NV9606
Control Panel

User's Guide

NV9606 Control Panel — User's Guide

- **Revision**: 1.0

- **Software Version**: 6.0.8

- **Part Number**: NV9606

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 # UG0044-00

• Software version: 6.0.8

Rev	Date	ECO	Description	Approved By
1.0	18 Aug 10	17186	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.

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1. Preface

Chapter 1 is an introduction to the NV9606 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 NV9606 Control Panel:

- Chapter 1, Preface, (this chapter) outlines ways to use this guide.
- Chapter 2, Introduction, provides a functional description of the NV9606.
- 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, describes the tally (a.k.a. GPIO) interface and tells you how to configure it.
- 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 NV9606 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 NV9606. It presents these topics:

Summary

The NV9606[1] is a 1RU control panel, about 1.92″ deep, overall. It has 68 backlit function buttons.

The panel is organized as shown in figures 2-1 and 2-2:
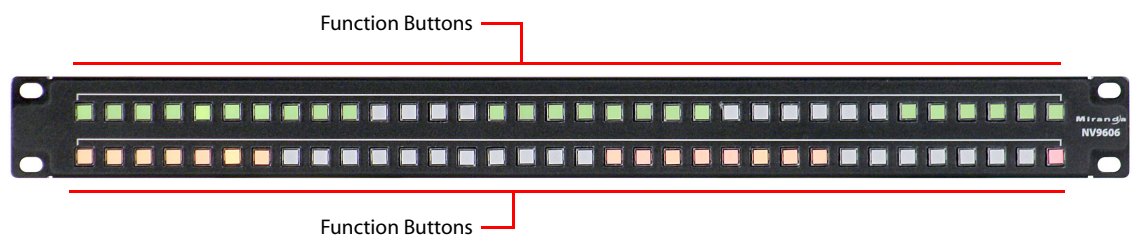
Figure 2-1. NV9606 Front

The NV9606 can operate either by itself as a stand-alone panel or as a extension of an NV9607 control panel.

When the panel is stand-alone, the function buttons are limited: an operator can select sources and destinations or execute salvos. When the panel is used as an NV9607 extension, the set of functions is approximately that of the NV9607. As an extension to an NV9607, it can operate in any of the 4 modes configured for that particular NV9607. See Modes of Operation, following.

The sets of functions differ in the different operating modes.

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

Figure 2-2. NV9606 Rear

You connect the NV9606 to the NV9000 system using the Ethernet connector.

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

The NV9606 uses external PS0001 power supplies. One will suffice. Two provide redundancy.

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1   An equivalent NV9606V — a GUI that is called a "virtual panel"— is available. It emulates the NV9606.

The GPIO connector supports the panel's GPIO functions: 4 outputs and 8 inputs. See GPIO on page 39.

Panel Organization

Function Buttons

The NV9606 has 2 rows of 34 function buttons. The total is 68 function buttons. The set of buttons differ in each of the 4 operating modes. (See Modes of Operation, on page 5.)

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

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

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 NV9606 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.

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2 The NV9606V (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.

Modes of Operation

By itself, the NV9606 operates in a very limited X-Y mode.

As an NV9607 extension, the NV9606 can operate in any of the modes configured for the NV9607.

- 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 for both the NV9606 and the NV9607. The operator cannot switch between different modes.

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 the corresponding NV9607 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. 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 the corresponding NV9607 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 the corresponding NV9607 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, it would be possible to route to 116 destinations. The typical configuration would have fewer destinations.

Pressing a source button completes a take unless the corresponding NV9607 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

The NV9606 of itself has no secondary modes.

The NV9606 has a limited self-test capability, but no setup mode in which to change its panel ID. To change the panel ID, you must use NV9000-SE Utilities. See Setting the Panel ID on page 9.

Other NV9606 Functions

By itself, the NV9606 can be configured to perform two additional functions:

- Previous source.
- System salvos.

As an NV9607 extension, the NV9606 can be configured to perform the following additional functions:

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

3. Installation

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

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

Package Contents

If you have ordered one or more NV9606 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 NV9606 items that can ship include:

- One or more NV9606 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 NV9606 (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 NV9606 control panel:

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

The NV9606 is designed to mount in a 19″ rack. Rack-mounting is not a requirement.

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.

2 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 45 for details on the PS0001 power supply. See also Power Cord Retention on page 53.

Installing Software and Documentation

This document is available through the Miranda web site.

You must use NV9000-SE Utilities to configure the NV9606 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 NV9606 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

Your NV9606 will go through a brief initialization sequence as it starts up.

If your panel has been configured and has a panel ID, it will reach its operating state in a few seconds. The panel will exhibit a moving pattern of green button illumination as it starts up. If the panel ID is wrong (or has never been set), the two buttons at the top left will light:
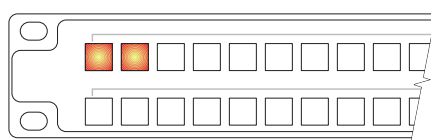
Otherwise, if all is well, the panel buttons will illuminate as they have been configured.

