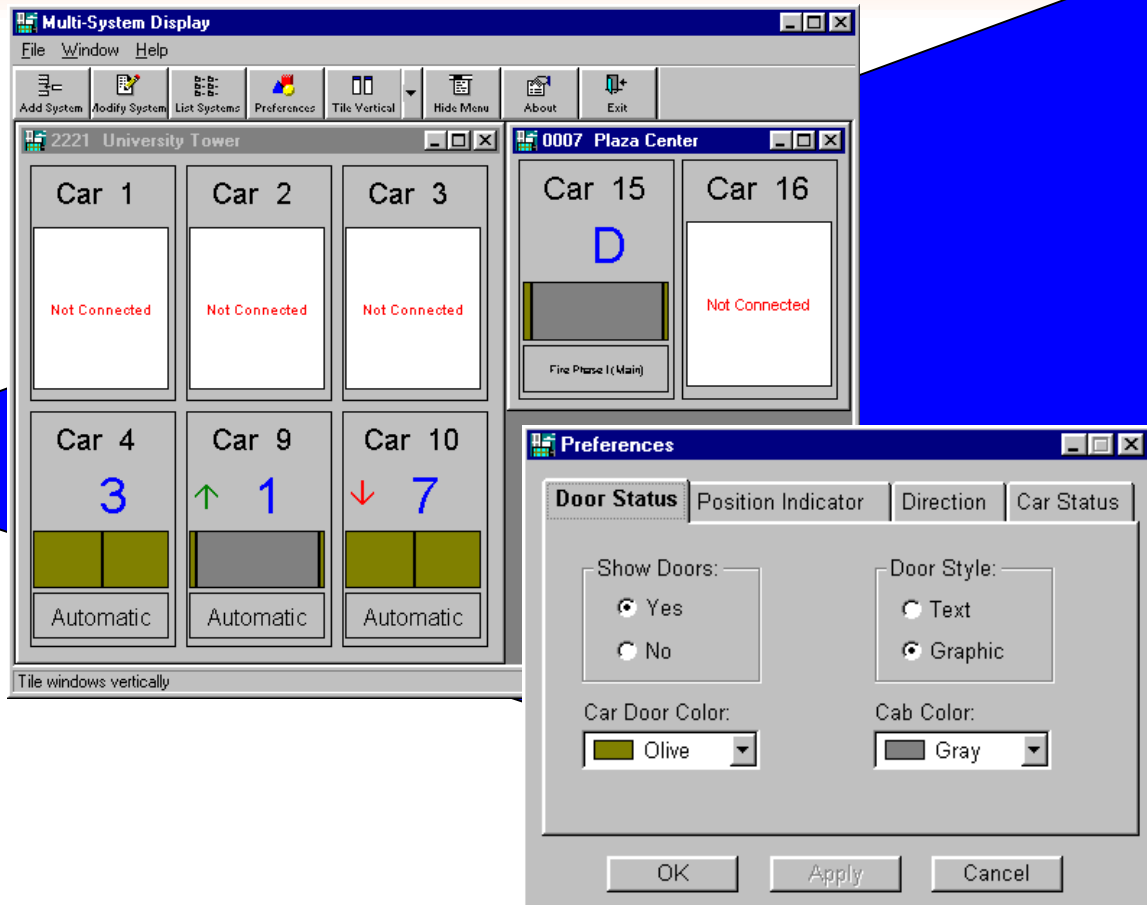


ELEVATOR MULTIPLE SYSTEM DISPLAY MSD for Windows



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What is Multiple System Display (MSD)?

The Multiple System Display (MSD) software allows the Personal Computer (PC) user to monitor a number of MCE control systems simultaneously, providing an easy-to-understand display. A typical application for MSD is a lobby display where several elevator systems must be monitored at the same time. Rather than an individual display device for each system monitored, the MSD software allows many systems (up to eight direct connections and up to twelve if you have an Ethernet option) to display simultaneously. The display provides information about each elevator including its location (PI), direction of travel, the status of its doors and its general operating status. The display is easy to view from a distance for applications where the monitoring device is mounted up on a wall or viewed by a number of people at the same time.

System Requirements

PC	Pentium 266 MHz or faster, 1GB Hard drive, CD-ROM drive, VGA display adapter, VGA monitor
Operating System	Microsoft Windows 98, 2000 or XP
RAM	32 MB or more
COM Port	1 serial port for each controller to be monitored
NIC Card	Optional for Ethernet connections



NOTE: For installations where several elevator groups are monitored, a 17" or a 21" monitor is strongly recommended to display elevator's information legibly.

Installing Multiple System Display

MSD software is distributed in compressed form on floppy diskettes. Install the software from the diskettes following the instructions below:

- Close all applications on your computer before installing the MSD software. If your computer had any unexpected problems while being used, it is advisable to restart the computer before installing MSD. This allows the Operating system to "clean up."
- Insert the MSD CD into the CD-ROM drive.
- Click the **Start** button on the Windows taskbar.
- Click **Run**.
- Type **x:setup** (x is the drive letter for the CD-ROM drive).

