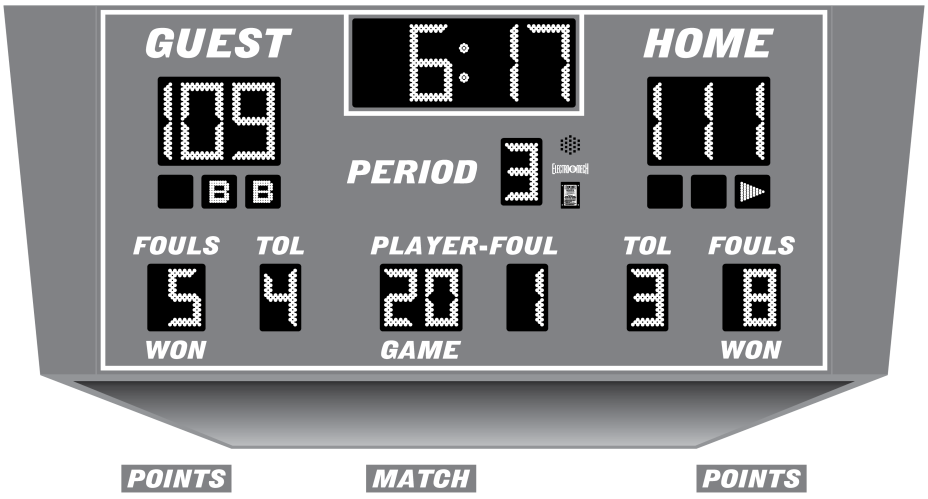
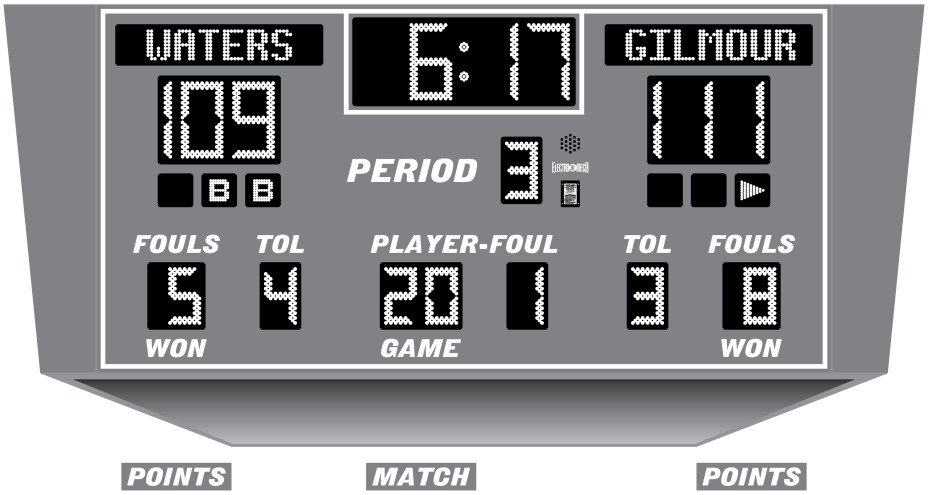
ELECTRO-MECH
SCOREBOARD COMPANY

Model LX2665-4
Owner's Manual
Indoor Multi-Sport Scoreboard





The purpose of this manual is to explain how to install and maintain the Electro-Mech Model LX2665-4 Indoor Multi-Sport scoreboard as well as the LX2665-4-ETN version of this product, which features Electronic Team Names. Operation of the scoreboard is covered in the manuals that ship with the control consoles.

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BEST PRACTICES FOR PERSONAL SAFETY AND PRODUCT CARE

Thank you for choosing Electro-Mech products for your athletic facility. We hope you will be pleased with the performance and appearance of your scoreboard. The information in this document will help you maintain the equipment in its best condition.

Receiving Your Scoreboard

Depending on the shipping method, cardboard sheets, partially open wooden crates, or a set of complete enclosures may protect the scoreboard cabinets and corner pieces. It is important to inspect the scoreboard packaging for damage when it arrives — *before signing any paperwork telling the trucking company that you have received everything in good condition*. If damage has occurred to the packaging, then damage may have occurred to the scoreboard. Where you find dents, scrapes, or holes in the packaging, peel back the cardboard or other packing materials to expose the scoreboard cabinet or other pieces. Make notes on the paperwork provided by the trucking company before accepting delivery. If the damage appears to be severe, refuse the shipment. Contact the manufacturer as soon as possible if you suspect shipping damage.

For larger scoreboards (and any separate ID panels that may have shipped with them), we supply eye bolts in the top of the cabinets for lifting. These eye bolts usually remain exposed while the cabinets are in their shipping packages. You may lift a packaged cabinet by the eye bolts to remove it from the truck and move it around prior to installation. You may also transport a cabinet on dollies. For pieces more than twelve feet wide, we recommend using a dolly at least every ten feet along the bottom of the cabinet to provide support and prevent sagging.

We recommend keeping the scoreboard displays, corner sections, and accessories in their packing materials until the day of installation. It is important to keep the packing materials dry. Wet cardboard can adhere to surfaces and damage the finish.

If your scoreboard cabinets arrived in wooden crates, then pry apart the nailed pieces, taking care to avoid scraping the cabinets with tools, nails, or lumber. Make certain to pry the wooden pieces apart from each other rather than trying to apply force against a scoreboard cabinet. Aluminum is strong, but a steel crowbar is stronger.

Once the crate is out of the way, remove the cardboard padding. You may need to remove a few labels adhered to the side of the cabinets for shipping. At this point, your scoreboard cabinets are unpacked and ready for installation.

Storage Prior to Installation

Unless you are planning to install your scoreboard on the same day that it arrives, you will need to prepare a clean, dry, secure area for storage. Even though your scoreboard cabinetry is designed ruggedly, you will need to keep it away from moisture, dirt, accidental damage, and abuse.

Stand the scoreboard cabinets upright prior to assembly; never lay them facing up or down. Never stack things on top of the scoreboard cabinets while they are in storage.

These recommendations apply equally to ID panels and other items that may have shipped with your scoreboard.

Conditions of Installation and Use for Indoor Scoreboards

This scoreboard display and its accessories are designed for installation and use in a dry environment. Do not attempt to install or operate this scoreboard outdoors or in a wet location.

Center-hung scoreboard displays are typically suspended by chains or cables from a hoist system, which is attached to a support beam in the ceiling of the building. Each of the four scoreboard cabinets includes a pair of eye bolts for attaching the chains or cables. It is important to make sure the support system is designed to handle the weight of the complete scoreboard assembly ─ including any ID panels or other accessories.

Center-hung scoreboard displays are not designed to support additional devices. In other words, don't plan to hang lighting or sound equipment from the scoreboard structure. The scoreboard may share a support system with other devices, assuming the support system can handle the combined load.

Each scoreboard cabinet receives power from a standard 120 VAC electrical outlet. When the scoreboard display is not in use, you should disconnect each cabinet from power. For this reason, we recommend installing a dedicated disconnect switch within sight of the scoreboard display. In the "off" position, the switch should isolate all load-carrying conductors (not the ground). This will help protect the scoreboard electronics from nearby lightning strikes and other power fluctuations that might otherwise travel along the power cables.

PRODUCT SPECIFICATIONS

General Description:

- Model LX2665-4 is an electronic scoreboard designed for permanent installation indoors and intended primarily to display time and scoring information for basketball or volleyball.

