NV9607
Control Panel

User's Guide

NV9607 Control Panel — User's Guide

- **Revision**: 1.0
- **Software Version**: 6.0.8
- **Part Number**: UG0045-00
- Copyright: © 2010 Miranda Technologies. All rights reserved.
- No part of this manual may be reproduced in any form by photocopy, microfilm, xerography or any other means, or incorporated into any information retrieval system, electronic or mechanical, without the written permission of Miranda Technologies, Inc.
- The information contained in this manual is subject to change without notice or obligation.
- All title and copyrights as well as trade secret, patent and other proprietary rights in and to the Software Product (including but not limited to any images, photographs, animations, video, audio, music, test, and "applets" incorporated into the Software Product), the accompanying printed materials, and any copies of the Software Product, are owned by Miranda Technologies, Inc. The Software Product is protected by copyright laws and international treaty provisions. Customer shall not copy the printed materials accompanying the software product.

Notice

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. (See Symbols and Their Meanings on page v.)

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

Trademarks

Miranda is a registered trademark of Miranda Technologies, Inc.

Brand and product names mentioned in this manual may be trademarks, registered trademarks or copyrights of their respective holders. All brand and product names mentioned in this manual serve as comments or examples and are not to be understood as advertising for the products or their manufactures.

Software License Agreement and Warranty Information

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

Technical Support Contact Information

Miranda has made every effort to ensure that the equipment you receive is in perfect working order and that the equipment fits your needs. In the event that problems arise that you cannot resolve, or if there are any questions regarding this equipment or information about other products manufactured by Miranda, please contact your local representative or contact Miranda directly through one of the appropriate means listed here.

- Main telephone: 530-265-1000 (9 am to 9 pm PST)
  Fax: 530-265-1021

  In the Americas, call toll-free: +1-800-224-7882 (9 am to 9 pm EST)
  In Europe, the Middle East, African or the UK, call +44 (0) 1491 820222 (9 am to 6 pm, GMT)
  In France, call +33 1 55 86 87 88 (9 am to 5 pm, GMT + 1)
  In Asia, call +852-2539-6987 (9 am to 5 pm, GMT + 8)
  In China, call +86-10-5873-1814

- Emergency after hours: toll-free: +1-800-224-7882
  Tel: +1-514-333-1772

- E-Mail:

  In the Americas, support@miranda.com
  In Europe, the Middle East, African or the UK, eurotech@miranda.com
  In France, eurotech@miranda.com
  In Asia, asiatech@miranda.com
  In China, asiatech@miranda.com

- Website: http://www.miranda.com

- Mail   Shipping

  Miranda GVD   Miranda GVD
  P.O. Box 1658   125 Crown Point Court
  Nevada City, CA 95959, USA   Grass Valley, CA 95945, USA

Note	Return Material Authorization (RMA) required for all returns.

Change History

The table below lists the changes to the Control Panel User's Guide.

- User's Guide Part # UG0045-00

- Software version: 6.0.8

Rev	Date	ECO	Description	Approved By
1.0	05 Nov 10	17286	Initial release. Conforms to SE version 6.0.8	D. Cox

Restriction on Hazardous Substances (RoHS)

Miranda 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.

Miranda has a substantial program in place for RoHS compliance that includes significant investment in our manufacturing process, and a migration of Miranda 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 Miranda is available from Miranda Customer Support at

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

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.

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 Miranda 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 Miranda 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 output that is easily accessible.

Table of Contents

Table of Contents

Table of Contents

Table of Contents

1. Preface

Chapter 1 is an introduction to the NV9607 User's Guide. It presents the following topics:

- Chapter Structure
- The PDF Document
- Terms, Conventions and Abbreviations

Chapter Structure

The following chapters provide detailed information regarding the NV9607 Control Panel:

- Chapter 1, Preface, (this chapter) outlines ways to use this guide.
- Chapter 2, Introduction, provides a functional description of the NV9607.
- 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, GPIO, provides information about the tally interface (general-purpose I/O).

  This chapter is for configurers, primarily.
- Chapter 7, Technical Details, provides electrical, mechanical, and environmental specifications, product drawings, and default settings.
- Chapter 8, Misc. Topics, provides a glossary.
- An index is 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 ▲ 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 NV9607 control panel and to NV96xx control panels, in general.
- "High tally" means that a button is brightly illuminated. High-tally usually means that the button function is selected or active.
- "Low tally" means that a button is illuminated at low intensity. Most buttons assume a low tally state until selected.
- "SE" is an abbreviation used in this document for NV9000-SE Utilities.

Other Documentation and Software

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

- NV9000 Quickstart Guide.
- 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 router control systems.

2. Introduction

Chapter 2 provides a functional description of the NV9607. It presents these topics:

- Summary
- Panel Organization
- Modes of Operation
- Other NV9607 Functions

Summary

The NV9607[1] is a 2RU control panel, about 1.9″ deep, overall. It has 116 backlit function buttons and a small display. The display has either 4 or 8 lines of 42 characters, depending on its configuration.

An NV9606 control panel can operate as an extension of the NV9607. That is, an NV9607 and an NV9606 together form a larger panel with more buttons. See the *NV9606 User's Guide* for details.

The NV9607 can operate in one of 4 modes:

- Limited X-Y mode.
- Single-destination (SD) mode.
- Single-destination mode with breakaway.
- Multi-destination (MD) mode.

See Modes of Operation, following.

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

Function Buttons   Display
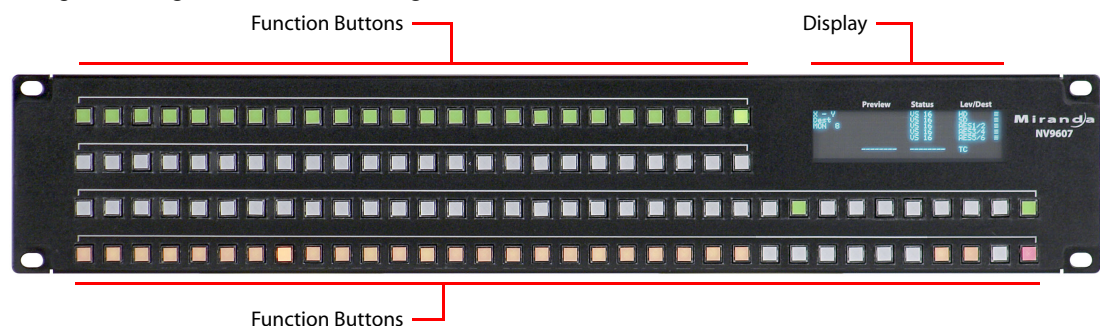
Function Buttons

Figure 2-1. NV9607 Front

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

The sets of functions differ in the different operating modes.

---

1   An equivalent NV9607V — a GUI that is called a "virtual panel"— is available. It emulates the NV9607.

At the rear of the panel are power, serial control, Ethernet, and GPIO connectors:

Figure 2-2. NV9607 Rear

You connect the NV9607 to the NV9000 system using the Ethernet connector.

The serial port is for local diagnostics, as it is for all control panels.

The NV9607 uses external PS0001 power supplies. One will suffice. Two provide redundancy.

The GPIO connector supports the panel's GPIO functions: 4 outputs and 8 inputs. See GPIO on page 57.

Panel Organization

Function Buttons

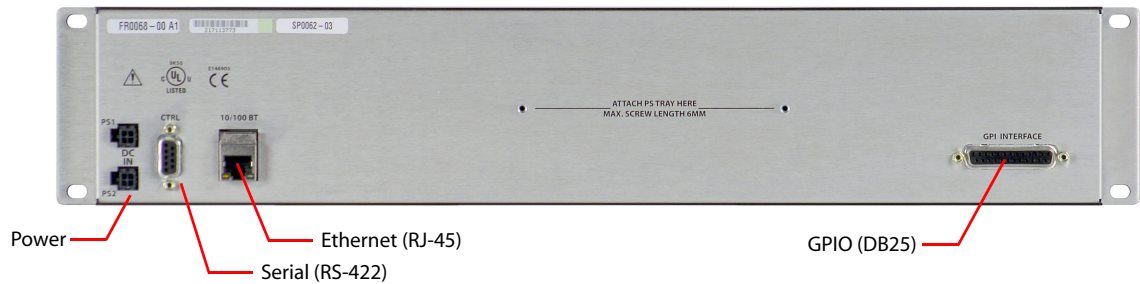The NV9607 has 4 rows of function buttons. The upper two rows have 24 buttons. The lower two rows have 34 buttons. The total is 116 function buttons. The set of buttons differ in each of the 4 operating modes. (See Modes of Operation, on page 8.)

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

Each button has *three* operational levels: high and low tally (green, amber, and sometimes red), 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. However, green and amber also represent other functions.

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.[2]

---

2 The NV9607V (virtual panel) has automatically generated button legends. For instance, a source button's legend is the source name. Depending on the operating mode, the source button might have up to 3 lines of text: a source from page 1, a source from page 2, and a destination.

Alphanumeric Display

The panel has an alphanumeric display (a VFD) at the top right:
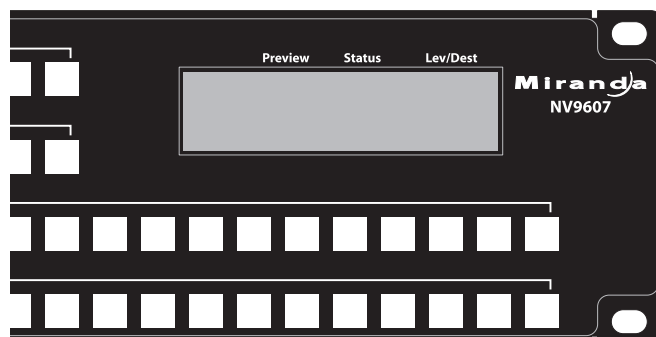
The display has either 4 or 8 lines of 42 characters, depending on configuration. The characters are tall (4×14) when the display is configured for 4 lines.

Display Fields

When the panel is in multi-destination mode, the contents of the display differ greatly from the contents in X-Y, single-destination, or single-destination mode with breakaway:

Multi-destination mode

Limited X-Y mode

Single-destination mode

Single-destination mode with breakaway

With 4 lines of text, the text is larger:

Multi-destination mode

Limited X-Y mode

Single-destination mode

Single-destination mode with breakaway

The main difference between XY mode, SD mode, and SD mode with breakaway is the title in the first line: 'X - Y', 'Single', and '1Dst/wBrk' respectively.

Operators might need to scroll the display to see additional information. ('Page Up' and 'Page Down' buttons are for scrolling the display.)

The display has 4 columns:

- Information (the left-most column, not labeled).

  The first entry in this column is one of 'X - Y', 'Single', '1Dst/wBrk', or 'MultiDest' depending on the mode in which the panel is configured, unless the operator has entered menu mode, or setup mode or has pressed an 'Information' button. See chapter 5 for those topics.

  The bottom-most entry in this column is always the page number of the display.

  In MD mode, there are no entries in this column other than "MultiDest" and the page number.

  In the other modes, the second entry is always the word "Dest" as a title for the third entry which identifies the current destination. In the preceding illustrations, the current destination is VTR 1.

- Preview.

  The preview column indicates what source will be routed to a destination if the operator presses a 'Take' button.

  ▲ This column is used only when the panel is in source preview mode. When the panel is not in source preview mode, takes occur when the operator selects a source.

  In MD mode, the preview column indicates the source(s) that will be routed to selected destination(s) in the 'Level/Dest' column. These are the *preset source(s)*. After the take, they disappear from the preview column and re-appear in the status column, reflecting that the preset sources have now become current sources.

  In the other modes, the preview column represents the levels of a source or the levels of multiple sources under breakaway. Here too, these are called the *preset source(s)*. After the take, they disappear from the preview column and re-appear in the status column, reflecting that the preset sources have now become current sources.

- Status.

  The status column indicates what source was routed to the destination.

  In MD mode, the status column represents the sources routed to each of the destinations in the 'Level/Dest' column. Again, these are the *current sources*.

  In the other modes, the status column represents the levels of a source or the levels of multiple sources under breakaway. These are called the *current source(s)*. The presence of '--------' in the status or preset columns means that that particular level is not defined for the destination. Therefore, no source selection for that level is possible. The preceding illustrations show that levels HD and 'TimeCode' are not defined for VTR 1.

- Level/Dest.

  In MD mode, the 'Level/Dest' column presents all the MD destinations defined in the NV9607 configuration. (Actual destinations are defined in the NV9000 configuration.) Operators might need to scroll to see or select a destination.

  In the other modes, this column identifies the levels of the currently selected destination. That destination is identified in the information column. In the illustration above, 'VTR 1' was selected. Operators might need to scroll to see or select a level.

  The ordering of levels (in all but multi-destination mode) is a configuration option.

