MediaMatrix®

A Division of Peavey Electronics Corporation

nControl Hardware Manual

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Scope

This guide describes how to physically install an nControl unit, connect it to a network and specify basic settings, ready to use it with NWare.

Contents

Chapter 1

Important safety instructions

In This Chapter

Safety warnings

Warning: When using electrical products, basic cautions should always be followed, including the following:

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any of the ventilation openings. Install in accordance with manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding plug. The wide blade or third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point they exit from the apparatus.
11. Only use attachments/accessories provided by the manufacturer.
12. Use only with a cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. Never break off the ground pin. Write for our free booklet *Shock Hazard and Grounding*. Connect only to a power supply of the type marked on the unit adjacent to the power supply cord.
16. If this product is to be mounted in an equipment rack, rear support should be provided.
17. Control panel devices, including the xControl range, D series and nTouch 60, are designed for mounting in NEMA metal enclosures. Grounding to the front plate is required.
18. **Note for UK only:** If the colors of the wires in the mains lead of this unit do not correspond with the terminals in your plug, proceed as follows:
    a) The wire that is colored green and yellow must be connected to the terminal that is marked by the letter E, the earth symbol,
    b) colored green or colored green and yellow.
    c) The wire that is colored blue must be connected to the terminal that is marked with the letter N or the color black.

d) The wire that is colored brown must be connected to the terminal that is marked with the letter L or the color red.

19. This electrical apparatus should not be exposed to dripping or splashing and care should be taken not to place objects containing liquids, such as vases, upon the apparatus.
20. The on/off switch in this unit does not break both sides of the primary mains. Hazardous energy can be present inside the chassis when the on/off switch is in the off position. The mains plug or appliance coupler is used as the disconnect device, the disconnect device shall remain readily operable.
21. Exposure to extremely high noise levels may cause a permanent hearing loss. Individuals vary considerably in susceptibility to noise-induced hearing loss, but nearly everyone will lose some hearing if exposed to sufficiently intense noise for a sufficient time. The U.S. Government's Occupational Safety and Health Administration (OSHA) has specified the following permissible noise level exposures:

Duration Per Day in Hours	**Sound Level dBA, Slow Response**
8	90
6	92
4	95
3	97
2	100
1½	102
1	105
½	110
¼ or less	115

According to OSHA, any exposure in excess of the above permissible limits could result in some hearing loss. Ear plugs or protectors to the ear canals or over the ears must be worn when operating this amplification system in order to prevent a permanent hearing loss, if exposure is in excess of the limits as set forth above. To ensure against potentially dangerous exposure to high sound pressure levels, it is recommended that all persons exposed to equipment capable of producing high sound pressure levels such as this amplification system be protected by hearing protectors while this unit is in operation.

SAVE THESE INSTRUCTIONS!

Chapter 2

Before you start

In This Chapter

Important network considerations

This product is designed to operate on a network backbone or infrastructure. The design, implementation and maintenance of this infrastructure is critical to correct operation and performance of the product. Peavey Electronics Corp does not support nor service network cabling, hubs, switches, patch bays, wall plates, connector panels or any other type of network interconnect device. Please ensure that these components and their associated installation techniques have been properly designed and installed for audio and network applications.

Power outage and surge protection

We make the following recommendations for the power source:

- Use an uninterruptable power supply (UPS) to protect against power outages.
- Use a power surge protection device, such as a *Surge-X* (*http://www.surgex.com*). This provides protection from destructive spikes, surges and inductive transients.

Warranty Registration

Please take a few minutes and fill out the warranty registration card. Although your warranty is valid without the registration, the information you provide with the form is crucial to our support group. It enables us to provide better service and customer support, and to keep you informed of new product updates.

Tip: Refer to the warranty statement at the rear of this manual for details of what your warranty includes and what the limitations are.

Thank You!

Thank you for purchasing this MediaMatrix product. It is designed to provide years of trouble-free operation and high quality performance. We are confident that you will find this product and other MediaMatrix products to be of the highest quality.

Chapter 3

Introduction to nControl

In This Chapter

Description

nControl is an industrial network PC server running ControlManager application software. ControlManager provides a platform for MediaMatrix control systems. It can be custom configured to monitor and control multiple NWare projects, consisting of NIONs, CABs, amplifiers, and other devices. Additionally, it can also monitor and control 3rd party devices using SNMP and execute Python scripts.

nControl supports RATC and PASHA protocols, allowing you to interact with an NWare project via an Ethernet or serial connection.

After nControl has been installed and given initial configuration settings, it is managed using NWare.

Notes:

- nControl units host projects for control and monitoring, but do not have any DSP capability.
- The available functionality is controlled using a USB hardware key. With this key, you can deploy projects containing devices from the *nControl Devices* section of the devices tree to the nControl. Without the key, you cannot use these devices in your project, but it can contain nTouch 60 devices.
- If you are using a hardware key issued prior to the 1.7.2 release, you will also need an activation key, which is a special code that you specify on the Hardware page of the web interface.
- Using all the capabilities of nControl requires a firm understanding of NWare, SNMP and Python scripting.

Features

- Industrial server with dual core Pentium 1.8 GHz processor
- 2 Gigabytes of memory
- Mirrored, redundant SATA HDDs
- Multiple PCI expansions slots
- Multiple exhaust fans
- Universal voltage redundant power supplies
- Six rear USB ports
- Two front USB ports
- One recessed front USB port for hardware key
- Two PS-2 ports for mouse and keyboard
- One VGA port
- Four serial ports
- Two Gigabit Ethernet ports
- four or eight additional Gigabit Ethernet ports available via expansion cards
- 3U rack mountable case
- Supports SNMP, RATC, Python
- Allows control using different protocols over Ethernet or serial connections
- Software upgradable from within NWare or via a USB stick

- Runs Kiosk for control of NWare projects (hosted by the nControl or other MediaMatrix devices on the network)
- Compatible with all NION models
- Compatible with NWare version 1.5.1 and later.

Applications

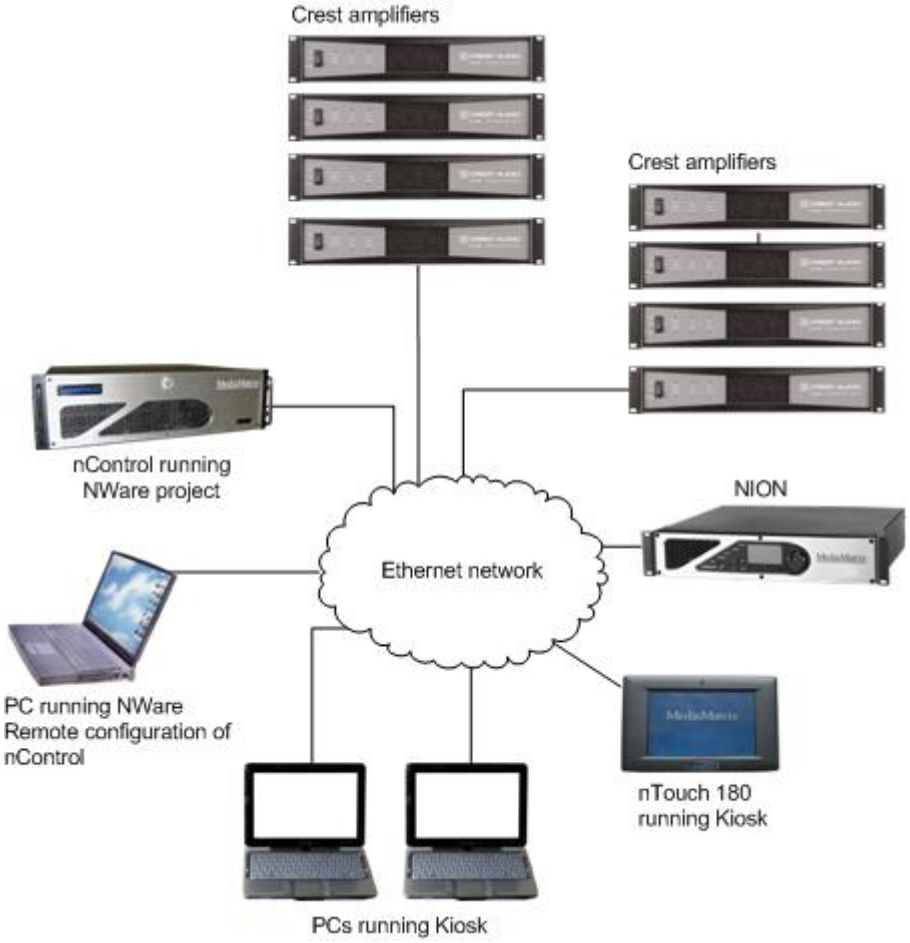
- airports and mass rapid transit (MRT) systems
- stadiums and arenas
- government and civic centers
- hotels and convention centers
- auditoriums
- performing arts centers and theaters
- courts of law
- houses of worship
- university campus and schools
- theme parks
- casino
- cruise ships.

