

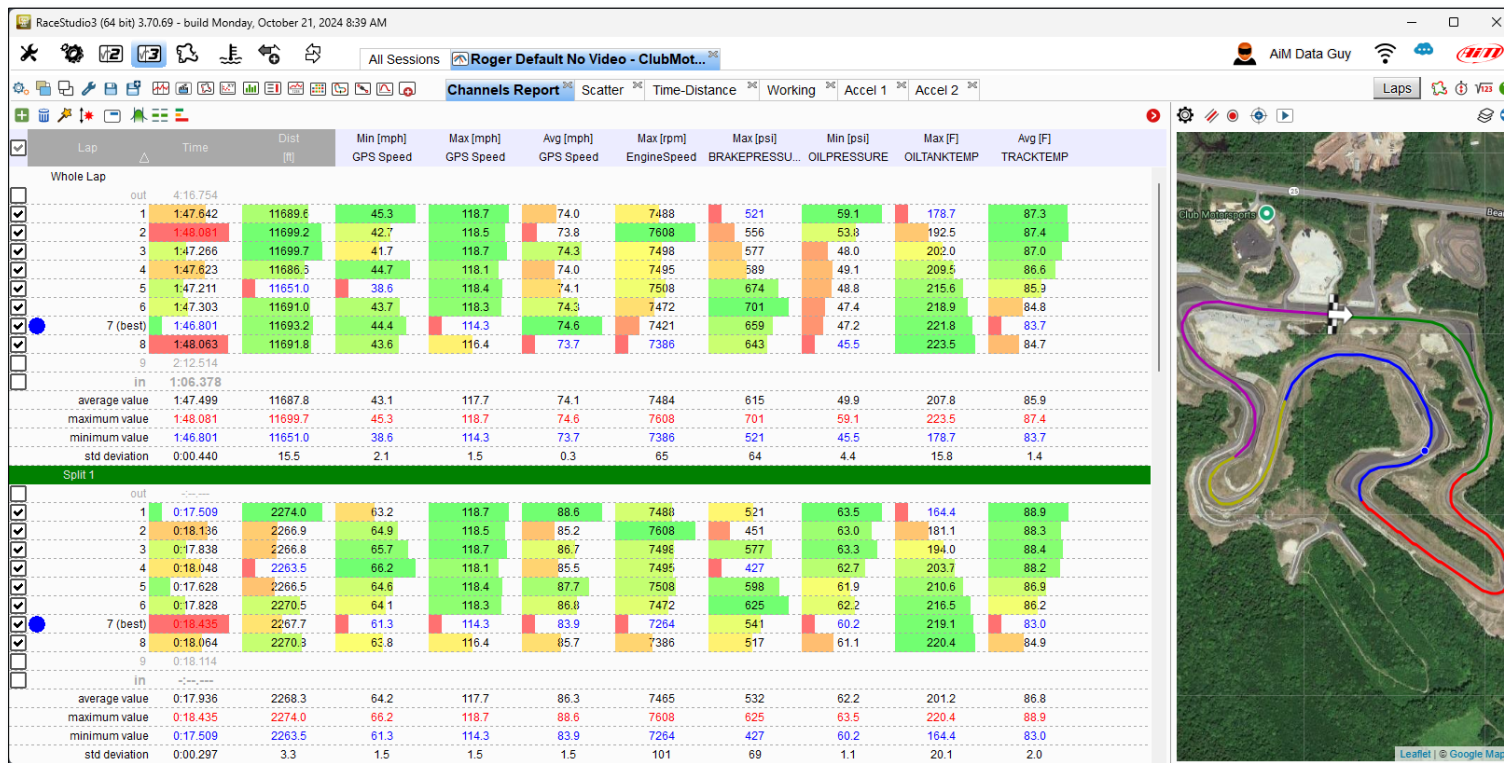
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If You Have Questions

Next AiM Sports Webinar

Tuesday, November 12th, 2024 – 6pm Pac / 9pm East



Advanced Use of Segment Based Data Analysis



Host:

Roger Caddell

AiM Sports - National Training Manager

Co-Host:

