NK-3RD User Guide

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.)*

NK-3RD · User Guide

- Ross Part Number: **9807DR-1020-05**
- Release Date: December 5, 2017.

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

Copyright

©2017 Ross Video Limited, Ross®, and any related marks are trademarks or registered trademarks of Ross Video Limited. All other trademarks are the property of their respective companies. PATENTS ISSUED and PENDING. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, mechanical, photocopying, recording or otherwise, without the prior written permission of Ross Video. While every precaution has been taken in the preparation of this document, Ross Video assumes no responsibility for errors or omissions. Neither is any liability assumed for damages resulting from the use of the information contained herein.

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.

Safety Notices

Refer to the "**Important Regulatory and Safety Notices**" document that accompanied your product.

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

US 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 Limited could void the user's authority to operate this equipment.*

Canada

This Class A device complies with Canadian ICES-003 rules.

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

European Union

This equipment is in compliance with the essential requirements and other relevant provisions established under regulation (EC) No 765/2008 and Decision No 768/2008/EC referred to as the "New Legislative Framework".

> **Warning** — *This equipment is compliant with Class A of CISPR 32. In a residential environment this equipment may cause radio interference.*

Australia/New Zealand

This equipment is in compliance with the provisions established under the Radiocommunications Act 1992 and Radiocommunications Labeling (Electromagnetic Compatibility) Notice 2008.

Korea

This equipment is in compliance with the provisions established under the Radio Waves Act.

Class A equipment (Broadcasting and communications service for business use).

This device is a business-use (Class A) EMC-compliant device. The seller and user are advised to be aware of this fact. This device is intended for use in areas outside home.

Type of Equipment	User's Guide
A급 기기 (업무용 방송통신기자재)	이 기기는 업무용(A급) 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.
Class A Equipment (Industrial Broadcasting & Communication Equipment)	This equipment is **Industrial (Class A) electromagnetic wave suitability equipment** and seller or user should take notice of it, and this equipment is to be used in the places except for home.

International

This equipment has been tested under the requirements of CISPR 22:2008 or CISPR 32:2015 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.*

Warranty and Repair Policy

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

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 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

Introduction

This guide is for installers and operators of the Ross Video NK-3RD. It provides instructions on how to connect the NK-3RD into your routing switcher system, how to configure the NK-3RD 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.

This guide includes the following chapters:

- "**Introduction**" summarizes the guide and provides important terms, and conventions.
- "**Overview**" provides general information to keep in mind before configuring your NK-3RD within a routing system.
- "**Installation**" provides guidelines and instructions for physically installing your NK-3RD.
- "**Setting Up the NK-3RD**" provides instructions for displaying the NK-3RD in DashBoard, and configuring the NK-3RD device details.
- "**Operating the NK-3RD**" provides general information for establishing communications with third party devices.
- "**Third Party Protocols**" lists the third-party protocol commands the NK-3RD supports.

If you have questions pertaining to the operation of NK-3RD, contact us at the numbers listed in the section "**Contacting Technical Support**". Our technical staff is always available for consultation, training, or service.

Documentation Conventions

Special text formats are used in this guide to identify parts of the user interface, text that a user must enter, or a sequence of menus and sub-menus that must be followed to reach a particular command.

Interface Elements

Bold text is used to identify a user interface element such as a dialog box, menu item, or button. For example:

In the **Save As** dialog, click **OK**.

User Entered Text

Courier text is used to identify text that a user must enter. For example:

In the **Language** box, enter **`English`**.

Referenced Guides

Italic text is to identify the titles of referenced guides, manuals, or documents. For example:

For more information, refer to the ***DashBoard User Guide***.

Menu Sequences

Menu arrows are used in procedures to identify a sequence of menu items that you must follow. For example, if a step reads "**File** > **Save As**," you would click the **File** menu and then click **Save As**.

Important Instructions

Star icons are used to identify important instructions or features. For example:

✶ The NK-3RD resets if configuration items are changed.

Contacting Technical Support

At Ross Video, we take pride in the quality of our products, but if problems occur, help is as close as the nearest telephone.

Our 24-hour Hot Line service ensures you have access to technical expertise around the clock. After-sales service and technical support is provided directly by Ross Video personnel. During business hours (Eastern Time), technical support personnel are available by telephone. After hours and on weekends, a direct emergency technical support phone line is available. If the technical support person who is on call does not answer this line immediately, a voice message can be left and the call will be returned shortly. This team of highly trained staff is available to react to any problem and to do whatever is necessary to ensure customer satisfaction.

