NV9603A

NV9000 Control Panel

User's Guide

UG0041-01

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Rev.	Date	ECO	Description	Approved
1.0	05 Nov 10	17286	Initial release.	D. Cox
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Safety Compliance

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.

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.

Table of Contents

1 Preface

Chapter 1 is an introduction to the NV9603A User's Guide.

Topics

Chapter Structure

The following chapters provide detailed information regarding the NV9603A control panel:

- Chapter 1, Preface, (this chapter) outlines ways to use this guide.
- Chapter 2, Introduction, provides a functional description of the NV9603A.
- 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 NV9603A 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 NV9603A.

Topics

Summary

The NV9603A[1] is a 1RU panel, slightly over 9" deep, overall. It has 2 sets of backlit function buttons and a small display. The display has 3 distinct LED readouts each having 8 characters.

The NV9603A operates in X-Y mode.

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

Fig. 2-1: NV9603A Front

The function buttons select sources or destinations, or perform some task such as locking a destination. All of the function buttons are configurable. The 10 buttons at the lower left are category buttons, by convention.

The two buttons immediately to the left of the display are scroll buttons ('Page Up' and 'Page Down') by default. Using the scroll buttons, the operator can sequence through devices within a category. See Device Selection by Category on page 27.

The operator can select one of two sets of sources using a configured 'Source Shift' button. Thus, every source button potentially represents 8 sources, depending on the page in use and the state of the 'Source Shift' button. There is a similar 'Destination Shift' function.

The scroll buttons are also used when the panel is in menu mode (to change the illumination of the buttons). See Menu Mode on page 39.

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1. An equivalent NV9603AV — a GUI that is called a "virtual panel"— is available. It emulates the NV9603A.

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

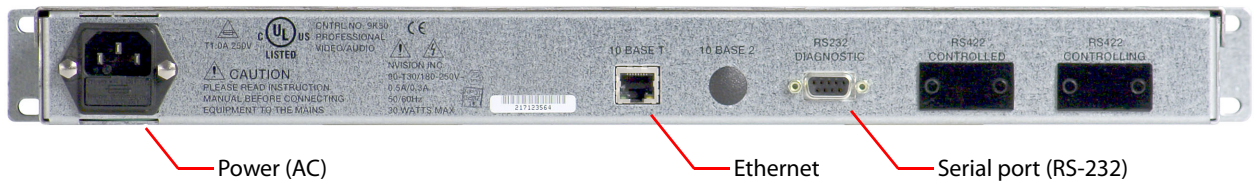Power (AC)　　　　　　　　　　　　　　Ethernet　　　　　Serial port (RS-232)

Fig. 2-2: NV9603A 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.

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

Panel Organization

Function Buttons

The NV9603A has an array of 30 function buttons on the left and 4 function buttons on the right.

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." (Physically, they are actually white or 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.

Alphanumeric Display

The display has 3 display fields.
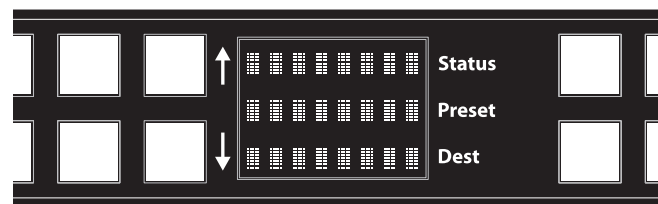
Display Fields

The display has 3 fields of 8 characters:

- Status.

  The 'Status' field always shows the source that was routed to the currently selected destination, which is identified in the 'Destination' field.

- Preset.

  The 'Preset' field shows the source that is pending a take. After the take, this source becomes the current source and appears in the 'Status' field.

- Destination.

   The 'Dest' field shows the current destination.

The 'Status', 'Preset', and 'Dest' fields can show either names belonging to a name set or system names 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 NV9603A operates in X-Y mode.

Additional but secondary modes of panel operation are:

- Salvo mode — pressing a salvo button places the NV9603A in salvo mode where the operator may select and execute a salvo from a salvo list.
- Setup mode — where the NV9603A is freshly powered up, but disconnected from the network. In this mode, you can preset the NV9603A's panel ID and perform a few diagnostic tasks.
- Menu mode — pressing a menu button places the NV9603A 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.

When the panel is not in setup mode or menu mode, we say it is in *normal mode*.

Other NV9603A Functions

The NV9603A 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

If you have ordered one or more NV9603A 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 57.

Depending on your order, the NV9603A items that can ship include:

- One or more NV9603A control panels.
- An AC power cord for each NV9603A.

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 NV9603A (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 NV9603A control panel:

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

The NV9603A 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 NV9603A.

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 NV9603A 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 to your NV9603A 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 NV9603A, you must give it a panel ID. Follow these steps for each NV9603A you are installing:

1 Power up the NV9603A. 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:
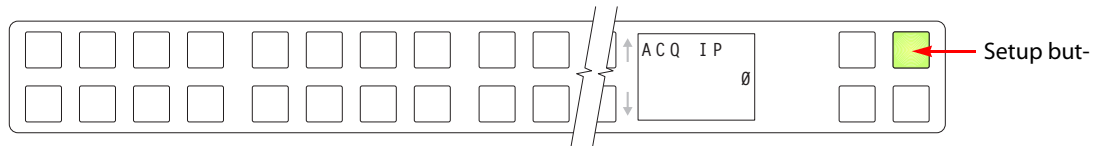
We call that the "setup" button while the panel is disconnected from the network.

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 a printed on the panel. They range from 0 (at the left) to 9:
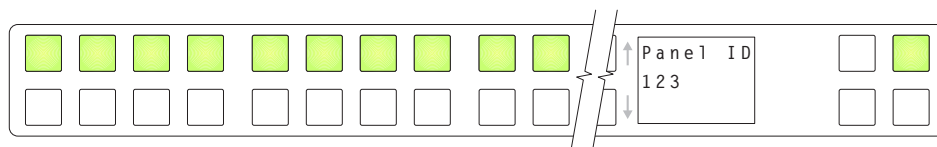
Enter the panel ID using the keypad. Then press the setup button again.

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.
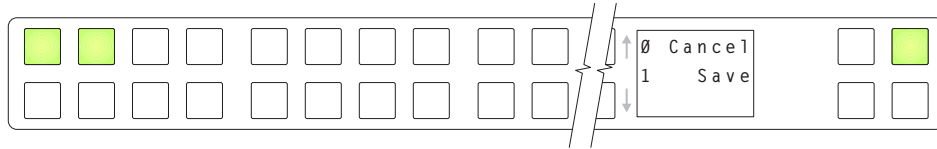
4 Press the setup button once again and continue to press the setup button until the panel displays 'ACQ IP' once again as in step 1.

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 distinct.)

You can now prepare an NV9603A configuration in NV9000-SE Utilities and upload the configuration to the NV9603A. You need the panel ID to create a NV9603A 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 NV9603A is disconnected from the system controller. Run the test to determine the health of your NV9603A. See Setup Mode on page 42 for detail. You can also view the software version numbers under setup mode.

These are points to consider after you install your NV9603A control panel(s):

1 Do the buttons illuminate? When an NV9603A 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 NV9603A 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 NV9603A, 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 takes and perform other operations?

Configuration 4

Chapter 4 provides configuration instructions for the NV9603A.

Topics

This chapter addresses configurers. Operators and other persons not interested in NV9603A configuration need not read this chapter.