- Click **OK**.
- The installation program will guide you through the installation process. During installation you are prompted to select a program folder that will contain a shortcut to the MSD program. By default, the program folder created will be named *Multi-System Display(MSD)*.

Starting MSD

- Click on **Start**
- Select *Programs*
- Select *Multi-System Display(MSD)*. If you chose a different name during installation, select that program folder here.
- Click on **Multi-System Display**. This will start the application.

Adding a system to MSD

In order to connect to a control system and monitor it, the control system must first be added to MSD. Adding a system tells MSD how to connect the control system and how to handle the control system when MSD is first run. To add a system to be monitored by MSD, follow the steps below.

- Click on **Add System** from the File menu, or click on the **Add System** icon on the toolbar.
- A window (*Add System*) will pop-up and prompt for the entry of all the new systems information.
- Enter a unique **Number** for the controller (range 1 - 9999). This field is required, and a new (unique) number must be entered for each of the systems added to MSD.
- Enter **Name** of the system for reference.
- Click (check) the check box for **Connect to the controller upon start-up**, if you want MSD to connect to the controller every time MSD is started. If the box is not checked, MSD does not attempt to connect to the controller upon startup.
- Select the type of connection to be used. The connections supported by MSD are **Serial Cable**, **Line Driver**, and **Ethernet**.

Serial Cable or Line Driver Connections:

The 'Add System' dialog box is shown with the following settings:

- System:** Number [] Name []
 Connect to this controller on start-up
- Type of Connection:** Serial Cable Line Driver Modem Ethernet
- Connection Settings:** BAUD rate: 19200 PC's COM port: COM 1

Buttons: Add, Cancel

Select the appropriate **BAUD rate** for connection. It defaults to the recommended BAUD rate when the type of connection changes. Note that the BAUD rate setting changes automatically when the type of connection is changed between Serial Cable and Line Driver.

- Select the **PC's COM port** that is used to connect to the controller. MSD will not allow you to connect to more than one system upon startup using the same COM port. If you need to connect to more than one system, then use a separate PC COM port for each system. Please note that this setting refers to the PC's COM port and not the controller's COM port.

Ethernet Connections:



NOTE: For a control system to be monitored by MSD using Ethernet connections, the control system must be equipped with a Terminal Server device. A Terminal Server device interfaces the control system with the Ethernet network.

The 'Add System' dialog box is shown with the following settings:

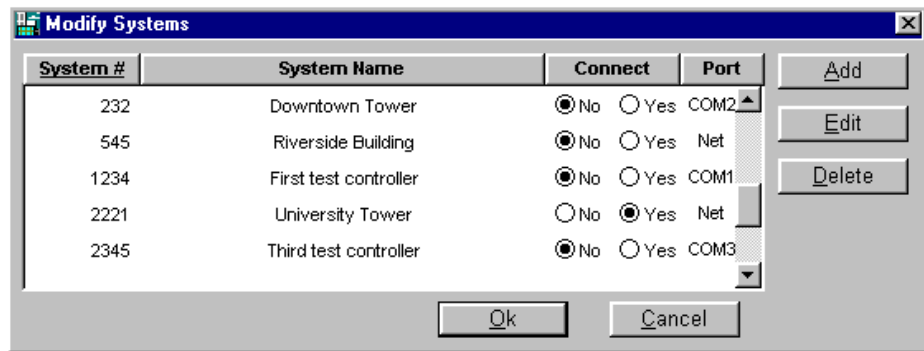
- System:** Number [] Name []
 Connect to this controller on start-up
- Type of Connection:** Serial Cable Line Driver Modem Ethernet
- Connection Settings:** IP Address: 209.37.221.23 Telnet Port Number: 2001
(Example: 205.61.241.23)

Buttons: Add, Cancel

- Enter the IP address for the Terminal Server attached to the control system you want to monitor. The controller's IP address must be provided to you by your network administrator.
- Enter the Telnet Port Number for the Terminal Server device that is attached to the control system. Check the Terminal Server documentation for the Telnet Port Number. For most single port Terminal Servers, the Telnet Port Number is 2001.
- Click on **Add** to save the settings.

Repeat the above for each controller that you plan to monitor using MSD.

Making changes to system's settings



In some cases you may need to change a system's setting after it has been added to MSD. For example: to change the PC's COM port assigned to connect to a control system or to change the IP address of a system on the Ethernet. The **Modify Systems** screen lists the *System #*, *System Name*, *Connect* option, and the assigned *Port* for every registered system. The *Connect* option indicates if the system is monitored or not. You can change the *Connect* option from this screen without having to edit the system information. The *Port* column specifies the port used to connect to the system. For direct connections (Serial Cable and Line Drivers), the *Port* specifies the PC's serial port used (COM1, COM2, etc.). For Ethernet connections, the *Port* will list "Net" to indicate that the system will use an Ethernet network connection.



NOTE: The Connect option on this screen should only be set to Yes if the specified MCE controller is on line. Otherwise, set to No.

