Track Safety Software
Owner’s Manual

for use with
Intelligent Track Safety Lights
and Black Flag Displays

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LIMITED WARRANTY

To the original purchaser of this RaceAmerica product, RaceAmerica warrants it to be in good working order for a period of ninety (90) days from the date of purchase from RaceAmerica or an authorized RaceAmerica distributor. Should this product malfunction during the warranty period, RaceAmerica will, at its option, repair or replace it at no charge, provided the product has not been subjected to misuse, abuse, or alterations, modifications, and/or repairs not authorized by RaceAmerica.

Any product requiring Limited Warranty service during the warranty period should be returned to RaceAmerica with proof of purchase. If return of merchandise is by mail, the customer agrees to insure the product, prepay shipping charges, and ship the product to RaceAmerica, Inc.,

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THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH MAY VARY FROM STATE TO STATE.
NOTE: This software program utilizes an internal TCP Server and/or TCP Client, and/or UDP Socket to communicate with other devices and software programs installed on a computer.

Many of the Windows operating systems will detect this type of operation and alert the user with a choice to block this type of communications using the Windows Firewall. In order for this software to communicate properly with other devices and software, insure all network types (Private, Home, Public, etc) are selected (if applicable) and ALLOW ACCESS and/or UNBLOCK is selected. If the user’s response to this prompt is to KEEP BLOCKING or CANCEL or ASK ME LATER, Windows will restrict the communications between this program and other devices and software and block the communications, limiting the effectiveness of this software program.

NOTE: These Windows Firewall prompts will occur only on the first time the Windows operating system encounters an attempt by this software to communicate. The user will not be prompted the next time this program runs making it invisible to the user of a blocked or unblocked communications path. The input at these prompts is stored by Windows Firewall and does not change after the computer is rebooted.
THEORY OF OPERATION

The Track Safety Software runs on a standard 32-bit or 64-bit PC using Windows XP, Vista, Windows 7 or 8 operating systems. The software communicates with the Intelligent Track Safety Lights (iTSLs) and Black Flag Displays through wireless or hardwired connections. For wireless, a USB port via a RaceAmerica 4520U or 4620U Wireless Data Comm Link, for hardwired, though a RS485 interface or Ethernet. The software operates in three basic modes; SETUP, RF MONITOR, and RUN.

Three config and setup modes, Track, Flag, & Lights configure all aspects of the software and hardware using drag and drop features. Track Setup mode provides the ability to move and rotate iTSLs on the PC screen to match their physical locations on the track using a user supplied track diagram image file to serve as the screen background. Brightness levels for the iTSLs can be adjusted and iTSLs can be grouped to illuminate the same flag by clicking on any one iTSL in the group. In Config Flag mode, 16 unique flags with 8 configurable segments each can be colored, animated, and interconnected to provide a series of flags to execute automatically. In Config Light mode, each iTSL can be enabled or disabled, assigned an ID and Panic Flag, and spare iTSLs can be swapped in and out of use.

RUN mode is designed for live practice or race event operation. RF Integrity and Battery levels for each iTSL can be monitored and displayed. If utilizing Black Flag Displays, numbers are entered through the number pad on the computer keyboard.

NOTE: Wireless communication integrity relies on proper placement of iTSLs and Black Flag displays. For more severe non-line-of-sight installations, antennas provided with the units may require extensions to insure consistent communications with the tower.

INSTALLING THE PC SOFTWARE

To install the Track Safety software double click the setup icon and follow the program prompts to automatically install the software and all necessary files.

Next install the drivers for the USB Wireless Unit by following the instructions in the INSTALLATION_INSTRUCTIONS.TXT file.

Once the drivers have been installed a second time, note the red LED on the wireless unit is illuminated and the yellow and green are no longer illuminated. This indicates the wireless unit is properly installed. If the yellow and green LEDs remain illuminated, re-install the wireless unit by unplugging the USB cable, wait 5 seconds, then plug in the USB cable and the Windows OS will begin the new hardware detection process.

