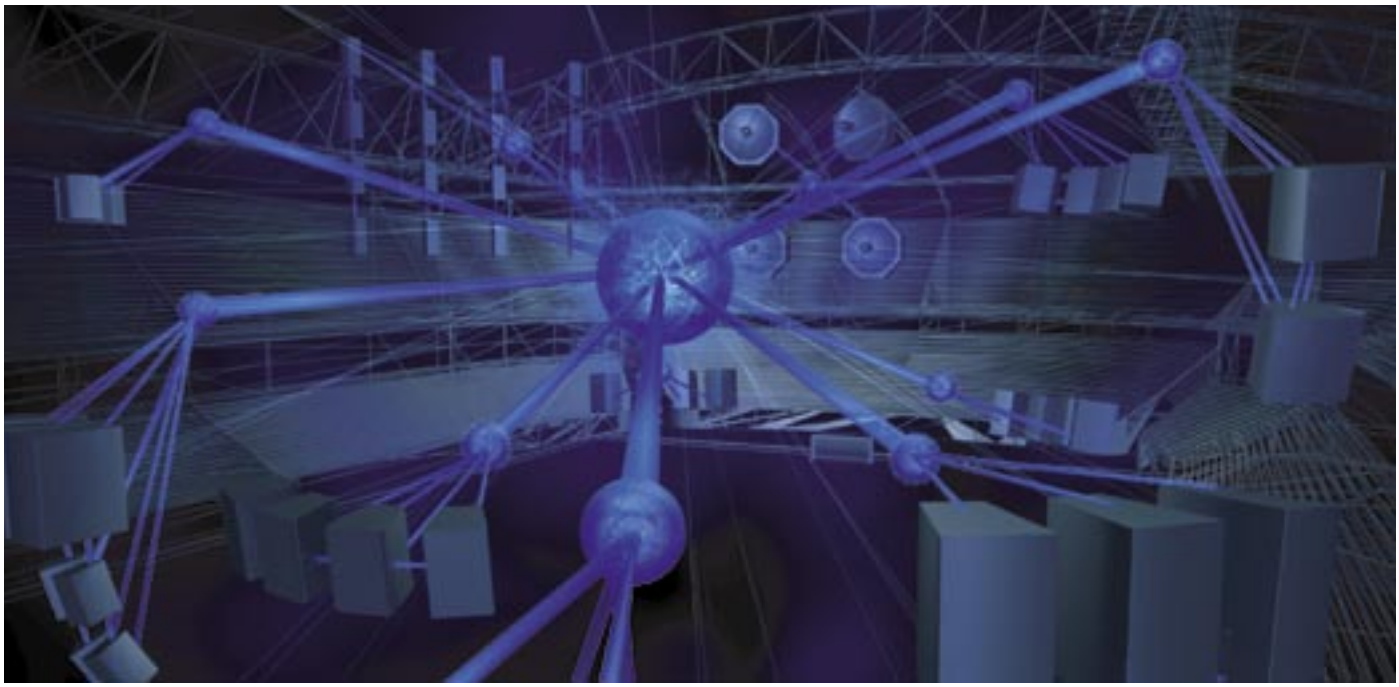
RMS™ 4.5



Meyer Sound®

RMS™ 4.5 Remote Monitoring System User Guide

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CONTENTS

INTRODUCTION

HOW TO USE THIS GUIDE

As you read this guide, you'll find figures and diagrams to help you understand and visualize what you're reading. You'll also find numerous icons that flag important information or warn you against improper or potentially harmful activities. These icons include:

A **NOTE** identifies an important or useful piece of information relating to the topic under discussion.

A **TIP** offers a helpful tip relevant to the topic at hand.

A **CAUTION** gives notice that an action can have serious consequences and could cause harm to equipment or personnel, delays, or other problems.

INTRODUCING THE RMS™ REMOTE MONITORING SYSTEM

The RMS remote monitoring system was developed by Meyer Sound to monitor the electronic operating parameters of Meyer Sound self-powered loudspeakers during operation. RMS employs an Echelon® LonWorks® network to monitor system performance in a client software application running on a Windows® PC, creating a new level of loudspeaker and amplifier diagnostic interaction. RMS allows you to remotely perform such monitoring tasks as:

- Verifying operation status upon system setup
- Verifying loudspeaker polarity
- Controlling Mute and Solo functions
- Protecting loudspeakers by monitoring limiting activity
- Detecting failed components

RMS also monitors many loudspeaker and amplifier parameters, including:

- Amplifier channel output voltage (peak and average)
- Amplifier channel output power
- Limiting and excursion
- Input voltage
- Amplifier temperature and fan speed
- Polarity

USER INTERFACE

The RMS application uses different "views" – icons, meters, and text – to display the data you need about your system depending on your preferences. Views contain loudspeaker identification information and data from the amplifier, controller, driver, and power supply of the loudspeakers in your network; system status conditions cause color changes in icon and meter indicators to alert you of faults, excessive levels, and other critical data.

Views are moveable, and typically are arranged on the screen to reflect the physical layout of the loudspeakers. You can design a screen full of icons, meters and text, then save it to a file, giving you the ability to create different layouts according to the needs of the system design. In addition, Mute and Solo control functions are available and can be enabled/disabled in software or hardware.

NETWORK HARDWARE

Loudspeakers are identified on the network by node names kept in the RMS database. RMS uses an established network platform developed by Echelon Corporation, the world's leading supplier of networking technology for monitoring and control. The platform is not affected by loss of power at a loudspeaker node, does not require coaxial or fiber optic lines, is polarity insensitive, and supports Free Topology (flexible wiring configuration).

An RMS network is a real-time data acquisition system, so no data is lost during transmission. A standard RMS network allows up to 62 nodes (115 with a repeater) of self-powered loudspeakers using a twisted-pair connection, and several hundred nodes using an Ethernet-based setup.

HOW THIS GUIDE IS ORGANIZED

The RMS 4.5 User Guide is divided into four chapters plus an appendix that contains useful keyboard shortcuts for the RMS application. An RMS configuration data sheet, for logging information about the loudspeakers on your RMS network, is also included at the end of the guide.

The chapters are organized as follows:

- Chapter 1, “Planning and Designing for RMS,” gets you started by showing you how to plan your RMS network.
- Chapter 2, “Installing Transition Hardware,” takes you through the process of installing your hardware correctly.
- Chapter 3, “Installing Software and Network Adapters,” explains how to install RMS software components, and walks you through configuring the i.Lon 10 Ethernet Adapter.
- Chapter 4, “Using RMS Software,” explains how to use RMS software, from commissioning loudspeakers to controlling Mute, Solo and Wink functions.

Information in this User Guide is applicable as of the date of this printing. Updates and supplementary information are posted on the Meyer Sound website at:

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CHAPTER 1: PLANNING AND DESIGNING FOR RMS

This chapter will help you understand the issues involved in planning an RMS network for your system design. Type of hardware, number of loudspeakers and their layout are all crucial to setting up a fast, trouble-free RMS network.

SYSTEM REQUIREMENTS

To ensure that the RMS monitoring system runs smoothly, the following system specifications are required:

- Windows® 98SE/NT 4.0 (SP5)/2000/XP™ (SP1) or higher
- Pentium® III processor or higher (350 MHz min., 500+ MHz recommended
- 64 MB RAM min. for 98SE/NT, 128+ recommended; 128 MB RAM min. for 2000/XP, 256+ recommended
- 4 MB video card or higher (800 x 600 min. resolution)
- At least 50 MB free hard drive space.
- For a large network: 20 MB/s sustained transfer rate with less than 8 ms average seek time
- One open full-size, 32-bit (standard) PCI slot or Type II PC Card (PCMCIA) card slot

CAUTION: A half-size PCI slot will not accommodate the Network Interface Card used by RMS. Ensure that you have a full-sized, standard PCI slot available.

NOTE: If you are running the RMS application on a laptop computer, a PCMCIA Type II port is required.

TIP: RMS is designed to multitask with other Windows applications. However, because of the large amount of data processing and monitoring that must occur in real-time, Meyer Sound recommends running RMS as a stand-alone application (no other applications running). If you experience problems running RMS in conjunction with other Windows applications, close the other programs to determine if the problem is due to a conflict with those applications.

If you do decide to multitask RMS with other applications, please be aware of the following:

- Avoid operations that are CPU intensive. For example, audio (signal) processing, spectrum/ frequency analyzers, large file copying, and playing music and video files.
- Avoid operations that are network intensive (i.e. those that heavily use the Ethernet port). For example, streaming audio/video, large network file transfers, Web/Internet browsing of multimedia content, and heavy use of email or instant messaging.

HARDWARE COMPONENTS

RMS ships with a number of different hardware options depending on how you decide to configure your network. This section will walk you through the different components for a twisted pair versus an Ethernet-based network, as well as the components common to both types of networks.

The RMS User Panel

You must have an interface on the loudspeaker before you connect to it through a network. All Meyer Sound self-powered loudspeakers (with the exception of the HD-1/2, UPL-1/2 and HM-1S) can be equipped with an RMS communications module. The module's user panel is shown in Figure 1.1.

Figure 1.1. The RMS communication module's user panel

NOTE: All M Series loudspeakers are fitted with the RMS communications module as standard. The RMS communications module is available as an option for other self-powered Meyer Sound loudspeakers.

The user panel is straightforward, with three LEDs and two buttons. Their functions are as follows:

Network Connectors

Two Weidmuller locking network connectors enable data transmission to and from the network. The connectors are bi-directional – able to both transmit and receive network data.

Service LED (Red)

When blinking once every two seconds, the Service LED indicates that the communications module is operational, but the loudspeaker is not installed on the network. When the loudspeaker has been installed on the network the Service LED will be not be lit, while the Activity LED will

flash continuously. When continuously lit, the Service LED indicates that the loudspeaker has a local RMS hardware failure. In this case, the RMS communications module may be damaged and you should contact Meyer Sound Technical Support.

Wink LED

When the Wink LED is lit, it indicates that an identifying signal has been sent from the host computer to the loudspeaker. This is achieved using the service pin on the loudspeaker and the RMS application.

NOTE: See Chapter 4 for more details on the Wink function.

Activity LED

When the loudspeaker has been installed, the Activity LED will flash continuously indicating that data is being transmitted to the host computer. If not lit, the loudspeaker has not yet been installed on the network.

Service Button

Pressing the service button will both commission and identify a loudspeaker on the network. When pressed, a happy face is displayed over the corresponding loudspeaker's icon in the RMS application.

NOTE: Chapter 4, "Using RMS Software" covers the commissioning process in detail.

Reset Button

Pressing this button will reset the communications module and reset the module's control functions (e.g., causing a muted loudspeaker to unmute or decommissioning a loudspeaker from the network).

Desktop PCI Network Interface Card

If your RMS host computer is a desktop PC, you will use an Echelon PCLTA-20 network card. The PCLTA-20 card is a high-performance LonWorks PCI card for desktop computers. Make sure that your computer can accommodate a full-size, standard PCI card.

Laptop PCMCIA Network Interface Card

If you need the flexibility of a laptop for touring or portable applications, you will need a PCC-10 network card. Make sure that your laptop has a Type II PC card (formerly PCMCIA) slot. This card supports the LonWorks® interface and comes with an adapter cable to patch into the network with a Weidmuller male connector.

i.LON 10 Ethernet Adapter I/O

The i.LON 10 Ethernet Adapter converts a twisted-pair network to an Ethernet 10BaseT connection. This allows you to connect your RMS network(s) to an RMS Host computer via a standard Ethernet network. Multiple i.LON 10 Ethernet Adapters can be connected to a single RMS Host to make up a larger RMS network with sub-networks – highly useful for operating over long distances with a large number of nodes.

The i.LON 10 uses standard 10BaseT cabling and an RJ-45 connector.

FTR-120 Network Repeater

The FTR-120 network repeater allows you to increase the geographical coverage of your network. A network repeater should be used in situations when an Ethernet-based network is impractical – for example, when touring with RMS and a simple twisted-pair network.

NOTE: A repeater is a network device that connects multiple segments of a network cable. It re-times, strengthens, and regenerates the incoming signal then sends the signal back to the network.

Network Terminator

An RMS network terminator is a simple resistive capacitive device designed to prevent electrical reflections on the network. The terminator can be installed at almost any location in the network depending on topology.

Custom Twisted-Pair Connectors

When designing twisted-pair cable runs, it's not uncommon to use a custom wall plate or connector to make the connections more user-friendly. This is typical for a theater or touring rig depending on design requirements.

TWISTED PAIR VS. ETHERNET

RMS is available in both twisted-pair and Ethernet versions. When deciding which technology to use for your RMS system, consider the following:

- The number of loudspeakers on the network
- The amount of cabling needed to run the network
- Fixed or portable installation
- The distance between your host computer and the loudspeakers on the network
- Existing Ethernet network access points at the venue (if available)

A simple twisted-pair network, for example, works in most situations. It's easy to wire and requires no additional networking routers, switches or hubs, although a repeater is required for runs over 1,640 feet. A more cost-effective solution (and a practical solution when a repeater is required) for installations with an Ethernet infrastructure is to run multiple i.LON-10 Ethernet adapters. Using i.LON-10s also minimizes data traffic on larger networks, making the RMS system more responsive.

More important, the network could be overloaded by running long lengths of twisted-pair cabling on a subnet. Overloading an RMS network is usually the result of the following:

- You are attempting to pass more data through the network than what it is equipped to handle. More than 50 loudspeakers on one network segment may overload the network in this way.
- The distance between the host computer and the first loudspeaker (max-to-node) is greater than 1,640 feet (500 meters) in a non-repeater system, or the length of one network segment (node-to-node) in a system using a repeater is greater than 1,640 feet (500 meters).

NOTE: For best performance, it is recommended that the distance between the host computer and a loudspeaker not be more than 1,450 feet (450 meters).

If you overload the network, the result is that the critical data will reach you very slowly – or not at all. Like any network, the software and hardware components in RMS are interacting continuously to transmit information to the host computer about the loudspeakers connected to the network.

Twisted pair

Figures 1.2 and 1.3 show typical network configurations for simple twisted-pair and twisted-pair repeater configurations.

When designing a twisted-pair RMS network, pay close attention to the wiring, cable gauge, and connector requirements (discussed in the section “Network Specifications” later in this chapter) which are important to good performance.

CAUTION: Consider using a repeater in the network if you are within 1,640 feet of exceeding the cable length or if you are using VEAM™ connectors in your system design.

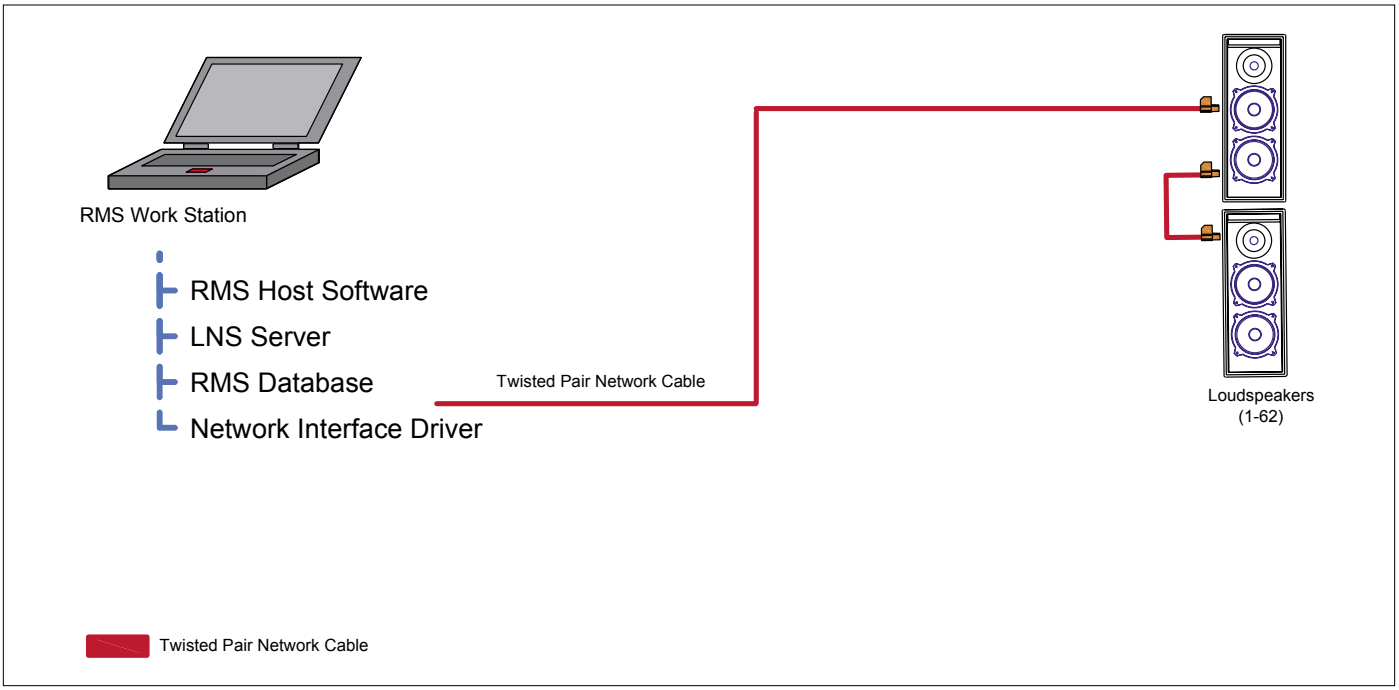


Figure 1.2. Simple twisted-pair network configuration

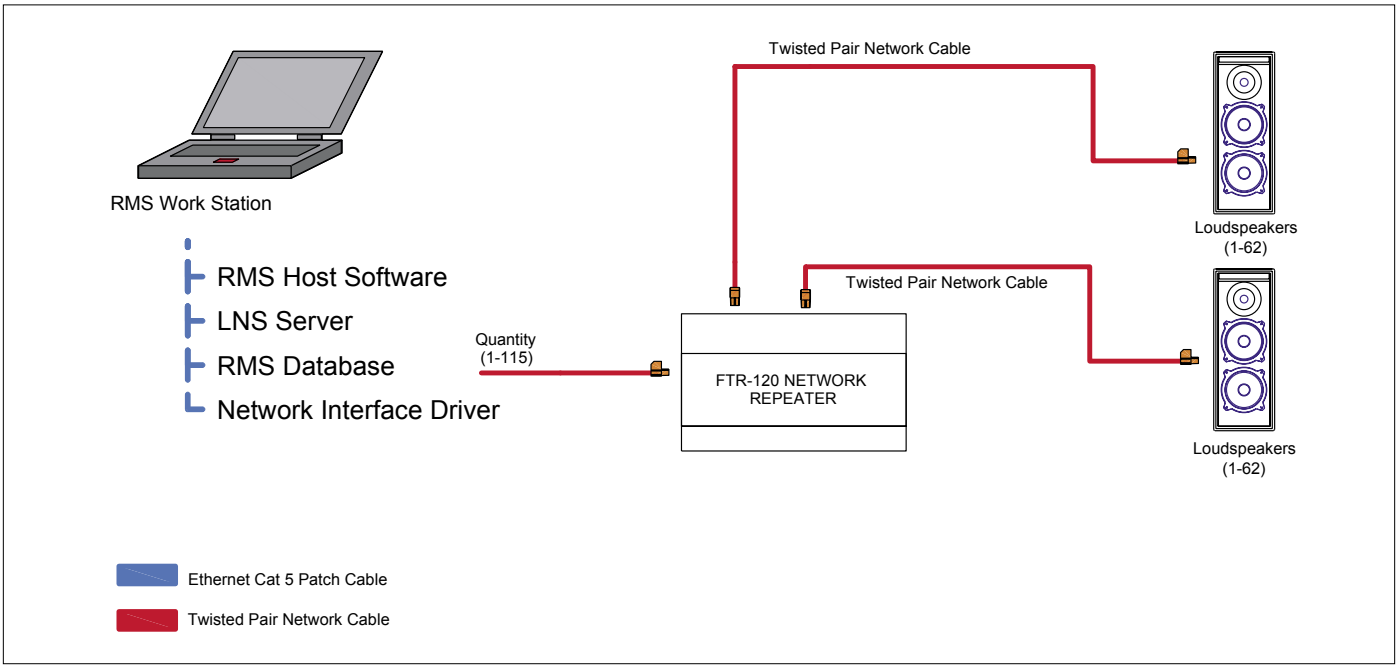


Figure 1.3. Twisted-pair network configuration with repeater

Ethernet

Figures 1.4 through 1.6 on the following pages show various network configurations for a simple Ethernet-based network configuration.

NOTE: An Ethernet-based RMS system is more complex from a design standpoint and must conform to Ethernet network design specifications (beyond the scope of this guide). A general knowledge of Ethernet networks is very helpful if you plan to deploy an Ethernet-based system.