Standard Package Includes:

- Four scoreboard cabinets
- Four corner pieces
- Hardware for attaching scoreboards to corners
- One control console
- Four stereo patch cables
- One junction box (when configured to use hardwired data cable)
- One stereo plug

Cabinet Dimensions and Weight:

- Each scoreboard section is 10 ft (W) x 5 ft (H) x 6 in (D), 150 lb
- Each corner section is 15 in (W) x 5 ft (H) x 15 in (D), 45 lb
- Full assembly is 12 ft 6 in square (W x D), 5 ft (H), 780 lb

Cabinet Construction and Finish:

- Each cabinet includes a self-supporting frame constructed from extruded aluminum channel and formed aluminum pieces. The face and back sections are made from aluminum sheet material. The masks protecting the LED displays are also made from aluminum sheet material. Mask and face pieces are finished with enamel paint. All other cabinet surfaces are mill finish. Captions, optional accent striping, and other decorative elements are cut from interior grade vinyl. Electro-Mech offers eighteen standard paint and vinyl colors. Other color options are available as an upgrade.

Overview of LED Displays:

- Red, amber, or green LEDs (light emitting diodes) mounted on PCBs (printed circuit boards) form all digits, indicators, and text displays. The PCBs are mounted behind aluminum masks, painted black to increase contrast. The masks are designed to allow the epoxy shells of the LEDs to protrude past the scoreboard face, maximizing viewing angle while providing impact absorbing protection from contact with stray balls and other flying objects. The LEDs may be dimmed to reduce glare under changing lighting conditions. They are rated for 100,000 hours of use.

Display Features:

- 4-Digit Period Clock, Red, 12 inches tall, shows Time in MM:SS up to 99:59, counts up or down, can show Tenths of Seconds during the final minute of a down-counting Period, can show HH:MM in Time of Day Mode, can show a Segment Clock in Practice Segment Timer Mode
- 2.1-Digit Scores (one set for Guest, one set for Home), Amber, 12 inches tall, to 199, may be used to show team cumulative Scores in Wresting
- 1-Digit Period, Green, 9 inches tall, to 4
- 1.1-Digit Team Fouls (one set for Guest, one set for Home), Amber, 9 inches tall, to 19, may be used to show cumulative Games Won in Volleyball or individual player Points in Wrestling
- 1-Digit Time Outs Left (one for Guest, one for Home), Red, 9 inches, to 9
- 2-Digit Player Number, Green, 9 inches tall, to 99, may be used to show the current Game Number is Volleyball or Match Number in Wrestling
- 1-Digit Player Foul, Green, 9 inches tall, to 9
- "B" Indicators for Bonus/Double Bonus (one set for Guest, one set for Home), Green, 3 inches tall
- Arrow Indicators for Next Possession (one for Guest, one for Home), Red, 3 inches tall
- Optional Electronic Team Names (one ETN display for Guest, one ETN display for Home), Amber, 9x56 pixels, 5-inch x 32-inch active display area, capable of showing up to 11 characters

Additional Standard Scoreboard Features:

- All serviceable components accessible from the front of the cabinets
- Internally mounted Horn in each scoreboard cabinet
- Built-in AC power cable, 6 feet long, for each scoreboard cabinet
- Data output port for daisy-chaining additional displays
- Output receptacles to power Visual Horn Indicators
- Eye bolts for lifting and hanging

Control Console:

- The control console features custom software running on an internal microprocessor, a 32-character LCD display, a 37-button sealed membrane keypad, and a 6-ft. power cord. The console enclosure consists of an ABS plastic base and top with a metal back plate.
- Four data output ports can each directly drive a scoreboard display through a single cable run and indirectly drive up to ten displays in perfect synchronization via daisy chaining. The number of synchronized displays is practically limitless when using the optional ScoreLink RF communications system.
- The software includes support for Electronic Team Names, Practice Segment Timer Mode, Time of Day Clock Mode, 50 levels of brightness, and other features.

Optional Equipment and Features:

- Data cable for hard-wired installations
- ScoreLink RF communications system for wireless data transmission
- Hard carrying case for control console and accessories
- Wired or wireless hand-held controllers to start and stop the Period Clock
- Non-illuminated, illuminated, and fully electronic ID panels, message centers, and video displays
- Stadium Sound systems
- Backboard-mounted LED light bar kits to serve as visual Horn indicators

Power Requirements:

- Without ETNs, the LX2665-4 scoreboard display requires a total of 6.8 amps, 120 VAC, 60 Hz. Each scoreboard face requires one circuit providing 1.7 amps, 120 VAC, 60 Hz.
- LX2665-4-ETN requires a total of 9.6 amps, 120 VAC, 60 Hz. Each scoreboard face requires one circuit providing 2.4 amps, 120 VAC, 60 Hz.
- Power enters each scoreboard cabinet via an attached 6-foot long cord designed to plug into a standard (NEMA 5-15R) power receptacle.
- The control console requires one circuit providing 0.5 amps, 120 VAC, 60 Hz via standard (NEMA 5-15R) power receptacles.
- Electro-Mech recommends installing a dedicated breaker to control power to the scoreboard display.
- All power receptacles must be properly grounded.

Mounting Requirements:

- In its standard configuration, this scoreboard display is designed to be suspended by cables or chains.
- Electro-Mech recommends using an electric or mechanical hoist system allowing the scoreboard assembly to be raised or lowered for maintenance.

Warranty Information:

- The standard limited warranty covers factory labor on parts returned to Electro-Mech within five years of the scoreboard's date of invoice.
- The complete standard warranty statement is included near the end of this document.
- Additional support plans are available.

PLANNING YOUR SCOREBOARD INSTALLATION

A good plan is important to the success of any project, and installing a scoreboard is no exception. An important first step in planning for your scoreboard is determining its optimal location. Key factors here are visibility and accessibility.

By "accessibility" we mean the ease with which you can get people, equipment, cabling, etc. to a scoreboard display during installation, as well as ease-of-access for future service. For center-hung scoreboards, the best solution usually involves a hoist system that raises and lowers the entire scoreboard assembly. Speak with your local sign company or scoreboard sales rep for recommendations.

By "visibility" we mean the ease with which spectators, participants, and the scoreboard operator can see the display. Because every sports facility is unique, there is no one-size-fits-all way to describe the perfect scoreboard location. Obviously, a "center-hung" scoreboard such as this one should be centered over the playing area. The height is the main variable. We recommend at least 25 feet of clearance between the playing surface and the bottom of the scoreboard assembly. Otherwise, the scoreboard could interfere with gameplay – especially where volleyball is played.

Unless you've selected a very small scoreboard for a very large facility, viewing distance is not usually an issue. The rule of thumb in the sign industry is that, for lighted characters, every inch of height provides 50 feet of viewing distance. For comfort, and because you also need to read the captions on a scoreboard, we prefer to recommend 25 feet of viewing distance per inch of digit height. Model LX2665-4 uses 12- and 9-inch tall digits, meaning it can easily be seen from 225 feet. If your spectators need to be several hundred feet or more from the scoreboard, your facility may require a larger display.

For some indoor facilities, it is important to make sure people cannot – accidentally or intentionally – interfere with the scoreboard or cables connected to it. This is rarely a problem for center-hung scoreboards, although some facilities may include overhead walkways that could bring people within reach. Such proximity can make it tempting for fans to reach out and touch the scoreboard, snag a cable, drop a soda on it, or otherwise make a nuisance of themselves. One solution would be to install a shield above any scoreboard in this position.

