KRAMER

USER MANUAL

MODEL:

VS-8FDxl
Programmable 8 Port SDI Router

Contents

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!

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.

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/VS-8FDxl 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 neighbouring electrical appliances that may adversely influence signal quality.

- Position your Kramer **VS-8FDxl** 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 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.

Overview

Congratulations on purchasing your Kramer **VS-8FDxl**.

VS-8FDxl is a high-quality 8-port matrix switcher for SDI signals for up to 3G HD−SDI. Each SDI port can be defined as either an input or an output.

The **VS-8FDxl** provides exceptional quality, advanced and user-friendly operation, and flexible control.

Exceptional Quality

- Max. Data Rate – 3Gbps.
- HDTV Compatibility.
- Multi–Standard Operation – SDI (SMPTE 259M/344M), HD-SDI (SMPTE 292M), 3G HD-SDI (SMPTE 424M).
- Selectable Single (for routing a signal of up to 1080p) or Dual mode (for routing a signal of up to 4K30).
- Kramer Equalization & re-Klocking™ Technology – Rebuilds the digital signal to travel longer distances.
- Cable Equalization – Up to 350m for SD signals, 140m for 1.5GHz HD signals and 120m for 3GHz 3G signals.
- Clean Switching – When the sources are genlocked to the selected genlock input with a difference of no more than two lines of video.

Advanced and User-friendly Operation

- Supports ANC Data – Embedded audio, teletext, time code, etc.

- Memory Locations – Stores 8 multiple switches as presets to be recalled and executed when needed.

- Versatile Genlocking – Using an analog signal.

- Resolution information buttons

- Easy front-panel operation and routing.

- User friendly embedded web pages

- Lock button to prevent tampering.

- Kramer protocol 3000 support.

- Firmware upgrade via Ethernet or the RS-232 port.

- Control Options – RS-232 serial commands transmitted by a PC, touch screen system or other serial controller, Ethernet port via LAN.

- LCD 16x2 display, indicating the switching status and other functions.

- Includes non-volatile memory that retains the last settings, after switching the power off and then on again.

Flexible Connectivity

- Interchangeable input to output switching – from 1:7 distribution amplifier (DA) to 7x1 switcher in the 1080p mode and 1:3 (DA) to 3x1 switcher in the 4K/30 mode.

- Housed in a 19" 1U rack mountable enclosure, with rack ears included, and fed from a 100-240 VAC universal switching power supply.

Typical Applications

The **VS-8FDxl** is ideal for the following typical applications:

- Rental and staging.

Controlling your VS-8FDxl

Control your **VS-8FDxl** directly via the front panel push buttons, or:

- By RS-232 serial commands transmitted by a touch screen system, PC, or other serial controller.

- Via the Ethernet using built-in user-friendly web pages.

Defining the VS-8FDxl Programmable 8 Port SDI Router
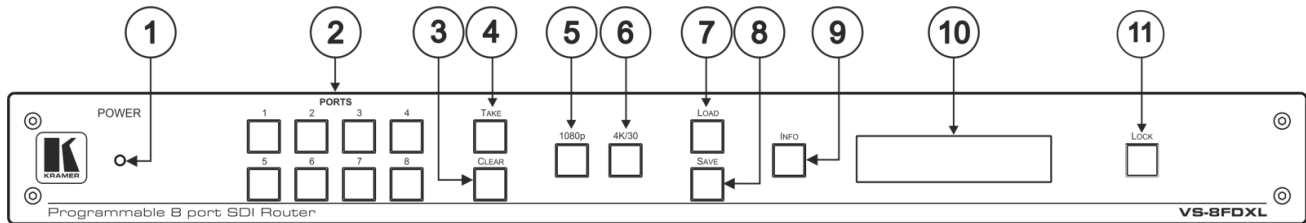
This section defines the **VS-8FDxl**.

Figure 1: VS-8FDxl Programmable 8 Port SDI Router Front Panel

#	Feature	Function
1	POWER LED	Illuminated switch for turning the unit ON or OFF.
2	PORT Buttons	Press an output port (lights green) and then an input port (lights blue) to route an input to an output.
3	CLEAR Button	Press to clear a selection.
4	TAKE Button	Press to enter TAKE mode. In Take mode, press several sets of output-input ports and then press TAKE to activate all the selected routings at the same time. (When TAKE mode is OFF, the output-input pair is switched immediately).
5	1080p Button	Press to light the front-panel PORT button LEDs that are set to Single mode (1080p) and view them on the LCD display panel.
6	4K/30 Button	Press to light the front-panel PORT button LEDs that are set to Dual mode (4K@30) and view them on the LCD display panel.
7	LOAD Button	To load a preset configuration: Press LOAD, press the appropriate PORT preset button to select a preset configuration, and then press TAKE to load that preset.
8	SAVE Button	To save the current port configuration to a PORT preset button: Press STORE, press the port button to which you want to save the configuration, and then press TAKE to save the setup to that port.
9	INFO Button	Press to display the firmware version and IP address. Press INFO and then a specific PORT button to display the information of that selected port.
10	LCD Display Panel	Displays the current routing status, device information and so on.
11	LOCK Button	Press for about 3 seconds to lock the front panel. When locked (button is lit), press again for about 3 seconds to release the front panel lock.
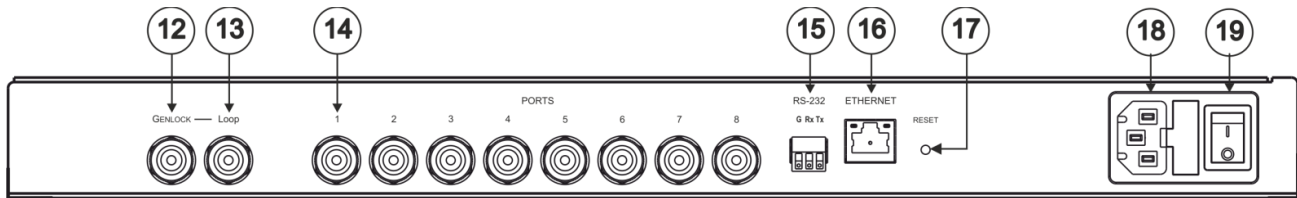
Figure 2: VS-8FDxl Programmable 8 Port SDI Router Rear Panel

#	Feature	Function
12	GENLOCK BNC Connector	Connect to the GENLOCK source.
13	LOOP BNC Connector	Connect to the GENLOCK connector of the next unit in the daisy chain.
14	PORTS BNC Connectors	Connect to sources and acceptors (8 in total, or 4 in total for dual mode).
15	RS-232 (G,Rx,Tx) Terminal Block Connector	Connect to a PC or remote controller.
16	ETHERNET RJ-45 Connector	Connect to a PC via LAN and also use for firmware upgrade.
17	RESET Button	Press briefly to restart the system. Press for 10 seconds to reset IP settings to factory default values. The device powers up and loads the factory default values: IP address: 192.168.1.39; Mask: 255.255.255.0; Gateway 192.168.1.1.
18	Power Socket	AC connector enabling power supply to the **VS-8FDxl**.
19	Power Switch	Illuminated switch for turning the unit ON and OFF.

Installing in a Rack

This section provides instructions for rack mounting the **VS-8FDxl**. Before installing in a rack, verify that the environment is within the recommended range:

- Operation 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.

When installing on a 19" rack, avoid hazards by taking care that:

- It is located within recommended environmental conditions. Operating ambient temperature of a closed or multi-unit rack assembly may exceed ambient room temperature.

- Once rack mounted, there is enough air still flow around the **VS-8FDxl**.

- The **VS-8FDxl** is placed upright in the correct horizontal position.

- You do not overload the circuit(s). When connecting the **VS-8FDxl** to the supply circuit, overloading the circuits may have a detrimental effect on overcurrent protection and supply wiring. Refer to the appropriate nameplate ratings for information. For example, for fuse replacement, see the value printed on the product label.

- The **VS-8FDxl** is earthed (grounded) and connected only to an electricity socket with grounding. Pay particular attention when electricity is supplied indirectly (for example, when the power cord is not plugged directly into the wall socket but to an extension cable or power strip). Use only the supplied power cord.

To rack-mount the VS-8FDxl:

1. Attach both ear brackets to the **VS-8FDxl**: Remove the screws from each side of the **VS-8FDxl** (3 on each side), and replace them through the ear brackets.

2. Place the ears of the **VS-8FDxl** against the rack rails and insert the appropriate screws (not provided) through each of the four holes in the rack ears.
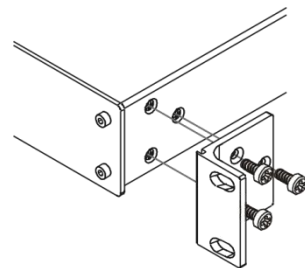
Some models, may feature built-in rack ears:

- Detachable rack ears can be removed for desktop use.

- Always mount the **VS-8FDxl** in the rack before connecting any cables or power.

- If you are using a Kramer rack adapter kit (for a machine that is not 19"), see the Rack Adapters user manual for installation instructions available from our Web site www.kramerav.com/downloads/VS-8FDxl.

Connecting the VS-8FDxl

ⓘ Always switch off the power to each device before connecting it to your **VS-8FDxl**. After connecting your **VS-8FDxl**, connect its power and then switch on the power to each device.

ⓘ Although this connecting example shows only several inputs and outputs that are connected, you can connect all the inputs and outputs simultaneously.

To connect the VS-8FDxl as illustrated in the example in [Figure 3](#):

ⓘ This connection example describes the **VS-8FDxl** default setup: a 4x4 switcher in the 1080p mode. Other setups can include a range of 7:1 to 1x7 switching setups and in the 4K/30 mode, a range of 3:1 to 1x3 switching setups.

1. Connect up to four SDI video sources to the PORT BNC connectors (1 to 4) ⑭. For example, connect:

   - An SDI camera to PORT 1.
   - A Kramer **FC-113** HDMI to SD/HD-SDI Converter to PORT 4.

2. Connect up to four SDI video PORT BNC connectors (5 to 8) ⑭ to up to four acceptors. For example, connect:

   - PORT 5 to an SDI display.
   - PORT 8 to an SDI display.

