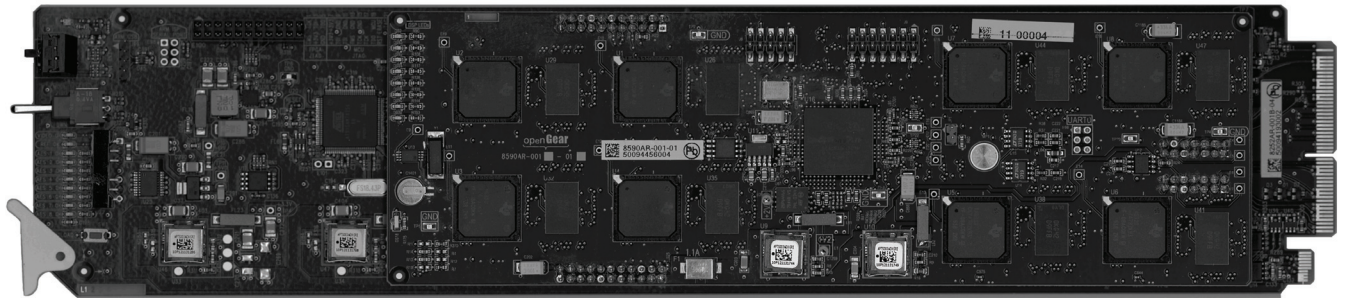


**NWE-3G**  
**3G/HD/SD Nielsen Watermark Encoder**  
**User Manual**



---

## NWE-3G • Nielsen Watermark Encoder User Manual

- Ross Part Number: **NWE3GDR-004A-01**
- Release Date: November 18, 2011. Printed in Canada.

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

---

## Copyright

© 2011 **Ross Video Limited**. All rights reserved.

© 2011 **The Nielsen Company**. All rights reserved.

Contents of this publication may not be reproduced in any form without the written permission of Ross Video Limited. Reproduction or reverse engineering of copyrighted software is prohibited.


---

## Notice

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

---

## Trademarks

-  is a trademark of Ross Video Limited.
- Ross, ROSS, ROSS® are registered trademarks of Ross Video Limited.
- Nielsen and the Nielsen logo are trademarks or registered trademarks of CZT/ACN, Trademarks L.L.C.
- openGear® is a registered trademark of Ross Video Limited.
- DashBoard Control System™ is a trademark of Ross Video Limited.
- Dolby® is a registered trademark of Dolby Laboratories.
- Atmel® is a registered trademark of Atmel Corporation or its subsidiaries, in the US and/or other countries.
- All other product names and any registered and unregistered trademarks mentioned in this guide are used for identification purposes only and remain the exclusive property of their respective owners.

---

# Important Regulatory and Safety Notices

Before using this product and any associated equipment, refer to the “**Important Safety Instructions**” listed below to avoid personnel injury and to prevent product damage.

Products may require specific equipment, and/or installation procedures to be carried out to satisfy certain regulatory compliance requirements. Notices have been included in this publication to call attention to these specific requirements.

## Symbol Meanings



---

*This symbol on the equipment refers you to important operating and maintenance (servicing) instructions within the Product Manual Documentation. Failure to heed this information may present a major risk of damage or injury to persons or equipment.*

---



---

**Warning** — The symbol with the word “**Warning**” within the equipment manual indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

---



---

**Caution** — The symbol with the word “**Caution**” within the equipment manual indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

---



---

**Notice** — The symbol with the word “**Notice**” within the equipment manual indicates a situation, which if not avoided, may result in major or minor equipment damage or a situation which could place the equipment in a non-compliant operating state.

---



---

**ESD Susceptibility** — This symbol is used to alert the user that an electrical or electronic device or assembly is susceptible to damage from an ESD event.

---

## Important Safety Instructions



---

**Caution** — This product is intended to be a component product of the DFR-8300 series frame. Refer to the DFR-8300 series frame User Manual for important safety instructions regarding the proper installation and safe operation of the frame as well as its component products.

---



---

**Warning** — Certain parts of this equipment namely the power supply area still present a safety hazard, with the power switch in the OFF position. To avoid electrical shock, disconnect all A/C power cards from the chassis' rear appliance connectors before servicing this area.

---



---

**Warning** — Service barriers within this product are intended to protect the operator and service personnel from hazardous voltages. For continued safety, replace all barriers after any servicing.

This product contains safety critical parts, which if incorrectly replaced may present a risk of fire or electrical shock. Components contained with the product's power supplies and power supply area, are not intended to be customer serviced and should be returned to the factory for repair. To reduce the risk of fire, replacement fuses must be the same time and rating. Only use attachments/accessories specified by the manufacturer.

---

## EMC Notices

### ***United States of America FCC Part 15***

This equipment has been tested and found to comply with the limits for a class A Digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.



---

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

---

### ***CANADA***

This Class “A” digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe “A” est conforme à la norme NMB-003 du Canada.

### ***EUROPE***

This equipment is in compliance with the essential requirements and other relevant provisions of **CE Directive 93/68/EEC**.

### ***INTERNATIONAL***

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



---

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

---

## Maintenance/User Serviceable Parts

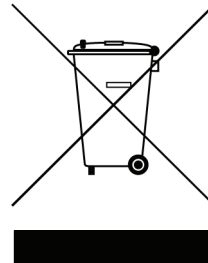
Routine maintenance to this openGear product is not required. This product contains no user serviceable parts. If the module does not appear to be working properly, please contact Technical Support using the numbers listed under the “Contact Us” section on the last page of this manual. All openGear products 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 that you purchased required the extraction and use of natural resources for its production. It may contain hazardous substances that could impact health and the environment.**

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

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



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

---

## Company Address



### **Ross Video Limited**

8 John Street  
Iroquois, Ontario  
Canada, K0E 1K0

### **Ross Video Incorporated**

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

---

General Business Office: (+1) 613 • 652 • 4886

Fax: (+1) 613 • 652 • 4425

Technical Support: (+1) 613 • 652 • 4886

After Hours Emergency: (+1) 613 • 349 • 0006

E-mail (Technical Support): [techsupport@rossvideo.com](mailto:techsupport@rossvideo.com)

E-mail (General Information): [solutions@rossvideo.com](mailto:solutions@rossvideo.com)

Website: <http://www.rossvideo.com>



### **The Nielsen Company**

Encoder Support Group  
501 Brooker Creek Blvd.  
Oldsmar, Florida, USA 34677

---

Phone: (+1) 800 • 537 • 4872

E-mail: [encoders@nielsen.com](mailto:encoders@nielsen.com)

Website: <http://www.nielsen.com>

# Contents

<b>Introduction</b>	<b>1</b>
Overview.....	1-2
Operator Interfaces .....	1-2
Features .....	1-3
Functional Block Diagram .....	1-4
Documentation Terms and Conventions.....	1-5
 <b>Installation</b>	 <b>2</b>
Before You Begin .....	2-2
Static Discharge .....	2-2
Unpacking.....	2-2
Planning the Installation .....	2-3
Getting Started .....	2-4
Related Publications .....	2-5
Installing the NWE-3G .....	2-6
Installing the Rear Module .....	2-6
Installing the NWE-3G.....	2-6
Cabling Overview for the NWE-3G .....	2-7
Cabling Overview.....	2-7
Power Fail Relay .....	2-7
Connecting Video and Audio .....	2-8
Connecting SDI Signals .....	2-8
Connecting AES Audio Signals .....	2-8
Linear Timecode Cabling .....	2-9
Connecting an LTC Input.....	2-9
Serial Port Cabling.....	2-10
Serial COM Pinouts.....	2-10
Connecting to the Serial COM Port .....	2-10
Software Upgrades for the NWE-3G.....	2-12
 <b>Configuration</b>	 <b>3</b>
Selecting the Reference Source .....	3-2
Configuring the Inputs and Outputs.....	3-3
Configuring the Loss of Input .....	3-3
Defining the Silence Thresholds .....	3-3
Processing Non-PCM Signals .....	3-3
Using the NWE-3G with Asynchronous PCM AES Audio .....	3-4
Bypass Mode .....	3-4
Defining the Audio Clusters .....	3-6
Audio Clusters Overview .....	3-6
Defining a Cluster.....	3-7
Configuring the Time Reference .....	3-9
Specifying the Time Reference Input.....	3-9
Specifying an Offset.....	3-10
Configuring the Daylight Saving Time .....	3-10