If there are errors, certain buttons will turn red, indicating a panel error. These are the potential panel errors:

Error	Solution
The panel is disconnected from the NV9000. (The lower left button is red.)	Make sure that the panel is connected to an Ethernet switch that supports 10baseT and that the Ethernet switch is connected to the NV9000's panel and router net.
The panel has a panel ID already assigned to another panel. (The two top left buttons are red.)	Set the panel ID in NV9000-SE Utilities.

You can now prepare an NV9606 configuration in NV9000-SE Utilities and upload the configuration to the NV9606. You need a panel ID to create a NV9606 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.

Setting the Panel ID

▲ It is not possible to set the panel ID of an NV9606 at the panel itself. You must use NV9000-SE Utilities to set the panel ID.

Follow these steps to set the panel ID.

1 If you have more than one NV9606 to set up, choose one of them.

2 Apply power to the panel. Connect one panel to the appropriate panel/router network of your NV9000 (or NV915) system.

3 In NV9000-SE Utilities, click 'System Management' in the navigation pane. Click the "+" sign next to the icon for the applicable system in the 'System management' tree at the left. Doing that expands the information "tree" associated with the system. Then click the 'Control Panels ...' entry in the tree.

The control panels page appears:

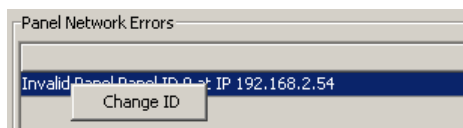Panel Error → Message
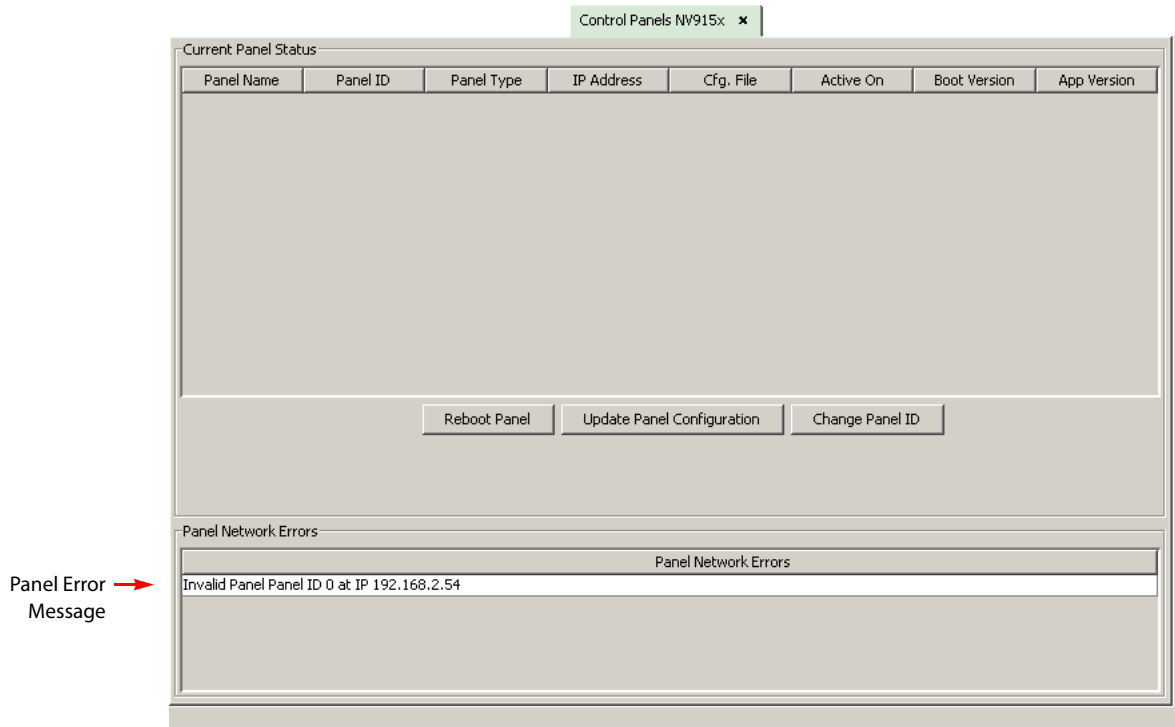
4 Observe the 'Panel Network Errors' list in that window. You should see a network error message for the NV9606 you have connected.

This example shows a panel ID of 0. Usually, NV9606 panels from the factory have an ID of 0.