The display fields can show either names in a name set or system mnemonics for devices 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

The display also shows flags of different kinds next to the sources and destinations.

Selection Marks

At the far right of the display are marks (3 small bars) that turn on to indicate selections.

In MD mode, a mark appears to the right of the currently selected destination (and of all the currently selection destinations in hold mode).

In the other modes, the marks turn on to indicate that a level is selected and are not visible otherwise. (The operator makes level selections in the button array.)

Other Signs

A plus sign (+) indicates that additional information is available. There is an 'Info' button type available so that operators may view the additional information.

In MD mode, an asterisk (*) directly after a source indicates a breakaway on that destination.

An 'L' indicates that a device has been locked. A 'P' indicates that a device has been protected. NV9607 operators may lock, protect or release destinations. It is important for operators to know that other operators may lock, protect, or release sources and destinations.

Tally Interface

At the rear of the panel is a DB25 connector that provides 8 tally inputs and 4 tally outputs. (The outputs are solid state relay outputs.) Both inputs and outputs are optically isolated.

During configuration, you can construct Boolean logic that switches the outputs on or off. The terms of the logic expressions are states of the source and destination devices, etc., controlled by the NV9000 control system.

During configuration, you can prescribe NV9607 behavior that depends on the tally inputs.

What you connect to the tally interface is, of course, up to you. Miranda provides a breakout cable (WC0053) that can be used with the tally connector, as a purchase option.

Note that the NV9000-SE Utilities on-line help documentation calls the tally interface a GPIO interface. On the rear of the panel, it is labelled a "GPI interface."

See Chapter 6, GPIO, on page 67, for complete detail.

Modes of Operation

The NV9607 operates in one of 4 modes:

- Limited X-Y Mode.
- Single-Destination Mode.
- Single-Destination Mode with Breakaway.
- Multi-Destination Mode.

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

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

▲ The NV9606 control panel can operate as an extension of the NV9607. See the *NV9606 User's Guide* for details.

Limited X-Y Mode

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

Pressing a source button completes a take unless a panel has a 'Source Preview' button and it is active (high-tally).

Breakaway is possible in this mode if the panel has level buttons. Level buttons select the levels on which the take is to occur. Takes occur on all levels when either no levels are selected or when all levels are selected.

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

Single-Destination Mode

In single destination mode, the panel's destination is configured as the default destination and there are no destination buttons.

Pressing a source button completes a take unless a panel has a 'Source Preview' button and it is active (high-tally).

Takes are all-level.

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

Single-Destination Mode with Breakaway

Again the single destination is configured as the default destination. There are no destination buttons.

Pressing a source button completes a take unless a panel has a 'Source Preview' button and it is active (high-tally).

Breakaway is possible in this mode if the panel has level buttons. Level buttons selected the levels on which the take is to occur. Takes occur on all levels when either no levels are selected or when all levels are selected.

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

Multi-Destination Mode

In this mode, source buttons are configured with destinations as well as sources. Thus, each source button completes a route to an individual destination. If each button had a different destination, the panel could support 116 destinations. The typical configuration would have fewer destinations.

Pressing a source button completes a take unless a panel has a 'Source Preview' button and it is active (high-tally).

Takes are all-level.

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

Secondary Modes

Additional but secondary modes of panel operation are:

• Setup mode—where the NV9607 is powered up, but disconnected from the network. In this mode, you can preset the NV9607's panel ID and perform a few diagnostic tasks.

• Menu mode—pressing a menu button places the NV9607 in "menu" mode. In menu mode, the buttons lose their normal functions and become part of a menu that changes as needed during menu operation.

• Source preview mode—(in any of the operating modes) allows source selection to act as a preview selection, requiring the operator to press a 'Take' button to complete a take.

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

Other NV9607 Functions

The NV9607 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.

2. Introduction

Other NV9607 Functions

3. Installation

Chapter 3 provides installation and connection instructions. It presents the following topics:

- Package Contents
- Installation
- Installing Software and Documentation
- Installation
- Testing

Package Contents

If you have ordered one or more NV9607 control panels from Miranda, 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 Technical Support Contact Information on page iii.

Depending on your order, the NV9607 items that can ship include:

- One or more NV9607 control panels.
- One or more power supplies (PS0001) with power cord retention straps.

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 NV9607 (including the NV9000 system controller, NV915 system controller, other NV96xx control panels, EC9700 GUI, EC9710 GUI, and configuration programs such as UniConfig 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 NV9607 control panel:

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

The NV9607 is designed to mount in a 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 NV9607.

You can also connect the panel using a serial protocol and a serial cable connected at the panel's DE9 port. The connection is RS-422. The NV9000 will require a serial card and breakout box for such a connection. There are several options available. Refer to the NV9000-SE Utilities User's Guide for serial configuration options. Contact Miranda regarding serial interface options.

3 Connect one or both power supplies. First connect the 4-pin connector to PS1 or PS2 on the rear of the router. The connectors are keyed and snap into place. There is only one way they fit. Do not force them. Then connect the power supply to AC power.

A second power connection is for redundancy only (protection against failure) and is not a requirement for operation.

Refer to Power Specifications on page 63 for details on the PS0001 power supply. See also Power Cord Retention on page 71.

Installing Software and Documentation

This document is available through the Miranda web site.

You must use NV9000-SE Utilities to configure the NV9607 control panel. Contact Miranda 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 NV9607 to have a static IP address (with respect to the NV9000) or to use DHCP. The panel, as it comes from the factory, defaults to DHCP.

Initialization

Before your NV9000 system controller can communicate with an NV9607, you must give it a panel ID. Follow these steps for each NV9607 you are installing:

1 Power up the NV9607. Do **not** connect its Ethernet cable. (Disconnect it if it is connected.)

   After a few seconds, the display will show 'ACQUIRE IP ADDRESS' at the top and show the panel's current panel ID. The bottom right button is high-tally green:
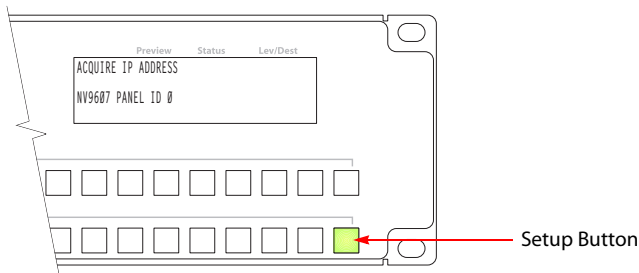
Setup Button

   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:
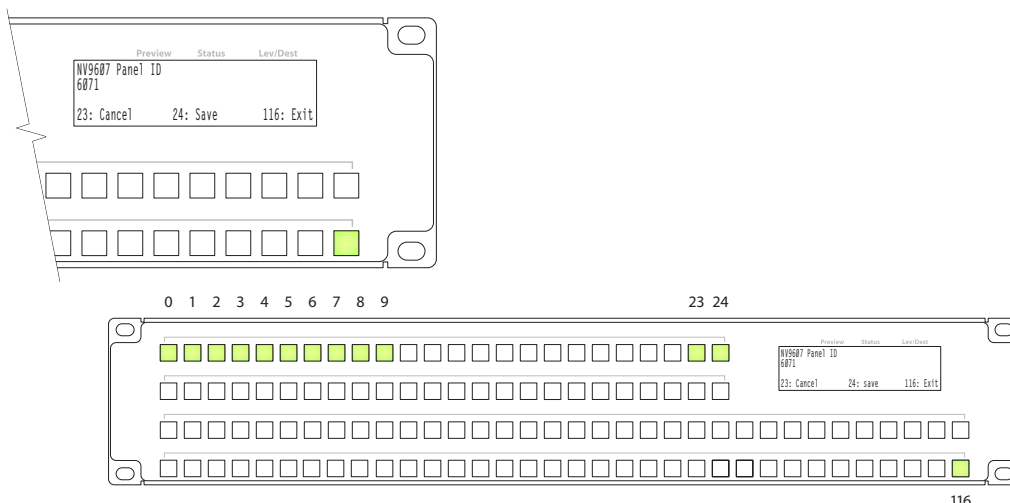
   Enter the panel ID using the keypad. The panel requires a non-zero ID.

   The display tells you to press button 23 to cancel, press button 24 to save the panel ID, or press button 116 to exit (and move to the next part of the setup sequence). These buttons are the ones that are illuminated. They are identified in the illustration. (Button 116 is the setup button.)

   When you finish, press the setup button.

3 Continue to press the setup button until the panel displays 'ACQUIRE IP ADDRESS' once again as in step 1.

4 After you enter the panel ID, reconnect the Ethernet cable. The NV9000 system controller will detect your panel in a few seconds. (**All** panel IDs must be unique.)

You can now prepare an NV9607 configuration in NV9000-SE Utilities and upload the configuration to the NV9607. You need the panel ID to create a NV9607 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 NV9607 is disconnected from the system controller. Run the test to determine the health of your NV9607. See <u>Setup Mode</u> on page 53 for detail. You can also view the software version numbers under setup mode.

These are points to consider after you install your NV9607 control panel(s):

1 Do the buttons illuminate? When an NV9607 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 NV9607 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," "ACQUIRE IP ADDRESS," or "Locating Network," you have a problem. Reboot everything and try again.

   ▲ The NV9607, by default, acquires its IP address through DHCP on the NV9000'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 NV9000 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?

4. Configuration

Chapter 4 provides configuration instructions for the NV9607. It presents the following topics:

- Summary
- Adding a Panel to an NV9000 Configuration
- NV9607 Panel Configuration Page
- Commitment Buttons
- Panel Options
- Button Definitions
- Multi-Destination Configuration

This chapter addresses configurers. Operators and other persons not interested in NV9607 configuration need not read this chapter.

Summary

The NV9607 is a relatively simple panel. It has 116 function buttons and a small display. Although it has relatively few button functions, there are 4 operating modes.

- Limited X-Y Mode.
- Single-Destination Mode.
- Single-Destination Mode with Breakaway.
- Multi-Destination Mode.

The set of button functions varies from mode to mode.

NV9000-SE Utilities is the software with which to configure the NV9607. Figure 4-1, following, shows the default NV9607 panel configuration page from NV9000-SE Utilities.

Adding a Panel to an NV9000 Configuration

You must create configurations for the NV9607 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.

4. Configuration

Adding a Panel to an NV9000 Configuration

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

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

Choose "NV9607" from the 'Type' field. In the ID field, enter the panel ID you assigned to the panel while it was in setup mode. (You can change the panel ID in NV9000-SE Utilities.) Give a name to the panel in the name field and select a user.

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

1 Make a copy of an existing configuration file, giving it a new file name.

2 Use an existing configuration file. (This allows several panels to share a single configuration.)
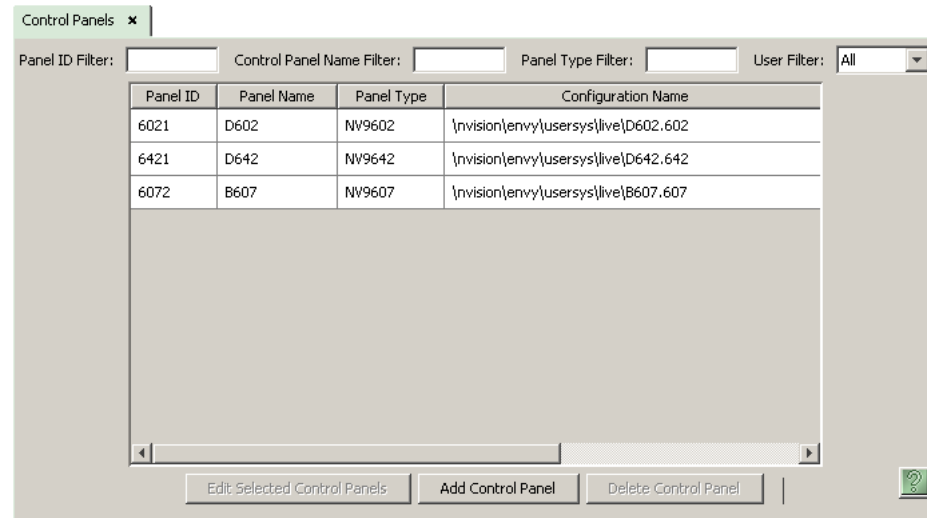
3 Create an entirely new configuration file.

In the first and third cases, you will create a new configuration file whose name you designate. The file extension for an NV9607 configuration file is `.607`. 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 NV9607.

Return to the 'Control Panels' page to view your new entry. To edit an NV9607 configuration, double-click its list entry:

Panel ID	Panel Name	Panel Type	Configuration Name
6021	D602	NV9602	\nvision\envy\usersys\live\D602.602
6421	D642	NV9642	\nvision\envy\usersys\live\D642.642
6072	B607	NV9607	\nvision\envy\usersys\live\B607.607

You will then see the panel configuration page for the selected NV9607.

