

NV9602

NV9000 Control Panel

User's Guide

UG0040-01

13 Nov 2014



Copyright & Trademark Notice

Copyright © 2014 Grass Valley. All rights reserved.

Belden, Belden Sending All The Right Signals, and the Belden logo are trademarks or registered trademarks of Belden Inc. or its affiliated companies in the United States and other jurisdictions. Grass Valley, NVISION, NV9000, NV9000-SE Utilities, and NV9602 are trademarks or registered trademarks of Grass Valley. Belden Inc., Grass Valley, and other parties may also have trademark rights in other terms used herein.

Terms and Conditions

Please read the following terms and conditions carefully. By using NV9602 documentation, you agree to the following terms and conditions.

Grass Valley hereby grants permission and license to owners of NV9602 routers to use their product manuals for their own internal business use. Manuals for Grass Valley products may not be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, for any purpose unless specifically authorized in writing by Grass Valley.

A Grass Valley manual may have been revised to reflect changes made to the product during its manufacturing life. Thus, different versions of a manual may exist for any given product. Care should be taken to ensure that one obtains the proper manual version for a specific product serial number.

Information in this document is subject to change without notice and does not represent a commitment on the part of Grass Valley.

Warranty information is available in the support section of the Grass Valley web site (www.grassvalley.com).

Title	NV9602 User's Guide
Part Number	UG0040-01
Revision	1.1 (14 Nov 14)

Change History

Rev.	Date	ECO	Description	Approved
1.0	05 Nov 10	17286	Initial release.	D. Cox
1.1	14 Nov 14	19357	Reformatted and slightly changed.	D.Cox

Safety Compliance

FC FCC Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CE Declaration of Conformance (CE)

All of the equipment described in this manual has been designed to conform with the required safety and emissions standards of the European Community. Products tested and verified to meet these standards are marked as required by law with the CE mark.

When shipped into member countries of the European Community, this equipment is accompanied by authentic copies of original Declarations of Conformance on file in the Grass Valley offices in Grass Valley, California USA.

Software License Agreement and Warranty Information

Contact Grass Valley for details on the software license agreement and product warranty.

Important Safeguards and Notices

This section provides important safety guidelines for operators and service personnel. Specific warnings and cautions appear throughout the manual where they apply. Please read and follow this important information, especially those instructions related to the risk of electric shock or injury to persons.

WARNING

Any instructions in this manual that require opening the equipment cover or enclosure are for use by qualified service personnel only. To reduce the risk of electric shock, do not perform any service other than that contained in the operating instructions unless you are qualified to do so.

Restriction on Hazardous Substances (RoHs)

Grass Valley is in compliance with EU Directive RoHS 2002/95/EC governing the restricted use of certain hazardous substances and materials in products and in our manufacturing processes.

Grass Valley has a substantial program in place for RoHS compliance that includes significant investment in our manufacturing process, and a migration of Grass Valley product electronic components and structural materials to RoHS compliance.

It is our objective at Miranda GVD to maintain compliance with all relevant environmental and product regulatory requirements. Detailed information on specific products or on the RoHS program at Grass Valley is available from Grass Valley Customer Support at

1-800-719-1900 (toll-free) or
1-530-265-1000 (outside the U.S.).

Symbols and Their Meanings



The lightning flash with arrowhead symbol within an equilateral triangle alerts the user to the presence of dangerous voltages within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle alerts the user to the presence of important operating and maintenance/service instructions.



The Ground symbol represents a protective grounding terminal. Such a terminal must be connected to earth ground prior to making any other connections to the equipment.



The fuse symbol indicates that the fuse referenced in the text must be replaced with one having the ratings indicated.



The presence of this symbol in or on Grass Valley equipment means that it has been designed, tested and certified as complying with applicable Underwriter's Laboratory (USA) regulations and recommendations.



The presence of this symbol in or on Grass Valley equipment means that it has been designed, tested and certified as essentially complying with all applicable European Union (CE) regulations and recommendations.

General Warnings

A warning indicates a possible hazard to personnel which may cause injury or death. Observe the following general warnings when using or working on this equipment:

- Heed all warnings on the unit and in the operating instructions.
- Do not use this equipment in or near water.
- This equipment is grounded through the grounding conductor of the power cord. To avoid electrical shock, plug the power cord into a properly wired receptacle before connecting the equipment inputs or outputs.
- Route power cords and other cables so they are not likely to be damaged.
- Disconnect power before cleaning the equipment. Do not use liquid or aerosol cleaners; use only a damp cloth.
- Dangerous voltages may exist at several points in this equipment. To avoid injury, do not touch exposed connections and components while power is on.
- Do not wear rings or wristwatches when troubleshooting high current circuits such as the power supplies.
- To avoid fire hazard, use only the specified fuse(s) with the correct type number, voltage and current ratings as referenced in the appropriate locations in the service instructions or on the equipment. Always refer fuse replacements to qualified service personnel.
- To avoid explosion, do not operate this equipment in an explosive atmosphere.
- Have qualified service personnel perform safety checks after any service.

General Cautions

A caution indicates a possible hazard to equipment that could result in equipment damage. Observe the following cautions when operating or working on this equipment:

- When installing this equipment, do not attach the power cord to building surfaces.
- To prevent damage to equipment when replacing fuses, locate and correct the problem that caused the fuse to blow before re-applying power.
- Use only the specified replacement parts.
- Follow static precautions at all times when handling this equipment.
- This product should only be powered as described in the manual. To prevent equipment damage, select the proper line voltage on the power supply(ies) as described in the installation documentation.
- To prevent damage to the equipment, read the instructions in the equipment manual for proper input voltage range selection.
- Some products include a backup battery. There is a risk of explosion if the battery is replaced by a battery of an incorrect type. Dispose of batteries according to instructions.
- Products that have (1) no on/off switch and (2) use an external power supply must be installed in proximity to a main power outlet that is easily accessible.
- To reduce the risk of electrical shock, plug each power supply cord into a separate branch circuit having a separate service ground.

toc

Table of Contents

1	Preface	1
	Chapter Structure	1
	The PDF Document	1
	Terms, Conventions and Abbreviations	2
	Other Documentation and Software	2
2	Introduction	3
	Summary	3
	Panel Organization	4
	Function Buttons	4
	Alphanumeric Display	4
	Display Fields	4
	Flags	5
	Modes of Operation	5
	Single-Destination Mode	5
	Single-Destination Mode with Breakaway	5
	Limited X-Y Mode	5
	Multi-Destination Mode	6
	Secondary Modes	6
	Other NV9602 Functions	6
3	Installation	7
	Package Contents	7
	Installation	8
	Installing Software and Documentation	8
	Initialization	8
	Testing	9
4	Configuration	11
	Summary	11
	Adding a Panel to an NV9000 Configuration	11
	NV9602 Panel Configuration Page	14
	Regions of the Configuration Page	14
	Configuration Tasks	15
	Commitment Buttons	15
	Panel Options	15
	Checkbox Options	16
	Button Definitions	17
	Button Specification	18
	Button Types	18
	Multi-Destination Configuration	23

5	Operation	25
	Summary	25
	Modes of Operation	25
	Single-Destination Mode	26
	Single-Destination Mode with Breakaway	26
	Limited X-Y Mode	26
	Multi-Destination Mode	26
	Secondary Modes	27
	Button Legends	27
	Operating Concepts	27
	Source Shift	27
	Destination Shift	28
	Levels	28
	Breakaway	28
	Hold	28
	Breakaway	28
	Limited X-Y	29
	Buttons	29
	Broadcast	30
	Chop	30
	Default State	30
	Destination	30
	Destination Lock	30
	Destination Protect	31
	Destination Shift	31
	Free Source	31
	Hold	31
	Level	32
	Menu	32
	Name Set Toggle	32
	None/All	32
	Panel Lock	32
	Previous Source	32
	Salvo	33
	Source	33
	Source is Master	33
	Source/Destination	33
	Source/Dest Toggle	34
	Source Shift	34
	Undefined	34
	Lock, Protect, and Release	34
	Locks and Protects with Breakaway	35
	Takes	35
	Case 1—Single-Destination Mode	35
	Case 2—Single-Destination Mode, Breakaway	35
	Case 3—Limited X-Y Mode	36
	Case 4—Multi-Destination Mode	36
	Multi-Destination Operations	36
	Name Sets	37
	Broadcast Routes	37
	Before You Begin	38
	Performing a Broadcast Take—Limited X-Y Mode	38
	Performing a Broadcast Take—Multi-Destination Mode	38
	Important Points	39

Data Routing	39
Automatic Data Routing	39
Manual Data Routing	39
Semi-Automatic Data Routing	39
Chop	40
Case 1—Single-Destination Mode, with or without Breakaway	40
Case 2—Limited X-Y Mode	40
Case 3—Multi-Destination Mode	41
Menu Mode	41
Panel ID	41
Panel Name	42
User ID	42
User Name	42
Software Versions	42
Button Illumination	43
Setup Mode	43
6 Technical Details	47
Power Specifications	47
NV9602 Specifications	47
Environmental Specifications	48
Defaults	48
Initial Panel State	48
Configuration Page	48
DHCP	48
Drawings	48
Glossary	51
Index	53
Contact Us	59

Table of Contents

1

Preface

Chapter 1 is an introduction to the NV9602 User's Guide.

Topics

Chapter Structure	1
The PDF Document	1
Terms, Conventions and Abbreviations	2
Other Documentation and Software	2

Chapter Structure

The following chapters provide detailed information regarding the NV9602 control panel:

- Chapter 1, [Preface](#), (this chapter) outlines ways to use this guide.
- Chapter 2, [Introduction](#), provides a functional description of the NV9602.
- Chapter 3, [Installation](#), provides installation, connection, and initialization instructions.
- Chapter 4, [Configuration](#), provides configuration instructions.

This chapter is for configurers, primarily.

- Chapter 5, [Operation](#), provides operating instructions.

This chapter is for operators, primarily.

- Chapter 6, [Technical Details](#), provides electrical, mechanical, and environmental specifications, product drawings, and default settings.
- An [index](#) and [glossary](#) are also provided for your reference.

The PDF Document

This guide is provided in PDF format, allowing you to use Acrobat's "bookmarks" to navigate to any desired location. You can also easily print a hardcopy. Please note:

- Use the Table of Contents or the bookmarks page to jump to any desired section.
- Many hyperlinks are provided within the chapters.
- Use the Index to jump to specific topics within a chapter. Each page number in the index is a hyperlink.
- Use Acrobat's 'Go to Previous View' and 'Go to Next View' buttons to retrace your complete navigational path.

Use the 'First Page', 'Previous Page', and 'Next Page', and 'Last Page' buttons to go to the first, previous, next, or last page within a PDF file.

Note

To display the navigation buttons, right-click the Tool Bar area, and check 'Navigation'.

- Use Acrobat's extensive search capabilities, such as the 'Find' tool and 'Search' tool to perform comprehensive searches as required.

Terms, Conventions and Abbreviations

The following conventions are used throughout this guide:

- The symbol **p** denotes either an example or a special message.
- Entries enclosed in single quotation marks or Capital Letters denote physical control panel buttons, configuration buttons, or menu items.
 - Click 'Apply' to ...
 - Press the SRC 12 button ...

The following terms and abbreviations are used throughout this guide:

- The term "control panel" refers to the NV9602 control panel and to NV96xx control panels, in general.
- "High tally" means that a button is brightly illuminated.
- "Low tally" means that a button is illuminated at low intensity. Most buttons assume a low tally state until selected.
- "MD" is an abbreviation for multi-destination.
- "SE" is an abbreviation for NV9000-SE Utilities.

Other Documentation and Software

You should read and be familiar with the material presented in the following documents:

- NV960, NV920, or NV915 Quickstart Guide(s).
- NV9000-SE Utilities User's Guide (or NV9000-SE Utilities help files).
- The router manuals for whatever routers you have in your system.

You should also be familiar with the NV9000-SE Utilities software and NV9000 family router control systems.

2 Introduction

Chapter 2 provides a functional description of the NV9602.

Topics

Summary	3
Panel Organization	4
Modes of Operation	5
Other NV9602 Functions	6

Summary

The NV9602¹ is a 1RU panel, slightly over 9" deep, overall. It has 2 sets of backlit function buttons and a small display. The display has 2 distinct LED readouts each having 8 characters.

The NV9602 can operate in one of 4 modes. See [Modes of Operation](#), following.

The panel is organized as shown in figures 2-1 and 2-2:



Fig. 2-1: NV9602 Front

The function buttons select sources or destinations, or they execute functions. Physical source selection buttons represent one of two “pages” of sources. Physical destination selection buttons (if present) represent one of two pages of destinations. An operator can toggle between the two pages.

The up and down arrows at the far right apply only when the panel is in menu mode.

At the rear are power, serial, and network connectors:

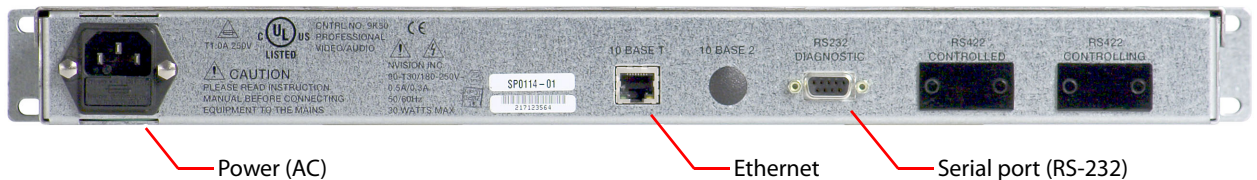


Fig. 2-2: NV9602 Rear

The ports labeled 10base2 and RS-422 are non-operational and are covered. Only the serial port and the Ethernet port are available.

- ▲ The AC connector has a compartment in which you can find a spare fuse.

1. An equivalent NV9602V—a GUI that is called a “virtual panel”—is available. It emulates the NV9602.

(The Ethernet port is 10baseT. The system controller supports 10baseT as well as 100baseT.)

Panel Organization

Function Buttons

The NV9602 has an array of 32 function buttons on the left and 6 function buttons on the right. The buttons' functions are slightly different in each of the 4 operating modes. (See [Modes of Operation](#), next.) The 10 buttons at the top left are labeled with numerals (0–9). These are for menu operations such as entering the panel ID.

Physical source buttons represent one of two “pages” of sources. Physical destination buttons (if present) represent one of two pages of destinations. The panel can be configured with a ‘Source Shift’ button that toggles between the two source pages and a ‘Destination Shift’ button that toggles between the two Destination pages.

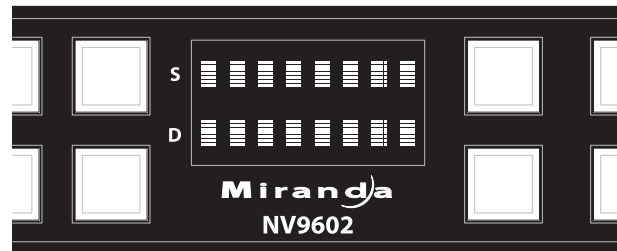
Each button has *three* operational levels: high and low tally (green or amber), and off. Operators can adjust the low tally levels in increments of 10% using the panel's menu. Buttons that are turned off are said to be dark. (Their material is actually white or light gray.)

- ▲ Generally, green represents a source or a source function and amber represents a destination or a destination function.

The function buttons each have clear plastic keycaps under which you may place plastic inserts for button legends. It is a simple matter to change button legends.¹

Alphanumeric Display

The display has 2 display fields.