5 Right-click that list entry. You will get a 'Change ID' message allowing you to change the panel ID:
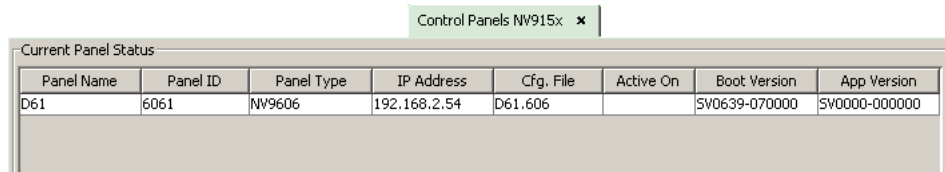
6 Click 'Change ID'. A window appears in which you can enter a new panel ID:
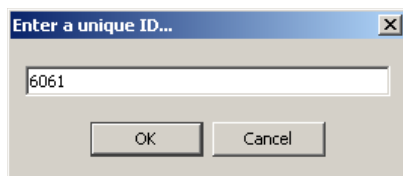
7 Change the panel ID to a suitable value. Make a note of the value.

8 Now click 'Configuration' in the navigation pane. Under 'Configuration', choose 'Control Panels'.

9 Click 'Add Control Panel' in the 'Control Panels' page to create an NV9606 control panel configuration. It is important to give it the panel ID you just assigned to the NV9606. You do not have to complete the configuration at this time.

10 Return to the 'System Management' page for your system. Click 'Write Configuration ...' to write the updated configuration to the NV9000. The NV9000 will now include a panel configuration for, and an panel ID for, the NV9606.

If you view the system's control panel page, the 'Current Panel Status' list shows the panel you just added.

Panel Name	Panel ID	Panel Type	IP Address	Cfg. File	Active On	Boot Version	App Version
D61	6061	NV9606	192.168.2.54	D61.606		SV0639-070000	SV0000-000000

Control Panels NV915x ×

Current Panel Status

11 Repeat steps 2 through 10 for any additional NV9606s.

▲ You must set the panel ID of only one NV9606 at a time. If you connect multiple NV9606s (that do not have proper panel IDs) to the NV9000, it cannot determine to which NV9606 you want to assign a panel ID.

▲ You can also right-click the panel entry in the 'Current Panels' list (under System Management) if you want to change its ID again. If you change its ID, you will have to create another panel configuration with that panel ID. The easiest way to do that is to create a copy of the old configuration that has the new panel ID.

Testing

A panel test function is available when the NV9606 is disconnected from the system controller. Run the test to determine the health of your NV9606. See Self-Test on page 38 for detail. You can also view the software version numbers under setup mode.

These are points to consider after you install your NV9606 control panel(s):

1 Do the buttons illuminate? When an NV9606 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 NV9606 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 NV9606, 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?

3. Installation

Testing

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 NV9606. It presents the following topics:

- Summary
- Adding a Panel to an NV9000 Configuration
- NV9606 Panel Configuration Page
- Commitment Buttons
- Panel Options
- Button Definitions

This chapter addresses configurers. Operators and other persons not interested in NV9606 configuration need not read this chapter.

Summary

The NV9606 is a relatively simple panel. It has 68 function buttons. It can operate stand-alone or as an extension to an NV9607 control panel. As an extension, it follows the mode in which the NV9607 was configured. The NV9607 has 4 operating modes:

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

The button functions for the NV9607 and the NV9606 differ from mode to mode.

NV9000-SE Utilities is the software with which to configure the NV9606. Figure 4-1, following, shows the default NV9606 panel configuration page from NV9000-SE Utilities.

Adding a Panel to an NV9000 Configuration

You must create configurations for the NV9606 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

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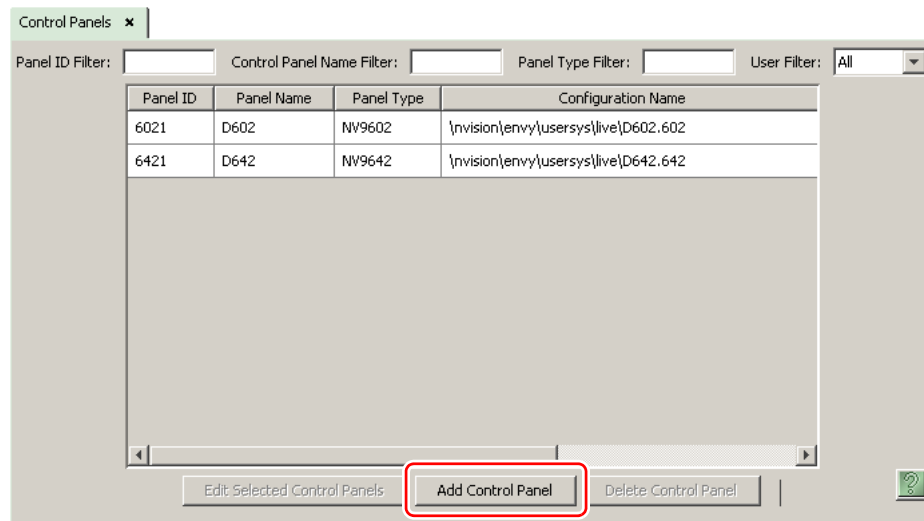
Click 'Add Control Panel' at the bottom of the configuration page. The 'Add Control Panel' page appears:

Choose "NV9606" 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.)
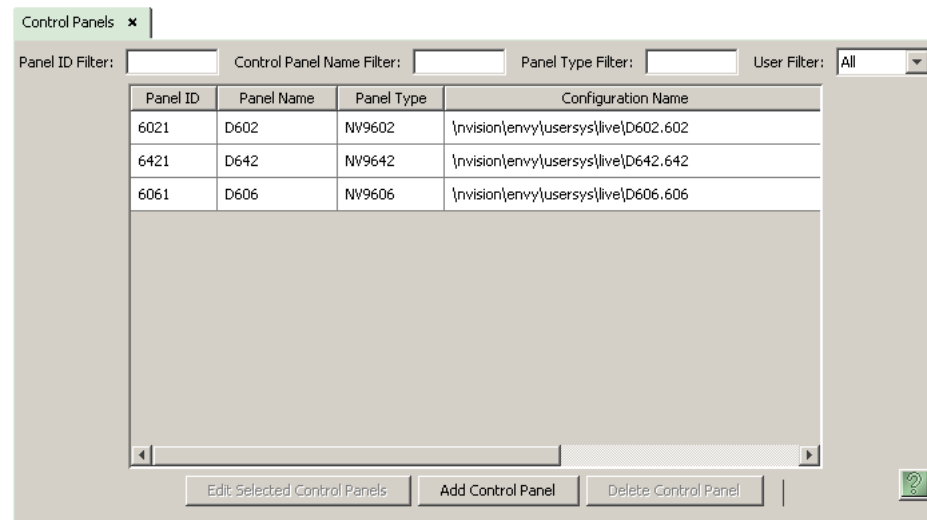
3 Create an entirely new configuration file.

In the first and third cases, you will create a new configuration file whose name you designate. The file extension for an NV9606 configuration file is `.606`. 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 NV9606.

Return to the 'Control Panels' page to view your new entry. To edit an NV9606 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
6061	D606	NV9606	\nvision\envy\usersys\live\D606.606

Panel ID Filter: [ ]   Control Panel Name Filter: [ ]   Panel Type Filter: [ ]   User Filter: [All ▼]

[Edit Selected Control Panels]   [Add Control Panel]   [Delete Control Panel]

You will then see the panel configuration page for the selected NV9606.

Following is a discussion of how to use the panel configuration page in which you configure an NV9606.

NV9606 Panel Configuration Page

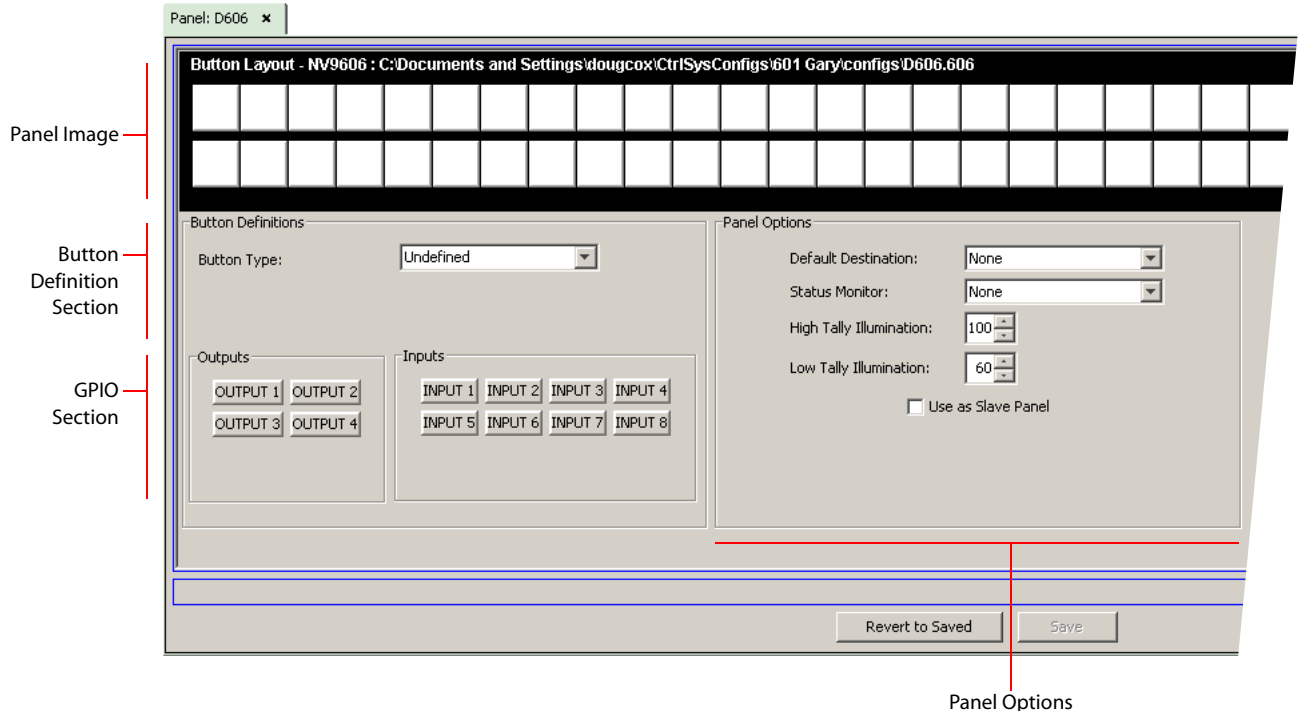This is the default NV9606 panel configuration page in NV9000-SE Utilities:

Figure 4-1. NV9606 Configuration Page (Default)

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

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

Regions of the Configuration Page

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

- A graphic representation of the NV9606 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.

