device
Subnet Mask:	255.255.0.0
Gateway:	192.168.0.1
Maximum Simultaneous Connections:	40
TCP Port 1:	5001
TCP Port 2:	5002
UDP Port:	50000

Default Logon Authentication

Web UI Access	
User name:	Admin
Password:	Admin

11 Kramer Protocol 3000

The **NT-52P** can be operated using the Kramer Protocol 3000 serial commands. The command framing varies according to how you interface with the **NT-52P**. For example, 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:
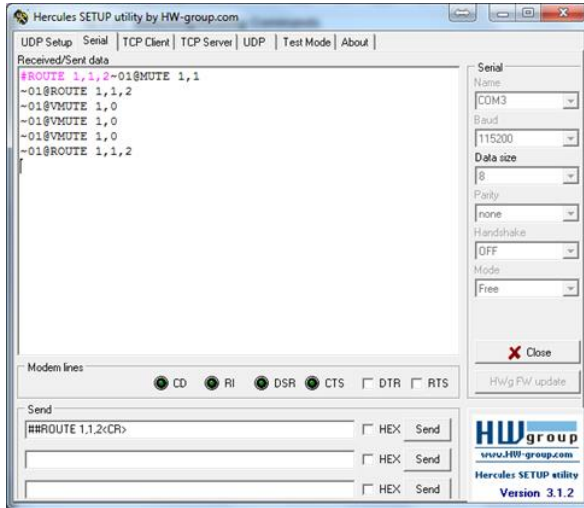
(i) The framing of the command varies according to the terminal communication software.

- K-Touch Builder (Kramer software):
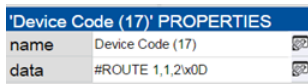
- K-Config (Kramer configuration software):
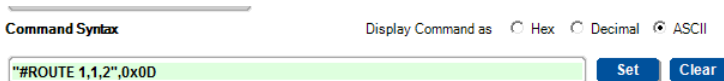
(i) All the examples provided in this section are based on using the K-Config software.

You can enter commands directly using terminal communication software (e.g., Hercules) by connecting a PC to the serial or Ethernet port on the **NT-52P**. 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.

11.1 Kramer Protocol 3000 – Syntax

11.1.1 Host Message Format

Start	Address (optional)	Body	Delimiter
#	*Destination_id@*	**Message**	CR

11.1.1.1 Simple Command

Command string with only one command without addressing:

Start	Body	Delimiter
#	**Command** SP *Parameter_1,Parameter_2,…*	CR

11.1.1.2 Command String

Formal syntax with commands concatenation and addressing:

Start	Address	Body	Delimiter
#	*Destination_id@*	**Command_1** *Parameter1_1,Parameter1_2,…*| **Command_2** *Parameter2_1,Parameter2_2,…*| **Command_3** *Parameter3_1,Parameter3_2,…*|…	CR

11.1.2 Device Message Format

Start	Address (optional)	Body	Delimiter
~	*Sender_id@*	**Message**	CR LF

11.1.2.1 Device Long Response

Echoing command:

Start	Address (optional)	Body	Delimiter
~	*Sender_id@*	**Command** SP *[Param1 ,Param2 …]* result	CR LF

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

11.1.3   Command Terms

Command

A sequence of ASCII letters ('A'-'Z', 'a'-'z' and '-').

Command and 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**.

Note: 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 (Optional, for K-NET)

K-NET Device ID followed by '@'

Query sign

'?' follows some commands to define a query request.

Message closing character

`CR` – For host messages; carriage return (ASCII 13)

`CRLF` – For device messages; carriage return (ASCII 13) + line-feed (ASCII 10)

Command chain separator character

When a message string contains more than one command, a pipe ('|') character separates each command.

Spaces between parameters or command terms are ignored.

11.1.4 Entering Commands

You can directly enter all commands using a terminal with ASCII communications software, such as HyperTerminal, Hercules, etc. Connect the terminal to the serial or Ethernet port on the Kramer device. To enter `CR` press the Enter key. (`LF` is also sent but is ignored by command parser).

For commands sent from some non-Kramer controllers like Crestron, some characters require special coding (such as, /X##). Refer to the controller manual.

11.1.5 Command Forms

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

11.1.6 Chaining Commands

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 once, at the beginning of the string and at the end.

Commands in the string do not execute until the closing character is entered.

A separate response is sent for every command in the chain.