Enabling the Watermarking .....	3-12
Configuring Alarms in DashBoard .....	3-13
Resetting the Alarm Settings .....	3-15
DataSafe™ Overview .....	3-16
Overview .....	3-16
Event Log .....	3-17
Viewing the Event Log .....	3-17
Saving the Event Log .....	3-17
<b>User Controls</b> .....	<b>4</b>
Card Overview .....	4-2
Control and Monitoring Features .....	4-3
Status and Selection LEDs on the NWE-3G .....	4-3
SNMP Monitoring and Control .....	4-5
<b>DashBoard Menus</b> .....	<b>5</b>
Status Tabs .....	5-2
Signal Tab .....	5-2
Product Tab .....	5-4
Hardware Tab .....	5-5
Time Status Tab .....	5-5
Config Tab .....	5-7
Set Time Tab .....	5-9
Watermark Setup Tab .....	5-11
Audio Clusters Tab .....	5-12
Input Status Tab .....	5-14
Alarm Enables Tab .....	5-15
Event Log Tab .....	5-17
Message Contents .....	5-17
<b>Specifications</b> .....	<b>6</b>
NWE-3G Technical Specifications .....	6-2
<b>Appendix A.</b> .....	<b>7</b>
Atmel® Microcontroller Software License .....	7-2
Software License Agreement .....	7-3
<b>Service Information</b> .....	<b>8</b>
Troubleshooting Checklist .....	8-2
Warranty and Repair Policy .....	8-3
<b>Index</b> .....	<b>IX</b>



# Introduction

---

## In This Chapter

This chapter contains the following sections:

- Overview
- Features
- Functional Block Diagram
- Documentation Terms and Conventions

## A Word of Thanks

Congratulations on choosing an openGear **NWE-3G - Nielsen Watermark Encoder**. Your NWE-3G is part of a full line of Digital Products within the openGear Terminal Equipment family of products, backed by Ross Video's experience in engineering and design expertise since 1974.

You will be pleased at how easily your new NWE-3G fits into your overall working environment. Equally pleasing is the product quality, reliability and functionality. Thank you for joining the group of worldwide satisfied Ross Video customers!

Should you have a question pertaining to the installation or operation of your NWE-3G, please contact us at the numbers listed on the back cover of this manual. Our technical support staff is always available for consultation, training, or service.

---

## Overview

The NWE-3G 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-3G 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-3G 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 DFR-8321 series frame through the MFC-8300 Series Network Controller Card. Refer to the *DashBoard User Manual* for details on using DashBoard.
- **PC Interface Protocol** — The NWE-3G provides a computer-to-computer protocol, known as the PC Interface, allowing a remote computer with special software to control the NWE-3G. The physical connection is through the serial port on the 8320AR-060 rear module. Refer to the *NWE-3G 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-3G Management Information Base (MIB) file for a breakdown of SNMP controls on the NWE-3G.

---

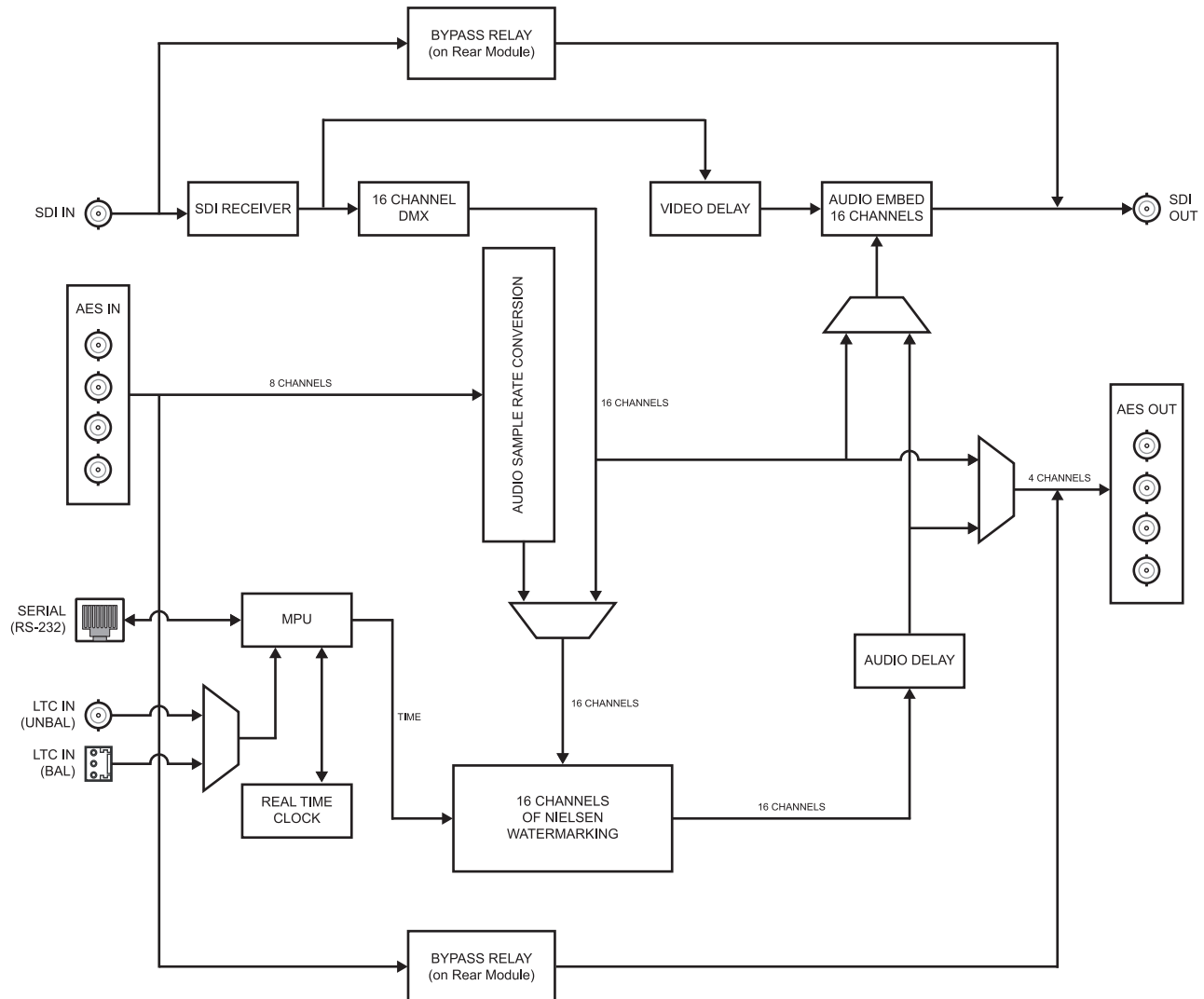
# Features

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

- Supports serial digital (SDI) compatible video per SMPTE 259M-C, SMPTE 292M, and SMPTE 425-A
- Supports AES3id digital audio or embedded in the SMPTE 259M, SMPTE 292M, or SMPTE 425-A video
- Supports popular video formats: 480i 59.94Hz, 1080i 59.94Hz, 720p 59.94Hz, and 1080p 59.94Hz
- 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-3G
- 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-3G.



**Figure 1.1** NWE-3G — Simplified Block Diagram

---

# Documentation Terms and Conventions

The following terms and conventions are used throughout this manual:

- “**5.1**” refers to 5.1 surround sound (uncompressed PCM data).
- “**Basic Tree View**” refers to 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.
- “**Board**”, and “**Card**” refer to openGear terminal devices within openGear frames, including all components and switches.
- “**DashBoard**” refers to the DashBoard Control System™ software.
- “**Device View**” refers to 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.
- “**DFR-8321 series frame**” refers to all versions of the 20-slot frames and any available options unless otherwise noted.
- “**Frame**” refers to DFR-8321 series frame that houses the NWE-3G.
- “**LTC**” refers to linear timecode.
- “**NTP**” refers to Network Time Protocol.
- “**Operator**” and “**User**” refer to the person who uses NWE-3G.
- “**System**” and “**Video system**” refer to the mix of interconnected production and terminal equipment in your environment.
- “**Operating Tips**” and “**Note**” boxes are used throughout this manual to provide additional user information.



# Installation

---

## In This Chapter

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

The following topics are discussed:

- Before You Begin
- Planning the Installation
- Getting Started
- Installing the NWE-3G
- Cabling Overview for the NWE-3G
- Connecting Video and Audio
- Linear Timecode Cabling
- Serial Port Cabling
- Software Upgrades for the NWE-3G

---

## Before You Begin

Before proceeding with the instructions in this chapter, ensure that your DFR-8321 series frame is properly installed according to the instructions in the ***DFR-8300 Series User 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-3G you received from the shipping container. If any items are damaged, contact your sales representative or Ross Video directly.



---

# Planning the Installation

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

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

## Compatibility with Existing Plant

The NWE-3G is designed to work with serial digital video (SMPTE 259M-C, 292M, or 425-A) and with embedded or discrete digital audio (AES).