Configuration Tasks

The person configuring an NV9606 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 whether the panel will run as an NV9607 extension.

• Determine in which mode 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.
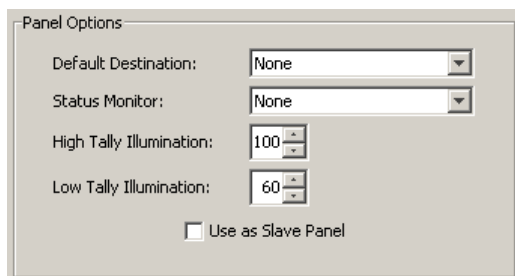
Commitment Buttons

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:

Default Destination	None	After a reset, the panel has no default destination. (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. These modes are available only when the panel is used as an NV9607 extension.
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).
High-Tally Illumination	(The default is 100.)	Sets the panel's button illumination for high-tally. Use the arrow buttons to scroll to a value. The values range from 10 to 100 in increments of 10 (percent).
Low-Tally Illumination	(The default is 60.)	Sets the panel's button illumination for low-tally. Use the arrow buttons to scroll to a value. The values range from 0 to 90 in increments of 10 (percent).
Use as Slave Panel	(The default is unchecked.)	Check this box if the NV9606 is to be used as an extension to an NV9607. When you do check this box, a drop-down menu appears in which you can select the NV9607 to which this NV9606 will be an extension. If there are no entries in the drop-down menu, you cannot use the NV9606 as an extension.

Button Definitions

When the NV9606 operates stand-alone, it has only a few button functions:

Source	Previous Source	Salvo
Destination	Panel Lock	

When it is an NV9607 extension, there are three classes of button functions:

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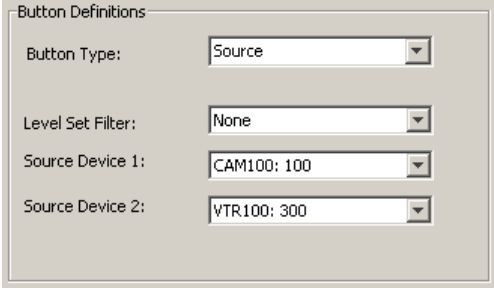- Special functions, such as 'Menu' and 'Salvo'.

When the panel is an NV9607 extension, the buttons operate as they do for an NV9607. For example, source buttons on the NV9606 are subject to the source shift function and source names selected on the NV9606 are displayed on the NV9607 (where names of a name set might be displayed).

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 NV9606:

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

The letter 'L' denotes stand-alone operation.

Button Types

These are the button types available for NV9606 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 the *NV9607 User's Guide* for more information.
		See also the Source Master 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.

Type	Modes	Description
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, L**	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 NV9606 provides no explicit indication, during operation, whether a destination is locked or unlocked.
Destination Protect	**S, B, X**	The button sets or removes a "protect" on the current destination device. The protect can be removed only by the user that originally set the protect, or by a panel that has "Force Release" enabled. **Note:** a protect prevents *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 NV9606 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.

Type	Modes	Description
Hold	**B, X**	In single-destination mode with breakaway, this button retains break-away 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 28.
		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.
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 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 the *NV9607 User's Guide* for more information.
		The button definition has no fields to configure.
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.

4. Configuration

Type	Modes	Description
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.
Panel Lock	**All, L**	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, L**	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, L**	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, L**	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 of the NV9607:

- 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 184 destinations. (68 in the NV9606 and 116 in the NV9607).

  The destination assigned to the button does not change when the source page changes.

  See the *NV9607 User's Guide* for more information.

Type	Modes	Description
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 the *NV9607 User's Guide* for more information.

Type	Modes	Description
Source Shift	**All**	The button toggles between the first and second source sets.
		The button definition has no fields to configure.
		The button affects the operation of any source button (in any mode). Source buttons represent two sources. One belongs to one source set and the other belongs to the other source set.
Undefined	**All, L**	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).

5. Operation

Chapter 5 provides operating instructions for the NV9606 control panel. It presents these topics:

- Summary
- Operating Concepts
- Self-Test

This chapter is intended specifically for the NV9606 panel *operator*.

Summary

As an NV9606 operator, you will be confronted initially with a relatively simple panel—68 buttons (and no display). The NV9606 can operate either as a stand-alone panel or as an extension to an NV9607. As an NV9607 extension, it follows the mode and methods of the NV9607.

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.

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

As a stand-alone panel, the NV9606 has no modes, but can operate either as a single-destination panel (using the default destination) or it can operate as an X-Y panel.

