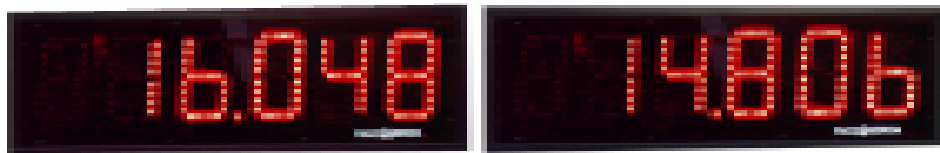


# RACE **A**MERICA

INNOVATION. TECHNOLOGY. RELIABILITY.

## *Drag Racing Scoreboards*



## *Owner's Manual*

Models 6828E, 6810E - Rev U

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## PRODUCT INFORMATION LINKS

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RaceAmerica Website	<a href="http://www.raceamerica.com">www.raceamerica.com</a>
RaceAmerica Online Store	<a href="http://store.raceamerica.com">store.raceamerica.com</a>
Raceamerica Online Forum	<a href="http://www.raceamerica.com/forum">www.raceamerica.com/forum</a>
Product Warranty	<a href="http://www.raceamerica.com/legal.html">www.raceamerica.com/legal.html</a>
Service & Repairs	<a href="http://www.raceamerica.com/service.html">www.raceamerica.com/service.html</a>
Technical Assistance	<a href="http://www.raceamerica.com/techcall.html">www.raceamerica.com/techcall.html</a>
Owner's Manuals	<a href="http://www.raceamerica.com/prodpdf.html">www.raceamerica.com/prodpdf.html</a>
Mounting Diagrams	<a href="http://www.raceamerica.com/mountpdf.html">www.raceamerica.com/mountpdf.html</a>
Product Catalog	<a href="http://www.raceamerica.com/catalog.html">www.raceamerica.com/catalog.html</a>

## 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 RS232 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 '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 and 2850 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 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 RS232/RS422 connections.

Scoreboards are available in single or dual line formats in five and eight inch digit heights for viewing up to 320 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

### STEP 1 - Assemble/mount the scoreboard

Each scoreboard model and race track have unique requirements; the scoreboards are configured and labeled for Left or Right lane; hanging or hard mounting provisions are provided on each enclosure.

### STEP 2 - Configure the scoreboard

The scoreboards ship from the factory with the most likely selections enabled for starters. DIP switches control the scoreboards completely when used with the model 2600/2650 'XL advanced' system and partially when used with the model 2700 XL Wireless and 2800/2850 'XL professional' system. Refer to the DIP switch section before making any changes.

### STEP 3 - Connect the interface

The timers output both RS232 and RS422 serial data formats; be sure to match/convert data formats as follows:

All five and eight inch models must receive RS232 data which can be a hard wire connection up to 100 ft away (RS232) or greater wired distances with communication PODs (RS422) or Wireless Link networks.

Several cabling options are available depending on the scoreboard placement on the

race track.

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 RS232 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.

For wireless models, an Internal Wireless Data Network or external unit is used. For external wireless installations, connect a 07-4554 cable between the wireless link and the scoreboard (RJ45 connector). The external wireless link unit is mounted on the back of the display. For internal wireless, simply install the antenna on the display and connect the Wireless Data Transceiver at the data source.

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 successfully 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 or decimal points. 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 are 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 ET only.

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.

#### **Model 2650 XL Advanced -**

Scoreboards operating with the XLAdvanced 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 PC's 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.

### Model 3230 S-Trap

When operating with a 3230, the display should be configured for Speed in the Right lane. The 3230 must be operating with code revision C.0x.x as displayed during powerup.

### SCOREBOARD CONTROL - XLscore

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 Professional 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

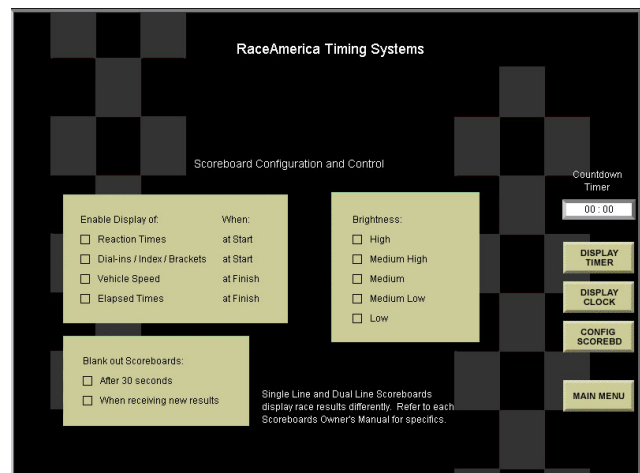


Figure 1 - Scoreboard Control Screen

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.

