KRAMER ELECTRONICS LTD.

USER MANUAL

MODEL:
VP-81SIDN
8x1 Digital Step-In Switcher

P/N: 2900-300315 Rev 1

VP-81SIDN 8x1 Digital Step-In Switcher Quick Start Guide

This guide helps you install and use your product for the first time. For more detailed information, go to http://www.kramerelectronics.com/support/product_downloads.asp to download the latest manual or scan the QR code on the left.

Step 1: Check what's in the box

☑ **VP-81SIDN** 8x1 Digital Step-In Switcher
☑ 1 Power cord
☑ 1 Set of rack "ears"

☑ 1 Quick Start Guide
☑ Kramer RC-IR3 Infrared RC Transmitter
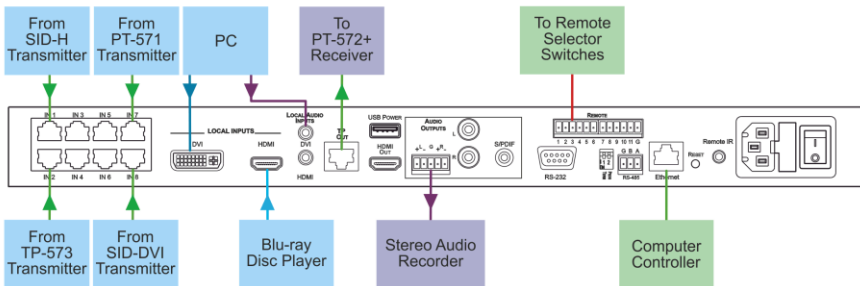☑ 4 Rubber feet
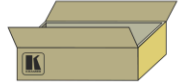
Save the original box and packaging in case your **VP-81SIDN** needs to be returned to the factory for service.

Step 2: Install the VP-81SIDN

Mount the machine in a rack (using the included rack "ears") or attach the rubber feet and place it on a shelf.

Step 3: Connect the inputs and output

Always switch off the power to all devices before connecting them to your **VP-81SIDN**.

From SID-H Transmitter	From PT-571 Transmitter	PC	To PT-572+ Receiver		To Remote Selector Switches

From TP-573 Transmitter	From SID-DVI Transmitter	Blu-ray Disc Player	Stereo Audio Recorder	Computer Controller

For optimum performance we recommend the Kramer **BC-DGKat524** (CAT 5 24 AWG), the Kramer **BC-DGKat623** (CAT 6 23 AWG), and the Kramer **BC-DGKat7a23** (CAT 7a 23 AWG) cables. These specially built cables significantly outperform regular CAT 5/CAT 6/CAT 7a cables.
Note: The **VP-81SIDN** cannot work with unshielded cables.

Step 4: Connect the power

Connect the power cord to the **VP-81SIDN** and plug it into the mains electricity.

Step 5: Operate the VP-81SIDN

To Switch an Input to the Output:

❏ Press one of the eight input buttons

To Toggle between the TP and HDMI Outputs:

❏ Press the Output Select TP button to select the TP output
❏ Press the Output Select HDMI button to select the HDMI output

To Select the Local Input Type:

❏ Press the Local Input Select DVI button to select the DVI input
❏ Press the Local Input Select HDMI button to select the HDMI input

To Adjust the Output Volume:

❏ Press the Volume Control + or – button to increase or decrease the volume respectively

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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 11 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 and GROUP 11: Sierra Video Products.

Congratulations on purchasing your Kramer **VP-81SIDN** *8x1 Digital Step-In Switcher*, which is ideal for the following typical applications:

- Display systems requiring simple input selection
- Remote monitoring of computer activity in schools and businesses
- Rental/staging applications
- Multimedia and presentation source selection

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 http://www.kramerelectronics.com/support/product_downloads.asp 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:

- Use only good quality connection cables (we recommend Kramer high-performance, high-resolution cables) to avoid interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables)

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

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

- Position your **VP-81SIDN** 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 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

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 *http://www.kramerelectronics.com/support/recycling/*.

3 Overview

The **VP-81SIDN** can route one of eight TP (Twisted Pair), a DVI or an HDMI input to either a TP or an HDMI output. Input selection can also be controlled remotely using;

- Step-In modules (for example, the **SID-DP**)
- Contact closure switches
- A serial controller via RS-232 or RS-485
- A PC via Ethernet connected over a LAN

The device also outputs balanced and unbalanced stereo audio, as well as digital audio.

In particular, the **VP-81SIDN**:

- Has a bandwidth of 1.65Gbps per video channel
- Can be cascaded with up to four **VP-81SIDN** devices via the HDMI port to provide up to 37 Twisted Pair inputs
- Supports the SID range of Step-in Commander panels for remote inputs and remote step-in control
- Has a USB power port that can provide power to USB devices, (for example, the Kramer **KW-11T**)
- Is HDCP compliant
- Provides EDID capture – Copies and stores the EDID from a display device

You can control the **VP-81SIDN** using the front panel buttons, or remotely via:

- RS-485 or RS-232 serial commands transmitted by a touch screen system, PC or other serial controller
- Ethernet over a LAN
- The Kramer **RC-IR3** Infrared Remote Control Transmitter or the CA35M/IRR-50 infrared remote extension cable transmitter (optional)

3.1 About the Power Connect™ Feature

The Power Connect™ feature here means that digital *Step-In Commanders* (for example, the **SID-DP** and **SID-DVI**) do not require an independent power supply if the distance between the **VP-81SIDN** and the *Step-In Commander* does not exceed 50m (164ft). The Power Connect™ feature applies as long as the cable can carry power and the distance does not exceed 50m on standard TP cable. (Heavier gauge cable may be used to extend the Power Connect™ range).

Note: Analog *Step-In Commanders* (for example, the **SID-VGA** and **SID-X1**) do require independent power supplies.

3.2 Using Twisted Pair cables

Kramer engineers have developed special twisted pair cables to best match our digital twisted pair products; the Kramer **BC-DGKat524** (CAT 5 24 AWG), the Kramer **BC-DGKat623** (CAT 6 23 AWG), and the Kramer **BC-DGKat7a23** (CAT 7a 23 AWG) cables. These specially built cables significantly outperform regular CAT 5/CAT 6/CAT 7a cables.
Note: The **VP-81SIDN** cannot work with unshielded cables.

3.3 Using the IR Transmitter for the VP-81SIDN

You can use the **RC-IR3** IR transmitter to operate the **VP-81SIDN** via the built in IR receiver on the front panel, or instead, via an optional external IR receiver. The external IR receiver can be located 15m (49ft) away from the device. This distance can be extended to up to 60m (197ft) when used with three extension cables.

Before using the external IR receiver, be sure to arrange for your Kramer dealer to insert the internal IR connection cable with the 3.5mm mini jack that fits into the REMOTE IR opening on the rear panel. Connect the external IR receiver to the REMOTE IR 3.5mm mini jack.

