



Serial Timer

User Guide



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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.

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Introduction



Welcome to Gen7 timing. The Gen7 platform provides you long-lasting technology that will save you time and money. The software interface puts intuitive control of all levels of competition at your fingertips. This software combined with the distributed intelligence of our proprietary serial bus communication system gives you the flexibility to run your meets your way.

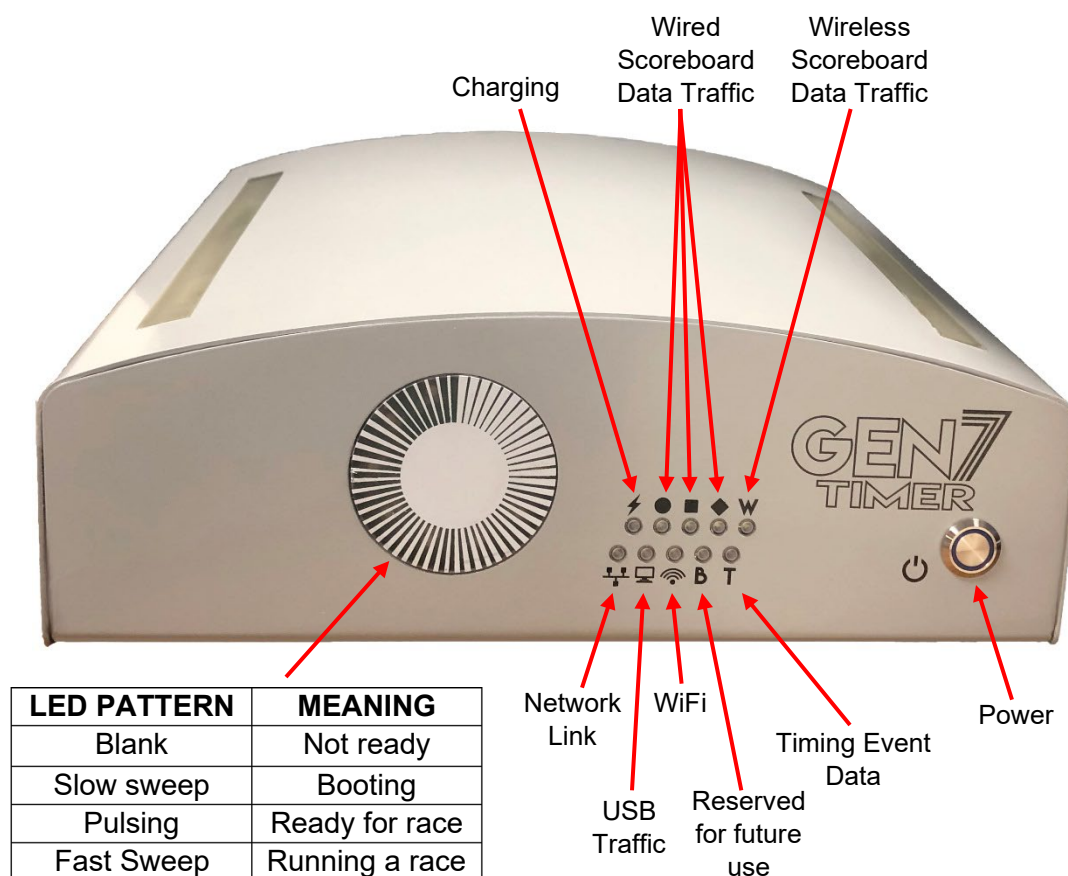
Gen7 exceeds current standards by offering you cutting-edge technology with unrivaled precision and an all-new software-driven experience to run your meets flawlessly.

Various sections of this manual contain QR codes linked to accompanying tutorial videos. Click or scan the QR codes to see the Gen7 in action.



Sample

Hardware



The LEDs on the front of the timer indicate data traffic and the state of the timer, as described above.

Charging status LED

- When the device is plugged in to power and the battery is charging correctly the LED is blue.
- When the device is plugged in and the battery is not charging, because the charging was completed or the battery is full, the LED is dark.
- When the device is not plugged in the LED is dark.

The Gen7 Timer utilizes a battery charging chip. When the battery charging chip analyzes the status of the battery before and during charging and finds a fault the LED is red.

Note: When the battery is quite full and the device gets plugged in the charging chip can erroneously detect a battery fault. In the case of a red LED, disconnect the device from power, and then reconnect to power to see if the status changes.

If the LED blinks red, contact Colorado Time Systems Customer Support

Power Supply

Important Safety Instructions

When using electrical products, basic precautions should always be practiced including the following:

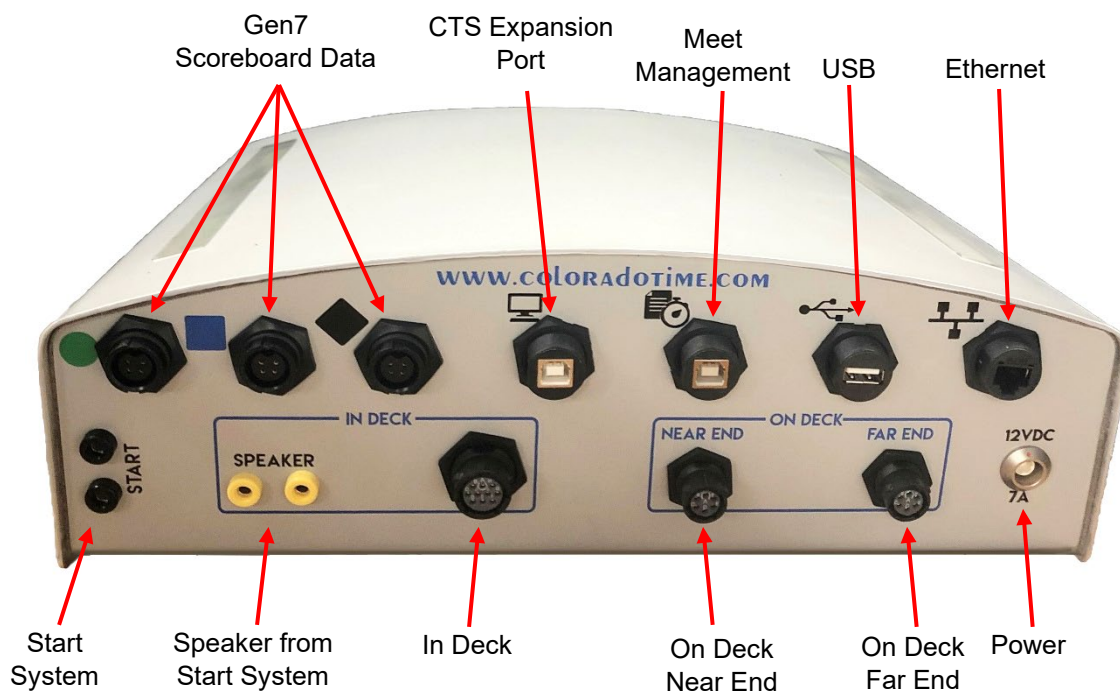
READ AND FOLLOW ALL SAFETY INSTRUCTIONS.

Read and follow all instructions that are on the product or provided with the product. Do not use an extension cord with the Gen7 power supply.

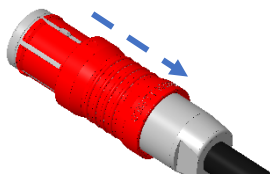
WARNING: Risk of Electric Shock. When used outdoors, install only to a covered Class A GFCI protected receptacle that is weatherproof with the power unit connected to the receptacle. If one is not provided, contact a qualified electrician for proper installation. Ensure that the power unit and cord do not interfere with completely closing the receptacle cover.

SAVE THESE INSTRUCTIONS– This manual contains important safety and operating instructions for power units.

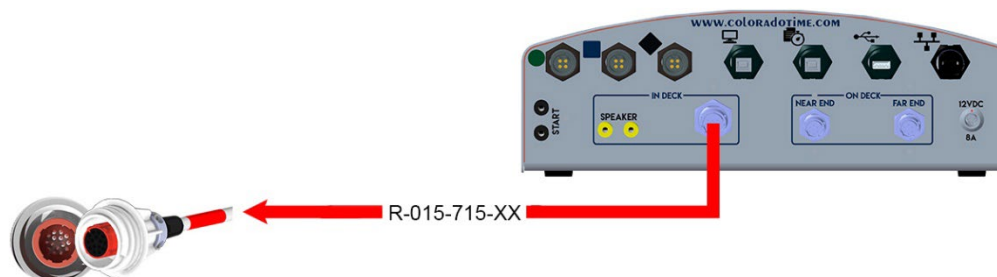
Connections



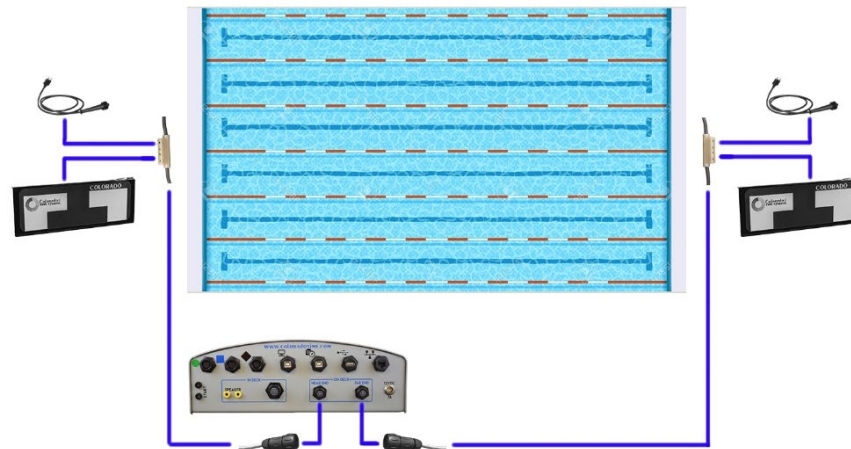
Power Connection: To connect the power supply to the Gen7 timer, line up the red dot on the power receptacle with the red dot on the connector on the power cord. Push in until it clicks in place. To disconnect the power cable, pull back on the sleeve on the connector (shown in red below) to unlock the connector from the receptacle then disconnect the power cord from the timer.



For in-deck systems: you only need the R-015-715-xx cable. Plug the black end of the cable into the timer. Plug the white end (with the red keyway) into a "Timer" node in your wallplate or your deck.



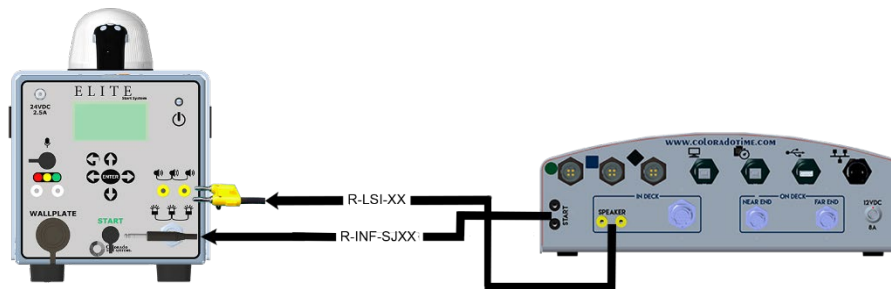
For on-deck systems: there are separate connectors for near end and far end serial cable harnesses. Serial cable harnesses may be chained together to support a primary and a backup harness for up to 20 lanes.



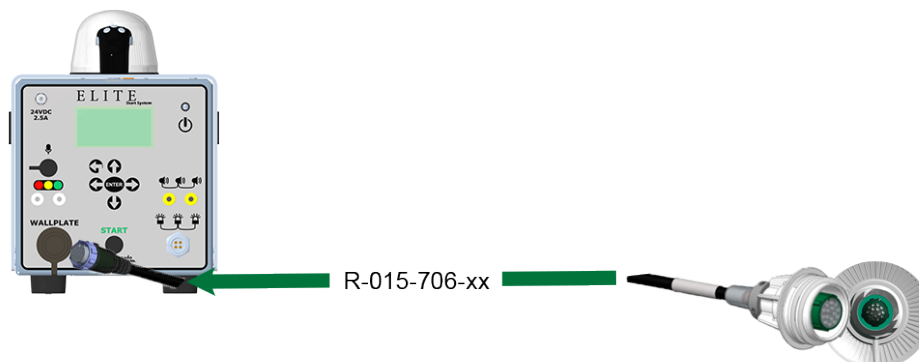
Connecting the Start System

The start system can be connected to the Gen7 timer in two different ways:

- Connect the start system directly to the timer using one R-LSI-xx cable for the speaker signal and one R-INF-SJxx cable for the start signal.



- Connect the start system to a start node in the wall or deck using an R-015-706-xx color-coded cable with the green keyway.



Connect Interface Computer to Timer

The Gen7 timer requires a laptop (or desktop) PC to run the control interface. The interface computer and timer must be connected to the same network. The Gen7 Timer supports an Ethernet connection. The interface computer can be connected to the network via a cabled Ethernet connection or Wi-Fi. The timer and interface computer can also be directly connected with a single Ethernet cable.



Other Connections

Connect other equipment such as touchpads, pushbuttons and relay judging platforms to the deckplates at each lane. Use the Diagnostics function (see page 21) to quickly confirm that all equipment is in the correct location and plugged in.

Power On Sequence

With your equipment connected to the timer, you can now begin the power up sequence.

1. Power on the interface computer and let it boot completely.
2. Press the power button on the Gen7 timer
3. Wait until all LEDs in the CTS logo sweep show a slow pulse (about 30 seconds) before launching Gen7 Swimming software.



Power Off Sequence

To power off the timer click first close the Gen7 Swimming software. A pop up will appear asking to confirm exit. Select the **Send POWER OFF command to timer** check box then click OK. The timer will power off after a few seconds.



Should the timer need to be powered down without sending the command from the software, press and hold the power button for approximately 8 seconds. When the sweep and other lights turn off the timer is successfully powered down.

Software

Power On Sequence

With your equipment connected to the timer, you can now begin the power up sequence.

4. Power on the interface computer and let it boot completely.
5. Press the power button on the Gen7 timer
6. Wait until all LEDs in the CTS logo sweep show a slow pulse (about 30 seconds).
7. Start the Gen7 Swimming Software on the interface computer.



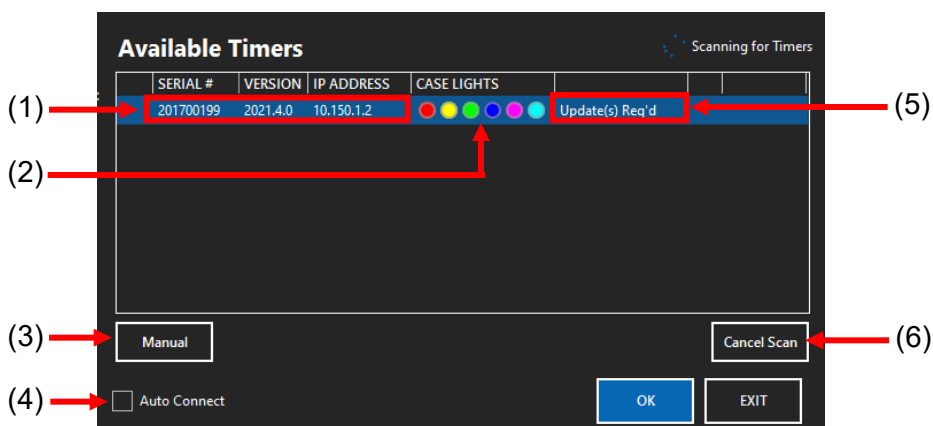
Note: If Gen7 Swimming Software is not installed, see

<https://www.coloradotime.com/sware.htm>

Click the Gen7 tab then select the latest Gen7 Swimming Software.

When the software starts, it will attempt to find the timer automatically. If the timer is not found, an IP address can be specified manually.

Timer Selection



When the software opens the Available Timers window will pop up. Here is where available timers are shown.

1: Serial number, version number, and IP address

Displays each available timer's serial number, firmware version number and IP address.

2: Case lights

If there are multiple Gen7 timers on the network, the case lights option can be used to easily distinguish each timer. With the timer highlighted, click any of the colored dots to change the case lights on the top of the timer to the color selected.

3: Manual

If a selected Gen7 timer has a static IP address, click the **Manual** button. A text box will appear where a static IP address can be typed in for the timer.

4: Auto Connect

Click the **Auto Connect** check box to connect to the selected timer automatically when the software is started and bypass the Timer Selection screen.

5: Updates Required Alert

If updates are available for a listed timer, Update(s) Req'd will display in the Updates Required Alert field. If no updates are needed the field will remain blank.

6: Cancel Scan

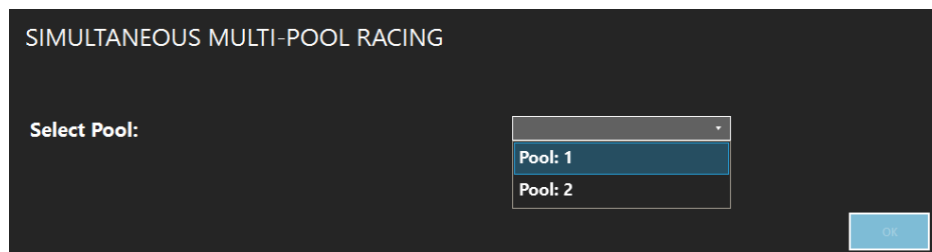
Click the **Cancel Scan** button to stop the software from scanning for additional Gen7 timers.

Set Up

Each time you open the Gen7 Swimming software, you need to either create a new meet or open an existing meet.

Pool Selection

In multi-pool facilities, select which pool will be used for the meet. In single pool facilities, this window will not appear.

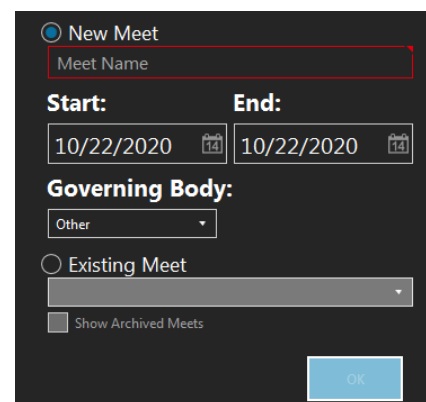


Create a New Meet

1. Select **New Meet**
2. Enter a name for the meet
3. Choose Start and End dates for the meet
4. Select the governing body

Open an Existing Meet

1. Select **Existing Meet**
2. Select desired meet from previously created meets



Create a New Session

1. Select **New Session**
2. Choose the session number
3. Select pool length
4. Choose the sessions start time.
5. A tag can be added to the session if desired. A tag is extra text that is added to the session name (e.g., Friday Prelims)
6. Select Default Event Sequence if you wish to automatically add events
7. Use **Timing Hardware Selection** to select the course configuration. Course setup options are configured at the time of installation. If additional course setups are required, please contact CTS support.

The screenshot shows a 'New Session' form with the following fields and options:

- New Session** (radio button selected)
- Number:** 2 (with increment/decrement buttons)
- Tag:** (e.g., Fri. Prelims)
- Pool Length:** (dropdown menu)
- Start Time:** 1/21/2022 1:00:00 PM (with a calendar icon)
- Add Default Events:** No (radio button selected) / Yes (radio button)
- Coed High School (NHHS)** (dropdown menu)
- Include Junior Varsity?** No (radio button selected) / Yes (radio button)
- Existing Session** (radio button)
- Session:** 1 (dropdown menu)
- Timing Hardware Selection** (dropdown menu with options: West Side, Near End: West End, Far End: West Bulkhead)
- BACK** and **OK** buttons

Open an Existing Session

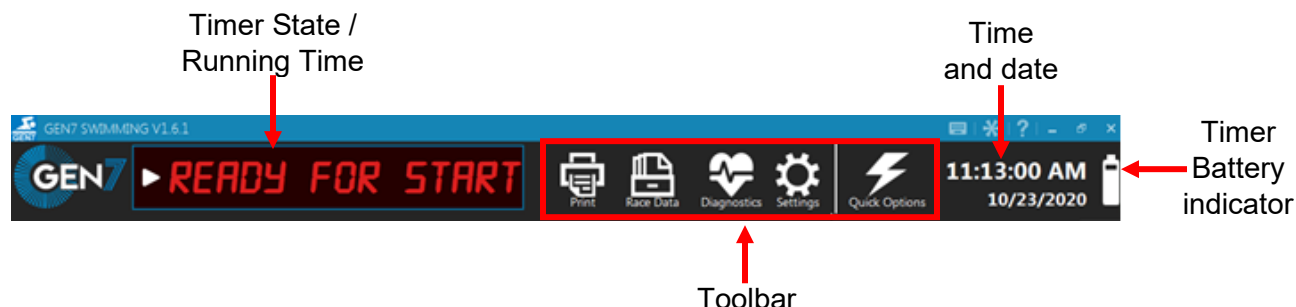
1. Select **Existing Session**
2. Choose a session from previously created sessions
3. Use **Timing Hardware Selection** to select the course configuration

Main Screen

The Main screen is where current event and heat information is displayed.