If the insertion point is analog (NTSC or PAL), it is necessary to couple the NWE-3G 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-3G 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-3G 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-3G 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.

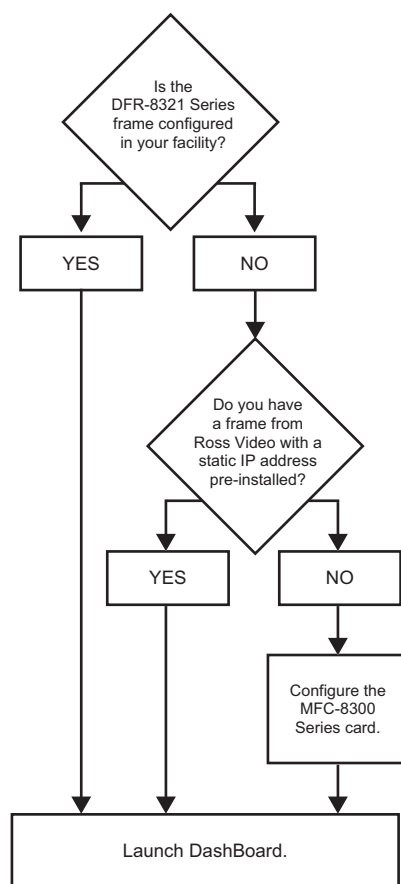
If NTP is unavailable at your facility, the time reference can be supplied by a Linear Timecode (LTC) input.

---

## Getting Started

This section provides a brief summary of some steps that are required before you configure and use your NWE-3G watermarking system. The NWE-3G 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 DFR-8321 series frame installed and have configured your MFC-8300 Series Controller card for network communications, proceed to the section “**Installing the NWE-3G**” on page 2-6.

**Figure 2.1** 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 2.1** Simplified Workflow Diagram

### Installing the DFR-8321 Series Frame

The DFR-8321 series frame is a 2RU high density modular frame, designed to accommodate up to 20 openGear cards.

1. If the DFR-8321 series frame was ordered from Ross Video, ensure that your frame is installed according to the instructions in the ***DFR-8300 Series User Manual***.
2. If your frame was not ordered from Ross Video, refer to the documentation that came with your frame for installation details.

### Configuring the Network Connection

The MFC-8300 Series Network Controller card features an ethernet interface which allows monitoring and control of openGear cards installed in the frame. You must configure this card before you can configure the NWE-3G.

1. Connect a LAN cable directly from the DashBoard client computer to the DFR-8321 series frame, or connect both to an Ethernet switch or hub.
2. Power on the DFR-8321 series 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, but without a static IP address pre-configured, it is set for DHCP by default.
  - If your network supports DHCP, the MFC-8300 Series 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 appropriate chapter for your MFC-8300 series card in the *MFC-8300 Series User Manual* 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

1. Ensure that the latest version of DashBoard is installed on the computer. The software and *DashBoard User Manual* are available from the Ross Video website ([www.rossvideo.com/dashboard](http://www.rossvideo.com/dashboard)).
2. When you launch DashBoard, your DFR-8321 series frame is displayed in the Basic Tree View. If not, consult the *MFC-8300 Series User Manual*.

## Related Publications

If you have not already done so, it is recommended to consult the following Ross documentation before installing and configuring your NWE-3G:

- *DashBoard Control System User Manual*, Ross Part Number: 8351DR-004
- *DFR-8300 Series Frames User Manual*, Ross Part Number 8300DR-005
- *MFC-8300 Series User Manual*, Ross Part Number: 8300DR-004

These manuals are available from the Ross Video website, or the Gear Resources CD that came with your NWE-3G.

---

## Installing the NWE-3G

You must first install the 8320AR-060 rear module in the DFR-8321 series frame, install the NWE-3G into the designated frame slot, and cable the rear module. This section outlines how to perform these tasks. If the NWE-3G is already installed, proceed to the section “**Cabling Overview for the NWE-3G**” on page 2-7.



---

**Note** — *The 8320AR-060 is not compatible with the DFR-8310 series frames. You cannot install the NWE-3G in a DFR-8310 series frame.*

---

### Installing the Rear Module

When installing the NWE-3G in the DFR-8321 series frame, the 8320AR-060 Full Rear Module is required. This rear module occupies four slots in the DFR-8321 series frame. If the rear module is already installed, proceed to the section “**Installing the NWE-3G**” on page 2-6.

Use the following procedure to install a rear module in your DFR-8321 series frame:

1. Refer to the **DFR-8300 Series User Manual** 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-3G 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-3G

Use the following procedure to install the NWE-3G in a DFR-8321 series frame:

1. Ensure that the DFR-8321 series frame is properly installed. Refer to the **DFR-8300 Series User Manual** for details.
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.

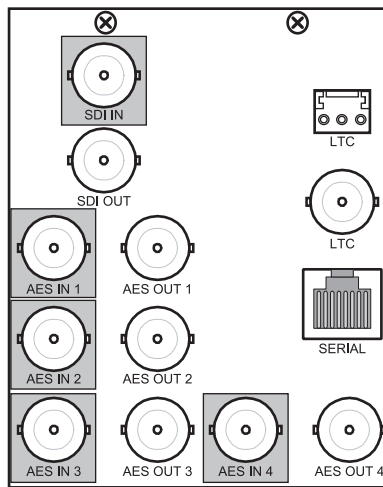
---

# Cabling Overview for the NWE-3G

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-3G is used with the 8320AR-060 rear module in the DFR-8321 series 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 2.2** and the rear module label for connector locations.



**Figure 2.2** Cable Connections for the NWE-3G

## 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-3G. This allows the card to be serviced without interrupting the video signal.
- If the NWE-3G 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 4-2.
- on enabling Bypass mode using DashBoard, refer to the section “**Bypass Mode**” on page 3-4.

---

## 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.



**Important** — *The NWE-3G supports the following video formats: 480i 59.94Hz, 1080i 59.94Hz, 720p 59.94Hz, and 1080p 59.94Hz. 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-3G, click the Bypass Relay button on the Config tab.*

Use the following procedure 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.

This completes the procedure for connecting embedded SDI signals to the rear module.

## Connecting AES Audio Signals

If your configuration uses separate AES3id audio signals, they must be routed through the NWE-3G to be watermarked. The NWE-3G'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.

Use the following procedure 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 2.2** and the rear module label for connector locations.
2. Connect the output AES connectors (**AES OUT 1-4**) to the destination equipment.

This completes the procedure for connecting audio input and output cables to the rear module.

---

# Linear Timecode Cabling

The NWE-3G 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-3G 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.

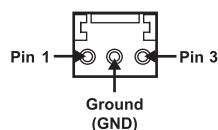
## Connecting an LTC Input

Before cabling, ensure that the following conditions are met:

- The LTC should be synchronous with the video input to the NWE-3G. 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 2.2** 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 2.3**.



**Figure 2.3** LTC Wiring — 3-Pin Terminal Block Connector

### For More Information...

- on configuring the time source for your NWE-3G, refer to the section “**Configuring the Time Reference**” on page 3-9
- on LTC status in DashBoard, refer to the section “**Status Tabs**” on page 5-2.

---

## Serial Port Cabling

This section outlines how to cable serial communications for the NWE-3G. The **Serial COM** port is used for automation control by a software system designed for use with the NAVE II. Unless your NWE-3G 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-3G PC Interface Protocol User Manual*.
- on the location of the **Serial COM** port on the rear module, refer to **Figure 2.2**.

## Serial COM Pinouts

Refer to **Table 2.1** for the pin assignment of the **Serial COM** port on the 8320AR-060 rear module.

**Table 2.1 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 2.1** 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 2.2** 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 2.2 Required ASCII Terminal Settings**

Parameter	Value
Baud Rate	9600
Parity	None
Stop Bit	1



**Table 2.2 Required ASCII Terminal Settings**

Parameter	Value
Flow-control	Enabled
CTS/RTS	Disabled
Full/Half Duplex	Full
Xon/Xoff	Enabled

---

# Software Upgrades for the NWE-3G

The card can be upgraded in the field via the MFC-8300 series Network Controller card in your frame.



