

RACE AMERICA

INNOVATION. TECHNOLOGY. RELIABILITY.

Large Digital Display Owner's Manual

Model 6860D, 6860DW, 6860DZ

Rev D



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PRODUCT INFORMATION LINKS

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

PRODUCT OVERVIEW

The Model 6860 Large Digital Displays are microprocessor controlled systems based upon the 7-segment format display digit using the latest technology Ultra-Bright LEDs. The display uses an RS232 hardwired serial link or internal wireless to receive data to be displayed. The serial link is configured for 9600 baud. The 6860 is capable of displaying numbers 0 through 9 and alpha letters A through Z with the exception of K, M, and W. Selected punctuation marks are also among the displayable character set listed in the back of this manual. The 6860 is designed to connect to RaceAmerica AC4 autocross timers, RaceAmerica custom timers, personal computers running race management software, and selected non-RaceAmerica timers. Timer selection and data format is selected through the DIP switch settings located on the rear of the display. Data connections can be via hard wire or via Wireless Data Network Link units.

These displays are all available with internal batteries/external chargers and wireless communications for remote placement.

The wireless option requires a transmitter at the data source and a receiver at the display. The receiver can be internal (from factory) or external.

NOTE: THIS PRODUCT USES 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.

PACKAGE COMPONENTS

- 1 - Large Digital Display Unit
- 1 - Power Patch Cord
- 1 - Owner's Manual

Model 6860 Available Options:

- 06-X100 RS232 Cable up to 100'
- 4520/4620 External Wireless Unit
- 'W' option - Internal Wireless 900MHz
- 'BZ' option - Internal Wireless 2.4GHz
- 6501A AC Power Adapter
- 6076B Carry Case
- 7606B Display Stand (40" tall)

LOCAL REQUIREMENTS

Additional items required to operate the 6860 Series Digital Display and options:

- 1 - 12VDC automotive battery

Other options:

AC power source for AC adapters

PRODUCT SPECIFICATIONS 6860

Display Type:	7-Segment
Digit Height:	Eight Inch Tall
Number of digits:	Six
Dimensions:	14-1/4" x 46-3/4" x 3"
Mounting:	Top 1/4" Eyelets - 30" c
Housing:	Powder coated steel
View Filter:	Red Transparent acrylic
View Range:	320' in full sun

POWER REQUIREMENTS

The Large Display can be powered by a 12VDC automotive battery or any 12VDC power source capable of 0.85 ampere current load maximum. Average power consumption is approximately 0.4 ampere. Maximum voltage should never exceed 13.2VDC at the Power Input Connector (NO chargers or running cars).

PRODUCT SET-UP

The model 6860 Large Digital Displays are designed to hang free using the top eyelets supplied with the display. A display stand is also available from RaceAmerica to hang the display at a good viewing level 40" above ground level.

STEP 1 - Configure the Display

The DIP Switches are located on the backside of the display behind the removable cover. They are used to match the communications format and the display format to the data sent to the display from the timing system or PC. To determine the correct switch settings, read the **DIP SWITCH SETTINGS** section of this manual. Switch settings have two positions, ON and OFF. The ON position is indicated on the DIP switch and is active when the switch button is moved to the right side when viewed from the back of the display.

STEP 2 - Establish the Data Interface

The Display can receive data via a hard wired cable or an internal wireless data link. The display receives RS232 data at 9600 baud.

An interface cable contains a RJ45 modular connector on one end of the cable and is connected to the display using the SERIAL PORT connector on the back of the display. 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.

Depending upon the type of timer or PC connected to the display, the other end of the cable may contain an RJ45 connector for RaceAmerica timing systems. In this case, either end of the cable can be connected to the display or the RaceAmerica timer. If connecting to a PC or non-RaceAmerica timer, a 9-pin D-sub or 25-pin connector will terminate the other end of the cable and should be inserted into the serial communications port to be

used to send data to the display.

For internal wireless, simply install the antenna on the display and connect the Wireless Data Transceiver at the data source. Use DIP switches 7/8 to switch between internal wireless and hard-wire/external wireless.

STEP 3 - Connect the Power

Power can be supplied to the display from an external 12V source (battery or AC Adapter) or from an internal battery. If power is supplied to the display externally, connect through the 12VDC 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. If the power source is an internal battery, turn on the power using the switch on the bottom of the display.

