



Scoreboard for Swimming & Track

With 2.4 GHz Integrated Wireless

EVENT		HEAT	
COLORADO TIME SYSTEMS			
LN	PL	TIME	
1	1	10:03.90	
2	5	9:48.63	
3	2	9:37.46	
4	1	9:37.08	
5	3	9:38.52	
6	4	10:13.63	
7	4	9:42.70	
8	6	9:51.46	

Installation and User Guide



**Colorado
TIME SYSTEMS**

A **PLAYCORE** Company

F1004 Rev. 202007

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Product Identification

Product: Multiline Scoreboards

Model Numbers:

MS-0149 through MS-0152

MS-0155 through MS-0157

Power Specification

320W power supply: 100-240V, 50/60Hz, max 4A

Information in this manual is subject to change without notice. Pictures and illustrations may not accurately depict your version. Please check our website for the most current information; our user manuals are available online in the customer service section of our website.

Part Number F1004, Rev. 202007

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Product Overview

The Otter multiline scoreboards for swimming and track can be used indoors or outdoors. They feature a lightweight aluminum enclosure and plastic weather covers over the digits.

For swimming, the scoreboard is operated wirelessly when controlled by a Dolphin timing system, CTS Gen7 timer or sports console (System 6 or older). When used wirelessly, the scoreboard is controlled by a certified radio patch antenna that is mounted internally which keeps it protected from damage. It can be operated wired when controlled by a CTS sports console or Gen7 timer.

For track, the scoreboard is operated wirelessly, controlled by a RoadRunner timing system.

The scoreboards also contain ambient light sensors, which can be enabled by Gen7 or System 6 to detect external light and shadows and then adjust the display so that it visually maintains the optimal digit intensity.

Scoreboard Installation Preparation

When a board is used outdoors, the power cord must be used in conjunction with an outdoor-rated receptacle.

**Typically, it is more convenient to complete the Channel and PAN settings (if necessary) on the ground prior to mounting the board. Instructions are on following pages.

It is the owner's responsibility to follow all applicable electrical and structural codes. It is the owner's responsibility to follow all applicable building codes.

Required mounting/installation drawings showing board dimensions, attachment points and weight are available from www.coloradotime.com

Physical mounting

Determine the location for the scoreboard. It is the owner's responsibility to choose a location which can support the weight of the scoreboard, which is listed in the installation drawing. The scoreboard is mounted to a wall, corner, pole or caddy using kits that can be purchased separately. Follow the instructions that are included with the mounting kit.

Scoreboard support structures are the responsibility of the facility, and must be designed by a qualified structural engineer to meet all national and local codes. Refer to scoreboard installation drawing, showing the boards' dimensions, attachment points and weight.

The board must not be connected to live AC power during installation.

Scoreboard Power On Routine

Once the scoreboard is powered up it displays an initialization routine on lanes 1, 4, and 7 (if present):

- LEDs on
- Digits count up 0 through 9
- Displays version number of scoreboard firmware
- Rotates through address, channel and PAN at least 3 times. For example, a board set to address 1, channel 6 and PAN 0 would show A01, C06, and P00.
- Shows Dolphin/RoadRunner information for 30 seconds: channel number under Lane and Place, two other numbers, and scoreboard adapter firmware revision in the 4 rightmost digits.

The scoreboard is then ready for signals from its data source: Dolphin wireless stopwatch system, Gen7 timer, System 6 or older sports console, or RoadRunner for track.

Dolphin

The Dolphin base (and watches and starter) must be on the same channel as the wireless scoreboard adapter inside the scoreboard. **The default factory setting of the wireless scoreboard adapter inside the scoreboard is Channel 7**

When the scoreboard is turned on, it displays an initialization routine which includes the scoreboard's channel, PAN and address, and then the channel of the wireless scoreboard adapter inside the scoreboard. This display is described in more detail in the Scoreboard Power On Routine on page 2.

Note the Dolphin channel displayed under Lane and Place during initialization, and follow instructions in the Dolphin general quick reference guide to set the Dolphin base to the same channel through the Dolphin software. You can then follow the user instructions for the scoreboard adapter to wirelessly change the channel of the scoreboard adapter inside the scoreboard if desired.

Gen7 Timer *Setting Channel and PAN*

If using the scoreboard wirelessly, the scoreboard's wireless settings must match the wireless settings in the Gen7 timer. **The scoreboard's default factory settings used by Gen7 are Channel 6 / PAN 0.** You can change the settings in the Gen7 Swimming software from the Scoreboard tab.

When the scoreboard is turned on, it displays an initialization routine which includes the scoreboard's channel, PAN and address, and then the channel of the wireless scoreboard adapter inside the scoreboard. This display is described in more detail in the Scoreboard Power On Routine on page 2.

Wired Connection

A Gen7 timer can be connected by cables to the scoreboard.