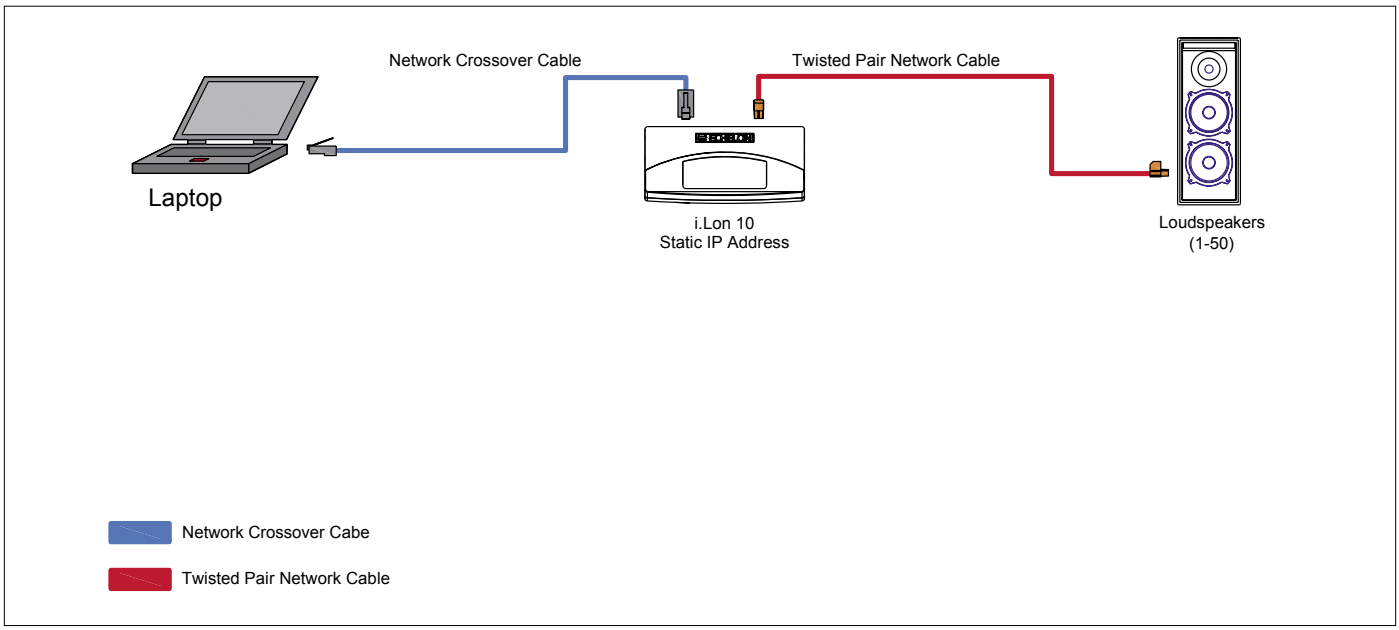


Figure 1.4. Simple closed Ethernet-based network configuration

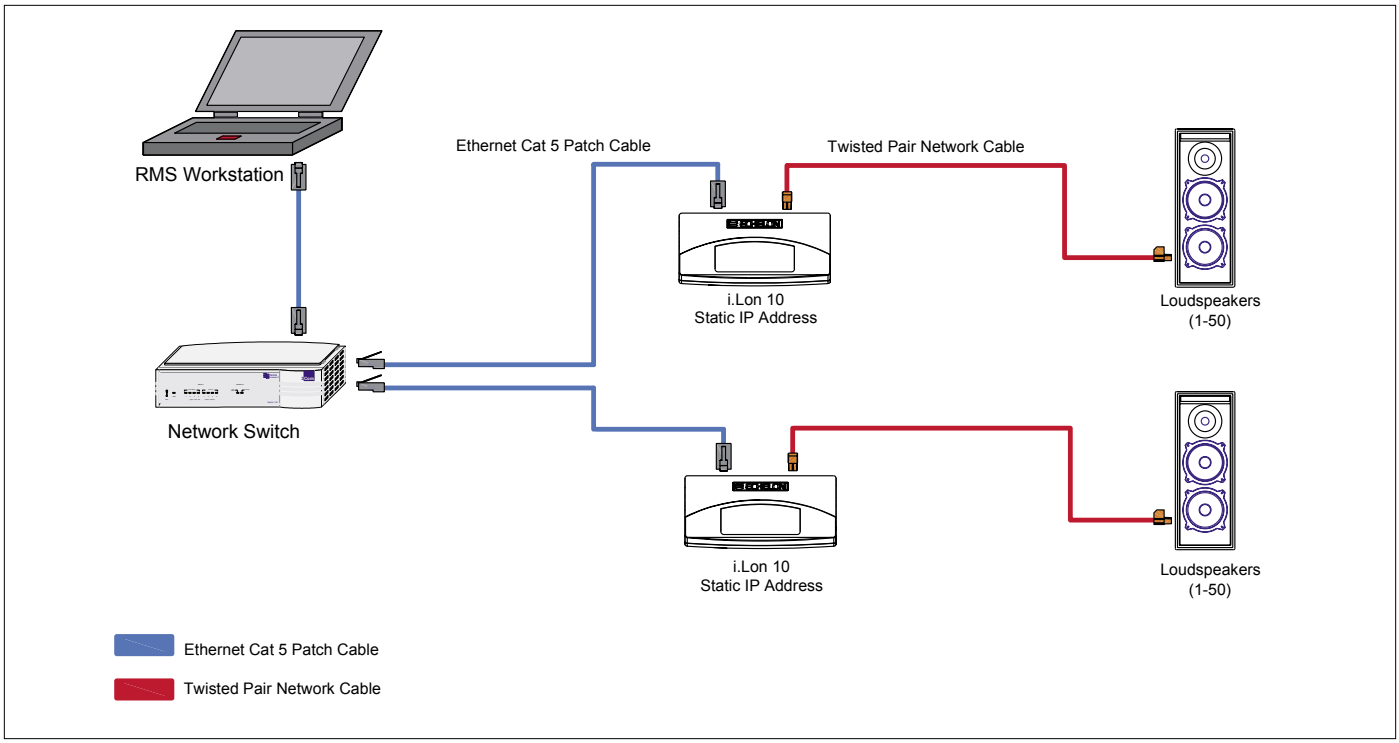


Figure 1.5. Closed Ethernet-based network configuration with multiple iLons

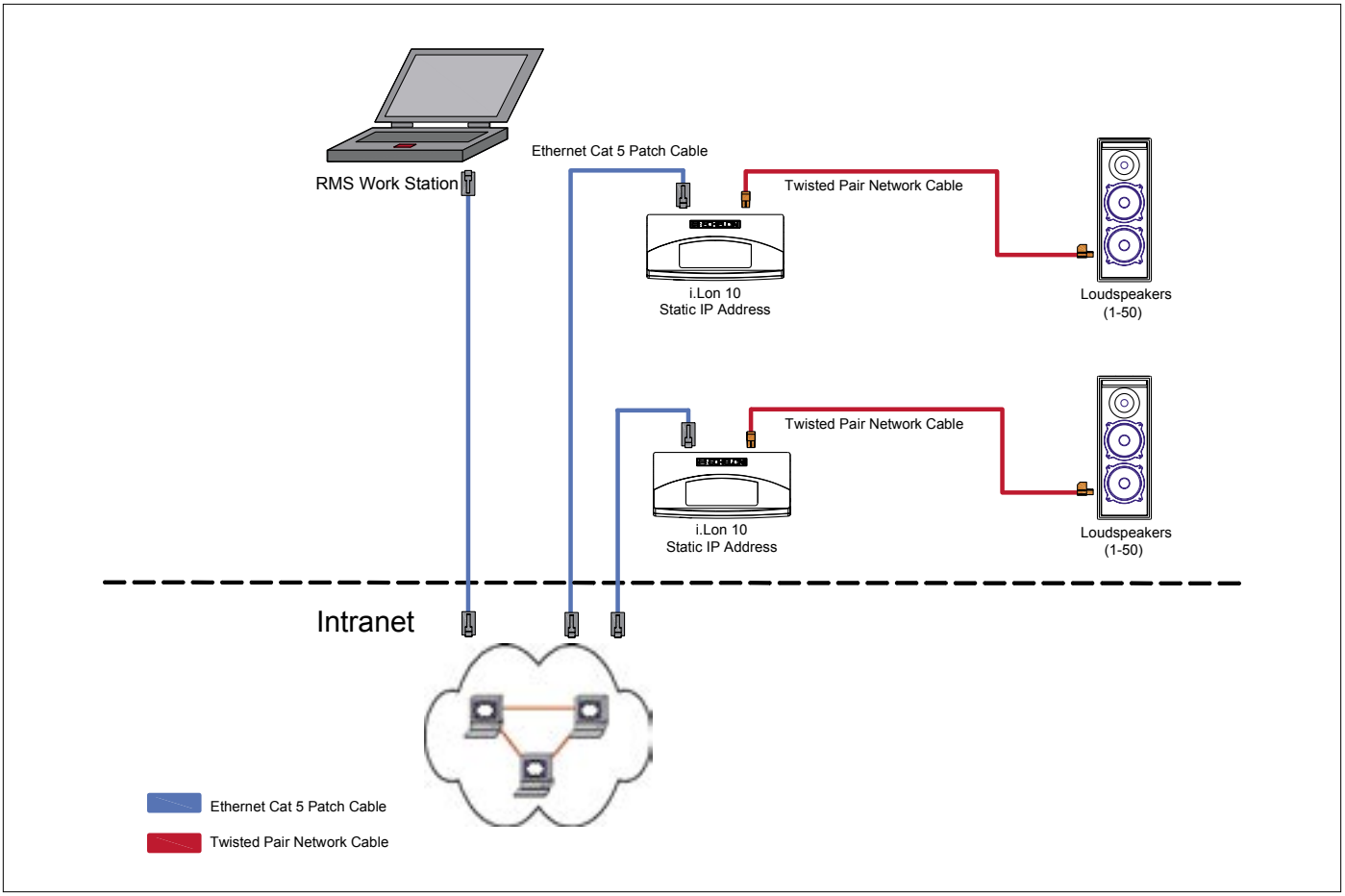


Figure 1.6. Ethernet-based network configuration using existing Intranet infrastructure

The advantages of an Ethernet-based network are:

- A larger number of loudspeakers may exist on a single network
- A wider area of available locations
- Improved network speed

CAUTION: Meyer Sound recommends that an Ethernet-based RMS network be deployed as a closed, separate network to reduce network problems from outside network traffic.

Understanding the i.LON 10

As discussed earlier in this chapter, the i.LON 10 Ethernet Adapter converts twisted-pair network data to Ethernet network data, allowing you to connect RMS to one or more LNS servers via the TCP/IP protocol.

Each i.LON 10 must have its own static IP address, which will provide its RMS identity as a network segment in the network database. It will also have its own database in the RMS host computer and each network database segment will contain all of the Neuron ID (the unique loudspeaker identification number) information on the network for the loudspeakers contained on that particular segment of the network.

NOTE: i.LON 10 installation procedures are covered in more detail in Chapter 2, “Installing Transition Hardware.”

Hubs and Switches

A hub is a device that joins multiple computers or other network devices together to form a single network segment.

Switches look nearly identical to hubs, but a switch is more intelligent. Switches are capable of inspecting the data packets as they are received, determining the source and destination device of that packet and forwarding that packet appropriately. Switches conserve network bandwidth and offer better performance than hubs.

A Hub or a Switch is needed for an RMS Ethernet network that contains more than one i.LON 10 or if you are sharing an existing Ethernet network connection.

NOTE: A network repeater or an Ethernet-based system with multiple i.LON 10s is required if you want to connect more than 62 loudspeakers to an RMS host computer. This will increase the data traffic capacity through the network as well as signal strength over longer cable runs.

TIP: While it is possible to wire an RMS system in a near-infinite number of ways, a typical network using Free Topology (flexible wiring configuration) can only address 62 loudspeaker nodes over a maximum cable length of 500 meters (1,640 feet) using 20 AWG cable and a single bus terminator (a terminator is a simple resistive capacitive device designed to prevent network reflections.).

NOTE: Each i.LON 10 equals one network segment. You can have many network segments within a network depending on your installation needs.

NETWORK SPECIFICATIONS

Maximum Loudspeaker Nodes

- Twisted-pair system with a maximum of 62 nodes (maximum of 50 recommended); up to 115 nodes with a network repeater
- Ethernet network with i.LON 10 with up to 50 nodes per network segment

Twisted-Pair Cable Type

- 20 AWG (Belden 8205 or equivalent) twisted pair, stranded, unshielded

Ethernet Cable Type

- Category 5 or higher. Straight-through (patch) cable if using a hub or a switch. Use a crossover cable if wiring the computer's Ethernet port directly to an i.LON 10.

Connector Types

- Twisted pair: Weidmuller 2 conductor locking connector
- Ethernet: 10BASE-T, type RJ-45
- Portable: XLR and EN3

Maximum Network length

- Maximum network length without installation of repeater(s):
  - Free Topology: 20 AWG, 18 AWG or 16 AWG cable, one 52.3-ohm type terminator: 500 m (1,640 ft)
  - Ethernet: 10BASE-T network limitations plus Standard twisted pair limitations

Termination

- Free Topology: One 52.3-ohm type terminator at any point
- Bus Topology: Two 52.3-ohm type terminators (one on either end)

Connector Type

- 2-wire plug with recommended snap-on lock

Network Platform

- Differential Manchester Encoding; Polarity Insensitive, Free Topology

Transceiver

- EMI, complies with FCC Part 15, Class A; UL recognized; VDE: EMI compliant

Data Rate

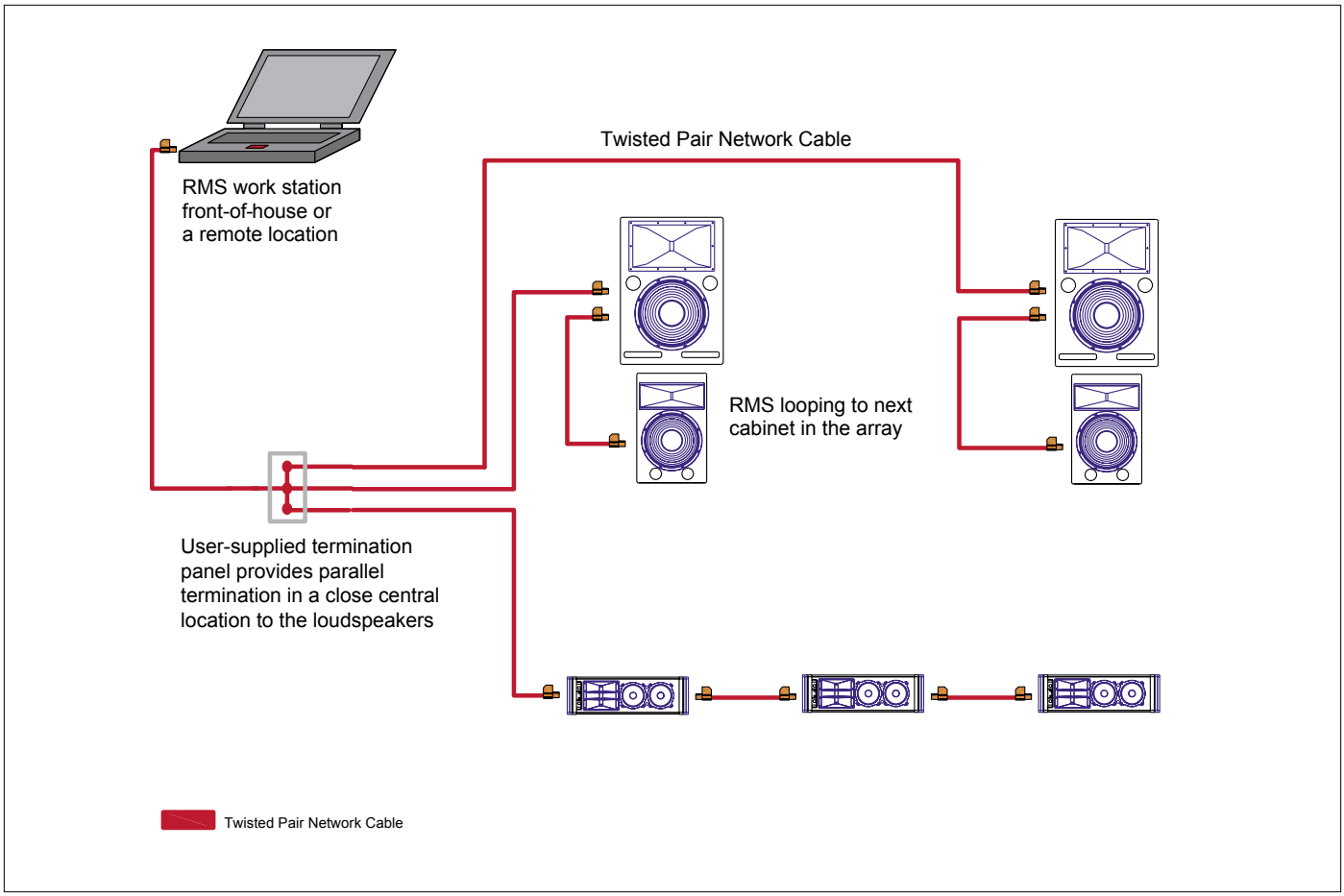
- 200 ms data transfer rate with 20 loudspeakers

RMS NETWORK DESIGN EXAMPLES

This section focuses on examples of several RMS system designs that can serve as building block diagrams for an RMS network. These examples show how the twisted-pair and Ethernet connections are made to reduce network load.

Small- to Mid-Sized Venue

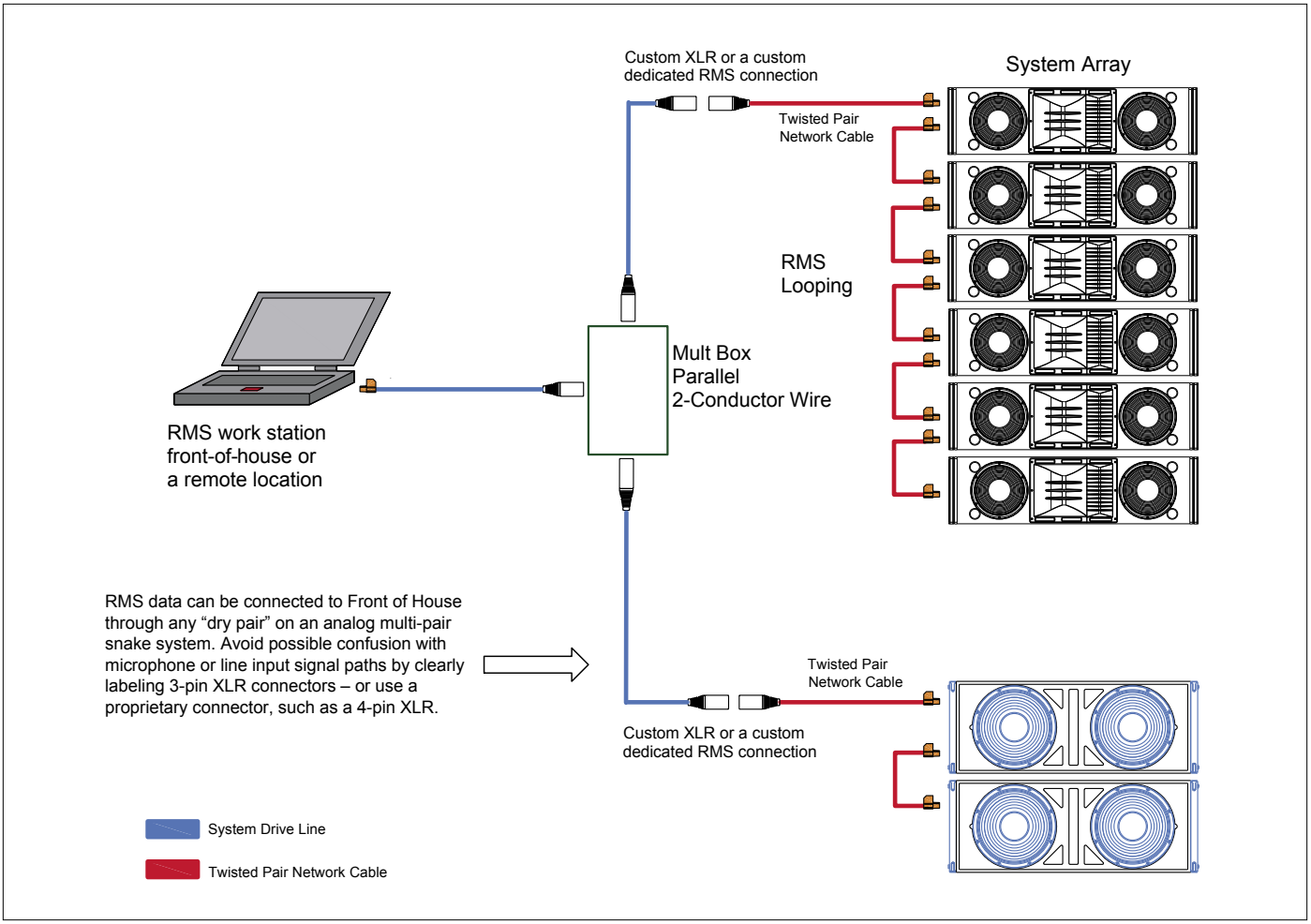
If you're planning for a small- to mid-sized venue, a twisted-pair network is typical. Proper planning of the cable runs to each loudspeaker and termination points are important for reducing excess cable in the network and minimizing network latency. You can also design an Ethernet solution for a small- to mid-sized venue if needed.



Touring or Portable Applications

Touring or portable applications may require a flexible twisted-pair network. Using a laptop and keeping your existing inventory of loudspeakers commissioned and organized will make using RMS simple to setup and easy to use.