### DIP SWITCH DEFINITIONS

All scoreboard models have eight DIP switches located on the back of the unit that are numbered from 1 to 8 and can be switched ON or OFF. The ON position is indicated on the switch itself. Switch function and setting are discussed below.

#### Model 6510D and 6810D Dual Line scoreboard factory settings for internal wireless models:

##### Upper position

<u>Switch</u>	<u>Position</u>
1	OFF
2	OFF(right) ON(left)
3	ON
4	OFF
5	OFF
6	OFF
7	OFF
8	ON

##### Lower position:

<u>Switch</u>	<u>Position</u>
1	OFF
2	OFF(right) ON(left)
3	OFF
4	OFF
5	OFF
6	OFF
7	OFF
8	ON

This configuration will display non-zero Dial-In (lower) before the race, Reaction Time (upper) after both vehicles start, Speed or non-zero 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 6528D & 6828D Single Line scoreboard factory settings for internal wireless models:

<u>Switch</u>	<u>Position</u>
1	OFF
2	OFF(right) ON(left)
3	ON
4	OFF
5	OFF
6	ON
7	OFF
8	ON

This configuration will display Dial-In before the race, Reaction Time after both vehicles start (2700/2710/2900/2910 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.

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.

#### Data Interface

DIP Switches 7 and 8 determine which data mode will send the data:

<u>Data Interface</u>	<u>7</u>	<u>8</u>
Wired/External Wireless	ON	OFF
Internal Wireless	OFF	ON

#### Single Line/Dual Line

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

<u>Scoreboard configuration</u>	<u>6</u>
Single Line (models 6X28)	ON
Dual Line (models 6X10)	OFF

### Display Hold Time

DIP 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 seconds or until new data is received. If the display is sent new race results prior to the 30 second timeout, the display will be updated with the new results and the display hold time timer is reset to 30 seconds or new data.

<u>Display Hold Time</u>	<u>1</u>
Clear on New Data	ON
Clear after 30 seconds	OFF

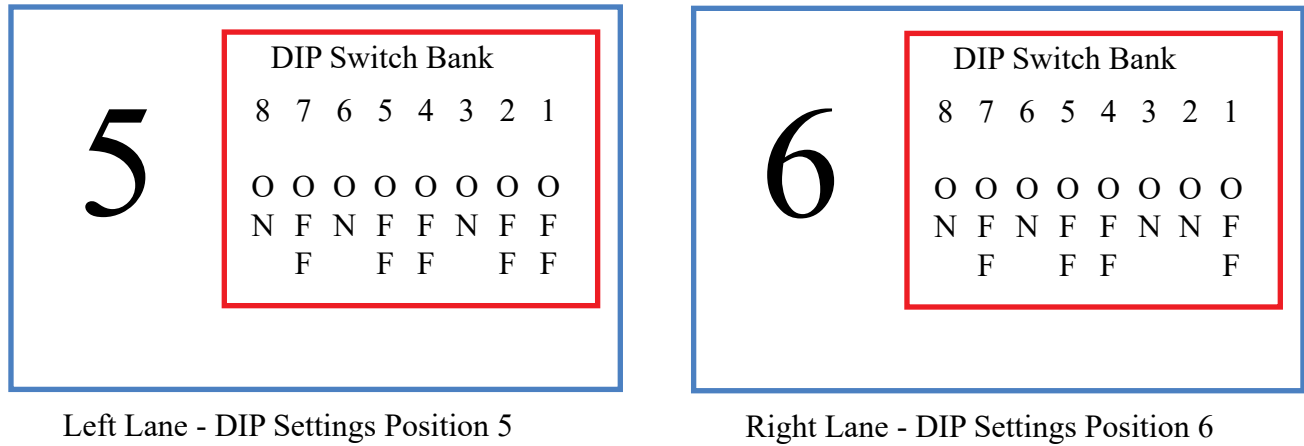
### Race Results

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

<u>Race Result</u>	<u>Switch</u>	<u>Position</u>
Dial-in	4	OFF
Reaction Time (RT)	5	OFF



