NK Routing Systems

RCP-NKQ User Guide

ROSS

Production Technology Experts

Thank You for Choosing Ross

You've made a great choice. We expect you will be very happy with your purchase of Ross Technology. Our mission is to:

1. Provide a Superior Customer Experience
   - offer the best product quality and support
2. Make Cool Practical Technology
   - develop great products that customers love

Ross has become well known for the Ross Video Code of Ethics. It guides our interactions and empowers our employees. I hope you enjoy reading it below.

If anything at all with your Ross experience does not live up to your expectations be sure to reach out to us at *solutions@rossvideo.com*.

David Ross
CEO, Ross Video
dross@rossvideo.com

Ross Video Code of Ethics

Any company is the sum total of the people that make things happen. At Ross, our employees are a special group. Our employees truly care about doing a great job and delivering a high quality customer experience every day. This code of ethics hangs on the wall of all Ross Video locations to guide our behavior:

1. We will always act in our customers' best interest.
2. We will do our best to understand our customers' requirements.
3. We will not ship crap.
4. We will be great to work with.
5. We will do something extra for our customers, as an apology, when something big goes wrong and it's our fault.
6. We will keep our promises.
7. We will treat the competition with respect.
8. We will cooperate with and help other friendly companies.
9. We will go above and beyond in times of crisis. *If there's no one to authorize the required action in times of company or customer crisis - do what you know in your heart is right. (You may rent helicopters if necessary.)*

RCP-NKQ · User Guide

- Ross Part Number: **9806DR-0100-03**
- Release Date: August 16, 2019. Printed in Canada.

The information contained in this Guide is subject to change without notice or obligation.

Copyright

Patents

Patent numbers US 7,034,886; US 7,508,455; US 7,602,446; US 7,802,802 B2; US 7,834,886; US 7,914,332; US 8,307,284; US 8,407,374 B2; US 8,499,019 B2; US 8,519,949 B2; US 8,743,292 B2; GB 2,419,119 B; GB 2,447,380 B; and other patents pending.

Notice

The material in this manual is furnished for informational use only. It is subject to change without notice and should not be construed as commitment by Ross Video Limited. Ross Video Limited assumes no responsibility or liability for errors or inaccuracies that may appear in this manual.

Statement of Compliance

This product has been determined to be compliant with the applicable standards, regulations, and directives for the countries where the product is marketed.

Compliance documentation, such as certification or Declaration of Compliance for the product is available upon request by contacting techsupport@rossvideo.com. Please include the product; model number identifiers and serial number and country that compliance information is needed in request.

EMC Notices

United States of America - FCC Part 15

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.

Notice — *Changes or modifications to this equipment not expressly approved by Ross Video Ltd. could void the user's authority to operate this equipment.*

CANADA

This Class "A" digital apparatus complies with Canadian **ICES-003**.

Cet appareil numerique de la classe "A" est conforme a la norme **NMB-003** du Canada.

EUROPE

This equipment is in compliance with the essential requirements and other relevant provisions of **Council Directives 2006/95/EC & 2004/108/EC**.

INTERNATIONAL

This equipment has been tested to **CISPR 22:1997** along with amendments **A1:2000** and **A2:2002** and found to comply with the limits for a Class A Digital device.

> ⚠️ **Notice** — *This is a Class A product. In domestic environments, this product may cause radio interference, in which case the user may have to take adequate measures.*

Australian/New Zealand C-tick approval

The equipment meets the requirements of the Australian Communications and Media Authority (Limits & Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment (AS/NZS CISPR22)).

Warranty and Repair Policy

The product is backed by a comprehensive one-year warranty on all components.

> ⚠️ **Notice** — *Changes or modifications to this equipment not expressly approved by Ross Video Limited could void the user's authority to operate this equipment.*

If an item becomes defective within the warranty period Ross will repair or replace the defective item, as determined solely by Ross.

Warranty repairs will be conducted at Ross, with all shipping FOB Ross dock. If repairs are conducted at the customer site, reasonable out-of-pocket charges will apply. At the discretion of Ross, and on a temporary loan basis, plug in circuit boards or other replacement parts may be supplied free of charge while defective items undergo repair. Return packing, shipping, and special handling costs are the responsibility of the customer.

This warranty is void if products are subjected to misuse, neglect, accident, improper installation or application, or unauthorized modification.

In no event shall Ross Video Limited be liable for direct, indirect, special, incidental, or consequential damages (including loss of profit). Implied warranties, including that of merchantability and fitness for a particular purpose, are expressly limited to the duration of this warranty.

This warranty is TRANSFERABLE to subsequent owners, subject to Ross' notification of change of ownership.

Extended Warranty

For customers that require a longer warranty period, Ross offers an extended warranty plan to extend the standard warranty period by one year increments. For more information, contact your regional sales manager.

Environmental Information

The equipment that you purchased required the extraction and use of natural resources for its production. It may contain hazardous substances that could impact health and the environment.

To avoid the potential release of those substances into the environment and to diminish the need for the extraction of natural resources, Ross Video encourages you to use the appropriate take-back systems. These systems will reuse or recycle most of the materials from your end-of-life equipment in an environmentally friendly and health conscious manner.

The crossed-out wheeled bin symbol invites you to use these systems.

If you need more information on the collection, reuse, and recycling systems, please contact your local or regional waste administration. You can also contact Ross Video for more information on the environmental performances of our products.

Company Address

Ross Video Limited
8 John Street
Iroquois, Ontario
Canada, K0E 1K0

Ross Video Incorporated
P.O. Box 880
Ogdensburg, New York
USA 13669-0880

General Business Office:	(+1) 613 ● 652 ● 4886
Fax:	(+1) 613 ● 652 ● 4425
Technical Support:	(+1) 613 ● 652 ● 4886
After Hours Emergency:	(+1) 613 ● 349 ● 0006
E-mail (Technical Support):	techsupport@rossvideo.com
E-mail (General Information):	solutions@rossvideo.com
Website:	http://www.rossvideo.com

Contents

Troubleshooting 6

Hexadecimal to Router Level Conversion 7

Introduction

Thank you for purchasing the Ross Video RCP-NKQ Remote Control Panel. This remote control panel enables you to control a routing switcher system from one point. With Ross Video's reputation for delivering leading-edge routing switcher equipment and our unsurpassed level of customer service and support, you can look forward to many years of reliable broadcasting. Please read this guide thoroughly and retain it for future reference.

The RCP-NKQ provides flexible connectivity of additional remote control panels and multi-page menu programming.

Overview of this User Guide

This is for installers, and operators of the Ross Video RCP-NKQ, It provides instructions on how to connect the RCP-NKQ to your routing switcher system, how to set up a configuration document for the RCP-NKQ using DashBoard, and how to operate it. It assumes that you are experienced with general broadcast concepts, and that you are familiar with the planning requirements for a routing switcher system.

RCP-NKQ Overview

Features

The RCP-NKQ Remote Control Panel provides the following features:

* 17 programmable keys (function, backlighting level, color, and custom text)
* operation in XY mode
* up to 32 router levels may be controlled
* virtual routing and resource management
* macros
* panel linking with other remote control panels
* support in DashBoard for easy creation of configuration documents
* firmware is fully upgradeable using DashBoard
* slim modular design integrates with NK Series devices via T-Bus using straight CAT5 Ethernet cables
* up to 250 pages of programmable menus including navigation keys
* assignable functions of destination, source, crosspoint, level, breakaway, breakaway step, macro, protect, take, chop, de-assign, machine control, panel lock, menu link, menu navigation, and menu display

Typical System Equipment

The RCP-NKQ is used when you require advanced control functions from a single point. Using DashBoard, you can program up to 250 menus on the same remote control panel. At each menu, the function of particular keys may change depending on the assignment. These parameters can be saved in a configuration document and sent to an RCP-NKQ at any time using DashBoard. Therefore, if an RCP-NKQ is used in a number of different operating scenarios, the configuration can be changed easily and quickly.

Typical equipment that is used in an NK Series routing switcher system when an RCP-NKQ is used includes:

* any of the NK Series routing switchers with its appropriate power supply (for more information see the documentation provided with your NK Series routing switcher)
* an NK-IPS Network Bridge
* a PC running DashBoard, connected via a CAT5 Ethernet cable to the NK-IPS
* standard source and destination equipment (for example, cameras, VTRs, servers)

Before You Begin

* If you are connecting the PC directly to the NK-IPS, use a crossover CAT5 Ethernet cable.
* If you are connecting the PC indirectly via an Ethernet switch to the NK-IPS, use a straight-through CAT5 Ethernet cable.
* The NK-IPS and PC with DashBoard are only required for setting up the configuration document, then sending this to the device. However, you can use the NK Switchboard feature in DashBoard to control and monitor a routing switcher system.

System Overview

A routing switcher system may use distributed control across the internet, a LAN, or a VPN. The routing switcher system shown in **Figure 2.1** has been simplified.
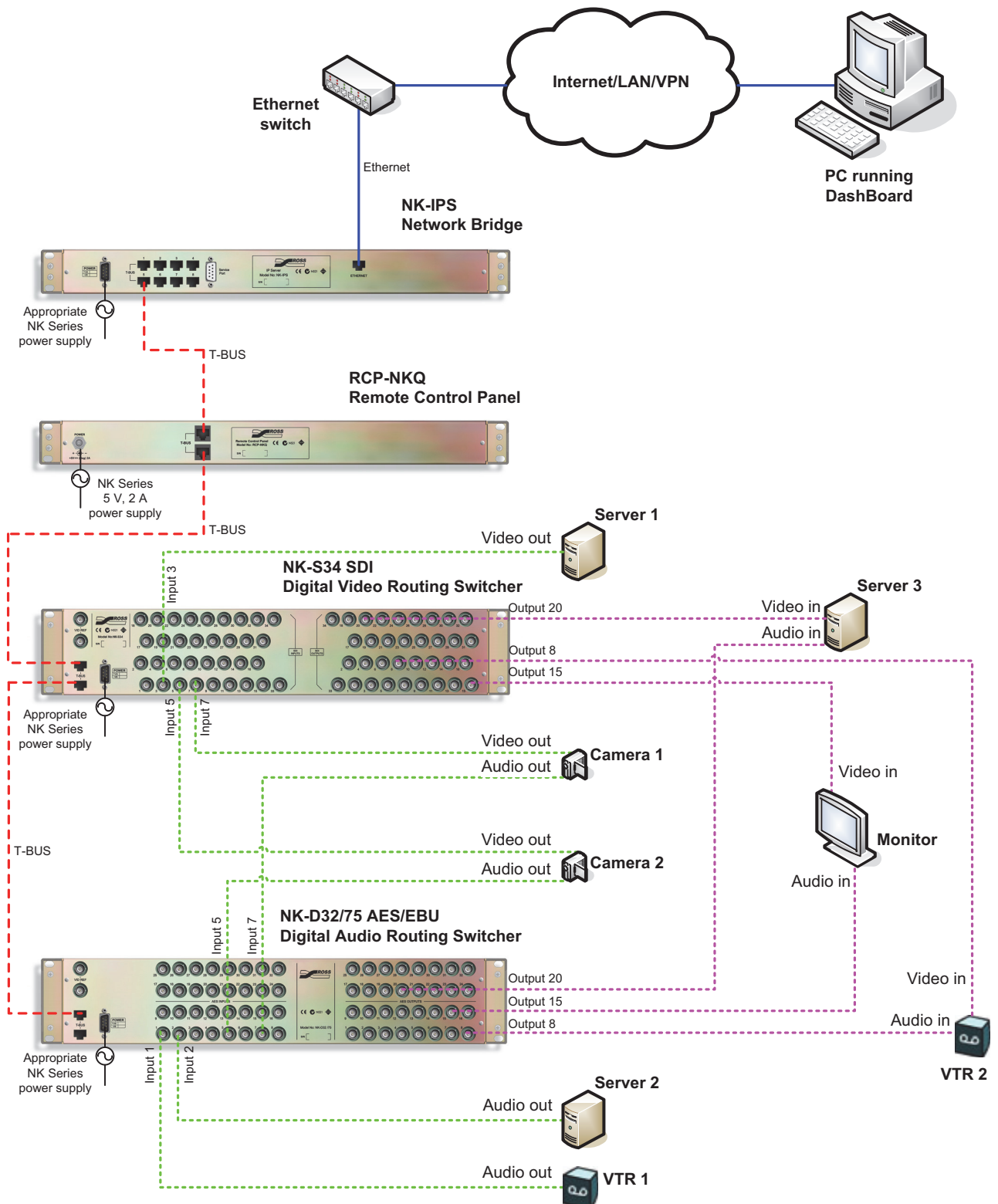
Figure 2.1 *Layout showing a simplified routing switcher system with an RCP-NKQ*

★ All T-Bus connections between NK Series devices use straight-through CAT5 cables.