4 Defining the VP-81SIDN 8x1 Digital Step-In Switcher

Figure 1 defines the front panel of the **VP-81SIDN**.
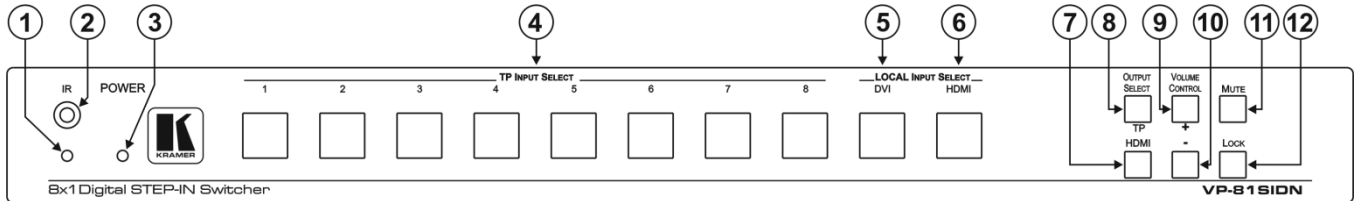
Figure 1: VP-81SIDN 8x1 Digital Step-In Switcher Front Panel

#	Feature		Function
1	*IR*	LED	Lights yellow when receiving an IR signal
2		Sensor	Receives the signal transmitted by an IR remote control
3	*POWER* LED		Lights green when the device is powered on
4	*TP INPUT SELECT* Buttons (1 to 8)		Press to select one of the TP inputs
5	*LOCAL INPUT SELECT* Buttons	DVI	Press to select the DVI input
6		HDMI	Press to select the HDMI input
7	*OUTPUT SELECT* Buttons	HDMI	Press to select the HDMI output
8		TP	Press to select the TP output
9	*VOLUME CONTROL* Buttons	**+**	Press to increase the analog audio output volume
10		**–**	Press to decrease the analog audio output volume
11	*MUTE* Button		Press to mute the external audio output
12	*LOCK* Button		Press and hold to lock the front panel buttons. Press and hold again to unlock the buttons

Figure 2 defines the rear panel of the **VP-81SIDN**.
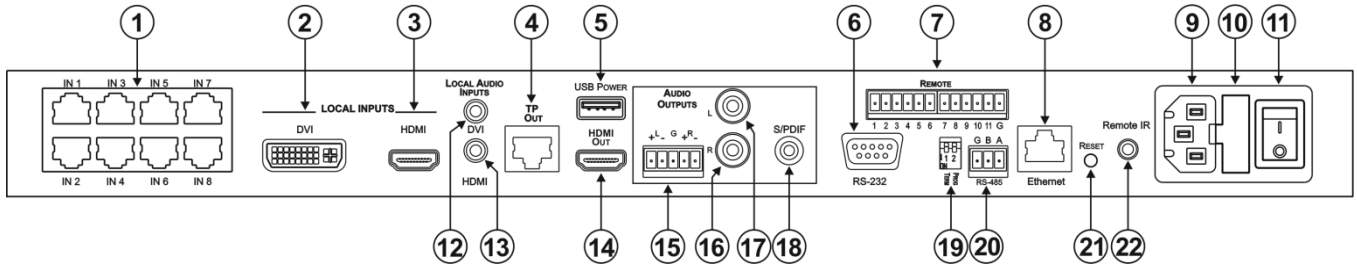
Figure 2: VP-81SIDN 8x1 Digital Step-In Switcher Rear Panel

#	Feature		Function
1	TP Input RJ-45 Connectors *IN 1* to *IN 8*		Connect to the remote TP sources (1 to 8) using CAT 6 or higher specification cable. These may be step-in panels (for example, SID-DP) or TP transmitters (for example, the PT-571 or TP-573)
2	*LOCAL INPUTS*	*DVI*	Connect to the local DVI source
3		*HDMI*	Connect to the local HDMI source
4	*TP OUT* RJ-45 Connector		Connect to the remote TP receiver, for example, PT-572+, using CAT 6 or higher specification cable (maximum 50m, 164ft)
5	*USB POWER* Connector		Connect any device requiring USB power, (for example, the Kramer KW-11T)
6	*RS-232* 9-pin D-sub Port (F)		Connect to a serial controller (see Section 6.3)
7	*REMOTE* 12-way Terminal Block		Connect to remote contact closure input and output selection switches (see Section 6.2)
8	*ETHERNET* RJ-45 Connector		Connect to a PC or LAN for remote control via Ethernet (see Section 6.5)
9	AC Mains Power Socket		Connect to the AC mains power
10	AC Mains Fuse		AC mains supply protection fuse
11	AC Mains Power Switch		Turns the AC mains power supply to the device on and off

#	Feature		Function
12	*LOCAL AUDIO INPUTS*	*DVI*	Connect to the local DVI audio source
13		*HDMI*	Connect to the local HDMI audio source
14	*HDMI OUT* Connector		Connect to the local HDMI acceptor
15	*AUDIO OUTPUTS*	*+L–G+R–*	Connect to the balanced audio acceptor (see Section 6.1)
16		*R*	Connect to the unbalanced audio acceptor right channel
17		*L*	Connect to the unbalanced audio acceptor left channel
18		*S/PDIF*	Connect to the digital audio acceptor
19	*PROG TERM* DIP-Switch		DIP-Switch 1: Sets the RS-485 bus termination (see Section 8.3). Up = Off, Down = On (Default = On) DIP-Switch 2: For the use of Kramer service personnel only
20	*RS-485* 3-way Terminal Block		Connect to RS-485 port on a remote controller or another VP-81SIDN. Connect: G to Ground, A to A, and B to B (see Section 6.4)
21	*RESET* Button		Press while power-cycling the device to reset parameters to factory default values
22	*REMOTE IR* 3.5mm Mini Jack		Connect to an external IR receiver unit for controlling the device via an IR remote controller (see Section 3.3)

5   Installing in a Rack

This section provides instructions for rack mounting the unit.

Before installing in a rack, be sure that the environment is within the recommended range:

|	
OPERATING TEMPERATURE:	0º to +40ºC (32º to 104ºF)
STORAGE TEMPERATURE:	-40º to +70ºC (-40º to 158ºF)
HUMIDITY:	10% to 90%, RHL non-condensing

CAUTION!

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

1. It is located within the recommended environmental conditions, as the operating ambient temperature of a closed or multi unit rack assembly may exceed the room ambient temperature.
2. Once rack mounted, enough air will still flow around the machine.
3. The machine is placed straight in the correct horizontal position.
4. You do not overload the circuit(s). When connecting the machine to the supply circuit, overloading the circuits might 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.
5. The machine is earthed (grounded) in a reliable way and is connected only to an electricity socket with grounding. Pay particular attention to situations where electricity is supplied indirectly (when the power cord is not plugged directly into the socket in the wall), for example, when using an extension cable or a power strip, and that you use only the power cord that is supplied with the machine.