As an NV9607 extension, it 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).

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.

5. Operation

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 (when the panel is an NV9607 extension). 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.

Single-Destination Mode

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

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

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

Takes occur as soon as a source button is pressed 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.

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

As a stand-alone panel, the NV9606 has no secondary modes.

When it is an NV9607 extension, the 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.

- Self-test mode—where the NV9606 is freshly powered up, but *disconnected from the network*. In this mode, you can perform certain panel tests. See Self-Test on page 38.

- Menu mode—pressing a menu button places the NV9606 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 the *NV9607 User's Guide* for more information.

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 22 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 NV9606 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 also color-coded to a limited degree. Green represents sources. Amber represents destinations. Those colors are used for other functions, however. High-tally (bright) buttons are those that are selected; low-tally (dim) buttons are those that are not selected. Dark (white or gray) buttons are those that are disabled. Red indicates that either a destination is locked or protected 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.

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.

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

If your NV9606 is an NV9607 extension, your *NV9607* 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), the 'Source Preview' button, and a 'Take' button (on the NV9607) 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 NV9607 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

As a stand-alone panel, the NV9606 has 5 button types:

- Destination
- Source
- Previous Source
- Panel Lock
- Salvo

As an NV9607, the NV9606 has 21 button types, not including "undefined" which is not an actual button type:

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

In comparison, the NV9607 has 26 button types. The button types not available on the NV9606 are:

Name Set Toggle	Source/Destination	Take
Source Preview	Source/Dest Toggle	

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.

Additionally, the letter 'L' identifies button types that are available for a stand-alone NV9606.

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 the *NV9607 User's Guide* 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 the *NV9607 User's Guide* for more information.

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.)

L, 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 NV9606 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 NV9606 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 28.

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 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 the *NV9607 User's Guide* for more information.

The button definition has no fields to configure.

All   Name Set Toggle

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

B   None/All

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

All   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.

L, 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.

L, 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.

L, All   Salvo

The salvo button executes a system salvo immediately.

L, 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 NV9607 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 the *NV9607 User's Guide* for more information.

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 the *NV9607 User's Guide* for more information.

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 the *NV9607 User's Guide* for more information.

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 Shift

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

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

L, 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 NV9606 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.

The NV9606 can operate by itself as a stand-alone panel or as an extension to an NV9607. As an extension to an NV9607, it operates according to the mode in which the NV9607 is configured.

Following are brief instructions on how to perform a take under the various cases.

Case 1 — Stand-Alone Panel, Single-Destination Mode

The single destination is the one defined as the default destination. Takes all-level.

Press a source button to perform (and complete) a take.

Case 2 — Stand-Alone Panel, X-Y Mode

Takes all-level. Follow these steps:

1 Press a destination button.

2 Press a source button to perform (and complete) a take.

Case 3 — NV9607 Extension, Single-Destination Mode

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

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

2 If the 'Destination' field does not show the default destination, of course, a problem exists. Perhaps the panel is malfunctioning or not configured properly or perhaps the destination has been removed from the NV9000 system. Any of these conditions is rare and the remedy will depend on your system.

3 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.

Case 4 — NV9607 Extension, 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 5 — NV9607 Extension, 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 6 — NV9607 Extension, Multi-Destination Mode

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

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

2 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).

3 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 the *NV9607 User's Guide* for more information.

Self-Test

You can perform a short test of the NV9606 when it is disconnected from its network and powered up.

The panel powers up with the top right button illuminated in green and a moving pattern of green button illumination on the top row of the panel:
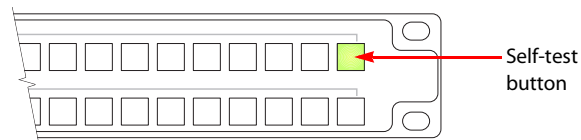
Self-test
button

Here we call the button at the top right the "self-test" button. Press the self-test button to proceed to the color test. This test has 4 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 self-test button (still in the same place although it is now changing color) 5 more times.

Finally, you will reach the button test:
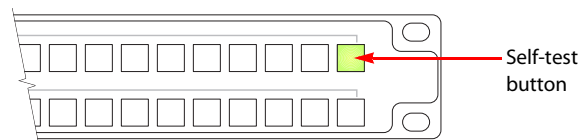
Self-test
button

All the buttons turn off. Press any button to test it. If the button is working properly, it will flash a few times rapidly.

Pressing the self-test button will terminate the button test and return your panel to its initial state. The moving pattern of green button illumination reappears and the self-test button is illuminated.

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 NV9606—in the router control system. The router control system can trigger events that—through the relays in the NV9606—switch your tally devices.