Scoreboard cables must be supported a minimum of every 6 feet when not in conduit. When conduit is used, the conduit must be secured every 3 feet at minimum. Scoreboard cables must not be spliced in either indoor or outdoor applications. If using wired data make sure there are no sharp bends in the cable. A bend in RS-485 cables must have a minimum bend radius of 1.2".

Use a data cable (R-015-674-xx) to connect your Gen7 timer to the round quarter-inch RS-485 jack on the bottom of the scoreboard.



Time of Day

When the scoreboard is on but does not receive data from a data source for longer than 30 seconds, the board will display time of day in Lane 1. Set the time of day in the Gen7 Swimming software from the Scoreboard tab.

Ambient Light Sensor Set-up and Operation

The ambient light sensors can be enabled and disabled from the Gen7 Swimming software Scoreboard tab.

There are multiple sensors to compensate for shadows across the board. The number of sensors depends on the size of board.

- The top sensor is to the right of lane 1, and controls lanes 1, 2, 3 and Event/Heat.

- The sensor next to lane 5 controls lanes 4, 5, 6

- The sensor next to lane 7 controls lanes 7, 8, 9

- The sensor next to lane 9 controls lane 10

System 6 or older sports consoles

Setting Channel and PAN

If using the scoreboard wirelessly, you need a wireless adapter (WA-3 or WA-2) connected to the sports console. The wireless adapter's channel must match the scoreboard's wireless settings must match the transmitter that you are using. **The scoreboard's default factory settings used by the WA-2 are Channel 6 / PAN 0.**

Operating Instructions

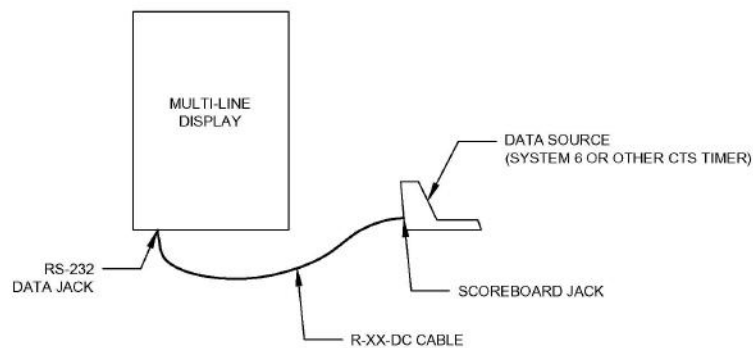
Operating Instructions

Sports console

Cabled connection:

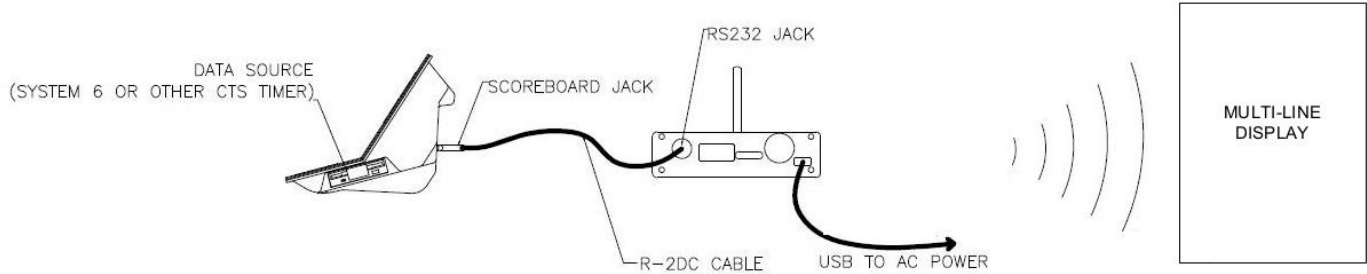
Sports consoles can be connected by cables to the scoreboard.

Scoreboard cables must be supported a minimum of every 6 feet when not in conduit. When conduit is used, the conduit must be secured every 3 feet at minimum. Scoreboard cables must not be spliced in either indoor or outdoor applications. If using wired data make sure there are no sharp bends in the cable. A bend in RS-232 cables must have a minimum bend radius of 1.0".



Use a data cable (R-xxDC) to connect your sports timer to the round quarter-inch RS-232 jack on the bottom of the scoreboard.

Wireless connection:



When using a wireless connection, the WA-2 wireless adapter and scoreboard must be set to the same channel and PAN. Follow the WA-2 user instructions to change its channel and PAN. Follow instructions on previous pages if scoreboard Channel and PAN must be changed.

Displaying data correctly

Proper operation of the scoreboard with sports timer data requires the default scoreboard module definitions on the sports timer.

Time of Day

When the scoreboard is on but does not receive data from a data source for longer than 30 seconds, the board will display time of day in Lane 1. Follow the instructions in your sports console user manual to set the time, and it will also be saved to the scoreboard. The scoreboard definition for time of day module must be set 16, which is the default.

