openGear

NWE-TS User Guide

ROSS

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1. Provide a Superior Customer Experience
    *   offer the best product quality and support

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    *   develop great products that customers love

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

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

David Ross

David Ross
CEO, Ross Video
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Ross Video Code of Ethics

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

1. We will always act in our customers' best interest.

2. We will do our best to understand our customers' requirements.

3. We will not ship crap.

4. We will be great to work with.

5. We will do something extra for our customers, as an apology, when something big goes wrong and it's our fault.

6. We will keep our promises.

7. We will treat the competition with respect.

8. We will cooperate with and help other friendly companies.

9. We will go above and beyond in times of crisis. *If there's no one to authorize the required action in times of company or customer crisis - do what you know in your heart is right. (You may rent helicopters if necessary.)*

NWE-TS · User Guide

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Patents

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

Notice

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

Safety Notices

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

Statement of Compliance

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

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

EMC Notices

US FCC Part 15

This equipment has been tested and found to comply with the limits for a class A Digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a Commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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

Canada

This Class "A" digital apparatus complies with Canadian ICES-003 and part 15 of the FCC Rules.

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

European Union

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

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

Australia/New Zealand

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

International

This equipment has been tested under the requirements of CISPR 22:2008 or CISPR 32:2015 and found to comply with the limits for a Class A Digital device.

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

Maintenance/User Serviceable Parts

Routine maintenance to this openGear product is not required. This product contains no user serviceable parts. If the module does not appear to be working properly, please contact Technical Support using the numbers listed under the "**Contact Us**" section of this manual. All openGear products are covered by a generous 3-year warranty and will be repaired without charge for materials or labor within this period. See the "**Warranty and Repair Policy**" section in this manual for details.

Environmental Information

The equipment may contain hazardous substances that could impact health and the environment.

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

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

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

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Introduction

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

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

Related Publications

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

* *DashBoard User Manual*, Ross Part Number: 8351DR-004
* *NWE-TS Quick Start Guide*, Ross Part Number: NWETSDR-002

Documentation Conventions

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

Interface Elements

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

In the **Network** tab, click **Apply**.

User Entered Text

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

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

Referenced Guides

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

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

Menu Sequences

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

Important Instructions

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

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

Contacting Technical Support

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

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

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

Contacting the Nielsen Encoder Support Group

- **Support**: (+1) 800-537-4872
- **E-mail**: encoders@nielsen.com
- **Website**: http://www.nielsen.com

Before You Begin

The NWE-TS is a Nielsen Transport Stream Watermark Encoder. It accepts one MPEG-2 Transport Stream (TS) input, extracts and watermarks selected audio services, and then re-injects them into the TS in place of the non-watermarked audio services.

The NWE-TS 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-TS uses the Nielsen Audio Encoding System (NAES) Nielsen Watermarks (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-TS can be accessed via the following interfaces:

*   **DashBoard Control System** — This interface enables you to monitor and control openGear Connect compatible devices from a computer. Refer to the ***DashBoard User Manual*** for details on using DashBoard.
*   **NWE-TS Network Configuration** menu system— This interface enables you to setup network communications for your NWE-TS directly from the NWE-TS chassis. Refer to "**Manual Setup**" for details.

Features

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

*   Supports an ATSC Transport Stream carried in a DVB-ASI signal[1]
*   Ability to watermark up to ten audio streams
*   Two levels of bypass for optimal protection from signal, power, and system failures:
    *   › relays controlled by power and front-panel push buttons; and
    *   › "soft" bypass under watchdog, software, and user control
*   Reports status and configuration remotely via the DashBoard Control System
*   Reports serial number and IP address on the front panel
*   Remote monitoring with IPMI (refer to the Dell® documentation for details)
*   3-year transferable warranty

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1. The NWE-TS expects an ATSC 1.0 stream at a bit rate of 19.392658 Mbit/s.

Functional Overview

This section provides a functional block diagram for the NWE-TS.
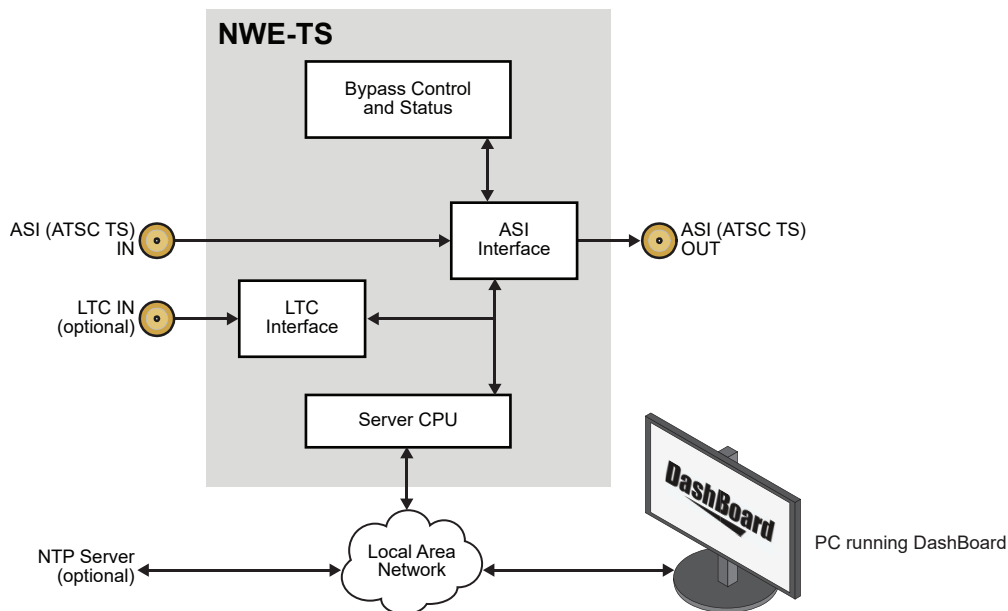
Figure 1 NWE-TS — Simplified Block Diagram

System Integration

This section provides a system diagram that illustrates one way to integrate your NWE-TS into a watermarking system. Note that **Figure 2** is only an example and your facility needs may differ from what is presented here.
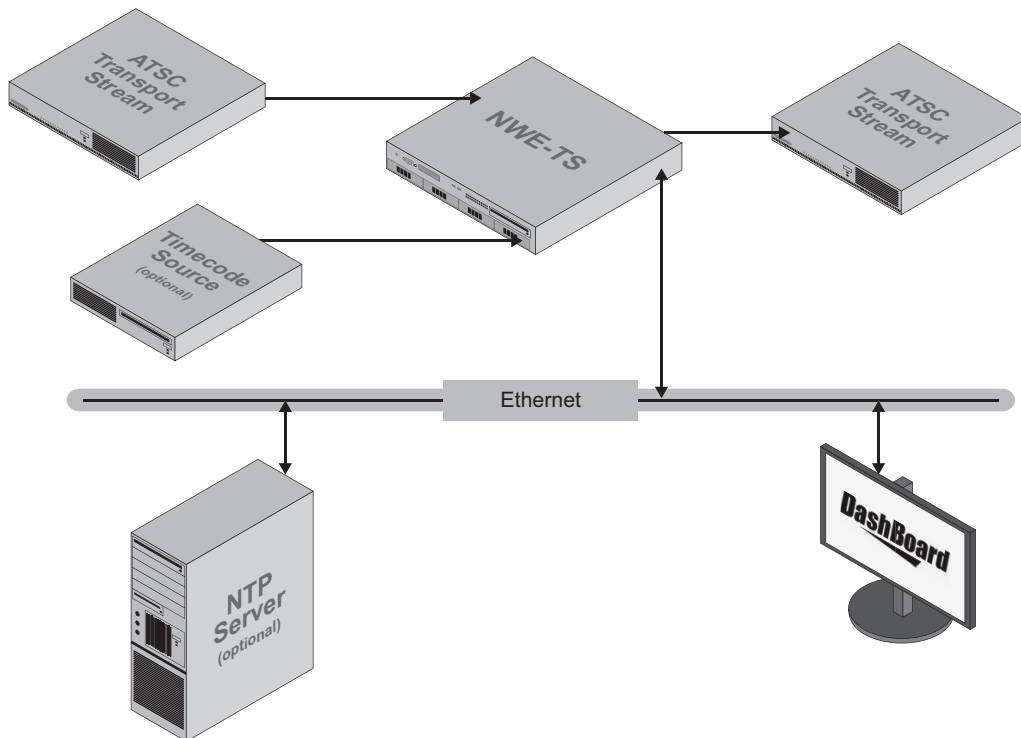
Figure 2 NWE-TS — System Integration Example

Hardware Overview

This chapter provides a general overview of the hardware features of the NWE-TS.