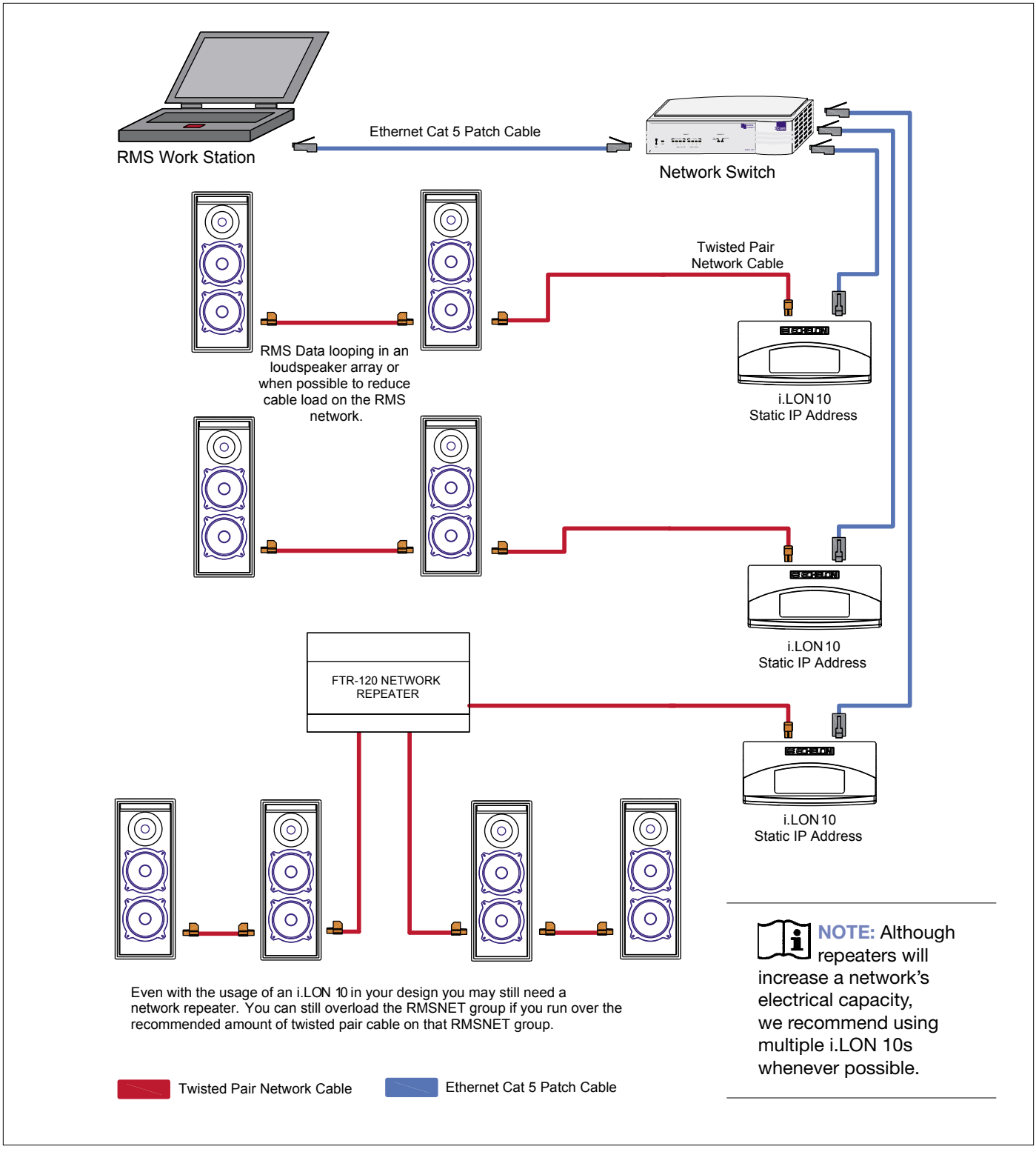
RMS data can be connected to FOH through any "dry pair" on an analog multi-pair snake system, and it's helpful to use a proprietary connector, such as a 4-pin XLR connector, to avoid possible confusion with microphone or line input signal paths.



Large Venue Applications

For larger venues such as theatres, stadiums, arenas, hotels, and theme parks, an Ethernet-based network, using multiple i.LON 10s, is preferred for increased network speed and durability.

When planning an Ethernet network you still have to convert to twisted pair from the i.LON 10 to your loudspeaker locations. Doing so allows you to form a hybrid network between twisted-pair and Ethernet type cabling (10BASE-T).



NOTE: Although repeaters will increase a network's electrical capacity, we recommend using multiple i.LON 10s whenever possible.

Design Tips for RMS networks

Different designs have their own strengths and weaknesses. The following tips will help you make the most out of your RMS network design:

- Avoid making “dedicated single runs” for each loudspeaker in a system design. Make only a single twisted-pair run to loudspeaker locations or arrays when possible. Once you have reached the loudspeaker location and array, daisy-chain or loop through all the loudspeakers in the array. This will help reduce cable load on the network.

CAUTION: If you must make dedicated twisted-pair runs to each loudspeaker (for example, when using VEAM) do not exceed the total recommended cable length (1,640 ft), or plan on using a repeater to minimize lost data.

- Plan for a single twisted-pair run from the PC location and have the breakout panel located as close to the loudspeaker locations as possible.
- If you are receiving poor data or experiencing other communications problems, make sure to use a terminator in the network to help increase network stability.
- When planning an Ethernet-based network, plan the location of the i.LON 10 to be as close to the twisted-pair breakout location as possible.
- With an Ethernet-based network that is running off a venue’s existing network, work with the venue’s IT department to choose and reserve static IP addresses for your RMS network.
- If possible, use a closed Ethernet-based network (as discussed earlier).

CHAPTER 2: INSTALLING TRANSITION HARDWARE

This chapter will cover installation and configuration of many of the hardware devices you may encounter during an RMS installation.

NOTE: RMS-equipped loudspeakers ship by default with a spare jumper to enable/disable the loudspeaker's Mute functionality, unless you request the jumper to be pre-installed when the order is placed.

INSTALLING AN RMS NETWORK COMMUNICATION MODULE (MP OR HP AMPLIFIER)

This section will walk you through the installation process for Meyer Sound MP-2, MP-4, HP-2, and HP-4 amplifier modules.

NOTE: If muting is not currently enabled, you can enable it while replacing the RMS communications module. See the section "Mute-Enable Jumper Installation" in this chapter for information on this procedure.

NOTE: Amplifiers manufactured before 1997 need to be fitted with TPL control board(s) and an RMS-ready user panel for upgrade to RMS.

To replace an RMS communications module in MP and HP amplifiers, you will need the following tools and equipment:

- Standard (#2) Phillips screwdriver
- 3/8" nut driver
- Fluke 87 multimeter or equivalent

TIP: All M Series products come standard with RMS network communication modules installed.

CAUTION: Ensure that the amplifier is not connected to any electrical source.

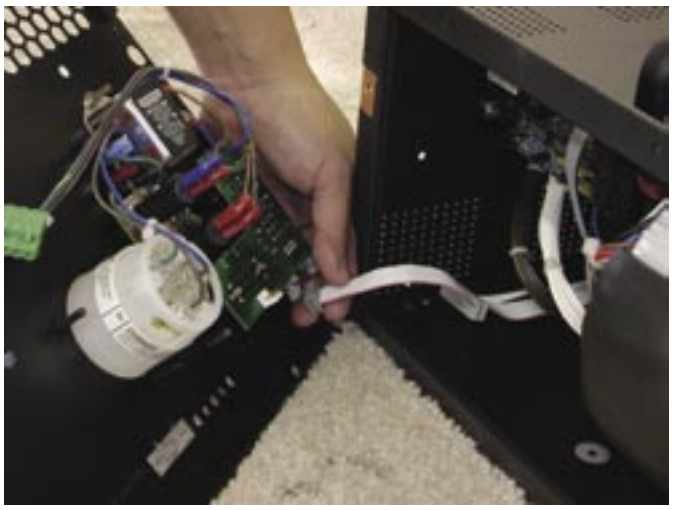
To install the RMS communications module, perform the following steps:

1. If the amplifier is in the loudspeaker cabinet, remove the eight large head screws that attach the amplifier to the cabinet. If the amplifier is not in the loudspeaker cabinet, go to step 3.
2. Remove the amplifier from the cabinet slowly, taking care to unplug the green loudspeaker connector (there are two connectors on the four-channel version) on the top side of the amplifier.
3. With the amplifier sitting on a firm surface, remove the eight small head screws from its user panel.

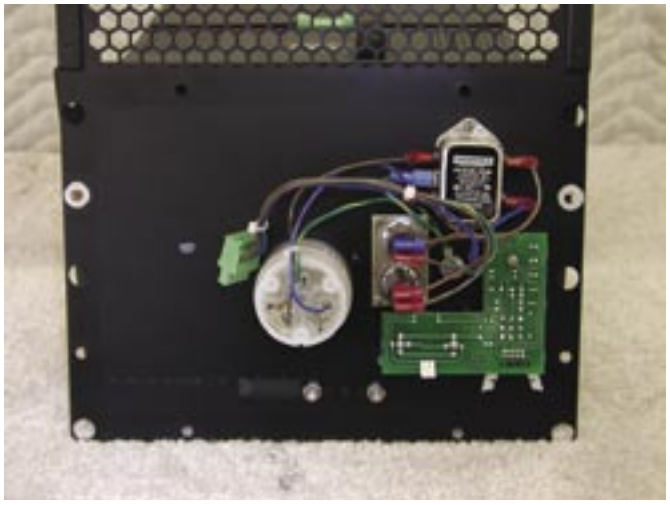
Screw points for attachment to cabinet (four per side)

User panel attachment screws (eight total)

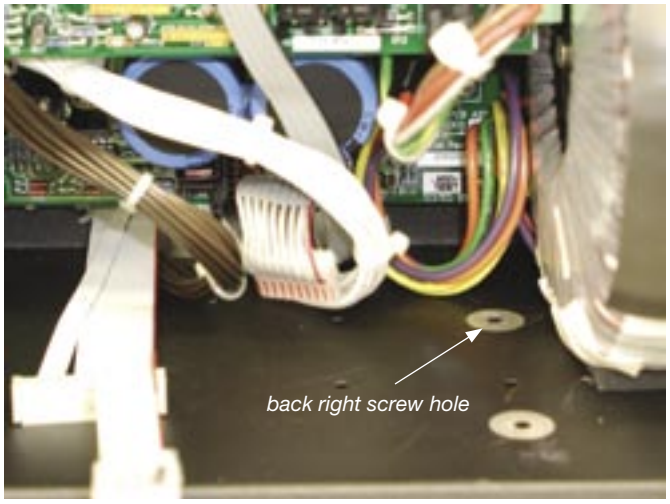
4. While slowly removing the amplifier's user panel, disconnect the signal cable from the input board on the user panel by disengaging the gray connector and disconnect the AC input connector (4-wire green connector) from the AC mains board.



5. Remove the blank plate from the user panel by removing the two nuts on the back of the user panel.



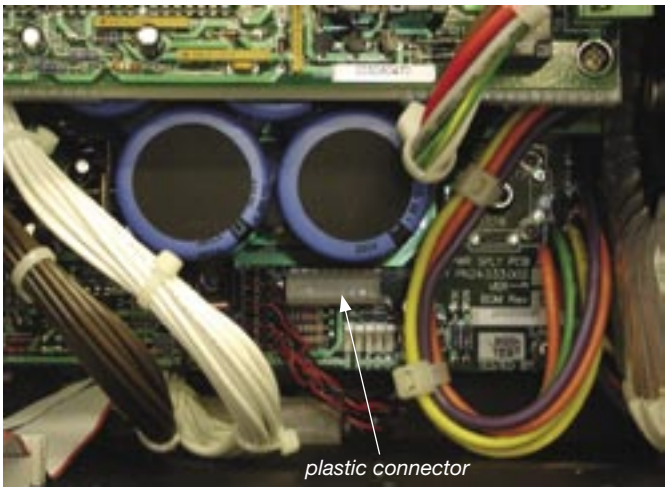
6. Looking in to the power supply chassis, locate the back right screw hole (next to the transformer) on the floor of the power supply chassis.



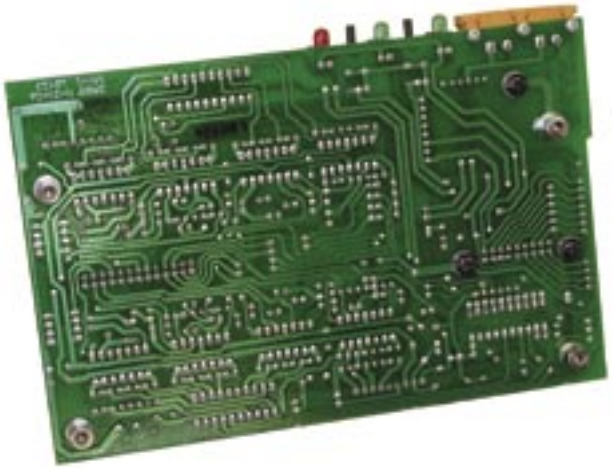
7. Verify that the paint around the hole is removed. If it is not, remove a sufficient amount of paint with a Dremel tool or sandpaper to allow for metal to metal contact with the module standoff and the chassis floor. Make sure that you remove all debris from the chassis when you are done.

CAUTION: Over-thinning the metal around the hole will make metal-to-metal contact worse. Don't grind down the metal too much.

8. Remove the plastic connector (next to the fan power connector) on the power supply board.



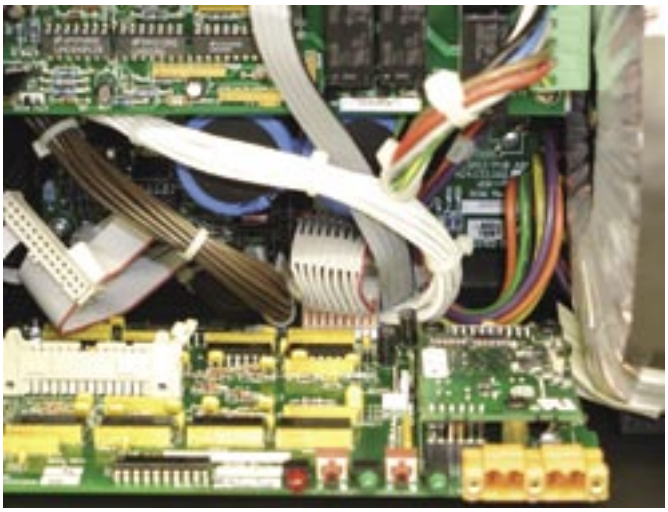
9. Apply one drop of Loctite® to each of the four standoffs on the RMS communications module.



CAUTION: Be careful to avoid touching any of the components. Always handle modules by their edges.

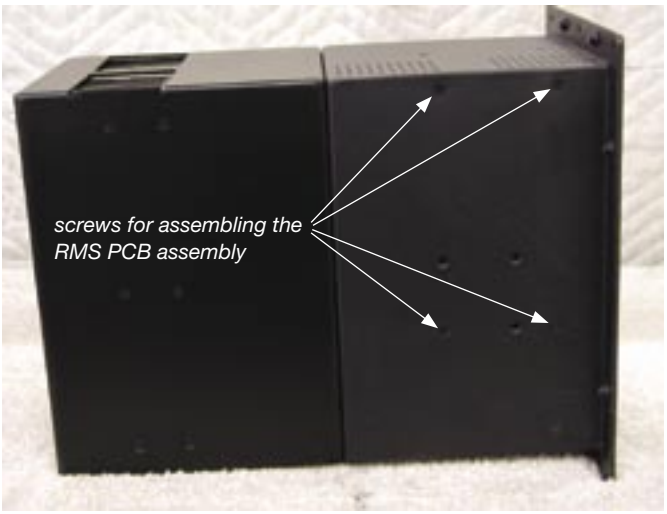
10. Position the RMS communications module within the bottom of the power supply chassis so that the standoffs on the module align with the four screw holes in the bottom of the chassis and the LEDs are facing out.

11. Connect the short 9-wire gray ribbon cable from the RMS communications module to the connector on the power supply board.



NOTE: Make sure that all of the pins are engaged and the connector is firmly seated.

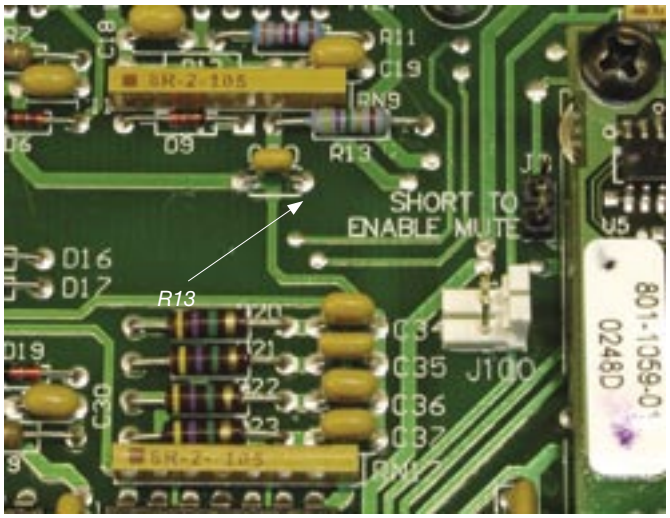
12. While holding the RMS communications module in place, lay the unit on its side and secure the RMS communications module using the four screws provided with the kit.



13. Connect the 26-pin connector from the long ribbon cable to the RMS communications module connector. Make sure to fully lock the connector.

14. Using an ohmmeter, check the resistance across R13 on the RMS communications module. R13 is located 1 inch to the right of the center of the module. The resistance must measure less than 10 ohms. If it measures 47 ohms, remove the RMS communications module (it is insufficiently grounded), return to step 6 and repeat, or contact Meyer Sound Technical Support for assistance.

TIP: Insufficient grounding could be the result of over-thinning the back right screw hole (see Step 7). If this is the case, using a shorter screw may fix the problem.



NOTE: The resistance reading in step 14 presumes that the ribbon power cable has been connected (step 11). If it is not connected, return to step 11 and connect it.

15. Replace the AC input cable on the user panel to the AC mains board and replace the signal cable to the input board on the user panel, making sure to lock the gray connector.

16. Replace the user panel with the eight screws to secure it to the chassis, making sure to carefully set the LEDs and the network connectors.
17. Affix the Neuron ID label to the bottom center of the User Panel.

18. After installing the RMS communications module, power-up the loudspeaker. The Activity LED will blink to indicate that the new RMS hardware is operational and ready to be commissioned on your network.

NOTE: All RMS communication modules are shipped commissioned to Meyer Sound's network. In the rare case that the Service LED blinks, this does not mean that there is any problem with the card and/or electronics. It indicates that the RMS module was reset and needs to be commissioned. In order for RMS to communicate with the module, please commission the replacement/upgrade module to your network (as discussed in Chapter 3 of this guide).

INSTALLING OR UPGRADING AN RMS NETWORK COMMUNICATION MODULE (ULTRASERIES)

The modular amplifier and electronics in the self-powered UltraSeries are designed for maximum serviceability. You can replace modules or install optional components with little more than a screwdriver and a multimeter.

NOTE: If you want to enable muting while replacing the RMS communications module, see the section "Mute-Enable Jumper Installation" in this chapter for information on this procedure.

To replace the RMS communications module in UltraSeries amplifiers, you will need the following tools and equipment:

- Standard (#2) Phillips screwdriver
- UX RMS communications module (Part Number 40.076.028.01)

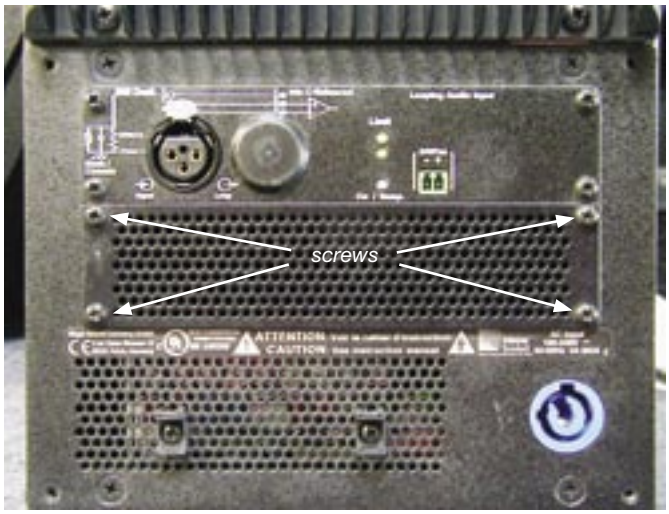
NOTE: The RMS communications module can be installed in self-powered UltraSeries loudspeakers, whether or not they are equipped with any of the optional audio input modules.

NOTE: Meyer Sound's UPM, M1D and UPJ model loudspeakers follow the same procedure for installation or replacement as the UltraSeries model loudspeakers discussed in this section.

While the figures in this procedure are specific to the UPA-1P loudspeaker, these steps outline upgrading to RMS for all self-powered loudspeakers that use UX amplifiers. To install the RMS communications module, perform the following:

1. Remove the AC power cable and the signal cable from the loudspeaker, and place the unit with the top facing up on a clean, low static flat surface (i.e., workbench, table or floor).

2. Remove the four Phillips-head screws from the blank perforated plate or RMS communications module if installed and being replaced. Save the plate in case you need it in the future.



3. Make sure the copper strip on the left-hand side of the opening is properly positioned and not damaged. This strip contributes to the grounding of the RMS communications module to the chassis. If you need to replace the strip, please contact Meyer Sound.

4. Look for the ribbon cable underneath the Audio Input module. Connect and lock this cable to the RMS communications module. Slide the RMS communications module into the power supply module, hand-thread the four screws into place, then tighten the screws until they are flush and secure.

NOTE: Be very careful to avoid touching any of the components. Always handle modules by their edges.

5. After installing the RMS communications module, power-up the loudspeaker. The Activity LED will blink to indicate that the new RMS hardware is operational and ready to be commissioned on your network.

NOTE: All modules are shipped commissioned to Meyer Sound's network. In the rare case that the Service LED blinks, this does not mean that there is any problem with the card and/or electronics. It indicates that the RMS module was reset and needs to be commissioned. In order for RMS to communicate with the module, please commission the replacement/upgrade module to your network (as discussed in Chapter 3 of this guide).

MUTE-ENABLE JUMPER INSTALLATION

In order to use the Mute and Solo functions of any RMS-equipped Meyer Sound loudspeaker, a special jumper must be installed in the loudspeaker's RMS communication module (the jumper ships as a separate item with the loudspeaker). To install the Mute-Enable jumper:

1. Remove the AC power cord from the loudspeaker and wait at least five minutes before removing the RMS communication module.
2. Locate the two jumper pins on the circuit board labeled "short to enable mute" (Figure 2.4).

