



Drag Racing System

DragPro 2000

DragPro 3000

USER MANUAL

Introduction

Trackmate Racing, formerly known as TrakMate has been making drag racing systems since 1999. Now covering many forms of drag racing that not only include Slot Cars and Radio Control Cars but also Full Scale Cars, Snowmobile, ATV, Boats.

The help file in this manual will cover the software and hardware installations for HO and 1:24 scale slot cars. All systems are completely tested before shipping, but should you encounter any problems please check out the troubleshooting section. Toll Free support is also provided during business hours.

Help File Version 6.8 updated July 2020

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Features

- Full Tree
- Pro Tree
- Bracket Racing
- Index Racing
- Two staging modes
- .0001 accuracy 1/10000 of a second
- Print race slips Automatically or Manually
- View logged races
- View/Print top qualifiers
- Sensor Test
- Auto Tree for hands free operation
- Supports non standard Pro Tree and Full Tree times
- Swap Lanes in a single click
- Supports LED sign
- Supports Win Lights
- Flash winner on tree option
- Can be used for trial runs
- Built-in spreadsheet to view and sort logged races
- Option to announce ETs etc over speakers automatically
- Use the countdown clock to force racers to start the race (completely configurable). A must have for big events

Note: Countdown clock is a paid option

Computer Requirements

PC requirements are very low as it can run on old and new computers; desktops and laptops. No CD is required and internet connection is not required. Size of memory and hard drive is never a problem.

Minimum requirements are:

- Windows XP/VISTA/7/8/10

USB or Com port (9 pin male connector)

Hardware Hookup

Mount the Red module underneath the track near the starting line. The Red module is powered by the 12volt adapter. (ignore the 9v label) LED on the module should come on.



The 6 inch LED tree requires no power. The 16 inch LED tree requires a 24 volt adapter which we include.

AUX connector is normally for the optional 1000ft (scale) sensors.

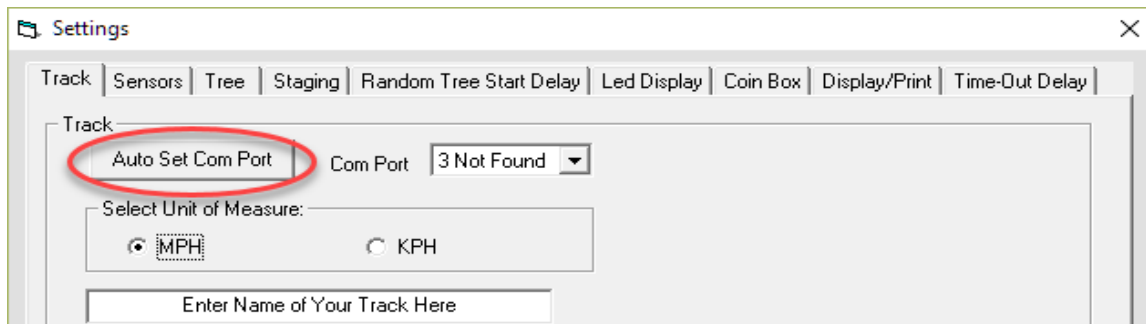
Install the sensor board that has dual sensors on them at the starting line.

Important Settings

In order for the system to work we need to set some important settings.

Click Settings, On password prompt just click OK. There is no password after installation.

Com Port: A USB to Serial cable is shipped with each system. This cable creates a virtual COM port. We need to set the COM port. Fortunately it's very easy to do with the latest software. Simply go to the (top menu) Settings>Track and click "Auto Set Com Port".



Select Units of Measure: Select Imperial for MPH or Metric for KPH

Track Name: Enter Track Name, this is what will appear on printed time slips.