3. Connect the power cord ⑱.
   We recommend that you use only the power cord that is supplied with this machine.

4. If required, connect:

   - The ETHERNET port ⑯.
   - The RS-232 3-pin terminal block connector ⑮ to a control device.
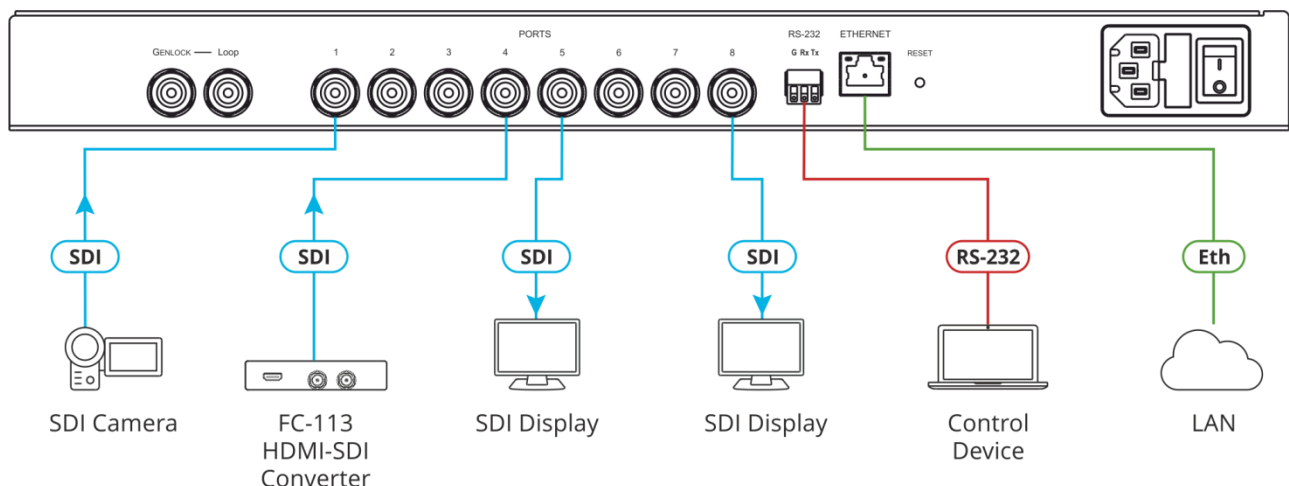
Figure 3: Connecting to the VS-8FDxl Rear Panel

Connecting to VS-8FDxl via RS-232

You can connect to the **VS-8FDxl** via an RS-232 connection ⑮ using, for example, a PC.

To connect to the **VS-8FDxl** via RS-232:

- Connect the RS-232 rear panel port on the **VS-8FDxl** unit via a
9-wire straight cable (only pin 2 to pin 2, pin 3 to pin 3, and pin 5 to pin 5 need to be connected) to the RS-232 9-pin D-sub port on your PC.

Connecting VS-8FDxl via the ETHERNET Port

You can connect to the **VS-8FDxl** 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 8).

- 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 10).

ⓘ 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 **VS-8FDxl** 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 **VS-8FDxl** with the factory configured default IP address.

After connecting the **VS-8FDxl** 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 4.
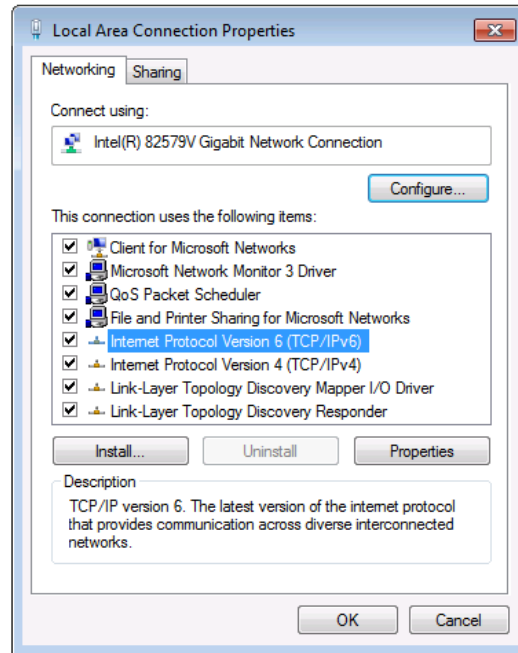
Figure 4: Local Area Connection Properties Window

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 5 or Figure 6.
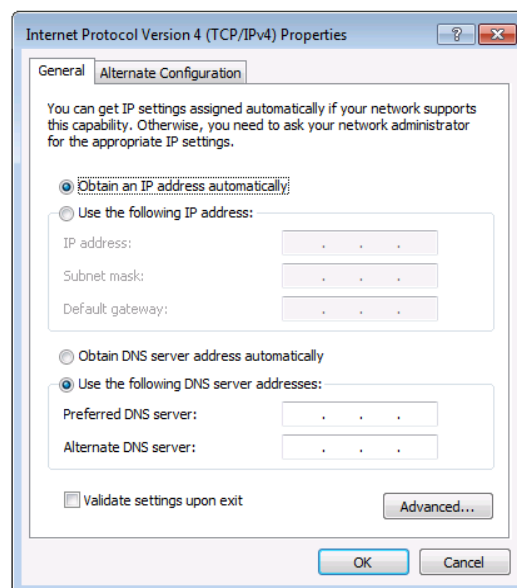
Figure 5: Internet Protocol Version 4 Properties Window
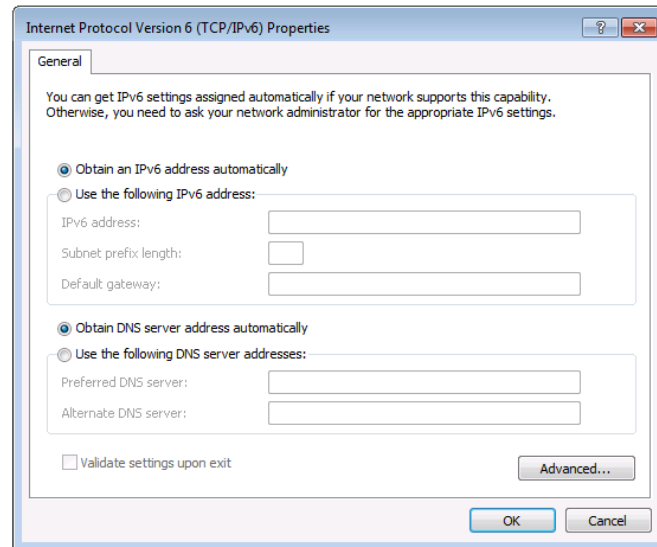
Figure 6: Internet Protocol Version 6 Properties Window

6. Select **Use the following IP Address** for static IP addressing and fill in the details as shown in Figure 7.
   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.
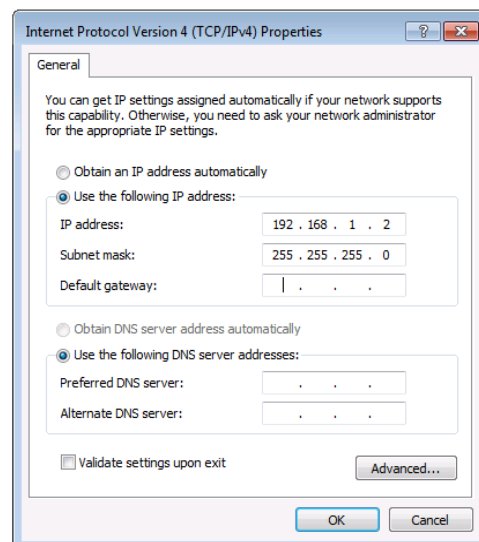
Figure 7: Internet Protocol Properties Window

7. Click **OK**.

8. Click **Close**.

Connecting the Ethernet Port via a Network Hub or Switch

You can connect the Ethernet port of the **VS-8FDxl** 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 VS-8FDxl via the ETHERNET Port on page 8).

Operating VS-8FDxl via Front Panel Buttons

Press the power switch ⑲ to power the device. During the initialization process, the LCD display briefly displays the current version and IP address (accessed also by pressing **INFO** ⑨ during normal operation), and then the PORT buttons illuminate (green for outputs and blue for inputs).

Following initialization, the front panel buttons and display enter normal operation and the display shows the video IN-OUT status:

IN	1	4	5
OUT	7	28	36

Figure 8: LCD Display – Normal Operation

In this example, ports 1, 4 and 5 are configured as inputs (port buttons illuminated blue) and ports 2, 3, 6, 7 and 8 are configured as outputs (port buttons illuminated green). Port 1 is routed to port 7, port 4 is routed to ports 2 and 8, and port 5 is routed to ports 3 and 6.

You can configure ports to be set as inputs or outputs only via the embedded web pages, see Setting Port Configuration on page 17.

The **VS-8FDxl** front panel buttons enable performing the following functions:

- Routing the Signals on page 11.
- Saving and Loading a Setup on page 12.

Routing the Signals

- Viewing the Operation Mode on page 11.
- Routing a Signal on page 12.

Viewing the Operation Mode

The operation mode can be set only via the web pages, see Setting Port Configuration on page 17. The 1080p ⑤ and 4K/30 ⑥ buttons enable you to view the operation mode for each port.

To view ports in Single operation mode:

- Press **1080P**:
  The 1080P button illuminates.
  The LCD display shows the current switching status of the Single mode ports.
  The Single mode port buttons illuminate green (for outputs) and blue (for inputs) for a few seconds.

To view ports in Dual operation mode:

- Press **4K/30**:
  The 4K/30 button illuminates.
  The LCD display shows the current switching status of the Dual mode ports.
  The Dual mode port buttons illuminate green (for outputs) and blue (for inputs) for a few seconds.

Routing a Signal

The input/output port configuration is identified by the color of the **PORT** ② buttons (blue for input and green for output).

To route a signal:

1. Press an output **PORT** button (green).
   The selected button flashes.

2. Press an input **PORT** button (blue).
   The selected input is routed to the selected output which no longer flashes, and the current status can be viewed on the display.