Summary

The NV9603A is a relatively simple panel. It has 34 function buttons and a small display. It operates in X-Y mode.

NV9000-SE Utilities is the software with which to configure the NV9603A. Figure 4-1, following, shows the default NV9603A panel configuration page from NV9000-SE Utilities.

Adding a Panel to an NV9000 Configuration

You must create configurations for the NV9603A 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.

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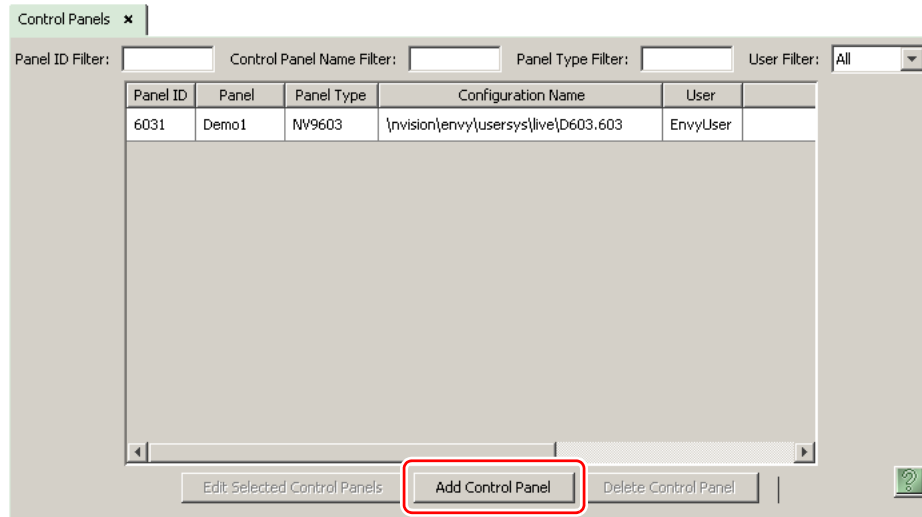
Click 'Add Control Panel' at the bottom of the configuration page. The 'Add Control Panel' page appears:

Choose "NV9603"[1] 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.

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1. This means the NV9603A.

In the first and third cases, you will create a new configuration file whose name you designate. The file extension for an NV9603A configuration file is .603. 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 NV9603A.

Return to the 'Control Panels' page to view your new entry. To edit an NV9603A configuration, double-click its list entry:
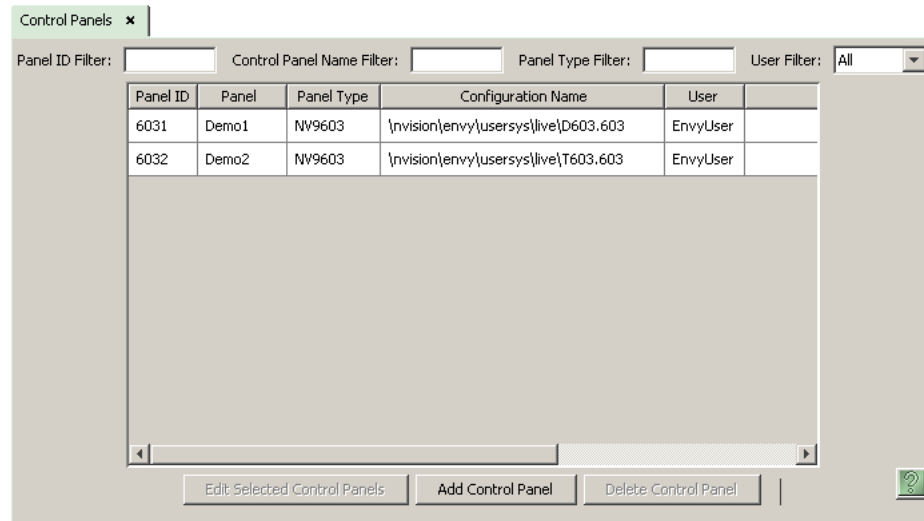
You will then see the panel configuration page for the selected NV9603A.

Following is a discussion of how to use the panel configuration page in which you configure an NV9603A.

NV9603A Panel Configuration Page

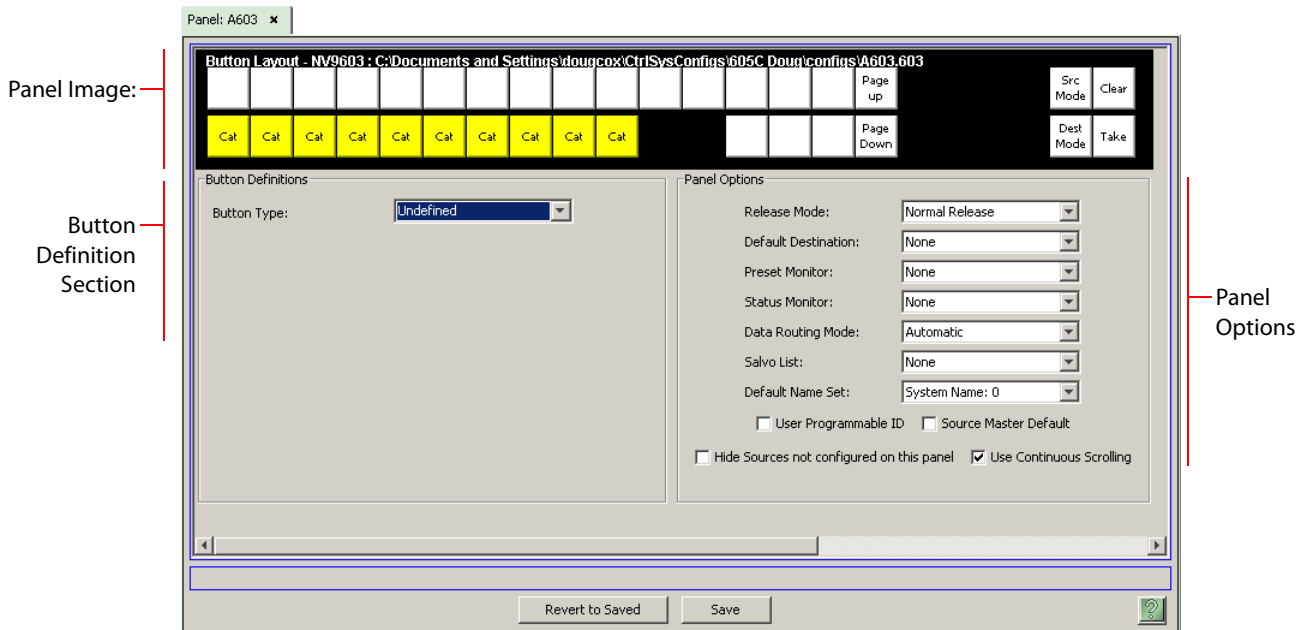This is the default NV9603A panel configuration page in NV9000-SE Utilities:

Fig. 4-1: NV9603A 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.

THERE'S A NEW PANEL OPTION = Use Asterisk for Breakaway

Regions of the Configuration Page

There are 3 main regions:

- A graphic representation of the NV9603A 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 NV9603A 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:

- Select panel options.
- Assign functions to buttons.

We have no strong recommendations for button types on your panel, but it is likely that a 'Take' button will be needed. It is also probable that you will need 10 category buttons for selection of sources and destinations by category.

