



NWE-3GA User Guide

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NWE-3GA · User Guide

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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.

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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.

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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 and part 15 of the FCC Rules.

Cet appareil numérique de la classe “A” est conforme à 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.

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

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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.

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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.*

Maintenance/User Serviceable Parts

Routine maintenance to this openGear product is not required. This product contains no user serviceable parts. If the module does not appear to be working properly, please contact Technical Support using the numbers listed under the “**Contact Us**” section of this manual. All openGear products are covered by a generous 5-year warranty

and will be repaired without charge for materials or labor within this period. See the “**Warranty and Repair Policy**” section in this manual for details.

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.

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Introduction

This guide covers the installation and use of the NWE-3GA Nielsen Watermark Encoder. The following chapters are included:

- “**Introduction**” summarizes the guide and provides important terms, and conventions.
- “**Before You Begin**” provides general information to keep in mind before installing and configuring your NWE-3GA.
- “**Hardware Overview**” provides a basic introduction to the NWE-3GA hardware features.
- “**Getting Started**” provides information to assist in planning your NWE-3GA installation and operation.
- “**Physical Installation**” provides instructions for the physical installation of the NWE-3GA.
- “**Using DashBoard**” provides an overview of launching DashBoard and accessing the NWE-3GA interfaces in the DashBoard window.
- “**Configuration**” provides instructions for configuring the NWE-3GA using the options available in DashBoard.
- “**DashBoard Menus**” provides a brief summary of the menus available for the NWE-3GA in DashBoard.
- “**Software Upgrades**” outlines how to upgrade the software on the NWE-3GA using the options in DashBoard.
- “**Technical Specifications**” provides the specifications for the NWE-3GA.
- “**Software Licenses**” provides third-party software license information for your NWE-3GA.
- “**Service Information**” provides information on the warranty and repair policy for your NWE-3GA.
- “**Glossary**” provides a list of terms used throughout this guide.

Related Publications

It is recommended to consult the following Ross documentation before installing and configuring your NWE-3GA:

- ***DashBoard User Manual***, Ross Part Number: 8351DR-004
- ***MFC-OG3-N User Manual***, Ross Part Number: 8322DR-004
- ***OGX-FR User Manual***, Ross Part Number:

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 **Network** tab, click **Apply**.

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

Text set in bold and italic represent the titles of referenced guides, manuals, or documents. For example:

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

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:

- ★ Contact your IT department before connecting to your facility network to ensure that there are no conflicts. They will provide you with an appropriate value for the IP Address, Subnet Mask, and Gateway for your device.

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>

Before You Begin

The NWE-3GA adds data to audio used to track a video program through many national distribution systems. Typically, the signal is monitored as it is broadcast on all commercial full-power United States television stations, although other stations, cable feeds, and households can be monitored.

The information that is encoded is used to uniquely identify the content of the creative and, if desired, track the transport path of the creative through any other point in the distribution system that does watermarking. This patented ability to add information at various stages is called multi-level encoding. The encoded information typically consists of:

- **Source Identification Number (SID)** — A unique number is assigned to each source of creative, usually one per encoder. Post-production facilities that serve more than one Automated Measurement of Lineups (AMOL) client may use a separate SID for each client.
- **Date/Time** — The local time that the creative was encoded.

The audio portion of the NWE-3GA uses a Nielsen Watermark (NW) audio encoder. Audio is encoded on a continuous basis. The data is embedded in an audio signal by performing minor modification of selected spectral frequency components of successive blocks of audio data.

Operator Interfaces

The NWE-3GA can be accessed via one of the following interfaces:

- **DashBoard Control System** — This interface enables you to monitor and control openGear frames and cards from a computer. DashBoard communicates with other cards in the openGear frame through the Network Controller Card. Refer to the *DashBoard User Manual* for details on using DashBoard.
- **PC Interface Protocol** — The NWE-3GA provides a computer-to-computer protocol, known as the PC Interface, allowing a remote computer with special software to control the NWE-3GA. The physical connection is through the serial port on the 8320AR-060 rear module. Refer to the *NWE-3GA PC Interface Protocol User Manual* for details.
- **Simple Network Management Protocol (SNMP)** — Optional support for remote monitoring using SNMP is also available. This interface has the additional advantage of operating over TCP/IP ethernet. Refer to your NWE-3GA Management Information Base (MIB) file for a breakdown of SNMP controls on the NWE-3GA.

Features

The NWE-3GA was designed with the following client requirements in mind:

- Supports serial digital (SDI) compatible video per SMPTE 259M, SMPTE 292M, and SMPTE 424
- Supports AES3id digital audio or embedded in the SMPTE 259M, SMPTE 292M, or SMPTE 424 video
- Supports popular video formats: 480i 59.94Hz, 720p 59.94Hz, 1080i 59.94Hz, 1080p 59.94Hz, 576i 50Hz, 720p 50Hz, 1080i 50Hz, and 1080p 50Hz
- AES input signals are unbalanced 75ohm and compliant with AES3id
- Ability to watermark up to eight audio pairs (16 channels) selected from eight embedded or four AES3id channel pairs. This supports up to eight stereo pairs, or two 5.1 channel surround groups plus two stereo pairs.
- Supports 5.1, stereo, and mono signals
- Ability to define up to eight clusters per NWE-3GA
- One SD/HD/3G video input and output with relay bypass
- Four discrete AES inputs and outputs with relay bypass
- Operating software can be uploaded via LAN connection
- Includes a video/audio bypass switch

- Fully transparent to VANC and H-VANC data
- One serial port for communicating using the PC Interface Protocol
- Indicators for bypass enabled and status
- Install up to 5 cards per frame
- Audio and video are delayed by one frame maintaining proper lip-sync timing
- Report status and configuration remotely via the DashBoard Control System
- Fully compliant with openGear specifications

Functional Block Diagram

This section provides the functional block diagram that outlines the workflow of the NWE-3GA.

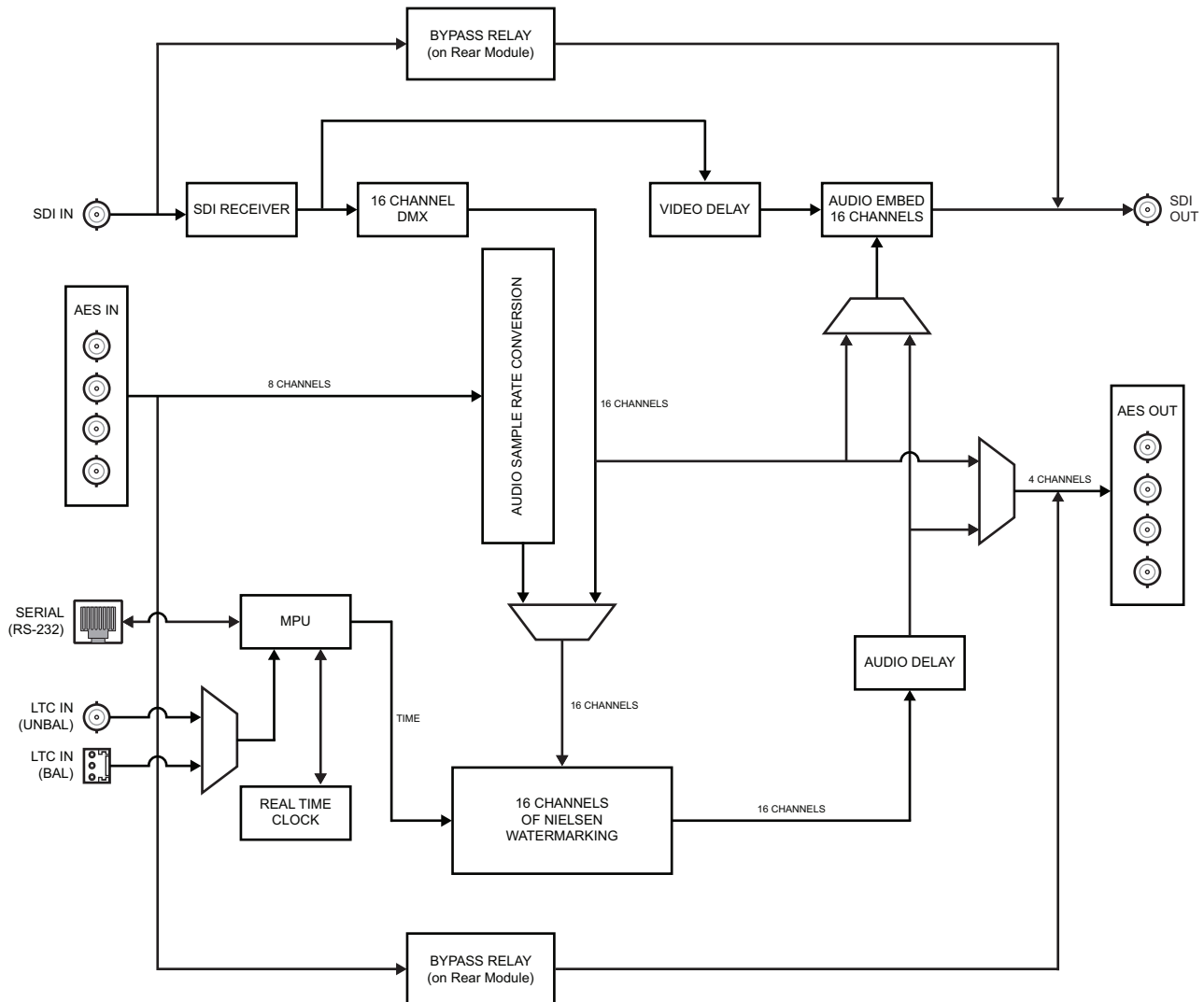


Figure 2.1 NWE-3GA — Simplified Block Diagram

Hardware Overview

This chapter provides a general overview of the user controls available on the NWE-3GA.

Card Overview

This section provides a general overview of the Bootload button on the NWE-3GA card-edge. For information on the LEDs available on the card-edge, refer to the section “**Control and Monitoring Features**” on page 15.

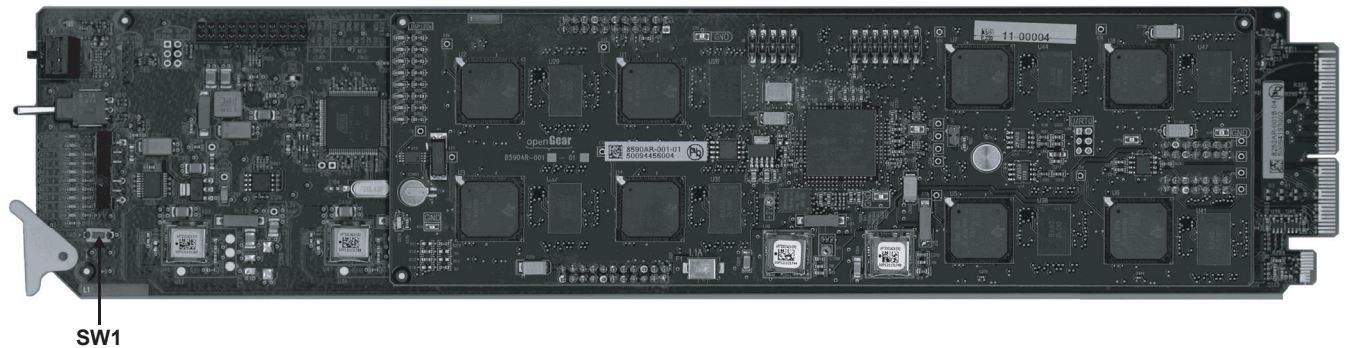


Figure 3.1 NWE-3GA — Card-edge Components

Bootload/Bypass Button (SW1)

SW1 has two functions:

- **Bootload** mode — Press and hold **SW1** when installing the card into the slot automatically sets the card into Bootload mode. Do not initiate this function unless instructed to do so by Ross Technical Support.
- **Bypass** feature — Pressing this button toggles the Bypass feature of the NWE-3GA.
 - › When in Bypass mode, the SDI and AES signals on the input BNCs bypass the card and are looped passively to the output BNCs through the relays. The **BYPASS** LED on the daughter card is lit. The **OK/ERROR** LED on the main card flashes orange and green.
 - › When in Active mode, the SDI and AES signals are routed through the card. The **BYPASS** LED is off on the daughter card. This is the default setting.

For More Information on...