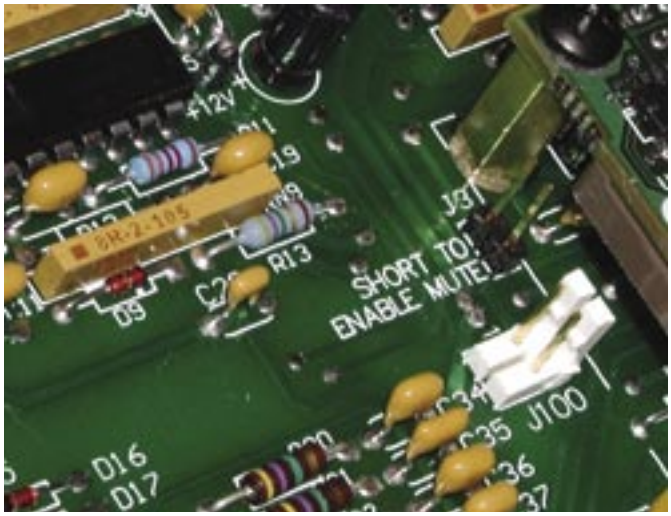


Figure 2.4. Location of the Mute jumper pins (not shorted)

3. Install the blue two-pin jumper on to these two pins (Figure 2.5).

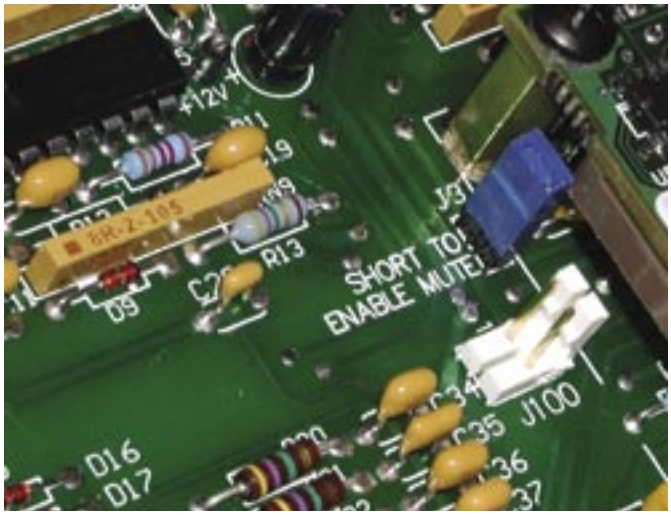


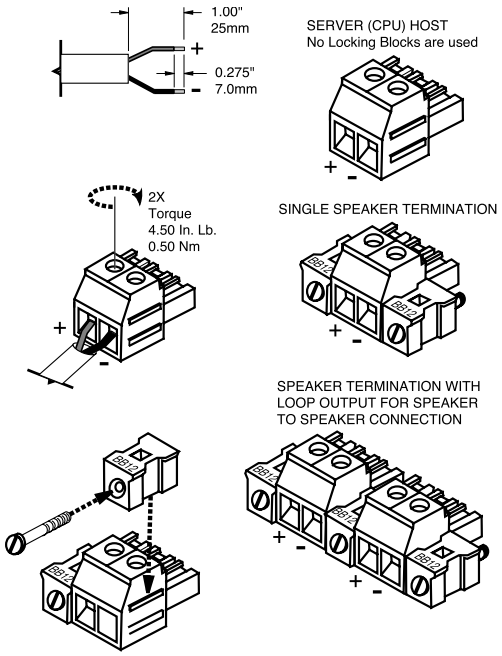
Figure 2.5. Location of the Mute jumper pins, shorted with the blue jumper cap

4. Reassemble the loudspeaker.

CAUTION: Be careful not to install the two-pin header on to the white, unlabeled two-pin connector on the RMS communications module. This connection is for use with the VEAM connector option, and using it for any other purpose will damage the communication module, causing it to stop functioning.

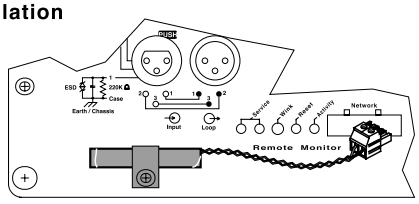
NOTE: You can specify that the Mute-Enable jumper be pre-installed when you order any RMS-equipped loudspeaker.

INSTALLATION OF THE RMS CONNECTOR ASSEMBLY

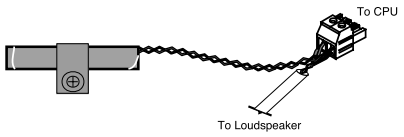


TERMINATION INSTALLATION

Loudspeaker Installation



Server (CPU) Host



INSTALLATION AND OPERATION OF THE FTR-120 NETWORK REPEATER

The FTR-120 (Figure 2.6) is a four-channel network repeater. A message generated on any network segment to which the FTR-120 is connected is rebroadcast on the three other channels.

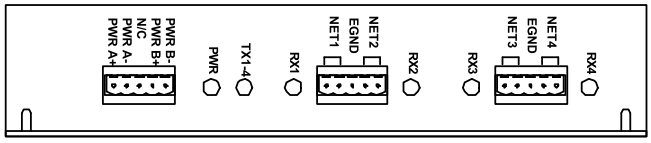


Figure 2.6. The FTR-120 network repeater

NOTE: See Chapter 1, Planning and Designing for RMS, for design scenarios using the FTR-120 network repeater.

There are six status LEDs on the unit:

- The PWR LED is the power indicator. It is lit if power is properly supplied to the unit.
- The other five LEDs give an indication of the amount of network traffic. The TX1-4 LED flashes whenever a message is transmitted by the repeater. The RX1, RX2, RX3, RX4 LEDs flash whenever a message is received on a particular channel.

For example, if a message is received on channel 1, the RX1 LED would flash, the message would be transmitted on the other channels (2, 3 and 4), and the TX1-4 LED would flash.

Mechanical Installation

The FTR-120 can be mounted on a wall or other surface using four #6 wood screws (or equivalent). It can be mounted horizontally with the terminal blocks facing down, or vertically with the terminal blocks on the right side. The FTR-120 unit and associated wiring should be mounted and fastened securely, so that no stress is incurred. Do not install the FTR-120 in a manner that would allow unanticipated disconnection.

Network Terminations

The FTR-120 is capable of providing the standard network termination if desired. As shipped, each channel on the FTR-120 has 5-ohm network termination resistors connected. If no termination or 100-ohm network termination is required, the top must be removed.

Network termination can be changed by moving the shorting jumper on CN1, CN2, CN3, or CN4. Figure 2.7 and Table 2.1 describe the jumper positions.

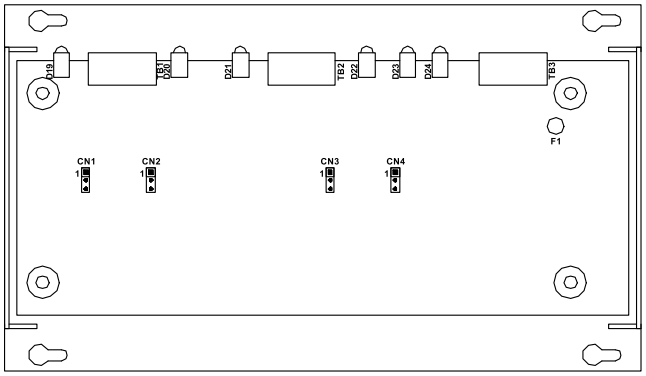


Figure 2.7. FTR-120 jumper layout

Table 2.1 FTR-120 Jumper Positions

Channel	No. Termination	5-ohm Termination	100-ohm Termination
1	CN4 No Jumper	CN4-Jump 1 and 2	CN4-Jump 2 and 3
2	CN3 No Jumper	CN3-Jump 1 and 2	CN3-Jump 2 and 3
3	CN2 No Jumper	CN2-Jump 1 and 2	CN2-Jump 2 and 3
4	CN1 No Jumper	CN1-Jump 1 and 2	CN1-Jump 2 and 3

When installing an FTR-120 network repeater on an RMS network, avoid using the twisted wire terminator (provided in the RMS peripheral kit) on the net output of the loudspeakers connected to the repeater unless the repeater terminator is removed. Double terminating any net output will decrease performance.

Wiring

The FTR-120 is wired using five position terminal blocks. The wiring pin-out for the FTR-120 module is shown in Table 2.2.

Table 2.2 FTR-120 Wiring Pin-out

Pin Description	Functionality
PWR A+	Power A+ positive supply connection
PWR A-	Power A- negative supply connection
N/C	No connection (reserved)
PWR B+	Power B+ positive supply connection
PWR B-	Power B- negative supply connection
NET1	Network channel 1 connection
NET1	Network channel 1 connection
EGND	Earth ground
N/C	No connection (reserved)
NET2	Network channel 2 connection
NET2	Network channel 2 connection
NET3	Network channel 3 connection
NET3	Network channel 3 connection
EGND	Earth ground
N/C	No connection (reserved)
NET4	Network channel 4 connection
NET4	Network channel 4 connection

Power A+ and Power A- are the power supply inputs. Connect the positive lead of the power supply to the terminal block Power A+ and the negative lead of the power supply to the terminal block Power A-.

If a redundant supply is required, connect it to Power B+ and Power B-. Connect the positive lead of the redundant power supply to the terminal block Power B+ and the negative lead of the power supply to the terminal block Power B-.

Network 1-4 are the network connections. Network 1 is the channel 1 network connection. Connect the first network twisted pair to the terminal block NET1 positions. The wiring is polarity-independent so it does not matter which wire in the pair is connected to which position on the terminal block. Connect the rest of the network twisted pairs to the other channels. Leave any unused channels unconnected.

NOTE: Terminals labeled EGND should be connected to an earth ground.

Universal Power Supply

The universal power supply included in the repeater kit allows for FTR-120 operation around the world. The supply accepts any input voltage from 100 to 240 V AC, and produces the required 12 V DC output. The male IEC input allows for any mains lead adapter to be used with the supply.

FTR-120 Specifications

Table 2.3 FTR-120 Specifications

Power Supply	+12VDC to +24VDC +/- 10% @ 100mA
Data Communications	Differential Manchester coding
Network Polarity	Polarity insensitive
Transmission Speed	78 Kb per second
EMI	Complies with FCC Part 15 Class A
Operating Temperature	-40° C to + 60° C
Storage Temperature	-40° C to + 85° C
Operating Humidity	25% to 90% @ 50° C non-condensing
Storage Humidity	0% to 95% @ 50° C non-condensing
Approximate Dimensions	9.65" w x 2.5" h x 5.65" d (245 mm x 64 mm x 144 mm)
Approximate Weight	1 lb (625 g)
Packaging	Aluminum enclosure

CHAPTER 3: INSTALLING SOFTWARE AND NETWORK ADAPTERS

At the heart of the RMS remote monitoring system is a robust suite of software including the Echelon Drivers, Echelon LNS Server, and the RMS application. This chapter will show you how to install and set up these components.

BACKING UP AND IMPORTING THE RMS DATABASE

If you are upgrading to RMS version 4.5 and you want to use your existing database, you should backup your data files before installing the latest version, then import the files after installation. If you fail to make a backup of these files, you may lose all of your data and will have to re-commission your Meyer Sound product inventory.

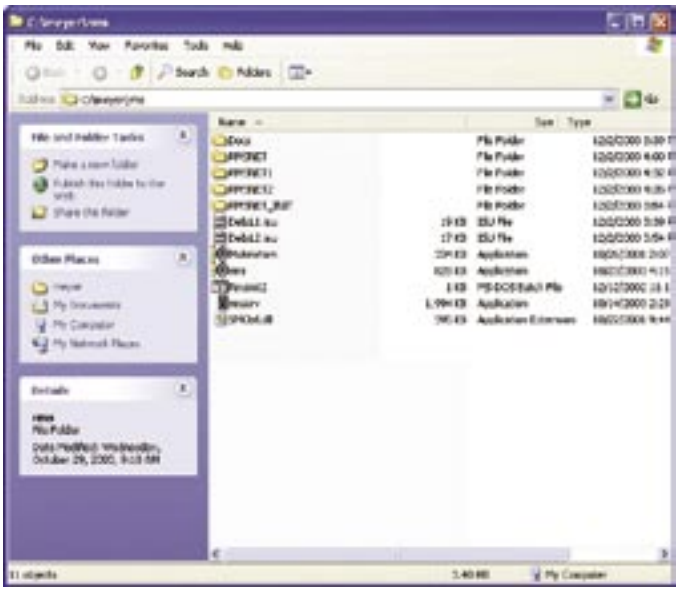
NOTE: RMS, in most instances, will actually rename the old database and back it up by adding a date and time stamp to the folder name. However, you should always be safe and back your files up yourself.

TIP: Periodically backing up your RMS database files is always a good idea: You should create backups at least once per week to protect yourself in case of hard drive failure.

Backing Up Your RMS Database and Panel Files

Perform the following steps to backup and import your RMS database files.

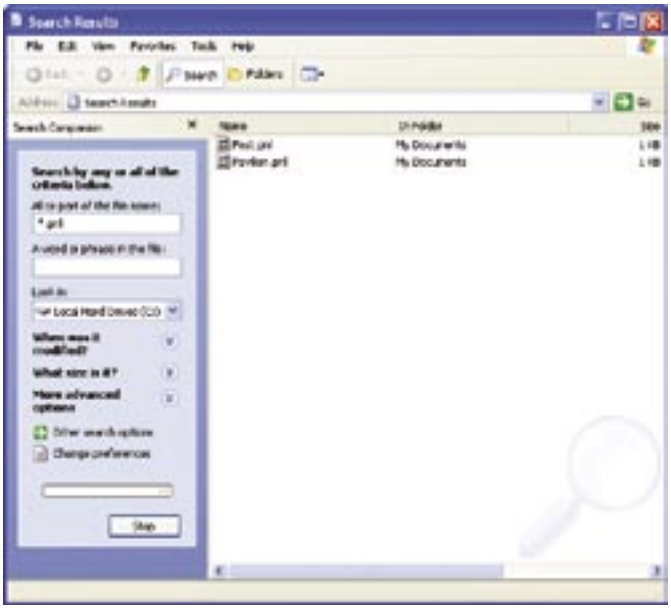
1. In Windows Explorer, navigate to **C:\meyer\rms**.



2. Copy the following items to a storage medium that can handle files larger than 1 MB, such as a CD-RW or Zip disk (or, alternately, another folder on your hard disk):
   - Any folders (depending on your RMS network configuration) that have the form RMSNET, or RMSNET plus a numeral – for example, RMSNET1, RMSNET2, and so forth.
   - All files with a .pnl extension

TIP: The RMSNET folder refers to the network database that is associated with the network card (PCLTA 20 or PCC-10) in your desktop or laptop PC, while any RMSNET folder with a numeral at the end of it refers to the i.LON 10 and the network data associated with that folder. For example, RMSNET1 holds data for the i.LON adapter ilon-1 with an IP address of 192.168.1.101.

CAUTION: Do not copy or remove the RMSNET_INT folder.



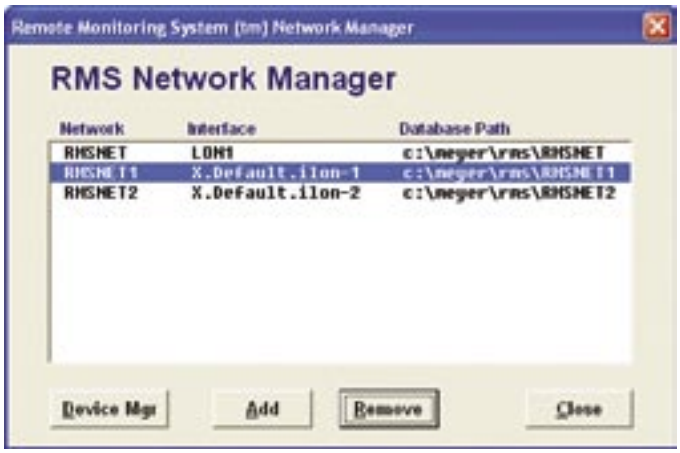
Removing and Importing a Network Database

You can remove an existing RMS database as well as import saved databases or databases you want to copy between different computers.

Removing a Network Database

Perform the following steps to remove an RMS database:

1. Launch RMS and open the RMS Network Manager.



2. Highlight the database you wish to remove. Keep in mind the following RMSNET identification system:
   - RMSNET - PCC-10 or the PCLTA20 network interface
   - RMSNET1, RMSNET2...RMSNETXX – i.LON 10 network interface

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NOTE: If no network card is present, the first i.LON 10 will use RMSNET and the next i.LON 10 will use as its default folder RMSNET2.

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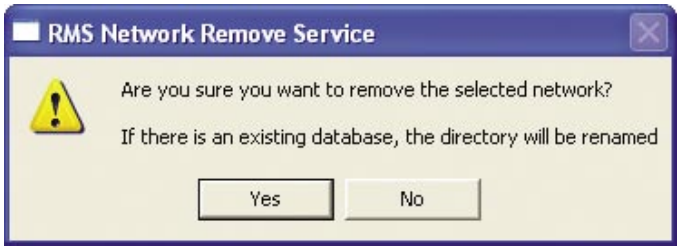
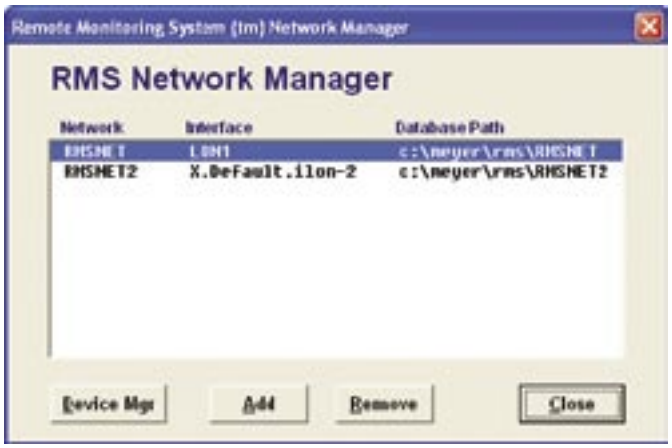
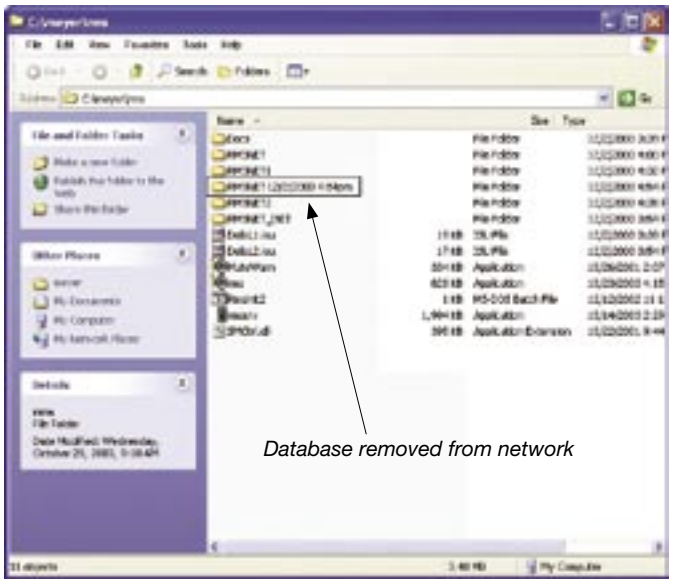
3. Click Remove. You will be prompted to acknowledge the removal of this database. Click Yes.
4. The RMS Network Remove Service dialog appears. Click **Yes**. RMS will automatically rename the database with a date/time stamp, so that the network will no longer recognize it.



5. The database is no longer recognized in the RMS Network Manager, however it still exists in date-stamped form in the **C:\meyer\rms** folder on your hard drive.



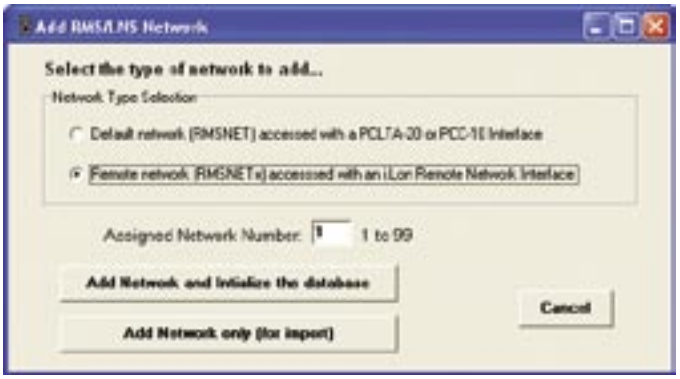


Importing a Network Database

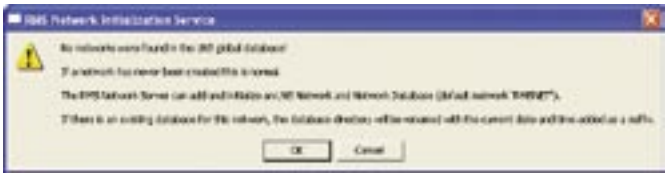
If you have upgraded to a new version of RMS, if you have moved your database files to a new RMS host computer, you will need to import your RMS database.

Perform the following steps to import an RMS database:

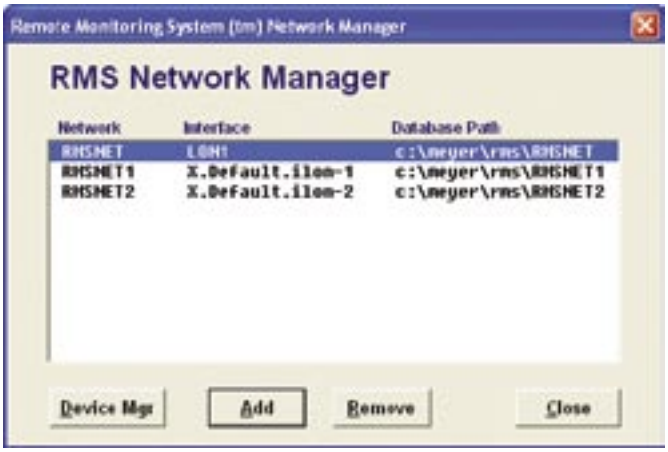
1. If RMS is running, shut it down.
2. Locate your backed-up RMSNET folder. Copy it into the **C:\meyer\rms folder**.
3. Restart RMS and open the RMS Network Manager. Click **Add**. The Add RMS/LNS Network dialog appears.



4. If you are importing a database for the RMSNET default network (using a PCLTA-20 or PCC-10 interface), click the **Default network (RMSNET) accessed with a PCLTA-20 or PCC-10 Interface** radio button. If you are importing i.LON 10 database, click the **Remote network (RMSNET) accessed with an i.Lon Remote Network Interface** radio button.
5. If you are importing an i.LON 10 database, you must also type in the sequential number of the i.LON 10 on the network in the Assigned Network Number field. For example, an i.LON adapter named ilon-1 with an IP address of **192.168.1.101** means you would type a 1.
6. Click **Add Network only (for Import)**.
7. You will be prompted with two warnings. Click **OK** and **Yes**, respectively, to dismiss both warning dialogs.