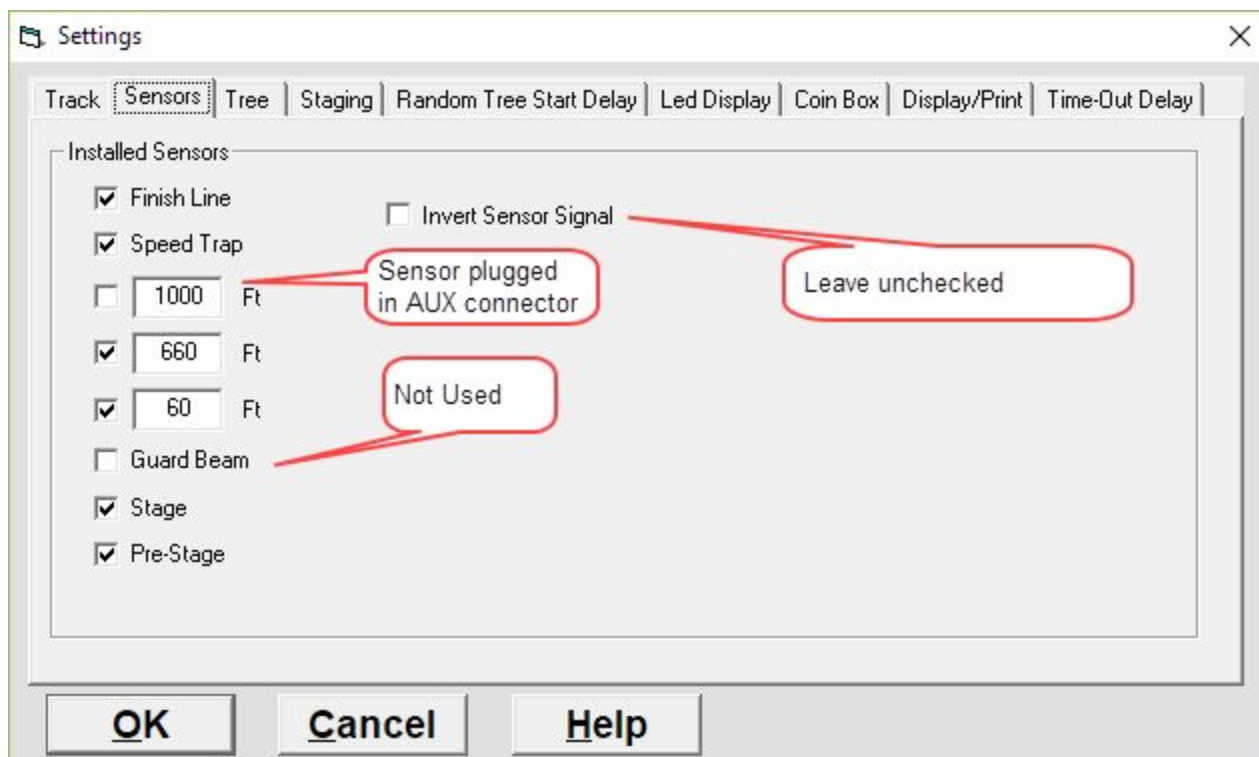
Inches between Speed Trap and Finish Line: Enter in inches, distance between the speed trap sensor and finish line sensors. It must be entered in inches even if metric was selected, 2.54cm = 1 inch. Normally HO is 12 inches. 1:24 scale 30 inches.

Track Length: This number is not used to compute any data but will appear in the time slip, you may enter scale or real length.

Speed Multiplier: Normally left at 1. Multiplies real speed by the number in this box. Can be used to display a more realistic speed in some smaller scale applications such as slot cars.

Invert Sensor Signal: This should be left unchecked

Installed Sensors: Check mark all the sensors installed



Pro-Tree, Yellow on Time: Normally left at .4 This means the yellow lights will stay on for .4 seconds.**Full Tree, Yellow on Time:** Normally left at .5

Flash Winner on Tree: Instead of having winlights you can flash the winner on tree. The Green light will flash. This will also display breakouts. The top yellow will stay on if the racer does a break out.

Invert Tree Signal: Depending on the tree used, this setting may need to be checked or unchecked. If this setting is incorrect the lights that should be off will be on and vice versa.

Staging

You can run two different modes of staging as follows:
Go to Settings>Staging



Staging:

Pre-stage/ Stage: Both pre-stage sensor and Stage sensor should be blocked when staging.

Pre-stage/ Start: Block Prestage Only, If the pre-stage sensor is not installed, roll up to the start line without blocking the stage sensor. When this mode is selected the prestage and stage lights will both come on when the sensor is blocked.

Printing: Set number of copies for time slips

Time Out: Set how many seconds you want to wait for both cars to cross the finish line. If one car is unable to complete the race or cross the finish line, the system will force the end of the race after this predetermined amount of time. It's important that you set this about 5-10 seconds more than anticipated ET times.

Hardware Installation

Options

Win Lights



Red/Black wires = Left Lane
Yellow/Green wires = Right Lane
Win Lights are a paid option

Time Slip Printer

To install the time slip printer the computer will require a 2nd serial/com port (9 pin male connector) or a USB to serial adaptor.