- the LEDs located on the card-edge, refer to the section “**Status and Selection LEDs on the NWE-3GA**” on page 16.
- the bypass feature, refer to the section “**Power Fail Relay**” on page 22.

Control and Monitoring Features

This section provides information on the card-edge LEDs for the NWE-3GA. Refer to **Figure 3.2** for the location of the LEDs.

★ The sixteen LEDs on the DSP card-edge are not implemented. Only the BYPASS LED is implemented.

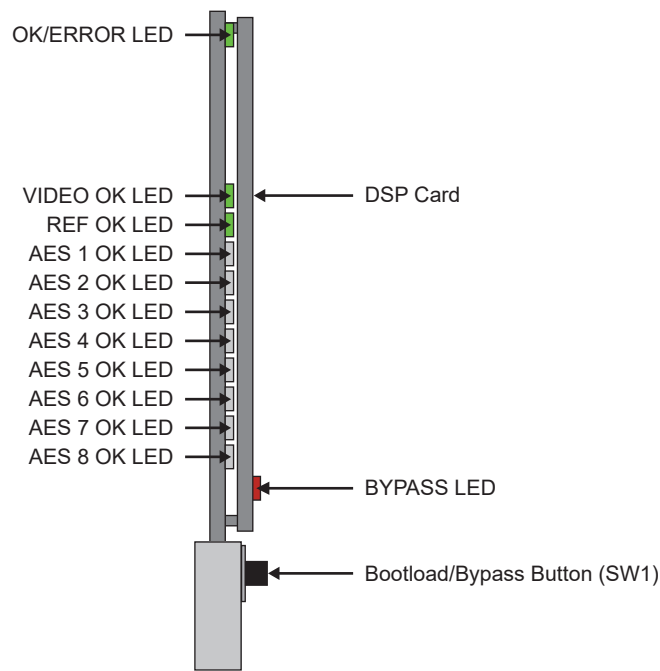


Figure 3.2 NWE-3GA Card-edge Controls

Status and Selection LEDs on the NWE-3GA

The front-edge of the NWE-3GA has LED indicators for the power, and video input status. Basic LED displays and descriptions are provided in **Table 3.1**.

Table 3.1 LEDs on the NWE-3GA

LED	Color	Display and Description
OK/ERROR	Green	When lit green, this LED indicates that the card is functioning normally and that no anomalies have been detected. The following conditions must be satisfied: <ul style="list-style-type: none"> • a valid input signal is present • a valid reference signal is present when a reference is required, and that the reference standard matches the input standard.
	Flashing Green	When flashing green, this LED indicates the bootloader is waiting for a software upload.
	Flashing Green and Orange	When lit green with flashing orange, this LED indicates there is a signal error such as a missing or invalid input or reference. Note that this will occur when the card is in Bypass mode.
	Orange	When lit orange, this LED indicates the card is powering on.
	Red	When lit red, this LED indicates the card is not operational.
OK/ERROR	Off	When off, this LED indicates there is no power to the card.
VIDEO OK	Green	When lit, this LED indicates that the video input is valid.
	Flashing Green	When flashing, this LED indicates that video is present, but the input format is unsupported.
	Off	When off, this LED indicates the absence of an input signal.

Table 3.1 LEDs on the NWE-3GA

LED	Color	Display and Description
REF OK	Green	When lit, this LED indicates a valid reference signal.
	Flashing Green	When flashing, this LED indicates that the reference signal is present but the format is invalid.
	Off	When off, this LED indicates that a reference signal is not present, or is not supported.
AES # OK		These LEDs are not implemented.
BYPASS	Red	When lit, this LED indicates that the card is in Bypass mode; the SDI and AES3id signals on the input BNCs bypass the card and are looped passively to the output BNCs through the relays.
	Off	When off, this LED indicates that the card is in Active mode; the signals are routed through the card.

Getting Started

This chapter provides information to assist in planning your NWE-3GA installation and operation.

Planning the Installation

Before installing the NWE-3GA, determine the following:

- Type of audio interface (AES3id or embedded in video)
- Audio groupings (5.1, stereo, or mono), called **clusters** in the NWE-3GA
- Assignment of clusters to inputs (AES3id connectors or embedded groups)
- Choice of time reference source (NTP or LTC)

Compatibility with Existing Plant

The NWE-3GA is designed to work with serial digital video (SMPTE 259M, 292M, or 424) and with embedded or discrete digital audio (AES).

If the insertion point is analog (NTSC or PAL), it is necessary to couple the NWE-3GA with A/D and D/A conversion equipment. Contact your openGear sales representative if you need help selecting this equipment.

If conversion equipment is used in live (on-air) applications, it is common practice and strongly encouraged that a method for bypass be implemented. The recommended solution allows a master control operator to activate the bypass routing at the master control station.

Determine Encoder Insertion Point

The best insertion point for the NWE-3GA is downstream of all switchers, routers, and processing equipment but before any Dolby® E or Dolby® AC-3 encoders. To ensure that the coding remains in the audio signals, the NWE-3GA should be downstream of any equipment that may strip or modify audio. Contact Nielsen if you are unsure about the proper system installation.

Select the Time Reference Source

The NWE-3GA requires an accurate time reference, in order to ensure correct watermarking and crediting. The preferred source is Network Time Protocol (NTP) for the following reasons:

- It provides the date as well as the time.
- It reduces cabling since it uses the network connection which is required for DashBoard control and monitoring.
- It is less prone to configuration errors, especially when Daylight Saving Time (DST) is observed and/or when a time zone offset is required.

★ If NTP is unavailable at your facility, the time reference can be supplied by a Linear Timecode (LTC) input.

Workflow

This section provides a brief summary of some steps that are required before you configure and use your NWE-3GA watermarking system. The NWE-3GA requires an Ethernet network connection between the frame in which it is installed and a computer that will run the DashBoard client. If you already have the openGear series frame installed and have configured your Network Controller card for network communications, proceed to the section “**Installing the NWE-3GA**” on page 21.

Figure 4.1 provides a simplified workflow of the steps required to set up networking for your watermarking system. Basic descriptions of each stage are provided below.

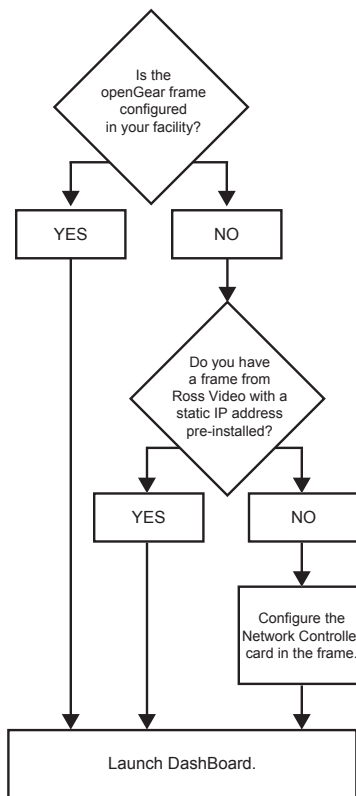


Figure 4.1 Simplified Workflow Diagram

Installing the openGear Frame

The openGear frame is a 2RU high density modular frame that accommodates up to five NWE-3GA cards.

★ Ensure that your frame is installed according to the instructions in its manual.

Configuring the Network Connection

The Network Controller card features an ethernet interface which allows monitoring and control of cards installed in the openGear frame. You must configure this card before you can configure the NWE-3GA.

1. Connect a LAN cable directly from the DashBoard client computer to the frame, or connect both to an Ethernet switch or hub.
2. Power on the openGear frame.
3. If your frame was ordered from Ross Video with a static IP address pre-configured, proceed to the next stage.
4. If your frame was ordered from Ross Video without a static IP address pre-configured, it is set for DHCP by default.
 - If your network supports DHCP, the Network Controller card should automatically obtain the IP address that it needs shortly after the frame is powered on.
 - If your network does not support DHCP, refer to the user manual for the Network Controller card for details.
5. If your frame was not ordered from Ross Video, refer to the documentation that came with your frame for configuration details.

Launch DashBoard

Refer to the chapter “**Using DashBoard**” on page 27 for instructions on accessing the NWE-3GA in DashBoard.

Physical Installation

This chapter provides instructions for installing the rear module for the NWE-3GA, installing the card into the frame, cabling details, and updating the card software.

- ★ The NWE-3GA hardware requires software version 1.11 or higher. You can verify the software version on your card by checking the Software Rev field in the Product tab of DashBoard.

Before You Begin

Before proceeding with the instructions in this chapter, ensure that your openGear frame is properly installed according to the instructions in its manual.

Static Discharge

Throughout this chapter, please heed the following cautionary note:



ESD Susceptibility — *Static discharge can cause serious damage to sensitive semiconductor devices. Avoid handling circuit boards in high static environments such as carpeted areas and when synthetic fiber clothing is worn. Always exercise proper grounding precautions when working on circuit boards and related equipment.*

Unpacking

Unpack each NWE-3GA you received from the shipping container. If any items are damaged, contact your sales representative or Ross Video directly.

Installing the NWE-3GA

You must first install the 8320AR-060 rear module in the openGear frame, install the NWE-3GA into the designated frame slot, and cable the rear module. This section outlines how to perform these tasks. If the NWE-3GA is already installed, proceed to the section refer to the section “**Cabling Overview for the NWE-3GA**” on page 22.

- ★ The 8320AR-060 is not compatible with the DFR-8310 series frames. You cannot install the NWE-3GA in a DFR-8310 series frame.

Installing the Rear Module

When installing the NWE-3GA in the openGear frame, the 8320AR-060 Full Rear Module is required. This rear module occupies four slots in the openGear frame and accommodates one card. If the rear module is already installed, proceed to the section Refer to the section “**Installing the NWE-3GA**” on page 22.

To install a rear module in your openGear frame

1. Refer to the user manual for your frame to ensure that the frame is properly installed.
2. When installing the 8320AR-060 rear module, use one of the following slot combinations:
 - Slots 1, 2, 3, 4
 - Slots 5, 6, 7, 8
 - Slots 9, 10, 11, 12
 - Slots 13, 14, 15, 16
 - Slots 17, 18, 19, 20
3. Remove the Blank Plates from the slots you have chosen for the NWE-3GA installation.
4. Install the bottom of the rear module in the **Module Seating Slot** at the base of the frame’s back plane.

5. Align the two screws of the rear module with the holes on the top-edge of the frame back plane.
6. Verify that the card aligns with the rear module before fully tightening either of the screws.
7. Using a Phillips screwdriver and the supplied screws, fasten the rear module to the back plane of the frame. Do not over tighten.
8. Ensure proper frame cooling and ventilation by having all rear frame slots covered with rear modules or Blank Plates.

Installing the NWE-3GA

Use the following procedure to install the NWE-3GA in an openGear frame:

1. Ensure that the openGear frame is properly installed.
2. Install the card in slot 2, 6, 10, 14, or 18 to mate with the rear module.
3. Hold the card by the edges and carefully align the card edges with the rails in the frame.
4. Fully insert the card into the frame until the card is properly seated in the rear module.

Cabling Overview for the NWE-3GA

This section provides a general overview of the connections available on the rear module. For details on cabling specific ports, refer to the sections that follow. Operation without video is not recommended. Video processing is important because it delays the video by one frame time, to equalize the audio and video delays.

Cabling Overview

The NWE-3GA is used with the 8320AR-060 rear module in the openGear frame. Each rear module occupies four slots and provides one SDI input, one SDI output, four unbalanced AES3id inputs, four AES3id outputs, a balanced LTC connection, an unbalanced LTC connection, and a serial communications port. Refer to **Figure 5.1** and the rear module label for connector locations.

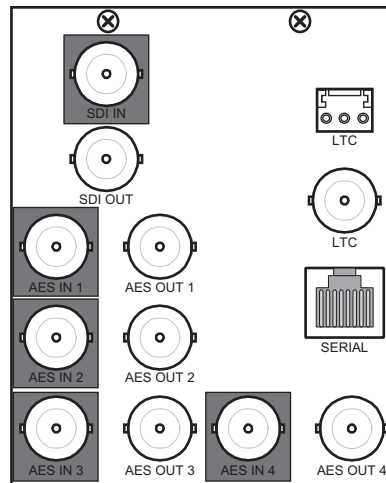


Figure 5.1 Cable Connections for the NWE-3GA

Power Fail Relay

The 8320AR-060 provides a power fail relay from the **SDI IN** BNC to the **SDI OUT** BNC. The purpose of this relay is as follows:

- When the card is removed from the frame, the relay passes video from the **SDI IN** to the **SDI OUT** of the NWE-3GA. This allows the card to be serviced without interrupting the video signal.
- If the NWE-3GA loses power, or the frame loses power, the video still passes through.