Front Panel Overview

This section provides a general overview of the features of the NWE-TS front panel.
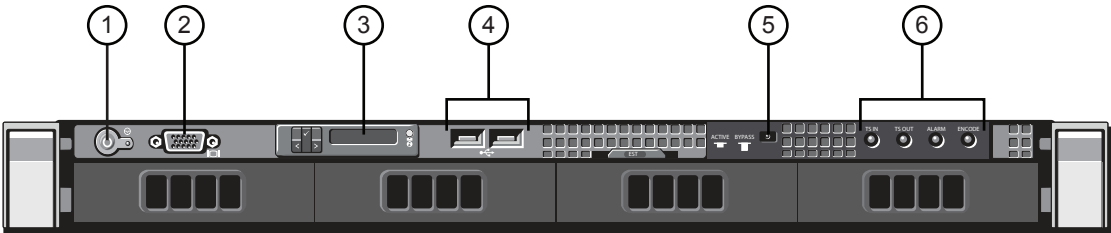
Figure 3 NWE-TS — Front Panel

1) Power Button	3) Diagnostic Panel	5) Bypass Mode Button
2) VGA Port	4) USB Ports	6) STATUS LEDs

1. Power Button

This is the main power button for the NWE-TS.

2. VGA Port

Use this port as described in "**VGA Port**".

3. Diagnostic Panel

This panel reports the serial number, network address mode, IP address, and netmask of the NWE-TS. Status information on the Dell® hardware is also displayed. Refer to the Dell documentation that accompanied the NWE-TS for details on the type of messages this panel displays.

4. USB Ports

Use these ports as outlined in "**USB Port(s)**".

5. Bypass Mode Button

This button is used to force the transport stream into bypass mode or to restore it to active status. Refer to the chassis silk-screen for button toggle position details.

6. STATUS LEDs

This panel provides four LEDs that reports on the transport stream (TS) signals and watermarking signals of the NWE-TS. **Table 1** describes these LEDs starting with the left-most LED when facing the NWE-TS front panel.

Table 1 LEDs on the Front Panel

LED	Color	Display and Description
TS IN	Green	When this LED is green, a valid ASI input signal is connected to the ASI IN BNC located on the NWE-TS rear panel.
	Off	When this LED is off, the input signal is invalid or missing.
TS OUT	Green	When this LED is green, the NWE-TS is producing a valid ASI output.
	Off	When this LED is off, the ASI output of the NWE-TS is not a valid ASI output.
ALARM	Red	When this LED is red, an error condition is occurring. For example, there may be errors in the transport stream because there are missing Audio PIDs.
	Off	When this LED is off, the NWE-TS is operating correctly with no errors.
ENCODE	Green	When this LED is green, the NWE-TS is watermarking the audio signals.
	Off	When this LED is off, no watermarking is occurring. For example, the watermarking feature is disabled, or the audio is missing.

Rear Panel Overview

This section provides a general overview of the features of the NWE-TS rear panel. Your NWE-TS may be built using one of the following Dell® hardware platforms.
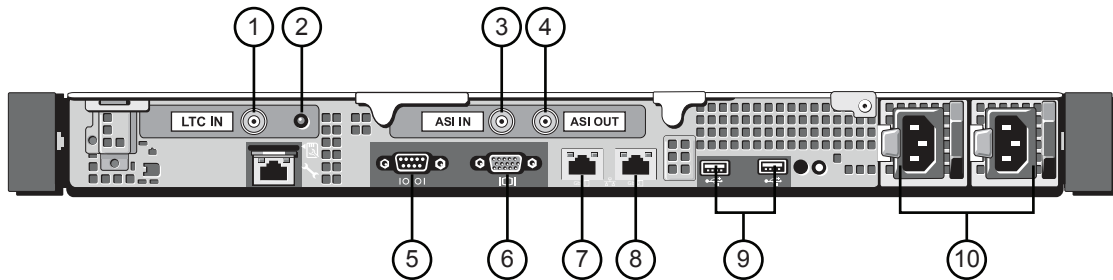
Figure 4 NWE-TS — Dell R320 Rear Panel
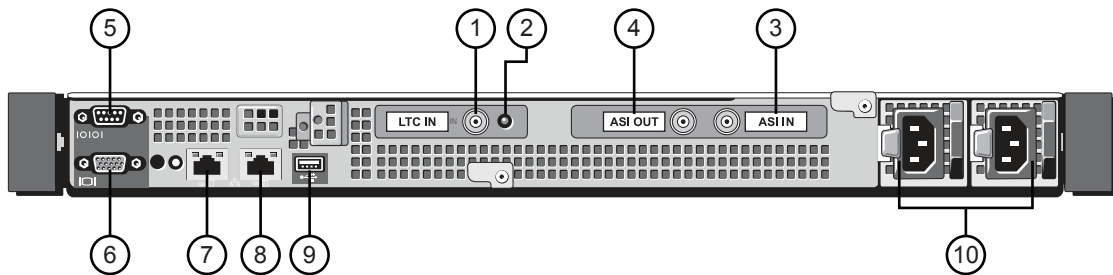
Figure 5 NWE-TS — Dell R330 Rear Panel

1) LTC IN BNC	5) Serial Port	9) USB Port(s)
2) LTC COMM LED	6) VGA Port	10) Power Supplies
3) ASI IN BNC	7) Gb1 Ethernet Port	
4) ASI OUT BNC	8) Gb2 Ethernet Port	

1. LTC IN BNC

This BNC provides an unbalanced SMPTE 12M LTC input connection for the NWE-TS. The source on this BNC can be used as your time reference source. Refer to "**Configuring the Time Reference**" for details.

2. LTC COMM LED

This LED reports the communication activity on the **LTC IN** BNC as follows:

› When lit, this LED indicates a valid LTC signal is present.
› When off, this LED indicates that an LTC signal is not present.

3. ASI IN BNC

This BNC accepts a DVB-ASI MPEG-2 transport stream input. The **TS IN** LED on the front panel reports the communication activity of the signal on this BNC.

4. ASI OUT BNC

This BNC carries the DVB-ASI MPEG-2 transport stream output, with watermarking, of the NWE-TS. The **TS OUT** LED on the front panel reports the communication activity of the signal on this BNC.

5. Serial Port

This port is reserved for future use.

6. VGA Port

Connect a monitor to this port if you do not have access to a network with DHCP for the initial ethernet setup, or if you have a need to reset your NWE-TS static IP address outside of DashBoard. Refer to "**Manual Setup**" for details.

7. Gb1 Ethernet Port

This standard 10/100/1000 Base-TX RJ45 connector is used to connect the NWE-TS to an external Ethernet network. This connector is required to bridge the external ethernet network to the local communication bus for monitoring and controlling the NWE-TS using DashBoard. This port is also used for software upgrades.

8. Gb2 Ethernet Port

This port is reserved for future use.

9. USB Port(s)

Connect a keyboard to this port if you do not have access to a network with DHCP for the initial ethernet setup, or if you have a need to reset your NWE-TS static IP address outside of DashBoard. Refer to "**Manual Setup**" for details.

10.Power Supplies

The NWE-TS comes standard with two power supplies. One A/C power cable has been provided with each power supply. Refer to "**Connecting the NWE-TS Power Supplies**" for details.

Getting Started

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

Planning the Installation

Before installing the NWE-TS, determine the following:

- Compatibility with Existing Plant
- Determine Encoder Insertion Point
- Select the Time Reference Source

Compatibility with Existing Plant

The NWE-TS is designed to work with an ATSC Transport Stream carried in a DVB-ASI signal on coaxial cable. With companion converters, it can also be used in a SMPTE 310M path, as discussed in "**SMPTE 310M Configuration**".

Determine Encoder Insertion Point

The best insertion point for the NWE-TS is downstream of the ATSC emission multiplexer, since this enables it to use the PSIP data in identifying programs for watermarking. The PSIP is an essential component of an ATSC Transport Stream. If it is missing, an alarm is generated and no watermarking occurs.

Select the Time Reference Source

The NWE-TS 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.

For More Information on...

- connecting an LTC device to your NWE-TS, refer to "**Linear Timecode Cabling**".
- selecting a time reference source for the NWE-TS, refer to "**Configuring the Time Reference**".

Physical Installation

This chapter provides instructions for the physical installation of your NWE-TS, cabling for the NWE-TS, and updating the NWE-TS software.