Ambient Light Sensor Set-up and Operation

The ambient light sensors can be enabled and disabled from a System 6.

To turn the sensor on, follow these steps:

1. Go to the Setups screen in Swimming
2. Select "Hardware" on the left pane
3. Press "0" to set the intensity
4. Select "2" as the intensity value
5. In Swimming, these settings are automatically saved.

The board will now begin to control the intensity automatically based on the intensity of the light hitting the board.

To turn the sensor off, follow steps 1-3 above, selecting anything above a 2 for the intensity value.

There are multiple sensors to compensate for shadows across the board. The number of sensors will vary depending on the size of board.

The top sensor is to the right of lane 1, and controls lanes 1, 2, 3 and Event/Heat.

The sensor next to lane 5 controls lanes 4, 5, 6

The sensor next to lane 7 controls lanes 7, 8, 9

The sensor next to lane 9 controls lane 10

RoadRunner

The RoadRunner PCIF must be on the same channel as the wireless scoreboard adapter inside the scoreboard. **The default factory setting of the wireless scoreboard adapter inside the scoreboard is Channel 7**

When the scoreboard is turned on, it displays an initialization routine which includes the scoreboard's channel, PAN and address, and then the channel of the wireless scoreboard adapter inside the scoreboard. This display is described in more detail in the Scoreboard Power On Routine on page 2.

Note the channel displayed under Lane and Place during initialization, and follow instructions in the RoadRunner user guide to set the PCIF to the same channel through the RoadRunner software. You can then follow the user instructions to wirelessly change the channel of the scoreboard adapter inside the scoreboard if desired.

Synchronizing Time of Day

To set multiple scoreboards to the same time, they must be set to the same channel and PAN (See page 3, 5, or 8 for your application).

Designating Leader/Follower with WTTC, WA-3 or WA-2

1. Connect a WTTC, WA-3 or WA-2 to your computer using a USB cable.
2. Make sure the Channel and PAN are set to match your scoreboard.
 - a. WA-3 or WA-2: use the dipswitches on the device
 - b. WTTC: use the on-screen menu. After checking /setting the Channel and PAN and saving any changes, turn the unit off and then on again and leave it at the Sport Selection menu.
3. From your computer, open the MultiSport Firmware Reprogramming tool.
 - a. If you do not have this tool, download it from the CTS website at <https://www.coloradotime.com/support-overview/installation-methods>. Choose the MultiSport tab and download MultiSport Display Firmware.
4. Click "Scan for Devices"
5. Select your attached WTTC or WA-3/WA-2 (WA-3 will be listed as WA2)
6. Click "Get Sub-Devices"
7. Select the scoreboard you wish to set as leader.
 - a. Click the "Enable (as Leader)" button at the bottom of the screen.
 - b. The scoreboard will display **LEAD** for a few seconds
8. One by one, select the scoreboard you wish to set as follower.
 - a. Click the "Enable (as Follower)" button at the bottom of the screen.
 - b. The scoreboard will display **FOLL** for a few seconds
9. Close the software and disconnect you WTTC, WA-3 or WA-2.

Setting Time of Day and Changing Channel with Wireless Tabletop Controller (WTTC)

For tabletop controller (WTTC), enter any sport and press the Menu button. Select "Set Time". Time of Day from WTTC will override the time on the leader and all follower clocks and scoreboards.

To change the channel and PAN, select "Scoreboard Options" in the Menu. When finished, press Clear to exit the menu.

Setting Time of Day and Changing Channel with Wireless Handheld Controller (WHC)

For handheld controller (WHC), enter the Menu and select “Time of Day”. Time of Day from WHC will override the time on the leader and all follower clocks and scoreboards. To change the channel and PAN, select “Connections”

Time of Day from a Sports Console (Gen 7, System 6, System 5)

Gen7 timers will receive time of day from the attached laptop and transmit that time to leader clocks/scoreboards that are turned on and on the same channel and PAN. You can also manually send time of day from the scoreboard settings screen. The leader will update the followers.

System 6 and System 5 sports consoles will send time of day to leader clocks/scoreboards connected to them via RS-232 or wirelessly from WA-3/WA-2 on the same channel and PAN. The leader will then update the followers.

Physically changing the scoreboard channel (for Gen7, System 6 or older sports timer)

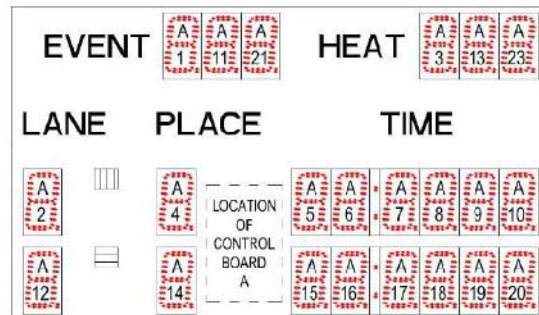
If using the scoreboard wirelessly, the scoreboard’s wireless settings must match the transmitter that you are using. For Gen7, System 6 and older sports timers, this is the channel and PAN.