- When the card boots, the relay will be left in Bypass mode until the card can generate a valid output. Once the card is up and functional, the relay is switched to the active position.

You can also enable the Bypass mode using the card-edge controls or the settings in DashBoard.

For More Information on...

- the card-edge controls for Bypass mode, refer to the section “**Bootload/Bypass Button (SW1)**” on page 15.
- enabling Bypass mode using DashBoard, refer to the section “**Bypass Mode**” on page 31.

Connecting Video and Audio

The normal configuration has all audio channels either embedded in the video stream or carried through separate AES3id signals. A number of configurations are possible due to the three types of clusters, the four AES inputs, and the eight embedded audio pairs. Their organization is constrained by the following rules:

1. Three pairs that comprise a 5.1 channel cluster must all be clock-synchronous with each other, and have the same interface type (either all AES3id or all embedded).
2. All embedded audio data must be clock-synchronous with the video.

Connecting SDI Signals

For video connections, use SDI-grade cables (e.g., Type 1694A) with 75ohm BNC connectors.

The NWE-3GA supports the following video formats: 480i 59.94Hz, 720p 59.94Hz, 1080i 59.94Hz, 1080p 59.94Hz, 576i 50Hz, 720p 50Hz, 1080i 50Hz, and 1080p 50Hz.

- ★ If you connect a video signal which has an unsupported format, an Invalid Format alarm is generated. In this case, or if no video input is present, the SDI output is the Loss of Input signal as defined on the Config tab, in the most recently detected supported video format, with silent embedded audio. To allow unsupported video to pass through the NWE-3GA, click the Bypass Relay button on the Config tab.

To cable the embedded SDI signals to the rear module

1. Connect the input source for **SDI IN** to **BNC 1**.
2. Connect the **SDI OUT (BNC 2)** to the destination (downstream) equipment.

Connecting AES Audio Signals

If your configuration uses separate AES3id audio signals, they must be routed through the NWE-3GA to be watermarked. The NWE-3GA’s AES inputs and outputs are 75ohms unbalanced. Each AES input/output pair is protected by an individual bypass relay:

- When the unit is in Bypass, each input is directly connected to the corresponding output, and presents a high impedance to the input signal.
- When the unit is in Active state, the AES input and output impedances are 75ohms.

To connect audio input and output cables to the rear module

1. Connect the appropriate input AES sources to the **AES 1-4** BNC connectors. Refer to **Figure 5.1** and the rear module label for connector locations.
2. Connect the output AES connectors (**AES OUT 1-4**) to the destination equipment.

Linear Timecode Cabling

The NWE-3GA requires a time reference to ensure accurate watermarking. NTP is the preferred source. If this is not available, you can use one of the two LTC inputs provided on the 8320AR-060 rear module. The NWE-3GA receives Linear Timecode (LTC) on a BNC or via the 3-pin terminal block. DashBoard reports the LTC presence,

and which physical LTC connector on the rear module is in use (balanced or unbalanced connection). You can also configure alarms in DashBoard to report when the LTC signal is no longer present.

This section provides an overview on cabling your LTC device to the 8320AR-060 rear module. Refer to the documentation for your LTC source for specific cabling requirements for your device.

Connecting an LTC Input

Before cabling, ensure that the following conditions are met:

- The LTC should be synchronous with the video input to the NWE-3GA. That is, the video input must be connected, it must be of a supported type, and the timing for the video and LTC should be derived from a common frequency reference.
- For 59.94Hz video formats, the LTC source should be set to Drop Frame timecode as opposed to Non-Drop Frame. SMPTE Drop Frame timecode, a SMPTE standard that maintains time accuracy between the frame rate and actual wall-clock time, will prevent a slight drift in a facility's house time over extended periods of time. Setting the house SMPTE timecode generator to Drop Frame time will prevent this cumulative timing error from affecting the time accuracy of Nielsen's SID (Source ID) insertions in the program feed.

To connect an LTC input

1. Locate the LTC ports on the 8320AR-060 rear module. Refer to **Figure 5.1** and the rear module label for connector locations.
2. If you have an unbalanced LTC source cable the **LTC BNC** as follows:
 - Connect one end of the **LTC Interface Cable** to the **LTC BNC** on the 8320AR-060 rear module. Ross Video does not supply this cable.
 - Connect the other end of the **LTC Interface Cable** to the BNC connector on your LTC device.
3. If you have a balanced LTC source cable the **LTC 3-pin terminal connector** as follows:
 - The left and right pins are the two signals while the center pin is the common Ground (GND). Ross Video does not supply this cable. Refer to **Figure 5.2**.

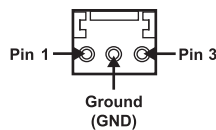


Figure 5.2 LTC Wiring — 3-Pin Terminal Block Connector

For More Information on...

- configuring the time source for your NWE-3GA, refer to the section “**Configuring the Time Reference**” on page 34
- LTC status in DashBoard, refer to the section “**Status Tabs**” on page 41.

Serial Port Cabling

This section outlines how to cable serial communications for the NWE-3GA. The **Serial COM** port is used for automation control by a software system designed for use with the NAVE II. Unless your NWE-3GA is replacing a NAVE II that was under automation control via RS-232, please skip this section.

For More Information on...

- the PC Interface Protocol, refer to the *NWE-3GA PC Interface Protocol User Manual*.
- the location of the **Serial COM** port on the rear module, refer to **Figure 5.1**.

Serial COM Pinouts

Refer to **Table 5.1** for the pin assignment of the **Serial COM** port on the 8320AR-060 rear module.

Table 5.1 RJ-45 Pin Assignment

RJ-45 Pin	RS-232
1	n/c
2	Rx
3	Tx
4	n/c
5	n/c
6	n/c
7	GND
8	GND

Connecting to the Serial COM Port

In order to properly complete this procedure, you need the following cables and equipment:

- **Serial Interface Cable** — This is a serial cable with a RJ-45 connector on one end and a connector on the other end to connect to your serial device. **Table 5.1** for the pin assignment of the **Serial COM** port. Ross Video does not supply this cable.

To connect to the Serial COM port

1. Connect the automation computer to the **Serial COM** port on the 8320AR-060 rear module using the **Serial Interface Cable**. Refer to **Figure 5.1** for the port location.
2. Connect and secure the other end of the **Serial Interface Cable** to the appropriate port on your automation computer. Refer to the user manual for your serial device for details.
3. Set the automation computer to the following communication settings:

Table 5.2 Required ASCII Terminal Settings

Parameter	Value
Baud Rate	9600
Parity	None
Stop Bit	1
Flow-control	Enabled
CTS/RTS	Disabled
Full/Half Duplex	Full
Xon/Xoff	Enabled

Using DashBoard

The DashBoard Control System enables you to monitor and control openGear frames and cards from a computer. DashBoard communicates with cards in the openGear frame through the Network Controller Card. This controller card is required in order to use DashBoard to monitor the NWE-3GA.

Before You Begin

Before proceeding, ensure that DashBoard software version 6.2.0 or higher is installed on a PC connected to your facility network. The DashBoard software and user manual are available from the Ross Video website.

For More Information on...

- using DashBoard, refer to the *DashBoard User Manual*.

Accessing the NWE-3GA in DashBoard

Ensure that the openGear frame with the NWE-3GA card(s) is displayed in the Tree View located on the left-side of the DashBoard window. It may take 30 seconds or more to update the Tree View. Consult the *MFC-OG3 Series User Manual* and *DashBoard User Manual* should the Tree View not display the NWE-3GA node.

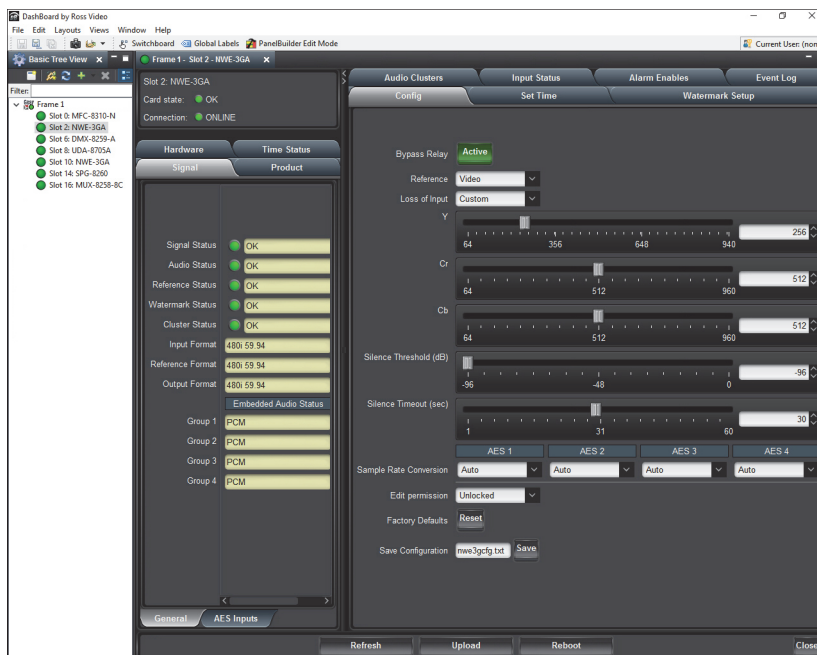
To launch DashBoard

1. Ensure that you are running DashBoard software version 6.2.0 or higher.
2. Launch DashBoard by double-clicking its icon on your desktop.

To access the NWE-3GA in DashBoard

1. From the **Tree View**, expand the node for the openGear frame your cards are installed in.
A list of cards installed in the frame displays.
2. Double-click the node for a card to display its menus in the right-side of the DashBoard window.

In the example below, the node for Frame 1 is expanded to show a list of seven cards including two NWE-3GA cards.



Configuration

This chapter provides instructions for configuring the NWE-3GA using the options available in DashBoard.

- ★ The NWE-3GA waits 10 seconds after the last setting change before saving them to permanent storage. After changing any settings, please wait at least 10 seconds before rebooting or ejecting the card, or turning off power to the frame. This will ensure that the NWE-3GA will retain your settings.

Selecting the Reference Source

The openGear frame distributes the analog reference signal to all cards in the frame. Thus, a single composite or tri-level sync signal can be used for multiple NWE-3GA cards. This section provides information for specifying the reference source for your NWE-3GA.

- ★ Ensure the frame reference is synchronous with the video input.

Frame Rate Compatibility

It is important to remember that if you are using the reference source connected to the openGear frame, the NWE-3GA input video frame rate must match the reference frame rate. Reference compatibility is shown in **Table 7.1**. A check-mark indicates a supported output reference compatibility.

Table 7.1 Output/Reference Compatibility

Reference	Output							
	480i 59.94Hz	720p 59.94Hz	1080i 59.94Hz	1080p 59.94Hz	576i 50Hz	720p 50Hz	1080i 50Hz	1080p 50Hz
480i 59.94Hz	✓	✓	✓	✓				
720p 59.94Hz		✓		✓				
1080i 59.94Hz	✓	✓	✓	✓				
576i 50Hz					✓	✓	✓	✓
720p 50Hz						✓		✓
1080i 50Hz					✓	✓	✓	✓

To specify the reference source

1. Display the **Device View** of the card by double-clicking its status indicator in the **Basic Tree View**.
2. From the **Device View**, select the **Config** tab.
3. Select a reference input from the **Reference** area. Choose from the following:
 - **Frame 1** — Select this option to use the reference source connected to the **REF 1** port on the openGear frame.
 - **Frame 2** — Select this option to use the reference source connected to the **REF 2** port on the openGear frame.
 - **Video** — Select this option to use the digital video signal connected to the **SDI IN** port on the 8320AR-060 rear module. This signal is used as the timing reference.

Configuring the Inputs and Outputs

This section provides information on specifying the output during a loss of input, defining the silence detection thresholds of the NWE-3GA, and specifying how to process non-PCM data.