Display Fields

The display has 2 fields of 8 characters:

- Status, labeled “S” on the panel.
The ‘Status’ field always shows the source that was routed to the currently selected destination, which is identified in the ‘Destination’ field.
- Destination, labeled “D” on the panel.
The ‘Destination’ field shows the current destination.

1. The NV9602V (virtual panel) has automatically generated button legends. For instance, a source button's legend is the source name. Depending on the operating mode, the source button might have up to 3 lines of text: a source from page 1, a source from page 2, and a destination.

In multi-destination mode, the destination field shows the most recently selected destination and the status field changes to reflect the source most recently routed to that destination.

The 'Status' and 'Destination' fields can show either names from a name set or system mnemonics depending on (1) the state of the 'Name Set Toggle' button (if the panel has one), (2) the default name set (3) the existence of name sets in the NV9000 configuration.

Flags

When a destination is in breakaway, the 'Source' field indicates the breakaway with an asterisk in its eighth character position.

- ▲ The asterisk will obscure the last character of the source name if the name has 8 characters.

Modes of Operation

The NV9602 operates in one of 4 modes:

- [Single-Destination Mode](#).
- [Single-Destination Mode with Breakaway](#).
- [Limited X-Y Mode](#).
- [Multi-Destination Mode](#).

The panel's set of button functions varies with the mode.

The modes (or behavioral models) are determined at configuration. The operator cannot switch between different modes.

- ▲ The NV9604 control panel can operate as an extension of the NV9602. See the *NV9604 User's Guide* for details.

Single-Destination Mode

In single destination mode, the panel's destination is configured as the default destination and there are no destination buttons. Takes are performed on all levels.

Operators can use a 'Source Shift' button to toggle between two sets of sources.

Takes occur as soon as a source button is pressed. (There is no 'Take' button function.)

Single-Destination Mode with Breakaway

This mode is an extension of single-destination mode that includes level buttons on the panel.

Again, the single destination is configured as the default destination. There are no destination buttons and there is no 'Take' button.

Level buttons selected the levels on which the take is to occur. Takes occur on all levels when either no levels are selected or when all levels are selected.

Operators can use a 'Source Shift' button to toggle between two sets of sources.

Limited X-Y Mode

In limited X-Y mode, takes occur from a single source to a single *selectable* destination.

Takes are all level. Pressing a source button completes the take. There is no 'Take' button. Operators can use a 'Source Shift' button to toggle between two sets of sources. Similarly, operators can use a 'Destination Shift' button to toggle between two sets of destinations.

Multi-Destination Mode

In this mode, source buttons are configured with destinations as well as sources. Thus, each source button completes a route to an individual destination. If each button had a different destination, it would be possible to route to 32 destinations. The typical configuration would have fewer destinations. The panel uses spacing to separate the left-hand buttons into 4 groups. The most natural number of destinations would be 4, but that is not a requirement.

There is no 'Take' button.

Takes are all-level.

Operators can use a 'Source Shift' button to toggle between two sets of sources.

Secondary Modes

Additional but secondary modes of panel operation are:

- Setup mode — where the NV9602 is freshly powered up, but disconnected from the network. In this mode, you can preset the NV9602's panel ID and perform a few diagnostic tasks.
- Menu mode — pressing a menu button places the NV9602 in "menu" mode. In menu mode, the buttons lose their normal functions and become part of a menu that changes as needed during menu operation.
- Source mode — (in limited X-Y mode only) allows 'Source/Destination' buttons to select sources.
- Destination mode — (in limited X-Y mode only) allows 'Source/Destination' buttons to select destinations.

When the panel is not in setup mode or menu mode, we say it is in *normal mode*. "Normal" means the panel is functioning in one of the 4 operating modes.

Other NV9602 Functions

The NV9602 can be configured to perform the following additional functions:

- Previous source and free source.
- System salvos.
- Lock/protect/release for destinations.
- Multiple-level breakaways.
- Broadcast data routing.

3 Installation

Chapter 3 provides installation and connection instructions.

Topics

Package Contents	7
Installation	8
Installing Software and Documentation	8
Initialization	8
Testing	9

Package Contents

If you have ordered one or more NV9602 control panels from Grass Valley, inspect the shipping container for damage. If you find any container damage, unpack and inspect the contents. If the contents are damaged, notify the carrier immediately.

As you unpack the shipping container, look for the packing slip and compare it against the contents to verify that you received everything as ordered. If anything is missing (or if you find equipment damage unrelated to shipping), please contact technical support. Refer to [Grass Valley Technical Support](#) on page 59.

Depending on your order, the NV9602 items that can ship include:

- One or more NV9602 control panels.
- An AC power cord.

The package does not contain network cables, serial cables, or mounting screws.

You do not need to take any special precautions regarding ESD.

This document does not address the shipment or installation of any other equipment or software that can be used in conjunction with the NV9602 (including any system controllers, other NV96xx control panels, EC9700 GUI, EC9710 GUI, and configuration programs such as UniConfig, MRC, or NV9000-SE Utilities).

This document does briefly address the use of NV9000-SE Utilities and the Panel IP Configuration Utility as they pertain to panel configuration.

Installation

Follow these steps to install a NV9602 control panel:

- 1 Mount, and secure, the panel in the rack.

The NV9602 is designed to mount in a standard 19" rack. Rack-mounting is not a requirement.

- 2 We assume that you have an Ethernet switch connected to the "Panel and Router Network" port of your system controller. Connect an Ethernet cable from that switch to the RJ-45 port at the rear of the NV9602.
- 3 Connect power.

Installing Software and Documentation

This document is available through the Grass Valley web site.

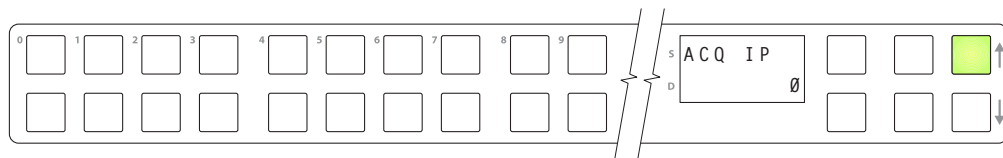
You must use NV9000-SE Utilities to configure the NV9602 control panel. Contact Grass Valley if you need to obtain the latest version of this NV9000 configuration software.

You may use the Panel IP Configuration Utility if you want your NV9602 to have a static IP address (with respect to the system controller) or to use DHCP. The panel, as it comes from the factory, defaults to DHCP.

Initialization

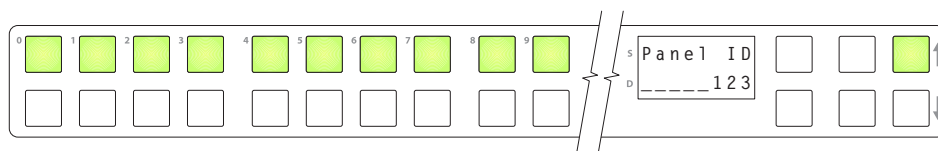
Before your system controller can communicate with an NV9602, you must give it a panel ID. Follow these steps for each NV9602 you are installing:

- 1 Power up the NV9602. Do **not** connect its Ethernet cable. (Disconnect it if it is connected.) After a few seconds, the display will show 'ACQ IP' at the top and show the panel's current panel ID. The top right button is high-tally green:



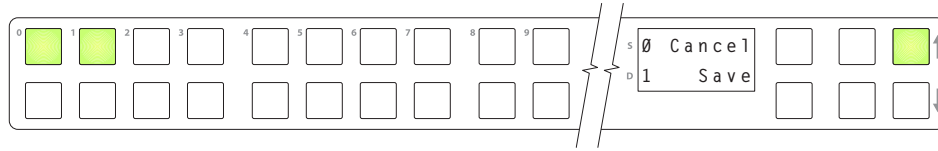
We call that the "setup" button while the panel is disconnected from the network.

- 2 Press the setup button. The panel now allows you to enter the panel ID using buttons at the left that function as a numeric keypad. The numbers of the keypad are printed on the panel. They range from 0 (at the left) to 9:



Enter the panel ID using the keypad. Then press the setup button again.

3 The panel displays a confirmation message:



Press the left-most button to cancel your entry; press the button to the right of it to save your entry.

- 4 Press the setup button once again and continue to press the setup button until the panel displays 'ACQ IP' once again as in step 1.
- 5 After you enter the panel ID, reconnect the Ethernet cable. The system controller will detect your panel in a few seconds. (**All** panel IDs must be unique.)

You can now prepare an NV9602 configuration in NV9000-SE Utilities and upload the configuration to the NV9602. You need the panel ID to create a NV9602 configuration. When you upload the configuration, the panel ID you entered in NV9000-SE Utilities designates the actual panel to which the upload will occur. If no actual panel has that ID, the upload cannot occur.

Testing

A panel test function is available when the NV9602 is disconnected from the system controller. Run the test to determine the health of your NV9602. See [Setup Mode](#) on page 43 for detail. You can also view the software version numbers under setup mode.

These are points to consider after you install your NV9602 control panel(s):

- 1 Do the buttons illuminate? When an NV9602 powers up, one or more of its buttons are supposed to turn green or amber. Did it pass the panel test mentioned above?
- 2 When the NV9602 powers up and it is connected to the system controller, it should initialize completely. (That takes a few seconds.) The NV9000 system should load whatever configuration exists for that panel and the buttons appropriate for its configuration should light. If you continue to see "No Server," "ACQ IP," or "Locating Network," you have a problem. Reboot everything and try again.
 - ▲ The NV9602, by default, acquires its IP address through DHCP on the system controller's panel/router network. You can use the Panel IP Configuration Utility to force the panel to have a static IP address.

If (in setup mode) you do not see your designated panel ID in the 'Preset' display field, you have either not initialized the panel or no configuration has been created for your panel in NV9000-SE Utilities.

- 3 Is the system controller actually running? With the typical noise levels in a facility, it can sometimes be difficult to tell. Use the 'System' pages of NV9000-SE Utilities to make the determination.
- 4 Is NV9000-SE Utilities installed and operating? If so, can you upload a configuration to the specified panel?
- 5 Does the configuration actually work? Is it useful? Can the operator perform tasks and perform other operations?

4 Configuration

Chapter 4 provides configuration instructions for the NV9602.

Topics

Summary	11
Adding a Panel to an NV9000 Configuration	11
NV9602 Panel Configuration Page	14
Commitment Buttons	15
Panel Options	15
Button Definitions	17
Multi-Destination Configuration	23

This chapter addresses configurers. Operators and other persons not interested in NV9602 configuration need not read this chapter.

Summary

The NV9602 is a relatively simple panel. It has 38 function buttons and a small display. Although it has relatively few button functions, there are 4 operating modes.

- [Single-Destination Mode](#).
- [Single-Destination Mode with Breakaway](#).
- [Limited X-Y Mode](#).
- [Multi-Destination Mode](#).

The set of button functions varies slightly from mode to mode.

NV9000-SE Utilities is the software with which to configure the NV9602. Figure 4-1, following, shows the default NV9602 panel configuration page from NV9000-SE Utilities.

Adding a Panel to an NV9000 Configuration

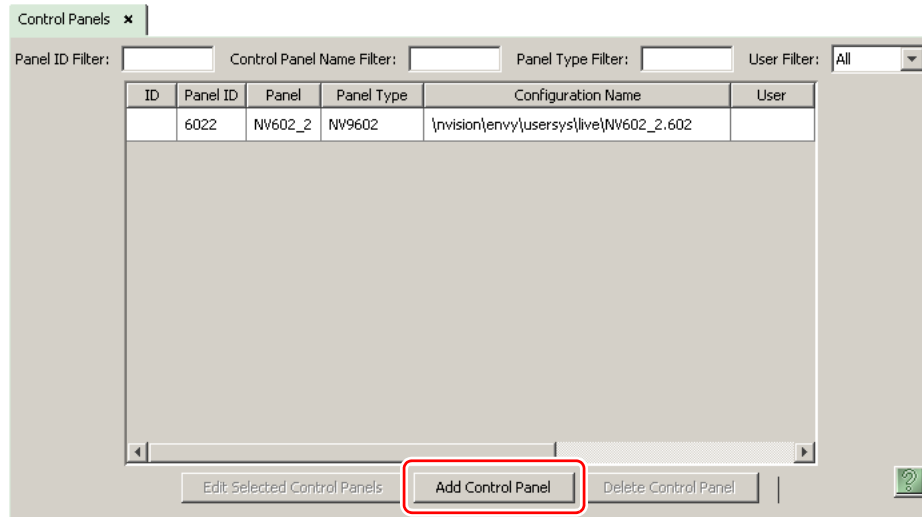
You must create configurations for the NV9602 using NV9000-SE Utilities. We assume that you are familiar enough with NV9000-SE Utilities that you can understand the following material. It is not difficult material, but some of the concepts might not be familiar to everyone.

It takes only a few seconds to add a new panel configuration.

Configuration

Adding a Panel to an NV9000 Configuration

After launching NV9000-SE Utilities, choose 'Control Panels' from the Configuration pane in the navigation area. The 'Control Panels' configuration page appears:



Click 'Add Control Panel' at the bottom of the configuration page. The 'Add Control Panel' page appears:

Choose "NV9602" from the 'Type' field. In the ID field, enter the panel ID you assigned to the panel while it was in setup mode. (You can change the panel ID in NV9000-SE Utilities.) Give a name to the panel in the name field and select a user.

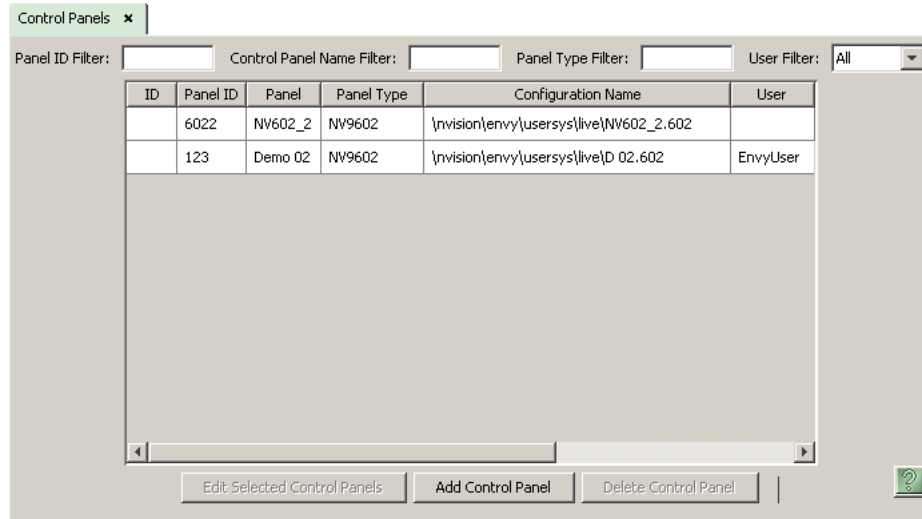
When you are creating a panel configuration you have 3 options. These options are presented in the 'Configuration Options' area:

- 1 Make a copy of an existing configuration file, giving it a new file name.
- 2 Use an existing configuration file. (This allows several panels to share a single configuration.)
- 3 Create an entirely new configuration file.

In the first and third cases, you will create a new configuration file whose name you designate. The file extension for an NV9602 configuration file is .602. Click 'Next' or 'Finish' to proceed. Click 'Previous' to go back the previous page. Click 'Cancel' to terminate the entry operation.

▲ There are 2 other buttons, 'Suffix' and 'Navigate', both dim (disabled). These do not apply to the NV9602.