Run DP3000sp712_Driver.exe

Select Star SP712 Line Printer

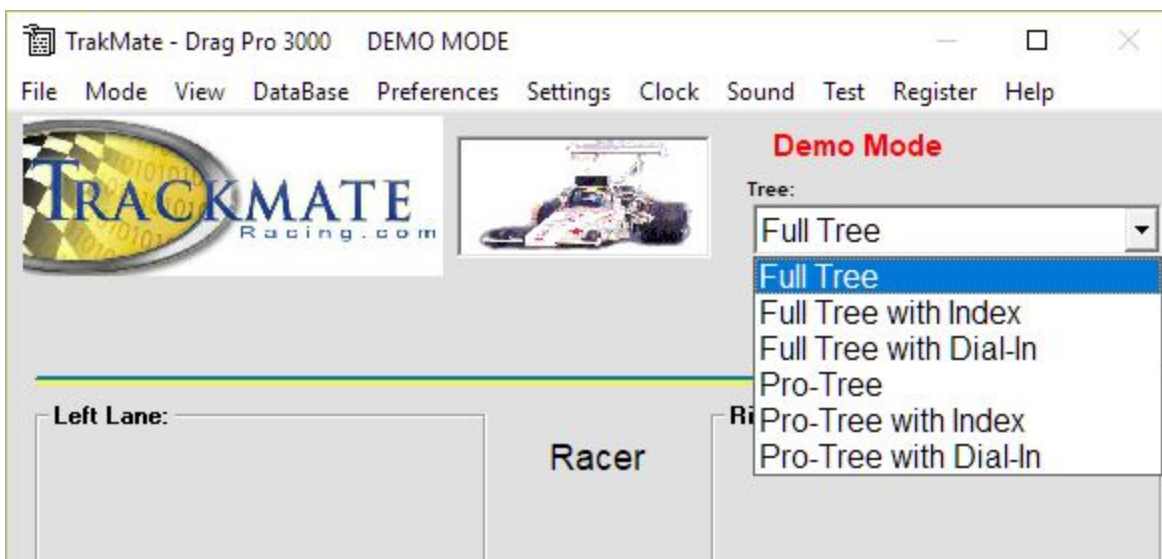
Select Com Port. It should be different from the one the DP3000 module is connected to.

Select the SP712 as your default printer in windows *control panel*->*Printers*

To autoprint timeslips click on *Preference*->*autoprint* .

Drag Racing

PRO and FULL Tree



Pro Tree

On a Pro tree all 6 amber lights come on for .4 seconds then the green lights come on. In full scale drag racing drivers will react as soon as they see the ambers come on. If you watch drag racing on TV you will most likely see the Pro Tree.

Full Tree

On a Full tree yellows come down in sequence each one staying on for .5 seconds. Full Tree is normally used in [bracket racing](#) .

Pro Tree Time Adjustable In Trackmate Software - WHY?

The following applies mostly for slot cars. We made the amber lights on time adjustable in the software (see settings), read on to find out why. On a Pro tree all 6 amber lights come on for .4 seconds then the green lights come on. In full scale drag racing drivers will react as soon as they see the ambers come on. Human reaction time takes about .2 seconds, that's the time it takes to respond to a visual. There's another .020 seconds before the light is perceived as on. $0.2 + .02 = .220$ seconds, that leaves .180 seconds. It will take at least .180 seconds for the car to roll out of the stage beam. The driver never has to worry about Red lighting if he reacts when the amber lights come on. Now for slot cars it's a different story. A slot car will move forward a $\frac{1}{4}$ " in about .010 seconds from a stand still, this means you will be Red lighting every time if you react as soon as the ambers come on. This is why TrackMate Dragpro software has made the Pro Tree adjustable. It has been requested by customers who race full scale drag racing cars. They believe that it should not be possible or difficult just as it is in full scale drag racing to red light on a Pro Tree if you react as soon as the ambers come on. I recommend adjusting the pro tree to .200 seconds if you're using external tree lights (for LED trees you will need to adjust the Pro Tree time to a lower value) you might experience better racing because both cars will be coming off the line within a fraction of a second. It's easy as soon as you see the ambers come on pull the trigger. Changing the Pro Tree time will not affect ET times as ET times do not include reaction time. Some racers prefer a .200 second Pro Tree you just might like it also!!!!

Bracket Racing (Dial-in)

What is Bracket Racing?

Why?