Example set up

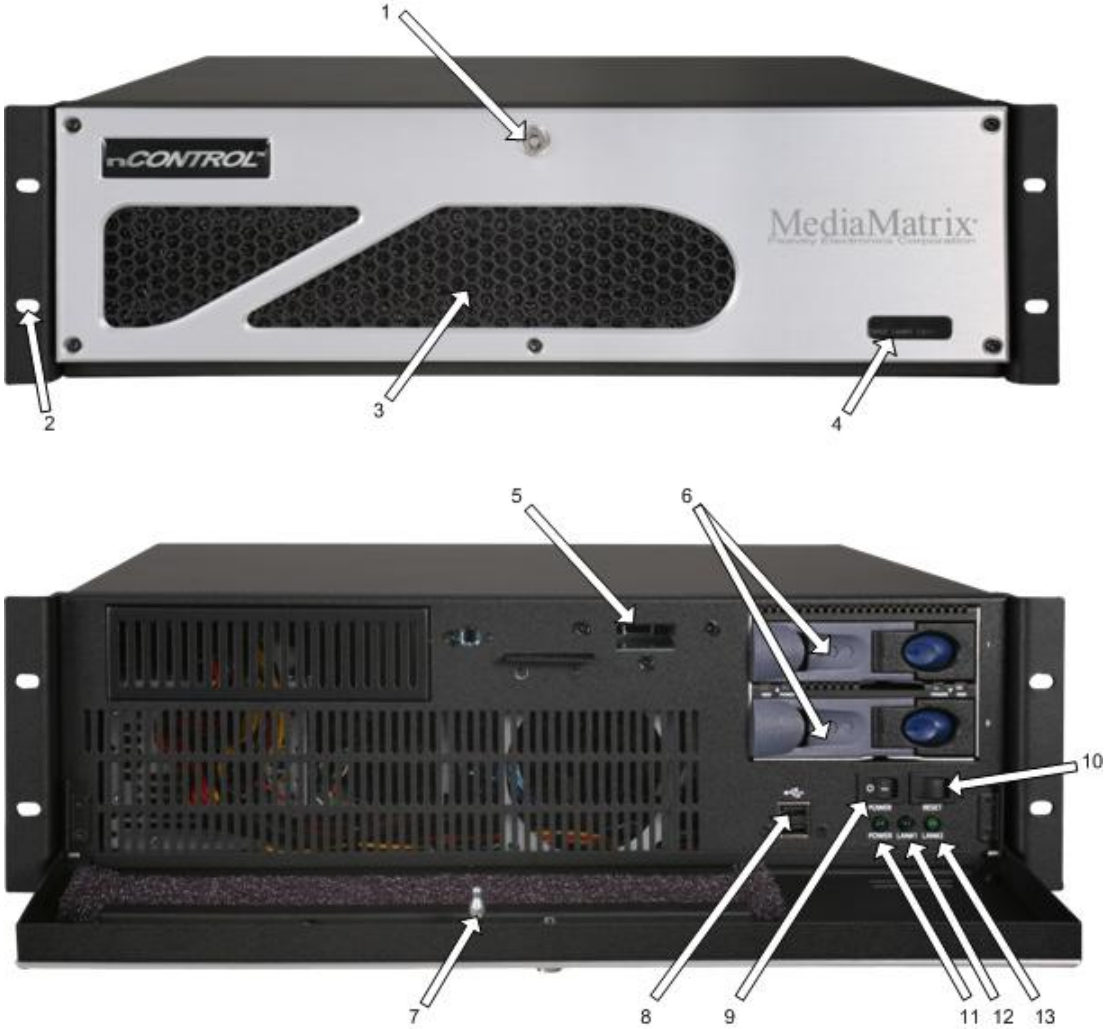
The diagram below shows a typical scenario where an nControl allows users to control a number of amplifiers remotely. The project created in NWare on the laptop gives the Kiosk users graphical controls for altering the volume, selecting an input source, or muting the audio output, for example.

The nControl can also be used to monitor network devices, such a switches, via SNMP and other protocols, and this information can then be made available to the system administrator.

The NION supplies audio to the amplifiers across the network, and complements the role of the nControl in providing an overall audio management and networking solution.



Front panel



1. Front panel lock.
2. Holes for rack-mount bolts (not supplied).
3. Air Vent. Air intake vent provides fresh air flow to internal cooling system.

   Do not block or obstruct this vent. Proper airflow must be maintained for proper operation.
4. LED status window.
5. Recessed USB port. The port is recessed to allow the front panel to be closed when the hardware key is inserted.
6. Hard disk drives.
7. Front panel lock.
8. USB ports.

Caution: The USB port for the hardware key is recessed, so that when the front panel is closed, the hardware key does not get damaged. The other USB ports on the front panel are not recessed and must not be used, otherwise you risk damaging the hardware key or the port.

9. On/off switch.
10. Reset switch.
11. POWER LED. Lit green to show the unit is switched on.
12. LAN#1 LED. Indicates activity on LAN port #1.
13. LAN#2 LED. Indicates activity on LAN port #2.

Rear panel

1. Exhaust fans.

Do not block or obstruct the fan vents. Airflow must be maintained.

2. Monitor, keyboard and mouse ports. These devices are required for configuring certain features of the device, as described later in the manual.
3. Male DB-9 connectors for general purpose RS-232 communications.
4. Ethernet port / local area connection 2. Female RJ-45. Transports control and communications via Ethernet on Category 5e (CAT5e) cabling.
5. Ethernet port / local area connection 1. Female RJ-45. Transports control and communications via Ethernet on Category 5e (CAT5e) cabling.
6. PCI expansion slots for inserting extra cards, including:
   - AudioScience cards to allow the nControl to transfer audio data across a CobraNet network.
   - Multi-port Ethernet cards to allow a project to control devices on multiple separate networks using RATC or SNMP.
7. Redundant power supplies with power sockets. To be used with supplied IEC power cables.

Use only the supplied cables or an equivalent international version.

Note: You must connect both cables to the unit, otherwise a warning sound will be heard when you switch the unit on. The system is designed to provide redundant power using two independent power supplies.

Chapter 4

Installing the nControl

In This Chapter

DHCP versus static IP

Notes:

- Care should be taken when choosing to use Dynamic Host Configuration Protocol (DHCP), rather than a static IP address. DHCP mode is provided as a convenience when using units in informal settings or for test purposes. A static IP address should always be used when units are deployed in end-user installations. DHCP-obtained IP addresses depend on a *lease* to be maintained by the DHCP server in order to keep an assigned IP address. If the IP address lease is allowed to expire, there is a chance that the IP address assigned to one or more units could be lost, changed or reassigned, resulting in the loss of control or audio from a project.
- The network administrator should be able to give you a range of static (or fixed) IP addresses to use for your project. When requesting these IP addresses, be sure to obtain enough to cover each unit.

Installation procedure

It is very important that you read the installation procedure carefully before you attempt to install an nControl unit.

Note: Do not turn the unit on until instructed to do so in the procedure below.

To install an nControl unit into an equipment rack

1. Remove the unit from its packaging.
2. Remove all the other items from the packaging.
3. Check that you have all the items listed below:
   - nControl unit
   - 2 IEC removable power supply line cords
   - Green USB stick labeled *nControl KEY* (the hardware key – already inserted into a USB port on the front of the unit)
   - Red USB stick labeled *nControl RESTORE* (for recovering the nControl unit if it stops functioning)
   - User literature package.

   If any of these items is missing, please contact your Authorized Peavey MediaMatrix contractor/dealer.

   If you intend to use NWare:Kiosk with the nControl unit, or you want to view status information and change advanced Windows settings, you will also need a monitor, keyboard and mouse.

   Note: It is very important that you do not misplace the USB sticks. Ensure the green hardware key remains inserted in the nControl unit and the red restore USB stick can be found easily should you need to recover the unit.

4. Retain the packaging. It must be used if the unit is transported for any reason.
5. With a person standing at the front of the equipment rack and a person standing at the rear, position the nControl unit so that the holes in the mounting brackets are aligned with the holes on the rack posts.

   The unit does not require a gap above and below it in the equipment rack, as there are no ventilation holes at the top or bottom – all airflow is from the front of the unit to the back.

Use caution when lifting the unit. Two people are required to install it into an equipment rack.

It is important to keep the rack stable. If this unit is the only one in the rack, install it at the bottom. If there are several devices to install in the rack, load the rack from the bottom up.

Do not block or obstruct the fan vents. Airflow must be maintained.

6. Fix the nControl unit into the equipment rack using rack-mount fitting screws (not provided).

Caution: The unit may appear to be fixed securely using a single screw on either side, but we recommend that you fix the unit using all four screws.

7. Use a tape measure or a level to verify that the nControl unit is installed straight and level.
8. At the rear of the unit, insert an Ethernet cable into one of the Ethernet ports, then connect the other end of the cable to a local Ethernet switch.

   The nControl unit is configured to connect to a DHCP server to obtain an IP address and network settings. If it cannot find a DHCP server, an IP address starting with *169* will be used.

   You can use any of the available Ethernet ports. If the nControl is fitted with an Ethernet expansion card, you can use the ports on this card as well as the two ports fitted to the motherboard.

Notes:

- You must connect one of the ports on the motherboard to the control network. This is the network to which the NWare PC is connected.
- If you want to interface with a CAB device, you must use the ports on the motherboard to connect to the control network and CobraNet network. For an example configuration, see *Interfacing with a CAB device* (on page 33).
- There is currently no redundancy support for network connections.

9. If you are intending to interface with a device via one of the RS-232 ports, using the RATC protocol, for example, connect a cable between the RS-232 port and the external device.

   Be sure to note the port name: COM1 (above the VGA port), COM2, COM3 or COM4 for when you configure the nControl using NWare.

   For information on the pin-outs, see *RS-232 serial port pin outs* (on page 56).

10. If you are intending to use a PCI-1761 card, refer to the documentation supplied with the card for information on installation and connections.
11. If you are intending to use an AudioScience card, it is important that the jumpers on the card are set correctly before it is installed.

    Each card shipped from Peavey has an adapter number of 1, which is set using a jumper on the card. If you want to fit more than one AudioScience card to an nControl, you must specify a unique adapter number for each card.

    For more information on setting the jumpers, see *Installing multiple AudioScience cards* (on page 19).

    Also refer to the documentation supplied with the card for more information on installation and connections.
12. Connect the supplied power cables to the power inlet sockets.
13. Connect the other ends of the cables to a power source.

Use only the supplied cables or an equivalent international version.

Note: You must connect both cables to the unit, otherwise a warning sound will be heard when you switch the unit on. The system is designed to provide redundant power using two independent power supplies.

14. Open the front panel of the nControl unit.
15. Check that the green hardware key is inserted into the recessed USB slot.

Caution: The USB port for the hardware key is recessed, so that when the front panel is closed, the hardware key does not get damaged. The other USB ports on the front panel are not recessed and must not be used, otherwise you risk damaging the hardware key or the port.

Notes:

- If the hardware key is removed from the USB port, NWare projects containing devices from the *nControl Devices* part of the devices tree will not function.
- The hardware key can be inserted into a USB port at the rear of the nControl unit, but we recommend that the key is inserted into the recessed USB port at the front, as this will make it easier to access should you need to remove the key.

16. If you are using a keyboard, monitor and mouse, connect these devices to the nControl unit using the ports at the rear.
17. Switch on the nControl unit.
18. Check that the green **POWER** LED is lit at the front of the unit and the fans can be heard.