For More Information on...

• the physical installation of the NWE-TS, refer to the **NWE-TS Quick Start Guide**.

Before You Begin

Before you begin, ensure that you are using DashBoard version 5.0.0 or higher. The DashBoard Control System software and user manual are available from the Ross Video website.

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-TS you received from the shipping container and ensure that all items are included. If any items are missing or damaged, contact your sales representative or Ross Video directly.

Connecting the NWE-TS Power Supplies

For redundancy, each power cord should be connected to a separate power source for protection against failure of the A/C power circuit. In the event of one power supply failure, the frame load is transferred to the other redundant power supply.

Warning — *In some countries, it may be necessary to supply the correct mains supply cord. Use only an approved IEC 320 C-13 type A/C line cord rated for a minimum 10A at 250V and certified for the country of use.*

The power supply plugs into the right-hand section of the NWE-TS rear panel. The universal power supply supports all worldwide AC power voltages, and no power adjustments are required.

To connect the NWE-TS power supplies

Warning Hazardous Voltages — *The safe operation of this product requires that a protective earth connection be provided. This protective earth is provided by the grounding conductor in the equipment's supply cord. To reduce the risk of electrical shock to operator and service personnel, this ground conductor must be connected to an earthed ground.*

1. Connect the cable's female IEC connector to the right power socket. Refer to "**Rear Panel Overview**" for socket location.

2. Plug the second IEC connector into left power socket.

3. Each AC connector includes a PowerLock, which is designed to retain the power cable connector. Clip the PowerLock over the shoulder of the inserted AC Cable end.

4. Connect each supplied power cable's three-prong male connector to an AC outlet.

5. Power on the NWE-TS by pressing the Power button on the front panel. Refer to "**Front Panel Overview**" for button location.

✸ The fans run at full speed for a short period at the startup.

Ethernet Connection

The exact steps for connecting to your facility via an ethernet network depend on the network requirements for your facility. Contact your IT Department before connecting to your facility network to ensure that there are no conflicts. They will provide you with an appropriate value for the IP Address, Subnet Mask, and Gateway for the NWE-TS.

✸ The NWE-TS is set for DHCP by default.

For More Information on...

• physical connections on the NWE-TS rear panel, refer to the ***NWE-TS QuickStart Guide***.
• configuring network settings, refer to "**Ethernet Communications**".

Connecting the Transport Stream Device

This section provides a general overview of the connections available on the NWE-TS chassis for connecting to a transport stream (TS) source. A SMPTE 310 configuration is possible using the NWE-TS and the Ross Video ASI-310-R2 openGear card which provides conversion in both the 310-to-ASI and ASI-to-310 directions, and relay bypass of the SMPTE 310 signal.

For More Information on...

• SMPTE 310 workflow, refer to "**SMPTE 310M Configuration**".

Cabling Overview

The NWE-TS provides one DVB-ASI BNC for the transport stream source input and a second DVB-ASI BNC as the watermarked output from the NWE-TS to your downstream equipment.
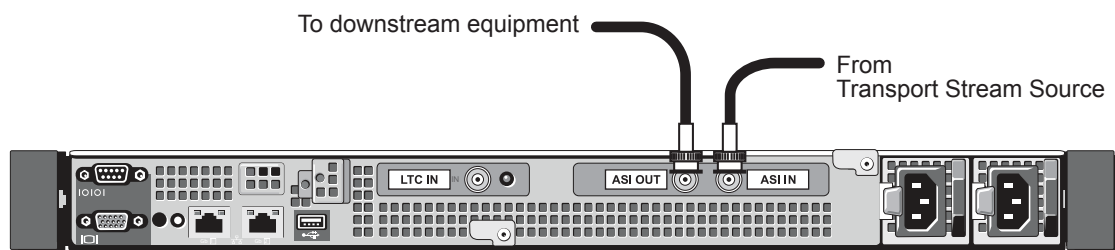
Figure 6   NWE-TS (Dell R330) — Cabling for Transport Stream Devices

To connect a transport stream source to your NWE-TS

1. Locate the **ASI IN** BNC on the NWE-TS rear panel. Refer to **Figure 6** for the BNC location.

2. Connect one end of the TS Interface Cable to the **ASI IN** BNC on the NWE-TS rear panel. Ross Video does not supply this cable.

3. Connect the other end of the TS Interface Cable to the BNC connector on your TS device that will provide the input for the NWE-TS.

To connect the ASI output of the NWE-TS

1. Locate the **ASI OUT** BNC on the NWE-TS rear panel. Refer to **Figure 6** for the BNC location.

2. Connect one end of the TS Interface Cable to the **ASI OUT** BNC on the NWE-TS rear panel. Ross Video does not supply this cable.

3. Connect the other end of the TS Interface Cable to the BNC connector on your downstream equipment.

ASI Input Modes

ASI signals have two modes relating to how the data is spread within the constant-rate ASI signal: burst (contiguous, packet) and byte (continuous, spread).

Table 2 ASI Input Modes

Mode	Description
Burst	All the bytes of each TS packet arrive consecutively.
	Fill characters (K28.5) are inserted between TS packets and not inserted between bytes.
Byte	Fill characters (K28.5) are inserted between bytes within TS packets as well as between TS packets.

For best compatibility the NWE-TS should receive an ASI signal in byte mode, but in some circumstances burst mode is also acceptable, dependent on the other equipment in the airchain.

Bypass Relay

The NWE-TS provides bypass relays from transport stream input to output via a button located on the NWE-TS front panel. Refer to "**Front Panel Overview**" for button location.

Linear Timecode Cabling

The NWE-TS requires a time reference to ensure accurate watermarking. NTP is the preferred source. If this is not available, you can use the **LTC IN** BNC provided on the NWE-TS rear panel. The NWE-TS receives Linear Timecode (LTC) on this BNC and DashBoard reports the LTC presence in the Status tab.

This section provides an overview on cabling your LTC device to the NWE-TS rear panel. Refer to the documentation for your LTC source for specific cabling requirements for your device.

Connecting an Unbalanced LTC Input

Before cabling, ensure that the following condition is met:

• 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 IN** BNC on the NWE-TS rear panel. Refer to **Figure 7** for the BNC location.
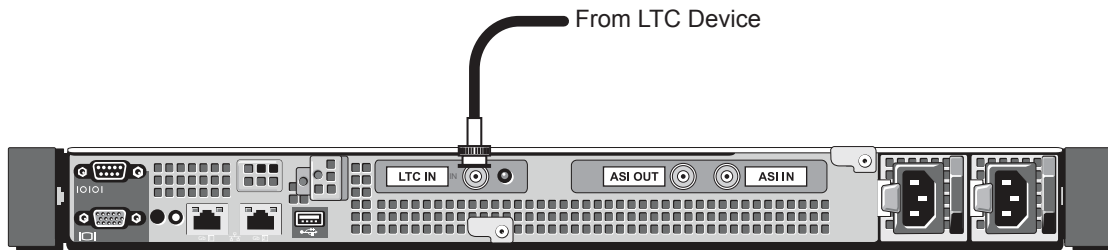
Figure 7 NWE-TS (Dell R330) — Cabling for LTC

2. Connect one end of the LTC Interface Cable to the **LTC IN** BNC on the NWE-TS rear panel. Ross Video does not supply this cable.

3. Connect the other end of the LTC Interface Cable to the BNC connector on your LTC device.

For More Information on...

• setting the time reference source to LTC, refer to "**Configuring the Time Reference**".

Ethernet Communications

The **Gb1 Ethernet** port on the rear panel is also for software upgrades. The exact steps for connecting to your facility via an ethernet network depends on the network requirements of your facility. Contact your IT Department before connecting to your facility network to ensure that there are no conflicts.

Use a CAT5 Fast Ethernet cable or better (up to 100m) to connect the NWE-TS to an external Ethernet hub or switch. The **Gb1 Ethernet** port has its RJ45 connector wired as a Network Interface card (NIC) and does not provide Power-over-Ethernet (PoE). There is no need for a crossover cable as the NWE-TS includes an Auto-MDIX ethernet PHY that will switch to crossover automatically as needed. Ross Video does not supply these cables.

Using DashBoard

This chapter provides instructions for launching DashBoard, and accessing the NWE-TS interfaces in DashBoard.

Before You Begin

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

For More Information on...

• using DashBoard, refer to the **_DashBoard User Manual_**.