- **Technical Support**: (+1) 613-652-4886
- **After Hours Emergency**: (+1) 613-349-0006
- **E-mail**: techsupport@rossvideo.com
- **Website**: http://www.rossvideo.com

Overview

The NK-3RD enables a third-party control system to control an NK Series routing switcher system using the SW-P-08 (General Remote Control), SW-P-02 (General Switcher Communication), Jupiter ESswitch, or GVG Native protocol. 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.

Features

The NK-3RD Routing Switcher provides the following features:

- Works with any NK Series router
- Supports crosspoint switch commands, and crosspoint status requests
- Up to 1024 outputs may be controlled
- Up to 1024 inputs may be controlled
- Supports up to 16 levels
- Matrix number can be configured, up to a maximum of 16 (Probel SW-P-08 protocol only)
- Virtual routing is supported through NK-VRC Virtual Routing Core
- Firmware is fully upgradeable using DashBoard
- Slim, modular design integrates with NK Series routers via T-Bus
- Minimal configuration required for operation. Default settings allow it to work with any NK Series router.

Supported Protocols

- Prober's General Remote Switcher (SW-P-08) protocol. System3 refers to a subset of the protocol's functionality. For System3, Probel matrix number begins with 0, and levels start from 0.
- SW-P-02 protocol.
- The SW-P-08 and SW-P-02 use an RS422 physical layer.
- Grass Valley Jupiter ESswitch protocol.
- GVG Native protocol.
- The NK-3RD serial port is configured for 1 stop bit and odd parity for all protocols. The Baud Rate is selectable between 38400 or 19200 baud.

✶ This may require adjusting the parity setting at the other end of the serial line. If the controller does not support configurable serial settings, please contact Ross Video Tech Support for help.

- NK switching protocol version 2 via T-Bus for Ross Video router control.
- Ross Video Generic Device Protocol for full configuration through DashBoard and the NK-IPS.

Supported Commands

The NK-3RD supports a limited command set from each protocol. Switch request and status response commands enable the NK-3RD to effectively integrate with other third party devices with the minimum of configuration and overhead.

For More Information on...

- the protocol specific commands, refer to the chapter "**Third Party Protocols**" on page 25.

Supported NK Devices

The NK-3RD can be controlled by any system that implements SW-P-08, SW-P-02, Grass Valley Jupiter ESswitch, or GVG Native protocol.

Typical System Equipment

The NK-3RD is used to control a Ross Video NK Series router using the SW-P-08, SW-P-02, ESswitch, or GVG Native protocol. A simple system would include:

- NK Series Router
- NK-3RD Third-Party Interface
- Third-party control system implementing SW-P-08, SW-P-02, ESswitch, or GVG Native protocol.

Any number of NK Series routers can be controlled, and full NK Series control can be implemented, with control panels and DashBoard.

NK-3RD Functional Overview

On power up the NK-3RD requests the complete NK Series status or tally information. The third-party systems must request this status on startup as required. The NK-3RD will also send status change messages from the NK Control System, so polling is not required (protocol dependent).

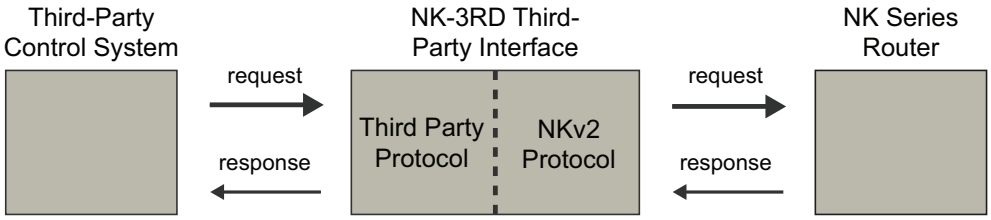


Figure 2.1 Block Diagram Example of Protocol Emulation

Any switch requests or commands received by the converter are converted to NK Series switch or tally (status) requests.

The output and level are sent straight to the NK Series router as received. So to control an NK-3G router in its default setting, the third-party control system must be configured to use Level 1.

System Overview

The NK Series system may be as complex or as simple as required. A medium scale system is shown with control panels and DashBoard. It is important to note that control panels and DashBoard are not required for the simplest installation, which would be a single router level.