    If a monitor is connected, a MediaMatrix boot screen will be displayed during the boot process. When the nControl unit has booted, the main set up screen will be displayed.

    If the unit fails to power up, check that both power cables have been inserted correctly and that power is being provided by the power source.
19. Close the front panel.

Installing multiple AudioScience cards

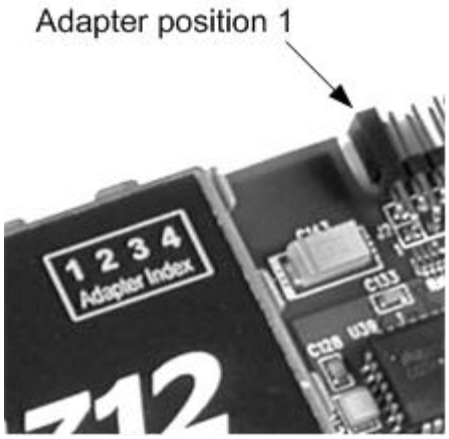
The nControl can be fitted with more than one AudioScience card to increase the number of available audio input and output connections.

Each card shipped from Peavey has an adapter number of 1, which is set using a jumper on the card. If you want to fit more than one AudioScience card to an nControl, you must specify a unique adapter number for each card.

To specify an adapter number for a card

1. Hold the card with the faceplate to the left, so you can see the location of the jumpers.

2. Move the jumper to position 1, 2, 3 or 4 to specify the adapter number for the card.



Chapter 5

Setting up the nControl unit

In This Chapter

Introduction

The configuration settings for an nControl unit are distributed between two different user interfaces: the web interface (accessed via a web browser) and the Windows interface (accessed via configuration screens that are displayed when you connect a monitor directly to the nControl unit).

Interface name	Configuration settings and actions
Windows interface	Setting the display resolution for the Window interface Enabling and disabling NWare Kiosk Restarting the unit IP configuration Accessing a Command Prompt window Specifying advanced Windows system configuration settings
Web interface	Stopping, restarting and erasing the role IP configuration settings for network ports and host name CAB control configuration Pandad configuration FTP server - enabling and disabling Time and date CPU load and PSU status display AudioScience card status display Activation key Firmware status display User management Rebooting and powering down the unit Adding entries to the log Restarting the ControlManager application Redundancy

Using the Windows interface

Specifying the basic network settings

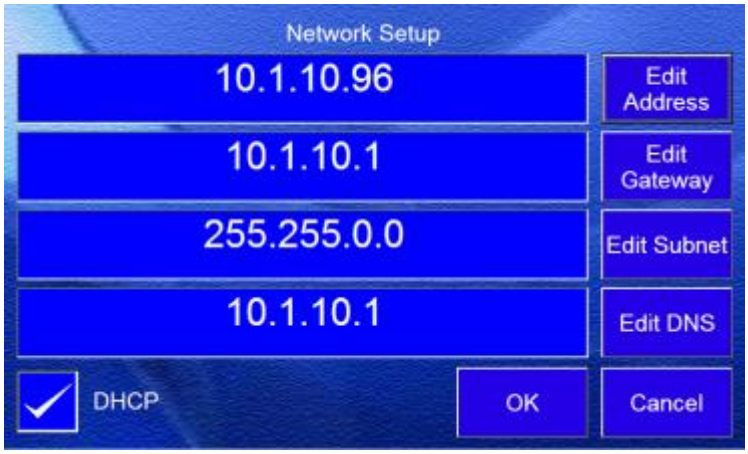
The nControl unit is configured to connect to a DHCP server to obtain an IP address and network settings. If it cannot find a DHCP server, an IP address starting with *169* will be used. The current network settings are displayed at the top of the main set up screen.

If you want to use DHCP, you do not need to change the network set up, but it is important that you check that the network to which you are connecting the unit has a DHCP server.

Note: If DHCP mode is selected, but there is no DHCP server on the network, the unit will be unable to communicate with other devices.

To specify the basic network settings

1. On the main set up screen, click **Network Setup**.



2. Clear the **DHCP** check box.
3. Click **Edit Address**, and then type an IP address in the address box.

   Note: The IP address must be unique on the network to avoid conflicts.

4. If your subnet is connected to a router, specify the router's IP address in the **Gateway** box. If you have no router, leave the **Gateway** box blank.
5. Type the network mask in the **Subnet** box.
6. If you intend to use a domain name to identify the nControl on the network, *e.g. nControl-mainroom.mediamatrix.corpname.net*, type the IP address of a DNS in the **DNS** box.
7. Click **OK**.

   Note: When you exit the **Network Setup** screen, you will be prompted to restart the system. This must be done in order for the settings to take effect.

8. Click **Yes** to restart the system.

   The nControl will reboot and the new network settings will take effect.

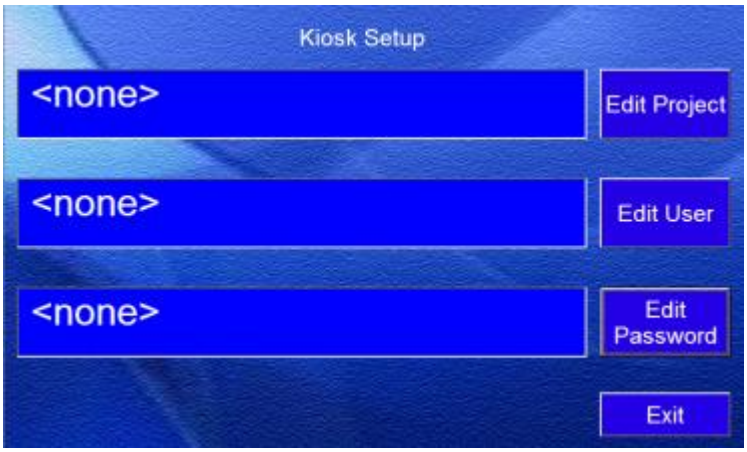
Specifying settings for running Kiosk

If you want Kiosk to start automatically when the nControl boots up, you must specify a project name (and optionally, a user name and password). These settings will then be used automatically.

A project name is also required if you want to start Kiosk manually by exiting the main set up screen in the Windows interface. If you specify the project using the Windows interface, the Exit button will be available immediately. If you use the web interface, you must firstly display the project settings in the Windows interface, then select Exit to refresh the display.

To specify Kiosk settings to use automatically

1. On the main set up screen, select the **Enable NWare Kiosk** check box.
2. Click **Project**.



3. Click **Edit Project**.
4. Type the name of the NWare project, and then click **OK**.

   If you do not specify a valid project, the user will be prompted to choose a project when the unit powers up.

Note: The project name is case-sensitive.

5. Click **Edit User**.
6. Type the username for the project, and then click **OK**.

Note: The username is case-sensitive.

7. Click **Edit Password**.
8. Type the password for the project, and then click **OK**.

Note: The password is case-sensitive.

9. Click **Exit**.

Starting Kiosk manually

Note: In order to use Kiosk on the nControl, you will need to attach a monitor, keyboard and mouse to the unit.

1. On the main set up screen, click **Exit**.
   This screen is displayed.

2. Wait for the countdown to reach zero.
   Kiosk will start automatically and attempt to connect to an NWare project using the settings that are currently stored.
   If the project settings are valid, the project start screen will be displayed in Kiosk.
   If the project name or log on settings are not valid, you will be prompted to enter them before you can continue.

Tips:

- The **Starting Kiosk...** screen will now be shown each time the nControl boots.
- If you want to exit Kiosk when it is running, press ALT+F4 to close the application and return to the **Starting Kiosk...** countdown screen.

Changing the display resolution

You can adjust the display resolution to ensure that the nControl configuration screens and, if you are running Kiosk, the Kiosk window can be seen clearly on your monitor.

To change the display resolution

1. On the main set up screen, click **Display Settings**.

2. Click the plus (+) and minus (-) buttons to adjust the display resolution.
3. Click **Set**.
4. Click **Exit**.

Specifying advanced system configuration settings

nControl runs Microsoft Windows Embedded Standard and supports a wide range of configuration options, including:

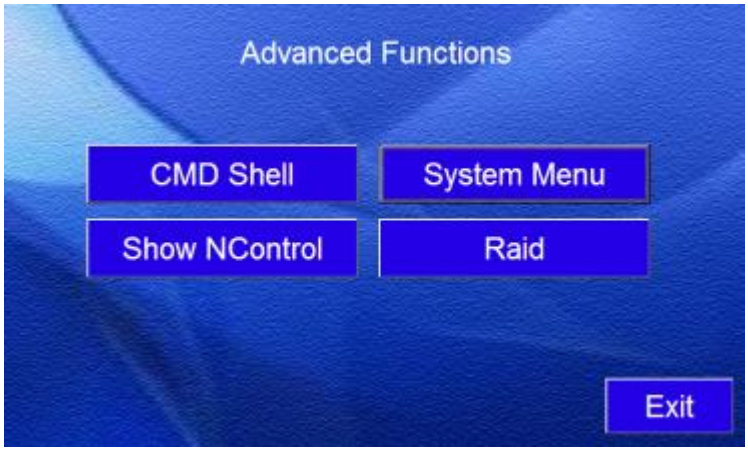
- Device driver management
- Event log management
- Remote access
- Windows firewall.

Note: Changing settings can have adverse affects on the operation of the unit, so it is very important that you only change them when instructed to do so by MediaMatrix Technical Support.

To specify advanced system configuration settings

1. On the main set up screen, click **Advanced**.
   You will be asked to confirm your choice.
2. Click **Continue**.

The **Advanced Functions** screen is displayed.



3. Click **System Menu**.
4. Change the settings.

   You can refer to the Windows Help and Support Center on a Windows XP PC for information on the settings.
5. Click **Exit**.

