Myriad/ Mercury[16]
Display Manual

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Contents

Myriad/Mercury[16]/Mercury[16] Sun Series Specifications

Environment Myriad and Mercury[16]

Temperature: 0°C - 50°C
Humidity: 90% (non-condensing)
Altitude: 0 to 3000 m

Environment Mercury[16] Sun Series

Temperature: -10°C - 70°C
Humidity: 90%
Altitude: 0 to 3000 m

Electrical

Supply Voltages:
US: AC Supply: 115 VAC ±10% @ 2.5A per module, 50-60Hz

Electrical - International

AC Supply: 230 VAC ±10% @ 1.3A per module, 50-60Hz

Input and Output Connections

Ethernet Link - Input/Output, 5V
SCBD Port: Input - RS-232, ±12V

Installation

This product is intended to be used in an indoor or outdoor environment When the display is operated in the US it must be used in accordance with the National Electric Code. When the display is operated elsewhere it must be used in accordance with all appropriate national and local electrical codes and regulations for the country of installation. The AC power cord should not be accessible during normal operations.

The Myriad/M-16 series of displays must be used with a grounded outlet. This equipment is intended to be connected to a circuit protected by a ground-fault circuit interrupter when used outdoors or near a pool. This product is equipped with a 3-wire gounding-type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact a qualified electrician to replace your obsolete outlet. Do not defeat the purpose of the grounding- type plug.

Using the Myriad/M-16 series displays in a manner not specified by Colorado Time Systems may cause the protection provided by the equipment to be impaired. Replacing of fuses or similar servicing shall be performed only while the unit is disconnected from the source of supply.

Other than those items described in the Myriad user manual, there are no user serviceable parts on the Myriad series of scoreboards.

The Myriad series of displays should only be installed by Colorado Time Systems personnel.

Symbols

Protective Conductor Terminal	⏚	Alternating Current	∿

Introduction

Congratulations on the purchase of your new Myriad/ Mercury[16] Display with DisplayLink software! DisplayLink is a Windows®-based program designed to drive Myriad, Mercury[16], Outdoor Mercury[16] and future displays from Colorado Time Systems. DisplayLink enables users to configure their display to show alpha-numeric data, graphics and animation sequences. It also interfaces with sports timers from Colorado Time Systems and meet management software to provide the user with a comprehensive timing and scoring solution.

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Colorado Time Systems' Myriad/ Mercury[16] Boards are designed to operate on typical 115VAC 20 Amp electrical outlet power using standard Ground Fault Interrupt panel breakers (G.F.I.). These outlets are to be installed according to National Electrical Codes and Local Ordinances.

Branch Circuit Connection - This product has been designed to allow it to be installed using a fixed wiring method. Fixed wiring can be accomplished by connecting standard electrical conduit to the knock-out provided in the back of the display. Remove the strain relief from the existing power cord and pull one foot of cord inside the enclosure. Cut and discard the remaining length of power cord. Remove about 6 inches of the outer cable jacket and strip all three wires (black, white and green or blue, brown and green/yellow in Europe) as appropriate for wire nut termination. Wire-nut the branch circuit hot wire to the black wire of the Myriad/Mercury16 power cord. Wire-nut the branch circuit neutral wire to the white wire of the Myriad/Mercury16 power cord. Wire-nut the branch circuit ground wire to the green wire (or green/yellow wire in Europe) of the Myriad/Mercury16 power cord.

NOTE: Electrical conduit and wire nuts not provided by Colorado Time Systems. Use copper conductors only. For supply conntections, use wires suitable for at least 75°C

WARNING: This procedure must only be done by a qualified electrician or CTS personnel and must be done in accordance with the National Electric Code (NEC) or the applicable local and national electrical codes.

Each Myriad/ Mercury[16] module line requires 2 Amps per individual box with the maximum of 4 boxes wide. Where the display is larger than 4 boxes in width, additional circuits must be installed to accommodate the remaining columns of boxes. In essence, a dedicated 20 amp duplex is required for every two rows by four columns of the Myriad/ Mercury[16] Board.

