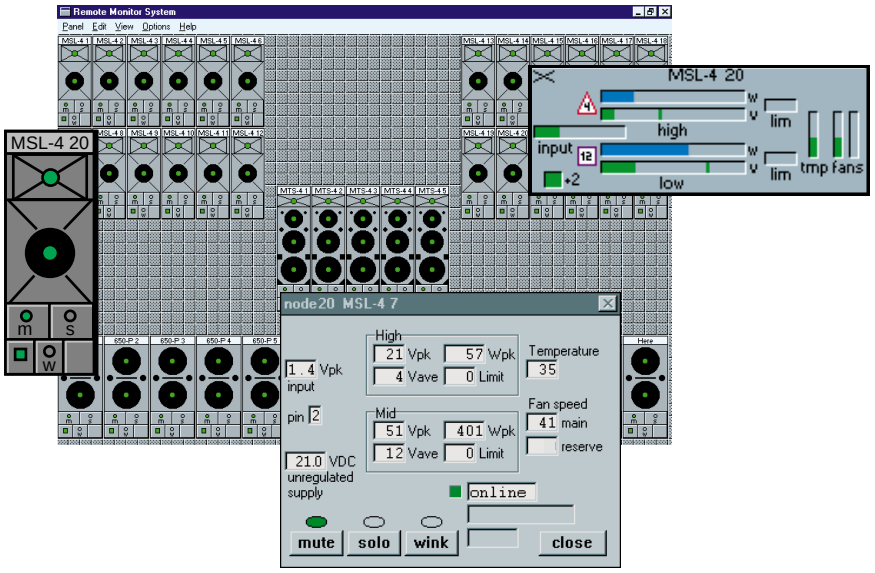
REMOTE MONITORING SYSTEM™

Network System for Self-Powered Loudspeakers

FEATURES

- Easy installation
- Proven flexible network platform
- Real time displays
- Muting and solo controls (optional)
- Color data displays



The Remote Monitoring System (RMS™) is a real-time monitoring system which connects Meyer Sound self powered speakers with an IBM-compatible computer at the sound mix position or other location. RMS software delivers extensive status and system performance data directly to the operator from every installed speaker.

RMS displays include amplifier voltages, limiting activity, power output, temperature, fan and driver status, warning alerts, and other key data for up to 62 speakers at a display update rate of 2-5 times per second (see page 4 for a list of all monitored parameters). More data is available, and with greater convenience, than from conventional monitor systems. The RMS Monitor Program interface is quickly learned, and runs in an MS-DOS™/Windows™ environment. Supervision of a sound system becomes effortless.

MONITOR DISPLAYS

Each speaker appears on the computer's color monitor as a "View", in the form of a status Icon, Bar Graph Meter, or Text Meter (numerical values) depending on user preference. See page 3 for detailed diagrams of each View style.

Each View contains speaker identification information and data from the amplifier, controller, driver, and power supply of that particular unit. System status conditions cause color changes in Icon and Bar Graph indicators, alerting the operator to faults or excessive levels.

The Views are moveable, and typically are arranged on the screen to reflect the physical layout of the loudspeakers. A user can design a screen "Panel" of Icons or Meters and save it on the computer's hard disk, conveniently named for a unique arrangement or performer. If the speaker installation pattern changes completely, a new screen Panel can be built. If a different subset of already installed speakers is to be used at the next show, only selected speakers need appear on the monitoring screen for that performance.

Superior engineering for the art and science of sound.

Meyer Sound

FUNCTIONS

A Panel of Icons is a status monitoring tool to flag conditions possibly warranting attention. A quick visual scan of the monitor screen is sufficient to be fully informed of the operational behavior of large numbers of speakers. Mouse-clicking on an Icon adds a Bar Graph View for that speaker. Clicking on the Bar Graph adds a Text Meter. In this way during a performance the operator may investigate unusual behavior in increasing detail, making adjustments as necessary. Added Meters can then be closed, allowing return to the normal monitoring Panel.

Control Functions

Speaker Mute and Solo commands for acoustic set-up or troubleshooting are available on the Icon and Text Views. These functions are optional. A jumper must be installed in the amplifier module of a speaker in order for it to Mute or Solo. If desired, the jumper can be left out to eliminate any conceivable operator muting error during a performance. These functions can also be disabled by software commands. RMS does not control speaker volume or AC power.