Configuring the Loss of Input

DashBoard allows configuration of the output during a loss of input. From the **Config** tab, you can select from a list of specific colors, or create a custom color using the provided sliders in the tab.

To configure the video output

1. From the **Device View**, select the **Config** tab.
2. From the **Loss of input** field, specify the output during a loss of input, or during a change of input format. Your selection will display until the input signal is stable or returns. Note that the embedded audio will also go silent. Choose from the following:
 - **Blue** — Select this option to set the output to blue when there is a loss of input.
 - **Black** — Select this option to set the output to black when there is a loss of input.
 - **Custom** — Select this option to set the output to a specific color when there is a loss of video input. This color is determined by the Y, Cr, and Cb sliders.
3. If you selected **Custom** in 2, use the sliders to specify the custom color value as follows:
 - **Y** slider — Sets the luminance component of the Custom video signal.
 - **Cr** slider — Sets the Cr component of the Custom video signal.
 - **Cb** slider — Sets the Cb component of the Custom video signal.

Defining the Silence Thresholds

DashBoard provides options in the **Config** tab that enable you to define when a signal is considered silent, and the maximum duration of silent time before an alarm is triggered.

To configure the silence thresholds

1. From the **Device View**, select the **Config** tab.
2. Use the **Silence Threshold** field to specify the value (in dB) where silence is considered to start. Audio signals below the specified threshold value will be considered silent, and an alarm is raised in the **Audio Status** field located in the **Signal** tab.
3. Use the **Silence Timeout** field to specify the value (in seconds) that silence is acceptable on the inputs. Audio silence for longer than the specified value raises an alarm in the **Audio Status** field located in the **Signal** tab.

Processing Non-PCM Signals

You can configure the NWE-3GA to pass non-PCM signals, such as Dolby® Digital and Dolby® E, using the options available in DashBoard. However, the NWE-3GA does not watermark them.

DashBoard provides a Sample Rate Conversion option in the **Config** tab that enables the card to pass non-PCM signals, by selecting whether SRC is automatically applied or not.

To configure the NWE-3GA to pass non-PCM AES signals

1. From the **Device View**, select the **Config** tab.
 2. In the AES column for the input signal you want to configure, select **Off** from the associated **Sample Rate Conversion** menu. Non-PCM signals embedded in the SDI input are automatically passed to the SDI output without modification
- ★ If you select On, SRC is used unconditionally on the AES input. If you select Auto, the SRC is automatically used on the input unless the card detects non-PCM audio data. The default setting is AUTO.

Using the NWE-3GA with Asynchronous PCM AES Audio

The NWE-3GA internally processes all PCM audio as 48KHz, synchronous with the video. As such, AES inputs should be 48KHz synchronous if possible. The AES outputs are 48KHz in all cases, and their channel status reflects this.

- If the **Sample Rate Conversion** is set to **On** or **Auto** for an AES input, it re-samples PCM input at exactly 48KHz. The input sampling frequency can therefore vary widely from 48KHz, and high-quality audio output will be maintained.
- If the **Sample Rate Conversion** is set to **Off**, the input must be 48KHz and synchronous with the video. If it is not, the audio output will be distorted. The audibility of the distortion depends on the audio content, however it is very noticeable on audio quality measurement equipment.

Bypass Mode

When the NWE-3GA is operating in Bypass mode, the SDI and AES signals on the input BNCs bypass the card and are looped passively on the output BNCs through the relays. The **BYPASS** LED on the DSP card is lit red, the **OK/ERROR** LED on the main card flashes orange and green, the main DashBoard status for the card indicates 'Bypass' and the button in the **Config** tab in DashBoard is labeled as Bypass. You can enable Bypass mode using the card-edge controls or DashBoard. This section outlines how to enable Bypass mode using DashBoard.

★ Bypass mode can also be toggled by pressing the **SW1 Bypass/Bootload** button on the card-edge.

To enable Bypass mode

1. From the **Device View**, select the **Config** tab.
2. Locate the **Bypass Relay** button.
3. Click **Active**. The button label changes to **Bypass** to indicate that the card is now operating in Bypass mode.

To disable Bypass mode

1. From the **Device View**, select the **Config** tab.
2. Locate the **Bypass Relay** button.
3. Click **Bypass**. The button label changes to **Active** to indicate that the card is now out of Bypass mode.

For More Information on...

- the card-edge controls for Bypass mode, refer to the section “**Bootload/Bypass Button (SW1)**” on page 15.

Defining the Audio Clusters

The NWE-3GA needs to be told the structure of your audio:

- Whether your audio inputs are AES3id or embedded.
- The input pairs that are used.
- What type of audio they contain: 5.1 surround, stereo, or mono. These groupings are called “clusters”.

Each cluster has one or more associated audio inputs. The **Audio Clusters** tab in DashBoard enables you to assign clusters to inputs and includes the following features:

- **Cluster Status** field that indicates when you have mis-configured a cluster or whether the current clusters are supported.
- A cluster can be 5.1 surround, stereo, or mono.
- ★ When you define an audio cluster that uses embedded audio inputs, the NWE-3GA ensures that the corresponding embedded audio groups are always present in its SDI output. If a selected input group is missing at any time, the NWE-3GA will insert an output group containing silence in all four channels until the input group returns. This is convenient if the audio configuration is subject to frequent changes; for example, you might have 5.1+2.0 channels at some times, and only 5.1 channels at others. The NWE-3GA ensures a consistent output group configuration at all times, regardless of the input.

Audio Clusters Overview

The normal configuration has all audio channels either embedded in the video stream or carried through separate AES3id signals. A number of configurations are possible, due to the types of clusters, the four AES3id inputs, and the eight embedded audio pairs. The following restrictions apply:

- All the signals in a 5.1 or stereo cluster must be co-timed.
- All embedded audio data must be clock-synchronous with the video.
- All inputs in a single cluster must use the same interface type (AES3id or embedded). For example, a stereo cluster cannot consist of one AES3id and one embedded channel.
- Each cluster must use exactly the number of audio pairs required to support it; three pairs for 5.1, and one pair for stereo or mono. For example, a stereo cluster cannot consist of two channels located in different AES3id or embedded pairs.

For More Information on...

- connecting the input and output audio signals, refer to the section “**Connecting Video and Audio**” on page 23.

Using AES3id Inputs

The four AES3id signals can carry up to four stereo pairs or a 5.1 cluster plus a stereo pair.

Using Embedded Audio Pairs

Embedded audio can carry up to eight stereo pairs or two 5.1 clusters plus two stereo pairs.

Using a Combination of AES3id and Embedded Audio

Many combinations of AES3id and embedded audio signals can be watermarked subject to the restrictions listed above.

Examples of Valid Clusters

Table 7.2 provides examples of valid clusters.

Table 7.2 Valid Clusters

Type	Contents	Source	Comments
5.1	L	Group1 Ch1	Typical configuration with six successive channels in three embedded pairs.
	R	Group1 Ch2	
	C	Group1 Ch3	
	LFE	Group1 Ch4	
	LR	Group2 Ch1	
	RR	Group2 Ch2	
5.1	L	AES-1A	Six channels in three AES3id pairs. Note that channels do not need to be successive.
	R	AES-1B	
	C	AES-3B	
	LFE	AES-3A	
	LR	AES-2A	
	RR	AES-2B	

Examples of Improper Clusters

Table 7.3 provides examples of improper clusters.

Table 7.3 Improper Clusters

Type	Contents	Source	Comments
5.1	L	Group1 Ch1	Mixed embedded and AES3id sources is not permitted.
	R	Group1 Ch2	
	C	Group1 Ch4	
	LFE	Group1 Ch3	
	LR	AES 1A	
	RR	AES 1B	
5.1	L	AES-1A	More than three pairs used in a 5.1 cluster is not permitted.
	R	AES-1B	
	C	AES-2A	
	LFE	AES-2B	
	LR	AES-3A	
	RR	AES-4A	
Stereo	L	Group1 Ch1	More than one pair used in a stereo cluster is not permitted.
	R	Group2 Ch2	

Defining a Cluster

Embedded audio in the SDI stream is de-multiplexed and sent to the daughter card for watermarking. The NWE-3GA adds the Nielsen watermark to a mixture of embedded and discrete audio channels to the maximum of 16. This section outlines how to define an audio cluster using the options in the **Audio Clusters** tab of DashBoard. The purpose of defining clusters is to identify to the watermarking DSPs where to find specific channels of interest, e.g. when the center channel is processed differently than LFE.

★ As long as any cluster error is present (no clusters, unassigned source, mixed audio sources), all watermarking is disabled. Once all clusters and their audio sources are properly defined, the Cluster Status field will display “OK” (green indicator), and watermarking will start.

To define a cluster

1. From the **Device View**, select the **Audio Clusters** tab. If this is the first time accessing the tab, the cluster area is blank as no clusters are pre-configured by default.
2. From the **Add Clusters** area, select a type of cluster to add. Choose from the following:
 - **Add 5.1** — This option adds an audio cluster that includes four pairs of 5.1 audio. A new cluster displays in the tab with the **Cluster Type** set to **5.1** and the **Contents** fields populated with six elements: L (left), R (right), C (center), LFE (low frequency effect), LR (left-rear), and RR (right-rear).
 - **Add Stereo** — This option adds an audio cluster that includes one stereo pair (Stereo-Left, Stereo-Right). A new cluster displays in the tab with the **Cluster Type** set to **Stereo**, and the **Contents** fields populated with two elements: L (left), and R (right).
 - **Add Mono** — This option adds an audio cluster that includes one mono audio signal. A new cluster displays in the tab with the **Cluster Type** set to **Mono**, and the **Contents** field populated with one element: M (mono).
3. If desired, re-name a cluster by typing a unique identifier in the **Name** field for that cluster. This is the name the NWE-3GA reports in the logs for that cluster element.

4. Associate the input source(s) to a cluster element using the **Audio Source** field. Choose from the following:
 - **Group# Ch#** — Select this option to assign the specified Embedded Audio group and channel combination to the cluster element.
 - **AES #** — Select this option to assign the specified AES input signal to the cluster element.
 5. Repeat for each audio cluster you wish to create.
- ★ To delete an audio cluster, click the associated button in the **Remove Cluster** area of the **Audio Clusters** tab.

Configuring the Time Reference

The NWE-3GA requires an external time source in order to accurately encode the time-of-day into the audio stream. A variety of external time sources are supported. Without an external time source, the encoded time-of-day will drift over extended periods.

Specifying the Time Reference Input

The options in DashBoard enable the selection of time/date source, configuration of applicable time-zone offsets, and Daylight Savings Time (DST) adjustment parameters such as whether the LTC input follows DST. This section also outlines how to set the time manually, in case the time input is temporarily unavailable.

To specify the time source

1. From the **Device View**, select the **Set Time** tab.
 2. From the **Time Source** area, specify the type of time reference input by choosing one of the following:
 - **Network Time** — Select this option to obtain the date and time from a NTP server via the ethernet connection on the Network Controller card in the openGear frame. This is the recommended setting. If required, you can also set an offset as described in the section “**Specifying an Offset**” on page 35.
- ★ It is necessary to specify the IP address of the NTP server. This IP address is configured on the Network Controller Card. Refer to the manual for the Network Controller Card for details.
- **Manual** — No external time source is used; the values are specified manually using the options in the **Set Time** tab. You will need to set the date and time as described in the section “**To manually set the date and time**” on page 35.
 - **LTC (Balanced)** — The time of day is obtained from the timecode signal connected to the **LTC** 3-pin terminal block connector on the 8320AR-060 rear module. Note that the timecode provides only the time and not the date (year, month, day) which are specified manually.
 - **LTC (Unbalanced)** — Select this option if you have connected an LTC device to the **LTC** BNC connector on the 8320AR-060 rear module. Note that the timecode provides only the time and not the date (year, month, day) which are specified manually.
3. When using LTC inputs, specify whether your LTC device automatically adjusts for Daylight Savings Time by configuring the **LTC Follows DST** check box as follows:
 - Select the check box if your LTC device connected to the NWE-3GA automatically adjusts for Daylight Savings Time
 - Clear the check box if your LTC device connected to the NWE-3GA does not recognize DST. This is the default setting.