Source Shift and Destination Shift

The NV9603A provides 2 sets of sources and 2 sets of destinations. Operators use a 'Source Shift' button to switch between the 2 pages of sources and use a 'Destination Shift' button to switch between the 2 pages of destinations.

When you are configuring a source button, the button definition region includes fields for 'Source 1' and 'Source 2'. When you are configuring a destination button, the button definition region includes fields for 'Destination 1' and 'Destination 2'.
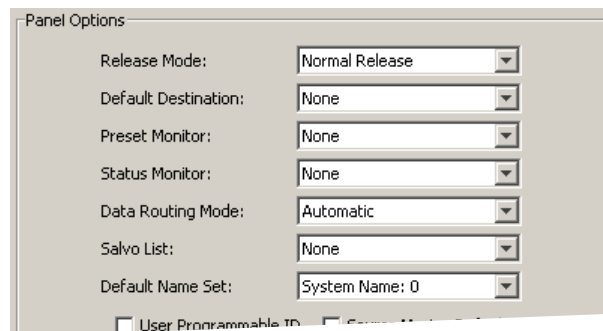
Commitment Buttons

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:

These are its drop-down menu options:

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.)
	‹device›	The panel uses the specified device as the destination after a reset. (The 'Default State' button also returns the panel to this destination.)
Preset Monitor	None	The preset source video is not sent to a monitor.
	‹device›	The preset source video for the selected destination appears on the specified monitor (device).
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 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 breakaway on the control level. The control level will never switch as part of a multi-level take.
Salvo List	[none]	Salvo lists appear in the drop-down menu. A salvo list, as you might think, is a list of salvos. The salvos in the list you choose are the salvos the operator can choose in salvo mode.
		Salvo lists are defined, in NV9000-SE Utilities, under the 'Views' pane, using the 'Salvo Lists' table and the 'Salvo List Details' table.
		The NV9000 configuration might not have any salvo lists, in which case 'None' is the only entry in the drop-down menu.
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 names. 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:
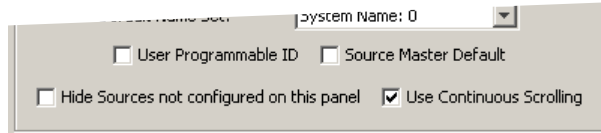
A check in the box enables the option. Clearing the checkbox disables the option.

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.

- 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.

- Use continuous scrolling.

  If you check this box, the panel will scroll source or destination devices continuously (or indefinitely). That is, the display will show the first device in the list following the last when you are scrolling up, and will show the last device after the first if you are scrolling down.

  If you leave this box unchecked, the panel will stop scrolling when it reaches either the beginning or end of the list.

  This option does **not** affect scrolling of salvos when the panel is in salvo mode or levels when the panel is in level mode.

Button Definitions

There are three classes of button functions:

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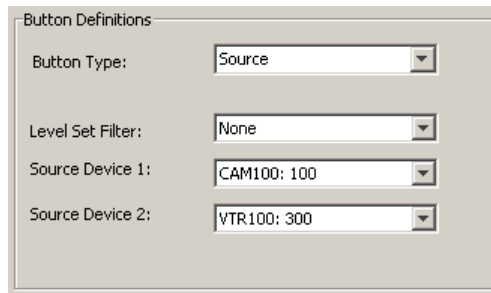- Special functions, such as 'Menu' and 'Salvo'.

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 configurer 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 NV9603A:

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.

Button Types

These are the button types available for NV9603A configurations:

Type	Description
Broadcast	On the data (machine control) level, the button enables a broadcast take to an *additional* controlled device, after a broadcast route has been initiated with a "source is master" control-level take to the *first* controlled device. The button definition has no fields to configure. 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.
Category	A category button has 3 functions: • Select a source category and initiate device selection for that category. • Select a destination category and initiate device selection for that category. • During the process of device selection, append a suffix to the pending device name. A category button can provide any or all of these functions. When you assign a category button, 3 additional drop-down menus appear: 'Source Category', 'Destination Category', and 'Suffix'. A category button can represent a suffix. Once a category is selected, operators press suffix buttons to select a device within the category. Not all category buttons necessarily select categories and not all category buttons represent suffixes. If your category button does not represent a suffix, select 'None' in the 'Suffix' field. If your category button does not represent a source category, select 'None' in the source field. If your category button does not represent a destination category, select 'None' in the destination field. Category buttons are affected by source mode and destination mode. Only source categories are available in source mode; only destination categories are available in destination mode.
Chop	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. The button definition has no fields to configure.
Clear	The button reverts to the most recent preset. You may think of this as a "backspace key." During category device selection, it erases the suffixes you entered under category select in reverse order.
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. When you assign a destination button, two drop-down menus appear: 'Level Set Filter' and 'Destination Device'. Select the device for this button from the list that appears in the 'Destination Device' field. The button is not available in multi-destination mode.

Type	Description
Destination Lock	The button sets or removes a "lock" on the current destination device. The lock can be removed only by the user (at this panel or at another) that originally set the lock, or by a panel that has "Force Release" enabled. The button definition has no fields to configure. The NV9603A provides no explicit indication, during operation, whether a destination is locked or unlocked. This button is available, but does not operate, in multi-destination mode. It is present on the configuration page as a future feature.
Destination Protect	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 *others* from routing to a destination; a lock prevents *anyone* — even the user who issued the lock — from routing to the destination. The button definition has no fields to configure. The NV9603A provides no explicit indication, during operation, whether a destination is locked or unlocked. This button is available, but does not operate, in multi-destination mode. It is present on the configuration page as a future feature.
Destination Mode	The button places the panel in destination mode, in which category selection buttons select destination categories. If the panel is not in destination mode, it is in source mode.
Destination Shift	The button toggles between the first and second sets of destinations. The button definition has no fields to configure. The button affects the operation of any destination button. Destination buttons represent two destinations. One belongs to one destination set and the other belongs to the other destination set.
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 is also used with tielines to free the tieline for others to use. The free source is defined in the *Level Set Details* page of NV9000-SE Utilities. The button definition has no fields to configure. The free source button must be used in conjunction with machine control router(s). Otherwise, it fails with an 'Inv Src' message briefly appearing in the 'Status' field of the display. This button is available, but does not operate, in multi-destination mode. It is present on the configuration page as a future feature.

Type	Description
Level	The button selects a level.

The button definition has one field to configure: the level. (Do not choose 'None' for the level.)

Your panel can 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.

When all levels are deselected, or when all levels are selected, a take is "all-level." When one or more level buttons are selected, a take occurs on just those levels.

The level buttons for selected levels are high-tally.

▲ When the operator first selects a destination, *all* levels for that destination are automatically selected. If the operator presses any level button when all levels are selected, the result is that all *other* levels become deselected and that level remains selected.

▲ If your panel does not have level buttons that represent all levels of a destination, it is impossible to reselect all levels after deselecting some levels. The remedy is to reselect the destination. Doing so causes the pending take to become all-level once again.

Menu This button puts the NV9603A panel in menu mode and displays a menu that provides access to certain panel functions. Without the button, the operator has no access to the menu functions.

By pressing certain buttons, the operator makes menu selections and may enter data (such as panel ID) or change button brightness values. When the panel is in menu mode, the menu button cycles through the functions of the menu. See Menu Mode on page 39.

The button definition has no fields to configure.

