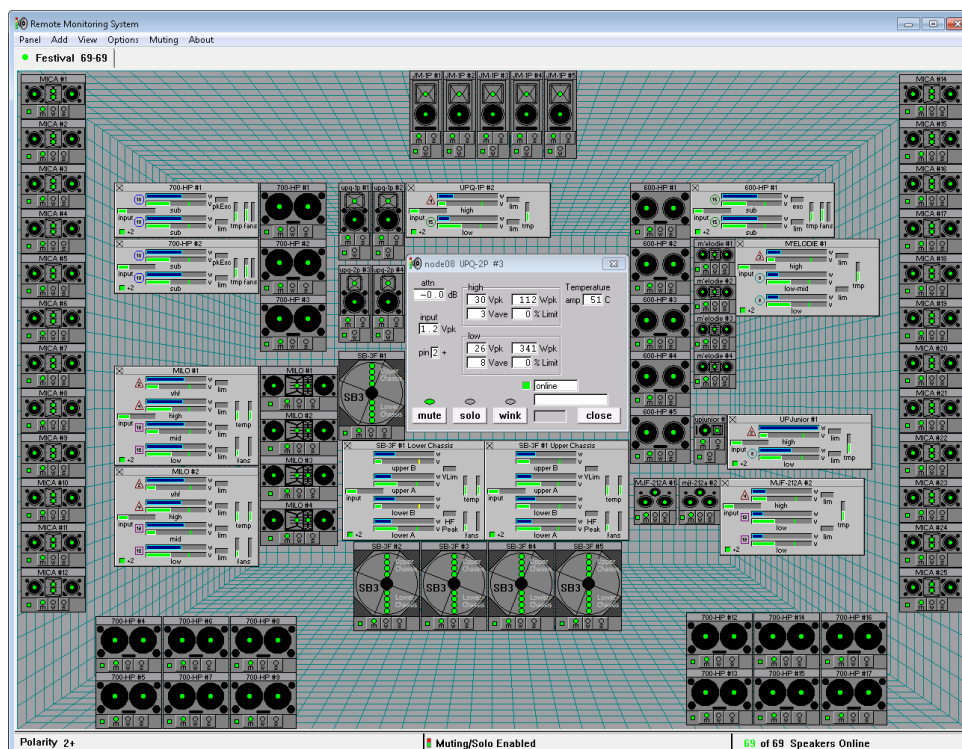


RMS™ : Remote Monitoring System

thinking sound



The RMS remote monitoring system connects Meyer Sound loudspeakers to a Windows® 7 computer for real-time monitoring of loudspeaker parameters from the mix position or other location. The RMS host computer communicates with Meyer Sound self-powered loudspeakers, equipped with RMS modules, via a simple twisted-pair network, or via an Ethernet network using an FT-10 to Ethernet adapter. 48 V DC loudspeakers, powered by an RMS-equipped external power supply, are also supported. RMS software reports extensive system status and performance data, updated 2–5 times per second, including amplifier voltage, limiting activity, power output, temperature, fan and driver status, and warning alerts.

RMS uses an established network platform developed by Echelon Corporation, the world's leading open-standard energy control networking company. The platform supports Free Topology, is polarity insensitive, does not require coaxial or fiber optic cabling, and is not affected by loudspeaker power losses. The RMS network is a real-time acquisition system, where loudspeakers sample and hold data until it is transmitted, so no data is lost. Basic RMS networks with twisted-pair

connections support up to 50 nodes of self-powered loudspeakers (up to 100 with a repeater). Several hundred nodes are supported with Ethernet-based configurations.

Loudspeakers are added to the RMS network and assigned a node during a one-time commissioning procedure. Loudspeakers are identified on the network by their unique Neuron IDs and can be viewed in the RMS software with Icon View, Meter View, and Text View. System status conditions cause LED color changes in Icon View and level changes in Meter View, alerting the operator to excessive levels and faults. Loudspeaker icons and views can be arranged on-screen in panels to reflect how the loudspeakers have been deployed in the system. Multiple panels can be saved and recalled for specific performances and venues. Panels can also be created for loudspeaker subsystems, for example, to zero in on the status for the stage monitors.