To route several signals together:

1. Press **TAKE** ④.
   The **TAKE** button flashes.

2. Press several output-input **PORT** buttons.
   All the selected buttons flash.

3. Press **TAKE** to carry out the routing operation.
   The selected inputs are routed to the selected outputs which no longer flash, and the current status can be viewed on the display.

ⓘ All operations should be carried out within 10 seconds.

Press **CLEAR** ③ to cancel the operation.

Saving and Loading a Setup

VS-8FDxl can store up to 8 setups. Each setup includes the port direction settings, the operation mode (1080p or 4K/30), the genlock mode and the timing settings.

To save the current setup:

1. Press **SAVE** ⑧.
   The **SAVE** button flashes and the PORT buttons are dimmed.

2. Press a **PORT** ② button (from 1 to 8).
   The selected **PORT** button flashes red.

3. Press **TAKE** ④.
   The current preset is saved and the buttons no longer flash.

To load a setup:

1. Press **LOAD** ⑦.
   The **LOAD** button flashes and the **PORT** buttons are dimmed.

2. Press the desired **PORT** button (from 1 to 8).
   A preview of the preset configuration is displayed on the LCD.
   Press any number of presets (by pressing a port button) to preview their configuration
   before pressing **TAKE** to load the desired configuration.

3. Press **TAKE** to load the desired configuration.
   The selected preset is loaded and the buttons no longer flash.

ⓘ Pressing **CLEAR** ③ or **LOAD**/**SAVE** before pressing **TAKE** cancels the load/save process.

ⓘ You need to press **TAKE** within 10 seconds, to apply settings.

Firmware Upgrade

You can upgrade the **VS-8FDxl** via:

- Web pages.

- By RS-232/TCP/UDP using Kramer K-UPLOAD tool.

ⓘ The latest firmware version and the latest version of **K-UPLOAD** and installation instructions can be downloaded from the Kramer Web site at www.kramerav.com/downloads/VS-8FDxl.

Using the Embedded Web Pages

The Web pages let you control the **VS-8FDxl** via the Ethernet. The web pages include all the OSD items and more, and are accessed using a web browser and an Ethernet connection.

Before attempting to connect:

- Perform the procedures described in <u>Connecting VS-8FDxl via the ETHERNET Port</u> on page <u>8</u>.

- Ensure that your browser is supported.

The following operating systems and Web browsers are supported:

OS	Version	Browser	Version
Windows	7	IE	11
			9
			10
		Firefox	48.0.2
			45.0.1
			54
		Chrome	31.0.1650.59
			31.0.1650.60
			59.0.3071.109
		Safari	5.1.7(7534.57.2)
	8	IE	11
		Firefox	47.0.1
		Chrome	51.0.2704.106
Mac	10.11	Safari	9.0(11601.1.56)
iOS	10.3.2	Safari	N/A
Android	N/A	N/A	N/A

The **VS-8FDxl** web pages enable performing the following:

- <u>Switching and Setting the Ports</u> on page <u>17</u>.
- <u>Setting the Genlock</u> on page <u>20</u>.
- <u>Changing Device Settings and Saving/Loading Presets</u> on page <u>21</u>.
- <u>Activating Security</u> on page <u>23</u>.
- <u>Performing Firmware Upgrade</u> on page <u>26</u>.
- <u>Locking the Front Panel Buttons</u> on page <u>26</u>.
- <u>Viewing the About Page</u> on page <u>27</u>.

To browse the VS-8FDxI 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 set, security is enabled):

Figure 9: Using the Embedded Web Pages – the Authentication Window

3. Enter the **User Name** and **Password** and click **OK** (Admin and Admin by default). The Video Switching page appears:
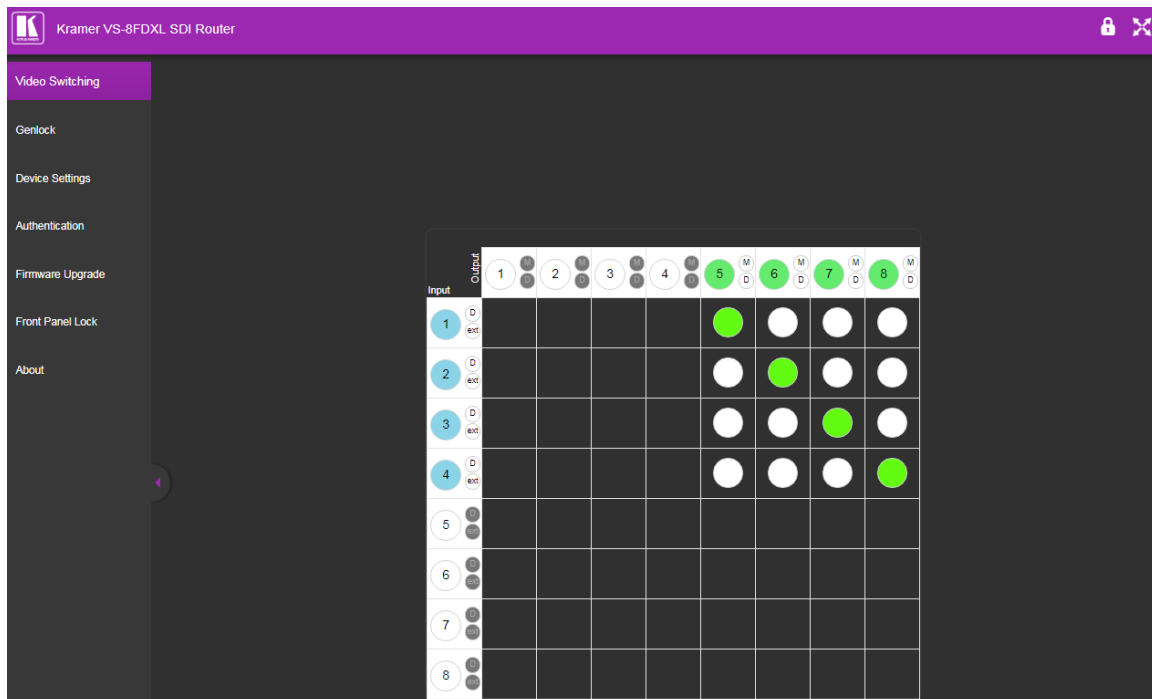
Figure 10: Video Switching Page with Navigation List on Left

4. Click the desired Web page or click the arrow to hide the navigation list.

Switching and Setting the Ports

The Video Switching Web page enables performing the following functions:

-
-

Setting Port Configuration

Port configuration includes:

-
-
-

Setting a port as an input or output

Each SDI port can be set to function as an input or an output.

To set the port as an input or output:

- In the **Output** row, click a button (from 1 to 8).
  For example, select button 4 to be an output:
  Button 4 changes color from white to green on the Output row and changes from blue to white on the Input column.

- In the **Input** column, click a button (from 1 to 8).
  For example, select button 2 to be an input:
  Button 2 changes color from white to blue on the Input column and changes from green to white on the Output row.

Setting ports to Single or Dual Operation Mode

The Single mode uses one SDI port to route an HDMI signal up to 1080p.

The Dual mode uses two SDI ports to route an HDMI signal up to 4K30. Each SDI-port pair transmits one signal as if it were a single port.

The Dual (4K30) mode uses the following SDI pairs to route the signal (input or output): ports 1 and 2, ports 3 and 4, ports 5 and 6, and ports 7 and 8. All the port actions (for example, routing or muting affect the pair simultaneously).

To route signals in the Dual mode, you need at least one SDI pair on the input and one SDI pair on the output that are configured to the Dual mode. For example, if ports 1 and 2 are set as a dual input and ports 5 and 6 are set as dual outputs, when routing 1 to 5, **VS-8FDxI** also routes 2 to 6 as part of the dual pair. When muting output 5, output 6 will be automatically muted too.

To set a port to Single or dual operation mode:

- Click **D** next to an input or an output button to enter the dual mode.
  The adjacent port is also set to dual mode.
  For example clicking **D** on Input 1 immediately turns Input 2 to Dual mode, see Figure 13.
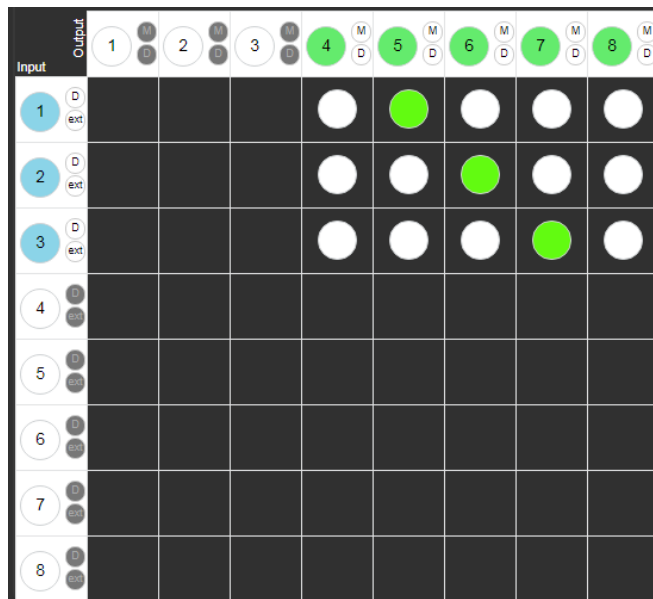
Figure 11: Video Switching Page – The Switching Matrix

Switching configurations can be set with a click of a button. For example, ports 1 to 7 are set as inputs and port 8 is set as an output:
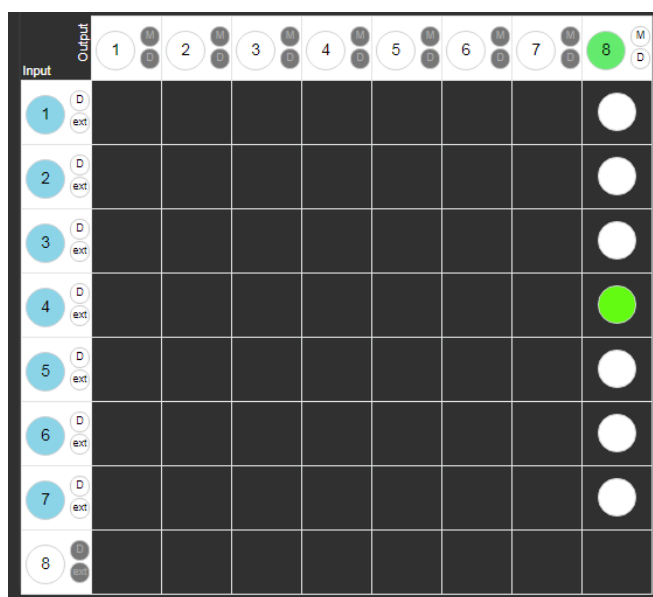
Figure 12: Video Switching Page – 7x1 Switcher Configuration Example

Other Port Settings

To mute an output:

- Click **M** next to an output button to mute the output.
  M turns green.