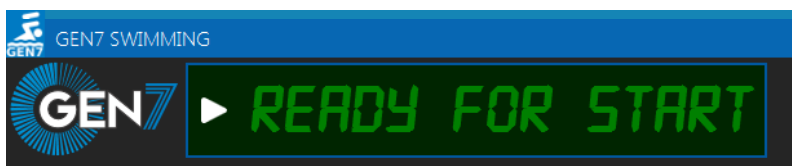
Running Time and Toolbar

The Running Time and Toolbar portion of the Main screen is where the Timer State / Running Time, and Toolbar are displayed.



Timer State/Running Time

When **READY FOR START** is displayed, the system is in the reset state and is ready for a race to be started.



During a race the Running Time will be displayed here



After finish times have been registered for all lanes, **FINISHED** will be displayed

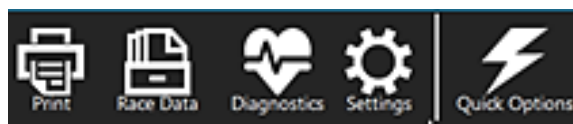


Click **FINISHED** and then Click **Save and Reset** to store the race results and put the timer back into the reset state.




Toolbar

The toolbar contains the Print, Race Data, Diagnostics, Settings, and Quick Options buttons.



Print



The  button will open a dialog box where the current completed event results can be printed or exported to PDF. (See page 49 for printer settings)

1) Girls' 200 Meter Medley Relay - Heat 2 (Race# 5)

CTS Invitational (1/27/2021 - 1/27/2021) Session: 2

Girls' 200 Meter Medley Relay

Event: 1 Heat: 2 Race # 5
Start Time: Wednesday, December 15, 2021 9:14:59 PM


By Lane			By Place		
Lane	Place	Time	Place	Lane	Time
2	6	1:12.60	1	4	1:11.84
3	4	1:12.34	2	5	1:11.89
4	1	1:11.84	3	6	1:12.17
5	2	1:11.89	4	3	1:12.34
6	3	1:12.17	5	7	1:12.55
7	5	1:12.55	6	2	1:12.60

	Lane 1	Lane 2	Lane 3	Lane 4	Lane 5	Lane 6	Lane 7	Lane 8
25m								
50m	17.50	18.23	18.38	18.64	18.85	19.00		
75m								
100m	39.27	39.12	38.89	39.72	40.02	40.12		
	(21.77)	(20.89)	(20.51)	(21.08)	(21.17)	(21.12)		
125m								

Print Export to PDF System Default Printer CLOSE

Race Data



The  button navigates to the Race Data Screen. Here the results of all previously run races of the session can be viewed and printed.

Print
selected race

Completed
races
(grouped
by event)

GEN7 SWIMMING V1.6.2-2

GEN7 ▶ **READY FOR START**  Main Screen Diagnostics Settings Quick Options 11:26:32 AM 11/19/2020


Event 1 200 Meter Medley Relay Heat 2 [Race # 1]

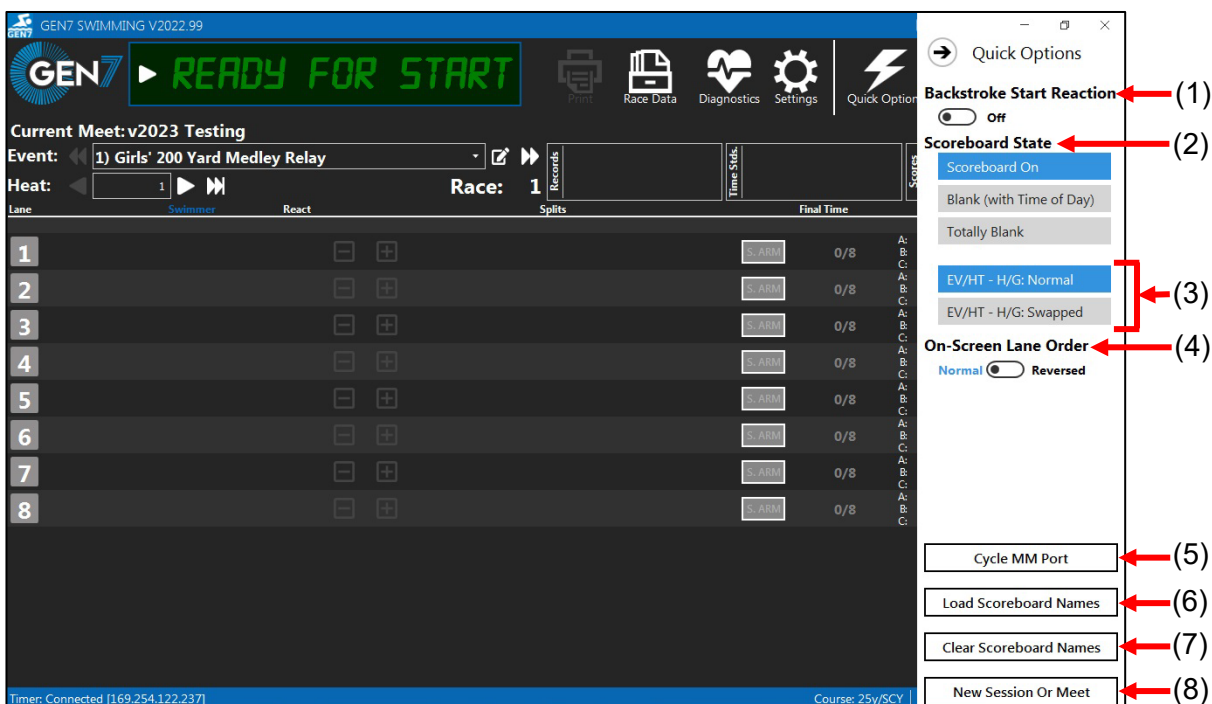
200 Meter Medley Relay Event: 1 Heat: 2 Race: 1 Start Time: 2/25/2020 11:10 AM

Lane #	React	LAP 2	50m	LAP 4	100m	LAP 6	150m	LAP 8	200m	Final Time	Backup	Place
1												
2												
3	0.47	35.47	1:07.72	32.25	1:46.35	38.63	2:12.74	26.39	2:12.74	2:12.91		6
4	0.46	33.38	1:06.32	32.94	1:45.22	38.90	2:10.77	25.55	2:10.77	2:10.95		4
5	0.46	30.38	1:04.38	34.00	1:42.77	38.39	2:08.97	26.20	2:08.97	2:09.18		2
6			1:05.29	34.00	1:44.08	38.79	2:09.84	25.76	2:09.84	2:10.03		3
7	0.47	34.47	1:08.77	34.30			2:12.05		2:12.05	2:12.16		5
8	0.39	36.42	1:09.33	32.91	1:41.13	31.80	2:08.13	27.00	2:08.13	2:08.24		1
9												
10												

Data for
selected
race

Quick Options

Click  to open a menu on the right side of the Main screen.



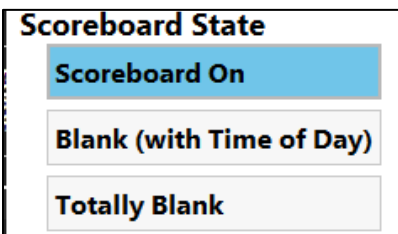
1: Backstroke Start Reaction

Toggles backstroke start reaction on or off. See page 38 for information on adjusting backstroke start reaction settings.



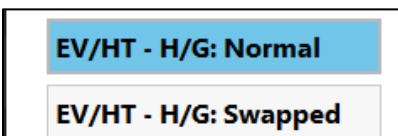
2: Scoreboard State

Here the scoreboard state can be toggled between On, Blank with Time of Day displayed, or Totally Blank. When "Blank with Time of Day" is selected, the time of day will appear on modules 03, 0F and 16.



3: Event/Heat – Home/Guest Swap

Sets what appears on modules 0C and 0D. Normal is Event/Heat on 0C and Home/Guest scores on 0D. This is designed to work with the LED6 series numeric boards.



4: On-Screen Lane Order

Changes the order in which lanes are displayed on the main screen. This has no effect on actual lane mappings.



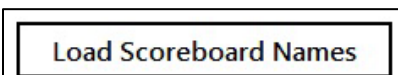
5: Cycle MM Port

Click to cycle the connection to the meet management software to re-establish a connection.



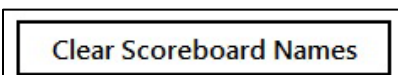
6: Load Scoreboard Names

Allows selection of a folder containing Scoreboard Name (SCB) files. Names are displayed on screen and transmitted to the scoreboard (via RS-485). For more information, see Appendix C



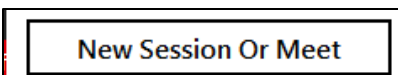
7: Clear Scoreboard Names

Clears any previously loaded scoreboard names.



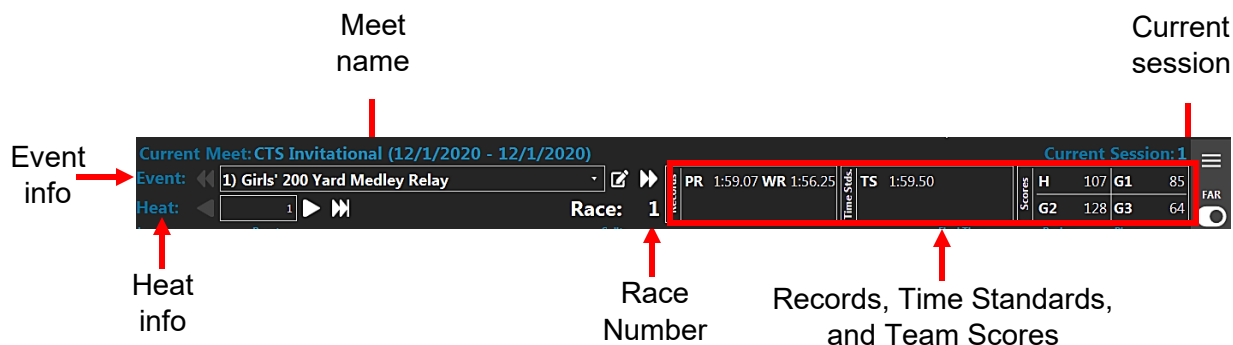
8: New Session or Meet

Click New Session or Meet to open a dialog box where a new session or meet can be created. See page 16 for details on creating a meet or session.

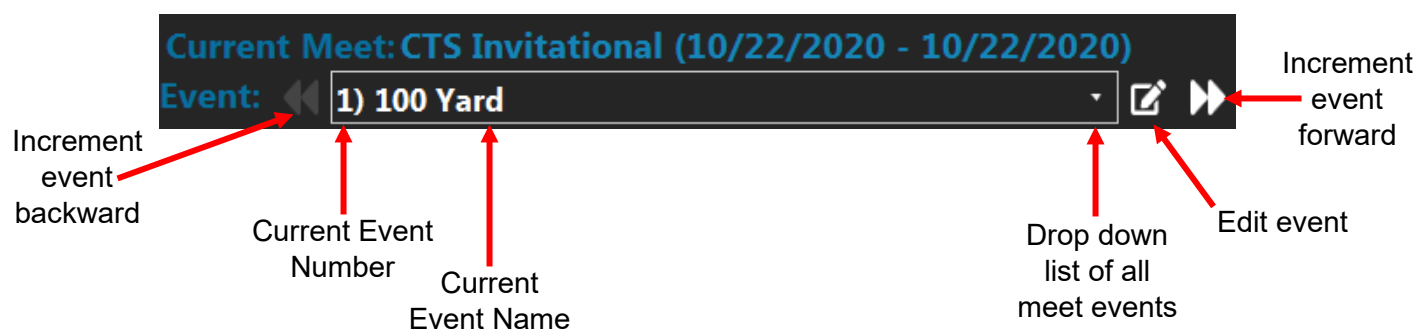


Event Info

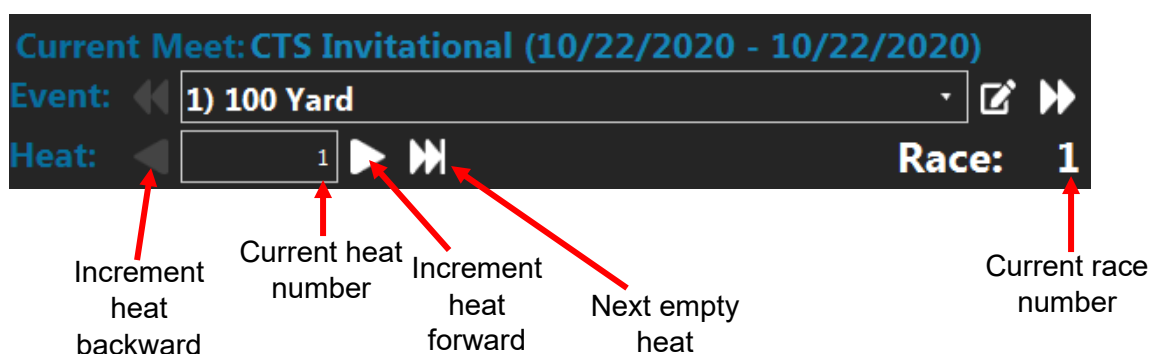
The Event Info section is where current event and heat selection are managed, and where records, time standards, and team scores are displayed.



Event



Heat



In both the **Event** and **Heat** sections, the number of the event or heat desired can be typed and the software will go to the defined event or heat. If an event number is typed in that is not already defined, the software will create a new event which can be edited by clicking the edit event button.

By default, a single lap test race (Event #0) is added to all event sequences. This event allows test races to be run without using a real event number. Please note, any data recorded while running a test race is **NOT** saved.

The behavior of the Next/Previous Event and Next/Previous Heat buttons is affected by the **Event Skip Mode** setting in the Session Settings tab. These modes help facilitate different scenarios used in two-pool racing. For more information see page 58.

Records, Time Standards, and Team Scores

Records	PR 1:59.07	WR 1:56.25	Time Stds.	TS 1:59.50	Scores	H 107	G1 85
						G2 128	G3 64

Records: When a record has been defined in **Session Settings** (see page 53) the record tag(s) and record time(s) will be displayed here. Only a race winner can beat a record.

Time Standards: When a time standard is specified in **Session Settings** (see page 57), the time standard tag(s) and time(s) will be displayed here.

Team Scores: Scores for home and guest(s) are displayed here. Click here to edit team scores.

Lane Data

The Lane Data section of the screen is where the current race data will be displayed and where basic operations take place during an event (see page 59).

Lane Numbers	Split Times				Final Times	Place (Rank)
1 Lane Off						
2	30.19	1:00.51	1:31.81	2:01.63	2:01.63	6 F. ARM
3	29.73	1:00.16	1:31.36	1:59.37	1:59.37	2 F. ARM
4	29.38	59.21	1:30.50	1:59.07	1:59.07	1 F. ARM
5	29.47	59.50	1:29.82	1:59.89	1:59.89	5 F. ARM
6	29.73	59.99	1:31.27	1:59.37	1:59.37	2 F. ARM
7	30.19	1:00.45	1:31.71	1:59.70	1:59.70	4 F. ARM
8 Lane Off						

Relay Exchange Times

Backup Times

Lane State

To turn a lane that is not in use off, click on the lane number. No data for this lane will be displayed. Click the lane number again to turn the lane back on. In the event a lane is accidentally turned off during an event, the software will continue to record timing inputs registered in the lane. Turn the lane on during the race or before saving race results and the lane results will be placed and saved.

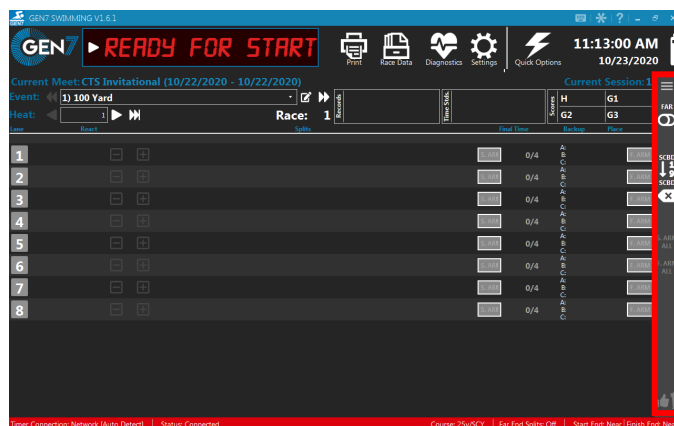
Status Bar


The status bar located at the bottom of the screen displays the timer connection network setting, timer connection status, and the current course settings. The status bar is red if the timer is running on battery.

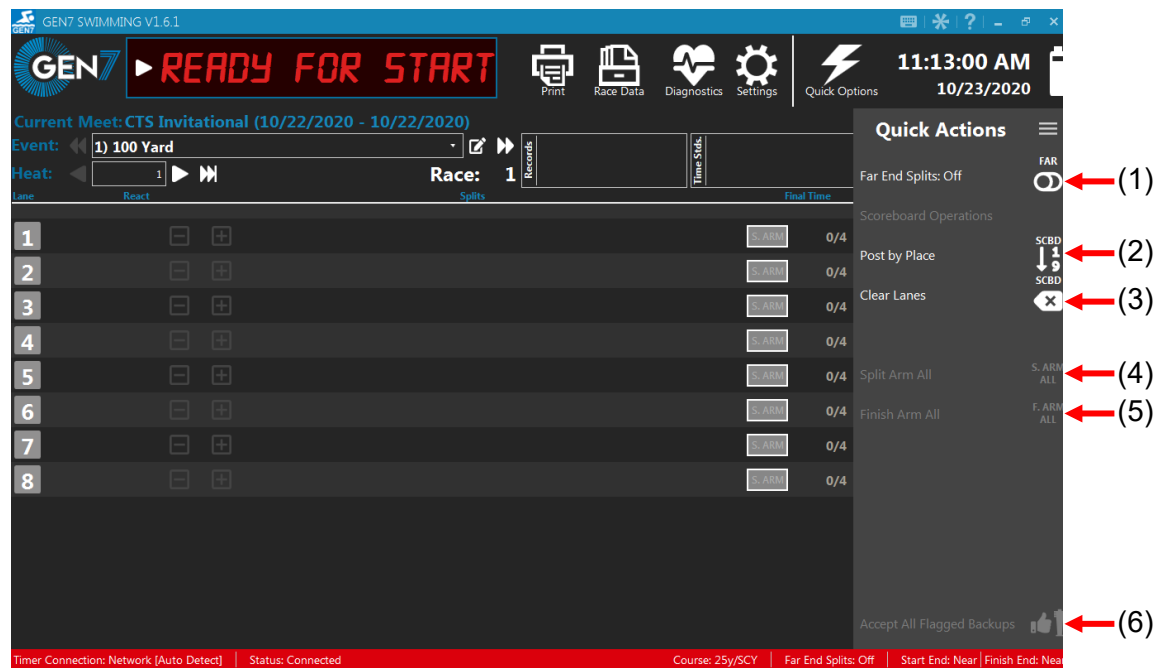


Quick Actions

The Quick Action menu is located on the right side of the Main screen. This menu gives access to actions that are commonly performed throughout a meet.

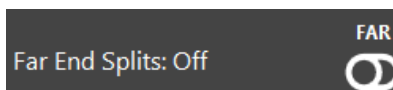


Click the  button to expand the menu. **Note:** Quick Action menu options can be adjusted using the displayed icons without the need to expand the menu.



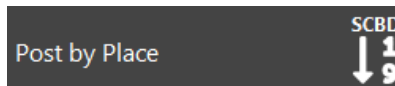
1: Far End Splits

Quickly turn far end splits on or off during an event.



2: Post by Place

Posts the race results in place order to the scoreboard after an event has finished.



3: Clear Lanes

Clears lane data from the scoreboard.



4: Split Arm All

Click to arm all active lanes for split times. **Note:** Only available while an event is running.



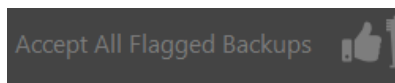
5: Finish Arm All

Arms all active lanes to accept a finish input. **Note:** Only available while an event is running. Will not affect already finished lanes.



6: Accept All Flagged Backups


Click to accept all backup times for flagged times. **Note:** Only available after at least one lane has finished with a backup discrepancy and before the event is saved.



Race Data

The race data screen is where data from all completed races is accessed. When a race is selected, the lanes can be marked as DQ/NS/EX, and the official times can be edited (backup times promoted, Original pad time restored).

Race Data Quick Options

Click  while in the **Race Data** screen to access Race Data Quick Options for the selected race.

1: Mark as False Start?

Click to mark the selected race as a false start. Races marked as False Start will not be available to Meet Management software.

Mark as False Start?

2: Post by Place

Click to post the results of the selected race by place to the scoreboard.

Post by Place

3: Post by Lane

Click to post the results of the selected race by lane to the scoreboard.

Post by Lane

4: Review Race Log

Click to review the race log for the selected race. The race log screen shows all timing events including any touches registered that are ignored due to settings such as pad delays or far end splits settings. This means it can be used to recover times that might otherwise be lost. The race log data can be exported to MS Excel.

Review Race Log

RACE LOG - BOYS' 10 - 12 100 YARD FREESTYLE FINALS

Boys' 10 - 12 100 Yard Freestyle Finals **Manual Start**

Event: 6 Heat: 11 Race: 99 Start Time: 12/13/2021 5:58 PM

TIME	LANE	END	TYPE	TYPE
0.33	1	Near	Pad	Closed
0.49	2	Near	Pad	Closed
0.52	1	Near	Pad	Open
0.56	3	Near	Pad	Closed
0.59	2	Near	Pad	Open
0.62	4	Near	Pad	Closed
0.64	3	Near	Pad	Open
0.67	5	Near	Pad	Closed
0.69	4	Near	Pad	Open

The Race Log shows ALL timing events recorded during the course of a race. This includes all events that are ignored because of arming state as well as "opposing" events (e.g., pad releases, RJP closures).