Making a new time zone available for selection

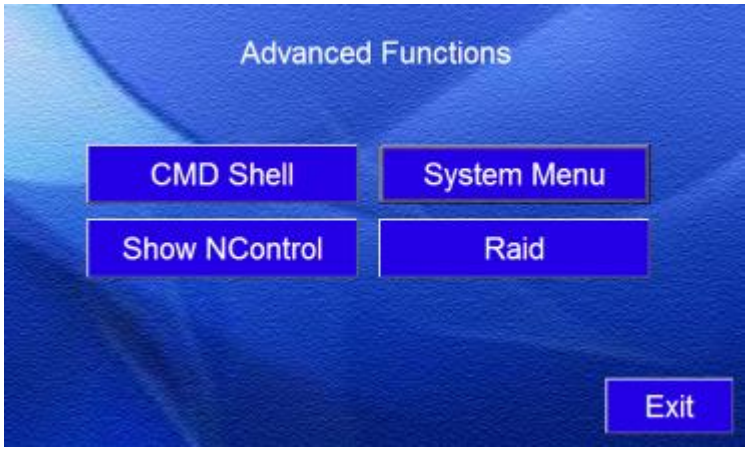
If you are installing nControl units in a time zone that is not listed on the *Time and Timezone* tab of the web interface, you will need to add a new entry for the time zone to the *timezones_lut.txt* file on the nControl unit.

To add a new mapping to the time zone configuration file

1. On the main set up screen, click **Advanced**.

   You will be asked to confirm your choice.
2. Click **Continue**.

   The **Advanced Functions** screen is displayed.



3. Click **System Menu**.
4. Click **Explorer**.

   Windows Explorer is displayed.
5. Browse to *C:\nControl\ncontrol_data*.
6. Open the *timezones_lut.txt* file.

7. Add a new entry to the end of file using this format:

   ```
   <Windows time zone>|<Linux time zone continent>/<Linux time zone city>
   ```

   For example:

   ```
   Eastern Standard Time|America/New_York
   ```

8. Save the file.
9. Close Windows Explorer.
10. On the System menu, click **Restart**.
11. Click **Yes**.

Configuring the RAID storage system

The nControl unit is fitted with two hard disk drives, which are configured to use RAID 1 mirroring.

Instead of using a single disk to store data, it is written to both drives simultaneously. This ensures that should one of the drives fail, there is a full copy of the data on the other and the system can continue to operate normally.

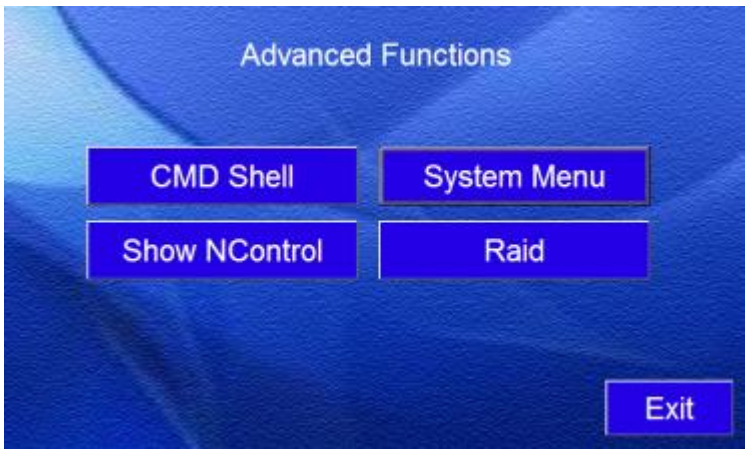
Caution: It is very important that you only make changes to the RAID settings when under instruction from MediaMatrix Technical Support. It is possible to lose data stored on the nControl unit or stop it from booting if you specify settings incorrectly.

1. On the main set up screen, click **Advanced**.

   You will be asked to confirm your choice.

2. Click **Continue**.

   The **Advanced Functions** screen is displayed.



3. Click **Raid**.

   The Intel Matrix Storage Console is displayed.

4. Perform the actions you have been instructed to perform by MediaMatrix Technical Support.
5. When you have finished, exit Intel Matrix Storage Console.

Displaying the nControl status window

The nControl status window displays information about the software running on the nControl unit. This is useful for diagnosing issues when working in conjunction with MediaMatrix Technical Support.

To display the nControl status window

1. On the main set up screen, click **Advanced**.
   You will be asked to confirm your choice.
2. Click **Continue**.
   The **Advanced Functions** screen is displayed.

3. Click **Show NControl**.
   The nControl status windows is displayed.
4. When you have finished viewing the status information, click **Hide nControl**.

Displaying the Command Prompt window

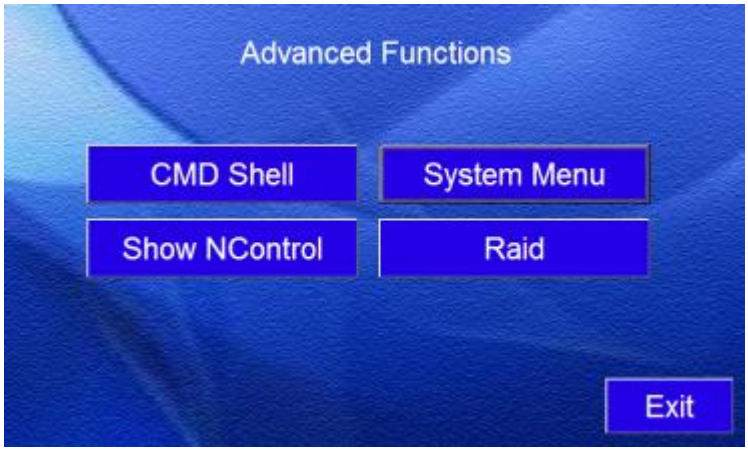
You can display a standard Windows Command Prompt window and then type in commands directly.

Note: Changing settings can have adverse affects on the operation of the unit, so it is very important that you only change them when instructed to do so by MediaMatrix Technical Support.

To display the Command Prompt window

1. On the main set up screen, click **Advanced**.
   You will be asked to confirm your choice.
2. Click **Continue**.

The **Advanced Functions** screen is displayed.



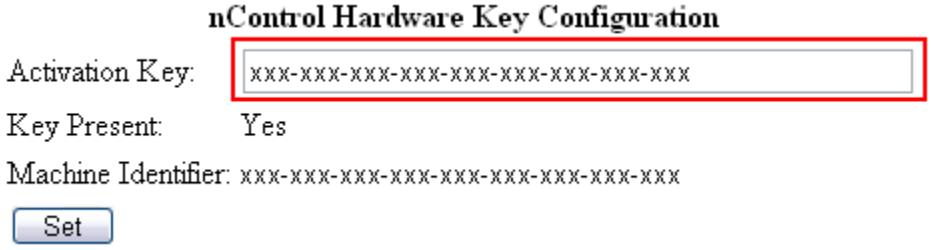
3. Click **CMD Shell**.

   A Command Prompt window is displayed.
4. Perform the actions you have been instructed to perform by MediaMatrix Technical Support.
5. When you have finished, type **Exit**.

Using the web interface

Recording the activation key

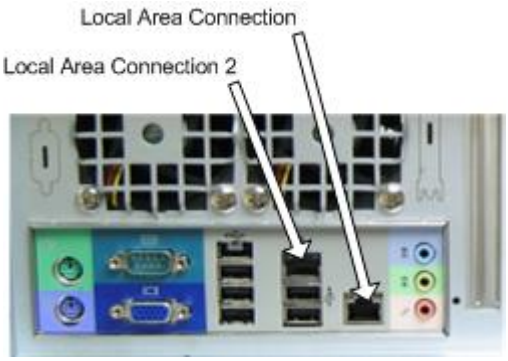
If you are using a hardware key issued prior to the 1.7.2 release, you will need to use a software activation key in conjunction with it to license the unit. If the unit stops functioning, you will need to reinstall the software, as described in the section *Recovering the nControl unit if it stops functioning* (on page 50), and, if you are using nControl devices in your project, also specify the activation key via the web interface. Therefore, we recommend that you make a note of the activation key before continuing; it is displayed under **nControl Hardware Key Configuration** on the **Hardware** tab of the web UI.



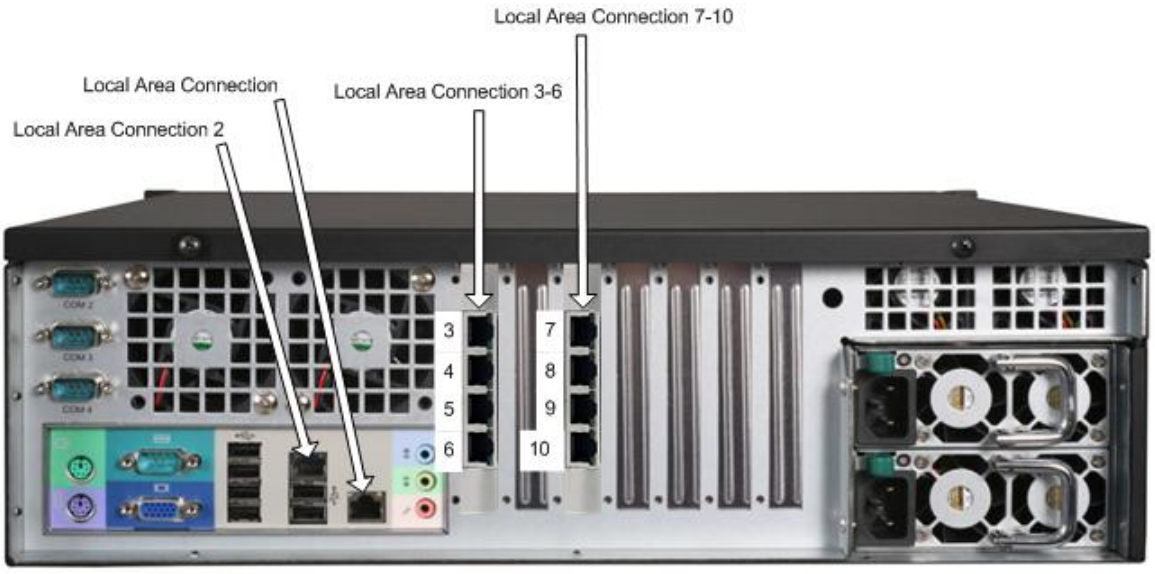
Specifying the network settings

Rear network ports

Before you specify network settings, make sure you know which physical interfaces at the rear of the nControl unit **Local Area Connection** and **Local Area Connection 2** on the **Network** screen correspond to.