## Single Line Dual Lane



## Dual Line Dual Lane

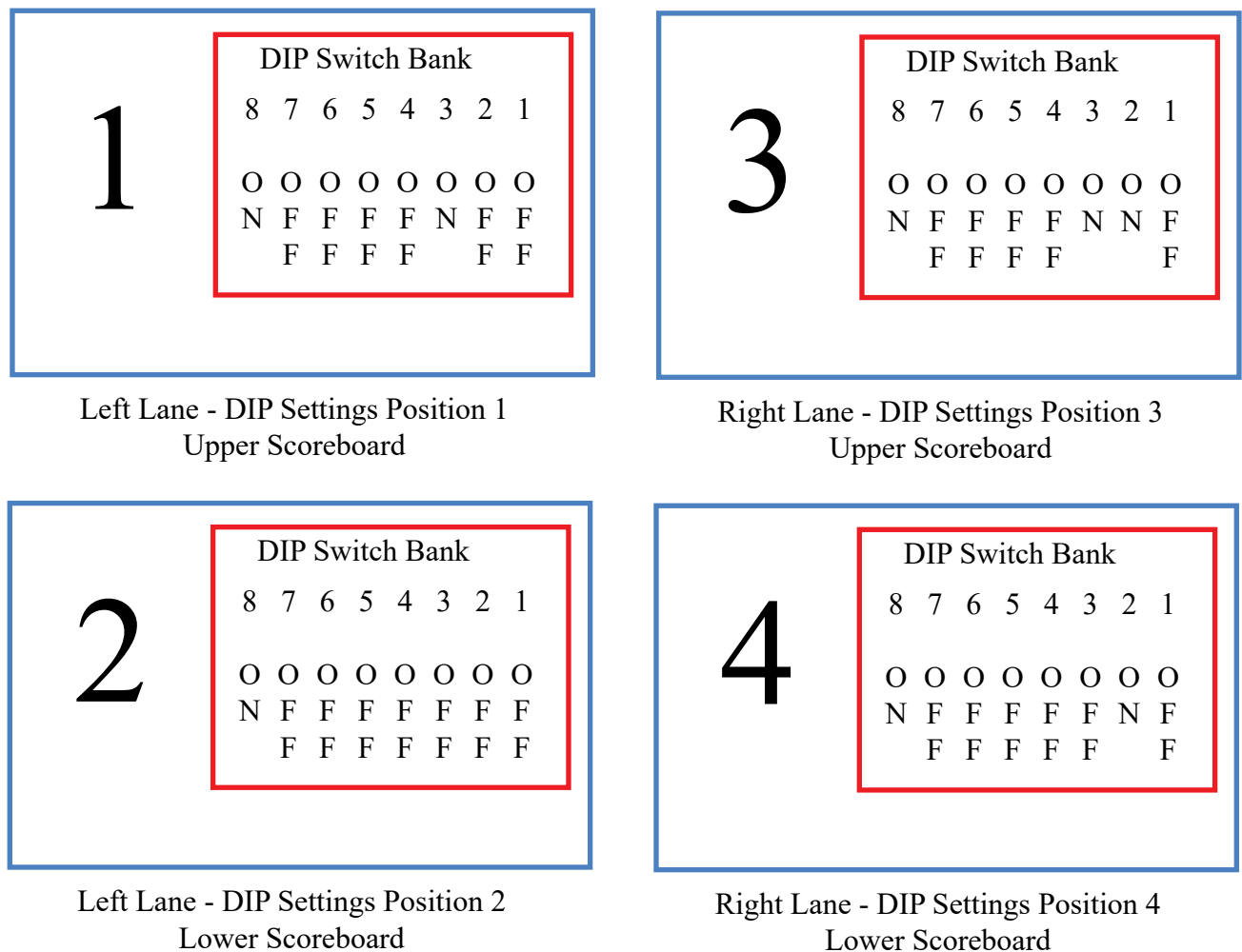
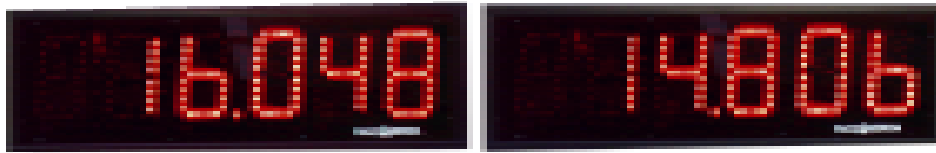


Fig. 5 - At the conclusion of power-on testing, a single digit will display, corresponding to the scoreboard position. With the settings shown, scoreboards will display non-zero Dial-Ins, RT, SPEED and ET. Dual line scoreboards display RT/ET in the Upper Scoreboard and Dial-In/SPEED in the Lower Scoreboard.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