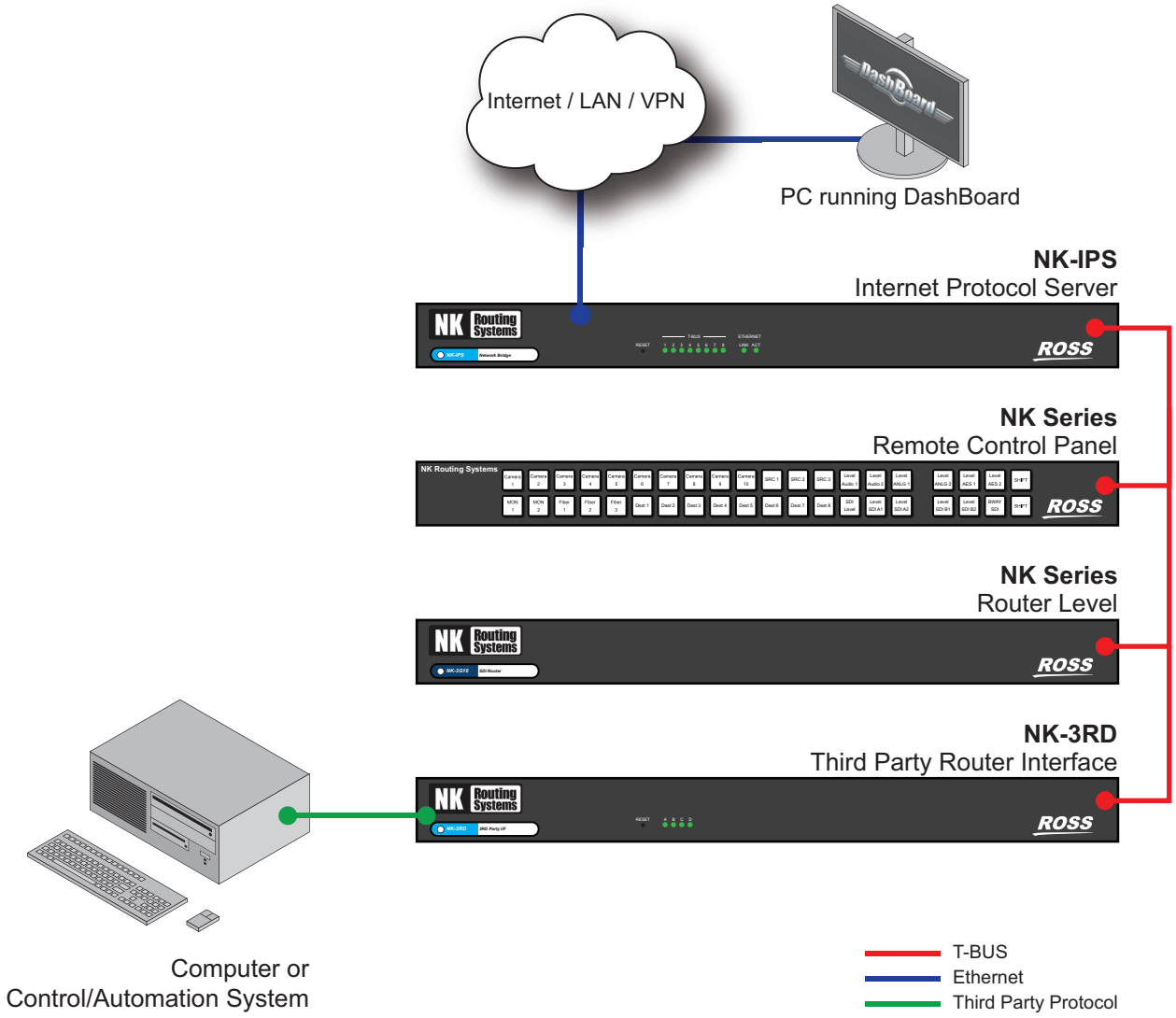


Figure 2.2 Example Routing Switcher System Using NK-3RD

Note:

- All T-Bus connections use straight-through CAT5 cables.
- If the NK-IPS is connected directly to the Ethernet port of a PC, a cross-over CAT5 cable is used.
- If the NK-IPS is connected to a network hub or switch, a straight-through CAT5 cable is used.

Installation

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

Unpacking the Equipment

On receiving your NK-3RD, check the contents against the packing list. Make sure that all equipment itemized on the packing list is present before you start installing the NK-3RD into your routing switcher system.

