The Leader in Event Critical Timing Electronics

Drag Racing Scoreboards

Owner Manual's

Models 6428D, 6628D, 6410D, 6610D - Rev V

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RACE AMERICA

Timing Systems

LIMITED WARRANTY

To the original purchaser of this RaceAmerica product, RaceAmerica warrants it to be in good working order for a period of ninety (90) days from the date of purchase from RaceAmerica or an authorized RaceAmerica distributor. Should this product malfunction during the warranty period, RaceAmerica will, at its option, repair or replace it at no charge, provided the product has not been subjected to misuse, abuse, or alterations, modifications, and/or repairs not authorized by RaceAmerica.

Any product requiring Limited Warranty service during the warranty period should be returned to RaceAmerica with proof of purchase. If return of merchandise is by mail, the customer agrees to insure the product, prepay shipping charges , and ship the product to RaceAmerica, Inc., 280 Martin Avenue Unit 1, Santa Clara, CA 95050.

ALL EXPRESSED AND IMPLIED WARRANTIES FOR THIS PRODUCT ARE LIMITED IN DURATION TO THE ABOVE NINETY DAY PERIOD.

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PRODUCT OVERVIEW

RaceAmerica Drag Race Scoreboards are a microprocessor controlled system based upon the 7-segment format display digit using the latest technology Ultra-Bright LEDs. The scoreboard uses a RS422 serial link to receive data to be displayed. The serial link is preconfigured for use with RaceAmerica two lane drag timing systems (models 2600/2650 'XL advanced' models 2800/2850/2900 'XL professional' and model 2700 'XL Wireless'). Each scoreboard contains its own CPU chip to analyze the data string received and correctly display the desired race results (e.g. left/right lane, speed, ET).

Race results to be displayed are selected through DIP switches located on the rear panel of the scoreboard or configured remotely with the XLscore Pro software or 2700 XL wireless console.

All Scoreboards can display Dial-Ins, Speed and ET; models 2700, 2800, 2850 and 2900 can also display Reaction Time, Time of Day and a countdown clock for intermission sessions. Multiple race results can be displayed in sequence as a race is run; Dial-Ins, then RT, and lastly speed and ET. A five inch scoreboard can be used as a Dial-In board at the starting line with or without larger scoreboard systems. Brightness control is available with the 2700/2850/2900 systems.

A separate WIN light option is available for each scoreboard system. The WIN light is on a 10ft cable which connects to the scoreboard for power and data. The WIN light will flash for the winning lane. Wireless Win Lights are also available.

Data communication to all models is available via internal wireless data link units (requires timer side wireless transmitter) or hard wired RS422 connections.

Multiple scoreboards can be daisy chained down the track for spectator viewing and controlled from a single wireless transmission.

Scoreboards are available in single or dual line formats in fifteen and twenty-four inch digit heights for viewing up to 1000 ft away. Each product is addressed for its unique properties in this manual.

NOTE: THESE PRODUCTS USE ULTRA-BRIGHT LED TECHNOLOGY. DUE TO THE BRIGHTNESS LEVEL OF THIS DISPLAY, CARE SHOULD BE TAKEN, AS WITH ANY BRIGHT LIGHTING SOURCE,TO AVOID PROLONGED VIEWING AT CLOSE RANGE AND SHORT DISTANCES. AS WITH ANY BRIGHT LIGHTING SOURCE, VISION MAY BE AFFECTED SHORT TERM SIMILAR TO CAMERA FLASHES.

SCOREBOARD SET-UP

Each scoreboard model and race track have unique requirements; see suggestions and instructions with each respective model in this manual. Hard mounting suggestions are provided for each enclosure.

STEP 1 - Mounting

A horizonal and vertical frame structure is required to mount each scoreboard (see figures).

STEP 2 - Configure the scoreboard

The scoreboards ship from the factory with the most likely selections enabled. See DIP switch definitions to change scoreboard positions (pages 8-10).

STEP 3 - Connect the interface

Fifteen and twenty-four inch models must receive RS422 data. Models with a Wireless 'receive' Link mounted internally are configured to receive RS422 data.

A 07-3434 red RS422 cable or timer side wireless link transmitter (for scoreboards with internal wireless) are all that is required to send data to the scoreboards.

Scoreboards without an internal wireless unit use interface cables containing RJ45 modular connectors on both ends of the cable and are connected to the scoreboard using the SERIAL PORT connector on the back of the scoreboard. When inserting this connector, press inward until a

click is heard to lock the cable in place. If the cable remains loose and no click is heard, carefully bend outward the locking tab on the RJ45 connector approximately 45 degrees from the connector body. Re-insert the cable into the serial port until the click is heard and the cable remains locked in place. To remove this cable, pinch the locking tab against the body of the RJ45 connector and pull the connector out.

View the wiring diagrams in this manual to properly connect the scoreboard units, RS422 Communication PODs and wireless networks to the RaceAmerica Drag Timing Systems.