To rack-mount a machine:
1. Attach both ear brackets to the machine. To do so, remove the screws from each side of the machine (3 on each side), and replace those screws through the ear brackets.
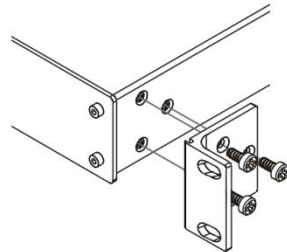
2. Place the ears of the machine against the rack rails, and insert the proper screws (not provided) through each of the four holes in the rack ears.
Note:
• In some models, the front panel may feature built-in rack ears
• Detachable rack ears can be removed for desktop use
• Always mount the machine in the rack before you attach any cables or connect the machine to the 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

6 Connecting the VP-81SIDN 8x1 Digital Step-In Switcher

Switch off the power to all devices before connecting them to your **VP-81SIDN**. After connecting your **VP-81SIDN**, connect its power and then switch on the power to each device.
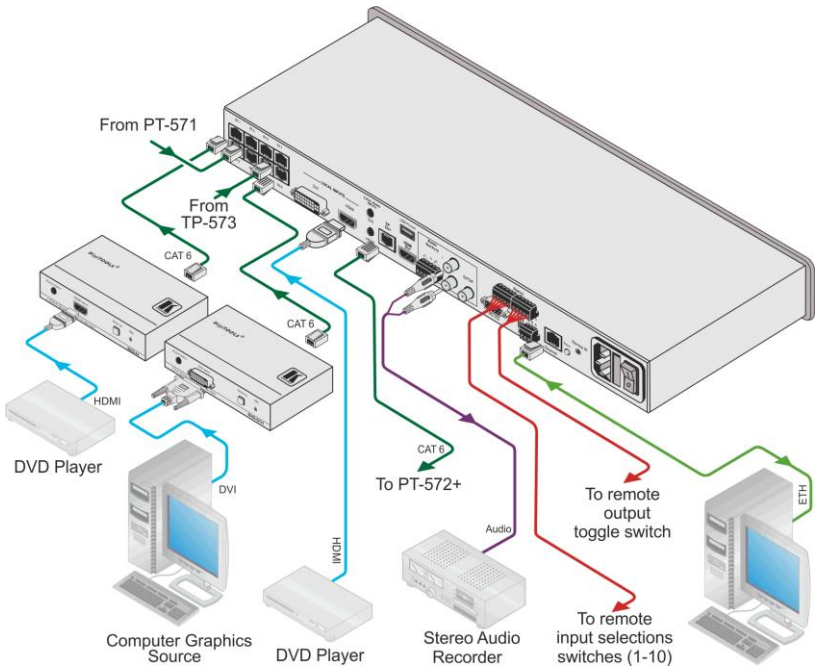

Figure 3: Connecting the VP-81SIDN 8x1 Digital Step-In Switcher

To connect the VP-81SIDN as illustrated in the example in Figure 3:

1. Connect up to eight remote Step-in Commanders (for example, the **SID-H** and **SID-DVI** Step-In Commander panels up to 50m (164ft) away) or TP transmitters (for example, the **PT-571** and **TP-573**) to the **VP-81SIDN** RJ-45 TP INPUT connectors.

2. Connect a DVI video source (for example, a computer graphics source) to the LOCAL INPUTS DVI connector, and the computer's unbalanced stereo audio source to the LOCAL AUDIO INPUT DVI connector.

3. Connect an HDMI video source to the LOCAL INPUTS HDMI connector.

4. Connect the TP OUT RJ-45 connector to a compatible TP receiver up to 50m (164ft), for example, **PT-572+**.

5. Connect the S/PDIF RCA digital audio output to an audio acceptor (for example, a DAT recorder).

6. Connect the balanced audio 5-pin terminal block (see Section 6.1) to an audio acceptor (for example, a balanced stereo audio amplifier).

7. Connect up to ten remote, contact closure input selection switches to the REMOTE terminal block (see Section 6.2).

8. Connect the Ethernet RJ-45 TP port directly or via a LAN to a PC controller.

   Alternatively, you can connect a PC and/or controller to the:

   - RS-232 port (see Section 6.3)
   - RS-485 port (see Section 6.4)

9. Connect the power cord.

Note: When signal sources are disconnected from inputs, signal acceptors (for example, a projector) may not go into standby mode automatically. We therefore recommend that you turn off the **VP-81SIDN** and/or the acceptor.

Note: When using the **PT-572+** in conjunction with the **VP-81SIDN** do not connect the 12V power supply to the **PT-572+**.

6.1 Connecting to a Balanced Audio Acceptor

Figure 4 illustrates how to wire devices to the balanced audio output.

L+ L- G R+ R-
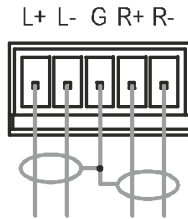
Figure 4: Balanced Stereo Audio Output Connection

6.2 Connecting Remote Contact Input and Output Selection Switches

You can connect remote, contact closure input selection switches to the REMOTE terminal block on the rear panel of the **VP-81SIDN**. Remote input selection switches provide the ability to remotely activate the inputs and an output.

The following table lists the remote-contact, terminal block connections.

Terminal Number	Description
1	Connect to ground to select input 1
2	Connect to ground to select input 2
3	Connect to ground to select input 3
4	Connect to ground to select input 4
5	Connect to ground to select input 5
6	Connect to ground to select input 6
7	Connect to ground to select input 7
8	Connect to ground to select input 8
9	Connect to ground to select input 9
10	Connect to ground to select input 10
11	Connect to ground to toggle between output 1 and output 2
G	Ground

The following example illustrates three switches (1, 8 and A) connected so as to remotely control inputs 1 and 8, and select an output respectively. Connected as shown, pressing switch 1 causes input 1 on the **VP-81SIDN** to be the active input, and pressing switch 8 causes input 8 to be the active input. Pressing switch A causes the output selection to toggle between the TP and HDMI outputs.

Figure 5: Remote Input Selection Switch Wiring

To connect remote input/output selection switches as illustrated in the example in Figure 5:
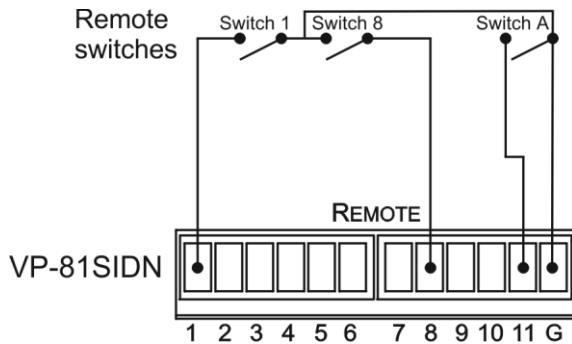
1. Connect Switch 1 to pins 1 and G on the terminal block (remote step-in for input 1).