NOTE: once a PC USB port has been configured for the wireless unit, insure the same port is always used to connect to the wireless unit otherwise the Windows OS will detect new hardware on a different port and start the driver install process again for that port.

The Track Safety software icon and the Owner’s Manual icon will be placed on the computer’s desktop. Double click the Track Safety icon to start the program.
STARTING THE SOFTWARE

The software maintains an audit trail file logging time stamped entries documenting the operation of the program by the user. The audit file can be used to determine if the correct flags were selected and displayed during an event. After double clicking the Track Safety icon, Figure 1a prompts to archive the current audit trail information to a backup file. Figure 1b prompts to continue using the current audit file and append new entries to it or delete it and start this event with a new file.

Figure 2a will prompt to choose the COM port connected to the PC Data Comm and to enable/disable program features. Click on the desired PC COM port to proceed. If the desired COM port is not listed, QUIT the program and check the USB cable connections and restart the program. If this is demo software, the Demo Simulator will appear on the screen as shown in Figure 2b and the COM port selection will be skipped. The Demo Simulator is discussed later in this manual.

The Main Menu is the next screen displayed as shown in Figure 3. The Main Menu displays all the setup, run, and monitoring functions of the software.
LOAD - Use to load a previously saved Track Safety file with background image, iTSL placement, size and transparency, configured flags, and iTSL enabled IDs and Panic Flag. *(Note: the software comes pre-loaded with a few sample files)*. LOAD will prompt with a list of previously saved files to select from. Click on the desired file to load and preview the image onscreen.

SAVE - Stores the current image, iTSL placement, size & transparency, configured flags, and iTSL enabled IDs and Panic Flag. Enter the filename to save the current settings for recall using the LOAD function.

RESET - Clears all configured track, flag, and iTSL settings and track image.

SYSTEM SETTINGS - Configure the software for type of communications and error reporting. The functions on this screen are discussed later in this manual.

RUN EVENT - Displays the screen used during a live practice or race event to control the flags displayed by each iTSL on track. The RUN EVENT screen is discussed in detail later in this manual.

TRACK SETUP - Use to select the background image, position the iTSLs onscreen to correspond to their physical position on track. The TRACK SETUP screen is discussed in detail on page 7 in this manual.

CONFIG FLAGS - Use to design and configure each of the 16 flags displayed by the iTSLs to meet track and racing needs. The CONFIG FLAGS screen is discussed in detail on page 9 in this manual.

CONFIG LIGHTS - Use to enable or disable each iTSL by ID number. Also used to swap out iTSLs and reassign spare units. The default Panic Flag is configured on this screen. The CONFIG LIGHTS screen is discussed in detail on page 10 in this manual.

RF MONITORING - Turns each iTSL into a live monitor and display of the RF signal strength received at each safety light on the track. The RF signal strength is displayed on each iTSL with a signal strength bar. The more segments illuminated indicates a stronger signal received.

Figure 3 - Main Menu screen
(No image appears first time program is run)

**TRACK SETUP SCREEN**

This screen, displayed in Figure 4, is used to configure the onscreen overhead view of the track and position of each iTSL.

Each iTSL ID enabled on the Config Lights screen is displayed. IDs consist of a color (red, green, blue or yellow) and a number (1, 2, 3, or 4) combination. Position each iTSL by clicking on an iTSL ID and drag and drop in position on the track image. To rotate the iTSL to a horizontal orientation, right click the iTSL. Right click again on the iTSL to change back to a vertical orientation onscreen. It is very important to insure the iTSL ID screen location matches its physical location on track.

SELECT BACKGROUND - Click to select a file containing an overhead image of the track...
used by the software as the onscreen background track image. Compatible file formats are JPEG, JPG, BMP, GIF and PICT image files, either photos or drawings. The Track Safety program will prompt for the location of the track image file. After selecting the desired file, the software resizes the image to best fit the PC screen size. Higher resolution image files will result in clearer background images of the track.