To manually set the date and time

1. From the **Device View**, select the **Set Time** tab.
2. From the **Manual Time Setting** area, specify the current time and date:
 - Use the **Year**, **Month**, and **Day** fields to specify the current date.
 - Use the **Hours** field to specify the hour value, 00 to 23, using 24-hour notation.
 - Use the **Minutes** field to specify the minute value.
 - Use the **Second** field to specify the seconds value.
3. Click **Accept** in the **Time Settings** area to save your time settings. The **Encoding Time and Date** fields in the **Time Status** tab are updated.

Specifying an Offset

If the NWE-3GA output is to be viewed in a separate location from the timing reference input source, you need to include an offset to the time. This enables the NWE-3GA to watermark the local time in the broadcast area.

- The UTC offset is the time difference between the location of the viewers and UTC (also known as GMT). This offset must be specified even when using LTC or manual time sources. The UTC offset must be specified when entering the CBET CSID codes on the Watermark Setup tab.
- For LTC, the offset is normally set to 0, unless the program will be broadcast in a different time zone than the NWE-3GA location.

To specify an offset

1. From the **Device View**, select the **Set Time** tab.
2. Add an offset to the UTC value as follows:
 - Use the **Hours** field to specify the number of hours to offset the time source by.
 - Use the **Minutes** field to specify the number of minutes to offset the time source by.
3. If you are using an LTC source, you must also select a value from the **Local Encoding Time Relative to LTC** area, specify an offset as follows:
 - Use the **Hours** field to specify the number of hours to offset the time source by.
 - Use the **Minutes** field to specify the number of minutes to offset the time source by.
4. Use the **Hemisphere** options to specify whether your facility is located east or west of Greenwich, UK.
5. Click **Accept**.

Configuring the Daylight Saving Time

You can set the DST start and end date automatically, or manually either by setting a custom start and end for DST, by setting the system to Manual and setting the correct date when the time change occurs. When selecting Manual adjustment, you must enter the DST setting each time you enter the time.

To automatically set DST

1. From the **Device View**, select the **Set Time** tab.
2. In the **Daylight Saving Time** area, select **Auto**. The **Manual DST Setting** fields are automatically disabled.
3. Set the automatic start and end times for DST as follows:
 - From the **Start** area, specify when DST is to automatically begin using the **Month**, **Week**, **Day**, and **Hour** menus.
 - From the **End** area, specify when DST is to automatically end using the **Month**, **Week**, **Day**, and **Hour** menus.

To manually set DST

1. From the **Device View**, select the **Set Time** tab.
2. In the **Daylight Saving Time** area, select **Manual**.
3. From the **Manual DST Setting** area, select one of the following:
 - **Standard Time** — Select this option if you do not observe Daylight Savings Time (DST) in your area.
 - **Daylight Saving Time** — Select this option if you observe DST in your area.
4. If you selected Daylight Saving Time in step 4, manually set the start and end times for DST as follows:
 - From the **Start** area, specify when DST is to begin using the **Month**, **Week**, **Day**, and **Hour** menus.
 - From the **End** area, specify when DST is to end using the **Month**, **Week**, **Day**, and **Hour** menus.

Enabling the Watermarking

Once you have selected the embedded or AES3id audio inputs for watermarking, and assigned audio pairs to clusters, you can proceed to set up and enable the watermarking feature for your NWE-3GA. The NWE-3GA watermarks only the selected PCM audio channels as defined in the **Audio Clusters** tab. Channels which are not selected for watermarking, as well as those containing non-PCM audio or other data, are delayed but not watermarked.

If you encode for Program Content and are also Final Distributors, you may need multiple encoders. Contact Nielsen Encoder Support for assistance.

To enable watermarking

1. From the **Device View**, select the **Watermark Setup** tab.
 2. Identify the NWE-3GA for your program by entering your identification values provided by Nielsen as follows:
 - Type your NAES SID value into the **NAES SID** field located in the **System Settings** area.
 - Type the required code into the **NAES Check Code** field located in the **System Settings** area.
 - Type your CBET CSID value into the **CBET CSID** field located in the **System Settings** area. Leave this field blank if you have not been assigned a CSID by Nielsen.
 - Type the required code into the **CSDI Check Code** field located in the **System Settings** area.
 3. Set the audio code scheme for your NWE-3GA by selecting an option in the **Code Type** area. This affects NAES 2 code production only. Choose from the following:
 - **Final Distributor** — Select this option if the NWE-3GA is installed in the station or cable network slot of the program-distribution chain.
 - **Program Content** — Select this option if the NWE-3GA is installed in the broadcast network or syndicator slot of the program-distribution chain.
- ★ The **Audio Parameters** fields are for Nielsen diagnostics purposes only.
4. Specify how to resolve conflicts between data already present in the incoming signal, and data to be added by the NWE-3GA by selecting an option in the **NAES Level Overflow Method** area. This affects NAES 2 code production only. The NAES SID and CBET CSID can be configured independently. For each data type, choose from the following overflow methods:
 - **Refrain** — Select this option to not encode the NWE-3GA data and only transmit the incoming data.
 - **Overwrite** — Select this option to encode the NWE-3GA data regardless of the presence of incoming data.
 5. Enable the watermark feature for your program by selecting the **Watermark Enabled** check box.

Configuring Alarms in DashBoard

DashBoard displays the status of the inputs, reference signal, audio, watermarking feature, and hardware in various status tabs in the Device View.

Status Tabs in the Device View

Four status tabs, located on the left side of the Device View, provide fields that report read-only status information such as product details, signal status, and time source status. You can specify which fields report or ignore error conditions by configuring the options in the **Alarms Enable** tab. Note that all alarms are enabled by default.

Card Status Reporting in DashBoard

The top left corner of the **Device View** in DashBoard features the **Card state** field. This field reports the most important alarm condition occurring on the NWE-3GA, or “OK” if there are none that are both present and enabled. For example, a loss of video input is a more urgent condition than a missing time reference. If both errors occur simultaneously, the loss of video is reported in the **Card state** field.

If there is only one error condition present, a single red indicator is seen on one of the **Signal**, **Time**, and/or **Hardware** status tabs. This enables you to quickly identify the item that needs to be fixed. For example, a loss of video input is reported in the **Signal Status** field of the **Signal** tab. There may be other functions that are impaired by this (for example, embedded audio and watermarking do not operate without video input); however they do not show an alarm condition because they are not the root cause. This is to avoid confusion about which items require attention.

An exception to this is that LTC processing requires video presence for correct operation. If LTC is in use and video is missing or unusable, the **Time Status** tab will report “Time Source Missing”. The **Card state** field, however, reports the video error, in order to ensure that the user addresses this error first.

For More Information on...

- the read-only fields of the status tabs, refer to the section “**Status Tabs**” on page 41.

To verify the video input alarm settings

★ The video alarms should be enabled at all times, except when troubleshooting.

1. From the **Device View**, select the **Alarm Enables** tab.
2. If the **No Input** check box is selected, an alarm is generated in the **Signal Status** field when an input signal is missing.
3. If the **Invalid Input** check box is selected, an alarm is generated in the **Input Format** field when the input is in an unsupported format.
4. If the **Incompatible Input** check box is selected, an alarm is generated in the **Input Format** field when the input frame rate is not the same as the reference input rate.
5. If the **Non-Sync Video** check box is selected, an alarm is generated in the **Signal Status** field when the video input is asynchronous to the reference signal.

To verify the reference alarm settings

★ The reference alarms should be enabled if you are using a frame reference, and disabled otherwise.

1. From the **Device View**, select the **Alarm Enables** tab.
2. If the **No Reference** check box is selected, an alarm is generated in the **Reference Status** field when a loss of reference condition occurs.
3. If the **Invalid Reference** check box is selected, an alarm is generated in the **Reference Format** field when the reference is a format that is not supported.

To verify the hardware alarm settings

1. From the **Device View**, select the **Alarm Enables** tab.
2. If the **Incompat Rear Module** check box is selected, an alarm is generated in the **HW Status** field when the rear module is not compatible with the card.
3. If the **Incompat Daughter Card** check box is selected, an alarm is generated in the **HW Status** field when using an unsupported daughter card.

To verify the embedded input audio alarm settings

★ Enable the alarms only for the embedded channels in use. Disable the alarms for the remaining channels.

1. From the **Device View**, select the **Alarm Enables** tab.
2. If the **Group Not Present** check box is selected, an alarm is generated in the **Signal Status** field when a group is not present on the input.
3. If a **Channel # Invalid** check box is selected, an alarm is generated in the **Signal Status** field when the specified channel is detected as silent or when it is an unsupported or invalid format.
4. If the **SD 24Bit** check box is selected, an alarm is generated in the **Audio Status** field when the selected configuration would embed 4 groups of 24bit audio in an SD output. Group 4 is down-sampled to 20bit audio.

To verify the AES inputs alarm settings

★ Enable the alarms only for the AES3id inputs in use. Disable the alarms for the remaining inputs.

1. From the **Device View**, select the **Alarm Enables** tab.
2. If the **Input Not Present** check box is selected, an alarm is generated in the **Signal Status** and **AES Inputs** fields in the **Signal** tab when the specified AES3 input is not detected.
3. If a **Channel # Invalid** check box is selected for an AES3 input, an alarm is generated in the **Signal Status** and **AES Inputs** fields in the **Signal** tab when the specified channel is detected as silent or non-PCM, for that AES input. This is especially helpful since watermarking is not applied to a channel when that channel goes silent.

Resetting the Alarm Settings

You can clear all the check boxes or select all the check boxes in the **Alarm Enables** tab using the buttons located near the bottom of the tab.

- To disable the alarm settings, click **Clear**. All the alarms configurable from this tab are now disabled and will not report error conditions in the various status fields in the Device View for the card.
- To reset the alarm settings, click **Set**. All the alarms configurable from this tab are now enabled and will report error conditions in the various status fields in the Device View for the card.

DataSafe Overview

DataSafe is a feature of the MFC-8320-N card that enables you to quickly load and store card parameters. Note that DataSafe is disabled on the MFC-8320-N by default.

★ The DataSafe feature is only available for openGear frames using the MFC-8320-N cards, and not for the MFC-8320-S.

Overview

DataSafe dramatically reduces downtime when failed modules are swapped out. All module parameters are stored on the local frame network (MFC-8320-N) card and automatically restored when a hot swap is performed.

DataSafe also simplifies the set up of numerous identical modules by allowing the configuration of one device to be uploaded and distributed to other identical devices.

For More Information on...

- using the DataSafe feature, refer to the *MFC-8300 Series User Manual* and the *DashBoard User Manual*.

Notes for the NWE-3GA

The following information is not restored/saved using DataSafe with the NWE-3GA:

- Event log
- Manual Time Setting (located in the **Set Time** tab)

Event Log

The NWE-3GA records events in non-volatile memory. Each entry in the log contains a timestamp, a code number and a brief message. You can specify which type of messages are written to the log.

Specifying the Messages that the Event Log Reports

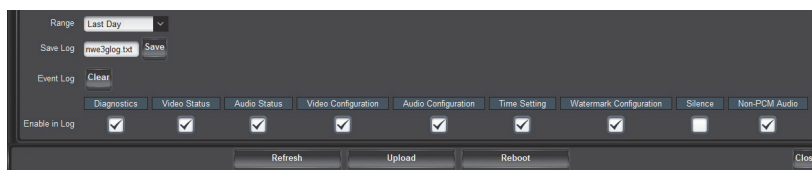
The following events and conditions can be reported in the Event Log:

- Configuration changes that affect the audio path such as input selections, and watermarking parameters.
- Input state changes such as video presence, audio presence, video formats. In the case of audio inputs, the log entry also includes the associated audio cluster.
- Power-on or reboot cycles.
- Error conditions reported by DashBoard.

★ The log does not report the Check Code value entered in the **Watermarking Setup** tab.

To specify the messages that the Event Log reports

1. Display the **Device View** of the card by double-clicking its status indicator in the **Basic Tree View**.
2. From the **Device View**, select the **Event Log** tab.
3. Scroll down the bottom of the tab to display the **Enable in Log** options.



4. Use the boxes to select what types of messages the Event Log reports. Refer to **Table 8.12** for information on the types of messages available.

Viewing the Event Log

The **Event Log** tab in DashBoard displays the 20 most recent messages. Each message includes a timestamp, and a short description of the event.

★ Firmware version numbers are included in the startup message, to allow tracking of updates.