How the RCP-NKQ and Routing Switchers Communicate

Switching

The RCP-NKQ sends a switch request message to the routing switcher. The routing switcher recognizes the request, sets the crosspoint, then sends a response to the RCP-NKQ.

Data Storage

The RCP-NKQ stores information on the menu, destination, level, breakaway, and machine control status. The routing switcher stores the crosspoint status in its internal memory.

When the routing switcher system is powered up, the routing switcher restores its crosspoint status. The RCP-NKQ requests the status of the routing switcher. The routing switcher sends the status of the crosspoints to the RCP-NKQ.

Installation

Unpacking the Equipment

On receiving your RCP-NKQ, check the contents against the packing list. Make sure that all equipment itemized on the packing list is present and that there are no signs of damage before you start installing the RCP-NKQ into your system.

If anything is missing or damaged, contact your Ross Video office immediately to obtain the correct warranty service procedures. This ensures prompt assistance, minimal turnaround time, and avoids any freight issues.

We recommend that the equipment is installed by qualified and experienced personnel, to any relevant standards and approvals.

General

These installation guidelines assume the following:

• The relevant NK Series equipment has been installed into a ventilated rack frame. The relative humidity in the environment of the equipment should be < 70% (non-condensing).

• The routing switcher system has been well planned and designed. Consideration must be given to inputs and outputs across multiple router levels, and typical operating scenarios for breakaways.

• Correct IP addresses have been assigned to the equipment, where required.

• The routing switchers are connected to physical inputs and outputs, and have appropriate NK Series power supplies.

• All NK Series equipment connected in the routing switcher system have firmware v2.00 or later. For information on updating the firmware in a device see the readme file that comes with the firmware. To check for the latest firmware versions, contact Ross Video Technical Support.

Installing the RCP-NKQ

The RCP-NKQ is powered using the 5 V 2 A power supply provided. This power supply connects directly to the AC mains supply.

⚠️ **Warning** — *Ensure that the AC mains supply complies with the PSU specification before making the connection.*

⚠️ **Warning** — *An earthed neutral mains supply and residual current device is recommended for safe operation.*

Installing the Routing Switcher System in a Daisy-Chain Layout

You may connect NK Series equipment in a daisy-chain layout. The items are connected via the T-Bus control system. However, if the T-Bus chain is broken, for example, by accidentally disconnecting a cable, downstream devices are also disconnected. T-Bus RJ-45 sockets on devices downstream from the NK-IPS are passively connected internally, so device failure or power disconnection does not disrupt communication with other devices in the chain.

Each T-Bus connector on the NK-IPS has an independent driver/receiver ensuring that each of the eight T-Bus connectors will not be affected by a device failure on any other connector.
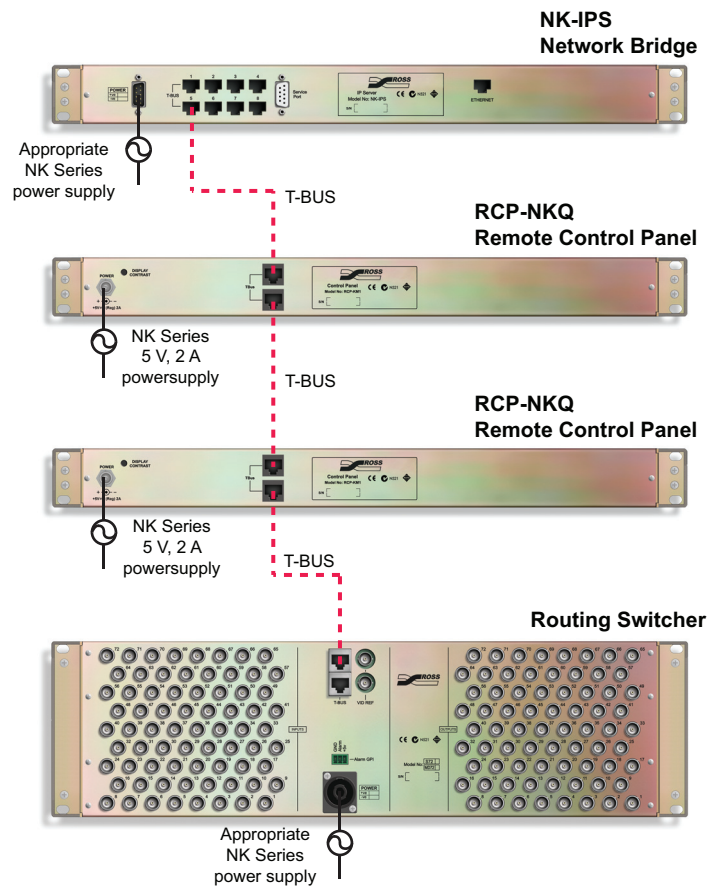
Figure 3.2 *Remote control panels connected to NK Series Equipment in a daisy-chain layout*

To connect the remote control panel in a daisy-chain layout

1. Install the RCP-NKQ into the rack frame, then fix in place with appropriate fasteners.

2. Connect a straight-through CAT5 Ethernet cable between a **T-Bus** connector on the rear of the RCP-NKQ and a **T-Bus** connector on the rear of another remote control panel, an NK Series routing switcher, or an NK-IPS (see **Figure 3.2**).

If required, make a similar connection between the remaining **T-Bus** connector on the rear panel of the RCP-NKQ and a **T-Bus** connector on the rear panel of another item of NK Series equipment.

3. Connect the 5 V 2 A power supply provided to the **POWER** connector on the rear panels of the RCP-NKQ.

4. Connect the cable from the power supply to a suitable AC mains supply.

✦ The RCP-NKQ is designed for installation into a standard 19" equipment rack. It has integrated rack ears, allowing it to be screwed in using standard screws and cage nuts.

Installing the Routing Switcher System in a Star-Layout

You may connect NK Series equipment to the NK-IPS in a star layout. The items are connected via the T-Bus control system. If any device connected directly to the NK-IPS is disconnected, it is only the downstream devices that become non-operational. All other devices remain operational.
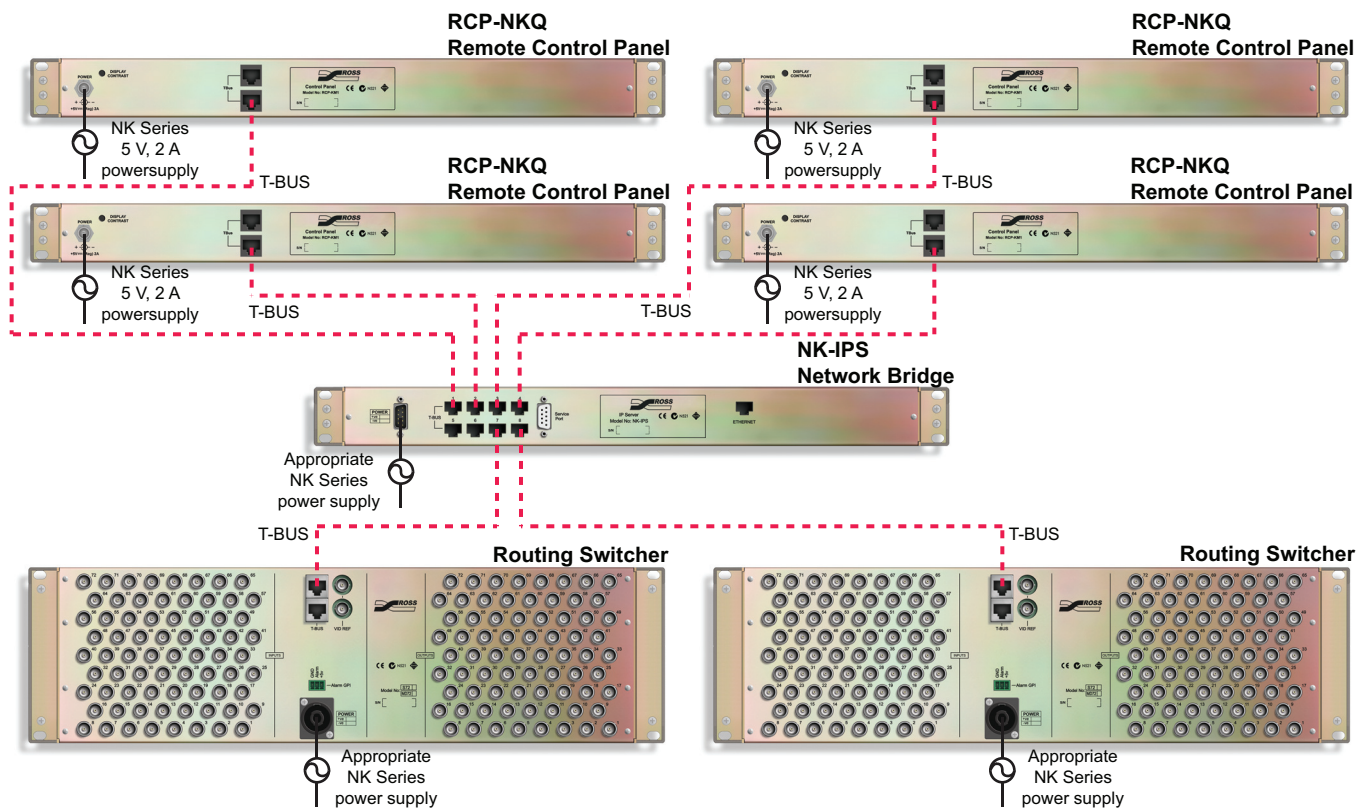
Figure 3.3 Remote control panels connected to NK Series equipment in a star layout

To connect the remote control panel in a star layout

1. Install the RCP-NKQ into the rack frame, then fix in place with appropriate fasteners.

2. Connect a straight CAT5 Ethernet cable between a **T-Bus** connector on the rear panel of the RCP-NKQ and a **T-Bus** connector on the rear panel of the NK-IPS (see **Figure 3.3**).

3. Connect the 5 V 2 A power supply provided to the **POWER** connector on the rear panel of the RCP-NKQ.

4. Connect the cable from the power supply to a suitable AC mains supply.

5. Connect any remaining remote control panels in this manner.

★ The RCP-NKQ is designed for installation into a standard 19" equipment rack. It has integrated rack ears, allowing it to be screwed in using standard screws and cage nuts.

Connecting to the NK-IPS in the Routing Switcher System

Before you can set up and send a configuration document to the RCP-NKQ, you must connect an NK-IPS to the RCP-NKQ. Once DashBoard locates the NK-IPS, the attached RCP-NKQ is visible and can have configuration documents sent to it.

Most systems automatically detect an NK-IPS if its IP address uses the same subnet as the PC running DashBoard. However, if the device is not detected automatically, follow the steps below. For information on the NK-IPS, refer to the documentation provided with the equipment.

To connect to the NK-IPS

1. Launch DashBoard.

2. Use Walkabout to determine and/or change the IP address of the NK-IPS. Refer to the *NK-IPS User Guide* for more information.

3. From the main toolbar in DashBoard select **File** > **New** > **NK IPS Connection**.

4. Enter the IP Address of the NK-IPS you want to connect to.

5. Ensure the **TCP Port** field is set to **5000**.

6. Click **Finish**.

The NK-IPS now displays as a node in the Basic Tree View of DashBoard.

Checking the Firmware Version of a Device

The RCP-NKQ must operate with other devices that have v2.00 firmware or later. Firmware may be updated easily using DashBoard. To check for the latest firmware versions, contact Ross Video Technical Support.

Using DashBoard to Check the Firmware Version

To check the firmware version of any device using DashBoard

1. Launch DashBoard and connect to the NK-IPS.

2. In the Device Tree of DashBoard, expand the NK-IPS (or NK-NET) node to display a list of sub-nodes.

✹ Each sub-node is a list of devices communicating with the NK-IPS (or NK-NET).

3. Double-click the RCP-NKQ node to open its interface in DashBoard.

The firmware version is reported in the top panel of the window.

Upgrading the Firmware Version of a Device

For information on upgrading the firmware version of a device, see the readme file that comes with the firmware.

Setting Up the RCP-NKQ

The RCP-NKQ can be set up using DashBoard. You must have an NK-IPS connected into the system. The parameters for a device may be then saved to a configuration document.

For More Information on...

- checking and upgrading firmware see "**Using DashBoard to Check the Firmware Version**" on page 3–4 and "**Upgrading the Firmware Version of a Device**" on page 3–4.

- saving parameters to a configuration document, see "**Saving the Current Document for the RCP-NKQ**" on page 4–24.