We recommend that the electrical outlets used in a Myriad/ Mercury[16] system are on separate, dedicated circuits. (Refer to Figures 1-1 and 1-2.) Also, it is strongly recommended to install a single throw master circuit breaker that will supply power to all of the individual duplex box circuits. The guideline for installing this breaker, for amperage rating, is to multiply the number of dedicated circuits going to the scoreboard by a factor of 20. For example: A display that is 4 boxes wide and 8 boxes high requires 4 dedicated circuits. Multiplying these 4 dedicated circuits by 20 amps would render a total of 80 amps for the master breaker. These duplex box circuits should have individual G.F.I. panel-mounted breakers, as well as be inaccessible to vandalism. As with other microprocessor controlled products, the Myriad/ Mercury[16] Display is sensitive to noise on the AC power line.
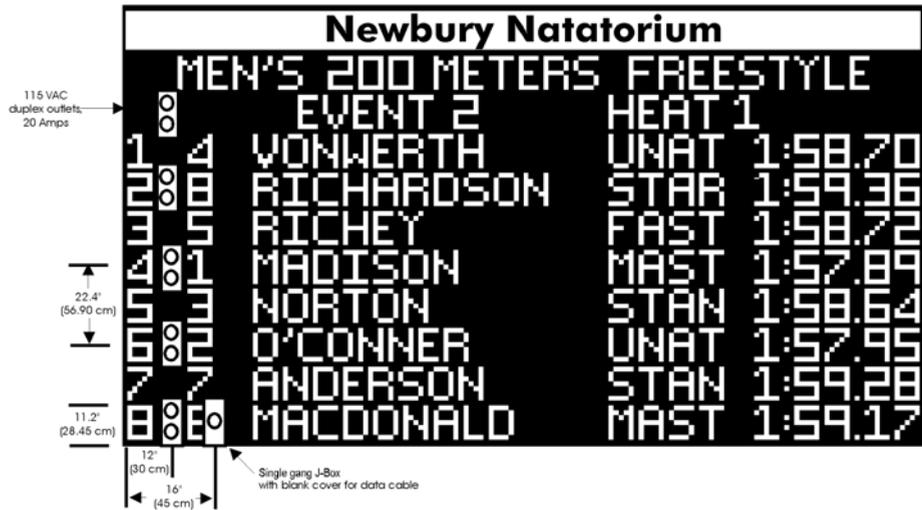
Figure 1-1

Ensure that other electrical devices, especially those containing or using motors are not placed on the same circuit as the scoreboard system.

At times when the scoreboard is not in use it is recommended that all electrical power be shut off to the boards at the breakers. This procedure reduces the risk of damage to the boards in the event of power surges and other electrical hazards.
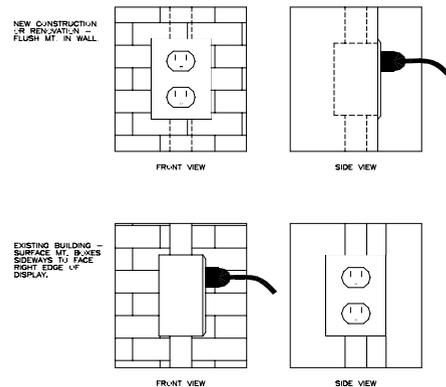
Figure 1-2

1.2 Data Conduit and Locations

Two data cables of approximately 3/8" diameter each must be run to the finished display. A 1" conduit from the nearest 12" x 12" wall box (see our Architectural Guidelines) to an outlet box at the lower left corner of the display should be sufficient for this purpose. However, if more than four 90 degree angles are used, a larger diameter conduit is required.

1.3 Structural

Each Myriad/ Mercury[16] Display module (8 x 32 pixels), including the Unistrut framework, weighs approximately 15 lb. The supplied wall anchors are intended for flat wall mounting on concrete, brick, or cinder block walls. Other wall types can be accommodated upon request. Consult your sales representative for more information.