Return to the 'Control Panels' page to view your new entry. To edit an NV9602 configuration, double-click its list entry:



You will then see the panel configuration page for the selected NV9602.

Following is a discussion of how to use the panel configuration page in which you configure an NV9602.

NV9602 Panel Configuration Page

This is the default NV9602 panel configuration page in NV9000-SE Utilities:

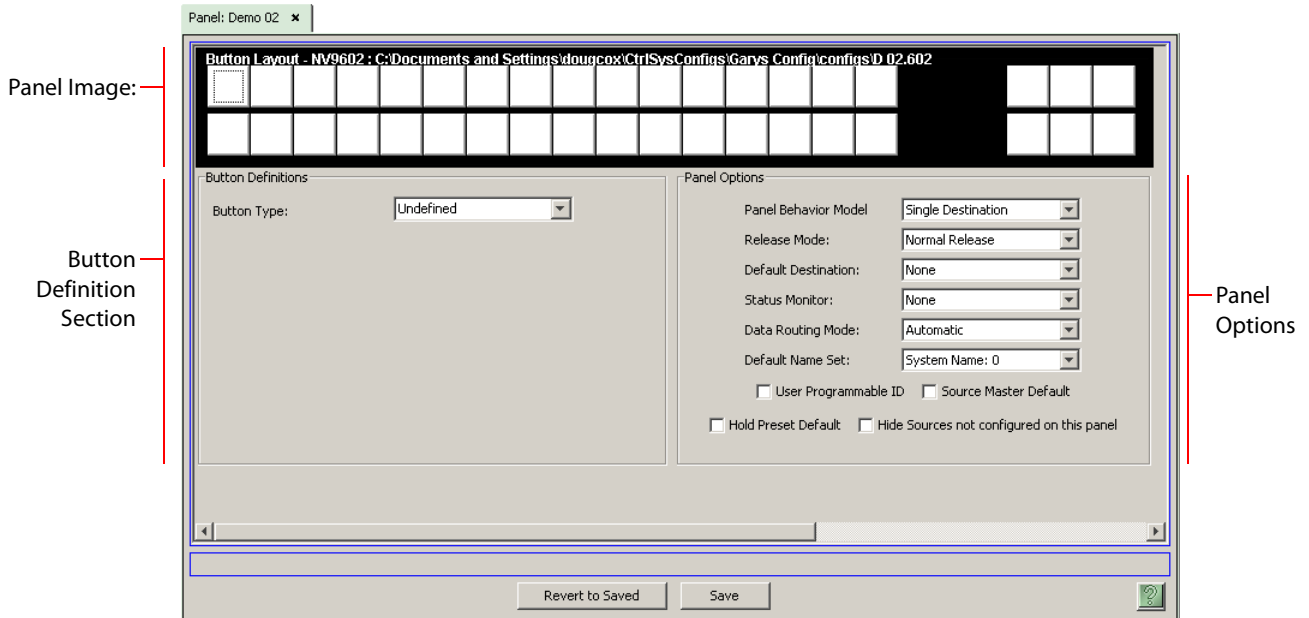


Fig. 4-1: NV9602 Configuration Page (Default)

After you configure buttons the appearance of the panel buttons will have changed. The panel buttons on this page will show legends, determined from the button type assigned to the button. (The panel's actual buttons have clear plastic keycaps that you can remove and insert button legends, graphic or text, of your own design.)

At the bottom of the page are two important configuration buttons: 'Revert to Saved' and 'Save'. The 'Save' button commits modifications you have just made. The 'Revert to Saved' button restores the last saved version of the panel configuration, canceling any changes you just made.

Regions of the Configuration Page

Above the 'Revert to Saved' and 'Save' buttons (always present) there are 4 main regions:

- A graphic representation of the NV9602 panel.
Configurers must click a button "proxy" to select the button for configuration.
- Button definitions.
In this section, configurers make button assignments, using its pull-down menus and text fields. See [Button Definitions](#), following.
- Panel options.
In this section, configurers may specify the behavioral characteristics of the panel. See [Panel Options](#), following.

Configuration Tasks

The person configuring an NV9602 panel will want to consider how best to use the buttons to support the devices and routers in the router control system at hand. Trade-offs must be made.

In support of that effort, the configurer will do the following:

- Determine in which of the 4 modes the panel with this configuration will run.
- Select panel options.
- Assign functions to buttons.
- Define logic for some or all of the tally inputs and outputs.

We have no strong recommendations for button types on your panel, but it is likely that a 'Source Shift' button will be needed.

Commitment Buttons

Two buttons at the bottom of the configuration page are self-explanatory and appear on most configuration pages:

- Revert to Saved. Press this button if you want to discard any recent changes you have made.
- Save. Press this button to commit all your recent changes.

Neither of these actions is reversible.

Panel Options

The panel options section, at the right of the configuration page, has two parts: drop-down menus and checkbox options. These are the drop-down menus:

The screenshot shows a window titled 'Panel Options' with the following settings:

- Panel Behavior Model: Single Destination
- Release Mode: Normal Release
- Default Destination: None
- Status Monitor: None
- Data Routing Mode: Automatic
- Default Name Set: System Name: 0

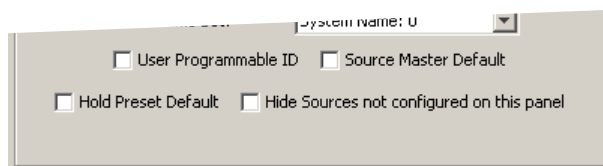
These are its drop-down menu options:

Panel Behavioral Model	Single Destination	In single-destination mode, the panel's destination is configured as the default destination and there are no destination buttons. Takes are performed on all levels.
	Single destination with break-away	This mode is an extension of single-destination mode that includes level buttons on the panel. Level buttons selected the levels on which the take is to occur. Takes occur on all levels when either no levels are selected or when all levels are selected.
	Limited X-Y	In limited X-Y mode, takes occur from a single source to a single destination (which is selectable). Takes are all-level.

	Multi-destination	In multi-destination mode, source buttons are configured with destinations as well as sources. Thus, each source button completes a route to an individual destination. Takes are all-level.
Release Mode	Normal Release	This panel can release “locks” and “protects” set by the designated user (at this panel or any other panel).
	Force Release	This panel can release locks and protects set by any user.
Default Destination	None	After a reset, the panel has no default destination and displays no destination device. (This is not recommended in single-destination mode or single-destination-with-breakaway mode.)
	<device>	The panel uses the specified device as the destination after a reset. (The ‘Default State’ button also returns the panel to this destination.) A specific device is essential for operation in single-destination mode or single-destination-with-breakaway mode.)
Status Monitor	None	The current source video is not sent to a monitor.
	<device>	The current source video for the selected destination appears on the specified monitor (device).
Data Routing Mode	Automatic	If a machine control (data) level is involved in the route, make the route on the control level even if the control port is in use on the source or destination device.
	Semi-automatic (recommended)	If the control port is in use on the source or destination device, take all levels except control and allow the user to perform the control level route by pressing ‘Take’ a second time. If ‘Take’ is not pressed again, the route is cancelled. If the control port is not in use, the control level take occurs automatically.
	Manual	A take on the data level must be performed manually as a break-away on the control level. The control level will never switch as part of a multi-level take.
Default Name Set	System Name	A list of “name sets” appears in the drop-down menu. The name sets can be defined under the System Management pane of NV9000-SE Utilities. Choose ‘System Name’ in this list if you do not want, or do not care about, alternate device name. Do not choose ‘System Name’ if you are configuring any ‘Name Set Toggle’ buttons.

Checkbox Options

The checkbox options section is just below the panel options section, enclosed in the same region:



A check in the box enables the option. Clearing the checkbox disables the option.

By default, all the check box options are clear.

The following items are the checkbox options:

- User-Programmable ID.
Allows the Panel ID to be changed locally at the control panel (in menu mode).
- Source Master Default.
Makes a control-level source the *controlling* device (or master device) by default. Otherwise, the destination is the master by default. (The option is specifically for use with NVISION series machine control routers.)
“Source is master” is used for duplication, or broadcast routing, on a machine control level. “Destination is master” is for machine-to-machine editing. If you do not select the “source master default” option, you can place a ‘Source is Master’ button on the panel.
▲ **Note:** a ‘Source is Master’ button is a toggle that reverses the direction of data routing for devices used in data level (machine control) takes.
- Hold preset default.
When this checkbox is checked, the panel powers up in “hold mode.” Otherwise it powers up with hold mode off.
Hold mode, under single-destination mode with breakaway, causes the selected levels to be retained after a take. If hold mode is off, all levels become selected after a take.
Hold mode, under limited X-Y mode, allows a user to route a source to multiple destinations simultaneously.
- Hide sources not configured on this panel.
Causes the names of source devices that are not presently configured for this particular panel to be effectively hidden. When another panel changes the source to one not configured for this panel, this panel displays asterisks instead.

Button Definitions

There are three classes of button functions:

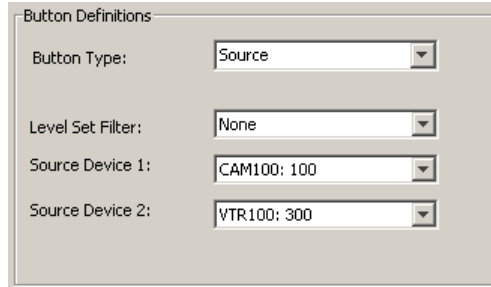
- Dedicated functions, such as ‘Default State’ or ‘Chop’.
- Variable functions, such as ‘Source’ or ‘Destination’.
- Special functions, such as ‘Menu’ and ‘Salvo’.

Note

During configuration, certain button fields contain a colon (:) and number, after the data in the field. The number is the record ID of the object in the NV9000 configuration database. The record IDs can be ignored but might be of some use when the configurator is searching for items in the configuration database.

Button Specification

The button definition section configures the button you have selected in the image of the NV9602:



The screenshot shows a dialog box titled "Button Definitions" with four dropdown menus:

- Button Type: Source
- Level Set Filter: None
- Source Device 1: CAM100: 100
- Source Device 2: VTR100: 300

When you choose a button type, additional drop-down menus can appear, depending on the button type, allowing you to further specify the button's behavior. Available options and selections vary from button type to button type.

Certain button types are not available in each of the modes. The list that follows identifies in which modes the buttons can apply. These letter codes represent the modes:

- S—single-destination mode
- B—single-destination mode with breakaway
- X—limited X-Y mode
- M—multi-destination mode
- All—all modes

Button Types

These are the button types available for NV9602 configurations:

Type	Modes	Description
Broadcast	M, X	<p>On the data (control) level, the button enables a broadcast take to an <i>additional</i> controlled device, after a broadcast route has been initiated with a "source is master" control-level take to the <i>first</i> controlled device.</p> <p>The button definition has no fields to configure.</p> <p>A broadcast button is useful in dubbing applications or when a backup (redundant) device is in use. See Broadcast Routes on page 37. See also the Source Master button, following.</p> <p>The button is available in single-destination mode, with or without breakaway, but is incompatible with the mode.</p>
Chop	All	<p>When a chop function is supported by a router, the button is a toggle that enables and disables rapid switching of the selected destination device between the current source and the preset source. This chop function is used to test system timing.</p> <p>The button definition has no fields to configure.</p>

Type	Modes	Description
Default state	All	The button returns the panel to its most recent power-up state. That is called the <i>default state</i> . The button definition has no fields to configure.
Destination	X	The button selects a destination. The destination name appears in the 'Destination' display. The destination is the target of an upcoming take, which will route a source to that destination. When you assign a destination button, two drop-down menus appear: 'Destination Device 1' and 'Destination Device 2'. These correspond to the two destination pages. If there is a 'Destination Shift' button on the panel, the operator can switch between the two pages. When the first page is selected, pressing the button selects device 1. When the second page is selected, pressing the button selects device 2.
Destination Lock	S, B, X	The button sets or removes a "lock" on the current destination device. The lock can be removed only by the user that originally set the lock, or by a panel that has "Force Release" enabled. The button definition has no fields to configure. The NV9602 provides no explicit indication, during operation, whether a destination is locked or unlocked.
Destination Protect	S, B, X	The button sets or removes a "protect" on the current destination device. The protect can be removed only by the user that originally set the protect, or by a panel that has "Force Release" enabled. Note: a protect prevents <i>others</i> from routing to a destination; a lock prevents <i>anyone</i> — even the user who issued the lock — from routing to the destination. The button definition has no fields to configure. The NV9602 provides no explicit indication, during operation, whether a destination is locked or unlocked.
Destination Shift	X	The button toggles between the first and second destination sets. The button definition has no fields to configure. This button toggles between the two destinations assigned to a 'Destination' button. See the Destination button, above.
Free Source	S, B, X	The button selects a pre-defined phantom device that can be used to release or "free" devices on the data (machine control) level. A free source is also used with tielines to free the tieline for others to use. The free source is defined in the <i>Level Set Details</i> page of NV9000-SE Utilities. The button definition has no fields to configure.

Type	Modes	Description
Hold	B, X	<p>In single-destination mode with breakaway, this button retains breakaway levels after a take.</p> <p>In limited X-Y mode, this button allows the operator to perform a gang (or “dub”) route. In hold mode, destination selections are cumulative, and not mutually exclusive. See Hold on page 28.</p> <p>The hold button is a toggle; press it once to place the panel in “hold mode.” Press it again to cancel “hold mode.” In the panel options, you can specify whether the panel powers up in hold mode.</p> <p>The button definition has no fields to configure.</p>
Level	B	<p>The button selects a level.</p> <p>The button definition has one field to configure: the level. (Do not choose ‘None’ for the level.)</p> <p>Your panel — configured for single-destination mode with breakaway — will have multiple level buttons, one for each level you want the operator to control. The operator selects multiple levels for a breakaway and then presses a source to complete the take.</p> <p>When all level buttons are <i>deselected</i>, or when all level buttons are <i>selected</i>, a take is “all-level.” When one or more level buttons are selected, a take occurs on just those levels.</p> <p>The operator must select levels before selecting the source</p> <p>The color of the level buttons reflect the levels of the current destination in a limited way.</p> <p>See also the None/All button, following.</p>
Menu	All	<p>This button puts the NV9602 panel in menu mode and displays a menu on the buttons that provides access to a variety of panel functions. Without the button, the operator has no access to the menu functions.</p> <p>By pressing certain buttons, the operator makes menu selections and may enter data (such as panel ID) or change brightness values. When the panel is in menu mode, the menu button cycles through the functions of the menu. See Menu Mode on page 41.</p> <p>The button definition has no fields to configure.</p>
Name Set Toggle	All	<p>The button toggles the panel between its default name set and the “system name” set. One or the other becomes the active name set.</p> <p>The button definition has no fields to configure.</p> <p>If the default name set is the system name set, the button would be a no-op. Therefore configurers should not create a ‘Name Set Toggle’ button if the default name set is ‘System Names’.</p> <p>The status, preset, or destination displays use the active name set — either the default name set (aliases) or the system name set. However, that when the panel is displaying aliases, and a device does not have an alias, the panel displays the system name.</p>

Type	Modes	Description
None/All	B	The button toggles the panel between all levels (of the current destination) being selected and none of the levels being selected. The button definition has no fields to configure.
Panel Lock	All	The button prevents accidental changes to the panel settings, especially router crosspoints. When the panel is locked, the button array becomes blank except for the Panel Lock button which becomes high tally amber. Pressing the panel lock button again reverts the panel to its previous state. The button definition has no fields to configure.
Previous Source	S, B, X	The button presets the previously routed source to the currently selected destination. The operator must next press 'Take' to restore the previous route. This function is useful when an operator makes a route in error. The button definition has no fields to configure. The button does not restore the previous destination. If the user changed the destination and presses 'Previous Source', the take will not restore the previous route.
Salvo	All	The salvo button executes a system salvo immediately. During configuration, when you assign a salvo button, a drop-down menu appears: 'Salvo'. Choose a salvo from the list. The 'None' entry is merely a placeholder. Do not choose 'None'.

