

# MediaMatrix®

A Division of Peavey Electronics Corporation



## nWall Hardware Manual

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The ratc-server component is based in part on the work of the libwebsockets project: <http://libwebsockets.org>.

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## Scope

This guide describes how to install an nWall device and how to connect the device to the network.

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# Chapter 1

# Important safety instructions

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## 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:

<b>Duration Per Day in Hours</b>	<b>Sound Level dBA, Slow Response</b>
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

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## 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.

## 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.

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

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## What you will need

Phillips head screwdriver to fit NEMA enclosure screws.

## What's in the box?

In the box you will find:

- The nWall
- Four screws, which are used to securely install the nWall in a NEMA electrical enclosure.

## 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 nWall

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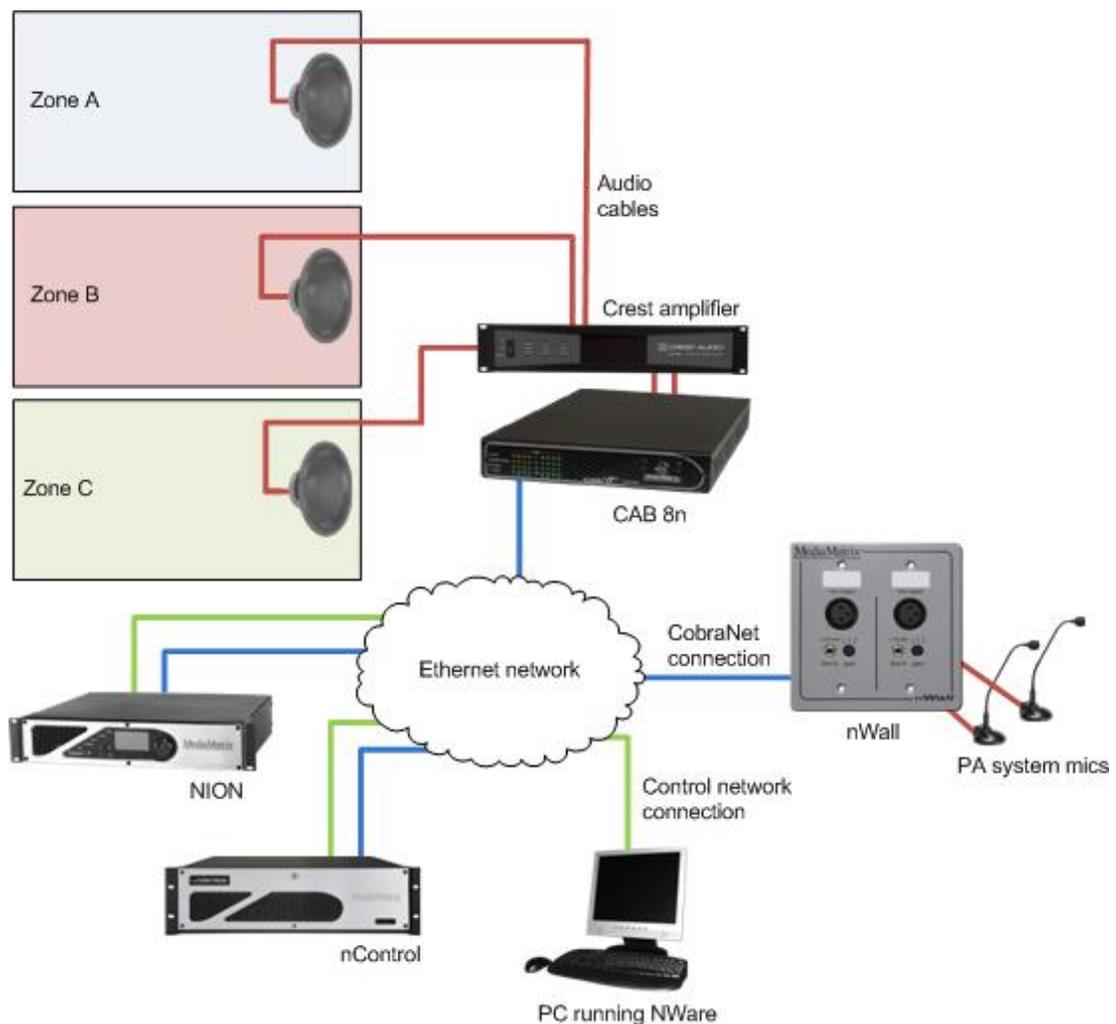
## Description

The nWall is a CobraNet interface panel with both XLR and TRS mini jack connectors. The nWall 2.0 has two microphone/line level input channels. The nWall 0.2 has two analog line level output channels. The nWall 1.1 has two analog line level input channels and two analog line level output channels.