A good use-case would be finding a pad time that came in during a pad delay. This information can also be used to verify lead-off splits (by comparing pads to backup buttons). For pads and buttons, only use "Closed" events. For RJP's, use "Open" events from Button A.

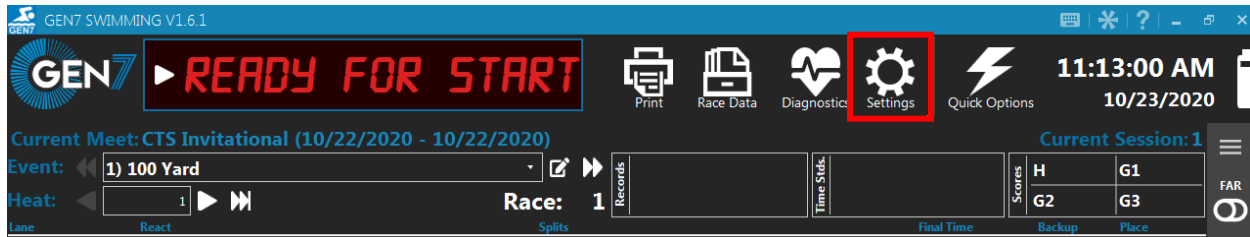
Filter: ☐ Lane 1 ☐ End Near ☐ Type Pad ☐ State Closed

Export to Excel

Settings

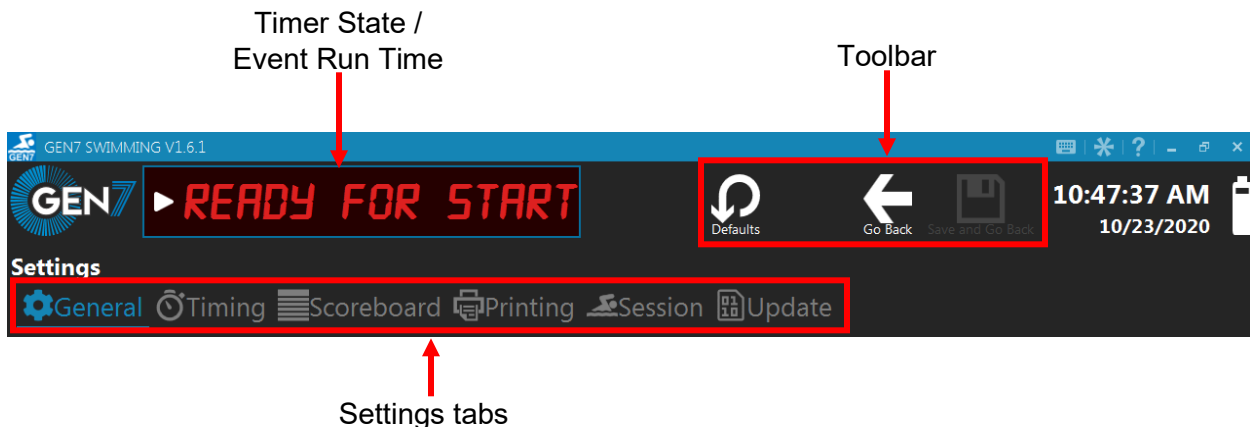
To access the Gen7 Software settings, click the **Settings** button located in the toolbar at the top of the Main screen.

Note: After a new session is created, the Gen7 software will automatically navigate to the **Session** tab in the **Settings** screen (see page 51).

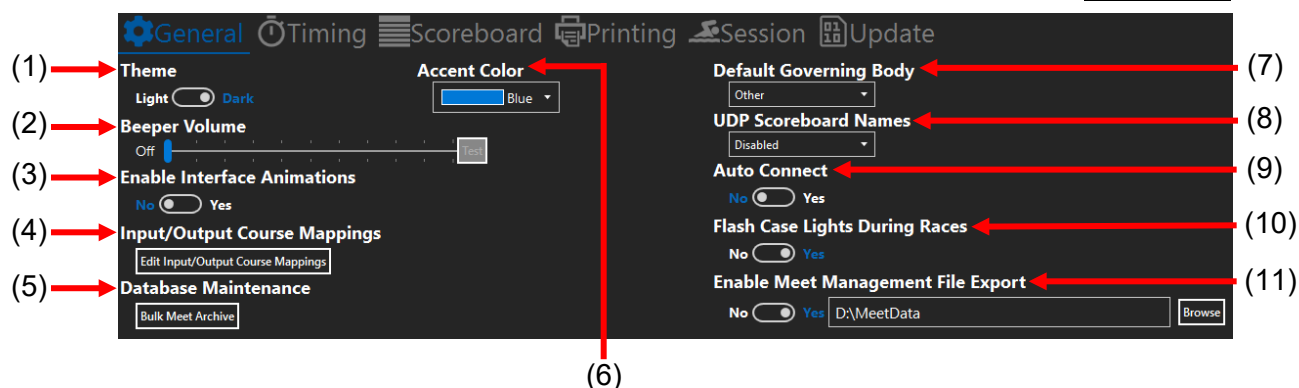


Settings Tabs and Toolbar

The top portion of the **Settings** screen is present through all sub menus. Each of the settings tabs will navigate to a separate submenu where various settings can be changed. Use the Toolbar to save changes, return to the **Main Screen** without saving, or restore the settings to factory or user defaults.

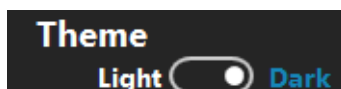


General



1: Theme

Select between a Light or Dark theme. The higher contrast in the Light theme helps with outdoor viewing.



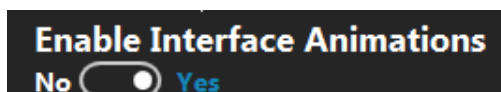
2: Beeper Volume

The slider adjusts the volume of beeps from the timer when there is a timing input registered.



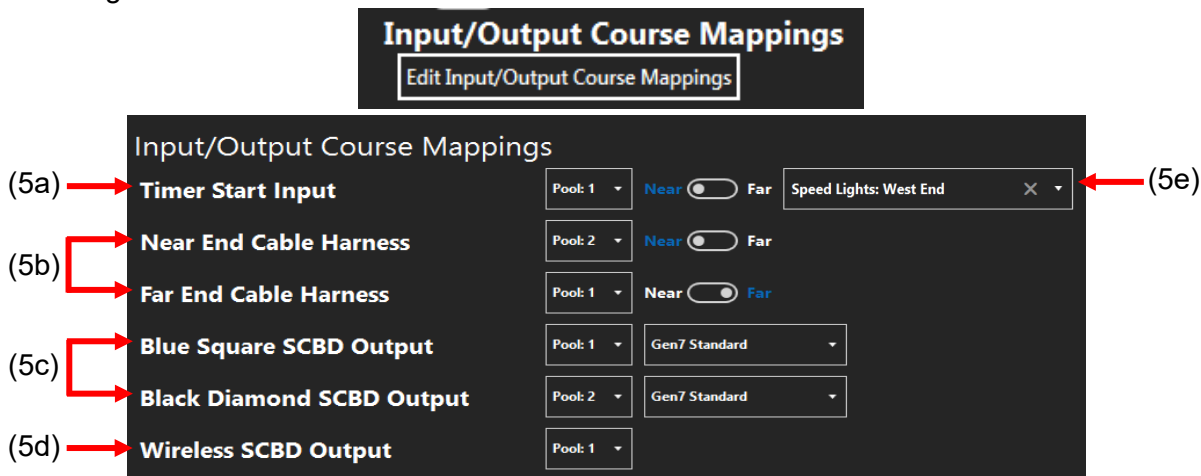
3: Enable Interface Animations

Select to have screen transition animations enabled or disabled. By default, screen transitions have an appear/disappear effect. Turn them off for faster navigation.



4: Input / Output Course Mappings

Click **Input / Output Course Mappings** to open a dialog box with options for controlling the various connectors on the back of the timer.



5a: Timer Start Input

Sets which pool the Timer Start Input is mapped to as well sets whether is on the near or far end.

5b: Near and Far End Cable Harnesses

Allows the near and far end cable harness inputs on the timer (see page 11) to be mapped to a specific pool and to set whether they are near end or far end.

5c: Blue Square SCBD and Black Diamond SCBD outputs

Controls which pool maps to the blue and black scoreboard connectors on the back of the timer (see page 11).

5d: Wireless SCBD Output

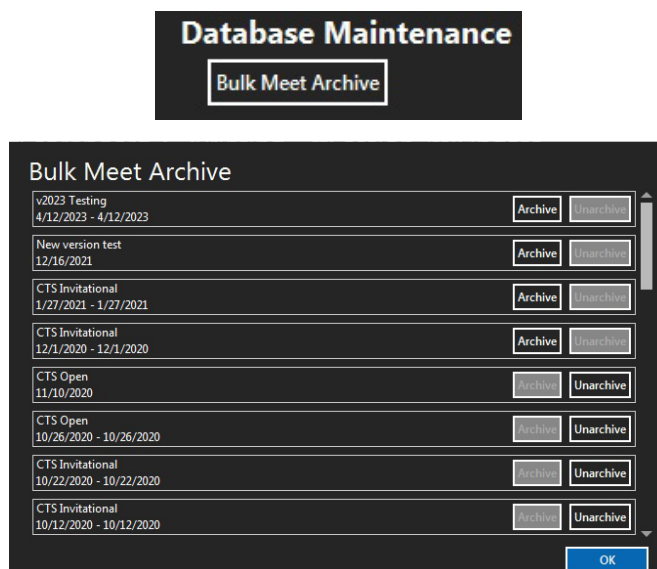
Controls which pool maps to the primary wireless data stream. This will control which pool appears on a wireless scoreboard (Otter or LED-R via WA-2 or WA-3). If receiving wirelessly (via WA-2 or WA-3) into DisplayLink, data from both pools will be available.

5e: Speed Lights

Sets which end of the pool speedlights are triggered when a start input is registered on the Timer Start Input.

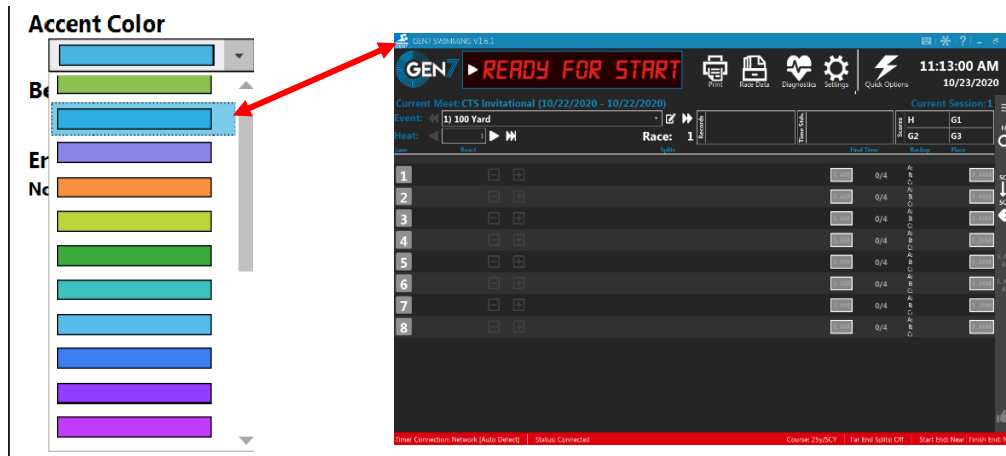
5: Database Maintenance

Click **Database Maintenance** to open a window within the software where multiple meets can be archived or unarchived.



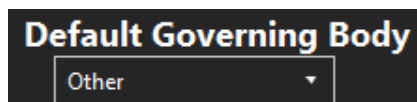
6: Accent Color

Choose accent color displayed on all screens.



7: Default Governing Body

This sets the default governing body that is selected when a new meet is created. The governing body for an existing meet can be changed in the **Sessions** screen. (See page 55)

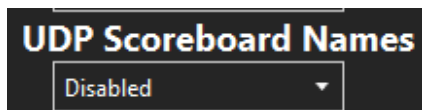


8: UDP Scoreboard Data

This creates a UDP server where Meet Management software can send start lists, team scores, and event results via a network connection. These data items are available when connecting to a video board running DL+ (v4.7.0 or greater) with CTS RS-485 data.

If the “Timer” option is selected, the timer and the meet management computer must be on the same subnet.

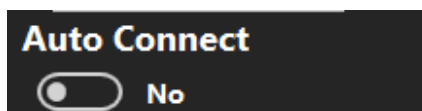
If the “This Computer” option is selected, the Gen7 interface computer and the meet management computer must be on the same subnet.



More information is available in Appendix C: Athlete Name Integration

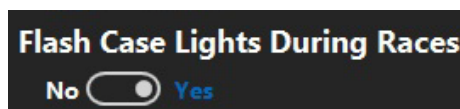
9: Auto Connect

If this option is enabled, the Gen7 software will automatically connect to the first timer it finds when searching. In most cases, this should be enabled. The one major exception would be a facility with multiple timers on the same network (e.g., North pool and South pool).



10: Flash Case Lights During Races

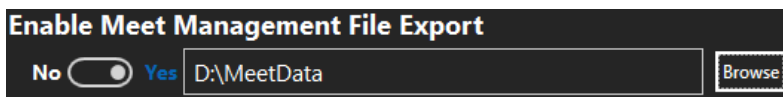
Sets the case lights on the Gen7 timer to either flash or not flash when a timing input is received. The case lights are set to flash by default.



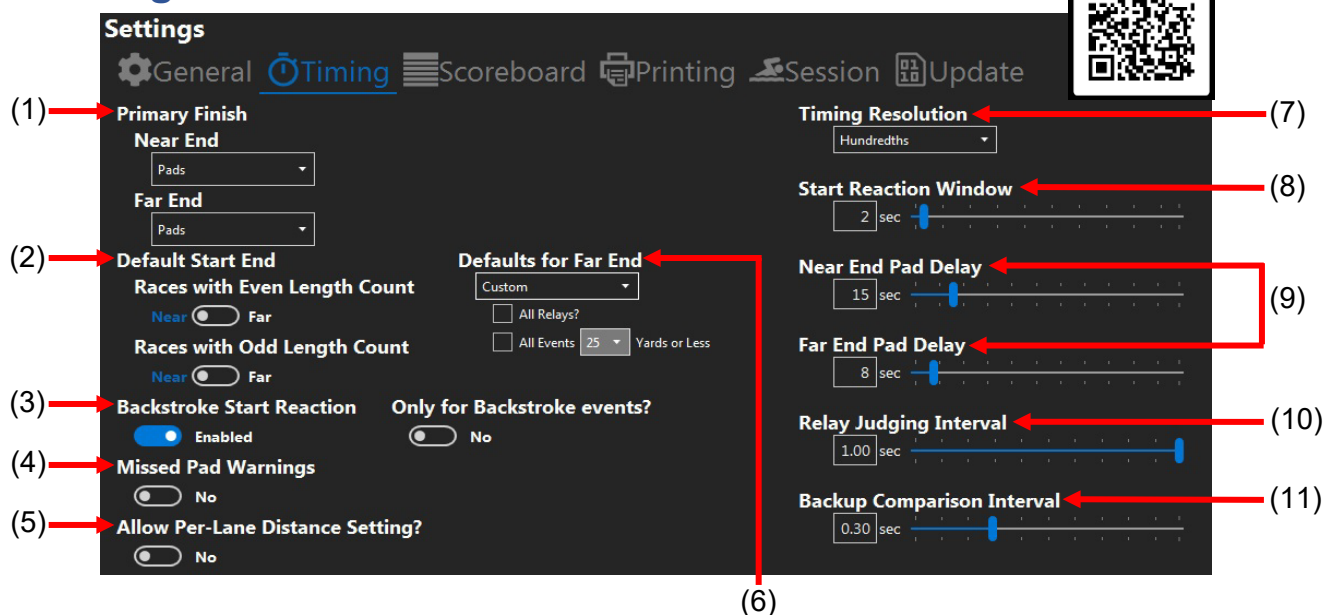
11: Enable Meet Management File Export

When enabled, Gen7 Swimming will automatically save a .gen file in the specified location. These .gen files contain complete race results (including splits, backup buttons, and relay exchange times) and can be imported into many Meet Management software systems.

This option can be used if your Meet Management software does not support a USB connection to Gen7 or if you are using a network share-based Meet Management interface.

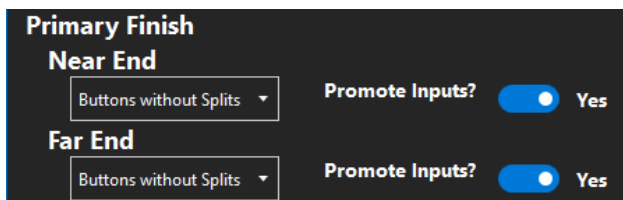


Timing



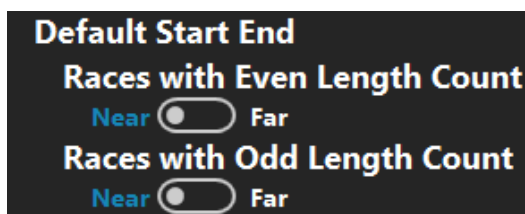
1: Primary Finish

Primary Finish sets whether the system will use touchpads or pushbuttons as the primary mode to finish a race. The near and far ends can be set independently. If pushbuttons are selected as the primary mode of finish, you can promote the inputs so that Pad becomes Button A, Button A becomes Button B and Button B becomes Button C. This will allow a 2 Button finish with a single cable harness.



2: Default Start End

In the Default Start End section even and odd length races can be set to accept a start input on either the near or far end of the pool. Single events can be altered in the **Session** screen if needed (see page 53).

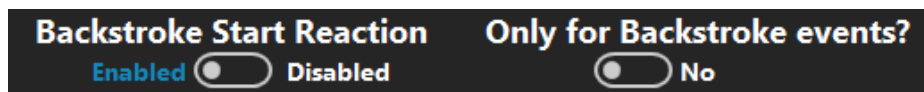


Changing this option will not automatically change the start end for events already listed in the event sequence. There will be an option to apply the new start end settings to existing events when the settings are saved.

3: Backstroke Start Reaction

Backstroke start reaction is measured with touchpads. The backstroke start reaction can be set to be enabled for all events or only for backstroke events.

If Backstroke Start Devices are being used or if performing flyover starts, disable backstroke start reaction to reduce extra touchpad hits being registered at the start which may skew the data.



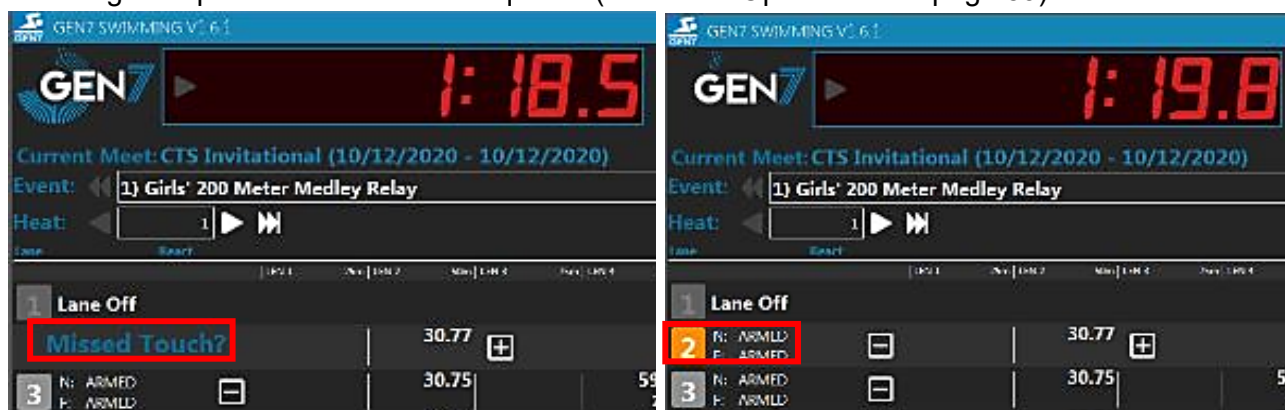
4: Missed Pad Warnings

Enabling the Missed Pad Warning will notify the operator of potential missed touches or that an athlete may be taking a long time or be off course.



In the event of a missed pad touch and with Missed Pad Warnings enabled, a “Missed Touch?” message will display for about one second in the **Lane Data** portion of the **Main** screen for the affected lane.

After the message fades the lane number of the affected lane will be displayed as yellow alerting the operator that action is required. (see Basic Operations on page 59).