Open the packing case and examine the contents for signs of damage. If you notice any damage, contact Ross Video immediately to organize return of the equipment.

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), and the ambient temperature should be < 30°C (86°F).
- The routing switcher system has been 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 necessary equipment.
- The routers are connected to physical inputs and outputs, and have appropriate NK Series power supplies.
- All NK Series equipment connected in the routing switcher system has firmware v2.00 or later. For information on updating the firmware in a device see the readme file that comes with the firmware.

✶ If the operating environment is not achievable, then routers and remote control panels should be installed with 1RU between each module.

For information on how to set the IP address in an NK-IPS see the documentation provided with the device.

Device Controls – Front

Figure 3.1 Front Panel

1. Heartbeat LED

The Heartbeat LED is a white LED that softly pulses to show that the device is operational. It will quickly flicker to show the following events:

- NK switch or status response
- Configuration command addressed to this device
- Third party crosspoint switch command received

2. Reset Button

The reset button will force a hard reset of the device. It is slightly recessed to prevent accidental operation.

3. Comms Activity LEDs

The Comms activity LEDs light to show serial communication activity. They show the following status:

Table 3.1 Comms Activity LEDs

LED	Monitors	Details
A	Third-Party Rx	Serial data is being received from third-party device.
B	Third-Party Tx	Serial data is being transmitted to third-party device.
C	NK Rx	Serial data is being received from NK Control System.
D	NK Tx	Serial data is being transmitted to NK Control System.

Device Controls – Rear

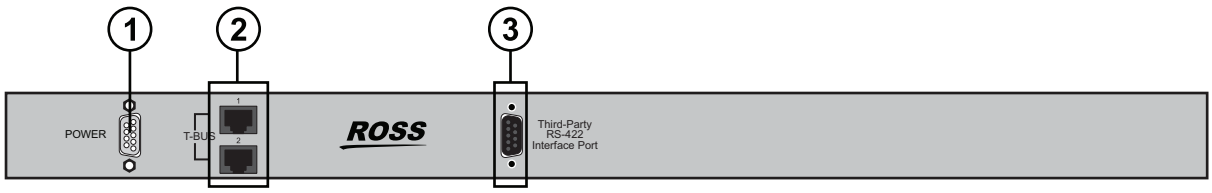


Figure 3.2 Rear Panel

1. Power Connector

The supplied power connects here.

2. T-Bus Ports

This is an RJ-45 socket for connecting to the T-Bus. T-Bus is a modified RS-485 serial communications link used by NK Series devices. Connect to NK Series devices using straight-through CAT5 cables.

There are two T-Bus sockets which are passively connected to create a “loop through” connection.

3. Third-Party Port

This is a female DB9 connector wired for standard RS-485/RS-422 communications. Use this to connect to the third-party device that will be controlling the system.

Connecting Power

The NK-3RD is powered using the 15V 3.3A power supply provided. This power supply connects directly to the AC mains supply.

Warning — *Always use the region-specific power supply and cable provided with the equipment.*

✶ The NK-3RD does not receive nor contribute to power via the T-Bus connector (phantom power).

Connecting to Third-Party Devices

The NK-3RD connects to third-party devices using RS-422 over standard DB9 cables. **Figure 3.3** shows the pinout designations for the DB9 connector.

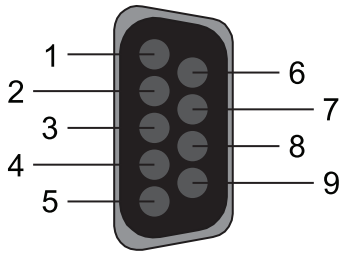


Figure 3.3 NK-3RD DB9 — Pinout Assignment

Table 3.2 DB-9 Pinout Assignments

Pin	Function
1	GND
2	Rx-
3	Tx+
4	GND
5	N/C
6	GND
7	Rx+
8	Tx-
9	GND

Connecting to NK Series Routers

Connect to NK Series routers using straight-through CAT5 cables.

Setting Up the NK-3RD

The NK-3RD can be configured using DashBoard. DashBoard must be run on a computer that has a physical wired ethernet connection to either an NK-IPS or NK-NET. Wireless connections do not allow device discovery. This chapter provides instructions for displaying the NK-3RD in DashBoard, and configuring the NK-3RD details.