Bracket racing is a form of drag racing whereby vehicles of different performance levels can compete on a potentially even basis. The anticipated elapsed times are compared for each vehicle, with the slower car receiving a head start equal to the difference of the two. With this system, virtually any two vehicles can be paired in a competitive drag race.

How it works

If car A chooses a dial of 16.00 seconds and car B chooses a dial of 14.50, car A will get a 1.5-second head start. The win will go to the driver who crosses the finish line first. TrackMate software simply enters the dial-in for both drivers and the tree will come down staggered giving one lane the appropriate head start. Bracket racing only works with the Full Tree. (Some clubs also do it with the PRO tree but this is rarely done)

Disqualifications

If a driver runs quicker than his or her dial, he or she is said to break out and is disqualified. If both drivers run quicker than their dials, the win goes to the driver who breaks out by the least. A foul start, or red-light, takes precedence over a breakout, so a driver who red-lights is automatically disqualified even if his or her opponent breaks out. If both red-light the driver who red-lighted first loses. TrackMate Drag software takes care of all this and will display appropriate winner

Choosing a Dialin

Example: Car "A" has recorded times of 17.78, 17.74, and 17.76, and the driver feels that a "dial-in" of 17.74 is appropriate. Meanwhile, driver "B", has recorded times of 15.27, 15.22, and 15.26 on the same track, and has opted for a dial-in of 15.22. Accordingly, car "A" will get a 2.5 second ($17.75 - 15.25 = 2.5$) head start over car "B" when the Tree counts down to each car's starting green light.

Strategy

Picking a Dialin that is too slow and you are more likely to break out. Pick a Dial-in that is too quick and you will receive less of a head start or your opponent will receive more of a head start. Having a car that runs consistent ETs will help.

Running A Race

Entering Names

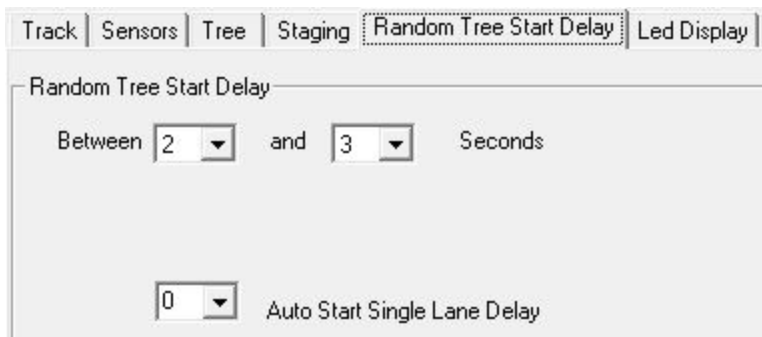
To enter names for the race you must enter them in the database. From the top menu Click on Database->Racers. Once the names are entered in the database, you will be able to select the name for the race.

Classes

Class names are used to separate types of races, for example you may want to run Modified and Stock. The class name will also be printed on the time slip.

Main Screen

The main screen is easy to use. To start a race hit the start button. You have the option of staging before clicking the start button, or clicking the start button then stage. The delay between the tree coming down and clicking the start button is determined by the [setting random tree delay](#). You will probably want a delay if you're by yourself, and no delay if there's a race director. You can also have auto tree where clicking the start button is not even necessary



To select the racers name you must first enter the racers name in the database. see entering names.

To enter Dialin, you must select the type of tree that supports dial in. Then simply type in the dialin for each racer.

When the race is over you will see the results on the screen

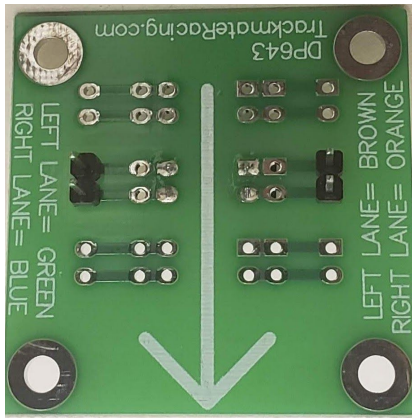
Statistics - Race # 176		
Print		
Steve	Class: Unlimited	Dan
1		1
.038	Reaction Time	.069
.134	60	.137
.291	660	.298
.932	Elapsed Time	.960
0.012	ET-DI	-0.040
132.1	MPH	124.4
	Finish Margin	.021
Dial-In 0.920	OK	Dial-In 1.000

Dan's ET of 0.960 was lower than his Dialin of 1.000 That's called a breakout, Steve is in Green indicating the winner.