Type	Modes	Description
Source	All	<p>The button selects a source. The source name appears in the 'Status' display. Pressing a source button completes a take.</p> <p>The nature of source buttons differs in the 4 operating modes:</p> <ul style="list-style-type: none"> • Single-destination, single-destination with breakaway, and limited X-Y modes <p>When you assign a source button, two drop-down menus appear: 'Source Device 1' and 'Source Device 2'. These correspond to the two source pages. If there is a 'Source Shift' button on the panel, the operator can switch between the two pages. When the first page is selected, pressing the button selects device 1. When the second page is selected, pressing the button selects device 2.</p> <ul style="list-style-type: none"> • Multi-destination mode <p>When you assign a source button, <i>three</i> drop-down menus appear: 'Source Device 1', 'Source Device 2', and 'Destination Device'. The first two correspond to the two source pages. If there is a 'Source Shift' button on the panel, the operator can switch between the two pages. When the first page is selected, pressing the button selects device 1. When the second page is selected, pressing the button selects device 2.</p> <p>The 'Destination Device' field allows you to configure a destination for every source button. Typically, you will assign one destination device to one set of sources, another destination to another set of sources, and so on. At the limit, you can configure up to 38 destinations.</p> <p>The destination assigned to the button does not change when the source page changes.</p> <p>See Multi-Destination Operations on page 36.</p>
Source Master	All	<p>Means "source is the master" and makes the source device the master. Otherwise, the destination is the master. This button (and these concepts) apply only to machine control routes. The button definition has no fields to configure. The button is a toggle: Press it once to make the source the master (it goes high-tally); press it again to make the destination the master (the button is low-tally).</p> <p>A panel option allows you to make "source is master" the default. In this case, the button still toggles between "source is master" and "destination is master," and the button, if present, is high-tally by default.</p> <p>The 'Source is Master' button is also used to initiate "broadcast" machine control routes. See Broadcast Routes on page 37.</p>

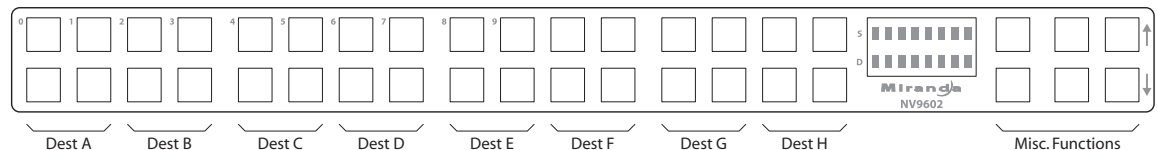
Type	Modes	Description
Source/ Destination	X	The button selects either a source or a destination depending on whether the panel is in source mode or destination mode. It is the 'Source/Dest Toggle' button that places the panel in source mode or destination mode. During configuration, when you assign a 'Source/Destination' button, you will see two drop-down menus: 'Source Device' and 'Destination Device'. The source device is selected when the operator presses the button in source mode. The destination device is selected when the operator presses the button in destination mode.
Source/ Dest Toggle	X	The button toggles between source and destination modes. The button definition has no fields to configure. 'Source/Destination' buttons are affected by the toggle. In source mode, a 'Source/Destination' button selects a source; in destination mode, a 'Source/Destination' button selects a destination.
Source Shift	All	The button toggles between the first and second source sets. The button definition has no fields to configure. The button affects the operation of any source button (in any mode). Source buttons represent two sources. One belongs to one source set and the other belongs to the other source set.
Undefined	All	This button type is a placeholder: during configuration, it makes the button undefined and inactive. On the actual panel, the undefined button remains unlit (dark).

Multi-Destination Configuration

A panel configured in multi-destination mode has source buttons that represent 2 sources and a destination. Pressing a source button selects the source and the destination and performs an immediate take—to the destination assigned to the source button. (A source shift button switches between the two sources of the source buttons.)

Potentially, all 38 buttons of a NV9602 could be source buttons, each having a unique destination. Thus, at that extreme, a panel in multi-destination mode could represent 38 destinations and give operators the choice of two sources for each destination.

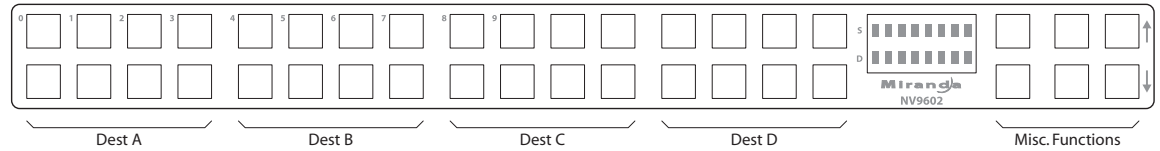
A more typical multi-destination configuration will present fewer destinations, organized in button clusters on the panel. This organization, for example, provides 8 destinations with up to 8 sources available for each one, with 6 buttons assigned to other functions:



Configuration

Multi-Destination Configuration

As another example, this organization provides 4 destinations with up to 16 sources available for each one, again with 6 buttons assigned to other functions:



This is a natural organization because the 32 buttons to the left of the display are spaced into 4 groups.

To configure a panel in multi-destination mode in a useful way, you should organize its source buttons into groups according to destination. Either of the preceding examples show good organization.

As a further example, you could organize the buttons by row: if you have only two destinations, the top row could represent one destination (having 32 potential sources) and the bottom row could represent the other destination (again with 32 potential sources).

It is natural to assign the same sources to each destination, but not a requirement. The different destinations could have disjoint sets of sources.

Source buttons are typically labeled (with clear plastic inserts) with mnemonics for the two sources assigned to each of the buttons.

It is important to label the buttons carefully. Button labels are clear plastic inserts that you place under the removable plastic button caps.

A button label should show the mnemonic for both sources of the button if your panel has a source shift button. If it has no source shift button, only one source mnemonic would be required. (Button labels could easily be graphics as well as text.)

5 Operation

Chapter 5 provides operating instructions for the NV9602 control panel.

Topics

Summary	25
Operating Concepts	27
Menu Mode	41
Setup Mode	43

This chapter is intended specifically for the NV9602 panel **operator**.

Summary

As an NV9602 operator, you will be confronted initially with a relatively small and simple panel — 38 buttons with two 8-character displays.

The panel's buttons can have arbitrary legends (using plastic inserts under the button caps). A button's legend should indicate its function. Some buttons can be applied differently in other modes (such as menu mode). Operators and configurers will have to communicate about the meaning of the buttons.

The alphanumeric display (2 lines of 8 characters) shows the status of completed takes under normal circumstances. The display presents information or menu items in other cases.

Physically, you will find

- Function buttons (e.g., switch source pages or lock a destination).
- Source, destination, and salvo buttons.
- Names of the selected destination and its current source.

At any particular time, some of the buttons are high-tally; some are low-tally; and some might be undefined. Active buttons are of two colors, green and amber. Green generally represents sources and source functions; amber generally represents destinations and destination functions, but the colors are also used for other functions.

- ▲ Please refer to the *NV9000-SE Utilities User's Guide* (or the NV9000-SE Utilities help files) if you are unfamiliar with the concepts used in this chapter.

Modes of Operation

The NV9602 operates in one of 4 modes (or behavioral models):

- [Single-Destination Mode](#).
- [Single-Destination Mode with Breakaway](#).
- [Limited X-Y Mode](#).
- [Multi-Destination Mode](#).

The panel's set of button functions varies with the mode (or model).

Generally, to operate the panel, you choose a destination, (possibly) choose desired breakaway levels, and choose a source. Choosing a source for a destination completes the take. This paradigm has slight variations in the different modes.

▲ There is no 'Take' button in any of the modes.

Single-Destination Mode

In single destination mode, the panel's destination is configured as the default destination and there are no destination buttons. You cannot select a destination—it is already selected.

Takes are performed on all levels of the currently selected destination.

You can use a 'Source Shift' button to toggle between two sets of sources.

Takes occur as soon as a source button is pressed.

Single-Destination Mode with Breakaway

This mode is an extension of single-destination mode that includes level buttons on the panel and that allows breakaway.

Here too, the single destination is configured as the default destination and you cannot select a destination because it is already selected.

Level buttons selected the levels on which the take is to occur. Takes occur on all levels when either no levels are selected or when all levels are selected.

You can use a 'Source Shift' button to toggle between two sets of sources.

Limited X-Y Mode

In limited X-Y mode, takes occur from a single source to a single destination. Destinations are selectable and there are two pages of destinations in addition to the two pages of sources.

Takes are all level. Pressing a source button completes the take.

You can use a 'Source Shift' button to toggle between two sets of sources. Similarly, you can use a 'Destination Shift' button to toggle between two sets of destinations.

Multi-Destination Mode

In this mode, source buttons are configured with destinations as well as sources. Thus, each source button completes a route to its own assigned destination. If each button had a different destination, it would be possible to route to as many as 38 destinations. The typical configuration would assign one destination to one set of sources, another destination to another set of sources, and so on.

Takes are all-level.

Operators can use a 'Source Shift' button to toggle between two sets of sources. There is no destination shift and a button's destination does not change when you press a 'Source Shift' button.

Secondary Modes

Secondary modes are:

- Source mode — exists (in limited X-Y mode) when you press a 'Source/Dest Toggle' button. Source mode and destination mode affect the operation of 'Source/Destination' buttons.
- Destination mode — exists (in limited X-Y mode) when you press a 'Source/Dest Toggle' button.
- Setup mode — where the NV9602 is freshly powered up, but *disconnected from the network*. In this mode, the configurer can preset the NV9602's panel ID and perform a few diagnostic tasks.

Usually, only configurers need be concerned with setup mode.

See [Setup Mode](#) on page 43.

- Menu mode — pressing a menu button places the NV9602 in "menu" mode. In menu mode, the buttons lose their normal functions and become part of a menu that changes as needed during menu operation.

There is nothing in the menu that concerns operators except button brightness. An operator may use the menu to set button brightness. Administrators and configurers may use the menu to view or change the panel ID, or to determine the software and firmware revisions.

See [Menu Mode](#) on page 41.

When the panel is not in setup mode or menu mode, we say it is in *normal mode*. "Normal" means the panel is functioning in one of the 4 operating modes.

Button Legends

There are about 20 different button functions. Some might not be available on your panel depending on the operating mode in which it was configured. Typically, buttons have graphic or text legends that are plastic inserts placed under the clear button caps.

There are button templates available. Use these or your own to create button graphics. Print the graphics on clear plastic, cut the button graphics apart and insert these under the clear button caps.

Buttons are also color-coded to a limited degree. Green represents sources. Amber represents destinations. Those colors are used for other functions, however. High-tally (bright) buttons are those that are selected; low-tally (dim) buttons are those that are not selected. Dark buttons are those that are disabled. Dark buttons are unlit, and actually white or gray in color.

Operating Concepts

Source Shift

Source shift applies in all modes.

Each source button can represent two sources. A 'Source Shift' button selects which of the two sources the source button will select. (The concept is similar to the shift key or the 'caps lock' key on a keyboard.)

A source shift button is a toggle. The source shift button is low-tally when it has enabled the first source. It is high-tally when it has enabled the second source.

A source shift button toggles *all* source buttons.

Destination Shift

Destination shift applies only in 'Limited X-Y' mode.

Each destination button can represent two destinations. A 'Destination Shift' button selects which of the two destinations the destination button will select. (The concept is similar to the shift key or the 'caps lock' key on a keyboard.)

A destination shift button is a toggle. The destination shift button is low-tally when it has enabled the first destination. It is high-tally when it has enabled the second destination.

A destination shift button toggles *all* destination buttons.

Levels

In NV9000-SE Utilities and in the NV9000 router control system, routes occur on *levels*. A level is typically SD, HD, analog video, AES, analog audio, or machine control. Various devices are defined as sending and receiving signals on certain levels. The set of levels handled by a device belong to what is called a *level set*.

A source can be routed to a destination if it has the same set of levels, i.e., it belongs to the same named level set. A source can be routed to a destination in a different level set if the NV9000 configuration has the appropriate inter-level set mapping.

The effect of this is that when you, the operator, choose a destination, the NV9000 software recognizes which source devices are allowed to be routed to the destination and limits your selection to those sources.

Breakaway

Routes can be all-level in which case they are taken on all levels defined for the destination. The acceptable sources for a route have the same levels as, or some configured mapping to, the levels of the destination.

A breakaway is where you take different sources to the same destination—on different levels.

It is not possible to take different sources to the destination on the same level. For instance, you cannot take SD from two different sources. The outcome would be noise even if you could do it. (That is because routers are not mixers.)

Hold

Hold mode (and hold buttons) apply in 'Single Destination with Breakaway' mode and 'Limited X-Y' mode.

Breakaway

In single-destination mode with breakaway, a hold button retains breakaway levels after a take. Simply press the hold button at any time before the take.

A hold button is a toggle. Press it once to put the panel in hold mode; press it again to remove hold mode.

Limited X-Y

In limited X-Y mode, this button allows you to perform a gang (or “dub”) switch. In hold mode, destination selections are cumulative, and not mutually exclusive.

Follow these steps to route a source to more than one destination:

- 1 Select the first destination to which you want to route the source. Use a ‘Destination Shift’ button if necessary to access the destination. The destination tallies bright amber and its name appears in the destination display.
- 2 Press the hold button. If the panel is in hold mode, the hold button will be high-tally. (Press the hold button again if it is not.)
- 3 Select the additional destinations you require. As you select each destination, its name appears in the destination display. You can toggle these additional destinations on or off.
- 4 Select a source. Use a ‘Source Shift’ button if necessary to access the source. The take to the multiple destinations is immediate.
- 5 As long as hold remains enabled, you can route other sources to the same group of destinations.

To clear hold mode:

- 1 Press the hold button. If it does not go low-tally, press it again.
- 2 Select any destination.

Buttons

The NV9602 has 3 classes of button functions:

- Dedicated functions, such as ‘Default State’ and ‘Chop’.
- Variable functions, such as ‘Salvo’, ‘Source’, or ‘Destination’. A salvo button executes a specific system salvo. A source button selects a specific source and completes a take. A destination button selects a specific destination.
- Special functions, such as ‘Menu’.

At present, there are about 21 button types, including “undefined” which is not a true button type:

Broadcast	Free Source	Previous Source
Chop	Hold	Salvo
Default State	Level	Source
Destination	Menu	Source is Master
Destination Lock	Name Set Toggle	Source/Destination
Destination Protect	None/All	Source/Dest Toggle
Destination Shift	Panel Lock	Source Shift

In the following function descriptions, the modes in which the functions operate are indicated (to the left) with these codes:

- S — single-destination mode
- B — single-destination mode with breakaway
- X — limited X-Y mode
- M — multi-destination mode.
- All — all modes.

All **Broadcast**

A broadcast button applies to a data (or machine control) level only. The button assigns one controlling device (the master) to multiple controlled devices (the slaves). The function is useful in dubbing applications. See [Broadcast Routes](#) on page 37 for more information.

▲ Pressing the 'Broadcast' button turns off the 'Source is Master' button and vice versa.

Although this button is available in single-destination mode (with or without breakaway) it is incompatible with the mode.