**RESET** - Click to clear the track image file and reset the iTSL position onscreen.

**iTSL TURNS** - This function is used to group iTSLs together so all iTSLs in a turn group will always display the same flag when one of the iTSLs is selected. For tracks with difficult corners requiring multiple lights to effectively alert drivers, multiple safety lights can be grouped together to function as a single safety light. Sixteen (16) different turns are available designated as turn1 through 16. Notice in Figure 5, there are two turn group tables at the bottom of the screen containing all the iTSL IDs and eight turn numbers each, turns 1 through 8 in the left table and turns 9 through 16 in the right table. To link iTSLs into a turn group for a specific turn, locate the ID color and number, then move down to the desired turn number and click in the circle. The circle will change red and the iTSL onscreen will display the turn number selected. To remove a iTSL from a turn group, click on the red dot again. To change turn groups, click on the circle of a different letter and the iTSL will transfer to that turn group.

**SIZE** - To change the displayed size of the iTSLs, click and hold down while dragging the red bar up or down within the Size bar. Note the size of the iTSLs onscreen will change as the red bar expands and shrinks in size.

**TRANSPARENCY** - To change the displayed transparency level of the iTSLs onscreen, click and hold down while dragging the red bar up or down within the Transparency bar. Note the onscreen iTSL will become more transparent as the red bar shrinks in size. Compare size and transparency settings and iTSLs in Figure 4 and Figure 6.

**BRIGHTNESS** - To change the brightness level of the physical iTSLs on track, click and hold down while dragging the red bar up or down within the Brightness bar. Note the brightness levels of the flags displayed on iTSLs on track will dim as the red bar shrinks in size. Brightness is also available on the RUN EVENT screen.

**HELP** - To view a ‘cheat sheet’ explanation of the functions on this screen.

**EXIT SETUP** - Returns to the MAIN MENU screen.

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**NOTE:** to expand the software screen to the maximum size, click on the maximize button located in the upper right corner of the window containing the program. The image will be expanded to best fit the new screen size.
**CONFIG FLAGS SCREEN**

Figure 7 illustrates the Config Flag screen layout. Each iTSL has a full size LED display panel designed with eight individually configurable segments of LEDs. Five segment colors are available, red, green, blue, and yellow and, of course, black or no color. The Config Flags Screen contains 16 configurable flags to meet the needs of the race event and safety flag requirements. When the software is first run, there are six flags preconfigured as examples. To change a segment on a flag, click the segment. Rotate through each available color by repeated clicking. To duplicate a flag, right click an existing flag, then drag and drop onto a second flag. The segment colors will be duplicated on the second flag.

**FUNCTION KEY SHORTCUT** - Once all eight segments of a flag are configured, a keyboard shortcut can be assigned using one of the 12 Function Keys generally available on a PC keyboard, F1 through F12. Click on the Function Key box directly below the flag to select a function key. Once selected, the function key is displayed on the flag.

**FLAG ANIMATION** - Each flag can be animated using one of the 16 pre-configured animation patterns listed on the right side of the PC screen. To select an animation, click on the Animation box directly below the flag to be animated. To view the flag animation with the color segments selected, click the TEST ANIMATION button. All 16 flags will display their selected animation pattern using the color segments of each flag. Click EXIT ANIMATION to return to the Config Flags screen.

**TIME TO ALTERNATE and ALTERNATE FLAG** - A sequence of flags can be interconnected to provide a more noticeable flag pattern to the drivers. An example would be to click on a flashing green flag that would change automatically to a solid green flag after 5 seconds and turn off the green after 10 more seconds. The flag to be displayed first would be configured for the number of seconds before the next flag is displayed. Enter the number of seconds (up to 999 seconds) into the Time To Alternate field directly below the first flag. Enter the next flag number in the Alternate Flag field below the number of seconds entered.

For example, enter 10 in the Time To Alternate field of flag #2 and a 6 in the Alternate Flag field of flag #2. When flag #2 is selected on the Run Event screen, it will display for 10 seconds then change to flag #6. Furthermore, also entering a 5 in the Time To Alternate field in flag #6 and a 10 in the Alternate Flag field of flag #6 will further extend the flag changing. Now selecting flag #2 on the Run Event screen will cause flag #6 to display for 10 seconds, then change to flag #6 which will display for 5 seconds before changing to flag #10. This function allows multiple color patterns and multiple animations to be used to more effectively get the driver’s attention separating the safety lights from other lighting on the track. When a flag is configured to change to an alternate flag, an arrow will appear in the upper right corner of the flag. Zero seconds disables the alternate flag function for a given flag.