STEP 4 - Connect the power

Power is supplied to each scoreboard unit through the DC POWER INPUT connector located on the rear of the display. Connecting power to the display will set the display into a power-up self-test mode. Once the self-test has completed, the display is ready for use.

POWER-ON SELF-TEST

When the power source is connected, each display unit begins an internal self-test and external visual check of the display elements.

The self-test begins by stepping through each segment of all digits, one segment at a time including the colon, decimal points and connected optional WIN lights. The self-test continues by sequentially illuminating each segment until all segments, colons, and decimal points are on. The self-test continues by drawing a square frame by sliding a small square from left to right, then down and right to left. The square then collapses and the configured position (by DIP switches) and revision level of the firmware code running in the microprocessor is displayed. The display will dim between dimmest and brightest to show the range of control available. When the internal self-test and external visual test is complete, **[rEAdy]** scrolls in from left to right and blanks out. The display is now ready for use..

SCOREBOARD OPERATION

Single line scoreboards can display Speed and ET by toggling between the two; otherwise with ET only, the winning lane ET will flash.

Dual line scoreboards will display RT/ET in the upper display and Dial-in/Speed in the lower display. A WIN light option is available to indicate the winning lane.

DIP switches (7) must be used to select left/right lane display preferences for all systems. See the graphic of DIP switch settings by scoreboard position.

Model 2650 XL Advanced -

Scoreboards operating with the XL Advanced timing system can display Dial-ins, Speed and ET. See DIP switch settings for the desired race results display.

Models 2800/2850 XL Professional -

The XL Professional systems operate with XLscore Pro software. These systems can display Dial-ins, RT, Speed and ET. Additionally, through the XLscore Pro software 'SCOREBD CONTROL' button, the scoreboard can display the time of day (from the PCs clock) or function as a countdown timer. The XLscore Pro software can also remotely reconfigure the display of the scoreboard, over-riding the DIP switch settings.

Model 2700 XL Wireless -

The XL Wireless system can display Dial-ins, RT, Full-track Speed and Full-track ET as well as time of day and function as a count-down timer. The 2700 will display the items selected in the Display menu.

SCOREBOARD CONTROL - XL PRO

RaceAmerica Digital Scoreboards connected to the XL Wireless and XL Professional Timing Systems can be controlled and reconfigured to display specific race information after each race over-riding the DIP switch settings on each scoreboard unit. Clicking on the SCOREBD CONTROL button on the Main Menu displays the Scoreboard Control and Configuration Screen shown in Figure 1. The items in the green areas of the screen are enabled by placing an 'X' in the appropriate box by clicking on the box or text of the feature to be enabled. To disable display of the race results on the scoreboards, remove the 'X' from the square by clicking on the box or the text.

Scoreboards are configured with DIP switches to determine the length of time the race results are displayed before blanking out the display. The XLscore Pro software allows selection of 30 seconds before blanking the display, or the scoreboards can be cleared when new information is sent from the XL Professsional Timing System, generally at the start of the next race or when the **CLEAR ALL SEND NEXT** button is clicked.

The following settings can be enabled:

REACTION TIME - displayed at the beginning of the race when both lanes have started (with XLscore Pro software only on 2700/2800/2850 models).

DIAL-INS/INDEX/BRACKETS - at the start of a race when dial-ins were entered before the start; with XLscore Pro, click **CLEAR ALL/ SEND NEXT** to update the scoreboards. With the XL Advanced, press **# [ENTER]**.

ELAPSED TIME/VEHICLE SPEED - displayed at the end of a race. Depending on the model, either both display (dual line) or they toggle between ET and Speed (single line).

BRIGHTNESS - select one of the five brightness levels. All units are on High after power-on.

Once the desired configuration is selected on-screen, click on the **CONFIG SCOREBD** button to reconfigure the scoreboards. The scoreboards should show '**rEAdy**' and then blank out.

To display the time of day present in the PC, click on the **DISPLAY CLOCK** button and the scoreboards will display the current time of day and function as a time of day clock.

During an intermission in the racing action, there may be times when it is preferred to display a countdown timer. Enter the minutes and seconds of the intermission as MM:SS and click on the DISPLAY TIMER button to display a countdown timer on the scoreboards.