---

**Important** — *The NWE-3G outputs will be interrupted during the upgrade process. To avoid disruption of your video and/or audio, please place the NWE-3G 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-3G to active operation by clicking the Bypass Relay button again*

---

## Overview

There are four software packages for the NWE-3G: two for the platform card and two for the DSP card. When upgrading more than one software package, consider following this sequence:

1. NWE-3G platform card software
2. NWE-3G platform card firmware
3. NWE-3G DSP card firmware
4. NWE-3G DSP card software




---

**Note** — *DashBoard version 4.0.0 or higher is required for this procedure.*

---

## To upgrade the software on a NWE-3G:

1. Contact Ross Technical Support for the latest software version file.
2. Display the **Device View** of the card by double-clicking its status indicator in the **Basic Tree View**.
3. From the **Device View**, click **Upload** to display the **Select file for upload** dialog.
4. Navigate to the \*.bin upload file you wish to upload. The filename indicates what product the file is for.
5. Click **Open**.
6. If you are upgrading a single card, click **Finish** to display the **Uploading to Selected Devices** dialog. Proceed to step 8.
7. 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 step 2.
  - 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.
8. Monitor the upgrade.
  - The **Uploading to Selected Devices** dialog enables you to monitor the upgrade process.

- Notice that each card is listed in the dialog with a  button. This button is replaced with a **Reboot** button once the software file is loaded to that card.



---

**Important** — *Avoid clicking the individual **Reboot** buttons until all cards have successfully completed the file upload process and the **OK** button, located in the bottom right corner of the dialog, is enabled.*

---

- Click **OK** to re-boot all the cards listed in the **Uploading to Selected Devices** dialog.
- The **Reboot Confirm** dialog displays, indicating the number of cards that will re-boot. Click **Yes** to continue the upgrade process. Note that clicking **Cancel** or **No** returns you to the **Uploading to Selected Devices** dialog without rebooting the card(s).
- The card(s) are temporarily taken offline 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.



# Configuration

---

## In This Chapter

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

The following topics are discussed:

- Selecting the Reference Source
- Configuring the Inputs and Outputs
- Defining the Audio Clusters
- Configuring the Time Reference
- Enabling the Watermarking
- Configuring Alarms in DashBoard
- DataSafe™ Overview
- Event Log



---

**Note** — *The NWE-3G 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-3G will retain your settings.*

---

---

## Selecting the Reference Source

The DFR-8321 series 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-3G cards. This section provides information for specifying the reference source for your NWE-3G.



---

**Important** — *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 DFR-8321 series frame, the NWE-3G input video frame rate must match the reference frame rate. Reference sources can be any of the following formats: 480i 59.94Hz, 720p 59.94Hz, or 1080i 59.94Hz.

### 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 DFR-8321 series frame.
  - **Frame 2** — Select this option to use the reference source connected to the **REF 2** port on the DFR-8321 series 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-3G, 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.

Use the following procedure 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 step 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.

Use the following procedure 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-3G to pass non-PCM signals, such as Dolby® Digital and Dolby® E, using the options available in DashBoard. However, the NWE-3G 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-3G 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



---

**Operating Tip** — 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 **On**.

---

## Using the NWE-3G with Asynchronous PCM AES Audio

The NWE-3G 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-3G 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 labelled as Bypass. You can enable Bypass mode using the card-edge controls or Dashboard. This section outlines how to enable Bypass mode using Dashboard.



---

**Operating Tip** — 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 4-2.

---

# Defining the Audio Clusters

The NWE-3G 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.



---

**Note** — When you define an audio cluster that uses embedded audio inputs, the NWE-3G 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-3G 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-3G 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...

- connecting the input and output audio signals, refer to the section “**Connecting Video and Audio**” on page 2-8.

## 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 3.1 provides examples of valid clusters.

**Table 3.1 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 3.2 provides examples of improper clusters.

**Table 3.2 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-3G 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.



---

**Note** — *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-3G 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 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.



---

**Operating Tip** — *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-3G 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 Protocol (NTP)** — Select this option to obtain the date and time from a NTP server via the ethernet connection on the MFC-8320 series Network Controller card. This is the recommended setting. If required, you can also set an offset as described in the section “**Specifying an Offset**” on page 3-10.



---

**Note** — *It is necessary to specify the IP address of the NTP server. This IP address is configured on the MFC-8320 series Network Controller Card. Refer to the **MFC-8300 Series User Manual** for details.*

---

- **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.
  - **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 3-9.
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-3G automatically adjusts for Daylight Savings Time
    - Clear the check box if your LTC device connected to the NWE-3G 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-3G 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-3G to watermark the local time in the broadcast area.

- For network time, the offset is the time difference between the location of the viewers and UTC (also known as GMT).
- For LTC, the offset is normally set to 0, unless the program will be broadcast in a different time zone than the NWE-3G location.

### To specify an offset:

1. From the **Device View**, select the **Set Time** tab.
2. From the **Network, LTC Offset from UTC** 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.
  - Use the **Hemisphere** options to specify whether your facility is located east or west of Greenwich, UK.
3. 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-3G. The NWE-3G 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-3G for your program by entering your Source ID (SID) provided by Nielsen as follows:
  - Type your SID value into the **SID** field located in the **System Settings** area.
  - Type the required code into the **Check Code** field located in the **System Settings** area.
3. Set the audio code scheme for your NWE-3G by selecting an option in the **Code Type** area. Choose from the following:
  - **Final Distributor** — Select this option if the NWE-3G is installed in the station or cable network slot of the program-distribution chain.
  - **Program Content** — Select this option if the NWE-3G is installed in the broadcast network or syndicator slot of the program-distribution chain.
4. Specify how to resolve conflicts between data already present in the incoming signal, and data to be added by the NWE-3G by selecting an option in the **Level Overflow Method** area. Choose from the following:
  - **Refrain** — Select this option to not encode the NWE-3G data and only transmit the incoming data.
  - **Overwrite** — Select this option to encode the NWE-3G data regardless of the presence of incoming data.



---

**Note** — *The **Audio Parameters** fields are for Nielsen diagnostics purposes only.*

---

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-3G, 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 5-2.

## To verify the video input alarm settings:



---

**Note** — *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:



**Note** — 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:



**Note** — 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:



**Note** — 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.



---

**Note** — *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-3G

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

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

---

# Event Log

The NWE-3G records events in non-volatile memory. The following events and conditions are recorded 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.

## 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.

### 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.



# User Controls

---

## In This Chapter

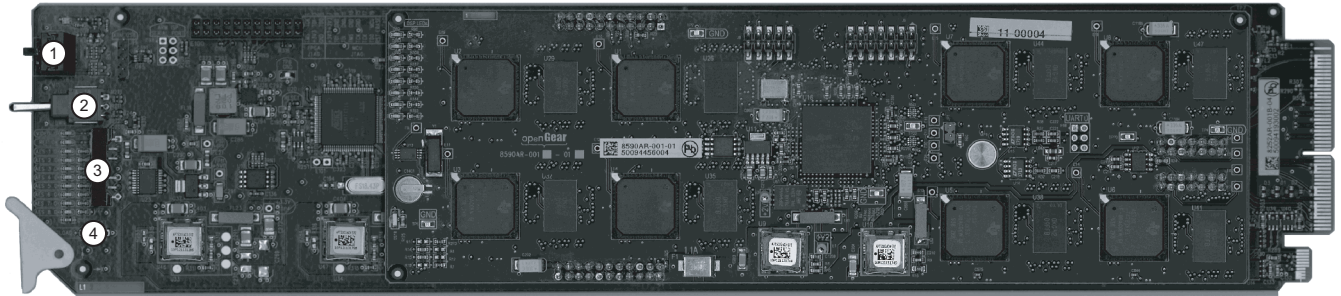
This chapter provides a general overview of the user controls available on the NWE-3G.

The following topics are discussed:

- Card Overview
- Control and Monitoring Features
- SNMP Monitoring and Control

## Card Overview

This section provides a general overview of the NWE-3G components. For information on the LEDs available on the card-edge, refer to the section “**Control and Monitoring Features**” on page 4-3.



**Figure 4.1** NWE-3G — Card-edge Components

1) Function Select Switch ( <b>SW2</b> )	3) 4-Character Display
2) Mode Select Switch ( <b>SW3</b> )	4) Bootload/Bypass Button ( <b>SW1</b> )

### 1. Function Select Switch (**SW2**)

This switch is not implemented.

### 2. Mode Select Switch (**SW3**)

This switch is not implemented.

### 3. 4-Character Display

This display indicates the card model and slot number it is installed in when **SW2** is in the **0** position.

### 4. 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-3G.
  - › 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.