Accessing the NK-3RD Interface in DashBoard

The NK-3RD displays in the DashBoard Tree View as a sub-node of the NK-IPS or NK-NET that the NK-3RD is physically connected to. The NK-3RD interface is organized into three panes: Device Details, Configuration, and Device Control.

✶ You need an NK-IPS connected to the system to configure the NK-3RD via DashBoard.

For More Information on...

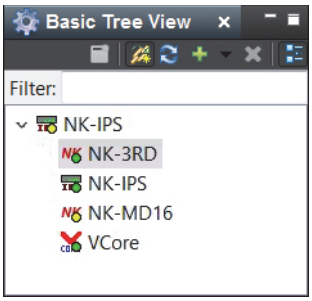
- downloading and installing the DashBoard client software, refer to the ***DashBoard User Manual***.

To launch DashBoard

1. Ensure that you are running DashBoard software version 8.0 or higher.
2. Launch DashBoard by double-clicking its icon on your computer desktop.

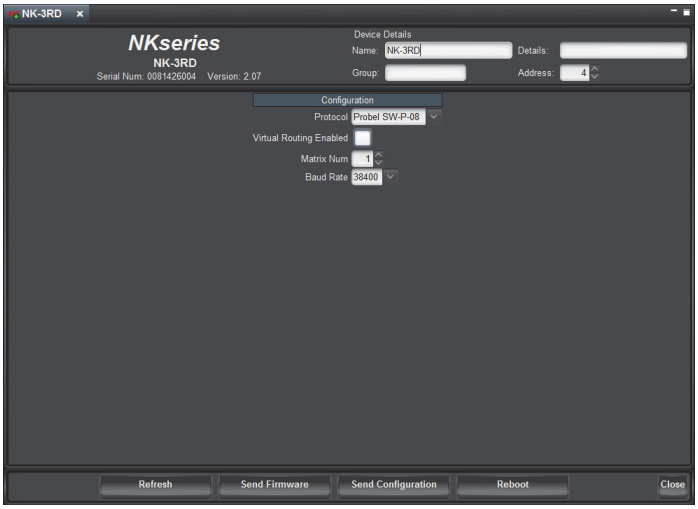
To access the NK-3RD interfaces in DashBoard

1. Locate the NK-3RD in the Tree View of DashBoard.



2. Double-click the NK-3RD node for the corresponding NK-3RD that you want to configure.

   The NK-3RD interface opens in the right-side of the DashBoard window.



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. Information is read from the device and shown in the device tab. **Table 4.1** outlines the Device Details that are read from the NK-3RD.

Table 4.1 Device Details that are read from the NK-3RD

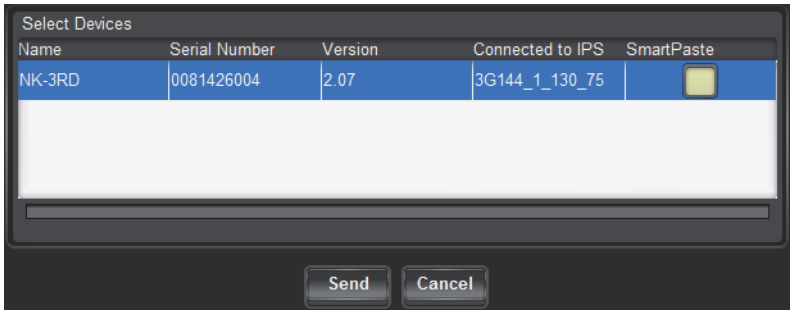
Item	Description
Serial Num	The serial number of the device. This is set in the factory. It is unique to the device. This parameter is read-only.
Version	The version status of the firmware detected in the device. This parameter is read-only.
Name	The name for the device. The default name for the NK-3RD is "**NK-3RD**". This parameter may be changed to any name that uniquely identifies the device. The name may be up to 16 characters in length.
Group	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	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	The address is used by each device in the routing switcher system to identify itself to other devices during communication. The default address for the NK-3RD is 248. Devices should have a unique address.

Changing Device Details on the NK-3RD

To change device details on the NK-3RD

1. In the **Device Details** frame, click inside the field that you want to change.
2. Enter the information as required.
3. Click **Send Configuration**.

   The **Send Config to NK Device** window opens.



4. Click **Send**.
5. Click **Refresh** to refresh the data and verify that the updated device details were loaded to the device.