If the nControl is fitted with one or more Ethernet expansion cards, there will be 4 or 8 additional ports available. In the web interface, these ports are labeled **Local Area Connection 3-6** or **Local Area Connection 3-10** respectively.



Setting the IP address

Using DHCP to assign an IP address automatically

1. Confirm that the network to which you are connecting the unit has a DHCP server.

Notes:

- If DHCP mode is selected, but there is no DHCP server on the network, the unit will be unable to communicate with other devices.
- In this example, the DHCP server is provided by the router. Ensure that your network is using a router. A plain switch will not provide the required DHCP server for the example.

2. Navigate to the **Network** screen.
3. Under **Local Area Connection x** (where x is the interface number), in the **IP Configuration Method** list, click **DHCP**.
4. Click **Set** to confirm the action.

   You will be asked to log on.
5. Specify your username and password. The default username is *superuser*; it has no password.

Using a static IP address

1. Navigate to the **Network** screen.
2. Under **Local Area Connection x** (where x is the interface number), in the **IP Configuration Method** list, click **static**.
3. Click **Set** to confirm the action.

   You will be asked to log on.
4. Specify your username and password. The default username is *superuser*; it has no password.

   Further options will be displayed.

Local Area Connection	
IP Configuration method:	static
IP:	192.168.1.100
Netmask:	255.255.0.0
Gateway:	none
DNS:	none

5. In the **IP** box, type an IP address.

Note: The IP address must be unique on the network to avoid conflicts.

6. In the **Netmask** box, type the network mask for your network.
7. If your subnet is connected to a router, specify the router's IP address in the **Gateway** box.

   If you have no router, set **Gateway** to **none**.
8. If you intend to use a domain name to identify the nControl unit on the network, e.g. *www.my_nControl.com*, specify the IP address of a DNS on the network, which will resolve the name to an IP address.
9. Click **Set** to confirm the action.

Specifying a name for the nControl unit

You can specify a name for the nControl unit that will identify it in NWare and will also be shown in the web interface.

To specify a name for the nControl unit

1. On the **Network** screen, in the **Host Name** box, type a name for the nControl unit.

   The name can only contain letters and numbers, and cannot contain spaces. The maximum length permitted is 12 characters.
2. Click **Set** to confirm the action.

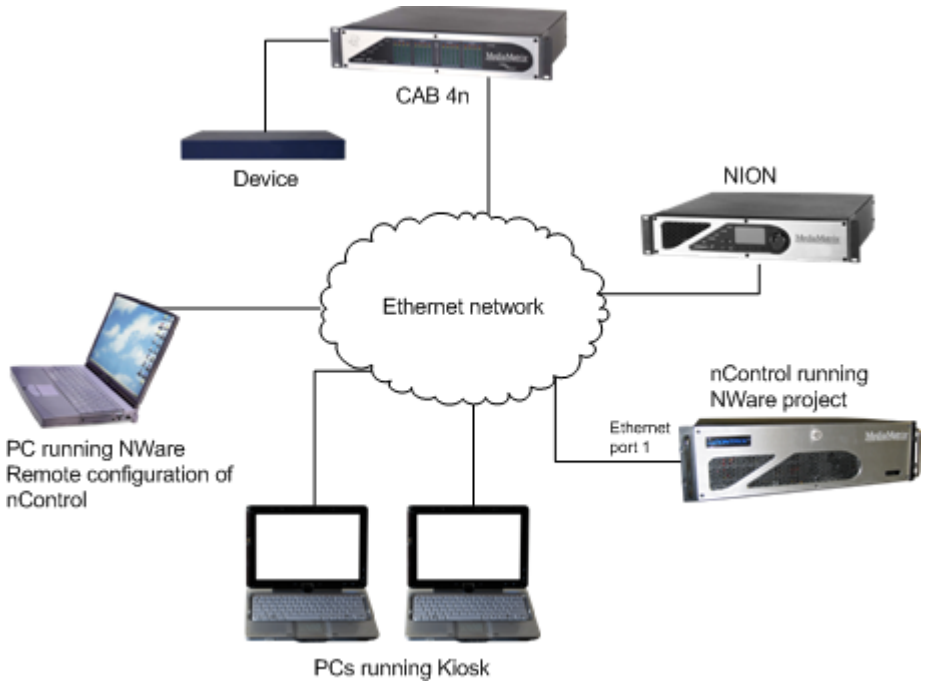
You will be asked to log on.

3. Specify your username and password. The default username is *superuser*; it has no password.

Interfacing with a CAB device

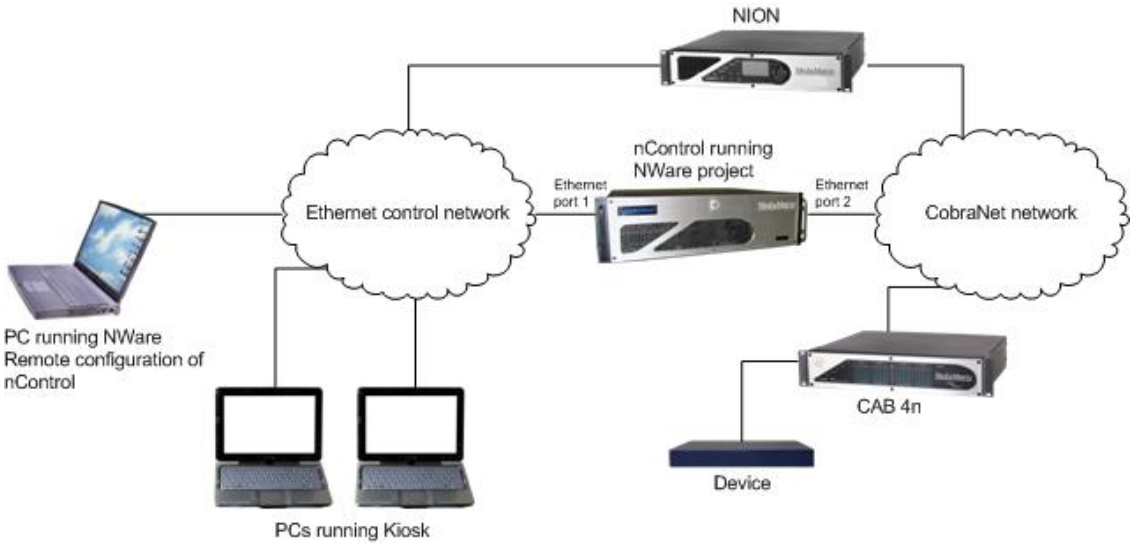
The nControl unit can interface with CAB devices, including the CAB 4n. This in turn allows control of external devices via the GPIO port, relays, RS-485 port etc. on the CAB.

The nControl unit has two Ethernet ports, allowing a number of different configurations. In the example below, the nControl unit can communicate with the CAB via the first of its two Ethernet ports, labeled *Local Area Connection* in the web interface.



In the next example, in order to communicate with the CAB, data must be sent via the second Ethernet port, labeled *Local Area Connection 2* in the web interface.

You need to specify which Ethernet port is to be used for communicating with CAB devices on the network.



Note: You cannot control a CAB device via one of the ports on an Ethernet expansion card. You must use one of the ports on the motherboard.

To specify a network interface for CAB control

1. On the **Network** screen, under **CAB Control Interface**, select a network interface for the CobraNet network.

   The details for the *Local Area Connection* interface are shown first, followed by the details for *Local Area Connection 2*.
2. Click **Set** to confirm the action.

   You will be asked to log on.
3. Specify your username and password. The default username is *superuser*; it has no password.
4. Navigate to the **Special** screen.
5. Under **Unit Shutdown** in the action list, click **reboot**.
6. Click **Do it**.

Specifying an IP address for connecting to other network devices

The Pandad Windows service that runs on the NWare PC will detect the nControl unit using a specified IP address and make it available in NWare. This IP address will also be used to connect to other MediaMatrix devices on the network.

The nControl motherboard is fitted with two Ethernet ports. If both ports are used, two IP addresses will be used. You will therefore need to specify which IP address to advertise to Pandad.

Note: You can only specify the IP address for one of the ports on the motherboard, and not a port on an Ethernet expansion card.

If you have specified the IP addresses manually via the web interface, they will be displayed under **Local Area Connection** and **Local Area Connection 2** on the **Network** page. If you are using DHCP, you will need to ask your systems administrator to look at the DHCP configuration for your network to see how addresses have been allocated to interfaces on the nControl unit.

To specify an IP address for connecting to other network devices

1. On the **Network** screen, under **Panda Interface**, select an IP address to advertise to Pandad on the control network.

   The details for the *Local Area Connection* interface are shown first, followed by the details for *Local Area Connection 2*.
2. Click **Set** to confirm the action.

   You will be asked to log on.
3. Specify your username and password. The default username is *superuser*; it has no password.

Setting the time and date

Introduction

For accurate reporting of events when running different MediaMatrix units, it is critical to specify the proper time zone, time, and date settings. Correct settings will ensure that the event logs and other time sensitive information are accurately recorded and displayed.

There is a time synchronization system that ensures that the time and date settings on NIONs, nControl units and nTouch 180 units are the same across the control network. If you change the date on a NION, for example, it is automatically changed on the other devices. This feature is especially useful for debugging. If you look at an event in the log that occurred at a particular time on one NION, you can be sure that an event with the same timestamp on a different NION occurred at exactly the same time.

You can specify the time and date settings manually, or they can be obtained automatically from a time server.

Tip: A time server can be set up on your local network, or you can connect to one via the internet. For information on available internet time servers, see *http://www.pool.ntp.org* (*http://www.pool.ntp.org*).

Synchronization modes

Mode name	Description
Normal	If you specify Normal mode for all units on the network, so no Master node is available, when you specify time and date settings on any of the units, they will be assigned to the others automatically.

	If a unit on the network is using Time Server or Master mode, all units in Normal mode will be assigned time and date settings from that unit – they will act as *slaves*.
Master	The time and date settings from this unit will be assigned to all units that are using Normal mode.
Time Server	This node will contact a time server to retrieve time and date settings. The time and date settings from this unit will be assigned to all units that are using Normal mode. The time server can be contacted using its IP address or a domain name. **Note:** When you use a domain name, it must be resolved to an IP address. This is done automatically, but you must specify DNS or DHCP settings on the Network screen in the web interface.