Id Functions

Speakers are identified on the network by Node Names assigned during one-time "Logical Installation" into the RMS database. This information is permanently retained at each speaker Network Board and in the computer RMS Database unless modified by the user. Speaker View titles are modified by the user at any time. View titles and speaker field labels can be verified using the Wink or Service Button commands (see diagram this page).

Network Hardware

RMS uses an established network platform developed by Echelon Corp., the world's leading supplier of networking technology for monitoring and control. The robust platform is not affected by loss of power at a speaker node, does not require coaxial or fiber optic lines, is polarity insensitive, and supports Free Topology (flexible wiring configuration).

The RMS network is a real-time data acquisition system (no data is lost). Each speaker samples and holds all data until it is transmitted. Displays are updated 2-5 times a second depending on the View format selected.

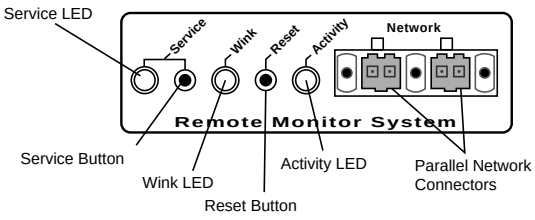
A standard RMS network allows up to 62 nodes (self-powered speakers). The network length is defined as the sum of all the inter-connecting wire lengths. If using Free Topology, the maximum network length is 1640 ft. The maximum line length can be increased by using heavier cable and exclusively Bus Topology, or by employing network repeaters. Higher capacity, longer networks are configured with additional hardware. Contact the factory for further information.

Installation

Interconnection of the network computer and speakers is straightforward, using twisted-pair cable and simple connectors. The network plugs in to the connectors on the Network Board located at the rear of the computer, and on the User Panel at the rear of each speaker.

Network Package

The RMS standard system package includes a computer and color monitor with factory-installed network monitoring hardware and software. Customers have the option of retrofitting a qualified existing desktop or laptop model computer to access a network (for minimum specifications see Meyer Sound document: "RMS Network Components List").



Summary of Functions

Speaker System User Panel RMS Buttons and LED's

Service/Installation LED (red)
- Flashing every 2 secs: network hardware operational, speaker not logically installed
- LED off completely: speaker logically installed
- LED on continuously: local network hardware error condition

Service Button
Transmits ID signal from speaker to monitor display to verify correlation of the installed speaker field label with the user title on the speaker View. Service Button symbol appears inside the associated speaker View when the Service Button is pressed at the speaker.

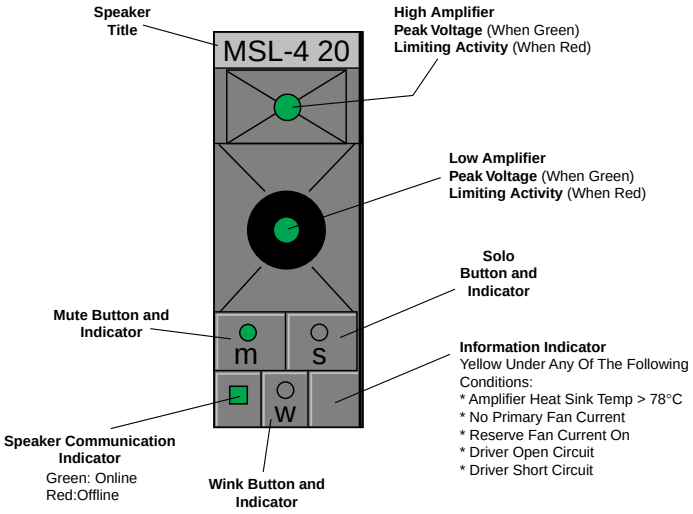
Wink LED (green)
Controlled by the Wink Button on a display Icon or Meter View. LED shines when ID signal sent from monitor to speaker to verify correlation of the speaker View user title with the installed speaker field label.

Reset Button
Resets RMS Network Board. Equivalent to power-down, power-up.