The nWall eliminates the need for long runs of analog audio cables terminated in racks of patch bays, as typically seen in ballrooms and convention centers. As the connection to the nWall uses CAT5e UTP cable with network standard RJ45 crimp connectors, the installation time, number of terminations required and associated cost are all minimized.

In the example below, the audio from the mics is made available directly onto the CobraNet network without the need for a CAB or NION in the same physical location. The NWare device used to control the nWall 2.0 is hosted on the nControl, allowing the NWare user to remotely assign an IP address and bundle number to the nWall for audio transmission (this can also be done using CobraNet Discovery (Disco)).

**Note:** If you want to control and monitor an nWall using an NWare project, you will need an nControl or nTouch 180. If you simply want to transmit or receive audio using an nWall, these devices are not required.



## Features

### All models

- Digital patching - using MediaMatrix NWare, any number of nWall panels can be patched to any number of NION processors on the fly, eliminating the need for expensive patch panels and greatly reducing setup time between events.
- Analog to digital / digital to analog conversion at the wall panel reduces problems with buzz, hum, ground loops and other cable issues, also eliminating the need for isolation and impedance matching interfaces.
- Structured cabling to greatly reduce critical path delivery time and costs.
- Power over Ethernet (PoE).
- Low power requirements.
- 2-gang NEMA mount.
- CobraNet audio transport via switched network and RJ45.
- Easy wiring and installation.
- Cost effective.

### nWall 0.2



- 2 balanced XLR outputs - output level selectable via front panel 3 step rotary switch allows quick source setup at the wall panel. Latchless connection minimizes mechanical damage.
- 2 unbalanced TRS 1/8th inch (3.5mm) mini jack outputs - for PC and Aux consumer line level audio products using off the shelf consumer audio cables.

## nWall 1.1



- 1 balanced XLR input connector - selectable input sensitivity via rotary switch. Latchless connection minimizes mechanical damage.
- 1 balanced XLR output connector - selectable output level via rotary switch. Latchless connection minimizes mechanical damage.
- 1 unbalanced TRS 1/8th inch (3.5mm) mini jack input connector - for Electret condenser and dynamic microphones, plus line level audio products.
- 1 unbalanced TRS 1/8th inch (3.5mm) mini jack output connector - for PC and Aux consumer line level audio products.

## nWall 2.0



- 2 balanced XLR inputs - mic/line selectable gain via front panel 3 step rotary switch allows quick source setup at the wall panel. Latchless connection minimizes mechanical damage.
- 2 unbalanced TRS 1/8th inch (3.5mm) mini jack inputs - summed mono for PC and Aux consumer line level audio products using off the shelf consumer audio cables.

## Rear Panel Connections

The rear panel contains a LAN socket for CobraNet and control communications on 100Base-T Ethernet. It requires a Power-over-Ethernet (PoE) injector or PoE via an IEEE 802.3af capable network switch.





# Chapter 4

## Infrastructure design considerations

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## Introduction

Before you start the installation, it is important to consider the implications for your network and power supply system. The infrastructure must be designed and installed correctly, in order to provide reliable and error-free performance.