All **Chop**

When a "chop" function is supported by a router, the button is a toggle that enables and disables "chop." Chop is a rapid switching of the current destination device between the one source and another source.

The chop function is used to test system timing and would **not** be used during normal operation.

The use of the chop function varies according to the operating mode. See [Chop](#) on page 40.

All **Default State**

The 'Default State' button returns the panel to its most recent power-up state. That is called the *default state*. (It does not cause any changes to the routers, control system, or its signals.)

X **Destination**

The button selects a destination. The destination name appears in the 'Destination' display. The destination is the target of an upcoming take, which will route a source to that destination.

S, B, X **Destination Lock**

This button is a toggle that sets or clears a *lock* on the current destination. The lock can be removed at the panel that originally set the lock, at a panel that has the same user ID, or by a forced release at any panel.

Unless your panel is configured for forced release, you cannot unlock or unprotect a destination locked or protected by someone else. The display will show "NotOwner" briefly.

You cannot take a source to a locked destination. The display will read "Locked" and show the user's name.

Locks and protects apply to the default destination in single-destination mode, with or without breakaway. They apply to the currently selected destination in limited X-Y mode. They are not available in multi-destination mode.

When you lock a destination, the 'Destination Lock' button goes high-tally amber. If you have a 'Destination Protect' button, it will also go high-tally amber.

- ▲ Locks apply to selected levels in single-destination mode with breakaway.
- ▲ The NV9602 provides no explicit indication, during operation, whether a destination is locked or unlocked.

S, B, X Destination Protect

This button is a toggle that sets or clears a *protect* on the current destination device. The protect can be removed at the panel that originally set the protect, at any panel that has the same user ID, or by a forced release at any panel.

Unless your panel is configured for forced release, you cannot unlock or unprotect a destination locked or protected by someone else. The display will show "NotOwner" briefly.

You cannot take a source to a protected destination if someone else protected it. The display will read "Protect" and show the user's name. However, you *can* take a source to a protected destination if you protected it or it is protected at another panel that has your user name. Doing so does not remove the protection.

Locks and protects apply to the default destination in single-destination mode, with or without breakaway. They apply to the currently selected destination in limited X-Y mode. They are not available in multi-destination mode.

When you protect a destination, the 'Destination Protect' button goes high-tally green. Any 'Destination Lock' button remains unaffected. Note that you cannot protect a locked destination.

- ▲ Protects apply to selected levels in single-destination mode with breakaway.
- ▲ The NV9602 provides no explicit indication, during operation, whether a destination is locked or unlocked.

X Destination Shift

The 'Destination Shift' button toggles between the first and second destination sets (which are available only in limited X-Y mode).

When you press a 'Destination' button, it will select the destination from the chosen sets.

The names of destination devices appear in the 'Destination' display.

S, B, X Free Source

The button selects a pre-defined phantom device that can be used to release or "free" devices on the data (machine control) level. A free source can also be used with tielines to free the tieline for others to use. The actual free source used is defined in the NV9000 configuration.

Use this button as if it were a source button.

B, X Hold

The button is a toggle; press it once to place the panel in "hold mode." Press it again to cancel "hold mode." (The panel might or might not be configured to power up in hold mode.)

In single-destination mode with breakaway, this button retains breakaway levels after a take.

In limited X-Y mode, this button allows you to perform a gang (or "dub") switch. In hold mode, destination selections are cumulative, and not mutually exclusive. See [Hold](#) on page 28.

The 'Destination' field of the display shows the most recently selected destination under hold mode.

The button definition has no fields to configure.

B Level

The button selects a level.

The button exists only when your panel is configured for single-destination mode with break-away. Presumably, it will have several level buttons, one for each level you need to control.

You will select one or more levels for a breakaway and then press a source button to complete the take. When all level buttons are *deselected*, or when all level buttons are *selected*, a take is "all-level." When one or more level buttons are selected, a take occurs on just those levels.

You must select levels before selecting the source.

The color of the level buttons reflect the levels of the current destination in a limited way.

See also the [None/All](#) button function, following.

All Menu

This button puts the panel in menu mode and produces a menu on the buttons and in the displays that provides access to a variety of panel functions.

Without the button, the operator has no access to the menu functions.

By pressing certain buttons, you makes menu selections and enter data (such as panel ID) or change brightness values. When the panel is in menu mode, you must press the 'Menu' button to cycle through the functions of the menu. See [Menu Mode](#) on page 41.

The button definition has no fields to configure.

All Name Set Toggle

An 'Name Set Toggle' button toggles the panel between its default name set and the "system name" set. Whichever name set you select becomes the "active" name set.

B None/All

The 'None/All' button toggles the panel between all levels (of the current destination) being selected and none of the levels being selected.

All Panel Lock

The button prevents accidental changes to the panel settings, especially router crosspoints. When the panel is locked, the button array becomes blank except for the Panel Lock button which becomes high tally amber.

The button is a toggle: press the panel lock button again to revert the panel to its previous state.

S, B, X Previous Source

The button presets the previously routed source to the currently selected destination. To restore the previous route, you must next press 'Take' assuming you have not changed the destination. This function is useful when you make a route in error.

The button does *not* restore the previous destination. If you changed the destination and press 'Previous Source', the take will not restore the previous route.

All Salvo

The salvo button executes a system salvo immediately.

All Source

The button selects a source. The source name appears in the 'Status' display. **Pressing a source button completes a take.**

The nature of source buttons differs according to the panel's configured operating mode:

- Single-destination, single-destination with breakaway, and limited X-Y modes

A source button can select one of two sources. The first source belongs to source set 1 and the second source belongs to source set 2. Pressing a 'Source Shift' button toggles the panel between source page 1 and page 2.

- Multi-destination mode

A source button can select one of two sources, as in the other modes, **and** it selects a destination.

Typically several source buttons (in MD mode) will share the same destination. Other groups of source buttons will also share their own common destination.

The destination for a source button does not change under a source shift.

See [Multi-Destination Operations](#) on page 36.

All Source is Master

Means "source is the master" and makes the source device the master. Otherwise, the destination is the master. This button (and these concepts) apply only to machine control routes.

The button is a toggle: Press it once to make the source the master (it goes high-tally); press it again to make the destination the master (the button is low-tally).

The 'Source is Master' button is also used to initiate "broadcast" machine control routes. See [Broadcast Routes](#) on page 37.

During data level (i.e., machine control) takes, this button makes the source device the master. Otherwise, the destination is the master.

The button is a toggle that reverses the direction of data routing. For example, if the destination is the master and the source is the slave, pressing a 'Source is Master' button reverses their roles. Pressing the button again reverses the roles.

The 'Source is Master' button is used to initiate "broadcast" control routes. See [Broadcast Routes](#) on page 37.

The panel can be configured so that "source is master" is the default state or so that "destination is master" is the default. The button still toggles between "source is master" and "destination is master."

- ▲ Pressing the 'Source is Master' button turns off the 'Broadcast' button and vice versa.

X Source/Destination

The 'Source/Destination' button selects either a source or a destination depending on whether the panel is in source mode or destination mode.

It is the 'Source/Dest Toggle' button (listed next) that places the panel in source mode or destination mode.

X Source/Dest Toggle

The 'Source/Dest Toggle' button toggles between source and destination modes.

'Source/Destination' buttons are affected by the toggle. In source mode, a 'Source/Destination' button selects a source; in destination mode, a 'Source/Destination' button selects a destination.

When the panel is in source mode, the 'Source/Dest Toggle' button and any 'Source/Destination' buttons are green. When the panel is in destination mode, the 'Source/Dest Toggle' button and any 'Source/Destination' buttons are amber.

All Source Shift

The 'Source Shift' button toggles between the first and second source "pages."

The button affects the operation of any source button (in any mode). Source buttons represent two sources (and, in multi-destination mode, a destination). One source belongs to source set 1 and the other belongs to source set 2.

All Undefined

An undefined button cannot be used and appears dark (unlit) on the panel. The term "undefined" has meaning primarily to the configurator.

Lock, Protect, and Release

In a multi-user system, routes made by one user can be made safe from being accidentally or maliciously change by another user.

Definitions

Owner	The user ID of a panel where a lock or protect was issued.
Source lock	No one can use the source.
Source protect	No one but the owner can use the source.
Destination lock	No one can route to the destination.
Destination protect	No one but the owner can route to the destination.
Release	To remove a lock or protect.

Some control panels can lock or protect both sources and destinations. However, *The NV9602 provides locks and protects for destinations only.*

A forced release is when the lock or protect is removed by someone other than the owner. A forced release can be performed:

- At any panel configured with release mode set to "forced release".
- At any other panel with "force release" enabled.

The 'Destination Lock' and 'Destination Protect' buttons are toggles. Press the lock (or protect) button to lock (or protect) a destination. Press the button again to release the lock (or protect).

▲ **Note:** a protect prevents *others* from routing to a destination; a lock prevents *anyone*—even the user who issued the lock—from routing to the destination.

▲ You may lock a protected destination, but you cannot change a locked destination to a protected destination directly. You must first unlock it.

Locks and Protects with Breakaway

Use this method to lock or unlock selected levels in single-destination mode with breakaway:

- 1 Verify that the default destination appears in the 'Destination' field of the display.
- 2 Optionally press 'Source Shift' to toggle between the source pages.
- 3 Optionally press a source button. The source currently routed to that destination might already be what you want. Pressing the source performs a take.
- 4 Select the levels you want to lock or unlock. Selected levels are high-tally. If your panel has a 'None/All' button, you can use it to select either no levels or all levels.
- 5 Press a 'Destination Lock' button.

Use this same method to protect or unprotect selected levels, using a 'Destination Protect' button instead.

Note that lock buttons are toggles. Therefore, if you select some levels that are already locked and some that are unlocked, pressing the lock button will invert their status. Locked levels become unlocked and those that were unlocked become unlocked. The same is true for protect buttons.

Takes

Pressing a source button completes a take, in any mode. Following are brief instructions on how to perform a take under 4 cases.

Case 1 — Single-Destination Mode

Takes in single-destination mode are all-level. Follow these steps:

- 1 Verify that the default destination appears in the 'Destination' field of the display.
- 2 If the 'Destination' field does not show the default destination, of course, a problem exists. Perhaps the panel is malfunctioning or not configured properly or perhaps the destination has been removed from the NV9000 system. Any of these conditions is rare and the remedy will depend on your system.
- 3 Optionally press 'Source Shift' to toggle between the source pages.
- 4 Press a source button to complete the take. The 'Status' field of the display shows the source you chose.

Case 2 — Single-Destination Mode, Breakaway

Takes in single-destination mode with breakaway are meant to be on selected levels. Follow these steps:

- 1 Verify that the default destination appears in the 'Destination' field of the display.
- 2 Press one or more level buttons to selected the levels you want to route. The levels that are available are those of the default destination. If your panel has a 'None/All' button, you can press that button to toggle between all levels being selected and no levels being selected.
- 3 Optionally press 'Source Shift' to toggle between the source pages.
- 4 Press a source button to complete the take. The 'Status' field of the display shows the source you chose.

- ▲ A take is all-level when all the level buttons are selected (high-tally) or when none of the level buttons are selected.
- ▲ If your panel has a 'Hold' button, you can use it to preserve the chosen breakaway levels after the take. Hold "mode" is active when the hold button is high-tally. When hold mode is inactive, the destination reverts to all levels after the take.

Case 3— Limited X-Y Mode

Takes in limited X-Y mode are all-level. Follow these steps:

- 1 Optionally press 'Destination Shift' to toggle between the destination pages.
- 2 Press a destination button to start the take. The 'Destination' field of the display shows the destination you chose.
- 3 Optionally press 'Source Shift' to toggle between the source pages.
- 4 Press a source button to complete the take. The 'Status' field of the display shows the source you chose.

Case 4— Multi-Destination Mode

Takes in multi-destination mode are all-level. Source buttons in multi-destination mode specify the destination to which the source is routed. Follow these steps:

- 1 Optionally press 'Source Shift' to toggle between the source pages.
- 2 Press a source button to complete the take. The 'Status' field of the display shows the source you chose and the 'Destination' field of the display shows the destination assigned to that source.

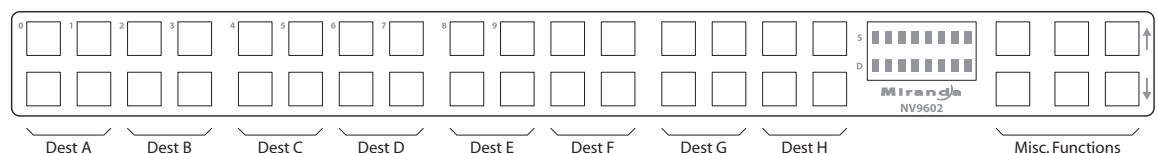
The way the source buttons on the panel are organized is important to knowing which destination is assigned to any particular source button. See [Multi-Destination Operations](#), next.

Multi-Destination Operations

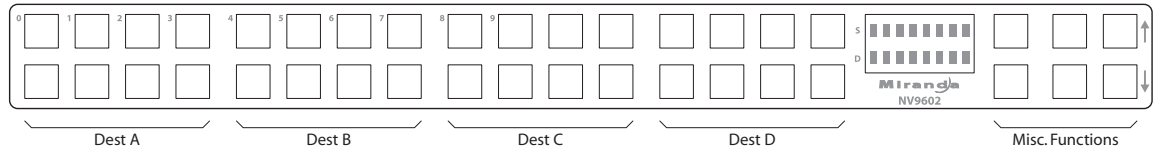
A panel that is configured in multi-destination mode has source buttons that represent 2 sources and a destination. Pressing a source button selects the source and the destination and performs an immediate take — to the destination assigned to the source button. (A source shift button switches between the two sources of the source buttons.) There are no destination buttons.

Potentially, all 38 buttons of a NV9602 could be source buttons, each having a unique destination. Thus, at that extreme, a panel in multi-destination mode could represent 38 destinations and give operators the choice of two sources for each destination.

A more typical multi-destination configuration will present fewer destinations, organized in button clusters on the panel. This organization, for example, provides 8 destinations and up to 8 sources available for each one, with 6 buttons assigned to other functions:



As another example, this organization provides 4 destinations and up to 16 sources available for each one, again with 6 buttons assigned to other functions:



This is a natural organization because the 32 buttons to the left of the display are spaced into 4 groups.

Your panel — if it is in multi-destination mode — might or might not be organized as in these examples. Consult your administrator to determine the organization of buttons.

To perform a take, simply select a source. The take occurs immediately. You might need to press a source shift button to make available the source you want.

When you press a source button, the destination and the selected source appear in the destination and status displays, respectively.

Source buttons are typically labeled (with clear plastic inserts) with mnemonics for the two sources assigned to each of the buttons.

Name Sets

NV9000-SE Utilities allows configurers to define multiple *name sets*. Each name set contains alternate names for any and all devices in the NV9000 system. The alternate names can appear in the displays of your panel.

Further, your panel can have a 'Name Set Toggle' buttons that allows you to switch between the "default" name set and the "system name" set. Whichever name set you are currently using is the *active* name set.

There is always a 'System Name' set. That name set includes the device names defined within the NV9000 configuration. Any other name sets are optional.

Note that when the panel is displaying alternate names, and a device does not have an alternate name, the panel displays the system name.

Broadcast Routes

It is easy to route a source to multiple destinations for audio and video routers. You place the panel in hold mode with the hold button.

In contrast, machine control routes are typically point-to-point. Therefore, to control multiple machines requires that you perform a "broadcast" operation using a 'Broadcast' button.

In "broadcast mode," the source device issues control commands to all destination devices — but only one destination (the first one you connect to the source) can respond with status.