A panel of loudspeaker Icon Views is easily scanned to verify the operational status for a large number of loudspeakers. When encountering warning flags, the operator may investigate, in

increasing detail, by double-clicking an Icon View to open its Meter View, and then, if necessary, by double-clicking the Meter View to open its Text View.

Icon View and Text View include Mute and Solo buttons, for remote mute and solo control of loudspeakers, which is useful for testing and troubleshooting during system installations. Hardware and software overrides are available to avoid accidental muting and soloing during performances.

Individual loudspeakers can be physically identified with the Wink option in RMS, which lights the Wink LED on the RMS module for that particular loudspeaker. Conversely, a loudspeaker can be identified in the RMS software by pressing the Identify button on the loudspeaker's RMS module.

Loudspeakers are easily connected to the RMS network with simple twisted-pair cables, patched from the computer's network interface to each loudspeaker's RMS module. RMS modules include two network connectors to facilitate daisy-chaining large numbers of loudspeakers.

FEATURES & BENEFITS

- Extensive real-time loudspeaker feedback for amplifiers, drivers, limiting, cooling, and fault alerts
- Proven, flexible network platforms with either Ethernet or twisted-pair
- Data updates 2–5 times per second

- Loudspeaker RMS modules connect easily to networks with twisted-pair cabling
- Mute and solo individual loudspeakers or groups of loudspeakers
- Wink and ID controls easily locate any loudspeaker in the entire system

APPLICATIONS

- Stadiums, arenas, and concert halls
- Touring sound reinforcement
- Theatrical sound reinforcement
- Cinema installations
- Theme parks

RMS COMPONENTS

RMS MODULES FOR SELF-POWERED LOUSPEAKERS

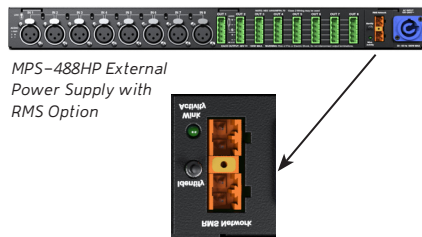
When equipped with an RMS module, Meyer Sound loudspeakers can connect to the RMS network and be monitored with the RMS software. Some Meyer Sound loudspeakers, such as the M-Series loudspeakers, come standard with the RMS module already installed. For other Meyer Sound loudspeakers, the module is available as an option that can be factory installed or installed later by a qualified service technician.



The RMS module user panel includes two Weidmuller 2-conductor locking network connectors for transferring data to and from the RMS network; two connectors are provided for easy daisy-chaining of multiple units. The user panel also includes LEDs that provide feedback on the status of the loudspeaker's network connection, and buttons for initializing and identifying the loudspeaker on the network.

RMS INTEGRATION FOR 48 V DC LOUSPEAKERS

48 V DC loudspeakers can be integrated in RMS networks via the MPS-488HP external supply (when equipped with the factory-installed RMS option). Up to eight loudspeakers can be connected to the MPS-488HP with their voltage and DC current being monitored in the RMS software. Loudspeakers can also be muted and unmuted from the software.



Supported 48 V DC loudspeakers include the MM-4XP miniature loudspeaker, UP-4XP

ultracompact loudspeaker, HMS-10 surround loudspeaker, and MM-10XP compact subwoofer.

RMS NETWORK HARDWARE

A network interface is required for the RMS host computer to connect to RMS loudspeakers via twisted-pair cabling. The number of loudspeakers and length of cables used in an RMS network can be expanded by adding a network repeater. The following network hardware is available from Meyer Sound:

Echelon PCLTA-20/21 PCI Card: Installs in full- and half-length PCI slots; supports up to 50 self-powered loudspeakers, or up to 100 self-powered loudspeakers with a network repeater.