1.4 Visibility

Many factors must be considered when determining where to mount your Myriad/ Mercury[16] Display. Factors include, but are not limited to, the following:

· Location of viewer
· Location of bleachers, fans and athletes (for sporting applications)
· Location of display operator
· Location of obstacles such as columns, diving boards, traffic (foot and automotive) HVAC conduit
· Location and direction of lighting
· Location and direction of sun and shade (for outdoor applications)
· Type of backdrop (i.e. a bright backdrop such as large windows may cause eye strain)

1.5 Accessibility

You will want to consider the accessibility of your Myriad/ Mercury[16] Display. This generally requires the use of a personal or platform lift. Will the lift fit through any doors required to get to the display? Are there any obstacles such as bleachers or benches directly under the display which will prevent the use of a lift? Reasons to access the display include, but are not limited to, the following:

· Installation and maintenance
· Changing of signage and advertising panels
· Cleaning
· Accidental damage and vandalism repair

1.6 Tools Required For Installation

The following is a partial list of the tools needed to install your Myriad/ Mercury16 Display:
· Personal or platform lift or scaffolding
· Hammer drill and 3/8" masonry drill bit
· Electrical extension cord
· Sockets and ratchet wrenches, 1/2" and 9/16"
· #1 or #2 Phillips screwdriver
· Tape measure
· Carpenter's level
· Pencil
· Hammer

1.7 Structural Framework

The Myriad/ Mercury16 Display requires a mounting framework of Unistrut channel to hold it away from the mounting surface. This allows for cooling, draining, and placement of power cords so they are hidden behind the display. For rough surfaces and existing installations utilizing surface mounted electrical boxes, brackets are supplied that extend this framework a few inches from the mounting surface. Keep in mind that the horizontal distance between Unistrut needs to be held within ~0.25" (error not to accumulate). The vertical distance between the anchors is critical as well, as these (or the brackets they support) must line up with

Note:

For supply connections, use wires suitable for at least 75 C .

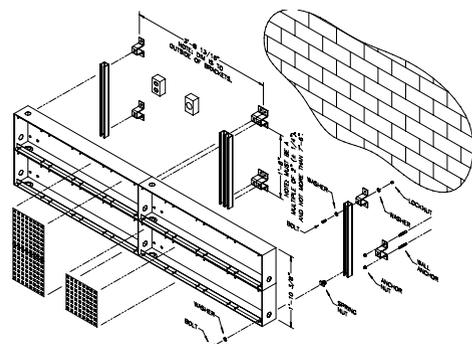Connect only to a circuit that is protected by a ground-fault circuit-interrupter (GFCI).

Figure 1-3

the slots in the Unistrut. The vertical distance between brackets needs to be in multiples of approximately 24 - 36 inches and not more than 48 inches.

Start by locating where you want your Myriad/ Mercury16 Display. Mark where you want the right, left, or center, as well as the top of your display. Use these marks to start installing the framework, using the MK-9s, as shown in Figure 1-3. First install a TOP U-bracket in desired starting position, using the anchors as shown. Attach a length of Unistrut to this bracket using a bolt, washers, and lock-nut, as shown. Next, locate mounting position of bottom U-bracket by lining up the Unistrut channel in a vertical position with the level. Mark the location of the bracket with the pencil, then install bracket as shown.

It is important to note that the bottom U-bracket should not be visible from below, so leave approximately 10" from lower edge of the Unistrut protruding past the mounting bracket. After bottom bracket has been installed, temporarily bolt the channel into place. Position and mark locations for all remaining U-brackets until entire length of channel is supported. Remove Unistrut channel from Top and Bottom locations, then install brackets in previously marked positions. Once all brackets are installed, reinstall the channel and secure to all mounting bracket points. Mount the other lengths of Unistrut in the same manner, using the first installed piece of Unistrut as a guide for the horizontal placement of all the other Unistrut.
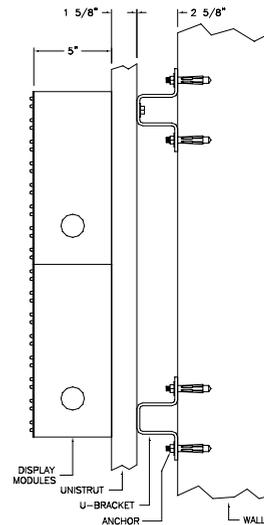
Figure 1-4

Corner mounting the Myriad/ Mercury[16] Display requires a special sub-framework designed for each installation. Consult your sales representative for assistance and more information.