POWER-ON SELF-TEST

When the 6860 power source is connected, the display begins an internal self-test and an external visual check of the display elements.

The self-test begins by stepping through each segment of all six digits, one segment at a time including the colon or decimal point which exist to the right of each digit except the right-most digit. 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 revision level of the code running in the microprocessor is displayed. When the internal self-test and external visual test is complete, **[rEAdy]** scrolls in from left to right. Lastly, the display will show all digits full bright and minimum brightness (programmatically controllable from some PC software). Finally, the display will blank out leaving only one or two dim LEDs ON within the first digit. The display is now ready for use.

NOTE: IF SWITCH NUMBER 1 IS SET TO THE 'OFF' POSITION DURING THE POWER-UP SELF-TEST, THE DISPLAY WILL CONTINUOUSLY LOOP ON THE SELF-TEST UNTIL SWITCH NUMBER 1 IS SET TO THE 'ON' POSITION. **DIP SWITCH SETTINGS**

The 6860 can operate in different modes dependent upon the device sending the information and race results to be displayed. The 8 DIP switches located on the back of the Large Display are 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 as well as recommended settings when connected to RaceAmerica timing systems, non-RaceAmerica timers, PC's running race management software for autotcross, and devices conforming to established industry standard data formats. The hold time and display format may not apply to all timers.

Display Hold Time

Switch number 6 determines the length of time to display the race results before clearing the display. When race results are displayed, the display will continue to display the results for either 15 seconds for fast paced action or 120 seconds for large viewing audiences. If the display is sent new race results prior to the 15 or 120 seconds expiring, the display will be updated with the new results and the display hold time timer is reset to 15 or 120 seconds.

<u>Display Hold Time</u>	<u>6</u>
15 seconds	ON
120 seconds	OFF

Internal Hard Wired/External Wireless

Switches 7 and 8 determine the data source for the display:

External Hard Wired

<u>Switch</u>	<u>Position</u>
7	ON
8	OFF

Internal Wireless

<u>Switch</u>	<u>Position</u>
7	OFF
8	ON

Data Sources

Switches 3, 4 and 5 are set to match the type of timing system connected to the Large Display in order for the Large Display to decode the information to be displayed. The following table is used to set the switches to select the type of data source hardware:

<u>Data Source Type</u>	<u>3</u>	<u>4</u>	<u>5</u>
Timer AC4 3800/3850 minimum revision			
E.10.X (m.ss.fff)	ON	ON	ON
F.10.X (sss.fff)	OFF	ON	ON
E.0X.7 (m.ss.fff)/PC	OFF	ON	ON
F.0X.7 (sss.fff)/PC	ON	ON	ON
E.0X.7 (m.ss.fff)/log/slip	OFF	OFF	ON
E.0X.7 (sss.fff)/log/slip	ON	OFF	ON
S-Trap 3230	ON	ON	OFF
Timer SBD 3220			
Differential	ON	OFF	OFF
Lane 1	ON	OFF	OFF
Lane 2	OFF	OFF	OFF
JA Circuits Timer	ON	ON	ON
Chronomix Format	ON	ON	ON
PC w/ AutoX/TS software	ON	ON	ON
PC w/ AXware software	ON	ON	ON
PC w/ GPSsoftware	ON	ON	ON
PC w/ Display Utility	ON	ON	ON

Diagnostic mode

Switch number 1 enables and disables the diagnostic capabilities of the Large Display. When enabled, the Large Display receives data and displays error codes when invalid data has been received. The following table is used to set switch number 1 to enable/disable the diagnostic feature:

<u>Diagnostic Mode</u>	<u>1</u>
Normal Operation	ON
Enabled	OFF

NOTE: IF SWITCH NUMBER 1 IS SET TO 'OFF' DURING THE POWER UP SELF-TEST, THE DISPLAY WILL CONTINUOUSLY LOOP ON THE SELF-TEST UNTIL SWITCH NUMBER 1 IS SET TO THE 'ON' POSITION.

Factory Use

Switch number 2 enables and disables the factory diagnostic capabilities of the Large Display.

DO NOT CHANGE THIS SWITCH

<u>Factory Use</u>	<u>2</u>
Factory Use	ON
Normal Operation	OFF

DISPLAY UTILITY

RaceAmerica offers a Windows based Display Utility for download from it's web site (<http://www.raceamerica.com>) to handle some of the special functions discussed here without requiring knowledge of the specific character command sets.