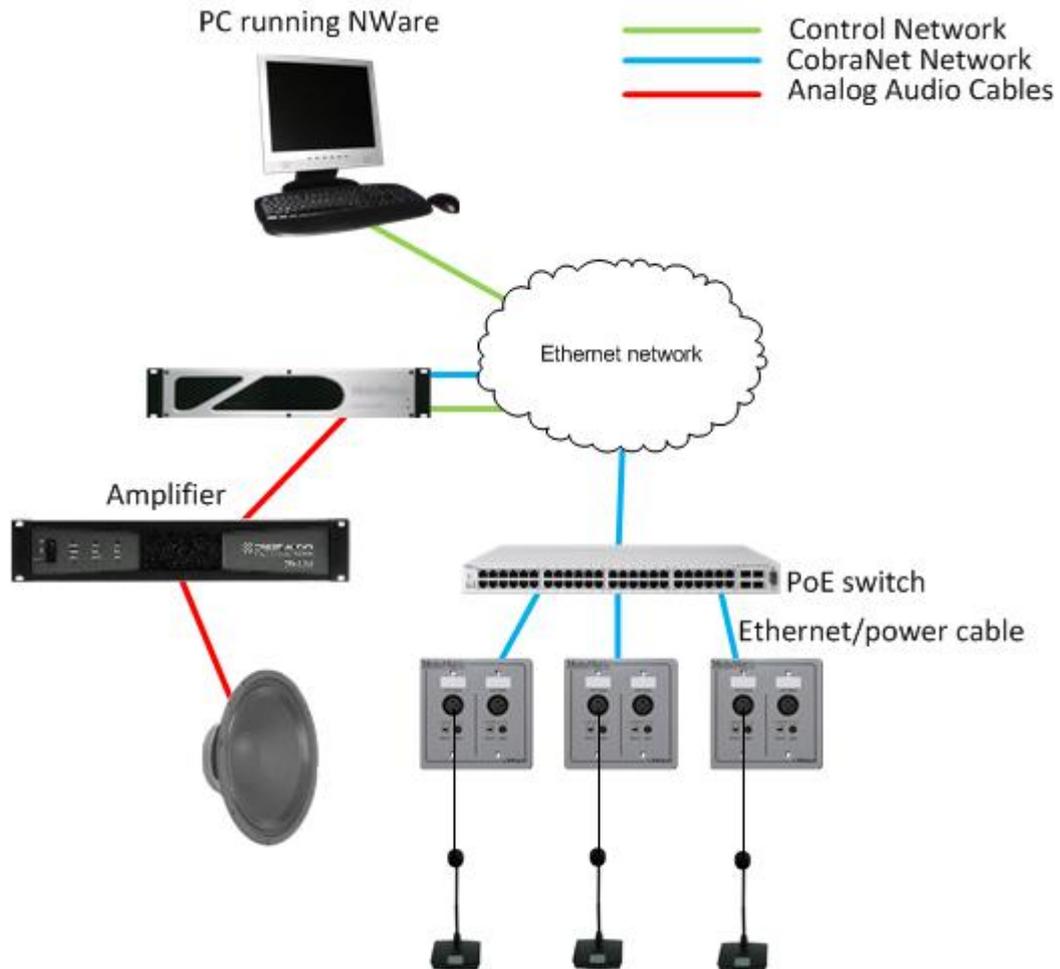
Each nWall unit requires a network connection to a network switch. There are several configurations you can use, allowing for a degree of flexibility in your installation.

## 2-gang NEMA electrical enclosures

nWall units are designed to mount in standard NEMA electrical enclosures. This includes boxes designed for fixed installation into sheet rock, wood or masonry construction. All cabling and terminations should be installed into EMT conduit, securely coupled to the mounting box and system ground plane. However, the nWall is not grounded through the network cable. It should be installed in a metal 2-gang NEMA electrical enclosure that is grounded according to the directives set forth by the authority having jurisdiction.

## Providing power to nWall devices

Power can be supplied to nWall devices via an injector or Power over Ethernet (PoE) switch. The nWall devices do not require separate power connections. An example is shown below.



## IP addresses

If you want to monitor an nWall using NWare, you must assign a unique IP address to the device.

You can use CobraNet discovery to assign the address. For more information, see *Using CobraNet Discovery* (on page 19). You can also use the Agent Discovery device in NWare. For more information, see *Using NWare*.



# Installing and connecting the nWall

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### In This Chapter

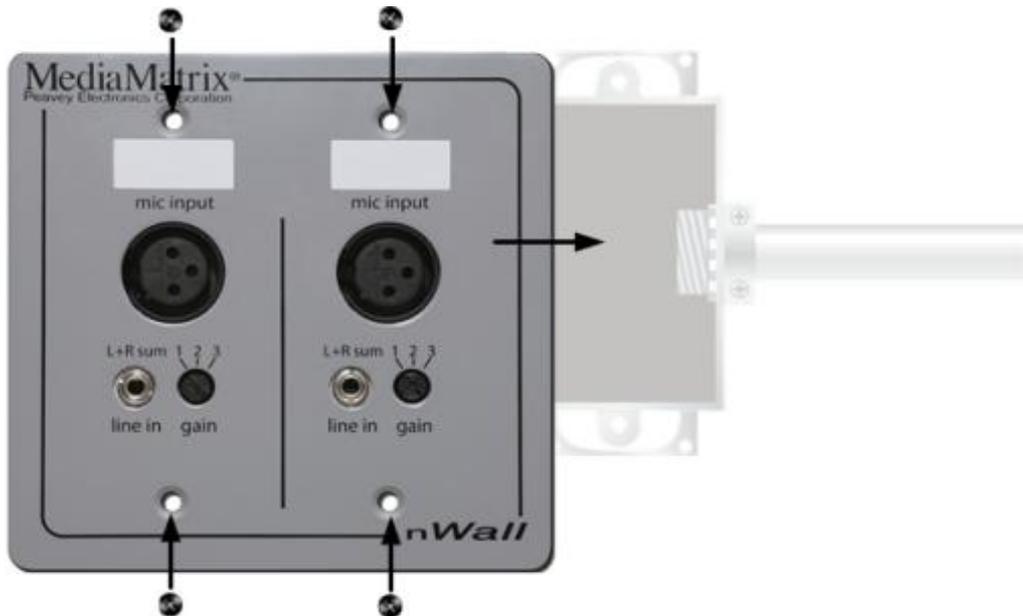
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## Installing the nWall

