<table>
<thead>
<tr>
<th>Revision</th>
<th>Date</th>
<th>Change Made</th>
<th>Responsible Engineer</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>10/16/2014</td>
<td>First release</td>
<td>Ken Hennacy</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bruce McCready</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Allen Zimmerman(editor)</td>
</tr>
<tr>
<td>B</td>
<td>5/12/2015</td>
<td>Updated Document to Nielsen template, fixed figure 31 missing item numbers,</td>
<td>Allen Zimmerman</td>
</tr>
<tr>
<td></td>
<td></td>
<td>eliminated empty definitions in glossary, corrected bad cross references,</td>
<td>Ken Hennacy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>added Table to for Audio Level assignments to dBFS</td>
<td>Bruce McCready</td>
</tr>
<tr>
<td>C</td>
<td>1/21/2016</td>
<td>Updated for Version 1.1: added sections for the Detectability Confidence and</td>
<td>Bruce McCready</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Encodability views, removed Fast Qoe section and references, updated figures</td>
<td>Ken Hennacy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>to reflect Web UI menu changes.</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>4/8/2016</td>
<td>Clarified details in Detectability View section; corrected user name and</td>
<td>Ken Hennacy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>password in “Logging In to the Monitor Web Interface through Ethernet;”</td>
<td>Lee Dennis</td>
</tr>
<tr>
<td></td>
<td></td>
<td>corrected SNMP Community String in “Setting Up SNMP for the Monitor;”</td>
<td>Bruce McCready</td>
</tr>
<tr>
<td></td>
<td></td>
<td>changed MSSCheck Fail to MSSCheck Alarm; also, because they are now alarms</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>instead of alerts, changed LOW LEVEL IN to low level and CODECHK FAIL to</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>codechk fail</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>6/14/2016</td>
<td>Capitalized user name, Station, in step 5 of section 2.4.3 and identified it</td>
<td>Lee Dennis</td>
</tr>
<tr>
<td></td>
<td></td>
<td>as case sensitive</td>
<td>Lore Eargle (editor)</td>
</tr>
<tr>
<td>F</td>
<td>7/29/2016</td>
<td>Corrected Status Relay diagrams and tables, Corrected Baud rate in Section 3.4</td>
<td>Bruce McCready</td>
</tr>
<tr>
<td></td>
<td></td>
<td>to the correct value and fixed errata in Appendix A1. Updated document to</td>
<td>Amy Gaither (editor)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>indicate cellular networks mode is supported.</td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>02/28/2017</td>
<td>Added instructions on downloading audio capture files and edited the upload /</td>
<td>Lore Eargle</td>
</tr>
<tr>
<td></td>
<td></td>
<td>download files section, how to use the Alarm/Alert History now in the</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Upload/Download window, specifications of read-only login and constraints to</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>appropriate sections, statement that installing a security certificate applies</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>to all browsers, suggestions for responding to “No Audio” alarms, and</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>procedure for setting the MCEM as an NTP server</td>
<td></td>
</tr>
</tbody>
</table>
Contents

Contacts ........................................................................................................................................................ 9
  United States .................................................................................................................................................. 9
  International .................................................................................................................................................. 9
  Mailing Address .......................................................................................................................................... 9
Notices ........................................................................................................................................................ 10
1. Introduction ............................................................................................................................................... 11
  1.1. Overview ............................................................................................................................................... 11
  1.2. Audience for this Manual ..................................................................................................................... 12
  1.3. How to Use this Manual ....................................................................................................................... 13
  1.4. Feature Summary ................................................................................................................................... 14
  1.5. Connectivity Modes ............................................................................................................................. 15
    1.5.1. Stand-Alone Mode ........................................................................................................................... 15
    1.5.2. Internal Connection to a Local Area Network (LAN) .................................................................. 16
    1.5.3. Connection to a Wide Area Network (WAN) ............................................................................. 16
    1.5.4. Connection to a Cellular Network ............................................................................................... 17
  1.6. Physical Features of the 1000-1220 Encoding Monitor ....................................................................... 18
  1.7. Understanding Channel Pairs and Channel Sets ............................................................................... 19
2. Installation .................................................................................................................................................. 20
  2.1. Installation Hardware Requirements .................................................................................................... 20
    2.1.1. Analog Audio Input Connection .................................................................................................... 20
    2.1.2. Connection for Ethernet Access .................................................................................................... 21
    2.1.3. Remote Monitor Connection (DA-15 Port) ..................................................................................... 21
    2.1.4. Serial Status Output Connection (Rear-Panel USB Ports) ............................................................. 21
    2.1.5. Antenna for Cellular Communication ............................................................................................. 21
    2.1.6. Connection for Front-Panel USB Type A Port Access .................................................................. 22
    2.1.7. Ground Connection ......................................................................................................................... 22
    2.1.8. Power Connection ........................................................................................................................... 22
  2.2. Suggested Placement ............................................................................................................................ 22
  2.3. Installing the 1000-1220 Encoding Monitor ......................................................................................... 22
  2.4. Initializing Optional Features ............................................................................................................... 24
    2.4.1. Configuring the Monitor IP Address if the Local Area Network Uses DHCP ............................. 24
    2.4.2. Using the Nielsen Audio Monitor Root Certificate Authority for HTTPS Access ..................... 25
    2.4.3. Logging into the Monitor Web Interface through Ethernet ......................................................... 26
    2.4.4. Setting Up the Encoding Monitor without a Network ................................................................. 27
    2.4.5. Setting Up SNMP for the Monitor ................................................................................................ 27
    2.4.6. Synchronizing Monitor System Time ............................................................................................ 27
    2.4.7. Using the Cellular Connection to Synchronize the Monitor Real Time Clock ......................... 28
3. Operation ................................................................................................................................................... 29
  3.1. Using the Front-Panel LCD, LEDs, and Buttons ............................................................................... 29
    3.1.1. Interpreting Channel Set Information on the Front Panel LCD .................................................. 30
3.1.2. The Default LCD View ................................................................. 31
3.1.3. Front-Panel LED Behavior .......................................................... 31
3.1.4. Navigating Among LCD Views .................................................... 32
3.1.5. Using the LCD Channel Set Status View ........................................ 33
3.1.6. Using the LCD System Status View .............................................. 37
3.1.7. Using the LCD Audio Levels View ............................................... 38
3.1.8. Using the LCD Operational Parameters View ............................... 40
3.1.9. Using the System Management View ............................................ 41
3.1.10. LCD Interactive Feedback ........................................................... 44

3.2. Initiating Monitoring ........................................................................ 44
3.3. Using Remote Monitoring ................................................................. 44
  3.3.1. DA-15 Pin-Outs for Remote Monitoring of Encoding Error Status 45
  3.3.2. DA-15 Pin-Outs for Remote Monitor of System Status ............... 47
3.4. Using the Rear Panel Serial Status Output ......................................... 48
3.5. Retrieving Log Files ......................................................................... 49

4. Using the Web Interface ........................................................................ 50
  4.1. Web Interface Overview ................................................................. 50
  4.2. Monitor Status (Home) Page ............................................................ 53
  4.3. Network Configuration Page (Station Users Only) .......................... 59
  4.4. Client Management (Station Users Only) .......................................... 61
  4.5. Device & Channel Page ................................................................. 62
  4.6. Upload/Download File Page and Download File Page .................. 64
     4.6.1. Upload Configuration Update File .......................................... 64
     4.6.2. Download Current Configuration File ..................................... 64
     4.6.3. Download Alarm/Alert History .............................................. 65
     4.6.4. Download Log Files .............................................................. 65
     4.6.5. Download Audio Capture Files ............................................. 65
     4.6.6. Download Log Files .............................................................. 66
  4.7. Detectability Confidence View ........................................................ 67
  4.8. Encodability Confidence View ........................................................ 70
  4.9. View/Download MIB Page ............................................................ 71
  4.10. View/Edit SNMP Notification Configuration Page ..................... 72

5. Updating Configuration, Firmware, or License .................................... 74

6. Status/Error Messages .......................................................................... 74

7. Nielsen Multi-Channel Monitor Specifications ......................................... 75
  7.1. Enclosure ....................................................................................... 75
  7.2. Front Panel .................................................................................. 75
  7.3. Rear Panel ................................................................................... 75
  7.4. Side Panels .................................................................................. 75
  7.5. USB Host Interfaces ...................................................................... 76
  7.6. Ethernet Interface ......................................................................... 76
  7.7. Rear-Panel DA-15 Port ................................................................... 76
List of Figures

Figure 1: 1000-1220 Encoding Monitor Front Panel ................................................................. 18
Figure 2: 1000-1220 Encoding Monitor Rear Panel ................................................................. 18
Figure 3: Sample Channel Set Configuration ........................................................................... 20
Figure 4: Example of the LCD Operational Parameters View ................................................... 24
Figure 5: SSL Certificate Information on the Encoder Root Web Page ...................................... 25
Figure 6: SSL Certificate Warning for Internet Explorer on Windows 7 ................................. 26
Figure 7: Monitor Web Interface Login Window for Windows 7 .................................................. 27
Figure 8: 1000-1220 Encoding Monitor Front Panel ................................................................. 29
Figure 9: Channel Set Status Displayed on Monitor Front Panel .................................................. 31
Figure 10: Navigating 1000-1220 Encoding Monitor Front-Panel LCD Views .......................... 33
Figure 11: LCD Channel Set Status View Navigation ................................................................. 33
Figure 12: LCD Channel Set Status View in Default Mode ......................................................... 34
Figure 13: Channel Set Status View Interactive Mode Displaying Short Messages .................... 35
Figure 14: LCD Displaying Long Form of UNKNOWN CODE Message ...................................... 36
Figure 15: Sample Messages in the System Status View ............................................................ 37
Figure 16: Example of the LCD Audio Levels View ................................................................. 39
Figure 17: Example of the LCD Operational Parameters View .................................................. 40
Figure 18: LCD System Management View Navigation ............................................................ 42
Figure 19: LCD System Management View in Default Mode .................................................... 42
Figure 20: LCD System Management View in Interactive Mode ............................................. 43
Figure 21: System Management View Confirmation Mode ....................................................... 43
Figure 22: Pin-Outs and Relays for Channel Pair A Status Monitoring ....................................... 45
Figure 23: Pin-Outs and Relays for Channel Pair B Status Monitoring ....................................... 46

Appendix A  Installing and Using a Security Certificate ............................................................. 80
Appendix B  Real Time Remote Serial Status Messages .............................................................. 89
Appendix C  Front-Panel LCD Map ............................................................................................ 90
Glossary .................................................................................................................................... 91
FCC Disclaimer ....................................................................................................................... 92
ICES Disclaimer ...................................................................................................................... 92
Figure 24: Pin-Outs and Relays for Channel Pair C Encoding Status Monitoring ........................................ 46
Figure 25: Pin-Outs and Relays for Channel Pair D Encoding Status Monitoring ........................................ 47
Figure 26: Pin-Outs and Relays for Remote System Error Status Monitoring .............................................. 47
Figure 27: Elements Common to All Pages for Station Users ........................................................................ 51
Figure 28: Menus for Station and Guest Users ........................................................................................... 51
Figure 29: Monitor Status Page for Station Users ......................................................................................... 53
Figure 30: Monitor Status Details ............................................................................................................... 55
Figure 31: Monitor Status Events ............................................................................................................... 57
Figure 32: Entity with Alarm and Alert Conditions ..................................................................................... 58
Figure 33: Clearing of Entity’s Alarm and Alert Conditions ....................................................................... 58
Figure 34: Network Configuration Page ..................................................................................................... 59
Figure 35 – Client Management .................................................................................................................. 61
Figure 36: Device & Channel Page (Station User Access) .......................................................................... 62
Figure 37: Upload/Download File Page ...................................................................................................... 64
Figure 38: Detectability View ...................................................................................................................... 67
Figure 39: Encodability View ...................................................................................................................... 70
Figure 40: View/Download MIB Page .......................................................................................................... 71
Figure 41: View/Edit SNMP Notification Configuration Page ....................................................................... 72
Figure 42: Root Certificate Open/Save File Prompt .................................................................................... 81
Figure 43: Certificate Information Dialog Box ............................................................................................ 81
Figure 44: First Dialog of the Certificate Import Wizard ............................................................................ 82
Figure 45: Second Dialog of Certificate Import Wizard .............................................................................. 82
Figure 46: Select Certificate Store Location ................................................................................................. 83
Figure 47: Certificate Store Selected ........................................................................................................... 83
Figure 48: Certificate Import Wizard Final Dialog Box .............................................................................. 84
Figure 49: Security Warning ....................................................................................................................... 84
Figure 50: Certificate Import Confirmation ................................................................................................. 85
Figure 51: Running Notepad as Administrator ......................................................................................... 86
Figure 52: Locate Hosts File Using Notepad ............................................................................................... 86
Figure 53: Example Hosts File .................................................................................................................... 87
Figure 54: Browser Accessing Monitor without (#1) and with (#2) Root CA Certificate .............................. 88

List of Tables

Table 1 – User Rights .................................................................................................................................. 12
Table 2: Channel Set Status View Default Mode ...................................................................................... 34
Table 3: Channel Set Status View When Viewing Short Messages ........................................................... 35
Table 4: Channel Set Status View When Viewing Long Messages ............................................................ 36
Table 5: System Status View ....................................................................................................................... 37
Table 6: Audio Input Level Relative Scale Assignments ........................................................................... 38
Table 7: Front-Panel Button Behavior in Audio Levels View .................................................................... 40
Table 8: Front-Panel Button Behavior in Operational Parameters View .................................................. 40
Table 9: Font-Panel Button Behavior in System Management View Default Mode .................................. 42
Table 10: Front-Panel Button Behavior in System Management View Interactive Mode .......................... 43
Table 11: Front-Panel Button Behavior in System Management View Confirmation Mode .................... 44
Table 12: Pin-Outs for Channel Pair A ....................................................................................................... 45
Table 13: Pin-Outs for Remote Encoding Status Monitoring for Channel Pair B ..................................... 46
Table 14: DA-15 Pin-Outs for Remote Monitor Status Monitoring for Channel Pair C ............................. 46
Table 15: DA-15 Pin-Outs for Remote Monitor Status Monitoring for Channel Pair D ........................................ 47
Table 16: DA-15 Pin-Outs for Remote System Error Monitoring ........................................................................... 47
Table 17: Descriptions for Figure 29 .................................................................................................................. 53
Table 18: Descriptions for Figure 30 .................................................................................................................. 55
Table 19: Descriptions for Figure 34 .................................................................................................................. 59
Table 20: MSS Thresholds ............................................................................................................................... 68
Table 21: Encoding Status LED Colors .......................................................................................................... 77
Contacts

United States

For **URGENT** encoding equipment issues, contact the following:

- Encoding Issues Hotline (staffed 24/7)
  Call: 866-767-7212

For any questions regarding this equipment manual, contact Nielsen as indicated below:

- For radio and for information on how to send large log files:
  Email: EncodingOperations@Nielsen.com
  Call: 410.312.8123 or 866-767-7212
- For other media:
  Email: USEncoding@Nielsen.com
  Call: 410.312.8199

International

For **URGENT** encoding equipment issues, contact local equipment support.