Accessing the NWE-TS in DashBoard

The DashBoard client runs on a separate computer that is connected to the same network as the NWE-TS. Before proceeding, ensure that the DashBoard software is installed on a PC connected to your facility network. The DashBoard software and user manual are available from the Ross Video website.

To launch DashBoard

1. Ensure that you are running DashBoard software version 6.2.0 or higher.

2. Launch DashBoard by double-clicking its icon on your desktop.

3. Ensure that the NWE-TS is displayed in the **Tree View** of DashBoard. If not, consult the **_DashBoard User Manual_** for more information on troubleshooting.

4. Expand the **nwets** node in the **Tree View** to display the sub-nodes.

✸ These sub-nodes provide access to the configuration and error logging interfaces for your unit.

Configuration

The NWE-TS provides transport stream processing to add Nielsen Watermarking to any/all audio streams. DashBoard provides tabs that allow you to identify Program and Audio streams and specify which ones are to be watermarked. You can also specify watermarking parameters, including the Source Identification (SID), obtained from Nielsen Encoder Support, for each Program in the transport stream, and choose a source of the time and date to be used in watermarking.

Communications Setup

In order for the NWE-TS to function, it must be attached to a network. A network connection enables remote access to the NWE-TS. Ross Video recommends that any required network configurations be performed by a qualified Network Administrator. Some network settings, if configured incorrectly, could prevent the NWE-TS from communicating on the network.

✱ By default, the NWE-TS is set to DHCP. You will need to connect it initially to a network with DHCP so that you can make a connection and follow the procedure below.

To set up ethernet communications for the NWE-TS

1. Select the **NWE-TS** node in the Tree View of the NWE-TS you want to configure.

2. Select the **Ethernet** tab in the Device View.

3. If you are manually configuring the ethernet settings:

   a. Select **Static**.

   b. Enter the **IP Address**, **Subnet Mask**, and **Default Gateway** settings for the NWE-TS.

4. If you want network settings to be automatically obtained, select **DHCP**.

5. Click **Apply Changes** to save the new settings.

Manual Setup

If you do not have access to a network with DHCP for the initial ethernet setup, or if you have accidentally set your NWE-TS to an invalid static IP address, use the following steps to allow the NWE-TS to connect to your network.

To login to the NWE-TS

1. Connect the supplied keyboard and a monitor to the USB and VGA ports on the NWE-TS front or rear panel. Refer to "**Rear Panel Overview**" for port locations.

2. At the prompt, login using the following information:

   • **User:** `ipconfig`

   The **NWE-TS Network Configuration** menu is displayed.

```
NWE-TS Network Configuration

Current configuration for NWETS:
IP address method: DHCP (Dynamic Host
Control Protocol: address and other
parameters are from DHCP server)

Menu:
1) Refresh network settings
2) Switch to Static IP Addressing
3) Exit leaving settings unchanged
```

To assign a static IP address

1. Enter the value **2** to display the **Static IP Address** menu.

```
NWE-TS Network Configuration

Modified configuration for NWETS:
IP address method: Static (address,
netmask, and gateway are set manually)
IP address:
Netmask: 255.255.0.0
Gateway:

Menu:
1) Discard changes and refresh network settings
2) Switch to DHCP IP Addressing
3) Modify IP address
4) Modify netmask
5) Modify Gateway
6) Discard changes and exit
7) Commit changes and exit
```

2. Use selections **3**, **4** and **5** to assign the static IP address.

3. To implement your changes:

   a. Return to the **Static IP Address** menu.

   b. Select **7**.

   c. The NWE-TS will now establish the network connection.

4. Confirm that the NWE-TS is visible in DashBoard as follows:

   a. Launch the DashBoard client on your PC.

   b. Ensure that the NWE-TS is displayed in the **Tree View** of DashBoard.

5. Disconnect the keyboard and monitor from the NWE-TS rear panel.

Managing SID Entries

From the SID Assignment tab you can add or remove a SID entry, view whether a SID is enabled or disabled, and verify SID assignment properties (such as program number). Note that each SID entry must have a valid Major/Minor channel number, Program number, or AC3 PID entered for encoding to begin.

Configuring an SID Entry

Each row in the SID Assignment tab potentially represents an audio elementary stream (ES) that will be watermarked in the transport stream. You can activate up to ten audio streams to watermark; the SID value is configurable for each stream individually. The list of channels is automatically provided by the transport stream input connected to the NWE-TS.

To configure a SID entry

1. Select the **NWE-TS node** in the Tree View of the NWE-TS you want to configure.

2. Select the **SID Assignment** tab in the Device View.

3. In the **SID and Check Code** field, enter the Source Identification (SID) code you obtained from Nielsen Encoder Support. The SID is supplied with check characters to ensure that it is entered correctly into the NWE-TS. Note that this field is case sensitive and the check characters must be entered in upper case with no spaces between the SID and check code.

✶ A SID is required if a CSID is to be configured.

4. In the **CSID and Check Code** field, enter the Critical Band Encoding Technology (CBET) Source Identification code you obtained from Nielsen Encoder Support. The CSID is supplied with check characters (different from the SID code) to ensure that it is entered correctly into the NWE-TS. Note that this field:
    • is case sensitive and the check characters must be entered in upper case with no spaces between the CSID and check code.
    • can be left blank if no CBET encoding is performed for the slot.

5. Verify the **PSI/PSIP** field to ensure the SID Assignment tab parameters match what is found in the transport stream input (green status) or if there is a mismatch (yellow status). If there is a mismatch, click **Validate** to update the lists.

✦ If the desired Transport Stream (TS) is present at the input, you can select the audio streams to be watermarked from a list provided by opening the DashBoard control. If the TS is not present, you can type the desired values into the controls, but there is no way to verify that they are correct until the TS is connected.

6. From the **Mode** menu, specify how you will identify the channels to be watermarked. Select one of the following:
    • **Major/Minor** — Select this option to have the NWE-TS watermark the selected Program group in the transport stream, and its Audio PIDs, as identified by the channel and sub-channel. The **Major/Minor Ch** field is now editable for this SID row. Proceed to step 7.
    • **Program Number** — Select this option to have the NWE-TS watermark the selected Program group in the transport stream, and its associated Audio PIDs, as identified by the Program number. The **Program Number** field is now editable for this SID row. Proceed to step 8.
    • **Audio PID** — Select this option to have the NWE-TS watermark an individual audio stream, identified by its PID value. The **Audio PID** field is now editable for this SID row. Proceed to step 9.

7. If you selected Major/Minor:
    a. Specify the channels of the Program group you wish to watermark from the **Major/Minor Ch** menu for the SID row. Channels are listed in the format of [**xx-y**] where **xx** represents the major channel number and **y** represents the sub-channel number.
    b. Verify that the **PSIP Name** field is updated with the correct channel information.

8. If you selected Program Number:
    a. Specify the channels of the Program group you wish to watermark from the **Program Number** menu for the SID row.
    b. Verify that the **PSIP Name** field is updated with the correct channel information

9. If you selected Audio PID, specify the audio packet identification number (PID) in the **Audio PID** field for the SID row.

10. If you are inserting NAES2 watermarks, specify how to resolve conflicts between data already present in the incoming signal, and data to be added by the NWE-TS by selecting an option in the **Insertion** menu for that SID row. Choose from the following:

   • **Ovr, Ovr** — Select this option to encode the NWE-TS CSID and SID data regardless of the presence of incoming data.

   • **Ovr, Ref** — Select this option to encode the NWE-TS CSID data regardless of the presence of incoming CSID data. The NWE-TS SID is not encoded when incoming SID data is present, and only transmits the incoming SID data.

   • **Ref, Ovr** — The NWE-TS CSID is not encoded when incoming CSID data is present, and only transmits the incoming CSID data. The NWE-TS encodes the SID data regardless of the presence of incoming SID data.

   • **Ref, Ref** — Select this option to not encode the NWE-TS CSID and SID data when incoming data is present, and only transmit the incoming data. This should only be selected under the guidance of Nielsen.

11. Select the **Active** box for the SID row. This adds the SID entry to the transport stream watermarking once the **Submit** button is clicked. Note that the order that you add SID entries determines their order in the stream.

12. Verify the SID assignment parameters you selected in the above steps as follows:

   a. Click **Validate** located near the bottom of the tab.

   b. The read-only fields below the button update to report the status of SID entries against the information in the input transport stream.

   c. The **Submit** button is now enabled.

13. Verify that the **Card State** field, located above the Status tabs and in the top left corner of the Device View window, does not report there are unsaved changes (yellow status indicator).