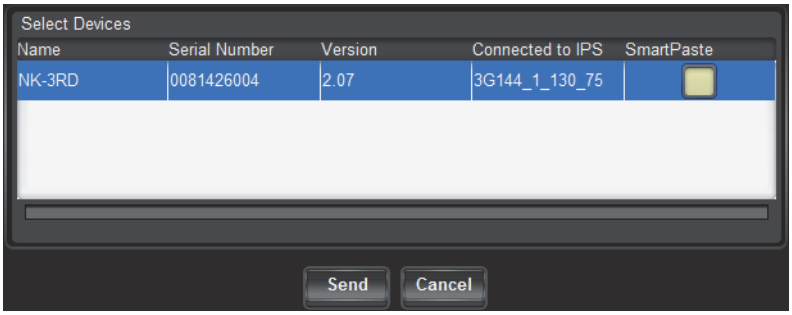
Configuring the NK-3RD

The NK-3RD configuration should be reviewed and set as required before use.

To change the configuration on the NK-3RD

1. Locate the **Configuration** area in the NK-3RD DashBoard interface.
2. Use the **Protocol** menu to select the type of protocol for the third-party control system to use to control the NK Series routing switcher system via the NK-3RD. Choose from the following:
   - Probel SW-P-08
   - Probel SW-P-02
   - Jupiter ESswitch
   - GVG Native
3. If an NK-VRC is used in the routing system, select the **Virtual Routing Enabled** box.
4. Use the **Matrix Number** field when the **Protocol** is set to **Probel SW-P-08**. This protocol allows up to 16 matrices (0 to 15) to be connected. The **Matrix Number** value selects which matrix number this NK-3RD will be responding to. By default this is set to **0**. This value should correspond to the setting in the third-party device.
5. Use the **Baud Rate** menu to select either 19200 or 38400 baud for the serial communications. The default is 38400.
6. If you are using the Probel SW-P-02 protocol, select the level of the NK system to be controlled.
7. Click **Send Configuration**.

   The **Send Config to NK Device** window opens.



8. Click **Send**.
9. Click **Refresh** to refresh the data and verify that the configuration was loaded to the device.

   If configuration items have changed, the device will reset.

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. If you have made changes to the configuration, but want to return to the default values, you can send the default document to the device.

Table 4.2 provides the default values.

Table 4.2 NK-3RD Default Values

Item Name	Value
Name	NK-3RD
Details	–
Group	–
Address	248
Virtual Routing Enabled	false
Matrix Num	0

Operating the NK-3RD

Third-Party Device Configuration

The third-party device will need to be configured to output SW-P-08, SW-P-02, ESswitch, or GVG Native commands on the RS-422 serial port. This is device specific, and users should consult the documentation that comes with the third party-device.

For correct operation, the following conditions need to be met:

- The third-party device needs to be configured to send SW-P-08, SW-P-02, ESswitch, or GVG Native commands on the RS-422 port to which the NK-3RD is connected.
- The NK-3RD external port uses 38.4k or 19.2k baud data rate, with 1 stop bit and ODD parity.

  This may require adjusting the parity setting at the other end of the serial line (e.g. on the automation server, etc.). If the controller does not support configurable serial parity settings, contact Ross Video Tech Support for additional support/help.
- The third-party device needs to be configured to use the same matrix number as the NK-3RD. The NK-3RD is by default set to 0. This is the lowest possible matrix number. If the third-party device gives a 0 (zero) option, then it should be selected.
- The third-party device needs to be configured to output the same level number as the NK Series router level that it is controlling. For example, an NK-3G router will use level 1.
- The third party device needs to have an output range set that matches the router level being controlled. For example, an NK-3G144 router uses outputs 1 to 144 by default.
- The third party device may need to have labels configured. If so, it will also need to be told to use its internal labels rather than requesting them from the SW-P-08, SW-P-02, ESswitch, or GVG Native protocol. The NK-3RD does not send label information.

Status Request

When a status request is received by the NK-3RD, it responds with the selected destination current status. The format of the response is protocol dependent.

This operation does not require any communication with the NK system, as the NK-3RD keeps a complete copy of the NK system status. This cache is updated by the NK system upon status change.

Switch Request

When a Switch or Take request is received by the NK-3RD, it sends a switch command to the NK system.

A switch response from the NK router will cause the NK-3RD internal cache to be updated. Any third-party communications upon this response is protocol dependent. It is the responsibility of the third-party device to manage retries.