For any questions regarding this equipment manual, send an email to ProductSupportEngineering@nielsen.com.

Mailing Address

Nielsen
7000 Gateway Drive Suite 200
Columbia MD 21046-3370
Notices

To Ensure Proper Operation:

DO NOT expose this unit to rain or moisture. ONLY Nielsen Audio authorized service personnel shall gain access to the inside of the Encoding Monitor. DO NOT disconnect the earth ground from the power cord since this is a very important safety feature. The Encoding Monitor should be mounted securely in a rack. The sides must be free of obstructions to provide adequate airflow through the instrument.

The Monitor contains a lithium battery backup to maintain its internal clock. Specialized tools are required to replace this part. Under no circumstances should anyone other than Nielsen Audio authorized service personnel attempt to replace this part.

FAILURE TO INSTALL THE ENCODING MONITOR IN ACCORDANCE WITH THE SPECIFICATION IN THIS MANUAL AND/OR FAILURE TO MAINTAIN BROADCAST SIGNALS IN ACCORDANCE WITH GENERAL INDUSTRY STANDARDS AND SPECIFICATIONS MAY RESULT IN THE ENCODING MONITOR NOT OPERATING PROPERLY.
1. **Introduction**

1.1. **Overview**

The Nielsen 1000-1220 Encoding Monitor is a rack-mountable dedicated-purpose appliance used in radio and television broadcast facilities to monitor Nielsen Audio-encoded audio material. To ensure that broadcasters using the Portable People Meter (PPM) system are properly credited for their audiences, it is important to verify that their outgoing audio signals are properly encoded. A Nielsen 1000-1220 Encoding Monitor installed at a broadcast facility provides immediate notification of encoding outages to the broadcasters and provides a mechanism through which broadcasters can work with Nielsen Audio to diagnose and resolve encoding issues.

Nielsen Audio encodes outgoing signals at broadcaster facilities with devices installed within the broadcast chain. This encoding consists of acoustic watermarks inaudible to the human ear that are embedded within an audio signal. Each watermark corresponds to an entity ID tracked by Nielsen Audio.

PPM devices worn by panelists in the field detect this encoding in ambient audio signals and send information about those detections to Nielsen Audio. Nielsen Audio uses the entity IDs to determine the origin of an audio signal. Timestamps included with the entity ID recorded by the PPM provide information about when the panelist was exposed to the signal.

The monitor can provide a remote monitoring capability when connected to Nielsen Audio by an Ethernet network through a secure port, or by cellular connectivity, where available. This remote monitoring feature enables Nielsen Audio to quickly react to encoding outages, minimizing the possibility of impact to ratings.

Prior to delivering the 1000-1220 Encoding Monitor to a broadcast station, Nielsen consults with the station engineer to determine the appropriate monitor configuration to suit the station’s needs. Nielsen delivers the monitor to the broadcast station pre-configured to meet those specifications.
1.2. **Audience for this Manual**

This manual covers installation and configuration of the 1000-1220 Encoding Monitor. User rights are determined by your login and password. Table 1 shows the tasks that each type of user, Station or Guest, can perform with the monitor.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Guest</th>
<th>Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Install 1000-1220 Encoding Monitor hardware (configured by Nielsen)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Configure monitor IP address if LAN uses DHCP (Section 2.4.1)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Access views in LCD display: Channel Set Status, System Status, Audio Levels, Operational Parameters, System Management, Interactive Feedback (Section 3.1)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>View alarms, alerts, system status, hardware status, version information (Section 4.2)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Monitor detectability (Section 4.7)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Monitor Encodability (Section 4.8)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Upload software configuration update through USB port (with assistance from Nielsen)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Download copy of current monitor configuration, log reports and system logs, audio capture files, and alarm/alert history (Section 4.5)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Upload software configuration update through web page (Section 4.6.1)</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>View and edit some aspects of the network configuration (Section 0)</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Edit device name, identity type, and impedance (Section 4.4)</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>View and download the SNMP MIB (Section 4.9)</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Edit the SNMP Notifications Community String, add or remove SNMP Network Managers, and view and download the Encoding Monitor Notifications Management Information Base (MIB) (Section 4.10)</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>
1.3. **How to Use this Manual**

Before you attempt to install or use the 1000-1220 Encoding Monitor, read all of Section 1 of this document. This section provides essential information needed to understand and use the rest of the manual, including:

- Section 1.4: summary of the features of the monitor
- Section 1.5: description of the modes of network connectivity the monitor supports
- Section 1.6: description of the monitor’s physical features
- Section 1.7: explanation of concepts essential to monitor users: channel pairs, channel sets, and how they relate to each other

Read Section 2 for the information you need to install the monitor. As with Section 1, you should read this section in the order it is presented, in its entirety, before proceeding with installation.

- Section 2.1: list of the physical requirements that must be met before installing the monitor hardware. These requirements vary depending upon which optional features of the monitor will be used.
- Section 2.2: information to help determine the best place for the monitor within the broadcast facility
- Section 2.3: step-by-step instructions to physically install the monitor hardware
- Section 2.4 information needed to set up or initialize various optional features once the monitor is physically installed. Use the subsections addressing the features appropriate to the needs of the broadcast facility.

The remaining sections of this manual address various aspects of using the encoder once it is installed. All of these sections can be useful to most users at one time or another, but they need not be read in any particular order.

- Section 3 describes how to use the hardware interfaces:
  - The monitor front-panel interface, consisting of the LCD, LEDs, and buttons
  - The rear-panel remote monitoring interface
  - The rear-panel interface for real-time serial text status output
- Section 4 addresses how to use the web interface. User rights determine the tasks each user, Station or Guest, can perform. See Table 1.
- Section 5 describes how to update the configuration, firmware, and license for the monitor device.
- Section 6 provides a summary of the status and error messages the monitor generates and displays on the LCD on the front panel.
- Section 7 provides monitor technical specifications.
1.4. Feature Summary

The Nielsen 1000-1220 Encoding Monitor provides the following features:

- Eight physical audio input devices offering either XLR or ¼ tip and sleeve input to support monitoring monophonic (mono, or single-channel), stereophonic (stereo, or dual-channel) or surround (three-channel) audio signals. The number of signals an individual unit can monitor varies depending on their types.

- An LCD display providing textual indication of encoding and operational status

- LEDs providing visual indication of encoding and operational status

- A cellular interface to support connectivity exclusively to Nielsen Audio for remote monitoring and update of the unit. The unit supports outgoing calls only.

- An Ethernet interface for connectivity to a network using a secure protocol. This supports using a web client interface for control, status monitoring, update (firmware, configuration, and license), and downloading log files. The web interface for the monitor has been tested with the Microsoft Internet Explorer®, Firefox®, and Google Chrome™, and Safari browsers running on Microsoft Windows® 7, 8, and 10 operating systems.

- An interface to support monitoring system status using SNMP Version 2C with read-only attributes and traps for alarms

- An NTP client to synchronize the internal clock with a time source in the Nielsen backend system when remote connectivity is enabled. The monitor uses this to confirm accurate timestamp of encoded material.

- A type A USB port to facilitate firmware, configuration, and license updates as well as downloading encrypted log files using a USB file storage device

- An Ethernet port to support a hardwired network connection with Nielsen Audio for firmware, configuration, and license updates, clock synchronization, and downloading encrypted log files

- A set of relays that may be connected to a third-party device to facilitate remote monitoring of alarm conditions. These relays will assert during an alarm condition of the system or one or more of the physical input channels.

- A type A USB port that supports streaming encoding and system status information in real-time to a third-party monitoring device
1.5. Connectivity Modes

Nielsen can configure the 1000-1220 Encoding Monitor to operate using three different modes of connectivity:

- Stand-alone mode
- Connected to an on-site Local Area Network (LAN)
- Connected to Nielsen Audio via a cellular network

The functionality provided by each of these connectivity modes is described in the following sections. These modes of connectivity are not exclusive to each other: a monitor may be connected to the LAN or configured to connect with Nielsen Audio using either Ethernet or cellular networks.

Regardless of the connectivity mode(s) the monitor is configured to use, the unit always reports encoding and system status through the front-panel LEDs and LCD, as well as through the real-time streaming USB port on the rear panel. If remote notification of alarm conditions is required, a third-party monitoring device can be connected to the relay DA-15 port (Section 2.1.3).

1.5.1. Stand-Alone Mode

In this mode, the monitor device is connected to neither a wired nor a wireless network. The web interface can be used by connecting the monitor with a PC using a direct connection.

In stand-alone mode:

- The monitor cannot synchronize its internal clock to an external time source, so the unit may not accurately report clock drift.
- Firmware, configuration, and license file updates must be performed manually as follows:
  
  **Note**  Nielsen Audio notifies you through email (followed by phone calls, if necessary) that updates are available.

  - Station or Guest user: through a USB file storage device inserted into the front-panel USB type A port and with assistance from Nielsen
  - Station user: through the web interface from a drive accessible by the web client

- If log files are needed to diagnose a problem, the encrypted log files must be downloaded as follows and then sent to Nielsen Audio for decryption and analysis. See Contacts on page 9.

  - Station of Guest user: through a USB file storage device inserted into the front panel USB port and with assistance from Nielsen
  - Station user: through the web interface to a drive accessible by the web client. See Section 4.6.
1.5.2. Internal Connection to a Local Area Network (LAN)

In this setup, the 1000-1220 Encoding Monitor is connected to an on-site LAN through its rear-panel Ethernet port. The monitor does not have access to network resources beyond the local firewall. In this setup, the monitor provides the following features:

- Guest and Station users can access the monitor through the web interface from any computer on the same LAN to monitor encoding of incoming signals and system status of the monitor.
- Guest and Station users can use the web interface to monitor encoding of incoming signals and system status of the monitor.
- Station users can do some system configuration of the monitor.
- Users can perform firmware, configuration, and license updates as follows:
  - Station and Guest users can make such updates by inserting a USB file storage device through the front-panel USB type A port. Nielsen provides the files and assistance with this process.
  - Station users also have the option to access a local drive through the web interface to make these updates. Nielsen provides the files.
- If log files are needed to diagnose a problem, a Station or Guest user downloads the encrypted log and sends the files to Nielsen Audio for decryption and analysis. See Contacts on page 9.
  - Download the log files to a USB file storage device connected to the USB port on the front panel.
  - Download the log files through the web interface to a drive accessible by the web client. See Section 4.6.

1.5.3. Connection to a Wide Area Network (WAN)

In this mode, the monitor device is connected to the on-site LAN through its rear-panel Ethernet port, and the LAN is configured to allow the monitor access to Nielsen Audio through a secure network port. In addition to the functionality described in Section 1.5.2 for local LAN access, when the monitor communicates with the Nielsen Audio network, it can provide the following features:

- The monitor's internal clock can be synchronized with the Nielsen Audio NTP server.
- Firmware, configuration, and license updates are automatically performed over the network directly from Nielsen Audio.
- The monitor sends encoding and system alarms directly to Nielsen Audio as they occur for evaluation by Nielsen Audio personnel.
- The monitor periodically automatically sends log files containing detailed information about quality of encoding and low priority alerts to Nielsen Audio. Nielsen Audio retains these files for auditing purposes.
1.5.4. **Connection to a Cellular Network**

In this mode, the monitor device must be equipped with a wireless wide area network (WWAN) antenna (provided with the unit) and must have radio access to a cellular tower. When cellular connectivity is enabled, the monitor provides the same features as those that are available through WAN access.

To verify communication with Nielsen, use the LCD display on the front panel to access System Management view and select Immediate Connect. The monitor immediately attempts to connect with the Nielsen back office to transmit status information. The monitor also checks for a new command script and, if one is available, the monitor downloads the script and runs it.
1.6. Physical Features of the 1000-1220 Encoding Monitor

Throughout this manual are references to fixtures on the front and rear panels of the monitor.

Figure 1: 1000-1220 Encoding Monitor Front Panel

Figure 1 shows the front panel. The numbers refer to the following features:

1. Four red/green LEDs to provide status information
2. LCD with four lines of twenty characters each, providing system and encoding status information
3. Six push-buttons to allow users to navigate within the information provided by the LCD
4. USB 2.0 type A host port (for USB file storage device)

Figure 2: 1000-1220 Encoding Monitor Rear Panel

The rear panel is pictured in Figure 2, and the rear panel features are described below:

1. Electrical ground post
2. International Electrotechnical Commission (IEC) 320 input power socket
3. DA-15 female port, used as an interface for remote status monitoring
4. Two USB 2.0 type A host ports for real-time serial status output
5. Subminiature version A (SMA) cellular antenna port
6. RJ-45 Ethernet port with integrated transmission/reception link status LED indicators
7. Combined female balanced XLR jacks with pushbutton release/unbalanced quarter-inch tip-sleeve phone jacks (combo jacks), to accept input for channels A1 and A2
8. Combined female balanced XLR jacks with pushbutton release/unbalanced quarter-inch tip-sleeve phone jacks (combo jacks), to accept input for channels B1 and B2
9. Combined female balanced XLR jacks with pushbutton release/unbalanced quarter-inch tip-sleeve phone jacks (combo jacks), to accept input for channels C1 and C2

10. Combined female balanced XLR jacks with pushbutton release/unbalanced quarter-inch tip-sleeve phone jacks (combo jacks), to accept input for channels D1 and D2

1.7. Understanding Channel Pairs and Channel Sets

This section presents some basic concepts about the organization of the monitor's audio input channels. This information is required to understand this manual and use the monitor.

The 1000-1220 Encoding Monitor is capable of monitoring up to eight channels of analog audio input. The physical inputs in the rear panel are organized into four channel pairs, each comprised of a left and a right channel (Figure 2). The inputs for these channel pairs are labeled on the back panel of the unit as follows:

- A1 and A2
- B1 and B2
- C1 and C2
- D1 and D2

For encoding detection, the monitor treats a group of one to three audio channels that comprise a broadcast signal as a unit. Such a logical group is called a channel set, and is identified and associated with the signal source. The monitor evaluates and reports encoding quality of the inputs collectively associated with a channel set.

The minimum number of physical inputs that can participate in a channel set is two—the channels of a physical channel pair. This is because a physical channel pair cannot be configured to split its inputs to serve two different audio sources. This means that when a channel set uses an odd number of inputs, one of the physical inputs assigned to the set remains unused.

Figure 3 provides an example illustrating the relationship between audio input signals, channel sets, and channel pairs. This figure represents a monitor configured to accept input signals from three different sources:

- The first audio source generates a three-channel surround signal. Physical inputs A1, A2, and B1 are configured to accept the signal as members of Channel Set AB. Physical input B2 is an unused member of Channel Set AB because Channel Pair B cannot be split between different audio sources.
- The second audio source generates a dual-channel stereo signal. Physical inputs C1 and C2 are configured to accept the signal as members of Channel Set C.
- The third audio source generates a single-channel mono signal. Physical input D1 is configured to accept the signal as a member of Channel Set D. Input D2 is an unused member of Channel Set D because Channel Pair D cannot be split between different audio sources.
2. Installation

The 1000-1220 Encoding Monitor is delivered to the broadcast station pre-configured for the input requirements specified by the station engineer during the pre-setup interview with Nielsen Operations. A diagram is supplied with the monitor to assist station personnel in properly connecting the unit to audio sources. Refer to Section 7 for monitor specifications.