- Click **ext** next to an input button to extend the input reach.
  ext turns green

Switching an Input to an Output

To switch an input to an output click a white button in the switching matrix.
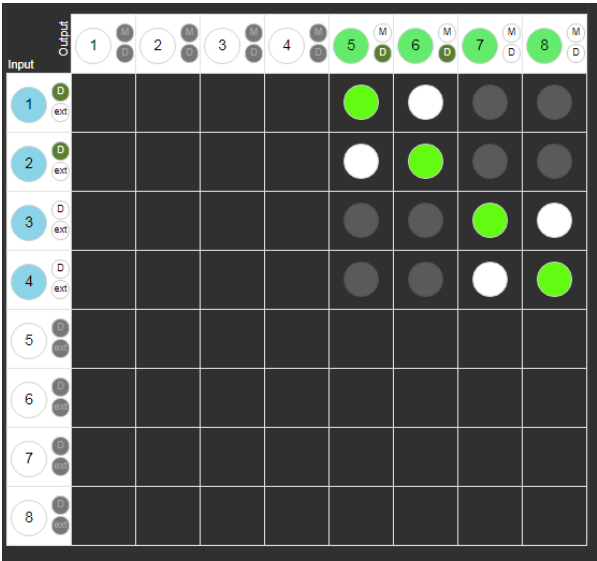
Figure 13: Video Switching Page – Switching Matrix Example

The switching matrix includes the following buttons (as illustrated in Figure 13):

The input is switched to the output.
For example input port 3 is switched to output port 7.

The input is currently not switched to an output/s but switching is possible.
For example, input port 3 is currently not switched to output port 8.

This switching option is not possible.
For example, input port 3 cannot be switched to output port 5 since Output 5 is set to the Dual mode (output ports 5 and 6).

Setting the Genlock

Use the **Genlock** web page to activate and configure the genlock port.

To set the genlock:

1. In the Navigation pane, click **Genlock**. The Genlock page appears.
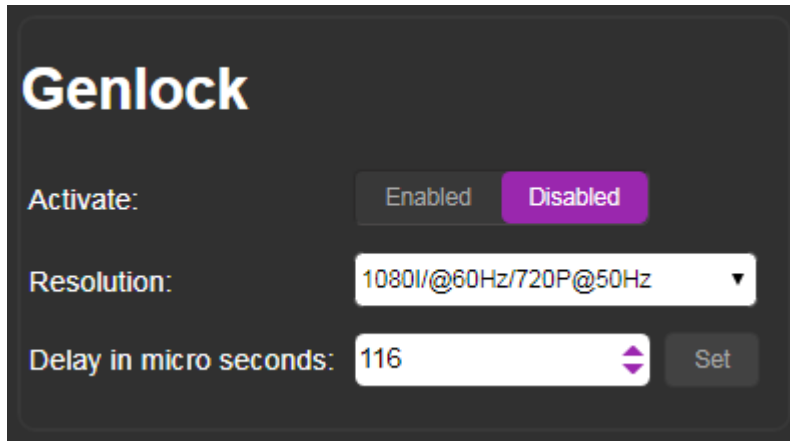
Figure 14: Genlock Page

2. Set the desired genlock resolution.
    The delay time appears.

(i) You can also set the delay time manually to a specific delay time that does not appear on the list. In this case the Resolution box displays **Customized**.

3. Click **Set**.

4. Enable or disable the genlock port settings.

Changing Device Settings and Saving/Loading Presets

The Device Settings Web page shows the device details, such as the unit name (changeable), model name, firmware version, serial number, MAC address and TCP port number (changeable), and also enables performing the following functions:

-
-
-

Changing the Ethernet Settings

To change the Ethernet settings:

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

Figure 15: Device Settings Page

2. Set **DHCP** ON or OFF.

3. If DHCP is OFF, change any of the parameters (IP Address, Netmask and/or Gateway).

4 . Click **Set**.

ⓘ Note that:

- After changing the IP number, reload the web page with the new IP address.

- If DHCP is ON, reload the web page with the new IP address.

Loading and Saving a Preset

You can save up to 8 presets and load them onto the **VS-8FDxI**, see Saving and Loading a Setup on page 12.

To save the current switching configuration to a preset:

1. In the Navigation pane, click **Device Settings**. The Device Settings page appears (Figure 15).

2. Click the Preset drop-down box and select a Preset number (Preset 1 to Preset 8).

3. Click **Save**.
   The current configuration is stored in the selected preset.

To load the current switching configuration to the device:

1. In the Navigation pane, click **Device Settings**. The Device Settings page appears (Figure 15).

2. Click the Preset drop-down box and select the Preset number (Preset 1 to Preset 8) with the desired configuration.

3. Click **Load**.
   The current configuration is uploaded to **VS-8FDxI**.

4. If desired, check **Locked** to lock the preset.
   The preset is locked and cannot be changed with a different configuration via the SAVE front panel button. When trying to save a different configuration to the locked preset, the following message appears on the display:

   "Failed saving read-only preset".

ⓘ You can only save a new configuration to this preset by unlocking the configuration via the web pages.

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 (Figure 15).

2. Click **Factory Reset**. The following window appears:

Communication warning

⚠ All the settings will be restored to defaults.
After this action, current WEB session may be disconnected.
In order to proceed Click OK to reload the web with the default URL.

Do you want to continue?

OK   Cancel
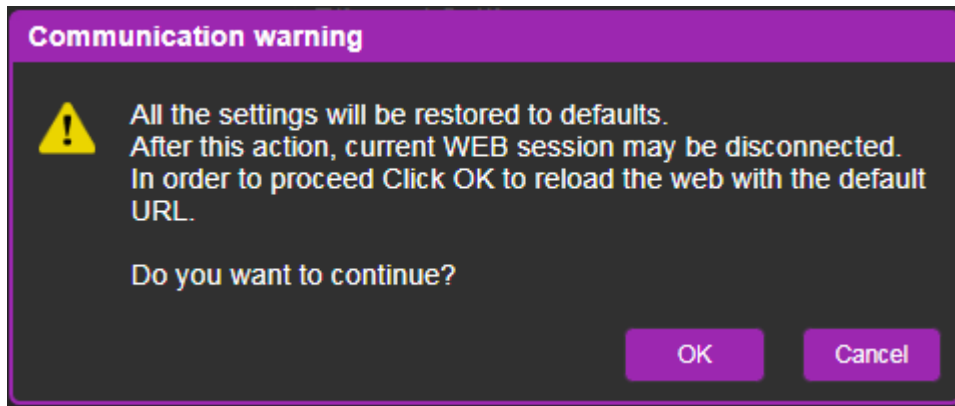
Figure 16: Device Settings Page – Factory Reset

3. Click **OK** to start factory reset and follow the instructions on-screen.

Activating Security

Use the Authentication page to set Web access permission.

Setting Web Page Access Permission

To define access to the web pages, in the Navigation pane, click **Authentication**.
The Authentication page appears displaying the current status (Security Enabled or disabled).

Authentication

Activate Security   Enabled   Disabled

Change Password: Current   [   ]
                    New   [   ]
                    Retype New [   ]

                               Change
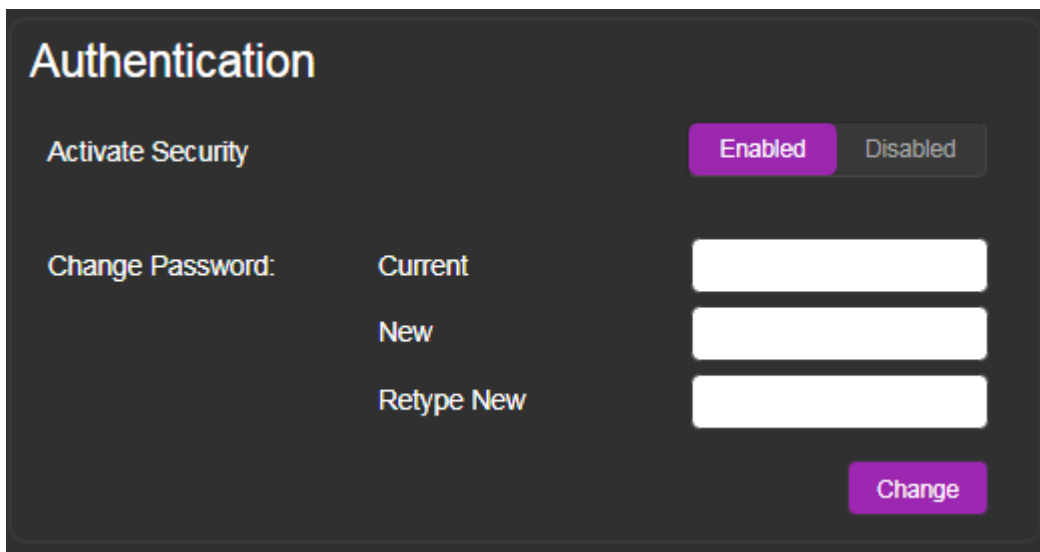
Figure 17: Authentication Page

To access Web pages without using the password:

1. Check the current security settings.

2. Set **Activate Security** to **Disabled**.
   The following message appears:
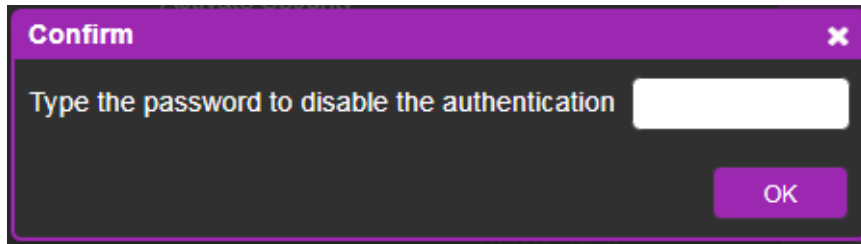
Figure 18: Authentication Page – Deactivating the Security

3. Type the current password (by-default, Admin).

4. Click **OK**.
   Authentication is disabled.

Figure 19: Authentication Page – Authentication Disabled

The page reloads and the top right side of the web page displays the security icon:

Figure 20: Security Page – Unlocked Icon

To access web pages using the password:

1. Check the current security status.

2. Set **Activate Security** to **Enabled** for web page password protection. The following message appears:
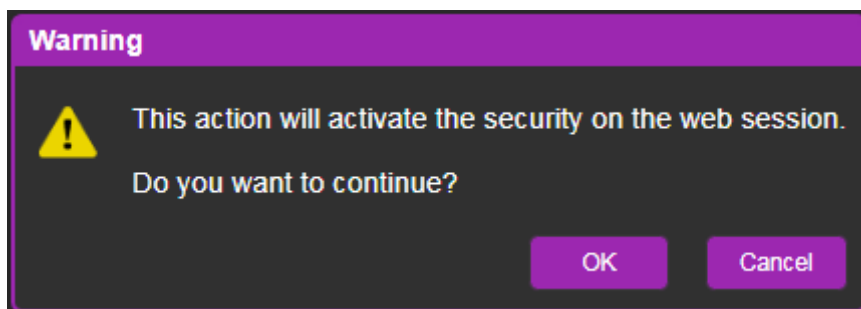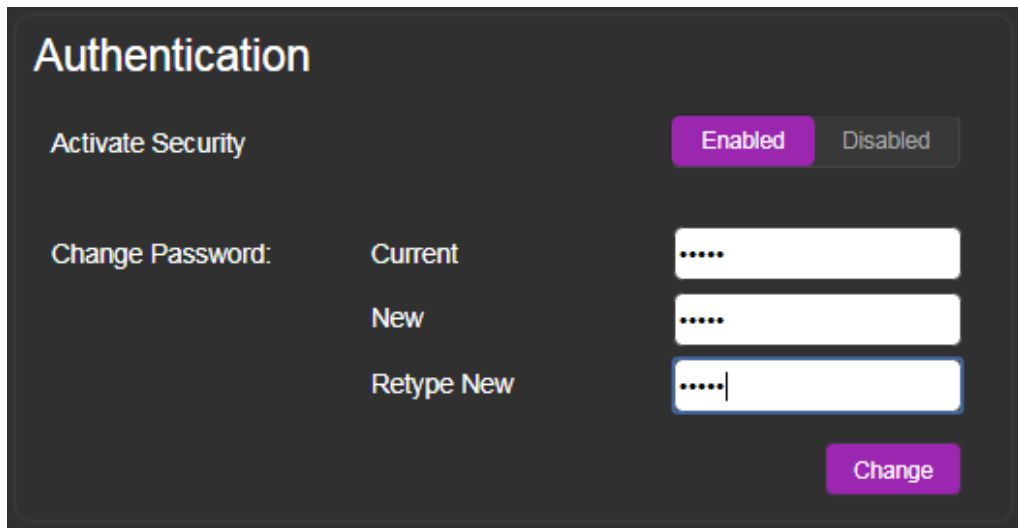
Figure 21: Authentication Page – Activating the Security

3. Select **Authentication** from the Navigation pane and type in the new password.

Figure 22: Security Page – Setting the Admin Password

4. Click **Change**. The following message appears:
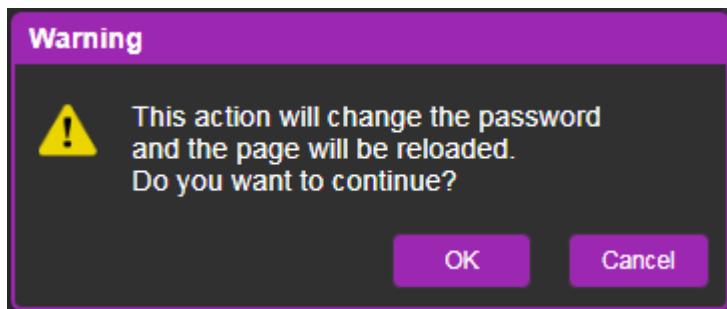
Figure 23: Security Page – Password Warning

5. Click **OK**.
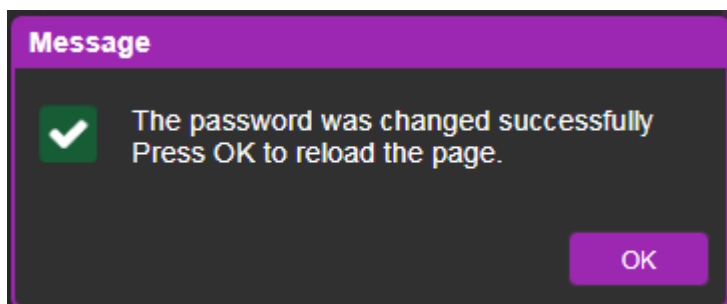
Figure 24: Authentication Page – Activating the Security

The page reloads and can be accessed by entering the password.
The top right side of the web page displays the security icon:

Figure 25: Security Page – Locked Icon

Performing Firmware Upgrade

To perform firmware upgrade:

1. In the Navigation pane, click **Firmware Upgrade**. The Firmware Upgrade page appears.
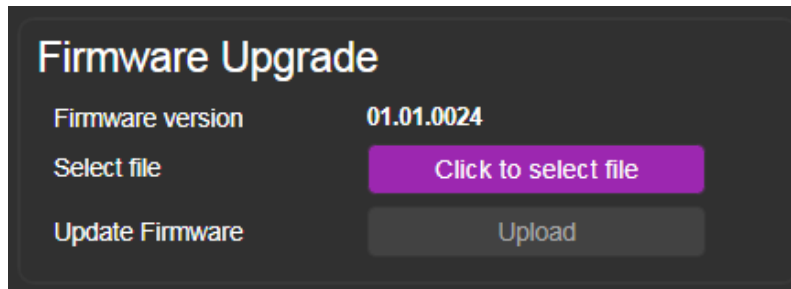
Figure 26: Firmware Upgrade Page

2. Click **Click to select file** and select the new firmware file.

3. Click **Open**.
   The new firmware file is selected.

4. Click **Upload** and follow the instructions on-screen.

Locking the Front Panel Buttons

The Front Panel Lock page lets you lock the front panel buttons.

When set to ON, **LOCK** ⑪ on the front panel illuminates and the buttons are locked. Unlock the buttons either by setting Status to OFF or by pressing **LOCK** for 5 seconds once again.
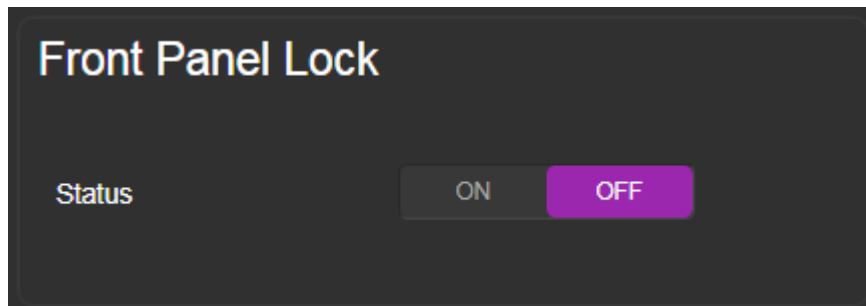
Figure 27: Front Panel Lock Page

Viewing the About Page

The **VS-8FDxI** About page lets you view the Web page version and Kramer Electronics Ltd details.

Figure 28: About Page

Technical Specifications

Ports	8 3G HD-SDI/HD-SDI/SDI video, 75Ω	On BNC connectors (by default, 1 to 4 are set as inputs and 5 to 8 are set as outputs)
	1 Genlock composite video input with loop	On BNC connectors
	1 RS-232	On a 3-pin terminal block for device control
	1 Ethernet	On an RJ-45 female connector for device control
Video	Max. Resolution	1080p@60Hz@24bpp For coupled signals: 4K@30
	Max Data Rate	3Gbps
	Reach	Up to 350m for SD signals Up to 140m for 1.5GHz HD signals Up to 120m for 3GHz HD signals 3G input reach can be extended by 10 meters in Extended mode
	SMPTE Standards	3G HD-SDI: SMPTE 424M HD-SDI: SMPTE 292M SDI: SMPTE 259M/344M
Control	Front Panel	Front panel buttons
		LCD display
		Power LED
	Other	RS-232, Ethernet (including embedded web pages)
Power	Consumption	28VA
	Source	100-240V AC, 50/60Hz
	Coupling	AC
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%, RH non-condensing
General	Net Dimensions (W, D, H)	19", 7", 1U, rack mountable
	Shipping Dimensions (W, D, H)	55cm x 27.6 cm x 10.7cm (21.65" x 10.87" x 4.21")
	Net Weight	1.7kg (3.75lbs) approx.
	Shipping Weight	2.7kg (6.0lbs) approx.
Accessories	Included	Rack ears, power cord
Specifications are subject to change without notice at www.kramerav.com		

Default Communication Parameters

RS-232			
Protocol 3000			
Baud Rate:	115,200	Stop Bits:	1
Data Bits:	8	Parity:	None
Command format example (define port 6 as an output port):		#PORT-DIRECTION 1,IN ~01@PORT-DIRECTION 1,IN	
TCP/IP Parameters			
IP Address:	192.168.1.39	UDP Port #:	50000
Subnet mask:	255.255.255.000	Maximum UDP Connections:	20
Default gateway:	192.168.1.1	Maximum TCP Connections:	Unlimited
TCP Port #:	5000		
Full Factory Reset			
Web Page:	Device Settings Web page.		
Protocol 3000:	Use "Factory" command: #FACTORY<CR>		
Rear panel RESET button:	Press RESET for 10 seconds while the machine is on. The device automatically resets and powers up again, loading factory default values.		