2. Connect Switch 8 to pins 8 and G on the terminal block (remote step-in for input 8).

3. Connect Switch A to pins 11 and G on the terminal block (remote output selection toggle).

6.3 Connecting to the VP-81SIDN 8x1 Digital Step-In Switcher via RS-232

You can connect to the **VP-81SIDN** via an RS-232 connection using, for example, a PC.

To connect to the VP-81SIDN via RS-232:

- Connect the Control RS-232 3-pin, terminal block connector on the rear panel of the **VP-81SIDN** unit via a 3-wire cable (pin TX to pin 2, RX to pin 3, and G to pin 5) to the RS-232 9-pin D-sub port on your PC

6.4 Connecting to the VP-81SIDN via RS-485

You can operate the **VP-81SIDN** via the RS-485 port from a distance of up to 1200m (3900ft) using any device equipped with an RS-485 port (for example, a PC). For successful communication, you must set the RS-485 machine number and bus termination.

To connect a device with a RS-485 port to the VP-81SIDN:

1. Connect the TxD+ pin on the RS-485 port of the PC to the A pin on the RS-485 port on the rear panel of the VP-81SID.

2. Connect the TxD– pin on the RS-485 port of the PC to the B pin on the RS-485 port on the rear panel of the **VP-81SIDN**.

3. If shielded TP cable is used, connect the shield to the G (ground) pin on the unit.

6.4.1 Connecting and Controlling Multiple VP-81SIDN Devices

You can connect up to four **VP-81SIDN** devices with operation via RS-232 (as shown in the example in Figure 6) or Ethernet. Connecting four devices provides 37 inputs.
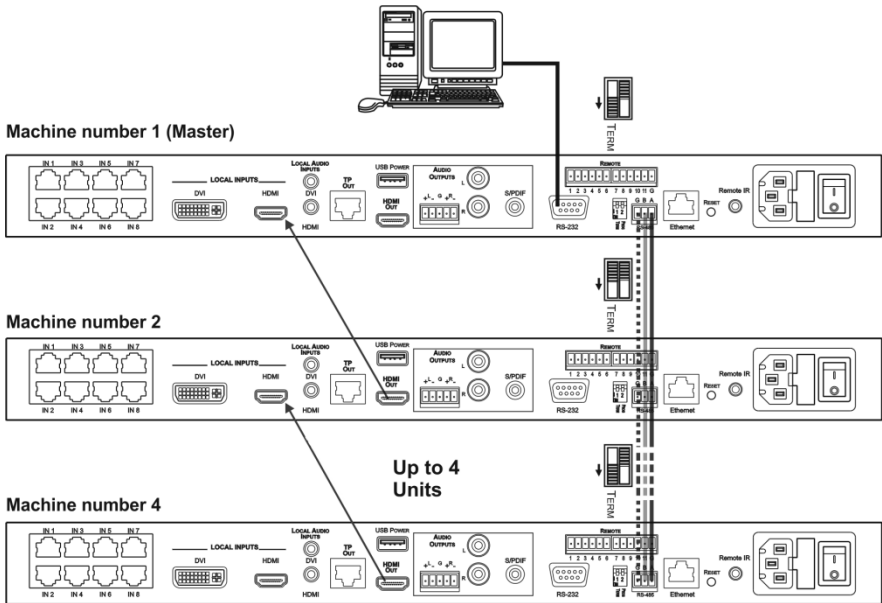
Figure 6: RS-485 Control of Multiple VP-81SIDN Devices via RS-232 and RS-485

To connect up to four VP-81SIDN devices:

1. Connect the RS-232 port on the first **VP-81SIDN** device to the PC (see Section 6.3).

2. Connect the RS-485 terminal block port on the first device to the RS-485 port on the second device, and so on for all devices. (Connect A to A, B to B, and G to G.)

3. Connect the HDMI LOCAL INPUT on the first device to the HDMI OUT on the second device, and so on for all devices.

4. Set the machine number and termination as follows:

   - The first device is machine number 1 and the subsequent three devices are machine numbers 2 to 4 (see Section 8.1)

   - Terminate the first and last devices, that is, terminate machine numbers 1 and 4 (see Section 8.3). Ensure that all other devices are left unterminated

6.5 Connecting to the VP-81SIDN 8x1 Digital Step-In Switcher via Ethernet

You can connect to the **VP-81SIDN** via Ethernet using either of the following methods:

- Directly to the PC using a crossover cable (see Section 6.5.1)

- Via a network hub, switch, or router, using a straight-through cable (see Section 6.5.2)

Note: 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.

6.5.1 Connecting the Ethernet Port Directly to a PC

You can connect the Ethernet port of the **VP-81SIDN** 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 **VP-81SIDN** with the factory configured default IP address.

After connecting the **VP-81SIDN** 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 7.
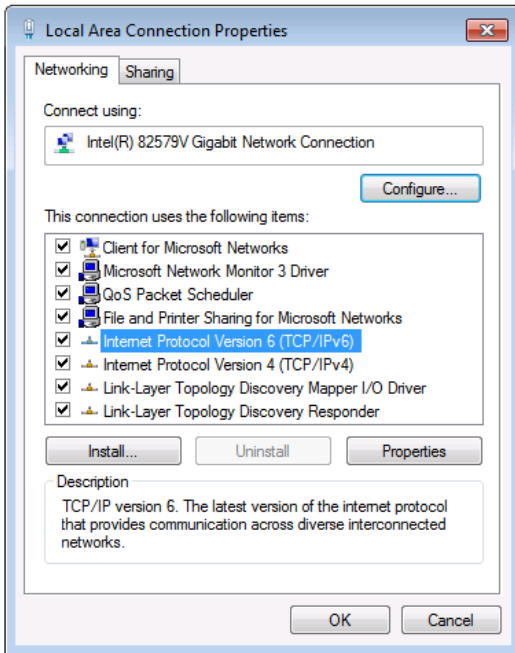
Figure 7: Local Area Connection Properties Window