2.1. Installation Hardware Requirements

The monitor provides several types of connections, each requiring a different type of hardware, as described in the following sections.

2.1.1. Analog Audio Input Connection

Establishing one or more audio input connections to the 1000-1220 Encoding Monitor is required. The monitor processes single-channel mono, dual-channel stereo, or three-channel surround analog input, and may accept those signals via cables with one of the following plugs:

- Three-pin XLR male plug
- Quarter-inch tip-sleeve phone plug

The number of cables needed varies depending upon the configuration established for a given unit. Each monitor comes with installation diagram describing how to connect these cables in the correct manner specific to that monitor’s configuration.
2.1.2. **Connection for Ethernet Access**

The 1000-1220 Encoding Monitor supports Transmission Control Protocol/Internet Protocol compliant with Internet Protocol version 4 (IPv4). An RJ-45 Ethernet patch cable is required to connect the Ethernet port on the rear panel of the encoder to the broadcast facility’s local area network to use any of the following optional functionality:

- Monitoring and controlling the monitor device from a PC using an HTTPS web interface (Section 4)
- Monitoring the monitor device from a PC using an SNMP interface (Section 2.4.5)
- Updating the monitor configuration, firmware, and/or license via web page upload (Section 5)
- Downloading encrypted log files (Section 4.6)

The monitor can be used on networks both with and without DHCP (Section 0).

Another option, if the monitor is not connected to a LAN, is to connect an Ethernet crossover cable from the Ethernet port on the monitor to an Ethernet port on a PC. This enables access to the web-based GUI despite the lack of LAN connectivity (Section 4).

2.1.3. **Remote Monitor Connection (DA-15 Port)**

The 1000-1220 Encoding Monitor is equipped with remote alerting relays. Using this feature is optional. When an encoding error or system error is detected by the system, a corresponding relay is asserted. This alerts a third-party remote monitoring device connected to the monitor via the DA-15 port.

To use this capability, the monitor must be connected to a third party, remote-monitoring device using a DA-15 cable with a male plug at the end that connects to the monitor. Be sure the third-party device complies with the pin out specifications found in Section 3.3.

2.1.4. **Serial Status Output Connection (Rear-Panel USB Ports)**

The rear panel on the 1000-1220 Encoding Monitor includes two USB type A ports. These ports can stream critical system events and real-time status for each of the audio sources being monitored. Events directed through these ports can be monitored by a third party, remote device that is capable of interpreting the ASCII text output (Section 3.4). For connection details, see Step 8 in Section 2.3.

2.1.5. **Antenna for Cellular Communication**

To support outgoing cellular calls to Nielsen, the monitor must have a wireless wide area network (WWAN) antenna (provided with the unit) connected to the subminiature version A (SMA) connector on the rear panel. Nielsen may use this connection for firmware/configuration/license updates, or to retrieve log files from the monitor.
2.1.6. Connection for Front-Panel USB Type A Port Access

With assistance from Nielsen, you can update the 1000-1220 Encoding Monitor firmware, configuration, and license files through the front-panel USB type A port. You can also use this port to download log files from the monitor to a USB mass storage device. For downloads, the USB file storage device must have sufficient space to accept the log files.

This USB type A input is currently limited per the USB v 1.1 specification so, while it works with a USB file storage device, this input does not provide sufficient power for an external hard disk.

**Note**
Connecting an external hard disk that requires power from the USB type A port greater than that specified by the USB v 1.1 specification may result in locking up the USB port. If the port locks up, reboot (unplug and plug in) the monitor to recover use of the port.

2.1.7. Ground Connection

The 1000-1220 Encoding Monitor provides a standard electrical ground post. (A ground wire is not provided with the unit.)

2.1.8. Power Connection

The 1000-1220 Encoding Monitor comes with a Universal Power International Electrotechnical Commission (IEC) 320 power cord. Use this cord to supply power to the unit.

2.2. Suggested Placement

To ensure that media consumers are exposed to properly encoded material, Nielsen recommends that the 1000-1220 Encoding Monitor be installed such that it receives program material that has exited the transmitter, or over-the-air broadcasts. The monitor should receive the same signal that will be detected by PPM devices worn by panelists.

The monitor operates optimally with a nominal average audio input level of +19 dBu (19.5 Vp-p). Occasional spikes above this level do not affect performance. To bring the native signal up or down to that level, the signal may need to go through an attenuator or amplifier before being input to the monitor.

2.3. Installing the 1000-1220 Encoding Monitor

**Note**
Read and follow the instructions below **before** applying power to the unit!

Follow the steps below to install the 1000-1220 Encoding Monitor.

1. Place the monitor into a 19” rack in an indoor climate controlled environment as follows:
   - Nielsen recommends allowing ½” of rack space above and below, and on each side of the encoder to allow for adequate ventilation and reduce the chance of overheating.
   - **DO NOT** block or otherwise impede airflow through the sides of the instrument.
- Select a location that will allow station personnel to easily view the status information provided by the front-panel LEDs and LCD.

2. Secure the monitor in the rack. Holes for screws are provided in each of the four front-panel corners, but other means of mounting the device may be used.

3. Use male XLR or quarter-inch tip-sleeve phone plugs to establish the monitor signal input connections.

4. Follow the instructions in the diagram provided with the monitor. This details how to establish the necessary connections to be compatible with the configuration specific to the monitor.

5. **Optional:** To monitor and control the monitor device through an Ethernet interface, do the following:
   
   a. Read and understand the information in Section 2.1.2.
   
   b. Connect an RJ-45 Ethernet cable to the rear-panel Ethernet port (item 6 in Figure 2).
   
   c. Connect the other end of the Ethernet cable into a port for the Local Area Network.

6. **Optional:** To monitor and control the monitor device using the web-based GUI without going through a local area network, do the following:
   
   a. Connect an Ethernet crossover cable to the rear-panel Ethernet port (item 6 in Figure 2).
   
   b. Connect the other end of the crossover cable to an Ethernet port on a PC.

7. **Optional:** To support remote monitoring of the monitor device, do the following:
   
   a. Read and understand the information in Section 2.1.3.
   
   b. Connect the male plug on a DA-15 cable to the female DA-15 port on the encoder rear panel (item 3 in Figure 2).
   
   c. Connect the other end of the DA-15 cable to a remote device that can comply with the pinout requirements described in Section 3.3.

8. **Optional:** To support sending encoding and system status information in real-time from the monitor device to a third-party device in ASCII text format, do the following:
   
   a. Connect a cable to one of the USB 2.0 type A ports on the monitor rear-panel (item 4 in Figure 2). Either use a USB-to-serial cable, or attach a USB-to-serial adapter at one end of the cable.
   
   b. Connect the monitor to a serial port on a device to receive serial status information from the monitor in real-time. Either of the rear-panel USB ports on the monitor may be used for this purpose, but only one port at a time may be used.
   
   c. On the connected device, run a monitor program capable of accepting and processing serial input with the properties as listed in Section 3.4, which also shows the format of the output stream.
9. **Optional:** If the monitor is to communicate with Nielsen via cellular network, connect the cellular antenna provided with the unit to the rear-panel cellular antenna port (item 5 in Figure 2).

10. **Optional:** Connect an electrical ground wire (not provided with the unit) from the ground post (Item 1 in Figure 2) to the rack.

11. Connect the female end of the power cord to the socket labeled Item 2 in Figure 2. Connect the male end of the power cord to a grounded power source. The monitor turns on when the power cord is plugged in. The LCD screen displays text and the LEDs light green.

### 2.4. Initializing Optional Features

The 1000-1220 Encoding Monitor provides a number of optional features to accommodate different modes of access. The following sections describe the set-up requirements for each of these features.

#### 2.4.1. Configuring the Monitor IP Address if the Local Area Network Uses DHCP

The 1000-1220 Encoding Monitor is by default set to use DHCP IP address on the network. The monitor obtains an IP address from the DHCP server. To locate the IP address of the monitor, navigate to the LCD menu on the monitor. Use the down arrow button to toggle the LCD menu until the IP address appears on the LCD screen as shown in Figure 4. When logging into the web interface, use this IP address (Section 2.4.3).

**Figure 4: Example of the LCD Operational Parameters View**

- **TEMP 39.000C**
- **LAST CELL STRENGTH 4**
- **IP 107.387.038.297**
- **VERSION 1.0.0.8**
2.4.2. Using the Nielsen Audio Monitor Root Certificate Authority for HTTPS Access

When accessing the monitor via HTTPS (using Ethernet), the monitor uses Secure Sockets Layer (SSL) authentication. This means that, until and unless an SSL certificate is installed on the PC connected to the monitor, any attempt to access the monitor via HTTPS causes a warning message to appear (Figure 5). The message does not prevent access, but clicking through it adds another step to the login process. Nielsen Audio recommends installing the Nielsen Audio Monitor Root CA certificate provided with the monitor. For detailed information on the purpose of the certificate and for installing the certificate for PCs, see Appendix A.

Nielsen Audio recommends that the network administrator of every facility install the Nielsen Audio Monitor Root CA certificate on the PCs used to access the monitor. Once the certificate is installed, the warning message shown in Figure 6 no longer appears during the login process.

Figure 5: SSL Certificate Information on the Encoder Root Web Page

![SSL Certificate Information](image-url)
2.4.3. Logging into the Monitor Web Interface through Ethernet

1. Launch a web browser (Internet Explorer, Firefox, Chrome, Opera, or Safari) on the computer connected to the encoder and enter https://IP-address in the address field, where IP_Address is the address as seen on the LCD menu described in section 3.1.8.

   **Note** If an SSL certificate for the monitor has been installed on the PC, the URL to access the monitor is different. See Appendix A for instructions on installing the Nielsen Audio Monitor Root CA certificate and creating the URL for monitor access when using the certificate.

2. One of the following occurs:
   - If the certificate has been installed, go to step 3.
   - If the Nielsen Audio Monitor Root CA certificate has not been installed on the PC, a warning message appears as shown in or similar to Figure 6. Depending on the browser you use, this message may have a different appearance. Click Continue to this website. Go to step 3.

   ![Figure 6: SSL Certificate Warning for Internet Explorer on Windows 7](image)

   **Note** When using the Safari® web browser on a Windows machine, the browser continues to warn about a missing SSL certificate, even after the certificate is installed. In this instance, ignore the message.

3. On the **Windows Security** (login dialog box), enter one of the following (the user name and password are case-sensitive):

<table>
<thead>
<tr>
<th>Access Type</th>
<th>User Name</th>
<th>Password</th>
</tr>
</thead>
<tbody>
<tr>
<td>Read/write</td>
<td>Station</td>
<td>C0lumb1aMD</td>
</tr>
<tr>
<td>Read only</td>
<td>Guest</td>
<td>G@t3w@y</td>
</tr>
</tbody>
</table>
4. Click OK. The Monitor Status page appears. For details on using the web interface, see Section 4.2.

2.4.4. Setting Up the Encoding Monitor without a Network

If no local network is available to support accessing the monitor through the web-based GUI, you can connect a local PC to the monitor by Ethernet as follows.

1. Connect an Ethernet crossover cable from a local PC to the monitor.
2. In Windows, set the static IP address for the PC.
3. In the Network Configuration page in the web interface, set the IP address for the monitor (Section 0).
4. Log into the web interface. See Section 4.

2.4.5. Setting Up SNMP for the Monitor

The 1000-1220 Encoding Monitor supports the use of the Simple Network Management Protocol (SNMP) to provide status information to external systems. The monitor supports read-only requests and may be configured to send notifications to a management device.

- There is one Management Information Base (MIB) to support the read-only requests. Station users can download the MIB from the web user interface. The SNMP community string for this MIB is nielsen1220monitor. See Section 4.9.
- A separate MIB supports the notifications and may be viewed or downloaded from the web user interface. The community string for notifications defaults to EM1220Notifications, however, a Station user can configure this value. For SNMP notifications to function correctly, the address of one to five network managers must be configured. See Section 4.10.

2.4.6. Synchronizing Monitor System Time

The 1000-1220 Encoding Monitor uses its internal clock to confirm accurate timestamp of encoded material, so the internal clock must be accurate. If Nielsen configured the monitor to connect to the Nielsen portal and can access the Nielsen portal through a wired Ethernet or cellular modem interface, the monitor’s internal clock automatically synchronizes to the clock of the Nielsen portal during each portal connection session.
2.4.7. Using the Cellular Connection to Synchronize the Monitor Real Time Clock

The 1000-1220 Encoding Monitor synchronizes its internal clock with time provided by the Nielsen portal automatically every time it connects to the portal. Nielsen configures the monitor to use cellular communication with the portal when any of the following conditions holds:

- The monitor is not configured to use the wired Ethernet connection for Nielsen portal connections.
- The monitor is not connected to the wired Ethernet.
- The wired Ethernet is behind a closed firewall.

Users only need to connect the cellular antenna as described in Step 9 of Section 2.3. Nielsen establishes the appropriate configuration for cellular communication with the portal. Station users need not perform any further configuration to cause time synchronization to take place via the cellular network connection.

If configured for cellular communication, to confirm that functionality, the unit automatically attempts to connect with Nielsen through the cellular network when it first boots up. The front-panel LCD displays the success or failure of this call.
3. Operation

The following sections address how to use monitor functionality not accessible via the web interface. Station and Guest users can access these views.

3.1. Using the Front-Panel LCD, LEDs, and Buttons

The 1000-1220 Encoding Monitor front panel is equipped with four red/green LEDs, an LCD display, six buttons, and a type A USB port as shown in Figure 8.

Figure 8: 1000-1220 Encoding Monitor Front Panel

The LCD displays four lines of information organized in six different views:

- Channel Set Status view
  
  In this view, the LCD displays status information for each channel set that the unit monitors. Depending on the way the monitor channel pairs are configured into channel sets, each input signal the device monitors may use one or two LCD lines to display its status information.

  The Channel Set Status view is the default view displayed on the LCD except when the system is booting, or any system alarms or critical events are in effect. This view can operate in two modes:
  
  - Default mode: displays channel set status messages in short form.
  - Interactive mode: the user can traverse among and view channel set status messages in short and long form.

- System Status view

  In this view, the LCD displays alarm/alert messages reporting the current monitor system status. This is the default view displayed on the LCD when a system alarm is in effect or when the system is booting. The user may also use the front panel buttons to select this view.

- Audio Levels view

  In this view, the LCD displays information about the audio input level for each channel set the device monitors. Depending on the way the monitor channel pairs are configured into channel sets, each input signal the device monitors may use one or two LCD lines to display its audio level information. The LCD displays this view only when the user has selected it using the front-panel buttons.
• Operational Parameters view

In this view, the LCD displays basic system information about the monitor. The LCD displays this view only when the user has selected it using the front-panel buttons.

• System Management View

This view gives the user access to basic hardware functions of the monitor.