Protocol 3000

The **VS-8FDxl Programmable 8 Port SDI Router** can be operated using the Kramer Protocol 3000 serial commands. The command framing varies according to how you interface with the
VS-8FDxl.

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:
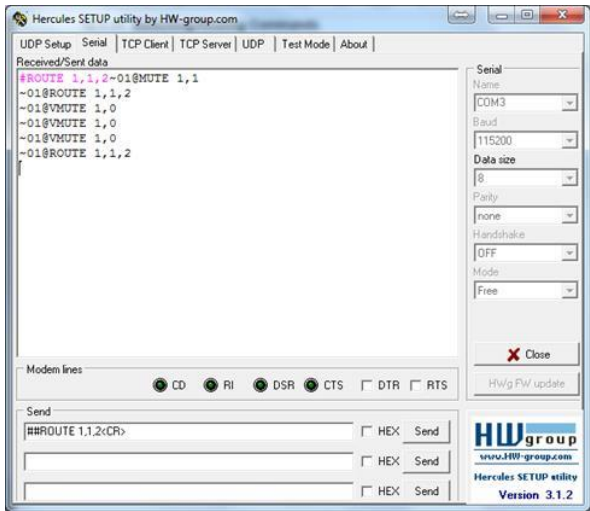
(i) The framing of the command varies according to the terminal communication software.   .

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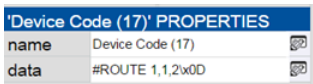
- K-Config (Kramer configuration software):
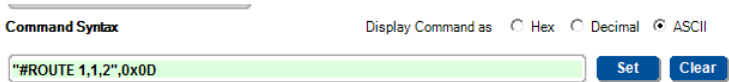
(i) All the examples provided in this section are based on using the K-Config software.

You can enter commands directly using terminal communication software (e.g., Hercules) by connecting a PC to the serial or Ethernet port on the **VS-8FDxl**. 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

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
#	*Device_id@*	**Message**	CR

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

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

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

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

- **Device Message Format**:

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

- Device Long Response – Echoing command:

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

Extended Protocol 3000

In addition to the standard Protocol 3000 syntax, newer Kramer products use extended syntax to improve user experience and provide easier deployment and configuration.

For products with many ports and of different types, the extended syntax describes commands and their parameters in a more intuitive, user-friendly format.

To identify devices supporting extended commands, use the `#HELP` command to list all supported commands. Commands that begin with the prefix '`X-`' use extended Protocol 3000 syntax. Extended commands use Port ID (see Port ID Format on page 33) and Signal ID (see Signal ID Format on page 34) instead of the old port naming parameters.

Port ID Format

The port ID is composed of three fields separated by a dot '.'
(`<direction_type>`**.**`<port_type>`**.**`<port_index>`), where:

- `<direction_type>` – specifies the direction of the port (see Direction Types on page 33).

- `<port_type>` – identifies the port type (see Port Types on page 34).

- `<port_index>` – is a port index that always matches the port number printed on the front or rear panel of the product.

Examples:
`IN.SDI.1` (refers to SDI input port 1)
`OUT.HDMI.4` (refers to HDMI output port 4)
`BOTH.RS232.2` (refers to bidirectional RS-232 port 2)

Direction Types

The string representation is not case sensitive.

String	Meaning
IN	Input port
OUT	Output port
BOTH	Bi-directional port where the direction has no meaning

Port Types

The string representation is not case sensitive.

String	Meaning
HDMI	HDMI port
HDBT	HDBaseT port
SDI	Any serial digital SDI port
ANALOG_AUDIO	Any balanced or unbalanced audio ports
AMPLIFIED_AUDIO	Any analog outputs defined as amplified audio
MIC	Any microphone port including a balanced audio input port divided into left/right
RS232	Local control port used for data control
IR	Local IR input
USB_A	Local USB port of type-A (client)
USB_B	Local USB port of type-B (host)

Signal ID Format

The signal ID is composed of three fields separated by a dot '.'
(`<port_id>.<signal_type>.<index>`), where:

- `<port_id>` – Indicates the port ID, as described in Port ID Format on page 33.

- `<signal_type>` – Indicates the type of signal, as described in Extended Signal Types on page 34.

- `<index>` – Indicates a specific channel number when there are multiple channels of the same type

Signal ID: <port_id>.<signal_type>.<index>
also means: <<direction_type>.<port_type>.<index>>.<signal_type>.<channel_index>

Examples:
`IN.HDMI.1.VIDEO.1` (refers to video channel 1 of HDMI input port 1)
`OUT.HDBT.1.AUDIO.1` (refers to audio channel 1 of HDBaseT output port 1)

Extended Signal Types

The string representation is non-case sensitive.

String	Meaning
VIDEO	Video signal of the port
AUDIO	Audio signal of the port
RS232	Data signal of the port (relevant for HDBT and RS-232 ports for example)
IR	IR signal of the port (relevant for HDBT and IR ports for example)
USB	USB signal of the port (relevant for HDBT and USB_A/B ports for example)

Examples

To understand the advantages of the extended Protocol 3000 syntax, compare the standard `MUTE` and `VMUTE` command syntax with the extended `X-MUTE` command syntax.

`MUTE` and `VMUTE` are dedicated commands to mute audio and video respectively. Both commands receive the index of the output to mute as a parameter. Two separate commands

are used to mute different signal types and neither command enable muting the inputs and not the outputs.

However, the `X-MUTE` command can mute audio and/or video on either inputs or outputs:

- Mute video on output 1: #X-MUTE OUT.HDMI.1.VIDEO.1

- Mute audio on output 1: #X-MUTE OUT.HDMI.1.AUDIO.1

- Mute video on input 1: #X-MUTE IN.HDMI.1.VIDEO.1

- Mute audio on input 1: #X-MUTE IN.HDMI.1.AUDIO.1

The name of the action remains the same and what it affects is passed in parameters.

In another example, the `#ROUTE` command is extended by the command `#X-ROUTE`:

- To route a video signal to HDBT output #4 from HDMI input #1:
  #X-ROUTE OUT.HDBT.4.VIDEO.1,IN.HDMI.1.VIDEO.1
  ~01@X-ROUTE OUT.HDBT.4.VIDEO.1,IN.HDMI.1.VIDEO.1

- To route an audio signal to analog output #1 from the HDMI input #1:
  #X-ROUTE OUT.ANALOG_AUDIO.1.AUDIO.1,IN.HDMI.1.AUDIO.1
  ~01@X-ROUTE OUT.ANALOG_AUDIO.1.AUDIO.1,IN.HDMI.1.AUDIO.1

Other Rules

In routing commands, first specify the target output(s), then the source input.
Example: `#X-ROUTE OUT.ANALOG_AUDIO.1.AUDIO.1,IN.HDMI.1.AUDIO.1`

Brackets '[' and ']' are reserved Protocol 3000 characters that define a list of parameters as in [a,b,c,d].
Example: to route video input 3 to outputs 1,4,6,7: **ROUTE 1,[1,4,6,7],3<cr>**

Example illustrating brackets and commas:
`#SIGNALS-LIST?`

```
~01@SIGNALS-LIST
[IN.SDI.1.VIDEO.1,IN.SDI.2.VIDEO.1,IN.SDI.3.VIDEO.1,IN.SDI.4.VIDEO.1,IN.SDI.
5.VIDEO.1,IN.SDI.6.VIDEO.1,IN.SDI.7.VIDEO.1,IN.SDI.8.VIDEO.1,OUT.SDI.1.VIDEO
.1,OUT.SDI.2.VIDEO.1,OUT.SDI.3.VIDEO.1,OUT.SDI.4.VIDEO.1,OUT.SDI.5.VIDEO.1,O
UT.SDI.6.VIDEO.1,OUT.SDI.7.VIDEO.1,OUT.SDI.8.VIDEO.1]
```

Protocol 3000 Commands

This section includes the following commands:

Common Commands

Command	Description
#	Protocol handshaking (system mandatory)
BUILD-DATE	Get device build date (system mandatory)
FACTORY	Reset to factory default configuration
HELP	Get command list (system mandatory)
MODEL?	Get device model (system mandatory)
PROT-VER?	Get device protocol version (system mandatory)
RESET	Reset device (system mandatory)
SN?	Get device serial number (system mandatory)
VERSION?	Read device firmware version
LOCK-FP	Lock/get front panel
NAME	Set/get machine (DNS) name
NAME-RST	Reset machine name to factory default (DNS)

#

Functions		Permission	Transparency
Set:	#	End User	Public
Get:	-	-	-
Description		**Syntax**	
Set:	Protocol handshaking	#CR	
Get:	-	-	
Response			
~nn@SP OK CR 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?**CR	
Response			
~nn@**BUILD-DATE**SPdateSPtimeCR 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			
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**CR	
Get:	-	-	
Response			
~nn@**FACTORY**SPOKCR 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	#**HELP**CR	
Response			
Multi-line: ~nn@Device available protocol 3000 commands:CR LFcommand,SP command...CR LF			
Parameters			
COMMAND_NAME – name of a specific command			
Notes			
To get help for a specific command use: **HELP**SPCOMMAND_NAMECR LF			
K-Config Example			
"#HELP",0x0D			

MODEL

Functions		Permission	Transparency
Set:	**-**	-	-
Get:	MODEL**?**	End User	Public
Description		**Syntax**	
Set:	-	-	
Get:	Get device model	#**MODEL?**CR	
Response			
~nn@**MODEL**SPmodel_nameCR 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?**CR	
Response			
~nn@**PROT-VER**SP3000:versionCR 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**CR	
Get:	-	-	
Response			
~nn@**RESET**SPOKCR 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?**CR	

Response
~nn@**SN**SPserial_numberCR LF

Parameters
serial_number – 11 decimal digits, factory assigned

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

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

VERSION?