Opening the RCP-NKQ Editor

✸ Before setting up any parameters for the RCP-NKQ, ensure that all NK Series devices in the routing switcher system have firmware v2.00 or later.

To open the RCP-NKQ editor

1. Launch DashBoard and connect to the NK-IPS.

2. In the Device Tree of DashBoard, expand the NK-IPS (or NK-NET) node to display a list of sub-nodes.

✸ Each sub-node is a list of devices communicating with the NK-IPS (or NK-NET).

3. Double-click the RCP-NKQ node to open its interface in DashBoard.
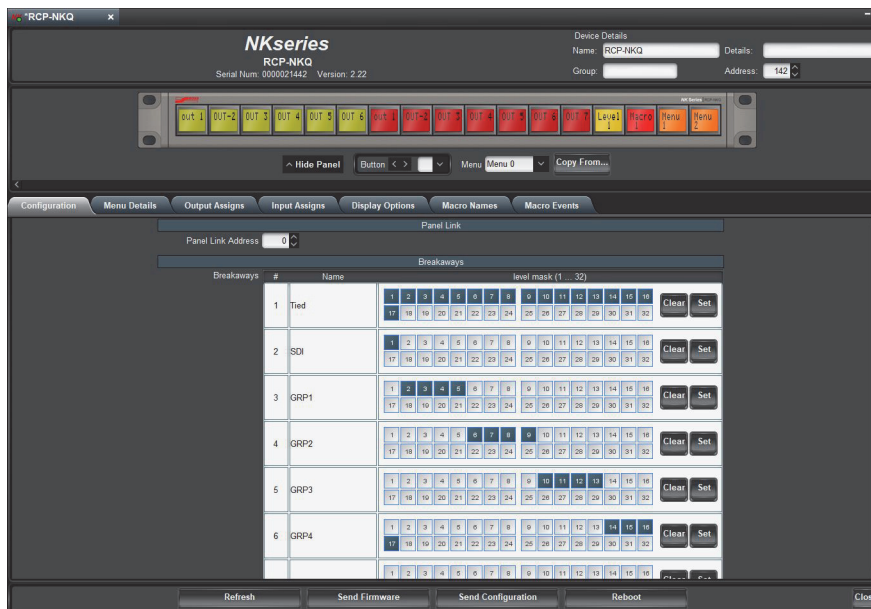
Implementing Your System Plan

An effective routing switcher system takes careful planning. If you intend to use multiple router levels across several input and output devices, it is recommended that you use common input connectors for each source device across the routing switchers, and common output connectors for each destination device across the routing switchers. Th e recommended methodology for setting up the RCP-NKQ is shown in **Figure 4.4**.

```
┌──────────────┐
│ Update device │
│   details     │
└──────────────┘
        │
        ▼
┌──────────────┐
│ Assign inputs and │
│ outputs according │
│  to physical      │
│  connections      │
└──────────────┘
        │
        ▼
┌──────────────┐
│   Set up      │
│  breakaways   │
│ according to router │
│    levels     │
└──────────────┘
        │
        ▼
┌──────────────┐
│  Set up menus │
└──────────────┘
        │
        ▼
┌──────────────┐
│ Assign functions │
│    to keys       │
└──────────────┘
        │
        ▼
┌──────────────┐
│ Unassign any  │
│ keys that are not │
│     used      │
└──────────────┘
```
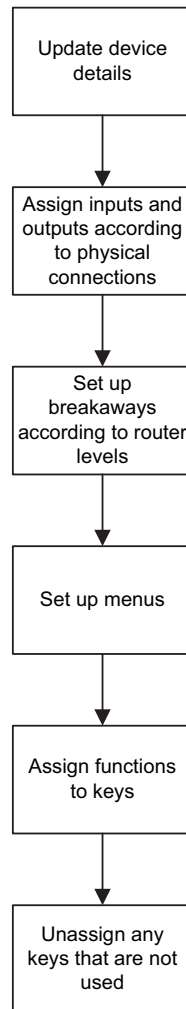
Figure 4.4 Flow chart for setting up the RCP-NKQ

Viewing and Changing Device Details

When a device attached to the NK-IPS is interrogated, a tab for the device appears in the main pane of DashBoard (see **Figure 4.4**). Information is read from the device and shown in the simulated RCP-NKQ.

To view the details for the RCP-NKQ

1. Open the RCP-NKQ editor (see "**Opening the RCP-NKQ Editor**" on page 4–1).

    The read-only parameters for the RCP-NKQ are shown in the top section of the tab of the device.

Table 4.1 Device details that are read from the RCP-NKQ

Item	Description
Serial Num (read-only)	This parameter is read-only. The serial number of the device. This is set in the factory. It is unique to the device. If you are working on a file that is stored under **File Explorer**, the serial number of the device is replaced by SAVED-FILE.
Version (read-only)	This parameter is read-only. The version status of the firmware detected in the device. If the firmware version for any NK Series device that is connected to the RCP-NKQ is earlier than v2.00, you must upgrade the firmware in that device (see "**Upgrading the Firmware Version of a Device**" on page 3–4).
Name (user definable)	The name for the device. The default name for the RCP-NKQ is Default - NKQ. This parameter may be changed to any name that uniquely identifies the device, for example, RCP-NKQ. The name may be up to 16 characters in length.
Group (user definable)	The group to which the device belongs. This parameter is used to identify items of equipment that may be in the same location or used for a similar purpose, for example, equipment in the same rack, or a logical grouping of modules that may be operated as a group. The group identifier may be up to 10 digits in length.
Details (user definable)	The meaningful details of the device. This parameter is used to specifically identify this device from other devices, for example, OBV Rack 1. The details may be up to 16 characters in length.
Address (user definable)	The address is used by each device in the routing switcher system to identify itself to other devices during communication. The default address for an RCP-NKQ is the last two digits of the serial number, plus 100. Devices should have a unique address. If you want to link a number of similar remote control panels together so that they function as one remote control panel, set the same address for each remote control panel, then set individual panel link addresses for each remote control panel (see "**Linking Remote Control Panels**" on page 4–4).

To change the details for the RCP-NKQ

1. In the **Device Details** frame, click in the field that you want to change.

2. Enter the information as required (see **Table 4.1**), then press **Enter**.

3. Send the current document to the device by clicking **Send Configuration** located on the lower Device Configuration window (see "**Sending a Document to a Device**" on page 4–24).

★ You should save the current document regularly (see "**Saving the Current Document for the RCP-NKQ**" on page 4–24).

Default Configuration

Every NK Series device leaves the factory with a default configuration. This default configuration is viewed by opening the editor for the device in DashBoard.

Loading Default Configuration and Factory Defaults

If you have made changes to the configuration, but want to return to the default configuration, you can send the default document to the device (see "**Sending a Document to a Device**" on page 4–24). You can also load the factory defaults (see "**Loading the Factory Defaults**" on page 4–23).

Router Levels

The RCP-NKQ sends switch requests to the routing switcher. Each routing switcher is assigned a level, or number of levels if it has been partitioned. These level assignments may be changed through the configuration editor for the routing switcher in DashBoard.

Table 4.2 Default Router Levels

Router Level	Name
1	Multi-definition 3G/HD/SD SDI digital video
2	SD SDI digital video
3	AES/EBU digital audio 1
4	AES/EBU digital audio 2
5	Analog video
6	Analog audio (left)
7	Analog audio (right)
8	Machine control

Breakaways

The default breakaway is tied, that is, the first eight router levels are switched together when requested from the RCP-NKQ. If your routing switcher system does not use all of the router levels stated above, you should remove the unused levels from the default breakaway. For more information on breakaways see "**Setting Up Breakaways**" on page 4–6.

Key Assignments

By default, the RCP-NKQ has these key assignments:

* keys 1 to 6: destinations (outputs 1 to 6 respectively)
* keys 7 to 13: sources (inputs 1 to 7 respectively)
* key 14: Level 1 (MD)
* key 15: Macro 1
* key 16: Menu 1
* key 17: Menu 2

Figure 4.5 Default key assignments on the Home menu

Linking Remote Control Panels

If your routing switcher system is extensive, control of the entire system may not be possible through just one remote control panel. If this is the case, additional remote control panels may be added, as described "**Installing the RCP-NKQ**" on page 3–1. You can choose to operate the remote control panels individually, or you can link the remote control panels together so that they operate as one larger remote control panel. For more information see "**Operating Linked Remote Control Panels**" on page 5–6.

You may link RCP-NKM and RCP-NKQ remote control panels together. You cannot link the RCP-NK1 with a RCP-NKM or RCP-NKQ.

You may link up to 255 remote control panels together. When multiple remote control panels are linked, the **Address** field must be the same for all linked remote control panels, and the **Panel Link Address** field must be different for each remote control panel.

To link remote control panels together

1. Open the RCP-NKQ editor (see "**Opening the RCP-NKQ Editor**" on page 4–1).

2. In the **Device Details** frame, **Address** field, enter the common address (between 2 and 255) that you want all the linked remote control panels to use.

    By default, the address is set to the last two digits of the serial number, plus 100.

3. Select the **Configuration** tab.

4. In the **Panel Link** frame, **Panel Link Address** field, enter the individual address (between 1 and 254) that you want this particular remote control panel to use.

    By default, the panel link address of a remote control panel is set to zero (0).

5. Send the current document to the device by clicking **Send Configuration** located on the lower Device Configuration window (see "**Sending a Document to a Device**" on page 4–24).

6. Repeat this process for all of the remote control panels that you want to link together.

✱ The panel address and link address must be different for each remote control panel.

Assigning Physical Connections for Control by an RCP-NKQ

Source and destination equipment is physically connected to routing switchers. This connection information must be displayed meaningfully on the RCP-NKQ. This information is set up on the **Input Assigns** and **Output Assigns** tabs.

Selecting the Number of Inputs/Outputs

Depending on the size of the routing switchers connected, you may choose to increase or reduce the number of input and output labels to match the size of the routing switcher, if virtual routing is not used. The number may be changed in increments of 8.

To change the number of possible inputs and outputs

1. Open the RCP-NKQ editor (see "**Opening the RCP-NKQ Editor**" on page 4–1).

2. Do one of the following:

    *   To change the number of inputs, select the **Input Assigns** tab.
    *   To change the number of outputs, select the **Output Assigns** tab.

3. Use the up and down arrows in the **Number of inputs**/**Number of outputs** field to adjust the number to match the requirements of your routing switcher system.

4. Click **Update**.

5. If you want to transfer this number of inputs/outputs to the other tab, click **Copy to Output Assigns**/**Copy to Input Assigns**.

    The labels are also copied.

6. Send the current document to the device by clicking **Send Configuration** located on the lower Device Configuration window (see "**Sending a Document to a Device**" on page 4–24).

To assign input and output labels

1. Open the RCP-NKQ editor (see "**Opening the RCP-NKQ Editor**" on page 4–1).

2. Do one of the following:
   - To change the label for an input, select the **Input Assigns** tab.
   - To change the label for an output, select the **Output Assigns** tab.

3. Double-click to highlight the text in the field corresponding to the input/output to which the item of source/destination equipment is connected.

4. Enter the name of the item of source/destination equipment.

5. Press **Enter**.

   The name of the item of source/destination equipment appears on the corresponding key on the simulated RCP-NKQ in DashBoard.

6. Repeat this process until all of the inputs and outputs on the routing switchers have been assigned a label for the connected items of source and destination equipment.

7. If you want to transfer the labels for the inputs/outputs to the other tab, click **Copy to Output Assigns**/**Copy to Input Assigns**.

   The number of inputs/outputs is also copied.

8. Send the current document to the device by clicking **Send Configuration** located on the lower Device Configuration window (see "**Sending a Document to a Device**" on page 4–24).

★ If there are various router levels using this input or output number, then the label may be ambiguous if the source or destination is different for those levels.

★ You may rearrange the layout of the labels on the keys when you assign functions to the keys (see "**Assigning Functions to Keys on the RCP-NKQ**" on page 4–9).

Setting Up Breakaways

A breakaway selects a group of levels to be switched. The default breakaway for the RCP-NKQ is the first eight router levels switching together, that is, tied. If your routing switcher system does not use all of the pre-defined router levels (see **Table 4.2**), you should disable those levels that are not used in order to prevent a breakaway warning. If you want to switch certain router levels only, set up a custom breakaway for these levels, then assign this to a key on the RCP-NKQ (see "**Assigning Functions to Keys on the RCP-NKQ**" on page 4–9). If you select a breakaway that includes a level for which there is no routing switcher assigned, a breakaway warning is indicated in the bottom right corner of the key.