If you are planning for the construction or renovation of a new facility, then you will likely have more options for locating your scoreboard. In addition, you may be able choose helpful positions for electrical outlets, plan for conduits, and control other details that will make installation, operation, and service easier. Your scoreboard sales rep should be able to answer questions and offer advice that will help you with these plans.

If you are adding this scoreboard to an existing facility, your options may be more limited. In some cases, we can modify the scoreboard to meet special needs. An example of this would be accommodating power entry through the back of the cabinet

rather than via the standard power cable on top. These sorts of details must be worked out prior to the release of a scoreboard order. Your sales rep can guide you through the process.

The sections that follow in this document primarily discuss the details of the mechanical and electrical installation of a single center-hung assembly. If your project includes multiple scoreboards or other electronic displays, please check with your scoreboard sales rep to make sure you have any project-level documentation you may need.

Before You Spend Your Time and Money...

Please keep in mind that the dimensions and other details referenced throughout this document are specific to the standard configuration of this particular scoreboard model. Before purchasing materials, running cabling, etc. you should verify with the factory that you have the right documentation for your unique project.

It is possible that a government agency, such as your local city council, will require a building permit or other documentation and approval forms related to the installation and operation of your scoreboard. In some cases the installation plan may require a stamp from a locally licensed Professional Engineer (P.E.).

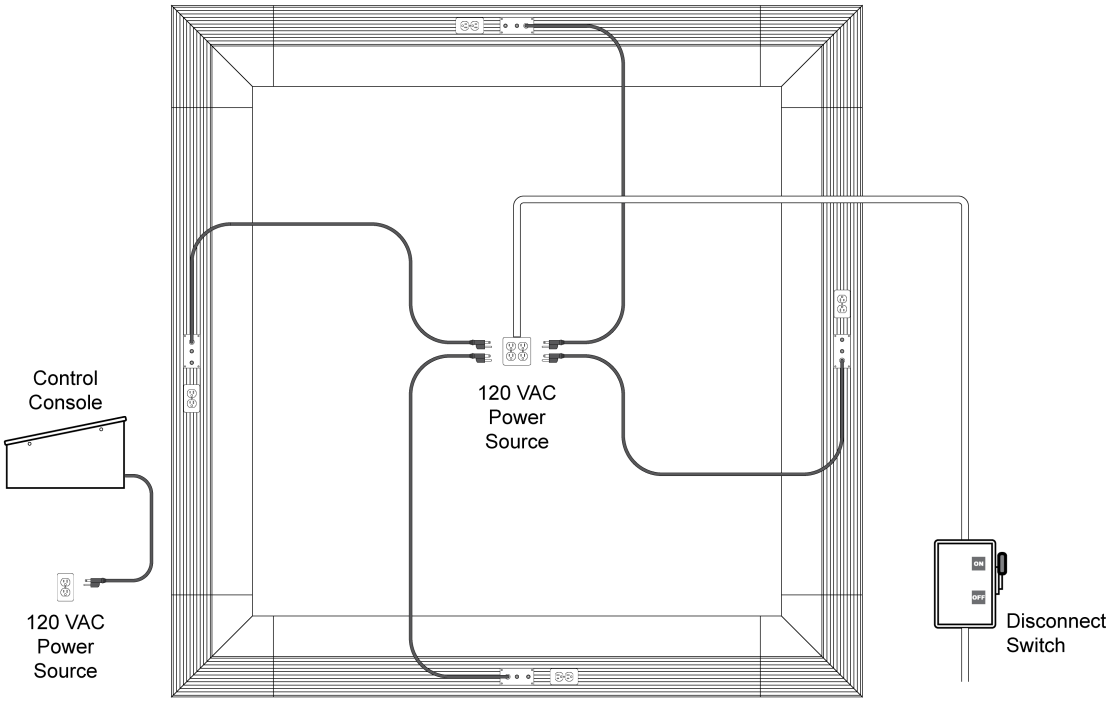
ELECTRICAL INSTALLATION

This section of the manual provides information that is important for locating power receptacles, running cable, planning for conduit, and other steps needed in preparation for bringing power and data to the scoreboard. The final hookups for power and data will happen after the mechanical installation. But it is wise to plan for key pieces of the electrical installation prior to physically mounting the scoreboard.

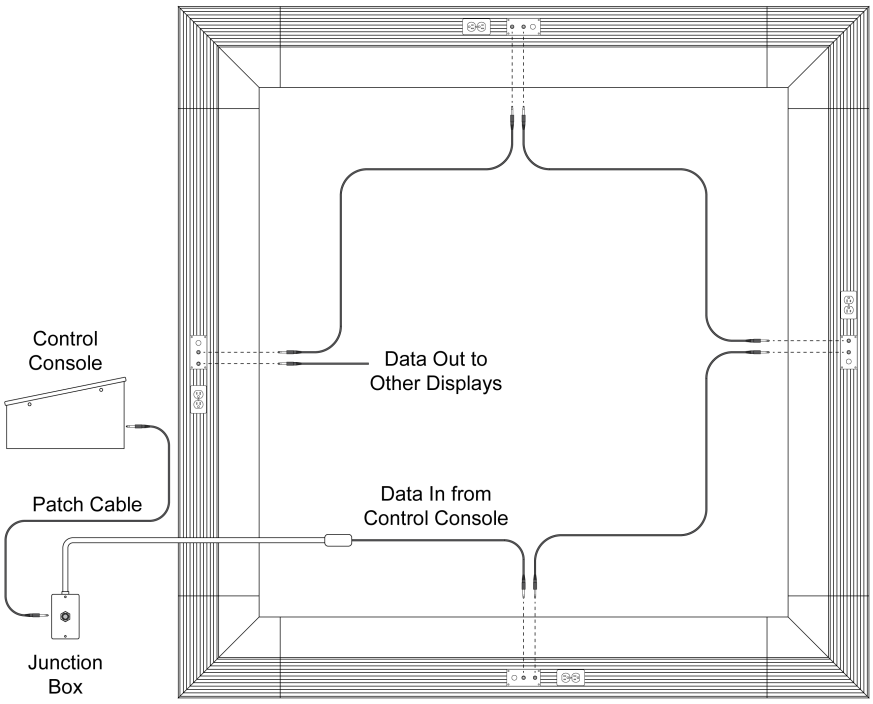
If your scoreboard package includes special accessories such as electronic message centers or video displays, there may be additional cabling and conduit needed to support this equipment. Please consult the documentation provided with these items.

The standard configuration of this scoreboard includes a power cable attached to the top of each scoreboard cabinet. Input and output ports for data are located here as well. At the factory, it is possible to relocate these connection points to accommodate special needs. Let your scoreboard sales rep know about any custom requirements BEFORE we begin building your cabinet.

Overview of Power Connections



Overview of Data Connections



In the preceding illustrations, it is assumed that all four faces of the scoreboard will be synchronized to the same control console (using data cable) and powered via the same electrical circuit. It is possible to treat each scoreboard cabinet independently. If your facility requires separate management of the scoreboard faces, please discuss the requirements with your scoreboard sales rep.

Additional Materials and Tools

The illustrations on the previous pages show where power is needed and how data cables can be routed. Data cable is not included as a standard part of the scoreboard package, although Electro-Mech typically is the source for it. Alternatively, Electro-Mech can provide a ScoreLink wireless communication system to replace the data cable. Other materials shown (or implied) in the illustration that are not included in the standard scoreboard package:

- Power receptacles (at the scoreboard display and at the point of operation)
- A disconnect switch (to turn the scoreboard display on and off)
- Cable and conduit to supply power to the receptacles
- Conduit for the data cable (if data cable is used)
- Wire splicing kits for use with 22 AWG wire (if data cable is used)

This document assumes the installer has access to tools and skills for...