8. This will take several moments as the speaker nodes are found and imported into the folder. Once completed, you have successfully imported a network database.



INSTALLATION AND SETUP

As discussed in Chapter 1, do not install your network interface card (PCI or PCMCIA card) until after you have completed installation of all RMS software components.

Once the software is installed, you will need to shut down your computer and install the Network Interface Card. You will also need to follow some additional steps to make sure the Network Interface Card is working (covered at the end of this section).

⚠ **CAUTION:** If you already have a previous version of the RMS Software Suite running on your computer, you must un-install all previous components before continuing with a new installation. Click Start, Control Panel, Add/Remove Programs, locate entries for LNS Network and RMS application, remove the components, and restart your computer. Contact Meyer Sound Technical Support for assistance if needed.

Launching RMS Setup

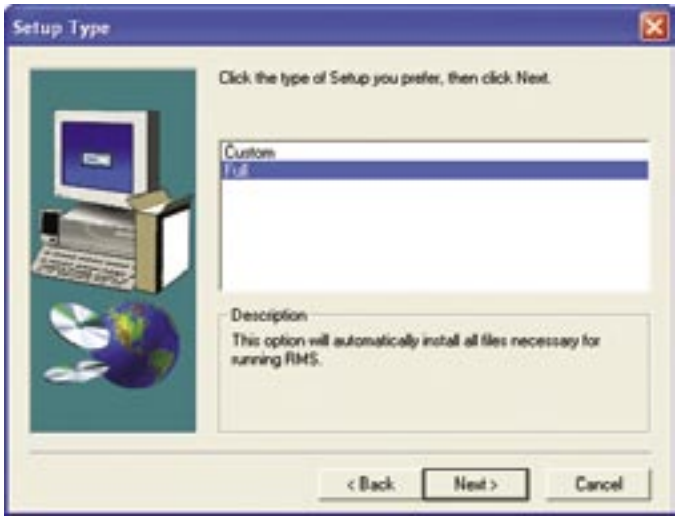
To begin installation of the RMS software suite, ensure that no other applications on your computer are running, then insert the Meyer Sound RMS installation disk into your CD-ROM drive. After a few seconds, the Setup dialog appears.

If the RMS Setup dialog fails to appear, perform the following steps:

1. From the Windows Task Bar, click **Start**, then **Run**.
2. In the Open textbox, type the drive letter of your CD-ROM drive, followed by "\Setup.exe." For example, if you CD-ROM drive is "D," you would type **d:\Setup.exe**.
3. Click **OK**. The Setup dialog should appear now.

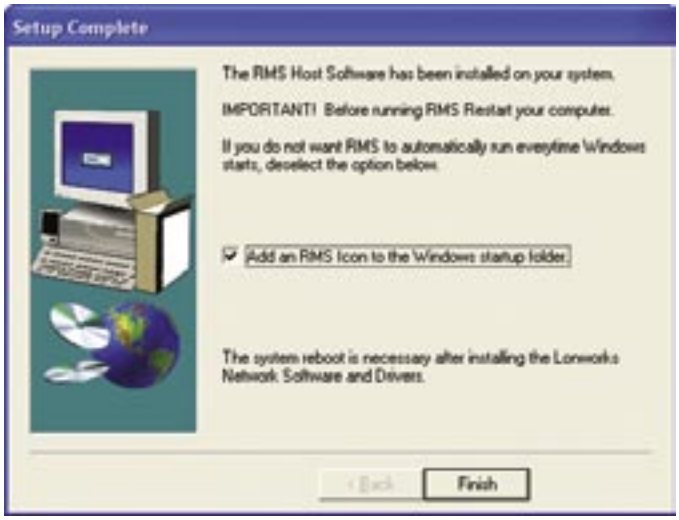
When prompted for your serial number at the User Information dialog, locate the serial number on your RMS installation disk and enter the number exactly as it appears, including any hyphens. You must complete all three fields (Name, Company, and Serial) to continue.

You will be prompted to select either a full or custom installation.

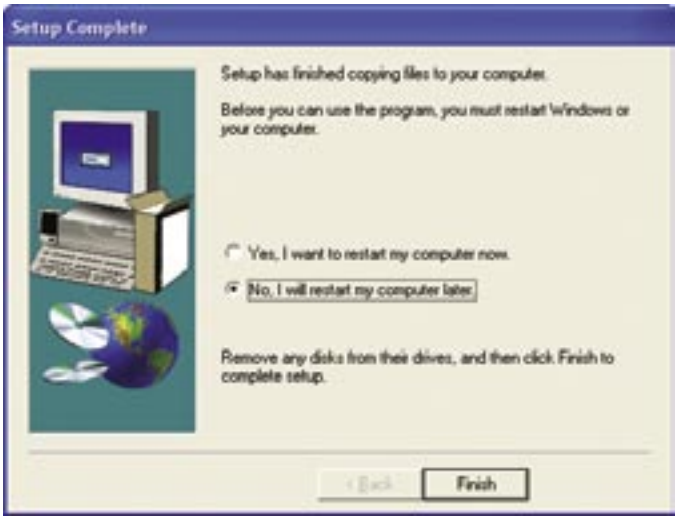


If you choose a custom installation, you will be asked which RMS components you would like to install. Unless you are are networking savvy or you are reinstalling specific components, choose to do a full installation.

At the Setup Complete dialog, un-check the **Add an RMS Icon to the Windows startup folder** checkbox if you do not wish to automatically run the RMS application when you first start Windows. By default, it is left checked, and is particularly useful if you are running an RMS-dedicated system.



The last dialog of the wizard will prompt you to shutdown your computer. Select **No, I will restart my computer later**.



Manually shutdown your computer from the Start menu and install the Network Interface Card. When the Network Interface Card is installed, restart your computer, then launch RMS.

Launch RMS.

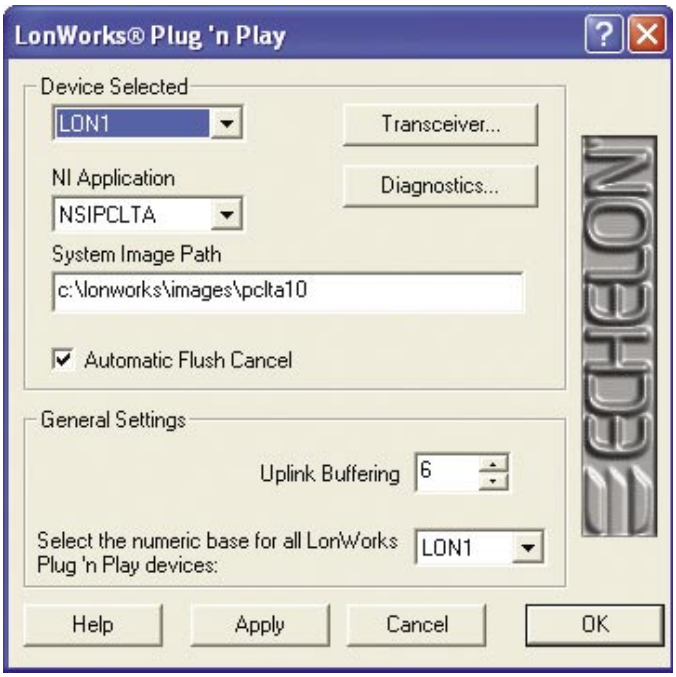
NOTE: If RMS does not start successfully, you will need to shut down RMS and validate the Network Interface Card (covered in the next section).

Validating the Network Interface Card (Not necessary for i.LON only users)

To ensure that the Network Interface Card is properly set up, as well as perform diagnostics, use the LonWorks Plug 'n Play applet, found in the Control Panel. Follow these steps to validate and check your card:

CAUTION: You must click **OK** or **Apply** following these steps to ensure that the applet has successfully communicated with the hardware on-board your computer.

1. Inspect the **NI Application** drop-down box. If your Network Interface Card is a PCI card, make sure that NSIPCLTA is selected. If your card is a PCMCIA, NSIPCC should be selected.



2. Click **Apply** to initialize and load the system image file onto the card.
3. Click **Diagnostics** to launch the Diagnostics dialog and test your card.
4. Click **Test** to request the connection status from your card. You should see output similar to the messages shown in Figures 3.1 and 3.2, indicating that your card is working correctly.

NOTE: If you get an error of any kind, click **Restart** and **Reset** to reset the card and reload its firmware.

5. Click **OK** to exit the applet.

Figure 3.1. Typical Diagnostics output

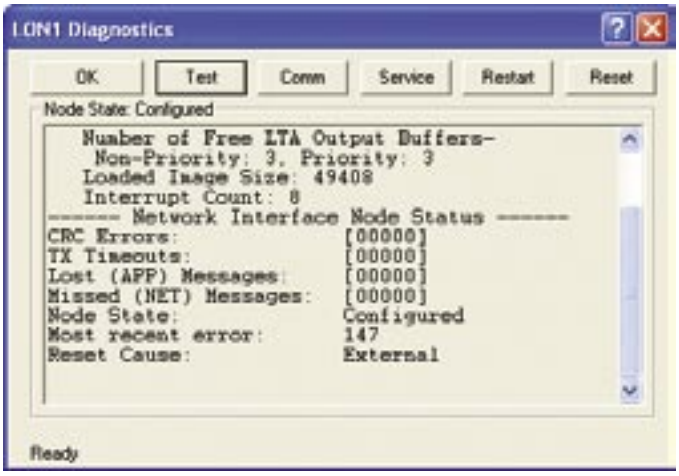


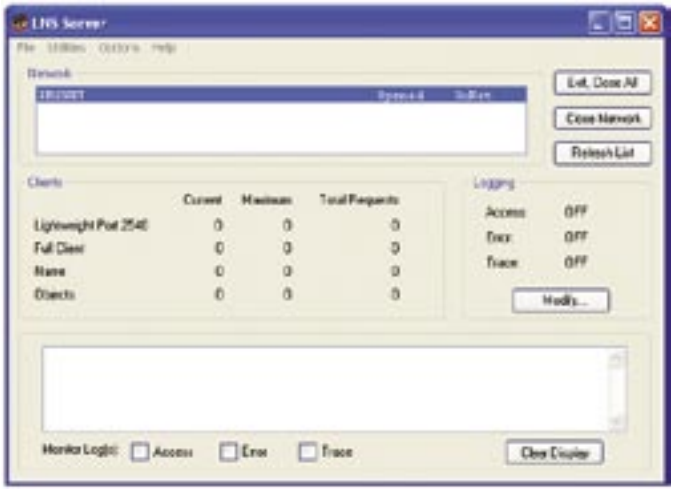
Figure 3.2. Diagnostics information after clicking the Test button

If validation is unsuccessful, verify that the RMS software and hardware are working properly by taking the following steps:

1. From the Start Menu, **Click Echelon LNS Utilities, LNS Server**.

2. The Network Interface dialog appears. Click **OK**.

3. The LNS Server dialog appears. Click **Exit, Close All**.



4. Start RMS.

Upon re-starting, RMS will attempt to establish a connection between all of the software and hardware segments in the system. If your Network Interface Card still does not respond, see the Echelon LonWorks PCC-10, PCLTA-10, or PCLTA-20 User Guides, accessible from the Echelon Drivers folder on the Start menu, for more information and troubleshooting tips. Alternately, contact Meyer Sound Technical Support for help.

NOTE: The Network Interface dialog may take up to one minute to appear.

RUNNING RMS FOR THE FIRST TIME

After installing the RMS software, restarting your computer, and validating your Network Interface Card, RMS is almost ready to run! Double-click the RMS Icon on your desktop – or select RMS from the shortcut in the Meyer Sound folder in the Start menu – to launch the RMS software.

NOTE: If you chose to add an RMS icon to your Startup folder during RMS software installation, RMS will automatically run when Windows starts.

The first time you run RMS, the Echelon LNS Server layer will need to create an the RMS network database. The following is the startup sequence:

1. A Network Server and Manager dialog will appear displaying information about the status of the program and the server on startup (Figure 3.3).

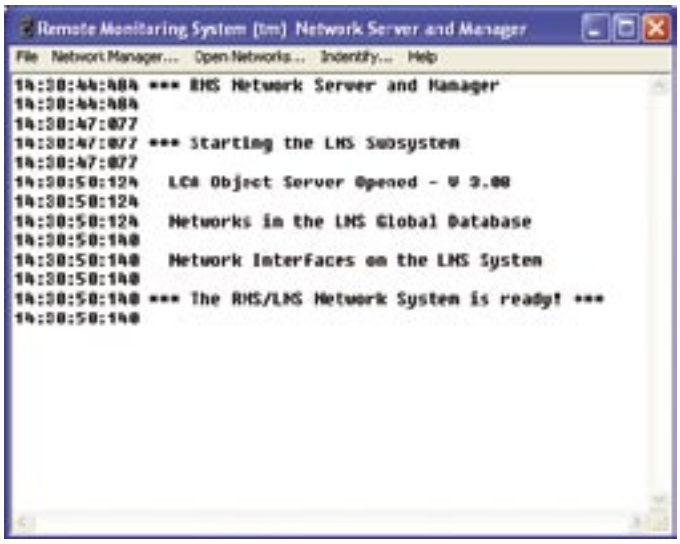


Figure 3.3. The Network Server and Manager dialog

2. The RMS Network Initialization Service will create a new database. Click **OK** to create the new database, as shown in Figure 3.4.

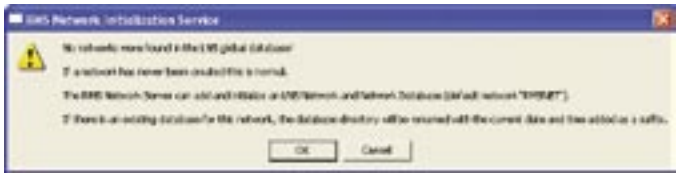


Figure 3.4. The RMS Network Initialization Service dialog

TIP: The default name for the database is "RMSNET"; a new sub-folder to hold all of the database and configuration files will be created in the folder where RMS is installed.

3. If the program asks you if you're sure you want to create a new database, click OK again.
4. The program will close and re-initialize the new database (Figure 3.5).

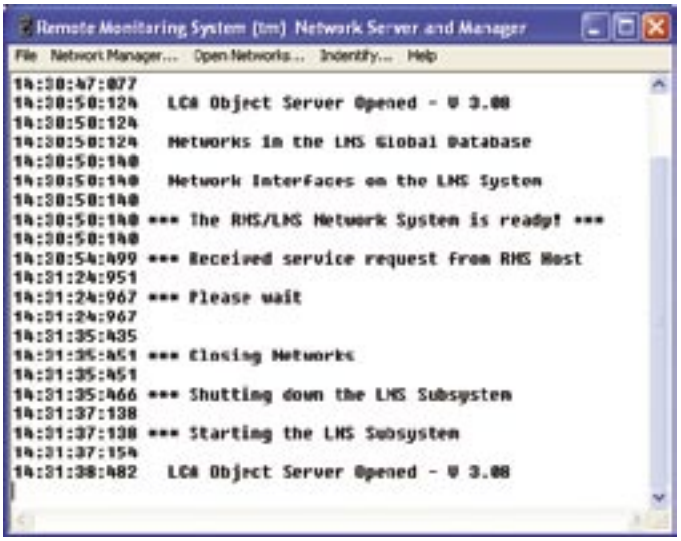


Figure 3.5. A new RMS network database being created

If the database is successfully created, the RMS application will open automatically. You're ready to go!

TIP: The Network Server and Manager will continue to run minimized in the background, accessible from the Windows Taskbar. Since it is the communication layer between the RMS application and your loudspeakers, don't close it. When you close the RMS application, the Network Server and Manager will close automatically.

CAUTION: If a dialog appears stating "The object was not found," then your card is not connected to any loudspeaker. Click **OK** to close the dialog and check your cable connection(s). The RMS application will not launch automatically. Note that closing the Network Server and Manager dialog will launch the RMS application.

CONNECTING AND CONFIGURING THE I.LON 10 ETHERNET ADAPTER

By following the steps outlined in this section, you can quickly and easily configure your i.LON Ethernet Adapter to communicate with your computer. Figure 3.6 shows the i.LON 10 Ethernet Adapter (FT Model) from the top and from the back, showing all hardware inputs and outputs.

Figure 3.6. The i.LON 10 Ethernet Adapter

Connecting the i.LON 10

To connect the i.LON 10 Ethernet Adapter, follow these steps:

1. Remove power from the i.LON 10 Ethernet Adapter.
2. Connect the FTT Channel to the i.LON 10 Ethernet Adapter's orange Weidmuller connector.
3. Connect the i.LON 10 Ethernet Adapter's 10BaseT Ethernet port to an Ethernet Hub/Switch (TCP/IP network) that can communicate with your PC or use a crossover Ethernet cable to connect the i.LON 10 to your PC directly (Figure 3.7).

NOTE: See Chapter 1, "Planning and Designing for RMS," for additional examples and diagrams for how to setup your i.LON 10 based network.

NOTE: See the section, "i.LON 10 Ethernet Adapter Security," in "Appendix B: Advanced i.LON Configuration," for information about i.LON 10 security measures.

At this point, you are ready to configure an i.LON 10 for use with RMS.

Configuring the i.LON 10

In order to configure RMS to use one or more i.LON 10 adapters, you should have basic networking knowledge and experience; in addition, you must have Administrator rights on the PC and network you will be using.

NOTE: If you are using the backbone of an existing network at a venue, contact the Network Administrator and/or venue representative before accessing the network.

To begin, you must change your computer's network IP connection setting from dynamic to static. To do so, perform the following steps:

1. From the Start menu, click **Control Panel**, then **Network Connections**. The Local Area Network Connections dialog appears.

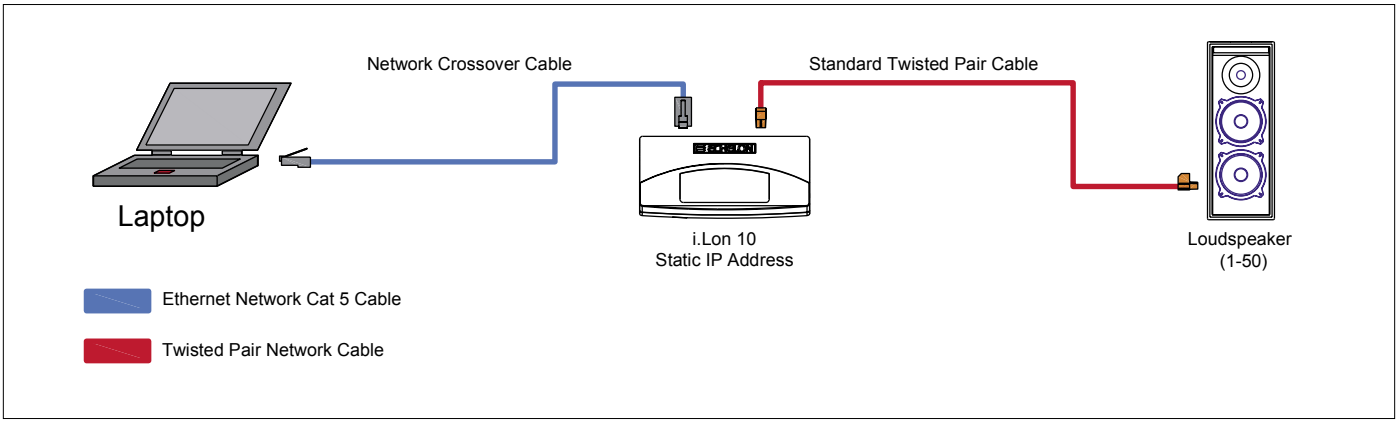
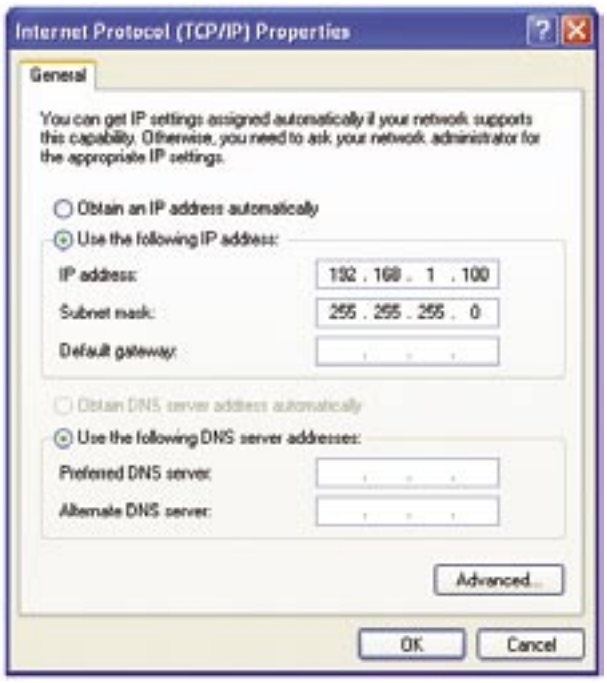


Figure 3.7. A simple i.LON 10 network setup

2. On the General tab, highlight **Internet Protocol (TCP/IP)** and select Properties. The Properties dialog appears.
3. Click the **Use the following IP address** radio button. In the IP address field, enter **192.168.1.100**, accept the default Subnet mask, then click OK.



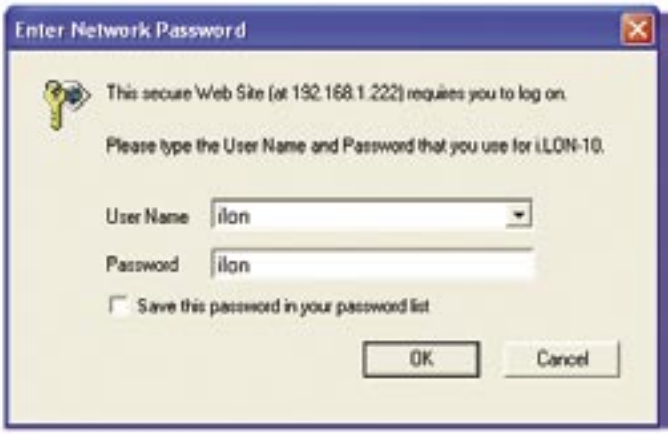
NOTE: If you are using Windows 98, you may need to restart after making the changes in step 3.