The display is designed for modular installation. The modules (8 x 32 pixels) are all interchangeable with the exception of the left modules of each row which house the controller and have power cords exiting their chassis.

Now you need to mount the boxes that house your display electronics. Starting at the bottom left of your framework, attach a row controller box to the framework using the supplied bolts,

1.7.1 Corner Mounting (at an angle)

1.8 The Modular Concept

1.8.1 Attachment of Boxes

washers and spring nuts.(Refer to Figure 1-4.) Use a level to keep the box both horizontally and vertically straight. Mount the rest of the bottom row in the same manner, keeping the boxes level and snug against one another. Mount the other rows of boxes by simply stacking them on top of the row beneath, and using the supplied bolts, washers, and spring nuts. There is no need to level these boxes, but you do need to keep them snug against each other and the row below.

NOTE: Be sure you mount the correct boxes in the correct locations. The left most column of boxes has a standard power cord and plug exiting at the left rear. All boxes not in the left column are the same, and do not have a standard power cord. Be sure all boxes are mounted in their proper locations.

AC power uses the daisy chain distribution concept. The left-most module in each line is supplied with a standard three-prong plug electrical cable. The AC power will daisy chain to the other boxes in the row using cables supplied with the boxes.

DC power will run from each power supply (one per module) to the four 8x8s in that module using a cable supplied with each box.

1.9 Cabling and Connections

1.9.1 AC Power

1.9.2 DC Power

1.9.3 Data

For all intents and purposes, data is defined as electronic instructions sent to the receiving peripheral devices. The following is a list of subsystems and the functions associated with each:

Transmission - Data is transmitted using standard RG58/AU coaxial cabling.

DisplayLink Computer - Data is transmitted from the computer to a receiving Wall Plate.

Wall Plates - Data is input into a wall plate and cabled from there to an outlet box at the display location. It is then connected to the Ethernet cards in each box in the left column.

Ethernet Card - Each row in the display has an Ethernet card to receive transmitted data. This card is located in the left-most position in the first box of each row.

PCB to PCB - A 40 conductor ribbon cable is used. These ribbon cables are polarity sensitive and must be installed accordingly.

Orientation - Each faceplate/PCB assembly must be oriented so that the power connector is toward the bottom.

Screws - Each faceplate needs to be secured with four of the supplied screws. Customer Service will have extras of these screws on hand as they may be lost, damaged or misplaced.

1.10 8x8s and Faceplates

This type of signage is simply a sheet of plastic, the width of the display, that mounts with screws the same fashion as the face-

plates. Attach loosely to allow slight shifting to the screws.

1.11 Signage and Cosmetic Attachments

1.11.1 Box Signage

The type of signage is "L" shaped, bent vinyl clad aluminum that is attached to the edges of the display boxes using self tapping screws, nuts and bolts or some other means of attachment suitable for the given application.

The display may use "L" or "C" shaped bent vinyl clad to trim the display to the same width as an existing 4009 scoreboard. This part will be used if the Myriad/ Mercury16 Display is being installed in conjunction with a 4009 scoreboard module display.

1.11.2 Freestanding Signage

1.11.3 "Fitting" (Vinyl Clad)

Replace using supplied extra screws as needed.

Upon completion of an installation, verify that all external 1.5" holes have a hole plug. Customer is supplied a few extra plugs for this purpose.

1.11.4 Missing or Damaged Screws

1.11.5 Hole Plugs

Troubleshooting the System

The following section is intended to assist the customer in the event that a problem arises with the Myriad/ Mercury[16] Display. The following areas will be covered to assist in the troubleshooting procedure:

- · Theory of operation
- · What to Do First
- · Troubleshooting Display Failures
- · Troubleshooting Software/ Computer Failures

2.1 Theory of operations

Note: It is not feasible in the scope of this guide to examine every low-level component that comprises the system, only a generalized overview of the complete system will be offered.