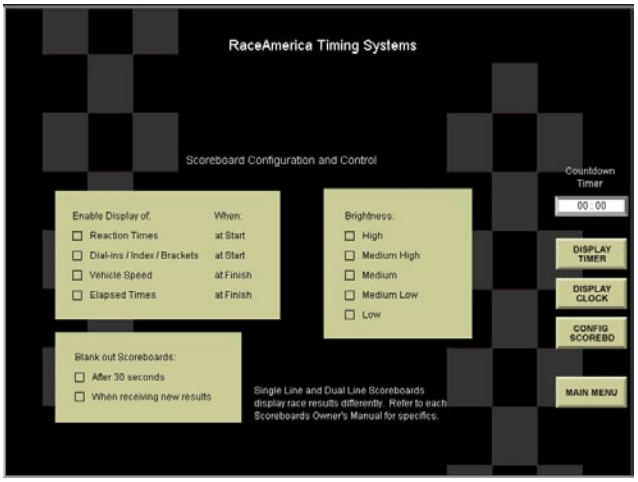


Figure 1 - Scoreboard Control Screen

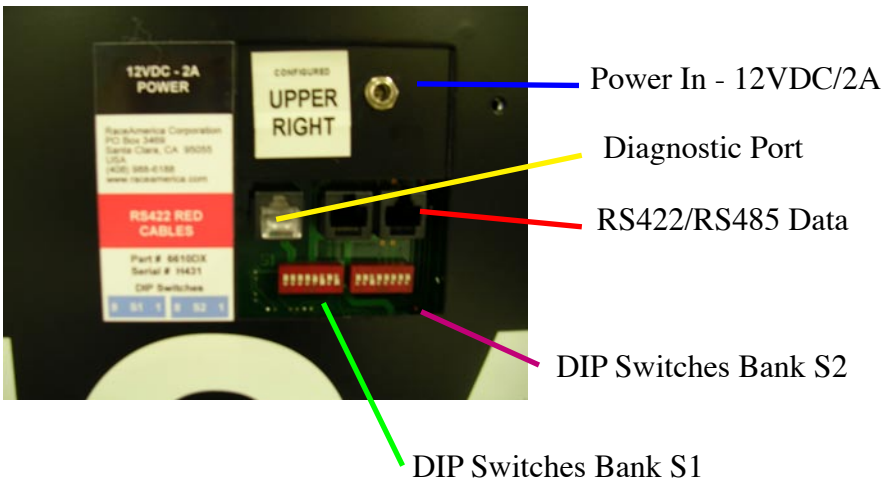


Figure 2 - 15” Scoreboard Cable connections and DIP Switches

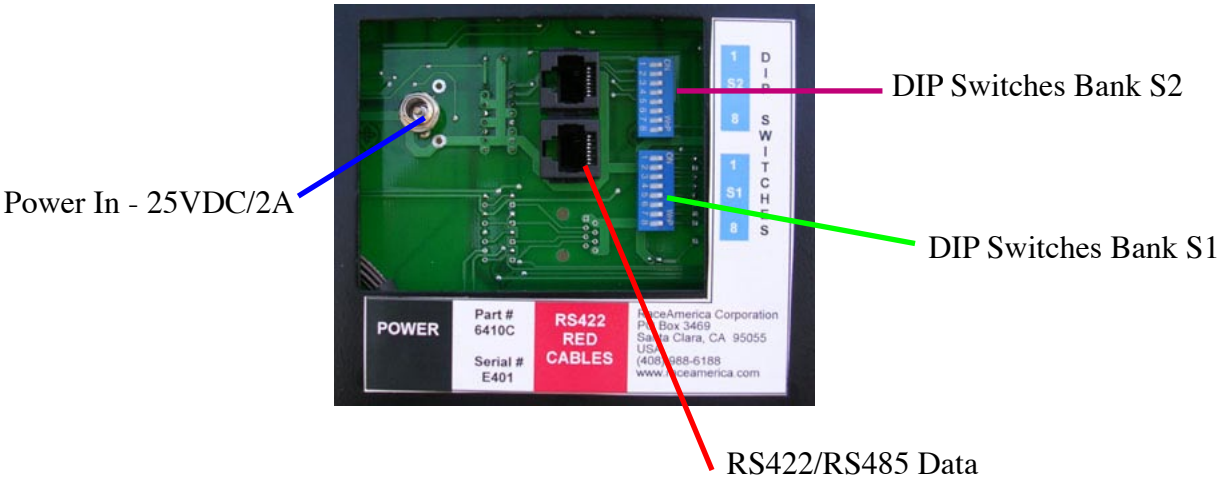


Figure 3 - 24” Scoreboard Cable connections and DIP Switches

DIP SWITCH DEFINITIONS

All scoreboard models have two banks of eight DIP switches (S1 and S2) located on the back of the unit numbered from 1 to 8 and can be switched ON or OFF. The ON position is indicated on the switch itself. Each switch function and setting are discussed below. Cycle power OFF/ON after making any changes.

DIP Switch Bank S1

Scoreboards ship from the factory with the most likely DIP switch settings for the scoreboard model and position. See page 10 for a graphic of the DIP switch bank

Model 6610D and 6410D Dual Line scoreboards Factory Settings:

Upper position

Switch S1	Position
1	OFF
2	OFF
3	ON
4	OFF
5	OFF
6	OFF
7	Rt Lane - OFF Lt Lane - ON
8	OFF

Lower position:

Switch S1	Position
1	OFF
2	OFF
3	OFF
4	OFF
5	OFF
6	OFF
7	Rt Lane - OFF Lt Lane - ON
8	OFF

This configuration will display Dial-In (lower) before the race, Reaction Time (upper) after both vehicles start (2800/2850 Timers), Speed or Dial-In (lower) and ET (upper) after both lanes finish. Data will remain on the scoreboard for 30 seconds or until it is cleared or new data is received.