- Working with conduit and fittings
- Routing cables
- Crimping terminals, splicing, soldering, and other basic wire management
- Minor carpentry work
- Common tools such as Phillips and flat head screwdrivers, a knife, etc.

Electro-Mech recommends you find a reputable sign installer or electrician with the tools and experience to handle the type of work mentioned above. If you are unfamiliar with sign installers in your area, contact your scoreboard sales rep for recommendations.

Power Receptacles and Disconnect Switch

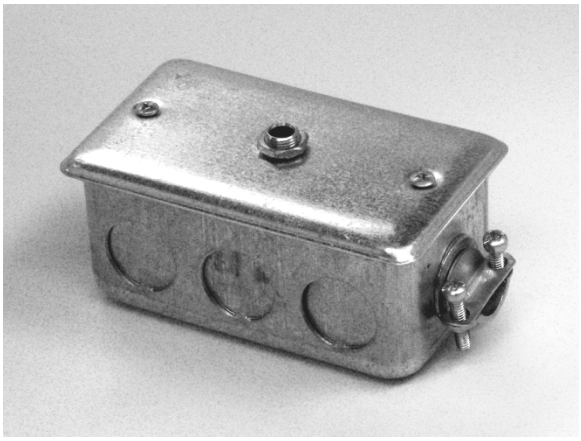
Each scoreboard cabinet is designed to be plugged into a US standard (NEMA 5-15R) 120 VAC receptacle. Because center-hung scoreboards are typically installed on hoist systems, the installer usually runs power extension cables from the scoreboards to the receptacles. The extensions must provide sufficient slack to allow for lower the scoreboard assembly. We recommend providing a disconnect switch to kill power to the receptacles when the scoreboard is not in use. The control console also requires a power receptacle. This receptacle does not need to be attached to a disconnect switch, since the consoles can easily be unplugged and are typically stored between games. A control console used with an external ScoreLink transmitter will need an extra receptacle for the transmitter's power supply.

Model LX2665-4 draws a maximum of 8 amps (2 amps per scoreboard face) when the package includes Electronic Team Names. Without ETNs, the maximum current is 4.8 amps (1.7 amps per scoreboard face).

Junction Boxes and Data Cable

If your scoreboard package includes the ScoreLink wireless communication system, your work is done here. Skip to the next section.

The following material assumes the use of a single run of cable to send data to all four faces of a center-hung scoreboard. It is possible to treat each face independently, but this material sticks to the basics. Let your scoreboard sales rep know if you have special requirements.



Your hard-wired scoreboard package includes a junction box, which you should permanently mount to provide a stable point of termination for the data cable. The idea is to connect the control console to this junction box via a ten-foot patch cable. So the junction box will need to be mounted within ten feet of the position where your scoreboard operator will sit. In many gyms the junction box is concealed inside a larger floor box. The box can be flush mounted on a wall, externally mounted on bleachers, or positioned anywhere else that is convenient. Choose a location that is protected so that the junction box and cables are not likely to be stepped on, tripped over, or have liquid (or anything else) spilled on them.

It is also important to label your junction box. The connectors used for scoreboard data look very much like the type used in some audio systems. Plugging audio devices into a scoreboard data line can often damage the scoreboard.

The junction box ships with a length of cable soldered to the stereo socket and tucked inside the box. There should be no need to solder cable to this socket during the installation. Instead, splice the wires from the cable to the pigtail inside the junction box, matching colors. The wires in the pigtail are 22 AWG, and the cable should use the same size conductors. The installer must provide wire nuts, crimp splices, or other means to connect the wires.

The splice point should stay inside the junction box. That is, you want to feed the long run of cable into the box rather than pulling the pigtail out. Electro-Mech provides a strain relief on one side of the junction box to secure the cable. You may choose to connect conduit directly to the junction

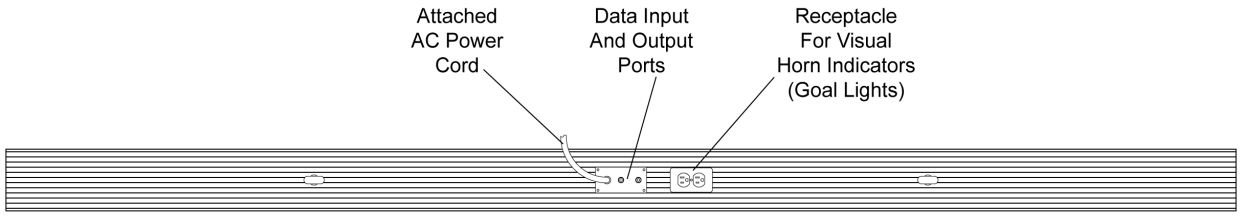
box, in which case the strain relief will not be needed. The junction box is designed to accept 3/4-inch conduit fittings.

We recommend running data cable in conduit from the junction box to the scoreboard ─ especially where the cable would otherwise be exposed. You should never run data cable in the same conduit as power cable. Having more than one run of scoreboard data cable in a single conduit is perfectly fine.

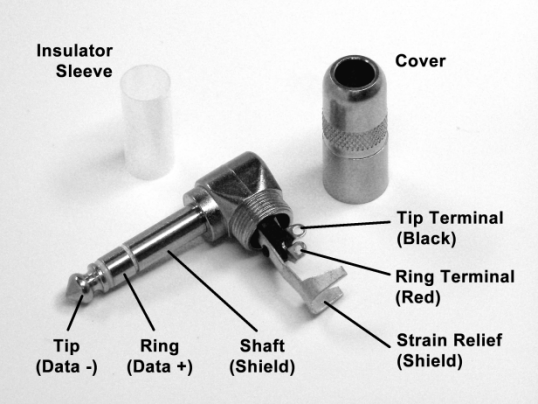
One more warning about data cable: Never split or branch the cable. The current loop signal we use to transmit data to the scoreboard will behave unpredictably if it is divided between two destinations. There are other options for getting synchronized data to two locations, including daisy chaining ─ which will be discussed below. If your facility calls for a more complicated cabling plan, it is best to work out the details with your scoreboard sales rep prior to installation.

Stereo Plug

At the scoreboard end, data enters the cabinet through a port located along the top. In the case of center-hung scoreboards, you may pick any of the four faces to serve as the initial entry point for data. Then use the patch cables to route data out of the first cabinet and into the second, out of the second and into the third, etc. The illustration below is a view of the top of a single scoreboard face showing the standard location of the ports.



There are two common methods for bringing the last few feet of data cable to the scoreboard assembly. One method involves installing a junction box above the assembly. From here you can run a patch cable to the first scoreboard display's data input port. The standard scoreboard package does not include extra junction boxes and patch cables for this type of cable routing. However, the materials are readily available from Electro-Mech. For center-hung scoreboards, this method allows you to use the patch cable to provide the slack required to lower the sign for service. Or the junction box can be positioned (with slack on the other side) to be lowered and raised along with the scoreboard assembly.



The other method requires the right-angle stereo plug assembly, which Electro-Mech provides with all hard-wired indoor scoreboard packages. The assembly consists of the main plug body, an insulating sleeve, and a cover. For center-hung scoreboards, this end of the data cable must include additional slack if the scoreboard assembly is to be lowered and raised with a hoist system for ease of service.