To enhance the understanding of the operation of the display, it is easiest to examine the system by breaking it down into three distinct divisions which are computer, display, and connectivity. These three main divisions can then be broken down into component subsystems. The hierarchy of the system divisions and subsystems are presented in Table T1. Notice that some of the components of each system are identical, or can be grouped in more than one category. Operating principles as they relate to the Myriad/ Mercury[16] Display system will be covered according to this hierarchy.

Computer	Display	Connectivity
Software	Data Receive Row	PC to Display
Data Transport Data	Transmit Row	Inter-Display Rows
	Power Regulation	Inter-Display 8x8

Table T1

2.1.1 Computer

The DisplayLink computer is responsible for instructing the display to show user defined data. It accomplishes this task in two parts: creating software generated images and data, and transmitting that data to the display. The initial stage in the creation of the data is to determine what is to be presented. Data can be previously created animation sequences, on-the-fly instant messages, or timing data exported from a peripheral device such as the CTS System 5 sports timer. Once a particular data type is selected to be displayed, the software automatically sends it to the data transport system. This system is comprised of an Ethernet card and its' supporting software components. Data is automatically rendered into the correct transmission format and sent to the display.

2.1.2 Connectivity

Connectivity is simply considered to be the data transmission cabling responsible for connecting all of the system components together. There are, however, many different types of cabling which serve various functions in the system. First to be noted is the coaxial cable that connects the PC to the Wall-Plate. This cable is a short extension of the permanent cabling that is connected to the display through conduits in the facility. The end of the cable that is connected to the display exits a small wall box mounted to the wall near the display. Inside the display, the end of this cable connects to the first Ethernet card, located in the bottom left Display Module Box.

From this point, moving upwards in the first column of the display, small sections of this cable type connect all subsequent Ethernet cards in each row. Another component of the data connection architecture is the ribbon cables located inside all of the Display Module Boxes. These ribbon cables connect the Row Controller to the first 8x8 in each row, as well as all 8x8s to each other. The next set of cabling is the power transmission series. There are two types for this cabling: standard power cables (such as those found when plugging in your computer), and power Y adapters. This first type, standard power cables, connects all of the power supplies in the display unit to a power source (AC wall outlet). The power Y adapters connect all other components of the display system to the power supply. Components connected to the power supply include: row controllers, 8x8s, fan units, and resistors.

2.1.3 Display

The display is defined as the integral system of all parts comprising the viewable "scoreboard" apparatus. The display is mounted to a wall in a facility and is separate from the control equipment. Components for the display contain, but are not limited to: module boxes, 8x8s, row controllers, fans, resistors, power supplies, power cables and power Y adapters, Ethernet cards, firmware, mounting hardware, and optional equipment such as the HWPM 110 or HWPM 220.

The display may, for the sake of simplicity in explanation, are comprised into the power and data divisions. Since each row in the display is inherently identical, the operation of only one row will be detailed. Information presented about this single row can be replicated for every line of the display regardless of size.

The first division of the display is power regulation and distribution. Power is supplied from an AC power outlet provided from the facility. Power is input to the power supply in the left-most box of the display through a power cable connected to the outlet. Interconnect power cables then transmit power to the rest of the power supplies in the row by parallel power distribution methodology. The output connections from the power supply then connect all other system components through power Y adapters.

The other division of the display is the data transmission architecture. Data is input into the Ethernet card through the coaxial data cable discussed earlier. The Ethernet card then transmits the received data to the row controller. From the row controller, data is then sent through a ribbon cable to the first 8x8. The 8x8 receives instructions about the data it is required to display, then passes the information on to the next 8x8 via ribbon cable. This inter-connection of 8x8s by ribbon cables is present throughout the row, until the last 8x8 input is reached and there are no further output connections necessary.