Activity LED (green)
- LED Off: speaker system has not been logically installed on the network.
- LED Flashing: speaker logically installed and in normal operation. Flash rate is present data update rate (200 or 500 milliseconds, depending on whether View presently open on monitoring panel for this speaker is an Icon or a Meter).

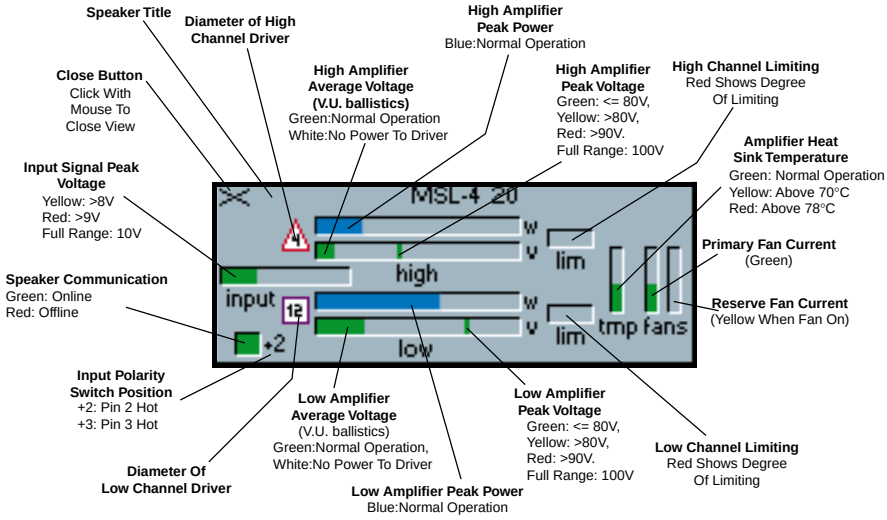
The Icon View

The Icon View with color-coded indicators reveals any system status conditions at a quick glance. Each Icon resembles the model of the speaker from which it receives data. Control function buttons are included. The data is updated twice a second.



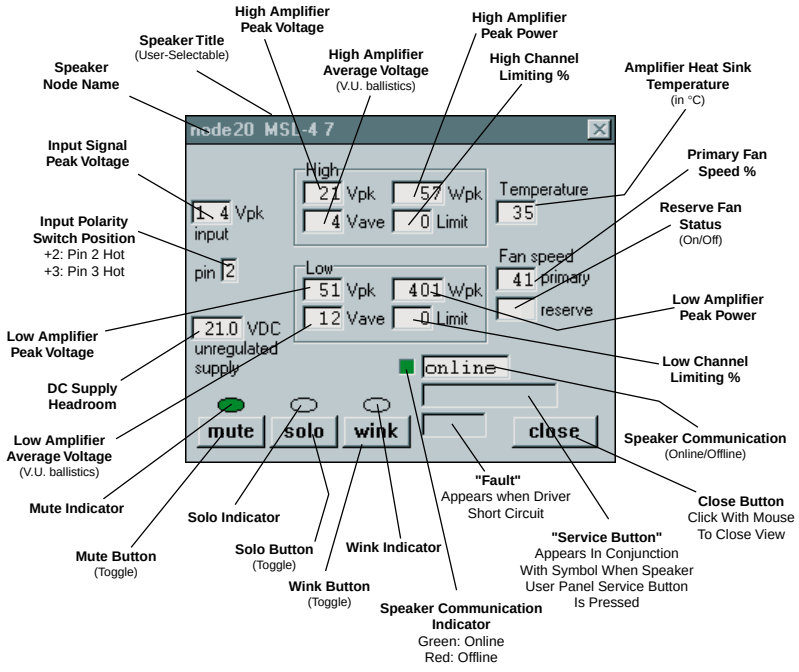
Bar Graph Meter View

Bar Graph Meter View showing data from an MSL-4 (2-channel self powered speaker). This View displays key amplifier, controller, and operational variables as graphs. A set of audio output and limiting parameters is reported for each speaker channel. The color of the dynamic graph bars reflects the normal or unusual operating status of a given parameter. Data is updated 5 times a second.



The Text Meter View

The Text Meter View shows data as numerical values. All monitored parameters are displayed. Control functions are included. Data is updated 5 times a second.