▲ Configurers should **not** locate the menu button on any of the buttons used to change the illumination or to change the panel ID. To view those locations, see Panel ID on page 40 and Button Illumination on page 41.

Name Set Toggle The button toggles the panel between its default name set and the "system name" set. One or the other becomes the active name set.

The button definition has no fields to configure.

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'.

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.

Type	Description
Page Down	The button scrolls *down* through the device list of the currently selected category. The device selected appears in the 'Preset' field of the display. ▲ The term "page" does not have any meaning here. 'Page Down' moves to the next *lower* device in the category's device list. (Example: if the current device is CAM_4, the next lower device would probably be CAM_3, subject to the device definitions in the NV9000 configuration.) Scrolling devices is possibly only when a category selection is in progress. Whether the list wraps around at the beginning or end is governed by the 'Use Continuous Scrolling' panel option. The button definition has no fields to configure.
Page Up	The button scrolls *up* through the device list of the currently selected category. The device selected appears in the 'Preset' field of the display. ▲ The term "page" does not have any meaning here. 'Page Up' moves to the next *higher* device in the category's device list. (Example: if the current device is CAM_3, the next higher device would probably be CAM_4, subject to the device definitions in the NV9000 configuration.) Scrolling devices is possibly only when a category selection is in progress. Whether the list wraps around at the beginning or end is governed by the 'Use Continuous Scrolling' panel option. The button definition has no fields to configure.
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. Pressing the panel lock button again reverts the panel to its previous state. The button definition has no fields to configure.
Previous Source	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. This button type can be used in either mode.
Salvo	The salvo button places the panel in *salvo mode* where the operator can scroll through the salvo list assigned to the panel (as a panel option). When the operator finds the salvo of interest, he or she presses the 'Take' button to execute the salvo. After the salvo executes, the panel returns to its normal mode. The salvo name appears in the 'Preset' field of the display. The button definition has no fields to configure. Pressing the salvo button again while the panel is in salvo mode resets the salvo selection to nothing. Pressing any other button while the panel is in salvo mode returns the panel to its normal mode.

Type	Description
Source	The button selects a source. The source name appears in the 'Preset' display. When you assign a source button, two drop-down menus appear: 'Source Device 1' and 'Source Device 2'. These correspond to two sets of sources. If there is a 'Source Shift' button on the panel, the operator can switch between the two sets. When the first set is selected, pressing the button selects device 1. When the second set is selected, pressing the button selects device 2.
Source 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 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). 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.
Source Mode	The button places the panel in source mode, in which category selection buttons select source categories. If the panel is not in source mode, it is in destination mode.
Source Shift	The button toggles between the first and second sets of sources. The button definition has no fields to configure. The button affects the operation of any source button (in either limited X-Y mode or multi-destination mode). Source buttons represent two sources. One belongs to one source set and the other belongs to the other source set. This button type can be used in either mode.
Src/Dst Mode	The button toggles between source and destination modes. Category selections in source mode select source devices. Category selections in destination mode select destination devices. A single 'Src/Dst Mode' button does the work of a pair of 'Source Mode' and a 'Destination Mode' buttons.
Take	In normal mode, a take button routes the preset source to the selected destination on selected level or levels. In salvo mode, a take button executes a selected salvo. A take button is disabled (and dark) until it is possible for the operator to execute a take. Configurers should provide the operator a 'Take' button. The button definition has no fields to configure.
Undefined	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).

Single-Destination Configuration

It is possible to configure the panel for single-destination operation.

The default destination (a panel option) is the single destination. There would be no destination buttons supporting other destinations.

5 Operation

Chapter 5 provides operating instructions for the NV9603A control panel.

Topics

This chapter is intended specifically for the NV9603A panel **operator**.

Summary

As an NV9603A operator, you will be confronted initially with a relatively small and simple panel — 34 buttons with a display having three 8-character fields.

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 (3 lines of 8 characters) shows the status of completed and pending takes under normal circumstances. The display presents information or menu items in other cases. See Alphanumeric Display on page 4 for information.

Physically, you will find

- Function buttons (e.g., select a source or lock a destination).
- Source, destination, and category buttons (and other button types).
- The name of the selected destination, its current source and its pending 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 NV9603A usually operates in X-Y mode. You can also operate the panel in menu mode or salvo mode.

Generally, to operate the panel, you choose a destination, (possibly) choose desired breakaway levels, choose a source, and press 'Take'.

Takes generally occur from a single source to a single destination. Destinations are selectable.

Takes are all level unless your panel has level buttons. If your panel has level buttons, you can select the level(s) on which the take is to occur. The sources of levels *not selected* remain unchanged.

Single-Destination Operation

Your panel might have been configured to have a single destination. If that is the case, then it is not necessary (or possible) to select a destination. It was pre-selected when the panel was configured.

Secondary Modes

Secondary modes are:

- Source mode — exists when you press a 'Source Mode' button or a 'Src/Dst Mode' button.
- Destination mode — exists when you press a 'Destination Mode' button or a 'Src/Dst Mode' button.
- Setup mode — where the NV9603A is freshly powered up, but *disconnected from the network*. In this mode, the configurer can preset the NV9603A's panel ID and perform a few diagnostic tasks. Usually, only configurers need be concerned with setup mode.

  See Setup Mode on page 42.
- Menu mode — pressing a menu button places the NV9603A 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 39.
- Salvo mode — pressing a salvo button places the NV9603A in "salvo" mode. In salvo mode, the buttons lose their normal functions and display a list of salvos from which to choose.

When the panel is not in setup mode, menu mode, or salvo mode, we say it is in *normal mode*.

Button Legends

There are about 24 different button functions. Some might not be available on your panel. 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 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 (white or gray) buttons are those that are disabled.

Operating Concepts

Source Shift and Destination Shift

Each source button can represent two sources. A 'Source Shift' button selects which of the two sources the 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: it is low-tally when it has enabled the first source. It is high-tally when it has enabled the second source.

Similarly, each destination button can represent two destinations. A 'Destination Shift' button selects which of the two destinations the button will select.

A source shift button affects all source buttons and a destination shift button affects all destination buttons.

Device Selection by Category

Although your panel might have dedicated source buttons and destination buttons, the panel does not have enough space to accommodate the hundreds or thousands of sources and destinations common in many installations.

Device categories exist to solve that problem. A device belongs to a named category and has an identifier within that category. Typically a category name is short (e.g., CAM, VTR) and the identifier is a number. However, the identifier can also be defined as an alphanumeric suffix (e.g, A, DF).

In the NV9000 system, device names are concatenations of the category name and one or more identifiers. There can be an underbar or similar character in between the category name and the identifiers (i.e., suffixes), for example:

CAM_5, CAM_7, VTR_12, VTR_83, VS134, VS135, ST_A7, ST_B12

Device names are limited to 8 characters, so it is not possible to use very many or very long suffixes.

The set of category buttons on your panel allow you to specify a device name in parts. The buttons can do *any* or *all* of 3 things:

- Select a source category and initiate category selection. When you press such a category button (in source mode) the category name becomes the start of the device name and appears in the 'Preset' field of the display.
- Select a destination category and initiate category selection. When you press such a category button (in destination mode) the category name becomes the start of the device name and appears in the 'Preset' field, and the 'Destination' field of the display.
- Append a suffix (numerical or alphanumeric) to the pending device name.

The panel's category buttons will probably be labeled. It is up to you, the operator, to understand the labels.