• Interactive Feedback

Certain activities, such as a configuration or firmware update through a USB file storage device, require that the monitor provides feedback on the LCD. In these circumstances, the Interactive Feedback overrides the current LCD view.

The six, front-panel buttons provide two functions:

• The ability to navigate between LCD views

• The ability to navigate within the Channel Set Status view in Interactive mode

The four LEDs can reflect either the System status or the status for each channel set (Section 3.1.3).

3.1.1. Interpreting Channel Set Information on the Front Panel LCD

Two of the monitor front-panel LCD views provide status information about logical channel sets, but the information is organized with respect to physical channel pairs. These are the Channel Set Status view (described in Section 3.1.5) and the Audio Levels view (described in Section 3.1.7). To interpret the front-panel LCD and LED information provided by these views, keep the following in mind:

• Each line of the LCD reflects the status/audio level of one of the physical channel pairs, numbered from one to four.

• The status/audio level of a channel pair is the status/audio level of the channel set of which it is a member—this applies whether one or both channels of the pair are configured. See Section 1.7 for an explanation of how channels and channel pairs relate to each other.

• If no system alarm is in effect, each LED reflects the encoding status of one of the physical channel pairs, numbered from 1 to 4.

Figure 9 shows an example using the Channel Set Status view. In this figure:

• Channel Set AB is configured as input from KCCC. This consists of both Channel Pair A and Channel Pair B. Therefore lines one and two of the LCD display reflect the status of the signal from KCCC-TV.

• Channel Set C is configured as input from WNII. Therefore, line 3 of the LCD display reflects the status of the signal from WNII-FM.

• Channel Set D is configured as input from WAAA-AM. Therefore, line 4 of the LCD display reflects the status of the signal from WAAA-AM.
3.1.2. The Default LCD View

The front-panel LCD default view refers to the LCD view the monitor displays without intervention from the user. When the user navigates the LCD away from the default view using the front-panel buttons, the LCD reverts to the default view after a period of front-panel button inactivity. See Sections 3.1.6 and 3.1.5.

The LCD view the monitor uses as the default varies depending on the following conditions:

- When the monitor is booting up, the default LCD view in effect is the System Status view.
- Once the boot process has completed, if system alarms are detected, the default LCD view remains the System Status view.
- Once the boot process has completed, if no system alarms are detected, the default Channel Set Status view is in effect.

If an interactive event is triggered, such as the user inserting a USB file storage device into the front-panel USB port, a feedback message appears. Interactive messages obscure the current default view until they expire or are cleared by the user.

3.1.3. Front-Panel LED Behavior

The four front-panel LEDs light in different ways depending upon various status conditions. The colored circle icons appearing in this section are used throughout this document to represent the LED behaviors described below. These LEDs provide three categories of information:

- **System power status**
  
  If the LEDs are lit, regardless of color, the unit is powered on. This is, however, not the ultimate indicator for whether the unit is powered. If all four channel sets are inactive, all four LEDs are dark. In this case the LCD is lit and displays the **INACTIVE** status for each channel set.

- **System alarm status**
  
  The four front-panel LEDs light solid red when:
o The system is booting up

o A system alarm is in effect and the front-panel LCD is displaying the System Status view

- Channel pair encoding status

If no system alarm is in effect and the system is not in the process of booting up, the four front-panel LEDs always light in a manner that reflects the encoding status of the channel sets as reported in the Channel Set Status view (Section 3.1.1.) This is regardless of which LCD view is currently displayed.

- When a channel set is encoded correctly, its LED(s) are solid green.
- When a channel set is not configured to detect encoding, the set is said to be inactive, and its LED(s) remain dark.
- When one or more alarms are present for a channel set, its LED(s) flash red/dark.
- When one or more alerts are present for a channel set with no alarms present at the same time, its LED(s) flash green/dark.

3.1.4. Navigating Among LCD Views

The front-panel buttons can be used to display a different LCD view if the LCD is not currently displaying one of the following:

- System boot-up messages
- Channel Set Status view in Interactive mode
- Interactive Feedback view

If none of the above conditions is in effect, use the up-arrow (↑) and down-arrow (↓) front-panel buttons to navigate among the LCD views in the order shown below:

- Channel Set Status view (in default mode)
- System Status view
- Audio Levels view
- Operational Parameters view
- System Management view (in default mode)
- Language Selection view (not currently operational)

Navigation among views occurs in a circular fashion so pressing the up-arrow (↑) button when displaying the Channel Set Status view displays the System Management view, and pressing the down-arrow (↓) button when displaying the System Management view displays the Channel Set Status view. Figure 10 provides a map of the LCD display views and how to use the front-panel buttons to navigate among them.
When the user has pressed the up-arrow (↑) or down-arrow (↓) button to navigate away from the default view, the LCD restores its display to the default view after a period of inactivity. The default LCD view varies depending upon the monitor status; see Section 3.1.2 for details. Each of these LCD views is described in detail in the following sections. Appendix C provides a detailed reference map of all five views in a single diagram.

### 3.1.5. Using the LCD Channel Set Status View

*Note* See also Section 4.2, “Monitor Status (Home) Page” for a description of the web interface view of this information.

The Channel Set Status view behaves differently depending upon its current mode—which in turn depends on the status conditions in effect at the time, and the selections the user makes with the front-panel buttons. These modes are described below, with information about the front-panel button functionality in each mode, and how the LCD transitions between modes.

In modes that respect the button activity timeout, if there is no front-panel button activity for a period, the LCD reverts to its current default view. Figure 11 provides a map of the Channel Set Status view and shows how to use the front-panel buttons to navigate within it.
Channel Set Status View: Default Mode

This is the default LCD view, unless system alarm(s) or interactive event(s) are in effect, or the system is booting up.

- Each line of the LCD corresponds to one of the monitor's physical channel pairs. LCD line one displays status information for Channel Pair A, LCD line 2 displays status information for Channel Pair B, and so forth.
- Each line of the LCD displays the status for the channel set of which the corresponding channel pair is a member. (See Section 3.1.1 for a detailed explanation of how channel set status translates to the LCD.)
- Each LCD line shows one of the following:
  - **ENCODING OK**
  - Short form alert/alarm message
  - Cycling multiple alarm/alert messages; alert messages appear only if no alarm conditions are in effect
- No cursor is displayed.
- When this is the default LCD view, there is no change for the front-panel button timeout.
- The LEDs light in a manner to reflect the current encoding status of each channel set, as described in Section 3.1.3.

Figure 12 provides an example of the LCD displaying the Channel Set Status view in Default mode. In this example:

- Channel Pairs A and B are configured as Channel Set Zero, monitoring KCCC-TV. Encoding is good.
- Channel Pair C is configured as Channel Set One, monitoring WNII-FM. The monitor has detected two alarm conditions, and the display alternates between two messages: **UNKNOWN CODE** and **LOW LEVEL**.
- Channel Pair D is not configured to monitor any input, so the LCD reports it as **INACTIVE**.

**Figure 12: LCD Channel Set Status View in Default Mode**

In Channel Set Status view, Default mode the front-panel buttons behave as summarized in Table 2.

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>↓</td>
<td>Traverse LCD display to System Status view.</td>
</tr>
<tr>
<td>↑</td>
<td>Traverse LCD display to Operational Parameters view.</td>
</tr>
</tbody>
</table>
Channel Set Status View in Interactive Mode: Viewing Short Messages

The LCD displays Channel Set Status view Interactive mode when the user presses √ from the Channel Set Status view Default mode. When Interactive mode is first triggered:

- The display appears the same as in the Default mode (Section 3.1.5) with the exception that multiple messages for a single channel set no longer appear in rotation.
- A cursor blinks on character 1 of line 1.
- The button activity timeout is in force.
- The LEDs light in a manner to reflect the current encoding status of each channel set, as described in Section 3.1.3.

Figure 13 provides an example of the Channel Set Status view in Interactive mode displaying short messages. In this example, the same messages are displayed for each Channel Set as shown in Figure 12, but the messages for Channel Set One (WNII-FM) no longer cycle.

Figure 13: Channel Set Status View Interactive Mode Displaying Short Messages

The notable feature of Interactive mode is that the front-panel buttons can be used to move the blinking cursor within the Channel Set Status view and gather more detailed information. When Interactive mode is triggered, the front-panel buttons behave as described Table 3.

Table 3: Channel Set Status View When Viewing Short Messages

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>↓ ↑</td>
<td>Traverse up/down—cursor moves among the four lines of the Channel Set Status view.</td>
</tr>
<tr>
<td>← →</td>
<td>If on a line with one alarm/alert message: no effect If on a line with multiple status messages in force: The previous (←) or next (→) short form alert/alarm message in the sequence appears with each button press; the message list is circular. If a channel set has one or more alarm conditions in effect at the same time as one or more alerts, the LCD does not include the alert messages in the cycling display in Channel Set Status view Default mode. (Alarm conditions take precedence.) But when using ← and/or → to traverse the list of current messages in Interactive mode, all alarm/alert messages currently in force display. (The ↑ and ↓ still allow traversal to other LCD lines after ← or → has been pushed.)</td>
</tr>
</tbody>
</table>
Channel Set Status View in Interactive Mode: Viewing Long Messages

The LCD displays an alert/alarm message in long form if the user presses √ when the LCD cursor appears on a line displaying a short form alarm/alert message, as described in Section 3.1.5. When the long form of an alert/alarm message is displayed:

- The alarm/alert information uses all four lines of the LCD screen as follows:
  - LCD line 1 displays the short form message and a numeric status code
  - LCD lines 2 and 3 display the detailed message, up to 40 characters long.
  - LCD line 4 displays Contact Support when any alarm is active. The cursor does not show in this view.
- The button activity timeout is in force.
- The LEDs light in a manner to reflect the current encoding status of each channel set, as described in Section 3.1.3.

Figure 14 provides an example of the LCD displaying the Channel Set Status view displaying the detailed information for the UNKNOWN CODE message, which is one of the messages in effect for Channel Set One in Figure 13.

Figure 14: LCD Displaying Long Form of UNKNOWN CODE Message

When a long form alert/alarm message is displayed, the front-panel buttons behave as described in Table 4.

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>√</td>
<td>Toggle to viewing current short message in long form. See Section 3.1.5.</td>
</tr>
<tr>
<td>X</td>
<td>Exit Interactive mode. Return to Default mode, described in Section 3.1.5.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>↓ ↑</td>
<td>Has no effect.</td>
</tr>
<tr>
<td>← →</td>
<td>If only one alert/alarm condition is in effect for the current channel set, no effect. If multiple alert/alarm conditions are in effect for the current channel set, the previous (←) or next (→) long form message in the sequence appears with each button press; the message list is circular.</td>
</tr>
<tr>
<td>✓</td>
<td>Has no effect.</td>
</tr>
<tr>
<td>X</td>
<td>Toggle to viewing current messages for all channel sets in short form. See Section 3.1.5.</td>
</tr>
</tbody>
</table>
3.1.6. **Using the LCD System Status View**

Whenever a system alarm is in effect or when the system is booting up, the front-panel LCD displays the System Status view by default. This view displays the system alarm and/or alert messages currently in effect on the monitor. Users may navigate to this view from other views using the ↓ or ↑ buttons, as shown in Figure 10.

When the System Status view is displayed:

- The alarm/alert information uses all four lines of the LCD screen.
  - LCD line 1 displays the short form message and a corresponding numeric status code (Nielsen personnel can use this code if you need to call them for troubleshooting)
  - LCD lines 2 and 3 display the detailed message, up to 40 characters long.
  - LCD line 4 displays the phone number to call for support.
- If multiple alarm/alert conditions are in effect, the messages alternate in a cycling sequence.
- When this is the default LCD view, there is no change for the front-panel button timeout. Otherwise the front-panel button activity timeout is in force.
- All the LEDs are red if a system alarm is in effect. Otherwise, they light in a manner to reflect the current encoding status of each channel set, as described in Section 3.1.3.

Figure 15 illustrates the System Status view with a sample alarm message, as well as the message displayed when no system alarms or alerts are in effect. If multiple alarm/alert conditions are in effect, the messages alternate in a cycling sequence.

![Figure 15: Sample Messages in the System Status View](image)

When the System Status view is displayed, the front-panel buttons behave as describe in Table 5:

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>↓</td>
<td>Traverse LCD display to Audio Levels view.</td>
</tr>
<tr>
<td>↑</td>
<td>Traverse LCD display to Channel Set Status view.</td>
</tr>
<tr>
<td>← →</td>
<td>If only one system status condition is in effect, this button has no effect. If multiple system status conditions are in effect, cycling display stops. The previous (←) or next (→) system status message in the sequence appears with each button press; the message list is circular. Message cycling resumes after one minute if no other button is pushed.</td>
</tr>
</tbody>
</table>
### 3.1.7. Using the LCD Audio Levels View

This view displays the audio input level the monitor detects for each configured channel set. Users may use the ↓ or ↑ buttons to navigate to this view from other views, as shown in Figure 10.

When the Audio Levels view is displayed:

- Each line of the LCD corresponds to one of the monitor's physical channel pairs. LCD line 1 displays audio level information for Channel Pair A (inputs A1 and A2, or 1 and 2), LCD line 2 displays audio level information for Channel Pair B (inputs B1 and B2, or 3 and 4), and so forth.

- Each line of the LCD displays the name of the channel set of which the corresponding channel pair is a member. (See Section 3.1.1 for a detailed explanation of how channel set audio level information translates to the LCD.)

- Each LCD line displays audio level information for channels A and B of a channel pair as described below:
  - Audio input level is represented on a relative scale with numbers ranging from 0 to 5. All values within this scale represent audio input levels that can support proper encoding.
  - The letter H indicates the audio level for the channel is too high to support reliable encoding.
  - The letter L indicates the audio level for the channel is too low to support reliable encoding.
  - The letter X indicates the channel is not configured.

Table 6 details the Audio Input Level Relative Scale Assignments.

#### Table 6: Audio Input Level Relative Scale Assignments

<table>
<thead>
<tr>
<th>Level</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>level &lt; -60 dBFS</td>
</tr>
<tr>
<td>0</td>
<td>-60 dBFS &lt;= level &lt; -51.5 dBFS</td>
</tr>
<tr>
<td>1</td>
<td>-51.5 dBFS &lt;= level &lt; -43 dBFS</td>
</tr>
<tr>
<td>Level</td>
<td>Range</td>
</tr>
<tr>
<td>-------</td>
<td>------------------------</td>
</tr>
<tr>
<td>2</td>
<td>-43 dBFS &lt;= level &lt; -34 dBFS</td>
</tr>
<tr>
<td>3</td>
<td>-34 dBFS &lt;= level &lt; -25.5 dBFS</td>
</tr>
<tr>
<td>4</td>
<td>-25.5 dBFS &lt;= level &lt; -17 dBFS</td>
</tr>
<tr>
<td>5</td>
<td>-17 dBFS &lt;= level &lt; -8.5 dBFS</td>
</tr>
<tr>
<td>H</td>
<td>&gt;= -8.5 dBFS</td>
</tr>
</tbody>
</table>

Figure 16 provides an example of the Audio Levels view. In this figure, Channel Pairs A and B are configured to accept 3-channel surround input from KCCC-TV as follows:

- Channel A1 of Channel Pair A (Input One) reports an audio level of 0 on the relative scale.
- Channel A2 of Channel Pair A (Input Two) reports an acceptable audio level of 1 on the relative scale.
- Channel B1 of Channel Pair B (Input Three) reports an acceptable audio level of 2 on the relative scale.
- Channel B2 of Channel Pair B (Input Four) is not configured to accept input, and displays X.
- Channel Pair C is configured to accept stereo input from WNII-FM.
- Channel C1 of Channel Pair C (Input Five) reports an acceptable audio level of 5 on the relative scale.
- Channel C2 of Channel Pair C (Input Six) displays an H to report that its audio input level is too high to support reliable encoding.
- Channel Pair D (Inputs Seven and Eight) is not configured to accept input, and displays X for each channel.