To set up the breakaways

1. Open the RCP-NKQ editor (see "**Opening the RCP-NKQ Editor**" on page 4–1).

2. Select the **Configuration** tab.

3. Scroll to the **Breakaways** frame.

4. In the **Tied** level mask, de-select the router levels that are not used in your routing switcher system by clicking on the numbered squares.

   A selected router level is indicated by a blue square.

   For example, if router levels 2 and 3 are the only levels used, you should de-select levels 1, 4, 5, 6, 7, and 8 in the **Level Mask** column corresponding to **Tied**.

5. Double-click in the field below **Tied** in the **Name** column.

6. Enter the name of the router level that corresponds to the first custom breakaway that you want to define.

For example, enter **SDI**.

7.   Select the corresponding router level(s) in the **Level Mask** column (see **Table 4.2**), and de-select any router levels that are not used.

8.   Define the next custom breakaway in the **Name** column below the breakaways that you have defined previously. Continue until you have defined all the custom breakaways that you want to use.

9.   Clear the remaining level masks from unused breakaways in the **Breakaways** table.

10. Scroll to the **Configuration** frame.

11. Click the down arrow in the **Breakaway Warning Mode** field, then select the breakaway with which you want to compare the status of the router levels in the current breakaway.

12. Send the current document to the device by clicking **Send Configuration** located on the lower Device Configuration window.

Notes

Keep the following in mind when setting up breakaways:

• If you click and drag across the level mask, you can rapidly select or de-select router levels.

• The breakaway defined in the first row of the **Breakaway** table is the default breakaway.

• You can combine more than one router level in the same breakaway. Give the breakaway a meaningful name that covers the router levels that you want to use. Limit the name to 8 characters.

• A breakaway warning is caused by no response from the routing switcher system on one or more router levels or a difference in status of any level in the currently selected breakaway when compared with the first level in the breakaway.

• The default breakaway and any custom breakaways may now be assigned to keys on the RCP-NKQ.

For More Information on...

• sending the current document to the device, see "**Sending a Document to a Device**" on page 4–24.

• assigning breakaways to keys, see "**Assigning a Breakaway to a Key**" on page 4–13.

Resetting a Custom Breakaway to the Default Breakaway Automatically After a Switch

The default breakaway is defined in the first row of the **Breakaways** table in the **Breakaways** frame. Typically, this breakaway is tied, and switches all router levels together. If you want only certain router levels to switch, as defined in a custom breakaway, you select that breakaway on the RCP-NKQ, then make the switch. The RCP-NKQ continues to use that breakaway (as indicated by the key being illuminated) for all further switches until another custom breakaway, or the default breakaway is selected. If you want the RCP-NKQ to reset to the default breakaway immediately after a custom breakaway is used during a switch, then you should set the RCP-NKQ to reset the breakaway.

To enable the resetting of the breakaway to the default breakaway automatically after a switch

1.   Open the RCP-NKQ editor (see "**Opening the RCP-NKQ Editor**" on page 4–1).

2.   Select the **Configuration** tab.

3.   Scroll to the **Configuration** frame.

4.   Select the **Breakaway Reset** check box.

5.   Send the current document to the device by clicking **Send Configuration** located on the lower Device Configuration window (see "**Sending a Document to a Device**" on page 4–24).

Setting Up Menus

Menus may be used to group certain functionality within the RCP-NKQ together. You can store up to 250 menu pages in the RCP-NKQ. You can also set up what happens after an activity has been performed in a particular menu,

that is, you can define the fallback. Each menu page provides a new set of 17 keys that you may assign with new functions.

For example, if you set up a menu containing all the breakaways, another menu containing all the destinations, and another menu containing all the sources, you can set up the menus so that once you have selected a breakaway, the menu containing all the destinations is shown so that you can select a particular destination device. Following this, the menu containing all the sources is shown so that you can select a particular source device.

To set up a menu

1. Open the RCP-NKQ editor (see "**Opening the RCP-NKQ Editor**" on page 4–1).

2. Select the **Menu Details** tab.

3. Use the up and down arrows in the **Number of menus** field to adjust the number to match the requirements of your routing switcher system.

4. Click **Update**.

5. In the row corresponding to **Menu Number 1**:

    a. Double-click to highlight the text in the **Menu Name** column, enter up to 8 characters as a meaningful name for the menu, then press **Enter**.

    b. Click in the **Fallback Mode** column, then select the option that you want from the drop list. Use the information in **Table 4.3** as a guide.

Table 4.3 Fallback Mode Options

Option	Function
Fallback Off	After a key in the menu is pressed, the RCP-NKQ remains on the menu.
	If you select **Fallback Off**, the corresponding value in the **Fallback Menu** column is ignored. You must provide extra menu navigation keys within the menu so that you can exit from the menu.
First Menu	After a key in the menu is pressed, the RCP-NKQ returns to the menu set in **Menu Number 1**.
	If the key that is pressed is assigned as a menu link or a menu navigation key, then the RCP-NKQ goes to that menu.
Previous Menu	After a key in the menu is pressed, the RCP-NKQ returns to the menu that is was on prior to the current menu.
	If the key that is pressed is assigned as a menu link or a menu navigation key, then the RCP-NKQ goes to that menu.
Specified Menu	After a key in the menu is pressed, the RCP-NKQ returns to the menu specified in the corresponding field in the **Fallback Menu** column.
	If the key that is pressed is assigned as a menu link or a menu navigation key, then the RCP-NKQ goes to that menu.

   If you have selected **Specified Menu**, enter the menu number in the corresponding field in the **Fallback Menu** column.

    c. Click in the **Menu Color** column, then select the color that you want for the key.

6. Define the next menu in the **Menu Name** column below the menus that you have defined previously. Continue until you have defined all of the menus that you want to use.

7. Send the current document to the device by clicking **Send Configuration** located on the lower Device Configuration window (see "**Sending a Document to a Device**" on page 4–24).

Setting Up Display Options for Each Type of Key on the RCP-NKQ

You can set up the display options for each type of key on the RCP-NKQ so that you can distinguish between what type of function the key has, and whether or not the key is active. When a key is active, it shows the color and invert settings for the selected state. When a key is not active, it shows the color and invert settings for the default state.

You can select any of the available colors to represent default and selected states. You can also choose whether or not the default or selected state uses inverse.

Default (not selected), not inverted   Selected, inverted

Default (not selected), inverted   Selected, not inverted
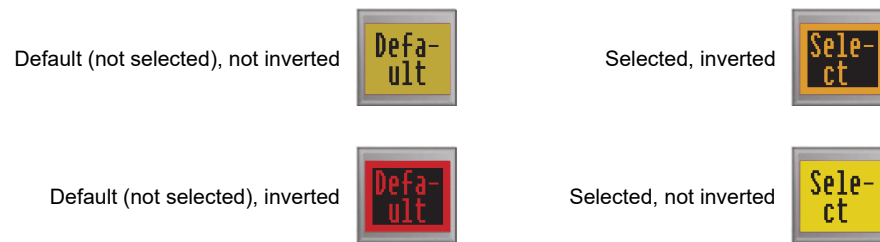
Figure 4.6 Display options for keys on the RCP-NKQ

To set the display options for a key type

1. Open the RCP-NKQ editor (see "**Opening the RCP-NKQ Editor**" on page 4–1).

2. Select the **Display Options** tab.

    The information in **Table 4.4** describes the options that can be selected on the **Display Options** tab.

Table 4.4 Display Options

Column	Description
Mode	The type of function assigned to the key.
Default Color	The color of the key when it is not selected or not active.
Invert Default	The text on the key is shown in inverse when the key is not selected or not active.
Selected Color	The color of the key when it is selected and active.
Invert Selected	The text on the key is shown in inverse when the key is selected and active.

3. If you want to change the default color for a key type, click the corresponding down arrow in the **Default Color** column. As you make changes to the default and selected colors, the changes are shown immediately in the preview keys to the right of the **Display Options** table.

4. Select the color that you want the key to be when it is not selected.

5. If you want the text on the key to appear in inverse, select the corresponding check box in the **Invert Default** column.

6. Select the color that you want the key to be when it is selected.

7. If you want the text on the key to appear in inverse, select the corresponding check box in the **Invert Selected** column.

8. Send the current document to the device by clicking **Send Configuration** located on the lower Device Configuration window (see "**Sending a Document to a Device**" on page 4–24).

Assigning Functions to Keys on the RCP-NKQ

The RCP-NKQ is programmed in the factory with default key assignments (see "**Default Configuration**" on page 4–3). If this default key assignment is not suitable for your routing switcher system, you can easily customise the configuration using the DashBoard and save it as a document.

The available functions are listed in the **Properties** pane, **Function** field drop list.

The RCP-NKQ may be programmed with 250 menu pages. Each menu may hold a different set of key functions. You can assign any of the following key functions across any menu.

Table 4.5 Functions that may be assigned to keys on the RCP-NKQ

Function	Description
Destination (Dest)	The item of destination equipment that receives the physical output from the routing switcher. The destination is selected by pressing the key, but the switch is not made until the required source key is pressed. For more information, see "**Assigning a Source or Destination to a Key**" on page 4–11. By default, keys 1 to 6 on the RCP-NKQ are assigned as destinations.
Source	The item of source equipment that sends the physical input to the routing switcher. A switch occurs when a source key is pressed, and the signal is routed to the currently selected destination. For more information, see "**Assigning a Source or Destination to a Key**" on page 4–11. The function of any source key on a menu is changed when a **TAKE** key is assigned to the menu (see **Take**). By default, keys 7 to 13 on the RCP-NKQ are assigned as sources.
Crosspoint (Xpoint)	A breakaway, destination, and source assigned to one key. A switch is achieved by pressing the crosspoint key, rather than pressing a breakaway key, a destination key, then a source key. For more information, see "**Assigning a Crosspoint to a Key**" on page 4–12. The function of any crosspoint key on a menu is changed when a **TAKE** key is assigned to the menu (see **Take**).
Level	A specific router level assigned to a key. Pressing a level key, selects that router level. Multiple levels may be selected. If a switch is made while a level key is pressed, the switch is made on that router level only. For more information, see "**Assigning a Level to a Key**" on page 4–12.
Breakaway	A pre-defined group of router levels assigned to a key. You select a breakaway as part of making a switch. For more information see, "**Setting Up Breakaways**" on page 4–6 and "**Assigning a Breakaway to a Key**" on page 4–13. If a level key is assigned for one or all of the router levels in a breakaway, then the level keys corresponding to the router levels in the breakaway are illuminated when the breakaway key is selected. The level keys do not illuminate when the default breakaway is selected. If you want to view the levels used in the current breakaway, *hold* the breakaway key (see "**Viewing the Breakaways Assigned to an RCP-NKQ**" on page 5–2). For help with reading the levels from the hexadecimal expression, see **Table 7.12**.
Breakaway Step (Brk Step)	A single key that selects the next breakaway in the **Breakaway** table (see "**Setting Up Breakaways**" on page 4–6). For more information, see "**Assigning a Breakaway Step Key**" on page 4–13. If you want to view the levels used in the current breakaway, *hold* the breakaway step key (see "**Viewing the Breakaways Assigned to an RCP-NKQ**" on page 5–2). For help with reading the levels from the hexadecimal expression, see **Table 7.12**.
Macro	A sequence of switching events that are assigned to a key. For more information, see "**Assigning a Macro to a Key**" on page 4–13.
Protect	A single key that places a block on the current destination, preventing its use by other sources, and other linked remote control panels. For more information, see "**Assigning a Protect Key**" on page 4–16. The protect key may also be used to lock the RCP-NKQ (see "**Locking the RCP-NKQ**" on page 5–4).