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

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

Response
~nn@**VERSION**SPfirmware_versionCR LF

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

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

LOCK-FP

Functions		Permission	Transparency
Set:	**LOCK-FP**	End User	Public
Get	**LOCK-FP?**	End User	Public

Description		Syntax	
Set:	Lock front panel	#**LOCK-FP**SPlock_modeCR	
Get:	Get front panel lock state	#**LOCK-FP?**	

Response
~nn@**LOCK-FP**SPlock_modeSPOKCR LF

Parameters
lock_mode – 0 (Off, unlock the front panel buttons), 1 (On, lock the front panel buttons)

K-Config Example
Unlock front panel: "#LOCK-FP 0",0x0D

NAME

Functions		Permission	Transparency
Set:	**NAME**	Administrator	Public
Get:	**NAME?**	End User	Public

Description		Syntax
Set:	Set machine (DNS) name	#**NAME**SP*machine_name*CR
Get:	Get machine (DNS) name	#**NAME?**CR

Response

Set: ~nn@**NAME**SPmachine_name CR LF

Get: ~nn@**NAME**SPmachine_name CR LF

Parameters

machine_name – String of up to 14 alpha-numeric characters (can include hyphens but 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

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**SPOK CR LF

Notes

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

K-Config Example

Reset the machine name (S/N last digits are 0102):

"#NAME-RST KRAMER_0102",0x0D

System Commands

Command	Description
LOCK-FP	Lock front panel
LOG-TAIL?	Retrieve last lines from log file
PRST-LOCK	Set preset lock status
PRST-STO	Store current connections to preset
PRST-RCL	Recall saved preset list
PORT-DIRECTION	Set port direction
PORTS-LIST	Get all ports' ID list
SIGNALS-LIST	Get all signals' ID list

LOCK-FP

Functions		Permission	Transparency
Set:	**LOCK-FP**	End User	Set:
Get:	**LOCK-FP?**	End User	Get:
Description		**Syntax**	
Set:	Lock the front panel	#**LOCK-FP**SPLock/UnlockCR	
Get:	Get the front panel lock state	#**LOCK-FP?**CR	
Response			
~nn@**LOCK-FP**SPLock/UnlockCR LF			
Parameters			
Lock/Unlock – 0 (unlock), 1 (lock)			
K-Config Example			
Lock the front panel: "#LOCK-FP,1",0x0D			

LOG-TAIL

Functions		Permission	Transparency
Set:	-	-	-
Get:	**LOG-TAIL?**	End User	Public
Description		**Syntax**	
Set:	-	-	
Get:	Get the last "n" lines of message logs	#**LOG-TAIL?**SPline_numCR LF	
Response			
Get: ~nn@**LOG-TAIL?**CR LF Line content #1CR LF Line content #2CR LF etc...			
Parameters			
Line_num – optional, 10 (default)			
Notes			
Used for advanced troubleshooting. Helps find error root causes and gets details not displayed in the error code number.			
Example			
#NAME %66yy ~01@NAME %66yy ERR 003 #LOG-TAIL? 1 2015-09-14 09:13:12:566 ERROR P3K_Common_Cmd Invalid name character %(37) - only alphanumeric and hyphen are allowed			

PRST-LOCK

Functions		Permission	Transparency
Set:	**PRST-LOCK**	End User	Public
Get:	**PRST-LOCK?**	End User	Public
Description		**Syntax**	
Set:	Set a preset as read-only	#**PRST-LOCK**SPpreset_Index,modeCR LF	
Get:	Get the preset read-only status	#**PRST-LOCK?**SPpreset_IndexCR LF	
Response			
Set / Get: ~nn@**PRST-LOCK**SPpreset_Index,modeCR LF			
Parameters			
preset_Index – 1 to 8 (preset number) mode – ON, OFF			
Notes			
Prevents users from overriding the preset by mistake			
Examples			
#PRST-LOCK? 1 ~01@PRST-LOCK 1,OFF #PRST-LOCK? 2 ~01@PRST-LOCK 2,OFF #PRST-LOCK 2,ON ~01@PRST-LOCK 2,ON #PRST-LOCK? 2 ~01@PRST-LOCK 2,ON			
K-Config Example			
Set preset 1 as read only: "#PRST-LOCK 1,ON",0x0D			

PRST-STO

Functions		Permission	Transparency
Set:	**PRST-STO**	End User	Public
Get	-	-	-
Description		**Syntax**	
Set:	Store current connections, volumes and modes in preset	#**PRST-STO**SP*preset*CR	
Get:	-	-	
Response			
~nn@**PRST-STO**SP*preset*CR LF			
Parameters			
preset – preset number: 1 (Port 1)… 8 (Port 8)			
K-Config Example			
Store preset 1: "#PRST-STO 1",0x0D			

PRST-RCL

Functions		Permission	Transparency
Set:	**PRST-RCL**	End User	Public
Get	-	-	-

Description		Syntax
Set:	Recall saved preset list	#**PRST-RCL**SP*preset*CR
Get:	-	-

Response
~nn@**PRST-RCL**SPpresetCR LF

Parameters
preset – preset number: 1 (Port 1)… 8 (Port 8)

K-Config Example
Recall preset 1: "#PRST-RCL 1",0x0D

PORT-DIRECTION

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

Description		Syntax
Set:	Set port direction for video port	#**PORT-DIRECTION**SPport_index,directionCR LF
Get:	Get port direction for video port	#**PORT-DIRECTION?**SPport_index,directionCR LF

Response
Set / Get: ~nn@**PORT-DIRECTION**SPport_index,directionCR LF

Parameters
port_index – port number from the front panel (1-8) direction – IN (input), OUT (output)

Notes
This command defines the direction of a bidirectional port. Then routing is possible between them, use X-ROUTE as following: #X-ROUTE OUT.SDI.5,IN.SDI.1 ~01@X-ROUTE OUT.SDI.5.VIDEO.1,IN.SDI.1.VIDEO.1

Example
Set: #PORT-DIRECTION 5,OUT   ~01@PORT-DIRECTION 5,OUT #PORT-DIRECTION 1,IN   ~01@PORT-DIRECTION 1,IN Get: #PORT-DIRECTION? 5   ~01@PORT-DIRECTION 5,OUT #PORT-DIRECTION? 1   ~01@PORT-DIRECTION 1,IN

K-Config Example
Set the direction of port 1 to IN: "#PORT-DIRECTION 1,IN",0x0D

PORTS-LIST

Functions		Permission	Transparency
Set:	-	-	-
Get:	PORTS-LIST?	End User	Public

Description		Syntax	
Set:	-	-	
Get:	Get the port list of this machine	#**PORTS-LIST?**CR LF	

Response

~nn@**PORTS-LIST**SP[port_id,..,]CR LF

Parameters

port_id – <direction_type>.<port_type>.<port_index>, see Port ID Format on page 33 for further information.

Notes

The response is returned in one line and terminated with CR LF

The response format lists port IDs separated by commas.

Examples

```
#PORTS-LIST?
~01@PORTS-LIST
[IN.SDI.1,IN.SDI.2,IN.SDI.3,IN.SDI.4,OUT.SDI.5,OUT.SDI.6,OUT.SDI.7,OUT.SDI.8]
```

K-Config Example

Get the ports list:
"#PORTS-LIST?",0x0D

SIGNALS-LIST

Functions		Permission	Transparency
Set:	-	-	-
Get:	**SIGNALS-LIST?**	End User	Public

Description		Syntax	
Set:	–	–	
Get:	Get signal ID list of this machine	#**SIGNALS-LIST?**CR LF	

Response

~nn@**SIGNALS-LIST**SP [signal_id,..,]CR LF

Parameters

signal_id – <direction_type>.<port_type>.<port_index>.<signal_type>.<index> for further information, see Signal ID Format on page 34)

Notes

The response is returned in one line and terminated with CR LF

The response format lists signal IDs separated by commas.

Examples

```
#SIGNALS-LIST?
~01@SIGNALS-LIST
[IN.SDI.1.VIDEO.1,IN.SDI.2.VIDEO.1,IN.SDI.3.VIDEO.1,IN.SDI.4.VIDEO.1,
IN.SDI.5.VIDEO.1,IN.SDI.6.VIDEO.1,IN.SDI.7.VIDEO.1,IN.SDI.8.VIDEO.1,
OUT.SDI.1.VIDEO.1,OUT.SDI.2.VIDEO.1,OUT.SDI.3.VIDEO.1,OUT.SDI.4.VIDEO.1,
OUT.SDI.5.VIDEO.1,OUT.SDI.6.VIDEO.1,OUT.SDI.7.VIDEO.1,OUT.SDI.8.VIDEO.1]
```

K-Config Example

Get the signals list:
"#SIGNALS-LIST?",0x0D

Authentication Commands

Command	Description
PASS	Set/get password for login level

PASS

Functions		Permission	Transparency
Set:	**PASS**	Administrator	Public
Get:	**PASS?**	Administrator	Public
Description		**Syntax**	
Set:	Set password for login level	#**PASS**SPlogin_level,passwordCR	
Get:	Get password for login level	#**PASS?**SPlogin_levelCR	
Response			
~nn@**PASS**SPlogin_level,passwordCR LF			
Parameters			
login_level – level of login to set: User, Admin password – password for the login_level. Up to 15 printable ASCII chars.			
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			

Video Commands

Command	Description
GENLOCK-MODE	Set/get genlock mode
GENLOCK-TIME-MICROSEC	Set/get genlock timing
PORT-RES-TYPE	Set/get port signal resolution type
VMUTE	Set/get video on output status
X-long-reach	Set/get long-reach mode of a port
x-ROUTE	Route a port to other port

GENLOCK-MODE

Functions		Permission	Transparency
Set:	**GENLOCK-MODE**	End User	Public
Get:	**GENLOCK-MODE?**	End User	Public
Description		**Syntax**	
Set:	Set genlock sync	#**GENLOCK-MODE**SPmodeCR LF	
Get:	Get genlock mode	#**GENLOCK-MODE?**CR LF	
Response			
Set / Get: ~nn@**GENLOCK-MODE**SPmodeCR LF			
Parameters			
mode – ON, OFF (not case sensitive)			
Notes			
This command synchronizes the routing action with sync frames. Routing does not occur until a sync frame is detected and delay is defined in the GENLOCK-TIME-MICROSEC command. This mode affects the whole system and is not configurable per output/input.			
Examples			
#GENLOCK-TIME-MICROSEC? ~01@GENLOCK-TIME-MICROSEC 100 #GENLOCK-TIME-MICROSEC 20 ~01@GENLOCK-TIME-MICROSEC 20 #GENLOCK-MODE ON ~01@GENLOCK-MODE ON #GENLOCK-MODE? ~01@GENLOCK-MODE ON			
K-Config Example			
Set genlock mode to on: "#GENLOCK-MODE ON",0x0D			