Following is a discussion of how to use the panel configuration page in which you configure an NV9607.

NV9607 Panel Configuration Page

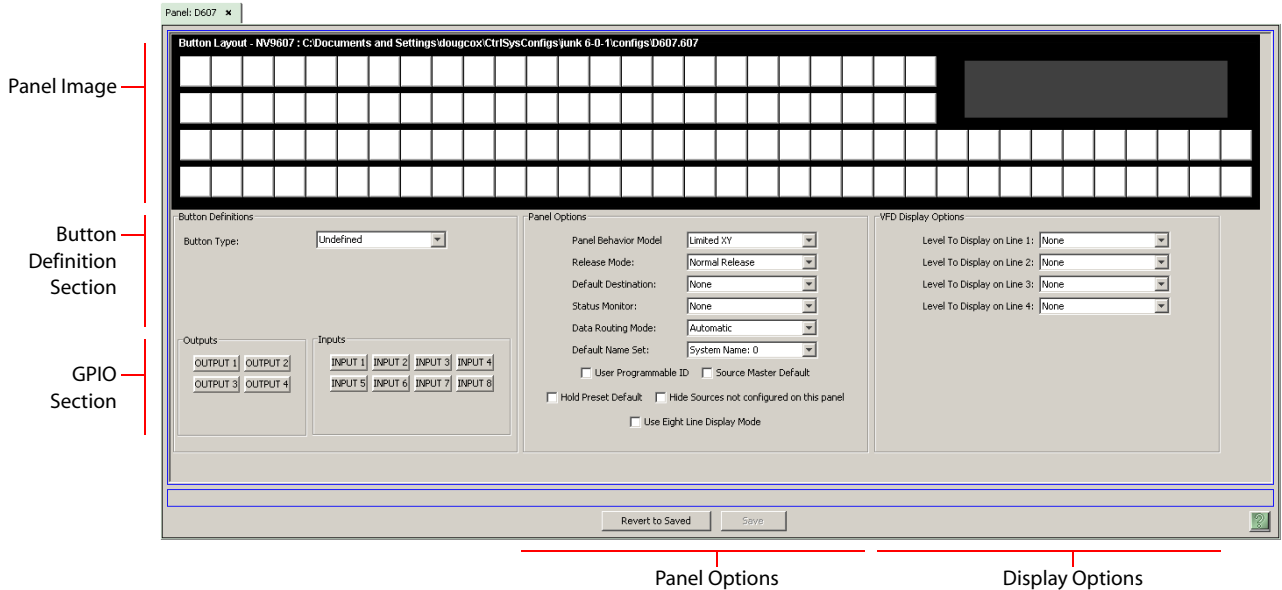This is the default NV9607 panel configuration page in NV9000-SE Utilities:

Figure 4-1. NV9607 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.

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

Regions of the Configuration Page

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

- A graphic representation of the NV9607 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.

- GPIO definitions.

  In this section, configurers may define GPIO logic. The control panel has a rear connector that provides 4 relay outputs and 8 optically isolated inputs. See GPIO, page 65, for more information. (Note that the graphical buttons represent *connector terminals* and not actual buttons.)

- Panel options.

  In this section, configurers may specify the behavioral characteristics of the panel. See Panel Options, following.

- Display options.

  In this section, configurers may partially specify the ordering of levels when the panel is in X-Y mode, single-destination mode, or single-destination mode with breakaway.

  In these modes, the display shows level information. When the display is configured with 4 lines, it displays 4 levels and when the display is configured with 8 lines, it displays 8 levels. (The display scrolls if the panel has 'Page Up' and 'Page Down' buttons.) The display options let you specify explicitly what levels appear on those 4 (or 8) lines. The specification applies, however, *only to the first page* of the level display.

  For example, if your NV9000 configuration has levels HD, SD, AES12, AES34, AES56, AES78, timecode, and 'Ctrl' defined, and you specify that HD, AES12, AES34 are to appear on lines 1, 2, and 3, that will always happen. Other levels will appear *in their default order* on page 2, 3, and so on, as the operator scrolls.

  During configuration, you may leave any of the fields in this section blank. If you leave all of the fields blank, the display will present levels *in their default order* (according to their display index, as defined in NV9000-SE Utilities).

  If you leave some fields blank, those display lines will appear blank, while the lines for which you specified a level will show that level.

  ▲ Filling any field of the display options (with an actual level) means that the entire first page of levels contains either blank lines or the level(s) you specify.

Configuration Tasks

The person configuring an NV9607 panel will want to consider how best to use the buttons to support the devices and routers in the router control system at hand. Trade-offs must be made.

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

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

The panel operator, in most cases, needs a 'Page Up' button and a 'Page Down' button. A 'Take' button might be needed if your panel has a 'Source Preview' button.

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.
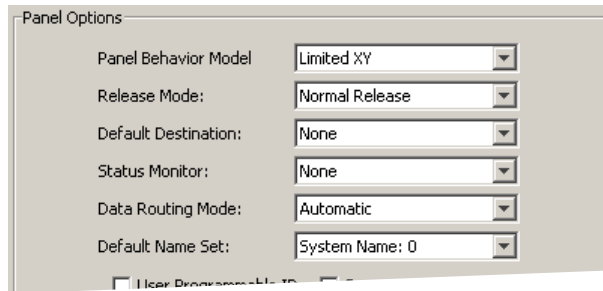- Save. Press this button to commit all your recent changes.

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:

Panel Behavioral Model	Limited X-Y	In limited X-Y mode, takes occur from a single source to a single destination (which is selectable). Breakaway is possible.
	Single Destination	In single-destination mode, the panel's destination is configured as the default destination and there are no destination buttons.
		Takes are all-level.
	Single destination with breakaway	This mode is an extension of single-destination mode that includes level buttons on the panel.
		Level buttons select the levels on which the take is to occur. Takes occur on all levels when either no levels are selected or when all levels are selected.
	Multi-destination	In multi-destination mode, source buttons are configured with destinations as well as sources. Thus, each source button completes a route to an individual destination. Takes are all-level.
Release Mode	Normal Release	This panel can release "locks" and "protects" set by the designated user (at this panel or any other panel).
	Force Release	This panel can release locks and protects set by any user.
Default Destination	None	After a reset, the panel has no default destination and displays no destination device. (This is not recommended in single-destination mode or single-destination-with-breakaway mode.)
	‹device›	The panel uses the specified device as the destination after a reset. (The 'Default State' button also returns the panel to this destination.)
		A specific device is essential for operation in single-destination mode or single-destination-with-breakaway mode.)
Status Monitor	None	The current source video is not sent to a monitor.
	‹device›	The current source video for the selected destination appears on the specified monitor (device).

Data Routing Mode	Automatic	If a 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.
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:
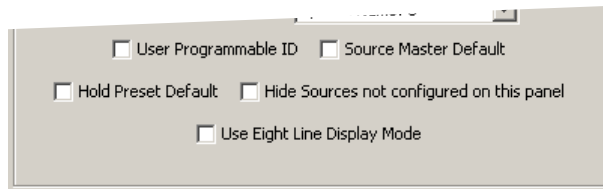
A check in the box enables the option. Clearing the checkbox disables the option.

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.

• Hold preset default.

When this checkbox is checked, the panel powers up in "hold mode." Otherwise it powers up with hold mode off.

Hold mode, under single-destination mode with breakaway, causes the selected levels to be retained after a take. If hold mode is off, all levels become selected after a take.

Hold mode, under limited X-Y mode, allows a user to route a source to multiple destinations simultaneously.

- Hide sources not configured on this panel.

    Causes the names of source devices that are not presently configured for this particular panel to be effectively hidden. When another panel changes the source to one not configured for this panel, this panel displays asterisks instead.

- Use eight line display mode.

    The display has 4 lines of text by default. If you check this option, the display will have 8 lines of text and it will scroll by 8 lines at a time when it can scroll. (A 4-line display scrolls by 4 lines at a time.)

    The display options in the configuration page show either 4 or 8 lines according to whether you have checked this checkbox.

Button Definitions

There are three classes of button functions:
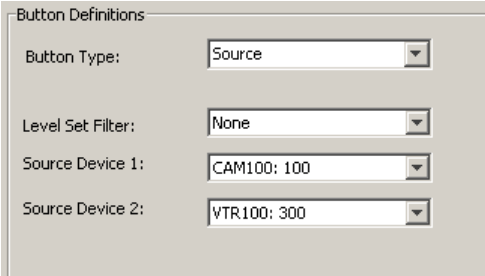
- Dedicated functions, such as 'Default State' or 'Chop'.
- Variable functions, such as 'Source' or 'Destination'.
- Special functions, such as 'Menu' and 'Salvo'.

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 NV9607:

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

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

These codes represent the modes:

    S — single-destination mode

    B — single-destination mode with breakaway

    X — limited X-Y mode

    M — multi-destination mode

    All — all modes

Button Types

These are the button types available for NV9607 configurations:

Type	Modes	Description
Broadcast	**X**	With respect to the 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 <u>Broadcast Routes</u> on page 45.
		See also the <u>Source Master</u> button, following.
Chop	**All**	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.
Default state	**S, B, X**	The button returns the panel to its most recent power-up state. That is called the *default state*.
		The button definition has no fields to configure.
Destination	**X**	The button selects a destination. The destination name appears in the 'Destination' display. The destination is the target of an upcoming take, which will route a source to that destination.
		When you assign a destination button, two drop-down menus appear: 'Destination Device 1' and 'Destination Device 2'. These correspond to the two destination pages. If there is a 'Destination Shift' button on the panel, the operator can switch between the two pages. When the first page is selected, pressing the button selects device 1. When the second page is selected, pressing the button selects device 2.
Destination Lock	**S, B, X**	The button sets or removes a "lock" on the current destination device. The lock can be removed only by the user that originally set the lock, or by a panel that has "Force Release" enabled.
		The button definition has no fields to configure.
		The NV9607 provides no explicit indication, during operation, whether a destination is locked or unlocked.

Type	Modes	Description
Destination Protect	**S, B, X**	The button sets or removes a "protect" on the current destination device. The protect can be removed only by the user that originally set the protect, or by a panel that has "Force Release" enabled.
		Note: a protect prevents *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 NV9607 provides no explicit indication, during operation, whether a destination is locked or unlocked.
Destination Shift	**X**	The button toggles between the first and second destination sets.
		The button definition has no fields to configure.
		This button toggles between the two destinations assigned to a 'Destination' button. See the Destination button, above.
Free Source	**S, B, X**	The button selects a pre-defined phantom device that can be used to release or "free" devices on the data (machine control) level. A free source is also used with tielines to free the tieline for others to use. The free source is defined in the *Level Set Details* page of NV9000-SE Utilities.
		The button definition has no fields to configure.
Hold	**B, X**	In single-destination mode with breakaway, this button retains breakaway levels after a take.
		In limited X-Y mode, this button allows the operator to perform a gang (or "dub") route. In hold mode, destination selections are cumulative, and not mutually exclusive. See Hold on page 35.
		The hold button is a toggle; press it once to place the panel in "hold mode." Press it again to cancel "hold mode." In the panel options, you can specify whether the panel powers up in hold mode.
		The button definition has no fields to configure.
Information	**All**	The information button displays auxiliary information about level mapping, breakaway, and perhaps other matters. The operator presses the information button once to see the information and again to hide the information.

Type	Modes	Description
Level	**B, X**	The button selects a level.
		The button definition has one field to configure: the level. (Do not choose 'None' for the level.)
		Your panel—configured for limited X-Y mode or single-destination mode with breakaway—will have multiple level buttons, one for each level you want the operator to control. The operator selects multiple levels for a breakaway and then presses a source to complete the take.
		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.
		The operator must select levels before selecting the source
		The color of the level buttons reflect the levels of the current destination in a limited way.
		See also the None/All button, following.
Menu	**All**	This button puts the NV9607 panel in menu mode and displays a menu on the buttons that provides access to a variety of panel functions. Without the button, the operator has no access to the menu functions.
		By pressing certain buttons, the operator makes menu selections and may enter data (such as panel ID) or change brightness values. When the panel is in menu mode, the menu button cycles through the functions of the menu. See Menu Mode on page 49.
		The button definition has no fields to configure.
Name Set Toggle	**All**	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.
None/All	**B**	The button toggles the panel between all levels (of the current destination) being selected and none of the levels being selected.
		The button definition has no fields to configure.
Page Down	**All**	The button scrolls the display down one page (either 3 lines or 7 lines according to the panel's display configuration).
		The button definition has no fields to configure.
Page Up	**All**	The button scrolls the display up one page (either 3 lines or 7 lines according to the panel's display configuration).
		The button definition has no fields to configure.