Function	Description
Take	The trigger that ends a hold on a switch sequence. This enables you to press the required breakaway, destination, then source key combination, or crosspoint key, or macro key, but not activate the switch until **TAKE** is pressed. If you have a **TAKE** key assigned on a menu, it affects the behavior of the menu. You *must* use it to activate any switch that is set up. If you do not have a **TAKE** key assigned to the menu, then a switch is made as soon as the source/crosspoint/macro key is pressed. For more information, see "**Assigning a Take Key**" on page 4–17.
Chop	A single key that starts a slow or fast toggle between the two most recently selected sources for a given destination. For more information, see "**Assigning a Chop Key**" on page 4–17.
De-assign	The **DE-ASIGN** button has two-fold functionality: • A single key that provides a convenient method for disconnecting machine control ports. For more information, see "**Setting Up Machine Control**" on page 4–21. • A single key that allows you to free-up resources when they are no longer needed for a path. For more information, see "**Setting Up Virtual Routing and Resource Management**" on page 4–22.
Machine Control Key (MC Key)	A single key that provides a convenient method for toggling reciprocal switching on and off when machine control is used. For more information, see "**Setting Up Machine Control**" on page 4–21.
Panel Lock	A single key that provides a convenient method for locking the RCP-NKQ against accidental changes. For more information, see "**Assigning a Panel Lock Key**" on page 4–18. The panel lock function may also be set using the **Panel Locked** check box on the **Configuration** tab.
Menu Link	A link that accesses a pre-defined menu via a single key. For more information, see "**Setting Up Menus**" on page 4–7 and "**Assigning a Menu Link to a Key**" on page 4–18.
Menu Navigation	A specific menu destination assigned to a key. You can set the key to return to **Menu Number 1** (**Home**), the next or previously visited menu, or go up or down a menu as defined on the **Menu Details** tab. If **XPoint Layer** is selected, you can cycle through the current breakaway, destination and source on any visible crosspoint keys by repeatedly pressing this navigation key. The navigation key shows the current layer. For more information, see "**Assigning Menu Navigation to a Key**" on page 4–19.
Menu Display	A status report that is displayed on a key. For example, if you choose to display the current output, then this key shows the output label for the currently selected destination. For more information see "**Assigning a Menu Display to a Key**" on page 4–19.
Unassigned	A label indicating that the key does not have any of the above key functions assigned to it, and therefore does nothing when pressed. For more information, see "**Unassigning a Key**" on page 4–20.

Assigning a Source or Destination to a Key

Source and destination keys map the physical connections on the routing switcher to the RCP-NKQ. You can provide meaningful labels for these physical connections using the **Input Assigns** and **Output Assigns** tabs for the RCP-NKQ (see "**Assigning Physical Connections for Control by an RCP-NKQ**" on page 4–5).

To assign a source or destination to a key

1. Open the RCP-NKQ editor (see "**Opening the RCP-NKQ Editor**" on page 4–1).

2. On the simulated RCP-NKQ, select the key that you want to use for the source or destination.

3. In the pop-up dialog:

a. Select the key function type.

b. Select the desired key value.

The simulated RCP-NKQ in DashBoard shows the label for the specified input/output on the selected key. If you have assigned a name to this input/output using the **Input Assigns**/**Output Assigns** tab, this name appears on the key.

4. Send the current document to the device by clicking **Send Configuration** located on the lower Device Configuration window (see "**Sending a Document to a Device**" on page 4–24).

✱ If you have virtual routing enabled in the RCP-NKQ, the output that you enter represents the virtual destination as set up in the NK-VRC Virtual Routing Core.

Assigning a Crosspoint to a Key

When you make a switch, you need to select the level(s) that you are switching using a breakaway, the destination, then the source. This requires three key presses. To reduce this effort and the potential for error, common switch sequences may be set up in a crosspoint.

✱ You should also assign a menu navigation key on the same menu as a crosspoint key. Set the menu navigation key to **XPoint Layer**. This key may be used to toggle through the breakaway, destination and source information in the crosspoint.

To assign a crosspoint to a key

1. Open the RCP-NKQ editor (see "**Opening the RCP-NKQ Editor**" on page 4–1).

2. On the simulated RCP-NKQ, select the key that you want to use for the crosspoint.

3. In the pop-up dialog:

a. Select **Crosspoint** as the key type.

b. In the **Output** field, enter the physical output that connects to the item of destination equipment to which you want to switch, then press **Enter**.

c. In the **Input** field, enter the physical input that connects to the item of source equipment that provides the required signal, then press **Enter**.

d. In the **Breakaway** field, enter the breakaway level that you want to use for the switch, then press **Enter**.

The simulated RCP-NKQ in DashBoard shows the name of the source and crosspoint indicator on the selected key.

4. Send the current document to the device by clicking **Send Configuration** located on the lower Device Configuration window (see "**Sending a Document to a Device**" on page 4–24).

Assigning a Level to a Key

A level key enables you to select one router level for a switch. While a breakaway is similar, it may contain more than one router level.

To assign a level to a key

1. Open the RCP-NKQ editor (see "**Opening the RCP-NKQ Editor**" on page 4–1).

2. On the simulated RCP-NKQ, select the key that you want to use for the level.

3. In the pop-up dialog:

a. Select **Level** as the key type.

b. In the **Level Value** field, enter the specific router level that you want to assign to this key, then press **Enter**.

The simulated RCP-NKQ in DashBoard shows the selected level on the key, for example **Level 2**.

4. Send the current document to the device by clicking **Send Configuration** located on the lower Device Configuration window (see "**Sending a Document to a Device**" on page 4–24).

Assigning a Breakaway to a Key

When you make a switch, you need to select the level or levels that you are switching using a breakaway. The breakaways should be set up before they are assigned to a key (see "**Setting Up Breakaways**" on page 4–6).

To assign a breakaway to a key

1. Open the RCP-NKQ editor (see "**Opening the RCP-NKQ Editor**" on page 4–1).

2. On the simulated RCP-NKQ, select the key that you want to use for the breakaway.

3. In the pop-up dialog:

   a. Select **Breakaway** as the key type.

   b. In the **Breakaway** value field, enter the row number for the breakaway that you want to use, then press **Enter**.

   The simulated RCP-NKQ in DashBoard shows the name of the breakaway on the selected key, for example, **Tied**.

4. Send the current document to the device by clicking **Send Configuration** located on the lower Device Configuration window (see "**Sending a Document to a Device**" on page 4–24).

Assigning a Breakaway Step Key

An RCP-NKQ may have several breakaways defined. If you want to cycle through the breakaways that have a non-zero level mask, assign a breakaway step key to the RCP-NKQ. The breakaway step key shows the name of the currently selected breakaway with the breakaway step indicator. If you *hold* the breakaway step key for each breakaway, the levels defined in that breakaway are represented by eight hexadecimal characters on the key. For help with reading the levels from the hexadecimal characters see **Table 7.12**.

To assign a breakaway step key

1. Open the RCP-NKQ editor (see "**Opening the RCP-NKQ Editor**" on page 4–1).

2. On the simulated RCP-NKQ, select the key that you want to use for the breakaway step.

3. In the pop-up dialog:

   a. Select **Function** as the key type.

   b. From the **Function Key** value field, select **Breakaway Step**.

   The simulated RCP-NKQ in DashBoard shows **BRK STEP** on the selected key.

4. Send the current document to the device by clicking **Send Configuration** located on the lower Device Configuration window (see "**Sending a Document to a Device**" on page 4–24).

✸ When this configuration is sent to an RCP-NKQ, the key shows the name of the currently selected breakaway with the breakaway step indicator.

Assigning a Macro to a Key

If you want to perform several tasks at the press of a key, assign a macro key to the RCP-NKQ, then record a macro using this key. For more information see "**Recording a Macro Using the Panel**" on page 4–14. You can assign up to 40 macros to an RCP-NKQ.

To assign a macro to a key

1. Open the RCP-NKQ editor (see "**Opening the RCP-NKQ Editor**" on page 4–1).

2. On the simulated RCP-NKQ, select the key that you want to use for the macro.

3. In the pop-up dialog:

a. Select **Macro** as key type.

b. In the **Macro** value field, enter the unique number that you want to use to identify the macro, then press **Enter**.

The simulated RCP-NKQ in DashBoard shows the macro number on the selected key, for example, **Macro 1**.

4. Send the current document to the device by clicking **Send Configuration** located on the lower Device Configuration window (see "**Sending a Document to a Device**" on page 4–24).

Recording a Macro Using the Panel

Macros can be recorded using the keys on the RCP-NKQ. You may record up to 112 key presses in a macro. A macro key must be assigned on the RCP-NKQ before you can use it to record the macro.

To record a macro using the panel

1. On the RCP-NKQ, *hold* the **Macro <n>** key until the key shows **Macro Rec**.

2. Release the key.

The key flashes **Macro Rec** slowly, indicating that the RCP-NKQ is now ready to record a macro.

3. Press the required keys in the correct sequence until your task is completed.

Each key acknowledges that it has been pressed by flashing briefly.

4. Press the **Macro <n>** key again to end the recording process.

The macro is recorded.

★ If you unassign the **Macro <n>** key from the macro function, the recorded macro is held in memory. You can re-assign the macro to a key using the same macro number under which the macro was recorded.

Adding to a Macro Using the Panel

You can add extra key sequences to an existing macro. You can join two existing macros together.

To add to a macro using the panel

1. On the RCP-NKQ, *hold* the **Macro <n>** key until the key shows **Macro Rec**, then release the key.

The key flashes **Macro Rec** slowly, indicating that the RCP-NKQ is now ready to record a macro.

2. *Hold* the **Macro <n>** key again.

The selected macro is played back internally, ready to receive the additional key sequences.

3. Do one of the following:

- To add an extra key sequence, press the required keys in the correct sequence until your task is completed.
- To add an existing macro, press the key for that macro.

Each key acknowledges that it has been pressed by flashing briefly.

4. Press the **Macro <n>** key again to end the recording process.

The existing macro is overwritten with the new macro.

Configuring a Macro

Macros can be configured in DashBoard using the Macros Events tab.

To configure a macro using

1. Assign a macro to a key (see "**Assigning a Macro to a Key**" on page 4–13).

2. In DashBoard, select the **Macro Events** tab.

3. In the **Num. Rows.** box of the macro, enter or select the number of events to be assigned.

4. Click **Update** to add the events to the **Event** column of the macro.

5. In the **Function** column, use the list to select the function to perform for the event. The options are as follows:

   • **Switch** — performs a standard crosspoint switch.

   • **Macro** — performs a macro within the executed macro.

   • **Protect** — creates a protect condition on the destination of the selected crosspoint (see "**Assigning a Protect Key**" on page 4–16).

6. In the **Output** column, perform the following:

   a. Double-click the **Output** box.

   b. Enter a destination for the event.

   c. Press **Enter**.

7. In the **Input** column, perform the following:

   a. Double-click the **Input** box.

   b. Enter a source for the event.

   c. Press **Enter**.

8. In the **Level Mask** column, select the level mask or masks for the device affected by the macro.

   Each function can occur on any available level, independent of any other function within the same macro event.

9. Repeat Steps 5 to 8 for any remaining events of the macro.

10. Send the current document to the device by clicking **Send Configuration** located on the lower Device Configuration window (see "**Sending a Document to a Device**" on page 4–24).

Assigning a Name to a Macro

Macros can be assigned custom names in DashBoard using the Macro Names tab.

To assign a name to a macro

1. In DashBoard, select the **Macro Names** tab.

2. In the **Name** column, perform the following:

   a. Double-click the **Name** box of the macro.

   b. Enter a name.

   c. Press **Enter**.

Configuring a Macro Using a Web Browser

Macros can be configured by using a web browser.

To configure a macro using a web browser

1. Assign a macro to a key (see "**Assigning a Macro to a Key**" on page 4–13).

2. In the **Device Properties** page, click **Macro Events**.

3. In the **Num Rows for Macro** box of the macro, enter the number of events to be assigned.

4. Press **Enter**.

   The **Device Properties** page displays a message that the settings were sent to the device.

5. Click the **Online** tab.

   The **Online Devices** page opens.

6. Click the **Properties** button for the RCP-NKQ.

   The **Device Properties** page opens.

7. In the **Device Properties** page, click **Macro Events**.

   The **Device Properties** page displays the **Macro #** tables.

8. In the **Function** column, use the list to select the function to perform for the event. The options are as follows:

   • **Switch** — performs a standard crosspoint switch.
   • **Macro** — performs a macro within the executed macro.
   • **Protect** — creates a protect condition on the destination of the selected crosspoint.

9. In the **Output** column, enter a destination for the event.

10. In the **Input** column, enter a source for the event.

11. In the **Level Mask** column, select the level mask or masks for the device affected by the macro.

    Each function can occur on any available level, independent of any other function within the same macro event.

12. Repeat Steps 8 to 11 for any remaining events of the macro.

13. Click **Submit Settings** to send the current document to the device.

    The **Device Properties** page displays a message that the settings were sent to the device.

Assigning a Name to a Macro Using a Web Browser

Macros can be assigned custom names using a web browser.

To assign a name to a macro using a web browser

1. Open the **Device Properties** page in a web browser.

2. In the **Device Properties** page, click **Macro Names**.

3. In the **Name** column of the **Macro Names** table, perform the following:

   a. Click the **Name** box of the macro.

   b. Enter a name.

   c. Press **Enter**.

      The **Device Properties** page displays a message that the settings were sent to the device.