11.1.7 Maximum String Length

64 characters

11.2 Kramer Protocol 3000 – Command List

Command	Description
#	Protocol handshaking
BUILD-DATE	Read device build date
COM-ROUTE	Set/get tunneling port routing
COM-ROUTE-ADD	Add communication route tunnel connection
COM-ROUTE-REMOVE	Remove communication route tunnel connection
DEL	Deletes a file
DIR	List files
ETH-PORT	Sets protocol port
ETH-TUNNEL	Get parameters for open tunnels
FACTORY	Restart the machine with the default
FORMAT	Format the file system
FS-FREE	Print free file space
GET	Get file content
GPIO-CFG	Set/get HW GPIO configuration
GPIO-STATE	Set/get HW GPIO state
GPIO-STEP	Set/get HW GPIO step
GPIO-THR	Set/get HW GPIO threshold voltage
GPIO-VOLT	Get HW GPIO voltage level
HELP	List of commands
IR-LEARN	Send IR learning command
IR-SND	Send IR command to port
IR-STOP	Stop IR command to port
LOGIN	Set/get protocol permission
LOGOUT	Demotes the terminal security level to minimum
MACH-NUM	Set device ID
MODEL	Read device model
NAME	Set/get device (DNS) name
NAME-RST	Reset device name to default
NET-DHCP	Set/get DHCP mode
NET-GATE	Set/get gateway IP
NET-IP	Set/get device IP address
NET-MAC	Get the MAC address
NET-MASK	Set/get the device subnet mask
PASS	Set/get the password for login level
PORT-LOCK	Set/get the port lock state
PORT-TYPE	Set/get the port type
PROT-VER	Get protocol version
RELAY-STATE	Set/get relay state
RESET	Reset device
SECUR	Set/get current security state
SN	Get device serial number
TIME	Set/get the time
TIME-LOC	Set/get local time offset from UTC/GMT

Command	Description
TIME-SRV	Set/get time synchronization from server
UART	Set/get a port serial parameters
VERSION	Get firmware version number

11.3   Kramer Protocol 3000 – Detailed Commands

This section lists the detailed commands applicable to the **NT-52P**.

11.3.1

Functions		Permission	Transparency
Set:	#	End User	Public
Get:	**-**	-	-
Description		**Syntax**	
Set:	Protocol handshaking	#CR	
Get:	-	-	
Response			
~nn@SP OK CR LF			
Parameters			
Response Triggers			
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			

11.3.2 BUILD-DATE

Functions		Permission	Transparency
Set:	-	-	-
Get:	BUILD-DATE?	End User	Public

Description		Syntax
Set:	-	-
Get:	Get device build date	#BUILD-DATE?`CR`

Response
~`nn`@BUILD-DATE`SP`*date*`SP`*time*`CR LF`

Parameters
date – Format: YYYY/MM/DD where YYYY = Year, MM = Month, DD = Day
time – Format: hh:mm:ss where hh = hours, mm = minutes, ss = seconds

Response Triggers

Notes

K-Config Example
"#BUILD-DATE?",0x0D

11.3.3 COM-ROUTE

Functions		Permission	Transparency
Set:	`COM-ROUTE`	Administrator	Internal
Get:	`COM-ROUTE?`	End User	Internal

Description		Syntax
Set:	Set tunneling port routing	`#COM-ROUTE`[SP] `COM_Num,portType,ETHPort,ETH_rep_en,TCP_keep_alive_timing`[CR]
Get:	Get tunneling port routing	`#COM-ROUTE?`[SP]`COM_Num`[CR]

Response
~[nn]`@COM-ROUTE`[SP]`COM_Num,portType,ETHPort,ETH_rep_en,TCP_keep_alive_timing`[CR][LF]

Parameters
`COM_Num` – machine dependent `portType` – `1 (UDP)`, `2 (TCP)` `ETHPort` – TCP/UDP port number `ETH_rep_en` – `1` (COM port sends replies to new clients), `0` (COM port does not send replies to new clients) `TCP_keep_alive_timing` – `0-3600` seconds – every x seconds the device sends an empty string to TCP client (`"/0"`)

Response Triggers

Notes
This command sets tunneling port routing. Every com port can send or receive data from the ETH port. All com ports can be configured to the same ETH port.

K-Config Example
Set COM1 as RS-232, port 1, Eth port 1, send replies, keep alive 30 seconds: `"#COM-ROUTE 1,1,1,1,30",0x0D`

11.3.4 COM-ROUTE-ADD

Functions		Permission	Transparency
Set:	`COM-ROUTE-ADD`	Administrator	Internal
Get:	-	-	-

Description		Syntax	
Set:	Add a communication route tunnel connection	`#COM-ROUTE-ADD`SP `ComNum,PortType,EthPort,EthRepEn,Timeout`CR	
Get:	-	-	

Response

~nn@`COM-ROUTE-ADD`SP`ComNum,PortType,EthPort,EthRepEn,Timeout`CR LF

Parameters

`ComNum` – machine dependent
`portType` – 1 (UDP), 2 (TCP)
`EthPort` – TCP/UDP port number
`EthRepEn` – 1 (COM port sends replies to new clients), 0 (COM port does not send replies to new clients)
`Timeout` – Keep alive timeout in seconds (1 to 3600)

Response Triggers

Notes

K-Config Example

Add COM1 port as TCP, port 1, Eth port 1, send replies, keep alive 30 seconds:
"`#COM-ROUTE-ADD 1,1,1,1,30`",0x0D

11.3.5 COM-ROUTE-REMOVE

Functions		Permission	Transparency
Set:	`COM-ROUTE-REMOVE`	Administrator	Internal
Get:	-	-	-

Description		Syntax	
Set:	Remove a communication route tunnel connection	`#COM-ROUTE-REMOVE`SP`ComNum`CR	
Get:	-	-	