All of the system settings are available for modification except the system number (*System #*). To change the *System #* you must delete the system and create a new one, please refer to the section "**Add a system to MSD**" to create a new system. To modify an existing system's settings, follow the steps bellow.

- Click on **Modify Systems** from the File menu or click on **Modify Systems** icon on the toolbar.

- A window (*Modify Systems*) will pop-up listing all the systems that have been added to MSD.
- Select the System that you want to modify by clicking once on it. A pointer will appear to the left of the selected *System #*.
- Click on the **Edit** button.
- A window similar to the *ADD System* window will pop-up showing the current settings for the system.
- Modify the settings as required and click on **SAVE**.
- Click the **OK** button on the *Modify Systems* window.

The list is initially sorted by the System Number. To change the sort criteria, click on the column heading by which to sort. For example: to sort the list based on the system name, click on the System Name header. The System Name heading will underline indicating that the list is currently sorted by system names.

Deleting a system

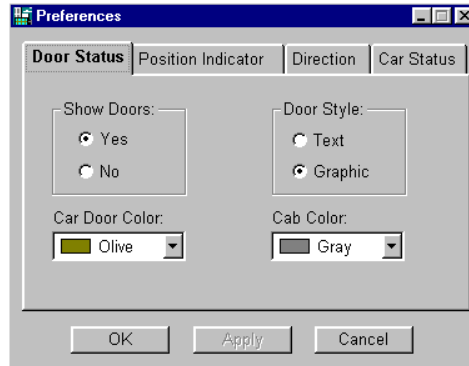
- Click on **Modify Systems** from the File menu
- A window will pop-up listing all the systems that have been added to MSD.
- Select the system that you want to modify by clicking once on the “System #” field. A pointer will appear to the left of the *System #* showing that it is selected.
- Click on the **Delete** button.
- A window will display prompting you to confirm the deletion of the system. Click on **YES** button to delete the system. Click **NO** to cancel this operation and return to the **Modify Systems** window.

Customizing display options

Many of the elements of the car display may be customized to your preferences. In order to set the preferences, Click on **Preferences** from the *File* menu or the **Preferences** icon on the tool bar. A window pops up with tabs for four display items: Door Status, Position Indicator, Direction Indicator and Car Status. Each tab contains the programmable parameters for that display item. To change the parameters of a particular display item, click on the desired tab.

Door Status

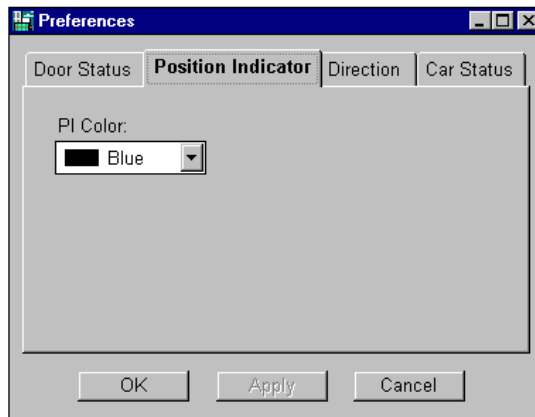
This tab lets you customize the representation of the door of an elevator.



- Show doors* Set this setting to *Yes* if the doors are to be displayed. *No* removes the representation for the door.
- Door Style* Set to *Text* if you want a textual display of the Doors on the screen. Set to *Graphic* if you want an animated graphical representation of the elevator doors which shows the position of the doors at all times.
- Car Door Color* Choose a color for the door. Click on the color bar to see more choices. Click on the color that you want for the door.
- Cab Color* Choose a color for the Cab. Click on the color bar to see more choices. Click on the color that you want for the Cab. This color is shown inside the car when the doors open.

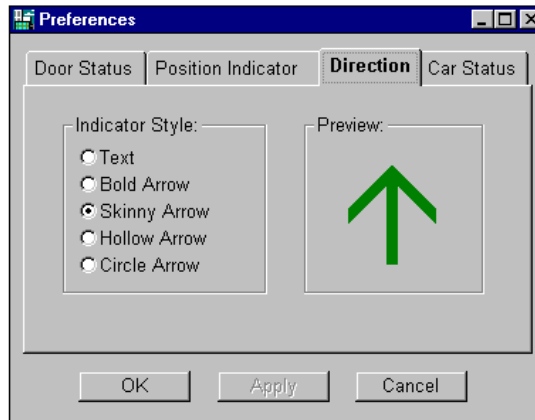
Position Indicator

This tab lets you customize the color of the text for the display of the PI. Click on the *color bar* to see more choices.



Direction Indicator

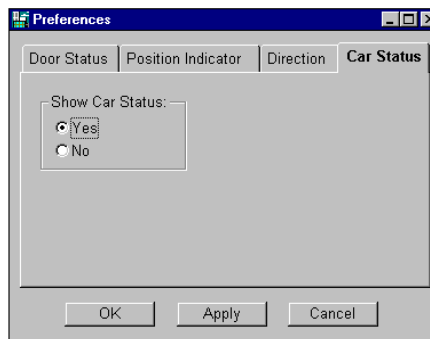
This tab lets you customize the Direction of Travel Indicator. The choices are listed on the screen. The available representations are textual and different



graphical arrow styles. Click on your choice and a preview window will show the representation of the arrow as it will appear on the screen. The indicator will automatically change colors to Green for Up travel and Red for Down travel.