14. Click **Submit** to apply your changes and to start encoding.

Activating and De-activating an SID Entry

You can choose to enable or disable an SID entry from the transport stream watermarking. Note that the order of SID lines is important as the first validate line that is submitted is given priority.

To activate an SID entry

1. Select the **NWE-TS** node in the Tree View of the NWE-TS you want to configure.

2. Select the **SID Assignment** tab in the Device View.

3. In the **SID Assignment** tab, locate the row for the SID that you wish to activate.

4. Select the **Active** box next to the appropriate SID row.

5. Click **Validate**.

6. Click **Submit**.

To de-activate an SID entry

1. Select the **NWE-TS** node in the Tree View of the NWE-TS you want to configure.

2. Select the **SID Assignment** tab in the Device View.

3. In the **SID Assignment** tab, locate the row for the SID that you wish to activate.

4. Clear the **Active** box next to the appropriate SID row.

5. Click **Validate**.

6. Click **Submit**.

Deleting an SID Entry

Deleting an SID entry from the list in the **SID Assignment** tab removes it from the NWE-TS workflow. It does not delete it from the transport stream input source. Note that if there is a single SID row present, it cannot be deleted.

To delete an SID entry

1. Select the **NWE-TS** node in the Tree View of the NWE-TS you want to configure.

2. Select the **SID Assignment** tab in the Device View.

3. In the **SID Assignment** tab, locate the row for the SID that you wish to de-activate.

4. Select the **Delete** box next to the appropriate SID row.

5. Click **Validate**.

6. Click **Submit**.

Configuring the Time Reference

The NWE-TS 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.

✶ The NWE-TS requires an NTP or LTC input for accurate timekeeping. If this is temporarily unavailable, you can also select the free-running System Clock; however this is not suitable for live system operation, as it will drift over time.

To specify the time source

1. Select the **NWE-TS** node in the Tree View of the NWE-TS you want to configure.

2. Select the **Configuration** tab in the Device View.

3. From the **Time Reference** area, specify the type of time reference input by choosing one of the following:

   • **System Clock —** Select this option to use the date and time as reported by the NWE-TS internal clock. Refer to "**To manually set the date and time for the System Clock**" for details on configuring the internal clock.

   • **NTP (Network Time Protocol)** — Select this option to obtain the date and time from a NTP server via the ethernet connection on the NWE-TS rear panel. Enter an IP address for an NTP server that is accessible through your network.

   • **LTC** — The time of day is obtained from the timecode signal connected to the **LTC** BNC connector on the NWE-TS rear panel.

4. When using an LTC input, specify whether your LTC device automatically adjusts for Daylight Savings Time (DST) by configuring the LTC Observe DST check box as follows:

   a. Select the check box if your LTC device connected to the NWE-TS automatically adjusts for DST.

   b. Clear the check box if your LTC device connected to the NWE-TS does not recognize DST. This is the default setting.

c. You will also need to set the **Encoder Date** as outlined in step 2 of the procedure "**To manually set the date and time for the System Clock**" below.

d. You may also need to specify an offset as outlined in "**Specifying an Offset**".

5. From the **Time Zone** menu, specify the time zone your facility is located in.

6. Click **Set Time Reference**.

7. Verify that the **Encoder Date** and **Encoder Time** fields in the **Status** tab are correct.

To manually set the date and time for the System Clock

1. From the **Device View**, select the **Configuration** tab.

2. To specify the current date:

   a. Use the **Day**, **Month**, and **Year** fields to specify the current date.

   b. Click **Set Encoder Date** to apply your changes.

3. To specify the current time:

   a. Use the **Hours** field to specify the hour value, 00 to 23, using 24-hour notation.

   b. Use the **Minutes** field to specify the minute value.

   c. Use the **Seconds** field to specify the seconds value.

   d. Click **Set Encoder Time** to apply your changes.

4. Verify that the **Encoder Date** and **Encoder Time** fields in the **Status** tab are correct.

Specifying an Offset

If the NWE-TS 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-TS to watermark the local time in the broadcast area. For LTC, the offset is normally set to 0, unless the program will be broadcast in a different time zone than the NWE-TS location.

To specify an offset

1. From the **Device View**, select the **Configuration** tab.

2. In the **LTC Offset** field, specify an offset using the following format: # hh:mm:ss where:

   • **#** represents if you want to increase (+) or decrease (-) the offset by the indicated value. For example, typing +00:00:04 adds an offset of 4 seconds.
   • **hh** represents the number of hours to offset the time source by.
   • **mm** represents the number of minutes to offset the time source by.
   • **ss** represents the number of seconds to offset the time source by.

3. Click **Set Time Reference**.

Configuring the NWE-TS

This section outlines additional communication setup such as setting the audio code scheme for the NWE-TS, and using the Bypass buttons on the Configuration tab.

Setting the Code Level

You must specify the NWE-TS role in your program path.

To set the code level for a NWE-TS

1. Select the **NWE-TS** node in the Tree View of the NWE-TS you want to configure.

2. Select the **Configuration** tab in the Device View.

3. Set the audio code scheme for your NWE-TS by selecting an option in the **SID Code Level** menu. Choose from the following:

   · **Final Distributor** — Select this option if the NWE-TS is installed in the station or cable network slot of the program-distribution chain.
   · **Program Content** — Select this option if the NWE-TS is installed in the broadcast network or syndicator slot of the program-distribution chain.

4. Click **Set** beside the **SID Code Level** menu to apply your changes.

Setting the Transport Stream ID

A TSID value is assigned to each emitter of an ATSC signal. The NWE-TS compares the value in the incoming stream to the one specified here. If they do not match, watermarking is disabled. To disable this comparison and accept any ATSC TS input, enter the value 0.

To set the System TSID for your NWE-TS

1. Select the **NWE-TS** node in the Tree View of the NWE-TS you want to configure.

2. Select the **Configuration** tab in the Device View.

3. In the **System TSID** field, type the identification number for the incoming transport stream for your NWE-TS.

4. Click **Set** beside the **System TSID** menu to apply your changes.

Using the Bypass Mode

In this mode, the ASI input is re-clocked and routed to the ASI output without any watermarking or delay. This will occur if the NWE-TS is unable to process the ASI TS for some reason, or under DashBoard control. In this mode, the Encode LED on the front panel is off. This section outlines how to enable Bypass mode using DashBoard.

✶ This software-controlled bypass mode does not operate the same way as the front panel BYPASS button. When the button is in the Bypass (out) position, the ASI input BNC is looped passively to the ASI output BNC through a relay, and the input is not available for inspection by the NWE-TS software. The BYPASS LED on the front panel is lit red, and the main DashBoard status for the NWE-TS indicates `Bypass`.

To enable Bypass mode

1. Select the **NWE-TS** node in the Tree View of the NWE-TS you want to configure.

2. From the **Device View**, select the **Configuration** tab.

3. From the **System Mode** area click **Bypass**. The button is now lit, and the **Bypass** field in the Status tab indicates that the NWE-TS is operating in Bypass mode.

To disable Bypass mode

1. Select the **NWE-TS** node in the Tree View of the NWE-TS you want to configure.

2. From the **Device View**, select the **Configuration** tab.

3. From the **System Mode** area click **Active**. The button is now lit, and the **Bypass** field in the Status tab indicates that the NWE-TS is operating in Active mode.

✶ The Transport Stream propagation delay through the NWE-TS is approximately 430msec in Active mode, and 5μsec in Bypass mode. Switching between these modes will cause a transient

disruption of the video and audio programming, and should only be done when absolutely necessary.

For More Information on...

• the location of the **Bypass** button on the front panel, refer to "**Front Panel Overview**".

Event Logs

The following events and conditions are recorded in the event log:

• Configuration changes that affect the audio path such as watermarking parameters.
• Input state changes such as audio presence.
• Power-on or reboot cycles.
• Error conditions reported by DashBoard.

The log does not report the Check Code value entered in the **Configuration** tab.

Viewing the Event Log

The **Event Log** tab in DashBoard displays only the 20 most recent messages. Each message includes a timestamp, and a short description of the event. To access a complete log of events, you must navigate to the Logging interface as described in "**Logging Interface**" below.

To view the event log in DashBoard

1. Select the **NWE-TS** node in the Tree View of the NWE-TS you want to monitor.

2. From the **Device View**, select the **Event Log** tab.

Logging Interface

The NWE-TS also provides a second interface, **System Logging**, located under the **nwets** node in the Tree View of DashBoard. Double-click the **System Logging** node to display the **View System Log** tab in the Device View. This tab provides a more detailed list of events than what is reported in the Event Log tab discussed above. The Logging interface is used by Ross Technical Support and the Nielsen Encoder Group for troubleshooting. You should only access this node under their direction.