Model 6628D and 6428D Single Line scoreboards

Switch S1	Position
1	OFF
2	OFF
3	OFF
4	OFF
5	OFF
6	ON
7	Rt Lane - OFF Lt Lane - ON
8	OFF

This configuration will display Dial-In before the race, Reaction Time after both vehicles start (2700/2800/2850 Timers), Speed and ET toggling after both lanes finish. Data will remain on the scoreboard for 30 seconds or until it is cleared or new data is received determined by DIP switch 1 setting.

DIP Switch Definitions

If other configurations are desired, refer to the specific DIP switch functions; XLscore PRO software users can use the scoreboard control panel to remotely reconfigure the scoreboards.

Lane Selection

DIP S1 Switch number 7 determines which lane's race results will be displayed:

Lane to Display	7
Left	ON
Right	OFF

Single Line/Dual Line

DIP S1 Switch number 6 sets data display positions for Single Line or Dual Line Scoreboards:

Lane to Display	6
Single Line (models 6X28)	ON
Dual Line (models 6X10)	OFF

Display Hold Time

DIP S1 Switch number 1 determines the length of time to display the race results before clearing the display. When race results are displayed, the display options for display of the results are 30 or until new data is received. If the display is sent new race results prior to the 30, the display will be updated with the new results and the display hold time timer is reset to 30 seconds or new data.

Display Hold Time	1
Clear on New Data	ON
Clear after 30 seconds	OFF

Race Results

DIP S1 Switches 3, 4 and 5 on the back of the Scoreboard unit determine which race results will be displayed:

Race Result	Switch	Position
Dial-in	4	OFF
Reaction Time (RT)	5	OFF
SPEED (see note)	3	OFF

When SPEED is selected on a single line scoreboard, the scoreboards will toggle between SPEED and ET at the end of the race and the winning lane will not flash the ET.

SPEED and Display Position

DIP S1 Switch number 3 works in conjunction with DIP S1 Switch 6 to determine whether to display SPEED and the proper display position for SPEED based on a single or dual line display.
Single Line Display:

Single Line Display (6 ON)	3
Disable SPEED	ON
Enable SPEED	OFF

Dual Line Display (6 OFF)	3
Upper Display	ON
Lower Display	OFF

DIP Switch Bank S2

Data Interface

Switches number 5 and 6 determine which data interface is used - wireless or hard wired:

Data Interface	5	6
Hard wire	ON	OFF
Wireless Link (internal)	OFF	ON

Factory Settings

Other Bank S2 switches should be set as follows:

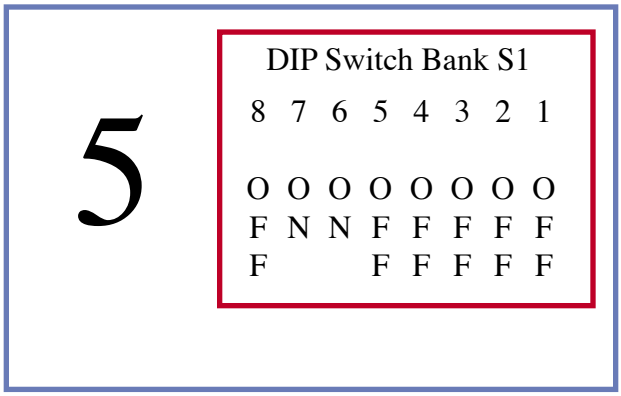
Timer to Scoreboard hard wired or with PODs:

Switch Number	Status
1	ON
2	ON
3	OFF
4	OFF
5	ON
6	OFF
7	OFF
8	OFF

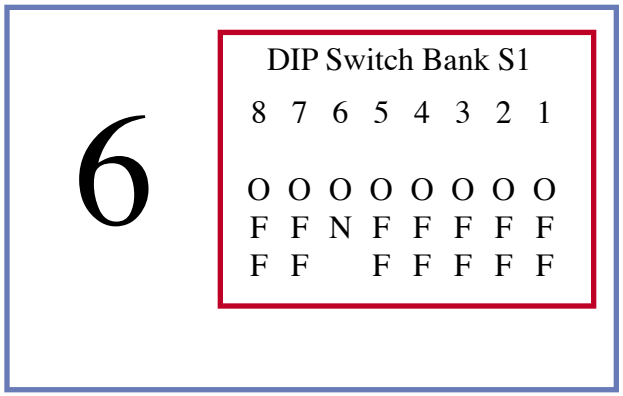
Timer to Scoreboard with internal wireless:

Switch Number	Status
1	OFF
2	OFF
3	ON
4	ON
5	OFF
6	ON
7	OFF
8	OFF

Single Line Dual Lane

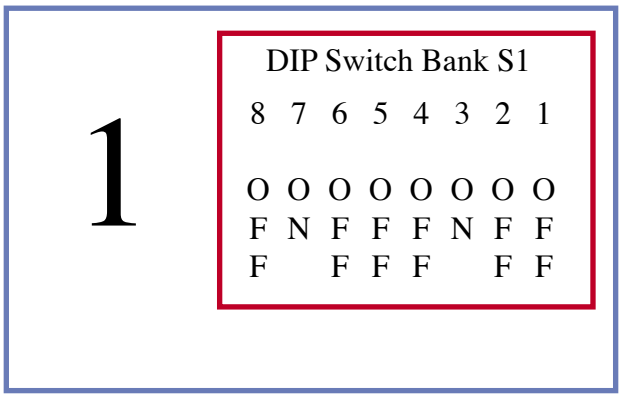


Left Lane - DIP Settings Position 5

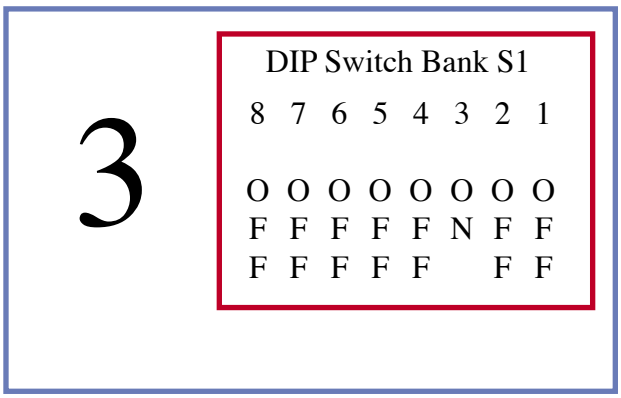


Right Lane - DIP Settings Position 6

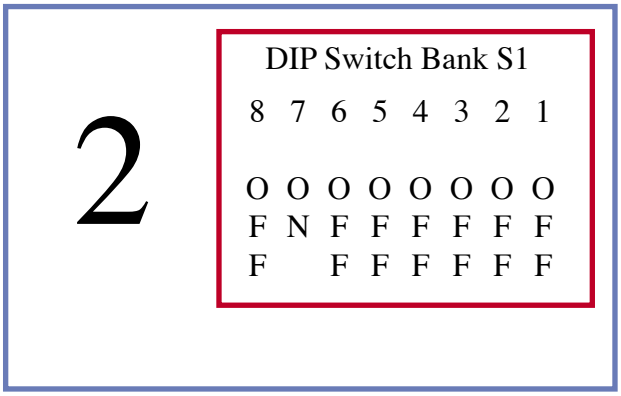
Dual Line Dual Lane



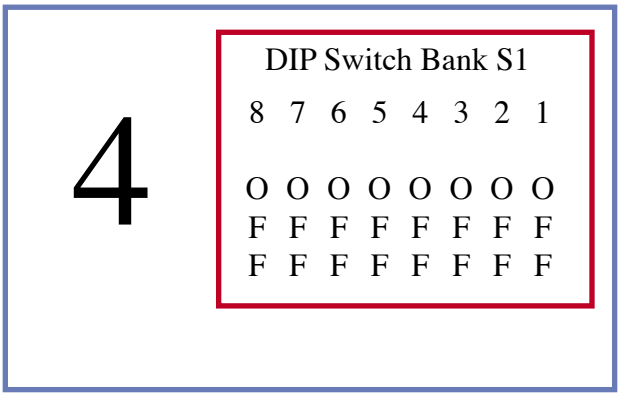
Left Lane - DIP Settings Position 1
Upper Scoreboard



Right Lane - DIP Settings Position 3
Upper Scoreboard



Left Lane - DIP Settings Position 2
Lower Scoreboard



Right Lane - DIP Settings Position 4
Lower Scoreboard

Fig. 4 - At the conclusion of power-on testing, a single digit will display, corresponding to the scoreboard position. With the settings shown, scoreboards will display Dial-Ins, RT, SPEED and ET. Dual line scoreboards display RT/ET in the Upper Scoreboard and Dial-In/SPEED in the Lower Scoreboard. Dial-In, RT and SPEED can be disabled using switches 3, 4 and 5 (see earlier section).