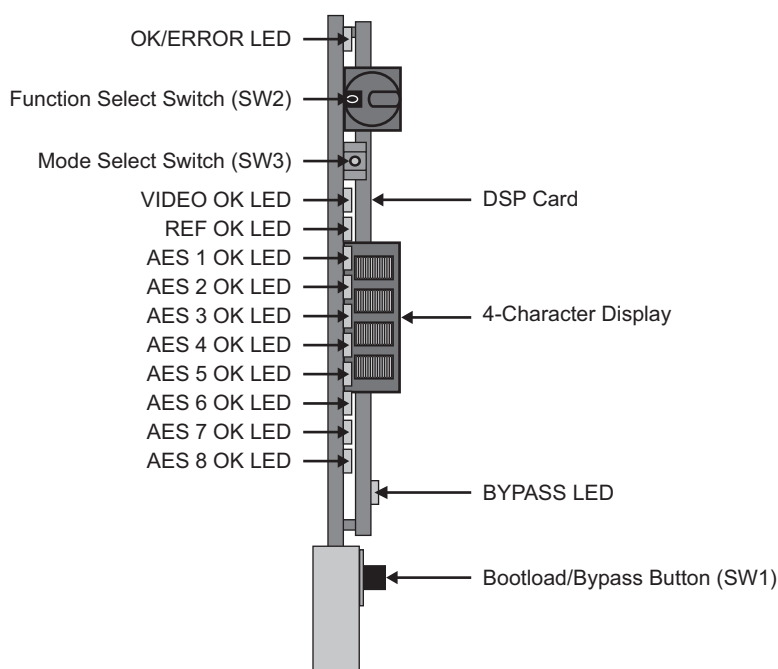
### *For More Information...*

- on the LEDs located on the card-edge, refer to the section “**Status and Selection LEDs on the NWE-3G**” on page 4-3.
- the bypass feature, refer to the section “**Power Fail Relay**” on page 2-7.



## Control and Monitoring Features

This section provides information on the card-edge LEDs for the NWE-3G. Refer to **Figure 4.2** for the location of the LEDs.



**Figure 4.2** NWE-3G Card-edge Controls



**Note** — The sixteen LEDs on the DSP card-edge are not implemented. Only the BYPASS LED is implemented at this time.

## Status and Selection LEDs on the NWE-3G

The front-edge of the NWE-3G has LED indicators for the power, and video input status. Basic LED displays and descriptions are provided in **Table 4.1**.

**Table 4.1** LEDs on the NWE-3G

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"><li>• a valid input signal is present</li><li>• a valid reference signal is present when a reference is required, and that the reference standard matches the input standard.</li></ul>
	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.

**Table 4.1 LEDs on the NWE-3G**

LED	Color	Display and Description
<b>OK/ERROR</b>	Off	When off, this LED indicates there is no power to the card.
<b>VIDEO OK</b>	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.
<b>REF OK</b>	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.
<b>AES # OK</b>		These LEDs are not implemented.
<b>BYPASS</b>	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.

---

## SNMP Monitoring and Control

The MFC-8320-NS Network Controller Card in the DFR-8321 series 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-3G Management Information Base (MIB) file for a breakdown of SNMP controls on this card. Refer to the ***MFC-8300 Series User Manual*** for additional information on SNMP Monitoring and Control.



# DashBoard Menus

---

## In This Chapter

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

The following topics are discussed:

- Status Tabs
- Config Tab
- Set Time Tab
- Watermark Setup Tab
- Audio Clusters Tab
- Input Status Tab
- Alarm Enables Tab
- Event Log Tab

## 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 5.1** summarizes the read-only information displayed in the **Signal** tab.

**Table 5.1 Signal Tab Items**

Tab Title	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 <sup>a</sup>	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"><li>• Reference setting (in the Config tab) is set to Frame 1 or Frame 2</li><li>• A valid reference signal is not present</li><li>• Card has gone to Free Run Mode</li></ul>
		Invalid Format - Video (Red)	A reference signal is detected but the format is incompatible with the current output signal
		Invalid Format - Free Run (Red)	The following conditions are occurring: <ul style="list-style-type: none"><li>• Card has detected an invalid reference format</li><li>• Input video is missing or invalid<sup>b</sup></li><li>• Card has switched to Free Run Mode</li></ul>

**Table 5.1 Signal Tab Items**

Tab Title	Item	Parameters	Description
<b>General</b>	Watermark Status	OK (Green)	The Check Code is validated for the SID and watermarking is operating correctly
		Invalid Check Code (Red)	An incorrect Check Code was entered for the specified SID value
	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-3G to encode.
		Unassigned Source (Red)	<ul style="list-style-type: none"> <li>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.</li> <li>Watermarking of all channels is disabled under this condition</li> </ul>
		Mixed Audio Sources (Red)	<ul style="list-style-type: none"> <li>A single cluster has both AES and embedded audio locations assigned to it</li> <li>Watermarking of all channels is disabled under this condition</li> </ul>
	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 <sup>b</sup>
	Output Format	#	Indicates the output format detected
<b>General - Embedded Audio Status</b>	Group #	PCM	Indicates the presence of the specified embedded audio group
		No Input	
		PCM-Silent	
		Non-PCM	
		Async	
		Mixed	

**Table 5.1 Signal Tab Items**

Tab Title	Item	Parameters	Description
<b>AES Inputs</b>	AES #	PCM	Indicates the presence of the specified AES inputs
		No Input	
		PCM-Silent	
		Non-PCM	
		Async	
		Mixed	

- a. This parameter indicates that there are more than 3 groups of 24bit SD embedded audio sources.
- b. Refer to the section “**Frame Rate Compatibility**” on page 3-2 for a complete list of supported formats.

## Product Tab

**Table 5.2** summarizes the read-only information displayed in the **Product** tab.

**Table 5.2 Product Tab Items**

Tab Title	Item	Parameters	Description
<b>Product</b>	Product	NWE-3G	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
<b>Daughter Card</b>	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 5.3** summarizes the read-only information displayed in the **Hardware** tab.

**Table 5.3 Hardware Tab Items**

Tab Title	Item	Parameters	Description
Hardware	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-3G
		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 5.4** summarizes the read-only information displayed in the **Time Status** tab.

**Table 5.4 Time Status Tab Items**

Menu Title	Item	Parameters	Description
Time Status	Time Status	OK (Green)	Indicates a valid time source is reporting to the NWE-3G
		Time Source missing (Red)	Indicates that the time source reporting to the NWE-3G 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) <b>D</b> indicates that Daylight Saving Time is in effect <b>S</b> 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"> <li><b>Ddd</b> represents the day of the week</li> <li><b>Mmm</b> represents the month</li> <li><b>##</b> represents the day of the month</li> <li><b>yyyy</b> represents the year</li> </ul>

**Table 5.4 Time Status Tab Items**

Menu Title	Item	Parameters	Description
NTP Time and Date	Time	hh : mm : ss D	Indicates the current local time based on NTP (hours:minutes:seconds) <b>D</b> indicates that Daylight Saving Time is in effect <b>S</b> 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"> <li>• <b>Ddd</b> represents the day of the week</li> <li>• <b>Mmm</b> represents the month</li> <li>• <b>##</b> represents the day of the month</li> <li>• <b>yyyy</b> represents the year</li> </ul>
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) <b>D</b> indicates that Daylight Saving Time is in effect <b>S</b> 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) <b>D</b> indicates that Daylight Saving Time is in effect <b>S</b> 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 5.5** summarizes the **Config Tab** options available in DashBoard. In **Table 5.5**, the **Item** column references specific menus.

**Table 5.5 Config Tab Items**

Menu Title	Item	Parameters	Description
Config	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 <b>REF 1</b> port on the DFR-8321 series frame
		Frame 2	The card is using the reference source connected to the <b>REF 2</b> port on the DFR-8321 series frame
		Video*	The card is using the reference source connected to the <b>SDI IN</b> BNC on the 8320AR-060 rear module
	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
	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.		

**Table 5.5 Config Tab Items**

Menu Title	Item	Parameters	Description	
Config	Loss of Input	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-3G 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 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 5.6** summarizes the **Set Time** tab options available in DashBoard. In **Table 5.6**, the **Menu Item** column references the specific areas of the tab. The **Item** column references specific menu items.

**Table 5.6 Set Time Tab Items**

Menu Title	Item	Parameters	Description
<b>Time Source</b>	Time Source	Network Time*	Enables the NWE-3G 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
		LTC (Balanced)	Enables the NWE-3G 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-3G 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-3G automatically adjusts for Daylight Savings Time
		Cleared*	Specifies that the LTC device connected to the NWE-3G does not apply DST
<b>Network Offset from UTC, LTC Offset from Local<sup>a</sup></b>	Hours	#	Specifies the number of hours to offset the timecode from an NTP or LTC source
	Minutes	##	Specifies the number of minutes to offset the timecode from an NTP or LTC source
	Hemisphere	West*	Specifies whether your facility is located East or West of Greenwich, UK
		East	
<b>Manual Time Setting<sup>b</sup></b>	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

**Table 5.6 Set Time Tab Items**

Menu Title	Item	Parameters	Description
<b>Daylight Saving Time</b>	Daylight Saving Time	Auto	The NWE-3G 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 <sup>c</sup>	Standard Time	Specifies that Standard time is presently in effect
		Daylight Saving Time	Specifies that Daylight Saving Time is presently in effect
	Month <sup>c</sup>	Start	Specifies the month that DST begins in
		End	Specifies the month that DST ends in
	Week <sup>c</sup>	Start	Specifies the week that DST begins in
		End	Specifies the week that DST ends in
	Day of Week <sup>c</sup>	Start	Specifies the calendar day that DST begins in
		End	Specifies the calendar day that DST ends in
	Hour of Day <sup>c</sup>	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)

- Use this option when the **Time Source** is set to **Network** or **LTC**.
- Use this option when the **Time Source** is set to **Manual**. The fields are read-only when **Time Source** is set to **Network Time**.
- This option is disabled when **Daylight Saving Time** is set to **Auto**.