Car Status

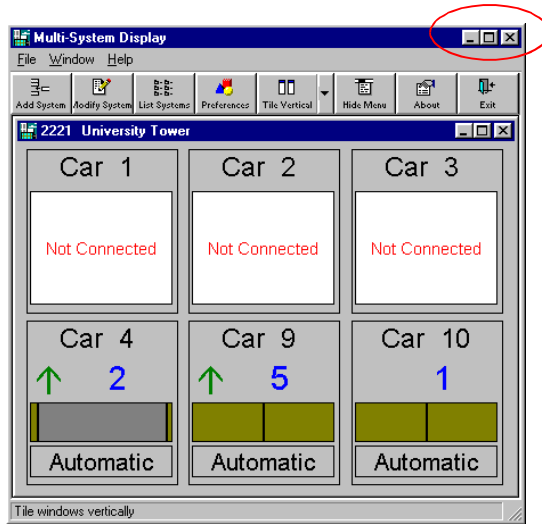
This tab allows you to show or hide the car status message from the display. Click on *YES* to show the car status. Click on *NO* to hide it.



Using MSD

How do I close a system that is open?

Click on the little “X” button on the top right corner of the window to close a system window.

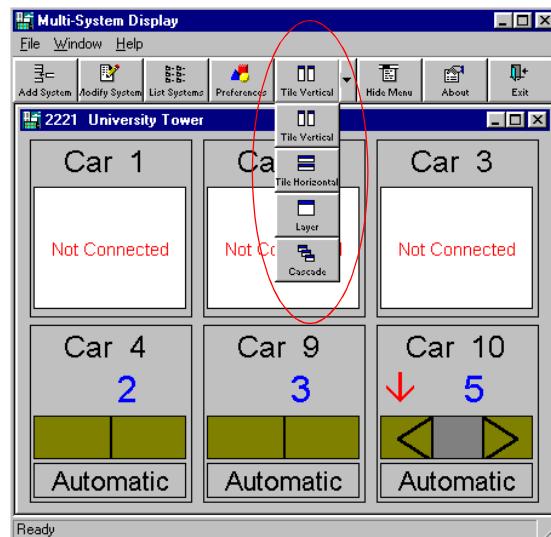


How do I manually Open a system window?

Add the system to MSD, if it does not exist already. If the system exists, click on **Modify Systems** from the *File* menu. Choose the system that you wish to open by clicking on its system number (a pointer indicates the system that is selected). Click on the **Yes** radio button below *Connect*. Click on the **OK** button.

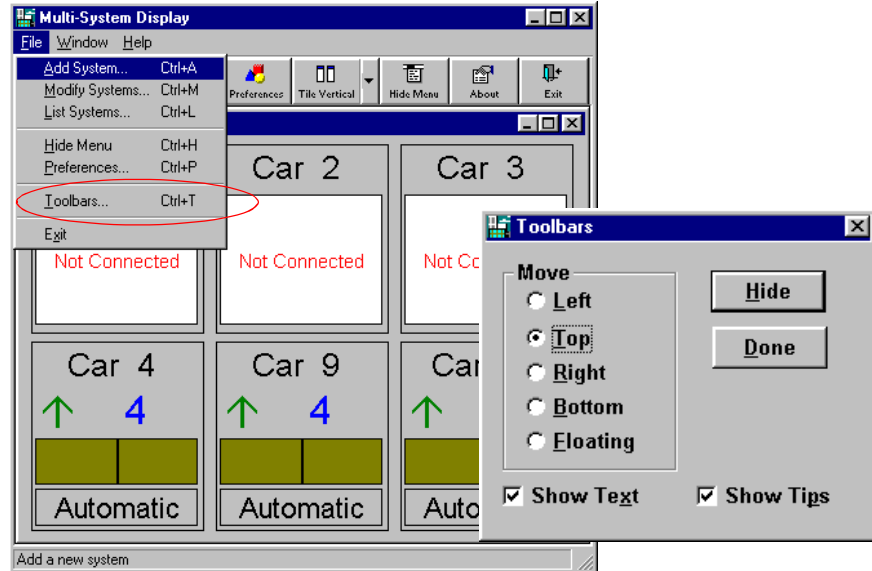
Arranging system windows

You may adjust the size and position of the system window by dragging a side of the window. Simply move the cursor over an edge of the window, click the mouse and drag to a new position and let go of the mouse. You may also let MSD align the windows horizontally, vertically or cascaded by clicking on the Window menu and choosing the corresponding option or by choosing the desired arrange option from the toolbar.