Broadcast routes can be performed in either mode.

- ▲ "Broadcast" routes are those that involve machine control. An NVISION series machine control router such as the NV5256 is required.

Before You Begin

- 1 Ensure that all devices that you want to include in the route are not locked or protected — and that their machine control levels can be acquired.
- 2 Ensure that the panel has a 'Broadcast' button. If it does not, broadcast routes are not possible. Consult your administrator.
- 3 Ensure that your data router has been configured as "data forward." In this mode, the router expects the source (e.g., playback device) to control the destination (e.g., recording device).
- 4 Cue your playback device. (After the take, you must manually start the playback.)

Performing a Broadcast Take — Limited X-Y Mode

Follow these steps:

- 1 Select a destination and route a source to it. The source becomes the master because the router is in data forward mode. This destination is the slave and communicates bidirectionally with the master on the machine control level.
- 2 Press 'Broadcast' (so that it is high-tally).
- 3 Choose a destination and route the *same source* to it. This destination only receives control commands; it will not return status.
- 4 Repeat step 3 to connect additional slave destinations.
- 5 To remove one slave from the group, turn off 'Broadcast' and route a source to it that is not the master (e.g., the free source). This new device must have a machine control connection.
- 6 To clear the entire broadcast route, turn off 'Broadcast' and select the master device as the destination in a new route. (We recommend that you use the free source as the new source). The entire broadcast route is cleared, and data connections are removed from all slaves.

Performing a Broadcast Take — Multi-Destination Mode

Follow these steps:

- 1 Press a source. That source becomes the master because the router is in data forward mode. This destination (configured on the source button) is the slave and communicates bidirectionally with the master on the machine control level.
- 2 Press 'Broadcast' (so that it is high-tally).
- 3 Press another source button that has the *same source* but a different destination. This destination only receives control commands; it will not return status.
- 4 Repeat step 3 to connect additional slave destinations.
- 5 To remove one slave from the group, turn off 'Broadcast' and route a source to it that is not the master (e.g., the free source). This new device must have a machine control connection.
- 6 To clear the entire broadcast route, turn off 'Broadcast' and select the master device as the destination in a new route. (We recommend that you use the free source as the new source). The entire broadcast route is cleared, and data connections are removed from all slaves.

Important Points

- After you perform the complete take, you must start the playback of the source device manually.
- The panel provides no way to determine which devices belong to the “broadcast group.” You must keep track of this yourself.
- If another operator takes either your master device or the first slave device, the entire broadcast group collapses. Any other slave can be removed from the group, however, without collapsing the entire group. Only the primary pair is critical to the group's integrity.

Data Routing

There are 3 data routing options that affect sources and destinations that have a machine control level (i.e., a data level). These options govern what happens when a source or destination device is to be used.

Automatic Data Routing

A take involving a machine control level occurs automatically, without intervention, regardless of who is using a device.

This option applies in all operating modes.

Manual Data Routing

A take involving a machine control level occurs on all levels except the machine control level. You must route the machine control level as a breakaway.

When a take involving a machine control level occurs, the status display shows the name of the machine control level and the destination display shows “In Use.” That is a signal that you need to take the machine control level as a breakaway.

This option applies only in single-destination mode with breakaway.

Semi-Automatic Data Routing

A take involving a source or a destination having a machine control level might not occur immediately if the source or destination device is in use.

This option applies in all operating modes.

If neither device is “in use” the take occurs immediately. Otherwise, you need to press the source button again to complete the take.

If the source device is in use, the ‘Status’ display shows “Src Used” and the destination display shows “Retry?”

If the destination device is in use, the ‘Status’ display shows “DestUsed” and the destination display shows “Retry?”

If both devices are in use, the ‘Status’ display shows “BothUsed” and the destination display shows “Retry?”

If you do not press the (same) source button again, the take is canceled. (It will time out.)

Case 1 — Single-Destination Mode with or without Breakaway

- 1 Press a source button.
- 2 Examine the display.
- 3 If the destination display shows "Retry," press the source button again to complete the take. The take will time out if you do not press the source button.

Case 2 — Limited X-Y Mode

- 1 Press a destination button.
- 2 Press a source button.
- 3 Examine the display.
- 4 If the destination display shows "Retry," press the source button again to complete the take. The take will time out if you do not press the source button.

Case 3 — Multi-Destination Mode

- 1 Press a source button.
- 2 Examine the display.
- 3 If the destination display shows "Retry," press the source button again to complete the take. The take will time out if you do not press the source button.

Chop

The chop function is a diagnostic function for routers that support chop. It allows you to switch rapidly between two sources at a particular destination. The chop interval is defined in the NV9000 configuration. The default chop interval is 6 *fields*.

Case 1 — Single-Destination Mode, with or without Breakaway

Follow these steps:

- 1 Verify that the default destination appears in the 'Destination' field of the display.
- 2 Optionally press 'Source Shift' to toggle between the source pages.
- 3 Press a source button. This is the first source.
- 4 Press the chop button.
- 5 Optionally press 'Source Shift' to toggle between the source pages.
- 6 Press another source button. This is the second source. The chop is immediately activated on the routers (of the default destination) that support chop.

To terminate the chop, (1) press the chop button again to turn it off, then (2) select any source.

Case 2 — Limited X-Y Mode

Follow these steps:

- 1 Optionally press 'Destination Shift' to toggle between the destination pages.
- 2 Press a destination button. The 'Destination' field of the display shows the destination you chose.
- 3 Optionally press 'Source Shift' to toggle between the source pages.

- 4 Press a source button. This is the first source.
- 5 Press the chop button.
- 6 Optionally press 'Source Shift' to toggle between the source pages.
- 7 Press another source button. This is the second source. The chop is immediately activated on the routers (of the default destination) that support chop.

To terminate the chop, (1) press the chop button again to turn it off, (2) select the destination you had chosen for the chop, then (3) select any source.

Case 3—Multi-Destination Mode

Follow these steps:

- 1 Optionally press 'Source Shift' to toggle between the source pages.
- 2 Press a source button. This is the first source.
- 3 Press the chop button.
- 4 Optionally press 'Source Shift' to toggle between the source pages.
- 5 Press another source button that *uses the same destination* as the first. This becomes the second source for the chop. The chop is immediately activated on the routers (of the default destination) that support chop.

To terminate the chop, (1) press the chop button again to turn it off, then (3) select any source.

Menu Mode

The NV9602 enters menu mode if it has a menu button and you press the menu button.

- ▲ The menu uses some of the buttons on your panel. The legends and functions of these buttons in normal operating mode do not apply while the panel is in menu mode.

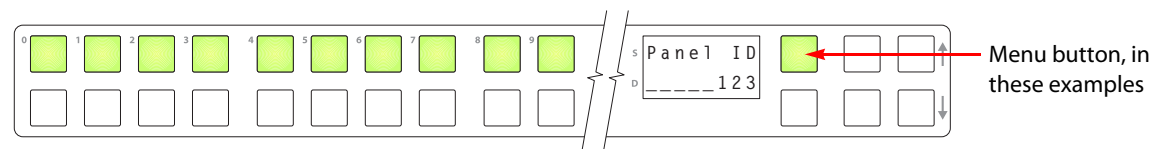
While the panel is in menu mode, you will use the menu button to cycle through the various parts of the menu. There are 8 parts:

- Panel ID•Panel name
- User ID•User name
- Software version•Boot version
- Application version•Low button illumination level

Configurers should ensure that the menu button is not part of the numeric keypad that becomes available in the panel ID submenu. See [Panel ID](#), following.

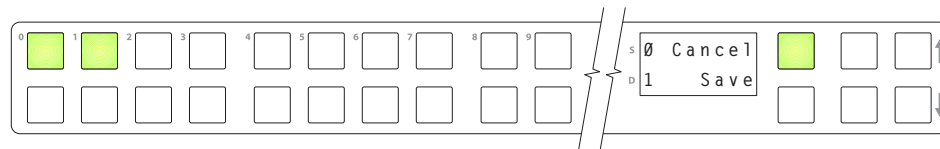
Panel ID

The panel ID submenu appears first when you press the menu button:



The panel now allows you to enter the panel ID using buttons at the left that function as a numeric keypad. The numbers of the keypad are printed on the panel. They range from 0 (at the left) to 9.

▲ To use the keypad, you will have to disregard whatever legends are on the buttons. After you enter a panel ID, press the menu button again. A confirmation message appears:

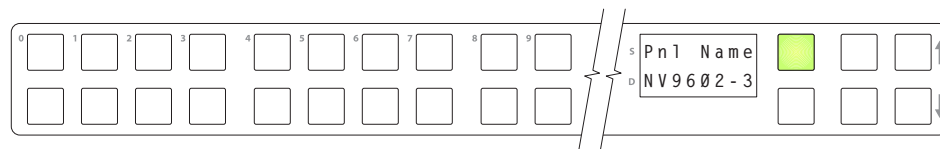


Press the left-most button to cancel the operation or press the button to its right to save your new panel ID. After you save the panel ID, the panel continues to the next item in the menu.

If you do not want to change the panel ID, simply press the menu button again to skip to the 'Panel Name' submenu.

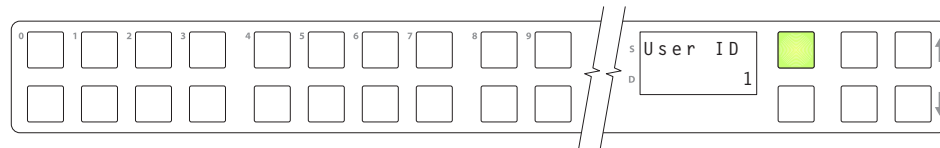
Panel Name

The second submenu merely displays the configured panel name. You cannot change it.



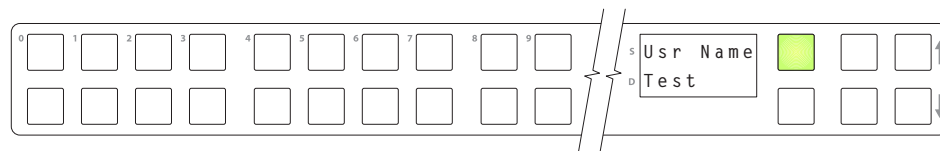
User ID

The third submenu merely displays the configured user ID. You cannot change it.



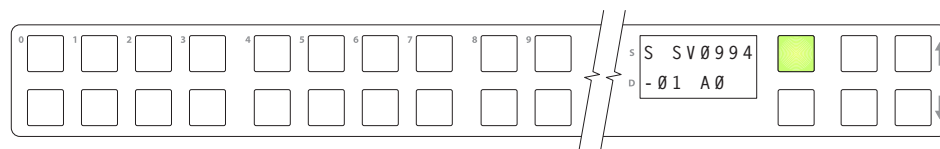
User Name

The fourth submenu merely displays the configured user name. You cannot change it.

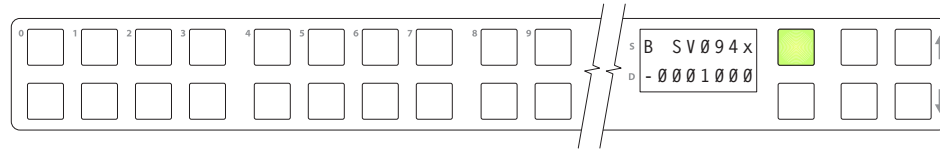


Software Versions

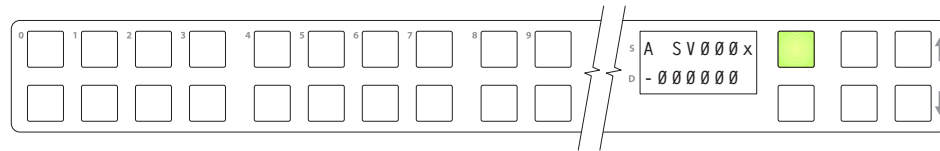
The fifth submenu displays the software version:



The sixth submenu displays the boot version:

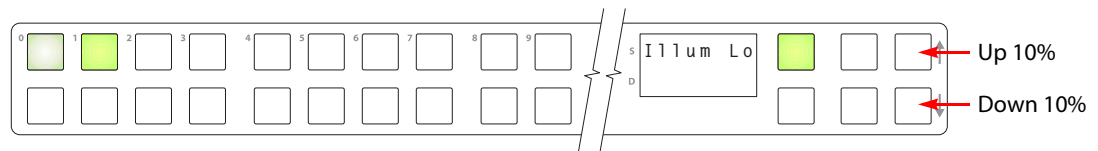


The seventh submenu displays the application version:



Button Illumination

The last submenu displays the illumination setting:



The button at the far left indicate the low illumination level. The button to its right gives high-ly illumination for comparison.

The right-most buttons near the up and down arrows change the low illumination level by 10%. The default level is 40%.

Press the low illumination button to change the low illumination level. Press the high illumination button to change the high illumination level. Press the up or down buttons at the right to change the illumination level.

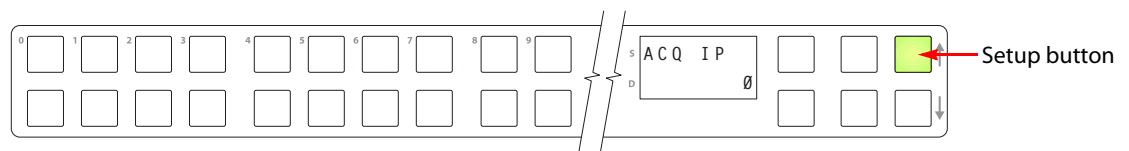
When you are satisfied with the illumination level you have chosen, press the menu button once again. At this last step, the panel leaves menu mode and returns to normal mode.

Setup Mode

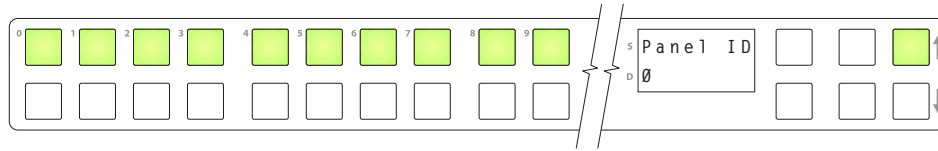
Setup mode occurs when the NV9602 is disconnected from its network and is freshly powered up. In setup mode, you can set or change the panel ID, identify the software version, and perform a test of the panel's buttons. It is in setup mode that you must initially set the panel ID.

▲ It can take several seconds for the buttons to appear.

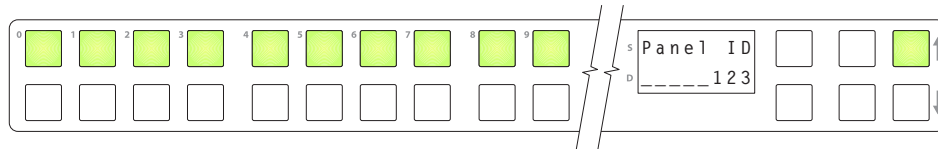
The panel powers up with 1 button (here called the "setup" button) illuminated in green and a display of the current panel ID. The panel ID is usually set to 0 at the factory:



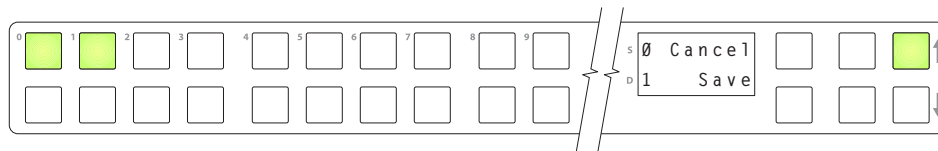
Press the setup button to proceed to the first part of setup which is to set the panel ID:



The panel now allows you to enter the panel ID using buttons at the left that function as a numeric keypad. The numbers of the keypad are printed on the panel. They range from 0 (at the left) to 9:



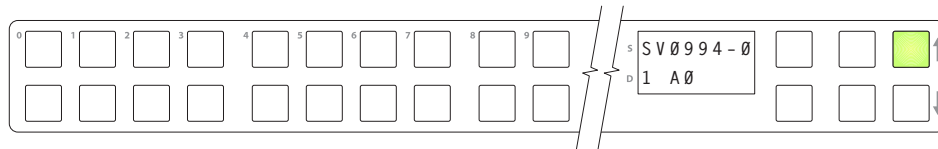
Press the setup button to complete the entry. A confirmation message appears:



Press 1 (the button on the left) to cancel your entry or press 2 (the button on the right) to save your entry. Thereafter, your panel will have the panel ID you assigned, unless you or someone else changes it.