Response

~nn@`COM-ROUTE-REMOVE`SP`ComNum`CR LF

Parameters

`ComNum` – machine dependent

Response Triggers

Notes

K-Config Example

Remove comm port 1:
"`#COM-ROUTE-REMOVE 1`",0x0D

11.3.6 DEL

Functions		Permission	Transparency
Set:	DEL	Administrator	Public
Get:	**-**	-	-

Description		Syntax
Set:	Delete file	#DEL`SP`file_name`CR`
Get:		

Response
~`nn`@DEL`SP`file_name`CR`

Parameters
file_name - name of file to delete (file names are case-sensitive)

Response Triggers

K-Config Example
Delete a file named "test":   "DEL test",0x0D

11.3.7 DIR

Functions		Permission	Transparency
Set:	DIR	Administrator	Public
Get:	**-**	-	-

Description		Syntax
Set:	List files in device	#DIR`CR`
Get:	-	-

Response
Multi-line: ~`nn`@DIR`CR LF`   file_name`TAB` file_size`SP`bytes,`SP`ID:`SP`file_id`CR LF`   `TAB`free_size`SP`bytes.`CR LF`

Parameters
file_name – name of file   file_size – file size in bytes. A file can take more space on device memory   file_id – internal ID for file in file system   free_size – free space in bytes in device file system

Response Triggers

K-Config Example
"DIR",0x0D

11.3.8 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`SP`portType,ETHPort`CR	
Get:	Get Ethernet port protocol	`#ETH-PORT?`SP`portType`CR	
Response			
`~`nn`@ETH-PORT`SP`portType,ETHPort`CR_LF			
Parameters			
portType – `1` (UDP), `2` (TCP) *ETHPort* – TCP/UDP port number			
Response Triggers			
K-Config Example			
Set ETH port 1 to UDP: "ETH-PORT 2,1",0x0D			

11.3.9 ETH-TUNNEL

Functions		Permission	Transparency
Set:	-	-	-
Get:	`ETH-TUNNEL?`	Administrator	Internal
Description		**Syntax**	
Set:			
Get:	Get parameters for open tunnels	`#ETH-TUNNEL?`SP`TunnelId`CR	
Response			
`~`nn`@ETH-TUNNEL`SP `TunnelId,ComNum,PortType,EthPort,EthIp,RemotPort,EthRepEn,Wired`CR_LF			
Parameters			
TunnelId – tunnel ID number: `1-64` (depends on number of tunnel connections), `*` (all tunnel connections) *ComNum* – UART number *portType* – `1` (UDP), `2` (TCP) *EthPort* – TCP/UDP port number *EthIp* – client IP address *RemotPort* – remote port number *EthRepEn* – `1` (COM port sends replies to new clients), `0` (COM port does not send replies to new clients) *Wired* – `1` (wired connection), `0` (not wired connection)			
Response Triggers			
Notes			
The response displays each tunnel in a separate line.			
K-Config Example			
"ETH-TUNNEL? 1",0x0D			

11.3.10 FACTORY

Functions		Permission	Transparency
Set:	FACTORY	End User	Public
Get:	-	-	-

Description		Syntax	
Set:	Reset device to factory default configuration	#FACTORY CR	
Get:	-	-	

Response
~nn@FACTORY SP OK CR_LF

Parameters

Response Triggers

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

11.3.11 FORMAT

Functions		Permission	Transparency
Set:	FORMAT	Administrator	Public
Get:	–	-	-

Description		Syntax	
Set:	Format file system	#FORMAT CR	
Get:	-	-	

Response
~nn@FORMAT SP OK CR_LF

Parameters

Response Triggers

Notes
Response could take several seconds until formatting completes

K-Config Example
"#FORMAT",0x0D

11.3.12 FS-FREE

Functions		Permission	Transparency
Set:	–	-	-
Get:	FS-FREE?	Administrator	Public
Description		**Syntax**	
Set:	-	-	
Get:	Get file system free space	#FS-FREE?`CR`	
Response			
~`nn`@FS_FREE`SP`*free_size*`CR_LF`			
Parameters			
free_size – free size in device file system in bytes			
Response Triggers			
K-Config Example			
"#FS-FREE?",0x0D			

11.3.13 GET

Functions		Permission	Transparency
Set:	-	-	-
Get:	GET	Administrator	Public
Description		**Syntax**	
Set:	-	-	
Get:	Get file	#GET`SP`*file_name*`CR`	
Response			
Multi-line: ~`nn`@GET`SP`*file_name*,*file_size*`SP`READY`CR_LF` *contents* ~`nn`@GET`SP`*file_name*`SP`OK`CR_LF`			
Parameters			
file_name – name of file to get contents *contents* – byte stream of file contents *file_size* – size of file (device sends it in response to give user a chance to get ready)			
Response Triggers			
K-Config Example			
Get a file named "test": "#GET test",0x0D			

11.3.14 GPIO-CFG

Functions		Permission	Transparency
Set:	`GPIO-CFG`	End User	Public
Get:	`GPIO-CFG?`	End User	Public