6628 Fifteen Inch Single Line Scoreboard

Model 6628D SCOREBOARD

PACKAGE COMPONENTS

2 - Scoreboard Units
2 - Power Patch Cords
8- 3/8-16 Assembly Bolts
1 - Owner's Manual

Model 6628 Available Options:

4520A Wireless Data Comm Links
6502A 12V/2A AC Power Adapter-2 req'd
07-3434 RS422 Cable timer to scoreboard - 2 required
6601A Permanent Installation Kit
'W' suffix - Internal Wireless Data Link 900mhz
'X' suffix - Internal Wireless Data Link 2.4ghz
6703A WIN Lights - 2 req'd
05-6703 - 10ft cable for WIN light - 2 req'd

LOCAL REQUIREMENTS

Additional items required to operate the 6628 Single Line Scoreboard and options:

1 - 12VDC automotive battery for each unit

Other requirements:
AC power source for AC adapters

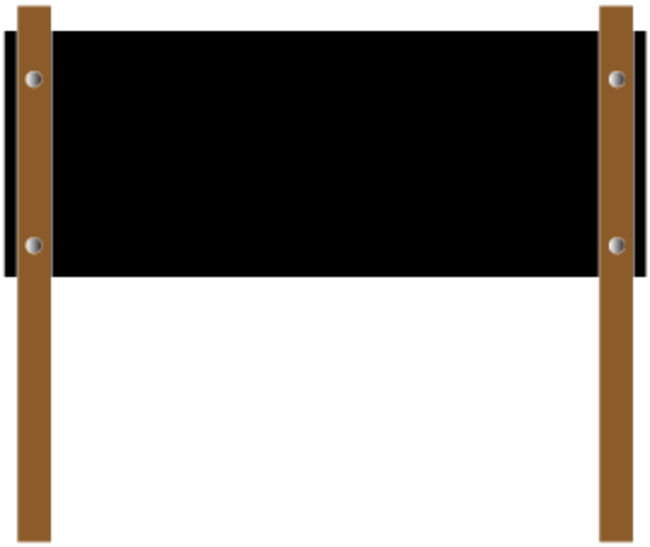
PRODUCT SPECIFICATIONS Model 6628

Display Type:	7-Segment
Digit Size:	15" x 7.75
Number of digits:	Five
Dimensions (half):	64.6"W x 22.3"H x 4"D
Mounting:	3/8-16 PEM nuts on back
Housing:	Powder coated aluminum
View Filter:	Red Transparent acrylic
View Range:	660' in full sun
Power Reqt:	11.5 to 12.6VDC/2A x 2
Data Comm:	RS422 serial
Weight (total):	76#

PRODUCT SET-UP

Model 6X28 Single Line Scoreboard is designed to be secured from the back with 3-8-16 PEM nuts to a rigid upright pole structure.

Scoreboard Mounting



3/8-16 PEM nuts are on the back of the enclosure. The 15” display has six PEMs while the 24” has nine when posts are atached in the middle.

Figure 5 - Scoreboard Mounting

6428 Twenty-four Inch Single Line Scoreboard

Model 6428D SCOREBOARD

PACKAGE COMPONENTS

10 - Scoreboard Units
8- 3/8-16 Assembly Bolts
1 - Owner's Manual

Model 6428 Available Options:

4520A Wireless Data Comm Links
07-3434 RS422 Cable (Various lengths)
6524A 25VDC/2.5A AC Power Adapter
6401A Permanent Installation Kit (includes AC)
'W' suffix - Internal Wireless Data Link 900mhz
'X' suffix - Internal Wireless Data Link 2.4ghz
6703A WIN Lights - 2 req'd
05-6703 - 10ft cable for WIN light - 2 req'd

LOCAL REQUIREMENTS

Additional items required to operate the 6428 Single Line Scoreboard and options:

2 - 25VDC/2.5A Power sources
2 - Mounting structures

Other requirements:
AC power source for AC adapters

PRODUCT SPECIFICATIONS Model 6428

Display Type:	7-Segment
Digit Size:	24" x 10"
Number of digits:	Five
Dimensions (half):	98"W x 29"H x 4"D
Mounting:	3/8-16 PEMs on back
Housing:	Powder Coated aluminum
View Filter:	Red Transparent acrylic
View Range:	1000' in full sun
Power Reqt:	25VDC/.2.5A x2
Data Comm:	RS422 serial
Weight (total):	180#

PRODUCT SET-UP

Model 6X28 Single Line Scoreboard is designed to be secured from the back with 3-8-16 PEM nuts to a rigid upright pole structure.

6610 Fifteen Inch Dual Line Scoreboard

Model 6610D SCOREBOARD

PACKAGE COMPONENTS

4 - Scoreboard Units
16- 3/8-16 Assembly Bolts
4 - Power Patch Cords
1 - Owner's Manual

Model 6610 Available Options:

07-3434 RS422 Data Cable
6502A AC Power Adapter - 4 req'd
6601A Permanent Installation Kit - incl AC
4520A Wireless Data Comm Links
'W' suffix - Internal Wireless Data Link 900mhz
'X' suffix - Internal Wireless Data Link 2.4ghz
6703A WIN Lights - 2 req'd
05-6703 - 10ft cable for WIN light - 2 req'd

LOCAL REQUIREMENTS

Additional items required to operate the 6610 Dual Line Scoreboard and options:

1 - 12VDC auto battery for each two units

Other requirements:
AC power source for AC adapters

PRODUCT SPECIFICATIONS Model 6610

Display Type:	7-Segment
Digit Size:	15" x 7.75"
Number of digits:	Five
Dimensions (unit):	64.6"W x 22.3"H x 4"D
Mounting:	3/8-16 PEM nutsnon back
Housing:	Powder coated aluminum
View Filter:	Red Transparent acrylic
View Range:	660' in full sun
Power Reqt:	12VDC/2A x4
Data Comm:	RS422 serial
Weight (total);	152#

PRODUCT SET-UP

Model 6X28 Dual Line Scoreboard is designed to be secured from the back with 3/8-16 PEM nuts to a rigid upright pole structure.