**NOTE:** When multiple flags are interconnected, there are times one of the alternate flags will never be used by itself. Removing intermediate flags from the Run Event screen is helpful to reduce flag selection error. To remove the flag from the Run Event screen, click on the flag number above a flag and a red X will appear to confirm.
SAFETY CAR - To automatically illuminate all ‘SC’ Safety Car display around the track when a specific flag is selected, right click on the illuminated yellow SC then drag and drop to the desired flag. A yellow SC will appear in the lower righthand corner of the flag to indicate the SC display will automatically be illuminated on the track when the flag is selected on the Run Event screen. To remove the automatic SC function, right click on the gray SC and drag and drop on a flag displaying a yellow SC indicator.

IMPORT/EXPORT FLAGS - To save a copy of the 16 configured flags with function keys, animations, and alternate flags functions, use the Export Flags function and enter a filename. To load a previously saved set of flags, use the Import Flags function and select the filename for the desired set of previously exported flags.

HELP - To view a ‘cheat sheet’ explanation of the functions on this screen.

MAIN MENU - When finished configuring flags, click to return to the Main Menu. If a flag was altered or a flag set loaded, the software will prompt to keep the changes, discard the changes, or return to the Config Flags screen.

CONFIG LIGHTS SCREEN

Up to 16 safety lights can be enabled by the program and up to 3 spares safety lights can be made available to be swapped into service or added to the already enabled safety lights as shown in Figure 8. When this screen is displayed, the program polls the track for all active iTSL IDs and spare iTSL IDs. All active iTSLs on track display their ID code as one of four colors (red, green, blue, or yellow) and a number of illuminated segments (1, 2, 3 or 4).

ENABLE/DISABLE ALL - To enable all IDs for use by the software, click the ENABLE ALL button. All onscreen IDs will be illuminated. To disable all iTSLs, click the DISABLE ALL button and all onscreen IDs will be grayed out. To enable a single iTSL, click on the onscreen ID and the ID will illuminate. To disable a single ID, click on an illuminated onscreen ID. All enabled iTSLs will be available for use on the Track Setup and Run Event screens.

NOTE: It is important to insure only active iTSLs are enabled on this screen to maximize the efficiency of the communications between the tower and the on track iTSLs. IDs enabled onscreen but do not exist on the track will cause the software to repeatedly poll attempting to establish communications with the missing safety light.

TIMEOUTS and PANIC FLAGS - When an iTSL responds, its on track ID is loaded below the corresponding onscreen ID as well as its Revision level, configured Timeout parameter and configured Panic Flag as shown in Figure 8. A Panic Flag will be displayed on an iTSL if there is a complete breakdown in communications with the tower or an electrical failure occurs with the iTSL. This is a safety backup function to continue to insure the correct flag is displayed by each safety light on the track.

In Figure 8, ID Green 1 is configured to change to an all yellow flag if there is a communications breakdown or it is unable to communicate with the tower for 10 seconds. In the case of ID Blue 2, the Panic Flag configured in the safety light does not match any of the configured flags being utilized by the software and a question mark displays. To change the Panic Flag and/or Timeout, select a Default Panic Flag at the bottom of the screen and enter the number of seconds in the Timeout field, then click ASSIGN PANIC FLAG. A value of 0
seconds disables this function.

**REASSIGN IDs and SPARES** - To change the assigned ID of an iTSL on track, click on an existing ID. Note the flag sticks to the cursor until it is placed over a different ID and clicked again to reassign. The next software polling of the track will display the ID change and the iTSL will display the newly assigned ID.