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 8 or Figure 9.
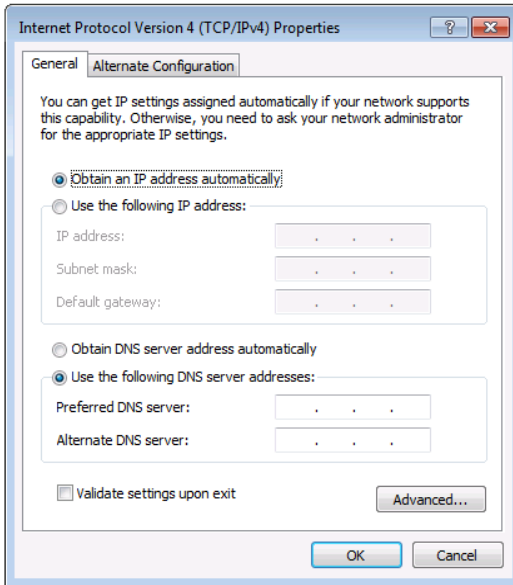
Figure 8: Internet Protocol Version 4 Properties Window
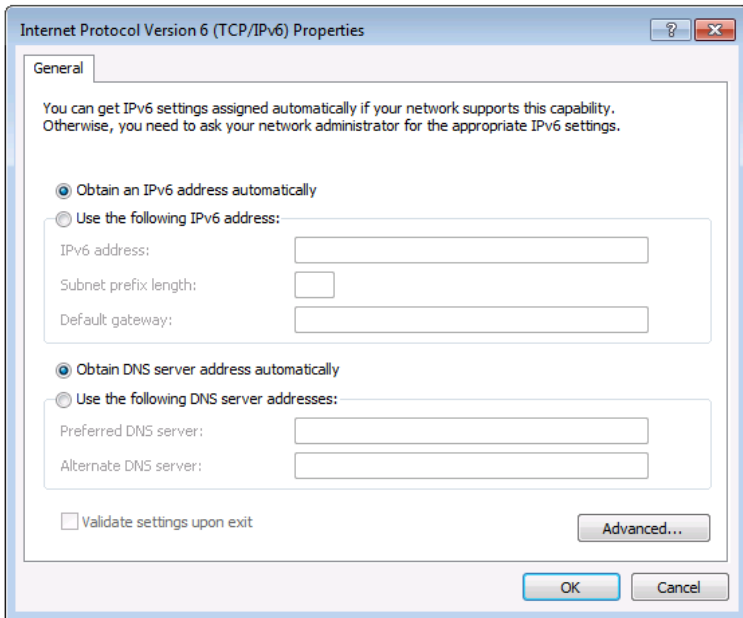
Figure 9: Internet Protocol Version 6 Properties Window

VP-81SIDN - Connecting the VP-81SIDN 8x1 Digital Step-In Switcher

6. Select **Use the following IP Address** for static IP addressing and fill in the details as shown in Figure 10.
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.
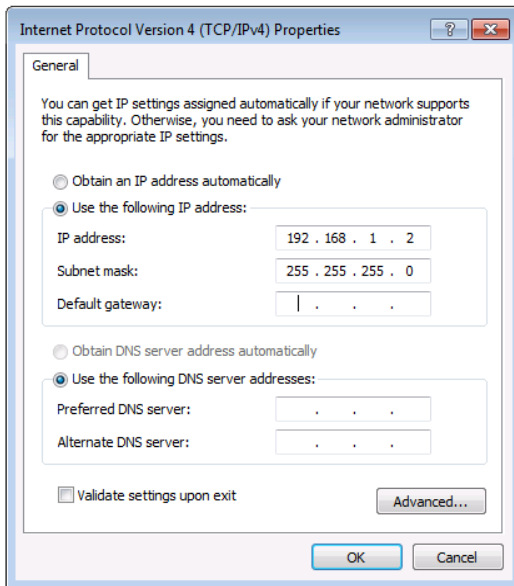
Figure 10: Internet Protocol Properties Window

7. Click **OK**.

8. Click **Close**.

6.5.2 Connecting the Ethernet Port via a Network Hub or Switch

You can connect the Ethernet port of the **VP-81SIDN to** the Ethernet port on a network hub or using a straight-through cable with RJ-45 connectors.

6.5.3 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 Section 8).

7 Operating the VP-81SIDN Locally

This section describes:

- Selecting an input (see Section 7.1)

- Muting the input when using Step-In Commanders (see Section 7.2)

- Resetting all input priorities to their defaults (see Section 7.3)

- Selecting an output (see Section 7.4)

- Setting the audio output volume (see Section 7.5)

- Locking and unlocking the front panel buttons (see Section 7.6)

- Muting the audio (see Section 7.7)

Powering up the **VP-81SIDN** recalls the last settings (that is, the configuration of the device when it was powered down) from the non-volatile memory.

7.1 Selecting an Input

The input buttons illuminate to indicate the following:

- Off indicates the input is not selected

- On indicates the input is selected

- Flashing indicates that you have tried to select the input but another input with a higher priority is currently selected

To select an input:

- Press one of the ten front panel Input Select buttons. The selected button lights

Note: Pressing an active input button mutes the input. Pressing the button again unmutes the input.

Note: The priority of each input can be set individually using the Step-In Commander panel.

7.2   Muting the Input when using Step-In Commanders

To mute and unmute the input when using a Step-In Commander:

1. Press the Input Select button on the Step-In Commander.
   The input is selected and the buttons lights.

2. Press the Step In button on the Step-In Commander.
   The input is muted and the button no longer lights.

3. Press the Step In button on the Step-In Commander a second time.
   The input is unmuted and the button lights.

7.3   Resetting all Input Priorities to the Default

To reset all input priorities to the default priority (10):

1. Press the Lock button until the button lights.
   The front panel buttons are locked.

2. Press the Volume Control + and – buttons at the same time.
   All the TP Input Select buttons flash. When they stop flashing, the input
   priorities have been reset to their defaults.

7.4   Selecting an Output

To select an output

- Press one of the two front panel Output Select buttons.
  The selected button lights.

7.5   Setting the Audio Output Volume

To set the audio output volume:

- Press either the Volume Control + (to increase the volume) or the Volume
  Control – (to decrease the volume) button.

7.6   Locking and Unlocking the Front Panel Buttons

To lock and unlock the front panel buttons:

1. Press the Lock button until it lights.
   The front panel buttons are locked.

2. Press the Lock button until it no longer lights.
   The front panel buttons are unlocked.

7.7   Muting and unmuting the Audio

To mute and unmute the audio output:

- Press the Mute button.
  The button lights and the audio is muted

- Press the Mute button again to toggle the setting.
  The button no longer lights

8 Configuring and Maintaining the VP-81SIDN

This section describes:

- Setting the RS-485 device number (see Section 8.1)

- Reading the current RS-485 device number (see Section 8.2)

- Setting the RS-485 bus termination (see Section 8.2)

- Resetting to the factory default settings (see Section 8.4)

- Upgrading the firmware (see Section 8.5)

8.1 Setting the RS-485 Device Number

The machine number on the RS-485 bus can be set to between 1 and 4 and can be set using the front panel buttons.

To set the RS-485 machine number using the front panel buttons:

1. Press the Lock button until the button lights.
   The front panel buttons are locked.

2. Press the Local Input Select HDMI and Mute buttons at the same time.
   The TP Input Select buttons flash.

3. Press the TP Input Select button number (1 to 4) for the required machine number.
   The TP Input Select buttons stop flashing and the selected TP Input Select button lights.

4. Press the Lock button until the button is no longer lit.
   The selected machine number is set and front panel buttons are unlocked.

8.2 Reading the Current RS-485 Device Number

To read the current RS-485 machine number:

1. Press the Lock button until the button lights.
   The front panel buttons are locked.

2. Press both the Mute and DVI buttons at the same time.

The current ID is indicated by input number button with the flashing LED.