✱ The information reported in the System Logging interface is stored in the non-volatile memory of the NWE-TS.

The complete event log can be downloaded to a file on your computer. The resulting file contains log entries in chronological order. The event log stores messages in the non-volatile memory. Upon read-back, the entries are displayed in chronological order.

To save the event log as a compressed archive

1. From the **Tree View**, expand the NWE-TS node for the card you want to monitor.

2. Double-click the **System Logging** node to display the **Logging** interface in the Device View.

3. Click **Download** and follow the on-screen instructions.

DashBoard Menus

This chapter briefly summarizes the menus, items, and parameters available from the NWE-TS node in the Tree view of DashBoard. Parameters marked with an asterisk (*) are the factory default values.

Status Tabs

This section provides a summary of the read-only information displayed in the **Status** tabs which are located in the left pane of the Device View in DashBoard.

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.

System Information Tab

Table 3 summarizes the read-only information displayed in the System Information tab.

Table 3 System Information Tab Items

Item	Parameters	Description
Serial Number	######	Indicates the serial number of your NWE-TS
Model	NWE-TS	Indicates the product name
LTC Driver Version	#	Indicates the version of the LTC card installed in the NWE-TS chassis
DVB-ASI Firmware Version	# x #	Indicates the firmware version of the MPEG card installed in the NWE-TS chassis
DVB-ASI Driver Version	#	Indicates the driver version of the MPEG card installed in the NWE-TS chassis
Build Date	Mmm DD YYYY	Indicates the build date of the MPEG card software
OS Version	#.#.#	Indicates the software versions of the NWE-TS software
Application Version	#.#.##	
User Interface Version	#.#.#	

Current SID Assignment Tab

Table 4 summarizes the read-only information displayed in the Current SID Assignment tab.

Table 4 Current SID Assignment Tab Items

Item	Parameters	Description	
Slot #	SID #, Major/Minor [##-#]	SID assignment uses major/minor notation	Indicates the SID assignment for the slot in the output, no CSID is assigned and CBET watermarks are not encoded
	SID #, Program #	SID assignment uses program notation	
	SID #, Audio PID 0x####	SID assignment uses PID entries	
	SID #, CSID #, Major/Minor [##-#]	SID and CSID assignment uses major/minor notation	Indicates the SID and CSID assignments for the slot in the output
	SID #, CSID #, Program #	SID and CSID assignment uses CSID notation	
	SID #, CSID #, Audio PID 0x####	SID and CSID assignment uses PID entries	
	<blank>	No SID or CSID is assigned to that slot in the output	

System Configuration Tab

Table 5 summarizes the read-only information displayed in the System Configuration tab. Note that the information in this tab reflects the last saved/applied settings made in the Configuration tab.

Table 5 System Configuration Tab Items

Item	Parameters	Description
Time Reference	NTP	Indicates the selected Time Reference source
	System Clock	
	LTC	
NTP Server	##.##.#.##	Indicates the IP Address of the NTP time source
Time Zone	##	Indicates the time zone you specified for your facility
Code Type	FINAL	Indicates that the NWE-TS is configured as the Final Distributor in the SID Code Level field
	PROGRAM	Indicates that the NWE-TS is configured as the Program Content in the SID Code Level field

Status Tab

Table 6 summarizes the read-only information displayed in the Status tab.

Table 6 Status Tab Items

Item	Parameters	Description	
TX	(Green)	Indicates the NWE-TS is producing a valid ASI Output	
	(Red)	Indicates the ASI output of the NWE-TS is invalid	
RX	(Green)	Indicates a valid ASI input signal is connected to ASI IN BNC of the NWE-TS	
	(Red)	Indicates the input signal connected to the ASI IN BNC is invalid or missing	
Encode	(Green)	Indicates the NWE-TS is watermarking the audio signals	
	(Red)	Indicates that no watermarking is occurring	
Alarm	(Green)	Indicates that the NWE-TS is operating correctly with no errors	
	(Red)	Indicates that a serious error condition has occurred in the last few seconds. Refer to the Event Log tab for additional information.	
Warning	OK (Green)	NWE-TS is not experiencing any error conditions	
	# (Yellow)	NWE-TS has experienced a minor error condition in the last few seconds	
System Mode	Active (Green)	Indicates the ASI signal is routed through the NWE-TS	
	Switched Bypass (Red)	Bypass mode set via the Bypass Mode button on the front panel	Indicates the ASI signal on the ASI IN BNC is looped passively to the ASI OUT BNC through the relays
	User Bypass (Red)	Bypass mode set using DashBoard	
PSIP Present	Yes (Green)	PSIP Tables are present in the incoming Transport Stream (TS)	
	PSIP Not Preset (Red)	PSIP Tables are absent in the incoming TS	
PSI Present	Yes (Green)	PSI Tables are present in the incoming TS	
	PSI Not Present (Red)	PSI Tables are absent in the incoming TS	
PSIP PSI Match	Yes (Green)	Revision levels in the PSI Tables match the levels in the PSIP Tables	
	PSIP Not Matching (Red)	The levels are mis-matched or missing	

Table 6 Status Tab Items

Item	Parameters	Description
MPEG Program Count	# (Green)	Indicates the number of Programs contained in the incoming TS
	None (Red)	No Programs are detected or the incoming TS is unavailable
Total Audio Streams Present	# (Green)	Indicates the number of audio streams (2.0 or 5.1) within all the Programs detected in the incoming TS
	None (Red)	No audio streams are detected or the incoming TS is unavailable
Total Audio Streams Encoded	# (Green)	Indicates the number of audio streams the NWE-TS is encoding into
	None (Red)	NWE-TS is currently not encoding any audio streams
Encoder Date	mm/dd/yy	Reports the current encoding time as reported by the time source selected on the Configuration tab
Encoder Time	hh:mm:ss	
TSID	## x ####	Indicates the TS identification of the incoming signal
	Unknown	Identification is invalid or missing

SID Assignment Tab

Table 7 summarizes the SID Assignment tab options available in DashBoard.

Table 7 SID Assignment Tab Items

Item	Parameters	Description
Delete?	Selected	Deletes the specified SID row from the watermarking transport stream once the Validate and Submit buttons are clicked
	Cleared*	The specified SID row is not deleted the next time the Validate and Submit buttons are clicked
Active	Selected	NWE-TS outputs the programming with watermarking for this SID
	Cleared*	No watermarking is inserted with this SID
SID and Check Code	#**	Source Identification Number (SID) that is assigned by Nielsen. The ** represent the Check Code for that SID. This field is case sensitive and you must enter the characters in upper case.
CSID and Check Code	#	The Critical Band Encoding Technology (CBET) Source Identification Number that is assigned by Nielsen for this NWE-TS. The ** represent the Check Code for that CSID.

Table 7 SID Assignment Tab Items

Item	Parameters	Description
Mode	Major/Minor	Enables you to specify the major and minor channels of a Program for watermarking; watermarks all audio program associated with Major/Minor.
	Program Number	Enables you to specify the Program for watermarking; includes the Audio PIDs associated with the Program
	Audio PID*	Enables you to specify individual Audio PIDs for watermarking
PSIP Name	(read-only)	Reports the identifier for the PSIP Tables present in the incoming Transport Stream
Major/Minor Ch	(read-only)	Mode is not set to Major/Minor
	[xx-y]	• Mode is set to Major/Minor • Specify the Program using the format of [xx-y] where xx represents the main channel and y indicates the sub-channel
Program Number	(read-only)	Mode is not set to Program Number
	#	• Mode is set to Program Number • Specify the Program to be watermarked
Audio PID	(read-only)	Mode is not set to Audio PID
	#	• Mode is set to Audio PID • Specify the Audio PID to be watermarked
Insertion (CSID, SID)[a]	Ovr, Ovr*	Select this option to encode the NWE-TS CSID and SID data regardless of the presence of incoming data.
	Ovr, Ref	Select this option to encode the NWE-TS CSID data regardless of the presence of incoming CSID data. The NWE-TS SID is not encoded when incoming SID data is present, and only transmits the incoming SID data.
	Ref, Ovr	The NWE-TS CSID is not encoded when incoming CSID data is present, and only transmits the incoming CSID data. The NWE-TS encodes the SID data regardless of the presence of incoming SID data.
Insertion (CSID, SID)[a]	Ref, Ref	Select this option to not encode the NWE-TS CSID and SID data when incoming data is present, and only transmit the incoming data. This should only be selected under the guidance of Nielsen.