Statistics - Race # 192		
Print		
Steve	Class: Unlimited	Dan
1		1
-.005	Reaction Time	.051
.133	60	.130
.290	660	.283
.931	Elapsed Time	.910
0.011	ET-DI	0.010
135.3	MPH	131.1
.055	Finish Margin	
Dial-In 0.920	OK	Dial-In 0.900

Steves RT (Reaction Time) is below 0. meaning he Red lighted.

U-Sensors for 1:24 scale



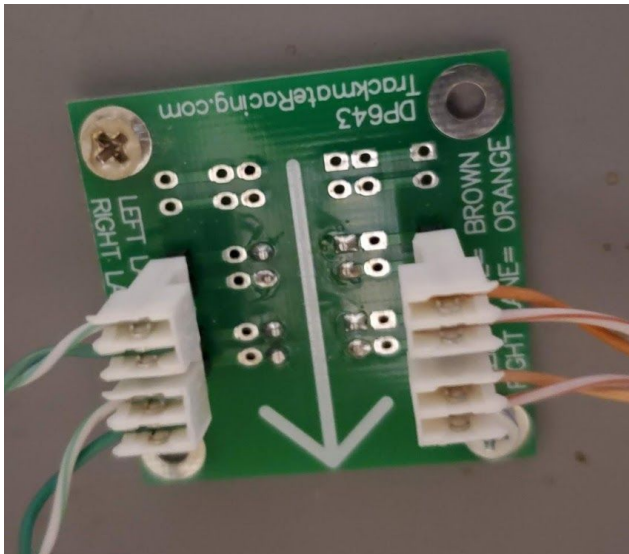
Arrow should point towards the finish line.

It is written on the board which colored wires go where.

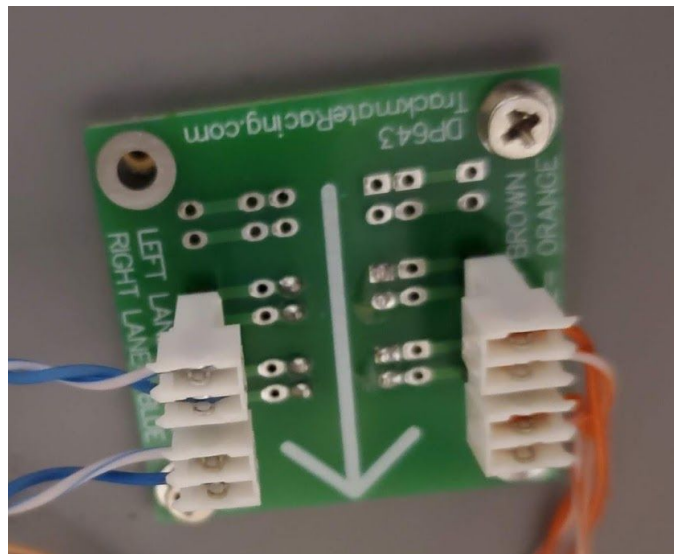
Left lane use: Green and Brown.

Right lane use: Blue and Orange

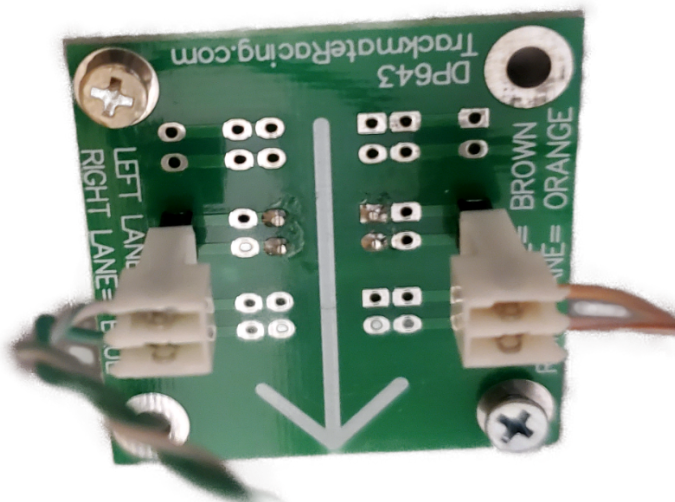
Connectors do have an orientation. Wires on the connector must exit towards the edge of the board. See examples below.