MONITOR DISPLAY PARAMETERS

Network		Speaker Type, User-Selected Title, Network Node Name, Speaker Network Communication: On-Line/Off Line	
Input	**Input Signal Peak Voltage**	Range: 0-10V	Resolution: 39 mV
	Input Polarity "Hot"	Range: Pin 2 or 3	Resolution: N/A
Output (for each channel)	**Amplifier Avg. Output Voltage**	Range: 0-100V	Resolution: .39V
	Amplifier Peak Output Voltage	Range: 0-100V	Resolution: .39V
	Amplifier Peak Output Power	Range: 0-1300W	Resolution: 5W
	TruPower™ Limiting Activity	Range: 0-100%	Resolution: $^1/_2$%
Cooling	**Amplifier Heat Sink Temp**	Range: 0-100° C	Resolution: 1° C
	Fan Current (Primary)	Range: 0-100%	Resolution: 1 %
	Fan Current (Reserve)	Range: 0-100%	Resolution: 1 %
Power Supply	**DC Supply Headroom**	Range: 0-30V	Resolution: 124 mV
Fault Alarms (Visual)		Driver Open Circuit Indication. Driver Short Circuit Indication. Information Indicator: Trips if any of following conditions present: Amp Heat Sink Temp >78 ° C, Primary Fan Off, Reserve Fan On, Driver Open Circuit, Driver Short Circuit	
Muting/Solo Control[1]	**Mute Button and Indicator**	On/Off	
	Solo	Enabled/Disabled	
	Solo Button and Indicator	On/Off	
Display View[2]	**Wink Command Button/Indicator**	Computer-to-Speaker	
	ID Sent Service Button Indicator	Speaker-to-Computer ID Received	
Total Parameters Reported	**2-Channel Speaker**	18 parameters (Drivers: High/Low, or Low/Low, or Low/Sub, or Sub/Sub, depending on model)	
	4-channel speaker	27 parameters (Drivers: High/Mid/Low/Sub)	

NETWORK PARAMETERS

	Maximum Speaker Nodes	Standard System-62; Larger system-contact factory
MAX. NETWORK LENGTH[4]		
	Free Topology	20 ga or 16 ga cable, one 52.3 Ω type terminators: 500 m (1640 ft)
	Bus Topology	16 ga cable, two 105 Ω type terminators: 2700 m (8858 ft)
	Bus Topology	20 ga cable, two 105 Ω type terminators: 1400 m (4593 ft)
MAX. NODE TO NODE DISTANCE		
	Free Topology	20 ga cable: 400 m (1312 ft)
	Free Topology	16 ga cable (Belden 85102 or equivalent): 500 m (1640 ft)
	Free Topology	16 ga cable (Belden 8471 or equivalent): 400 m (1312 ft)
TERMINATION		
	Free Topology	[≤500 m (1640 ft)]: one 52.3 Ω type terminator at any point
	Bus Topology	[> 500 m (1640 ft)]: two 105 Ω type terminators (one on either end)
	Connector Type	2-wire Plug with recommended snap-on lock
CABLE TYPE		
	16 ga	Belden 85102, 8471 (or equivalent) twisted pair, stranded, unshielded
	20 ga	Belden 8205 (or equivalent) twisted pair, stranded, unshielded
	Network Platform	Differential Manchester Encoding; Polarity Insensitive, Variable Topology
	Transceiver	EMI: complies with FCC Part 15, Class A; UL recognized; VDE: EMI compliant
	Data Rate	Standard system: 78 Kb/s; Larger system-contact factory
Computer	**Computer Specifications**	(see Meyer Sound document: "RMS Network Components List")
	Software Requirement	Windows™ 3.1 or Windows™ 95

Notes

1. Optional; enabled by hardware jumper and software switch
2. Title or speaker field label ID verify
3. Maximum network length without installation of repeater(s)

Meyer Sound Laboratories has devoted itself to designing, manufacturing, and refining components that deliver superb sonic reproduction. Every part of every component is designed and built to exacting specifications and undergoes rigorous, comprehensive testing in the laboratories.

Research remains an integral, driving force behind all production. Meyer strives for sound quality that is predictable and neutral over an extended lifetime and across an extended range.

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