2.2 What to Do First

In the event that a problem arises with the operation of the Myriad/ Mercury[16], it is necessary to determine the nature of the malfunction. Since the error can be induced from any number of sources, it is recommended that the following procedures be utilized to isolate the problem.

Step 1: Remove power from ALL of the system components by shutting them off (Note- this may involve turning off breakers, power switches, and/ or power strips used by the different components of the system).

Step 2: Check to ensure that ALL necessary communication cables are properly connected and utilized (Note- check to insure that the DisplayLink Data Cable is properly connected to the DisplayLink computer with a T connector and terminator. Also, remove the communication connection cables from any other peripheral devices such as meet management computers or sports timers).

Step 3: Re-apply power to the Myriad/ Mercury16 Display. Codes settings will appear in the left-most area of the display when the board resets. If these codes do not appear properly, or the row constantly flashes On then Off, remove and reapply power again. If problem persists, consult the "Troubleshooting Display Failures" section of the manual for more information.

Step 4: Re-apply power to the DisplayLink Computer. If computer performs boot-up correctly, go to Step 5. If computer does not boot-up correctly, go to "Troubleshooting Software/ Computer Problems".

Step 5: Open the DisplayLink Program by double-clicking on the DisplayLink icon. Upon opening the DisplayLink program, the display should go completely blank. If the codes are still displayed, go to the "Troubleshooting Software/ Computer Problems" section for more information.

Step 6: Open the DisplayLink library by left-clicking on the menu option tab form the main DisplayLink screen. Select the Slide Shows folder by left-clicking on the tab "Slide Shows". Select one of the slide show icons and drag-and-drop it on the Active Display Window. At this point, the slide show will begin to load, and automatically transmit the data to the display. If the slide show displays correctly, then the system is functioning correctly. If an error occurs, note what message is displayed for further reference and consult the section "Troubleshooting Software/ Computer Problems."

2.3 Troubleshooting Display Failures

This section is intended for use in troubleshooting failures associated with the display unit itself, not software related items. It is intended to address common failures in the normal operation and maintenance of the display in reference to hardware and connectivity issues. The Display Failures section is subdivided into sections that describe the problem and provide the possible solution. The user can use this section to identify the problem and then cross reference the "How To" section for useful tips on rectifying the problem.

Problem: Display is blank.
Solution: Ensure power to the display is turned ON. See "How To- Check for Power at the Display."

Problem: Computer functions normally, but will not send data to the display.
Solution: Check to ensure that the Ethernet cable is connected properly at the back of the computer. Proper connection of the cable includes an Ethernet T and an attached terminator. If the cable is connected simply by being plugged into the computer without the T and terminator, the display will not receive appropriate data. See also "How To- Check Cable Connections."

Problem: Display is in RESET mode, but one of the rows repeatedly flashes ON then OFF.
Solution: Shut off power to the display, wait 10 seconds, then reapply power. Repeat until row initializes. If row refuses to initialize, see "How To- Change a Row Controller/ Ethernet Card."

Problem: Display is functioning correctly, but a line of pixels is OFF or constantly ON.
Solution: Note where the error is located on the display. Remove the 8x8 from the display (leaving it physically connected) in the location of the beginning of the problem. Check the ribbon cable connections coming from the previous board, and the one that goes to the removed board. See "How To- Remove an 8x8" and "How To- Check Cable Connections."

Problem: Display is functioning correctly, but a whole row is blank.
Solution: Turn OFF power to the display and check to see if the row RESETS. If it does, re-send data to the display. See "How To- Check for Power in the Module Box."

Problem: Display is functioning correctly, but a row "locks up" and does not show changing data.
Solution: Turn OFF power to the display and check to see if the row RESETS. If it does, re-send data to the display. See "How To- Check Cable Connections, Ethernet."

Problem: Display functions correctly, but one row does not display data, only the reset codes.
Solution: Turn OFF power to the display and RESET the row. Re-send data to the display. If the problem still exists, check the Ethernet cable connecting to the Ethernet card in the malfunctioning row. See "How To- Check Cable Connections, Ethernet" or "How To- Change a Row Controller/ Ethernet Card."