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

Type	Modes	Description
Source	**All**	The button selects a source. The source name appears in the 'Status' display. ***Pressing a source button completes a take unless source preview mode is in effect.*** In that case, pressing a take button is required for the completion of the take. The nature of source buttons differs in the 4 operating modes: • Single-destination, single-destination with breakaway, and limited X-Y modes When you assign a source button, two drop-down menus appear: 'Source Device 1' and 'Source Device 2'. These correspond to the two source pages. If there is a 'Source Shift' button on the panel, the operator can switch between the two pages. When the first page is selected, pressing the button selects device 1. When the second page is selected, pressing the button selects device 2. • Multi-destination mode When you assign a source button, *three* drop-down menus appear: 'Source Device 1', 'Source Device 2', and 'Destination Device'. The first two correspond to the two source pages. If there is a 'Source Shift' button on the panel, the operator can switch between the two pages. When the first page is selected, pressing the button selects device 1. When the second page is selected, pressing the button selects device 2. The 'Destination Device' field allows you to configure a destination for every source button. Typically, you will assign one destination device to one set of sources, another destination to another set of sources, and so on. At the limit, you could configure up to 116 destinations. (When the NV9607 has an NV9606 extension, you could configure up to 68 additional destinations.) The destination assigned to the button does not change when the source page changes. See <u>Multi-Destination Operations</u> on page 44.
Source Master	**All**	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. The 'Source is Master' button is also used to initiate "broadcast" machine control routes. See <u>Broadcast Routes</u> on page 45.

Type	Modes	Description
Source/ Destination	**X**	The button selects both a source and a destination and performs an immediate take.
		▲ Source/dest buttons are not subject to source preview mode. In fact they become inactive in source preview mode.
		▲ Source/dest buttons are not subject to source shift or destination shift.
Source Preview	**All**	The button toggles 'source preview' mode. When source preview mode is off, pressing a source button results in an immediate take.
		When source preview mode is on, pressing a source button does not cause an immediate take, but places source information in the 'Preview' column of the display. Pressing a take button is required to complete the take. This mode allows operators to preview a source before actually executing the take.
		▲ In source preview mode, all buttons except source buttons, source-related buttons, the 'Source Preview' button and the 'Take' button are disabled.
Source Shift	**All**	The button toggles between the first and second source sets.
		The button definition has no fields to configure.
		The button affects the operation of any source button (in any mode). Source buttons represent two sources. One belongs to one source set and the other belongs to the other source set.
Take	**All**	This button performs a take when a panel is in source preview mode (i.e., it has a 'Source Preview' button and it is high-tally).
		When the panel is not in source preview mode, any take button is disabled and dark.
		When the panel is in source preview mode, the take button is dark until you select a source. Then the take button turns low-tally red. After you press the take button, the button goes dark again.
Undefined	**All**	This button type is a placeholder: during configuration, it makes the button undefined and inactive. On the actual panel, the undefined button remains inactive and unlit (dark).

Multi-Destination Configuration

Multi-destination configuration is a special case: it demands the creation of groups (or clusters) of buttons on the panel. The other modes do not need this kind of grouping.

A panel configured in multi-destination mode has source buttons that represent 2 sources and a destination. (A source shift button switches between the two sources of the source buttons.)

Pressing a source button selects the source and the destination. If the panel is not in source preview mode, the button performs an immediate take — to the destination assigned to the source button. In source preview mode, pressing a 'Take' button is required to complete the take.

Potentially, all 116 buttons of a NV9607 could be source buttons, each having a unique destination. Thus, at that extreme, a panel in multi-destination mode could represent 116 destinations and give operators the choice of two sources for each destination.

A more typical multi-destination configuration will present fewer destinations, organized in button clusters on the panel. The following organization, for example, provides 12 destinations with up to 16 sources available for each one, with 20 buttons assigned to other functions:
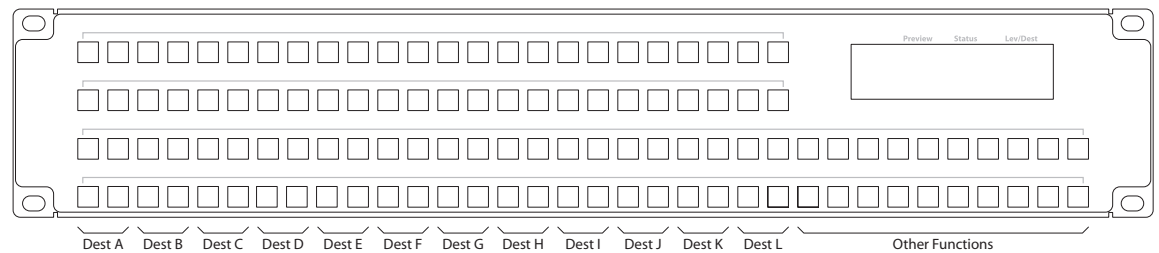
As another example, this organization provides 6 destinations with up to 32 sources available for each one, again with 20 buttons assigned to other functions:

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

As a further example, you could organize the buttons by row: if you have only two destinations, the top 2 rows could represent one destination (having 96 potential sources) and the bottom row could represent the other destination (again with 96 potential sources) and 20 miscellaneous functions.

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

5. Operation

Chapter 5 provides operating instructions for the NV9607 control panel. It presents these topics:

- Summary
- Operating Concepts
- Menu Mode
- Setup Mode

This chapter is intended specifically for the NV9607 panel *operator*.

Summary

As an NV9607 operator, you will be confronted initially with a relatively simple panel — 116 buttons and a small display.

The panel's buttons can have arbitrary legends. 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 (either 4 lines or 8 lines of 42 characters) shows the status of completed and pending takes under normal circumstances. The display presents information or menu items in other cases.

Physically, you will find

- Function buttons (e.g., select previous source or lock a destination).
- Source, destination, and salvo buttons.
- Names of destination(s), source(s), and level(s).

At any particular time, some of the buttons are high-tally; some are low-tally; and some might be undefined. Active buttons are usually of two colors, green and amber, but are sometimes red. Red means "locked." 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 NV9607 operates in one of 4 modes (or behavioral models):

- Limited X-Y Mode.
- Single-Destination Mode.
- Single-Destination Mode with Breakaway.
- Multi-Destination Mode.

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

5. Operation

Generally, to operate the panel, you choose a destination, (possibly) choose desired breakaway levels, and choose a source. Choosing a source for a destination completes the take unless source preview mode is active. In that case, pressing a 'Take' button is required for the completion of the take. This paradigm has slight variations in the different modes.

Single-Destination Mode

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

Takes are performed on all levels of the default destination.

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

Takes occur as soon as a source button is pressed unless source preview mode is active. In that case, pressing a 'Take' button is required for the completion of the take.

Single-Destination Mode with Breakaway

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

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

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

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

Takes occur as soon as a source button is pressed unless source preview mode is active. In that case, pressing a 'Take' button is required for the completion of the take.

Limited X-Y Mode

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

Breakaway is possible if the panel has level buttons.

Pressing a source button completes a take unless source preview mode is active. In that case, pressing a 'Take' button is required for the completion of the take.

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

Multi-Destination Mode

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

Takes are all-level.

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

Secondary Modes

Secondary modes are:

- Source preview mode—exists (in any operating mode) when you press a 'Source Preview' button. In source preview mode, the display shows the source you select in the 'Preview' column of the display. Further, in source preview mode, pressing a 'Take' button is required for the completion of takes. When the panel is not in source preview mode, pressing a source button is enough to complete a take.

- Setup mode—where the NV9607 is freshly powered up, but *disconnected from the network*. In this mode, the configurer can preset the NV9607's panel ID and perform a few diagnostic tasks.

  Usually, only configurers need be concerned with setup mode.

  See [Setup Mode](#) on page 53.

- Menu mode—pressing a menu button places the NV9607 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 49.

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

Button Legends

There are about 25 different button functions. Some might not be available on your panel depending on the operating mode in which it was configured. It is possible for buttons to have graphic or text legends that are plastic inserts placed under the clear button caps. Because the buttons of the NV9607 are small, it is not easy to create legend inserts. There is room above the buttons for customers to place adhesive-backed legends.

Buttons are 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. Red indicates that either a destination is locked or that the panel is locked.

Operating Concepts

Source Shift

Source shift applies in all modes.

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

A source shift button is a toggle that enables either the first or second source of source buttons. The source shift button is low-tally when it has enabled the first source. It is high-tally when it has enabled the second source.

A source shift button toggles all source buttons. However, source shift does **not** apply to 'Source/Destination' buttons.

Destination Shift

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

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

A destination shift button is a toggle that enables either the first or second destination of destination buttons. The destination shift button is low-tally when it has enabled the first destination. It is high-tally when it has enabled the second destination.

A destination shift button toggles all destination buttons. However, destination shift does **not** apply to 'Source/Destination' buttons.

Levels

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

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

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

Breakaway

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

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

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

Hold

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

Breakaway

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

Simply press the hold button at any time before the take.

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

Limited X-Y

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

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

  1 Select the first destination to which you want to route the source. Use a 'Destination Shift' button if necessary to access the destination. The destination tallies bright amber and its name appears in the destination display.

  2 Press the hold button. If the panel is in hold mode, the hold button will be high-tally. (Press the hold button again if it is not.)

  3 Select the additional destinations you require. As you select each destination, its name appears in the destination display. You can toggle these additional destinations on or off.

  4 Select a source. Use a 'Source Shift' button if necessary to access the source. The take to the multiple destinations is immediate.

  5 As long as hold remains enabled, you can route other sources to the same group of destinations.

To clear hold mode:

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

  2 Select any destination.

Source Preview

Your panel can have a 'Source Preview' button. This button turns "source preview mode" on or off. Source preview mode can be used in any of the 4 operating modes.

When source preview mode is *off*, pressing a source button completes a take.

When source preview mode is *on*, all buttons except source buttons, source-related buttons (such as source shift), and the 'Source Preview' button are disabled and dark.

In source preview mode, pressing a source button does not complete a take. Instead, the source name appears in the 'Preview' column of the display and a take button (if your panel has one) turns red. It is necessary to press the take button to complete the take. After the take, the take button goes dark once again.

To cancel a pending take in source preview mode, simply press the 'Source Preview' button again. The panel exits source preview mode and all of its buttons become re-enabled.

After you turn it on, source preview mode remains in effect until you turn it off.

Buttons

The NV9607 has 3 classes of button functions:

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

At present, there are 25 button types, not including "undefined" which is not a true button type:

Broadcast	Information	Salvo
Chop	Level	Source
Default State	Menu	Source is Master
Destination	Name Set Toggle	Source Preview
Destination Lock	None/All	Source/Destination
Destination Protect	Page Down	Source Shift
Destination Shift	Page Up	Take
Free Source	Panel Lock	
Hold	Previous Source	

In the following function descriptions, the modes in which the functions operate are indicated (to the left) as follows:

S — single-destination mode

B — single-destination mode with breakaway

X — limited X-Y mode

M — multi-destination mode.

All — all modes.

X   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 45 for more information.

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

All   Chop

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

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

The use of the chop function varies according to the operating mode. See Chop on page 47.

S, B, X Default State

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

X Destination

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

S, B, X Destination Lock

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

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

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

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

When you lock a destination, the 'Destination Lock' button goes high-tally red. When you select a destination that is locked, the 'Destination Lock' button goes high-tally red. If you select another destination that is not locked, the 'Destination Lock' button returns to low-tally amber.

▲ If you attempt to take a source to a destination that is locked (or protected by another user), the message "Some levels did not switch" appears in the display.

▲ Locks apply to selected levels in single-destination mode with breakaway.

▲ The NV9607 provides no explicit indication, during operation, whether a destination is locked or unlocked.

S, B, X Destination Protect

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

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

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

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

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

▲ Protects apply to selected levels in single-destination mode with breakaway.

▲ The NV9607 provides no explicit indication, during operation, whether a destination is locked or unlocked.

X   Destination Shift

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

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

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

S, B, X   Free Source

The button selects a pre-defined phantom device that can be used to release or "free" devices on the data (machine control) level. A free source 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.

B, X   Hold

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

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

In limited X-Y mode, this button allows you to perform a gang (or "dub") switch. In hold mode, destination selections are cumulative, and not mutually exclusive. See Hold on page 35.

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

The button definition has no fields to configure.

All   Information

The 'Information' button presents auxiliary information on the alphanumeric display. The information button is inactive (dark) unless there is information to display.

B, X   Level

The button selects a level.

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

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

You must select levels before selecting the source.

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

See also the None/All button function, following.

All   Menu

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

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

By pressing certain buttons, you makes menu selections and enter data (such as panel ID) or change brightness values. When the panel is in menu mode, you must press the 'Menu' button to cycle through the functions of the menu. See <u>Menu Mode</u> on page 49.