## Watermark Setup Tab

**Table 5.8** summarizes the **Watermark Setup** tab options available in DashBoard. In **Table 5.7**, the **Menu Item** column references the specific areas of the tab. The **Item** column references specific menu or field names.

**Table 5.7 Watermark Setup Tab Items**

Menu Title	Item	Parameters	Description
<b>Watermark Setup</b>	Watermark Enabled	Selected*	NWE-3G outputs the programming with watermarking
		Cleared	No watermarking is inserted
<b>System Settings</b>	SID	#	Source Identification Number (SID) for this specific NWE-3G. This value is assigned by Nielsen.
	Check Code	..	Checksum that validates the SID code entered in the field above. This value is assigned by Nielsen.
	Watermark Status	OK (Green)	The Check Code is validated for the SID and watermarking is operating correctly
		Invalid Check Code (Red)	An incorrect Check Code was entered for the specified SID value. This code is assigned by Nielsen.
<b>Audio Settings</b>	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 syndicator in the program distribution chain
	Level Overflow Method	Refrain	When the input audio contains watermarks of the specified code type, the NWE-3G does not add any watermarks of its own.
		Overwrite*	When the input audio contains watermarks of the specified code type, the NWE-3G replaces the incoming watermarks with its own.
	Audio Parameters	For use by Nielsen only.	
	Password	For use by Nielsen only.	

## Audio Clusters Tab

**Table 5.8** summarizes the **Audio Clusters Menu** options available in DashBoard. In **Table 5.8**, the **Menu Item** column references to either the column titles or specific areas of the tab. The **Item** column references specific menu items.

**Table 5.8 Audio Clusters Menu Items**

Menu Title	Item	Parameters	Description
Audio Clusters	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-3G 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 <sup>a</sup> (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 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



**Table 5.8 Audio Clusters Menu Items**

Menu Title	Item	Parameters	Description
<b>Add Cluster</b>	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
<b>Remove Cluster</b>	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 Tab

**Table 5.8** summarizes the **Input Status Menu** options available in DashBoard. In **Table 5.9**, the **Tab Title** column references the sub-tab and a specific area of that sub-tab.

**Table 5.9 Input Status Menu Items**

Tab Title	Item	Parameters	Description
<b>Video Input &amp; Embed</b>	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"> <li>• For SD formats, it displays both active picture and full frame errors.</li> <li>• For HD formats, it displays the total count of errors.</li> </ul>
	Error Count	Reset	Resets the count in the CRC Errors field
<b>Video Input &amp; Embed - Embedded Audio (Read-only)</b>	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	
<b>Audio - AES # (Read-only)</b>	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	
	Sample Rate	#	Displays the sample rate of the AES3id input
		Unknown	

## Alarm Enables Tab

**Table 5.10** summarizes the **Alarm Enables** tab options available in DashBoard. In **Table 5.10**, the **Menu Title** column references a specific area of the tab.

**Table 5.10 Alarm Enables Tab Items**

Menu Title	Item	Parameters	Description
<b>Video Input &amp; Reference Alarms</b>	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
<b>Hardware Alarms</b>	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
<b>Misc Alarms</b>	Time Status	Selected*	Time Status field reports when the selected time source is absent
		Cleared	Disables the alarm
<b>Embedded Audio Alarms - Group #</b>	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

**Table 5.10 Alarm Enables Tab Items**

Menu Title	Item	Parameters	Description
<b>Embedded Audio Alarms</b>	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
<b>AES Input Alarms - AES #</b>	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
<b>Alarm Enables</b>	All Alarms	Set	Enables all alarms
		Clear	Disables all alarms

---

## Event Log Tab

Table 5.8 summarizes the **Event Log** tab options available in DashBoard.

**Table 5.11 Event Log Tab Items**

Menu Title	Item	Parameters	Description
Event Log	DD mm dd, yyyy hh:mm:ss (code #): xxx		Displays the last 20 messages. Each message reports: <ul style="list-style-type: none"><li>• the date and time of the message</li><li>• the type of message (code #)</li><li>• a brief description</li></ul>
	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 <b>Range</b> menu to the specified text file
	Event Log	Clear	Clears the log from non-volatile memory

### Message Contents

Each entry in the log contains a timestamp, a code number and a description. Messages are written to the log when significant changes occur in the operation of the NWE-3G. These include: changes to video, reference, audio or time inputs; power-on or reboot cycles; configuration changes that can have an effect on watermarking; video/audio bypass; user clearing of the log; and alarm conditions. Firmware version numbers are included in the startup message, to allow tracking of updates.



# Specifications

---

## In This Chapter

This chapter provides technical specification details on the NWE-3G. Note that specifications are subject to change without notice.

The following topics are discussed:

- NWE-3G Technical Specifications

# NWE-3G Technical Specifications

This section includes the technical specifications for the NWE-3G.

**Table 6.1 NWE-3G Technical Specifications**

Category	Parameter	Specification
<b>SDI Input</b>	Number of Inputs	1 HD-SDI input
	SDI Data Rates and SMPTE Standards Accommodated	<ul style="list-style-type: none"> <li>• 270Mbps (SMPTE 259M)</li> <li>• 1.5Gbps (SMPTE 292M)</li> <li>• 3Gbps (SMPTE 425)</li> </ul>
	Impedance	75ohm
	Return Loss	>14dB to 1.5GHz >9dB to 3.0GHz
	Equalization	80m of 1694 cable @ 3GHz
	Connector Type	BNC
<b>SDI Output</b>	Number of Outputs	1 HD-SDI
	SDI Data Rates and SMPTE Standards Accommodated	<ul style="list-style-type: none"> <li>• 270Mbps (SMPTE 259M)</li> <li>• 1.5Gbps (SMPTE 292M)</li> <li>• 3Gbps (SMPTE 425)</li> </ul>
	Impedance	75ohm
	Return Loss	>13dB to 1.5GHz >8dB to 3.0GHz
	Signal Level	800mV +/- 10%
	Connector Type	BNC
<b>AES Inputs</b>	Number of Inputs	4
	AES Standards Accommodated	AES-3id-2001
	Impedance	75ohm
	Minimum Input	50mV p-p
	Maximum Input	2.0V p-p
	Sampling Rate	48kHz
	Connector Type	BNC
<b>AES Outputs</b>	Number of Outputs	4
	AES Standards Accommodated	AES-3id-2001
	Impedance	75ohm
	Signal Level	1.0V +/- 10%
	Sampling Rate	48kHz



**Table 6.1 NWE-3G Technical Specifications**

Category	Parameter	Specification
<b>LTC Inputs</b>	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	WECO™ 3-pin terminal block
<b>Serial COM Port</b>	Protocol	Subset of NAVE II PC Interface
	Rate and Format	Baud Rate: 9600bps Data Bits: 8 Parity: None Stop Bit: 1
	Communication Type	RS-232
	Connector	RJ-45
<b>Environmental</b>	Operating Range	5°C to 40°C ambient
<b>Power</b>	Total Power Consumption	16W



# Appendix A.

---

## In This Appendix

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

This appendix contains the following sections:

- Atmel® Microcontroller Software License
- Software License Agreement

---

# Atmel® Microcontroller Software License

This software contains code licensed under the following terms. These files were obtained from AT91LIB from Atmel.com.

Copyright (c) 2008, Atmel Corporation

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- Redistributions of source code must retain the above copyright notice, this list of conditions and the disclaimer below.
- Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the disclaimer below in the documentation and/or other materials provided with the distribution.

Atmel's name may not be used to endorse or promote products derived from this software without specific prior written permission.

DISCLAIMER: THIS SOFTWARE IS PROVIDED BY ATMEL "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT ARE DISCLAIMED. IN NO EVENT SHALL ATMEL BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

---

# Software License Agreement

This is a legal agreement between you (either an individual or an entity) as purchaser of the Nielsen Audio Video Encoder (“You”) and Ross Video Limited and The Nielsen Company. By accepting delivery of the Nielsen Audio Video Encoder unit (“NAVE Unit”) You agree to be bound by the terms of this agreement. If You do not agree to the terms of this agreement, return the entire NAVE Unit, and all accompanying materials and software (if any) to Ross Video Limited within 10 days of delivery for a full refund.