2.4 Troubleshooting Software/ Computer Problems

This section is intended for use in troubleshooting failures associated with the software or computer portions of the display system. It is intended to address common failures in the normal operation of the display in reference to data transmission and configuration issues. The Software/ Computer Problems section is subdivided into segments that describe the problem and provide the possible solution. The user can use this section to identify the problem and then cross reference the DisplayLink Software Manual for useful tips on rectifying the problem.

Problem: Computer functions normally, but will not send data to the display.
Solution: Under the "Settings" option bar in the main DisplayLink screen, check to ensure that a check mark is next to "Display Connected." Without the check mark for the connection to the display, the computer will not send any data.

Problem: Animation sequences begin to load, display briefly, then disappear.
Solution: Ensure that the setting of "Loop Forever" is set in the animation sequence designer window.

Problem: Animation sequences or graphics are fuzzy or not well defined when shown on display.
Solution: Check to ensure that the display settings of the computer monitor have not been changed. The correct settings for display area are 1024x768.

Problem: Text, graphics, or animation sequences appear correctly on the display, but are negative images in the Active Display window.
Solution: The display settings are set to the incorrect amount of colors in the configuration. The correct setting is 65,536 colors.

Problem: Animation sequences begin to load, then an "Error Sending Packet" message is displayed.
Solution: Ensure that the setting of "Loop Forever" is set in the animation sequence designer window.

Problem: DisplayLink opens correctly, but there is nothing in the Library.
Solution: It is necessary to re-load the backup software provided with the system. Insert the program CD and follow the instructions on the screen.

Problem: Sports template for any given sport does not function correctly because data is not being transferred form timing system.
Solution: Check the "Settings" option bar in the main DisplayLink screen under Com Port Interfaces to ensure that a timing system is enabled. If the com port is enabled and data is still not being transferred, close down all programs, remove the connection to the timing system from the computer, and restart the DisplayLink computer.

How To...

3

This section provides a step-by step procedure outline to address repairing the Myriad/ Mercury[16] display system. Once a problem has been identified in one of the troubleshooting sections, the failure can be associated to one of the following procedures to provide a remedy. Please read each of the following instructions pertaining to the problem completely before proceeding with any operation.

3.1 Check Power at the Display

Determine if there is actually power being supplied to the outlets. This may be done by plugging a lamp or another 115VAC electrical device into the outlet to see if it functions. If no power is being supplied, check breakers or contact facility maintenance or a qualified electrician.

3.2 Removing and Replacing An 8x8

Caution: The pins located in the back of the 8x8s are easily damaged if improperly handled.

Turn OFF Power To The Scoreboard Before Proceeding!

Step 1: Provide a means to reach the malfunctioning 8x8. Usually, devices to do this are a lift of some sort, scaffolding, or in specific incidents, a ladder. Note: Ladders are not recommended due to the fact that they CANNOT be leaned on the face of the scoreboard to reach 8x8s in the middle of the board. They are also more difficult to work from when replacing an 8x8. Facility maintenance generally has some sort of apparatus that would be well suited to address this situation.

Step 2: Using a #1 Phillips head screwdriver, remove the (4) screws holding the 8x8 in place. Make sure that the 8x8 assembly does not fall out of the box after the screws are removed.

Step 3: Remove the 8x8 from the scoreboard chassis to expose the back of the circuit board. Notice the orientation of the 8x8. The power connectors are located closest to the bottom of the board when installed. It is necessary to reinstall the board with the proper orientation to ensure proper function.

Step 4: Disconnect the power cable from the 8x8. The power cable is the white connector with (4) wires coming out of the back. The power connector is fit tightly in its housing, do not pull on the wires to get it out of its seat. Once removed, the power connector can be left to hang out of the box, until the replacement is ready to be installed.

Step 5: Remove the data cable connectors from the 8x8. The data cables are large, flat, gray cables with a small red stripe or dots on one edge. Take note as to the direction the cable is coming from, and the corresponding location of the connector mate. Notice also where the red stripe is on the connector in reference to its placement on the 8x8. The red stripe is located furthest from the con-

nection of the power receptacle, and closer to the outside of the board. It is also important that when removing the data connector from the board, a pulling motion should be used that does not strain the cable and that enables the connector to be removed without bending the pins on the board.