Time zone compatibility

nControl and nTouch 180 units run Microsoft Windows, whereas the NION uses Linux. This means there are compatibility considerations for automatic time synchronization between the two operating systems.

nControl and nTouch 180 units use a mapping file, called *timezones_lut.txt*, to map Windows time zones to Linux time zones. This file is located on the nControl or nTouch 180 unit.

The file contains entries like this one:

```
Eastern Standard Time|America/New_York
```

This declares a mapping from a Windows time zone (*Eastern Standard Time*) to a Linux time zone (*America/New_York*). So, for example, if an nControl unit is set up as the time server, the *Eastern Standard Time* setting on the nControl unit would be translated to *America/New_York* on the slave NIONs.

Note: The mapping file contains a comprehensive list of time zones for both systems, but it is possible that NION, nControl and nTouch 180 units are being run in a part of the world which uses a time zone that is not in the mapping file. In this case, you will need to add a new mapping for the local time zone. For more information, see *Making a new time zone available for selection* (on page 27).

Setting up synchronization

Scenario	Actions to take
You want to be able to set the time and date on *any* MediaMatrix node on the network manually, and for the settings to then be automatically	On all MediaMatrix nodes: 1. Navigate to the **Time and Timezone** tab. 2. Clear the **Time Server** box.

Scenario	Actions to take
assigned to the others.	3. In the **Authority** list, click **normal**. 4. Click **Set**. If you want to adjust the time and date, perform these steps on any MediaMatrix node: 1. In the **Time (24hr)** box, type the new time in the format HH:MM:SS. 2. In the **Date (mm/dd/yy)** box, type the new date in the format mm/dd/yy. 3. Under the **Date (mm/dd/yy)** box, click **Set**. 4. If you are using a NION, under **Timezone**, specify a continent and country. 5. If the country has more than one time zone, in the **Zone** list, click the time zone. **Tip:** Where a country has only one time zone, you do not need to make a selection. 6. Under the **Zone** box, click **Set**.
You want the time and date for all nodes on the network to be obtained automatically from a single, master unit. You do not want anyone to be able to assign times and dates to the other units by accessing them directly. You will specify the time manually.	On the master node: 1. Navigate to the **Time and Timezone** tab. 2. Clear the **Time Server** box. 3. In the **Authority** list, click **Master**. 4. Click **Set**. If you want to adjust the time and date, perform these steps on the master node: 1. In the **Time (24hr)** box, type the new time in the format HH:MM:SS. 2. In the **Date (mm/dd/yy)** box, type the new date in the format mm/dd/yy. 3. Under the **Date (mm/dd/yy)** box, click **Set**. 4. If you are using a NION, under **Timezone**, specify a continent and country. 5. If the country has more than one time zone, in the **Zone** list, click the time zone. **Tip:** Where a country has only one time zone, you do not need to make a selection. 6. Under the **Zone** box, click **Set**.

Scenario	Actions to take
	On the other (slave) nodes: 1. Navigate to the **Time and Timezone** tab. 2. Clear the **Time Server** box. 3. In the **Authority** list, click **normal**. 4. Click **Set**. **Note:** If you try to change the time and date settings on the slave nodes, they will automatically change to match the settings on the master node.
You want the time and date for all nodes on the network to be obtained automatically from a time server.	On the master (time server) node: 1. Navigate to the **Time and Timezone** tab. 2. In the **Time Server** box, type IP address or domain name of a time server. **Note:** If you are using a domain name to contact the time server, a DNS must be present on the network. If a DHCP server is not available on the network, you must specify the IP address of the DNS on the Network page for the local area connection you are using. 3. In the **Authority** list, click **time server**. 4. Click **Set**. **Note:** Once you select time server mode, you will not be able to change the time or date settings. On the other (slave) nodes: 1. Navigate to the **Time and Timezone** tab. 2. Clear the **Time Server** box. 3. In the **Authority** list, click **normal**. 4. Click **Set**. **Note:** If you try to change the time and date settings on the slave nodes, they will automatically change to match the settings on the time server node.

Copying media files to the nControl unit

You can copy media files over to the nControl unit using FTP and then use them in your NWare projects. This allows you to quickly change the available media in a project. You can also minimize the size of the NWare project file by storing your media on the nControl unit and not in the project file itself. You can use any FTP client to copy the files.

In order to allow files to be copied, you need to enable the FTP server on the node you are using. This is done via the web interface. Once FTP is enabled, you can use an FTP client (or the FTP command from a Command Prompt window) to copy files over.

Files on an nControl unit can be played using a Media Player device in your NWare design.

Files on a NION can be played using a Wave File Player device in your NWare design.

For more information on these devices, refer to the *NWare Device Reference*.

Notes:

- It is not currently possible to view the amount of available space for storing media files.
- When the project is deployed, media files must be located on the same node that hosts the NWare device playing the files. If the files are located on a different node, you will not be able to play them. We recommend that you manually assign the device playing the files to a role and deploy that role to the node that will host the media files.
- You can disable the FTP server by clearing the FTP check box (see procedure below), but if you are using an nControl unit or nTouch 180 unit, you must restart it before the change will take effect.

To enable the FTP server

1. Navigate to the **Network** screen.
2. Under **Services**, select the **FTP** check box.
3. Click **Set** to confirm the action.

   You will be asked to log on.
4. Specify your username and password. The default username is *superuser*; it has no password.

To copy media files to the nControl unit

1. Open a Command Prompt window.
2. Navigate to the folder containing the media files.
3. Type `FTP` and press Enter.

   The `ftp>` prompt is displayed.
4. Type `open <IP address of nControl unit>` and press Enter.

   The following message is displayed.

   ```
   Connected to <IP address>.

   ...

   User (<IP address>:(none)):
   ```
5. Type `anonymous` and press Enter.
6. If you are prompted for a password, press Enter.

You do not need to specify a password.

7. If you want to list the files already copied to the unit, type `ls` and press Enter.
8. Type `binary` to switch to binary copy mode.
9. Type `mput <filename>` and press Enter.
   The parameter <filename> is either a single file or a wildcard referencing multiple files.

When you have finished copying files, type `quit` to close the ftp session.

Managing users

Introduction

Users are created via the web interface, and assigned privileges to allow them to perform certain operations, as listed below.

Privilege	What it controls
Deploy	Determines whether the user can deploy a role to this node.
Update Firmware	Determines whether the user can update the firmware on this node.
Debug Menu Access	Determines whether the user can access the debug menu of this node using the Pandebug application.
User Administration	Determines whether the user can create, edit and remove user accounts on this node.
NioNode Administration Access	Determines whether the user can change settings such as network configuration and time and date.
Log Access	Determines whether the user can view or clear the log. **Tip:** For more information on viewing the log within NWare, see *Remote Log* in the *NWare User Guide*.

There are two default users: *superuser* and *defaultuser*, which cannot be deleted. You can add your own users as necessary.

superuser	Has all privileges enabled. None of its settings can be changed, apart from the password, which is blank by default.
defaultuser	Has all privileges enabled, apart from *User Administration* and *NioNode Administration Access*.

In NWare, when you perform an action that involves the node, such as deploying a role or updating firmware, NWare logs on to the node using a particular username. The node matches this username with the username of the same name stored on the unit. The privileges of the username on the node determine whether the action may be carried out.

Tip: Users often log on to nodes with the username *defaultuser*. If the settings for this username on the node show the **Deploy** privilege set to **Disallow**, it will not be possible to deploy a role to the node even when they are logged on.

Adding a new user

1. Navigate to the **User Management** screen in your web browser.
2. Click **Add new user**.

   The **Edit User** screen is displayed.

3. In the **user name** box, type the name of the new user.
4. If you want to specify a password for the user, which must be specified when the user logs on, type the password in the **Password** box, and then type the password again in the **Confirm** box.

Note: We recommend that you always specify a password for users to ensure unauthorized persons do not gain access to the node.

5. Specify the user privileges.

Privilege	What it controls
Deploy	Determines whether the user can deploy a role to this node.
Update Firmware	Determines whether the user can update the firmware on this node.
Debug Menu Access	Determines whether the user can access the debug menu of this node using the Pandebug application.
User Administration	Determines whether the user can create, edit and remove user accounts on this node.
NioNode Administration Access	Determines whether the user can change settings such as network configuration and time and date.
Log Access	Determines whether the user can view or clear the log. **Tip:** For more information on viewing the log within NWare, see *Remote Log* in the *NWare User Guide*.

6. Click **Apply**.

Deleting a user

You can delete users from a node when they are no longer required.

Note: You cannot delete *defaultuser* or *superuser*.

To delete a user

1. Navigate to the **User Management** screen in your web browser.
2. Click the **Delete** button next to the user you want to delete.
   You will be asked to confirm the delete operation.
3. Click **Yes**.

Specifying settings for running Kiosk

If you want Kiosk to start automatically when the nControl boots up, you must specify a project name (and optionally, a user name and password). These settings will then be used automatically.

A project name is also required if you want to start Kiosk manually by exiting the main set up screen in the Windows interface. If you specify the project using the Windows interface, the Exit button will be available immediately. If you use the web interface, you must firstly display the project settings in the Windows interface, then select Exit to refresh the display.

To specify settings for running Kiosk

1. Navigate to the **User Management** tab.

   You will be asked to log on.
2. Specify your username and password. The default username is *superuser*; it has no password.
3. Under **Kiosk Configuration**, click in the **Project** box.
4. Type the name of the NWare project, and then click **OK**.

   If you do not specify a valid project, the user will be prompted to choose a project when the unit powers up.

   Note: The project name is case-sensitive.
5. Click in the **User** box.
6. Type the username for the project, and then click **OK**.

   Note: The username is case-sensitive.
7. Click in the **Password** box.
8. Type the password for the project, and then click **OK**.