1. Insert a cable from a CobraNet switch into the back of the nWall, as shown below.



2. Carefully place the nWall into a 2-gang NEMA box.
3. Insert and tighten the screws.



## Assigning bundle numbers and an IP address

In order to transmit audio onto the CobraNet network from an nWall, you need to assign the device a transmit bundle number. Similarly, in order to receive audio from the CobraNet network into the nWall, you need to assign the device a receive bundle number. Bundle numbers can be assigned using CobraNet Discovery or NWare.

The nWall does not require an IP address to send or receive data via CobraNet, but if you want to monitor the device using NWare, you will need to assign an IP address to the device. This can be done using CobraNet Discovery or NWare.

### Using CobraNet Discovery

You can use *CobraNet Discovery* (<http://www.cobranet.info/downloads>) to specify the settings manually, and to ensure that the same settings are used automatically when the nWall is power cycled.

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**Note:** The steps in the procedure below must be completed for each individual nWall. If an nWall is replaced, you will need to repeat the procedure.

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#### ▶▶ **To set an IP address**

1. Open CobraNet Discovery and wait for the nWall to appear in the list of devices on the CobraNet network.

The nWall MAC address starts with *00:1c:f4:02*. It is normally printed on a label attached to the rear of the unit.

2. Right-click the nWall device, click **New IP Address** and specify an IP address.
3. Click **OK**.

#### ▶▶ **To set a transmit or receive bundle number**

1. Right-click the nWall device, and then click **Configure**.
2. Double-click an RX or TX entry in the bundle list, and then specify a bundle number in the **Bundle** box.

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**Note:** Be sure to check which model of nWall is being configured. Some devices support transmission and reception, others only one or the other mode.

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3. Click **OK**.

#### ▶▶ **To ensure that the same bundle number is used when the unit is power cycled**

1. Click **Advanced** and then select the **Persistence** check box.
2. Click **OK**.

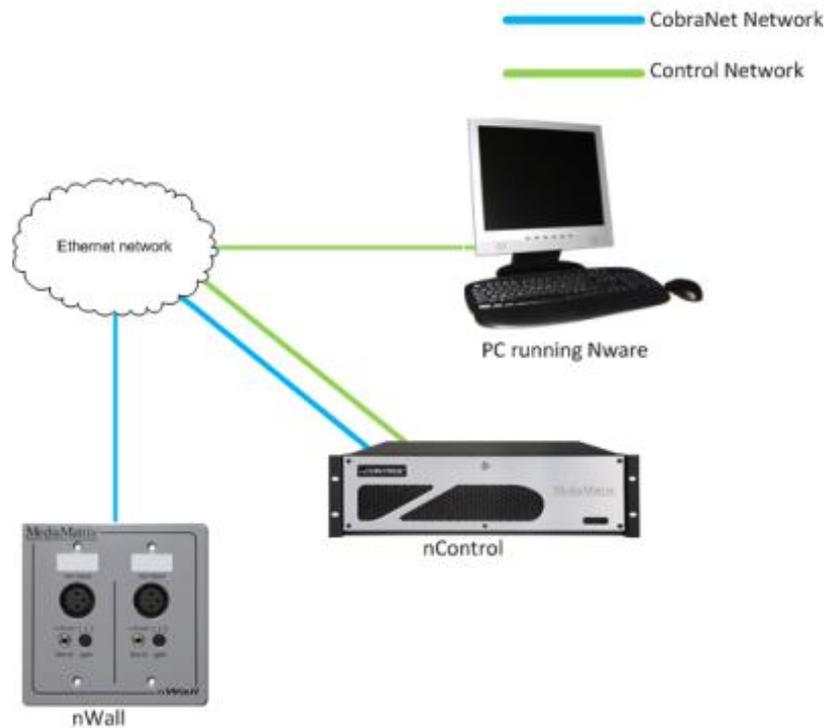
## Using NWare

### Setting up the nControl or nTouch 180

In order to assign a bundle number and IP address, you will need an nControl or nTouch 180 in your project.