## 6528 Five Inch Single Line Scoreboard

### Model 6528 SCOREBOARD

#### PACKAGE COMPONENTS

- 2 - Scoreboard Units
- 4 - Table Stands
- 2 - Power Patch Cords
- 1 - Owner's Manual

#### Model 6528 Available Options:

- 06-Y155 RS232 Cable up to 100'
- 4500 Data Communication POD (for placement greater than 100ft from timer)
- 4X20A Wireless Network Links (2 or 3 req'd)
- 6501A AC Power Adapter (2 req'd)
- 07-3434 RS422 Cable for use with PODs
- 6075B -Softside storage/carry case (2 req'd)
- 'B' suffix - Internal rechargeable battery
- 'W'/'X' suffix - Internal Wireless Datacomm link

#### LOCAL REQUIREMENTS

Additional items required to operate the 6528 Single Line Scoreboard and options:

- 1 - 12VDC automotive battery for each unit

Other requirements:

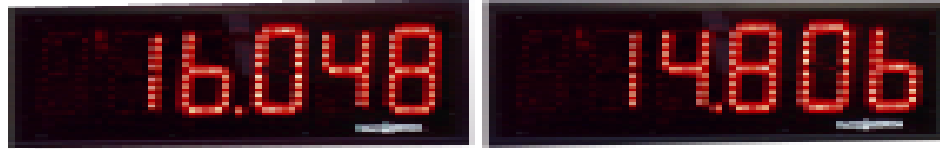
- AC power source for AC adapters

### PRODUCT SPECIFICATIONS Model 6528

Display Type:	7-Segment
Digit Size:	5" x 2.75"
Number of digits:	Six
Dimensions (half):	27.6"W x 11.6"H x 3"D
Mounting:	Top 3/16" Eyelets - 22"c
Housing:	Powder coated steel
View Filter:	Red Transparent acrylic
View Range:	200' in full sun
Power Req't:	11.5 to 12.6VDC/.8A x 2
Data Comm:	RS232 Serial
Weight (total)	18#

#### PRODUCT SET-UP

Model 6528 Single Line Scoreboard is designed to hang free using the top eyelets supplied with the display. It is suggested to use the hanging method in windy conditions to avoid damage to the display and the display housing. Table stands can place the scoreboard on a surface.



## 6828 Eight Inch Single Line Scoreboard

### Model 6828 SCOREBOARD

#### PACKAGE COMPONENTS

- 2 - Scoreboard Units
- 2 - Power Patch Cords
- 1 - Owner's Manual

#### Model 6828 Available Options:

- 06-Y155 RS232 Cable up to 100'
- 4500 Data Communication POD (for placement greater than 100ft from timer)
- 4X20 Wireless Network Links (2 or 3 req'd)
- 6501A AC Power Adapter
- 6077A Soft Side Storage/Carry Case (2 req'd)
- 6076A Heavy Duty Carry Case (2 req'd)
- 7606B Suspension Arm Display Stand  
40" tall/8" only - 2 req'd
- 07-3434 RS422 Cable for use with PODs
- 'B' suffix - Internal rechargeable battery
- 'W'/'X' suffix - Internal Wireless Datacomm link

#### LOCAL REQUIREMENTS

Additional items required to operate the 6828 Single Line Scoreboard and options:

- 1 - 12VDC automotive battery for each unit

Other requirements:

- AC power source for AC adapters

#### PRODUCT SPECIFICATIONS Model 6828

Display Type:	7-Segment
Digit Size:	8" x 3.75
Number of digits:	Six
Dimensions (half):	46.8"W x 14.3"H x 3"D
Mounting:	Top 1/4" Eyelets - 30" c
Housing:	Powder coated steel
View Filter:	Red Transparent acrylic
View Range:	320' in full sun
Power Req't:	11.5 to 12.6VDC/1A x 2
Data Comm:	RS232 Serial
Weight (total):	46#

#### PRODUCT SET-UP

Model 6828 Single Line Scoreboard is designed to hang free using the top eyelets supplied with the display. It is suggested to use the hanging method in windy conditions to avoid damage to the display and the display housing. A scoreboard stand is also available from RaceAmerica to hang the 8" display at a good viewing level 40" above ground level.