**HELP** - To view a ‘cheat sheet’ explanation of the functions on this screen.

**MAIN MENU** - When finished configuring lights, click to return to the Main Menu.

**RUN EVENT SCREEN**

Figure 9 illustrates the main screen used when running a live practice session or race event. The track image, enabled iTSL placement, turn group assignments, and configured animated flags all appear on this screen. To assign a flag to a iTSL, first, click the desired flag and a blue frame appears to confirm. Second, click the safety light onscreen to assign and a blue frame will flash to confirm (if enabled in System Settings). The onscreen iTSL will display the assigned flag and animation while the program sends the new flag information to the iTSL on track. If other iTSLs are turn grouped with the selected iTSL, they will also be updated with the new flag and animation. If the desired flag is already highlighted with the white frame, click additional safety lights on screen to assign.

Two specialty flags are also available: all white (one lap to go) and alternating white/black (finish flag). These two flags combine all the iTSL colors to produce a simulated white flag color.

When the SC is assigned to a flag and to minimize accidentally turning the SC displays on at the wrong time, the program will prompt for confirmation of the SC display.

**UPDATE ALL** - After selecting a flag to be displayed, click on this button to assign the flag to all enabled iTSLs. This is convenient when red flagging the entire track in one click.

**SC** - To enable or disable all the SC Safety Car displays on track, click the SC button to the right of the animated flags. To minimize errors accidentally turning the SC displays on at the wrong time, the program will prompt for confirmation when turning the SC displays on.

**RF AND BATTERY** - The program monitors the RF Integrity level established with each iTSL on track as well as measuring the reserve Battery level connected to each iTSL. To display these monitors, click the RF AND BATTERY button and Figure 11 appears. Click on the RF or BATT table and drag and drop it on the screen in an open area. Do not cover a safety flag or the flag will not be visible on the Run Event screen. Once placed, click the EXIT RF BATT button to return to the Run Event screen. Click this bitton again to remove the tables from the Run Event screen.

**SHOW ID NUMBERS** - Click and hold this button to show iTSL ID color/numbers and Group Letter (if assigned) on the PC screen. Release the button to hide and return to live control.

**BLACK FLAG UPDATE** - This display is
operated by using the numbered keypad on the your PC keyboard. Enter the number to display and click the UPDATE button to transmit to the Black Flag Displays. If the UPDATE button is not pressed within 5 seconds, the displayed number will revert back to the previous entry or go blank if no number was previously entered.

**CLEAR BLACK FLAG** - Click to immediately clear all Black Flag Displays.

**HELP** - To view a ‘cheat sheet’ explanation of the functions on this screen.

**MAIN MENU** - Click to return to the Main Menu. Safety Lights will not be updated after leaving the Run Event screen and the Panic Flags may be displayed by default.

**NOTE:** To expand the software screen to the maximum size, click on the maximize button located in the upper right corner of the window containing the program. The image will be expanded to best fit the new screen size.

**SYSTEM SETTINGS**

This section will select the type of data communications between the PC and the ontrack iTSL’s as shown in Figure 13. Click on the button to toggle between Hardwired RS422/485 communications and Wireless communications. Select the real time errors to be displayed onscreen by clicking a button to enable or disable visual reporting of errors discussed in the ERROR CONDITIONS section of this manual.

**ERROR CONDITIONS**

The software polls the iTSLs on track on a regular interval and confirms the correct flag is being displayed, data communications links, RF integrity levels, and reserve battery levels for each iTSL. Each time a response is received, the displayed flag for that iTSL is confirmed to be correct. If a response is not received by every enabled iTSL on track (flag not confirmed), the software will poll again attempting to confirm the all the above with each iTSL. If an error condition is detected by the software, a visual indicator will appear onscreen framing the iTSL where the failure has been detected.

If a response is not received from a safety

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**Figure 11 - RF/Battery Monitoring**

**Figure 12a - No response from iTSL**

**Figure 12b - Low RF Integrity or Battery**
light, the safety light onscreen is highlighted with a rapidly flashing red frame as shown in Figure 12a.

If a response was received from a iTSL but the RF Integrity level or reserve Battery level is below minimum levels, the detected iTSL will display a slowly flashing yellow frame as shown in Figure 12b.