**GRANT OF LICENSE.** The Nielsen Company and Ross Video Limited grant You a nonexclusive, license to use one copy of the Nielsen Audio Video Encoder software (“SOFTWARE”) as embedded in the NAVE Unit for the sole purpose of supplying The Nielsen Company with audio and video content identification data in accordance with the written instructions provided by The Nielsen Company and subject to the terms of this agreement. This license may be revoked by The Nielsen Company upon written notice to You and re-purchase of the NAVE Unit.

**INTELLECTUAL PROPERTY.** The SOFTWARE is licensed and not sold and your purchase of the NAVE Unit does not transfer any ownership in or to the SOFTWARE embedded therein. The Nielsen-specific portions of the SOFTWARE are owned by The Nielsen Company and is protected by United States copyright, patent laws, and international treaty provisions. The remaining software is owned by or provided under license to Ross Video Limited, and is protected by Canadian copyright laws and international treaty provisions.

**OTHER LICENSE RESTRICTIONS.** The SOFTWARE must at all times remain embedded within the NAVE Unit. You may not rent, lease or sublicense the SOFTWARE, but You may transfer the SOFTWARE together with the NAVE Unit on a permanent basis provided that: (a) You retain no copies of the SOFTWARE, (b) the transferee agrees to be bound by the terms of this Agreement and (c) recipient is currently a client of The Nielsen Company. If the SOFTWARE has been updated, any transfer must include the most recent update and all prior versions. You may not reverse engineer, decompile, disassemble or otherwise attempt to discover the source code form of the SOFTWARE.



# Service Information

---

## In This Chapter

This chapter contains the following sections:

- Troubleshooting Checklist
- Warranty and Repair Policy

---

# Troubleshooting Checklist

Routine maintenance to this openGear product is not required. In the event of problems with your NWE-3G, 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-3G.

Use the following procedure 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-3G 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-3G 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-3G 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-3G 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-3G 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-3G, 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-3G. 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.



# Index

## Numerics

3-pin terminal block .....	5-6
4-Character Display .....	4-2
5.1 .....	3-6, 3-8, 5-12, 5-13
8320AR-060	
cabling overview .....	2-7
installing .....	2-6
LTC connections .....	2-9
reference source .....	5-7

## A

Adding audio clusters .....	3-8
AES	
assigning to a cluster .....	3-8
information, read-only .....	5-4
inputs, audio clusters .....	3-6
monitoring .....	5-4
sample rate status .....	5-14
Silence Rate Conversion, configuring .....	5-8
watermarking .....	3-6
AES OK LED .....	4-4
Alarms	
AES inputs .....	5-4
audio clusters .....	5-12
audio status .....	5-2
cluster status .....	5-3
configuring .....	3-13, 3-14
embedded audio .....	5-3
input format status .....	5-3
reference status .....	5-2
resetting .....	3-15
signal status .....	5-2
time status .....	5-5
watermark status .....	5-3, 5-11
Alarms Enable tab .....	3-13, 3-14, 3-15, 5-15
Audio	
AES inputs, monitoring .....	5-4
embedded, monitoring .....	5-3
Sample Rate Conversion .....	5-8
silence threshold, configuring .....	5-8
silence timeout, configuring .....	5-8
status .....	5-2
watermarking, code type .....	5-11
watermarking, level overflow .....	5-11
Audio clusters .....	3-6
5.1 .....	3-8, 5-12, 5-13
adding .....	3-7, 3-8

assigning audio sources .....	5-12
deleting .....	3-8
menus .....	5-12
mono .....	3-8
mono source .....	5-12, 5-13
removing .....	5-13
status .....	5-12
stereo .....	3-8
stereo pairs .....	5-12, 5-13
type .....	5-12

## Audio groups

adding to audio clusters .....	3-6
monitoring .....	5-3
Audio parameters fields .....	3-12, 5-11
Auto, SRC .....	5-8

## B

Balanced, LTC connection .....	5-6
Block diagram .....	1-4
Bootload button .....	4-2
Bypass .....	2-8
Bypass mode .....	3-4, 4-2, 4-4, 5-7
Bypass Relay button .....	3-4, 4-2, 4-4, 5-7

## C

Cabling	
LTC .....	2-9
overview .....	2-7
serial communication .....	2-10
Card State field .....	3-13
Card-edge	
LEDs .....	4-3, 4-4
user controls .....	4-2
Check Code, entering a .....	3-12, 5-11
Clusters, audio .....	3-6, 5-12
5.1 .....	3-6
adding .....	3-8
AES inputs .....	3-6
deleting .....	3-8
embedded audio .....	3-6
overview .....	3-6
status .....	5-3
type .....	5-12
Code level	
final distributor .....	5-11
program content .....	5-11
Compatible video formats .....	3-2
Components, card-edge .....	4-2
Config tab, overview .....	5-7
Configuring	
reference source .....	3-2, 8-2
time reference input .....	3-9
Conversion, Silence Rate .....	5-8
CRC Errors .....	5-14
Current consumption .....	5-5
Custom color, loss of input .....	3-3

## D

### DashBoard

AES inputs, monitoring .....	5-4
audio clusters .....	5-12
audio parameters fields .....	5-11
Config tab .....	5-7
daughter card information .....	5-4
Daylight Saving Time .....	5-10
edit permissions, configuring .....	5-8
embedded audio information .....	5-3, 5-4
hardware information .....	5-5
Hardware tab .....	5-5
input status .....	5-14
loss of input, configuring .....	5-7, 5-8
overview .....	1-2, 5-1
product information .....	5-4
Product tab .....	5-4
reference source, selecting .....	5-7
Sample Rate Conversion, configuring .....	5-8
selecting reference source .....	3-2, 8-2
Set Time tab .....	5-9
signal information .....	5-2
Signal tab .....	5-2
silence threshold, configuring .....	5-8
silence timeout, configuring .....	5-8
software upgrades .....	2-12
Status tabs .....	5-2
time source, specifying .....	5-9
time status .....	5-5
Time Status tab .....	5-5
watermarking setup .....	5-11, 5-12
DataSafe, using .....	3-16
Date, encoding .....	3-9, 5-5, 5-6
Daughter card, status .....	5-4
Daylight Saving Time, see DST	
Defaults, factory .....	5-8
Deleting audio clusters .....	3-8, 5-13
DFR-8321 series frames	
reference source .....	5-7
slot combination .....	2-6
Diagram, block .....	1-4
Display, card-edge .....	4-2
Distributor, final .....	5-11
Documentation terms .....	1-5
DST	
configuring .....	3-10
LTC Follows setting .....	5-9
manual setting .....	3-10, 5-10
options .....	5-10
time reference input .....	3-9

## E

East hemisphere .....	5-9
Edit permissions, configuring .....	5-8
Embedded audio	
channel status .....	5-14

information, read-only .....	5-3
using .....	3-6
word length .....	5-14
Embedding non-PCM signals .....	3-3
Enabling	
alarms .....	3-13, 3-14
watermarking .....	3-12, 5-11
Encoding	
date, LTC .....	5-6
date, NTP .....	5-6
date, setting .....	5-5
time, LTC .....	5-6
time, NTP .....	5-6
time, setting .....	5-5
ESD Susceptibility .....	2-2
Event log	
clearing .....	3-17
DataSafe .....	3-16
overview .....	3-17
saving .....	3-17
viewing .....	3-17

## F

Factory defaults, resetting to .....	5-8
Features .....	1-3
File	
event log .....	3-17
MIB .....	4-5
Final Distributor .....	3-12, 5-11
Firmware version .....	5-4
Format, input .....	5-14
Frame	
installing card in .....	2-6
installing the rear module .....	2-6
rate compatibility .....	3-2
Function select switch .....	4-2
Functional block diagram .....	1-4

## G

Group, embedded audio status .....	5-3
------------------------------------	-----

## H

Hardware information, read-only .....	5-5
Hemisphere, specifying .....	5-9

## I

### Input

adding to clusters .....	3-6
AES, sample rate .....	5-14
cabling for .....	2-7, 2-8
CRC errors .....	5-14
error count, resetting .....	5-14
format status .....	5-3
loss of .....	3-3, 5-7, 5-8
status .....	5-14
time reference .....	3-9

Installing	
cables, serial communication .....	2-10
cabling, overview .....	2-7
card in frame .....	2-6
planning .....	2-3
rear module .....	2-6
slot combinations .....	2-6