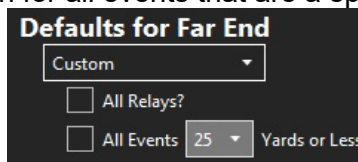
5: Allow Per-Lane Distance Settings

This option is designed to facilitate Time Trial events. It allows for one or more lanes to be configured with fewer required lengths than the entire race. For example, to run a 50yd race in Lane 1 and have the rest of the pool swimming a 100yd race, set Lane 1 to finish at 50yds. This change must be made while the race is running and before the race is reset



6: Defaults for Far End

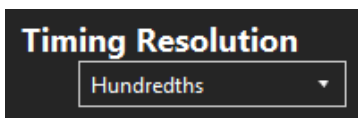
Sets the default parameters for registering far end timing inputs. This affects newly created events as well as event sequences loaded from Meet Management software. Select between Always On, Always Off, or Custom. When set to Custom the far end can be set to be on for all relay events and/or be set to be on for all events that are a specific distance or less. (Ex: set to



on for all events 100 meters or less.)

7: Timing Resolution

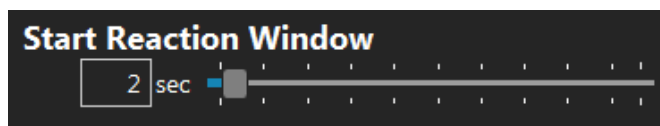
Timing resolution is where the number of places after the decimal that times are recorded is set. Select between seconds, tenths, hundredths, or thousandths. If the timing resolution is changed, only races that have not been run will be affected. Times for completed races are truncated according to the setting at the time of the race.



Note: Most governing bodies require the timing resolution to be set to Hundredths.

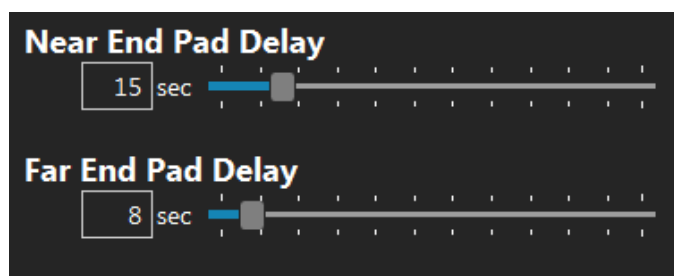
8: Start Reaction Window

Adjusts the time window to record start reaction times using RJPs for starting block starts and touchpads for in-water starts.



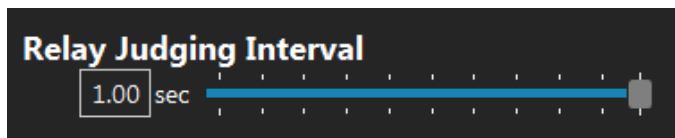
9: Pad Delay

Sets the near end and far end pad delays. After a touch, the pad will not register another touch during the delay period specified. With Gen7, unlike previous CTS timers, the scoreboard split delay is a separate setting in the **Scoreboard** screen and is NOT connected to the pad delay.



10: Relay Judging Interval

The relay judging interval sets the amount of time before and after a touchpad hit during which the Gen7 Timer will mark a relay input as valid. Relay inputs that occur outside this window are silently ignored.



11: Backup Comparison Interval

This is where the acceptable range between pad and backup times to be considered valid is set. Any difference in the times outside of the set range will be considered suspect and flagged as such in the **Lane Data** section of the **Main** screen. (see Promoting Backups on page 64).



	Final Time	Backup	Place
<input type="button" value="S. ARM"/>	1:00.06	A: 1:00.15 B: C:	5 <input type="button" value="F. ARM"/>
<input type="button" value="S. ARM"/>	59.69	A: 59.80 B: C:	3 <input type="button" value="F. ARM"/>
<input type="button" value="S. ARM"/>	59.27	A: 59.37 B: C:	1 <input type="button" value="F. ARM"/>
<input type="button" value="S. ARM"/>	1:00.53	A: 59.78 B: C:	7 <input type="button" value="F. ARM"/>
<input type="button" value="S. ARM"/>	59.28	A: 59.40 B: C:	2 <input type="button" value="F. ARM"/>

Scoreboard

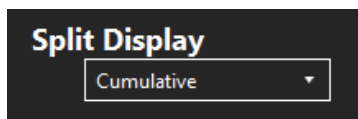


The screenshot shows the 'Scoreboard' settings page with the following callouts:

- (1) Split Display
- (2) Split Display Time
- (3) Phasing
- (4) Two Digit Lane and Place Display
- (5) Clear Lanes on Next Race
- (6) Post Places
- (7) Record Breaker Action
- (8) Lane Modules Used
- (9) Phasing Speed
- (10) Display on Missed Finish
- (11) Display on DQ
- (12) Show Reaction Times
- (13) Session Update
- (14) Single Line (OF)
- (15) Wireless
- (16) Time of Day
- (17) Hours & Minutes Only
- (18) Self Test Mode
- (19) Scoreboard Intensity (Numeric Boards Only)
- (20) Blank Running Time
- (21) Keep Finish Times if Lane Turned Off in Reset

1: Split Display

Split Display is where the split time is set to show cumulative splits, subtractive splits, or a combination of both. If a combination of both is selected, the mode listed first will display first followed by mode listed second.



2: Split Display Time

This adjusts the amount of time the split times are visible on the scoreboard.

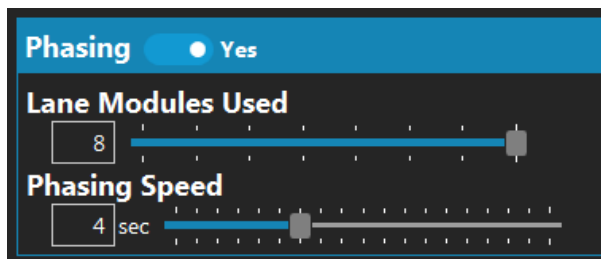


When a combination of both split display modes is selected, a second slider will become available and the display time for each mode can be set independently.



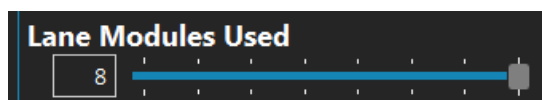
3: Phasing

When enabled, Phasing allows for specific modules of the scoreboard to be set to display race data.



Lane Modules Used

The lane Modules Used adjustment sets how many modules of the scoreboard will be utilized for race data. If the number of modules is set to a number less than the number of lanes in the pool, for example 4 modules in an 8-lane pool, the scoreboard will show the data in phases beginning with lanes 1-4 followed by lanes 5-8.



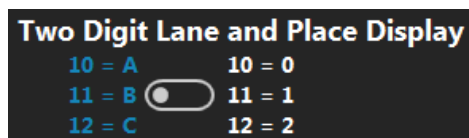
Phasing Speed

Sets the duration that each phase of data will be displayed.



4: Two Digit Lane and Place Display

For pools with more than 9 lanes, Two Digit Lane and Place Display adjusts how the lanes above 9 are displayed on the scoreboard.



For scoreboards that only have 1 digit for lane and 1 digit for place, you can select if lanes above 9 are displayed as single digit numeric, or as letters.



Letters



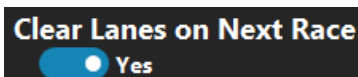
Numeric

On scoreboards capable of displaying both digits such as 10 Digit Per Line Boards or video boards, set the Two Digit Lane and Place Display setting to A,B,C to display both digits of lanes above 9.

EVENT		4 HEAT	1
LN	PL	TIME	
1	7	32.48	
2	6	32.36	
3	9	33.01	
4	1	31.18	
5	3	31.55	
6	5	31.90	
7	10	33.12	
8	8	32.59	
9	4	31.77	
10	11	33.29	
11	2	31.54	
12	12	33.39	

5: Clear Lanes on Next Race

When Clear Lanes on Next Race is selected, places and times will automatically clear from the scoreboard when the event or heat are changed while the timer is in the reset state (see Timer State/ on page 19).



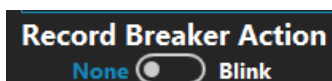
6: Post Places

The Post Places option selects whether places are posted at each split or only at the final time.



7: Record Breaker Action

Set the Record Breaker Action to blink to set the scoreboard to blink the time when a record is broken.



8: Display on Missed Finish

This option controls what is shown in the time digits for a given lane if that lane has recorded backup buttons but no touchpad finish.

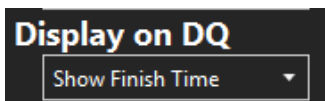
- Blank will hide the running time and show nothing in the six time digits
- Dashes will hide the running time and show 6 dashes (-----)
- Keep running will leave the running time active in that lane



9: Display on DQ

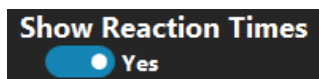
This option controls what is shown in the time digits for a given lane if that lane finished but has been disqualified.

- Blanks will hide the running time and show nothing in the six time digits
- Dashes will hide the running time and show 6 dashes (-----)
- Show finish time will display the recorded finish time



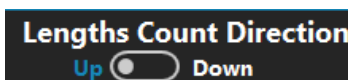
10: Show Reaction Times

Enable Show Start Reaction to display start reaction times for both RJP and backstroke take-offs with touchpads for each lane at the start of the race. Even if this option is turned off, start reaction times can still be recorded by the Gen7.



11: Lengths Count Direction

The Lengths Count Direction toggles the direction the lengths counter on the scoreboard will count to be either up or down.



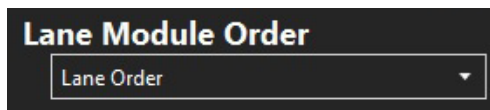
12: Configure Name Formatting

These options control the format for names that are sent directly from the Gen7 to the scoreboard. There are a variety of options for how the athlete's last name and first name are formatted.



13: Lane Module Order

Set whether the scoreboard displays in lane order (line 1 shows lane 1) or place order (line 1 shows first place).



14: Single Line (0F)

For scoreboards with only one line, this module allows the display of different information, depending on the status of the race.



14a: Time per Item

Sets the amount of time the finish time and each scrolling sequence item will be displayed on the scoreboard.

14b: Scroll Finish Times





If **Scroll Finish Times** is enabled, then while the race is running, the scoreboard will display the running time. When the lead swimmer completes a lap/length, their split time will be displayed. As the swimmers all finish the race, their final times will be displayed in the order in which they finished. This allows a single line scoreboard to effectively give athletes, coaches, and spectators all the information necessary for a successful meet.

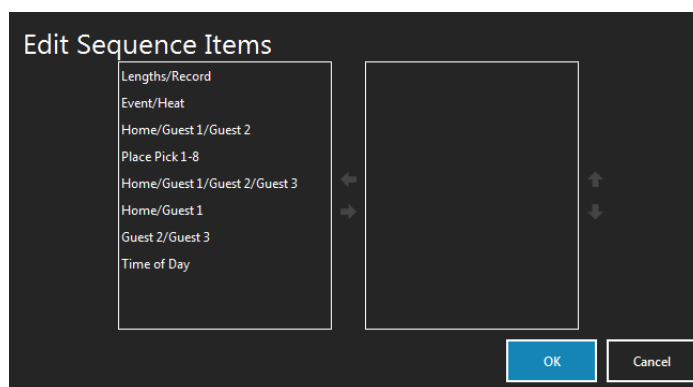
Additional information can be shown sequentially when the timer is in reset (see Edit Sequence Items below).

14c: Times to Loop

Sets the number of times the finish time and scrolling sequence items will be displayed on the scoreboard.

14d: Edit Sequence Items

Click the **Edit Sequence Items** button to open a dialog box where the post-race sequence can be adjusted. Highlight sequence item(s) in the left portion of the dialog box and use  to move them to the display box on the right portion of the screen. Unwanted sequence items can be removed from the display box by highlighting the item(s) and using . Sequence items in the display box can be re-ordered using  and  located to the right of the display box.



15: Wireless Settings

If enabled, Wireless Settings are where the Channel and PAN of your Gen7 Timer are set to match the Channel and PAN set on your wireless scoreboard or scoreboard adapter.

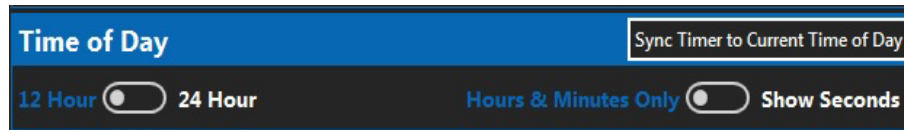


Wireless RSSI

To test the wireless signal strength between the timer and a wireless capable scoreboard, turn on Wireless Scoreboard RSSI. When enabled, the scoreboard enters a special test mode and will display the signal strength of the incoming wireless signal on the scoreboard. The higher the number, the poorer the signal.

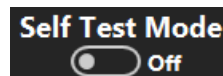
16: Time of Day options

Time of day is where the options are set for the time of day that is displayed on the scoreboard. Select between 12 or 24 hour formats and set whether to display only hours and minutes or include seconds. Time of Day is automatically synced when the Gen7 software starts up. Click **Sync timer to current time of day** to manually set the time displayed on the scoreboard to the current time.



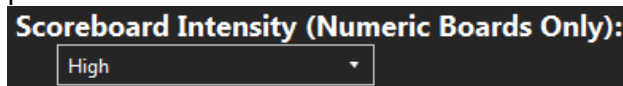
17: Self-Test Mode

Test scoreboard digit functionality by enabling the Scoreboard Self-Test. When enabled, the scoreboard displays a pattern designed to test each numeric digit.



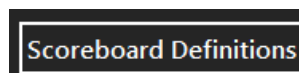
18: Scoreboard Intensity

Scoreboard intensity is where the brightness of the digits on numeric scoreboards is set. Choose between 7 intensity settings, or if connected to a numeric scoreboard equipped with an ambient light sensor, select Auto to set the scoreboard to adjust brightness based on surrounding light. This option has no effect on video boards.



19: Scoreboard Definitions

Like previous CTS timers, Gen7 allows the location of scoreboard information to be changed without making physical changes to the scoreboard itself. Click the **Scoreboard Definitions** button to open a screen where a module on which a given data item will appear can be selected.



If a data item is changed to appear on a different module and that module number is already assigned to a different data item, the modules numbers will effectively swap places.

Scoreboard Definitions

NOTE: These settings should only be used for LED-R, Otter and other numeric scoreboards. If data is being sent to a video board, via DisplayLink, all definitions must be left at their default values.

By changing what module a channel is mapped to, you can reorganize data displays to better match your physical scoreboard.

- Use the Module dropdown to select what physical module a particular data channel is displayed on.
- Use the "X" in the module dropdown to blank a data channel.
- Use the "Show on SCBD" toggle to display the module/channel pair on each line of scoreboard. The physical module number (DIP Switch Setting) will appear on the left column of each line. The mapped channel number will appear on the right column of each line.


Chan#	Description	Module
1	Lane 1	01 X
2	Lane 2	02 X
3	Lane 3	03 X
4	Lane 4	04 X
5	Lane 5	05 X
6	Lane 6	06 X
7	Lane 7	07 X
8	Lane 8	08 X
9	Lane 9	09 X
10	Lane 10	0A X
11	Lane 11	17 X
12	Lane 12	18 X
13	Lengths/Record	0B X

Restore Defaults? Show on SCBD: ☐ Off OK Cancel

Use **Show on SCBD: ☐ Off** to display the relationship between physical modules and mapped channels on the scoreboard.

The physical module number will appear on the left-hand side of each module. This number corresponds to the switch setting on the control card inside the scoreboard.

The channel number will appear on the right side of each module. This number corresponds to the channel number listed in the scoreboard definitions screen.

To blank a module, click the  in the module dropdown and make sure to not assign that module to another channel.

NOTE: if using an LED video board with DisplayLink software, leave all definitions at their default values.

20: Keep Finish Times if Lane Turned Off in Reset

When set to Yes, if a lane is turned off while the timer is in the Reset state the last final time for that lane will remain on the scoreboard until the start of the next race.

Keep Finish Times if Lane Turned Off in Reset

☒ Yes

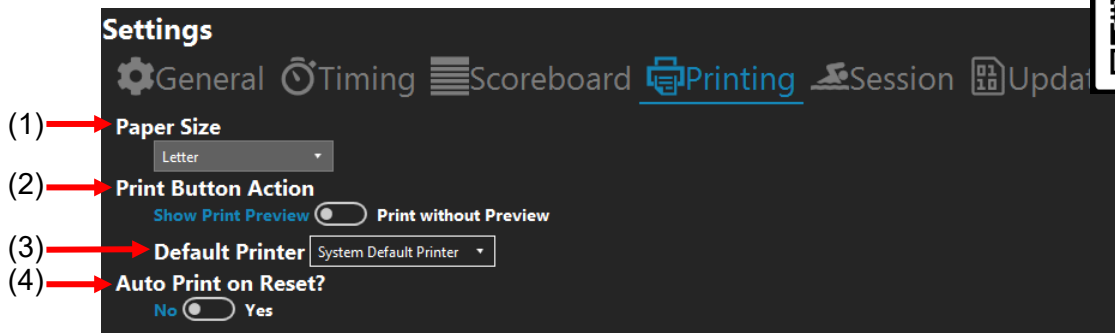
21: Blank Running Time

Controls what happens to the running time on the scoreboard (video displays only) at the end of a race. Choose to never blank the running time or blank the running time either after all the lanes have finished or after the timer has been reset.

Blank Running Time

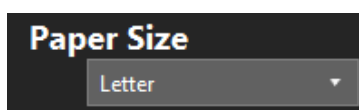
Never

Printing



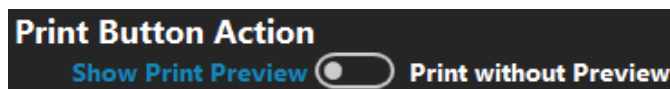
1: Paper Size

Select the paper size that race results will be printed on.



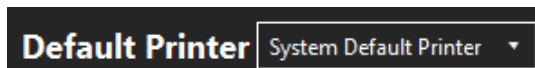
2: Print Button Action

The Print Button Action sets to show a preview before race results are printed or sets to print directly without showing a preview first.



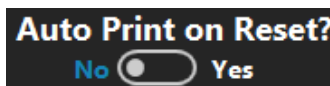
3: Default Printer

Sets the default printer that results will print to. You can override the default printer from the print preview screen.

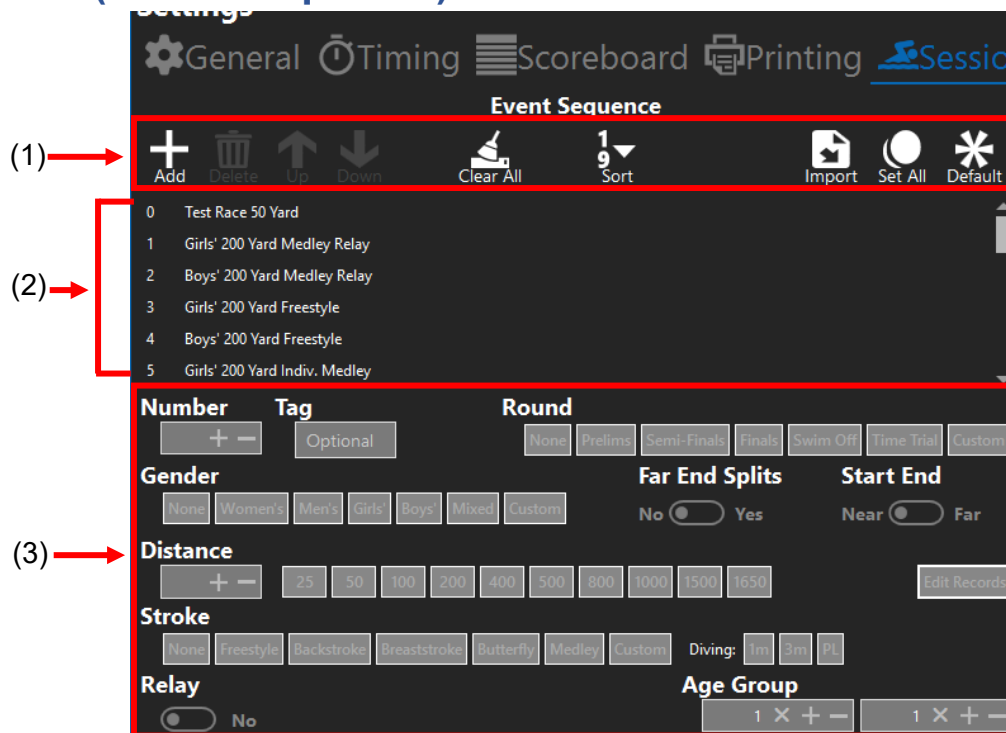


4: Auto Print on Reset

Use Auto Print on Reset to enable the system to automatically print race results every time an event is finished, and the timer is put back into the reset state.




Session (Event Sequence)




1: Event Sequence Toolbar

The Event Sequence Toolbar is used to  new events,  an existing event, move an event  or  in the sequence of events, and  events from the sequence.

Sort

Click  to sort the list of events from lowest to highest.

Import

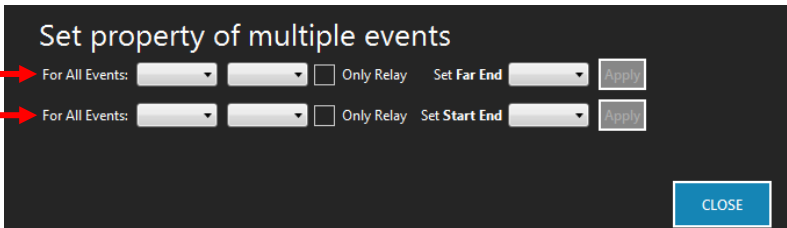
Click  to import a .sch file that was exported from your Meet Management software. This option can be used if your Meet Management software does not support a USB connection to Gen7 or if you are using a network share-based Meet Management interface.