Table 7 SID Assignment Tab Items

Item	Parameters	Description
Validate	Click this button to enable the NWE-TS to verify the SID information entered on this tab against the information from the incoming transport stream. Once the information is validated, the Submit button is enabled.	
	If the PSI/PSIP field reports a HAS CHANGED[b] (yellow indicator) condition, clicking Validate will clear the condition.	
Submit	• Applies the changes made to the SID rows	
	• The Card State field, located above the Status tabs, will report when there are unsaved changes in the SID Assignment tab	
	• If the Submit button is disabled, changes have been made to this tab but are not validated	
Cancel	Ignores the changes made to the SID rows and cancels unsaved changes made in the Configuration tab. The Submit button is disabled.	
PSI/PSIP (read-only)	UP TO DATE (Green)	The TS structure, as reported in the PSI and PSIP, is the same as it was the last time Validate was selected
	HAS CHANGED (Yellow)	The TS structure, as reported in the PSI and PSIOP, has changed since the last time the Validate button was selected
Read-only fields	#	Indicates the status of each SID that can be watermarked

a. Refrain and Overwrite settings only apply to NAES2 watermarks.
b. A yellow indicator is reported whenever there are changes to the SID Assignment fields that are not yet applied.

Configuration Tab

Table 8 summarizes the Configuration tab options available in DashBoard.

Table 8 Configuration Tab Items

Item	Parameters	Description
Time Reference	System Clock*	• Enables the NWE-TS to apply the timecode defined by its internal clock
		• Use the Day, Month, and Year fields to specify the date for the system clock
		• Use the Hour, Minutes, and Seconds fields to specify the time for the system clock
Time Reference	NTP	• Enables the NWE-TS to apply the timecode defined by the NTP server
		• Use the NTP Server field to enter the IP Address of your NTP server
		• This is the recommended setting
	LTC	Enables the NWE-TS to use the Linear Timecode signal from an LTC device connected to the unbalanced LTC BNC on the NWE-TS rear panel

Table 8 Configuration Tab Items

Item	Parameters	Description
NTP Server	##.##.#.##	Specifies the IP Address of the NTP Server of your facility
LTC Observe DST	Selected	Specifies that the LTC device connected to the NWE-TS automatically adjusts for Daylight Savings Time
	Cleared*	Specifies that the LTC device connected to the NWE-TS does not apply DST
LTC Offset	hh:mm:ss	Specify the number of hours (hh), minutes (mm), and/or seconds (ss) to offset the timecode from the LTC source. Use an "+" or "-" to increase/decrease the offset by the specified value. For example, typing +00:00:04 adds an offset of 4 seconds.
Time Zone	#	Specifies the time zone your facility is located in
	Set Time Reference	Applies the changes made to the Time Reference, NTP Server, LTC Observe DST, LTC Offset, and Time Zone fields
Code Type	Program Content	Specifies that your facility is the broadcast network or syndicate in the program distribution chain
	Final Distributor*	Specifies that your facility is the final station or network in the program distribution chain
	Set	Applies the change made to the Code Type menu
System Mode	Active	ASI signals are routed through the card
	Bypass	ASI signals on the input BNCs bypass the card and are looped passively to the output BNCs through the relays
System TSID	# x ####	Specifies the transport stream identifier for the incoming signal
	Set	Applies the change made to the System TSID field
Day	##	Specifies the current date for the System Clock to start counting from
Month	#	
Year	####	
Set Encoder Date[a]	• Applies the changes made to the Day, Month, and Year fields • Updates the Encoder Date field in the Status tab	
Hour[b]	#	Specifies the hour for the System Clock to start counting from; assumes a twenty-four hour clock
Minutes	#	Specifies the minute for the System Clock to start counting from

Table 8 Configuration Tab Items

Item	Parameters	Description
Seconds	#	Specifies the second for the System Clock to start counting from
Set Encoder Time	• Applies the changes made to the Hour, Minutes, and Seconds fields • Updates the Encoder Time field in the Status tab	
Cancel Changes	Returns the menu items on the Configuration tab and SID Assignment tab to their previously saved settings	
Encoding Parameters	For use by Nielsen only.	
Password	For use by Nielsen only.	
Set Factory Defaults	Resets the settings in the Configuration and SID Assignments tabs to their default values	

a.   This field is read-only when Time Reference is set to NTP.
b.   This field is read-only when Time Reference is set to NTP or LTC.

Ethernet Tab

Table 9 summarizes the Ethernet tab options available in DashBoard.

Table 9 Ethernet Tab Items

Item	Parameter	Description
Method	Static	User manually supplies the Ethernet settings
	DHCP*	Automates the assignment of the Ethernet settings
IP Address	###.###.###.###	The IP Address for the NWE-TS
Subnet Mask	###.###.###.###	The subnet mask for the NWE-TS
Default Gateway	###.###.###.###	The gateway for communication outside of the local area network (LAN)
Apply Changes	Applies and saves any changes made to the **Ethernet Settings**	
Cancel	Cancels any setting changes and resets the **Ethernet Settings** to the previous values	

Event Log Tab

Table 10 summarizes the Event Log tab options available in DashBoard.

Table 10 Event Log Tab Items

Item	Parameters	Description
DD mm dd, hh:mm:ss yyyy (code #): xxx		Displays the last 20 messages. Each message reports: • the date and time of the message • the type of message (code #) • a brief description

Table 10 Event Log Tab Items

Item	Parameters	Description
Event Log	Clear	Clears the fields in the Event Log tab. Note that this does not clear the information reported in the System Logging tree node, nor the information stored in the non-volatile memory of the NWE-TS.

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-TS. These include: 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.

For More Information on...

• saving the log file, refer to "**To save the event log as a compressed archive**".

Software Upgrades

The NWE-TS can be upgraded in the field using the options available in DashBoard.

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

To upgrade the software on the NWE-TS

1. Contact Ross Technical Support for the latest software version file.

2. Select the **NWE-TS** node in the Tree View of the NWE-TS you want to configure.

3. Select the **Configuration** tab in the Device View.

4. Select **Upload**, located near the bottom of the **Configuration** tab, to display the **Select file Upload** dialog.

5. Navigate to the ***.bin** file you want to upload.

6. Click **Open**.

7. Click **Finish** to start the upgrade.

8. Monitor the upgrade.

   • An **Upload Status** dialog enables you to monitor the upgrade process.
   • The NWE-TS auto restarts as part of the upgrade process. This restart is required after each software upgrade.
   • The NWE-TS is temporarily taken off-line for up to 7 minutes as part of the upgrade process.
   • The upgrade is complete once the status indicators for the **Card State** and **Connection** fields return to their previous status. These fields are located in the top left corner of the Device View, and directly above the Status tabs.

Technical Specifications

This chapter provides information on the specifications for your NWE-TS.

✦ Specifications are subject to change without notice.

Table 11 NWE-TS Technical Specifications

Category	Parameter	Specification
Transport Stream Input	Number of Inputs	1
	Standards Accommodated	DVB-ASI (EN 50083-9)
	Impedance	75ohm terminating
	Return Loss	>15dB to 270MHz
	Equalization	>150m (500ft) of Belden 1694A cable
	Connector Type	BNC
Transport Stream Output	Number of Outputs	1
	Standards Accommodated	DVB-ASI (EN 50083-9)
	Impedance	75ohm
	Return Loss	>10dB to 270MHz
	Signal Level	800mV ±10%
	DC Offset	0V ±50mV
	Rise and Fall Time	750ps typical
	Overshoot	<8%
	Jitter	<250ps
	Connector Type	BNC
Bypass Mode[a]	Insertion Loss	<1dB to 270MHz
LTC Input	Number of Inputs	1
	Impedance	15kohm
	Minimum Input Level	200mV p-p
	Maximum Signal Level	>3.3V p-p
	Connector Type	BNC
Environment	Maximum ambient temperature	40°C (104°F)
Power	Power Consumption (typical)	<100W
	Maximum Power Consumption	800W

a. Power off or push-button.

SMPTE 310M Configuration

This chapter provides information on creating a SMPTE 310M workflow using the NWE-TS, and an openGear ASI-310 card.

✶ The configuration presented here is an example and your facility needs may differ than what is presented here.