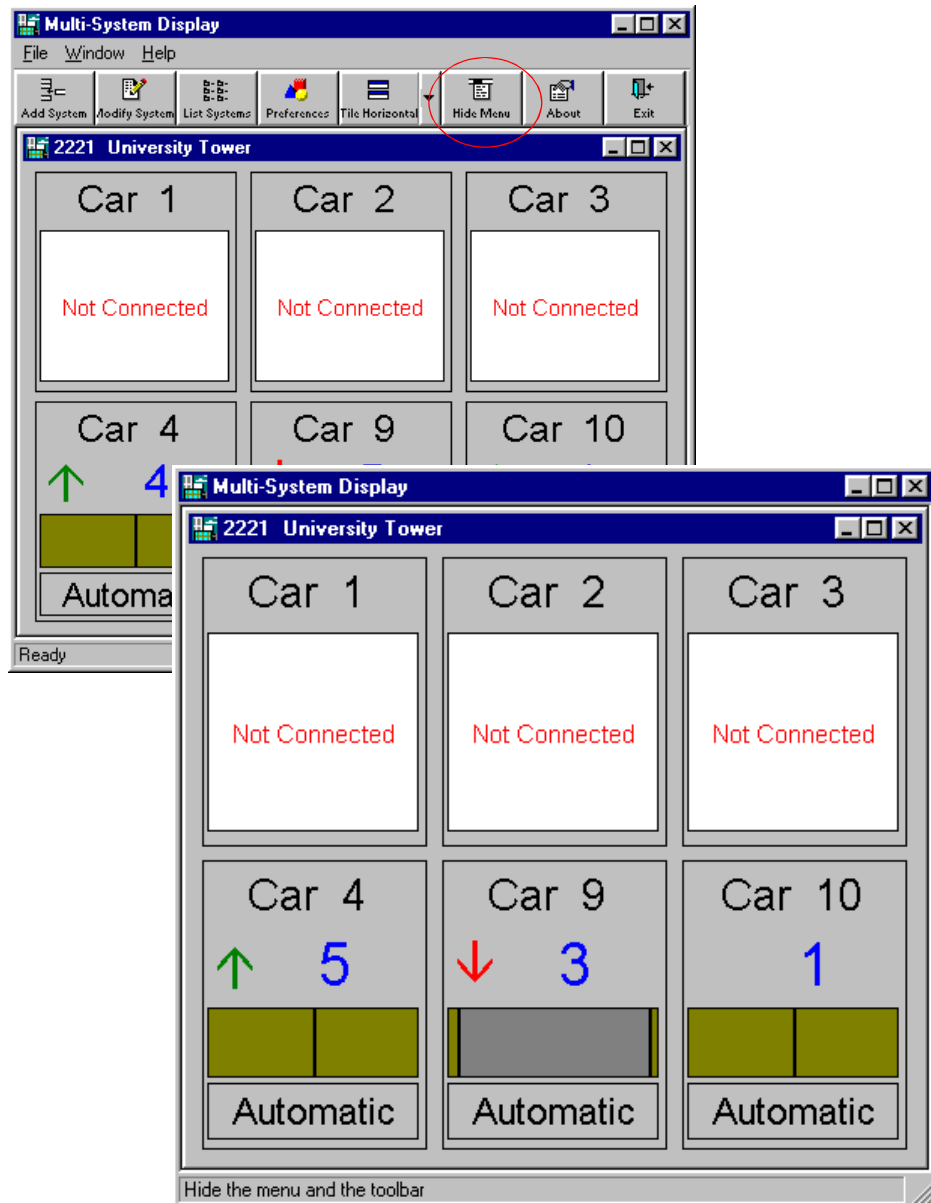
How do I hide the Toolbar?

From the *File* menu, click on the **Toolbars** menu option. The Toolbars window will be displayed as shown below. To hide the Toolbar, click on the **Hide** button on the Toolbars window. The toolbars window allows you to set the Toolbar's position by clicking on the desired position listed under the **Move** section. You can also display or remove the text shown on the toolbar icons by checking or un-checking the **Show Text** field. When finished making changes to the toolbar, click on the **Done** button to close the window.



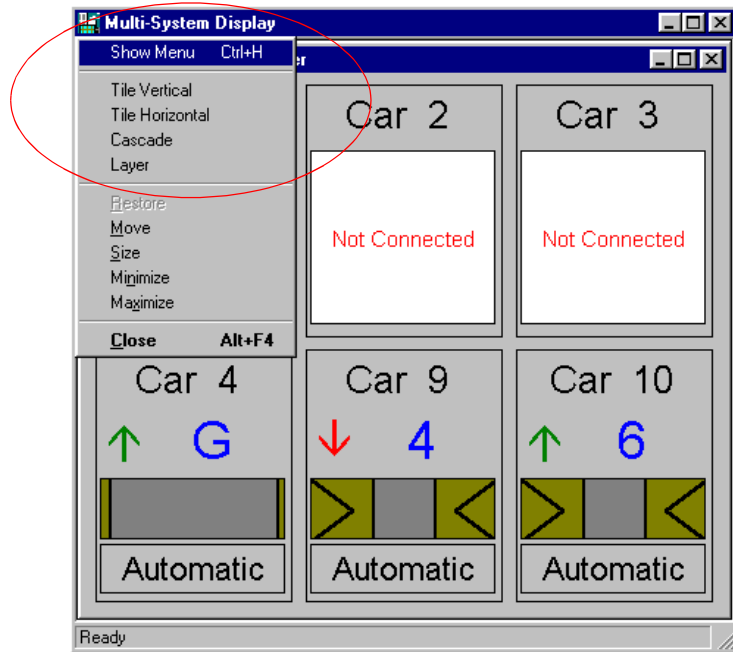
How do I hide the menu to have more room to display the system windows?