### 6510 Five Inch Dual Line Scoreboard

#### Model 6510 SCOREBOARD

##### PACKAGE COMPONENTS

- 4 - Scoreboard Units
- 4 - Power Patch Cords
- 1 - Owner's Manual
- 8 - Table Stands

##### Model 6510 Available Options:

- 06-Y555 RS232 Cable up to 100'
- 4500 Data Communication POD (for printers and displays greater than 100ft from timer)
- 4X20A Wireless Network Links (4 or 5 req'd)
- 6501A AC Power Adapter
- 07-3434 RS422 Cable for use with PODs
- 6075B Soft side storage/carry case
- 'W'/'X' suffix - Internal Wireless Datacomm link
- 'B' suffix - Internal Battery/External Charger

##### LOCAL REQUIREMENTS

Additional items required to operate the 6510 Dual Line Scoreboard and options:

- 1 - 12VDC automotive battery for each two units

Other requirements:

- AC power source for AC adapters

#### PRODUCT SPECIFICATIONS Model 6510

Display Type:	7-Segment
Digit Size:	5" x 2.75"
Number of digits:	Six
Dimensions (unit):	27.6"W x 11.6"H x 3"D
Mounting:	Top 3/16" Eyelets - 22"c
Housing:	Powder coated steel
View Filter:	Red Transparent acrylic
View Range:	200' in full sun
Power Req't:	11.5 to 12.6VDC/.8A x 2
Data Comm:	RS232 Serial
Weight (total):	36#

#### PRODUCT SET-UP

Model 6510 Dual Line Scoreboard is designed to hang free using the top eyelets supplied with the display. The lower scoreboard can be hung from the upper one using screw eyes in the PEM nuts on the bottom of the scoreboard.



### 6810 Eight Inch Dual Line Scoreboard

#### Model 6810 SCOREBOARD

#### PACKAGE COMPONENTS

- 4 - Scoreboard Units
- 4 - Power Patch Cords
- 1 - Owner's Manual

#### Model 6810 Available Options:

- 06-Y555 RS232 Cable up to 100'
- 4500 Data Communication POD (for printers and displays greater than 100ft from timer)
- 4X20A Wireless Network Links (4 or 5 req'd)
- 6501A AC Power Adapter
- 07-3434 RS422 Cable for use with PODs
- 6075B Soft side storage/carry case
- 'W'/'X' suffix - Internal Wireless Data link
- 'B' suffix - Internal Battery/External Charger

#### LOCAL REQUIREMENTS

Additional items required to operate the 6810 Dual Line Scoreboard and options:

- 1 - 12VDC automotive battery for each two units

Other requirements:

- AC power source for AC adapters

#### PRODUCT SPECIFICATIONS Model 6810

Display Type:	7-Segment
Digit Size:	8" x 3.75"
Number of digits:	Six
Dimensions (unit):	46.8"W x 14.3"H x 3"D
Mounting:	Top 1/4" Eyelets - 30" c
Housing:	Powder coated steel
View Filter:	Red Transparent acrylic
View Range:	320' in full sun
Power Req't:	11.5 to 12.6VDC/.8A x 2
Data Comm:	RS232 Serial
Weight (total):	96#

#### PRODUCT SET-UP

Model 6810 Dual Line Scoreboard is designed to hang free using the top eyelets supplied with the display. The lower scoreboard can be hung from the upper one using screw eyes in the PEM nuts on the bottom of the scoreboard.

Alternately, upper and lower units can be bolted together and hung from the upper eyelets.

## **DISPLAY 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 acrylic 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 considered. Contact RaceAmerica for availability and pricing.

## **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.

## REVISION HISTORY

- H - 'C' enclosure powder coat
- I - New cover picture
- J - Add 15" digit Model 6628
- K - Clarify DIP switches for 6628
- L - 03/05 - Combine all drag scoreboards
  - Add 24' digit models ++
  - Move Rev history out of PDF file
- M - 07/05 - Fix a multitude of errors; add hanging/mounting 15/24"; add 4528 dial-in boards
- N - 09/05 - Fix view range errors 15/24", correct DIP switch info for 15/24"
- O - 09/05 - Split 5/8" from 15/24" scoreboards; update
- P - 11/07 - Convert to InDesign, eliminate 6810 structure, integrate 2650, 2850 and 2700 wireless products
- Q - 01/08 - Add S-Trap
- R - 04/08 - Add details and diagram for internal wireless units and jumper block settings
- S - 12/08 - New board/new DIPs, and supported by XLscore E.06, add dimming, remove jumper block, hard wired LT and RT
- T - 02/18 - New board design, DIP settings, selectable left/right lane.