System Integration

Figure 8 provides a system diagram that illustrates one way to set up the SMPTE 310M conversion using an NWE-TS and a Ross Video ASI-310 converter.
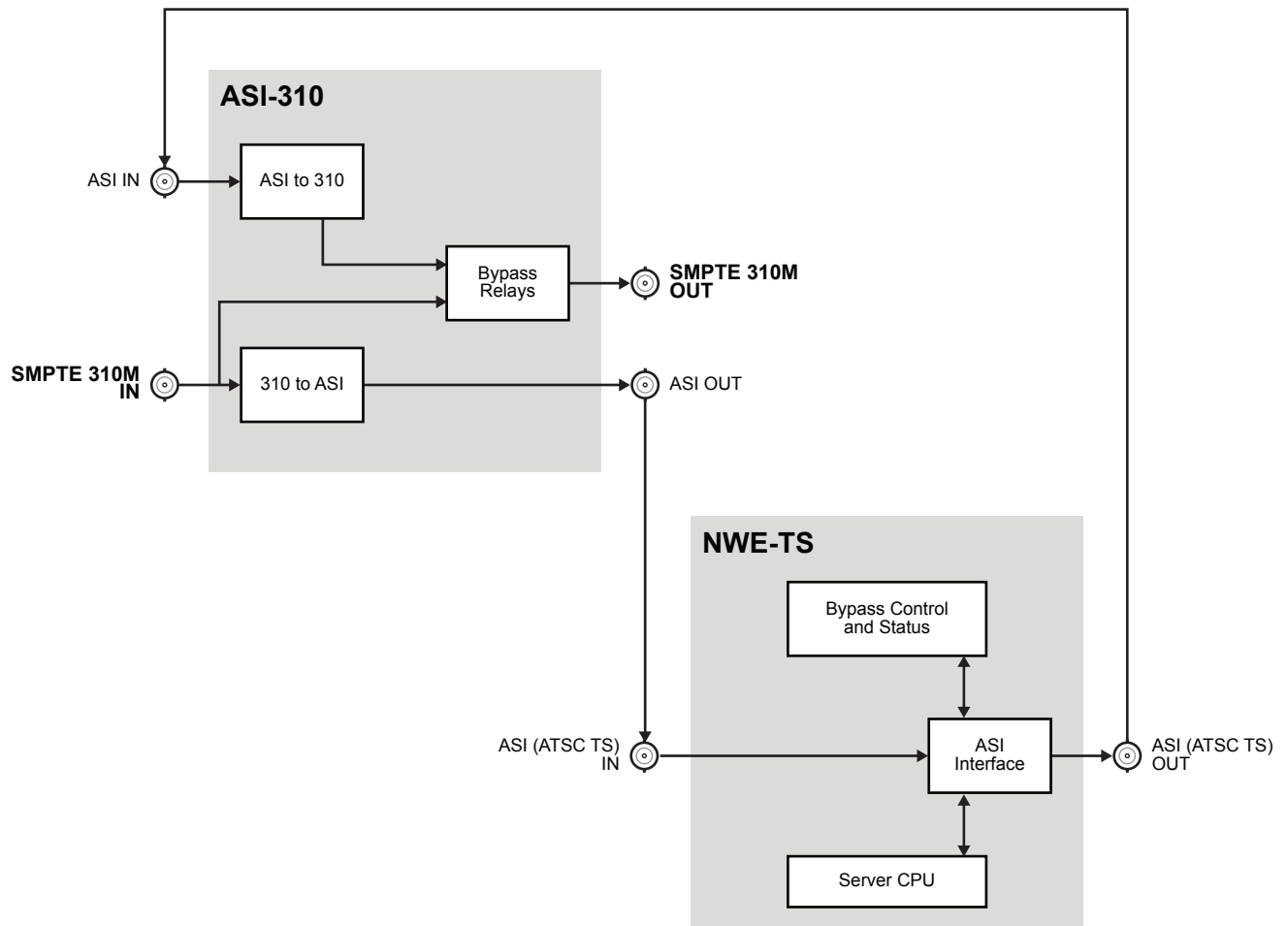

Figure 8 NWE-TS and ASI-310 Setup — SMPTE 310M Conversion

Service Information

This chapter provides information on the warranty and repair policy for your NWE-TS.

Troubleshooting Checklist

Routine maintenance to the NWE-TS is not required. In the event of problems with your NWE-TS, the following basic troubleshooting checklist may help identify the source of the problem. If the NWE-TS still does not appear to be working properly after checking all possible causes, please contact your NWE-TS distributor, or the Technical Support department at the numbers listed under the "**Company Addresses**" section at the front of this manual.

1. **Visual Review** — Performing a quick visual check may reveal many problems, such as connectors not properly seated or loose cables. Check the chassis, and any associated peripheral equipment for signs of trouble.

2. **Power Check —** Check the power indicator LED on the chassis 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. **Input Signal Status** — Verify that source equipment is operating correctly and that a valid signal is being supplied.

4. **Output Signal Path** — Verify that destination equipment is operating correctly and receiving a valid signal.

5. **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.

6. **Re-load the Factory Defaults** — If the NWE-TS 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 NWE-TS editable settings to a text file on your PC. This information is used by the Nielsen Encoder Support when troubleshooting issues you may be encountering with your NWE-TS.

To save your settings to a text file

1. From the **Basic Tree View**, right-click the NWE-TS node.

2. Select **Save Configuration to File**.

3. Follow the on-screen instructions.

Warranty and Repair Policy

The NWE-TS is warranted to be free of any defect with respect to performance, quality, reliability, and workmanship for a period of THREE (3) years from the date of shipment from our factory. In the event that your NWE-TS 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-TS 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 THREE (3) 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-TS User Guide provides all pertinent information for the safe installation and operation of your product. Ross Video policy dictates that all repairs to the NWE-TS 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-TS, 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-TS. If required, a temporary replacement frame will be made available at a nominal charge. Any shipping costs incurred will be the responsibility of you, the customer. All products shipped to you from Ross Video Limited will be shipped collect.

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

Glossary

The following terms are used throughout this guide:

• "**Audio PID**" refers to the audio stream in a TS that is identified by a 13bit packet identifier.

• "**ASI**" or "**DVB-ASI**" refers to Asynchronous Serial Interface. A standard interface for carriage of a Transport Stream (TS) in a 270megabit/second serial digital signal.

• "**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 Connect compatible devices on the same network are auto-detected by default.

• "**DashBoard**" refers to the DashBoard Control System.

• "**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 an openGear Connect compatible devices.

• "**DHCP**" refers to Dynamic Host Configuration Protocol.

• "**DST**" refers to Daylight Saving Time.

• "**ES**" refers to elementary stream. One of the components of a program, such as video, audio, or data.

• "**LTC**" and "**Timecode**" refer to Linear Timecode unless otherwise noted.

• "**MPEG-2**" refers to a standard format for the transmission and storing of audio, video, and PSIP data. This standard of multimedia compression is defined by the Moving Picture Experts Group, a sub-group of the International Organization for Standardization (ISO).

• "**MPTS**" refers to Multi Program Transport Stream. A TS that contains more than one program.

• "**NAES**" refers to Nielsen Audio Encoding System.

• "**NTP**" refers to Network Time Protocol.

• "**Operator**" and "**User**" refer to the person who uses the NWE-TS.

• "**PID**" refers to Packet ID. A 13bit address that identifies each component of a TS. For example, each ES and PSI table has its own PID. Some have fixed reserved values (e.g. 0 for the PAT) and others have values that are defined within the PSI.

• "**Program**" refers to a group of Elementary Streams intended to be presented together. A television program typically contains one video, at least one audio, and possible some data ES's.

• "**PSI**" refers to Program Specific Information, defined by ***ISO/IEC 13818-1***. Metadata that describes the TS and its Programs to allow receivers to select and assemble the appropriate components for presentation to the viewer. PSI is required in every MPEG-2 TS, including the DVB and ATSC formats. PSI consists of tables such as the PAT which are used in both DVB and ATSC formats, and others such as the SDT which are used only in DVB.

• "**PSIP**" refers to Program and System Information Protocol, defined by ***ATSC A/65***. A specification that defines metadata that is required in an ATSC TS, in addition to essential PSI tables.

• "**SID**" refers to the Source Identification number assigned by Nielsen.

• "**System**" and "**Video system**" refer to the mix of interconnected production and terminal equipment in which the NWE-TS operates.

• "**TS**" refers to MPEG-2 Transport Stream. A group of one or more Programs which are carried together, along with information that describes the contents of the TS and its Programs to allow receivers to select the appropriate components for presentation to the viewer.

• "**TSID**" refers to a Transport Stream Identifier. This value identifies the content source of an MPEG-2 transport stream.