4. Open your Web browser and enter in the following address to gain access to the i.LON 10:

   http://192.168.1.222/config

5. You will be prompted for a user name and password. Enter the following:

   User Name: ilon
   Password: ilon



6. The i.LON 10 Configuration screen appears.

7. Click the Security link on the left side navigation menu. The Security page appears.
8. Check the **Allow HTTP Access** and **Allow TFTP Access** checkboxes.

CAUTION: Do not click Save & Exit at this time.

NOTE: You must check both checkboxes to be allowed access to the i.LON 10 only after you have completed its configuration.

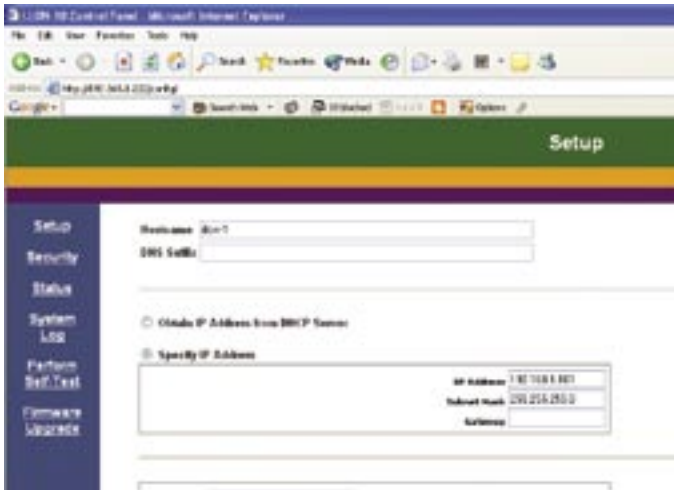
9. Click the Setup link on the left side navigation menu. The Setup page appears.
10. In the Hostname field, enter the name of the i.LON 10 that you wish to communicate with the network. The name must begin with ilon, followed by a dash -, followed by a number in sequence. For example, the first i.LON 10 name would be ilon-1, a second would be ilon-2, a third ilon-3, and so forth.

CAUTION: Ensure that no spaces or other characters are included in the name of the i.LON 10. For example, ilon - 1 or ilon 1 are not acceptable.

11. Click the **Specify IP Address** radio button and enter the IP addresss for this i.LON 10. The IP address must use a sequence corresponding to the IP address of your computer, with the last digit changed to correspond to the name of the i.LON 10. For example, the IP address for ilon-1 would be 192.168.1.101; for ilon-2, it would be 192.168.1.102; for ilon-3, 192.168.1.103; and so on (see Table 2.4).

Table 2.4 Example names and IP addresses for three i.LON 10s

Name	IP Address
ilon-1	192.168.1.101
ilon-2	192.168.1.102
ilon-3	192.168.1.103



TIP: Putting an actual physical label on the i.LON 10 showing the IP address is recommended in case access is needed to that i.LON 10 in the future.

12. Click **Save & Exit** to finish.

You have now successfully configured your i.LON 10 with its own unique IP address name. Make sure that you document IP addresses for both your computer and each i.LON 10 on the network, as well the i.LON 10 name. Next, you will need to configure your computer's i.LON 10 LonWorks information so that it knows where to find the i.LON 10 on the network.

NOTE: If you experience configuration problems, you may need to perform a security reset. Follow these steps:

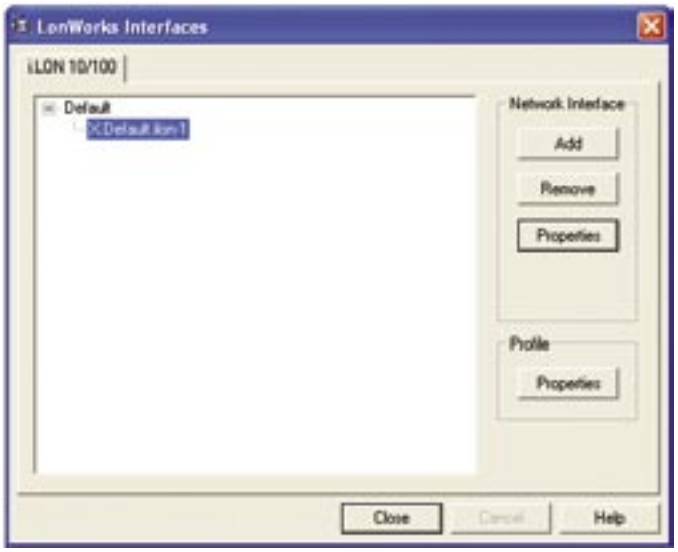
1. Hold down the i.LON 10 service pin.
2. While continuing to hold down the service pin, apply power to the i.LON 10 Ethernet Adapter.
3. Continue holding down the service pin for about 10 seconds until the Wink and Connect LEDs illuminate. This means that you have performed a security access reset and restored the default IP address: 192.168.1.222. You will now be able to access the i.LON Configuration pages stored on the i.LON 10 Ethernet Adapter.

Configuring the LonWorks Interface

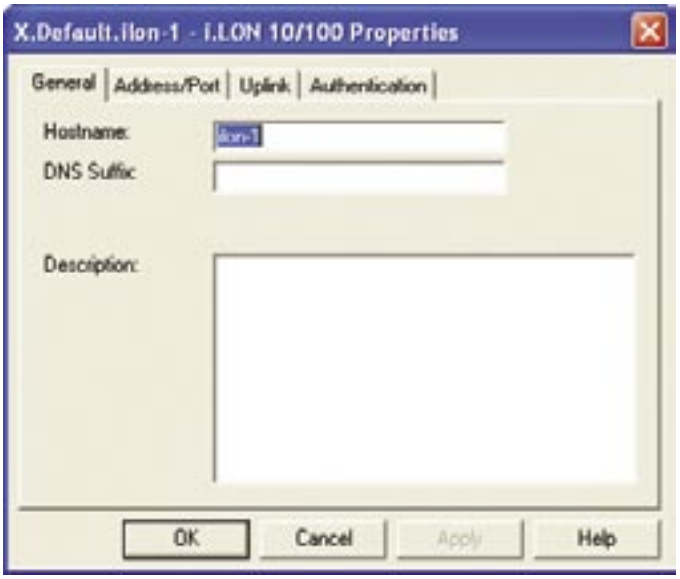
The LonWorks Interfaces program on your computer keeps track of the i.LON 10 adapters you specify. The interface manages the connection between your computer and the i.LON 10(s) on your RMS network.

NOTE: RMS software installation, covered in detail earlier in this chapter, is required from this point forward.

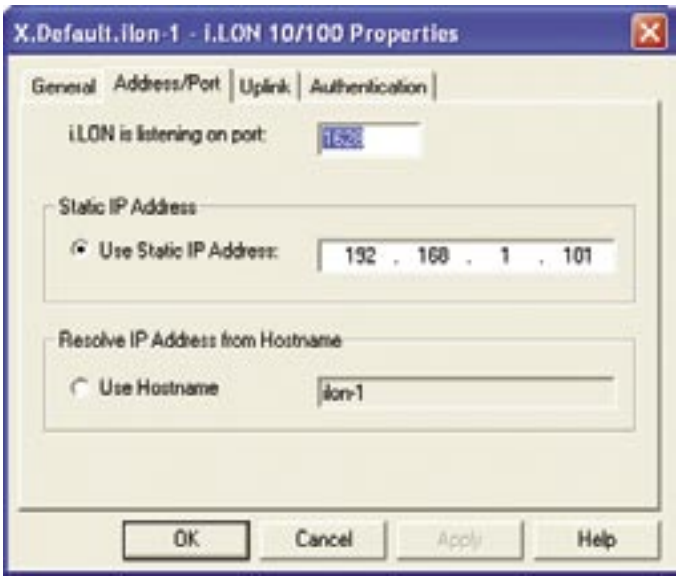
1. From the Start menu, click **Control Panel**, then **LonWorks Interfaces**. The LonWorks Interfaces dialog appears.



2. Click the Properties button. In the Properties dialog, enter in the exact hostname as you did in the i.LON 10 that you configured in the last section (ilon-1).



3. Click the Address/Port tab, then check the **Use Static IP Address** radio button. Enter the exact IP address you used in the i.LON 10 that you configured in the last section (for example, ilon-1 and 192.168.1.101).



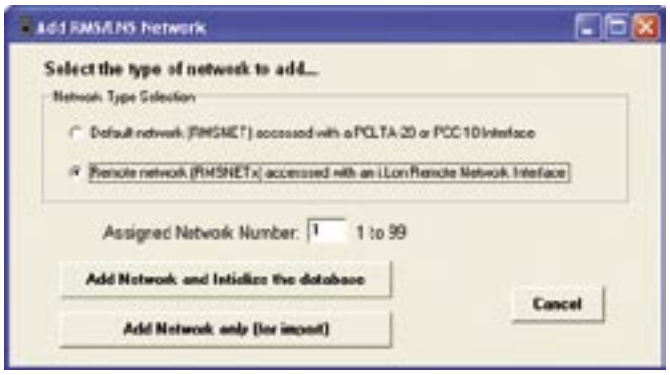
To configure additional i.LON 10s, repeat steps 1 through 3 in this section for each i.LON 10 in the network.

4. Click **OK** to close the Properties dialog, then click Close to exit the LonWorks Interfaces applet.

Initializing the i.LON 10 into the RMS Database

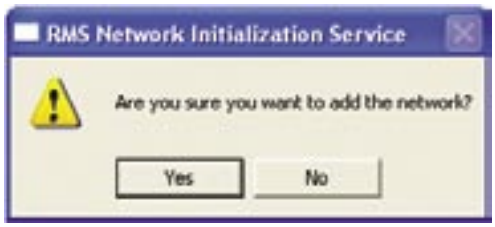
1. Launch RMS and open the Network Server and Manager, then open the Network Manager. Click **Add**.

2. In the Network Types section, click the **Remote network (RMSNETx) accessed with an i.Lon Remote Network Interface** radio button.

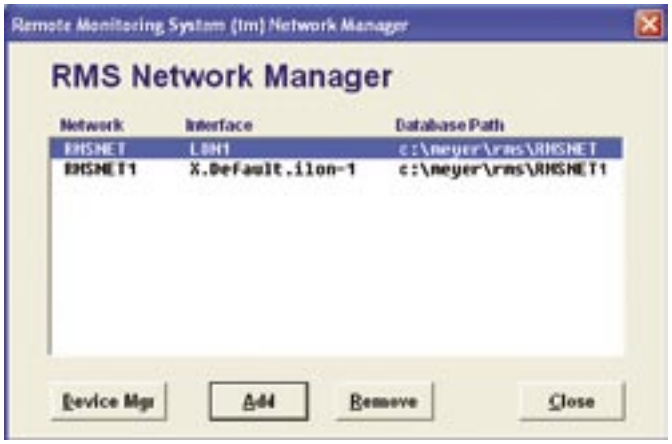


3. Type in the sequential number of the i.LON 10 on the network in the Assigned Network Number field. For example, an i.LON adapter named ilon-1 with an IP address of **192.168.1.101** means you would type a 1.
4. Click **Add Network** and initialize the database. The RMS Initialization Service warning dialog appears. Accepting this warning acknowledges that you understand you will be creating a new RMSNET database and that a folder will be created that will be associated with that i.LON 10 in **C:\meyer\rms** folder.

5. Click Yes to dismiss the warning dialog. The Network Server and Manager will shut down and reopen, initializing the database and the i.LON 10.



6. When the Network Server and Manager reopens, you will see the new i.LON 10 initialized on the network.



CHAPTER 4: USING RMS SOFTWARE

This chapter will walk you through the capabilities and functionality of the RMS application.

USING THE RMS APPLICATION

The RMS application is dual-purpose. First, you add virtual loudspeakers to a Page which represents the layout of your loudspeaker configuration. Second, you monitor the real, functioning loudspeakers through different graphical views available to you on each Page.

You can have multiple Pages for different loudspeaker configurations according to your design needs, and you assemble these into an RMS Panel.

The Panel

The first time RMS runs, the RMS application loads a default blank Panel (Figure 4.1) with one untitled Page, which represents an entire RMS workspace or project.

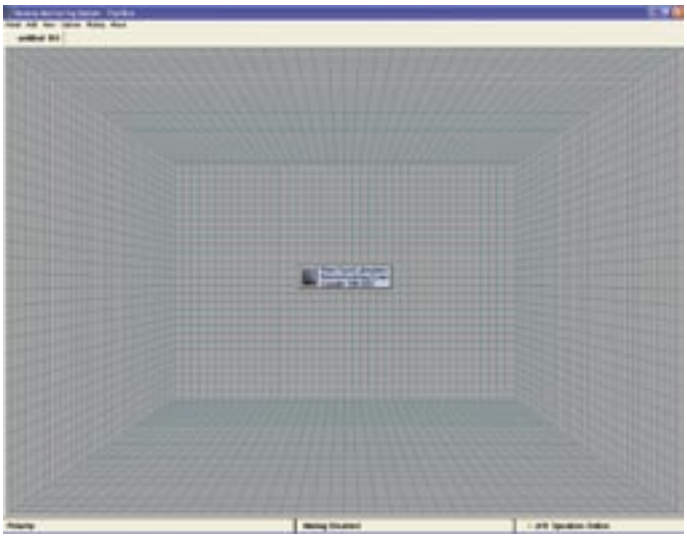


Figure 4.1. RMS application with a blank default Panel

The Panel is the most global RMS entity; an entire RMS file is saved as a .PNL file type, and these are the only files that RMS can open. You can work with Panel files in the following ways:

- To save a Panel, click **Save** or **Save As...** from the Panel menu.

TIP: RMS keeps track of the last .PNL file you saved, and will open it by default each time you launch the RMS application as long as the file still exists on your hard drive.

- To create a new Panel with one new, untitled Page, click **New** from the Panel menu.
- To open a Panel, click **Open** from the Panel menu.

Only one Panel may be open at a time. If you open a .PNL file (or create a new Panel) while working in another Panel, RMS brings up a dialog asking you if you want to save changes to the current Panel.

NOTE: RMS will not automatically launch by double-clicking a .PNL file from a Windows folder. You can associate the .PNL file type with the RMS Host program executable (**rms.exe** in the /RMS sub-folder where you installed RMS), however, double-clicking a .PNL afterward will only launch RMS with the last saved panel – not the .PNL which you double-clicked.

Working with Pages

Within the Panel, you can add, delete, and rename tabs below the menu bar to contain subsystems that you prefer to view separately. Each tab and its workspace is called a Page. For example, you may want to monitor the main house system on one Page and the stage monitor system on another Page. You can also use different pages to display the same system with different views.

Adding a Page

To add a Page, perform the following steps:

1. From the Panel menu, click Add Page. The Enter Page Name dialog appears.

2. Enter a name for the Page.

NOTE: A Page name cannot be greater than 10 characters long.

NOTE: You can add up to 20 Pages to a Panel.

3. Click **OK** to add the new Page. The new Page appears as a new tab to the right of the last Page created and becomes the current Page.

The following keyboard shortcuts are useful for navigating multiple Pages:

- Press **Tab** to cycle through the Pages from left to right.
- Press **Shift-Tab** to cycle through the Pages from right to left.
- Use the **number keys** to select Pages 1-10.

TIP: When monitoring loudspeakers, limiting, excursion and abnormal conditions for any loudspeaker on a Page will propagate to that Page tab. This is a good first-level troubleshooting indicator.

Deleting a Page

To delete a Page, perform the following steps:

1. From the Panel menu, click **Delete Page**. The Delete Page and Loudspeakers Views dialog appears.

2. Click **Yes** to delete the Page.

CAUTION: The loudspeakers on a Page that you delete will not be decommissioned.

Renaming a Page

To rename a Page, perform the following steps:

1. From the Panel menu, click **Rename Page**. The Enter Page Name dialog appears.

2. Type in a new name for the Page, then click **Yes** to apply the change.

NOTE: A Page name cannot be greater than 10 characters long.

Adding and Commissioning a Loudspeaker

Once you've created a Page, the next step is to add the loudspeakers you want to monitor. Once added, you commission the loudspeaker to establish a link between it and the RMS application. You can also remove the loudspeaker and/or decommission it from the your network.

The Add menu (Figure 4.2) contains all Meyer Sound self-powered loudspeakers compatible with RMS.

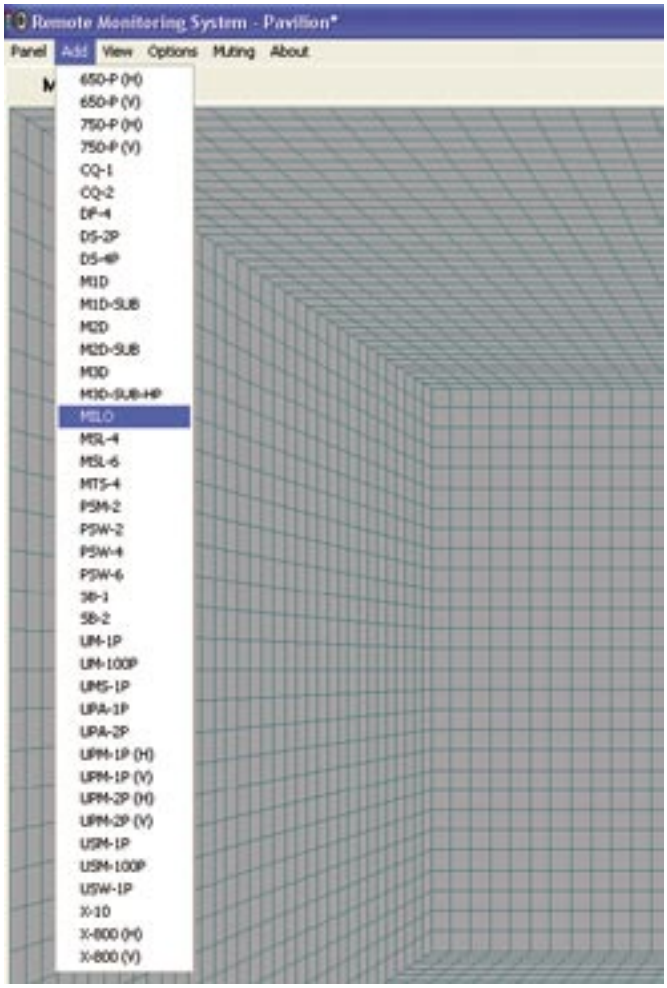
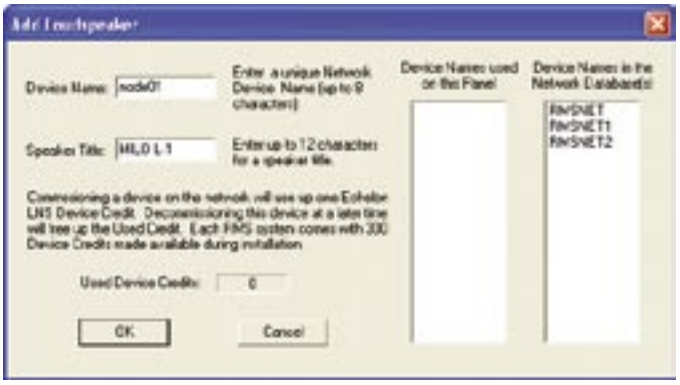


Figure 4.2. All RMS-equipped loudspeakers appear in the Add menu.

To add and commission a loudspeaker, perform the following steps:

1. From the Add menu, click the name of the loudspeaker you want to add. The Add Loudspeaker dialog appears.



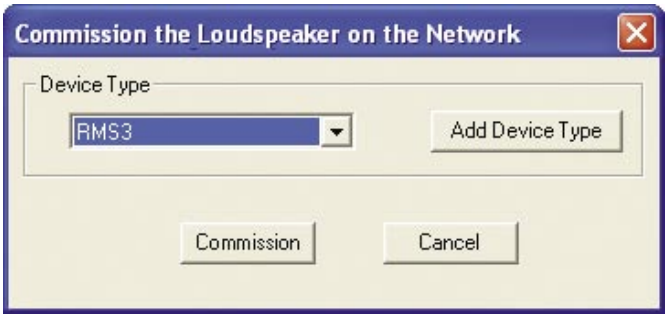
2. Enter a unique eight-character name that identifies the loudspeaker on the network in the **Device Name** field.

CAUTION: Don't include any spaces or punctuation other than a hyphen (-) in the Device Name. For example, **NODE001** or **NODE-001** is acceptable; **NODE 001** is not. Only the Speaker Title may include spaces and/or punctuation.

NOTE: The Device Name field initially contains an automatically generated name with a number appended to it; the number is incremented each time a new loudspeaker is added to insure each loudspeaker receives a unique name. However, it's much more useful to override this name with one that better describes the loudspeaker type and/or the location of the loudspeaker in the system.

3. Enter up to a twelve-character name that will be used to identify a speaker in the current Panel in the **Speaker Title** field. This name does not need to be unique. The Press the Service Pin dialog appears.

4. Click **OK**. The Commission the Loudspeaker on the Network dialog appears.



5. In the Device Type drop-down box, select either RMS3 or Prod6h according to the type of firmware the loudspeaker supports. Click **Commission** to connect to the loudspeaker on the network.

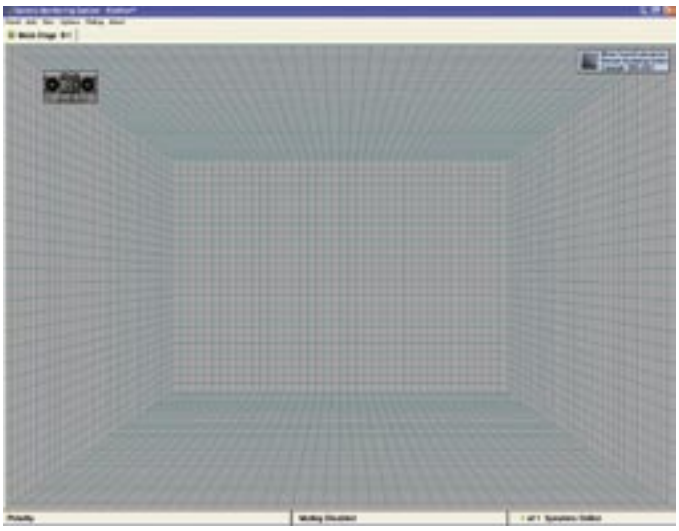
TIP: If you click **Cancel** in the Commission the Loudspeaker on the Network dialog, RMS will not be connected to the loudspeaker. This can be useful for setting up a Panel before physically connecting to a loudspeaker network. You can commission loudspeakers later by right-clicking on the loudspeaker icon and clicking **Commission**.