If a remote hand control has overridden the last flag sent by the tower, the iTSL will display the new flag and frame the iTSLs effected with a rapidly flashing white frame as shown in Figure 12c. Until the tower has sent a new flag to the iTSL or cleared it, the white frame will continue to flash.

If a iTSL on track has been configured with a Default Panic Flag and Timeout AND has not received a poll from the tower for more than the Timeout, the Default Panic Flag is displayed until the iTSL receives a poll from the tower. Before this happens, the PC screen will frame the suspect iTSL with the red frame as shown in Figure 12a to alert the operator of a communication error and possible Panic Flag to be displayed. This is a safeguard against power loss, an accident with a safety light on track, a breakdown in communications, etc. to insure the iTSLs will be displaying a predictable flag controlled by the tower and the iTSL configuration selected by the user.

**RUN EVENT OPTIONS**

Additional features can be enabled and disabled to further customize the automatic operation of the software and safety lights during the race event (see Figure 13).

**SAFETY CAR FUNCTION** - Click to enable or disable the Safety Car functions of the program and all onscreen references. If flags are configured with SC, they will be removed if disabled.

**BLACK FLAG DISPLAYS** - Click to enable or disable the Black Flag displays on track and remove the onscreen references. When enabled, the Black Flags positioned around the track are included in the TSL polling.

**RESERVE TURNS** - Track Safety Lights can be used to control Pit In and Pit Out for the drivers controlled from a hand control or tower. Normally when a full track yellow of green occurs, all safety lights display the same flag. To reserve
safety lights for pit use, enable this function and configure the Pit In safety lights on turn 15 and Pit Out safety lights on turn 16. When enabled, turns 15 and 16 will not display full track flags and can be controlled separately by the tower or a hand control using the TrackSafetyEX app and an iPad or iPhone or iTouch.

**NEXT TURN GREEN** - Enabling this features will automatically set a green flag in the next higher numbered turn when a yellow flag is set. Once turns have been assigned to safety lights on the TRACK SETUP screen and the desired yellow flag and green flag have been configured on the CONFIG FLAG screen, copy the flag numbers to the yellow and green Flag# on the SYSTEM SETTINGS screen. An example would be a yellow flag is set for turn 4 resulting in turn 5 assigned a green flag. If turn 5 also is set to yellow, turn 6 will then be assigned a green flag. If the track is configured for only 5 turns, then turn 1 will be assigned the green light instead.

When a turn is set with a yellow flag and the green-after yellow is enabled, turning off the yellow with flag #1 (all black) with also turn off the green at the following turn.

**MAX ONE BLUE** - Enabling this features will allow only one turn to display a blue flag at a time. Start by selecting the flag number for the blue Flag#. When a turn is set to blue, all other turns containing a blue flag will be turned off. This feature allows to flow a driver around the track clicking the next turn with a blue and the previous turn blue goes out.

**REMOTE CONTROL**

Control of the iTSL’s can be direct from the screen or from two remote sources, Mylaps Orbits software using the Rmonitor Feed, and RaceAmerica’s Hand Control using our Track Safety iPhone/iTouch/iPad App.

**HAND CONTROL** - To enable the Hand Control Server, enter a SERVER PORT number under the Hand Control Server, then click the ENABLE SERVER box to enable. When the server is enabled, a confirming message will be displayed. Up to eight Hand Controls can be enabled and assigned to control all turns or a specific turn. Up to five flags can be assigned to each Hand Control.

To ‘pair’ a Hand Control with the Track Safety software, start by clicking REMOVE in one of the rows to reset the current entry, then enter a DEVICE NAME to be assigned to the Hand Control. The software will edit out unusable characters as you type.

Next, click on the TURNS CONTROLLED column and select a specific turn number or ALL. ALL provides full control of all turns as well as individual control of each turn. Up to five flags can
be assigned to each Hand Control by clicking on a flag at the bottom of the screen, then clicking in one of the 5 slots under HAND CONTROL FLAG ASSIGNMENTS.

Next, click the box in the SELECT TO PAIR column.