Assigning a Protect Key

To prevent switching of critical crosspoints by others, assign a protect key for use on the RCP-NKQ. The protect function ensures that the selected destination can only receive the selected source across the selected levels. Once protected, the selected levels on a destination cannot be switched by other remote control panels (or by the same remote control panel if **Block All Panels** is selected). The source is not protected, and can be freely routed to other destinations if required. You can protect any number of destinations. For more information see "**Protecting a Destination**" on page 5–4.

★ You can also use the protect key to lock the RCP-NKQ against all key presses (see "**Locking the RCP-NKQ**" on page 5–4).

Assigning a Protect Key

Protect keys can be assigned using the editor in DashBoard.

To assign a protect key

1. Open the RCP-NKQ editor (see "**Opening the RCP-NKQ Editor**" on page 4–1).

2. On the simulated RCP-NKQ, select the key that you want to use for the protect key.

3. In the pop-up dialog:

   a. Select **Function** as the key type.

   b. Select **Protect** from the value field.

   The simulated RCP-NKQ in DashBoard shows **PROT Loc** on the selected key.

4. Select the **Configuration** tab.

5. Scroll to the **Configuration** frame.

6. Select the mode of protection that you want for the protect key. Use the information in **Table 4.6** as a guide.

Table 4.6 Protect Modes

Protect Mode	Description
Block Other Panels	The protected destination and level(s) *cannot* be switched to another source by other remote control panels.
	The protected destination and level(s) *can* be switched to another source on the current remote control panel.
Block All Panels	The protected destination and level(s) *cannot* be switched to another source by the current remote control panel or other remote control panels.

7. Send the current document to the device by clicking **Send Configuration** located on the lower Device Configuration window (see "**Sending a Document to a Device**" on page 4–24).

Assigning a Take Key

If you want to pre-load a switch sequence, but delay the switch, assign a **TAKE** key on the menu. If a **TAKE** key is assigned, then all switches on that menu are activated by pressing the **TAKE** key instead of the source/crosspoint/macro key. You should assign a **TAKE** key on each menu that requires this switching type.

To assign a take to a key

1. Open the RCP-NKQ editor (see "**Opening the RCP-NKQ Editor**" on page 4–1).

2. On the simulated RCP-NKQ, select the key that you want to use for the **TAKE** key.

3. In the pop-up dialog:

   a. Select **Function Key** as the key type.

   b. Select **Take** as the key value.

   The simulated RCP-NKQ in DashBoard shows **TAKE** on the selected key.

4. Send the current document to the device by clicking **Send Configuration** located on the lower Device Configuration window (see "**Sending a Document to a Device**" on page 4–24).

Assigning a Chop Key

If you want to toggle two different sources to the same destination, assign a **CHOP** key to the RCP-NKQ. For example, the destination may be the monitor that you are viewing, and the sources may be feeds from two different camera locations. When you use the **CHOP** key, the toggle rate can be slow or fast (see "**Toggling Between Two Sources**" on page 5–5).

To assign a chop to a key

1. Open the RCP-NKQ editor (see "**Opening the RCP-NKQ Editor**" on page 4–1).

2. On the simulated RCP-NKQ, select the key that you want to use for the **CHOP** key.

3. In the pop-up dialog:

    a. Select **Function Key** as the key type.

    b. Select **Chop** as the key value.

    The simulated RCP-NKQ in DashBoard shows **CHOP** on the selected key.

4. Send the current document to the device by clicking **Send Configuration** located on the lower Device Configuration window (see "**Sending a Document to a Device**" on page 4–24).

Assigning a Panel Lock Key

It may be necessary at times to lock the entire RCP-NKQ from changes. If this function is required, assign a panel lock key. You can also lock the RCP-NKQ using the **Panel Locked** check box on the **Configuration** tab (see "**Locking the RCP-NKQ**" on page 4–20).

To assign a panel lock key

1. Open the RCP-NKQ editor (see "**Opening the RCP-NKQ Editor**" on page 4–1).

2. On the simulated RCP-NKQ, select the key that you want to use for the panel lock.

3. In the pop-up dialog:

    a. Select **Function Key** as the key type.

    b. Select **Panel Lock** as the key value.

    The simulated RCP-NKQ in DashBoard shows **LOCK ON** on the selected key.

4. Send the current document to the device by clicking **Send Configuration** located on the lower Device Configuration window (see "**Sending a Document to a Device**" on page 4–24).

Assigning a Menu Link to a Key

You can assign a pre-defined menu to a key on the RCP-NKQ. For information on how to set up a menu see "**Setting Up Menus**" on page 4–7.

To assign a menu link to a key

1. Open the RCP-NKQ editor (see "**Opening the RCP-NKQ Editor**" on page 4–1).

2. On the simulated RCP-NKQ, select the key that you want to use for the menu.

3. In the pop-up dialog:

    a. Select **Menu Link** as the key type.

    b. Select the name of the menu that you want to use.

    The simulated RCP-NKQ in DashBoard shows the menu on the selected key, for example, **CAM**.

4. Click the down arrow in the **Menu** field below the simulated RCP-NKQ, then select the menu that you have just assigned.

5. Assign functions to the keys in this menu (see "**Assigning Functions to Keys on the RCP-NKQ**" on page 4–9).

    For example, if this menu is for the purpose of selecting a destination, assign the keys as destinations. You may choose to have this destination menu fall back to a source menu.

6. Send the current document to the device by clicking **Send Configuration** located on the lower Device Configuration window (see "**Sending a Document to a Device**" on page 4–24).

Assigning Menu Navigation to a Key

If you have multiple menus assigned in the RCP-NKQ, you may want to include some navigation keys to enhance movement through the menus.

To assign menu navigation to a key

1. Open the RCP-NKQ editor (see "**Opening the RCP-NKQ Editor**" on page 4–1).

2. On the simulated RCP-NKQ, select the key that you want to use for navigation.

3. In the pop-up dialog:

   a. Select **Menu Navigate** as the key type.

   b. Select the option that you want from the key value. Use the information in **Table 4.7** as a guide.

Table 4.7 Menu Navigation Descriptions

Option	Function
Home	Returns to the menu defined in **Menu Number 1** on the **Menu Details** tab, **Menu Details** frame.
Next Menu	Goes to the next menu, if one is held in the buffer.
Previous Menu	Goes to the previously used menu, if one is held in the buffer.
Up Menu	Goes up a menu, as defined on the **Menu Details** tab, **Menu Details** frame.
Down Menu	Goes down a menu, as defined on the **Menu Details** tab, **Menu Details** frame.
XPoint Layer	Shows the breakaway, destination or source for any visible crosspoint keys. You can step through the layers of a crosspoint by pressing the crosspoint layer key.

The simulated RCP-NKQ in DashBoard shows the type of navigation on the selected key, for example, **UP MENU**.

4. Send the current document to the device by clicking **Send Configuration** located on the lower Device Configuration window (see "**Sending a Document to a Device**" on page 4–24).

★ When this configuration is sent to an RCP-NKQ, the key shows an arrow in the top line indicating the direction of the menu (for example, ✦ for up) with the first five characters for the menu shown below. If the crosspoint layer is selected, the key shows the current layer and the crosspoint layer indicator.

Assigning a Menu Display to a Key

If you want to be able to view the status of the currently selected input, output or breakaway, assign the menu display function to a key. This key shows the name of the currently selected input, output or breakaway.

To assign a menu display to a key

1. Open the RCP-NKQ editor (see "**Opening the RCP-NKQ Editor**" on page 4–1).

2. Select the key that you want to use for displaying the status.

3. In the pop-up dialog:

   a. Select **Menu Display** as the key type.

   b. Select the option that you want from the key value. Use the information in **Table 4.8** as a guide.

Table 4.8 Display Layer Options

Option	Function
Current Output	Shows the currently selected output on the face of the key.
Current Input	Shows the currently selected input on the face of the key.
Current Levels	Shows the currently selected breakaway on the face of the key. If a level key is selected on the RCP-NKQ, the level mask is shown as eight hexadecimal characters on the face of the display layer key. For help with reading the levels from the hexadecimal expression see "**Viewing the Breakaways Assigned to an RCP-NKQ**" on page 5–2.

The simulated RCP-NKQ in DashBoard shows the type of display on the selected key, for example, **DISP INPUT**.

4. Send the current document to the device by clicking **Send Configuration** located on the lower Device Configuration window (see "**Sending a Document to a Device**" on page 4–24).

★ When this configuration is sent to an RCP-NKQ, the key shows the label for the current source, destination or breakaway (if the breakaway step key is used to cycle through the breakaways), for example **Server 1**, **Server 2** or **SDI**.

Unassigning a Key

If a key is not used for any function it should be unassigned.

To unassign a key from any function

1. Open the RCP-NKQ editor (see "**Opening the RCP-NKQ Editor**" on page 4–1).

2. On the simulated RCP-NKQ, select the key that you want to unassign from a function.

3. In the pop-up dialog, select **Clear Key** as key type.

    The simulated RCP-NKQ in DashBoard shows **UN-ASIGN** on the selected key. If the display option for an unassigned key is set to **Off**, the key is black.

4. Send the current document to the device by clicking **Send Configuration** located on the lower Device Configuration window (see "**Sending a Document to a Device**" on page 4–24).

Locking the RCP-NKQ

You can use the DashBoard to lock a remote control panel against accidental changes. The remote control panel can only be unlocked locally if you have assigned a **LOCK On** or protect key. If these keys have not been assigned, then the remote control panel may only be unlocked via DashBoard.

To lock the RCP-NKQ

1. Open the RCP-NKQ editor (see "**Opening the RCP-NKQ Editor**" on page 4–1).

2. Select the **Configuration** tab.

3. Scroll to the **Configuration** frame.

4. Select the **Panel Locked** check box.

5. Send the current document to the device by clicking **Send Configuration** located on the lower Device Configuration window (see "**Sending a Document to a Device**" on page 4–24).

The remote control panel is locked.

- If a **Panel Lock** key is assigned, this may be pressed to unlock the remote control panel.
- If a protect key is assigned, this may be *held* down for 3 seconds to lock/unlock a panel.
- If neither of these keys are assigned, the remote control panel can only be unlocked by clearing the **Panel Locked** check box, then sending this document to the device.

Setting Up Machine Control

If your routing switcher system uses a machine control routing switcher to provide reciprocal switching of RS-422 signals, your RCP-NKQ must be set up to handle these switches. Machine control must be enabled in the RCP-NKQ, and the router level used for machine control must match that set in the machine control routing switcher.

To set up machine control

1. Open the RCP-NKQ editor (see "**Opening the RCP-NKQ Editor**" on page 4–1).

2. Select the **Configuration** tab.

3. Scroll to the **Configuration** frame.

4. Select the **Machine Control Enabled** check box.

5. Use the up and down arrows in the **Machine Control Level** field to adjust the machine control level to match the level that the machine control routing switcher has been assigned.

6. Send the current document to the device by clicking **Send Configuration** located on the lower Device Configuration window (see "**Sending a Document to a Device**" on page 4–24).

Assigning a Machine Control Key

If your master device controls multiple slave devices, you need a machine control key to temporarily disable reciprocal switching until the last slave device is routed.

To assign a machine control key

1. Open the RCP-NKQ editor (see "**Opening the RCP-NKQ Editor**" on page 4–1).

2. On the simulated RCP-NKQ, select the key that you want to use for machine control.

3. In the pop-up dialog:

   a. Select **Function Key** as the key type.

   b. Select **MC Key** as the key value.

   The simulated RCP-NKQ in DashBoard shows **MC KEY** on the selected key.

4. Send the current document to the device by clicking **Send Configuration** located on the lower Device Configuration window (see "**Sending a Document to a Device**" on page 4–24).

Assigning a De-assign Key

To assign a de-assign key

1. Open the RCP-NKQ editor (see "**Opening the RCP-NKQ Editor**" on page 4–1).

2. On the simulated RCP-NKQ, select the key that you want to use to de-assign a machine control port.

3. In the pop-up dialog:

    a. Select **Function Key** as the key type.

    b. Select **Deassign**.

    The simulated RCP-NKQ in DashBoard shows **DE-ASIGN** on the selected key.

4. Send the current document to the device by clicking **Send Configuration** located on the lower Device Configuration window (see "**Sending a Document to a Device**" on page 4–24).

Setting Up Virtual Routing and Resource Management

The routing systems described in this section use physical switching only. That is, source 1 on level 1 refers to the first socket on the back of a routing switcher assigned to level 1. When an NK-VRC Virtual Routing Core is added to the system, virtual routing is possible. With virtual routing, physical inputs and outputs are mapped to virtual sources and destinations. For example, a virtual source may switch input 15 on level 1 and input 27 on level 2.

