



The Leader in Event Critical Timing Electronics

Stopwatch Display Timer Owner's Manual

Rev M



RaceAmerica Corporation
P.O. Box 3469
Santa Clara, CA 95055-3469
(408) 988-6188
<http://www.raceamerica.com>
info@raceamerica.com

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RACEAMERICATM

T i m i n g S y s t e m s

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.

UNDER NO CIRCUMSTANCES WILL RACEAMERICA BE LIABLE TO THE USER FOR DAMAGES, INCLUDING ANY LOST PROFITS, LOST SAVINGS, OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OF, OR INABILITY TO USE, SUCH PRODUCT.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH MAY VARY FROM STATE TO STATE.

PRODUCT OVERVIEW

The Stopwatch Display Timer series of digital displays (4532SC, 6532SC, 4832SC & 6832SC) are microprocessor controlled systems based upon the 7-segment format display digit using the latest technology Ultra-Bright LEDs. The Stopwatch Display Timer is a standalone integrated Timer and Digital Display with live running time. The timer operates with a simple push-button for Configuration/Start/Stop/Reset functions. The Stopwatch Timer is offered in 5" or 8" high digits and four or six digit models. The timer can be configured to count up or count down in hours, minutes, seconds and fractional seconds (see specifications). Capacities range from 0.001 seconds to 99:59 hours.

The timer can also function as a time of day 12 hour clock.

The display is viewable at wide angles and in conditions from full sun to total darkness without adjustment. Four levels of dimming are selectable if the standard display is too bright.

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

Each Stopwatch Display Timer package includes:

- 1 - Display Timer (either 5"/8" and 4/6 digits)
- 1 - Start/Stop Push-button - 25' cable
- 1 - Power Patch Cord
- 1 - Owner's Manual
- 1 - Battery Charger (Battery option models)

AVAILABLE OPTIONS

Cabling options:

Up to 100' for Push-button

6501A AC Adapter

6075A Soft Side Carry Case (for 6532SC)

6076A Heavy Duty Carry Case (for 6832SC)

6077A Soft Side Carry Case (for 6832SC)

7606B Suspension Display Stand

Internal Battery Option

POWER REQUIREMENTS

The Display Timer operates on any 12VDC power source or an internal rechargeable battery option 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. An automotive battery is ideal. Do not operate from battery chargers or an operating automobile.

THEORY OF OPERATION

The Stopwatch Display Timer is a standalone elapsed time timer and large digital display operated by a hand-held push-button.

The timer is configurable for count up or count down operation or use as a time of day clock. In the count down mode, the starting point can be set from 99:59 to 00:01 minutes.

Press and hold the push-button to reset the display; press the push-button to start the display counting (either up or down). Press the push-button again to stop the count.

MODEL SPECIFICATIONS

Model*	6532SC	6832SC	4532SC	4832SC
Display Type:	7-Segment	7-Segment	7-Segment	7-Segment
Digit Height (inches)	Five	Eight	Five	Eight
Number of digits:	Six	Six	Four	Four
Dimensions (inches)	11.5 x 29.6 x 3	14.3 x 46.8 x 3	11.5 x 20.3 x 3	14.3 x 32.3 x 3
Mounting - Eyelets	22" Center	30" Center	16.63" Center	22" Center
Housing - Powder Coated	Steel	Steel	Steel	Aluminum
View Filter	----- Red transparent acrylic -----			
View Range (ft)	200	320	200	320
Timing:				
Count UP				
(Seconds.Fractions)	-----000.000 to 999.999 -----		-----000.0 to 999.9-----	
			-----0.000 to 9.999-----	
(Min:Sec.Fractions)	-----00:00.00 to 99:59.99-----		-----00:00 to 99:59-----	
(Hour:Min:Seconds)	-----00:00:00 to 99:59:59-----		-----00:00 to 99:59-----	
Count DOWN				
(Min:Sec.Fractions)	-----99:59.99 to 00:01.00-----		-----99:59 to 00:01-----	
Time of Day Clock (12 Hr)	----- 00:00 to 12:59 -----			
(Hours:Minutes)				
Operating Range	----- -20°F to 120°F -----			
Hours of Operation (Bat)	10	10	14	14

* 'B' suffix on model number indicates internal battery

TIMER SET-UP

The Stopwatch Display Timer is designed to hang free using the top eyelets supplied with the display. The 5" digit Stopwatch Display Timers come with table stands. A display stand (7606B) is also available from RaceAmerica to hang the display at a good viewing level 40" above ground level.

RaceAmerica strongly suggests the system be set up and operation familiarity be gained prior to actual use. This can be done virtually anywhere.