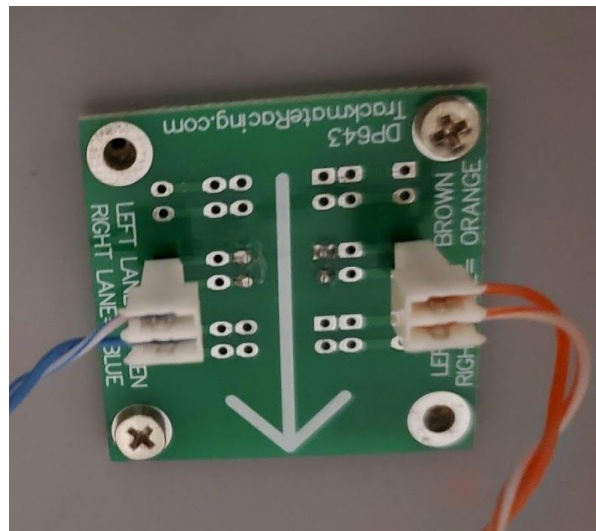
Left Prestage/Stage
Green and Brown wires



Right Prestage/Stage
Blue and Orange wires



Left Land Sensor
Green and Brown wires



Right Lane sensor
Blue and Orange wires

16 inch LED tree



How to remove tree cables

The LED tree is shipped with cables connected but if for some reason you need to remove cables, do not use force, use a small screwdriver to release the tab.

To remove the top cable use a small flat screwdriver inserted from the side to push the cable tab towards the rear.

To remove the bottom cable insert a small screwdriver through the hole. No force is required to pull cable out. The two cables are marked T for Top and B for Bottom

Tree power

The LED Tree is shipped with a 24volt power supply and it plugs into the rear of the tree near the bottom.

Reference

Connector Pinout

Pre-Stage Stage Cable

Pin#	Color	Lane	Sensor
1	Brown	Left	Prestage
6 – GND	Brown/White		
2	Orange	Right	PreStage
7 – GND	Orange/White		
3	Green	Left	Stage
8 – GND	Green/White		
4	Blue	Right	Stage
9 – GND	Blue/White		
5 - not used			

Mid Sensors Cable

Pin#	Color	Lane	Sensor
1	Red – short cable	Left	60'
6 – GND	Black	Left	
2	Yellow –short cable	Right	60'
7 – GND	Green	Right	
3	Red – long cable	Left	1/8 MILE
8 – GND	Black	Left	
4	Yellow –long cable	Right	1/8 MILE
9 – GND	Green	Right	
5 – Not Used			

Speed Trap / Finish Cable

Pin#	Color	Lane	Sensor
1	Brown	Left	Speed
6 – GND	Brown/White		
2	Orange	Right	Speed
7 – GND	Orange/White		
3	Green	Left	Finish
8 – GND	Green/White		
4	Blue	Right	Finish
9 – GND	Blue/White		
5 - not used			

1000' Sensor Cable (Optional)

Pin#	Color	Lane	Sensor
1	Red	Left	1000'
6 –GND	Black	Left	
2	Yellow	Right	1000'
7 -GND	Green	Right	

Identify your type of DP3000

There are two types of DP3000 boards



Board on the left is for Trackmate 6 inch and 16 inch LED trees. Do not plug a 12 volt with trailer lights type tree into this type of board.

Board on the right (notice gap between connectors and top plate) is for 12 volt trees, Trees built with trailer lights.

Tree using trailer lights (old TrixTrax trees)

The following information is for modules that have transistor outputs for the Tree.
(module on the right in picture above)

Tree lights cable connects to the DB25 (25 pin connector) on board.

The common for all the lights will connect to the POSITIVE of the power supply. (Yes positive NOT negative)

The negative of the power supply will connect to pins 18-25 of the 25-pin connector on the DragPro board.

Tree Lights	DB25 male PIN# Left side lights	DB25 male PIN# Right side lights	
PRESTAGE	1 - Brown	8 - Brown/White	
STAGE	2 - Orange	9 –Orange/White	
TOP YELLOW	3 – Green	10 – Green/White	
MID YELLOW	4 – Blue	11 – Blue/White	
BOT YELLOW	5 – Brown	12 – Brown/White	2nd Cable
GREEN	6 – Orange	13 – Orange/White	2nd Cable
RED	7 - Green	14 – Green/White	2nd Cable
GND –	Connect ground from Tree Power Supply to pins 18-25 (or use the two green terminal screws near the 25pin tree connector available on some modules)		
One side of the entire tree lights will be tied together to connect this to the Positive of the trees power supply. If using automotive trailer lights a 12volt 10 amp power supply is recommended.			