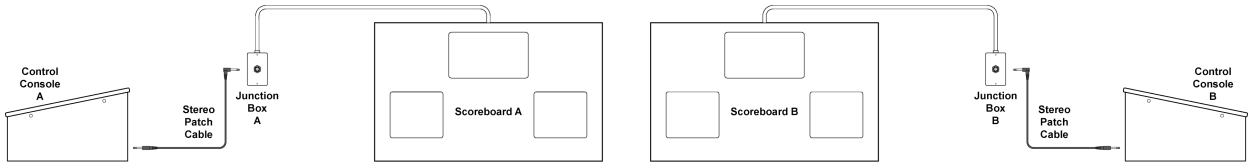
Connecting data cable to the stereo plug requires soldering to two terminals. Slide the cover and sleeve over the data cable before soldering. The terminal nearer the center of the plug body connects to the tip of the socket. The black wire from the data cable should be soldered to this terminal. The terminal that extends further from the center of the plug body connects to the ring of the plug. Solder the red wire here. The strain relief tabs are connected to the shaft of the plug. When you bend the tabs around the data cable, they should be in contact with the shielding or the bare drain wire.

Slide the insulator sleeve over the terminals and screw the cover in place to complete the assembly. Now you will be ready to plug the data cable into the port at the top of the scoreboard display when it is installed.

Managing Multiple Scoreboard Displays

The preceding material discussed how to run data cable for a single scoreboard display. When multiple displays are installed in the same facility, the options can become confusing. Please discuss cabling plans with your Electro-Mech sales rep to make certain you receive all the materials you need to meet your expectations.

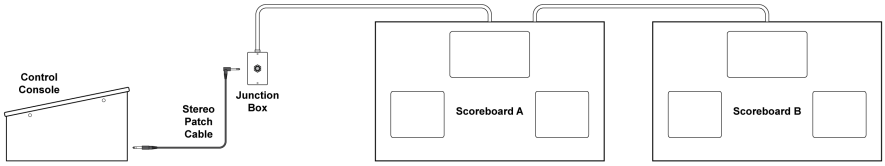
The simplest (and rarest) arrangement occurs when multiple scoreboards are completely unrelated to each other. In this case, each display would have its own control console (or consoles, in the case of scoreboards with stat panels) and its own data cable.



Two Scoreboards Always Run Separately

Daisy-Chaining

Another simple case is when multiple signs are always run in synchronization from a single control console. There are two ways to run cable for this setup. By running a secondary data cable from the data output port of one cabinet to the data input port of the second cabinet, you will link the two displays permanently.



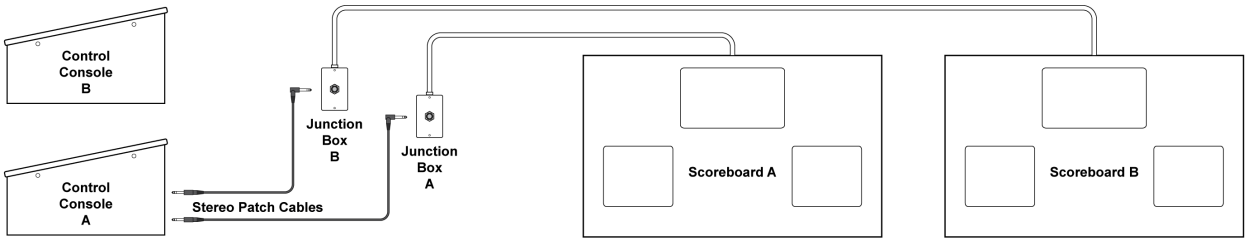
Two Scoreboards Always Run Together

This daisy-chaining technique can be extended, with a third display connected to the second, a fourth display connected to the third, on so on. We recommend daisy-chaining no more than ten displays from a single data source. Each scoreboard display in the chain adds a few milliseconds of propagation delay. After the tenth display, this delay would be noticeable when the Clock is counting Tenths of Seconds.

The second technique for running displays in synch is to use two runs of cable, each patched to a separate output of the same control console. We recommend this technique, when conditions in the gym allow it, because it offers the option of running the scoreboards separately in the future. This is discussed further in the next section.

Sometimes Separate, Sometimes Together

As mentioned previously, the current loop signal that sends data from a control console to a scoreboard display cannot be split. That is, you can't take the signal from one data port on the back of the control console to two or more displays. Instead, you should plan for a separate cable run for each display (or for each chain of displays, if you plan to daisy-chain). Each control console includes four output ports, so it is possible to directly drive four hardwired scoreboard displays (or chains) from one console.



Two Scoreboards Run Separately or Synched

In the illustration above, two signs are linked through Control Console "A" because both patch cables are plugged into data ports on the back of the console. If activities in the gym require two independent scoreboard displays, the patch cable connected to the "B" junction box can be moved to the "B" console.

In facilities with multiple scoreboard displays, including shot clocks and locker room clocks, many combinations of these techniques are possible. You may use one port on the back of your control console to drive a main scoreboard display and (via daisy-chaining) a set of shot clocks, another port to drive a second scoreboard display, and a third port to drive several daisy-chained locker room clocks. As always, we recommend discussing these options with your scoreboard sales representative prior to placing your order.

MECHANICAL INSTALLATION

This section of the manual describes assembling and installing the four-sided scoreboard display, in its standard configuration. If your scoreboard project includes customizations with additional ID panels or requires other special mounting considerations, please contact the factory to request details specific to your project. If you have unique requirements and would like to change the position or size of our mounting hardware to accommodate them, we can probably help you out. But we need to find out BEFORE we start building the cabinets. Let your scoreboard sales rep know about any special needs as early in the process as possible.

Additional Materials and Tools

Typically a center-hung scoreboard assembly is installed on a hoist system, which is attached to a support beam in the building's ceiling. The assembly may be connected to the hoist via chains, cables, rods, etc. Rather than attempting to describe all possible options for a support mechanism, this document assumes the installer will provide a method for hanging the scoreboard assembly that can handle the weight of all components and will make servicing convenient.

In addition to the support system, the installer will need a 3/4-inch SAE wrench or socket set to tighten the assembly bolts and will need people to provide support for the cabinets and corners as the pieces are aligned. This document also assumes the installer has access to tools and skills for working at the heights required for installing the support system, lifting the scoreboard assembly, and making final connections.

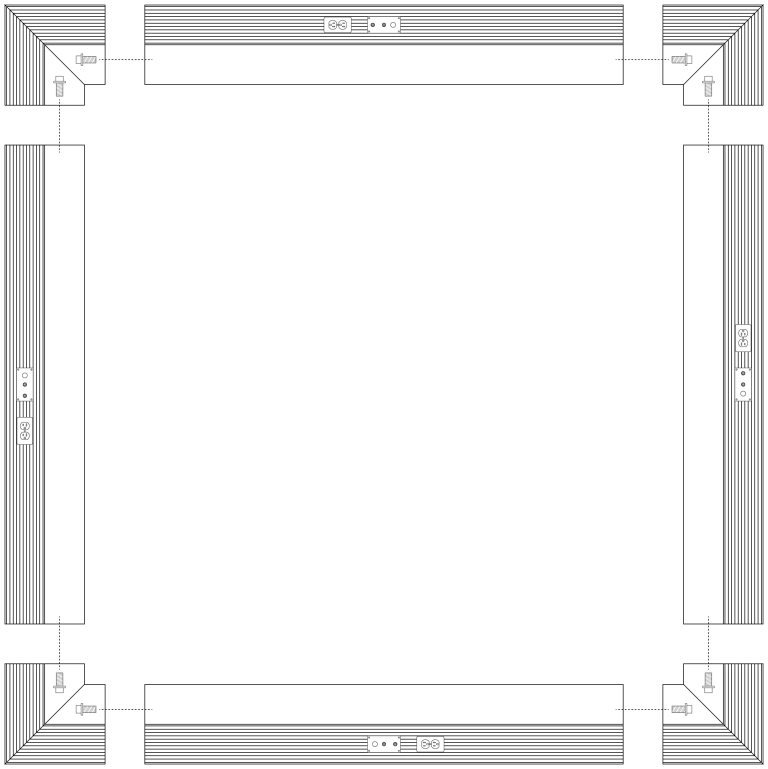
Electro-Mech recommends you find a reputable sign installer with the equipment and experience to handle the work mentioned above. If you are unfamiliar with sign installers in your area, contact your scoreboard sales rep for recommendations.