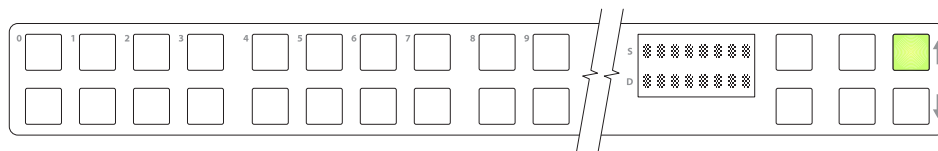
If you do not want to change the panel ID, just press the setup button again, without entering a number, to proceed to the next step.

Following the panel ID is the display of the software version:



The software part number and its revision number wrap around the first two lines of the display. In the illustration above, the part number is SV0639-07 and the revision is A0. The CPLD version number is 00.

Press the setup button to proceed to the pixel test:

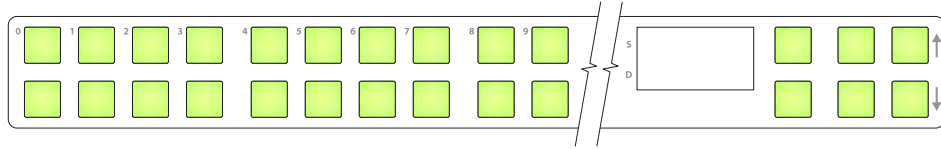


In this test, all the dots in each character of the 2 displays should be illuminated.

Press the setup button to proceed to the color test. This test has 4 parts:

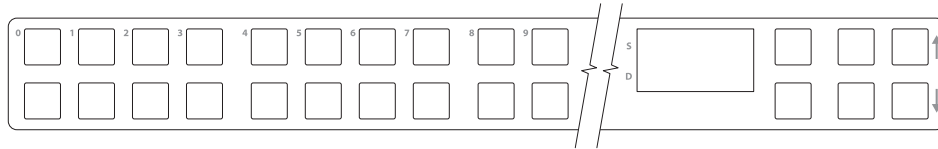
- All buttons turn low-tally amber.
- All buttons turn high-tally amber.
- All buttons turn low-tally green.

- All buttons turn high-tally green. This is an example:



To proceed through this test, press the setup button (still in the same place although it is now changing color) 3 more times.

Finally, you will reach the button test:



Press any button to test it. The button will flash a few times rapidly.

Pressing the setup button (i.e., button 25) will terminate the button test and return you to the initial display of setup mode. At this point — if you have assigned your NV9602 a suitable panel ID — you may connect your NV9602 to the panel network of your NV9000 system.

6 Technical Details

Chapter 6 provides electrical and mechanical specifications for the NV9602.

Topics

Power Specifications	47
NV9602 Specifications	47
Environmental Specifications	48
Defaults	48
Drawings	48

Power Specifications

NV9602 Power Specifications

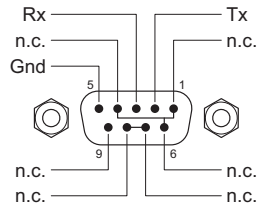
Specification	Detail
AC power	90–250 VAC, 50–60 Hz, auto-sensing. Inrush current < 50 A at 230 VAC, cold start, at 25°C, Input current < 2.0 A rms at 115 VAC; < 1.0 A at 230 VAC.
Power consumption	≤ 14 W
Regulatory	UL listed and CE compliant.

NV9602 Specifications

NV9602 Physical Specifications

Specification	Detail
Dimensions	Height: 1.72 in (43.7.9mm), fits EIA 1 RU (1.75 in or 44.5 mm), Width: 19.0 in (482.6 mm). Depth: 8.61 ± 0.01 in (218.7 mm), enclosure, 9.14 in (232.2mm) overall. Requires approximately .3 in cable clearance.
Weight	7.6 lb (3.447 kg).
Connectors	Power: AC. Ethernet: 1 connector, 10baseT, RJ-45 jack. RS-232: 1 connector, 9-pin D type, for diagnostics and upgrades.
Grounding terminal	None.

The RS-232 connector has this pinout:



Pins 1, 4, and 6 are tied together and pins 7 and 8 are tied together. None of those pins are connected to any circuitry.

Environmental Specifications

NV9602 Environmental Specifications

Specification	Detail
Operating temperature	0–30°C, ambient.
Relative humidity	0 to 90%, non-condensing.
Cooling	No fan required.

Defaults

Initial Panel State

Destination: the configured default.

Buttons: low-tally is 40% brightness by default and stays at its most recent setting.

Configuration Page

The initial NV9602 configuration has no buttons defined. The default panel options are:

- Behavioral model: Single-destination.
- Release mode: Normal.
- Default destination: None.
- Status monitor: None.
- Data routing mode: Automatic.
- Default name set: System names
- All other options: Disabled (check boxes clear).

DHCP

The panel is set up to respond to DHCP from the factory. It is possible to assign the panel a fixed IP address using the Panel IP Configuration Utility.

Drawings

The drawings on the following pages provide overall and critical dimensions.

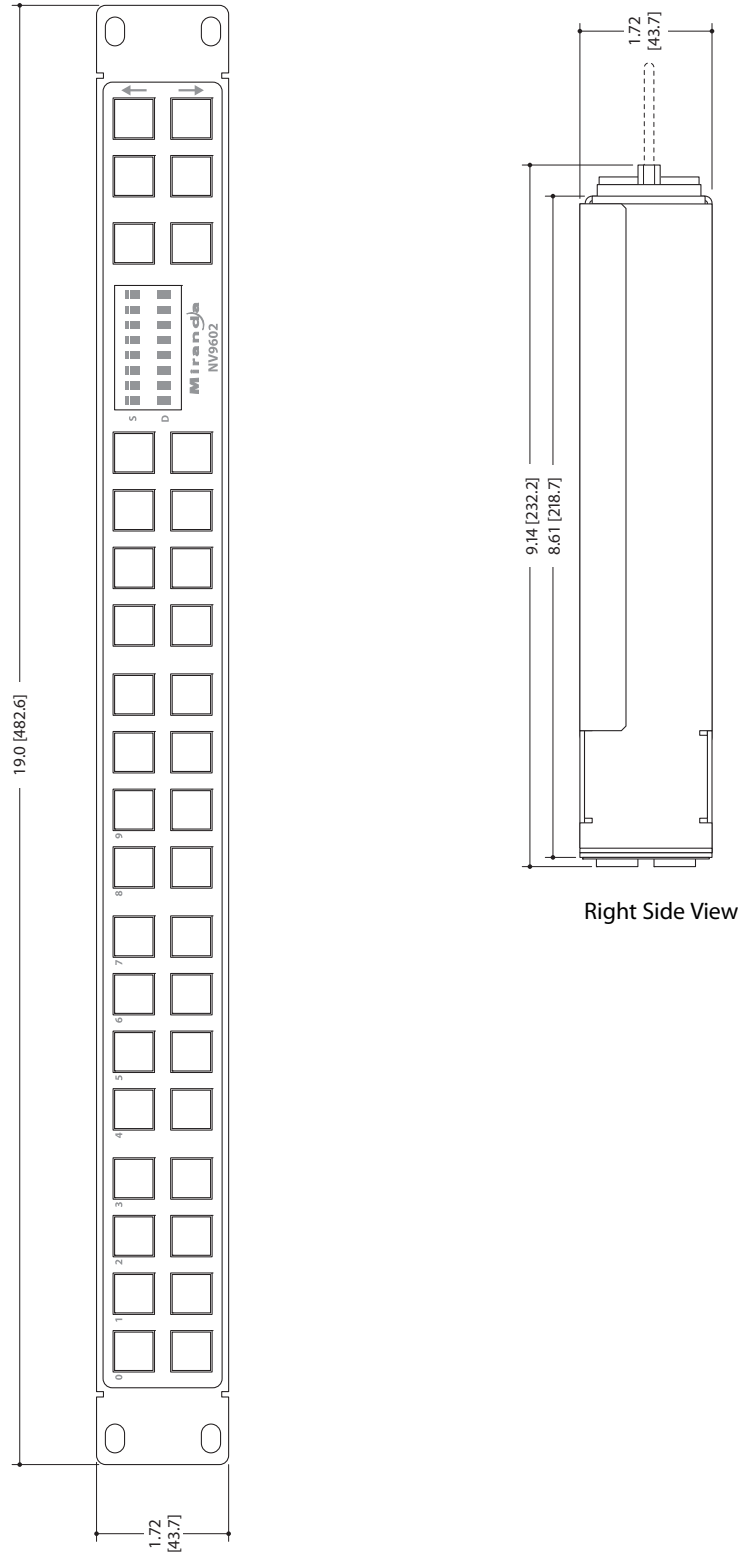


Fig. 6-1: Front and Side Views of the NV9602

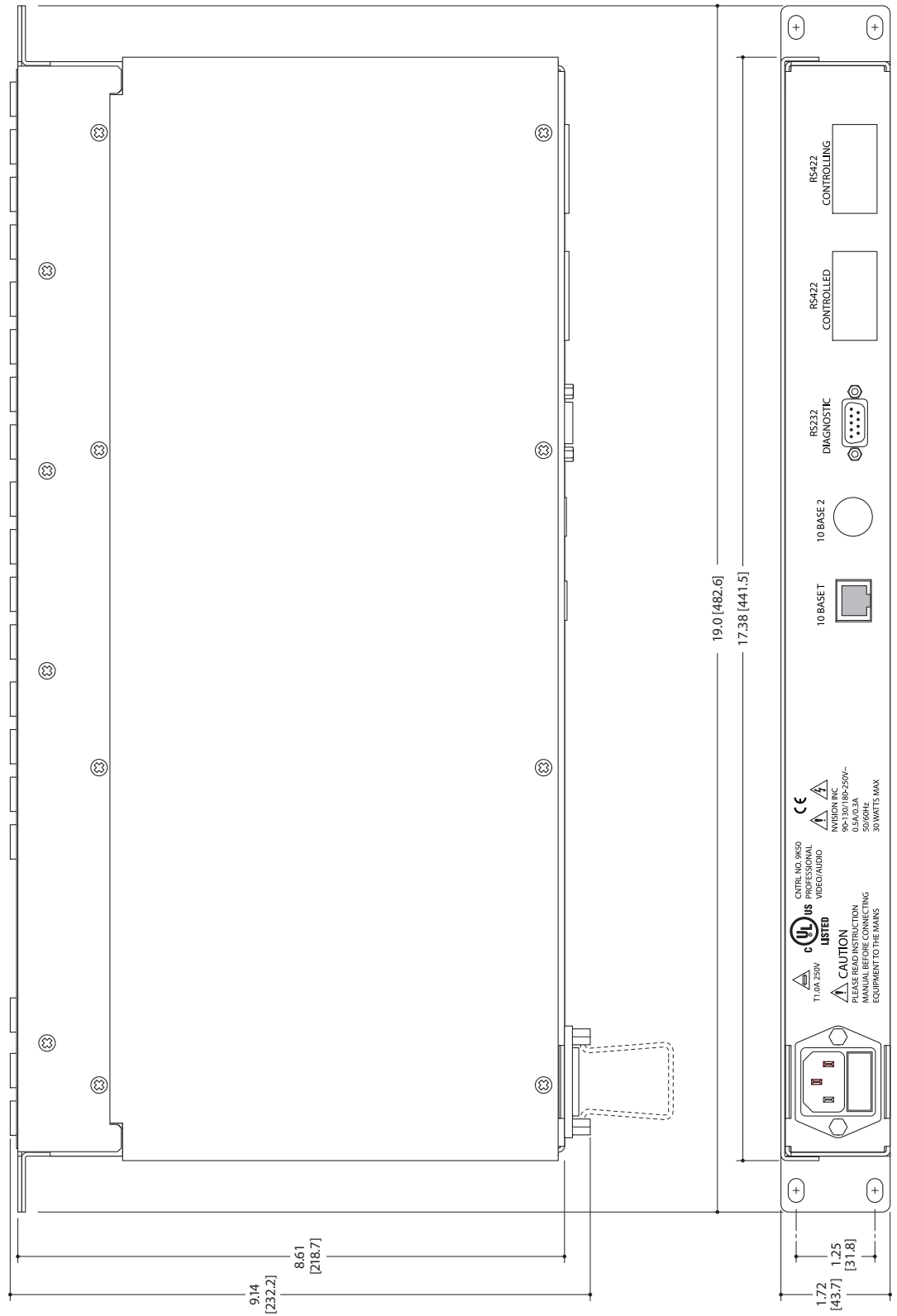


Fig. 6-2: Rear and Top Views of the NV9602

G

Glossary

AES/EBU	(Audio Engineering Society/European Broadcasting Union). AES and EBU are standards organizations.
Breakaway	A condition where a destination has multiple sources on different levels.
Category	<p>A category represents a set of devices. (The concept of categories exists to make it easier to select devices at a control panel.) A category can contain sources, destinations, or devices that are both sources and destinations. Each device in the category has a unique selection index within that category. Each category has a mnemonic ID associated with it.</p> <p>The NV9602 does not support categories or category selection.</p>
Data routing	Data routing (a.k.a., machine control routing) is a bidirectional form of routing. Routes are characterized by a controlling device and controlled device(s). The NV9602 provides certain data routing options including a 'Broadcast' button.
Device	A "device" is a grouping of input and output ports that define a logical entity. (The logical entity often represents a real device, but it does not have to be a real entity.) For example, a system might have 3 levels: video, AES, and time code. A hypothetical device in this system is Camera 1, which consists of video on input port 1 of the video router, AES on input port 5 of the AES router, and time code on input port 8 of the time code router.
GPIO	General Purpose Input and Output. A generic term for the NV9602's tally interface. The tally interface is called the "GPI Interface" at the rear of the NV9602.
Level set	A level set is a group of virtual levels that are commonly used together when switching devices. A level set also defines the mapping of each virtual level within the level set to a single physical level. All levels in a level set have a unique display index within that level set.
Multi-Destination (Mode)	A mode on an NV9000 control panel that presents many destinations at once, in contrast to X-Y mode. An operator may route sources to multiple destinations in a single take. Multi-destination mode does not permit the selection of breakaway levels.
Operator	The term operator (a.k.a. user) usually refers to users other than the system administrator or configurer. An operator is responsible for making the routes.
Physical level	Multiple routers provide different "physical levels" on which to switch the signals of devices. Any particular device might send or receive HD, SD, AES, time-code, or machine-code signals.
PIN	The system administrator may create a single "super user" personal identification number (PIN) that functions as a passcode. A PIN is 4–6 digits in length. The PIN allows certain operators to perform functions such as (1) forced release on a control panel that is configured for normal release or (2) changing the ID of a control panel.
Port	A port is the physical connection on a router. A port can only be an input port or an output port.
Salvo	A salvo is a stored group of commands that can be recalled and executed at an NV9000 control panel.
Source/ Destination	The term "source device" is used interchangeably with "source" and the term "destination device" is used interchangeably with "destination." A source is a device that is connected to one

	or more input ports. A destination is a device that is connected to one or more output ports. An example of such a device would be a monitor.
	A device can be both a source and destination. An example of such a device is a VTR.
System administrator	The system administrator is the person responsible for installing, configuring, and maintaining a router control system.
Tally	(1) High or low button illumination. (2) Tally interface <i>to be defined</i> .
Virtual level	Virtual levels allow the system administrator to define a single physical router level as multiple levels. Within a physical level, any port can be mapped to any virtual level. For example, an AES matrix could be divided into AES 1/2 and AES 3/4 <i>virtual</i> levels.
X-Y (mode)	A mode on an NV9000 control panel that switches one destination at a time, in contrast to multi-destination mode. In X-Y mode, some panels can display the virtual levels for the selected destination. Operators using those panels can perform breakaway level selection and level mapping.