Step 6: Reassemble the 8x8 connections in reverse order as when removing them. Start by connecting the data cable connectors. Be aware of the polarity designated by the red stripe on the cable, and ensure that all of the pins on the board and the holes in the connector line up correctly. Install the power connection, making sure that it is seated properly. The power connector only fits on one way due to its construction with a built in key outline. Place the 8x8 back in the module box and install the (4) retaining screws.

Step 7: Reapply power to the scoreboard and test for correct functionality.

3.3 Change a Row Controller/ Ethernet Card

Step 1: Remove the first two left-most 8x8s of the malfunctioning row. Remove from chassis and disconnect all interconnection wiring.

Step 2: Disconnect all of the interconnection wiring at the row controller, including the Ethernet connections.

Step 3: With a #1 Phillips head screwdriver, remove the 4 screws that hold the row controller into the Module Box chassis. Remove the row controller and Ethernet card from the chassis.

Step 4: Disconnect the tie-down band that holds the Ethernet card in place. At this point, replace the malfunctioning component (the Row Controller or the Ethernet card).

Step 5: Replace the tie-down band.

Step 6: Replace the Row Controller and Ethernet card in the chassis. Re-attach the boards with the mounting screws.

Step 7: Reconnect all of the interconnection wiring at the row controller, including the Ethernet connections.

Step 8: Replace the 8x8 interconnection wiring, and securely mount the 8x8s back in place.

3.4 Check Cable Connections

There are three types of cable connections used in the display system: Ethernet, power and data.

3.4.1 Ethernet

Ethernet cable connections are of the standard BNC type, with quick disconnect housings. To verify these types of connections it is recommended that they are removed from the mating piece by twisting them off, then replacing them to insure a proper seating. If the seating is loose, damaged, or not making sufficient contact, replace the cable.

3.4.2 Power

All power connections to Module Box components are standard IDC (hard drive) connector types. These are small, white, 4 slot male-to-female electrical connection terminals. To check to see if a power connector is making a good contact:

Step 1: Feel the connector to see if there is excessive heat being dissipated by the connector block. It is beneficial to feel other connectors in the Module to get a reference point to judge by. If the power connector is hot to the touch, unplug the connector harness and replace it (spares are supplied with the system).

Step 2: Separate the two halves of the connector and visually inspect the internal pins. Check for: damaged male connectors, excessive opening diameters of the female pins, proper seating of internal pins, corrosion or contamination of the pins. If any of these conditions exist, remove the harness and replace.

Step 3: Reconnect the two halves and verify operation. Once the halves have been re-installed, the system component should power-up normally. If it does not, replace the harness it is connected to.

3.4.3 Data   The data cables are large, flat, gray cables with a small red stripe or dots on one edge. Take note as to from which direction the cable is coming from, and the corresponding location of the connector mate. Notice also where the red stripe is on the connector in reference to its placement on the 8x8. The red stripe is located furthest from the connection of the power receptacle, and closer to the outside of the board.

Step 1: Remove the data cable connectors from the 8x8(s). It is important when removing the data connector from the board, a pulling motion should be used that does not strain the cable and that enables the connector to be removed without bending the pins on the board.

Step 2: Replace the malfunctioning component.

Step 3: Re-seat the data cable on the connector block pin assembly. Ensure that all of the male pins are correctly aligned in the pin slots of the female.

Step 4: Verify operation of the replaced component by sending data to the display.

Technical Support

For technical support with Myriad/ Mercury[16] Displays and DisplayLink not answered by this manual or the on-line help system, contact Colorado Time Systems Customer Service.

CTS Technical Support may be reached by:

Phone: 800-287-0653 or (970) 667-1000
Fax: (970) 667-0988

E-Mail Tech Support at: service@colotime.com

The CTS Web Page: http//www.colotime.com