Set All



Click  to open the **Set property of multiple events** dialog box where settings can be applied to multiple events that meet designated conditions.

Set Far End → Set Start End →




The dialog box titled "Set property of multiple events" contains two rows of controls. The first row is for "Set Far End" and the second for "Set Start End". Each row has a "For All Events:" dropdown menu, a second dropdown menu, an "Only Relay" checkbox, and a "Set Far End" or "Set Start End" dropdown menu, followed by an "Apply" button. A "CLOSE" button is at the bottom right.

Examples: To set all 25-yard events to start at the far end, use the Set Start End line of drop-down menus to set **For All Events** to ≤ 25 yds and **Set Start End** to Far.

To set all relay events to have splits on the far end, click the **Only Relay** check box in the Set Far End line of options and **Set Far End** to On.

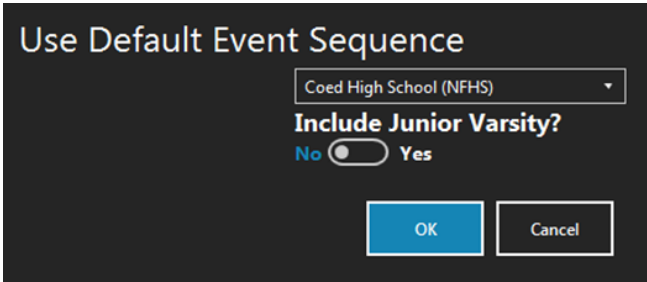
Default



To load a default event sequence for standard NFHS meets, click . A dialog box will open that contains a dropdown menu where either a default Coed, Girls, or Boys meet can be selected.

Click **OK** and the Gen7 software will generate a standard NFHS event sequence. If needed, the events can be edited just like any other event.


When the event sequence has been populated. Click save and go back to be taken to the main screen.



The dialog box titled "Use Default Event Sequence" features a dropdown menu currently set to "Coed High School (NFHS)". Below it is the text "Include Junior Varsity?" with a toggle switch set to "No". At the bottom are "OK" and "Cancel" buttons.

2: Sequence of Events

The Event Sequence section display all loaded/created events for the current session.



A list of events in a table-like format with a blue header row. The events are numbered 1 through 9.

1	Girls' 200 Yard Medley Relay
2	Boys' 200 Yard Medley Relay
3	Girls' 200 Yard Freestyle
4	Boys' 200 Yard Freestyle
5	Girls' 200 Yard Indiv. Medley
6	Boys' 200 Yard Indiv. Medley
7	Girls' 50 Yard Freestyle
8	Boys' 50 Yard Freestyle
9	Girls' 1m Diving

3: Event Settings

The screenshot shows the Event Settings interface with the following callouts:

- (3A) points to the **Number** control (plus/minus buttons).
- (3B) points to the **Gender** control (buttons: None, Women's, Men's, Girls, Boys, Mixed, Custom).
- (3C) points to the **Distance** control (plus/minus buttons and a row of distance buttons: 25, 50, 100, 200, 400, 500, 800, 1000, 1500, 1650).
- (3D) points to the **Stroke** control (buttons: None, Freestyle, Backstroke, Breaststroke, Butterfly, Custom).
- (3E) points to the **Relay** control (radio buttons: No, Yes).
- (3F) points to the **Round** control (buttons: None, Prelims, Semi-Finals, Finals, Swim Off, Time Trial, Custom).
- (3G) points to the **Start End** control (radio buttons: Near, Far).
- (3H) points to the **Far End Splits** control (radio buttons: No, Yes).
- (3I) points to the **Edit Records** button.
- (3J) points to the **Age Group** control (plus/minus buttons).

3A: Number

Adjusts a selected event's number. Use the plus or minus button or type an event number to edit an event's number in the event sequence. This only changes the number; it does not alter the order of events.

3B: Gender

Sets who will be competing. Women's, Men's, Girls', Boys', Mixed, or None to leave it blank. Click custom to enter a custom gender tag.

3C: Distance

Sets the race distance with either the quick select options or the plus and minus buttons. The race distance can also be typed.

3D: Stroke

Sets the stroke type(s) for the selected event. Click custom to enter a custom gender tag.

3E: Relay

Sets if the event is a relay and how many relay swimmers there will be.

3F: Round

Set the type of round for the event, prelims, semi-finals, finals, swim off, time trial, or None to leave it blank. Click custom to enter a custom gender tag.

3G: Start End

Choose which end of the pool the event will start on.

3H: Far End Splits

Select if far end splits are enabled for the event.

3I: Edit Records

Opens a dialog box where event specific records can be assigned in conjunction with Record Tags (see page 57).

The screenshot shows the Edit Records dialog box with the following structure:

Tag	Record Time
PR	MM:SS.LH

At the bottom of the dialog are **OK** and **Cancel** buttons.

3J: Age Group

Sets the age group that will be competing in the event.

Session (Session Settings)

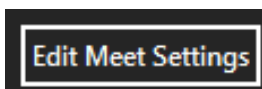


The screenshot shows the 'Session Settings' dialog box. Red arrows and numbers point to the following elements:

- (1) Edit Meet Settings button
- (2) Course dropdown menu (set to 'Short Course Yards (25y/SCY)')
- (3) LANE MAPPING: NEAR END and FAR END sections, each with radio buttons for 'Normal (1 - 8)', 'Reversed (8 - 1)', and 'Advanced' (with an 'Edit' button).
- (4) Lanes Used section showing 8 lanes, each with an 'On' button.
- (5) Edit Record Tags button
- (6) Edit Session Settings button
- (7) Lanes In Pool dropdown menu (set to '8')
- (8) First Lane toggle switch (set to 'One (1)')
- (9) Event Skip Mode dropdown menu (set to 'None')

1: Edit Meet Settings

Click the **Edit Meet Settings** button to open a dialog box that allows the settings for the current meet to be adjusted.



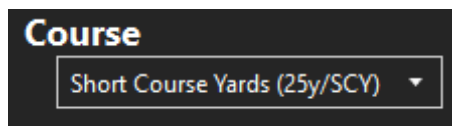
In the Edit Meet Settings dialog box, the meet name, start and end dates, and governing body of the meet can be changed, or you can select to archive the meet. By default, archived meets do not appear in the Create or Select Meet screen when the program starts up.

The 'Edit Meet Settings' dialog box contains the following fields:

- Meet Name:** CTS Invitational
- Start:** 10/22/2020
- End:** 10/22/2020
- Governing Body:** Other
- ☐ Archive
- Buttons:** Cancel, OK

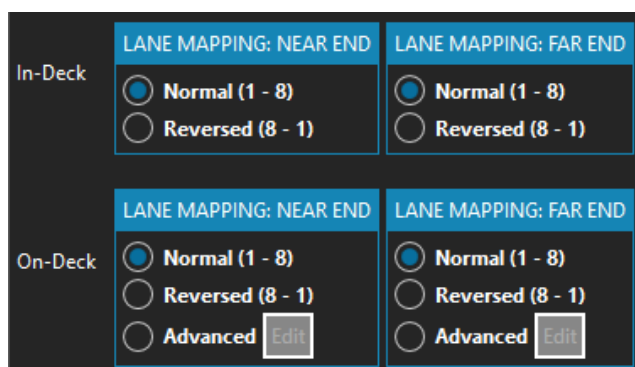
2: Course

Sets the desired course for the session. The drop down contains options for a 25-yard short course, 25-meter short course, or a 50-meter-long course. **Note:** Changing this option may change the number of lengths required to complete a race.

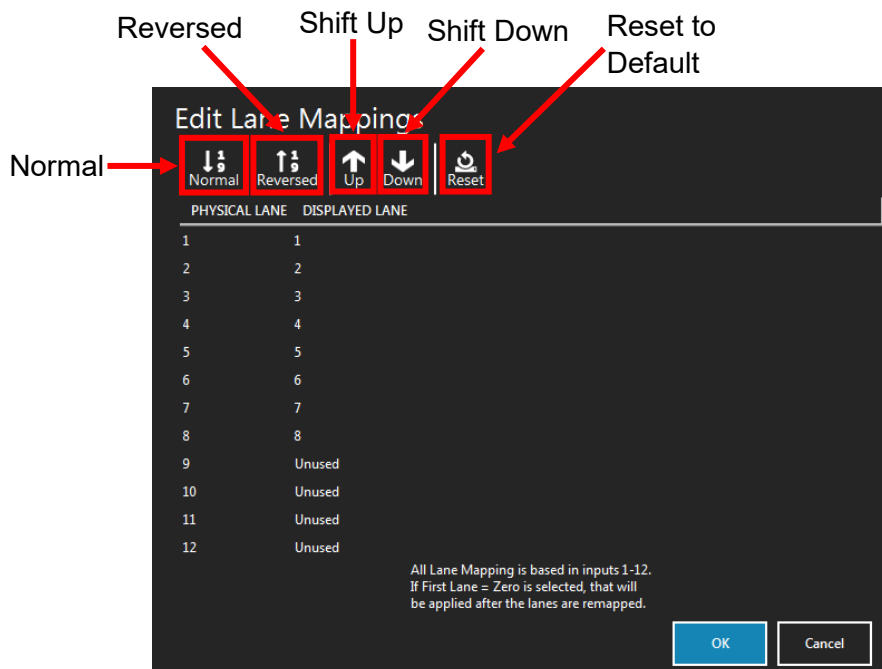


3: Lane Mapping

Lane mapping near end and **lane mapping far end** for both In-Deck (deckplates) and On-Deck (cable harnesses) determines how the lanes are mapped to the timer. **Normal** will map the lanes so that each lane number is displayed as that same lane number. **Reversed** maps the lanes in reverse order. For example: an 8-lane pool mapped in reverse order would display lane 8 as lane 1.

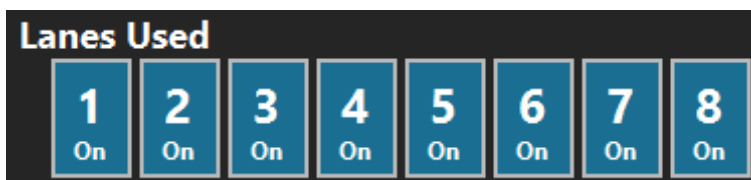


If using an On-Deck set up there are different mapping options available. Select **Advanced** and click the **Edit** button to open a dialog box where the lanes can be mapped so they are shifted as well as set to normal or reverse. For example, in an 8-lane pool running 6 lanes, the lanes can be shifted so that lane 2 displays as lane 1, or if also set to reversed, lane 7 would display as lane 1.



4: Lanes Used

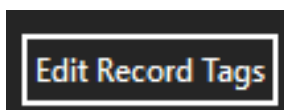
Lanes for a session can be turned off or on. Click a lane number to toggle between on and off.




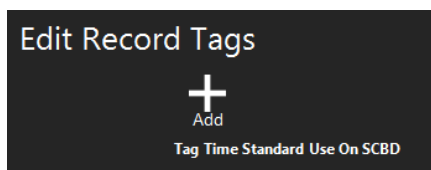
If a lane needs to be switched on or off for an event, it can be done by clicking the lane number on the main screen before the start of the event (see page 20).

5: Edit Record Tags

Click **Edit Record Tags** to open a dialog box where information is added for records that will be displayed in the Records, Time Standards, and Team Scores section of the Main Screen (see page 24).



Click the  to add a new record tag.



Enter a two letter tag in the **Tag** field for the record that will be displayed in Records section of the Main screen (see page 24) and on the scoreboard. For example: PR for pool record, or WR for world record. The record displayed on the scoreboard is used in conjunction with the Record Breaker Action option in the scoreboard settings screen (see page 43).

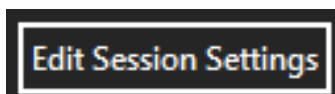
The Time Standard check box makes the tag a time standard instead of a record.



Input each events time data for records in the **Edit Records** section of the event settings on the left side of the session screen (see page 53).

6: Edit Session

Edit Session Settings opens a dialog box where the current session can be adjusted.



In the Edit Session Settings dialog box the current session number, and session start time can be changed, and a custom tag assigned to the session can be added or changed.

A dark-themed dialog box titled "Edit Session Settings". It contains three input fields: "Number:" with a numeric spinner showing "1", "Start Time:" with a date and time picker showing "10/22/2020 1:00:00 PM", and "Tag:" with an empty text box. At the bottom right are "Cancel" and "OK" buttons.

7: Lanes in Pool

Use the **Lanes in Pool** drop down to select how many lanes there are in the pool for the course that will be used.

A dark-themed dropdown menu titled "Lanes In Pool". The dropdown is open, showing the number "8" and a downward arrow.

8: First Lane

The First Lane setting toggles between the first lane being numbered as 1 or 0 with all subsequent lanes being in sequence corresponding to the selection.

A dark-themed toggle switch titled "First Lane". The switch is currently set to "One (1)" and is in the "on" position, with "Zero (0)" being the alternative option.

9: Event Skip Mode

Useful for two-pool racing scenarios, the Event Skip mode options control how the next/previous heat and next/previous event buttons behave. Choose to run only even heats or odd heats or choose to run only female (Girls' and Women's) or male (Boys' and Men's) events.

A dark-themed dropdown menu titled "Event Skip Mode". The dropdown is currently set to "None".

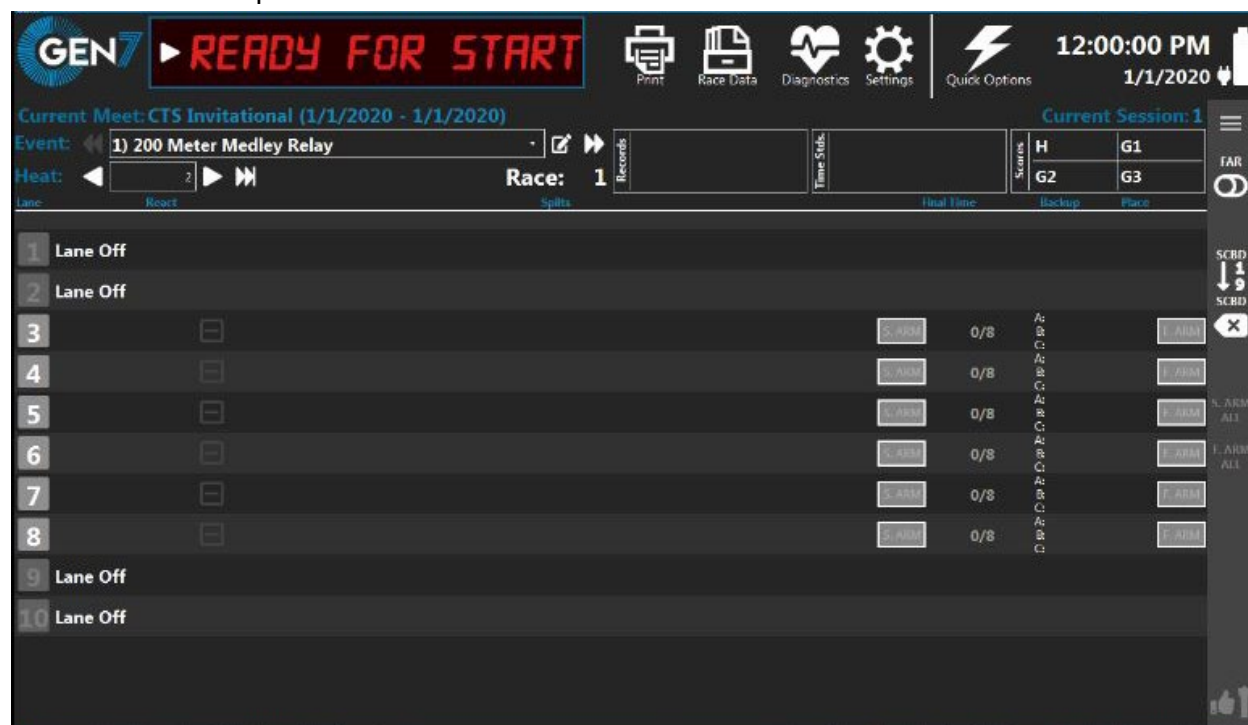
Basic Operation



This section will walk through a tutorial using a sample race to illustrate the basic operation of the Gen7 software and how to address common occurrences that arise during meets.


Tutorial

Our sample race is Event 1, Heat 2, a 200-meter medley relay. Our pool is 10 lanes, 25 meters. This heat only has six teams, so lanes 1, 2, 9, and 10 will be turned off (see page 22), and there will be no far end splits.



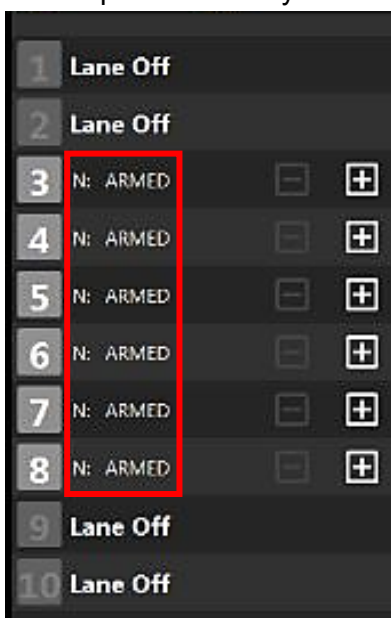
Starting the Race

Gen7 Swimming is in the reset state and is ready to begin timing a race (see page 19). The starting official starts the race with the start system, which sounds the horn, lights the strobe and sends the start signal to the timer.

The race can also be started manually clicking the  button on the left side of the Timer State section. **ONLY** use this if the timer did not start when the starting official signaled the start.



The touchpads are inactive for a user-defined number of seconds after the start (see page 39). As soon as the touchpads are ready to receive a touch, “ARMED” will be indicated in the Lane Data section (see page 22) for each lane. “N: ARMED” indicates near end touchpads are ready, and “F: ARMED” indicates far end touchpads are ready.



Times Registered

The swimmers have made their turns at the far end of the pool and come in to touch at the near end. The swimmer in lane 5 touches first. The timer beeps at the touch (see page 32) and the number of completed lengths for that lane is displayed. The pad status indicator for lane 5 goes blank and the pad will not accept another touch. The timer beeps as each swimmer touches a pad.




Missed touch (Using +Touch)

The second swimmer in lane 6 has started but the software does not show that the previous swimmer touched the pad. In this situation, the number of completed lengths displayed for lane 6 is 0/8.



As sometimes happens, the first swimmer touched the wall beside the pad, which does not register as a touch.

To correct the missed pad touch, press the  touch button for lane 6. Lane 6 now shows that 2/8 lengths have been completed. The split time will be missing, but subsequent split times and finish time can be recorded.


5			30.38		S. ARM	2/8
6	N: ARMED		0.46		S. ARM	2/8

Note: It is not possible to finish a race using +Touch; races must be finished from the touchpads or backup buttons.

Extra touch (Using – Touch and Split Arm)

The swimmers complete another length. Imagine that the second swimmer in lane 6 is slow getting out of the pool and steps on the touchpad after the pad delay time is up. The pad is armed at this point and the timer registers this as a touch. Lane 6 now shows incorrectly that 6/8 lengths have been completed and that it is on the finish lap.

5	N: ARMED		30.38	1:04.38		S. ARM	4/8
6			0.46	34.00		S. ARM	6/8
				1:05.29	1:21.82		
				0.62	16.53		

To correct this, click  touch button, a popup window will open. Select the option to remove the touch and split arm. This will arm the pad immediately for the next split.








5	N: ARMED		30.38	1:04.38		S. ARM	4/8
6	N: ARMED		0.46	34.00		S. ARM	4/8
				1:05.29			
				0.62			

Using Finish Arm

All swimmers except the one in lane 7 touch at the end of the third leg of this relay and the final swimmers are in the pool. After the pad delay, the lanes with valid touches display F.ARM showing they armed for finish touches. Lane 7's length count shows 4/8, and it is not finish armed.

7	N: ARMED		34.47	1:08.77		S. ARM	4/8	A: B: C:	6	F. ARM	
8	N: F.ARM		36.42	1:09.33	1:41.13		S. ARM	6/8	A: B: C:	1	F. ARM
			0.47	0.33	34.30						
			0.39	0.33	32.91	0.73	31.80				

To prepare the lane for the upcoming finish touch, click the  button. The length counter still displays 4/8 but pad status display indicates that the pad is armed for the finish. The finish time and place pick will be accurate.

7	N: F.ARM		34.47	1:08.77		S. ARM	4/8	A: B: C:	6	F. ARM	
8	N: F.ARM		36.42	1:09.33	1:41.13		S. ARM	6/8	A: B: C:	1	F. ARM
				0.33	34.30						
				0.33	32.91	0.73	31.80				

Finishing the race

All swimmers touch their pads successfully at the finish. The timer beeps as each swimmer finishes and displays the place picks in each lane.