NOTE: RMS3 and Prod6h are the only two Device Types currently compatible with RMS. To find out which type a loudspeaker uses, look on the user panel of the loudspeaker. If the loudspeaker uses RMS3, the user panel will be labeled "RMS3"; if the loudspeaker uses Prod6h, the user panel will not be labeled. Note that all newer loudspeakers (manufactured in the year 2000 and later) use the RMS3 firmware; Prod6h is an older format.

CAUTION: The Add Device Type button is reserved for future versions of RMS which may utilize additional firmware types.

6. Press the Service Pin on the RMS user panel of the loudspeaker. The Service Pin sends a unique ID which, combined with the device name, uniquely identifies that loudspeaker on the network.

7. RMS now displays an icon representing the loudspeaker you added on the current Page. If the loudspeaker is online, the Speaker Communications Indicators will be green.



NOTE: By default, RMS displays icons in "Icon View," a graphic representing the look of the particular loudspeaker. You can change the default view by using selecting **View** from the menu bar. Available views and their uses are discussed in the section, "Loudspeaker Views" later in this chapter.

Add additional loudspeakers to a Panel/Page by following the above steps.

NOTE: Use the RMS Configuration Datasheet in the back of this guide to help you keep track of loudspeakers commissioned on your RMS network.

Understanding Device Credits

During the commissioning process, a loudspeaker sends a unique Neuron ID which, in conjunction with the Device Name you give it, uniquely identifies that loudspeaker on the network. If commissioning is successful, you are "credited" with a loudspeaker being present on the network. Hence the number of Device Credits represents the number of actual loudspeakers commissioned on the network, and every loudspeaker commissioned on the network uses one Device Credit, regardless of its type.

NOTE: RMS ships with 300 Device Credits – more than enough for a typical RMS system.

As you add new loudspeakers, you will see the number of device credits grow (Figure 4.3).

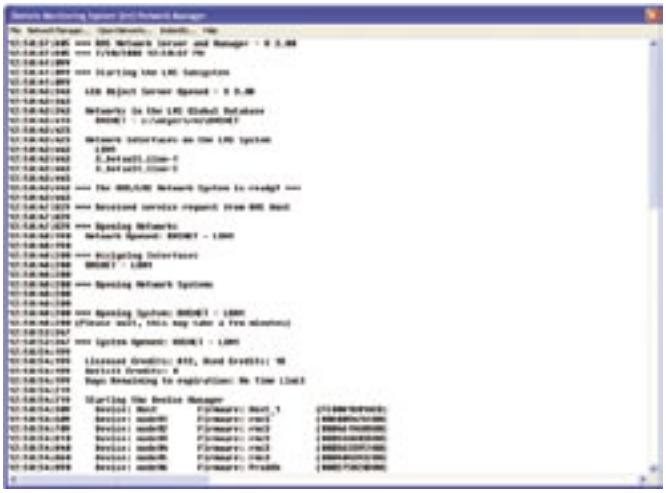
Figure 4.3. The Used Device Credits field keeps track of the number of "credits" (or loudspeakers) on your network.

Commissioning Loudspeakers Using the Neuron ID Number

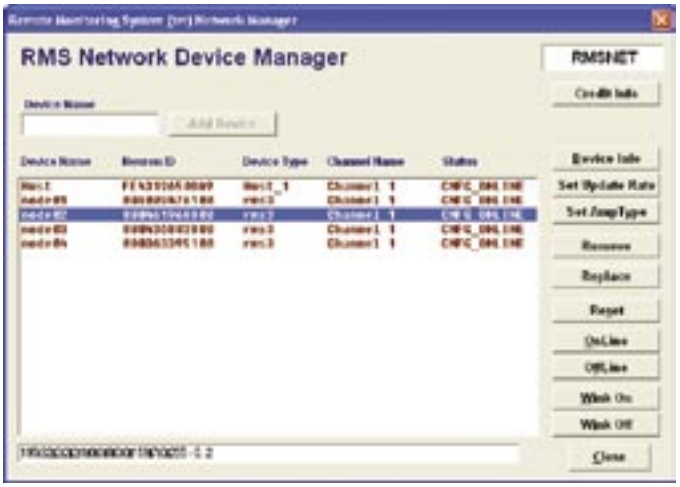
RMS-equipped Meyer Sound loudspeakers manufactured in July 2003 and later display a label on the user panel with the unique Neuron ID number of the RMS module. This number can be used to commission the loudspeaker without pressing the Service Pin.

To commission a loudspeaker using the Neuron ID number, perform the following steps:

1. Ensure that the loudspeaker is powered on and connected to the host computer.
2. After launching RMS, open the minimized Network Server and Manager by clicking on it in the Windows Taskbar.



3. Click **Network Manager** from the menu bar to open the RMS Network Manager. The RMS Network Manager appears, showing your RMSNET network and any i.Lon-10 networks you may be using. Highlight the network that the loudspeaker is on.



4. Click the **Device Mgr** button to open that network's Device Manager. Any loudspeaker nodes commissioned on that network will appear.

NOTE: If no loudspeakers have been commissioned onto the network, the host should be the only item listed in the Device Manager.

5. Enter a unique Device Name (not the Neuron ID) into the Device Name field. Click the Add Device button. The Loudspeaker Identification dialog appears.
6. Enter the loudspeaker's Neuron ID. Click the **Use ID** button.

7. Choose RMS3 or Prod6h from the drop-down box, then click the **Commission** button. The RMS application will search the network for the Neuron ID number; once found, it will commission the loudspeaker into the network database.

Repeat the above steps for each loudspeaker you wish to add using the loudspeaker's Neuron ID. When you're finished, close the Device Manager and Network Manager windows, minimizing the Network Server and Manager to the Windows Taskbar. Add your newly commissioned loudspeakers using the procedure outlined in the Device Names in the Network Database section in this chapter.

NOTE: If the commissioning fails, double-check the following:

- The loudspeaker must be powered on and properly connected to that network.
- The Neuron ID number must match the one shown on the Neuron ID label on the loudspeaker.
- If you're using multiple networks, make sure you're working in the correct Network Device Manager.

Managing Devices

Previously commissioned loudspeakers from one Panel are available to other Panels using the same network database; a physical loudspeaker can be added to another Panel with the same Device Name without being recommissioned or using an additional Device Credit. In addition, Loudspeakers that have already been added and commissioned in the Panel you're working in can be copied to new Pages.

Both of these techniques will help you speed up the process of adding loudspeakers, using the **Device Names used on this Panel** and **Device Names in the Network Database** listboxes in the Add Loudspeaker dialog.

Device Names used on this Panel

Loudspeakers listed in the Device Names used on this Panel listbox (Figure 4.4) have been previously added and commissioned in the current Panel.

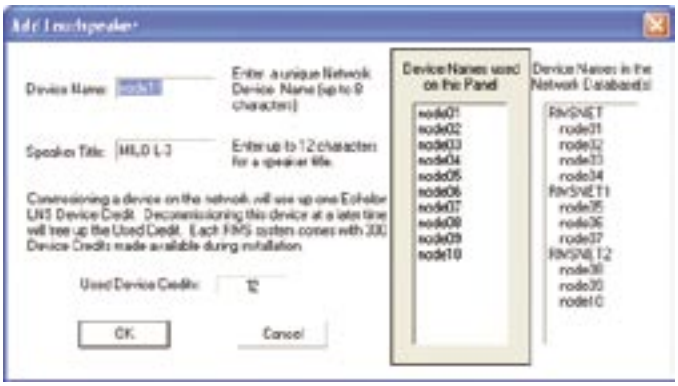


Figure 4.4. Device Names used on this Panel listbox

You can add a copy of an existing loudspeaker to any Page that doesn't have that loudspeaker added to it already. This is useful for showing different views of the same loudspeakers. For example, one Page could show the main system in Icon View, while a second Page shows the same system in Meter View.

NOTE: You can monitor each loudspeaker using four different views: Small Icon View, Icon View, Meter View and Text View. These are covered in detail in the section "Loudspeaker Views" later in this chapter.

To add a copy of a commissioned loudspeaker already in the current Panel, do the following:

1. Make sure that you are on a different Page than the one from which you will be copying the loudspeaker.
2. In the Add Loudspeaker dialog, enter the name of field.
3. Enter a descriptive Speaker Title if desired.
4. Click **OK**. The loudspeaker does not need to be recommissioned.

Device Names in the Network Database

Loudspeakers in the Device Names in the Network Database listbox (Figure 4.5) have been added and commissioned in previous Panels. They can be added to the current Panel/Page without being recommissioned.

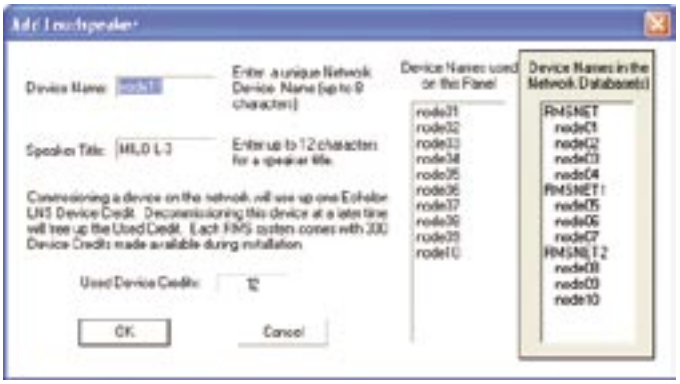


Figure 4.5. Device Names in the Network Database listbox

CAUTION: A loudspeaker that has been identified and added to the Network Database is not a generic placeholder – it's a unique physical loudspeaker that can identify itself to the network.

To add a loudspeaker from the Network Database to the current Panel:

1. In the Add Loudspeaker dialog, select the Device Name of the loudspeaker you would like to add from the device names in the listbox. The Device Name must correspond to the physical loudspeaker previously assigned that device name.
2. Enter a descriptive Speaker Title if desired.
3. Click **OK**. The loudspeaker does not need to be recommissioned.

Deleting a Loudspeaker

To delete a loudspeaker, perform the following steps:

1. Right-click on the loudspeaker icon in Speaker View (anywhere except the title bar) and click **Delete**.

CAUTION: Deleting a loudspeaker from any Page deletes the loudspeaker from all Pages – not just the Page the loudspeaker is on.

2. A dialog appears, asking you to confirm the deletion. Click **OK** to delete the loudspeaker. The Remove Loudspeaker From Network dialog appears.

3. If you expect to use the loudspeaker in a future Panel, click **No** to keep it commissioned so you can speed up the process of adding it later. If you don't expect to use the loudspeaker in a future panel, click **Yes** to decommission it and recover its Device Credit.

Loudspeaker Views

RMS provides four different views for monitoring each loudspeaker on the network. They are:

- Small Icon View
- Icon View
- Meter View
- Text View

NOTE: The default view for newly-added loudspeakers can be set by selecting **View** from the menu bar.

Each view displays important monitoring information about a loudspeaker, allowing you to customize how you monitor your network. You can see any view by right-clicking any visible view and selecting the view from the Properties menu.

NOTE: See the section "Working with Views" later in this chapter for more about viewing options.

CAUTION: This chapter uses the MILO loudspeaker in its examples. The information available in each view may be different for each loudspeaker depending on the number of drivers and the capabilities and/or design of the loudspeaker.

Icon View and Small Icon View

Icon View (the default loudspeaker view) and Small Icon View are both graphical representations of the loudspeaker. Figures 4.6 and 4.7 show a MILO high-power curvilinear array loudspeaker in Icon View and Small Icon View, respectively.

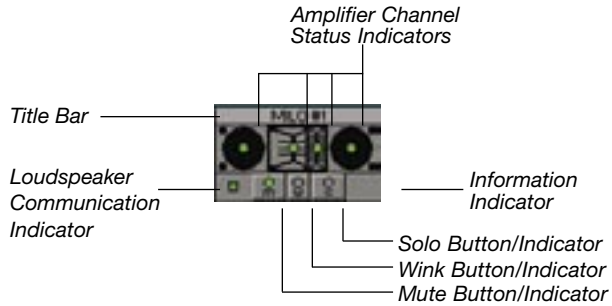


Figure 4.6. Icon View for a MILO loudspeaker

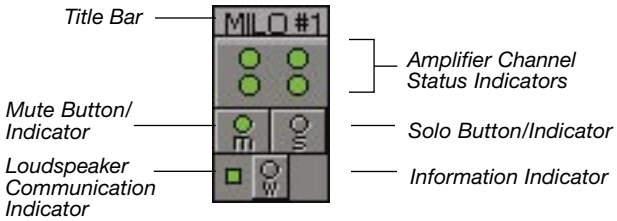


Figure 4.7. Small Icon View for a MILO loudspeaker

The information you can monitor using Icon View and Small Icon View is tailored somewhat to the features and functionality of each loudspeaker. Both views provide seven monitoring parameters, as shown in Table 4.1 for the MILO loudspeaker.

Table 4.1 Monitor Parameters in Icon View for the MILO Loudspeaker

Parameter	Function
Title Bar	Displays the Speaker Title and/or Device Name
Loudspeaker Communication	Green: Loudspeaker online Red: Information is not being received from the loudspeaker (offline)
Mute	Red: Muted Gray: Muting Disabled/Not Muted Green: Muting Enabled/Not Muted
Wink	Green: Winked Gray: Not Winked
Solo	Yellow: Soloed Gray: Not Soloed
Information	Displays a yellow "i" when one or more of the following has occurred: Amplifier heat sink > 77° C No Primary Fan current Primary Fan current > 97% Reserve Fan is on Driver open circuit Driver short circuit Loudspeaker offline
Amplifier Channel Status	Green: 0 < Voltage: Normal Yellow: Voltage present without power (open driver circuit) Red: Limiting indication Orange: Excursion indication Gray: No voltage present at channel

Meter View

Meter View is a smaller, simplified version of Text View (covered in the next section), with graphic meters for informing you of power usage, voltage, fan speed, and temperature. Figure 4.8 shows a MILO loudspeaker in Meter View.

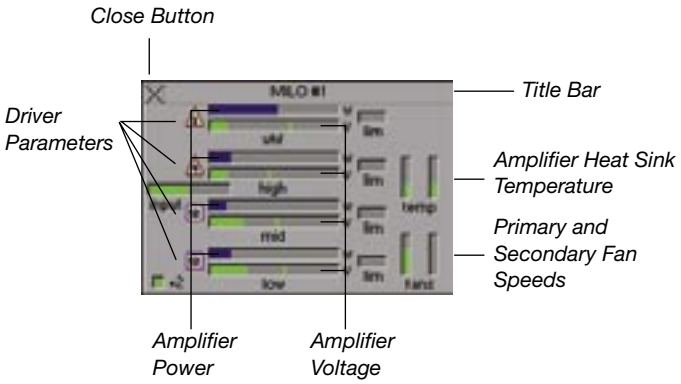


Figure 4.8. Meter View for a MILO loudspeaker

TIP: Unlike Icon View and Small Icon View, Meter View does not provide the ability to Mute, Wink or Solo a loudspeaker.

Using Figure 4.8 as a guideline, Table 4.2 explains all of the monitoring capabilities available in Meter View for the MILO loudspeaker.

Table 4.2 Monitoring Parameters in Meter View for the MILO Loudspeaker

Parameter	Function
Title Bar	Displays the Speaker Title and/or Device Name
Amplifier Limiting	For each channel, the percentage of limiting on the loudspeaker's respective amplifier channels
Amplifier Temperature	Upper and lower heat sink temperature of the amplifier
Primary/ Secondary Fan Speeds	Fan speeds of the amplifier's cooling fans
Amplifier Voltage	For each channel, measures a range of 0-100 V. A small momentary bar marks peak voltage. Segmented bar conditions are: Green: 0 < Voltage ≤ 50 V Yellow: 50 < Voltage ≤ 90 V Red: 90 < Voltage ≤ 100 V No Bar: Voltage = 0 Entire Bar Yellow: Open driver circuit
Amplifier Peak Power	For each channel, the peak power in watts
Input Polarity	Position of the loudspeaker's Input Polarity Switch: +2: Polarity Switch set to Pin 2 Hot +3: Polarity Switch set to Pin 3 Hot
Input Signal Level	Measures 0-10 V and indicates the following conditions: Green: 0 < Signal Level < 8 V Yellow: 8 < Signal Level < 9 V Red: 9 < Signal Level < 10 V

CAUTION: The Amplifier Limiting indicator corresponds to the intensity of the LEDs on the rear of the loudspeaker itself. In general, if the Amplifier Limiting indicator is orange or red, the loudspeaker may distort and may not operate in a linear manner, and routinely driving a loudspeaker at this level can shorten the lifespan of its amplifier and drivers. Intermittent limiting or over-excursion, however, will probably not result in sonic degradation or damage to the loudspeaker.

Since each type of loudspeaker behaves differently in response to limiting and over-excursion, consult the loudspeaker's operating instructions for more details on its limiting capabilities.

Text View

Text View (Figure 4.9) is the most complete monitoring view in RMS, with a host of important data displayed using text fields.

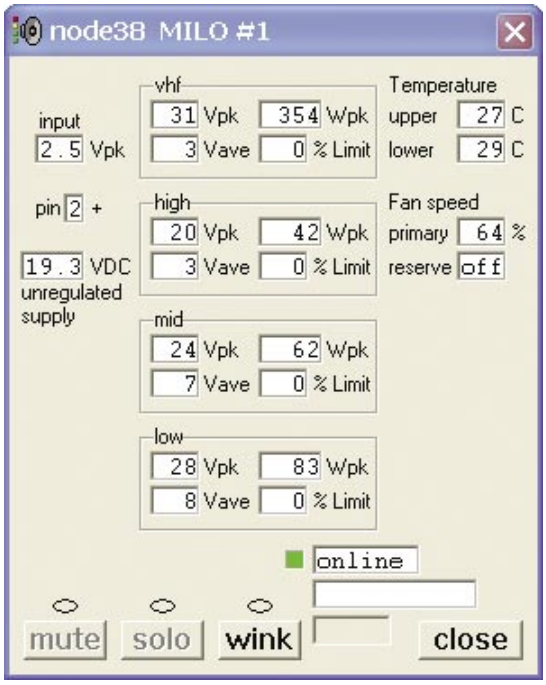


Figure 4.9. Text View for the MILO loudspeaker

Text View will vary the most among types of loudspeakers, and you may see other parameters (such as attenuation) in addition to the inherent differences in the number of channels between loudspeakers.

Using Figure 4.9 as a guideline, Table 4.3 explains all of the monitoring capabilities available in Text View for the MILO loudspeaker.

Table 4.3 Monitoring Parameters in Text View for the MILO Loudspeaker

Parameter	Function
Title Bar	Displays the Speaker Title and/or Device Name
Amplifier Peak Power	For each channel, **Wpk** is the peak power output for the amplifier channel
Amplifier Temperature	Upper and lower heat sink temperature of the amplifier
Amplifier Limiting	For each channel, **Limit** is the percentage of limiting on the loudspeaker's respective amplifier channels
Primary Fan Speed	Fan speed of the amplifier's primary cooling fan
Reserve Fan Status	Indicates whether or not the Reserve Fan is on
Loudspeaker Communication	Green: Loudspeaker online Red: Information is not being received from the loudspeaker (offline)
Service Pin	Pressing the Service Pin on the amplifier user panel displays "service pin" in this field and a cartoon face on the loudspeaker's views. This is the reverse of the Wink function.
Fault	Indicates various faults and abnormal conditions
Mute	Red: Muted Gray: Muting Disabled/Not Muted Green: Muting Enabled/Not Muted
Wink	Green: Winked Gray: Not Winked
Solo	Yellow: Soloed Gray: Not Soloed
DC Supply Headroom	Should be over 17 VDC if AC mains voltage is sufficient
Input Polarity	Position of the loudspeaker's Input Polarity Switch: +2: Polarity Switch set to Pin 2 Hot +3: Polarity Switch set to Pin 3 Hot
Input Voltage	**Vpk** within 0-10 V
Amplifier Voltage	For each channel, Peak (**Vpk**) and Average (**Vave**) voltage, within 0-100 V

Working with Views

You can show or hide views for any loudspeaker in a number of different ways by doing any of the following:

- Right-click anywhere except on the Title Bar on any visible view to display the Properties menu. A check mark beside a view indicates it is already open. Select a view with a check mark to close that view, or select a view without a check mark to open it.
- Double-click Icon View or Small Icon View to see Meter View.
- Double-click Icon View, Small Icon View, or Meter View to see Text View.
- Triple-click Icon View or Small Icon View to see both Meter View and Text View.

To move a view, click on the Title Bar, drag it to its new location on the Page, and release the mouse button. Click the Close button to close a view.

CAUTION: You cannot keep a loudspeaker loaded on a Panel/Page without at least one view present. If only one view is visible and you close it, you will be prompted to delete the loudspeaker.

The Properties Menu

In addition to showing and hiding Loudspeaker Views, the Properties menu (Figure 4.10) performs the following functions:

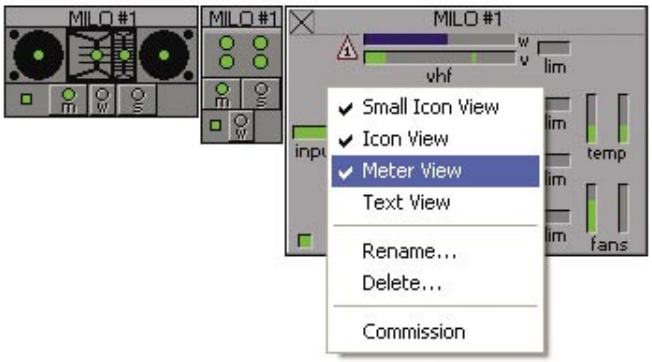


Figure 4.10. The Properties menu

- Click **Rename** to change the Speaker Title. The Rename Speaker Title dialog will appear asking you for a new (up to 12 characters) name.
- Click **Delete** to remove the loudspeaker from the Page.