The button definition has no fields to configure.

All   Name Set Toggle

A 'Name Set Toggle' (a.k.a. 'Toggle Names') button toggles the panel between its default name set and the system name set (i.e., system mnemonics). Whichever name set you select becomes the "active" name set.

B   None/All

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

All   Page Down

This button scrolls the alphanumeric display *down*. Scrolling is necessary when the number of lines to display is greater than the number of lines available, either 3 or 7 depending on the configuration of the display. The 'Page Down' button becomes enabled when it is possible to scroll down and is disabled when it is not possible.

All   Page Up

This button scrolls the alphanumeric display *up*. Scrolling is necessary when the number of lines to display is greater than the number of lines available, either 3 or 7 depending on the configuration of the display. The 'Page Up' button becomes enabled when it is possible to scroll up and is disabled when it is not possible.

All   Panel Lock

The button prevents accidental changes to the panel settings, especially router crosspoints. When the panel is locked, all buttons becomes disabled (dark) except for the panel lock button which becomes high tally red. When it is not locked, the button is low-tally red.

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

S, B, X   Previous Source

The button presets the previously routed source (or sources under breakaway) to the currently selected destination. This function is useful when you make a route in error.

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

All   Salvo

The salvo button executes a system salvo immediately.

All Source

The button selects a source. The source name appears in the 'Status' display. ***Pressing a source button completes a take unless the panel is in source preview mode.*** In source preview mode, pressing a 'Take' button is required for the completion of a take.

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

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

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

- Multi-destination mode

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

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

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

  See [Multi-Destination Operations](#) on page 44.

All Source is Master

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

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

The 'Source is Master' button is also used to initiate "broadcast" machine control routes. See [Broadcast Routes](#) on page 45.

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 45.

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.

All Source Preview

This button enables or disables source preview mode. In source preview mode, the panel displays the names of a selected source in the 'Preview' column of the display. It is then necessary to press a 'Take' button to complete a take. When source preview mode is off, pressing a source button completes a take.

Source preview mode allows you to be sure of the source you select before the actual take.

Also, when source preview mode is on, all buttons except source buttons, source-related buttons, the 'Source Preview' button, and the 'Take' button are disabled (dark).

To cancel source preview mode, simply press the 'Source Preview' button again. Any pending take will also be canceled and all buttons become active again.

X   Source/Destination

The 'Source/Destination' button selects both a source and a destination.

All   Source Shift

The 'Source Shift' button toggles between the first and second sets of sources.

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

All   Take

This button performs a take when a panel is in source preview mode (i.e., it has a 'Source Preview' button and it is high-tally).

When the panel is not in source preview mode, any take button is disabled and dark.

When the panel is in source preview mode, the take button is dark until you select a source. Then the take button turns low-tally red and the source name appears in the 'Preview' column of the display. After you press the take button, the button goes dark again.

To cancel a pending take, press the 'Source Preview' button again. The panel will exit source preview mode.

In MD mode, a take button switches the preset source device(s) to the selected destination device(s) on all levels.

In the other modes, a take button routes the preset source device(s) on selected levels to the selected destination device.

All   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 NV9607 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) the current destination. Press the button again to release the lock (or protect). (Note that destination locks and protects are not available in MD mode.)

When a destination is locked, its button is red.

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

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

Locks and Protects with Breakaway

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

1 Verify that the default destination appears in the 'Destination' field of the display.

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

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

4 Select the levels you want to lock or unlock. Selected levels are high-tally. If your panel has a 'None/All' button, you can use it to select either no levels or all levels.

5 Press a 'Destination Lock' button.

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

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

Takes

Pressing a source button completes a take, in any mode, unless source preview mode is active. In that case, it is necessary to press a 'Take' button to complete the take. Following are brief instructions on how to perform a take under 4 cases.

Case 1 — Single-Destination Mode

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

1 Verify that the default destination appears in the 'Destination' field of the display.

If the 'Destination' field does not show the default destination, of course, a problem exists. Usually that is because the panel was not configured with a default destination, but it is also possible that the destination was removed from the NV9000 system. Either of these conditions is rare and the remedy will depend on your system.

2 If source preview mode is off, press a source button to complete the take. (Optionally press 'Source Shift' to toggle between the two source sets.) The 'Status' field of the display shows the source you chose.

3 If source preview mode is on, press a source button. (Optionally press 'Source Shift' to toggle between the two source sets.) The 'Preview' field of the display shows the source you chose and the take button turns red. If that is the correct source, press a 'Take' button. If it is not the correct source, you can press another source and then press a 'Take' button.

Case 2 — Single-Destination Mode, Breakaway

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

1 Verify that the default destination appears in the 'Destination' field of the display.

2 Press one or more level buttons to selected the levels you want to route. The levels that are available are those of the default destination. If your panel has a 'None/All' button, you can press that button to toggle between all levels being selected and no levels being selected.

3 If source preview mode is off, press a source button to complete the take. (Optionally press 'Source Shift' to toggle between the two source sets.) The 'Status' field of the display shows the source you chose.

4 If source preview mode is on, press a source button. (Optionally press 'Source Shift' to toggle between the two source sets.) The 'Preview' field of the display shows the source you chose and the take button turns red. If that is the correct source, press a 'Take' button. If it is not the correct source, you can press another source and then press a 'Take' button.

▲ A take is all-level when all the level buttons are selected (high-tally) or when none of the level buttons are selected.

▲ If your panel has a 'Hold' button, you can use it to preserve the chosen breakaway levels after the take. Hold "mode" is active when the hold button is high-tally. When hold mode is inactive, the destination reverts to all levels after the take.

Case 3 — Limited X-Y Mode

Takes in limited X-Y mode can be all-level or on selected levels. Breakaway is permitted.

Follow these steps:

1 Optionally press 'Destination Shift' to toggle between the destination pages.

2 Press a destination button to start the take. The 'Destination' field of the display shows the destination you chose.

3 Optionally press 'Source Preview' to turn on source preview mode.

4 If source preview mode is off, press a source button to complete the take. (Optionally press 'Source Shift' to toggle between the source sets.) The 'Status' field of the display shows the source you chose.

5 If source preview mode is on, press a source button. (Optionally press 'Source Shift' to toggle between the source sets.) The 'Preview' field of the display shows the source you chose and the take button turns red. If that is the correct source, press a 'Take' button. If it is not the correct source, you can press another source and then press a 'Take' button.

Case 4 — Multi-Destination Mode

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

6 Optionally press 'Source Preview' to turn on source preview mode.

7 If source preview mode is off, press a source button to complete the take. (Optionally press 'Source Shift' to toggle between the source sets.) The 'Status' field of the display shows the source you chose and the 'Destination' field of the display shows the destination assigned to that source button. You might have to scroll the display to locate the destination (and its source).

8 If source preview mode is on, press a source button. (Optionally press 'Source Shift' to toggle between the source sets.) The 'Preview' field of the display shows the source you chose and the take button turns red. If that is the correct source, press a 'Take' button. If it is not the correct source, you can press another source and then press a 'Take' button. You might have to scroll the display to locate the destination (and its pending source).

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

Multi-Destination Operations

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

Potentially, all 116 buttons of a NV9607 could be source buttons, each having a unique destination. Thus, at that extreme, a panel in multi-destination mode could represent 116 destinations and give operators the choice of two sources for each destination.

A more typical multi-destination configuration will present fewer destinations, organized in button clusters on the panel. This organization, for example, provides 12 destinations and up to 16 sources available for each one, with 20 buttons assigned to other functions:
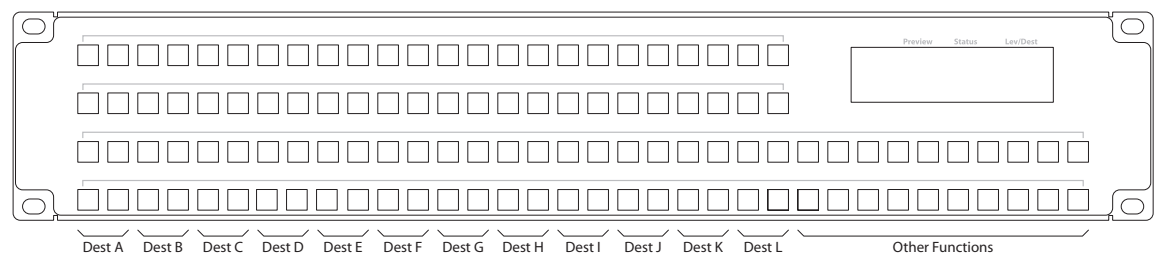
As another example, this organization provides 6 destinations and up to 32 sources available for each one, again with 20 buttons assigned to other functions:

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

To perform a take, simply select a source. You might need to press a source shift button to make available the source you want. The take occurs immediately when source preview mode is off. When the panel is in source preview mode, it is necessary to press a 'Take' button to complete the take.

When you press a source button, the selected source appears next to the destination in the display. In source preview mode, the source name appears in the 'Preview' column until you press 'Take' At that point, the source moves to the 'Status' column (for the destination) and disappears from the 'Preview' column.

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 (and elsewhere).

Further, your panel can have a 'Name Set Toggle' buttons that allows you to switch between the "default" name set and the system mnemonics. 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.

Name sets are defined in NV9000-SE Utilities under the 'System Management' page. See the appropriate section in the *NV9000-SE Utilities User's Guide*.

See also

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 limited X-Y mode only.

▲ "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 step 3 to connect additional slave destinations.

5 To remove one slave from the group, turn off 'Broadcast' and route a source to it that is not the master (e.g., the free source). This new device must have a machine control connection.

6 To clear the entire broadcast route, turn off 'Broadcast' and select the master device as the destination in a new route. (We recommend that you use the free source as the new source). The entire broadcast route is cleared, and data connections are removed from all slaves.

Important Points

- After you perform the complete take, you must start the playback of the source device manually.

- The panel provides no way to determine which devices belong to the "broadcast group." You must keep track of this yourself.

- If another operator takes either your master device or the first slave device, the entire broadcast group collapses. Any other slave can be removed from the group, however, without collapsing the entire group. Only the primary pair is critical to the group's integrity.

Data Routing

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

Automatic Data Routing

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

This option applies in all operating modes.

Manual Data Routing

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

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

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

Semi-Automatic Data Routing

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

This option applies in all operating modes.

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

> If the source device is in use, the 'Status' display shows "Src Used" and the destination display shows "Retry?"

> If the 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.)

Case 1 — Single-Destination Mode with or without Breakaway

1 Select a source.

2 Examine the display.

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

Case 2 — Limited X-Y Mode

1 Select a destination.

2 Select a source.

3 Examine the display.

4 If the destination display shows "Retry," press the source button again to complete the take. The take will time out if you do not press the source button.

Case 3 — Multi-Destination Mode

1 Press a source button.

2 Examine the display.

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

Chop

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

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

Follow these steps:

1 Verify that the default destination appears in the 'Destination' field of the display.

2 Select a source. This is the first source.

3 Press the chop button.

4 Select another source. This is the second source. The chop is immediately activated on the routers (of the default destination) that support chop.

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

Case 2 — Limited X-Y Mode

Follow these steps:

1 Select a destination. The 'Destination' field of the display shows the destination you chose.

2 Select a source. This is the first source.

3 Press the chop button.

4 Select another source. This is the second source. The chop is immediately activated on the routers (of the default destination) that support chop.

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

Case 3 — Multi-Destination Mode

Follow these steps:

1 Select a source. This is the first source.

2 Press the chop button.

3 Select another source that *uses the same destination* as the first. This becomes the second source for the chop. The chop is immediately activated on the routers (of the default destination) that support chop.

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

Menu Mode

The NV9607 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 Submenu
- User ID
- Software versions
- 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 Submenu, following.