STEP 1 - Familiarization

Familiarize yourself with the components pictured in this manual and how they interconnect. The push-button cable connects to the RJ45 connector on the back, The Power Patch Cable connects to a 12VDC source. Internal battery models have a switch to turn on the display.

STEP 2 - Connect Power - Patch cord

Power is supplied to the display through the 12VDC power input alligator clips. Connecting power to the display begins the power-up self-test mode.

Connect Power - Internal Battery

Power can be supplied to the display from an optional internal battery. The On/Off switch on the bottom of the display operates the internal battery models. It has two positions; the switch will be illuminated when power is supplied to the display (either from the battery or an external source).

The display will operate off the internal battery when the switch is pressed in and illuminated. The display will operate from an external power source (12V battery or AC adapter) in the out position. The switch will be illuminated.

The internal battery can be connected to the charger by the connector on the back of the display. The switch must be in the out position

and will be blank. The charger LED shows Red when charging and Green when completely charged. The charger may remain connected to the display when not in use; allow over-night for a full charge.

STEP 3 - POWER-ON SELF-TEST

When the timer power source is connected and the push-button is not pressed, the display timer 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 digits, one segment at a time including the colon or decimal point which exist to the right of each digit except the rightmost digit. The self-test continues by sequentially illuminating each segment until all segments, colons, and decimal points are on. Then the revision level of the code (eg [SCH0--]) running in the microprocessor is displayed, then [rEAdy] (four digit will display [rdy]) walks across the screen and flashes between brightest and dimmest settings and finally blanks out.

If the display is configured to count UP, the colon /decimal point will illuminate for the selected mode. If the display is set to Clock mode, the user is prompted to enter the desired time of day to start.

If the display is in count DOWN mode, the display will show the last saved start time in minutes/seconds [XX:XX.00] (six digit) or [XX:XX] (four digit) last saved.

STEP 4 - CONFIGURATION

The Display Timer includes a configuration menu when power is turned on while pressing the button. The timer has two configurable modes - [-UP---] and [-dn---] for count-UP (including clock) and Count DOWN respectively. Navigating these menus involves a series of push-button presses (press and release) and push-button holds (press and hold).

COUNT UP CONFIG

Power up while pressing the button (press/hold) and the display will show [ConFiG] (four digit will display [CFG]) until the button is released, then the last mode saved will show [UP] or [dn]. Toggle between count-up and count-down by pressing and releasing the button; when the desired format is displayed - [UP], press/hold the button until the screen blanks, then the last format saved will display. Each press/release of the button will cycle the display through the available flashing formats beginning with the last format displayed: [99:59.99] (MM:SS.FF), [99:59:59] (HH:MM:SS), [999.999] (SSS.FFF), and [12:59--] (HH:MM - Clock) on six digit displays; [99:SS] (MM:SS), [HH:59] (HH:MM), [999.9] (SSS.F), [9.999] (S.FFF) and [12:59] (HH:MM - Clock) on four digit displays. When the desired format is displayed, press/hold the button to select and release when the config advances to show brightness selection. [8888 -1] will display (brightest); press/release to view the next level (8888_3 will show). There are four levels to choose from (1/3/5/7); press/hold the button when the desired level is displayed. Next, the display will walk through the standard self-test. Upon completion the beginning start point with the desired format displayed at the selected brightness level. If the display is set to clock mode, the display will prompt to set the time and will show [XB:BB--]; where X is toggling between 0 and 1, B is a blank position. Input the desired time for the four digits by selecting the desired digit while it is displayed (press/release button). When all four digits are selected, the colon will turn off; press the button one last time to start the clock.

COUNT-DOWN CONFIG

Power up while pressing the button (press/hold) and the display will show [ConFiG] (four digit [CFG]) until the button is released, then the last mode saved will show [UP] or [dn]. Toggle between count-up and count-down by pressing and releasing the button; when the desired format is displayed - [dn], press/hold the button

until the screen blanks and the last count-down starting point saved will display as [MM:SS]. If starting from the same point, press/hold to move to brightness settings. If you wish to change the count-down starting point, press/release the button and the left digit will be cycling through 0, 1, 2, 3... press/release when the desired set point is displayed and the next digit will start cycling (when the fourth digit is set, the prompt cycles back to the first digit). When the desired time is displayed, press/hold the button to advance to show brightness selection. [8888 -1] will display (brightest); press/release to view the next level (8888_3 will show). There are four levels to choose from (1/3/5/7); press/hold the button when the desired level is displayed. This will take the display through the standard self-test. Upon completion the beginning start point with colons and decimals showing at the desired brightness level

TIMER OPERATION

Once configured, the timer will power-up to the last settings if the button is not pressed during power-up. To change between modes, cycle power and press/hold the button. Brightness must be configured each time power is applied in both modes.