On the iPad/iPhone/iTouch, insure a 3G or WIFI connection is available and start the Track Safety App. Enter the server IP address and server port number into the Hand Control setup screen as shown in Figure 15. Click ATTEMPT PAIRING on the Hand Control to begin the pairing process. Once paired, the IP address of the Hand Control will appear in the IP ADDRESS column of the Track Safety software and the Hand Control will confirm with HAND CONTROL IS PAIRED, then press SAVE on the Hand Control to finalize the pairing and flag assignments. The iPad/iPhone/iTouch will display the turns enabled and the five flags assigned on the iPad/iPhone/iTouch. At any time, the Track Safety App can be terminated and the turns and flags are stored. When the App is restarted, and the server is enabled in the Track Safety software, the pairing will be reconfirmed automatically. If any of the assigned flags have changed, a message will be displayed on the Hand Control and the new flags assigned and displayed on the iPad/iPhone/iTouch.

To enable Turn Status (flag at each turn) to be displayed on the iPad app, click the ENABLE TURN STATUS. On the iPad app, each turn assigned to a safety light will be updated with the current flag and indicate if the safety lights has confirmed if the flag is being displayed on track.

**ORBITS SOFTWARE** - To enable control of the iTSL’s direct from the MyLaps Orbits software, go to the Scoreboard Settings screen in Orbits and copy the IP ADDRESS and PORT numbers displayed and enable the Scoreboard Feed. In the Track Safety software, enter the SERVER IP and SERVER PORT under the Orbits Rmonitor Feed. Click the ENABLE MONITOR in the Track Safety software to link with the Orbits software. When the monitor is enabled and linked, a confirming message will be displayed. Orbits offers five different flag conditions all displayed on the Remote Control screen in the Track Safety software. Click a flag at the bottom of the screen to highlight, then click the iTSL flag below the appropriate Orbits flag to assign. When a flag is selected in Orbits, the Track Safety software will assign the selected flag to all iTSLs ontrack and frame the onscreen iTSL’s in white, if enabled.

**DEMO SOFTWARE**

When running demo software, the COM port selection is replaced by a separate Demo Simulator window as shown in Figure 16. This window is used in conjunction with the Track Safety software to simulate error conditions, RF Integrity and Battery levels and simulate iTSLs responding to the Config Lights screen.

To use the error simulation and RF/Battery levels, select the Run Event screen from the Main Menu screen.

Clicking on the LOW BATTERY, LOW RF, FLAG ERROR or REMOTE FLAG buttons will simulate the errors discussed in the ERROR CONDITIONS section of this manual.

Clicking on the RF graphic will generate RF Integrity and Battery levels on the associated graphics. To view these levels, follow the procedures under RF AND BATTERY in the Run Event screen section of this manual. The RF and Battery levels will begin to degrade each time the software polls the track but receives no response. Repeated clicking of the RF graphic in the Demo Simulator window will update the RF and Battery
levels with new random changes in levels.

Go to the Config Lights screen from the Main Menu to use the ID GREEN 1 and ID BLUE 2 buttons. Clicking on either of these buttons will send a proper response to the software for a specific safety light ID. The ID BLUE 2 button will simulate an iTSL with a Panic Flag previously configured but not matching any of the flags currently configured in the program.

END PROGRAM

To exit the program, click on the QUIT button on the Main Menu screen. The software prompts to determine what to do with all the setup and configuration contained in the program as shown in Figure 17.

To restart the program and continue with all setting as they are, click YES to save settings to a file and have that file loaded automatically when the program is run again. The user is prompted for a filename to be used to save all settings and accessible in the future using the LOAD button on the Main Menu screen.

Clicking NO will end the program and not save any settings or configurations of lights or flags that may have changed since the program was started.

Clicking CANCEL will return to the Main Menu screen with nothing changed.

SETTINGS LOCK

When others will operate the software and it is desired to lock the settings and prevent the user from gaining access to edit settings in error, use the Setting Lock function outlined in the following set of instructions.

After the program is configured with the desired track setup, flags, and communications, press the QUIT button to exit the program. When prompted to save settings prior to ending the program, answer YES. The program will prompt for a filename to save the current settings and defaults to SETTINGS.TSL. Use the default filename and click OK. All settings are now saved in the SETTINGS.TSL file and automatically loaded when the program is run.