6410 Twenty-four Inch Dual Line Scoreboard

Model 6410D SCOREBOARD

PACKAGE COMPONENTS

20 - Scoreboard Units
16 - 3/8-16 Assembly Bolts
1 - Owner's Manual

Model 6410 Available Options:

6524A 25VDC AC Adapter Kit - 4 req'd
6401A Permanent Installation Kit (AC)
07-3434 RS422 Cable (various lengths)
4520A Wireless Data Comm Links
'W' suffix - Internal Wireless Data Link 900mhz
'X' suffix - Internal Wireless Data Link 2.4ghz
6703A WIN Lights - 2 req'd
05-6703 - 10ft cable for WIN light - 2 req'd

LOCAL REQUIREMENTS

Additional items required to operate the 6410 Dual Line Scoreboard and options:

1 - 25VDC source for each unit

Other requirements:
AC power source for AC adapters

PRODUCT SPECIFICATIONS Model 6410

Display Type:	7-Segment
Digit Size:	24" x 10"
Number of digits:	Five
Dimensions (unit):	98"W x 58"H x4"D
Mounting:	3/8-16 PEMs on back
Housing:	Powder Coated aluminum
View Filter:	Red Transparent acrylic
View Range:	1000' in full sun
Power Reqt:	25VDC/2.5A x 4
Data Comm:	RS422 serial
Weight (total):	360#

PRODUCT SET-UP

Model 6X28 Dual Line Scoreboard is designed to be secured from the back with 3-8-16 PEM nuts to a rigid upright pole structure.