Figure 16: Example of the LCD Audio Levels View

When the LCD displays the Audio Levels view, the front-panel LEDs light in a manner to reflect the current encoding status of each channel set, as described in Section 3.1.3. The front-panel button activity timeout is in force.

When the Audio Levels view is displayed, the front-panel buttons behave as described in Table 7.
### Table 7: Front-Panel Button Behavior in Audio Levels View

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>↓</td>
<td>Traverse LCD display to Operational Parameters view.</td>
</tr>
<tr>
<td>↑</td>
<td>Traverse LCD display to System Status view.</td>
</tr>
<tr>
<td>← →</td>
<td>Has no effect.</td>
</tr>
<tr>
<td>√</td>
<td>Has no effect.</td>
</tr>
<tr>
<td>X</td>
<td>Has no effect.</td>
</tr>
</tbody>
</table>

#### 3.1.8. Using the LCD Operational Parameters View

The Operational Parameters view displays the following information about the monitor:

- Internal temperature in Celsius
- Strength of the cellular signal the monitor detects as follows:
  - An integer ranging from 1 to 9 indicates an acceptable cell signal strength range
  - L indicates a low signal level (less than 1)
  - H indicates a high signal level (greater than 9)
- Internet Protocol (IP) address in the format XXX.XXX.XXX.XXX
- Software version in the format X.X.X.X

Figure 17 provides an example of the information displayed in the Operational Parameters view.

![Figure 17: Example of the LCD Operational Parameters View](image)

When the LCD displays the Operational Parameters view, the front-panel LEDs light to reflect the current encoding status of each channel set, as described in Section 3.1.3. The front-panel button activity timeout is in force.

When the Operational Parameters view is displayed, the front-panel buttons behave as describe in Table 8.

### Table 8: Front-Panel Button Behavior in Operational Parameters View

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>↓</td>
<td>Traverse LCD display to Audio Levels view.</td>
</tr>
<tr>
<td>↑</td>
<td>Traverse LCD display to Channel Set Status view.</td>
</tr>
</tbody>
</table>
### 3.1.9. Using the System Management View

The LCD System Management view gives users access to the following hardware functions of the monitor:

- **Shutdown**
  Perform an orderly shutdown and power off the monitor. (After using this function, to turn the monitor back on, the power cord must be unplugged at either end and then plugged back in again.)

- **Reboot the monitor**
  To restart the monitor software and hardware.

- **Immediate Connect**
  Force an immediate attempt to connect with Nielsen to transmit status information to the Nielsen portal, and check for a new command script. If there is a new command script available, the monitor will download and execute it.

- **Reset network parameters**
  Reset the wired Ethernet interface to the default DHCP setting and obtain a dynamic IP address from the DHCP server on the network.

The System Management view behaves differently depending upon its mode—Default, Interactive, or Confirmation. The current mode is determined by the selections the user makes with the front-panel buttons. The modes are described below, with information about the front-panel button functionality in each mode, and how the LCD transitions between modes.

In all modes of the System Management view:

- The front-panel button activity timeout is in force (Section 3.1.2).
- The LEDs light in a manner to reflect the current encoding status of each channel set, as described in Section 3.1.3.

Figure 18 provides a map of the System Management view and how to use the front-panel buttons to navigate within it.
System Management View: Default Mode

Figure 19 shows the LCD displaying the System Management view in Default mode. All four of the functions offered are displayed, and the front-panel buttons behave as summarized in Table 9.

Table 9: Font-Panel Button Behavior in System Management View Default Mode

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>↓</td>
<td>Traverse LCD display to Channel Set Status view.</td>
</tr>
<tr>
<td>↑</td>
<td>Traverse LCD display to Operational Parameters view.</td>
</tr>
<tr>
<td>← →</td>
<td>Has no effect.</td>
</tr>
<tr>
<td>√</td>
<td>Enter Interactive mode. See Section 3.1.9.</td>
</tr>
<tr>
<td>×</td>
<td>Has no effect.</td>
</tr>
</tbody>
</table>
System Management View: Interactive Mode

The LCD displays System Management view in Interactive mode when the user presses √ from the System Management view Default mode. When Interactive mode is first triggered the display appears the same as in Default mode with the exception that a blinking cursor appears on character 1 of line 1, as shown in Figure 20.

![Figure 20: LCD System Management View in Interactive Mode](image)

In System Management view Interactive mode, the user may navigate among the four display lines and select the function to perform. The front-panel buttons behave as summarized in Table 10.

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>↓ ↑</td>
<td>Traverse up/down—cursor moves among the four lines of the System Management view.</td>
</tr>
<tr>
<td>← →</td>
<td>Has no effect.</td>
</tr>
<tr>
<td>√</td>
<td>Select the current function. Toggle to System Management view in Confirmation mode. See Section 3.1.9.</td>
</tr>
<tr>
<td>x</td>
<td>Exit Interactive mode. Return to Default mode, described in Section 3.1.9</td>
</tr>
</tbody>
</table>

System Management View: Confirmation Mode

The LCD displays System Management view in Confirmation mode when the user presses √ from the System Management view Interactive mode to select a System Management function. When Confirmation mode is triggered, the LCD displays the name of the function selected, and two options: OK and Cancel. The cursor initially appears on the first character of the OK option. Figure 21 illustrates this with the Reboot Monitor function selected.

![Figure 21: System Management View Confirmation Mode](image)

In System Management view Confirmation mode, the front-panel buttons behave as summarized in Table 11.
### Table 11: Front-Panel Button Behavior in System Management View Confirmation Mode

<table>
<thead>
<tr>
<th>Button</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>↕</td>
<td>Traverse up/down—cursor moves between OK and Cancel.</td>
</tr>
<tr>
<td>← →</td>
<td>Has no effect.</td>
</tr>
<tr>
<td>√</td>
<td>Perform the current function. Toggle to System Management view in Default mode, described in Section 3.1.9.</td>
</tr>
<tr>
<td>✗</td>
<td>Exit Interactive mode. Return to System Management view in Default mode, described in Section 3.1.9.</td>
</tr>
</tbody>
</table>

#### 3.1.10. LCD Interactive Feedback

Some activities the user may perform on the monitor require that the unit display feedback messages in the course of the activity. Such activities include performing a configuration or firmware update using the USB port on the front panel. When these messages appear, they persist for a short time until they are replaced either by another feedback message or, for a longer interval, until they timeout and the LCD display reverts to the current default view.

#### 3.2. Initiating Monitoring

The 1000-1220 Encoding Monitor automatically begins monitoring input signals as soon as it has been installed as described in Section 2.3 and power is applied to the unit. No further activity is required to initiate monitoring.

#### 3.3. Using Remote Monitoring

You can use a third-party device to remotely monitor the 1000-1220 Encoding Monitor to do the following:

- Remotely monitor whether encoding is detected on each pair of signal inputs (Section 3.3.1).
- Remotely monitor system status of the 1000-1220 Encoding Monitor device itself (Section 3.3.2)
- Stream critical system events and real-time status for each of the monitored audio sources (Section 3.4)
3.3.1. DA-15 Pin-Outs for Remote Monitoring of Encoding Error Status

On the rear-panel of the 1000-1220 Encoding Monitor, connect to the DA-15 port as described in Step 7 of Section 2.3. Each of the monitor input channel pairs corresponds to three pins in the DA-15 port—one common, one normally open (NO) and one normally closed (NC). The pins are connected to an internal relay of the monitor. The relay contacts are rated at 0.3A max, 24VDC.

**Important** To use these features, the remote device must comply with these pin-out specifications.

Channel Pair A Pin-Outs

**Table 12: Pin-Outs for Channel Pair A**

<table>
<thead>
<tr>
<th>Channel Pair A</th>
<th>Channel Pair A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pin 2: ENCODING OK</td>
<td>Pin 9: ALARM</td>
</tr>
<tr>
<td>Pin 1</td>
<td>Shorted</td>
</tr>
</tbody>
</table>

Figure 22 shows the DA-15 pin-outs and relays for an energized or "good" state.
Channel Pair B Pin-Outs

Table 13: Pin-Outs for Remote Encoding Status Monitoring for Channel Pair B

<table>
<thead>
<tr>
<th>Channel Pair B Pin-Outs</th>
<th>Channel Pair B Pin-Outs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pin 10: ENCODING OK</td>
<td>Pin 3: ALARM</td>
</tr>
<tr>
<td>Pin 10: Shorted</td>
<td>Pin 10: Shorted</td>
</tr>
</tbody>
</table>

Figure 23 shows the DA-15 pin-outs and relays for an energized or “good” state.

Channel Pair C Pin-Outs

Table 14: DA-15 Pin-Outs for Remote Monitor Status Monitoring for Channel Pair C

<table>
<thead>
<tr>
<th>Channel Pair C Pin-Outs</th>
<th>Channel Pair C Pin-Outs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pin 5: ENCODING OK</td>
<td>Pin 12: ALARM</td>
</tr>
<tr>
<td>Pin 4: Shorted</td>
<td>Pin 4: Shorted</td>
</tr>
</tbody>
</table>

Figure 24 shows the DA-15 pin-outs and relays for an energized or “good” state.
Channel Pair D Pin-Outs

Table 15: DA-15 Pin-Outs for Remote Monitor Status Monitoring for Channel Pair D

<table>
<thead>
<tr>
<th>Pin</th>
<th>13</th>
<th>13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pin 14: ENCODING OK</td>
<td>Shorted</td>
<td></td>
</tr>
<tr>
<td>Pin 6: ALARM</td>
<td></td>
<td>Shorted</td>
</tr>
</tbody>
</table>

Figure 25 shows the DA-15 pin-outs and relays for an energized or “good” state.

Figure 25: Pin-Outs and Relays for Channel Pair D Encoding Status Monitoring

3.3.2. DA-15 Pin-Outs for Remote Monitor of System Status

To support remote monitoring of the system error status of the 1000-1220 Encoding Monitor, the connections described in Table 16 below are provided in the DA-15 port at the rear of the encoder. The pins are connected to an internal relay of the monitor. The relay contacts are rated at 0.3A max, 24VDC.

Table 16: DA-15 Pin-Outs for Remote System Error Monitoring

<table>
<thead>
<tr>
<th>Pin</th>
<th>7</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pin 8: Monitor OK</td>
<td>Shorted</td>
<td></td>
</tr>
<tr>
<td>Pin 15: ALARM</td>
<td></td>
<td>Shorted</td>
</tr>
</tbody>
</table>

Figure 26 shows the DA-15 pin-outs and relays for an energized or “good” state.
3.4. Using the Rear Panel Serial Status Output

The 1000-1220 Encoding Monitor is equipped with two USB type A ports on the rear of the unit that can stream critical system events and real-time status for each of the audio sources being monitored. To use this capability, connect the monitor to a third-party device as described in Step 8 of Section 2.3. On the connected device, run a monitor program capable of accepting and processing serial input with the properties listed below:

- 19200 baud
- 8 data bits, no parity bits
- 1 stop bit

To view this status information, the third-party device must be capable of interpreting the ASCII text messages output from the monitor, which comply with the formats described below.

- Format for encoding status messages:
  \[ <\text{NOTE@P}[\text{Linenum}] \ [\text{TimeStamp}] \ [\text{ENCODING}] \ [\text{Severity}] \ [\text{Entity ID}] \ [\text{Message}] > \]

- Format for system status messages (including messages generated during system boot up):
  \[ <\text{NOTE@P}[\text{Linenum}] \ [\text{TimeStamp}] \ [\text{SYSTEM}] \ [\text{Severity}] \ [\text{Message}] > \]

Where:

- Linenum is a monotonically increasing integer that resets when it reaches 4,294,967,296 \(2^{32}\).
- TimeStamp is a date-time value associated with the event to the closest millisecond. The format is \textbf{YYYY-MM-DD HH:MM:SS.mmm}, where:
  - \textbf{YYYY} is the four-digit year
  - \textbf{MM} (first occurrence) is the month, ranging from 01 to 12
    - \textbf{DD} is the day of the month, ranging from 01 to 31
    - \textbf{HH} is hour of the day, ranging from 00 to 23
• **MM** (second occurrence) is minutes, ranging from 00 to 59
• **SS** is seconds, ranging from 00 to 59
• **mmm** is milliseconds, ranging from 000 to 999

  o **Severity** indicates the severity level of the event, either INFO, ALERT, or ALARM.
  o **Entity ID** is provided only if event type is ENCODING.
  o **message** is text that provides details of the status.

The monitor generates messages regularly. When no alerts or alarms are active, the **message** reads Encoding OK; the incrementing **Linenum** and **TimeStamp** confirm activity when the message does not change. The monitor generates messages for alert and/or alarm conditions when they are first detected, and then at regular intervals as long as the conditions are active.

### 3.5. Retrieving Log Files

The Nielsen 1000-1220 Encoding Monitor generates health and status information during its operation, which is stored in either log reports or system logs. The log reports contain health and status information related to the encoding monitoring and the system logs contain information related to the health and status of the system and software. While none of these files are useful to the end user, they can provide useful information to Nielsen support staff when attempting to address an issue at a monitoring site. To download these log files, do one of the following:

• Get instructions from Nielsen support staff on use of the USB port on the front panel. For information on contacting Nielsen, see the Contacts section on page 9.
• Use the web interface to download the files (Section 4.6).
4. Using the Web Interface

Note For instructions on logging into the web interface, see Section 2.4.3.

The Nielsen 1000-1220 Encoding Monitor web interface provides easy access to several features also available on the LCD display. The web interface is accessible by a PC using a web browser. The web interface provides access to status and configuration information associated with the monitor. The interface has been tested with these browser versions: Internet Explorer 10 and 11, Firefox 32, Chrome 37.0.2062.120, and Safari 5.1.7.

As with all web interfaces, status information presented on the monitor web interface pages reflects the status values at the time the page was last refreshed. Monitor status information is updated automatically at a 20-second interval or when a refresh is initiated by the user. The web interface can be accessed via the rear-panel Ethernet connection (as described in Section 2.4.3.) Some information presented on the monitor web interface is also accessible through the front-panel menu (See Section 3.1 for detailed charts to navigate the front-panel menu).