Making a Category Selection

1 Put the panel in source mode or destination mode as required. (Note: you must select a destination first, then the source, then press 'Take'—unless your panel is a single-destination panel where the destination is always pre-selected.)

2 Press a category button that will initiate a category selection. The category name will appear in the 'Preset' field of the display.

3 Press one more category buttons that append a suffix to the device name in the 'Preset' field.

4 Stop when your device name is complete. Proceed with other operations.

Example: To select the device SAT_A12, press a 'SAT' category button, followed by an 'A' suffix button, followed by a '1' suffix button and a '2' suffix button. The underbar would be automatically generated. Depending on the NV9000 configuration, other such fill characters might be used.

Source and Destination Modes

Category device selection is affected by source mode and destination mode. In source mode, only source categories are selectable. In destination mode, only destination categories are selectable. (Some devices, such as VTRs, are both sources and destinations.)
There are 3 button types that affect category device selection:

• Source Mode—places the panel in source mode.

• Destination Mode—places the panel in destination mode.

• Src/Dst Mode—toggles the panel between source mode and destination mode.

It is likely that your panel will have a 'Src/Dst Mode' button and neither of the other two.

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. In most cases, you would take only certain levels of a new source to a destination that already has a source on its various 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.)

Level Selection

If your panel has level buttons, you can select or deselect levels. To select a level, press a level button. To deselect it, press the button again.

▲ There is an exception to this: when you first select a destination, *all* levels for that destination are automatically selected. If you press any level button when all levels are selected, the result is that all *other* levels become deselected and that level remains selected.

If your panel does not have level buttons that represent all levels of a destination, it is impossible to reselect all levels after deselecting some levels. The remedy is to reselect the destination. Doing so causes the pending take to become all-level once again.

Buttons

The NV9603A has 3 classes of button functions:

- Dedicated functions, such as 'Default State' and 'Chop'.
- Variable functions, such as 'Category', 'Source', or 'Destination'. A category button initiates or carries out device selection. A source button selects a specific source. A destination button selects a specific destination.
- Special functions, such as 'Menu' and 'Salvo'.

At present, there are 24 button types, not including "undefined" which is not a true button type:

Broadcast	Destination Shift	Previous Source
Category	Free Source	Salvo
Chop	Level	Source
Clear	Menu	Source is Master
Destination	Name Set Toggle	Source Mode
Destination Lock	Page Down	Source Shift
Destination Mode	Page Up	Src/Dst Mode
Destination Protect	Panel Lock	Take

(If a button on your panel is undefined, it will remain dark and will not operate.)

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.

Category

A category button has 3 functions:

- Select a source category and initiate device selection for that category.

- Select a destination category and initiate device selection for that category.
- During the process of device selection, add a suffix to the pending device name.

A category button can provide *any* or *all* of these functions.

A typical NV9603A configuration has a "keypad" with which you can enter category mnemonics and device suffixes. (The keypad buttons are category buttons.) Consult your administrator to learn what functions your panel's keypad buttons perform. We presume that your panel's button legends provide a good indication.

Category buttons are affected by source mode and destination mode. Only source categories are available in source mode; only destination categories are available in destination mode. Use a 'Source Mode', 'Destination Mode' or 'Src/Dst Mode' button to select the mode of your choice. These are basic steps to perform category device selection:

1 Press one category button to select a category and initiate device selection. The category mnemonic appears in the 'Preset' field of the display as the beginning of a device name.

2 Press one or more suffix buttons to complete the selection, within that category. For instance, for device VTR_12, press a "VTR" category button and then press a "1" button and a "2" category button.

The names of devices in categories are composed of the category name followed by one or more suffixes. NV9000-SE Utilities allows configurers to designate a separator character which is inserted between the parts of the device name. (Device names are limited to 8 characters, however.)

▲ You cannot perform a name set change using a 'Nameset Toggle' button while a category selection is in progress.

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 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 38.

Clear

The 'Clear' button reverts the panel to the most recent preset. (It does not cause any changes to the routers, control system, or its signals.)

You may think of this as a "backspace" or "cancel" key. During category/suffix device selection, it erases the suffixes you entered in reverse order.

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. A destination button represents two destinations. The destination selected when you press the button is affected by whether your panel has a 'Destination Shift' button and its state: whether it is selected or not.

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 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 can apply to selected levels in limited X-Y mode.

▲ The NV9603A provides no explicit indication, during operation, whether a destination is locked or unlocked.

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 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 can apply to selected levels in limited X-Y mode.

▲ The NV9603A provides no explicit indication, during operation, whether a destination is locked or unlocked.

Destination Mode

The 'Destination Mode' button places the panel in destination mode, where category selection buttons select destination categories. If the panel is not in destination mode, it is in source mode, where category buttons select source categories.

Note that not all category buttons necessarily select categories. Some might represent only category suffixes. See

Destination Shift

The 'Destination Shift' button toggles between the first and second sets of destinations. The button affects the operation of any destination button.

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 is also 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.

Level

The button selects or deselects a level.

The button exists only when your panel is configured for limited X-Y mode. 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.

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 39.

The button definition has no fields to configure.

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.

Page Down

The button scrolls *down*. The meaning of scrolling varies with context:

- Scrolling devices within a category: 'Page Down' moves to the next *lower* device in the category's device list. (Example: if the current device is CAM_4, the next lower device would probably be CAM_3, subject to the device definitions in the NV9000 configuration.)

  Scrolling devices is possibly only when a category selection is in progress. The device name appears in the 'Preset' field of the display.

  Scrolling devices is subject to the "continuous scrolling" panel option. If continuous scrolling is enabled, the device list will wrap around at the beginning or the end of the list. Otherwise, scrolling stops at the beginning or end of the list.

- Scrolling salvos in salvo mode: 'Page Down' moves to the salvo with the next *lower* index in the panel's salvo list. (It is expected that if the panel has a salvo button, the NV9000 system also has a salvo list.)

  Scrolling salvos is **not** subject to the "continuous scrolling" panel option. Scrolling stops at the beginning or end of the salvo list.

Page Up

The button scrolls *up*. The meaning of scrolling varies with context:

- Scrolling devices within a category: 'Page Up' moves to the next *higher* device in the category's device list. (Example: if the current device is CAM_3, the next lower device would probably be CAM_4, subject to the device definitions in the NV9000 configuration.)

  Scrolling devices is possibly only when a category selection is in progress. The device name appears in the 'Preset' field of the display.

  Scrolling devices is subject to the "continuous scrolling" panel option. If continuous scrolling is enabled, the device list will wrap around at the beginning or the end of the list. Otherwise, scrolling stops at the beginning or end of the list.

- Scrolling salvos in salvo mode: 'Page Up' moves to the salvo with the next *higher* index in the panel's salvo list. (It is expected that if the panel has a salvo button, the NV9000 system also has a salvo list.)

  Scrolling salvos is **not** subject to the "continuous scrolling" panel option. Scrolling stops at the beginning or end of the salvo list.

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.

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.

Salvo

The salvo button places the panel in *salvo mode*. In salvo mode, most buttons become disabled. In salvo mode, you can scroll through the salvo list assigned to the panel. When you find the salvo of your choice, press the 'Take' button to execute the salvo. After the salvo executes, the panel returns to its normal mode.

Pressing the salvo button again while the panel is in salvo mode to reset the salvo selection. Press any other button (such as 'Clear') while the panel is in salvo mode to return the panel to its normal mode without executing a salvo.