Index

A

AC power cord	7
ACQ IP (message)	8–9
Acrobat usage	
bookmarks	1
hyperlinks	1
navigating and searching	1
Add control panel (button)	12
Add control panel (page)	12
AES (Audio Engineering Society)	51
AES/EBU	51
Africa, contact	59
Agreement, license	iii
Alphanumeric display	4, 25
Americas, contact	59
Application version	41
Application version (submenu)	43
Asia, contact	59
Asterisk	5
Automatic data routing	39

B

Behavioral model	15, 48
Behavioral models	5
Bookmarks, Acrobat	1
Boot version	41
Boot version (submenu)	43
BothUsed (message)	39
Breakaway	5–6, 20, 26, 28, 31, 35, 51
Broadcast (button)	18, 30, 33, 37
Broadcast data routing	6
Broadcast routes	37
Button	
add control panel	12
broadcast	18, 30, 33, 37
chop	18, 30, 40–41
default state	19, 30
destination	19, 25, 29–31
destination lock	19, 30, 34–35
destination mode	31
destination protect	19, 31, 34
destination shift	6, 19, 26, 29
finish	13
free source	6, 19, 31
hold	20, 29, 31

level	20, 32
menu	6, 20, 27, 29, 32, 41
name set toggle	5, 20, 32, 37
next	13
none/all	21, 32
panel lock	21, 32
previous source	6, 21, 32
revert to saved	14–15
salvo	21, 25, 29, 33
save	14–15
source	22, 25, 29, 33
source is master	17, 22, 30, 33
source shift	5–6, 23, 26–27, 29, 34, 40–41
source/dest toggle	23, 34
source/destination	23, 33
undefined	23, 34
Button classes	17, 29
Button color	25, 27
Button definition section	14, 18
Button definitions	14, 17
Button functions	29
Button illumination	41, 43
Button legends	4, 27
Button test	45
Button types	18
Buttons	
commitment	15
control panel	2
function	3–4

C

Cable, Ethernet	8
Category (defined)	51
Cautions	v
CE	iii
Change history	iii
Chapter structure	1
Chapters	
1, Preface	1
2, Introduction	3
3, Installation	7
4, Configuration	11
5, Operation	25
6, Technical Details	47
Checkbox options	16
China, contact	59

Chop	40
Chop (button)	18, 30, 40–41
Color test	44
Color, button	25, 27
Commitment buttons	15
Configuration	2
multi-destination	23
NV9000	11
NV9602	11
options	12
page	14
page, default	14, 48
pane	12
tasks	15
Connectors	48
Ethernet	8
RJ-45	8
RS-232	48
Contact Miranda	59
Control panel	2, 7–8, 51
buttons	2
installation	8
NV96xx	7, 51
Control panels (page)	12–13
Control system	28
Control system, NV9000	52
Controlled device	30
Controlling device	30
Corporate office, contact	59
Customer support	59

D

Data routing	6, 39
Data routing (defined)	51
Data routing (options)	39
Data routing mode	16, 48
Declaration of Conformance	iii
Default	
destination	16, 48
NV9602 configuration page	14, 48
source is master	17
Default name set	32, 37
Default name set (option)	16, 48
Default state (button)	19, 30
Defaults	48
Destination	
default	16, 48
locks	34
protects	34
Destination (button)	19, 25, 29–31
Destination (defined)	51
Destination display	4–5, 30–32, 36
Destination lock (button)	19, 30, 34–35
Destination mode	6, 23, 27, 34

Destination mode (button)	31
Destination protect (button)	19, 31, 34
Destination shift	28
Destination shift (button)	6, 19, 26, 29
DestUsed (message)	39
Device (defined)	51
Devices	
source	17
switching	51
DHCP	7–9, 48
Dimensions, NV9602	47–48
Disabled buttons	27
Display	4, 25
destination	4–5, 30–31
status	4–5, 22, 33
Display, destination	32, 36
Display, status	36, 39
Document revision	iii
Documentation	8
other	2
Drawings	48
NV9602, front view	49
NV9602, rear view	50
NV9602, side view	49
NV9602, top view	50
Dubbing applications	30

E

EBU	51
EC9700 (GUI)	7
EC9710 (GUI)	7
Electrostatic discharge	7
E-mail address	59
Environmental specifications	48
ESD	7
Ethernet cable	8
Ethernet connector	8
Ethernet port	4
Europe, contact	59
European broadcasting union (EBU)	51
Examples, symbol for	2

F

Fax number	59
FCC statement	iii
Figures	
NV9602, front view	49
NV9602, front, photo	3
NV9602, rear view	50
NV9602, rear, photo	3
NV9602, side view	49
NV9602, top view	50

Find, Acrobat	2
Finish (button)	13
First page, Acrobat	2
Forced release	16, 30, 34, 51
France, contact	59
Free source (button)	6, 19, 31
Function buttons	3–4
Fuse	3

G

Glossary	51
Go to first page, Acrobat	2
Go to last page, Acrobat	2
Go to next page, Acrobat	2
Go to next view, Acrobat	1
Go to previous page, Acrobat	2
Go to previous view, Acrobat	1

H

Hardware symbols	iv
Hazardous substance	iv
Hide sources not configured on this panel (option)	17
High tally	2, 27
Hold (button)	20, 29, 31
Hold (mode)	28, 31
Hold preset default (option)	17
Hours of operation	59
How to	
initialize the NV9602	8
install the NV9602	8
make a broadcast route	38
perform a gang switch	29
perform a take	35
use semi-automatic data routing mode	39
Hyperlinks, Acrobat	1

I

ID, panel	8–9, 17, 20, 27, 32, 41, 44–45
ID, user	41–42
Illumination (submenu)	43
Initial panel state	48
Initialization	8
Initializing the NV9602	8
Installation	
NV9602 control panel	8
package contents	7
receiving and unpacking	7
IP addresses	7–9, 48
IP configuration	7–8, 48

K

Keycaps	4
---------	---

L

Last page, Acrobat	2
Legends, button	4, 27
Level	
breakaway	20, 28, 31
physical	51–52
sets	51
virtual	51–52
Level (button)	20, 32
Level set	28
Levels	28, 32
License	iii
Limited X-Y (mode)	5, 11, 15, 18, 20, 22, 25–26, 28–31, 36, 38, 40
Locating network (message)	9
Locked (message)	30
Locks	6, 19, 25, 30, 34
destination	34
source	34
Low button illumination level	41
Low tally	2, 27

M

Machine control	30–31, 33
Manual data routing	39
Mapping, virtual to physical level	51
MD (abbreviation for multi-destination)	
Menu	
application version	43
boot version	43
illumination	43
panel ID	41
panel name	42
software version	42
user ID	42
user name	42
Menu (button)	6, 20, 27, 29, 32, 41
Menu mode	6, 20, 27, 32, 41
Messages	
acquiring IP address	8–9
both used	39
destination used	39
locating network	9
no server	9
not owner	30–31
protected	31
retry	39–40
source used	39

Middle East, contact 59
 Miranda, contact 59
 Mode
 data routing 16, 48
 destination 6, 23, 27, 34
 hold 28, 31
 limited X-Y 5, 11, 15, 18, 20, 22, 25–26, 28–31,
 36, 38, 40
 menu 6, 20, 27, 32, 41
 multi-destination 5–6, 11, 16, 18, 22–23, 25–26,
 30, 36, 38, 40–41, 51–52
 normal 6, 27
 release 16, 48
 setup 6, 8–9, 27, 43
 single-destination . 5, 11, 15, 18, 22, 25–26, 30, 35, 40
 single-destination, with breakaway 5, 11, 15, 18,
 20, 22, 25–26, 28, 30–31, 35, 40
 source 6, 23, 27, 34
 X-Y 51–52
 Model, behavioral 15, 48
 Modes of operation 5, 18, 25, 30
 Monitor, status 16
 Multi-destination (mode) 5–6, 11, 16, 18, 22–23,
 25–26, 30, 36, 38, 40–41, 51–52
 Multi-destination configuration 23
 Multi-destination operations 36

N

Name set toggle (button) 5, 20, 32, 37
 Name set, default 32, 37
 Name sets 5, 16, 20, 37, 48
 Next (button) 13
 Next page, Acrobat 2
 Next view, Acrobat 1
 No server (message) 9
 None/all (button) 21, 32
 Normal mode 6, 27
 Normal release 16
 NotOwner (message) 30–31
 NV9000
 router control system 2
 NV9000 configuration 11
 NV9000 router control system 28
 NV9000-SE Utilities 2, 7–9, 11–12, 14, 25, 28, 37
 user's guide 2
 NV915 system controller 2
 NV920 system controller 2
 NV960 system controller 2
 NV9602 2–3, 7–8, 11
 configuration 11
 dimensions 47–48
 front view 49
 initialization 8
 installation 7

 rear view 50
 side view 49
 top view 50
 weight 47
 NV9604, as extension 5
 NV96xx control panels 7, 51

O

Office hours 59
 Operating in multi-destination mode 36
 Operating modes 5, 18, 25, 30
 Operating temperature 48
 Operator 51
 Options
 checkbox 16
 configuration 12
 default name set 16
 panel 14–15
 Other documentation 2

P

Package contents 7
 Page (SE)
 add control panel 12
 control panels 12–13
 NV9602 configuration 14
 Pane, configuration 12
 Panel
 initial state 48
 options 14–15
 organization 4
 Panel configuration 11
 Panel configuration (page) 14
 Panel ID 8–9, 17, 20, 27, 32, 41, 44–45
 Panel ID (submenu) 41
 Panel image 14
 Panel IP configuration utility 7–8, 48
 Panel lock (button) 21, 32
 Panel name 41
 Panel Name (submenu) 42
 Panel options 14–15
 Panel/router network 9
 Panels, control 2, 7–8, 51
 NV96xx 7, 51
 PDF documents 1
 navigating and searching 1
 Phone numbers 59
 Photos
 NV9602, front 3
 NV9602, rear 3
 Physical level 51–52
 Physical specifications 47

PIN	51
Port (defined)	51
Power cord	7
Power specifications	47
Preface	
about PDF documents	1
chapter structure	1
terms, conventions and abbreviations	2
Previous page, Acrobat	2
Previous source (button)	6, 21, 32
Previous view, Acrobat	1
Protect (message)	31
Protects	6, 19, 31, 34
destination	34
source	34

R

Rack mount	8
Receiving and unpacking shipments	7
Release	6, 34
forced	16, 30, 34, 51
mode	16, 48
normal	16
Restrictions	iv
Retry (message)	39–40
Revert to saved (button)	14–15
Revision, document	iii
RJ-45 connector	8
RoHS	iv
Router control system	2
RS-232 connector	48

S

Safeguards	iii
Safety notices	iii
Salvo (button)	21, 25, 29, 33
Salvo (defined)	51
Salvos	33
Salvos, system	6
Save (button)	14–15
Scenarios, take	35
SE (abbreviation for NV9000-SE Utilities)	
Search, Acrobat	2
Secondary modes	27
Semi-automatic data routing	39
Setup mode	6, 8–9, 27, 43
Shift	27–28
Single-destination (mode)	5, 11, 15, 18, 22, 25–26, 30, 35, 40
with breakaway	5, 11, 15, 18, 20, 22, 25–26, 28, 30–31, 35, 40

Single-destination mode	
with breakaway	5
Software	8
Software license	iii
Software version	41
Software version (submenu)	42
Software, configuration	2
Source	
devices	17
locks	34
protects	34
shift	27
Source (button)	22, 25, 29, 33
Source (defined)	51
Source (mode)	6
Source is master	
as default	17
Source is master (button)	17, 22, 30, 33
Source mode	23, 27, 34
Source shift (button)	5–6, 23, 26–27, 29, 34, 40–41
Source/dest toggle (button)	23, 34
Source/destination (button)	23, 33
Special messages, symbol for	2
Specifications	
environmental	48
environmental,	48
physical	47
power	47
Src Used (message)	39
Static	7
Status (display)	4–5, 22, 33
Status display	36, 39
Status monitor	16, 48
Support, contact	59
Switching devices	51
Symbols	
for examples	2
for special messages	2
Symbols, meaning	iv
System administrator	52
System controller	8–9
System controllers	2
System names	32, 37, 48
System salvos	6

T

Tables	
environmental specifications	48
Take scenarios	35
Takes	35, 51
Tally	
high	2
low	2
Technical support	59

Temperature, operating 48
Terms, conventions and abbreviations 2
Testing your installation 9
Tielines 31

U

Undefined (button)23, 34
UniConfig 7
United Kingdom, contact 59
User ID 41
User ID (submenu) 42
User name 41
User name (submenu) 42
User's guide, chapter structure 1
User-programmable panel ID 17

V

Version (software) 41–43
Virtual levels 51–52

W

Warnings, hardware v
Warranty iii
Web site 59
Weight, NV9602 47

X-Y-Z

X-Y mode 51–52



Grass Valley Technical Support

For technical assistance, please contact the Grass Valley Technical Support center nearest you:

Americas

Office hours: 9:00 a.m. – 9:00 p.m. (EST)
Telephone: +1-800-547-8949
Fax: +1-514-335-1614
E-mail: support@miranda.com

Asia

Office hours: 9:30 a.m. – 6:00 p.m. (GMT+8)
Telephone: +852 2539 6987
Fax: +852 2539 0804
E-mail: asiotech@miranda.com

Europe, Middle East, Africa, UK

Office hours: 9:00 a.m. – 6:00 p.m. (GMT)
Telephone: +44 118 952 3444
Fax: +44 118 952 3401
E-mail: eurotech@miranda.com

China

Office hours: 9:30 a.m. – 6:00 p.m. (GMT+8)
Telephone: +86 10 5873 1814
E-mail: asiotech@miranda.com

France

Office hours: 9:00 a.m. – 5:00 p.m. (GMT+1)
Telephone: +33 1 55 86 87 88
Fax: +33 1 55 86 00 29
E-mail: eurotech@miranda.com

Malaysia

Telephone: +60 3 2247 1808
E-mail: asiotech@miranda.com

EMERGENCY after hours (global)

Toll free: 1-800-547-8949 (US and Canada)
Telephone: +1 514 333 1772

Corporate Head Office

Grass Valley
3499 Douglas-B.-Floreani
St-Laurent, Quebec H4S 2C6
Canada
Telephone: +1 514 333 1772
Fax: +1 514 333 9828
Web: www.miranda.com