Assembling the Cabinets and Corners

The main assembly consists of four scoreboard cabinets and four corner pieces. In theory, the four scoreboard cabinets are interchangeable and the four corners are interchangeable. In practice, we make slight adjustments to each piece at the factory to ensure the best fit. The product is fully assembled for testing before shipment. Then we mark the position of each piece before taking it all apart to ship. We recommend following the markings on the cabinets to make sure all the pieces fit back together as they did at the factory.

The assembly is held together by 3/8x1-inch bolts. Each scoreboard cabinet has four pieces of tapped hardware built into each side of its frame. The bolts pass through the cabinet frames and thread into the scoreboard sides. You will find access panels along the inside/back of each corner pieces. Remove the access panels to install the bolts. There are a total of 32 bolts (and 32 washers) provided to hold the complete assembly together. Replace the access panels with all scoreboards and corners are connected.

Bolting Corners to Scoreboards



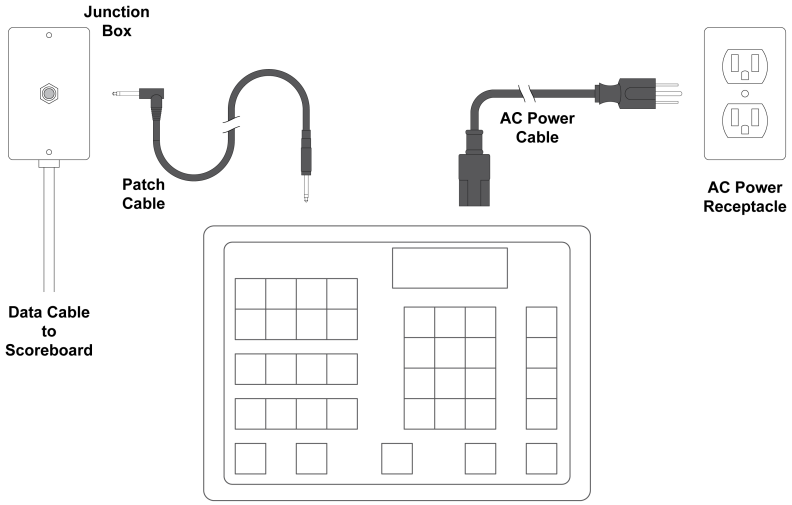
This assembly work should be completed on the floor with a team to support and align the pieces while someone else threads and tightens the bolts. Do not attempt to hang individual sections and complete the assembly from above the floor. This will create stresses that the cabinetry was not designed to handle.

Finalizing

With the completed four-faced assembly resting on the floor, you may now attach cables, chains, etc. from the support mechanism to the eye bolts in the tops of the scoreboard faces. If you've designed the power and data cabling to reach the scoreboard cabinets while they are still on the floor, you should make those connections now and test the system before raising it. Otherwise, you should be ready to raise the assembly into its final position. Make the connections described in the "Electrical Installation" section of this document. Notes on testing and operation appear on the next few pages.

Connections at the Control Console

The standard control console packaged with this scoreboard system is powered through a typical three-prong AC power cord. At the point of operation, the console requires a grounded power receptacle.



If your scoreboard package includes a ScoreLink RF Communications system, the power receptacle may be the only consideration on the control console side of the installation process. For details about ScoreLink, consult the documentation that ships with the product. Otherwise, use the stereo patch cable to plug the console into the junction box.

TESTING, OPERATION, AND ONGOING CARE

After all power, data, and other connections are in place, it is time to test the scoreboard system. Apply power to the scoreboard display first. Although there is no harm in powering the control console first, powering the sign first will cause the numeric displays to remain blank. Any LEDs (other than Electronic Team Names, which will initially power up with GUEST and HOME showing) that are illuminated on the sign in this condition would indicate a problem at the scoreboard display.

Next, power up the control console and, for wired setups, connect one of its data output ports to the junction box using the stereo patch cable. The scoreboard display should begin showing data within a few seconds. Make sure buttons on the control console produce responses at the scoreboard display. You may need to consult the documentation that ships with the control console to test certain features.

For scoreboards with Clock features, set the Clock to count down the final 30 seconds of a Period. If your scoreboard includes a Horn, it will (by default) sound when the Clock reaches 0.

Scheduled Testing and Maintenance

The scoreboard system does not require scheduled maintenance procedures. However, it is important to check for problems prior to a game. We recommend running through the tests described above between two and four weeks prior to the start of a season (or anytime you plan to use the scoreboard after a gap of more than a month). During the season, test out the scoreboard the day before each game.

After the Game, and After the Season

Whenever you are not using your scoreboard system, use the disconnect switch to cut power to the sign. You should unplug the control console from its power source and from the data cable as well. It is not necessary to take steps beyond this, even if the scoreboard will not be used for several months.

MAINTENANCE

We hope your scoreboard system provides years of trouble free service. In the event of a problem, the material that follows will provide some information about contacting technical support as well as some details about the parts inside your scoreboard display.

Contacting Technical Support

Our support staff is available via phone or e-mail Monday through Friday 8:00 through 5:00 Eastern. Our web address and phone number is printed at the bottom of this page. When contacting Electro-Mech for support, it helps to have the scoreboard model (**LX2665-4**) handy as well as the version of the software running on your control console. The console software version flashes briefly (for about 3 seconds) on the console's LCD display when you first apply power to it.

If you are reading this manual in search of help with a different scoreboard model, for outdoor scoreboards, you can find the model number printed on a metal plate attached to the back of the scoreboard cabinet near where the power enters. For indoor scoreboards, the model number is usually printed on a label at the top center of the cabinet near the attachment point for the power cable. If your console cannot display its software version, you can find useful information printed on the bottom of the console box.

Besides model numbers and software versions, the most important information to have is an exact description of what parts of your scoreboard system are working and what parts are not working. The best person to make contact is someone who has seen the problem first hand. Better yet, give us a call when you are there at the scoreboard display and can walk through a few simple tests with one or our technicians.

Scoreboard problems are rarely so complicated that diagnosing them requires skills beyond using a screwdriver and a ladder. Similarly, replacing parts is straightforward process that does not require complex tools or special knowledge.