Source

The button selects a source. The source name appears in the 'Status' display.

A source button represents two sources. The source selected when you press the button is affected by whether your panel has a 'Source Shift' button and its state: whether it is selected or not.

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.

Source Mode

The 'Source Mode' button places the panel in source mode, where category selection buttons select source categories. If the panel is not in source mode, it is in destination mode, where category buttons select destination categories.

Note that not all category buttons necessarily select actual categories. Some might represent only category suffixes. See Device Selection by Category on page 27.

Source Shift

The 'Source Shift' button toggles between the first and second sets of sources. The button affects the operation of any source button.

Src/Dst Mode

The 'Src/Dst Mode' button toggles the panel between source mode and destination mode. If the panel is in source mode, category buttons select source categories. Otherwise, category buttons select destination categories.

Note that not all category buttons necessarily select actual categories. Some might represent only category suffixes. See Device Selection by Category on page 27.

Take

In normal mode, a take button routes the preset source to the selected destination on selected level or levels.

In salvo mode, a take button executes a selected salvo.

A take button is disabled (and dark) until it becomes possible for the operator to execute a take.

Undefined

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

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 NV9603A 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 limited X-Y mode under breakaway:

1 Optionally press 'Source Shift' to toggle between the source sets.

2 Optionally press a source button. The source currently routed to that destination might already be what you want. Pressing the source performs a take.

3 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.

4 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

Press a 'Take' button to complete a take. The preset source is routed to the current destination on some or all levels. After the take, the preset source becomes the current source. Following are brief instructions on how to perform a take.

Follow these steps:

1 Press a destination button to start the take. Alternatively, select a destination using category selection. The 'Destination' field of the display shows the destination you chose.

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.

   ▲ A take with no levels selected is the same as a take with all levels selected. It occurs on all levels. What the 'None' function does is allow you to clear the levels easily prior to selecting just one level or only a few levels.

   ▲ If your panel does not have level buttons that represent all levels of a destination, it is impossible to reselect all levels after deselecting some levels. The remedy is to reselect the destination. Doing so causes the pending take to become all-level once again.

3 Optionally press 'Source Shift' to toggle between the source pages.

4 Press a source button. Alternatively, select a source using category selection. The 'Preset' field of the display shows the source you chose.

5 Press a 'Take' button. The 'Status' field of the display now shows the source you chose.

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

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 steps 2 and 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 limited X-Y mode.

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 source device is in use, the 'Status' display shows "DestUsed" and the destination display shows "Retry?"

> If the source device is 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.)

Follow these steps:

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.

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*.

Follow these steps:

1　Press a destination button. The 'Destination' field of the display shows the destination you chose. Scroll to the correct page if necessary.

2　Optionally press 'Source Shift' to toggle between the sets of sources.

3　Press a source button. This is the first source. Scroll to the correct page if necessary.

4　Press the chop button.

5　Optionally press 'Source Shift' to toggle between the sets of sources.

6　Press another source button. Scroll to the correct page if necessary. 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.

Salvo Mode

Your panel must be configured to have a salvo list and a salvo button. Otherwise, salvo mode does not function.

The salvo button places the panel in *salvo mode* where you can scroll through the panel's salvo list. When you find the salvo of you choice, press the 'Take' button to execute the salvo. After the salvo executes, the panel returns to its normal mode.

Press the salvo button again while the panel is in salvo mode to reset the salvo selection to nothing.

Press any other button while the panel is in salvo mode to return the panel to its normal mode.

Menu Mode

The NV9603A 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:
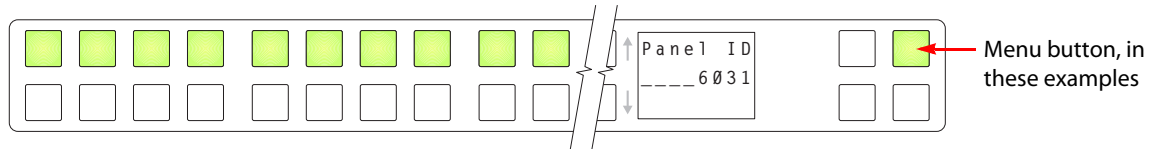
Menu button, in these examples

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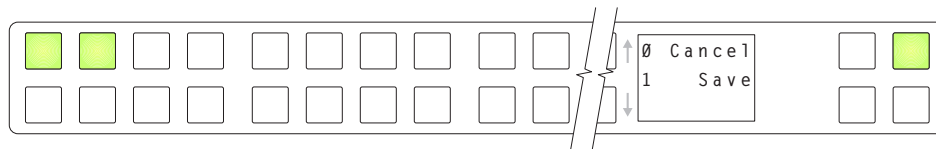
Press the left-most button to cancel the operation or press the button to its right to save your new panel ID. After you save the panel ID, the panel continues to the next item in the menu.

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.
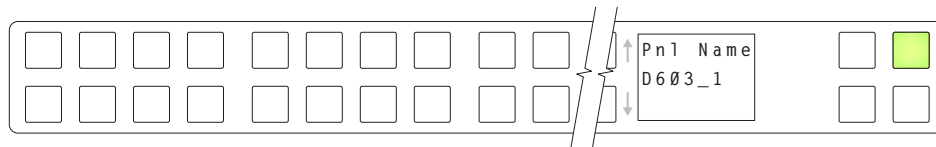
User ID

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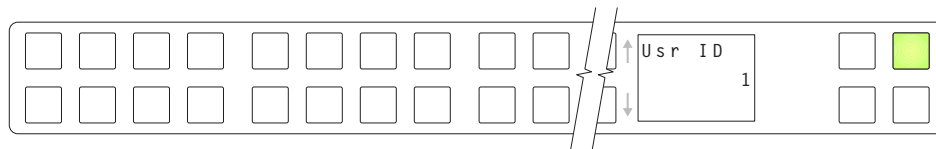
User Name

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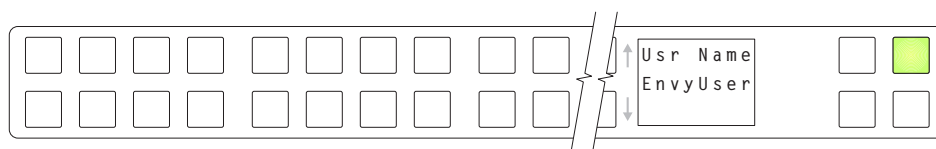
Software Versions

The fifth submenu displays the software version:

```
S
SVØ921-Ø
6
```
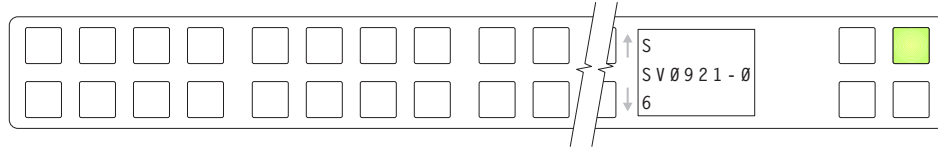
The sixth submenu displays the boot version:

```
B SVØ994
-Ø1ØØØØ
```
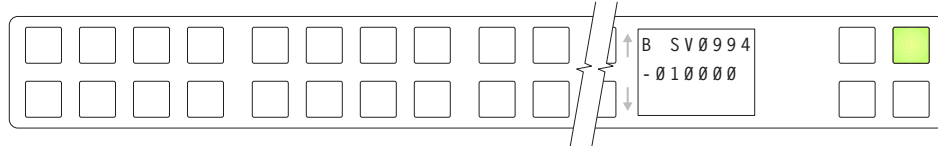
The seventh submenu displays the application version:

```
A SVØØØØ
-ØØØØØØ
```
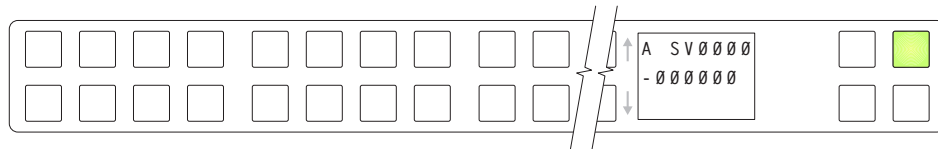
Button Illumination