Echelon U10 USB Adapter: Attaches to USB 2.0 port; supports up to 50 self-powered loudspeakers, or up to 100 self-powered loudspeakers with a network repeater.

i.LON 10 Ethernet Adapter: Attaches to RJ-45 port; supports up to 50 self-powered loudspeakers, or up to 100 self-powered loudspeakers with a network repeater; for even larger systems, multiple i.LON 10s can be connected to a single computer with a network switch.



i.LON 10 Ethernet Adapter

MicroCom DXI/DXL FTR-120 Network Repeater: Expands RMS networks to support installations with many nodes or nodes with cable runs that exceed cable length specifications.

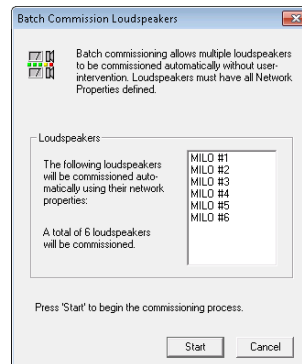
A standard RMS network with a single network interface or adapter supports up to 50 nodes of self-powered loudspeakers with a maximum network length of 1640 ft. The maximum network length, which is defined as the sum of all interconnected wire lengths, can be extended by using heavier cable gauges or by adding network repeaters.

Peripheral kits that include a network interface, bulk twisted-pair cable, network connectors,

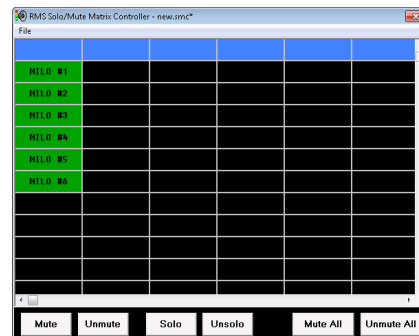
and network terminators are also available from Meyer Sound.

RMS SOFTWARE

RMS software automates and streamlines working with large numbers of loudspeakers. Batch commissioning allows you to automatically commission multiple loudspeakers in a single operation. This is especially useful when building an RMS panel offline (with no loudspeakers connected), or when adding several new loudspeakers to an existing panel.



The Solo/Mute Matrix manages muting and soloing for large numbers of loudspeakers. Up to 10 columns of 30 loudspeakers (a total of 300 loudspeakers) can be added to the matrix.



Loudspeakers can be viewed in the RMS software with Icon View, Meter View, and Text View. Loudspeaker icons and views can be arranged on-screen in panels to reflect how the loudspeakers have been deployed in the system

ARCHITECT SPECIFICATIONS

The loudspeaker monitoring system shall provide real-time monitoring of Meyer Sound loudspeakers from a desktop or laptop computer. The loudspeakers shall connect to the host computer, equipped with a network interface, via twisted pair cabling.

The loudspeakers shall be equipped with a loudspeaker network module with Weidmuller 2-conductor locking connectors, LEDs for monitoring the status of the loudspeaker connection, and buttons for initializing and identifying the loudspeaker on the network.

A basic system with a single computer network interface shall support up to 50 nodes of self-powered loudspeakers with a maximum cable length of 1640 ft (500 m). The number of loudspeaker nodes and maximum cable length shall be expandable by adding network repeaters or network switches.

Supported network platforms shall be Differential Manchester encoding and Free Topology. The data transfer rate shall be 200 ms for a system with 20 loudspeaker nodes.