Parts Exchange

If, after working with our support staff, you discover that a part needs to be serviced or replaced, the next step is to send the part to Electro-Mech for repair. During the warranty period, we repair parts and return them via UPS ground service at no charge. We can ship parts via overnight service for an additional charge. For work that falls outside of the warranty terms, we can, upon request, provide an estimate of repair costs on returned parts before performing the work. The typical turnaround on repair work is less than three business days

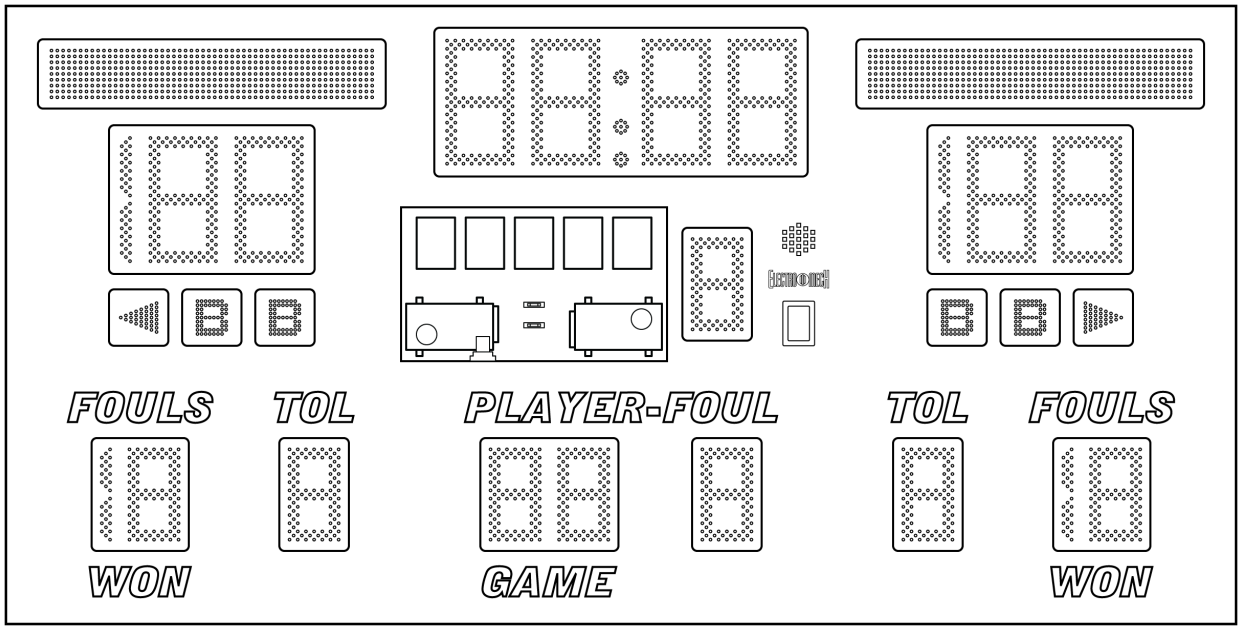
Electro-Mech maintains a supply of common parts for immediate shipment. Some customers choose to purchase new parts for immediate use and will later send old parts back to us to be repaired and returned as "backup" stock. In some cases our support plans include the option for shipping replacement parts to the customer once our service staff has identified a problem. The customer will then return the damaged part after receiving the replacement. Electro-Mech requires a valid credit card number before initiating a shipment of this type. We do not apply charges to the card unless the customer does not return parts within ten days or if the returned parts require work outside of our warranty terms.

Our shipping address:

Electro-Mech Scoreboard Co.
72 Industrial Blvd.
Wrightsville, GA 31096

Location of Serviceable Parts

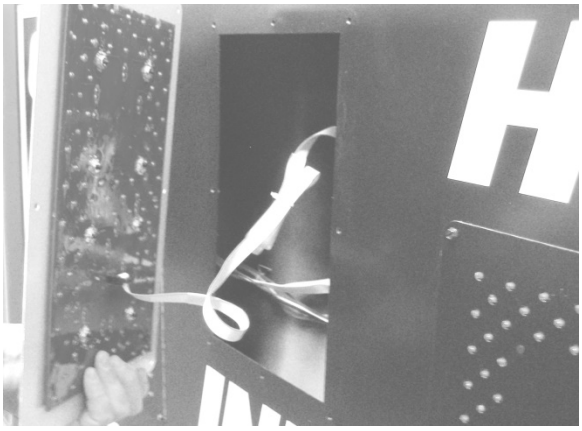
The power and driver components for each scoreboard face are located behind the Clock digit assembly in the middle of the scoreboard cabinet. The ScoreLink receiver (if purchased) is located to the right of the Period digit. The Horn is above it and is accessed by removing that digit.



LED Displays

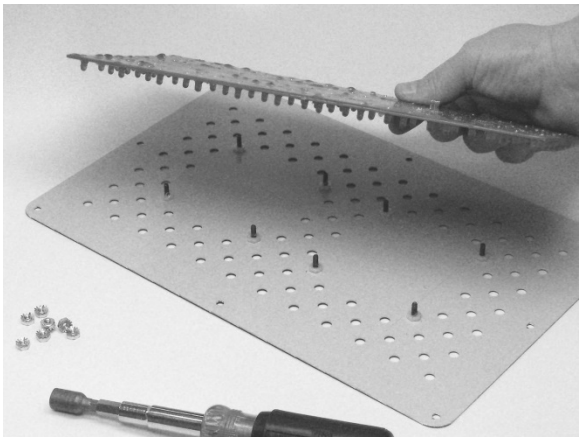
The LED displays (but not individual LEDs) are field replaceable parts. Each LED is soldered to a printed circuit board (PCB) which is, in turn, attached to a protective metal mask. The mask assembly is attached to the scoreboard face with machine screws. You will need a 1/4-inch nut driver to remove these screws.

Step-By-Step:



- Disconnect power to the scoreboard cabinet before performing any service work.
- Remove the machine screws from the metal mask, leaving for last one of the screws along the top of the mask.
- Support the mask with one hand as you remove the final screw.
- Rotate the mask so that you can see the PCB (or PCBs) behind it and the cable connections along the back side.
- Unplug the ribbon cables from the PCBs.
- Set the mask aside and save the screws for later.

If your purpose in removing the mask was to provide access to the components behind it, you may skip the next part about removing and replacing the LED printed circuit board.

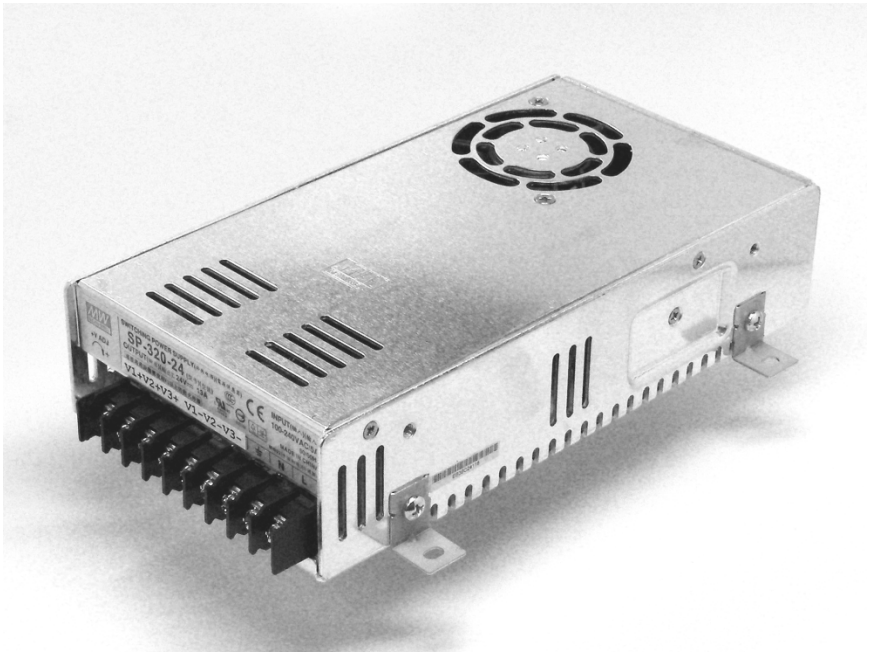


The LED display circuit board is held to the mask by several nuts, which you can remove using a 3/8-inch nut driver. Some single digit PCBs fit into their masks in two orientations, 180 degrees apart. Unless the digit shares the mask with another PCB, either orientation is fine within the mask. But you have to be careful to keep the whole assembly right side up with you return it to the scoreboard cabinet.