Important Some web browsers cache the authentication for web pages. This means that once a user has logged into the monitor web interface through a browser window, if the window is subsequently used to access other web pages not associated with the monitor, that window can access the monitor again simply by pointing it at the appropriate URL—an additional login is not required. Some users find this a convenience, but it does present a security risk, because unauthorized users (including malware scripts) may exploit this feature to access the authenticated monitor web pages. As a sound security practice, Nielsen recommends that users CLOSE the browser (not just the current tab, but all running instances of the browser) after completing activities on the monitor web pages.

4.1. Web Interface Overview

All pages of the web interface (Figure 27) share certain characteristics to present a consistent look and feel to the user.

- Drop-down menu (Items 1 and 6, described below Figure 27)
- The blue title bar across the top of the page displays
  - Name assigned to the monitor (Item 2 in Figure 27)
  - Serial number of the monitor (Item 3)
  - Current user type—Guest or Station (Item 4)
  - Link to log out of the monitor web session (Item 5).
- Contact information for product support (Item 7)
The title bar and footer information are the same for all pages in the web interface. The menu of links (Item 1 in Figure 27) is used to navigate among pages. The contents of the menu are different for a user with read/write rights (Figure 28) from for a user with read-only rights. To expand a closed menu or close and open menu, click the blue arrow.
The following descriptions appear in the order they appear on the menu for Station users:

- **Monitor Status:** Guest and Station can view status information for the input signals the system is monitoring, as well as software and hardware status for the monitor system itself. See Section 4.2.

- **Network Configuration:** Station users can view and edit the configuration of the monitor rear-panel Ethernet port. See Section 0 for more information.

- **Client Management:** Station users can enter an IP address to enable an MCEM to be used as an NTP server. See Section 4.4 for more information.

- **Device & Channel:** Guest and Station users can view information about the configuration of the audio channels input to the monitor. See Section 4.4 for more information.

- **Upload/Download File:** Station users can upload software and configuration updates to the monitor system, or download the current monitor configuration or log files to a PC. Guest users can download files. See Section 4.6 for more information.

- **View/Download MIB:** Station users can download the monitor SNMP Control Management Information Base (MIB), which can be used to retrieve information about the health and status of the monitor using an SNMP protocol (Section 4.7).

- **View/Edit SNMP Notification Configuration:** Station users can set up the monitor to send SNMP notifications to a list of up to five SNMP manager servers.

  Note that the SNMP Notification MIB accessed through this page is independent from the SNMP Control MIB described in Section 4.7 and provides access to establish SNMP Manager server(s) to receive event notification traps from the monitor system. See Section 4.10 for more information.

- **Logout:** logs the user out of the graphical user interface.

  After logging out, close the browser to ensure the session is fully closed. The monitor interface cannot reliably ensure the browser session is properly deleted so the user is still effectively logged in. This means anyone using that same browser instance can access the monitor simply by entering the correct URL in the address bar, without entering a user name or password.

  **Note** Because the logout feature does not work in Safari, close all instances of Safari to completely exit the web interface.
4.2. **Monitor Status (Home) Page**

**Note** Station and Guest users see the same page and can perform the same tasks.

The Monitor Status page displays the encoding status of the input signals the device is monitoring. For any given audio input, multiple status conditions may be in effect at the same time. This page enables the user to focus on the most severe issue and review the status of all input signals. In addition, this page shows the health status of the monitor unit itself. The figures and tables below describe the features and functions of this page. Table 17 describes the main sections of the page. Table 18 provides more details about the Monitor Status section.

![Figure 29: Monitor Status Page for Station Users](image)

<table>
<thead>
<tr>
<th>Number</th>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Monitor Status</td>
<td>For a description, see Figure 30 and Table 18.</td>
</tr>
<tr>
<td>2</td>
<td>System Status</td>
<td>Information for the entire monitor system. The possible values are ALARM, ALERT, and OK.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Code: event code associated with the status condition</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Status Description: description of the event associated with the Status and Code</td>
</tr>
</tbody>
</table>

![Table 17: Descriptions for Figure 29](image)
<table>
<thead>
<tr>
<th>Number</th>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Hardware Status</td>
<td>Serial Number: unique identifier that matches the number on the bar code sticker on the front panel of the monitor&lt;br&gt;Temperature: current temperature in Celsius&lt;br&gt;If the temperature exceeds an alert or an alarm threshold for safe operation, the system status displays the alert/alarm.&lt;br&gt;Cell Signal: signal strength for the monitor’s cellular connection with Nielsen&lt;br&gt;The possible values are:&lt;br&gt;  - L: cellular signal level is too low to ensure reliable status reporting to Nielsen&lt;br&gt;    To address this problem, place the antennae attached to the back panel so that communication with a cell tower can be achieved.&lt;br&gt;  - 1 – 10: audio signal level is within the range to support status reporting to Nielsen.&lt;br&gt;  - H: cellular signal level is too high to ensure reliable status reporting to Nielsen&lt;br    This is an unusual condition and may be due to different causes. For help with troubleshooting, see “Contacts” on page 9.&lt;br&gt;IP Address: address assigned to the monitor&lt;br    See section 3.1.8.&lt;br&gt;    Last updated: last time that the hardware status was updated (taken from the monitor’s internal clock, not the PC used to access the GUI interface&lt;br&gt;    Click Hardware Status to display this.</td>
</tr>
<tr>
<td>4</td>
<td>Version Information</td>
<td>Note that, at present, local configuration changes do not update the displayed configuration version. The version only updates when a configuration synchronization process takes place between Nielsen Encoding Operations and the monitor.&lt;br&gt;  - Software: version currently installed on the monitor and the date and time it was installed&lt;br&gt;  - Configuration: version currently installed on the monitor and the date and time it was installed&lt;br    The version information refers to installation-unique configuration parameters whose values Nielsen establishes during consultation with the customer. Customers cannot access these parameters.</td>
</tr>
</tbody>
</table>
### Table 18: Descriptions for Figure 30

<table>
<thead>
<tr>
<th>Number</th>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Status</td>
<td>Displays the most severe status condition currently in effect for each audio input being monitored. The possible values are <strong>ALARM</strong>, <strong>ALERT</strong>, and <strong>OK</strong>.</td>
</tr>
<tr>
<td>6</td>
<td>Entity</td>
<td>Displays the identifier assigned to each input signal being monitored. Nielsen configures these identifiers in consultation with customers. Broadcast station call signs are frequently the entity identifiers.</td>
</tr>
<tr>
<td>7</td>
<td>Channel Set</td>
<td>Displays the channel pairs (A, B, C, and D) used for each monitored input signal&lt;br&gt;  - If an input signal uses a single channel (mono configuration), it uses the left channel of a single channel pair, and this column displays the letter identifying that pair (channel set A monitors WREQ-AM in Figure 30)&lt;br&gt;  - If an input signal uses two channels (stereo configuration), it uses both channels of a single channel pair, and this column displays the letter identifying that pair (channel set B monitors WAAA-FM).&lt;br&gt;  - If an input signal uses three channels (surround configuration), it uses both channels of one channel pair, and the left channel of a second channel pair (channel sets C and D monitor WAAA-TV).&lt;br&gt;See Section 1.7 for a full explanation of channel sets and channel pairs.</td>
</tr>
<tr>
<td>Number</td>
<td>Item</td>
<td>Description</td>
</tr>
<tr>
<td>--------</td>
<td>------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>8</td>
<td>Audio Level</td>
<td>Displays the audio signal level for each channel comprising an input signal being monitored. The possible values are:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- L: too low to ensure proper encoding. Check the broadcast equipment processing this signal checked for potential causes.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- 1 – 5: within the range to support proper encoding</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- H: too high to ensure proper encoding. Check the broadcast equipment processing this signal checked for potential causes.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- X: channel is not in use; the monitor detects no input. X only appears when a signal uses a single channel or three channels so an X appears for the unused member of a channel pair.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The Audio Level indicator displays one level indicator character for each channel that comprises an input signal, and an X for any unused channels. Thus, the Audio Level indicator informs the user not only of the audio levels for each channel in use, but the number of channels used for each input signal. The possible display combinations are:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- If an input signal uses a single channel, Audio Level displays two characters: the first indicates the audio level of the channel in use, and the second is an X, indicating a channel not in use. In Figure 30, this is illustrated by the Entity WREQ-AM, which uses Channel Pair A.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- If an input signal uses two channels, audio level displays two characters: each indicates the audio level of one of the channels in use. In Figure 29, this is illustrated by the Entity WKRP-FM, which uses Channel Pair B.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- If an input signal uses three channels, it uses both channels of one channel pair, and the left channel of a second channel pair. This column displays four letters: three identify the audio levels for the three channel pairs in use, the fourth is an X, indicating a channel not in use. Figure 30 shows Entity WAAA-TV, which uses channel pairs C and D.</td>
</tr>
<tr>
<td>9</td>
<td>Encoder</td>
<td>Displays the identifier assigned to the encoder processing each monitored signal. Nielsen configures these identifiers after consultation with customers. For example, for entity WAAA-FM, the identifier that is detected is WAAA-FMWAAA-FMPri. This information appears to enable you to trace back problems the monitor detects to the appropriate encoder.</td>
</tr>
<tr>
<td>10</td>
<td>Status Count</td>
<td>Displays the total number of status conditions currently in effect for each entity. Click the underlined number to expand and display the details on each alert and alarm for this entity.</td>
</tr>
<tr>
<td>Number</td>
<td>Item</td>
<td>Description</td>
</tr>
<tr>
<td>--------</td>
<td>-----------------------------</td>
<td>--------------------------------------------------------------------</td>
</tr>
<tr>
<td>11</td>
<td>(Monitor status events)</td>
<td></td>
</tr>
</tbody>
</table>

To see the expanded status information, click the value in the Status Count column (#10 in Figure 30). These columns do not have identifying headers. Each row reports a status event for a single channel pair associated with the channel set. From left to right, the status event displays the following:

- Channel pair ID (A, B, C, D, AB, CD, or BC)
- Status for the channel pair: possible values are ALARM, ALERT, and OK
- Event status code for the channel pair
- Brief description of the status
  For alerts and alarms, the status also appears on the front panel LCD. The following status descriptions can appear:
  - Audio Wired: clears the No Audio alert that had been present earlier
  - CodeChk Fail: not enough expected codes have been observed
  - Encoding Ok: all encoding tests have passed for a particular channel pair
  - Low Level: audio level has been below the acceptable threshold for an extended period of time
  - MSSChk Alarm: the signal-to-noise ratio threshold for adequate detections has not been reached
  - No Audio: no audio is connected (wired) to channel pair
  If a monitor is in a constant alarm state, (1) check the audio connections on the back panel and their assignments and (2) check the integrity of the audio feed (Is a tuner involved? Is more than one station bleeding through?)
  - Silence: audio level has been virtually non-existent for an extended period of time

![Figure 31: Monitor Status Events]

<table>
<thead>
<tr>
<th>A</th>
<th>ALERT</th>
<th>Status Code: 118</th>
<th>CodeChk Fail</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>ALERT</td>
<td>Status Code: 126</td>
<td>Low Level</td>
</tr>
<tr>
<td>C</td>
<td>ALERT</td>
<td>Status Code: 130</td>
<td>Silence</td>
</tr>
<tr>
<td>D</td>
<td>ALARM</td>
<td>Status Code: 143</td>
<td>MSSChk Alarm</td>
</tr>
</tbody>
</table>

![Figure 31: Monitor Status Events]
Figure 31 illustrates the setting of alarms and alerts for WREQ-AM. Figure 32 illustrates the clearing of two alert conditions (Silence and CodeChk Fail).

**Figure 32: Entity with Alarm and Alert Conditions**

<table>
<thead>
<tr>
<th>Status</th>
<th>Entity</th>
<th>Channel Set</th>
<th>Audio Level</th>
<th>Encoder</th>
<th>Status Code</th>
<th>Status Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALARM</td>
<td>WREQ-AM</td>
<td>A</td>
<td>4.1</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CodeChk Fail</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>MBSvln Alarm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Silence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OK</td>
<td>WXRFP-FM</td>
<td>B</td>
<td>(4,4)</td>
<td>WXRFP-FMPRWP-FMPH</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>OK</td>
<td>WXRFP-TV</td>
<td>C0</td>
<td>(2,1,2,3)</td>
<td>WXRFP-TVWKP-TVPH</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 33: Clearing of Entity’s Alarm and Alert Conditions**

<table>
<thead>
<tr>
<th>Status</th>
<th>Entity</th>
<th>Channel Set</th>
<th>Audio Level</th>
<th>Encoder</th>
<th>Status Code</th>
<th>Status Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALARM</td>
<td>WREQ-AM</td>
<td>A</td>
<td>4.1</td>
<td>WREQ-AMPri1nWPRY</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>MSSvln Alarm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>MSSchlk Alarm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No Silence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OK</td>
<td>WXRFP-FM</td>
<td>B</td>
<td>(2,3)</td>
<td>WXRFP-FMPRWP-FMPH</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>OK</td>
<td>WXRFP-TV</td>
<td>C0</td>
<td>(2,3,2,3)</td>
<td>WXRFP-TVWKP-TVPH</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

**System Status**

<table>
<thead>
<tr>
<th>Status</th>
<th>Code</th>
<th>Status Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OK</td>
<td>288</td>
<td>The System is Operating Normally</td>
</tr>
</tbody>
</table>
4.3. **Network Configuration Page (Station Users Only)**

**Note**
Guest users do not have access to this page.

The monitor Network Configuration page provides the ability to view and edit various aspects of the configuration for the monitor’s rear-panel Ethernet port.

**Figure 34: Network Configuration Page**

<table>
<thead>
<tr>
<th>Number</th>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+</td>
<td>Input signals to this encoding monitor</td>
</tr>
<tr>
<td>2</td>
<td>Ethernet</td>
<td>MAC Address: fixed addressed (which cannot be changed) assigned to the network interface card</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Enable DHCP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Checked (default): disables entry of the other fields in the Ethernet section because device “expects” to be connected to a HCP-enabled LAN and automatically assigned an IP address</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Cleared: requires entry of the other fields in this section</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ IP Address (see the note following this table), Subnet Mask, Default Gateway, and DNS Address</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If DHCP is unchecked, enter the appropriate information.</td>
</tr>
</tbody>
</table>
## Encoding Monitor 1000-1220 Equipment Manual

### Number | Item | Description
---|---|---
3 | Portal Connectivity | Click Test to perform a quick verification that the monitor can reach the Nielsen portal through the wired Ethernet or cellular connection. A dialog box indicates success or failure.
4 | Save/Cancel | Save: click to save changes
| | | Cancel: click to clear changes that have not yet been saved

**Important** It is the user’s responsibility to assign an IP address that ensures proper HTTP operation of the monitor, and does not interfere with any other device on the LAN. For example, do not use the 0.0.0.0 and 127.0.0.1 IP addresses because 0.0.0.0 cannot be resolved and 127.0.0.1 is the standard loopback address for all IP devices.
4.4. Client Management (Station Users Only)

The Client Management page enables you to set up the MCEM as an NTP server to ensure the clock in each encoder in your facility is synchronized with the Nielsen back office.