To view the event log in DashBoard

1. Display the **Device View** of the card by double-clicking its status indicator in the **Basic Tree View**.
2. From the **Device View**, select the **Event Log** tab.

Saving the Event Log

The complete event log, or a portion thereof, can be downloaded to a file on your computer. The resulting file contains log entries in reverse chronological order. The event log stores messages in the non-volatile memory for

events that have occurred since the log was last cleared (by clicking **Clear** in the **Event Log** tab). This log can be saved as a text file on your computer. This enables you to review larger portions of the event log by specifying a number of days back from the present to be included in the text file. Upon read-back, the entries are displayed in reverse chronological order.

To save the event log as a text file

1. From the **Device View**, select the **Event Log** tab.
2. Specify the entries to capture in the text file by selecting an option from the **Range** menu. The default is **All** which captures all entries since the log was last cleared.
3. Click **Save** and follow the on-screen instructions.

SNMP Monitoring and Control

The Network Controller Card in the openGear frame can provide optional support for remote monitoring using Simple Network Management Protocol (SNMP), which is compatible with many third-party monitoring and control tools.

Refer to your NWE-3GA Management Information Base (MIB) file for a breakdown of SNMP controls on this card. Refer to the MFC-8300 Series or MFC-OG3 Series User Manual for additional information on SNMP Monitoring and Control.

DashBoard Menus

This chapter briefly summarizes the menus, items, and parameters available from the DashBoard Control System for the NWE-3GA. Parameters marked with an asterisk (*) are the factory default values.

Status Tabs

This section provides a summary of the read-only information displayed in the **Status** tabs. The fields in the **Status** tabs vary in severity from green (valid), yellow (caution), to red (alarm). DashBoard reports the most severe alarm for a single field. Alarm colors are noted within the tables as text set in brackets next to the parameter name.

Signal Tab

Table 8.1 summarizes the read-only information displayed in the **Signal** tab.

Table 8.1 Signal Tab Items

Item	Parameters	Description
General		
Signal Status	OK (Green)	Indicates when the card is functioning correctly or if anomalies are detected
	Invalid Format	
	Incompatible	
	Non-Sync Video	
	Group Not Present	
	Group Channel Silent	
Audio Status	OK (Green)	A valid audio source is present
	AES Input Not Present	An AES input signal is not present
	AES Input Invalid	AES audio source is silent, non-PCM, or asynchronous
	Grp 4 reduced to 20bit ^a	The four SD-SDI audio groups are at 24bits, however the fourth group is now reduced to 20bit
Reference Status	OK (Green)	The detected reference format is valid and supported
	No Reference - Video (Red)	No valid signal detected on the selected reference input
	No Reference - Free Run (Red)	The following conditions are occurring: <ul style="list-style-type: none">• Reference setting (in the Config tab) is set to Frame 1 or Frame 2• A valid reference signal is not present• Card has gone to Free Run Mode
	Invalid Format - Video (Red)	A reference signal is detected but the format is incompatible with the current output signal

Table 8.1 Signal Tab Items

Item	Parameters	Description
Reference Status	Invalid Format - Free Run (Red)	The following conditions are occurring: <ul style="list-style-type: none"> • Card has detected an invalid reference format • Input video is missing or invalid^b • Card has switched to Free Run Mode
Watermark Status	OK (Green)	The Check Code is validated for the SID and watermarking is operating correctly
	Off (Yellow)	One of the following has occurred: <ul style="list-style-type: none"> • The Watermark Enabled box on the Watermark Setup tab is not selected, or • No clusters are assigned in the Audio Clusters tab
	Invalid Check Code (Red) ^c	An incorrect Check Code was entered for the specified SID or CSID value
	Invalid SID Number (Red)	An incorrect value was entered for the specified SID
	Invalid CSID Number (Red)	An incorrect value was entered for the specified CSID
Cluster Status	OK (Green)	All clusters are configured correctly
	Empty (Red)	No audio clusters are defined. At least one cluster must be defined in order for the NWE-3GA to encode.
	Unassigned Source (Red)	<ul style="list-style-type: none"> • An audio cluster is defined, but an audio location has not been assigned to at least one of the channels. Note that when you move an audio location to a different cluster location, the previous cluster channel has an unassigned audio source. • Watermarking of all channels is disabled under this condition
	Mixed Audio Sources (Red)	<ul style="list-style-type: none"> • A single cluster has both AES and embedded audio locations assigned to it • Watermarking of all channels is disabled under this condition
Input Format	#	Indicates the input signal is a supported format
	None	Indicates that a valid input signal is not detected
	Unknown	Indicates that the input signal is present but is not a supported format
Reference Format	#	Indicates the reference format detected
	None	Indicates that a valid reference signal is not detected
	Unknown	Indicates a reference signal is present but is not a supported format ^b
Output Format	#	Indicates the output format detected

Table 8.1 Signal Tab Items

Item	Parameters	Description
Embedded Audio Status - Group #	PCM	Indicates the presence of the specified embedded audio group
	No Input	
	PCM-Silent	
	Non-PCM	
	Async	
	Mixed	
AES Inputs		
AES #	PCM	Indicates the presence of the specified AES inputs
	No Input	
	PCM-Silent	
	Non-PCM	
	Async	
	Mixed	

- This parameter indicates that there are more than 3 groups of 24bit SD embedded audio sources.
- Refer to the section “**Frame Rate Compatibility**” on page 29 for a complete list of supported formats.
- This status message will display for a maximum of 1 minute before the settings are automatically restored to the last valid entry.

Product Tab

Table 8.2 summarizes the read-only information displayed in the **Product** tab.

Table 8.2 Product Tab Items

Item	Parameters	Description
Product	NWE-3GA	Indicates the product name
Supplier	Ross Video Ltd.	
Board Rev	##	Indicates the board version of your card
Rear Module	#	Indicates the type of rear module in the slot
Board S/N	#####	Indicates the serial number of your card
Software Rev	##.##	Indicates the software and build versions
Firmware Rev	#.###	Indicates the FPGA version number
Daughter Card		
Type	##	Indicates what daughter card is installed.
Hardware Rev	##	Indicates the hardware issue of the daughter card
Software Rev	#. #	Indicates the software and build versions of the daughter card
Firmware Rev	#. #	Indicates the FPGA version number of the daughter card

Hardware Tab

Table 8.3 summarizes the read-only information displayed in the **Hardware** tab.

Table 8.3 Hardware Tab Items

Item	Parameters	Description
HW Status	OK (Green)	Normal operation; no hardware errors and the correct rear module is installed
	FPGA load invalid (Red)	FPGA could not be loaded successfully. It is recommended to contact Ross Technical Support.
	Incomp I/O module (Red)	Card is connected to a rear module that does not support the NWE-3GA
	Current out of spec (Red)	Current is more than 1.5A
	Internal Error (Red)	It is recommended to contact Ross Technical Support
Voltage (mV)	#	Measured input voltage
Current (mA)	#	Current consumption in milliamperes
CPU headroom	#	Processing power available
RAM available	#	CPU Memory available
Uptime (h)	#	Displays the number of hours since the last reboot of the card
Configuration Bank	#	Storage count
Log Bank	#%	Used for diagnostic purposes only

Time Status Tab

Table 8.4 summarizes the read-only information displayed in the **Time Status** tab.

Table 8.4 Time Status Tab Items

Item	Parameters	Description
Time Status	OK (Green)	Indicates a valid time source is reporting to the NWE-3GA
	Time Source missing (Red)	Indicates that the time source reporting to the NWE-3GA is invalid or absent
Encoding Time and Date		
Time	hh : mm : ss D	Reports the current encoding time as reported by the time source selected in the Set Time tab (hours:minutes:seconds) D indicates that Daylight Saving Time is in effect S indicates that Standard Time is in effect
	hh : mm : ss S	
Date	Ddd Mmm ##, yyyy	Indicates the encoded date where: <ul style="list-style-type: none"> Ddd represents the day of the week Mmm represents the month ## represents the day of the month yyyy represents the year

Table 8.4 Time Status Tab Items

Item	Parameters	Description
NTP Time and Date		
Time	hh : mm : ss D	Indicates the current local time based on NTP (hours:minutes:seconds) D indicates that Daylight Saving Time is in effect S indicates that Standard Time is in effect
	hh : mm : ss S	
Date	Ddd Mmm ##, yyyy	Indicates the current date based on NTP, where: <ul style="list-style-type: none"> • Ddd represents the day of the week • Mmm represents the month • ## represents the day of the month • yyyy represents the year
LTC Time		
Balanced	hh : mm : ss D	Indicates the current local time based on the LTC source connected to the LTC 3-pin terminal block on the rear module (hours:minutes:seconds) D indicates that Daylight Saving Time is in effect S indicates that Standard Time is in effect
	hh : mm : ss S	
	Not Present	Indicates that a valid LTC source is not present on the LTC 3-pin terminal block of the rear module
Unbalanced	hh : mm : ss D	Indicates the current local time based on the LTC source connected to the LTC BNC on the rear module (hours:minutes:seconds) D indicates that Daylight Saving Time is in effect S indicates that Standard Time is in effect
	hh : mm : ss S	
	Not Present	Indicates that a valid LTC source is not present on the LTC BNC of the rear module

Config Tab

Table 8.5 summarizes the **Config** tab options available in DashBoard. In **Table 8.5**, the **Item** column references specific menus.

Table 8.5 Config Tab Items

Item	Parameters	Description
Bypass Relay	Active*	SDI and AES signals are routed through the card
	Bypass	SDI and AES signals on the input BNCs bypass the card and are looped passively to the output BNCs through the relays
Reference	Frame 1	The card is using the reference source connected to the REF 1 port on the openGear frame
	Frame 2	The card is using the reference source connected to the REF 2 port on the openGear frame
	Video*	The card is using the reference source connected to the SDI IN BNC on the 8320AR-060 rear module

Table 8.5 Config Tab Items

Item	Parameters	Description
Loss of Input	Black	Sets the output to black in the event of a loss of video input
	Blue	Sets the output to blue in the event of a loss of video input
	Custom*	Sets the output to a custom color in the event of a loss of video input. Use the Y, Cr, and Cb sliders to configure the color.
	Y slider	Sets the luminance component of the Loss of Input Custom video signal
	Cr slider	Sets the Cr component of the Loss of Input Custom video signal
	Cb slider	Sets the Cb component of the Loss of Input Custom video signal
		Configures the output in the event of a loss of video input. Output format is the last valid input format, and this is indicated in the Output Format field of the Signal Status.
Silence Threshold (dB)	-96 to 0	Audio below the specified threshold value is considered silent
Silence Timeout (sec)	1 to 60	Audio silent for longer than the specified value raises an alarm (Channel # Invalid alarm is enabled)
Sample Rate Conversion - AES #	Off	Sample Rate Conversion (SRC) is not used on the specified AES input. Select this option when using non-PCM audio data.
	On	SRC is used on the specified AES input
	Auto*	SRC is automatically used on the specified AES input unless the NWE-3GA detects non-PCM audio data
Edit permission	Unlocked*	All menu options are unlocked and can be edited
	Locked	All menu items, except this one, are locked and read-only
Factory Defaults	Reset	Resets all parameters, except SID and Bypass Relay, to factory default values
Save Configuration	nwe3gcfg.txt	Displays the filename for the card settings text file
	Save	Saves the card settings to the specified text file

Set Time Tab

Table 8.6 summarizes the **Set Time** tab options available in DashBoard. In **Table 8.6**, the **Menu Item** column references the specific areas of the tab. The **Item** column references specific menu items.