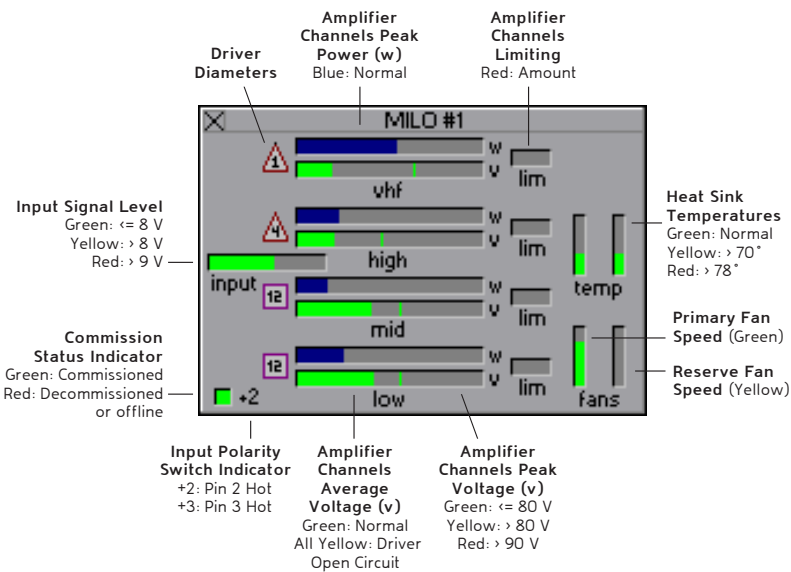
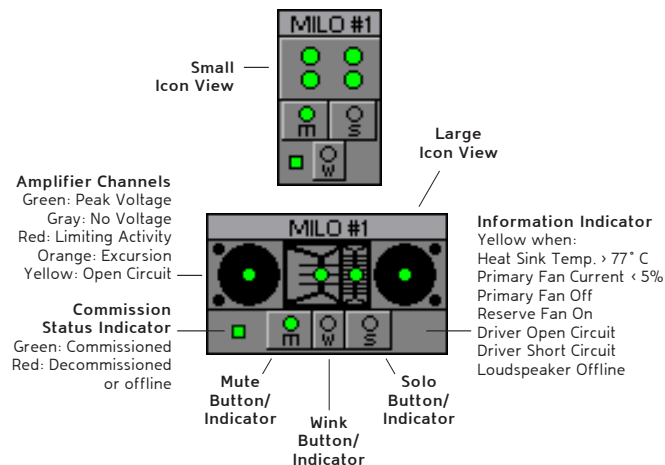
Software shall report the following loudspeaker parameters: input signal and input polarity; amplifier power output, voltage, and limiting; heat sink temperatures and fan status; DC headroom; and fault conditions. The software shall provide remote mute, solo, and wink control of the loudspeakers. Hardware and software overrides shall be available to avoid accidental muting and soloing during performances.

The system shall be the Meyer Sound RMS Remote Monitoring System.

LOUDSPEAKER VIEWS

ICON VIEW

Icon View graphically represents the appearance of the loudspeakers and includes color-coded LEDs that indicate system status conditions and feedback on amplifier and driver channels at a quick glance. Data is updated 2 times per second. Mute, Solo, and Wink controls are also provided. For crowded panels, the more compact Small Icon View can be used.