The program can be set to automatically answer each audit prompt at startup, automatically select the communications and operating features, and disable the prompt to save settings on program quit. This is accomplished by editing the properties of the shortcut ison located on the desktop used to run the Track Safety software.

First determine what prompts should be automatically answered by running the TrackSafety program. Acceptable answers are YES, NO, or PROMPT. Keep track of the desired answers for entry later in this procedure.

The first answer is whether to save a copy of the audit.dat audit trail file. Determine the desired answer as y, n, or p.

The second answer is whether to append the audit trail file. Determine the desired answer as y, n, or p.

The third answer is whether to bypass the SYSTEM SETTINGS screen and go directly to the RUN EVENTS screen. Determine the desired answer as y or n.

The fourth automated answer is whether to prompt to save settings when quitting the program. Determine the desired answer as y, n, or p.

These four answers will form a string of characters. Answers of nnnn represent answering NO to all four prompts. This will completely automate the startup and quit of the program for the simplest operation. If a user does leave the RUN EVENTS screen, the program will not allow any modifications or other screens to be viewed with the third answer of NO.

Start by right clicking the shortcut icon on the desktop and select PROPERTIES at the bottom of the window. Figure 18 will open in a window. Locate the TARGET box and note the filename of the TrackSafety.EXE file in quotations. Click on the entry and use the right arrow key to move to the rightmost characters where the right quotation mark is located as shown in Figure 18.

Next, enter a space then the minus sign and a lowercase c to tell the program to use the external answer to automate the startup and quit of the program. After the lowercase c, enter each
response as a single character without any spaces between them. An example string of all NO answers would be -cnnnn entered in the Target box. Allowing access to the SYSTEM SETTINGS and MAIN MENU screens with a YES for the third answer would result in the entered string as -cnnyn entered after the quotation mark.

Once the desired command string has been entered, it should appear as shown in Figure 19. Click the APPLY button, then click the OK button. Clicking on the TrackSafety icon on the desktop will now execute the desired commands and automate the startup and quit of the program.

To reverse this modification and disable using the external command string, follow this same procedure and remove the string previously entered, click APPLY, then click OK.

The next time the program is run using the desktop icon, the presence or the absence of the string will be detected and executed accordingly.
# Software Revision History

<table>
<thead>
<tr>
<th>Revision</th>
<th>Description of Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.0</td>
<td>- First release of software</td>
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</tbody>
</table>
| A.1      | - minimum screen size changed to 1024 x 700  
               - add rotation of safety light onscreen in Track Setup |
| A.2      | - add remote control by iPhone/iTouch/iPad  
               - add remote control by Mylaps Orbits software  
               - change safety light grouping to race track turn numbers  
               - selectable safety light error detection and display |
| A.3      | - add capability for multiple optimizer codes  
               - change .tsl file format |
| A.4      | - minor bug fixes  
               - additional logging points to audit file  
               - additional background analysis when no comm from safety lights |
| A.5      | - add Orbits finish flag tied to start/finish feature |
| A.6      | - add Black Flag control |
| B.0      | - add Green-After-Yellow function  
               - add Turns 15/16 for Pits In/Pits Out to isolate from full track flag function  
               - add Black Flag enable/disable function  
               - add Safety Car enable/disable function |
| B.1      | - add turning off both Yellow and the Green-After-Yellow when Yellow cleared  
               - add option for single Blue flag on track  
               - add option in Hand Control screen to enable Turn Status (flag) on iPad/iPhone app |
| B.2      | - enable use of all network mask configurations |
| B.3      | - add 4-segment safety light viewing of flag animations  
               - widen gap between flags on RUN EVENT screen  
               - add capability to bypass prompts on startup and program quit |
| B.4      | add SC control selections on SYSTEM SETTINGS screen  
               fix blu3 and red1 have areas with no response (TCP/UDP icons in way)  
               fix audit trail not updating |
| B.5      | fix Windows interrupting program after five hours runtime  
               add brightness control on RUN EVENT screen |