The nControl must be connected to both the control network and the CobraNet network. The example below shows the required setup.

The project is deployed to the nControl, allowing the user to monitor and control the nWall.



## Assigning an IP address and bundle number in NWare

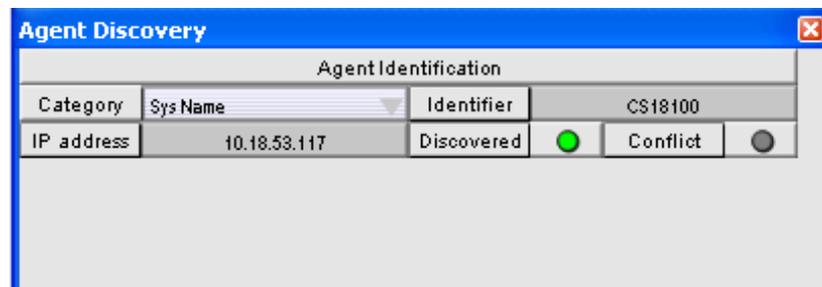
You can use the Agent Discovery device in NWare to assign an IP address and bundle number to the nWall. This method utilizes the BOOTP and SNMP features of the nControl or nTouch 180. It is especially helpful and suited for larger installations, as it uses switch port discovery.

**Note:** Before you start, it is important that you consider the IP address range that will be used in your installation.

### ►► To assign an IP address and bundle number in NWare

1. In the device tree, expand the **Hardware** folder.
2. Drag an **nControl** or **nTouch 180** device over to the design page.
3. In the device tree, expand the **Plugins / Peavey / Hardware** folder.
4. Drag an **nWall** device over to the design page.
5. Open the device properties on the nControl / nTouch 180.
6. Select the **CobraNet BOOTP** check box.
7. Select the **SNMP Discovery** check box.
8. Click **OK**.
9. On the **Configure BOOTP Server** dialog box, specify an IP address range for the nWall nodes on the network.
10. Click **OK**.
11. On the **Configure Discovery Server** dialog box, specify the IP address range used with BOOTP, and select the **Switch port support** check box.
12. Click **OK**.
13. In the device tree, expand the **nControl Devices / SNMP Components** folder, and then drag an **Agent Discovery** device over to the design page.
14. Select Wire mode , then wire the first output wiring node on the **Agent Discovery** block to the input wiring node on the **nWall** block.
15. Deploy the project and specify an identifier for the nWall using the **Agent Discovery** device.

**Tip:** You can use the *Sys Name* setting, which is *CS18100*, by default.



When the nWall has been discovered, an IP address will be assigned to it automatically, and this will be displayed on the control surface of the nWall device. You can then specify the bundle number(s) you want to use for transmission or reception of audio in the *Bundle* box(es).

## Replacing the nWall

There are two ways of replacing an nWall, you can:

- Repeat the steps of assigning a bundle number or IP address by using *CobraNet Discovery* (on page 19).
- Use an Agent Discovery device to discover the nWall's IP address. The nWall will be replaced as long as the identifier is correct according to the category you have specified.

For more information on using an Agent Discovery Device, see *Assigning an IP address and bundle number in NWare* (on page 21).

## Changing the Sys name

By default, the *Sys Name* setting is *CS18100*. This can be changed using CobraNet Discovery. After the Sys Name is changed, persistence must be enabled to ensure that the newly set Sys Name remains unchanged even in the event of power loss or if the system is restarted.

### ▶▶ **To change the Sys Name**

1. Open CobraNet Discovery, and wait for the nWall to appear in the list of devices on the CobraNet network.
2. Double-click the nWall device.
3. Click **Advanced**.
4. In the **Name** box, type the new name.
5. Select the **Persistence** check box.
6. Click **OK**.

## Connecting audio devices

### ▶▶ **To connect input sources**

1. Under *mic input*, plug balanced sources (microphones and line level devices) into the XLR connector(s) and unbalanced sources (computers, personal music players, etc.) into the 3.5mm TRS mini jack(s).
2. Select the mic gain level using the rotary switch(es).

### ▶▶ **To connect output devices**

1. Under *line output*, connect devices to the XLR connector(s) and 3.5mm TRS mini jack(s).
2. Select the output level using the rotary switch.

# 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 warranted 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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