1. On the Menu, click Client Configuration.
2. Check the Enable NTP Server check box.

3. For the NTP client, enter one or more IP Addresses, one per line.
4. Click Save.

Figure 35 – Client Management
4.5. **Device & Channel Page**

*Note*  
Guest users can view this page but not make changes.

The Device & Channel page displays information about the physical configuration of the input signals the monitor analyzes. The information on this page relates directly to the organization of the monitor’s physical inputs (audio input signals, channel sets, and channel pairs) as described in Section 1.7.

**Figure 36: Device & Channel Page (Station User Access)**

The Name Device field (Item 2) allows a Station user to enter a name for this 1000-1220 Encoding Monitor. The name appears in the title bar next to the serial number (Item 1). When assigning a name to the monitor, you must click Save for the change to take effect.

Item 3 marks the leftmost column in the Configure Identities section. This is the identifier for signal input to the monitor. In Figure 36 these are:

- **WREQ-AM**
- **KCCC-FM**
- **KCCC-TV**

Item 4 in Figure 36 identifies the channel set the monitor uses to accept each input signal.

- **WREQ-AM** uses Channel Set A (consisting of Channel Pair A)
KCCC-FM uses Channel Set B (consisting of Channel Pair B)
KCCC-TV uses Channel Set CD (consisting of Channel Pairs C and D)

Item 5 identifies the Type of signal being processed:
- WREQ-AM broadcasts a mono (single-channel) signal (the input for this is expected to be plugged into the jack labeled A1 on the rear panel of the monitor).
- KCCC-FM broadcasts a dual (stereo) signal (the inputs are plugged into the jacks labeled B1 and B2).
- KCCC-TV broadcasts a three-channel surround signal (the inputs are plugged into C1, C2, and D1).

When you change the Type, the monitor automatically saves the change.

Note Setting the Type to surround requires the assistance of Nielsen Encoding Operations to ensure proper configuration.

Item 6 identifies the impedance setting for the XLR inputs. This setting has no effect if the inputs are unbalanced 1/4” TS. When you change the Impedance, the monitor automatically saves the change.

Item 7 identifies the encoder(s) that are being monitored by the configuration. For example, the configuration for WREQ-AM is set up to monitor the primary and backup encoders (PrimaryWREQ and BackupWREQ, respectively) for the audio being broadcast on WREQ-AM.
4.6. **Upload/Download File Page and Download File Page**

Station and Guest users have different views of this page.

**Note** The downloaded files are solely for use by Nielsen. The end user cannot view these files.

**Figure 37: Upload/Download File Page**

![Image of upload/download file page](image)

4.6.1. **Upload Configuration Update File**

**Note** The web client does not display this option (Item 1) to Guest users.

1. Click **Choose File** and browse to the Nielsen-supplied file on the PC (item 1 in Figure 37).

2. Click **Upload**. The monitor validates and applies the update file. Update progress messages appear on the front-panel LCD. If the monitor determines the file is invalid, the monitor rejects the update without generating a notification.

4.6.2. **Download Current Configuration File**

Click Configuration File (Item 2 in Figure 37). The current monitor configuration file downloads to the default downloads folder as set in the browser. The name for this "sam file" is formatted as follows:

**Format:** configuration XXXXX YYYY-MM-DD_XX-XX-XX.sam

**Example:** configuration_K02721_2013-12-03_15-22-36.sam
4.6.3. **Download Alarm/Alert History**

Click Alarm/Alert History (Item 3 in Figure 37). The history, if it exists, downloads to the default downloads folder as set in the browser. If either of the following conditions exists, the software truncates the file by removing the oldest events.

- The file contains the alarm and alert history for the previous 180 days (or up to the number of days the unit has been running, if that number is less than 180 days). If no events required recording or were generated during this time, there is no file.
- The file can be no larger than 1 MB.

As the file grows beyond 180 days or 1 MB, the oldest content is deleted. The file shows the following:

- Alarm/alert state (triggered or cleared)
- Date and time
- Channel pair ID (A, B, C, or D)
- Event ID
- Long description of event (60 characters maximum)
- Short description of event (20 characters maximum)

4.6.4. **Download Log Files**

1. Enter the number of days of log reports (Item 4 in Figure 37) that Nielsen has asked you to obtain.
2. Click Download. The file name includes the unit serial number and the date range of the log reports.
   
   **Example:** logReports_K02744_20140828_20140904.zip

4.6.5. **Download Audio Capture Files**

1. Enter the number of days of audio capture files (Item 5 in Figure 37) that you want. Files for up to the previous 30 days (maximum 100 files) are available.
2. Click Download. The monitor creates a zip file with 5-minute *.wav files named according to the trigger that caused the monitor to save the files:
   
   - *.wav files names that begin with “audiomss” were triggered by an MSSChk Alarm, which indicates that the signal-to-noise ratio threshold for adequate detections was not reached.
     
     **Example:** audiomss_A_20160928203001.wav
   
   - *.wav file names that begin with “audio2plus” were triggered by a 2Plus Code Received Alarm, which means that the monitor detected two or more unique codes in the audio.
     
     **Example:** audio2plus_B_20160929202001.wav
4.6.6. **Download Log Files**

Click one of the following (Item 6 in Figure 37) and the file downloads to the default downloads folder as set in the browser:

- Current System Logs
- All System Logs

The file name (*.zip) indicates whether it contains the current system log or all system logs and the current date.
4.7. **Detectability Confidence View**

Content has various characteristics that determine the amount of possible detectable code insertions for it. Examples include signal strength, presence of silence, and the spectrum of the audio between 1 and 3 kHz.

The Detectability Confidence graph (Figure 38) is the per-minute view of the confidence of detections by a PPM on a scale of 0 to 4.

- **0**: no detections (worst) condition
- **4**: best detection condition

*Figure 38: Detectability View*
The confidence of detections is calculated using message signal strength (MSS) averaged over the left and right channels for the past minute.

- **MSS**: average of encoded symbol power divided by the average of unencoded symbol power over a minute interval
- **Detectable Code**: average MSS value per channel over a preset threshold
- **Not Detectable Code**: average MSS value per channel is lower than a preset threshold

The Detectability Confidence graph shows 0s for a Wrong Code or Unknown Code detected over an accumulated minute for a monitored station.

- **Wrong Code**: detected code that the MCEM recognizes but that is not the code designated for this audio feed. Incorrect audio feed assignments to the back panel of the monitor or the encoder can produce Wrong Code. An MCEM can simultaneously monitor up to 4 audio feeds.
- **Unknown Code**: code that is detected which is not designated for any stations assigned to this monitor. Unknown Code can result from a wrong configuration of input to the monitor.

The MSS thresholds were determined by examining various types of material from sparse talk to music and then relating these to PPM detections under various listening conditions.

<table>
<thead>
<tr>
<th>Bar Height</th>
<th>Function</th>
<th>MSS Threshold</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 1</td>
<td>Red</td>
<td>MSS &lt; 1.7</td>
<td>Indicates an encoding error (e.g. low audio input) or material with excessive silence</td>
</tr>
<tr>
<td>1</td>
<td>Green</td>
<td>1.7 &lt;= MSS &lt; 2.2</td>
<td>For a period of 15 minutes or longer, may indicate a setup error</td>
</tr>
<tr>
<td>2</td>
<td>Green</td>
<td>2.2 &lt;= MSS &lt; 3.0</td>
<td>Acceptable Detectability Confidence for encoded material</td>
</tr>
<tr>
<td>3</td>
<td>Green</td>
<td>3.0 &lt;= MSS &lt; 3.5</td>
<td>Acceptable Detectability Confidence for middle-to-high-end encoded material such as classical music</td>
</tr>
<tr>
<td>4</td>
<td>Green</td>
<td>MSS &gt;= 3.5</td>
<td>Acceptable Detectability Confidence with strongly encoded material</td>
</tr>
</tbody>
</table>

MSS greater than 2.2 (represented by 2 to 4 green bars) indicates proper encoding that the PPM should be able to detect under all but the harshest listening conditions.

**Axes**

- X axis represents time in one-minute intervals
- Y axis represents confidence of detections between 0 to 4 for the minute interval
Alarm Bar

The horizontal bar below each graph, the alarm bar, provides alarm indication based on the $X$ of the past $Y$ minutes of PPM Detection Confidence status, where the default for $X$ is 3 minutes and for $Y$ is 5 minutes. These settings are at present not available for configuration.

- **Green:** The bar turns green upon startup as soon as a high-confidence status is calculated. After a transition to a red alarm bar condition, the bar turns green as soon as $Z$ of the past $Y$ minutes have a high-confidence status OR the confidence level is low for less than $X$ of the past $Y$ minutes. The default for $Z$ is 1 in the past 5 minutes.

- **Red:** The bar turns red when $X$ of the last $Y$ minutes has low-confidence status. The default is 3 of the last 5 minutes.

The monitor displays an alarm status on the front panel, and the alarm relays are set.
4.8. **Encodability Confidence View**

The Encodability Confidence View shows the percentage of codes inserted per minute on the left and right channels divided by the maximum number of codes that are possible to insert (up to 12.5 codes per minute on each channel).

In general, Encodability is dependent upon the content type. The Encodability Confidence view complements the Detectability Confidence View. Encodability validates the encoding of the material and detectability indicates whether an issue is actionable. See the previous Section, “4.7 Detectability Confidence View.”

**Figure 39: Encodability View**

**Axes**
- X axis represents time in 1 minute intervals
- Y axis represents percentage code detections for each minute interval
4.9. View/Download MIB Page

The 1000-1220 Encoding Monitor comes with an SNMP Management Information Base (MIB) which can be used to monitor the unit via an SNMP protocol. To view or download the encoder SNMP MIB (named NIELSEN-1220-ENCODINGMONITOR-MIB), select View/Download MIB from the web interface main menu.

The web interface displays the SNMP MIB in text form in a scrollable window (Item 3 in Figure 40). The page also provides a link (Item 2 in Figure 40) that you can use to download the SNMP MIB using the conventions appropriate to the browser in use.

**Note**

The NIELSEN-1220-ENCODINGMONITOR-MIB is provided for remote monitoring of the encoder via SNMP. This is separate and distinct from the NIELSEN-1220-MONITOR-NOTIFICATIONS-MIB, which is provided to aid in setting up one or more SNMP manager servers to receive event notifications from the monitor via SNMP traps (described in Section 4.10).

Figure 40: View/Download MIB Page
4.10. **View/Edit SNMP Notification Configuration Page**

The Nielsen 1000-1220 Encoding Monitor comes with an SNMP Notifications MIB (named `NIELSEN-1220-MONITOR-NOTIFICATIONS-MIB`) that defines event notifications the monitor can send to up to five SNMP manager servers. To view or download the monitor NIELSEN-1220-MONITOR-NOTIFICATIONS-MIB, select View/Download MIB from the web interface main menu (Item 6 in Figure 41).

NIELSEN-1220-MONITOR-NOTIFICATIONS-MIB is provided to establish event notifications for one or more SNMP manager servers to receive from the monitor via SNMP traps.

**Note**  
This MIB is separate and distinct from the monitor SNMP MIB (`NIELSEN-1220-ENCODINGMONITOR-MIB`, described in Section 4.7), which is provided for remote monitoring and control of the monitor via SNMP.

NIELSEN-1220-MONITOR-NOTIFICATIONS-MIB specifies the format of the SNMP notifications that the monitor sends to configured network managers. Whenever the active state of a monitor condition changes, the monitor sends an SNMP notification containing the following parameters:

- Monitor serial number
- Monitor system time when the event occurred
- Alarm state (active or inactive)
- Alarm type (channel or system)
- Alarm channel pair ID (1–4 or 0 for system)
- Description of the alarm

**Figure 41: View/Edit SNMP Notification Configuration Page**
The View/Edit SNMP Notification Configuration page provides the ability to edit two parameters that are not part of the NIELSEN-1220-MONITOR-NOTIFICATIONS-MIB, but determine the following aspects of SNMP traps generated by the monitor:

- **SNMP Community String**
  
The text box labeled Item 1 in Figure 41 provides a place to enter the SNMP community string to be included in notification traps sent from the monitor to the SNMP network managers listed in the text box. Devices cooperating on an SNMP network use these community strings as a filter to determine which SNMP traps they accept and process. The SNMP community string should be set to a value determined in consultation with local network administrators.

  The SNMP Community String may be from 1 to 255 characters long, including alphanumeric characters, underscores, and hyphens. The monitor web interface requires that a syntactically valid value be set for the community string (even if the list of SNMP Network Managers [item 2 in Figure 41] is left blank). The default community string value set by Nielsen is **EM1220Notifications**, but this can be changed to suit the requirements of the local network.

- **SNMP Network Managers**
  
The text box labeled Item 2 enables you to enter the addresses of the SNMP network management station(s) to which the monitor will send event notifications. If no network management station names are entered, the monitor sends no notifications.

  Enter no more than five manager names, each on a separate line. These may be host names or IP4 network addresses. The monitor will send SNMP Trap notifications containing the SNMP Notification Community String (Item 2) to each SNMP network manager in this list. Whether those managers accept and process the traps depends on how they are configured. Select the SNMP Network Managers in consultation with local network administrators.

On this page, you can also do the following:

- Click Save to keep any changes you have made and put the changes into effect (Item 3).
- Click Reset Form to Current Values to clear any changes you have made (Item 4).
- The Monitor Notifications MIB appears on this page in a scrollable window (Item 5). To download the MIB, click the “here” link in the sentence below the **Encoding Monitor Notifications MIB** subtitle.
5. Updating Configuration, Firmware, or License

When the monitor does not have connectivity to a wide area network (WAN) and so does not automatically receive and install updates from Nielsen, you can manually update the configuration, firmware, and license for the monitor with an update package that Nielsen delivers to you. Do either of the following to update the monitor:

- **Primary method**: save the file to a PC hard drive or LAN drive or to a USB drive that you will insert into a PC accessible by the monitor. A Station user can use the Download/Upload File page of the web interface to apply the update (Section 4.6.1).

- **Secondary option**: save the file to a USB file storage device and insert the device into the USB port on the front panel of the monitor. For assistance with installing update, see “Contacts” on page 9.

6. Status/Error Messages

There are 3 basic status categories of text on the LCD display on the front panel when it displays the default audio monitoring page.

- **ALARM**: appears in upper case with a blinking red LED for each channel of the four pairs. A channel pair is composed of left and right channels of audio in a stereo configuration.

- **Alert**: appears in lower case text with a blinking green LED for each channel pair, but does not display by default unless there are no alarms present.

- **Encoding Ok**: appears in solid green LED in mixed upper and lower case text for each channel pair only when there are no alerts or alarms present for that channel pair.

When a system alarm is present, associated for example, with the boot-up process, all LEDs appear in solid red.

There are different types of alarms and alerts that are posted when a failure condition is either present for all channels that are monitored for a station, or whenever a failure for any particular channel of a station is present. These are two examples:

- If the monitor detects multiple attempts to encode on the same “layer” (referred to as “double encoding”) on any channel being monitored, the alarm, DBL ENCODING, appears for the corresponding channel pair.