The last submenu displays the illumination setting:

High Illumination   Up 10%

```
Illum Hi
    1ØØ%
```

Menu button, in these examples

Low Illumination   Down 10%
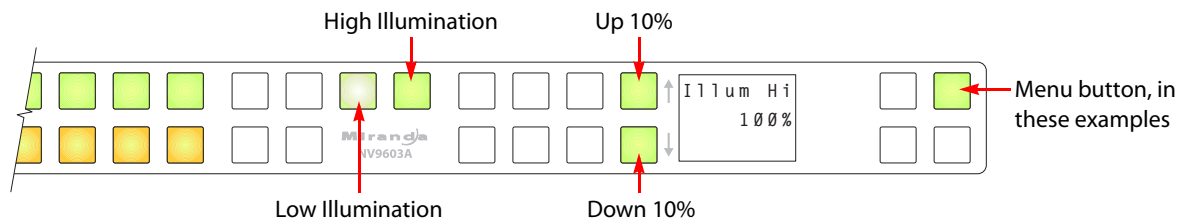
The buttons at the far left show the illumination level. The upper row shows green and the lower row shows amber.

The buttons immediately to the left of the display (by convention, 'Page Up' and 'Page Down' buttons) increase or decrease the illumination level by 10%. The default level for low illumination is 40%. The default level for high illumination is 100%.

Press the low illumination button to change the low illumination level. Press the high illumination button to change the high 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.

▲ Configurers' note: it is important not to locate the menu button on any of the buttons used to change the illumination.

Setup Mode

Setup mode occurs when the NV9603A 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:
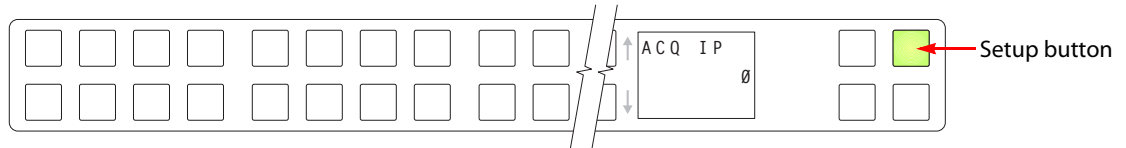
Press the setup button to proceed to the first part of setup which is to set the panel ID:
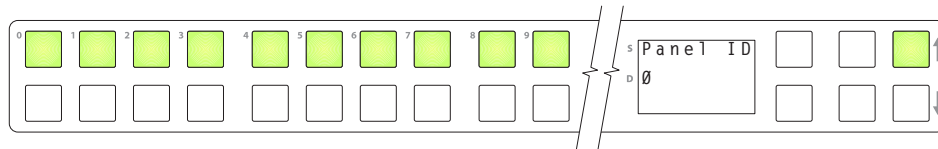
The panel now allows you to enter the panel ID using buttons at the left that function as a numeric keypad. The numbers of the keypad a printed on the panel. They range from 0 (at the left) to 9:
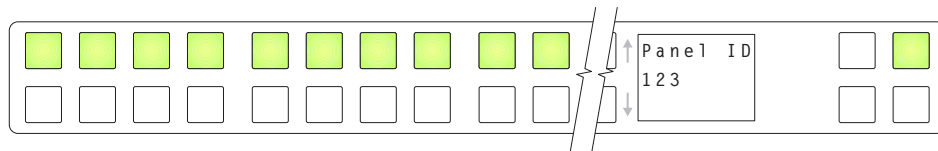
Press the setup button to complete the entry. A confirmation message appears:
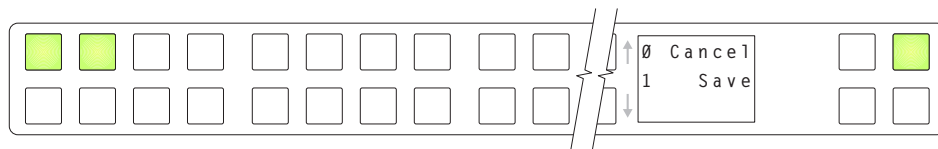
Press 1 (the button on the left) to cancel your entry or press 2 (the button on the right) to save your entry. Thereafter, your panel will have the panel ID you assigned, unless you or someone else changes it.

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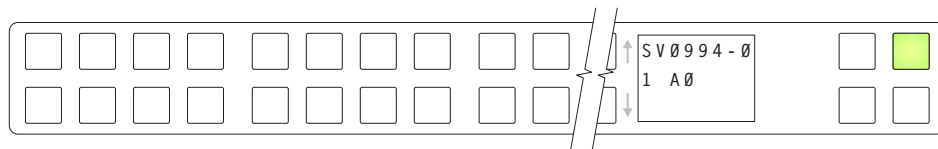
The software part number and its revision number wrap around the first two lines of the display. In the illustration above, the part number is SV0639-07 and the revision is A0. The CPLD version number is 00.

Press the setup button to proceed to the pixel test:
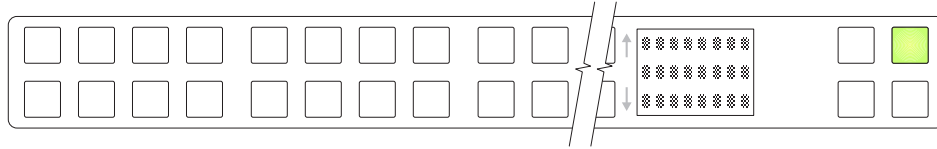
In this test, all the dots in each character of the 2 displays should be illuminated.

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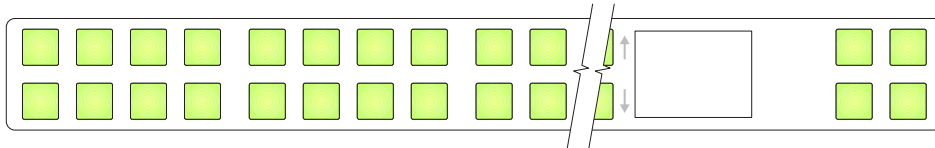
To proceed through this test, press the setup button (still in the same place although it is now changing color) 3 more times.

Finally, you will reach the button test:
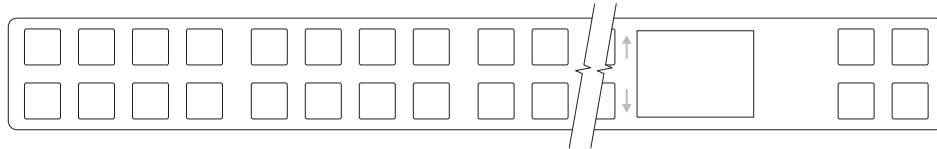
Press any button to test it. The button will flash a few times rapidly.