After a few seconds the LED stops flashing.

8.3   Setting the RS-485 Bus Termination

Figure 11 illustrates the factory default DIP-switch positions.

Figure 11: RS-485 Termination DIP-switch

DIP-switch 1 sets the RS-485 bus termination of the **VP-81SIDN**. Only the first and last physical units on the RS-485 bus must be terminated, all others must be unterminated. When the DIP-switch is up the termination is off (default), when the DIP-switch is down the termination is on.

8.4   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 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.

8.5   Upgrading the Firmware

The firmware may be upgraded by any the following methods:

- Kramer K-Upload software

- Kramer Step-In Controller software

- Kramer K-Router Plus software

See the relevant documentation for detailed instructions.

9 Operating the VP-81SIDN Remotely

The **VP-81SIDN** can be controlled remotely using all of the following methods:

- The Step-in Controller software (see Section 9.1)

- Step-In Commander panels

- Contact closure switches (for connecting, see Section 6.2)

- RS-485 (for connecting, see Section 6.4) or RS-232 (for connecting, see Section 6.3) serial commands transmitted by a touch screen system, PC or other serial controller

- Ethernet over a LAN (for connecting, see Section 6.5)

- Remotely using the Kramer RC-IR3 Infrared Remote Control Transmitter (refer to the RC IR3 user manual) or the infrared remote extension cable transmitter

9.1 Operating the VP-81SIDN Using the Controller Software

Before attempting to connect, perform the procedures described in Section 6.4.

The *Step-In Software* requires the following:

- Windows™ XP, Vista or Windows™ 7

- Microsoft .Net Framework version 3

To install the *Step-In Software*, download the software and run the setup file. After installation, running the *Step-In Software* for the first time displays a window similar to that shown in Figure 12.

The **VP-81SIDN** can operate in either secure mode or unsecure mode. The factory default mode is unsecure. In the secure mode, access can be via either Admin or User (see Section 9.1.3). When in unsecure mode, full access is granted without Admin authorization.
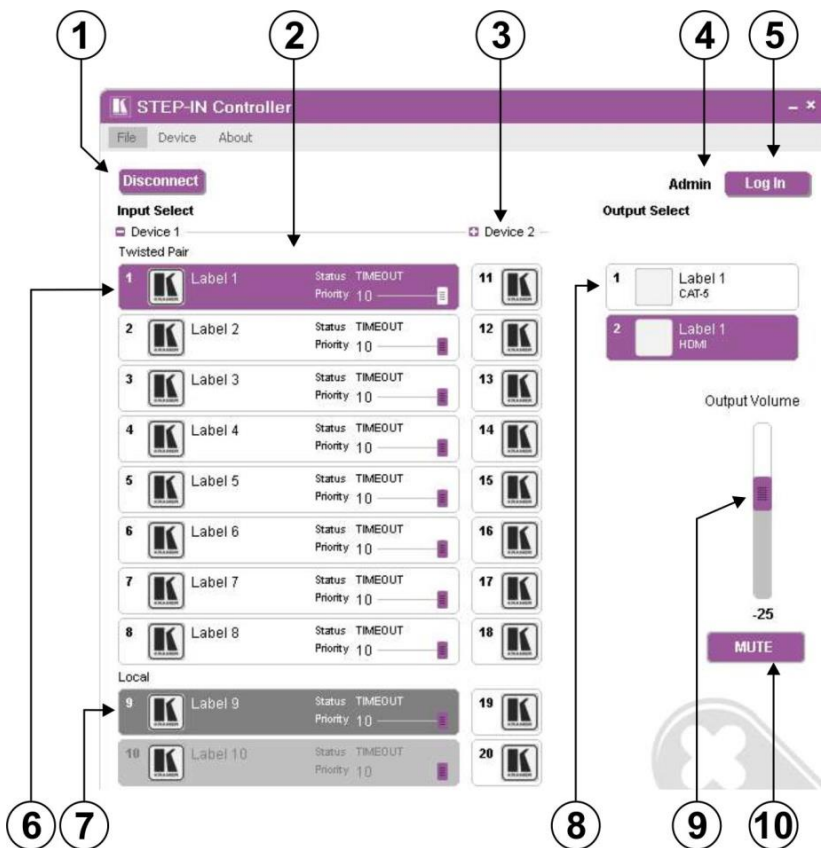
Figure 12: Step-In Software Main Window

The following table describes the main window features.

#	Feature	Function
1	*Connect/Disconnect* Button	Click to connect to or disconnect from the device (see Section 9.1.4)
2	Selected Input Buttons	Click to select an input. The selected input button is highlighted
3	*Device 2* Cascaded Device(s)	Inputs of any cascaded devices
4	*Current User* Label	Indicates which user is currently logged in (see Section 9.1.15)
5	*Log In* Button	Click to log in (see Section 9.1.3)
6	*Inputs Twisted Pair* Buttons	Click one of the eight remote Twisted Pair input buttons to select an input (see Section 9.1.16)
7	*Local* Input Buttons	Click one of the two local input buttons to select an input
8	*Outputs* Buttons	Click one of the two output buttons to select an output (see Section 9.1.17)

#	Feature	Function
9	*Output Volume* Slider	Click, hold and move the slider up (higher) or down (lower) to adjust the output volume (see Section 9.2)
10	*Mute on/off* Button	Click to mute/unmute the output volume (see Section 9.2)

Note: When a change is made on the device (for example, a different output is selected), the change is reflected almost immediately in the main window of the *Step-in Software*, and visa versa.

Figure 13 shows a typical input button.
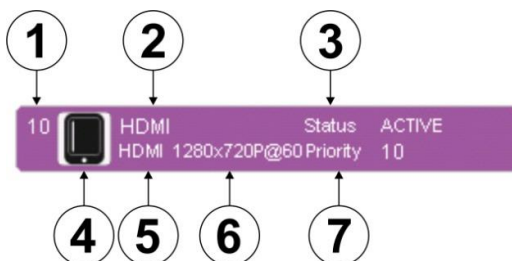
Figure 13: Typical Input Button

The following table describes the Button characteristics.

#	Feature	Description
1	*10*	Input (1–10) or output (1–2) channel number
2	*HDMI* Label	User-selectable button label, Admin only (see Section 9.1.1)
3	*Status ACTIVE*	Indicates the status of the connection and signal on the channel: TIMEOUT—no cable MUTE— cable present, no signal detected WAIT— cable and signal present but channel is not selected ACTIVE—cable and signal present and channel is selected (only one channel at a time)
4		User-selectable icon selected to be displayed on the button, Admin only (see Section 9.4)
5	*HDMI*	Video input type: VGA, HDMI, DP, DVI
6	*1280x720p@60*	Video resolution, i=interlace/p=progressive, refresh rate
7	*Priority 10* Slider	Slider for adjusting the priority (1, lowest–10, highest) of the input, Admin only (see Section 9.3)

9.1.1 Authorized Users

By default, you are logged in as User and you can:

- Select an active input or output

- Adjust or mute/unmute the output volume

- Change the device name

- Modify the IP configuration

Options that you are not authorized to perform are grayed out.