Device Logging

The NK-3RD may log the communications between a third party device and the NK system. This is useful for debugging communication errors. As the NK-3RD has limited internal capacity (1000 entries), two logging functions are provided:

- **Start-up** — Logs the large amount of communications at device start-up.
- **Rolling** — Logs the on going communications. The log will 'roll over' to the start once 1000 entries is reached.

✶ It is recommended for device performance that logging not be enabled for normal operation.

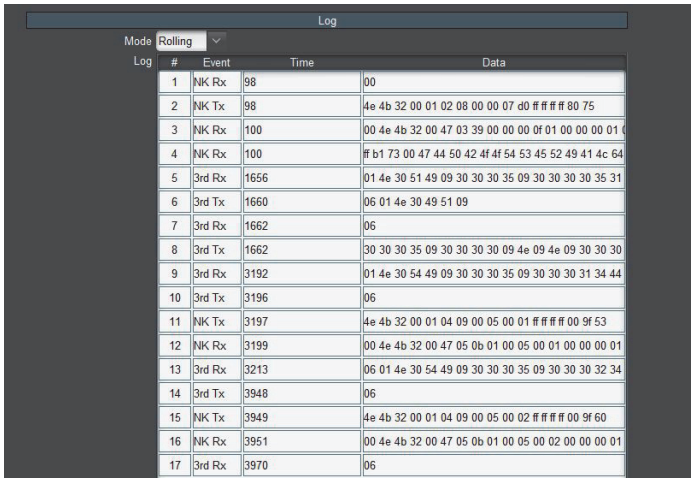
To enable logging

1. Locate the **Log** area in the NK-3RD DashBoard interface.
2. Use the **Mode** menu in the log area to specify the logging mode. Choose from the following:
3. Send the configuration to the NK-3RD as follows:
   a. Click **Send Configuration**.
   b. Click **Send**.
   c. Click **Refresh** to refresh the data and verify that the updated device details were loaded to the device.

To view the log entires

1. Ensure logging is enabled for the specific NK-3RD you wish to monitor.
2. Click **Refresh** on the NK-3RD interface.

   The log entries displays in DashBoard.



Third Party Protocols

The NK-3RD Third-Party Interface enables a third-party control system to control an NK Series routing switcher system using the SW-P-08, SW-P-02, Jupiter ESswitch, or GVG Native protocol. Using one of these protocols, an NK Series router can emulate a third-party router (limited to crosspoint switching and crosspoint status/tally requests). This allows a third-party automation system using the third-party's system protocol to control an NK Series router.

For More Information on...

- these commands, refer to the appropriate third party equipment's protocol documentation.

Supported Protocols

The NK-3RD implements a subset of the supported protocols, allowing crosspoint switching and status updating with minimal configuration. The following protocols are supported by the NK-3RD:

Table A.1 NK-3RD Supported Protocols

Name	Version Supported
Probel SW-P-08	Issue 13 08/09/98
Probel SW-P-02	SW-P-88 issue 1 20/03/01
Jupiter ESswitch	Revision E 18/10/01
GVG Native	071-0201-01

Implemented Probel SW-P-08 (General Remote Control Protocol) Messages

- CROSSPOINT INTERROGATE
- CROSSPOINT TALLY
- CROSSPOINT CONNECT
- CROSSPOINT CONNECTED

Implemented Probel SW-P-02 (General Switcher Communication Protocol) Messages

- INTERROGATE
- TALLY
- CONNECT
- CONNECTED

Implemented Jupiter ESswitch Messages

- KW_START_UP_RESPONSE
- KW_PRESET
  - › IF_MATRIX_POINTER
  - › IF_LEVEL_POINTER
  - › IF_SOURCE_POINTER
  - › IF_DESTINATION_POINTER
- KW_CONNECT_CROSSPOINT
- KW_READ
- KW_IF_ITEM_RESPONSE
  - › IF_SOURCES_TO_DEST

Implemented GVG Native Messages

Table A.2 Implemented GVG Native Messages

Message	Notes
BK,D	Forces next QJ to return all destination statuses.
QI / Qi	Query Destination by Index. Returns current connected source index.
QJ / Qj	Query Destination by Index. Returns current connected source index for all levels.
TI	Request Take Index with Level Index. No response.
TJ	Request Take Index with Level Bitmap. No response.