Pressing the setup button will terminate the button test and return you to the initial display of setup mode. At this point — if you have a assigned your NV9603A a suitable panel ID — you may connect your NV9603A to the panel network of your NV9000 system.

Technical Details

Chapter 6 provides electrical and mechanical specifications for the NV9603A.

Topics

Power Specifications

NV9603A 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.

NV9603A Specifications

NV9603A Physical Specifications

NV9603A Physical Specifications

Specification	Detail
Dimensions	Height: 1.72 in (43.7.9 mm), 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 (232.2 mm) overall. Requires approximately. 3 in cable clearance.
Weight	7.4 lb (3.36 kg).
Connectors	Power: AC. Ethernet: 1 connector, 10 baseT, 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:
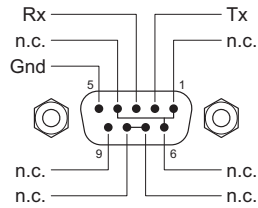
Pins 1, 4, and 6 are tied together and pins 7 and 8 are tied together. None of those pins are connected to any circuitry.

Environmental Specifications

NV9603A 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 NV9603A configuration has no buttons defined. The default panel options are:

Release mode: Normal.

Default destination: None.

Preset monitor: None.

Status monitor: None.

Data routing mode: Automatic.

Salvo List: None.

Default name set: System names.

Other options: All disabled except 'Use Continuous Scrolling'.

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 page provide overall and critical dimensions.
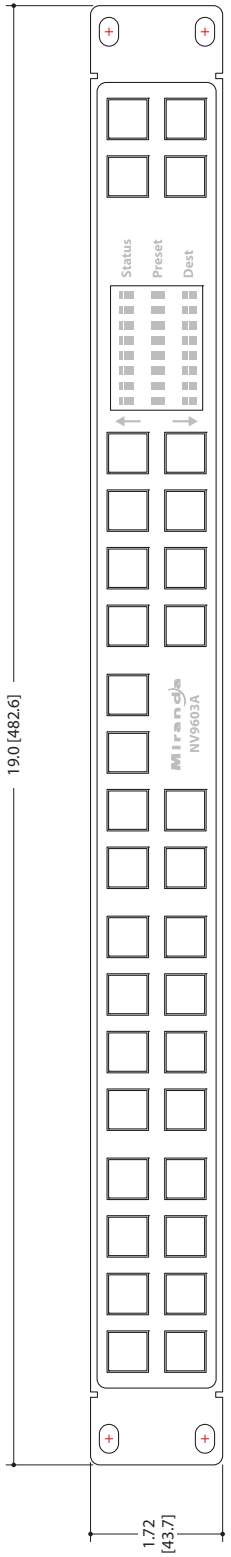
Fig. 6-1: Front View of the NV9603A
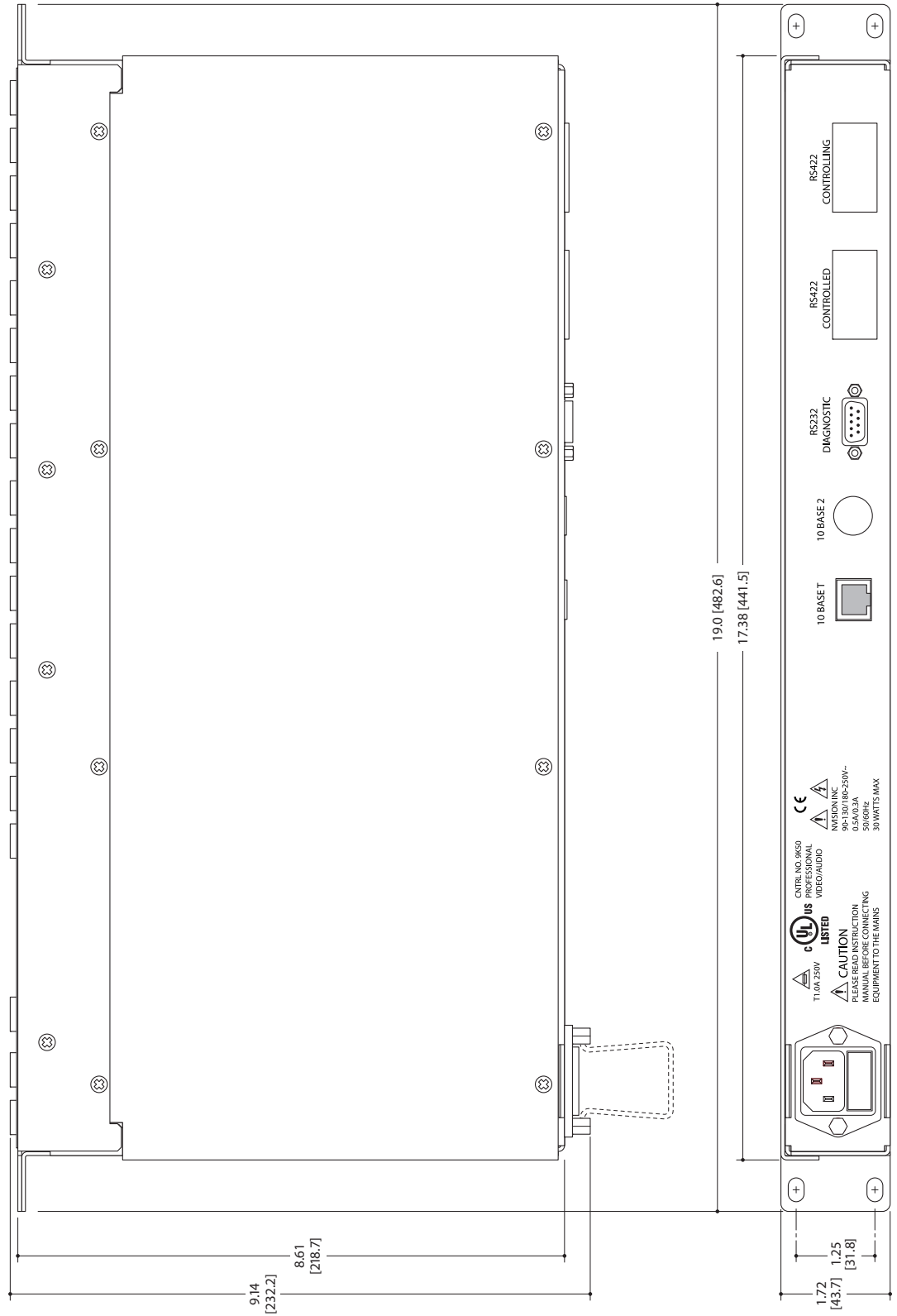
Fig. 6-2: Top, and Rear Views of the NV9603A

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 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.

The NV9603A does not support categories or category selection.

Data routing Data routing (a.ka., machine control routing) is a bidirectional form of routing. Routes are characterized by a controlling device and controlled device(s). The NV9603A 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 NV9603A's tally interface. The tally interface is called the "GPI Interface" at the rear of the NV9603A.

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 *to be defined*.

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 *virtual* 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.

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Contact Us

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

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

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

Asia

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

China

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

Malaysia

Telephone:	+60 3 2247 1808
E-mail:	asiatech@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