When logged in as Admin, in addition to the User abilities, you can:

- Modify the input priorities (see Section 9.1.9)

- Modify the input/output button characteristics (see Section 9.1.10)

- Upgrade the device firmware (see Section 9.1.11)

- Reset the device (see Section 9.1.12)

- Change the User and Admin Passwords (see Section 9.1.12)

- Enable/disable IR control

Note: Any actions that you are not authorized to perform are grayed out.

9.1.2 The Step-In Software Menu Bar

The following table describes the Menu Bar options.

Menu Bar Options	Sub Menu	Description
FILE	Connect/Disconnect	Connect or disconnect to the device
	Exit	Exit the Step-in software
DEVICE	Details	Retrieve and display the device details, such as, model, unit name, version, and so on
	Change Admin Password	Change the Admin password
	Cascade	Select the number of cascaded devices
	Firmware Update	Update the device firmware using a new firmware file (Admin only)
	Change Unit Password	Change the Admin user password (Admin only)
	Reset	Power cycle the device (Admin only)
	IR Status	Enable or disable the IR control for the device
ABOUT	NA	Displays the Step-in Software and Kramer company details

9.1.3   Logging in as Admin

To log in as admin:

1. Click the Log In button.
    The Log In window appears as shown in <u>Figure 14</u>.

Figure 14: Login Window

2. Select either User or Admin using the radio buttons.

3. Enter the password.
    The main window is displayed and the user shown is Admin.

4. To log out, click Log Out.

Note: By default there is no Admin password.

9.1.4   Connecting to the Device

To connect to the device:

1. Click the Connect button.
    The Connection Method window is displayed as shown in <u>Figure 15</u>.
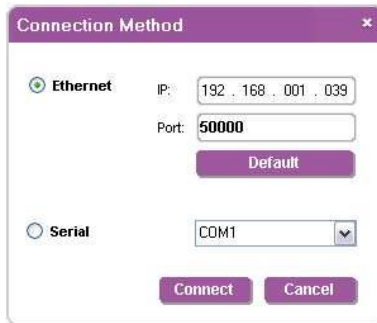
Figure 15: Connection Method Window

2. Select the connection method (via Ethernet over a LAN or a serial connection) by clicking the relevant radio button.

3. For Ethernet, enter the IP address and Port number of the device and click Connect.
   To set the default IP address and Port number, press the Default button.

4. For a serial connection, select the required Com port from the drop-down list.

5. Click Connect.
   If the connection is successful, the window shown in Figure 10 appears. If the connection is not successful, a Timeout error message appears.

9.1.5 Switching an Input to an Output

To switch an input to an output:

1. Click on the required twisted-pair or local input to switch.
   The input is selected and the button changes to solid purple as shown in Figure 16.

Figure 16: Input Selection

2. Click on the required output to select.

The switch selection is made and the button changes to solid purple.

Note: To switch an input to an output, you can click on either an input or an output first, the order is not important.

9.1.6 Switching and Selecting an Input when using the VP-81SIDN

To switch an input to an output:

1. Click on the TP input to which the **VP-81SIDN** is connected.

The switch selection is made and the button changes to solid purple.

2. Right-click on the input.

The InputPropertiesForm screen is shown as in Figure 17.
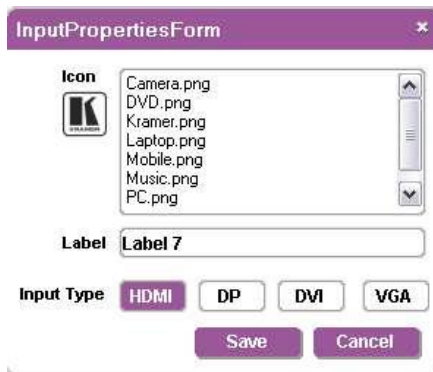
Figure 17: VP-81SIDN Input Selection

3. Click on the required Input Type button.

   The input type selection is made and the button changes to solid purple.

4. Click Save.

   The Input type is selected on the SID-X1.

9.1.7 Changing the Output Volume

To change the output volume:

1. Click and hold on the Output Volume slider as shown in Figure 18.

Figure 18: Changing the Output Volume

2. Drag up to increase or down to decrease the output volume.

   The volume level changes accordingly.

9.1.8 Muting the Audio Output

To mute the audio output:

1. Click the Mute button.

   The button changes to purple and the audio is muted.

2. Click the colored Mute button to unmute the audio.

   The button changes to white and the audio is unmuted.

9.1.9 Changing the Priority of an Input

The priority of an input determines whether another input that is selected can take control from it, where 1 is the lowest and 10 is the highest priority. For example, input 4 has a priority of 2 and input 8 has a priority of 5. If input 8 is currently selected, input 4 cannot take control. In this case, if you press input 4, the button flashes for a few seconds and then goes off, indicating that input 4 is not selected.

To change the input priority you must be logged in as Admin.

To change the priority of an input:

- Click, hold and move the Priority slider on the relevant input to the required priority, right to increase and left to decrease the priority.

9.1.10 Changing the Input and Output Button Icons and Labels

To change the input/output button icons and labels you must be logged in as Admin.

To change an input/output button icon and label:

1. Right-click on the relevant button.
   The button Input Properties window appears as shown in Figure 19.
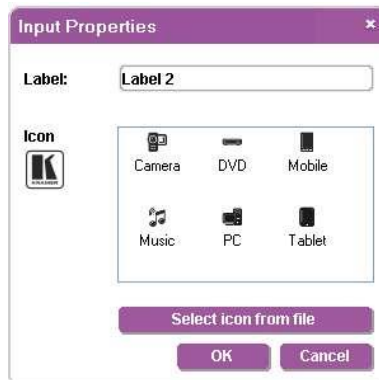
Figure 19: Input Button Priorities Window

2. In the Label text field, enter the required button label.

3. Either:

   ▪ Select the required icon from the list (you can save custom icons in the \Kramer Electronics\StepIn Controller\Images directory)

   OR

   ▪ Click Select icon from file and browse to the icon directory

4. Click OK.

   The button characteristics are changed.

9.1.11 Updating the Firmware

To update the firmware you must be logged in as Admin.

To update the firmware:

1. Download the latest firmware file from http://www.kramerelectronics.com.

2. Click Unit > Firmware Update.

3. Browse to the firmware file that you downloaded.

4. Click Open.

   The device firmware is loaded.

Note: Do not interrupt the uploading process or the device may be damaged.

5. When the process is complete, reset the device (see Section 9.1.12).

9.1.12 Resetting the Device

To reset the device you must be logged in as Admin.

To reset the device:

1. Click Unit > Reset.

2. Click OK.

   The device is reset.