Win Lights	DB9 PIN# LEFT	DB9 PIN# RIGHT	
WIN	2	1	
GND	6-9	6-9	Or gnd screws
The side of both win lights will be connected together, connect this to the Positive of the trees power supply or other 12volt supply, the negative of the power supply will go to pins 6-9.			

Sensor Location

Use this table to determine where to place the sensors on your track

1 mile = 5280'	HO (1/64)	1/32	1/24
1/4 mile	20' 7.5"	41'3"	55'
1000 feet	15' 7.5"	31'3"	41'8"
1/8 mile	10'3.75"	20'7.5"	27'6"
330 ft	5' 1.875"	10' 3.75"	13' 9"
60 feet	11.25 inches	22.5 inches	30 inches
Stage sensor	0 inches	0 inches	0 inches
Prestage sensor	- 0.3 inches	-0.3 inches	-0.3 inches
Recommended Speed Trap	12 inches before finish	30 inches before finish	30 inches before finish

Guide flag sensors have prestage and stage on the same board, so prestage location is fixed.

Troubleshooting

I don't have the password

There is no password on a fresh install, just click OK

Tree Does not come down when I click start?

Go to settings and click AUTO SET COM port button

Race finishes immediately after lights goes green

Most likely a bad finish sensor click menu>test to test sensors.

DNF Not reading finish line sensors or No speed

Make sure the sensor is all the way up and touching the braid, there should be no material between the sensor and braid. Braid on the car should be flat, so the guide flag is as deep as possible on the slot. Try replacing the sensor. Verify that there is no bump on the track, like a speed sensor pushing too much on the braid causing a bump. It can also be that the car is going fast and the air is lifting the car, try adjusting the aerodynamics of the car.

Error 430

Uncheck All sounds or install voice drivers. There are two programs in the voice driver directory run those two programs then voice should work

Error on startup

In Settings>Display/Print.....Make sure you have a printer selected for both time slip and regular. You can not leave it blank. If you have no printer installed on your computer, you can select Microsoft XPS printer.

When running one car I have to wait a long time for results

Use the ESC key to force the end of the race. You can also reduce time out delay in settings

ET-DI not showing up in results screen

Note: You need to be using Dialin or Index.

Uninstall program and reinstall in C:\DP3000v670 instead of c:\program files\...

Right side of the screen is missing, not all the data fits on the screen.

This is caused by having the screen resolution set to low. You must have at least a resolution of 1024x768. To increase resolution right click a blank area on your desktop and then click properties>settings and adjust screen resolution.

Both Prestage and Stage Lights come on at the same time

Go to Settings>Stagging You can select prestage/ stage on newer software version it is called Place car in stage beam.

Invalid Com Port, Trackmate Interface not found

First try this... Trackmate software go to Setting> click on Auto Detect Com port button.

If the computer is not connected to the internet you will encounter this problem.

Install the USB-to-serial-driver, which is a small program you need to run just once.

You should be able to find it on the Trackmate USB stick supplied or the software link provided. After installing software plug the USB to serial cable into the computer, and try again. In the Trackmate software go to Setting> click on Auto Detect Com port button. If it still doesn't work, exit the program and wait 10 minutes and try again. If it still doesn't work, reboot and try again.

Script out of range

Go to View>logged Races and *clear data*

Testing Board and the Tree

To test the board and the tree no PC is required. When you power on the board the Tree should start a left - right sequence going from top to bottom, Starting with the top left Prestage bulb and ending with the Right bottom Red bulb.

All the Tree lights are on, it seems backwards

Go to settings and just click OK to update the module with the settings, if lights still remain on.. go to settings and change check/uncheck *Invert Tree signal*

Test Sensors

To access the Diagnostic Screen click *Test on top main menu*

When the sensor is not blocked square will appear Green, when the sensor is blocked square will appear Red.

Square will also appear Red if that sensor is not installed. It is important that you actually block the sensor to verify that it turns red. Paper is not sufficient to block the sensor and you must use something that is completely opaque.

Sensors not working (HO sensor type)

You need to have sufficient light above the sensors. Fluorescent, CFL, and LED lights will not work. Use halogen, incandescent light, or Trackmate Infrared LEDs. Contact Trackmate for more information.

Run Time error

If you don't have speakers plugged in you may get a runtime error, In the Trackmate software go to menu> sound and uncheck all the sound boxes.