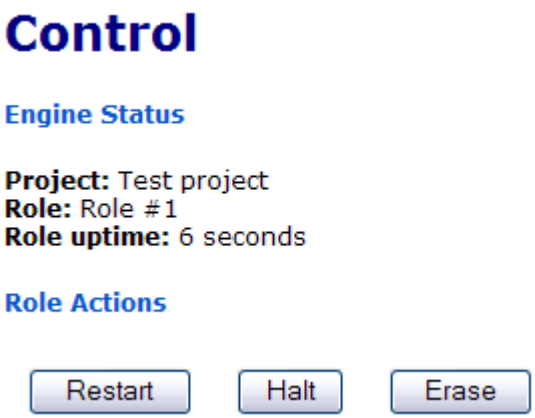
   Note: The password is case-sensitive.
9. Click **Set**.

Managing the role

In an NWare project, devices that are part of the design are assigned to roles, either automatically by NWare or manually by the user. Each role is then assigned to a NION, nControl unit or nTouch 180 unit for processing when the project is deployed.

Tip: Once a project has been deployed to a node, if the node is power cycled, the project is restarted automatically.

The **Control** screen shows the NWare project to which the role belongs, the name of the role and how long it has been loaded.



Restarting the role

1. On the **Control** screen, under **Role Actions**, click **Restart**.
2. Click **OK** to confirm the action.

Stopping the role

1. On the **Control** screen, under **Role Actions**, click **Halt**.
2. Click **OK** to confirm the action.

Erasing the role

1. On the **Control** screen, under **Role Actions**, click **Erase**.
2. Click **OK** to confirm the action.

Setting up redundancy

The nControl redundancy system allows a standby unit to replace an active unit on the network if it stops functioning.

When the system is used, the configuration settings from the active unit are automatically copied to the standby unit to keep them synchronized. The two units are responsible for a single role. There are two main modes of operation:

- One nControl is the primary unit and a second nControl is the backup unit. The primary unit is active and the backup unit is in standby mode. The backup unit continuously monitors the primary unit and synchronizes its files with the primary unit. In the event the primary unit fails, the backup unit will take over. If the primary unit starts functioning, it will take over from the backup unit.

  This mode is recommended when you want to prioritize the use of one unit over another. The primary unit may have a serial device attached, for example, and you want this device to be available to your project whenever possible. If a switchover is made to the backup unit, but then the primary unit subsequently starts functioning, you want to switch back to the primary unit immediately, so the serial device can be used.
- Two nControl units are set up as peers. One unit is active and the other unit is in standby mode. The unit in standby mode continuously monitors the active unit and synchronizes its files with the active unit. In the event the active unit fails, the unit in standby mode will take over. If the failed unit comes back online, it will run in standby mode and monitor the active unit, ready to take over if there is another failure.

If Kiosk users are connected to a project hosted on an nControl unit when it fails, they will be automatically connected to the project on the backup unit after a short delay.

Notes:

- By default, when one nControl unit takes over from another, the controls in the project (knobs, faders etc.) are reset to their default values. If you would like the controls to be set to the most recent values displayed in Kiosk, you need to change a setting in NWare: On the NWare *File* menu, click *Project Properties*, click *Advanced*, and then select the *Auto save settings* check box.
- It is important that you test the redundancy system carefully before using it in an installation. If the switchover to the standby unit does not work, users will be unable to connect to the NWare project.
- You can set up a redundancy system to use an nControl unit and an nTouch 180 unit, rather than units of the same type. However, the NWare project must be fully compatible with both units, otherwise it will not function properly when the backup unit takes over.

To set up redundancy when using a primary unit and a backup unit

1. Power up both the nControl units.
2. Connect to the web interface on the backup unit.
3. On the **Special** screen, under **Redundancy**, type the IP address of the primary nControl unit in the **Peer Unit Address** box.
4. In the **Timeout** box, type the number of seconds to wait after the backup unit has lost contact with the primary unit before the backup unit takes control.

   Waiting for a period of time allows the primary unit to start and load the project after a normal power cycle, preventing the backup unit from taking over automatically. It also allows for when communications between the primary and backup unit stop for a few seconds because of a slow network, for example.
5. Click **Set** to confirm the action.

   You will be asked to log on.
6. Specify your username and password. The default username is *superuser*; it has no password.
7. Restart the backup nControl unit.

To set up redundancy when using two units as peers

1. Power up both the nControl units.
2. Connect to the web interface on the first unit.
3. On the **Special** screen, under **Redundancy**, type the IP address of the second nControl unit in the **Peer Unit Address** box.
4. In the **Timeout** box, type the number of seconds to wait after this unit has lost contact with the other unit before this unit takes control.

   The same value can be specified on both units. This is because if they both start at the same time, they will negotiate to determine which unit will be active and which will operate in standby mode.
5. Click **Set** to confirm the action.

   You will be asked to log on.
6. Specify your username and password. The default username is *superuser*; it has no password.

7. Restart the first nControl unit.
8. Repeat steps 2-7 for the second nControl unit.

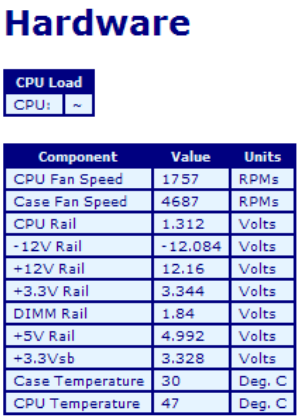
Chapter 6

Maintaining the nControl unit

In This Chapter

Viewing hardware status information

- Open the web interface, then navigate to the **Hardware** screen.
  A table of information about the hardware is displayed.



Hardware

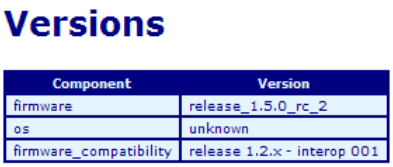
CPU Load	
CPU:	~

Component	Value	Units
CPU Fan Speed	1757	RPMs
Case Fan Speed	4687	RPMs
CPU Rail	1.312	Volts
-12V Rail	-12.084	Volts
+12V Rail	12.16	Volts
+3.3V Rail	3.344	Volts
DIMM Rail	1.84	Volts
+5V Rail	4.992	Volts
+3.3Vsb	3.328	Volts
Case Temperature	30	Deg. C
CPU Temperature	47	Deg. C

The first time the page is displayed, a tilde (~) symbol is shown instead of the *CPU Load* figure. You must refresh the page in order to see the calculated figure. Each time you refresh the page, the *CPU Load* figure is recalculated, based on the time since the page was last refreshed. The maximum time interval used for the calculation is 30 seconds.

Viewing firmware status information

- Open the web interface, then navigate to the **Versions** screen.
  The screen shows the version of firmware loaded on the nControl unit.



Versions

Component	Version
firmware	release_1.5.0_rc_2
os	unknown
firmware_compatibility	release 1.2.x - interop 001

Rebooting or shutting down the unit

1. Open the web interface, then navigate to the **Special** screen.
2. Under **Unit Shutdown** in the **action** list, click **reboot** or **power down**.
3. Click **Do it**.
   You will be asked to log on.
4. Specify your username and password. The default username is *superuser*; it has no password.

Adding entries to the log manually

When events occur, you can add entries to the log manually, rather than use an automatic system like the Logger device in NWare.

The messages are typed and then submitted to the log. Messages can be viewed on the **Remote Log** tab in NWare.

To add entries to the log manually

1. Open the web interface, then navigate to the **Special** screen.
2. Under **Create Log Entry** in the **entry** list, click the severity of the log entry, e.g. warning or fault.
3. In the box next to the entry list, type the text for the log entry.
4. Click **Log it**.

   You will be asked to log on.
5. Specify your username and password. The default username is *superuser*; it has no password.

Restarting the ControlManager application

ControlManager is the main MediaMatrix software application that resides on the nControl unit. When you want to restart this application, as an alternative to rebooting the nControl unit, you can restart ControlManager and leave the hardware powered up.

To restart the ControlManager application

1. Open the web interface, then navigate to the **Special** screen.
2. Under **Restart ConMan**, click **Restart it**.

   You will be asked to confirm the action.
3. Click **Yes**.

   You will be asked to log on.
4. Specify your username and password. The default username is *superuser*; it has no password.

Updating the firmware

Firmware on nControl units can be updated using two methods: using NWare or via a USB stick inserted directly into the unit.

Most releases of firmware can be installed using NWare, but occasionally, an upgrade using a USB stick must also be performed. Check the Release Notes for the version of firmware you are installing before you begin.

Note: If you are upgrading to a new major version of the firmware, it is important to check whether the major version on which the new release is based requires a USB stick upgrade. For example, if you are moving from 1.6.3 to 1.6.4b and 1.6.4 requires a USB stick upgrade, you must perform the USB stick upgrade in addition to the upgrade to 1.6.4b via NWare.

For information on updating firmware using NWare, see *Updating firmware on MediaMatrix devices* in the *NWare User Guide*.

If you need to upgrade the firmware using a USB stick, *Contact MediaMatrix Technical Support* (*mailto:mmtechsupport@peavey.com*). They will provide you with the files you need to install on the stick and explain the procedure. If you already have a USB stick, information on the upgrade procedure can be found in the *ReadMe.txt* file on the stick.

Recovering the nControl unit if it stops functioning

The nControl unit is shipped with a special red USB stick labeled *nControl RESTORE*, which can be used to restore the unit back to its factory state in the event that it has stopped functioning.

We recommend that you try switching the unit off and then on again to see if this solves the problem. If it does not, you will need to complete the steps below.

Notes:

- When you complete the firmware replacement procedure below, all of the data on the nControl unit will be lost.
- If you are using an nControl issued prior to version 1.7.2, after you replace the firmware, you will not be able to deploy a role to the unit that contains devices from the nControl section of the device tree until a valid activation key has been specified. If you already have an activation key, make a note of it; you will need to enter this key when the unit has been recovered. You can find the key on the *Hardware* tab in the web interface. If you do not have an activation key, complete the procedure *To obtain a new activation key* below. Users of units issued after the 1.7.2 release do not need to complete this procedure.

To replace the firmware

1. Locate the red USB stick labeled *nControl RESTORE*.
2. Open the front panel of the nControl unit.
3. Switch the unit off.
4. Insert the USB stick into one of the free USB slots.
5. Switch the unit on.

   The HDD light will flash as the unit starts up.

   The unit will perform a number of operations and then it will shutdown. The process will take approximately four and a half minutes.
6. Remove the USB stick and keep it in a safe place.
7. Switch the unit on.