It is usually easiest to set the data source to match the scoreboard. To do this, follow the user instructions for Gen7 or wireless transmitter WA-3/WA-2.

Sometimes, however, it is preferable to change the scoreboard’s Channel and PAN to match the data source (Gen7 or a wireless adapter connected to a timer).

To set the scoreboard’s Channel and PAN:

1. Remove end cap of one side by removing the screws. Slide out the second weather cover to expose control board A (see image below). Place all of these materials in a safe place for later re-installation.



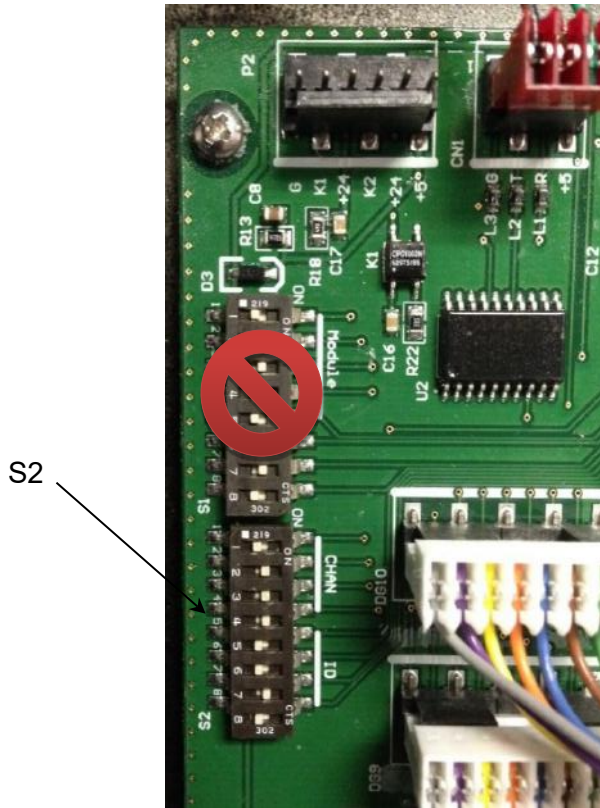
- Set the Channel and PAN on the dip switches for control board A.

DIP switch settings (Off = 0, On = 1)

Channels: Switches **1-4 of S2**. 0 to 11 are valid
PAN ID: Switches **5-8 of S2**. 0 to 15 are valid

0 0 0 0	0	0 0 1 0	4	0 0 0 1	8	0 0 1 1	12
1 0 0 0	1	1 0 1 0	5	1 0 0 1	9	1 0 1 1	13
0 1 0 0	2	0 1 1 0	6	0 1 0 1	10	0 1 1 1	14
1 1 0 0	3	1 1 1 0	7	1 1 0 1	11	1 1 1 1	15

NOTE: Settings of S1 should not be changed. Doing so will cause the display to cease functioning properly.



New picture w/ S3

- Replace the weather covers. Replace end cap.

Troubleshooting

Issue	Solutions
No data appears on the scoreboard	<ol style="list-style-type: none"> 1. Check that the scoreboard is plugged in to a working AC outlet. 2. Check that timer is plugged in and functioning. 3. Check that any cables are firmly attached 4. If using a wireless adapter, consult the user instructions for that adapter, and make sure that all settings (channel, etc.) are configured correctly 5. Ensure that the scoreboard is not “blanked” from the sports timer. Consult your timer’s user’s manual for details.
Expected data does not appear on the scoreboard	<p>Garbled data is displayed: If you are sending data from a sports timer older than the System 6, make sure the timer is set to high speed data rather than low speed data. (The System 6 only sends high speed data).</p> <p>Incorrect or missing data: Make sure the timer’s scoreboard module definitions are set to the default settings.</p> <p>Make sure you only have one active data source at a time. A sport console connected with a wire will override any wireless data sources. Dolphin or RoadRunner will override data sent via WA-3/WA-2.</p>

Standards followed

UL 48

Issue:2011/09/02 Ed:15 Rev:2012/05/04 UL Standard for Safety Electric Signs

CAN/CSA C22.2#207

*Issue:1989/01/01 Portable and Stationary Electric Signs and Displays General
Instruction No 1: 1989/10/01 - (R2008)*

FCC 47CFR 15B cIB

Issued: 2015/10/01 Title 47 CFR Part 15 Subpart B Unintentional Radiators Class A Verification

ICES 003

Issue:2004/01/01 Issue No.4 Interference-Causing Equipment Standard, Digital Apparatus



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