The DB25 connector, labeled "GPI Interface" at the rear of the NV9606 presents the tally signals. There are 8 input signals and 4 pairs of output signals.
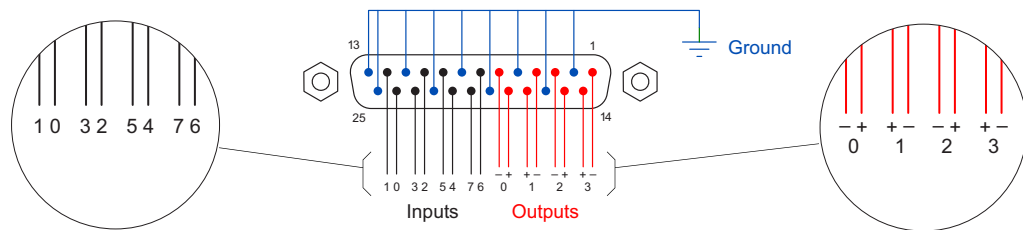
Figure 6-1. GPI Interface

Input

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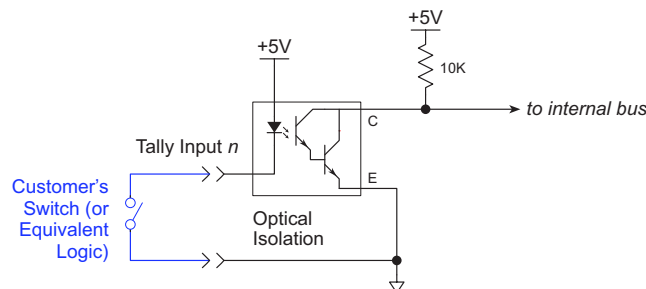
Figure 6-2. GPI Input

When the input transitions off or transitions on, the NV9606 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.
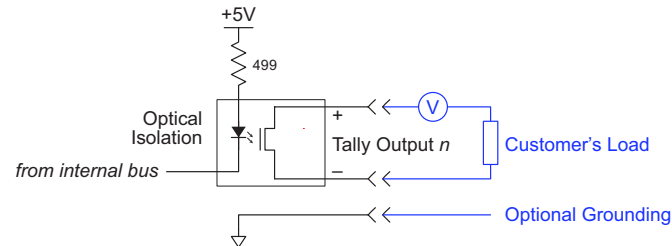
Figure 6-3. GPI Output

When a condition (defined for the relay) occurs, the router control system notifies the NV9606 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 NV9606'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 NV9606 Page

SE's NV9606 configuration page provides a GPIO section, below the tree window:
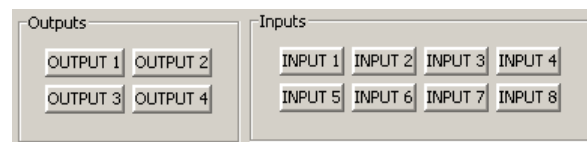
Click on a button under 'Outputs' to configure one of the 4 tally outputs.

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

▲ There are no actual GPIO *buttons* on the NV9606 control panel.

Configuring Outputs

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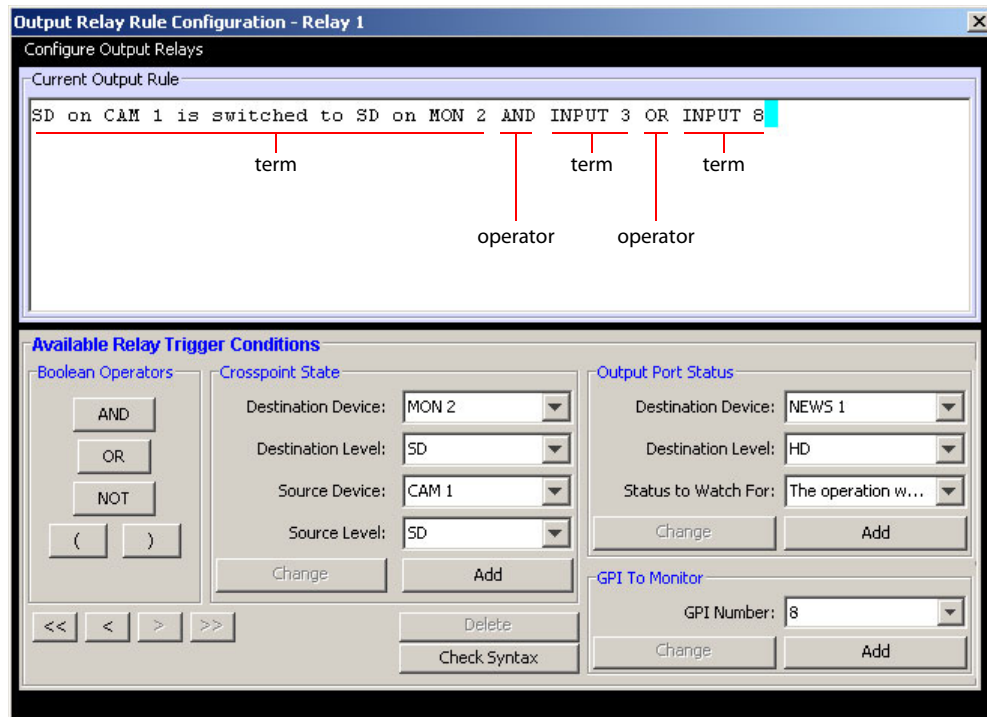
Figure 6-4. Relay Rule Dialog

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 NV9606 inputs and other system-wide events. The router control system sends signals to the NV9606 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:
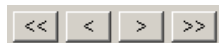
The left double arrows highlights the first term or operator in the expression. The right double arrow positions you at the very end of the expression where you may add more items.