Main Menu

The main menu appears first when you press the menu button:
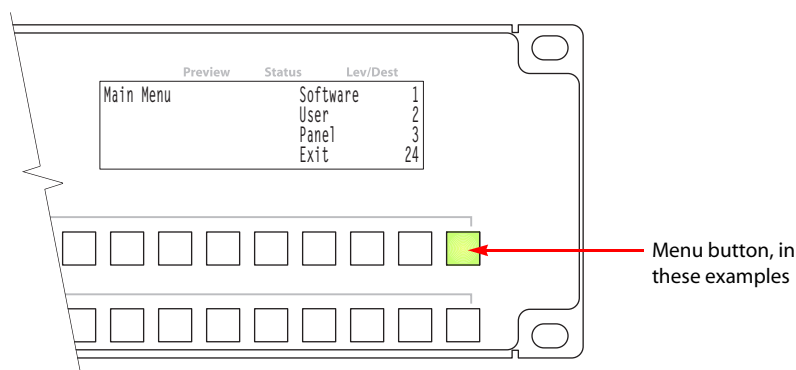
The menu identifies 3 submenus that you can select by pressing buttons 1, 2, or 3. If you press button 24, the panel will leave the menu and return to normal mode. The buttons are easy to locate because they are illuminated. This shows their location:
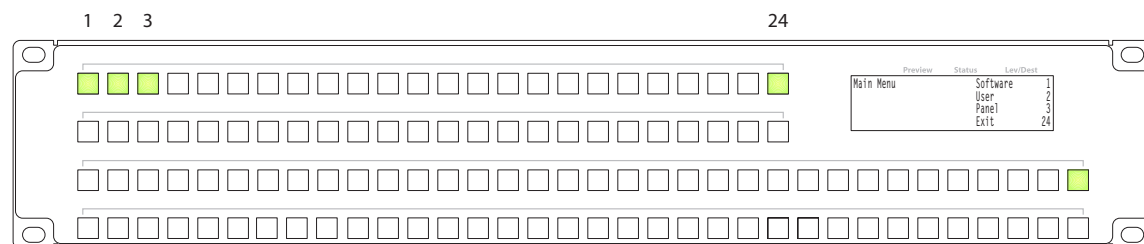
Press 1 to get the software menu.

Press 2 to get the user menu.

Press 3 to get the panel menu.

Software Submenu

The software submenu appears when you press button 1 under the main menu:
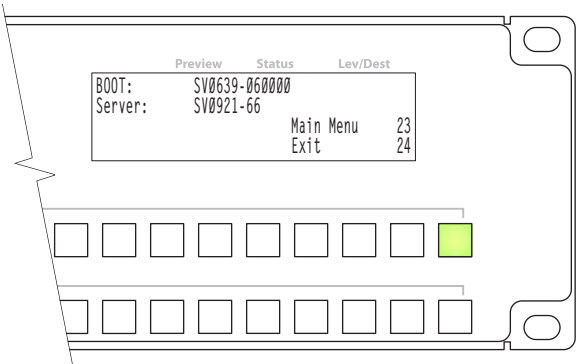
The software menu is for viewing only. Press button 23 to return to the main menu or button 24 to exit menu mode:
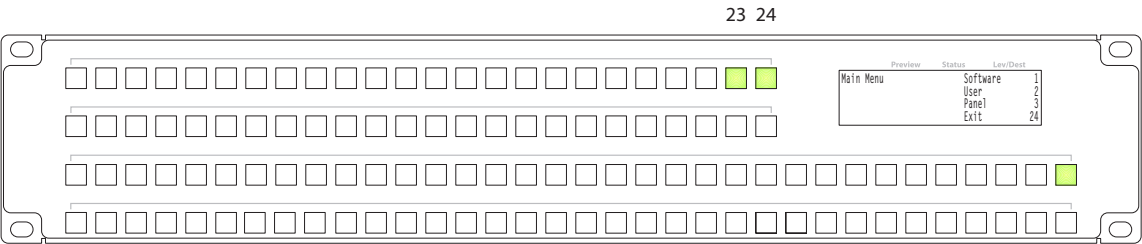
User Submenu

The user submenu appears when you press button 2 under the main menu:
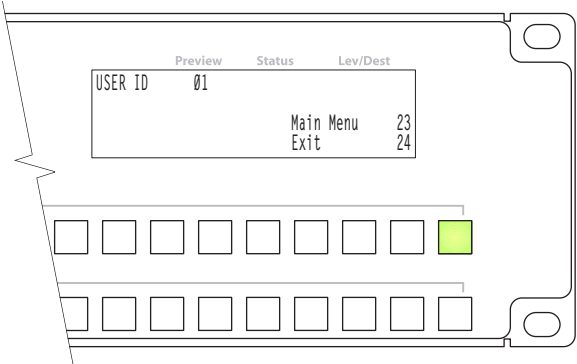
The user menu is also for viewing only. Press button 23 to return to the main menu or button 24 to exit menu mode.

Panel Submenu

The panel submenu appears when you press button 3 under the main menu:
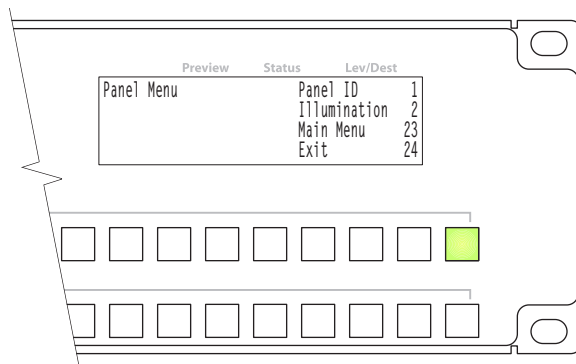
The panel menu presents 2 additional submenus:

- Panel ID. (Press button 1.)
- Button illumination. (Press button 2.)

Press button 23 to return to the main menu or button 24 to exit menu mode.

Panel ID Submenu

The panel ID submenu appears when you press button 1 under the panel menu:
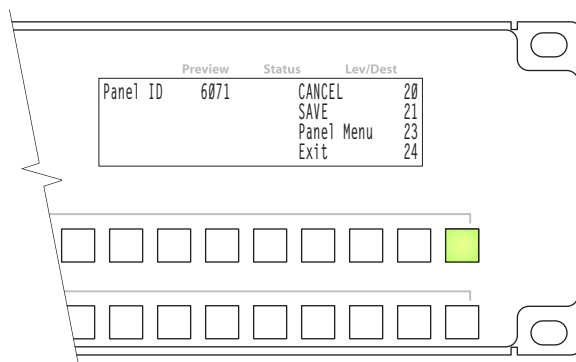
The panel ID menu shows the current panel ID and allows you to change the panel ID using a "numeric keypad" comprising the top left 10 buttons. In addition, buttons 20 and 21 act as 'Cancel' and 'Save' buttons:
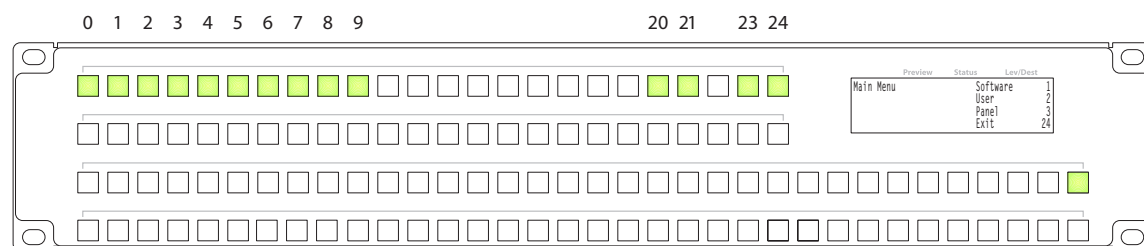
Note that the numeric keys range from 0 (at the left) to 9.

Press button 20 to cancel the new panel ID; press button 21 to save it.

Press button 23 to return to the panel menu or button 24 to exit menu mode.

Illumination Submenu

The illumination submenu appears when you press button 2 under the panel menu:
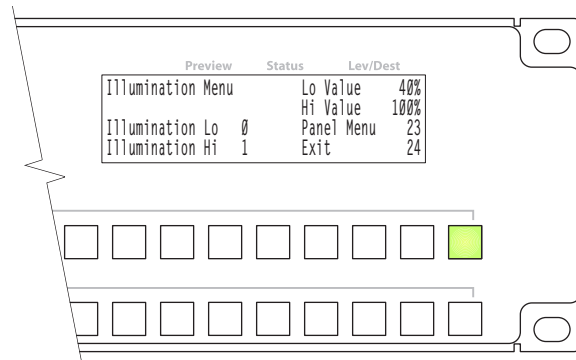
These are the buttons involved:
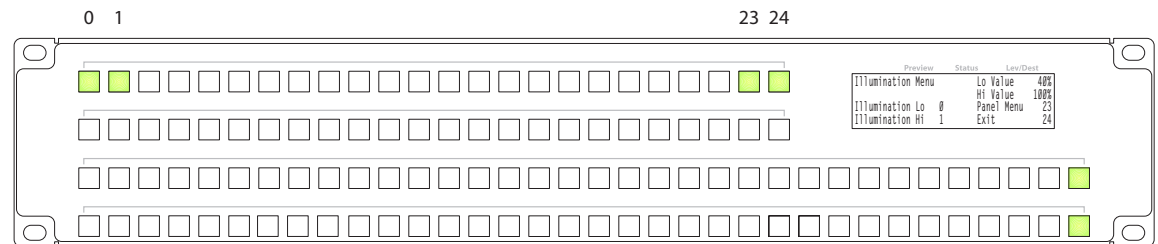
Button 0 (at the far left) represents the low illumination level. Button 1, to its right, represents high-tally illumination. Press button 0 to select low illumination; press button 1 to select high illumination. When you press either of these buttons, the bottom two rows of buttons illuminate to show you the illumination level currently selected.

The right-most two buttons increase and decrease the selected illumination level by 10%. The default low level is 40% and the default high level is 100%. These buttons remain disabled until you select either low illumination or high illumination.

When you are satisfied with the illumination level you have chosen, press button 23 to return to the panel menu or button 24 to exit from the menu.

Setup Mode

Setup mode occurs when the NV9607 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:
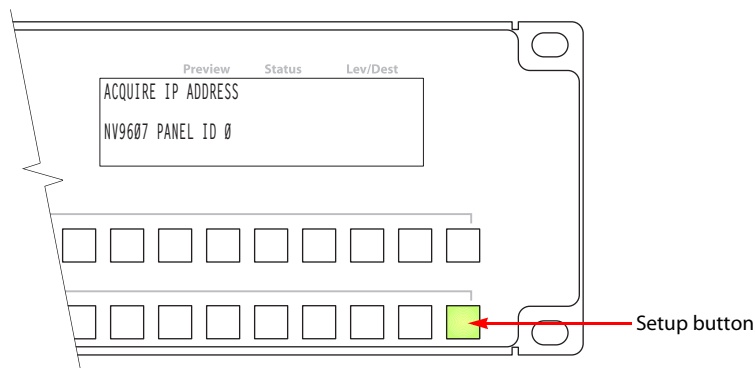
Press the setup button to proceed to the first part of setup which is to set the panel ID:
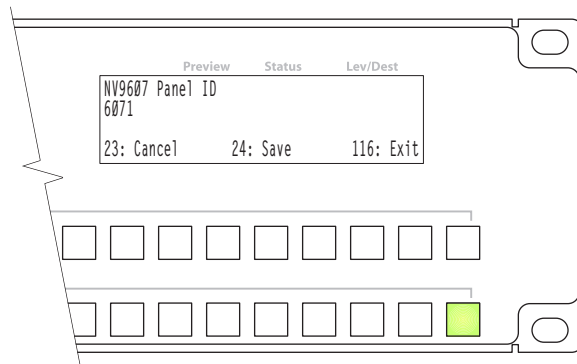
These are the buttons that apply:
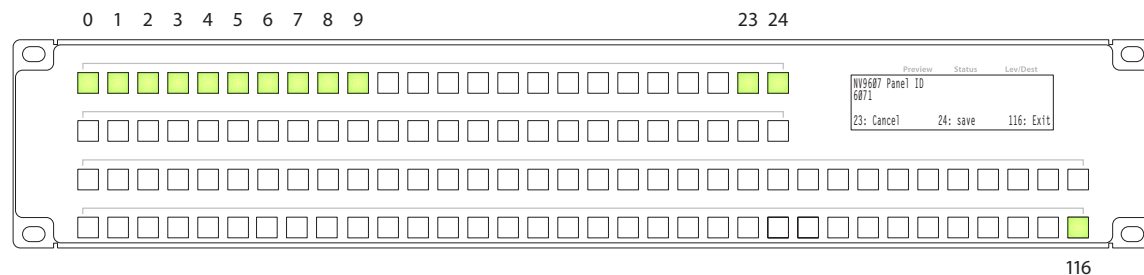
The panel now allows you to enter the panel ID using buttons at the top left that function as a numeric keypad. The buttons range from 0 (at the left) to 9.

Press button 23 to cancel your entry; press button 24 to save the new panel ID.

Press button 116 (the setup button) to proceed to the next part of setup.

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

Following the panel ID is the display of the software version:
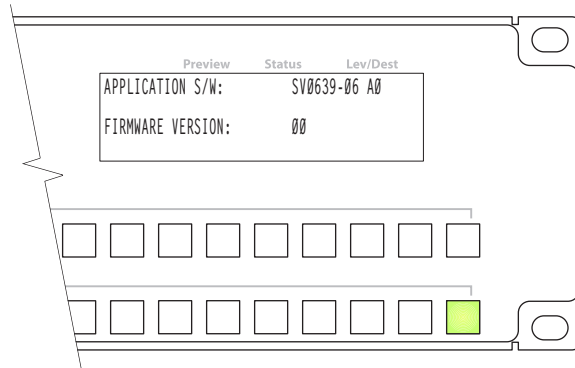
This is a view-only menu; you cannot change the values.