GENLOCK-TIME-MICROSEC

Functions		Permission	Transparency
Set:	#**GENLOCK-TIME-MICROSEC**	End User	Public
Get:	#**GENLOCK-TIME-MICROSEC?**	End User	Public

Description		Syntax	
Set:	Set genlock delay in microseconds	#**GENLOCK-TIME-MICROSEC**SPvalueCR	
Get:	Get genlock delay in microseconds	#**GENLOCK-TIME-MICROSEC?**SPvalueCR	

Response
Set / Get: ~nn@**GENLOCK-TIME-MICROSEC**SPvalueCR LF

Parameters
value – time in microseconds

Notes
Configures the maximum delay in microseconds between arrival of a picture frame and its routing is executed

Examples
#GENLOCK-TIME-MICROSEC? ~01@GENLOCK-TIME-MICROSEC 100 #GENLOCK-TIME-MICROSEC 20 ~01@GENLOCK-TIME-MICROSEC 20

K-Config Example
Set genlock delay time to 25microsec: "#GENLOCK-TIME-MICROSEC 25",0x0D

PORT-RES-TYPE

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

Description		Syntax	
Set:	Set dual/single mode for video ports	#**PORT-RES-TYPE**SPport_index,res_typeCR LF	
Get:	Get port resolution type	#**PORT-RES-TYPE?**SPport_index,res_typeCR LF	

Response
Set / Get: ~nn@**PORT-RES-TYPE**SPport_index,modeCR LF

Parameters
port_index – 1 to 8 (input or output number) mode – single, dual

Notes
Dual mode routes both signals as a pair. Two responses are returned to the Get command. When muting or selecting extra-range mode, both inputs/output of the pair are affected.

Example
#PORT-RES-TYPE? 8 ~01@PORT-RES-TYPE 8,SINGLE #PORT-RES-TYPE 8,DUAL ~01@PORT-RES-TYPE 8,DUAL ~01@PORT-RES-TYPE 7,DUAL

K-Config Example
Set port 1 to the single mode: "#PORT-RES-TYPE 1,SINGLE",0x0D

VMUTE

Functions		Permission	Transparency
Set:	**VMUTE**	End User	Public
Get:	**VMUTE?**	End User	Public

Description		Syntax
Set:	Set enable/disable video on output	#**VMUTE**`SP`output_id,flag`CR`
Get:	Get video on output status	#**VMUTE?**`SP`output_id`SP` `CR`

Response
Set / Get: ~`nn`@**VMUTE**`SP`output_id,flag`CR LF`

Parameters
output_id – 1 (Port 1), 2 (Port 2), 3 (Port 3), 4 (Port 4), 5 (Port 5), 6 (Port 6), 7 (Port 7), 8 (Port 8)
flag – 0 (unmute), 1 (mute), 2 (blank video)

K-Config Example
Disable the video output on Port 2: "#VMUTE 2,0",0x0D

X-LONG-REACH

Functions		Permission	Transparency
Set:	**X-LONG-REACH**	End User	Public
Get:	**X-LONG-REACH?**	End User	Public

Description		Syntax
Set:	Set extra range (long reach) mode for SDI ports	#**X-LONG-REACH**`SP`port_id,state`CR LF`
Get:	Get extra range (long reach) state configuration on any port	#**X-LONG-REACH?**`SP`port_id`CR LF`

Response
Get: ~`nn`@**X-LONG-REACH**`SP`port_id,state`CR LF`

Parameters
port_id – <direction_type>.<port_type>.<port_index> for further information see Port ID Format on page 33. state – OFF, ON (not case sensitive)

Notes
Some devices support extra range (long reach) mode, used in HDBT and SDI applications. Use the command #PORTS-LIST? to list all port IDs available in the system.

Example
#X-LONG-REACH IN.SDI.1,OFF ~01@X-LONG-REACH IN.SDI.1,OFF #X-LONG-REACH? IN.SDI.1 ~01@X-LONG-REACH IN.SDI.1,OFF

K-Config Example
Set port 1 (configured as input) long-reach mode to on: "#X-LONG-REACH IN.SDI.1,ON",0x0D

X-ROUTE

Functions		Permission	Transparency
Set:	**X-ROUTE**	End User	Public
Get:	**X-ROUTE?**	End User	Public

Description		Syntax
Set:	Send routing command to matrix	#**X-ROUTE**␣OUT_signal_id,IN_signal_id CR LF
Get:	Get routing status	#**X-ROUTE?**␣OUT_signal_id CR LF

Response
Set / Get: ~nn@**X-ROUTE**␣OUT_signal_id,IN_signal_id CR LF

Parameters
OUT_signal_id – OUT.SDI.<port_index>.VIDEO.<port_index> for further information see see Signal ID Format on page 34). IN_signal_id – IN.SDI.<port_index>.VIDEO.<port_index> for further information see see Signal ID Format on page 34).

Notes
It is recommended to use the command #SIGNALS-LIST? To get the list of all signal IDs available in the system and which can be used in this command. Video 1 is the default port in this command and is implied even if not written: #X-ROUTE OUT.SDI.5,IN.SDI.1 is interpreted as: #X-ROUTE OUT.SDI.5.VIDEO.1,IN.SDI.1.VIDEO.1

Examples
#X-ROUTE OUT.SDI.5.VIDEO.1,IN.SDI.1.VIDEO.1 ~01@X-ROUTE OUT.SDI.5.VIDEO.1,IN.SDI.1.VIDEO.1 #X-ROUTE? OUT.SDI.5.VIDEO.1 ~01@X-ROUTE OUT.SDI.5.VIDEO.1,IN.SDI.1.VIDEO.1 Reduced form : #X-ROUTE OUT.SDI.5,IN.SDI.1 ~01@X-ROUTE OUT.SDI.5.VIDEO.1,IN.SDI.1.VIDEO.1

K-Config Example
Route port 1 (input) to port 8 (output): "#X-ROUTE OUT.SDI.8.VIDEO.1,IN.SDI.1.VIDEO.1",0x0D

Communication Commands

Command	Description
ETH-PORT	Set/get Ethernet port protocol
Net-CONFIG	Set/get the network config
NET-DHCP	Set/get DHCP mode
NET-GATE	Set/get gateway IP
NET-IP	Set/get IP address
NET-MAC	Get MAC address
NET-MASK	Set/get subnet mask

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**SPportType,ETHPortCR
Get:	Get Ethernet port protocol	#**ETH-PORT?**SPportTypeCR

Response

~nn@**ETH-PORT**SPportType,ETHPortCR LF

Parameters

portType – 0 (TCP)=, 1 (UDP)

ETHPort – 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)

K-Config Example

Set the Ethernet port protocol for TCP to port 12457:

"#ETH-PORT 0,12457",0x0D

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**SPid,ip,net_mask,gatewayCR LF
Get:	Get a network configuration.	#**NET-CONFIG?**SPidCR LF

Response

Get: ~nn@**NET-CONFIG**SPid,ip,net_mask,gatewayCR LF

Parameters

id – network ID

ip – network IP

net_mask – network mask

gateway – network gateway

Example

NET-CONFIG 1,192.168.113.10,255.255.0.0,192.168.0.1
~01@ NET-CONFIG 1,192.168.113.10,255.255.0.0,192.168.0.1

K-Config Example

Set the network configuration:

"#NET-CONFIG 1,192.168.113.10,255.255.0.0,192.168.0.1",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**SPmodeCR
Get:	Get DHCP mode	#**NET-DHCP?**CR

Response
~nn@**NET-DHCP**SPmodeCR 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)

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

NET-GATE

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

Description		Syntax
Set:	Set gateway IP	#**NET-GATE**SPip_addressCR
Get:	Get gateway IP	#**NET-GATE?**CR

Response
~nn@**NET-GATE**SPip_addressCR LF

Parameters
ip_address – gateway IP address, in the following format: xxx.xxx.xxx.xxx

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

NET-IP

Functions		Permission	Transparency
Set:	**NET-IP**	Administrator	Public
Get:	**NET-IP?**	End User	Public
Description		**Syntax**	
Set:	Set IP address	#**NET-IP**SPip_addressCR	
Get:	Get IP address	#**NET-IP?**CR	
Response			
~nn@**NET-IP**SPip_addressCR LF			
Parameters			
ip_address – IP address, in the following format: xxx.xxx.xxx.xxx			
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			

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**SPmac_addressCR LF			
Parameters			
mac_address – unique MAC address. Format: XX-XX-XX-XX-XX-XX where X is hex digit			
K-Config Example			
"#NET-MAC?",0x0D			

NET-MASK

Functions		Permission	Transparency
Set:	**NET-MASK**	Administrator	Public
Get:	**NET-MASK?**	End User	Public
Description		**Syntax**	
Set:	Set subnet mask	#**NET-MASK**SPnet_maskCR	
Get:	Get subnet mask	#**NET-MASK?**CR	
Response			
~nn@**NET-MASK**SPnet_maskCR 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			
K-Config Example			
Set the subnet mask to 255.255.0.0: "#NET-MASK 255.255.000.000",0x0D			

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What is Not Covered

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In order to pursue any remedy under this limited warranty, you must possess an original, dated receipt as proof of purchase from an authorized Kramer Electronics reseller. If this product is returned under this limited warranty, a return authorization number, obtained from Kramer Electronics, will be required (RMA number). You may also be directed to an authorized reseller or a person authorized by Kramer Electronics to repair the product.

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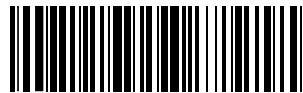
KRAMER

⚠ **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.

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