## L

LED	
AES OK .....	4-4
Bypass .....	4-4
card-edge .....	4-3, 4-4
OK/ERROR .....	4-3
REF/OK .....	4-4
VIDEO OK .....	4-4
Length, status .....	5-14
Level Overflow method .....	3-12, 5-11
Linear timecode, see LTC	
Locked permissions .....	5-8
Log, event .....	3-17
Loss of input	
configuring .....	5-7, 5-8
custom color .....	3-3
LTC	
balanced connection .....	5-6, 5-9
configuring time reference input .....	3-9, 5-9
connections .....	2-9
follows DST .....	3-9, 5-9
offset, specifying an .....	3-10
time and date, encoding .....	5-6
unbalanced connection .....	5-6, 5-9
LTC Follows DST .....	5-9

## M

Manual	
DST setting .....	3-10, 5-10
setting time and date .....	3-9, 5-9
setting, time reference input .....	5-9
Menus, DashBoard .....	5-1
MIB file .....	4-5
Mode select switch .....	4-2
Mode, bypass .....	3-4, 4-2, 4-4, 5-7
Module, rear .....	2-6, 5-4
Monitoring	
AES inputs .....	5-4
audio clusters .....	5-12
audio status .....	5-2
channel status .....	5-14
cluster status .....	5-3
embedded audio .....	5-3
encoding time .....	5-5
Hardware tab in DashBoard .....	5-5
input format .....	5-14
input format status .....	5-3
LEDs, card-edge .....	4-3, 4-4

output format status .....	5-3
reference format status .....	5-3
reference status .....	5-2
signal status .....	5-2
Signal tab in DashBoard .....	5-2
SNMP .....	4-5
status tabs in DashBoard .....	5-2
time status .....	5-5
watermark status .....	5-3, 5-11
word length .....	5-14
Mono sources, audio clusters .....	3-8, 5-12, 5-13

## N

Network Time, see NTP	
Nielsen Watermark (NW) .....	1-2
Non-PCM signals, embedding .....	3-3, 5-8
NTP	
date .....	5-6
setting an offset for .....	3-10, 5-9
specifying as a time source .....	5-9
time .....	5-6
Number, serial .....	5-4
NWE-3G	
alarms in DashBoard for .....	3-13
card-edge controls .....	4-2
event log .....	3-17
features .....	1-3
installing in a frame .....	2-6
LEDs .....	4-3
overview .....	1-2
SNMP .....	4-5
using DataSafe .....	3-16
watermarking .....	3-12

## O

Offset, specifying .....	3-10, 5-9
OK/ERROR LED .....	4-3
Output	
cabling for .....	2-7, 2-8
format status .....	5-3
watermarking .....	3-12
Overflow, level .....	3-12, 5-11
Overview	
audio clusters .....	3-6
DashBoard .....	5-1
event log .....	3-17
time reference input .....	3-9
watermarking .....	3-12
Overwrite, level overflow method .....	5-11

## P

PC Interface protocol .....	1-2
Permissions, edit .....	5-8
Ports, designations .....	2-7
Product information, read-only .....	5-4
Product tab, overview .....	5-4

Program Content .....	3-12, 5-11
Protocol, PC Interface .....	1-2

## R

RAM available .....	5-5
Rate	
frame .....	3-2
sample .....	5-14
Read-only information	
embedded audio .....	5-3, 5-4
hardware .....	5-5
product .....	5-4
signal .....	5-2
time status .....	5-5
Rear module	
8320AR-060 .....	2-6
cabling overview .....	2-7
cabling, serial .....	2-10
connections to .....	2-7
installing .....	2-6
type .....	5-4
REF OK LED .....	4-4
Reference	
format status .....	5-3
input, time .....	3-9
source, selecting a .....	3-2, 5-7, 8-2
status .....	5-2
Refrain, level overflow method .....	5-11
Relay, bypass .....	3-4, 4-2, 4-4, 5-7
Removing audio clusters .....	5-13
Reset	
alarms .....	3-15
error count .....	5-14
factory defaults .....	5-8

## S

Sample Rate Conversion, see SRC	
Sample Rate, AES input .....	5-14
Saving, event log .....	3-17
SDI	
connections .....	2-7
IN BNC .....	2-8, 5-7
OUT BNC .....	2-8
Serial	
cabling .....	2-10
COM port .....	1-2, 2-7
number .....	5-4
Set Time tab	
DataSafe .....	3-16
overview .....	5-9
Setup	
audio clusters, DashBoard menus .....	5-12
serial cabling .....	2-10
watermarking, DashBoard menus .....	5-11

## SID

definition .....	1-2
entering a .....	3-12, 5-11

## Signal

information, read-only .....	5-2
status .....	3-13, 5-2
tab, overview .....	5-2

## Silence

threshold, setting .....	3-3, 5-8
timeout, setting .....	3-3, 5-8

## Slot combination .....

2-6
-----

SNMP .....	4-5
------------	-----

Software upgrades .....	2-12
-------------------------	------

Software version .....	5-4
------------------------	-----

## Source

reference .....	3-2, 5-7, 8-2
time .....	5-9

## Source Identification Number, see SID

SRC .....	3-3, 5-8
-----------	----------

Standard time, selecting .....	5-10
--------------------------------	------

Static discharge .....	0-4, 2-2
------------------------	----------

## Status

audio .....	5-2
audio clusters .....	5-12
card state field .....	3-13
cluster .....	5-3
input format .....	5-3, 5-14
output format .....	5-3
reference .....	5-2
reference format .....	5-3
signal .....	5-2
watermark .....	5-3, 5-11

Status tabs .....	3-13, 5-2
-------------------	-----------

Stereo pairs, audio clusters .....	3-8, 5-12, 5-13
------------------------------------	-----------------

SW1 .....	4-2
-----------	-----

SW2 .....	4-2
-----------	-----

SW3 .....	4-2
-----------	-----

## T

### Tab

Alarms Enable .....	3-13, 3-14, 3-15
Audio Clusters .....	5-12
Config .....	5-7
Hardware .....	5-5
Input Status .....	5-14
Product .....	5-4
Set Time .....	5-9
Signal .....	5-2
signal .....	5-2
status .....	3-13, 5-2
Time Status .....	5-5
Video Input & Embed .....	5-14
Watermark Setup .....	5-11
Terms, documentation .....	1-5
Text file, event log .....	3-17
Threshold, silence .....	3-3, 5-8

Time	
encoding .....	3-9
manual setting .....	5-9
monitoring .....	5-5
network .....	5-9
setting the offset, network .....	5-9
source, specifying .....	5-9
standard .....	5-10
status tab .....	5-5
Time and date, encoding .....	5-5, 5-6
Time reference input	
configuring .....	3-9
LTC balanced setting .....	5-9
LTC follows DST .....	3-9
LTC unbalanced setting .....	5-9
manual setting .....	3-9, 5-9
Timecode, specifying an offset .....	3-10
Timeout, silence .....	3-3, 5-8
Type, code .....	5-11

## U

Unbalanced LTC connection .....	5-6, 5-9
Unlocked permissions .....	5-8
Upgrades, software .....	2-12
Upload software, how to .....	2-12

## V

Version	
firmware .....	5-4
software .....	5-4
Video Input & Embed tab .....	5-14
VIDEO OK LED .....	4-4
Voltage, input .....	5-5

## W

Watermark status .....	5-3, 5-11
Watermarking	
audio clusters .....	5-12
code type .....	5-11
enabling .....	3-12, 5-11
final distributor .....	3-12, 5-11
level overflow method .....	5-11
overflow, level .....	5-11
overview .....	3-12
program content .....	3-12, 5-11
setting up in DashBoard .....	5-11
specifying audio settings .....	5-11
West hemisphere .....	5-9
Word length, status .....	5-14





***Notes:***

**Notes:**

***Notes:***

# Contact Us

**Contact our friendly and professional support representatives for the following:**

- Name and address of your local dealer
- Product information and pricing
- Technical support
- Upcoming trade show information

<b>PHONE</b>	<b>General Business Office and Technical Support</b>	613 • 652 • 4886
	<b>After Hours Emergency</b>	613 • 349 • 0006
	<b>Fax</b>	613 • 652 • 4425
<b>E-MAIL</b>	<b>General Information</b>	solutions@rossvideo.com
	<b>Technical Support</b>	techsupport@rossvideo.com
<b>POSTAL SERVICE</b>	<b>Ross Video Limited</b>	8 John Street, Iroquois, Ontario, Canada K0E 1K0
	<b>Ross Video Incorporated</b>	P.O. Box 880, Ogdensburg, New York, USA 13669-0880

## Visit Us

**Please visit us at our website for:**

- Company information
- Related products and full product lines
- On-line catalog
- News
- Testimonials

**[www.rossvideo.com](http://www.rossvideo.com)**