9.1.13   Setting the IP Network Parameters

To set the IP network parameters you must be logged in as Admin.

To set the IP network parameters:

1. Click Unit > Device Details.

2. Under Connectivity, edit the required parameter.

3. Click Set Value.
   A confirmation message appears.

4. Click OK.
   The parameter is set.

5. Reset the device (see Section 9.1.12).

9.1.14   Setting Multiple Cascaded Devices

You can control up to four devices via a single RS-232 or Ethernet connection
using the Step-In Software. Control of multiple devices is the same as for a single
device but you must first set the number of devices. The main window (see
Figure 12) then displays an extra column of input buttons for each device.

The number of devices can be set manually or automatically. We recommend that
you set the number of devices manually as the auto-scanning procedure can take
some time.

To set the number of devices:

1. From the menu bar, click Unit.

2. From the options, click Cascade.

3. Either:

   ▪ Manually select the number of devices

   OR

   ▪ Select Auto.
     The Step-In Software scans the RS-485 bus for active devices. This
     may take a few minutes

10 Wiring the DGKat TP RJ-45 Connectors

Connect/solder the cable shield to the RJ-45 connector shield at both ends of the cable.

> **!** **Do not use a crossed TP cable with this product**.
> Using a TP cable that is incorrectly wired may cause permanent damage to the device
>
> **Do not** use unshielded TP cables with this product

Figure 27 defines the TP pinout using a straight pin-to-pin cable with RJ-45 connectors.

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

Figure 27: TP Pinout Wiring
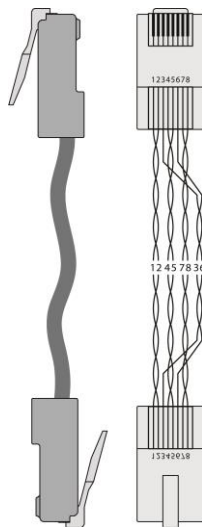
11 Technical Specifications

INPUTS:	Video: 8 TP on RJ-45 connectors 1 DVI-D on a Molex 24-pin (F) connector 1 HDMI connector	Audio: 2 Unbalanced stereo audio (1 for DVI and 1 for HDMI) on 3.5mm mini jacks
OUTPUTS:	Video: 1 TP on an RJ-45 connector 1 HDMI connector	Audio: 1 balanced stereo audio on a 5-pin detachable terminal block 1 unbalanced stereo audio on 2 RCA connectors 1 digital audio on an RCA connector
PORT:	USB Power: 5V DC USB power	
BANDWIDTH:	1.65Gbps per channel	
STANDARDS:	HDMI with Deep Color, x.v.Color™ and 3D	
STEP-IN COMMANDER DISTANCE:	50m (164ft) up to 1080p @60Hz	
OUTPUT DISTANCE:	50m (164ft) up to 1080p @60Hz	
POWER CONSUMPTION:	100-240V AC 50/60Hz 70VA	
OPERATING TEMPERATURE:	0° to +55°C (32° to 131°F)	
STORAGE TEMPERATURE:	-45° to +72°C (-49° to 162°F)	
HUMIDITY:	10% to 90%, RHL non-condensing	
DIMENSIONS:	43.7cm x 18.1cm x 4.4cm (17.2" x 7.1" x 1.7") W, D, H rack-mountable	
WEIGHT:	2.0kg (4.4lbs) approx.	
ACCESSORIES:	Power cord, Windows®-based Kramer control software, RC-IR3 Infrared Remote Control transmitter	
OPTIONS:	External remote IR receiver cable (P/N: C-A35M/IRR-50); 15m extension cable (P/N: C-A35M/A35F-50)	
REMOTE STEP-IN COMMANDERS	SID-VGA, SID-DP, SID-DVI, SID-H, SID-X1	

12 Default Communication Parameters

RS-232	
Protocol 3000 (Default)	
Baud Rate:	115,200
Data Bits:	8
Stop Bits:	1
Parity:	None
Command Format:	ASCII
Example (Output 2 to Input 4):	#AV 4>2<CR>

Ethernet	
IP Address:	192.168.1.39
Subnet Mask:	255.255.255.0
Default Gateway:	192.168.1.1
TCP Port #:	5000
Max TCP Ports:	4
UDP Port #:	50000
Max UDP Ports:	10

13 Protocol 3000

The **VP-81SIDN** can be operated using serial commands from a PC, remote controller or touch screen using the Kramer Protocol 3000.

This section describes:

- Kramer Protocol 3000 syntax (see Section 13.1)
- Kramer Protocol 3000 commands (see Section 13.2)

13.1 Kramer Protocol 3000 Syntax

13.1.1 Host Message Format

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

13.1.1.1 Simple Command

Command string with only one command without addressing:

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

13.1.1.2 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**

13.1.2 Device Message Format

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

13.1.2.1 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)

13.1.3 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.

13.1.4 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 $\boxed{\text{CR}}$ press the Enter key. ($\boxed{\text{LF}}$ 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.

13.1.5 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.

13.1.6 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.

13.1.7 Maximum String Length

64 characters

13.2 Kramer Protocol 3000 Commands

Command	Parameters	Description
#		Protocol handshaking
MODEL?		Read device model
VERSION?		Read device firmware version
SN?		Read device serial number
NAME?		Get device name
MACH-NUM		Set the machine num
BUILD-DATE?		Read device build date
PROT-VER?		Read device protocol version
HELP		List of commands
RESET		Reset device

Command	Parameters	Description
LDFW		Load firmware file – by application only
LDFPGA		Load FPGA binary file – by application only
LOCK-FP	1/0 (1=lock on,0=lock off)	Set lock for front panel
LOCK-FP?		Get lock state
NET-IP		Set IP address
NET-IP?		Get IP address
AV/V/ VID	in>out	Set current <input> and <output>
VOLUME, VOL	-63db to 0db, or +/- chars (exp: VOL +, VOLUME -)	Set Volume
PRIO	input, priority	Set priority [1..10] to input [1..10]
MUTE	1/0 (1=mute on,0=mute off)	Set audio mute for device
IREN		Enable/Disable IR driver
VID-TYPE	input, sid-x1 input	
AV?/V?/VID?	out	Get current input-to-output routing setting
VOLUME?/ VOL?		Get Volume
MUTE?		Get audio mute state
VID-RES?	Stage (in\out), num	Get input video resolution
VID-TYPE?	Stage (in\out), num	Get input video type
IN-STATE?	In	Get input information for <input [1..10]> ->
GEDID?	Stage (in/out), num	Clock [ON/OFF], State [TOUT/ACT/MUTE], Priority [0..11]
FPGA-VER?	Id	Get EDID info for stage [in/out]
IREN?		Get FPGA version

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We welcome your questions, comments, and feedback.

Web site: www.kramerelectronics.com

E-mail: info@kramerel.com

SAFETY WARNING
Disconnect the unit from the power supply before opening and servicing

P/N: 2900-300315   Rev: 1

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