You may hide the menu, including the toolbar, to allow MSD more room to display the system windows. Simply click on the **Hide Menu** icon on the toolbar or choose **Hide Menu** option from the **File** menu. To find out how to show the menu and how to arrange the system windows once the menu is hidden, please refer to the section “**How do I show the menu or arrange system windows when the menu is hidden?**”. To find out how to close MSD once the menu is hidden, please refer to the section “**How do I exit MSD when the menu is hidden?**”.



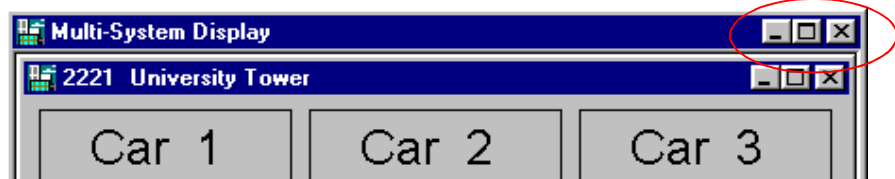
How do I show the menu or arrange system windows when the menu is hidden?

Click on the icon on the top left corner of the Multi-System Display window to display the control menu. To show the hidden menu, simply click on the **Show Menu** option. To arrange the system windows, select the desired arrange option. Available arrange options are **Tile Vertical**, **Tile Horizontal**, **Cascade**, and **Layer**.



How do I exit MSD when the menu is hidden?

Click on the little "X" button on the top right corner of the Multi-System Display window to close MSD.



What if a communication error happens?

If the error is not a serious error, the MSD program automatically attempts to restore connection to the system. If an error message persists for a long time, close the system window then reopen it to clear the error.

How do I make MSD connect to a system automatically every time MSD opens?

Click on **Modify Systems** from the *File* menu. Choose the system that you wish to open by clicking on its system number, a pointer indicates the system that is selected. Click on the **Yes** radio button below *Connect*. Click on the **OK** button.

How do I make MSD startup automatically when the PC is powered up?

- Click on **Start, Settings, Taskbar** to open the *Taskbar properties window*.
- Select the **Start Menu Programs** from the *Taskbar Properties window*.
- Click on **Advanced** button from the *Customize Startup menu* to bring up the *Programs* window.
- Click on **Programs** on the left side of the window, then double click on the **Multi System Display (MSD)** folder on the right side. If you did not accept the default location during installation please click on the folder that you specified during installation time.
- In this folder you should be able to see a shortcut to the *Multi System Display* program.
- Copy this shortcut by clicking on it once and clicking on **Copy** from the **Edit** menu of the window.
- Press the backspace key once, find the **Startup** folder on the right side and double click on it to open it.
- Paste the shortcut here on the right side by clicking on **Paste** from the **Edit** menu of the window. Voila !
- Close this window and the Taskbar properties window by clicking on the "X" on the top right of each window.

Can I work on other programs while MSD is running?

Yes. Windows is a multi-tasking environment and allows the users to run more than one program at a time. Simply by clicking the minimize button (with a "_") on the right top corner of the window and Windows will minimize MSD. To display MSD again, click on Multi-System Display icon on the taskbar.

How many COM ports do I need on the PC for direct connections?

In order to be able to view the systems simultaneously you need one COM port for each system in MSD. If more COM ports are required please check your computer documentation or contact your computer's manufacturer and Windows 95's documentation.

What do I need to install in the PC to use Ethernet connections?

For MSD to communicate with the elevator systems using Ethernet, the PC must be equipped with an Ethernet Card and a TCP/IP protocol installed under the Windows operating system. Please consult your computer documentation for more information about adding the Ethernet Card and installing a TCP/IP protocol.

How many cars can I monitor?

Up to 25 cars can be monitored at the same time. Each group can have a maximum of 8 cars.

What type of connections can be made?

MSD currently supports direct serial cable and line driver for extended length connections. MSD also supports Ethernet connections in a installation where a TCP/IP network is used.

Connection Type	Maximum Range
Serial Cable	up to 150 ft
Line Driver	Up to 0.5 miles at 19200 baud Up to 2 miles at 9600 baud
Ethernet	Dependent on the installed network

Reference

Error list

The following lists are error messages reported by MSD. Most of the errors are auto recoverable. The irrecoverable errors need intervention from the user, while auto recoverable errors attempt to correct themselves. If you feel that the computer has been attempting to correct itself for too long or is hampering other operations, you may stop using that connection until the problem is fixed.