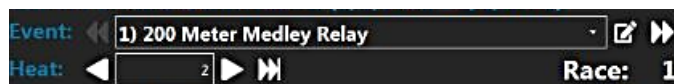
3	0.47	35.47	1:07.72	1:46.35	2:12.74	S. ARM	2:12.74	A: 2:12.91 B: C: A: 2:10.95 B: C: 2:09.18 A: 2:10.03 B: C: 2:12.16 A: 2:08.24	6	F. ARM
4	0.46	33.38	1:06.32	1:45.22	2:10.77	S. ARM	2:10.77		4	F. ARM
5	0.46	30.38	1:04.38	1:42.77	2:08.97	S. ARM	2:08.97		2	F. ARM
6	0.62	34.47	1:05.29	1:44.08	2:09.84	S. ARM	2:09.84		3	F. ARM
7	0.47	36.42	1:08.77	1:41.13	2:12.05	S. ARM	2:12.05		5	F. ARM
8	0.39	32.91	1:09.33	1:41.13	2:08.13	S. ARM	2:08.13		1	F. ARM

As soon as the race is over, click Finished and then Save and Reset. This stores the race results in memory.



After the race, if you wish to post the race results on the scoreboard in place order, go to the Quick Actions menu and select the Post by Place option (see page 28).

Press next heat or next event to prepare the timer for the next race.



Handling Exceptions

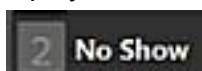
Whether a swimmer has failed to touch at the end of a race, or there is a no show to an event, Gen7 makes it easy to handle exceptions that arise during a swim meet. In this section we will look at common exceptions and go over how to handle them.



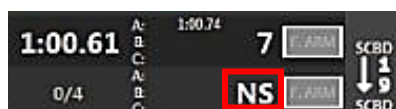
No Show

If a swimmer is a no show for an event, set the lane to display as a “no show”. After the race has started, right click on the lane number you want to update and then click **No Show**.

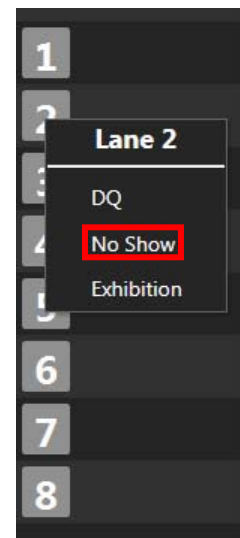
No show will be displayed next to the lane number.



After the race data has been saved, NS will appear in the “place” column for that lane.



If No Show is accidentally clicked for a lane with a swimmer in it. The Gen7 Timer will still record splits and finishes. Turn the lane back on before saving the event and all the data will be there.



Lanes marked as no show will not display on the scoreboard. When results are transmitted to meet management, the place for that lane will be marked as “NS”

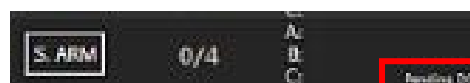
As a safety feature, to ensure that no recorded times are lost, if a lane is marked as **No Show** but still receives enough touches to finish a race, the lane will be turned back on when the final split comes in. This also applies to lanes that are simply turned off.

Disqualifying a swimmer:

To disqualify a swimmer, either right click on the lane number of the swimmer who is being disqualified and click **DQ** or use the keyboard short cut “D” followed by the lane number. See page 66 for a list of keyboard shortcuts.



“Disqualification” will appear for about a second and “pending DQ” will appear in the “place” column for that lane.



← Pending DQ

All of the swimmer's touches will be registered, however at the end of the race DQ will be displayed in the "place" column of the DQ'd lane.



If the DQ was an error, remove the disqualification before the race results are saved by right clicking the lane number and selecting "remove disqualification" or by using the keyboard shortcut "D" followed by the lane number.



Exhibition Swimmers

A swimmer can be marked as Exhibition by right-clicking on the lane number and selecting **Exhibition**. This swimmer will still receive an official time but will not be included in any rankings that are display on-screen or on the scoreboard.

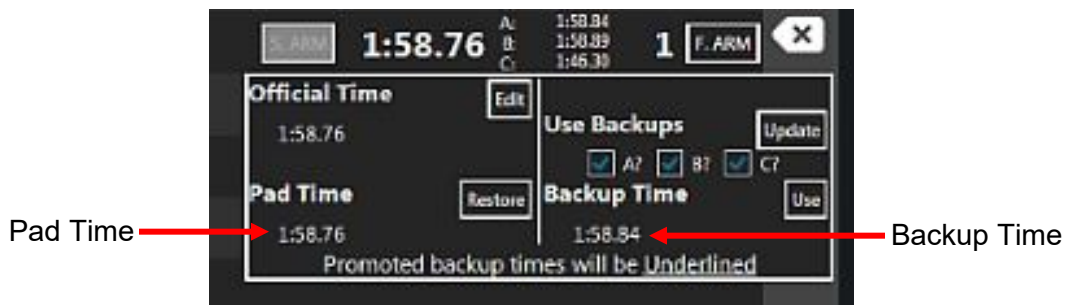
Promoting Backups:

Gen7 supports up to 3 backup buttons. The individual back up times are shown for each lane in the "Backup" column at the finish of the race. Displayed as A. B. and C.



Lane	Result	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th	18th	19th	20th	21st	22nd	23rd	24th	25th	26th	27th	28th	29th	30th	31st	32nd	33rd	34th	35th	36th	37th	38th	39th	40th	41st	42nd	43rd	44th	45th	46th	47th	48th	49th	50th	51st	52nd	53rd	54th	55th	56th	57th	58th	59th	60th	61st	62nd	63rd	64th	65th	66th	67th	68th	69th	70th	71st	72nd	73rd	74th	75th	76th	77th	78th	79th	80th	81st	82nd	83rd	84th	85th	86th	87th	88th	89th	90th	91st	92nd	93rd	94th	95th	96th	97th	98th	99th	100th	101st	102nd	103rd	104th	105th	106th	107th	108th	109th	110th	111st	112nd	113rd	114th	115th	116th	117th	118th	119th	120th	121st	122nd	123rd	124th	125th	126th	127th	128th	129th	130th	131st	132nd	133rd	134th	135th	136th	137th	138th	139th	140th	141st	142nd	143rd	144th	145th	146th	147th	148th	149th	150th	151st	152nd	153rd	154th	155th	156th	157th	158th	159th	160th	161st	162nd	163rd	164th	165th	166th	167th	168th	169th	170th	171st	172nd	173rd	174th	175th	176th	177th	178th	179th	180th	181st	182nd	183rd	184th	185th	186th	187th	188th	189th	190th	191st	192nd	193rd	194th	195th	196th	197th	198th	199th	200th	201st	202nd	203rd	204th	205th	206th	207th	208th	209th	210th	211st	212nd	213rd	214th	215th	216th	217th	218th	219th	220th	221st	222nd	223rd	224th	225th	226th	227th	228th	229th	230th	231st	232nd	233rd	234th	235th	236th	237th	238th	239th	240th	241st	242nd	243rd	244th	245th	246th	247th	248th	249th	250th	251st	252nd	253rd	254th	255th	256th	257th	258th	259th	260th	261st	262nd	263rd	264th	265th	266th	267th	268th	269th	270th	271st	272nd	273rd	274th	275th	276th	277th	278th	279th	280th	281st	282nd	283rd	284th	285th	286th	287th	288th	289th	290th	291st	292nd	293rd	294th	295th	296th	297th	298th	299th	300th	301st	302nd	303rd	304th	305th	306th	307th	308th	309th	310th	311st	312nd	313rd	314th	315th	316th	317th	318th	319th	320th	321st	322nd	323rd	324th	325th	326th	327th	328th	329th	330th	331st	332nd	333rd	334th	335th	336th	337th	338th	339th	340th	341st	342nd	343rd	344th	345th	346th	347th	348th	349th	350th	351st	352nd	353rd	354th	355th	356th	357th	358th	359th	360th	361st	362nd	363rd	364th	365th	366th	367th	368th	369th	370th	371st	372nd	373rd	374th	375th	376th	377th	378th	379th	380th	381st	382nd	383rd	384th	385th	386th	387th	388th	389th	390th	391st	392nd	393rd	394th	395th	396th	397th	398th	399th	400th	401st	402nd	403rd	404th	405th	406th	407th	408th	409th	410th	411st	412nd	413rd	414th	415th	416th	417th	418th	419th	420th	421st	422nd	423rd	424th	425th	426th	427th	428th	429th	430th	431st	432nd	433rd	434th	435th	436th	437th	438th	439th	440th	441st	442nd	443rd	444th	445th	446th	447th	448th	449th	450th	451st	452nd	453rd	454th	455th	456th	457th	458th	459th	460th	461st	462nd	463rd	464th	465th	466th	467th	468th	469th	470th	471st	472nd	473rd	474th	475th	476th	477th	478th	479th	480th	481st	482nd	483rd	484th	485th	486th	487th	488th	489th	490th	491st	492nd	493rd	494th	495th	496th	497th	498th	499th	500th	501st	502nd	503rd	504th	505th	506th	507th	508th	509th	510th	511st	512nd	513rd	514th	515th	516th	517th	518th	519th	520th	521st	522nd	523rd	524th	525th	526th	527th	528th	529th	530th	531st	532nd	533rd	534th	535th	536th	537th	538th	539th	540th	541st	542nd	543rd	544th	545th	546th	547th	548th	549th	550th	551st	552nd	553rd	554th	555th	556th	557th	558th	559th	560th	561st	562nd	563rd	564th	565th	566th	567th	568th	569th	570th	571st	572nd	573rd	574th	575th	576th	577th	578th	579th	580th	581st	582nd	583rd	584th	585th	586th	587th	588th	589th	590th	591st	592nd	593rd	594th	595th	596th	597th	598th	599th	600th	601st	602nd	603rd	604th	605th	606th	607th	608th	609th	610th	611st	612nd	613rd	614th	615th	616th	617th	618th	619th	620th	621st	622nd	623rd	624th	625th	626th	627th	628th	629th	630th	631st	632nd	633rd	634th	635th	636th	637th	638th	639th	640th	641st	642nd	643rd	644th	645th	646th	647th	648th	649th	650th	651st	652nd	653rd	654th	655th	656th	657th	658th	659th	660th	661st	662nd	663rd	664th	665th	666th	667th	668th	669th	670th	671st	672nd	673rd	674th	675th	676th	677th	678th	679th	680th	681st	682nd	683rd	684th	685th	686th	687th	688th	689th	690th	691st	692nd	693rd	694th	695th	696th	697th	698th	699th	700th	701st	702nd	703rd	704th	705th	706th	707th	708th	709th	710th	711st	712nd	713rd	714th	715th	716th	717th	718th	719th	720th	721st	722nd	723rd	724th	725th	726th	727th	728th	729th	730th	731st	732nd	733rd	734th	735th	736th	737th	738th	739th	740th	741st	742nd	743rd	744th	745th	746th	747th	748th	749th	750th	751st	752nd	753rd	754th	755th	756th	757th	758th	759th	760th	761st	762nd	763rd	764th	765th	766th	767th	768th	769th	770th	771st	772nd	773rd	774th	775th	776th	777th	778th	779th	780th	781st	782nd	783rd	784th	785th	786th	787th	788th	789th	790th	791st	792nd	793rd	794th	795th	796th	797th	798th	799th	800th	801st	802nd	803rd	804th	805th	806th	807th	808th	809th	810th	811st	812nd	813rd	814th	815th	816th	817th	818th	819th	820th	821st	822nd	823rd	824th	825th	826th	827th	828th	829th	830th	831st	832nd	833rd	834th	835th	836th	837th	838th	839th	840th	841st	842nd	843rd	844th	845th	846th	847th	848th	849th	850th	851st	852nd	853rd	854th	855th	856th	857th	858th	859th	860th	861st	862nd	863rd	864th	865th	866th	867th	868th	869th	870th	871st	872nd	873rd	874th	875th	876th	877th	878th	879th	880th	881st	882nd	883rd	884th	885th	886th	887th	888th	889th	890th	891st	892nd	893rd	894th	895th	896th	897th	898th	899th	900th	901st	902nd	903rd	904th	905th	906th	907th	908th	909th	910th	911st	912nd	913rd	914th	915th	916th	917th	918th	919th	920th	921st	922nd	923rd	924th	925th	926th	927th	928th	929th	930th	931st	932nd	933rd	934th	935th	936th	937th	938th	939th	940th	941st	942nd	943rd	944th	945th	946th	947th	948th	949th	950th	951st	952nd	953rd	954th	955th	956th	957th	958th	959th	960th	961st	962nd	963rd	964th	965th	966th	967th	968th	969th	970th	971st	972nd	973rd	974th	975th	976th	977th	978th	979th	980th	981st	982nd	983rd	984th	985th	986th	987th	988th	989th	990th	991st	992nd	993rd	994th	995th	996th	997th	998th	999th	1000th	1001st	1002nd	1003rd	1004th	1005th	1006th	1007th	1008th	1009th	1010th	1011st	1012nd	1013rd	1014th	1015th	1016th	1017th	1018th	1019th	1020th	1021st	1022nd	1023rd	1024th	1025th	1026th	1027th	1028th	1029th	1030th	1031st	1032nd	1033rd	1034th	1035th	1036th	1037th	1038th	1039th	1040th	1041st	1042nd	1043rd	1044th	1045th	1046th	1047th	1048th	1049th	1050th	1051st	1052nd	1053rd	1054th	1055th	1056th	1057th	1058th	1059th	1060th	1061st	1062nd	1063rd	1064th	1065th	1066th	1067th	1068th	1069th	1070th	1071st	1072nd	1073rd	1074th	1075th	1076th	1077th	1078th	1079th	1080th	1081st	1082nd	1083rd	1084th	1085th	1086th	1087th	1088th	1089th	1090th	1091st	1092nd	1093rd	1094th	1095th	1096th	1097th	1098th	1099th	1100th	1101st	1102nd	1103rd	1104th	1105th	1106th	1107th	1108th	1109th	1110th	1111st	1112nd	1113rd	1114th	1115th	1116th	1117th	1118th	1119th	1120th	1121st	1122nd	1123rd	1124th	1125th	1126th	1127th	1128th	1129th	1130th	1131st	1132nd	1133rd	1134th	1135th	1136th	1137th	1138th	1139th	1140th	1141st	1142nd	1143rd	1144th	1145th	1146th	1147th	1148th	1149th	1150th	1151st	1152nd	1153rd	1154th	1155th	1156th	1157th	1158th	1159th	1160th	1161st	1162nd	1163rd	1164th	1165th	1166th	1167th	1168th	1169th	1170th	1171st	1172nd	1173rd	1174th	1175th	1176th	1177th	1178th	1179th	1180th	1181st	1182nd	1183rd	1184th	1185th	1186th	1187th	1188th	1189th	1190th	1191st	1192nd	1193rd	1194th	1195th	1196th	1197th	1198th	1199th	1200th	1201st	1202nd	1203rd	1204th	1205th	1206th	1207th	1208th	1209th	1210th	1211st	1212nd	1213rd	1214th	1215th	1216th	1217th	1218th	1219th	1220th	1221st	1222nd	1223rd	1224th	1225th	1226th	1227th	1228th	1229th	1230th	1231st	1232nd	1233rd	1234th	1235th	1236th	1237th	1238th	1239th	1240th	1241st	1242nd	1243rd	1244th	1245th	1246th	1247th	1248th	1249th	1250th	1251st	1252nd	1253rd	1254th	1255th	1256th	1257th	1258th	1259th	1260th	1261st	1262nd	1263rd	1264th	1265th	1266th	1267th	1268th	1269th	1270th	1271st	1272nd	1273rd	1274th	1275th	1276th	1277th	1278th	1279th	1280th	1281st	1282nd	1283rd	1284th	1285th	1286th	1287th	1288th	1289th	1290th	1291st	1292nd	1293rd	1294th	1295th	1296th	1297th	1298th	1299th	1300th	1301st	1302nd	1303rd	1304th	1305th	1306th	1307th	1308th	1309th	1310th	1311st	1312nd	1313rd	1314th	1315th	1316th	1317th	1318th	1319th	1320th	1321st	1322nd	1323rd	1324th	1325th	1326th	1327th	1328th	1329th	1330th	1331st	1332nd	1333rd	1334th	1335th	1336th	1337th	1338th	1339th	1340th	1341st	1342nd	1343rd	1344th	1345th	1346th	1347th	134
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For a late touch, click on the final time. A pop up will show the race time as well as the pad time and the backup time. Click the backup time to promote it. The final time and place columns will be updated as needed.



If the difference between the final time and the calculated backup time is greater than the comparison interval defined in Timing Settings (usually 0.30 seconds), the Final Time column for that lane will show red.



In this instance, click on the red highlighted area. When the pop up opens, click the backup time to promote it and the final time and place columns will be updated.

If no pad touch was registered and only backup times are present a  icon will appear next to the registered backup times. Click the icon to quickly promote the backup time.



Promoting a Split to the Final time

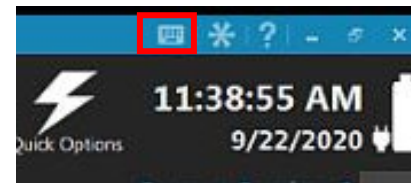
In the event that a missed touch is not fixed immediately, a swimmer may finish their race but the timer records the touch as their final split. You can right-click on any split in the lane display and select **Make Official Time**. This is functionally equivalent to manually editing the finish time and entering the value of the final split.

Removing an unintended RJP time

If an athlete or official makes contact with the Relay Judging Platform (RJP) at a split where a relay time should not have been recorded, you can right-click on that relay time and select **Remove RJP time**. This helps keep the recorded data clean and prevents confusion when data is sent to meet management software.

Keyboard Shortcuts

A list of available keyboard shortcuts can be found by clicking on the keyboard icon in the upper right of the screen.



Keyboard Shortcuts

Next Event	Ctrl + F5
Previous Event	Ctrl + F4
Next Heat	F5
Previous Heat	F4
Manual Start	Ctrl + Shift + Space
Reset Race (must press twice)	Ctrl + Shift + R
Finish Arm All	Ctrl + Shift + F
Clear Lanes	Ctrl + Delete

These shortcuts are a two key sequence: a command key followed by a number key:

Number keys can be used for lanes 1 - 10 (0 for lane 10)

For lane 11, use F11 or the 'B' key. For Lane 12, use F12 or the 'C' key

Lane On/Off	L, Num
DQ	D, Num
Split Arm	S, Num
Finish Arm	F, Num
Plus Touch	+, Num or P, Num
Minus Touch	-, Num or M, Num

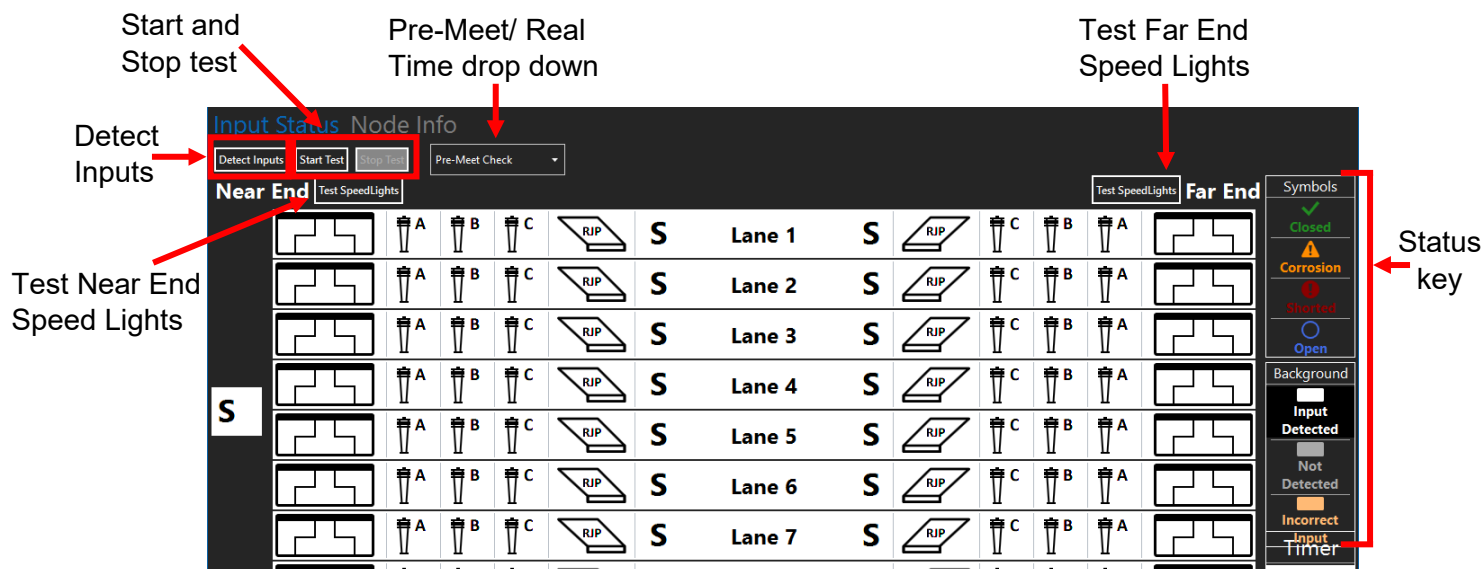
CLOSE

Troubleshooting

Issue	Solutions
Touchpad, pushbutton or RJP times are not registering.	Use the Diagnostics function to troubleshoot (see Diagnostics on page 69)
The interface (tablet or laptop) lost connection with the timer.	<p>The timer will continue running and will finish a race without the user interface.</p> <p>To reconnect, check cables. Restart the software if necessary.</p>
Unexpected behavior in lanes (numbering, lanes off, etc.).	Verify that the settings are correct for your pool for this session (see Session Settings on page 51)
Event Sequence not received from meet management software.	<p>1) Event sequences will not be received during a race. Wait until the race is finished and the timer is ready for a new race.</p> <p>2) Make sure meet management cable is connected to both the meet management computer and the Meet Management port on the back of the Gen7 timer.</p> <p>3) Refer to your meet management software manuals.</p>
Start system does not start race time.	<p>1) Make sure start system cable is properly attached.</p> <p>2) Clean connectors.</p> <p>3) Check cabling.</p> <p>4) Check start system.</p>
Finish system pad or finish button/backup button hits are not registering.	<p>1) Swimming software must be ready for a pad hit. Ensure that the pad arm indicator is displayed in the appropriate lane(s).</p> <p>2) Make sure touchpad and button cables are properly and securely connected.</p> <p>3) Clean connectors</p> <p>4) Check cabling.</p> <p>5) Check touchpad(s) or buttons(s).</p>
Scoreboard not working at all.	<p>1) Make sure scoreboard has power and is turned on.</p> <p>2) Make sure scoreboard is not blanked.</p> <p>3) Make sure scoreboard cable is properly connected.</p> <p>4) Check scoreboard cable connectors for corrosion and clean or replace as necessary.</p>

Issue	Solutions
Scoreboard not showing expected results.	<ol style="list-style-type: none"> 1) Make sure scoreboard cable is properly connected. 2) Check scoreboard cable connectors for corrosion and clean or replace as necessary. 3) Ensure that scoreboard DIP switches for each module are set to the proper physical address. 4) Check logical addresses in the Swimming software.
Gen7 Software is unable to connect to Gen7 Timer.	<ol style="list-style-type: none"> 1) Check that the ethernet cable is securely plugged in to both devices. 2) If connecting via a switch or router, ensure that this device is powered on. 3) Ensure that your Windows networking settings match your timer settings. For most users, this will be the "Automatic Private IP Address" setting under "Alternate Configuration" under the "TCP/IP v4" properties of your ethernet controller. 4) Ask your local IT department if there is anything they need to do to get your Gen7 on to your facility network.