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:
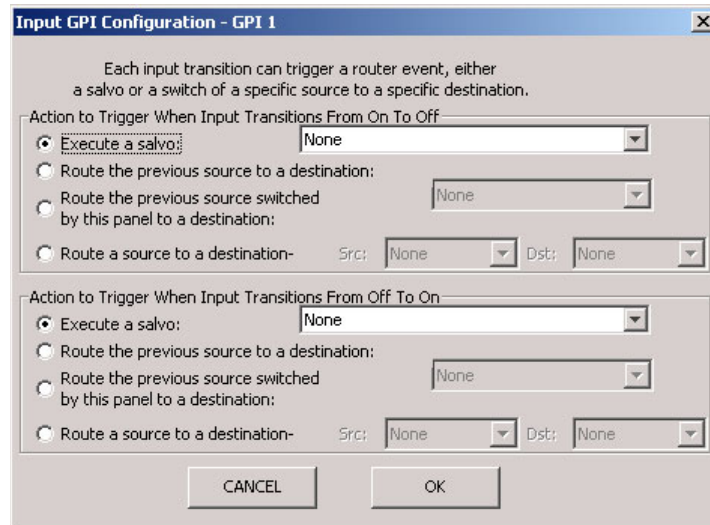
An event is signalled when a transition occurs on the input from on to off or from off to on. You can configure the NV9606 to recognize either occurrence on any of the 8 inputs, and specify one of 4 behaviors for each event or both:

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 NV9606 has 4 relays that can switch on or off your external devices, based on (1) NV9606 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 NV9606 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 NV9606. It presents these topics:

- Power Specifications
- NV9606 Specifications
- Environmental Specifications
- Defaults
- Drawings

Power Specifications

Table 7-1 provides power specifications for the NV9606 control panels.

Table 7-1. NV9606 Power Specifications

Specification	Detail
DC power	External power supply: 12 VDC ± 10%, 5 A.
Power consumption	≤ 12 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:
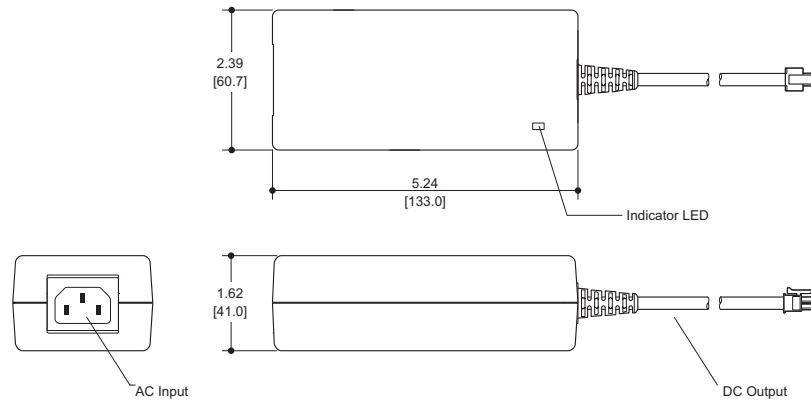
Figure 7-1. The power output has Molex 4-pin plug. See Power Cord Retention on page 53.

NV9606 Specifications

Table 7-3 provides specifications for the NV9606.

Table 7-3. NV9606 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	2.00 lb (0.907 kg).
Connectors	Power: AC. Ethernet: 1 connector, 10 baseT, RJ-45 jack. RS-232: 1 connector, 9-pin D type, for diagnostics and upgrades.
Grounding terminal	None.

The RS-232 connector has this pinout:
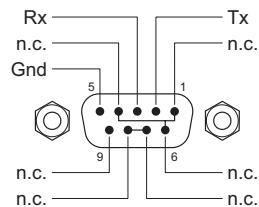
Pins 1, 4, and 6 are tied together and pins 7 and 8 are tied together. None of those pins are connected to any circuitry.

Environmental Specifications

Table 7-4 provides environmental specifications for the NV9606.

Table 7-4. NV9606 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 NV9606 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, Top, and Rear View of the NV9606

7. Technical Details

Drawings

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 NV9606 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 NV9606 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 NV9606's tally interface. The tally interface is called the "GPI Interface" at the rear of the NV9606.

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 administrator	The system administrator is the person responsible for installing, configuring, and maintaining a router control system.
Tally	(1) High or low button illumination.
	(2) Tally interface *to be defined*.
Virtual level	Virtual levels allow the system administrator to define a single physical router level as multiple levels. Within a physical level, any port can be mapped to any virtual level. For example, an AES matrix could be divided into AES 1/2 and AES 3/4 *virtual* levels.
X-Y (mode)	A mode on 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.

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