The utility allows several functions to be sent from the PC to the display - a time of day clock, a count-down timer, a six digit time, a combination display of time and position summary and up to six word sentences. This is also helpful for troubleshooting.

DISPLAY MAINTENANCE

The model 6860 Large Digital Display does not require any maintenance to maintain proper operation. If the display 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.

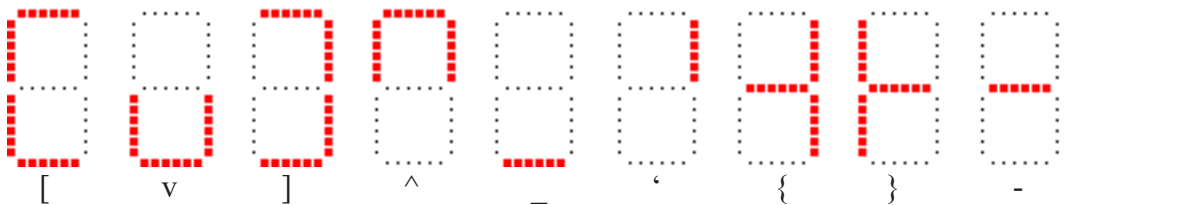
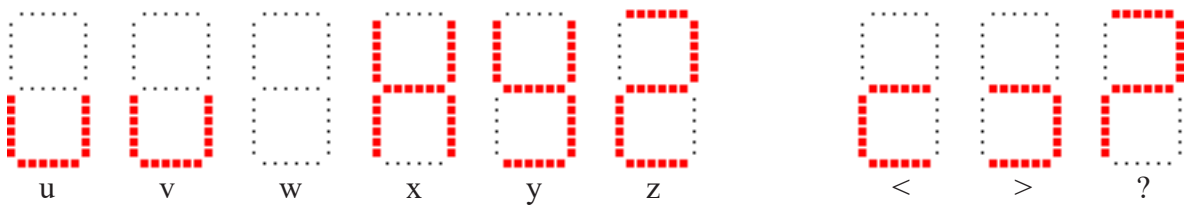
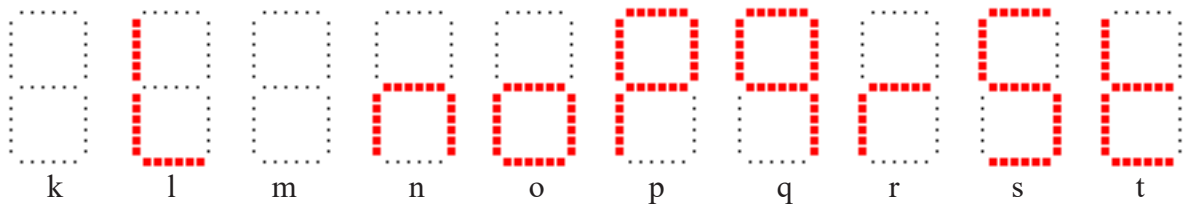
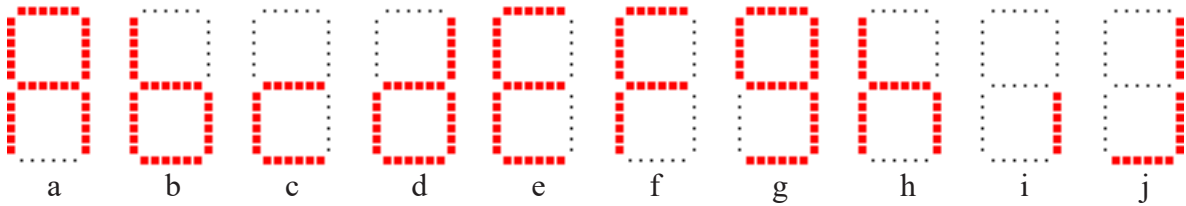
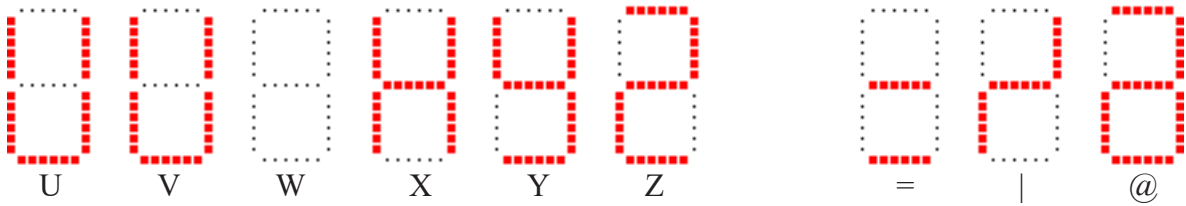
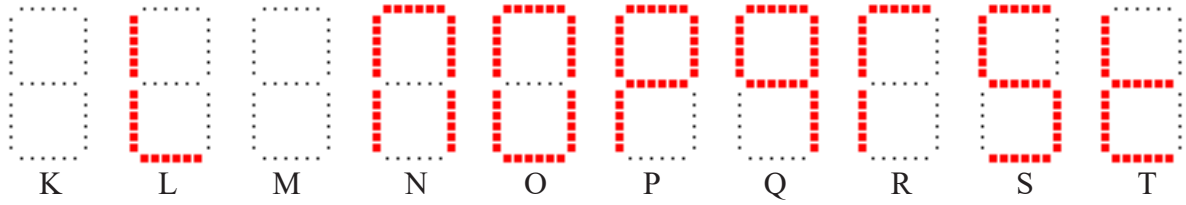
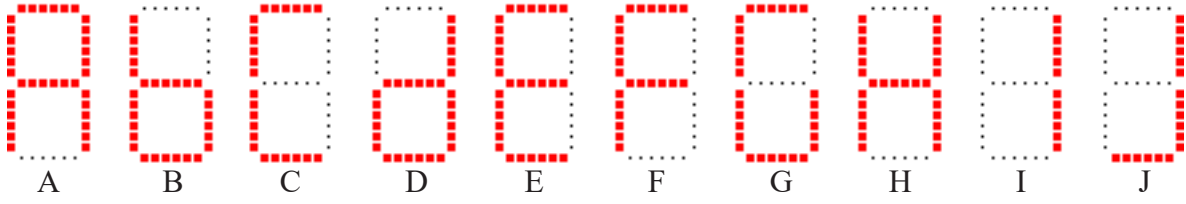
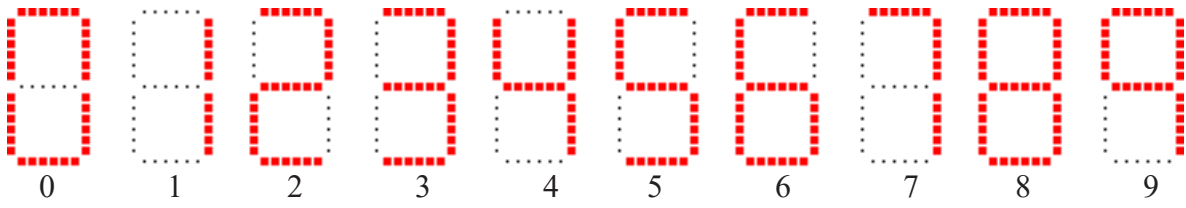
To clean the red acrylic lens, use a non-abrasive cleaner on a soft cloth. This will keep the protective lens clean and maximize visibility and clarity of the digits. If the red lens is soiled with mud or dirt, gently remove the grit using a soft cloth being careful not to press when wiping to avoid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

SPARE PARTS

Further to minimize race program interruptions, RaceAmerica recommends some spare parts. While the Display may not shut down the racing action, related cables and PODs for the Display should be in 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.



Uppercase Letters

Lowercase Letters

DISPLAY STAND ASSEMBLY INSTRUCTIONS

This assembly instruction is intended for use with six digit eight inch digital displays.

7606B Stand Kit Contents

- 2 - Suspension Stand Arms with 'J' hooks
- 1 - Pipe Flange
- 2 - 20 in pipe sections
- 1 - Pipe union
- 1 - Base Plate with Pipe Flange
- 2 - 1/4-20 bolts with wing nuts

Assembly

1) Assemble the suspension arms with the pipe flange and 1/4-20 bolts at most extreme angle setting. Orient flange and 'J' hooks down.

2) Connect the two pipe sections with the coupling and screw into the base plate flange to assemble the post.

3) Carefully screw the suspension arm assembly onto the post. Align such that arms will suspend the display over the center of the base plate on the diagonal for maximum stability.

4) Hang the display on the 'J' hooks; some droop is normal; the display will swing in the wind.

Additional Stability - (if required)

1) Place a weight onto the base plate or stake it into the ground