WIRING DIAGRAM FOR WIRELESS INSTALLATIONS

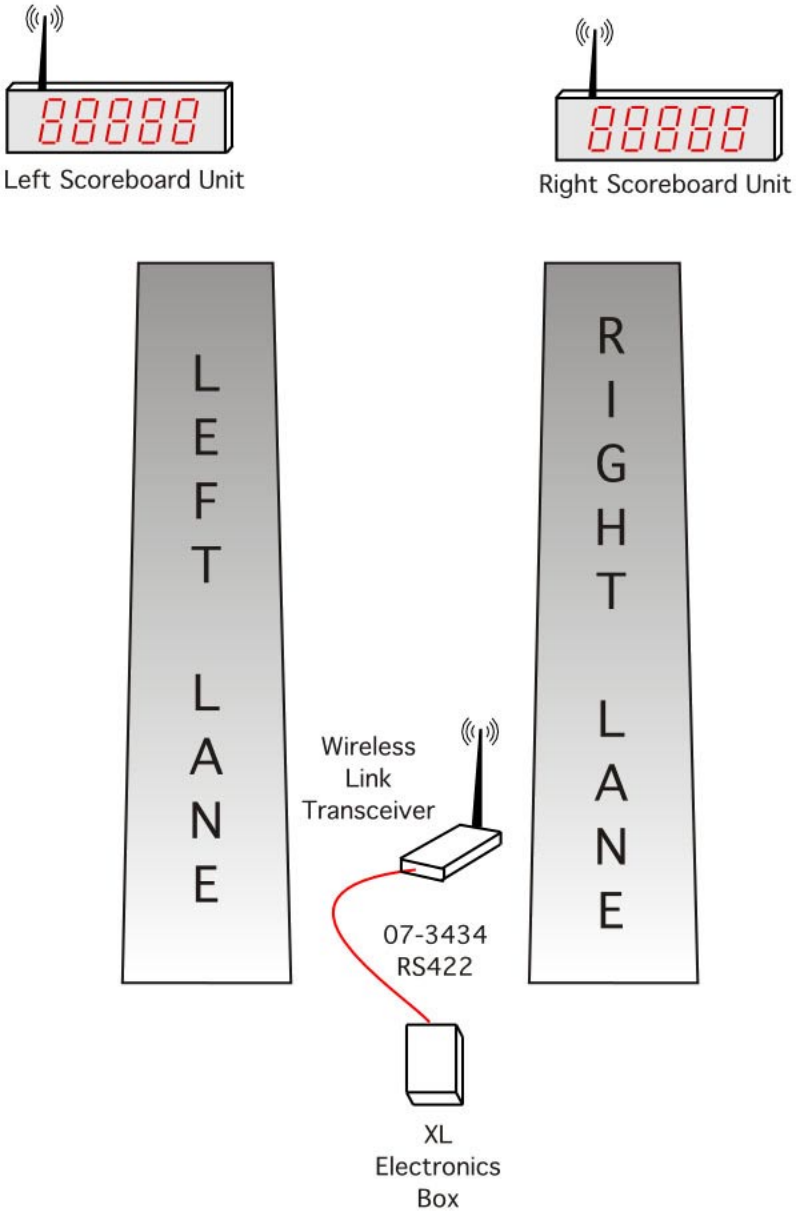


Fig. 6 - Scoreboard Wireless Installation

WIRING DIAGRAM FOR HARD WIRED INSTALLATIONS

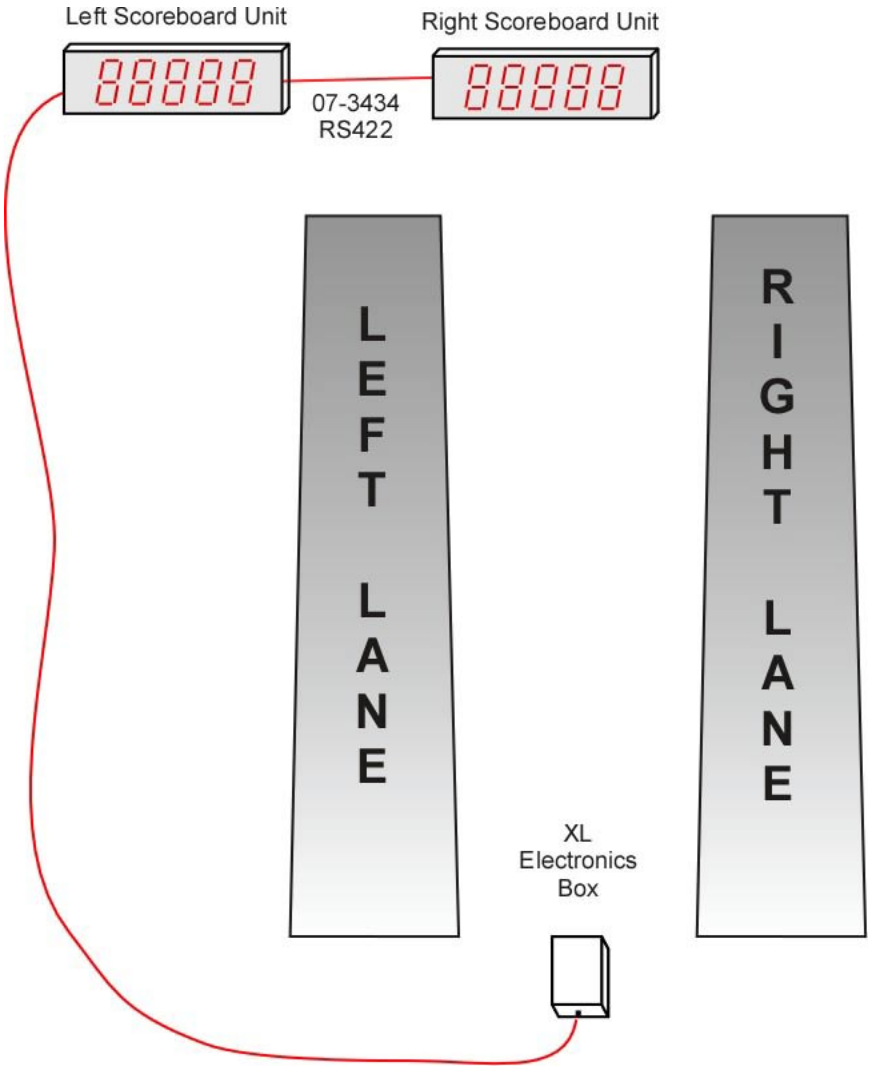


Fig. 7 - Scoreboard Wired Installation

SCOREBOARD MAINTENANCE

The drag racing scoreboards do not require any maintenance to maintain proper operation. If the scoreboard is to be used in rainy or wet conditions, it is suggested to protect the back panel from direct moisture by shielding the connection to power and the serial port.

To clean the red lens, use a non-abrasive cleaner with a soft cloth. This will keep the protective lens clean and maximize visibility and clarity of the digits. If the red lens is soiled with mud or dirt, gently remove the grit using a soft cloth/water being careful not to press when wiping to avoid scratching the red lens acrylic material.

SPARE PARTS

Further to minimize race program interruptions, RaceAmerica recommends some spare parts. While the Scoreboard may not shut down the racing action, a spare emitter/sensor pair and end of track cable sections should be available in the event of an unfortunate accident during a program. Related cables and PODs for the Scoreboard should be in considered. Contact RaceAmerica for availability and pricing of spares items.

SUPPORT AGREEMENTS

Support agreements are available from RaceAmerica providing Telephone Assistance on technical issues and operational questions, repair and/or replacement of hardware failures, Software and Firmware updates and bug reporting. Contact RaceAmerica for more information and pricing of Support Agreements.