Press the setup button to proceed to the character test:
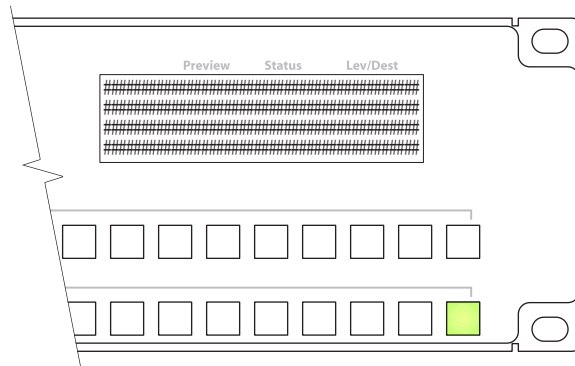
In this test, all the characters should display as pound signs (#).

Press the setup button to proceed to the color test. This test has 6 parts:

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

To proceed through this test, press the setup button (still in the same place although it is now changing color) 5 more times.

Finally, you will reach the button test:
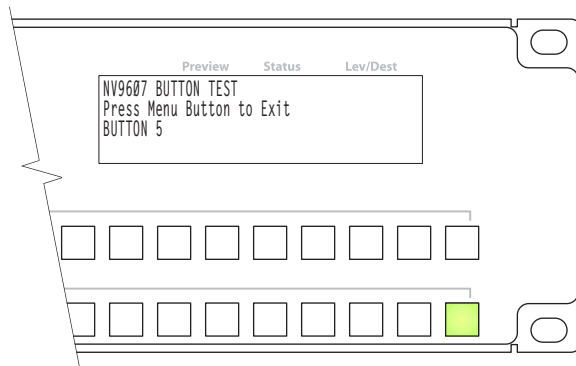
Press any button to test it. The button will flash a few times rapidly and the button number appears in the display. Continue to test any other buttons you want to test.

Pressing the setup button (i.e., button 25) will terminate the button test and return you to the initial display of setup mode. At this point — if you have a assigned your NV9607 a suitable panel ID — you may connect your NV9607 to the panel network of your NV9000 system.

5. Operation

Setup Mode

6. GPIO

Chapter 6 provides information about the tally (GPIO) interface. It discusses the following topics:

- The Interface
- GPIO Configuration Concepts
- Configuring Outputs
- Configuring Inputs

The Interface

The tally interface includes 8 optically isolated inputs and 4 solid-state relay outputs (also optically isolated). Tally devices you connect to inputs can trigger events—through the NV9607—in the router control system. The router control system can trigger events that—through the relays in the NV9607—switch your tally devices.

The DB25 connector, labeled "GPI Interface" at the rear of the NV9607 presents the tally signals. There are 8 input signals and 4 pairs of output signals.
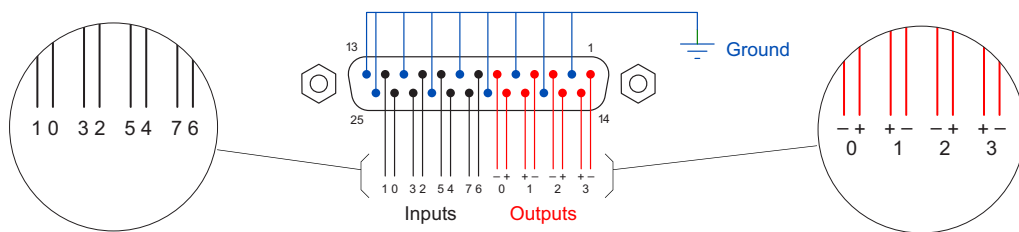
Figure 6-1. GPI Interface

Input

The tally inputs expect contact closure to ground, through the ground pins on the connector, to trigger a GPI input event.
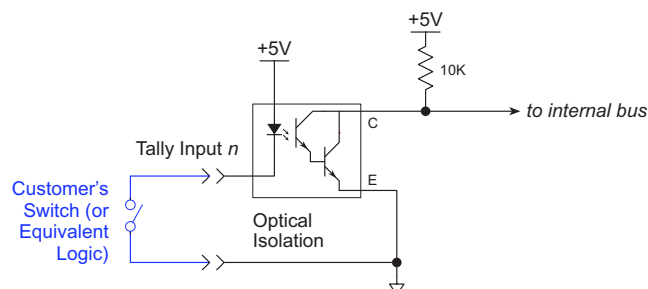
Figure 6-2. GPI Input

When the input transitions off or transitions on, the NV9607 notifies the router control system, which carries out the task defined for the input (if a task has been configured).

During contact closure, a current of 1.2 mA flows. A maximum of 48 VDC can be applied to the tally input for less than 5 seconds without failure. No voltage above 5 VDC should be continuously applied.

Output

A tally output is a solid state relay (no audible click) with a maximum resistance of $10\,\Omega$ and current capability of 150 mA. It can withstand 200 VAC.
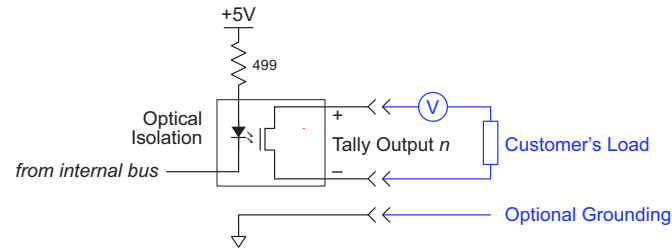
Figure 6-3. GPI Output

When a condition (defined for the relay) occurs, the router control system notifies the NV9607 which then opens or closes the relay. The relay switches the customer's circuit on or off. (It does not power the circuit. Customers must provide their own power.)

GPIO Configuration Concepts

These are the I/O characteristics of the NV9607's tally interface:

- Eight optically isolated inputs (sometimes called GPIs) that can be configured to trigger an event when the input transitions from off to on and to trigger another event on a transition from on to off. Events include:
  - Execute a salvo.
  - Route the "previous source" switched by *any* panel to a destination.
  - Route the "previous source" switched by *this* panel to a destination.
  - Route a source to a destination.
- Four relays that can be configured to switch on a number of conditions:
  - One or more routes occurring on specific levels.
  - Conditions involving output ports (destination, level).
  - A transition on one or more of the panel's tally inputs.

The GPIO Section of the NV9607 Page

SE's NV9607 configuration page provides a GPIO section, below the tree window:
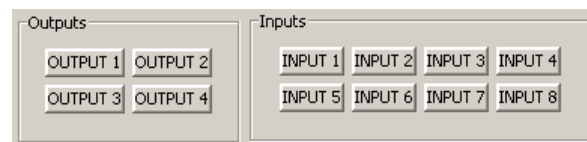
Click on a button under 'Outputs' to configure one of the 4 tally outputs.

Click on a button under 'Inputs' to configure one of the 8 tally inputs.

▲ There are no actual GPIO *buttons* on the NV9607 control panel.

Configuring Outputs

Clicking an output button (one of 4) displays a "Relay Rule" dialog for the output:
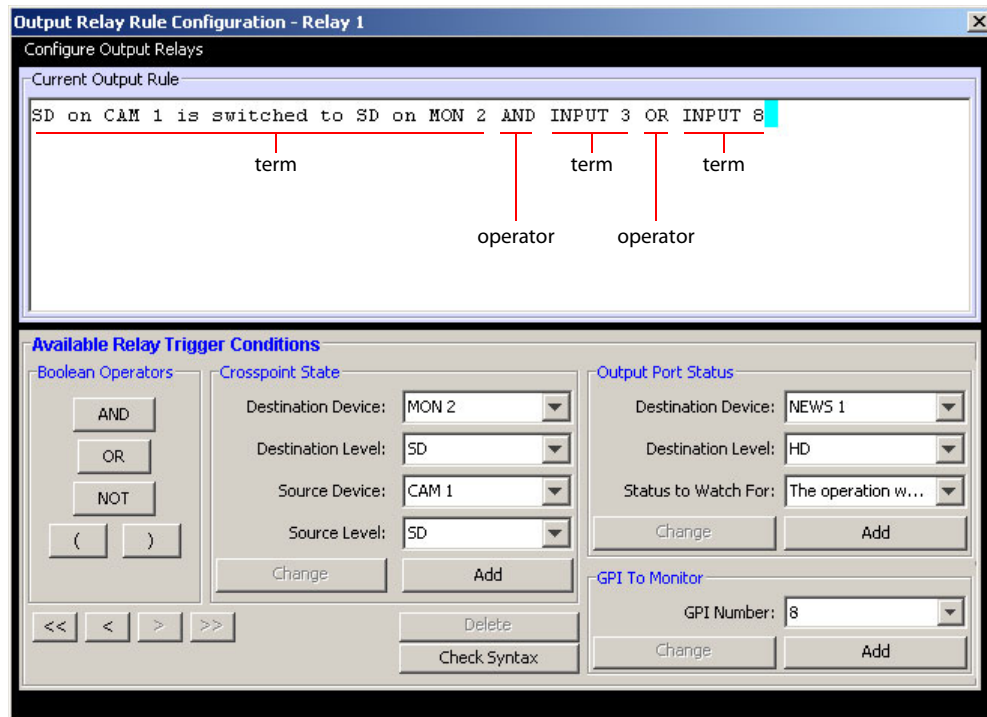
Figure 6-4. Relay Rule Dialog

In this dialog, you create a Boolean expression involving sources destinations, port status, and GPI (input) status. When the conditions of the Boolean expression are met (i.e., the expression is "true") the relay closes. When the conditions are not met, the relay opens. Figure 6-4 shows one such Boolean expression.

Boolean expressions comprise *terms* and *operators*. The operators include those indicated on the left: AND, OR, and NOT. Expressions can be parenthesized to control the order of evaluation. Operator precedence is normally NOT > AND > OR. All parenthesized expressions are evaluated first; expressions in nested parentheses are evaluated before those in outer parentheses.

Terms (i.e., operands) are generated by choosing entries in the other fields in this dialog and clicking 'ADD'. The example shows the following:

Dest. Device: MON2   Dest. Level: SD
Source Device: CAM1   Source Level: SD

Choosing these items (and clicking ADD) produces the Boolean sub-expression:

```
SD on CAM1 is switched to SD on MON2
```

In Figure 6-4, that sub-expression is ANDed with another sub-expression

```
INPUT 3 OR INPUT 8
```

The relay will turn on when the *entire* expression is true. That is, when the switch occurs and either of the inputs (3 or 8) transitions from off to on.

(To allow a relay to switch when an input transitions from on to off, precede the input term by "NOT." For example, the expression

```
INPUT 3 OR NOT INPUT 8
```

will evaluate TRUE when either input 3 goes on or input 8 goes off.)

You can also include one or more sub-expressions regarding the state of output ports. You must choose a entry in the drop-down menu. These are the choices:

The operation was successful	Destination port locked
Destination port protected	Router offline / unavailable
No tieline available	Used as master point to point
Used as master without responses	Used as broadcast master
Used as slave point to point	Used as slave without responses
Used as broadcast slave	

As an example, choosing 'Used as broadcast slave', device VTR3, and level CTRL for output port status produces the sub-expression:

```
CTRL on VTR3 has status of 'Used as broadcast slave.'
```

which you can combine with other sub-expressions as you require.

The actual logic takes place in the router control system, based on the state of the NV9607 inputs and other system-wide events. The router control system sends signals to the NV9607 instructing it to open or close its relays.

Four arrow buttons at the lower left corner of the relay dialog allow you to traverse the expression you are building:
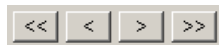
The left double arrows highlights the first term or operator in the expression. The right double arrow positions you at the very end of the expression where you may add more items.

The single arrows select and highlight the previous or next terms, operators, or spaces between terms and operators. If you wish to change a term, you may highlight it, reconstruct the term in the appropriate entry fields, and click the 'Change' button to effect the change.

Using the arrows is the only way to position between two items or at the end of the expression. You can double-click a term or an operator to select it directly.

You can click 'Check Syntax' to evaluate the syntax of your complete expression. Generally, an syntax error will have occurred because you forgot an operator between terms or you have an extra operator at the end. You can click 'Delete' to delete a selected term.

This is a summary of Boolean operations:

All operands evaluate either TRUE or FALSE.
AND = true if ALL terms are true; false if ANY term is false.
OR = false if ALL terms are false; true if ANY term is true.
NOT = true if term is false; false if term is true (i.e., negation).

▲ Relay output expressions can be as rich (or complex) as you require.