The RCP-NKQ must have virtual routing enabled to use this feature. When virtual routing is enabled, the sources and destinations that you assign on the RCP-NKQ refer to the virtual sources and destinations, as defined in the NK-VRC.

✖ When the RCP-NKQ is used with an Ultrix router, ensure that Virtual Routing is enabled and the **Comms Retry Delay Factor** set to **80ms** or greater on the panel.

Additionally, resource management may be implemented on the NK-VRC to manage routing of different signal types between one or more routers using external resources.

For More Information on...

• setting up and using an NK-VRC, refer to the *NK-VRC Virtual Routing Core User Guide*.

To set up virtual routing and resource management

1. Open the RCP-NKQ editor (see "**Opening the RCP-NKQ Editor**" on page 4–1).

2. Select the **Configuration** tab.

3. Scroll to the **Configuration** frame.

4. Perform one of the following:

    • If you want to enable virtual routing, select the **Virtual Routing Enabled** check box.

    • If you want to disable virtual routing, clear the **Virtual Routing Enabled** check box.

5. Send the current document to the device by clicking **Send Configuration** located on the lower Device Configuration window (see "**Sending a Document to a Device**" on page 4–24).

To assign a DE-ASSIGN key

Refer to the section "**Assigning a De-assign Key**" on page 4-21.

Setting the Retry Time for a Switch Failure

When you make a switch, a switch request is sent from the RCP-NKQ to the routing switcher. If the RCP-NKQ does not receive a response from the routing switcher, the RCP-NKQ retries the request after the time specified in the **Comms Retry Delay Factor** field.

Systems require different retry times, depending on the transfer of requests and responses between modules.

Table 4.9 Retry Time

System	Retry Time (ms)
Direct T-Bus RCP to router communications	10
Using NK-VRC in the system	20
Communications via IP networks	80
NK Series Hub	250

To set the retry time

1. Open the RCP-NKQ editor (see "**Opening the RCP-NKQ Editor**" on page 4–1).

2. Select the **Configuration** tab.

3. Scroll to the **Configuration** frame.

4. Use the up and down arrows in the **Comms Retry Delay Factor** field to adjust the retry time according to the requirements of your routing switcher system (see **Table 4.9**).

5. Send the current document to the device by clicking **Send Configuration** located on the lower Device Configuration window (see "**Sending a Document to a Device**" on page 4–24).

Returning to the Home Menu

You can use the DashBoard to return to the **Home** menu if the RCP-NKQ is not responding to key presses.

To return to the Home menu

1. Open the RCP-NKQ editor for the remote control panel that is not responding (see "**Opening the RCP-NKQ Editor**" on page 4–1).

2. Select the **Configuration** tab.

3. Scroll to the **Configuration** frame.

4. Select the **Return to Home Menu** check box.

5. Send the current document to the device by clicking **Send Configuration** located on the lower Device Configuration window (see "**Sending a Document to a Device**" on page 4–24).

   The RCP-NKQ returns to the **Home** menu.

Loading the Factory Defaults

If you need to return the RCP-NKQ to a known configuration, you can use DashBoard to load the factory defaults.

To load the factory defaults

1. Open the RCP-NKQ editor for the remote control panel that needs factory defaults loaded (see "**Opening the RCP-NKQ Editor**" on page 4–1).

2. Select the **Configuration** tab.

3. Scroll to the bottom of the **Configuration** tab.

4. Select the **Load Factory Defaults** check box.

5. Send the current document to the device by clicking **Send Configuration** located on the lower Device Configuration window (see "**Sending a Document to a Device**" on page 4–24).

   The factory defaults are loaded.

Saving the Current Document for the RCP-NKQ

The parameters that you have set up on the device tab for an RCP-NKQ are stored in a configuration document. When you have finished making changes to the configuration of the RCP-NKQ, you should save the document, then add the location of this document to the **File Explorer** pane so that you can open it later.

Saving a Device Document

To save a device document

1. Select the device tab containing the document that you want to save.

2. In DashBoard, right-click the device in the Device Tree.

3. Click **Save As...**.

4. Navigate to the folder in which you want to save the configuration document.

5. Click **Save**.

Adding a Directory to File Explorer

To add the document location to the File Explorer pane

1. Right-click on ☐ FileExplorer in the **File Explorer** pane.

2. Click **Add Directory...**

3. Navigate to the folder in which you saved the configuration document.

4. Click **Add**.

    The folder and any saved documents may now be accessed via the **File Explorer** pane.

Opening a Saved Document

To open a saved document

1. In the **File Explorer** pane, navigate to the saved configuration document that you want to open.

2. Double-click on the icon for the document.

Sending a Document to a Device

When you have made changes to the configuration of a device, the changes are not activated in the device until the document containing the changes is sent to the device. You can open a saved configuration document, make changes to it, save it, then send it to a device.

To send the current document to a device

1. Click **Send Configuration** (located on the lower pane of the **Device Configuration** window).

    The **Send Config to NK Device** dialog automatically selects configuration pages with changed values for sending. You may select all tables by checking the Select Pages if desired.

    The **Send Config to NK Device** dialog also lists similar devices within your routing system network. Smart Paste is automatically selected for devices that are of a similar type but not directly related to the current configuration document. This ensures only compatible data will be sent to other devices.
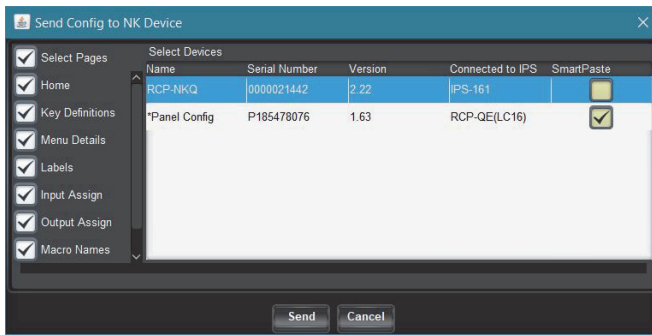
2. Select the pages that you want to send to the device. Use the information in **Table 4.10** as a guide.

Table 4.10 Page Descriptions

Page	Description
Home	The information contained in the **Device Details** frame and the **Configuration** tab.
Key Definitions	The information defining how keys have been assigned.
Menu Details	The information contained on the **Menu Details** tab.
Labels	The information contained in the combined pool of input and output labels.
Input Assign	The information contained on the **Input Assigns** tab.
Output Assign	The information contained on the **Output Assigns** tab.
Macro Names	The information contained on the Macro Names tab.
Macro Events	The information contained on the Macro Events tab.

3. Select the device to which you want to send the current document from the **Select Devices** list.

4. Click **OK**.

Operating the RCP-NKQ

LCD Keys

The LCD keys reflect any one of the following, depending on their current use:

- current status
- label
- current display mode
- special indicators

The text on the key changes as required. The color and inverse settings change depending upon the status of the key and how these display options have been set up. The default status shows when the key is not selected. The selected status shows when the key is selected (see "**Setting Up Display Options for Each Type of Key on the RCP-NKQ**" on page 4–9).

Breakaway warning indicator (breakaway and source keys)

Breakaway step indicator (breakaway step key)

Crosspoint indicator (crosspoint key)

Crosspoint layer indicator (crosspoint layer key)

Protection indicator (destination and protect key)

Navigation indicator (menu navigation keys)
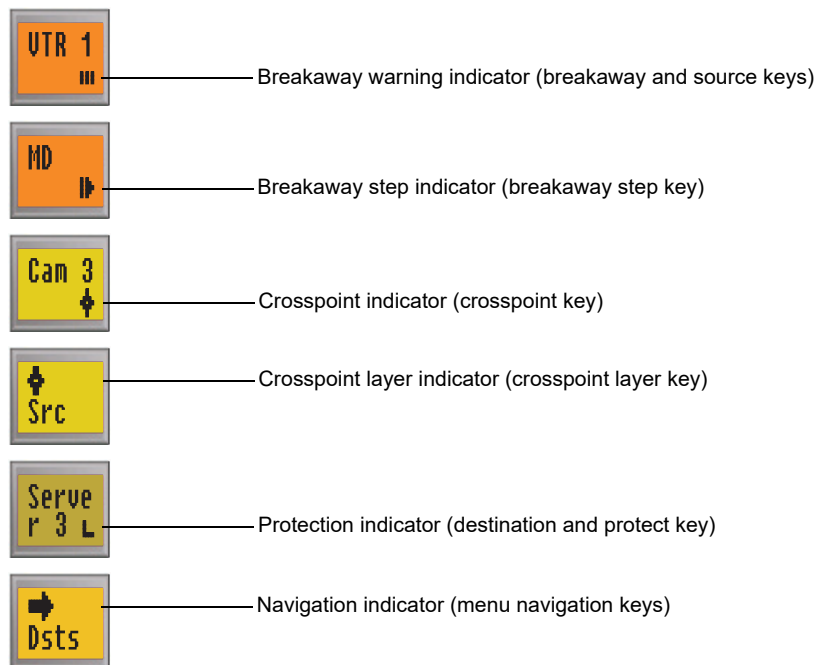
Figure 5.7 *Special indicators for the LCD keys*

Breakaways and Levels

Breakaways are made up of one or more levels that are defined as a level mask, then assigned to a key (see "**Setting Up Breakaways**" on page 4–6). You can assign multiple breakaway keys to an RCP-NKQ. You can select only one breakaway for a switch.

One level may be assigned to a key. You can assign multiple level keys to an RCP-NKQ. You can select multiple level keys prior to a switch.

Selecting Breakaways and Levels

To select a breakaway or level

- Press the corresponding key.

The key shows the color and inverse status for a selected breakaway or level. If you have selected a custom breakaway, and separate level keys are assigned to the RCP-NKQ, the level keys corresponding to the levels in the breakaway also show the color and inverse status for a selected key.

When a breakaway is selected, the status of the routing switcher shown on the key is the status of the lowest router level in the breakaway.

If a breakaway warning is indicated on the key, it shows the routing switcher status in the current breakaway when compared to the router levels defined in the breakaway in the configuration.

Notes

Keep the following in mind when selecting breakaways and levels:

- You cannot add a level to a custom breakaway by pressing a level key.
- A breakaway warning is caused by:
  › no response from the routing switcher system on one or more router levels
  › a difference in status of any level in the currently selected breakaway when compared with the first level in the breakaway

To de-select a breakaway

- Select another custom breakaway, the default breakaway, or a level key.

To de-select a level

- Press the level key again.

Viewing the Breakaways Assigned to an RCP-NKQ

You can view the breakaways assigned to an RCP-NKQ if a breakaway step key is assigned to the RCP-NKQ. The breakaway step key cycles to the next breakaway in the list each time it is pressed, and shows the name of the currently selected breakaway, with the breakaway step indicator in the bottom right of the key (see **Figure 5.7**). As each breakaway is selected, the level(s) defined in that breakaway are illuminated, if corresponding level keys have been assigned to the RCP-NKQ.

To view the breakaways assigned to an RCP-NKQ

- Press the breakaway step key repeatedly to cycle through the available breakaways.

The breakaway step key shows the selected status as you step through the breakaways. When the default breakaway is selected, the breakaway step key changes to the default status.

Notes

Keep the following in mind:

- If a breakaway warning exists, it is indicated at the bottom right of the breakaway key and the source key (see Figure 5.7).
- If a breakaway warning is current for the selected breakaway, the breakaway warning indicator is shown on the screen.

To view the name and levels of a breakaway

- *Hold* the breakaway key.

The name of the breakaway and an 8-character expression appears on the key. Each character provides a hexadecimal representation of the use of four levels, from 32 to 29 on the left, through to 4 to 1 on the right. **Table 7.12** provides a look-up table for reading the levels from the hexadecimal characters.

To view the levels defined in a breakaway

1. Select the breakaway.
2. Hold the breakaway step key.

An 8-character expression appears on the key. Each character provides a hexadecimal representation of the use of four levels, from 32 to 29 on the left, through to 4 to 1 on the right. **Table 7.12** provides a look-up table for reading the levels from the hexadecimal characters.

★ If level keys have been assigned to the RCP-NKQ, these show the selected status. The level keys show the default status when the default breakaway is selected.

Making a Switch

A switch can be made with or without a **TAKE** key assigned to the menu. If there is no **TAKE** key assigned, a switch is made when the source/crosspoint/macro key is pressed. If a **TAKE** key is assigned to the menu, the switch is made when the **TAKE** key is pressed.

### Switching with a Breakaway, Destination, and Source

To make a switch

1. Press the key(s) for the level(s) or breakaway that you want to use.

   If you do not select a custom breakaway or level key, the default breakaway is used.

   To de-select a level, press the key again.