COUNT UP MODE

In the count up Stopwatch mode, the timer begins live counting when the push-button is pressed and will count in the selected format until the push-button is pressed again - when it will freeze the time. Press the button again to blank the display and reset the timer. Press again to start timing the next event. The timer will stop at the maximum time for each format selection

COUNT DOWN MODE

In the count down mode, the timer starts counting down from the pre-selected point when the push-button is pressed and stops the countdown the next time the push-button is pressed or when it reaches zero time. Press again to reset the timer to the pre-selected time, press again to start.

CLOCK MODE

The time is set on the display and then enabled by one last press of the button; if the time needs to be coordinated with the actual time of day or other clocks, this will allow for either or both conditions. Figure out the start time for the clock (maybe a few minutes ahead of actual time to allow for setting). Set the Hours:Minutes (HH:MM) time of day as follows:

1) With the first digit toggling between **0** and **1** (the only possible choices for this position), press the push-button and release when the desired digit is displayed.

2) The first digit will freeze and the second digit will cycle between **0** and **2** (if the first position is a 1) or **1** and **9** (if the first position is 0); press the push-button and release when the desired digit is displayed.

3) The second digit will freeze and the third digit will cycle between **0** and **5**; press the push-button and release when the desired digit is displayed.

4) The third digit will freeze and the fourth digit will cycle between **0** and **9**; press the push-button and release when the desired digit is displayed.

5) The fourth digit will freeze and the colon goes out and the display will look like [XXXX--] (6-digit) or [XXXX] (4-digit). Press the push-button one last time to enable the clock; the colon will come back on indicating time of day is operational. This allows the clock to be synched with multiple units or the actual time of day (or both).

The push-button can be removed from the connector in the back of the clock after the time has been set.

If the time needs to be reset for any reason (power failure), plug in the push-button if it is not already plugged in, then cycle power OFF, then ON and restart at Step 1.

The display can only be dimmed using the config function at power-up. Brightness is reset to full each time the display is powered on.

DIP SWITCH DEFINITIONS

The Stopwatch Timer uses only DIP switch #1 and this should be in the ON position for normal operation.

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:

Diagnostic Mode	<u>1</u>
Disabled	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.

MAINTENANCE

The Stopwatch Timer Displays require minimal maintenance.

To clean the red 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 wet cloth being careful not to press when wiping to avoid scratching the red lens material.

Internal battery models should be charged after each use; allow eight hours for a full charge. It will not harm the charger of the battery to leave them connected when not in use.

SPARE PARTS

RaceAmerica recommends a spare push-button cable. 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.

DISPLAY STAND ASSEMBLY INSTRUCTIONS

This assembly instruction is intended for use with six digit 5/8 inch and four digit 8 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.

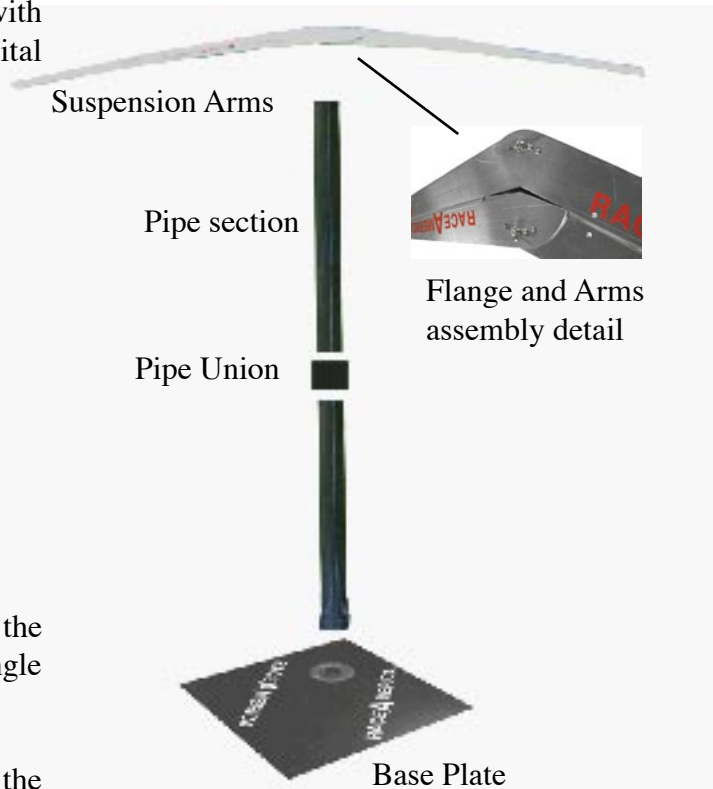
2) Connect the two pipe sections with the coupling and screw into the base plate flange to assemble the post.

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



Assembled Suspension Stand