Table 8.6 Set Time Tab Items

Item	Parameters	Description
Time Source		
Time Source	Network Time*	Enables the NWE-3GA to apply the timecode defined by NTP. This is the recommended setting
	Manual	Enables the user to configure the timecode using the options in the Set Time tab

Table 8.6 Set Time Tab Items

Item	Parameters	Description
Time Source	LTC (Balanced)	Enables the NWE-3GA to use the Linear Timecode signal from an LTC device connected to the LTC 3-pin terminal block connector on the 8320AR-060 rear module
	LTC (Unbalanced)	Enables the NWE-3GA to use the Linear Timecode signal from an LTC device connected to the LTC BNC connector on the 8320AR-060 rear module
LTC Follows DST	Selected	Specifies that the LTC device connected to the NWE-3GA automatically adjusts for Daylight Savings Time
	Cleared*	Specifies that the LTC device connected to the NWE-3GA does not apply DST
Local Encoding Time Relative to UTC ^a		
Hours	#	Specifies the number of hours to offset the timecode from an NTP source. Note that For network time, the offset is the time difference between the location of the viewers and UTC.
Minutes	##	Specifies the number of minutes to offset the timecode from an NTP source
Hemisphere	West*	Specifies whether your facility is located East or West of Greenwich, UK
	East	
Local Encoding Time Relative to LTC ^b		
Hours	#	Specifies the number of hours to offset the timecode from an LTC source
Minutes	##	Specifies the number of minutes to offset the timecode from an LTC source
Hemisphere	West*	Specifies the time offset in relation to the LTC source
	East	
Manual Time Setting ^c		
Year	####	Specifies the current date for the encoded time to start counting from
Month	#	
Day	##	
Hour	#	Specifies the hour for the encoded time to start counting from; assumes a twenty-four hour clock
Minute	#	Specifies the minute for the encoded time to start counting from
Second	#	Specifies the second for the encoded time to start counting from
Accept		Saves changes to the fields in the Manual Time Setting area
Daylight Saving Time		

Table 8.6 Set Time Tab Items

Item	Parameters	Description
Daylight Saving Time	Auto	The NWE-3GA automatically changes between Daylight and Standard time at the specified date and times
	Manual	The user manually selects Daylight or Standard time
Manual DST Setting ^d	Standard Time	Specifies that Standard time is presently in effect
	Daylight Saving Time	Specifies that Daylight Saving Time is presently in effect
Month ^c	Start	Specifies the month that DST begins in
	End	Specifies the month that DST ends in
Week ^c	Start	Specifies the week that DST begins in
	End	Specifies the week that DST ends in
Day of Week ^c	Start	Specifies the calendar day that DST begins in
	End	Specifies the calendar day that DST ends in
Hour of Day ^c	Start	Specifies the hour that DST begins in (assumes a twenty-four hour clock)
	End	Specifies the hour that DST ends in (assumes a twenty-four hour clock)

- a. Use this option when the **Time Source** is set to **Network Time**.
b. Use this option when the **Time Source** is set to **LTC (Balanced)** or **LTC (Unbalanced)**.
c. Use this option when the **Time Source** is set to **Manual**. The fields are read-only when **Time Source** is set to **Network Time**.
d. This option is disabled when **Daylight Saving Time** is set to **Auto**.

Watermark Setup Tab

Table 8.8 summarizes the **Watermark Setup** tab options available in DashBoard. In **Table 8.7**, the **Menu Item** column references the specific areas of the tab. The **Item** column references specific menu or field names.

Table 8.7 Watermark Setup Tab Items

Item	Parameters	Description
Watermark Enabled	Selected*	NWE-3GA outputs the programming with watermarking
	Cleared	No watermarking is inserted
System Settings		
SID	#	Specifies the Nielsen Audio Encoding System (NAES) Source Identification Number (SID) for this NWE-3GA. This value is assigned by Nielsen.
Check Code	#	Checksum that validates the SID code entered versus the unique Check Codes entered in the field above. This value is assigned by Nielsen.

Table 8.7 Watermark Setup Tab Items

Item	Parameters	Description
Level Overflow Method	Refrain	When the input audio contains watermarks of the specified NAES SID, the NWE-3GA does not add any watermarks of its own.
	Overwrite*	When the input audio contains watermarks of the NAES SID, the NWE-3GA replaces the incoming watermarks with its own.
SID	#	Specifies the Critical Band Encoding Technology (CBET) Source Identification Number (CSID) for this NWE-3GA. This value is assigned by Nielsen. CBET encoding is disabled when this field is blank.
Check Code	#	Checksum that validates the CBET CSID code entered in the field above versus the unique Check Codes entered. This value is assigned by Nielsen. If the CBET CSID field is blank, this field is not required.
Level Overflow Method	Refrain	When the input audio contains watermarks of the specified CBET CSID, the NWE-3GA does not add any watermarks of its own.
	Overwrite*	When the input audio contains watermarks of the CBET CSID, the NWE-3GA replaces the incoming watermarks with its own.
Watermark Status	OK (Green)	The Check Code is validated for the SID and watermarking is operating correctly
	Off (Yellow)	One of the following has occurred: <ul style="list-style-type: none">• The Watermark Enabled box on the Watermark Setup tab is not selected, or• No clusters are assigned in the Audio Clusters tab
	Invalid SID Check Code (Red)	An incorrect NAES SID Check Code was entered for the specified SID value. This code is assigned by Nielsen.
	Invalid CSID Check Code (Red)	An incorrect CBET CSID Check Code was entered for the specified CSID value. This code is assigned by Nielsen.
	Invalid SID Number (Red)	An incorrect SID or CSID was entered. Verify the entered value against the Nielsen assigned value.
	Invalid CSID Number (Red)	
Audio Settings		
Code Type	Final Distributor*	Specifies that your facility is the final station or network in the program distribution chain
	Program Content	Specifies that your facility is the broadcast network or syndicate in the program distribution chain
Audio Parameters	For use by Nielsen only.	
Password	For use by Nielsen only.	

Audio Clusters Tab

Table 8.8 summarizes the **Audio Clusters Menu** options available in DashBoard. In **Table 8.8**, the **Menu Item** column references to either the column titles or specific areas of the tab. The **Item** column references specific menu items.

Table 8.8 Audio Clusters Menu Items

Item	Parameters	Description
Cluster Status	OK (Green)	All clusters are configured correctly
	Empty (Red)	No audio clusters are defined. At least one cluster must be defined in order for the NWE-3GA to encode.
	Unassigned Source (Red)	An audio cluster is defined, but an audio location has not been assigned to one of its channels. Note that when you move an audio location to a different cluster location, the previous cluster channel has an unassigned audio source.
	Mixed Audio Sources (Red)	An audio cluster has both AES3id and embedded audio locations assigned to it
Cluster Type (read-only)	5.1	Indicates a cluster using 5.1 audio signals
	Stereo	Indicates a cluster using one stereo pair
	Mono	Indicates a cluster using a mono audio signal
Contents ^a (read-only)	L	Indicates the cluster element is a left channel (5.1 or Stereo)
	R	Indicates the cluster element is a right channel (5.1 or Stereo)
	C	Indicates the cluster element is a center channel (5.1)
	LFE	Indicates the cluster element is a low frequency effect (5.1)
	LR	Indicates the cluster element is a left-rear channel (5.1)
	RR	Indicates the cluster element is a right-rear channel (5.1)
	M	Indicates the cluster element is a mono channel (Mono)
Name	#	Specifies a name for the cluster element (optional)
Audio Source	Group# Ch#	Assigns the specified Embedded Audio group and channel combination to the cluster element
	AES #	Assigns the specified AES3id input signal to the cluster element
	Unassigned*	A signal is not assigned to the cluster element
Add Cluster		
Add 5.1		Adds an audio cluster for 5.1 inputs
Add Stereo		Adds an audio cluster for stereo pair inputs
Add Mono		Adds an audio cluster for mono inputs
Remove Cluster #		Deletes the applicable cluster from the watermarking stream

a. The options available in this column are dependent on the type of audio cluster you are configuring.

Input Status Tabs

This sections summarizes the **Input Status Menu** options available in DashBoard.

Video Input & Embed Tab

Table 8.9 summarizes the **Video Input & Embed** tab.

Table 8.9 Input Status — Video Input & Embed

Item	Parameters	Description
Input Format (read-only)	#	Displays the format of the video input
CRC Errors (read-only)	#	Displays the count of the CRC errors on the video input. This 14bit counter is reset on loss of video, or by user request. The counter is non-latching, and will rollover from maximum count to zero. <ul style="list-style-type: none">• For SD formats, it displays both active picture and full frame errors.• For HD formats, it displays the total count of errors.
Error Count	Reset	Resets the count in the CRC Errors field
Embedded Audio - Group #		
Channel #	PCM	Displays the status of each group and channel of embedded audio
	No Input	
	PCM-Silent	
	Non-PCM	
Word Length	20 bit	Displays the word length of the audio in number of bits
	24 bit	

Audio Tab

Table 8.10 summarizes the **Audio** tab.

Table 8.10 Input Status — Audio

Item	Parameters	Description
AES #		
Ch # Status	PCM	Displays the status of the specified channel input
	No Input	
	PCM-Silent	
	Non-PCM	
	Async	
Word Length	# bit	Displays the number of bits of audio
	Unknown	
Emphasis	Present	Displays the status of the emphasis bit within the channel status
	Not Present	

Table 8.10 Input Status — Audio

Item	Parameters	Description
Sample Rate	#	Displays the sample rate of the AES3id input
	Unknown	

Alarm Enables Tab

Table 8.11 summarizes the **Alarm Enables** tab options available in DashBoard. In **Table 8.11**, the **Menu Title** column references a specific area of the tab.

Table 8.11 Alarm Enables Tab Items

Item	Parameters	Description
Video Input & Reference Alarms		
No Input	Selected*	Signal Status field reports a loss of input
	Cleared	Disables the alarm
Invalid Input	Selected*	Input Format field reports when the input video is a format that is not valid
	Cleared	Disables the alarm
Incompatible Input	Selected*	Input Format field reports when the frame rate is not the same as the reference input
	Cleared	Disables the alarm
Non-Sync Video	Selected*	Signal Status field reports if the video input is asynchronous to the reference
	Cleared	Disables the alarm
No Reference	Selected*	Reference Status field reports a loss of reference conditions when they occur
	Cleared	Disables the alarm
Invalid Reference	Selected*	Reference Format field reports when the reference is a format that is not supported
	Cleared	Disables the alarm
Hardware Alarms		
Incompat Rear Module	Selected*	HW Status field reports when a rear module is not compatible with the card
	Cleared	Disables the alarm
Incompat Daughter Card	Selected*	HW Status field reports when using an incompatible daughter card
	Cleared	Disables the alarm
Misc Alarms		
Time Status	Selected*	Time Status field reports when the selected time source is absent
	Cleared	Disables the alarm
Embedded Audio Alarms		

Table 8.11 Alarm Enables Tab Items

Item	Parameters	Description
Group not present	Selected*	Signal Status field reports when one of the selected groups is not present on the input
	Cleared	Disables the alarm
Channel # Silent	Selected*	Signal Status field reports when the specified channel is detected as silent
	Cleared	Disables the alarm
SD 24Bit	Selected*	Audio Status field reports when the selected configuration would embed 4 groups of 24bit audio in an SD output. Group 4 is down-sampled to 20bit audio.
	Cleared	Disables this alarm
AES Input Alarms		
Input not present	Selected*	Signal Status and AES Inputs fields report when the AES input is not detected
	Cleared	Disables the alarm
Channel # Invalid	Selected*	Signal Status field reports when the AES3id channel is detected as silent or if the signal includes non-PCM data and the SRC is set to ON
	Cleared	Disables the alarm
All Alarms	Set	Enables all alarms
	Clear	Disables all alarms

Event Log Tab

Table 8.8 summarizes the **Event Log** tab options available in DashBoard.

Table 8.12 Event Log Tab Items

Item	Parameters	Description
DD mm dd, yyyy hh:mm:ss (code #): xxx		Displays the last 20 messages. Each message reports: <ul style="list-style-type: none"> the date and time of the message the type of message (code #) a brief description
Range	All	Specifies to download all messages in the non-volatile memory since the last clear of the log
	Last Day*	Specifies to download messages only from the last twenty-four hours
	Last 7 Days	Specifies to download messages only from the last seven days
	Last 30 Days	Specifies to download messages only from the last thirty days
Save Log	nwe3glog.txt	Displays the filename for the log text file
	Save	Saves the event log messages as defined in the Range menu to the specified text file

Table 8.12 Event Log Tab Items

Item	Parameters	Description
Event Log	Clear	Clears the log from non-volatile memory
Diagnostics	Selected*	The Event log reports when the card experiences a reboot
	Cleared	Diagnostic messages are not reported in the log
Video Status	Selected*	The Event log reports changes to the input or output video status
	Cleared	Video status messages are not reported in the log
Audio Status	Selected*	The Event log reports changes to the AES or embedded audio
	Cleared	Audio status messages are not reported in the log
Video Configuration	Selected*	The Event log reports changes to any video related setting in the DashBoard menus
	Cleared	Changes to the video configuration are not reported in the log
Audio Configuration	Selected*	The Event log reports changes to any audio related setting in the DashBoard menus
	Cleared	Changes to the audio configuration are not reported in the log
Time Setting	Selected*	The Event log reports changes to the time/date configuration or switching time source parameters
	Cleared	Changes to the time settings are not reported in the log
Watermark Configuration	Selected*	The Event log reports changes made to the settings in the Watermark Setup tab in Dashboard
	Cleared	Changes to the watermark configuration are not reported in the log
Silence	Selected	The Event log reports messages relating to moments of silence in the program audio as defined by the Silence Threshold and Silence Timeout settings in the Config tab
	Cleared*	Audio channels that are detected as silent are not reported in the log
Non-PCM Audio	Selected*	The Event log reports if any non-PCM audio events are present on both the embedded and AES audio channels
	Cleared	Audio channels that are detected as non-PCM are not reported in the log

Software Upgrades

The card can be upgraded in the field via the Network Controller card in your openGear frame.