   The HDD light will flash as the unit starts up. The unit will now function normally.

To obtain a new activation key

1. Open a web browser, connect to the nControl unit, then navigate to the **Hardware** screen.
2. Select the contents of the **Machine Identifier** box and then press CTRL+C to copy it to the Clipboard.
3. Email this code, along with your name, company name and a contact number, to *MediaMatrix Technical Support* (*mailto:mmtechsupport@peavey.com*).

   An activation key will be emailed to you.

To activate an nControl unit

1. Navigate to the **Hardware** screen.
2. In the **Activation Key** box, type the activation key that you have been sent.
3. Click **Set**.

   You will be asked to log on.

4. Specify your username and password. The default username is *superuser*; it has no password.

   If you have specified a valid activation key, the **Key Present** box will change to **Yes**.
5. Power cycle the nControl.

Using advanced recovery options

Caution: This section is intended for MediaMatrix Technical Support staff or users who are under instruction from Technical Support. Using the wrong configuration options could prevent the nControl from functioning.

The recovery process is controlled using settings in an XML file. This file is called *switches.xml* and is located in the root of the USB stick drive.

By default, the file contains the following code.

```
<?xml version="1.0" encoding="utf-8"?>
<RecoverySwitches>
 <Control>
 <exit_switch>
 <switch value="1" />
 </exit_switch>
 <put_switch>
 <switch value="1" />
 </put_switch>
 <get_switch>
 <switch value="0" />
 </get_switch>
 <wipe_switch>
 <switch value="0" />
 </wipe_switch>
 </Control>
</RecoverySwitches>
```

Each of the switches is explained in the table below.

exit_switch	When set to 1, shuts the computer down after the recovery process has finished. Default is 1.
put_switch	When set to 1, restores the system from the *.7z* image file, located in the *MM_Config* folder on the USB stick. Default is 1.
get_switch	When set to 1, retrieves the system image from the nControl unit, places it in a *.7z* file, then copies the file to the *MM_Config* folder on the USB stick. Default is 0.

wipe_switch	When set to 1, reformats and repartitions the hard disk, wiping the contents from both C: drive and D: drive on an nControl unit. When set to 0, C: drive will be formatted and the system will be restored on this drive; the contents of D: drive will be left intact. Default is 0. **Note:** This switch is for nControl units only. The contents of D: drive on nTouch 180 units are always lost as part of the recovery process.

The switches are set to 1,1,0,0, by default. This will restore the system without wiping the D: drive, then will shut down the nControl unit.

Specifying 0,0,0,0 will simply boot the system and display a command prompt.

Appendix A
Reference Information

In This Appendix

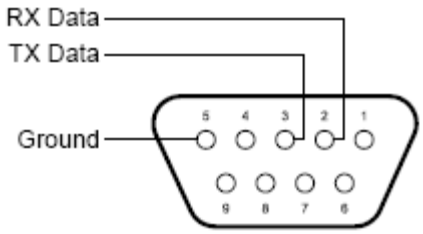
Front panel connections

Three USB ports	Female USB ports for connecting USB devices. The port in the center top area of the front panel is designed to accept the hardware key, which must be present in the unit at all times, in order for it to function.
	Caution: The USB port for the hardware key is recessed, so that when the front panel is closed, the hardware key does not get damaged. The other USB ports on the front panel are not recessed and must not be used, otherwise you risk damaging the hardware key or the port.
	Note: The hardware key can be inserted into a USB port at the rear of the nControl unit, but we recommend that the key is inserted into the recessed USB port at the front, as this will make it easier to access should you need to remove the key.

Rear panel connections

Mains Power	100v - 240v 50/60 Hz 300W A/C. Terminated to rear panel IEC connector. 2 redundant PSUs.
LAN 1 and 2	Female RJ-45. Transports control and communications via Ethernet on Category 5e (CAT5e) cabling. Either port can be used. Only one connection is required.
COM ports	Male DB-9 connectors for general purpose RS-232 communications. **Note:** These ports only supports the RS-232 protocol. In order to support RS-422 or RS-485, you must insert PCI cards.
Expansion slots	Multiple PCI expansion slots for inserting extra cards. Supported cards include: ▪ AudioScience cards that provide audio routing via the CobraNet network. ▪ Multi-port Ethernet cards for control of devices on multiple networks via SNMP and RATC.
Six USB ports	Female USB ports for connecting USB devices. **Note:** The hardware key can be inserted into a USB port at the rear of the nControl unit, but we recommend that the key is inserted into the recessed USB port at the front, as this will make it easier to access should you need to remove the key.
Two PS-2 ports	Mouse port and keyboard port.
One VGA port	Monitor connector port.

RS-232 serial port pin outs



Pin	Function
1	N.C.
2	RX data
3	TX data
4	N.C.
5	Ground
6	N.C.
7	N.C.
8	N.C.
9	N.C.

Note: Transmit (TX) and Receive (RX) are from the point of view of the MediaMatrix device. Connect them to the opposite port of the remote unit.

Mechanical specifications

Chassis Style	3RU EIA rack package
Installation	EIA rack mount only
Dimensions	19 in. (48.3cm) W x 16.3 in. (41.5cm) D x 5.1 in. (13cm) H
Weight	39 lbs. (17.69 kg)
Cooling	Forced air, front intake, rear exhaust.

Technical Support

When you require assistance with your product, you can get help from several sources. Apart from the online Knowledge Center, there are many technical documents, white papers and application notes on our website and on other websites on the Internet, covering subjects including Python programming, SNMP and serial control.

If you cannot find the information you require, contact your dealer or distributor. If you are still unable to solve the issue, you can contact us directly using the details below. MediaMatrix has an extensive Technical Services Group that provides technical support, repair and implementation services.

Peavey Electronics Corp.,
MediaMatrix Division,
5022 Hartley Peavey Drive,
Meridian, MS 39305, USA.

Phone: 601.483.9548
Phone (toll free): 866.662.8750
Fax: 601.486.1678

Website: *http://mm.peavey.com* (*http://www.peaveycommercialaudio.com/*).

Warranty statement

MediaMatrix®
PEAVEY ELECTRONICS CORPORATION DOMESTIC (USA) LIMITED WARRANTY
Effective Date: May 1, 2005

What This Warranty Covers

This Warranty covers defects in material and workmanship in Peavey MediaMatrix products purchased and serviced in the United States of America (USA).

What This Warranty Does Not Cover

The Warranty does not cover: (1) damage caused by accident, misuse, abuse, improper installation or operation, rental, product modification or neglect; (2) damage occurring during shipment; (3) damage caused by repair or service performed by persons not authorized by Peavey; (4) products on which the serial number has been altered, defaced or removed; (5) products not purchased from an Authorized MediaMatrix Integrator. This warranty does not cover associated costs incurred from servicing equipment, including, but not limited to, travel, jobsite-related costs, fabrication, freight, loaner equipment, installation, cabling or harnessing, mounting materials or other variable costs.

Who This Warranty Protects

In applications where the product is sold *over the counter*, this Warranty protects the original retail purchaser. In applications where the product is part of an integrated system, and such system is warrantied by the integrator as a complete assembly, this Warranty protects only the system integrator.

What Peavey Will Do

We will repair or replace (at Peavey's discretion) products covered by warranty at no charge for labor or materials. If the product or component must be shipped to Peavey for warranty service, the consumer must pay initial shipping costs. If the repairs are covered by warranty, Peavey will pay the return shipping costs.

How Long This Warranty Lasts

The Warranty begins on the date of purchase by the original retail purchaser or on the date received by the system integrator. (See *Who This Warranty Protects*, above). The duration of the Warranty varies by product as summarized below.

5 Years	MediaMatrix® DPU cards, NION™ Processing Nodes, CABs, I/O cards, Cinema Processors, Power Amplifiers, Pre-Amplifiers, Mixers, Electronic Filter Sets and Dynamics Processors.
1 Year	MM Series Cardframes, MF Series Cardframes, ControlMatrix™ Host Processors, Servers and Controllers, nControl, nTouch 180, nTouch 60, xControl LCDs, nWall, VCAT, VCAT-HD, VGA-2, VSC, D4S, D1V, Remote Control Panels, Plates, Paging Stations, Ambient Sense Devices and other devices installed in user-accessible locations.
90 Days	Loudspeaker Components (including speakers, baskets, drivers, diaphragm replacement kits and passive filter networks.) and all Accessory Products

How To Get Warranty Service

End Users: Take the defective product and your dated sales receipt or other proof of purchase to your Authorized MediaMatrix Systems Integrator or Authorized Peavey Service Center. System Integrators: Ship the defective product, prepaid, to Peavey Electronics Corporation, International Service Center, 412 Highway 11 & 80 East, Meridian, MS 39301, 601-483-5365. Include a detailed description of the problem, the name and location of the jobsite and a copy of your invoice as evidence of warranty coverage. Please include a complete return shipping address.

Limitation of Implied Warranties

ANY IMPLIED WARRANTIES, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO THE LENGTH OF THIS WARRANTY.

Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

Exclusions of Damages

PEAVEY'S LIABILITY FOR ANY DEFECTIVE PRODUCT IS LIMITED TO THE REPAIR OR REPLACEMENT OF THE PRODUCT, AT PEAVEY'S OPTION. IF WE ELECT TO REPLACE THE PRODUCT, THE REPLACEMENT MAY BE A RECONDITIONED UNIT. PEAVEY SHALL NOT BE LIABLE FOR DAMAGES BASED ON INCONVENIENCE, LOSS OF USE, LOST PROFITS, LOST SAVINGS, DAMAGE TO ANY OTHER EQUIPMENT OR OTHER ITEMS AT THE SITE OF USE, OR ANY OTHER DAMAGES WHETHER INCIDENTAL, CONSEQUENTIAL OR OTHERWISE, EVEN IF PEAVEY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This Warranty gives you specific legal rights, and you may also have other rights which vary from state to state. If you have any questions about this warranty or service received, or if you need assistance in locating an Authorized Service Center, please contact the Peavey International Service Center at (601) 483-5365. Features and specifications subject to change without notice.

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http://www.peaveycommercialaudio.com/products.cfm/mm/

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