Description		Syntax
Set:	Set HW GPIO configuration	`#GPIO-CFG`SP `HwGpioNumber,HwGpioType,HwGpioDir,Pullup`CR
Get:	Get HW GPIO configuration	`#GPIO-CFG`SP `HwGpioNumber`CR

Response
~`nn`@GPIO-CFG SP `HwGpioNum,HwGpioType,HwGpioDir`CR LF

Parameters
`HwGpioNum` – hardware GPIO number: `1-n` `HwGpioType` – hardware GPIO type: `0` (analog), `1` (digital) `HwGpioDir` – hardware GPIO direction: `0` (input), `1` (output) `Pullup` – enable/disable pull-up: `0` (disable), `1` (enable)

Response Triggers

Notes

K-Config Example
Configure GPIO 2 to analog input with pullup disabled): "#GPIO-CFG 2,0,0,0",0x0D

11.3.15 GPIO-STATE

Functions		Permission	Transparency
Set:	GPIO-STATE	End User	Public
Get:	GPIO-STATE?	End User	Public

Description		Syntax
Set:	Set HW GPIO state	#GPIO-STATE[SP]HwGpioNumber,HwGpioState[CR]
Get:	Get HW GPIO state	#GPIO-STATE[SP]HwGpioNumber[CR]

Response

~[nn]@GPIO-STATE[SP]HwGpioNum,HwGpioState[CR][LF]

Parameters

HwGpioNum – hardware GPIO number (1-n)
HwGpioState – hardware GPIO state – see note below

Response Triggers

Notes

GPIO-STATE? can only be sent in digital out mode and the answer is 0 (low), 1 (high). In all other modes an error message is sent.
The device uses this command to notify the user of any change regarding the step and voltage in:
In digital mode the answer is 0 (low), 1 (high)
In analog mode the answer is 0 to 100

K-Config Example

Configure GPIO 2 to low state:
"#GPIO-STATE 2,0",0x0D

11.3.16 GPIO-STEP

Functions		Permission	Transparency
Set:	GPIO-STEP	End User	Public
Get:	GPIO-STEP?	End User	Public

Description		Syntax
Set:	Set HW GPIO step	#GPIO-STEP[SP]HwGpioNumber,Step[CR]
Get:	Get HW GPIO step	#GPIO-STEP[SP]HwGpioNumber[CR]

Response

~[nn]@GPIO-STEP[SP]HwGpioNumber,NumOfStep,CurrentStep[CR][LF]

Parameters

HwGpioNumber – HW GPIO number: 1-n
NumOfStep – the configuration step – see note below
CurrentStep – the actual step depending on the measured voltage

Response Triggers

Notes

In digital mode the response is 2
In analog mode the response is 1 to 100
In other modes an error is returned

K-Config Example

Set GPIO 2 step 1 to 50:
"#GPIO-STEP 2,1,50",0x0D

11.3.17 GPIO-THR

Functions		Permission	Transparency
Set:	`GPIO-THR`	End User	Public
Get:	`GPIO-THR?`	End User	Public

Description		Syntax
Set:	Set HW GPIO voltage levels	`#GPIO-THR`SP`HwGpioNumber,LowLevel,HighLevel`CR
Get:	Get HW GPIO voltage levels	`#GPIO-THR?`SP`HwGpioNumber`CR

Response
`~`nn`@GPIO-THR`SP`HwGpioNumber,LowLevel,HighLevel`CR LF

Parameters
`HwGpioNumber` – hardware GPIO number: `1-n` `LowLevel` – voltage `500` to `28000` millivolts `HighLevel` – voltage `2000` to `30000` millivolts

Response Triggers

Notes

K-Config Example
Set GPIO 1 voltage levels between 600mV to 15000mV: `"#GPIO-THR 1,600,15000",0x0D`

11.3.18 GPIO-VOLT

Functions		Permission	Transparency
Set:	-	-	-
Get:	`GPIO-VOLT?`	End User	Public

Description		Syntax
Set:		
Get:	Get voltage levels of HW GPIO	`#GPIO-VOLT?`SP`HwGpioNumber`CR

Response
`~`nn`@`**`GPIO-VOLT`**SP`HwGpioNumber,Voltage`CR LF

Parameters
`HwGpioNumber` – hardware GPIO number: `1-n` `Voltage` – voltage `0` to `30000` millivolts

Response Triggers

Notes
This command is not available in digital out mode

K-Config Example
`"#GPIO-VOLT? 1",0x0D`

11.3.19 HELP

Functions		Permission	Transparency
Set:	-	-	-
Get:	HELP	End User	Public
Description		**Syntax**	
Set:	-	-	
Get:	Get command list or help for specific command	1. `#HELP`CR 2. `#HELP`SP*COMMAND_NAME*CR	
Response			
1. Multi-line: ~nn@Device available protocol 3000 commands:CR LF*command,*SP *command...*CR LF 2. Multi-line: ~nn@HELPSP*command:*CR LF*description*CR LF USAGE:*usage*CR LF			
Parameters			
COMMAND_NAME – name of a specific command			
Response Triggers			
Notes			
To get help for a specific command use: HELPSPCOMMAND_NAMECR LF			
K-Config Example			
"#HELP",0x0D			