Irrecoverable errors

IRRECOVERABLE ERROR LIST		
MESSAGE	PROBABLE CAUSE	NEEDED RESPONSE
Port is not open	MSD requested controller-MSD communication packets before opening COM port.	Close the system window and reopen it.
Comm object not open	MSD opening COM port before initializing.	Close the system window and reopen it.
Controller not supported	The controller being monitored is not supported by MSD.	Check with MCE to see if there is an upgrade for MSD or the controller software.
Specified COM port is in use	The specified COM port is in use by another device or program.	Check to see if the COM port is used for another controller or it is used by another device to connect to a modem etc.
Invalid port ID	User specified an invalid COM port ID. Valid Port ID range is 1-8.	Change this setting by editing the system and selecting a COM port from the list.
Comm Object exception error	COM port specified for this system is not installed on the PC. Either the hardware is not present or the Com port is not installed in windows.	Install the COM port on the PC. Please check your computer's and Windows 95's documentation on how to install a serial COM port.
Ethernet not initialized	MSD could not start the Ethernet interface. Ethernet interface is not installed.	Make sure that the PC is equipped with an Ethernet network card and that TCP/IP protocol is installed.
Ethernet is not available	Ethernet connections use TCP/IP protocol. MSD could not communicate using the TCP/IP protocol.	Make sure that the PC is equipped with an Ethernet network card and that TCP/IP protocol is installed.

Auto recoverable errors

AUTO RECOVERABLE ERROR LIST	
MESSAGE	MEANING / PROBABLE CAUSE
Received an invalid packet	MSD received an invalid packet from the controller. This is due to either communication problem or that the controller software is not compatible with MSD.
Received an invalid response	MSD received a response that it is not expecting. The response will be ignored.
Transmit buffer is full	MSD is transmitting a request that is larger than what the controller software can handle. The request will be ignored.
Invalid connection packet	MSD tried to connect to a controller but received an inaccurate response. This could be due to communication problems or incompatible controller software.
Invalid initialization packet	MSD tried to retrieve controller information from the controller but received an inaccurate response. This could be due to communication problems or incompatible controller software.
Connection packet timed out	MSD tried to connect to controller 3 times but it did not get a response. MSD will continue to attempt to connect to the system.
Initialization packet timed out	MSD requested controller information from the controller 3 times but it did not get a response. MSD will continue to attempt to re-connect to the system.
Checksum error	MSD requested information and received a corrupted response. MSD will re-request the information.
Real time packet timed out	MSD failed to receive real-time data from controller. MSD will re-establish communication again and request the real time data.
Connection already open	An attempt was made to open a connection with a controller but a connection is already open.
No media is selected	User did not select a media for communication.
Lost communication	MSD lost communication with controller. MSD will re-establish communication.
Unknown Comm Error	MSD's communication module received an unknown error. Error will be ignored.
Comm data buffer overflow	MSD's communication module received more data than it can handle. Data will be ignored.
Comm received break	MSD detected the specified communication error. If this error occurs frequently, indicates a problem communicating with the control system.
Comm CTS timed out	MSD detected the specified communication error. If this error occurs frequently, indicates a problem communicating with the control system.
Comm DSR timed out	MSD detected the specified communication error. If this error occurs frequently, indicates a problem communicating with the control system.
Comm framing error	MSD detected the specified communication error. If this error occurs frequently, indicates a problem communicating with the control system.

MESSAGE	MEANING / PROBABLE CAUSE
Comm overrun error	MSD detected the specified communication error. If this error occurs frequently, indicates a problem communicating with the control system.
Comm carrier detect timed out	MSD detected the specified communication error. If this error occurs frequently, indicates a problem communicating with the control system.
Comm receive buffer overflow	MSD detected the specified communication error. If this error occurs frequently, indicates a problem communicating with the control system.
Comm parity error	MSD detected the specified communication error. If this error occurs frequently, indicates a problem communicating with the control system.
Comm transmit buffer full	MSD detected the specified communication error. If this error occurs frequently, indicates a problem communicating with the control system.
Unknown error	MSD received an unknown error, the error will be ignored.
Unknown Ethernet error	MSD received an unknown error from the Ethernet connection. The error will be ignored and MSD will try again.
IP address is not available	The specified IP address is not valid. Consult with your network administrator to make sure that the IP address is correct and valid.
Ethernet connection rejected	The IP address you are connecting to is busy. Make sure that no one else is connected to the same control system and that you have the correct IP address for the control system's Terminal Server.
An IP address is required	You have not supplied an IP address for the specified control system. Edit the system information and enter an IP address.
The network can't be reached	MSD could not reach the network to communicate with the specified control system. Make sure that you have an Ethernet network installed and that it is attached to the network.
Ethernet connection timed out	MSD could not connect to the specified address within a predefined time. MSD will try the connection again. If this error persists, it indicates network problems.
Socket is out of resources	The Ethernet interface is out of memory. If this error persists, close MSD and restart the PC. Also, make sure that you do not have other programs using Ethernet interface.
Socket is out of buffers	The Ethernet interface is out of memory. If this error persists, close MSD and restart the PC. Also, make sure that you do not have other programs using Ethernet interface.
Socket detected network down	The Ethernet interface is reporting that the network is down. If this error persists, you may have to restart the computer and re-login to the network.
Connection reset remotely	The Ethernet connection was reset by the control system's Terminal Server. Connection will be re-established.
Connection aborted due to errors	The Ethernet interface encountered too many errors and has terminated the connection. Connection will be re-established.