2. Press the destination key that you want to use.

3. Press the source key that you want to use.

4. If a **TAKE** key is assigned to the menu, press **TAKE**.

5. If you want to protect the destination, press **PROT Off**, if it has been assigned (see "**Protecting a Destination**" on page 5–4).

Notes

Keep the following in mind:

• If you have selected the **Breakaway Reset** check box in the configuration document for the RCP-NKQ, the breakaway returns to the default breakaway after the switch is made.

• If resource management is used, the following may occur:

If the requested switch includes a resource, the button will display a resource indicator as shown in (**Figure 5.8**).

Resource indicator (Source key)
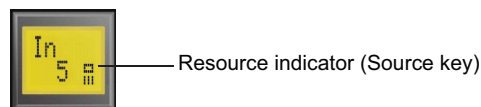
Figure 5.8 Resource indicator for the LCD Source key

After pressing source key to initiate switch:

› if no rule can be found to connect two classes, it displays **NO RULE** message

› if no resource exists for the selected rule, it displays **NO RSRCE** message

› if resource exists but panel priority does not have access rights, it displays **NO ACCES** message

Switching with a Crosspoint

To make a switch using a pre-defined crosspoint key

1. Press the crosspoint key.

2. If a **TAKE** key is assigned to the menu, press **TAKE**.

3. If you want to protect the switch, press **PROT Off**, if it has been assigned (see "**Protecting a Destination**" on page 5–4).

Notes

Keep the following in mind:

- When you make a crosspoint switch, the corresponding breakaway, destination and source keys illuminate.
- If you have selected the **Breakaway Reset** check box in the configuration document for the RCP-NKQ, the breakaway returns to the default breakaway after the switch is made.

Using a Macro

To use a macro

1. Press the macro key.

2. If a **TAKE** key is assigned to the menu, press **TAKE**.

Locking the RCP-NKQ

You can lock the RCP-NKQ if a panel lock or protect key has been assigned to the RCP-NKQ.

The protect key must be *held* to lock the RCP-NKQ.

To lock the RCP-NKQ using a panel lock key

1. Press **LOCK Off**.

   The panel lock key flashes red three times before returning to the default status. The label changes to **LOCK On**.

   Every key on the RCP-NKQ becomes inactive, except for the **LOCK On** key.

2. If you want to unlock the RCP-NKQ, press **LOCK On**.

   The text on the panel lock key changes to **LOCK Off**.

To lock the RCP-NKQ using a protect key

1. Hold **PROT Off** for 3 seconds.

   Every key on the RCP-NKQ becomes inactive, except for the **PROT Off** key, and **LOCK On** key, if assigned.

2. If you want to unlock the RCP-NKQ, *hold* **PROT Off**, or press the panel lock key, if assigned.

★ If a panel lock key is assigned to the RCP-NKQ, this key changes to **LOCK On**, and the **PROT Off** key remains the same.

Protecting a Destination

You can use a protect key to prevent switching of critical crosspoints by others. The protect function ensures that the selected destination can only receive the selected source across the selected levels. Once protected, the selected levels on a destination cannot be switched by other remote control panels (or by the same remote control panel if **Block All Panels** is selected). The source is not protected, and can be freely routed to other destinations if required. You can protect any number of destinations.

You can set the extent of protection that is used, that is, protected against other remote control panels or protected against all remote control panels, via the DashBoard (see "**Assigning a Protect Key**" on page 4–16).

To protect a destination

1. Make the switch.

2. Press **PROT Off**.

   The status of the protect key changes to **PROT Loc**, and the protection indicator is shown at the bottom right of both the protect key and the destination key.

★ If you are protecting a destination on a level for which a routing switcher does not respond, a protect breakaway error (BwayErr) occurs.

To remove the protection from a destination:

1. Press the key for the protected destination.

2. Press **PROT Loc**.

   The status of the key changes to **PROT Off** and the protection indicator is removed from the destination key.

Clearing Protects Held by an RCP-NKQ

A protect that is held by an RCP-NKQ prevents the crosspoint being changed by another user. A protect can be sent to the routing switcher from any connected remote control panel. Protects can be applied at any time, and are indicated by the protection indicator at the bottom right of the destination key.

To clear one protect from an RCP-NKQ

1. Press the destination key that has the protection applied.

   The protection indicator is shown at the bottom right of the destination key.

2. Press **PROT Loc**.

To clear all of the protects from an RCP-NKQ

1. Open the RCP-NKQ editor for the remote control panel that you want to clear (see "**Opening the RCP-NKQ Editor**" on page 4–1).

2. Select the **Configuration** tab.

3. Scroll to the **Configuration** frame.

4. If you want to clear all protects held by the RCP-NKQ, select the **Clear Protect(s)** check box.

5. Send the current document (see "**Sending a Document to a Device**" on page 4–24).

★ Protects may be held by other remote control panels. Each remote control panel attached to a routing switcher has to have its protects cleared separately.

Toggling Between Two Sources

If a **CHOP** key has been assigned to the RCP-NKQ, you can use this key to toggle between two sources.

To toggle between two sources

1. Press the key for the destination on which you want to receive the sources.

2. Press the key for the first source that you want to receive, followed by the **TAKE** key, if assigned.

3. Press the key for the second source that you want to receive, followed by the **TAKE** key, if assigned.

4. Do one of the following:

   • Press **CHOP** once to toggle slowly between the two sources (toggle cadence is 1700 ms). The status of the key changes to **CHOP Slow** and the two source keys illuminate alternately.

   • Press **CHOP** twice to toggle rapidly between the two sources (toggle cadence is 400 ms). The status of the key changes to **CHOP Fast** and the two sources keys illuminate alternately.

5. Do one of the following:

   - If you are in slow chop, press the chop key twice to stop toggling between the two sources.
   - If you are in fast chop, press the chop key once to stop toggling between the two sources.

   The status of the key returns to **CHOP**.

Using a Menu

A key that has a menu assigned has the name of the menu on the key.

To use a menu

1. Press the key that has the menu assigned to it.

2. Press the key that you want to use in that menu.

   If the menu has been set up to fall back to another menu, the RCP-NKQ goes to the pre-defined menu (see "**Setting Up Menus**" on page 4–7).

★ If you need to return to the **Home** menu, but the RCP-NKQ is not responding, use the DashBoard to do this. For more information see "**Returning to the Home Menu**" on page 4–23.

De-Assigning a Machine Control Port

If you want to stop machine control on a particular port temporarily, you can park the port by de-assigning it.

To de-assign a machine control port

1. Press the key for the machine control port that you want to park.

2. Press **DE-ASIGN**.

To unpark the machine control port

- Make a machine control switch.

De-Assigning Resources

De-assigning resources can be done in two ways:

- Route a different source to that destination that does not require a resource. The assigned resource will automatically be de-assigned.
- Use the de-assign button.

To de-assign a resource

1. Select the destination to which the resource is attached.

2. Press **DE-ASIGN**.

   If the selected destination does not include a resource, one of two things will occur:

   - If the panel is in MC mode, park the current destination (switch same source number to destination).
   - If the panel is not in MC mode, it displays the **MC MODE?** message.

★ The ability of a panel to de-assign a resource using the **DE-ASIGN** button will depend on the priority assigned to the panel and the resource in the NK-VRC virtual routing core.

Operating Linked Remote Control Panels

You can link RCP-NKQs together, or link them with RCP-NKQs. The remote control panels must have panel link addresses set, as described "**Linking Remote Control Panels**" on page 4–4. Once these addresses are set correctly,

the remote control panels transfer status, request and response information between them. Effectively, the remote control panels combine to form one big remote control panel. Up to 255 remote control panels may be linked together.

If you want to operate a 34-key remote control panel with the inputs and outputs of a 32 × 32 routing switcher, you may link two RCP-NKQs together. Another use may be to define all the crosspoints that you need without using menus and pages. To do this, you need as many keys as there are crosspoints.

★ The input and output assign labels should be identical across all remote control panels.

Function Keys

Once remote control panels are linked, they operate in a similar manner as the unlinked state. If a special function key (**CHOP**, **DE-ASIGN**, or a panel lock, protect, breakaway, breakaway step or machine control) is assigned to one remote control panel, it is effective across all linked remote control panels, regardless of the location of other relevant keys.

Notes

Keep the following in mind:

- A **TAKE** key does not operate across menus within the same remote control panel however, it does operate across linked remote control panels as long as it is on a current menu at the time that the source/crosspoint/macro key is pressed.
- If a **TAKE** key is assigned, the selected source/crosspoint/macro key and the **TAKE** key flash to indicate that the remote control panel is waiting for **TAKE** to be pressed.

Destinations and Sources

Destinations and sources from different remote control panels may be switched.

Crosspoints

Crosspoints can only be programmed to a remote control panel via the DashBoard, so these are specific to the remote control panel.

Switching

When a breakaway, destination and source are sent in a switch request from a remote control panel, each linked remote control panel receives the level mask, destination and source information via a linked panel message, and either reflects the status, or behaves accordingly (for example, locking the remote control panel or entering macro record mode).

Breakaways

Breakaway numbers are not sent in the switch request, thus removing the need for identical breakaway definitions across linked remote control panels. As such, breakaway step is not available across linked remote control panels. You can view the breakaways within the same remote control panel, in line with unlinked behaviour.

Menus

Menus and menu navigation keys are only effective on the remote control panel to which they are assigned.

Macros

Macros may be recorded or added to across linked remote control panels.

Resetting Devices

If you want to return to a known operating state and configuration, you can:

• send the default document to the RCP-NKQ (see "**Sending a Document to a Device**" on page 4–24)

• reset the device

• reload the factory defaults

If the RCP-NKQ fails to accept any documents that are sent to it, then you should reset the device. When you perform a reset, the RCP-NKQ takes on the last-known operating state and configuration that is stored in memory. If the RCP-NKQ fails to reset, then reload the factory defaults via a web browser.

To reset a device

• In the **IPS Explorer** pane, right-click on the RCP-NKQ that you want to reset, then select **Reset Device**.

Viewing Status and Alarms

An indication that alarms are present for a device is visible in the **IPS Explorer** pane. If a device has one or more alarms, a small circle appears in the icon for the device.
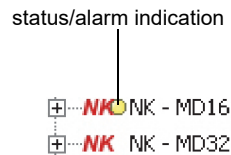
Figure 5.9 *IPS Explorer pane showing device with status/alarm indication*

To view the status and any alarms for an RCP-NKQ

1. Open the RCP-NKQ editor (see "**Opening the RCP-NKQ Editor**" on page 4–1).

2. Select the **Configuration** tab.

3. Scroll to the **Alarms** frame.

The status of the RCP-NKQ is shown via a number of colored buttons and labels.

Troubleshooting

Table 6.11 Troubleshooting

Problem	Cause	Action
I am stuck on a menu with no way back.	A return loop was not set up when the menu was defined.	Return to the **Home** menu as outlined in "**Returning to the Home Menu**" on page 4–23).
RCP-NKQ is not responding to DashBoard.	Information stored in the RCP-NKQ has been corrupted.	Try the following until the RCP-NKQ responds: • Power cycle the RCP-NKQ • Check the T-Bus communications connections • Send the default document to the RCP-NKQ
The RCP-NKQ is not switching correctly.	The NK Series devices are not set up correctly to operate with or without virtual routing.	Set up the devices with virtual routing enabled or disabled, as required (see "**Setting Up Virtual Routing and Resource Management**" on page 4–22).
The RCP-NKQ takes a long time for switch response to be displayed	The current breakaway is trying to switch a level when there is no router configured for that level.	Ensure the current breakaway only includes levels matching connected routers
The display briefly indicates NO RESP	The RCP-NKQ times out while waiting for response from router(s)	Increase the **Comms Retry Delay** value. Refer to "**Setting the Retry Time for a Switch Failure**" on page 4–22.

Hexadecimal to Router Level Conversion

The router level is represented by eight hexadecimal characters. For each hexadecimal character, read the corresponding binary representation across the table.

For each '1' that appears in the binary representation, drop down to the Level row to read the actual router level included in the mask. For example, 0AB50221 represents levels 28, 26, 24, 22, 21, 19, 17, 10, 6, and 1.

Table 7.12 Look-up table for hexadecimal to router level conversion

Hexadecimal	1st character				2nd character				3rd character				4th character			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1
2	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
3	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
4	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0
5	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
6	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0
7	0	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1
8	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0
9	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1
A	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
B	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1	1
C	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0
D	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
E	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
F	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Level	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17

Hexadecimal	5th character				6th character				7th character				8th character			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1
2	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
3	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
4	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0
5	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
6	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0
7	0	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1
8	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0
9	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1
A	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
B	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1	1
C	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0
D	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
E	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0
F	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Level	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1