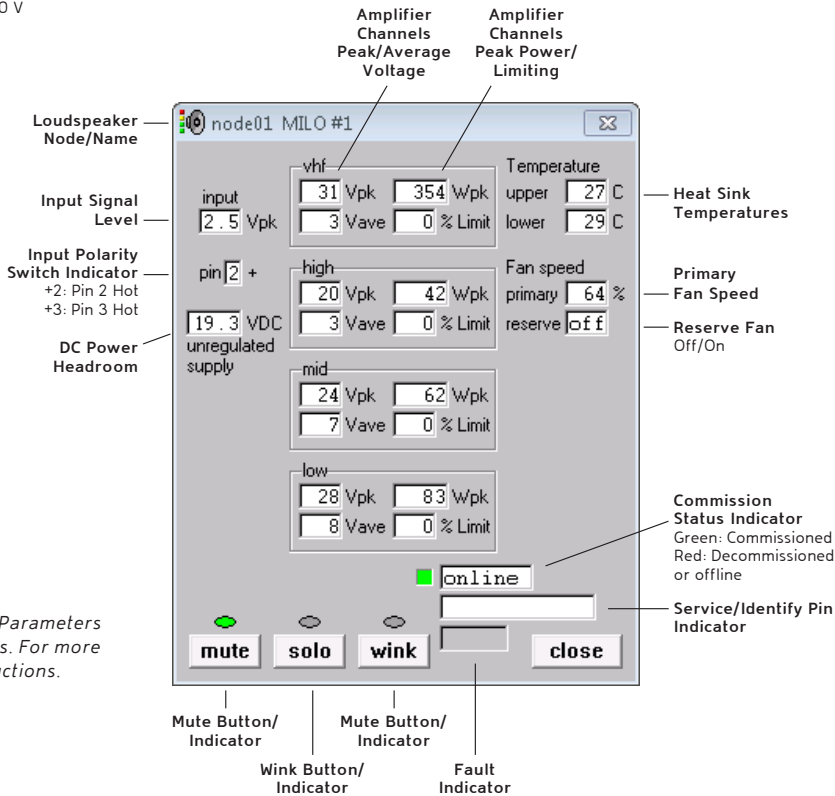
METER VIEW

Meter View provides color-coded bar graphs to display key operational parameters, including power output, voltage, and limiting for each amplifier channel, input level and input polarity, heat sink temperatures, and fan speeds. Meter colors reflect operating ranges from normal to extreme. Data is updated 5 times per second.

TEXT VIEW

Text View is the most comprehensive and detailed loudspeaker view, displaying all monitored parameters with numerical values. Mute, Solo, and Wink controls are also provided. Data is updated 5 times per second.

* Loudspeaker views shown on this page are for MILO. Parameters and parameter ranges may differ for other loudspeakers. For more information, refer to the loudspeaker's operating instructions.



RMS SPECIFICATIONS

DISPLAY PARAMETERS		
LOUDSPEAKER	Model, title, node, commission status	
MUTE/SOLO ¹	Mute Button/Indicator	On/off
	Solo Button/Indicator	On/off
IDENTIFICATION	Wink Button/Indicator	Computer to loudspeaker
	Service/Identify Button	Loudspeaker to computer
INPUT	Input signal peak voltage (W)	
	Input polarity (pin 2 or 3 hot)	
AMPLIFIER OUTPUT	Average output voltage (W)	
	Peak output voltage (W)	
	Peak power output (W)	
	Limiting activity	
COOLING	Heat sink temperature (° C)	
	Primary fan current (%)	
	Reserve fan current (%)	
POWER SUPPLY	DC headroom (V)	
FAULT ALARMS	Trip Conditions	Heat sink temperature, primary fan off, reserve fan on, driver open circuit, driver short circuit
TOTAL REPORTED PARAMETERS	2-Channel Loudspeaker	18
	4-Channel Loudspeaker	27

- NOTES:
1. Hardware and software overrides are available to avoid accidental muting and soloing during performances.
 2. Due to bandwidth restrictions, a maximum of 12 MPS-488HPs can be connected to a single network interface or i.LON 10.
 3. The SB-3F loudspeaker occupies the bandwidth of two normal loudspeakers. Therefore, a maximum of 25 SB-3F loudspeakers can be connected to single network interface or i.LON 10.

NETWORK PARAMETERS		
MAXIMUM NODES ^{2, 3}	Twisted-pair	50 (up to 100 with network repeater)
	Ethernet	50 for each i.LON 10
MAXIMUM LENGTH	Free Topology	1640 ft (500 m) with 20 AWG, 18 AWG or 16 AWG cable and one 52.3-Ω type terminator
	Ethernet	10BASE-T network limitations plus standard twisted pair limitations
CABLES	Twisted-pair	20 AWG (Belden 8205 or equivalent) twisted pair, stranded, unshielded
	Ethernet	Category 5 (Cat 5) or higher specification
CONNECTORS	Twisted-pair	Weidmuller 2-conductor locking connector
	Ethernet	10BASE-T, type RJ-45
	USB 2.0	USB plug
	Portable	XLR and EN3
TERMINATION	Free Topology	One 52.3-Ω type terminator at any point
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 transfer rate with 20 loudspeakers	

REQUIREMENTS		
HOST COMPUTER	CPU running Windows 7, 32-bit or 64-bit	
NETWORK INTERFACES	Echelon PCLTA-20/21 Network Interface Card	Requires 32-bit PCI card slot, half- or full-size
	Echelon U10 USB Network Interface Adapter	Requires USB 2.0 port
	Echelon i.LON 10 Ethernet Adapter	Requires Ethernet (RJ-45) port

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