11.3.20 IR-LEARN

Functions		Permission	Transparency
Set:	IR-LEARN	End User	Public
Get:	-	-	-
Description		**Syntax**	
Set:	Send IR learning command	`#IR-LEARN`SP*CommandName,Timeout*CR	
Get:	-	-	
Response			
~nn@IR-LEARNSP*CommandName,IR_Status*CR LF			
Parameters			
CommandName – String: IR command name limited to 15 chars. Controlling device must send the correct name (whitespace or commas forbidden) *Timeout* – 1 to 60 (timeout in seconds) *IR_Status* – 0 (sent), 1 (stop), 2 (done), 3 (busy), 4 (wrong parameter), 5 (nothing to stop), 6 (start), 7 (timeout), 8 (error)			
Response Triggers			
K-Config Example			
Send the IR learning command volume up with a 3 second timeout: "#IR-LEARN vol_up,3",0x0D			

11.3.21 IR-SND

Functions		Permission	Transparency
Set:	IR-SND	End User	Public
Get:	-	-	-

Description		Syntax
Set:	Send IR command to port	#IR-SND SP PortNum,Cmdid,CmdName,Repeat, TotalPackages,PackageNum,<pronto command…> CR
Get:	-	-

Response
~ nn @IR-SND SP PortNum,Cmdid,CmdName,Status CR LF

Parameters
PortNum – IR port (1 to 4) transmitting the command. '*' broadcasts to all ports
Cmdid – serial number of command for flow control and response commands from device
CmdName – String: IR command name limited to 15 chars.
Repeat – number of times the IR command is transmitted (limited to 50; repeats > 50 are truncated to 50), 1 (default)
TotalPackages – number of messages the original command was divided into, 1 (default)
PackageNum – chunk serial number (only valid when Chnk_Num >1)
Pronto command – Pronto format command (in HEX format, without leading zeros or '0x' prefix)
Status – 0 (IR_SENT), 1 (IR_STOP), 2 (IR_BUSY), 3 (IR_WRONG_PARAM), 4 (IR-NOTHING_TO_STOP)

Response Triggers

K-Config Example
Send a volume up command to port 3 and repeat five times: "#IR-SND 3,04,vol_up,5,1,1,4E 23 C4…",0x0D

11.3.22 IR-STOP

Functions		Permission	Transparency
Set:	`IR-STOP`	End User	Public
Get:	**-**	-	-

Description		Syntax
Set:	Send IR stop command to port	`#IR-STOP`SP`PortNum,Cmdid,CmdName`CR
Get:	-	-

Response
~`nn`@IR-STOP SP`PortNum,Cmdid,CmdName,Status`CR LF

Parameters
`PortNum` – IR port (`1` to `4`) transmitting the command. '*' broadcasts to all ports `Cmdid` – serial number of command for flow control and response commands from device `CmdName` – a string, the alias of the IR command. The controlling device is responsible for sending the correct name `Status` – 0 (IR_SENT), 1 (IR_STOP), 2 (IR_BUSY), 3 (IR_WRONG_PARAM), 4 (IR-NOTHING_TO_STOP)

Response Triggers

K-Config Example
Send a power off command to IR port 2: "#IR-STOP 2,06,power_off",0x0D

11.3.23 LOGIN

Functions		Permission	Transparency
Set:	LOGIN	Not Secure	Public
Get:	LOGIN?	Not Secure	Public
Description		**Syntax**	
Set:	Set protocol permission	#LOGIN`SP`*login_level,password*`CR`	
Get:	Get current protocol permission level	#LOGIN?`CR`	

Response

Set: ~`nn`@LOGIN`SP`*login_level,password*`SP`OK`CR LF`
    or
    ~`nn`@LOGIN`SP`ERR`SP`004`CR LF` (if bad password entered)
Get: ~`nn`@LOGIN`SP`*login_level*`CR LF`

Parameters

login_level – level of permissions required: User, Admin
password – predefined password (by PASS command). Default password is an empty string

Response Triggers

Notes

When the permission system is enabled, LOGIN enables running commands with the User or Administrator permission level
When set, login must be performed upon each connection
The permission system works only if security is enabled with the SECUR command. It is not mandatory to enable the permission system in order to use the device

K-Config Example

Set the protocol permission level to Admin (when the password defined in the PASS command is 33333):
"#LOGIN Admin,33333",0x0D

11.3.24 LOGOUT

Functions		Permission	Transparency
Set:	LOGOUT	Not Secure	Public
Get:	-	-	-
Description		**Syntax**	
Set:	Cancel current permission level	#LOGOUT`CR`	
Get:	-	-	

Response

~`nn`@LOGOUT`SP`OK`CR LF`

Parameters

Response Triggers

Notes

Logs out from User or Administrator permission levels

K-Config Example

"#LOGOUT",0x0D

11.3.25 MACH-NUM

Functions		Permission	Transparency
Set:	MACH-NUM	End User	Public
Get:		-	-
Description		**Syntax**	
Set:	Set machine number (device ID)	#MACH-NUM`SP`*machine_number*`CR`	
Get:	-	-	
Response			
~`nn`@MACH-NUM`SP`*machine_number*`CR LF`			
Parameters			
machine_number – New machine number			
Response Triggers			
Notes			
The new machine number is only set after restarting the device.			
K-Config Example			
"#MACH-NUM 4",0x0D			