Connection status messages

MESSAGE	MEANING / PROBABLE CAUSE
Connecting to controller	MSD is establishing connection with controller.
Retrieving controller info	MSD established connection with controller and is retrieving controller data.
Connecting - attempt 2	MSD failed to connect to specified controller and is attempting a second time.
Connecting - attempt 3	MSD failed to connect to specified controller and is attempting a third time.
Retrieving Info - attempt 2	MSD failed to retrieve controller information and is attempting a second time.
Retrieving Info - attempt 3	MSD failed to retrieve controller information and it attempting a third time.
Lost communication - retry 1	MSD lost communication with controller. It is attempting to reestablish communication.
Lost communication - retry 2	MSD lost communication with controller. It is attempting to reestablish communication a second time.
Processing	MSD received data and is processing, please wait.

MSD Car Status Message

The following lists are car status messages reported by MSD.

PHC/PTC Controller	
Automatic	The car is running in automatic operation.
Fire Phase 1 (Alternate)	The car is operating in Fire Phase 1 emergency recall. However, the car is at or is headed to the alternate floor. This operation is provided according to applicable local codes.
Fire Phase 1 (Main)	The car is operating in Fire Phase 1 emergency recall. However, the car is at or is headed to the main floor. This operation is provided according to applicable local codes.
Fire Phase 2	The car is running a fireman's operation. The car will only respond to car calls from the car operating panel.
Independent Service	The car is operating in Independent service. All cars are provided with an Independent service key switch in the car operating panel. The actuation of the key switch will cancel any existing car calls, and hold the doors open at the landing. The car will then respond only to car calls. Car and hoistway doors will only close with constant pressure on a car call push-button or the door close button.
Inspection/ Access	The car is on inspection operation.
Out of Service	Automatically removes any car from service should the car be delayed from responding to its demand for a predetermined field adjustable period of time. The system shall automatically restore any car back to operation when the reason for the delay has been corrected.

Simplex Non-Programmable Controller	
Attendant Service	The car is in attendant service operation. While in attendant service, the car will operate as follows: <ul style="list-style-type: none"> ▶ When the car is stopped at a landing, the doors will open automatically and will remain open until closed (by applying constant pressure on the door close button, car call button, or the up and down attendant buttons) by the attendant. ▶ The car will continue to receive hall call assignments. The car will answer the hall calls unless overridden by the attendant.
Automatic	The car is running in automatic operation.
Fire Phase 1 (Alternate)	The car is operating in Fire Phase 1 emergency recall. However, the car is at or is headed to the alternate floor. This operation is provided according to applicable local codes.
Fire Phase 1 (Main)	The car is operating in Fire Phase 1 emergency recall. However, the car is at or is headed to the main floor. This operation is provided according to applicable local codes.
Fire Phase 2	The car is running a fireman's operation. The car will only respond to car calls from the car operating panel.

Independent Service	The car is operating in Independent service. All cars are provided with an Independent service key switch in the car operating panel. The actuation of the key switch will cancel any existing car calls, and hold the doors open at the landing. The car will then respond only to car calls. Car and hoistway doors will only close with constant pressure on a car call push-button or the door close button.
Out of Service	Automatically removes any car from service should the car be delayed from responding to its demand for a predetermined field adjustable period of time. The system shall automatically restore any car back to operation when the reason for the delay has been corrected.

Group M3	
Attendant Service	The car is in attendant service operation. While in attendant service, the car will operate as follows: <ul style="list-style-type: none"> ▶ When the car is stopped at a landing, the doors will open automatically and will remain open until closed (by applying constant pressure on the door close button, car call button, or the up and down attendant buttons) by the attendant. ▶ The car will continue to receive hall call assignments. The car will answer the hall calls unless overridden by the attendant.
Automatic	The car is running in automatic operation.
Fire Phase 1 (Alternate)	The car is operating in Fire Phase 1 emergency recall. However, the car is at or is headed to the alternate floor. This operation is provided according to applicable local codes.
Fire Phase 1 (Main)	The car is operating in Fire Phase 1 emergency recall. However, the car is at or is headed to the main floor. This operation is provided according to applicable local codes.
Fire Phase 2	The car is running a fireman's operation. The car will only respond to car calls from the car operating panel.
Independent Service	The car is operating in Independent service. All cars are provided with an Independent service key switch in the car operating panel. The actuation of the key switch will cancel any existing car calls, and hold the doors open at the landing. The car will then respond only to car calls. Car and hoistway doors will only close with constant pressure on a car call push-button or the door close button.
Inspection/ Access	The car is on inspection operation.
Out of Service	Automatically removes any car from service should the car be delayed from responding to its demand for a predetermined field adjustable period of time. The system shall automatically restore any car back to operation when the reason for the delay has been corrected.