FAQ (Frequently Asked Questions)

When I pre-stage both pre-stage and stage lights come on?

That's how it works if you have '*place car before stage*' selected in settings. This means only the first sensor is used for staging the second sensor starts time and red lights. Only block the first sensor when using this mode.

I'm getting weird times, what is causing it?

Click on topMenu>Test. This will bring up the diagnostic screen. GREEN means the sensors see light; RED means the sensors are blocked.

When I stage the car the Pre-stage and Stage lights go out, it's working backwards, why?

Uncheck invert sensor signal in settings

On Pro tree The Yellow lights seem to stay on too long/too short

Go to settings and verify that the pro tree time is set at .400

The MPH doesn't seem right

Is the distance of the speed trap set correctly in the settings?

Set the speed multiplier in the settings to 1 for actual MPH.

Is there a way to shorten the time for the tree to start after clicking start?

You can set the tree delay range in the settings.

My ET was quicker and I still lost, why?

ETs do not include the reaction time.

Glossary

Auto Start: Allows hands free operation of the system

Breakout: Used only in handicap racing, "breakout" refers to a contestant running quicker than he or she "dialed" his or her vehicle (predicted how quick it would run). Unless the opponent commits a more serious foul (e.g., red-lights, crosses the centerline, or fails a post-race inspection), the driver who breaks out loses. If both drivers break out, the one who runs closest to his or her dial is the winner.

Burnout: spinning the rear tires in water to heat and clean them prior to a run for better traction. A burnout precedes every run.

Christmas Tree: Also called the Tree, it is the noticeable electronic starting device between the lanes on the starting line. It displays a calibrated-light countdown for each driver.

Deep stage: to roll a few inches farther into the beams after staging, which causes the pre-stage lights to go out. In that position, a driver is closer to the finish line but dangerously close to a foul start.

Dial under: when drivers in Super Stock and Stock (handicap categories) select an elapsed time quicker than the national index. Drivers select a dial-under, or e.t., that they think their cars will run based on previous performance. The breakout rule is in effect.

ET: Elapsed Time

Elapsed time: the time it takes a vehicle to travel from the starting line to the finish line. Also called e.t.

Eliminations: After qualifying, vehicles race two at a time, resulting in one winner from each pair. Winners continue in tournament-style competition until one remains.

Foul start: indicated by a red light on the Christmas Tree when a car has left the starting line before the green light, or starting signal.

Full Tree: used in Competition, Super Stock, and Stock, for which a handicap starting system is used to equalize competition. The three amber bulbs on the Christmas Tree

flash consecutively five-tenths of a second apart, followed five-tenths later by the green starting light. A perfect reaction time on a full Tree is .500.

Holeshot: when a driver reacts quicker to the Christmas Tree to win a race against an opponent with a quicker e.t.

Index: the expected performance for vehicles in a class as assigned by NHRA. It allows various classes of cars in the same category to race together competitively.

Interval timers: part of a secondary timing system that records elapsed times, primarily for the racers' benefit, at 60, 330, 660, and 1,000 feet.

Pre-stage: to position the front wheels about seven inches behind the starting line so the small yellow lights atop that driver's side of the Christmas Tree are glowing. The next step is to stage and be ready to race.

Pro Tree: used in Top Fuel, Funny Car, Pro Stock, Pro Stock Motorcycle, Top Alcohol Dragster, Top Alcohol Funny Car, Super Comp, Super Gas, and Super Street, which feature heads-up competition. All three large amber lights on the Christmas Tree flash simultaneously, followed four-tenths of a second later by the green starting light.

RT: Reaction Time

Reaction time: the time it takes a driver to react to the green starting light on the Christmas Tree, measured in thousandths of a second. The reaction-time counter begins when the last amber light flashes on the Tree and stops when the vehicle clears the stage beam.

Sixty-foot time: the time it takes a vehicle to cover the first 60 feet of the race track. It is the most accurate measure of the launch from the starting line and in most cases determines how quick the rest of the run will be.

Speed trap: the final 10 feet to the finish line where speed is recorded.

Stage: to position the front wheels right on the starting line so the small yellow lights below the pre-stage lights are glowing. Once both drivers are staged, the calibrated countdown (see Christmas Tree) may begin.

Trackmate Racing

Web: www.trackmateracing.com

Support: support@trackmateracing.com

Sales: sales@trackmateracing.com

Trackmate Racing

877-756-8227 Toll Free USA and Canada

604-582-1946

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