CAUTION: If the loudspeaker is a copy of another loudspeaker on the network, all instances of the loudspeaker will be deleted from the Panel.

- Click **Commission** to commission the loudspeaker if you have not already done so.

NOTE: See the section, “Adding and Commissioning a Loudspeaker” earlier in this chapter to learn how to commission a loudspeaker.

Control Functions

You can use RMS to control Mute, Solo and Wink functions. Mute and Solo are essential to RMS troubleshooting techniques, while Wink identifies the physical loudspeaker to the Loudspeaker View in a Panel.

Mute

Simply click the Mute button on any Loudspeaker View to mute that loudspeaker. The Mute Indicator light is red when muted and green when not muted. When muting is disabled, the Mute Indicator light will be dimmed (gray). To enable or disable muting, select Setting from the Muting menu bar to launch the Muting Options dialog (Figure 4.11).

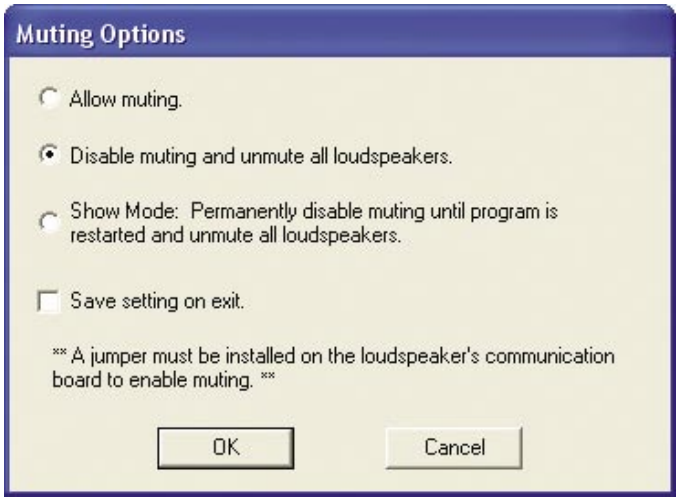


Figure 4.11. The Muting Options dialog allows you to enable or disable muting

The Muting Options dialog gives you the following choices:

- **Allow muting** - You can mute an individual loudspeaker by clicking the Mute button in Icon View or Text View for that loudspeaker. The green light above the Mute button turns red when the loudspeaker is muted.
- **Disable muting and unmute all loudspeakers** - Disables muting and unmutes any currently muted loudspeakers.
- **Show Mode** - Disables muting for the duration of your RMS session and unmutes all currently muted loudspeakers.

CAUTION: Disabling Mute also disables Solo (discussed in the next section).

Wink

The Wink function allows you to identify the physical loudspeaker corresponding to a Loudspeaker View. To wink a loudspeaker, perform the following steps:

1. Click the **Wink** button on any view and the green Wink LED on that loudspeaker's RMS user panel lights up.
2. Press the **Service Pin** button on a loudspeaker's RMS user panel to perform Wink's reverse function.
3. "Service Pin" appears in the Service Pin Indicator field in Text View and a cartoon face appears on each of that loudspeaker's views.

Solo

Clicking the Solo button in Icon View, Small Icon View, or Text View will solo the loudspeaker, muting all other loudspeakers on the network except for the one you have soloed. The Solo Indicator light turns yellow when active and gray when inactive.

NOTE: You can solo only one loudspeaker at a time. If you click a loudspeaker's Solo button while another loudspeaker is already soloed, only the new loudspeaker with Solo selected will be soloed.

Disabling Mute using the Muting Settings dialog also disables Solo.

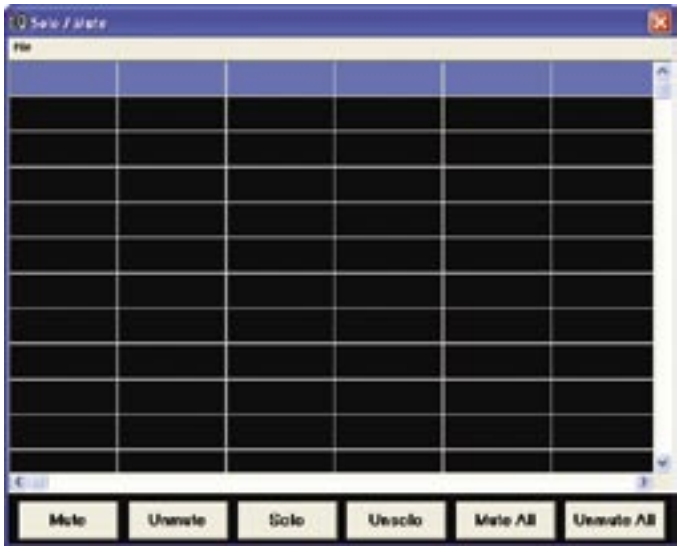
Solo/Mute Matrix Controller

The Solo/Mute Matrix helps you manage muting and soloing loudspeakers. With 10 columns and 30 rows, the Solo/Mute Matrix provides control of up to 300 loudspeakers.

NOTE: Operation of the Matrix is disabled if muting is not enabled.

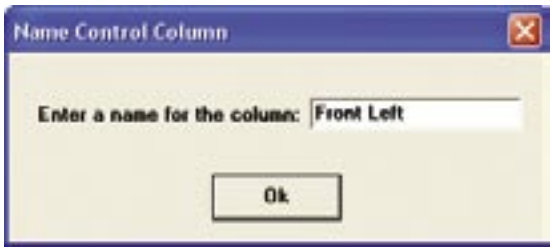
You can freely add loudspeakers anywhere in the matrix and name each column according to your system configuration. To set up the Solo/Mute Matrix, do the following:

1. From the Muting menu bar, you click on **Solo/Mute Matrix**. The Solo/Mute Matrix dialog appears.



2. Right-click on a column head and choose **Name Column**. The Name Control Column appears.

3. Enter a name for the column, then click **OK**.



4. Right-click on any cell and choose **Add**. A dialog appears listing all of the available loudspeakers in the Panel.
5. Select one or more loudspeakers and click Add.

If you selected one loudspeaker, it appears in the selected cell. If you chose more than one loudspeaker, the loudspeakers will appear in contiguous cells down the selected column (Figure 4.12).

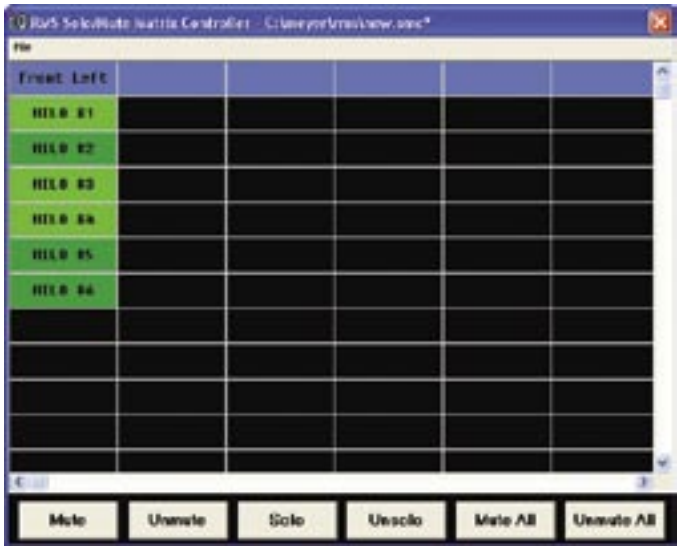


Figure 4.12. Multiple MILO loudspeakers in a matrix

TIP: You can add the same loudspeaker more than once, allowing loudspeakers to be members of multiple column groups.

To delete a loudspeaker from the matrix, select the loudspeaker, right-click on its cell and choose **Remove**. The loudspeaker will instantly be deleted from the matrix.

CAUTION: When a loudspeaker is deleted, it leaves an empty cell in the matrix. To close this gap in a column, right-click on the column head and click **Shift Entries Up**.

RMS saves your matrix configuration automatically to a file, and the last saved setup will reload when you call up the Solo/Mute Matrix dialog. You can also work with your own matrix files from the Solo/Mute Matrix dialog by using its menu bar:

- **New** – Starts a new, blank matrix
- **Open** – Opens a matrix setup file

NOTE: When you open a matrix setup file, RMS automatically looks to see if the loudspeakers in the matrix are present in the Panel. If it finds loudspeakers that are not present, it removes them from the matrix.

- **Save/Save As** – Saves the current matrix to a file

NOTE: Select All and Deselect All from the File menu bar will select/deselect all loudspeakers in the matrix.

TIP: Matrix setup files use the file extension .SMC.

Operations in the Solo/Mute Matrix Controller affect selected loudspeakers only (with the exception of global operations like Mute All). To select loudspeakers:

- Click on a cell to select a single loudspeaker.

NOTE: Clicking on a new cell selects the loudspeaker in that cell, and deselects the one in the previously selected cell.

- Shift-click to select multiple contiguous loudspeakers.
- Ctrl-click to select multiple non-contiguous loudspeakers.
- Click on a column head to select all loudspeakers in that column.

TIP: You can also click and drag to select a block of contiguous loudspeakers.

Use the buttons along the bottom of the Matrix panel to perform mute and solo operations on selected loudspeakers. Mute All and Unmute All affect all loudspeakers regardless of the selection. The following colors indicate the action:

- **Black** - Unselected
- **Green** - Selected
- **Red** - Muted
- **Yellow** - Soloed

The Options Menu

Status Bar

The Status Bar shows the polarity convention used for the current panel, whether muting is enabled/disabled, and how many loudspeakers of the total in the panel are online. The Status Bar will show 2+/3+ if both polarity settings are detected. Click **Options, Status Bar** from the Menu Bar to display the Status Bar at the bottom of the RMS window.

Background

You can change the RMS window background to different colors and patterns. Click **Options, Background** from the Menu Bar to open the Background dialog, as shown in Figure 4.13.

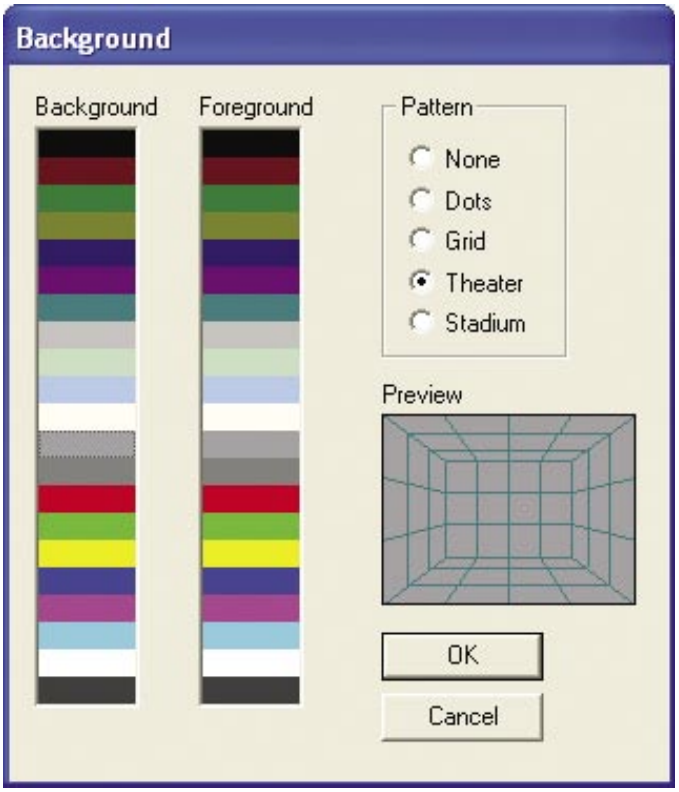


Figure 4.13. The Background dialog

Network Setup

Choose **Options, Network Setup** from the Menu Bar to open the RMS Network Setup dialog. Select **LNS** or **Legacy** to identify the network system you are using.

Title

Choose **Options, Title** from the Menu Bar to open the Set Title Type dialog. This dialog determines whether the device name or speaker title appears in the title bar of the speaker view.

UX Attenuation Range

The UX Attenuation Range dialog is used specifically for setting the attenuation ranges for UltraSeries model loudspeakers UPA-1P, UPA-2P, UM-1P, UM-100P, USM-1P and USW-1P. The dialog allows you to set the range to either 0 to –18 dB or 0 to -12 dB.

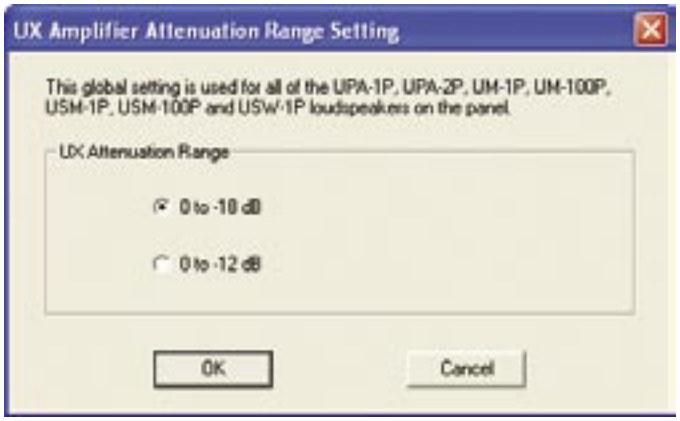


Figure 4.14. The UX Attenuation Range dialog

TIP: All Meyer Sound loudspeakers that use a UX or UPM amplifier can use the UX Attenuation Range dialog. These include:

- UPA-1P
- UPA-2P
- USW-1P
- UM-1P
- UM-1P
- UM-100P
- USM-1P
- USM-100P
- M2D
- UPM-1P
- UPM-2P
- UMS-1P

APPENDIX A: RMS APPLICATION COMMAND KEY REFERENCE

Key	Command
Ctrl+N	New Panel
Ctrl+O	Open Panel
Ctrl+S	Save Panel
Ctrl+A	Add Page
Ctrl+D	Delete Page
Ctrl+R	Rename Page
Ctrl+M	Muting Options
Ctrl+B	Background
Ctrl+C	Network Setup
Ctrl+T	Title
F12	Mute All
F9	Unmute All
F8	Solo/Mute Matrix Controller
Tab	Scrolls through Pages left to right
Shift+Tab	Scrolls through Pages right to left

APPENDIX B: ADVANCED ILON 10 CONFIGURATION

CONFIGURING I.LON IP INFORMATION

Hostname The TCP/IP host name of the i.LON 10 Ethernet Adapter.

When the i.LON 10 Ethernet Adapter establishes a connection with an LNS server it provides its fully qualified host/domain name so the LNS server knows which LONWORKS database to open. By default, the i.LON 10 Ethernet Adapter's host name is ilon10. The i.LON 10 Ethernet Adapter must be reset for change in this value to take effect. The URL of the i.LON 10 is Hostname.DNS Suffix (i.e. if Hostname is set to ilon10 and DNS Suffix is set to echelon.com, the URL will be ilon10.echelon.com. Valid characters are numbers, letters, and the hyphen ('-') character. This field has a maximum length of 63 characters.

DNS Suffix The IP domain name in which the i.LON 10 Ethernet Adapter is installed. This value is optional. All non-space characters are valid for this field. This field has a maximum length of 63 characters.

Obtain IP Address from DHCP Server Set this option to have the i.LON 10 Ethernet Adapter obtain its IP address, subnet mask, default gateway, and DNS servers from the local network's DHCP server. If this option is set, you must set the Hostname and DNS Suffix and register these values with your DNS administrator. To see the IP address that has been assigned to the i.LON 10, open the System Log Web page in secure mode (see the i.LON 10 User's Guide for more information about the System Log Web page).

Specify IP Address Set this option when specifying a static IP address for the i.LON 10 Ethernet Adapter in IP Address.

IP Address Static IP address used by the i.LON 10 Ethernet Adapter if Obtain IP address from DHCP Server is not set. By default, this value is set to 192.168.1.222.

Subnet Mask Subnet mask used by the i.LON 10 Ethernet Adapter if Obtain IP address from DHCP Server is not set. By default, this value is 255.255.255.0.

Gateway Gateway used by the i.LON 10 Ethernet Adapter if Obtain IP address from DHCP Server is not set. By default, this value is 192.168.1.1.

Primary/Secondary DNS Server The primary and secondary DNS Servers used to resolve LNS Server names if Obtain IP address from DHCP Server is not set. If DNS servers are specified both here and by the DHCP server, the DNS server specified by DHCP will be used.

CONFIGURING LNS SERVER IP INFORMATION

Once your i.LON 10 Ethernet Adapter is established as part of a TCP/IP network, you can configure it to be able to communicate uplink with one or more LNS Servers. Set the following fields in the Setup Web page to allow the i.LON 10 to call uplink to an LNS Server:

LNS Server 1/2/3 Up to three LNS Server names or IP addresses in the form

<LNS Server IP Address>:<port> or

<LNS Server Name>:<port>

For example, you can specify 123.2.34.1:1628 or mylns.echelon.com:1628. The i.LON 10 Ethernet Adapter will attempt to send packets to the first server on the list. If that server does not respond, it will try the second server, then the third. LNS Servers can be specified by DNS name. If DNS names are used, a DNS server must be listed in Primary/Secondary DNS Server or be available through the local network's DHCP server.

Listen for incoming LNS Server connections on port The TCP port on which the i.LON 10 Ethernet Adapter receives packets (LONWORKS messages). Defaults to 1628. It is not recommended that the port number be set below 1025, as ports 0 through 1024 are normally reserved.

Use CENELEC Access Protocol This option is only available on the power-line model. Set this option to use the CENELEC protocol for power-line communications. This protocol is often used in European power-line installations.

Raw MD5 Authentication Key/Text Shared Secret These options appear only when you first access the i.LON 10 Ethernet Adapter via HTTP after a security access reset (see Security Access Reset). You can enter either a 16 byte, hexadecimal, colon separated key in Raw MD5 Authentication (i.e., 11:22:33:44:55:66:77:88:99:00:AA:BB:CC:DD:EE:FF) or a word or phrase between 16 and 63 characters long (all white space will be removed) in Text Shared Secret.

If you select Text Shared Secret, the Raw MD5 Authentication Key will be cleared. If you select Raw MD5 Authentication Key, the Text Shared Secret will be cleared. The MD5 authentication key or shared secret entered here must match the key or phrase supplied to the xDriver and LNS Server software with which the i.LON 10 Ethernet Adapter communicates. Using an MD5 authentication key or phrase prevents unauthorized messages from being sent to either the LNS Server or the i.LON 10 Ethernet Adapter.

Save and Exit Click to close this page, write the configuration changes to FLASH memory, and reset the i.LON 10 Ethernet Adapter. Configuration changes will take effect upon reboot. After reboot, the Security page and the MD5 Authentication key will no longer be available until a security access reset is executed.

Exit Without Save Click to close this page without saving changes. Any changes made will be lost. The i.LON 10 Ethernet Adapter will not be reset and the Security page and the MD5 Authentication Key will still be accessible if they were before.

Display Factory Defaults Click to set all i.LON 10 properties to factory defaults. The changes will not propagate to the i.LON 10 until you click Save and Exit. This button is only available the first time this Web page is accessed after a security access reset.

Click Save and Exit when complete.

NOTE: As soon as you click Save and Exit the IP address of the i.LON 10 changes to the value set on the Setup Web page. You need to reset your PCs IP address to match the i.LON 10's subnet to access the Web page again.

I.LON 10 ETHERNET ADAPTER SECURITY

The i.LON 10 Ethernet Adapter institutes a number of security measures:

MD5 Authentication The i.LON 10 Ethernet Adapter uses MD5 Authentication with all communications between it and the LNS Server, requiring a 16 byte authentication key. See Configuring the i.LON 10 Ethernet Adapter to Communicate With An LNS Server for more information.

Security Web page The i.LON 10 Ethernet Adapter Security Web page allows you to password protect or disable entirely access to the i.LON 10.

Security Access Reset A security access reset is required to view the MD5 authentication key, open the security Web page, or reset the i.LON 10 Ethernet Adapter's configuration. A security access reset requires physical access to the i.LON 10 hardware.

Security Access Reset

The following features of the i.LON 10 Ethernet Adapter are available only after performing a security access reset:

- Access to the MD5 Authentication Key on the setup Web page (see i.LON 10 Ethernet Adapter Setup Web page, earlier in this chapter).
- Access to the Display Factory Defaults button on the setup Web page.
- Access to the security Web page (see i.LON 10 Ethernet Adapter Security Web page, earlier in this chapter).
- Access to the Perform Self-Test Web page. See the i.LON 10 Ethernet Adapter User's Guide for more information.
- Access to the firmware upgrade Web page.

i.LON 10 Ethernet Adapter Security Web Page

Access the Security Web page by clicking the Security link from the Setup Web page (Figure B.1). This page is only accessible after a security access reset.

Figure B.1. Accessing the Security Web Page in security access mode.

This page contains the following options:

Allow HTTP Access Set this option to allow users to access the i.LON 10 Web pages with the exception of the Firmware Page and the Security Page (both of which can only be accessed after a security access reset). If set, enter a Username and Password that will grant access. The Username and Password may contain up to 16 alphanumeric characters; they are case sensitive. By default, the Username and Password are set to ilon. If this option is not checked, you will not be able to view any of the i.LON 10 Web pages without performing a security access reset. Performing a security access reset resets the Username and Password to ilon.

Allow TFTP Access Set this option to allow users to use TFTP to load user Web pages (see the i.LON 10 Ethernet Adapter User's Guide). If this option is checked, enter a Password that will grant access. The Password may contain up to 16 alphanumeric characters; they are case sensitive. Password is set to ilon by default. Performing a security access reset resets the Password to ilon.

Allow Incoming LNS Server Connections Set this option to allow connections initiated from external LNS Servers. If this option is set, you should modify the MD5 Authentication Key or Shared Secret to prevent access from unauthorized LNS Servers (see Configuring the i.LON 10 Ethernet Adapter to Communicate With An LNS Server).

RMS CONFIGURATION DATA SHEET

Customer Name ______________________ Venue ______________________ Date ____________

Model	Loudspeaker Serial Number	Neuron ID	Device Name	Notes

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