Power Supplies and Fuses

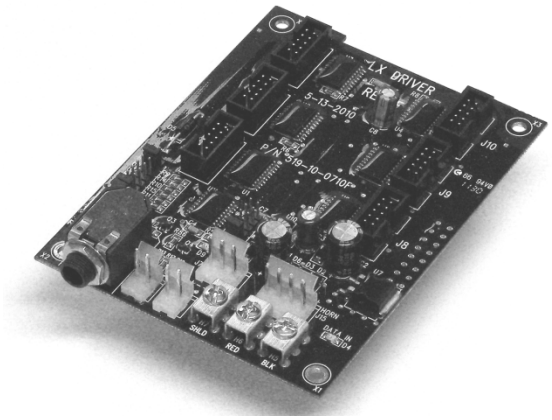
AC power enters each scoreboard section through the power cord attached to the top of the cabinet. Within each scoreboard cabinet, power is routed from the plug to the Mean Well SP-320-24 power supply module. AC line passes through a 5 amp fuse on the way to the power module. If the scoreboard includes Electronic Team Names, a second power supply module, Mean Well model SP-320-5, is added to the central chassis, and the rating of the fuse there changes from 5 amps to 10 amps. An additional 3 amp fuse protects the circuit providing AC power to the receptacles for Visual Horn Indicators mounted in the top of the cabinet frame. All fuses in the scoreboard display are AG style and should only be replaced with fuses of this same style and rating.

Power connections are made along a row of screw terminals on one side of each power supply module. The Mean Well SP-320-24 power module should be set to18.9 VDC output level. If an SP-320-5 module is present to power the ETN displays, it should provide 5 VDC output. If you replace any of the power supply modules, check the output voltage to make certain it is set correctly.



LX Drivers

The LX Driver circuit boards do the work of interpreting data sent from the control console to scoreboard display. Using that information, the drivers decide which of the LEDs should be illuminated and which should not. Each LX Driver in this system decodes data representing a specific set of digits or other indicators used in the scoreboard. The drivers send signals to the LED display circuit boards via ribbon cables.



Data flows from one LX driver to the next in order, starting at the lower chassis (if there is more than one), and then left to right within each chassis. In the table(s) below, columns represent the LX Driver numbers, listed in order based on the data path. The table rows give the names and purposes of the various connectors on the LX Drivers.

Connector	LX17	LX4	LX24	LX8
J2 (Data In)	From ScoreLink			
J3 (Data Out)	To LX4	To LX24	To LX8	To Data Output Port or to ETN1 Driver
J4 (Word 1 Low)	Period Clock Minutes Units	Right Score Units	Right Team Fouls Units, Tens	
J5 (Word 1 High)	Period Clock Minutes Tens	Right Score Tens, Hundreds		
J6 (Word 2 Low)	Period Clock Seconds Units	Left Score Units	Left Team Fouls Units, Tens	Player Number Units
J7 (DC Power In)	18.9 VDC	18.9 VCD	18.9 VDC	18.9 VDC
J8 (Word 3)	Period	Right Bonus 1, Bonus 2, Poss	Right TOL	Player Foul Units
J9 (Word 2 High)	Period Clock Seconds Tens	Left Score Tens, Hundreds		Player Number Tens
J10 (Word 4)	Period Clock Colon/Decimal	Left Bonus 1, Bonus 2, Poss	Left TOL	
J15 (Horn)	Horn			
H5/BLK (Data In)	From Data Input Port	From LX17	From LX4	From LX24
H6/RED (Data In)	From Data Input Port	From LX17	From LX4	From LX24
H7/SHLD (Data In)	From Data Input Port	From LX17	From LX4	From LX24
Jumper Pins	**LX17**	**LX4**	**LX24**	**LX8**
H13 (J4/J5 Blanking)		X		
H16 (J4/J5 Blanking)	X		X	
H14 (J6/J9 Blanking)			X	
H17 (J6/J9 Blanking)		X		
H15 (Blank/Stat)				
H18 (Lamp/Stat)				
H3 (Horn2 No Dim)	X	X	X	X
H11 (Spare Shunt)	X	X	X	X
H19 (Not Used)				
H1 (Memory Ret.)				
H2 (Group +1)	X	X	X	
H4 (Bank +2)		X		X
H12 (Bank +1)	X			X

If your scoreboard includes Electronic Team Names, the ETN1 driver will be located in the central chassis to the right of the LX4 driver. The J14 connector supplies ETN data to the team name display on the right side. The J10 connector supplies ETN data to the team name display on the left side.

LIMITED WARRANTY STATEMENT

Electro-Mech Scoreboard Company
Standard Equipment Warranty and Limitation of Liability
for Scoreboards and Accessories Sold in the United States

Warranty Coverage

Electro-Mech warrants to the original end-user that the Equipment will be free from Defects (as defined below) in materials and workmanship for a period of five years from the date of invoice. Electro-Mech's obligation under this warranty is limited to, at Electro-Mech's option, replacing or repairing any Equipment or Part thereof that is found by Electro-Mech not to conform to the Equipment's specifications. Any defective Part must be returned to Electro-Mech for repair or replacement. Equipment determined not to conform to specifications will be repaired or replaced and returned to purchaser with standard ground service transportation charges prepaid. Replacement Parts or Equipment will be new or serviceably used, comparable in function and performance to the original Parts or Equipment, and warranted for the remainder of the warranty period. Purchasing additional Parts or Equipment from Electro-Mech does not extend this warranty period.

Defects shall be defined as follows. With regard to the Equipment (excepting LEDs), a "Defect" refers to a material variance from the design specifications that prohibits the Equipment from operating for its intended use. With respect to LEDs, "Defects" are defined as LEDs that cease to emit light. The limited warranty provided by Electro-Mech does not impose any duty or liability upon Electro-Mech for partial LED degradation.

This limited warranty is not transferable.

Exclusions from Warranty Coverage

The limited warranty provided by Electro-Mech does not impose any liability upon Electro-Mech for:

- Damage caused by the unauthorized adjustment, repair, or service of the Equipment by anyone other than personnel of Electro-Mech or its authorized repair agents.
- Rental fees or other costs associated with lifts, cranes, or other tools and services used to access the Equipment.

- Damage caused by the failure to provide a continuously suitable environment, including, but not limited to (i) neglect or misuse (ii) a failure or surges of electrical power (iii) any cause other than ordinary use.
- Damage caused by vandalism, fire, flood, earthquake, water, wind, lightning, or other natural disaster, or by any other event beyond Electro-Mech's reasonable control.
- Costs associated with replacement of communication methods including but not limited to, wireless systems, copper wire, fiber optic cable, conduit, or trenching for the purpose of overcoming local site interference.
- Any statements regarding products or services made by salesmen, dealers, distributors, or agents, unless such statements are in a written document signed by an officer of Electro-Mech.

Limitation of Liability

In no event shall Electro-Mech be liable for any special, consequential, incidental, or exemplary damages arising out of or in any way connected with the Equipment or otherwise, including but not limited to damages for lost profits, cost of substitute or replacement equipment, down time, lost data, or injury to property, or any damages or sums paid by the purchaser to third parties.