11.3.26 MODEL

Functions		Permission	Transparency
Set:	-	-	-
Get:	MODEL?	End User	Public
Description		**Syntax**	
Set:	-	-	
Get:	Get device model	#MODEL?`CR`	
Response			
~`nn`@MODEL`SP`*model_name*`CR LF`			
Parameters			
model_name – String of up to 19 printable ASCII chars			
Response Triggers			
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			

11.3.27 NAME

Functions		Permission	Transparency
Set:	NAME	Administrator	Public
Get:	NAME?	End User	Public
Description		**Syntax**	
Set:	Set machine (DNS) name	#NAME␣*machine_name*CR	
Get:	Get machine (DNS) name	#NAME?CR	
Response			
Set: ~nn@NAME␣*machine_name*CR LF Get: ~nn@NAME?␣*machine_name*CR LF			
Parameters			
machine_name - string of up to 15 alpha-numeric chars (can include hyphen, not at the beginning or end)			
Response Triggers			
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 machine name to NT-52P-4321: "#NAME NT-52P-4321",0x0D			

11.3.28 NAME-RST

Functions		Permission	Transparency
Set:	NAME-RST	Administrator	Public
Get:	**-**	-	-

Description		Syntax	
Set:	Reset machine (DNS) name to factory default	#NAME-RST`CR`	
Get:	-	-	

Response
~`nn`@NAME-RST`SP`OK`CR LF`

Parameters

Response Triggers

Notes
Factory default of machine (DNS) name is "KRAMER_" + 4 last digits of device serial number

K-Config Example
"#NAME-RST",0x0D

11.3.29 NET-DHCP

Functions		Permission	Transparency
Set:	NET-DHCP	Administrator	Public
Get:	NET-DHCP?	End User	Public

Description		Syntax	
Set:	Set DHCP mode	#NET-DHCP`SP`*mode*`CR`	
Get:	Get DHCP mode	#NET-DHCP?`CR`	

Response
~`nn`@NET-DHCP`SP`*mode*`CR LF`

Parameters
mode – 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)

Response Triggers

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 NAME command. You can also get an assigned IP by direct connection to USB or RS-232 protocol port if available Consult your network administrator for correct settings

K-Config Example
Enable DHCP mode, if available: "#NET-DHCP 1",0x0D

11.3.30 NET-GATE

Functions		Permission	Transparency
Set:	NET-GATE	Administrator	Public
Get:	NET-GATE?	End User	Public
Description		**Syntax**	
Set:	Set gateway IP	#NET-GATE⟦SP⟧*ip_address*⟦CR⟧	
Get:	Get gateway IP	#NET-GATE?⟦CR⟧	
Response			
~⟦nn⟧@NET-GATE⟦SP⟧*ip_address*⟦CR LF⟧			
Parameters			
ip_address – gateway IP address, in the following format: xxx.xxx.xxx.xxx			
Response Triggers			
Notes			
A network gateway connects the device via another network, possibly over the Internet. Be careful of security problems. Consult your network administrator for correct settings.			
K-Config Example			
Set the gateway IP address to 192.168.0.1: "#NET-GATE 192.168.000.001",0x0D			

11.3.31 NET-IP

Functions		Permission	Transparency
Set:	NET-IP	Administrator	Public
Get:	NET-IP?	End User	Public
Description		**Syntax**	
Set:	Set IP address	#NET-IP⟦SP⟧*ip_address*⟦CR⟧	
Get:	Get IP address	#NET-IP?⟦CR⟧	
Response			
~⟦nn⟧@NET-IP⟦SP⟧*ip_address*⟦CR LF⟧			
Parameters			
ip_address – IP address, in the following format: xxx.xxx.xxx.xxx			
Response Triggers			
Notes			
Consult your network administrator for correct settings			
K-Config Example			
Set the IP address to 192.168.1.39: "#NET-IP 192.168.001.039",0x0D			

11.3.32 NET-MAC

Functions		Permission	Transparency
Set:	-	-	-
Get:	NET-MAC?	End User	Public
Description		**Syntax**	
Set:	-	-	
Get:	Get MAC address	#NET-MAC?`CR`	
Response			
~`nn`@NET-MAC`SP`*mac_address*`CR LF`			
Parameters			
mac_address – unique MAC address. Format: XX-XX-XX-XX-XX-XX where X is hex digit			
Response Triggers			
Notes			
K-Config Example			
"#NET-MAC?",0x0D			

11.3.33 NET-MASK

Functions		Permission	Transparency
Set:	NET-MASK	Administrator	Public
Get:	NET-MASK?	End User	Public
Description		**Syntax**	
Set:	Set subnet mask	#NET-MASK`SP`*net_mask*`CR`	
Get:	Get subnet mask	#NET-MASK?`CR`	
Response			
~`nn`@NET-MASK`SP`*net_mask*`CR LF`			
Parameters			
net_mask – format: xxx.xxx.xxx.xxx			
Response Triggers			
The subnet mask limits the Ethernet connection within the local network Consult your network administrator for correct settings			
Notes			
K-Config Example			
Set the subnet mask to 255.255.0.0: "#NET-MASK 255.255.000.000",0x0D			