Configuring Inputs

Clicking an input button (one of 8) displays the GPI input dialog:
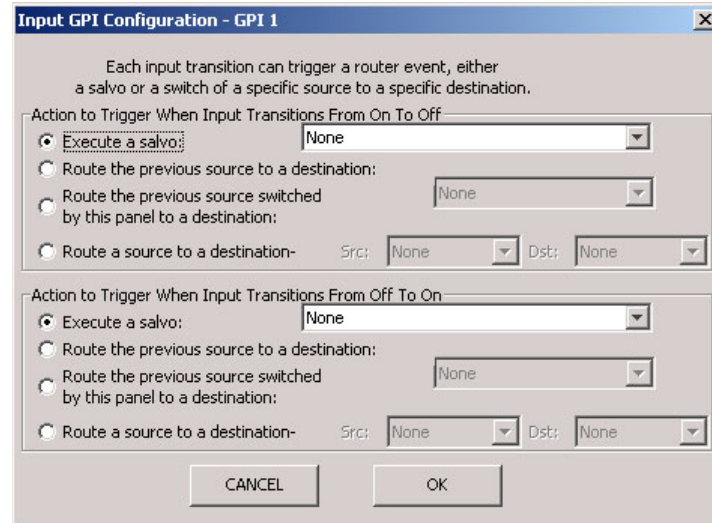
An event is signalled when a transition occurs on the input from on to off or from off to on. You can configure the NV9607 to recognize either occurrence on any of the 8 inputs, and specify one of 4 behaviors for each event or both:

1 Execute a salvo.

If you choose this behavior, select a salvo ID in the salvo drop-down list.

Note: Although it is not evident in the GPIO input dialog (or anywhere else), a 'Previous Source' command in a salvo chooses the most recent source that is *different* from the current source (for a designated destination).

2 Route the "previous source" (that was switched by *any* control panel) to a destination, even if it is the same as the current source.

If you choose this behavior, select a destination in the destination drop-down list.

3 Route the "previous source" switched by *this* panel to a destination, even if it is the same as the current source.

If you choose this behavior, select a destination in the destination drop-down list.

4 Route a source to a destination.

If you choose this behavior, select a source and a destination in the two drop-down lists.

GPIO Summary

The NV9607 has 4 relays that can switch on or off your external devices, based on (1) NV9607 input transitions and (2) events in the router control system.

Its 8 inputs can be switched on or off by your external devices. When an input transitions on or off, the NV9607 can respond with one of 4 actions, such as executing a salvo. (It is the system that actually executes the salvo.)

6. GPIO
Configuring Inputs

7. Technical Details

Chapter 7 provides electrical and mechanical specifications for the NV9607. It discusses these topics:

- Power Specifications
- NV9607 Specifications
- Environmental Specifications
- Defaults
- Drawings

Power Specifications

Table 7-1 provides power specifications for the NV9607 control panels.

Table 7-1. NV9607 Power Specifications

Specification	Detail
DC power	External power supply: 12 VDC ± 10%, 5 A.
Power consumption	≤ 21 W
Regulatory	UL listed and CE compliant.

Table 7-2 provides specifications for the PS0001 power supply.

Table 7-2. Power Supply Specifications

Specification	Detail
AC power	90–264 VAC (127–300 VDC), 47–447 Hz. 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.
DC power	≤ 60 W, 12 VDC, 5 A (5.4 A peak), Regulation ± 2%. Ripple ≤ 120 mV.
Efficiency	Efficiency > 80% at full load typical, 115 VAC.
Weight	1.085 lb (0.492 kg).
Regulatory	UL Listed and CE Compliant.

The power supply is an Miranda PS0001-00:

2.39
[60.7]

5.24
[133.0]

Indicator LED

1.62
[41.0]

AC Input
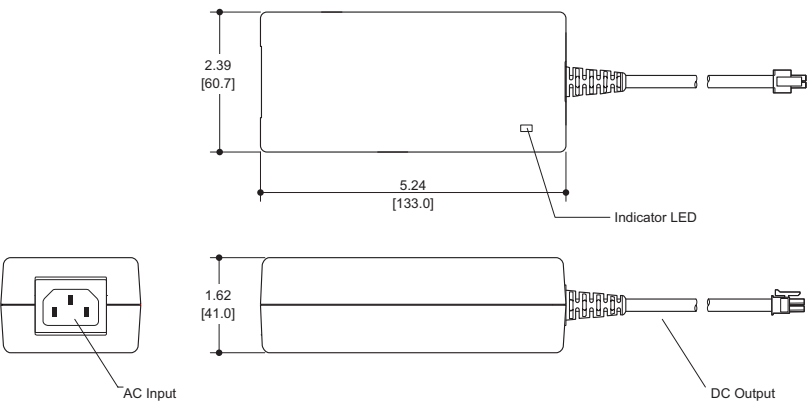
DC Output

Figure 7-1. The power output has Molex 4-pin plug. See Power Cord Retention on page 71.

NV9607 Specifications

Table 7-3 provides specifications for the NV9607.

Table 7-3. NV9607 Physical Specifications

Specification	Detail
Dimensions	Height: 1.72″ (43.7.9 mm), fits EIA 1 RU (1.75″ or 44.5 mm), Width: 19.0″ (482.6 mm). Depth:1.52 ± 0.01″ (38.6 mm), enclosure, 1.90″ (48.3 mm) overall. Requires approximately. 3″ cable clearance.
Weight	2.53 lb (1.147 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:

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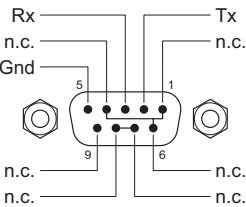
Pins 1, 4, and 6 are tied together and pins 7 and 8 are tied together. None of those pins are connected to any circuitry.

Environmental Specifications

Table 7-4 provides environmental specifications for the NV9607.

Table 7-4. NV9607 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 NV9607 configuration has no buttons defined. The default panel options are:

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

DHCP

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

Drawings

The drawings on the following pages provide overall and critical dimensions.
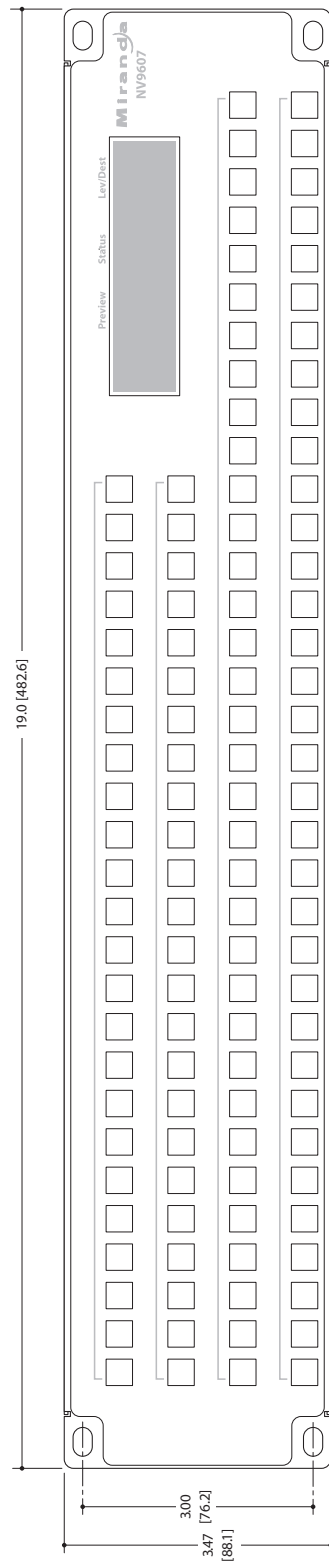
Figure 7-2. Front View of the NV9607

7. Technical Details

Drawings
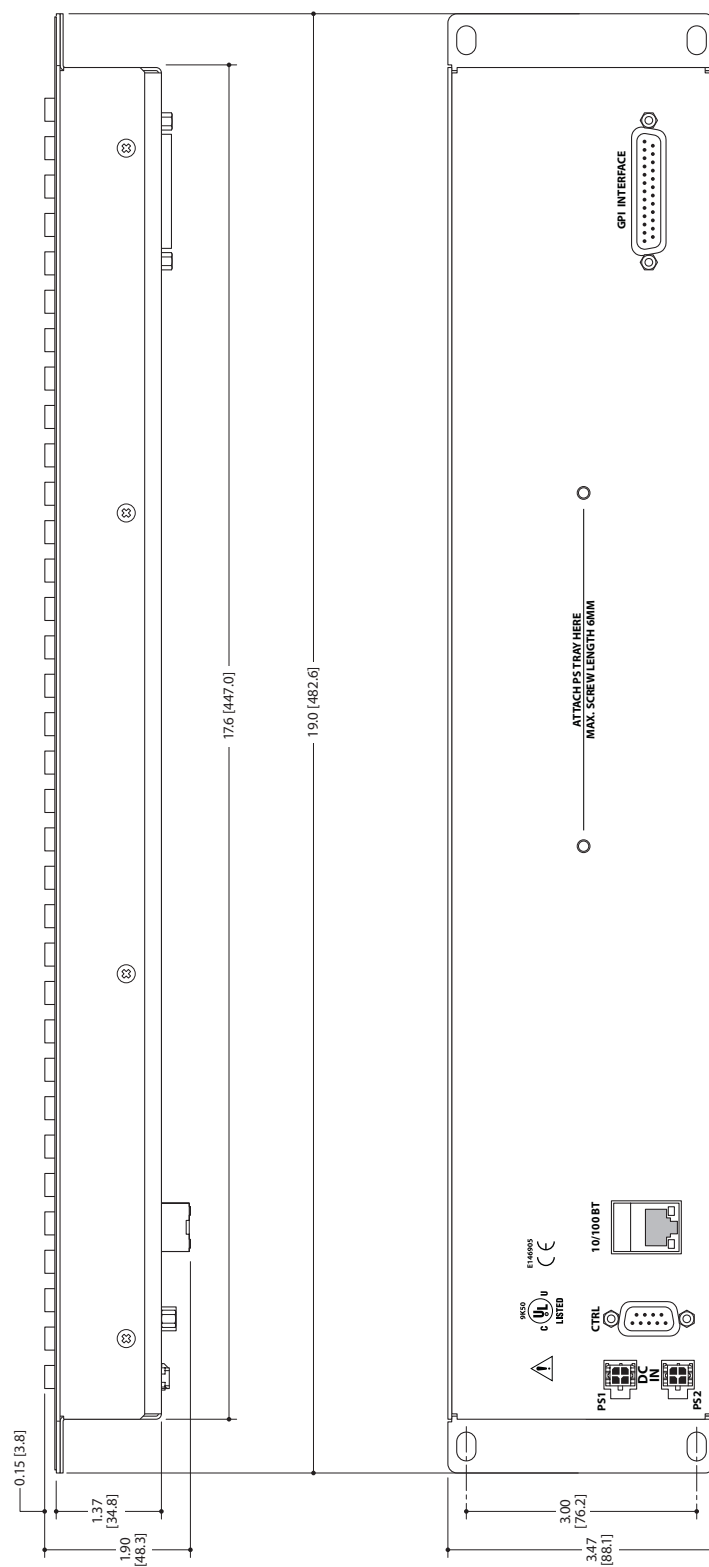
Figure 7-3. Top, and Rear Views of the NV9607

8. Misc. Topics

Chapter 8 provides the following:

- Glossary
- Power Cord Retention

Glossary

AES/EBU	(Audio Engineering Society/European Broadcasting Union). AES and EBU are standards organizations.
Breakaway	A condition where a destination has multiple sources on different levels.
Category	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 NV9607 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 NV9607 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 NV9607's tally interface. The tally interface is called the "GPI Interface" at the rear of the NV9607.
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 per-

	form 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 a 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 admin-istrator	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 a control 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.

Power Cord Retention

Use the supplied retention strap to keep the AC power cord firmly connected to the power supply. Follow these steps to use the strap:

1 Firmly insert the AC power cord into the power supply. Examine the last figure in this section to see how the strap should be applied.

2 Placed the Velcro retention strap, fuzzy side up, on top of the power supply with the buckle loop approximately 1 inch from the AC input side and the remaining strap around the cord end and down:

3 Holding the buckle in place, lift the strap up and around the cord end so the strap overlaps itself:

4 Holding the buckle loop in place, route the strap around the back of the supply diagonally across so that it sticks out on the left below the output cord:

5 Continue the strap around toward the buckle loop and through the loop. Cinch the strap tightly. While keeping tension, place the 2 inch strap end (with Velcro loops) down on the fuzzy part to complete the process:

6 Examine the strap though its path around the cord and power supply. Be sure that no slack exists and that it is tight the full length of the strap. If necessary, adjust and cinch it more tightly.

8. Misc. Topics
Power Cord Retention

Index

Index

Index

Index