Diagnostic Testing






The Gen7 diagnostics helps find issues with both in-deck and on-deck wiring as well as with touchpads, pushbuttons and RJPs. Here are the steps to fully test the entire system:

1. Connect all the hardware that will be used:
 - a. If using bulkheads or cable-harnesses, make sure those are plugged in to the appropriate deckplate, wallplate or timer connection.
 - b. Touchpads, pushbuttons and RJPs should be plugged in to deckplates or cable harnesses.
2. When the pool is empty, start Real Time diagnostics.

All inputs should show up as Open



- a. If you see any inputs register as Shorted , Corroded , or Closed  use the table below to determine next steps.
3. After ensuring that all inputs are registering as Open, stop the real-time test and run a pre-meet test.
4. Walk the pool deck and trigger each touchpad, pushbutton and RJP. Each input should show up as Closed.
 - a. If any inputs register as Shorted, Corroded or Closed, use the table below to determine next steps.

- While walking the pool deck the status of each input can be tracked using the scoreboard. Inputs at the far end will show “F” in the place column. Inputs at the near end will show “n” in the place column. Pads show as “P”, pushbuttons show as “A”, “B”, or “C” and RJPs show as “r”. If a component has an error, “E” will display in that components place on the scoreboard.





Near End									
	A ✓	B ✓	C ✓	RJP ✓	S	Clear	Lane 1		
	A ✓	B ✓	C ✓	RJP ✓	S	Clear	Lane 2		
	A ✓	B ✓	C ✓	RJP ✓	S	Clear	Lane 3		
	A ✓	B	C ✓	RJP ✓	S	Clear	Lane 4		
	A ✓	B ✓	C ✓	RJP ✓	S	Clear	Lane 5		
	A ✓	B ✓	C ✓	RJP ✓	S	Clear	Lane 6		
	A ✓	B ✓	C ✓	RJP ✓	S	Clear	Lane 7		
	A ✓	B ✓	C ✓	RJP ✓	S	Clear	Lane 8		

EVENT			2	HEAT	7
LN	PL	TIME			
1	n	PABC			
2	n	PABC			
3	n	PABC			
4	n	PABC			
5	n	PABC			
6	n	PABC			
7	n	PABC			
8	n	PABC			

- The start input can also be tested at the near and far ends, as well as the dedicated start input on the timer itself.
- After all inputs have been verified, the system is ready to run a meet.

Diagnostic Table

During both pre-meet and real-time diagnostics, the Gen7 screen will show each input in one of 4 states:

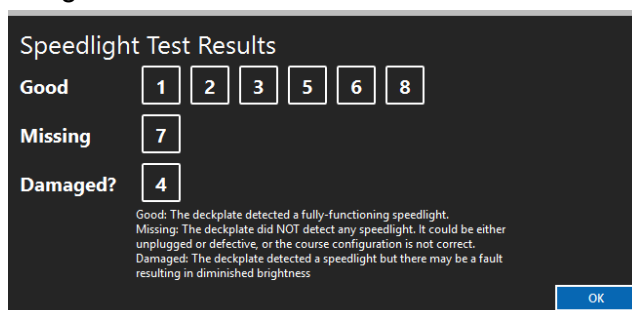
	Open	This is the normal state for a touchpad or pushbutton that has not been pressed. If this is displayed after pressing a touchpad or pushbutton, the pad/button should be tested with a touchpad meter (TPM-D). If the pad/button registers as good with the meter, there may be an issue with the deckplate or cable-harness
	Shorted	If this is displayed before pressing a touchpad or pushbutton, it could be a sign that there is a short in the pad/button. If the pad/button is removed and the short goes away, replace the pad/button. Ensure that the deckplate/cable-harness pod is as dry as possible and retest. Test the pad/button with a touchpad meter (TPM-D) and replace if necessary.
	Corrosion	If this is shown after pressing a touchpad or pushbutton, it could be a sign that either the plug or jack is corroded. Examine the plug on the pad/button and clean with rubbing alcohol. Use a cotton-swab and rubbing alcohol to clean deckplate and cable-harness jacks. If this is present without pressing a touchpad or pushbutton, it could be a sign of a shorted input that is also corroded. If the corrosion indicator goes away after retesting with a known-good button, the issue is in the pad/button. If the issue persists, the issue is in the wiring.
	Closed	This is the normal state for a touchpad or pushbutton that has been pressed. If this is present without pressing a touchpad or pushbutton, the pad/button should be tested with a touchpad meter (TPM-D). If the pad/button registers as good with the meter, there may be an issue with the deckplate or cable-harness

Having a known-good pushbutton that is free of corrosion can make diagnosing pad/button issues much easier.

Speedlight Testing

If you are using speedlights, you can use the buttons at the top of the diagnostic view to trigger Near End and Far End speedlights without requiring a start signal.

The deckplates will measure the current that flows through the speedlight. The results will be displayed indicating which speedlights functioned correctly, which were damaged, and which lanes were missing speedlights.



Input Detection

Gen7 serial deckplates can detect what type of inputs are plugged in to each spot on the deckplate. This operation takes a few seconds to complete but can allow the operator to determine if all expected pads and buttons are plugged in. Missing inputs are given a gray background, and mismatched inputs are given an orange background. This option is only available for in-deck systems. It will not function with cable-harnesses.

Routine Maintenance

Connectors

Inspect the cable connectors on the Gen7 back panel every time you plug a cable into the connector(s). Clean as necessary.

To clean cable connectors, put two or three drops of alcohol on a cleaning cotton swab available at almost any electrical supply store, or a folded soft pipe-cleaner, and insert the swab into the connector. **Pull the swab straight out.** Move the swab to the next section of the connector and repeat. **Do not slide the cotton swab along the inside of the connector.** Damage to the contacts could result. Rinse the connectors with a damp cotton swab, and then dry with a dry swab using the same motion. **Never use corrosive cleaners such as steel wool or corrosive chemicals such as Lime-A-Way® to clean these connectors!**

Note: In order to reduce corrosion on the touchpad connectors, it is advised that you power off the touchpads when they are not being used.

Case

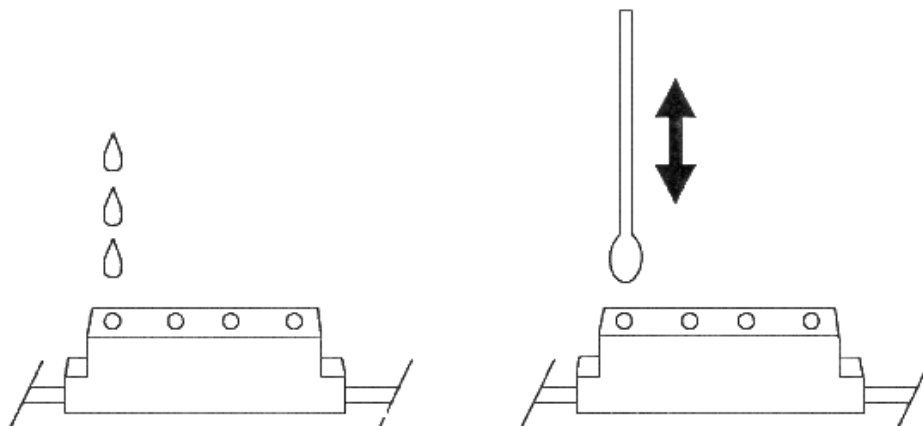
The Gen7 case is made of high-impact plastic. Use any neutral detergent to clean the case. Do not use alcohol, thinner or other solvents. These products can change the color or otherwise damage the case.

Cables

Inspect all cable and in-deck connectors for corrosion before use. All connectors must be corrosion-free for the timing system to operate properly.

To clean cable or in-deck connectors, rubbing alcohol, silicone grease and cotton swabs will be required. Follow the instructions below.

1. Pour a few drops of rubbing alcohol into the cable or deck plate jacks and let it sit for several minutes to dissolve corrosion.
2. Insert a cotton swab into the jack and use a plunging motion to clean the jack.

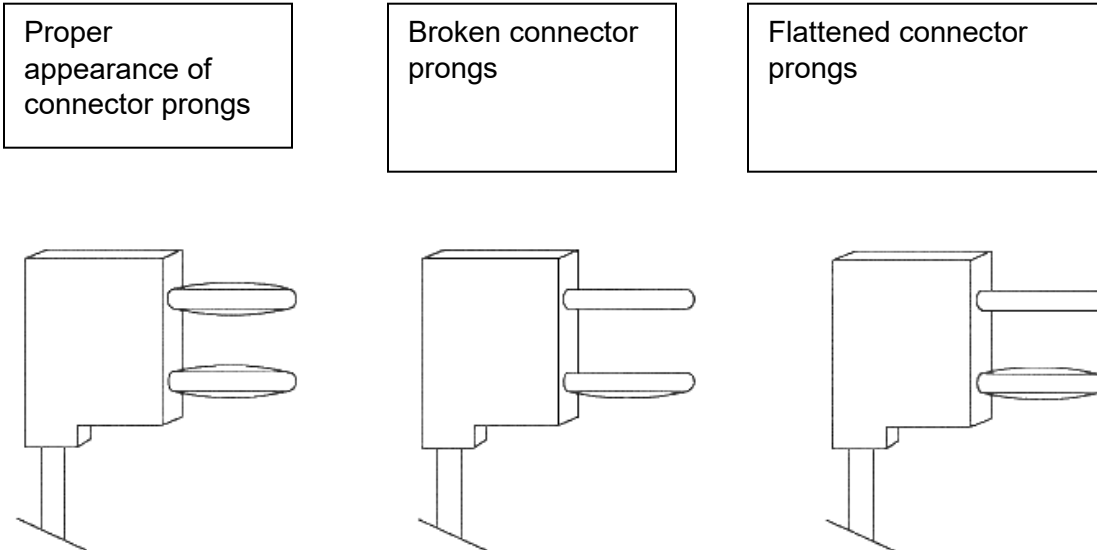


3. Rinse the jack with a damp cloth swab and dry it with a dry swab.

4. Apply a small amount of silicone grease to a clean cotton swab and insert into the jack.

Touchpads and Buttons

Make sure all connectors fit snugly into the cable harness. Connectors with broken prongs do not fit properly. Check connector prongs for corrosion and clean or replace connectors as necessary. Refer to the to your touchpad manual for detailed care instructions.



Start Systems

Make sure all connectors fit snugly into the cable. Connector prongs that are broken fit loosely.. Check connector prongs for corrosion and clean or replace connectors as necessary. Refer to your Start System user's manual for detail on its proper maintenance.

Scoreboard

Inspect the scoreboard data cable connectors for corrosion and broken or frayed wires. Clean or replace as necessary. Consult your scoreboard manual for any maintenance needed.

Appendix A: Specifications

Environmental

Operating temperature: 0°C - 45°C, storage temperature -20°C - 70°C

Humidity: 90% (non-condensing)

Altitude: 0 to 3000 m


Electrical


Use Class 2 power supply for the correct type of power outlet in your area: models R-920-055, R-920-056, R-920-057 or R-920-058 (12 VDC @ 7.5A) only.


Battery: NiMH, rechargeable, 7.2V nominal, 10,000 mAh.

Battery operating time: up to 6 hours of normal use with small 10 node in-deck system and/or cable harnesses; up to 3 hours of normal use with large 60 node in-deck system

Input and Output Connections (from top left to bottom right)

Scoreboard output  RS-485, differential pair, 3V, 300 mA max. Power 12V@2.5A max, short cut protected.

Scoreboard output  RS-485, differential pair, 3V, 300 mA max. Power 12V@2.5A max, short cut protected.

Scoreboard output  RS-485, differential pair, 3V, 300 mA max. Power 12V@2.5A max, short cut protected.

USB B to PC (CTS expansion port): Bidirectional, powered by PC

USB B to Meet Management PC: Bidirectional, powered by PC

USB A: Bidirectional, powered by device, 5V, 500mA

Ethernet port: 1Gbit max, isolated

Start input: 3.3V @1.7mA

Speaker input/output: Only to be used with a Colorado Time Systems start system and speakers. Do not use other power amplifiers or speakers other than specified by Colorado Time Systems.

Timing connections: In-deck 12V@2.5A max, short cut protected. On-deck near and far end together 12V 200mA, short cut protected

Power input: 12V, 7A max. Powers device and charges battery.

Installation/Maintenance

This product is intended to be used in an indoor or outdoor swimming pool environment. When the timer is operated in the US it must be used in accordance with the National Electric Code. When the timer is operated elsewhere it must be used in accordance with all appropriate national and local electrical codes and regulations for the country of installation. Run the Gen7 Serial Timer in a safe distance from the pool where it won't be splashed. If the Gen7 Serial Timer has been in a cold location, allow it to come to room temperature in a non-humid area before use to prevent condensation in the unit.

Using the Gen7 Timer in a manner not specified by Colorado Time Systems may cause the protection provided by the equipment to be impaired. There are no user serviceable parts in the Gen7 Timer. Do not attempt to open the enclosure. Removing or tampering with the labels covering the screws on the bottom of the unit voids the warranty.

Warranty is void if the product is misused, altered, tampered with or is installed or used in a manner that is inconsistent with Colorado Time System's written recommendations, specifications and/or instructions, or fails to perform due to normal wear and tear.

Gen7 serielles Zeitmeßgerät

Umgebung

Betriebstemperatur: 0°C - 45°C. Lagertemperatur -20°C - 70°C

Luftfeuchtigkeit: 90% (nicht kondensierend)

Höhe: 0 bis 3000 m


Elektrische Daten


Nur mit Klasse 2 DC Stromversorgungs-Modellen R-920-056, R-920-057 oder R-920-058 (12 VDC @ 7.5A), passend für die korrekten Steckdosen Ihres Landes zu verwenden


Batterie: Nickelmetallhydrid, wiederaufladbar, 7,2V, 10.000 mAh

Betriebsdauer batteriebetrieben: bis zu 6 Stunden normalen Gebrauchs mit einem kleinen eingebauten System (10 Deckverbindungen) und/oder Kabelsträngen, bis zu 3 Stunden mit einem großen eingebauten System (60 Deckverbindungen).

Eingänge und Ausgänge (von links oben nach rechts unten)

Anzeigetafelanschluss  : RS-485, differenzielle Leitungen, 3V, 300 mA max. 12V, 2,5A
Stromversorgung, kurzschlussgeschützt.

Anzeigetafelanschluss  : RS-485, differenzielle Leitungen, 3V, 300 mA max. 12V, 2,5A
Stromversorgung, kurzschlussgeschützt.

Anzeigetafelanschluss  : RS-485, differenzielle Leitungen, 3V, 300 mA max. 12V, 2,5A
Stromversorgung, kurzschlussgeschützt.

USB B zu PC (CTS Expansionsport): Bidirektional, versorgt vom PC

USB B zu Wettkampf Management PC: Bidirektional, versorgt vom PC

USB A: Bidirektional, versorgt vom Zeitmeßgerät

Ethernet Verbindung: 1Gbit max, isoliert

Start Eingang: 3.3V @1,7mA

Lautsprechereingang/ausgang: Nur mit einem Startsystem und Lautsprechern von Colorado Time Systems zu verwenden.

Zeitmeßverbindungen: Für eingebautes System (in-deck) 12V@2,5A max, kurzschlussgeschützt. Für nicht eingebautes System (on-deck) 12V@200mA max, kurzschlussgeschützt.

Stromversorgungseingang: 12V, 7A max. Versorgt das Gerät und lädt die Batterie, nur mit Klasse 2 Gleichstromstromversorgungs-Modell R-920-056, R-920-057 or R-920-058 (12 VDC @ 7,5A) zu verwenden

Bestimmungsgemäßer Gebrauch

Dieses Produkt ist für die Benutzung in Swimming Pools für innen und außen bestimmt. Die Installation und Verwendung des Gen7 Zeitmeßgerätes muß gemäß den landesüblichen Vorschriften erfolgen. Das Gen7 Zeitmeßgerätes sollte in einer sicheren Entfernung vom Pool verwendet werden damit es nicht angespritzt wird. Wenn das Gerät im Kalten gelagert war muss es vor Verwendung auf Raumtemperatur gebracht werden um Kondensation zu vermeiden.

Installation/Wartung

Wenn das Gen7 Zeitmeßgerät nicht so installiert und verwendet wird wie von CTS spezifiziert, können die Funktion und die Schutzvorrichtungen beeinträchtigt werden. Es gibt keine weiteren notwendigen Service-Wartungsarbeiten für das Gen7 Zeitmeßgerät als die routinemäßigen Reinigungsarbeiten wie sie im Handbuch beschrieben werden. Versuchen Sie nicht, das Gerät zu öffnen. Wenn die Aufkleber die die Geräteschrauben abdecken entfernt oder verletzt werden, erlischt die Garantie.

Appendix B: Networking Information

This appendix is primarily intended for network administrators and users who need to configure specific network settings.

The Gen7 Timer and the control laptops need to sit on the same physical network. They do not necessarily need to all be on Ethernet. The laptops can be hooked up via Wi-Fi as long as the Wi-Fi for the laptops and the Ethernet for the timers share the same network. This is necessary to facilitate the auto-discovery protocol where the software on the laptops automatically finds the timer.

The timer has its Ethernet MAC address printed on a sticker on the bottom of the unit if this is necessary for DHCP registration.

If there is a DHCP server present on the network, the Gen7 timer will receive its IP configuration from that server. If no DHCP server is present, or if no address is returned, the timer will self-assign an Automatic Private IP Address in the 169.254.xxx.yyy range. This range coincides with the Automatic Private IP Address range that Windows uses.

Because both the laptop and the Gen7 Timer default to Automatic Private IP Address, you can plug an Ethernet cable directly between the two.

See below for information on configuring static IP addresses.

Firewall Exceptions

Here are the open TCP/UDP ports for the various services run by the timer:

TCP 22: SSH (used for diagnostics and maintenance)

TCP 7105: Primary Gen7 Control Service (Encrypted with authentication)

UDP 5353: Zeroconf Networking (used for auto-discovery)

These ports need to be unblocked within the subnet but do not need to be routed beyond the subnet.

For security purposes, the SSH service does not allow a remote root login and the password for the user login is randomly assigned at the factory and is not shared by any other Gen7 device.

The Gen7 software installation package automatically enters firewall exceptions for the local Windows firewall.

Gen7 Network Config Utility

Starting with v1.3.0 (June 2019), CTS provides a Network Config Utility to set various network options for the Gen7 Timer. This program is installed when the main Gen7 Swimming installer is run. It requires a USB connection to the timer.