11.3.34 PASS

Functions		Permission	Transparency
Set:	PASS	Administrator	Public
Get:	PASS?	Administrator	Public
Description		**Syntax**	
Set:	Set password for login level	#PASS`SP`*login_level,password*`CR`	
Get:	Get password for login level	#PASS?`SP`*login_level*`CR`	
Response			
~`nn`@PASS`SP`*login_level,password*`CR_LF`			
Parameters			
login_level – level of login to set: User, Admin *password* – password for the *login_level*. Up to 15 printable ASCII chars.			
Response Triggers			
Notes			
The default password is an empty string			
K-Config Example			
Set the password for the Admin protocol permission level to 33333: "#PASS Admin,33333",0x0D			

11.3.35 PORT-LOCK

Functions		Permission	Transparency
Set:	PORT-LOCK	End User	Public
Get:	PORT-LOCK?	End User	Public
Description		**Syntax**	
Set:	Set the port lock	#PORT-LOCK`SP`*PortNumber,LockState*`CR`	
Get:	Get the port lock state	#PORT-LOCK?`SP`*PortNumber*`CR`	
Response			
~`nn`@PORT-LOCK`SP`*PortNumber,LockState*`CR LF`			
Parameters			
PortNumber – port number: 1-n *LockState* – 1 (lock), 0 (unlock)			
Response Triggers			
Notes			
K-Config Example			
Lock port 3. "#PORT-LOCK 3, 1",0x0D			

11.3.36 PORT-TYPE

Functions		Permission	Transparency
Set:	PORT-TYPE	End User	Public
Get:	PORT-TYPE?	End User	Public

Description		Syntax
Set:	Change the port type	#PORT-TYPE `SP` *PortNumber,PortType,PortName, 485Term*`CR`
Get:	Get the port type	#PORT-TYPE? `SP` *PortNumber*`CR`

Response
~`nn`@PORT-TYPE `SP` *PortNumber,PortType,PortName,485Term*`CR LF`

Parameters
PortNumber – port number: 1-n *PortType* – 0 (RS-232), 1 (RS-232X), 2 (RS-485), 3 (Relay), 4 (IR), 5 (GPIO) *PortName* – A string describing the port type *485Term* – 485 termination state: 1 (enable), 0 (disable)

Response Triggers

Notes
485Term is effective only when the port type is UART

K-Config Example
Change port 3 to relay and name it blinds: "#PORT-TYPE 3,3,blinds",0x0D

11.3.37 PROT-VER

Functions		Permission	Transparency
Set:	-	-	-
Get:	PROT-VER?	End User	Public
Description		**Syntax**	
Set:	-	-	
Get:	Get device protocol version	`#PROT-VER?`CR	
Response			
~nn`@PROT-VER`SP`3000:`*version*CR LF			
Parameters			
version - XX.XX where X is a decimal digit			
Response Triggers			
Notes			
K-Config Example			
"#PROT-VER?",0x0D			

11.3.38 RELAY-STATE

Functions		Permission	Transparency
Set:	RELAY-STATE	End User	Public
Get:	RELAY-STATE?	End User	Public
Description		**Syntax**	
Set:	Set relay state	`#RELAY-STATE`SP*RelayNumber,RelayState*CR	
Get:	Get relay state	`#RELAY-STATE?`SP*RelayNumber*CR	
Response			
~nn`@RELAY-STATE`SP*RelayNum,RelayState*CR LF			
Parameters			
RelayNumber – relay number: 1-2 *RelayState* – relay state: 0 (open), 1 (close)			
Response Triggers			
Notes			
K-Config Example			
Close relay 2: "#RELAY-STATE 2, 1",0x0D			

11.3.39 RESET

Functions		Permission	Transparency
Set:	RESET	Administrator	Public
Get:	**-**	-	-

Description		Syntax	
Set:	Reset device	#RESET`CR`	
Get:	-	-	

Response
~`nn`@RESET`SP`OK`CR LF`

Parameters

Response Triggers

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

11.3.40 SECUR

Functions		Permission	Transparency
Set:	SECUR	Administrator	Public
Get:	SECUR?	Not Secure	Public

Description		Syntax	
Set:	Start/stop security	#SECUR␣SP␣*security_mode*␣CR	
Get:	Get current security state	#SECUR?␣CR	

Response
~nn@SECUR␣SP␣*security_mode*␣CR␣LF

Parameters
security_mode – 1 (On / enable security), 0 (Off / disable security)

Response Triggers

Notes
The permission system works only if security is enabled with the SECUR command