- On the other hand, only if there is a low audio level present for all channels monitored for a particular feed does the LOW LEVEL alarm appear (default configuration).
7. Nielsen Multi-Channel Monitor Specifications

7.1. Enclosure

The 1000-1220 Encoding Monitor is designed to fit in an industry standard 19” equipment rack. Its frame is made of metal, and the dimensions are:

- 1 RU (1.75”) high
- 12 5/8” deep

7.2. Front Panel

From left to right, the 1000-1220 Encoding Monitor front panel features are:

- Four LEDs for status indication (including both encoding status and system status)
- LCD (4 lines X 40 characters)
- 6 LCD menu buttons
- USB 2.0 host type A (USB file storage device)

7.3. Rear Panel

From left to right, the rear panel features are:

- Electrical ground post
- Universal Power IEC-320 input socket
- Relay contact interface for status monitor (DA15-pin female socket)
- Two USB 2.0 host type A port
- Subminiature version A (SMA) antenna jack providing a connection to the internal cellular modem
- RJ-45 Ethernet jack with integrated transmission/reception link status LED indicators
- Eight combined female balanced XLR jacks with pushbutton release/unbalanced quarter-inch tip-sleeve phone jacks (combo jacks) for audio input

7.4. Side Panels

- Vent openings for passive cooling
- Rack mount brackets
7.5. **USB Host Interfaces**

The front-panel USB 2.0 type A host interface is used to:

- Update the 1000-1220 Encoding Monitor configuration parameters, firmware, and license from a flash memory device.
- Download the encrypted log file from the 1000-1220 Encoding Monitor to a flash memory device.

The rear-panel USB 2.0 type A host interfaces are used to stream critical system events and real-time status for each of the audio sources being monitored. These status events can be captured by a third-party device connected to the monitor with a USB cable with a USB type A male plug at the monitor end and an RS232 serial plug at the other end. Either USB port on the monitor may be used for this purpose, but only one port at a time may be used.

7.6. **Ethernet Interface**

The rear-panel Ethernet interface:

- Complies with the IEEE 802.3-2002 standard for wired network communications
- Complies with TCP/IP version 4 (IPv4)
- Supports 10/100Mbps connections, auto-sensing
- Supports both internal and external networks with one Ethernet controller
- Uses an Organizationally Unique Identifier (OUI) assigned to Nielsen by the IEEE: 00:16:6E:xx:xx:xx (hex)
- Supports encoder control, configuration, and monitoring via web-based GUI over Ethernet connection

7.7. **Rear-Panel DA-15 Port**

The rear-panel DA-15 female port provides the following features:

- Remote interface for monitoring encoding status on a channel pair basis
- Remote interface for monitoring the operational status of the unit
- Internal relay contacts rated for 0.3A Max, 24VDC
7.8. Front-Panel LEDs for Encoding Status

The four LEDs on the front of the 1000-1220 Encoding Monitor provide basic at-a-glance system status or encoding status information as detailed in Table 21.

<table>
<thead>
<tr>
<th>LED Color</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid red</td>
<td>One of the following:</td>
</tr>
<tr>
<td></td>
<td>The system is booting up</td>
</tr>
<tr>
<td></td>
<td>A system alarm is in effect.</td>
</tr>
<tr>
<td></td>
<td>Refer to the front-panel LCD for System Status view</td>
</tr>
<tr>
<td>Solid green</td>
<td>The channel set associated with the channel pair is encoded correctly.</td>
</tr>
<tr>
<td></td>
<td>(It will also be green if the corresponding channel is not configured and the LCD will then display the text “Inactive”)</td>
</tr>
<tr>
<td>Flashing red/dark</td>
<td>One or more alarms are present for the channel set associated with the channel pair.</td>
</tr>
<tr>
<td>Flashing green/dark</td>
<td>One or more alerts are present for the channel set associated with the channel pair.</td>
</tr>
</tbody>
</table>

7.9. Front-Panel LCD

The front-panel LCD (Item 2 in Figure 1) supports four lines of text, 40 characters each.

7.10. Front-Panel Control Buttons

The front-panel control buttons provide the means to navigate the menu displayed on the front-panel LCD. The function of each button is described in Section 3.1.

7.11. Environmental

The 1000-1220 Encoding Monitor is designed to operate in an ambient temperature of 0 - 35°C.

7.12. BTU Output

The 1000-1220 Encoding Monitor generates 120 BTUs per hour, assuming it is operating at 117.8V, 35.1W.
7.13. **Power Input**

The 1000-1220 Encoding Monitor uses power meeting the following specifications:

- 100-240 VAC
- 40 Watts
- 50/60 Hz

7.14. **SNMP**

The monitor supports SNMP version 1 and version 2c connections for read-only access and notifications.

- GET commands retrieve status information.
- The monitor can be configured to send SNMP Trap notifications to an SNMP manager.

7.15. **DHCP**

The 1000-1220 Encoding Monitor can be assigned an IP address, sub-net mask, and optional gateway address either statically or dynamically. Dynamic assignment uses DHCP. (DHCP must comply with IPv4.)

The user may disable DHCP to manually set the IP address, subnet mask, default gateway, and domain name system for the monitor Ethernet port.

**Important** When DHCP is disabled, it is the user’s responsibility to assign an IP address that ensures proper HTTP operation of the monitor, and does not interfere with any other device on the LAN. For example, do not use the 0.0.0.0 and 127.0.0.1 IP addresses because 0.0.0.0 cannot be resolved and 127.0.0.1 is the standard loopback address for all IP devices.

7.16. **HTTP**

The 1000-1220 Encoding Monitor provides HTTPS access via the Secure Sockets Layer (SSL) protocol. The Nielsen Audio Root CA certificate should be installed onto the connecting computer to allow that computer to recognize that the connection is valid and secure. The monitor root web page provides instructions for installing the certificate (Section 2.4.2). It is possible to communicate with the 1000-1220 Encoding Monitor before installing the certificate by ignoring the certificate error; see Section 2.4.3.

Monitor configuration, control, and status information is available through the HTTP interface using a web browser. Configuration and control changes require proper authentication. The monitor web pages require that JavaScript® be enabled. The web pages have been tested using the following browsers:

- Microsoft Internet Explorer®
- Firefox®
7.17. **Analog Audio Input Specifications**

The following specifications describe the rear-panel analog input connections:

- **Maximum steady input level:** +19 dBu (19.5 Vp-p) Occasional spikes above this level do not affect performance.
- **Connectors:** Combined female balanced XLR jacks with pushbutton release/unbalanced quarter-inch tip-sleeve phone jacks (combo jacks)
- **Input impedance characteristics:** 600 ohm or high impedance (>10k ohms)

7.18. **EMC/Safety Standards**

The 1000-1220 Encoding Monitor has been tested for compliance with the following standards:

**EMC:**

- **Title 47 of the Code of Federal Regulations (CFR), Part 15 Subpart B for a Class A Digital Device**
- **ETSI EN 301 489-1 with ETSI EN 301 489-17 (Article 3.1(b) of R&TTE Directive)**

**SAFETY:**

- **UL60950-1/CSA C22.2 No. 60950-1, Information Technology Equipment - Safety - Part 1: General Requirements**
- **IEC60950-1, Information Technology Equipment-Safety-Part 1: General Requirements**
- **EN60950-1, Information Technology Equipment-Safety-General requirements**
Appendix A Installing and Using a Security Certificate

Overview

Nielsen recommends every facility using HTTP to access a 1000-1220 Encoding Monitor install the Nielsen 1000-1220 Monitor Root CA certificate on the PCs used to access the monitor. When users access the monitor via HTTPS, the Nielsen 1000-1220 Monitor uses Secure Sockets Layer (SSL) authentication. Until an SSL certificate is installed on the PC connected to the monitor, accessing the monitor through HTTPS causes a warning message to appear. (See Figure 6 in Section 2.4.3) This message serves two purposes:

- It provides the correct address to use to access the monitor via HTTPS.
- It provides information the network administrator can use to install the Nielsen 1000-1220 Monitor Root CA certificate on the PC and add an entry for the monitor to the Hosts file on the PC. This appendix provides detailed instructions to augment that information.

The warning does not prevent access, although clicking through it adds more steps to the login process. Once the certificate is installed, the warning message no longer appears. Note that you only need to install this certificate once. It applies to all supported browsers: Chrome, Firefox, Internet Explorers, and Safari.

Install this certificate regardless of the version of Windows or type of web browser used to access the monitor. If you need help installing the certificate on a Windows XP system, contact Nielsen.

To use the certificate, a new host name associated with the monitor IP address must be added to the hosts file on the computer to run the web interface. Often this task is performed by a system administrator. If your facility does not have a dedicated system administrator, you can use the instructions here to perform this task yourself.

Installing Certificate Using Internet Explorer

This procedure describes installation through the Internet Explorer browser. If you want to, you can install the certification through a different browser but the procedure varies for each one.

1. In a browser, enter `http://<hostname-or-ip-address>/NielsenAudioMonitorRootCA.cer` where IP_Address is the address selected when the Ethernet connection is established (Section 2.1.2). A dialog such as the one in Figure 42 appears.
2. Click **Open**. A dialog box such as the one in Figure 43 appears.

3. Click **Install Certificate**.

4. The first screen of the Certificate Import Wizard appears (Figure 44). Click **Next**.
5. The dialog shown in Figure 45 appears, prompting for where the certificates should be stored on the PC. Select **Place all certificates in the following store** and click **Browse**.

6. The dialog shown in Figure 46 appears. Select **Trusted Root Certificate Authorities** and click **OK**.
7. The Certificate Import Wizard updates to display your selection as shown in Figure 47. Click Next.

8. A dialog such as Figure 48 appears. Click Finish.
9. When the import is complete, a security warning appears. Click Yes.

10. On the confirmation dialog box (Figure 50), click OK.
11. Go to “Creating a Host Name Association for the Monitor” on the next page.
Creating a Host Name Association for the Monitor

Before a computer can use an installed security certificate to access the 100-1220 Monitor, someone with system administrator rights must add new host names associated with the monitor IP addresses to the hosts file on the computer. Often this task is performed by a system administrator, but anyone with administrative access to the computer can do this by following the steps below.

1. On the Windows Start menu, navigate to All Programs > Accessories and right-click the Notepad entry.
2. Select Run as administrator.

![Figure 51: Running Notepad as Administrator](image)

3. In Notepad, browse to Windows\System32\drivers\etc\ and open the hosts file.

   **Note**  
   If you do not see the hosts file, in the lower right corner of the Open dialog box, select All Types (see Figure 52).

![Figure 52: Locate Hosts File Using Notepad](image)
4. At the end of the hosts file (see Figure 53), do the following
   
d. Add a line.
   
e. Enter the IP address to associate with the certificate (such as 10.97.5.1 for the USB connection).
   
f. To start the next column, press <TAB>.
   
g. Create a host name to be associated with the IP address and the monitor SSL certificate. Figure 53 shows an example of the format that Nielsen Audio recommends:

   MCEMxxxx.nielsenaudio.monitor
   
   o xxxx is the serial number of the monitor. Look on the front panel for a barcode sticker with the serial number. Nielsen recommends the format, MCEMxxxx, because it provides the ability to distinguish among Nielsen Audio monitors for facilities that use multiple monitors.
   
   o nielsenaudio.monitor is required because it denotes the domain with which the certificate is associated.

   Figure 53: Example Hosts File

5. Save the file and exit Notepad.

6. The URL for accessing the monitor follows the format https://host_name/.

   Example: https://L50019.nielsenaudio.monitor/

   #1 in Figure 54 shows what the address bar looks like when a user has logged into the monitor without Root CA Certificate installed on the PC. Note that the browser address bar is red with a Certificate Error warning. #2 in Figure 54 shows the address bar for a user who has logged into the monitor with a Root CA Certificate installed; the address bar is white, with a lock symbol to indicate that the connection with the monitor is secure.
Figure 54: Browser Accessing Monitor without (#1) and with (#2) Root CA Certificate
Appendix B  Real Time Remote Serial Status Messages

Note  See Section 3.4.

The ASCII messages output though the rear-panel USB ports come in three severity levels:

- **INFO** messages provide information related to non-error conditions
- **ALERT** messages provide notification of issues that indicate abnormal states that do not affect monitoring.
- **ALARM** messages provide notification of system error conditions that affect monitoring or indicate errors detected with the encoding of the monitored audio.

The following line show example output from the remote serial status:

```
<NOTE@P[0000368798][2014-09-15 13:42:15.677][ENCODING][INFO][WREQ-FM][Encoding OK]>
<NOTE@P[0000368799][2014-09-15 13:42:15.696][ENCODING][INFO][WKRP-AM][Encoding OK]>
<NOTE@P[0000368800][2014-09-15 13:42:15.716][ENCODING][INFO][KCCC-TV][Encoding OK]>
<NOTE@P[0000368801][2014-09-15 13:42:15.725][ENCODING][INFO][KCCC-TV][Encoding OK]>

<NOTE@P[0000781421][2014-09-15 13:44:59.017][ENCODING][INFO][WREQ-FM][Encoding OK]>
<NOTE@P[0000781422][2014-09-15 13:44:59.091][ENCODING][INFO][WKRP-AM][Encoding OK]>
<NOTE@P[0000781423][2014-09-15 13:44:59.137][ENCODING][ALARM][KCCC-TV][Low Level]>
<NOTE@P[0000781424][2014-09-15 13:44:59.151][ENCODING][ALERT][KCCC-TV][Silence ]>
<NOTE@P[0000781425][2014-09-15 13:44:59.112][ENCODING][ALARM][KCCC-TV][CodeChk Fail]>
<NOTE@P[0000781426][2014-09-15 13:44:59.124][ENCODING][ALARM][KCCC-TV][MSSChk Alarm]>
```
Appendix C  Front-Panel LCD Map

The diagram below provides a detailed summary of how to use the 1000-1220 Encoding Monitor front-panel buttons and LCD menu. This diagram is intended as a reference for users who are already familiar with the front-panel controls (Section 3.1).
This appendix provides definitions for acronyms and terms of art used in this document.

**C**

Channel
A single stream of audio information.

Channel Pair
Two audio channel physical interfaces often used together to carry a Stereo signal. (Member channels of a channel pair may also be used individually to carry a mono signal or part of a surround signal.)

Channel Set
A logical grouping of physical channels that work together to carry a single audio signal. In the 1000-1220 Encoding Monitor a single channel set may be comprised of one, two, or three channels.

**D**

DHCP
Dynamic Host Configuration Protocol. A network protocol that manages network addresses for devices participating in a network so they can communicate with each other using the Internet Protocol.

**I**

IP
Internet Protocol.

IP address
An Internet Protocol address is a numerical label assigned to each device participating in a computer network that uses the Internet Protocol for communication.

**M**

Mono input
Monophonic audio signals use a single channel of audio information.

**S**

Stereo Signal
Stereo signals carry two channels of audio information, referred to as the left and right channels.

Surround Signal
The 1000-1220 Encoding Monitor supports three-channel surround signals, using right, center, and left channels.
FCC Disclaimer

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 own expense.

ICES Disclaimer

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

CAN ICES-3 (A)/NMB-3(A)