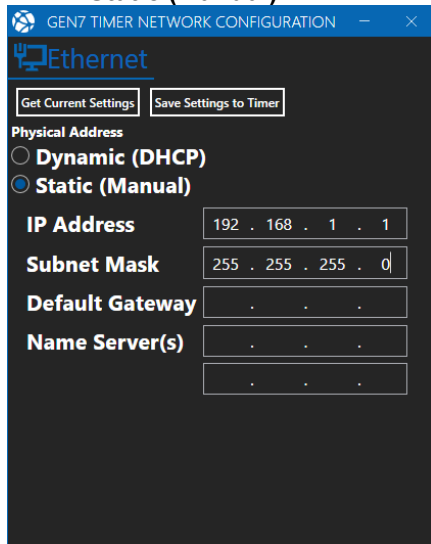
Here are the steps required:

1. Set up Gen7 Timer with nothing but the power cable connected
2. Turn on the timer and let it boot completely (to the pulsing sweep)
3. Connect the laptop and timer via USB connected to the monitor port on the timer (NOT THE MM PORT)



4. Start "Gen7 NetworkConfig" located in the "Gen7 Swimming" folder in the start menu


5. Select **Static (Manual)** and enter the following values:

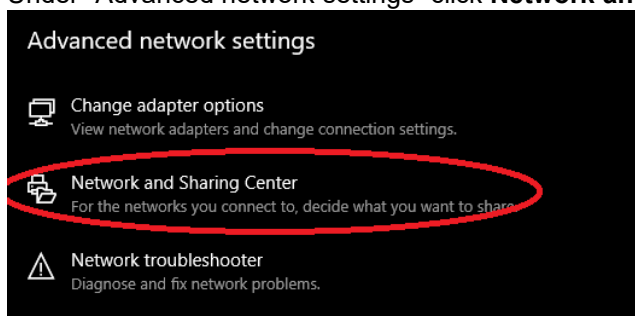


- a. IP Address and Subnet Mask are required. Default Gateway and Name servers are not
6. Click **Save Settings to Timer**
 7. Close the Gen7 Timer Network Configuration utility
 8. Disconnect the USB cable
 9. Connect the timer and laptop via Ethernet
 10. If you need to set a static IP for the laptop, follow the steps outlined below.
 11. If, after starting the Gen7 Swimming software, the timer is not automatically found, select **Manual** and enter the timer's assigned IP address


Below you'll find helpful information for changing Windows IP Settings. Please note, changing your network settings can prevent you from accessing the internet.

Settings Windows to use an Automatic Private IP Address

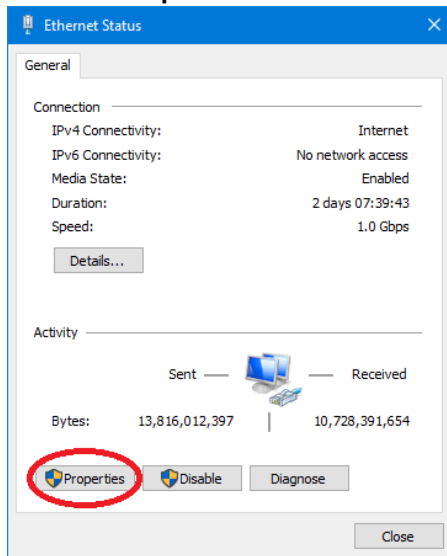
1. Open the Settings App (click the Gear Icon  in the Start Menu)
2. Select "Network and Internet"
3. Under "Advanced network settings" click **Network and Sharing Center**



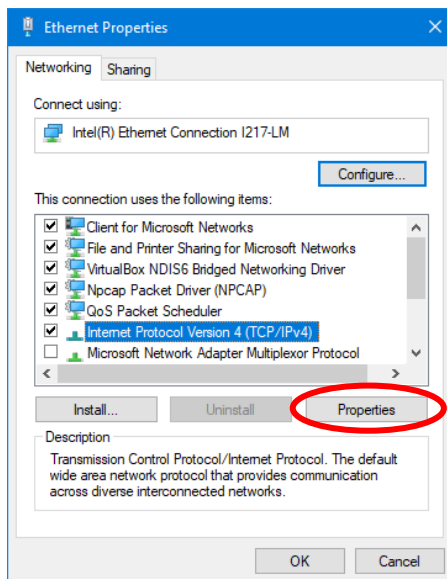
4. In the **Network and Sharing Center** window, click the link that says "Ethernet"

Access type: No network access
Connections:  Ethernet

5. Click the **Properties** button

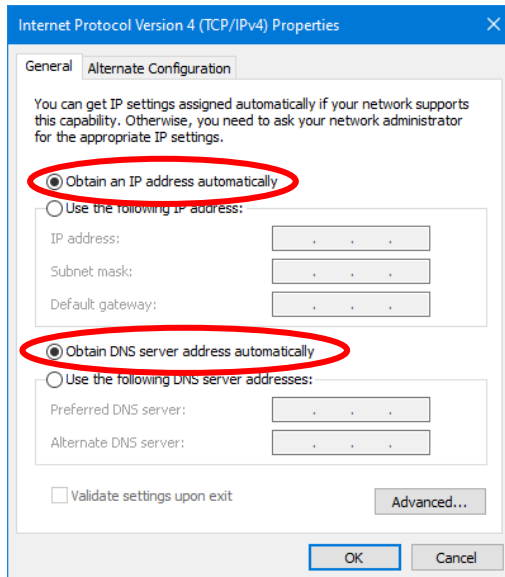


6. Select the item named "Internet Protocol Version 4 (TCP/IPv4)"

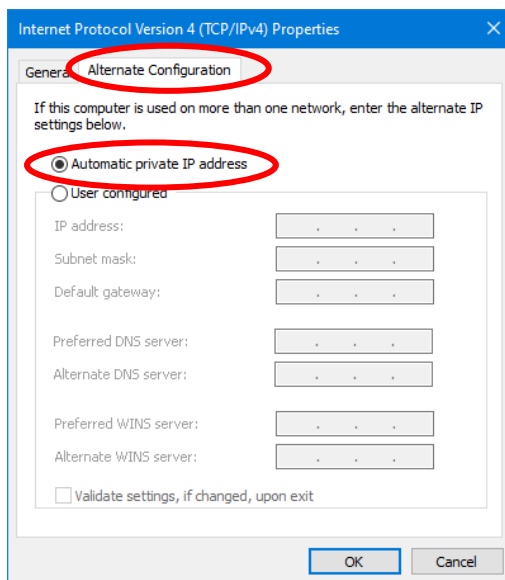


7. Click **Properties**

8. Make Sure “Obtain IP address automatically” and “Obtain DNS server address automatically” are both selected.



9. In the tab labeled “Alternate Configuration”, make sure “Automatic private IP Address” is selected.



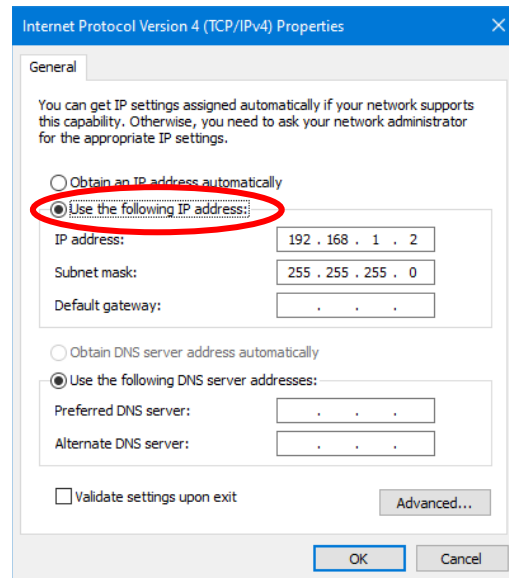
10. Click “OK” on all open windows.

Settings Windows to a Static IP

Static IP addresses can help increase the reliability of the network connectivity with your Gen7 Timer. When set to static IP addresses, both the timer and the laptop are immediately ready for connection (as opposed to needed 30+ second for the automatic private assignment to take place).

Generally, your IT department will provide you with IP addresses for both the timer and laptop. If you do not have an IT department, you should proceed with caution. Changing your network settings can prevent you from accessing the internet.

1. Follow steps 1-7 above
2. Make sure “Use the following IP address” is selected
3. Enter the IP address and Subnet mask provided by your IT department
 - a. Default gateway and DNS servers are not required



4. Click “OK” on all open windows.

Recommended Addresses for a standalone Gen7 network

If you want to create a small network just for your Gen7 Timer and laptop, CTS recommends the following IP addresses:

- Gen7 Timer: 192.168.1.101
- Laptop: 192.168.1.102

Set both devices to use a subnet mask of 255.255.255.0.

Appendix C: Athlete Name Integration

Starting with v2023, Gen7 Swimming supports loading Swimmers' Names for display on both the operator's screen and transmission to an LED video board. This integration removes the need for a connection between meet management software and the DisplayLink Plus (DL+) computer. Support is offered both for pre-loaded names (via SCB files) and live names (via UDP network connections). This appendix will describe the operation of both options.

In addition to Gen7 Swimming v2023, you must be running DL+ v4.6.0 or greater and must be using an RS-485 connection between the Gen7 Timer and the DL+ Computer. Swimmers' Names Integration is not supported on RS-232 connections. If you would like more information about upgrading from RS-232 to RS-485 connections, please contact your CTS Sales Representative.

Starting with Gen7 Swimming v2026 and DL+ v4.7.0, support for Team Scores and Complete Event Results was added to the UDP and RS-485 protocols.

Pre-Loaded Names (SCB Files)

Swimmers' Names can be pre-loaded into the Gen7 Timer using the same SCB files that are used to pre-load names to DL+. In addition to sending the names to an LED video board, the names will display in the Gen7 software. This can be very helpful for the Gen7 operator to follow along with the meet.

The steps to load names are as follows:

1. Export the SCB files from the meet management software.
 - a. Consult the documentation from your meet management vendor.
2. Copy the exported files to a USB Flash drive and insert that drive into the Gen7 computer.

3. Open the "Quick Options"  menu in the Gen7 software.
4. Click "Load Scoreboard Names".

Load Scoreboard Names

5. Navigate to the USB flash drive and click "Select Folder".
6. The Gen7 software will load all SCB files found in the selected folder.
7. Be sure to click "New Meet" in the Swimming Tab in DL+ to clear out any old data.

Names are stored on a per-session basis. If names need to be cleared from the session, click the "Clear Scoreboard Names" button.

Clear Scoreboard Names

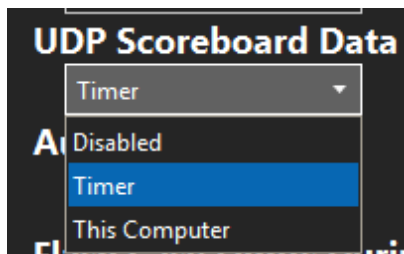
Live Data (UDP Connection)

Gen7 Swimming can establish a UDP network connection with the meet management software. This allows Swimmers' Names, Team Scores and Event Results to be transferred over your local network. For this to work, the computer running the meet management software must be

attached to the same subnet as either the Gen7 Timer or the Gen7 computer. The UDP connection cannot be routed between subnets.

Gen7 Setup

1. Open the Settings Screen and navigate to the General Tab
2. Select the appropriate option in the drop-down labelled “UDP Scoreboard Data”.

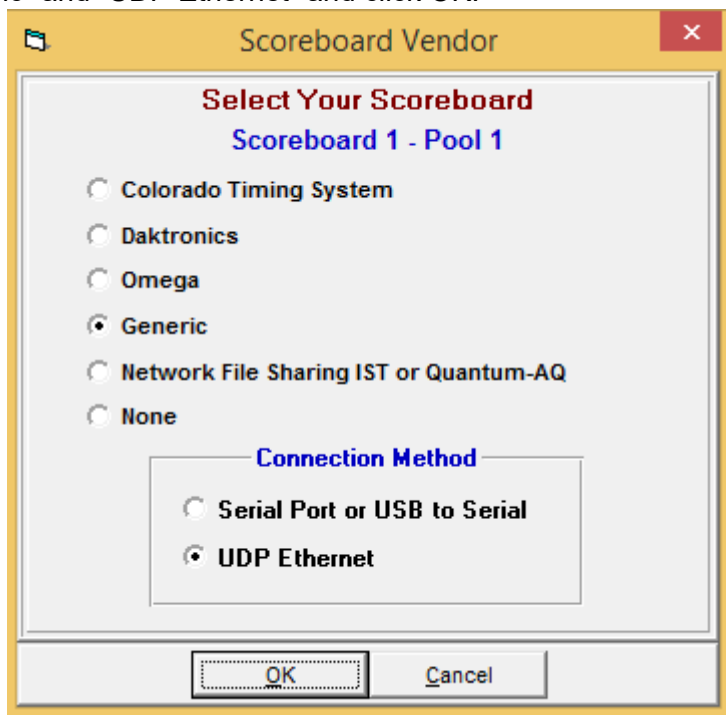


- a. If the Gen7 Timer and MM software are on the same subnet, select “Timer”.
 - b. If the Gen7 computer and mm software are on the same subnet, select “This Computer”.
 - c. If all three devices are on the same subnet, select either option; the end result will be the same.
3. Click “Save” to return to the main screen.

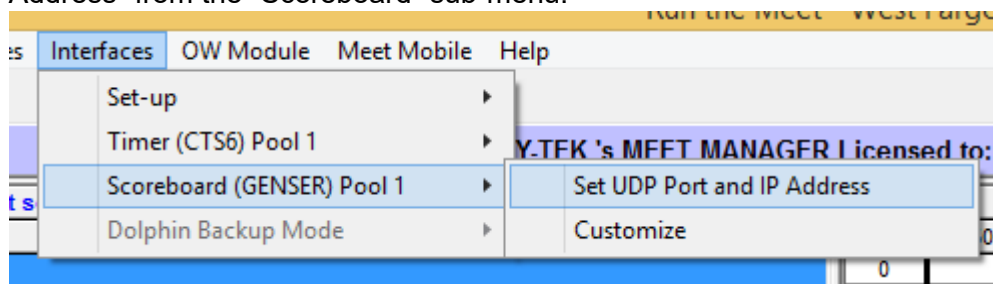
Meet Manager Setup

As of this writing, only Hy-Tek Meet Manager for Swimming supports UDP scoreboard data. Additionally, you must own the “Alpha Scoreboard” license option.

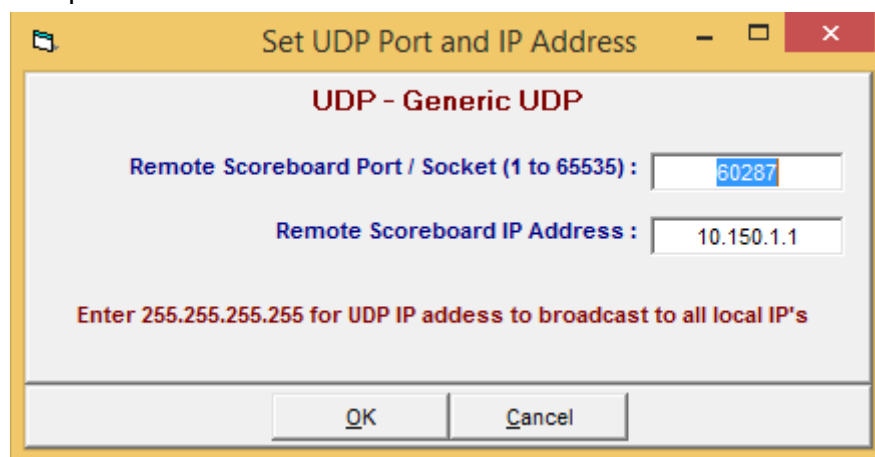
1. In the “Set-up” menu, click “Alpha Scoreboard Interface”.
2. Select “Generic” and “UDP Ethernet” and click OK.



3. From the “Run” screen, open the “Interfaces” menu, and select “Set UDP Port and IP Address” from the “Scoreboard” sub-menu.



- a. Enter port 60287 in the “Remote Scoreboard Port” box.



- b. If you selected “Timer” in the “UDP Scoreboard Names” drop-down in your Gen7 Settings, enter the IP address of the timer. This can be found in the lower-left corner of the Gen7 software screen.
 - c. If you selected “This Computer” in the “UDP Scoreboard Names” drop-down in your Gen7 Settings, enter the IP address of your Gen7 Computer. This can be found by clicking on the timer connection status in the lower-left corner of the Gen7 software screen.
 - d. Note: If both machines are on the same subnet, and you are only running one timer (i.e., you are not running a multi-pool setup), you can use the 255.255.255.255 broadcast address.
4. Click OK.
5. Once your events are seeded, you will need to send an initial start list to Gen7. Press CTRL+F10 from the Run Screen to send the start list for the current heat.
 - a. After you have sent the initial start list, Gen7 will have a bi-directional connection to Meet Manager.
 - b. At this point, Gen7 will request a new start list every time the event and/or heat are changed.

Notes

Start List data will be embedded in the RS-485 data scoreboard stream as well as displayed on the main screen of the Gen7 Software. Team Scores and Event Results data will pass through the Gen7 timer and be transmitted to the scoreboard but will not display in the Gen7 software.

When Gen7 Swimming is configured to use UDP data, the normal **Records, Time Standard, and Team Scores** elements on the main screen will be replaced by elements that allow you to request team scores and event results from you meet management software.

Team Scores	Combined ▾	Request Through All Events	Event Results	1 + -	Send
	Request Through...	1 + -		Finals ▾	

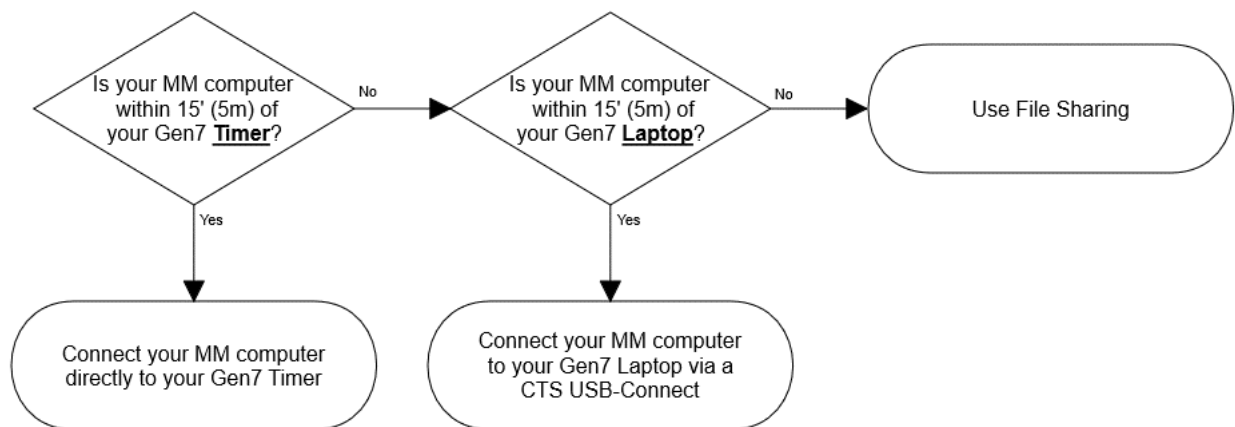
Appendix D: Meet Management Connectivity

Choosing your connection

The Gen7 Timer offers two primary methods for connecting with Meet Management software:

- 1) a USB connection between the meet management computer and the Gen7 system
- 2) network-based file sharing between the meet management computer and the Gen7 system

Both options provide for the same data to be exchanged between your meet management software and the Gen7 system. Which option you choose depends mostly on where you wish to set up your timer and your meet management computer.



USB Connection: General Information

The USB Connection option offers two different connection methods: USB to Timer and USB to Gen7 Laptop. More details on each are available below.

Regardless of which method you choose, the USB Connection option requires no additional setup within the Gen7 software. There are no settings that need to be enabled in order to activate the connection.

If you are experiencing issues, you can press the "Cycle MM Ports" button in the **Quick Options** menu to force the Gen7 Timer to reset the internal hardware.

Once the connection has been established, your meet management software can request race results from the Gen7 timer. Race results are made available to meet management as soon as you press "Save and Reset." You can also use your meet management software to download an event sequence to the Gen7 timer. This ensures that your timer is configured to match the event program that you have defined in your meet management software.

USB Connection: USB to Timer

You can connect a USB cable from your meet management computer directly to the Gen7 timer. On the back of the Gen7 timer, there is a USB port (Type B) with an icon depicting a stopwatch and report; this is the meet management port.

Your meet management computer will recognize the timer as a virtual COM port and assign it a port number. You can find this port number by running Device Manager on the meet management computer. You'll need to provide this port number to your meet management software.

USB Connection: USB to Gen7 Laptop

You can connect your meet management computer to your Gen7 interface laptop using the USB-Connect device offered by CTS. This device allows two computers to be connected via virtual COM ports. In effect, it simulates a 9-pin serial connection with a null modem except that it is entirely USB.

Your meet management computer will recognize the USB-Connect device as a virtual COM port and assign it a port number. You can find this port number by running Device Manager on the meet management computer. You'll need to provide this port number to your meet management software.

You must have the USB-Connect device plugged in to your Gen7 laptop before you start the Gen7 Swimming software.

File Sharing

You can exchange data between your meet management software and your Gen7 system using standard Windows® file-sharing. Both the Gen7 laptop and the meet management computer need to be connected to the same network. Both machines also need access to the same file share. This can either be a folder on one of the two machines that is shared with the other machine or it can be a file share on a third machine that both the Gen7 laptop and meet management computer have access to.

Once a race has been saved and the timer has been reset, the Gen7 software will save a copy of the race results to the specified file share. Your meet management software will be able to import results directly from this file share.

You can also export the event sequence from your meet management software so that it can be imported in to your Gen7 timer. This ensures that your timer is configured to match the event program that you have defined in your meet management software.

You'll need to enable "Meet Management File Export" in the **General** tab of Gen7 Settings. You will also need to specify the location of the file share. Consult the documentation of your meet management software provider for more information on how to enable and use file sharing within your meet management software.

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