K-Config Example
Enable the permission system: "#SECUR 0",0x0D

11.3.41 SN

Functions		Permission	Transparency
Set:	-	-	-
Get:	SN?	End User	Public

Description		Syntax	
Set:	-	-	
Get:	Get device serial number	#SN?␣CR	

Response
~nn@SN␣SP␣*serial_number*␣CR␣LF

Parameters
serial_number – 11 decimal digits, factory assigned

Response Triggers

Notes
This device has a 14 digit serial number, only the last 11 digits are displayed

K-Config Example
"#SN?",0x0D

11.3.42 TIME

Functions		Permission	Transparency
Set:	`TIME`	Administrator	Public
Get:	`TIME?`	End User	Public
Description		**Syntax**	
Set:	Set device time and date	`#TIME`SP`day_of_week,date,time`CR	
Get:	Get device time and date	`#TIME?`CR	
Response			
~`nn`@TIME SP`day_of_week,date,time`CR LF			
Parameters			

`day_of_week` – one of: `SUN`, `MON`, `TUE`, `WED`, `THU`, `FRI`, `SAT`
`date` – format: `DD-MM-YYYY`
`time` – format: `hh:mm:ss`			

Response Triggers			
Notes			
The year must be 4 digits The device does not validate the day of week from the date Time format – 24 hours Date format – Day, Month, Year			
K-Config Example			
Set the time to 09:45, Tuesday, 01-July-2015: `"#TIME TUE,01-07-2015,09:45:00",0x0D`			

11.3.43 TIME-LOC

Functions		Permission	Transparency
Set:	`TIME-LOC`	End User	Public
Get:	`TIME-LOC?`	End User	Public
Description		**Syntax**	
Set:	Set local time offset from UTC/GMT	`#TIME-LOC`SP`UTC_off,DayLight`CR	
Get:	Get local time offset from UTC/GMT	`#TIME-LOC?`CR	
Response			
~`nn`@TIME-LOC SP`UTC_off,DayLight`CR LF			
Parameters			
`UTC_off` – offset of device time from UTC/GMT (without daylight time correction) `DayLight` – `0` (no daylight saving time), `1` (daylight saving time)			
Response Triggers			
Notes			
If the time server is configured, device time calculates by adding UTC_off to UTC time (that it got from the time server) + 1 hour if daylight savings time is in effect TIME command sets the device time without considering these settings			
K-Config Example			
Set the time offset to GMT +2, standard time: `"#TIME-LOC 2,0",0x0D`			

11.3.44 TIME-SRV

Functions		Permission	Transparency
Set:	TIME-SRV	Administrator	Public
Get:	TIME-SRV?	End User	Public

Description		Syntax	
Set:	Set time server	#TIME-SRV`SP` *mode,time_server_IP,time_server_Sync_Hour*`CR`	
Get:	Get time server	#TIME-SRV?`CR`	

Response
~`nn`@TIME-SRV`SP`*mode,time_server_IP, time_server_Sync_Hour,server_status*`CR LF`

Parameters
mode – 0 (off), 1 (on) *time_server_IP* – time server IP address *time_server_Sync_Hour* – hour in day for time server sync *server_status* – ON/OFF

Response Triggers

Notes
This command is needed for setting UDP timeout for the current client list

K-Config Example
Connect the device to a time server at a given IP address, activate and sync at 6AM: "#TIME-SRV 1,xxx.xxx.xxx.xxx,06",0x0D

11.3.45 UART

Functions		Permission	Transparency
Set:	`UART`	Administrator	Public
Get:	`UART?`	End User	Public

Description		Syntax
Set:	Set com port configuration	`#UART`SP`COM_Num,baud_rate,data_bit,parity,stop_bit`CR
Get:	Get com port configuration	`#UART?`SP`COM_Num`CR

Response
Set: ~`nn`@UART SP`COM_Num,baud_rate,data_bit,parity,stop_bit`CR LF Get: ~`nn`@UART SP`COM_Num,baud_rate,data_bit,parity,stop_bit,serial1_type,485_term`CR LF

Parameters
`COM_Num` – 1-2 `baud_rate` – 9600-115200 `data_bit` – 7-8 `parity` – N (none), O (odd), E (even), M (mark), S (space) `stop_bit` – 1-2 `serial1_type` – 0 (RS-232), 1 (RS-485) `485_term` – 1/0 (optional - this exists exist only when serial1_type = 485)

Response Triggers

Notes
In NT-52P the serial port is selectable to RS-232 or RS-485 (usually serial port 1). If Serial1 is configured when RS-485 is selected, the RS-485 UART port is automatically changed

K-Config Example
Configure RS-232 com port 1 to 9600 baud, 8 data bits, no parity, 1 stop bit: `"#UART 1,9600,8,N,1,0"0x0D`

11.3.46 VERSION

Functions		Permission	Transparency
Set:	-	-	-
Get:	VERSION?	End User	Public

Description		Syntax	
Set:	-	-	
Get:	Get firmware version number	#VERSION?`CR`	

Response
~`nn`@VERSION`SP`*firmware_version*`CR LF`

Parameters
firmware_version – XX.XX.XXXX where the digit groups are: major.minor.build version

Response Triggers

Notes

K-Config Example
"#VERSION?",0x0D

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⚠ SAFETY WARNING

Disconnect the unit from the power supply before opening and servicing

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