- ★ The NWE-3GA outputs will be interrupted during the upgrade process. To avoid disruption of your video and/or audio, please place the NWE-3GA in bypass before beginning, by clicking the Bypass Relay button on the Config tab. After you have upgraded the necessary firmware components, restore the NWE-3GA to active operation by clicking the Bypass Relay button again.

Before You Begin

The NWE-3GA includes five components (*.bin files). These are all included in the software package (zip file) you received from Technical Support. Install the files in the following order (filenames in brackets where # represents the version number):

1. NWE-3GA platform card software (1-NWE-3G_main_sw_v#.bin)
2. NWE-3GA platform card firmware (2-NWE-3G_main_fw_v#.bin)
3. NWE-3GA DSP card firmware (3-NWE-3G_dsp_fw_v#.bin)
4. NWE-3GA DSP watermarking software (4-NWE-3G_dsp_app_v#.bin)
5. NWE-3GA DSP diagnostic software (5-NWE-3G_dsp_memdiag_sw_v#.bin)

Refer to the *NWE-3GA Release Notes* to learn which software versions are required.

Upgrading the Software

- ★ DashBoard version 4.0.0 or higher is required for this procedure.

To upgrade the software on a NWE-3GA

1. Contact Nielsen Encoder Support or Ross Technical Support for the latest software version zip file.
2. Unzip the software package (*.zip) on the computer with the DashBoard client installed.
3. Display the **Device View** of the card by double-clicking its status indicator in the **Basic Tree View**.
4. From the **Device View**, click **Upload** to display the **Select file for upload** dialog.
5. Navigate to the *.bin file you wish to upload.
6. Click **Open**.
7. If you are upgrading a single card:
 - Click **Finish** to display the **Uploading to Selected Devices** dialog.
 - Proceed to 9
8. If you are upgrading multiple cards:
 - Click **Next >** to display the **Select Destination** menu. This menu provides a list of the compatible cards based on the card selected in 3
 - Specify the card(s) to upload the file to by selecting the check box(es) for the cards you wish to upload the file to.
 - Verify the card(s) you wish to upload the file to. The **Error/Warning** fields indicate any errors, such as incompatible software or card type mismatch.
 - Click **Finish** to display the **Uploading to Selected Devices** dialog.

9. Monitor the upgrade.

★ The card may report error conditions during the upgrade due to incompatibilities between versions of the five software components. Please ignore these and proceed to upload the other files in the prescribed order. After the last file has been uploaded and the card has rebooted, there should be no persistent error state.

- The **Uploading to Selected Devices** dialog enables you to monitor the upgrade process.
- Click **OK** to complete the upgrade process.
- The card(s) are temporarily taken off-line during the re-boot process. The process is complete once the status indicators for the **Card State** and **Connection** fields return to their previous status.

10. Repeat 4 to 9 for each of the five software components in the prescribed order.

Technical Specifications

This chapter provides technical specification details on the NWE-3GA.

★ Specifications are subject to change without notice.

SDI Input Specifications

Table 10.1 Technical Specifications — SDI Inputs

Item	Specifications
Number of Inputs	1 HD-SDI input
Standards Accommodated	270Mbps (SMPTE 259M)
	1.5Gbps (SMPTE 292M)
	3Gbps (SMPTE 424)
Impedance	75ohm
Return Loss	>14dB to 1.5GHz
	>9dB to 3.0GHz
Equalization (using Belden 1694A cable)	< 100m (328ft) @ 3G
Connector Type	BNC

SDI Output Specifications

Table 10.2 Technical Specifications — SDI Output

Item	Specifications
Number of Outputs	1 HD-SDI
Standards Accommodated	270Mbps (SMPTE 259M)
	1.5Gbps (SMPTE 292M)
	3Gbps (SMPTE 424)
Impedance	75ohm
Return Loss	>13dB to 1.5GHz
	>8dB to 3.0GHz
Signal Level	800mV +/- 10%
Connector Type	BNC

AES Inputs Specifications

Table 10.3 Technical Specifications — AES Inputs

Item	Specifications
Number of Inputs	4
Standards Accommodated	AES-3id-2001

Table 10.3 Technical Specifications — AES Inputs

Item	Specifications
Impedance	75ohm
Minimum Input	50mV p-p
Maximum Input	2.0V p-p
Sampling Rate	48kHz
Connector Type	BNC

AES Outputs Specifications

Table 10.4 Technical Specifications — AES Outputs

Item	Specifications
Number of Outputs	4
Standards Accommodated	AES-3id-2001
Impedance	75ohm
Signal Level	1.0V +/- 10%
Sampling Rate	48kHz

LTC Input Specifications

Table 10.5 Technical Specifications — LTC Input

Item	Specifications
Number of Inputs	2
Impedance	15k ohm
Minimum Input Level	BNC: 200mV p-p
	3-pin terminal block: 200mV p-p
Maximum Signal Level	BNC: >3.3V p-p
	3-pin terminal block: >3.3V p-p
Unbalanced Connector	BNC
Balanced Connector	3-pin terminal block

Serial COM Specifications

Table 10.6 Technical Specifications — Serial COM

Item	Specifications
Protocol	Subset of NAVE II PC Interface
Rate and Format	Baud Rate: 9600bps
	Data Bits: 8
	Parity: None
	Stop Bit: 1

Table 10.6 Technical Specifications — Serial COM

Item	Specifications
Communication Type	RS-232
Connector Type	RJ-45

Environment

Table 10.7 Technical Specifications — Environment

Item	Specifications
Operating Range	5°C to 40°C ambient

Power

Table 10.8 Technical Specifications — Power

Item	Specifications
Total Power Consumption	16W

Software Licenses

This chapter provides software license information for your NWE-3GA. This product includes multiple software components which are individually licensed under the licenses included in this chapter.

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Service Information

Troubleshooting Checklist

Routine maintenance to this openGear product is not required. In the event of problems with your NWE-3GA, the following basic troubleshooting checklist may help identify the source of the problem. If the frame still does not appear to be working properly after checking all possible causes, please contact your openGear products distributor, or the Technical Support department at the numbers listed under the “**Contact Us**” section.

1. **Visual Review** — Performing a quick visual check may reveal many problems, such as connectors not properly seated or loose cables. Check the card, the frame, and any associated peripheral equipment for signs of trouble.
2. **Power Check** — Check the power indicator LED on the distribution frame front panel for the presence of power. If the power LED is not illuminated, verify that the power cable is connected to a power source and that power is available at the power main. Confirm that the power supplies are fully seated in their slots. If the power LED is still not illuminated, replace the power supply with one that is verified to work.
3. **Reference Signal Status** — Verify that the reference (blackburst or tri-level) is supplied on one of the three reference inputs. In DashBoard, check the Reference setting in the Config tab, and the Reference Status field in the Signal tab.
4. **Input Signal Status** — Verify that source equipment is operating correctly and that a valid signal is being supplied.
5. **Output Signal Path** — Verify that destination equipment is operating correctly and receiving a valid signal.
6. **Unit Exchange** — Exchanging a suspect unit with a unit that is known to be working correctly is an efficient method for localizing problems to individual units.
7. **Re-load the Factory Defaults** — If the card appears to be working and reports no errors, but is not generating any active picture or outputs black, restoring the default factory configuration may fix the problem.

Saving the Configuration to a Text File

You can save the editable card settings, and the information displayed in the **Product** tab, to a text file using the Save Configuration option in the **Config** tab. This information is used by the Nielsen Encoder Support when troubleshooting issues you may be encountering with your NWE-3GA.

To save your card settings to a text file

1. Display the **Device View** of the card by double-clicking its status indicator in the **Basic Tree View**.
2. From the **Device View**, select the **Config** tab.
3. Click **Save** in the **Save Configuration** area, located near the bottom of the tab, and follow the on-screen instructions.

Warranty and Repair Policy

The NWE-3GA is warranted to be free of any defect with respect to performance, quality, reliability, and workmanship for a period of FIVE (5) years from the date of shipment from our factory. In the event that your NWE-3GA proves to be defective in any way during this warranty period, Ross Video Limited reserves the right to repair or replace this piece of equipment with a unit of equal or superior performance characteristics.

Should you find that this NWE-3GA has failed after your warranty period has expired, we will repair your defective product should suitable replacement components be available. You, the owner, will bear any labor and/or part costs incurred in the repair or refurbishment of said equipment beyond the FIVE (5) year warranty period.

In no event shall Ross Video Limited be liable for direct, indirect, special, incidental, or consequential damages (including loss of profits) incurred by the use of this product. Implied warranties are expressly limited to the duration of this warranty.

This NWE-3GA User Manual provides all pertinent information for the safe installation and operation of your openGear Product. Ross Video policy dictates that all repairs to the NWE-3GA are to be conducted only by an authorized Ross Video Limited factory representative. Therefore, any unauthorized attempt to repair this product, by anyone other than an authorized Ross Video Limited factory representative, will automatically void the warranty. Please contact Ross Video Technical Support for more information.

In Case of Problems

Should any problem arise with your NWE-3GA, please contact the Ross Video Technical Support Department. (Contact information is supplied at the end of this publication.)

A Return Material Authorization number (RMA) will be issued to you, as well as specific shipping instructions, should you wish our factory to repair your NWE-3GA. If required, a temporary replacement frame will be made available at a nominal charge. Any shipping costs incurred will be the responsibility of you, the customer. All products shipped to you from Ross Video Limited will be shipped collect.

The Ross Video Technical Support Department will continue to provide advice on any product manufactured by Ross Video Limited, beyond the warranty period without charge, for the life of the equipment.

Glossary

The following terms are used throughout this guide:

5.1 — 5.1 surround sound (uncompressed PCM data).

Active image — the portion of the video picture area (production aperture) that is being utilized for output content. Active image excludes letterbox bars and pillarbox bars.

Basic Tree View — the area located to the far left of the DashBoard window. This area displays devices in a tree structure. When you launch DashBoard, all openGear frames within the same subnet are auto-detected.

Card — openGear terminal devices within openGear frames, including all components and switches.

CBET CSID — Critical Band Encoding Technology Source Identification.

CBR — constant bit rate.

CDN — content distribution network.

DashBoard — the DashBoard Control System.

Device View — the area located to the far right of the DashBoard window. This area typically displays tabs that include menus and options for control and monitoring a card.

DF — Differentiated Services.

DTVCC captions — CEA-708 captions.

Frame — the openGear frame that houses the NWE-3GA.

LTC — linear timecode.

MIB — management information base.

NAES SID — Nielsen Audio Encoding System Source Identification.

Network Controller Card — the MFC-OG3-N and any available options unless otherwise noted.

NTP — Network Time Protocol.

NTSC captions — the CEA-608-D: Line 21 Data Services captions.

PAL — PAL-B and PAL-G unless otherwise stated.

PCR — program clock reference.

PID — packet identifier.

Production aperture — the image lattice that represents the maximum possible image extent in a given standard (e.g. the full size of all active pixels and active lines). For example, the 1080i production aperture would be 1920x1080.

RTMP — Real Time Messaging Protocol.

System — the mix of interconnected production and terminal equipment in your environment.

TCP — Transmission Control Protocol.

TOS — Type of Service.

TPG — Test Packet Generator.

TTL — Time To Live.

UDP — User Datagram Protocol.

User — the person who uses the NWE-3GA.