Matt Romanowski

TrailBrake - Owner

Next Webinar

2nd Tues & Last Tues of Each Month



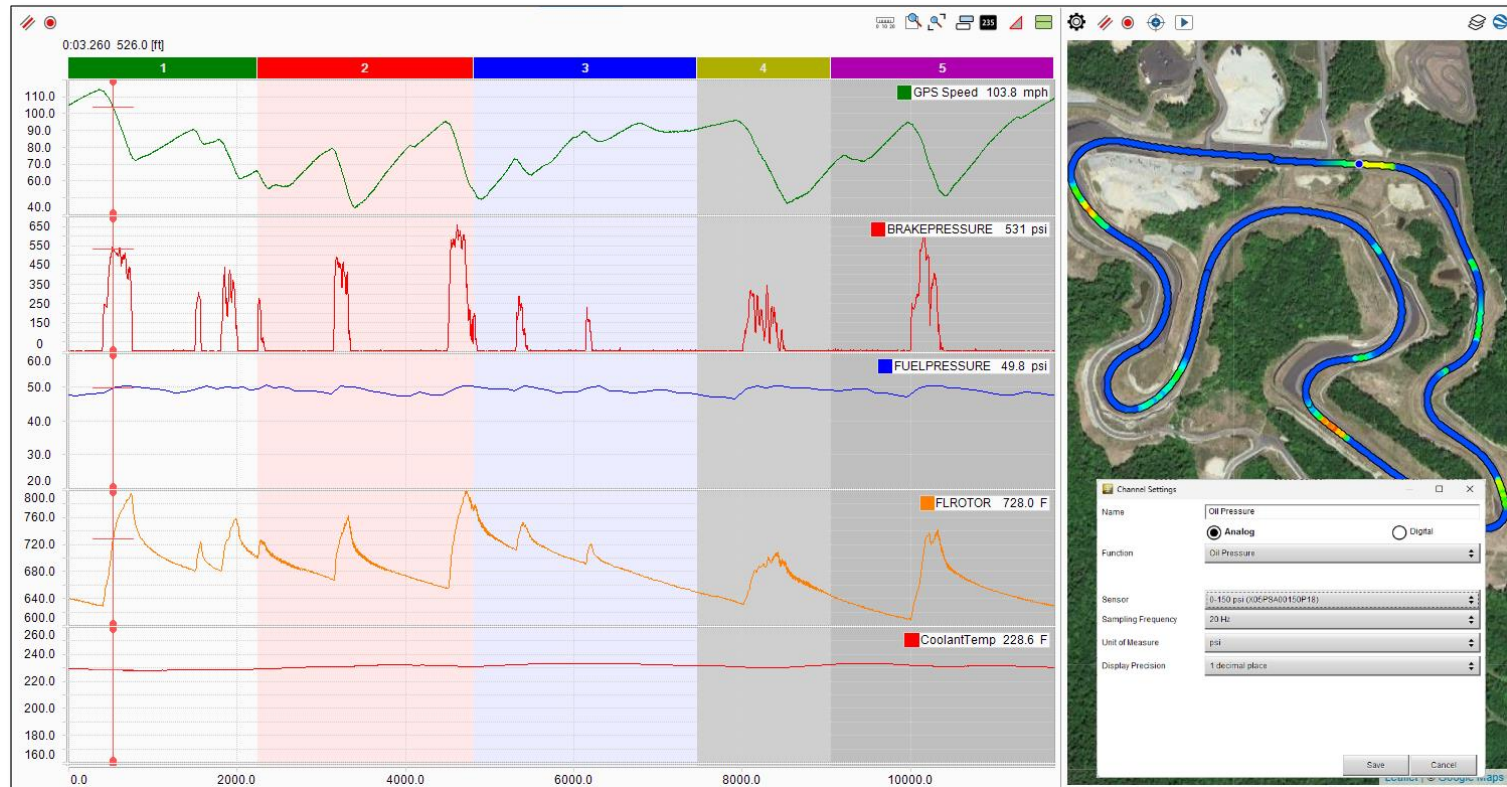
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#186

Temps and Pressures

in Racing Data Analysis



Host:

Roger Caddell

AiM Sports - National Training Manager



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Tuesday October 29th, 2024

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Different AiM Temp Sensors



TEMPERATURE SENSORS

CHT - Cylinder head thermocouple		Ø14 mm, Binder con.	X05SOT14A4517BML		Datasheet	RS3 conf	RS2 conf
		Ø12 mm, Binder con.	3CVSOT12A4521BML				
		Ø10 mm, Binder con.	X05SOT10A4520BML				
		Ø14 mm, Mignon con.	X05SOT14A4516MS				
		Ø12 mm, Mignon con.	X05SOT12A4519ML				
		Ø10 mm, Mignon con.	X05SOT10A4518MS				
Exhaust gas K type thermocouple M5 thread			3CVGAS807		Datasheet	RS3 conf	RS2 conf
Exhaust gas K type thermocouple T12 CIK-FIA homologated			X05TCM12A1175M		Datasheet	RS3 conf	RS2 conf
Tire temperature sensor			X05TTS01B0		Datasheet	RS3 conf	RS2 conf SCF*
Tire temperature sensor kit		Tire temp. sensors kit	X08TTK014120		Web page		
		Tire temp. sensor	X05TTS01B0				
		IR (infrared) temp. cont.	XSMIRTEMP00				
Water/oil PT100 thermoresistor M5 thread			X05TRM05A4514BPR		Datasheet	RS3 conf	RS2 conf
Water/oil PT100 thermoresistor M10 thread			X05TRM10A4512BPRS		Datasheet	RS3 conf	RS2 conf
Water PT100 thermoresistor 1/8" thread			X05NPTA4513BPRS		Datasheet	RS3 conf	RS2 conf
Water thermocouple M10 thread			X05TCM10A4515MS		Datasheet	RS3 conf	
Water thermoresistor M10 thread			X05TRM10A4512BPS		Datasheet		
UTV/ATV Transmission Belt infrared temperature sensor			X05ITS01A01		Datasheet	RS3 conf	

*Download the sensor configuration file ready to import in RS2

Link: <https://www.aimsports.com/us/products/sensors/index.htm#temperaturesensors>



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Temps/Pressures in Race Data

Different AiM Temperature Sensors

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Different AiM Pressure Sensors



PRESSURE SENSORS						
Pressure sensor 0-5 bar		M10 3/8 24	X05PSA00005B10K X05PSA00005B38K		Datasheet	RS3 conf
Pressure sensor 0-5 bar absolute		M10 3/8 24	X05PSA00005B10AK X05PSA00005B38AK		Datasheet	RS3 conf
Pressure sensor 0-10 bar		M10 1/8 NPT 3/8 24	X05PSA00010B10K X05PSA00010B18K X05PSA00010B38K		Datasheet	RS3 conf
Pressure sensor 0-100 bar		M10 3/8 24	X05PSA00100B10K X05PSA00100B38K		Datasheet	RS3 conf
Pressure sensor 0-100 bar free contacts		M10 3/8 24	X05PSA00100B10FC X05PSA00100B38FC		Datasheet	RS3 conf
Pressure sensor 0-160 bar		M10 3/8 24	X05PSA00160B10K X05PSA00160B38K		Datasheet	RS3 conf
Pressure sensor 0-15 PSI		1/8 NPT	X05PSA00015P18K		Datasheet	RS3 conf
Pressure sensor 0-50 PSI		1/8 NPT	X05PSA00050P18K		Datasheet	RS3 conf
Pressure sensor 0-50 PSI absolute		1/8 NPT	X05PSA00050P18AK		Datasheet	RS3 conf
Pressure sensor 0-150 PSI		1/8 NPT	X05PSA00150P18K		Datasheet	RS3 conf
Pressure sensor 0-300 PSI		1/8 NPT	X05PSA00300P18K		Datasheet	RS3 conf
Pressure sensor 0-2000 PSI		1/8 NPT	X05PSA02000P18K		Datasheet	RS3 conf

Link: <https://www.aimsports.com/us/products/sensors/index.htm#pressuresensors>



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Temps/Pressures in Race Data

Different AiM Pressure Sensors

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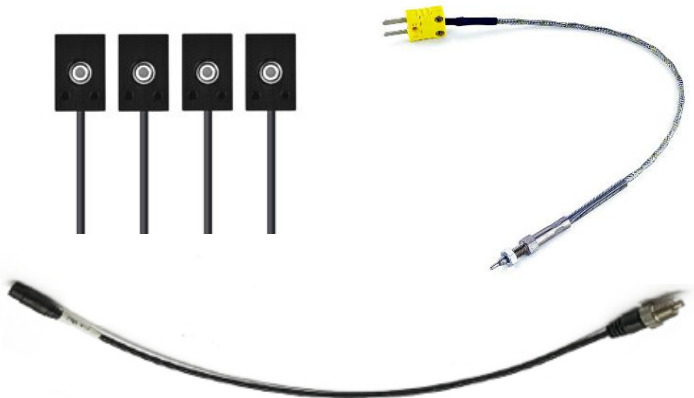
Pressure/Temp Sensor Types



Different Temperature Sensor Types

- PT100 Thermo-Resistor
0 - 150C / 32 - 302F
- Thermocouple
0 - 1000C / 32 - 1832F
- Infrared
-20 - 120C / -4 - 248F
35deg Field of Measure

Typical thread pitch available are:
M5, M10, and 1/8 NPT



Different Pressure Sensor Types

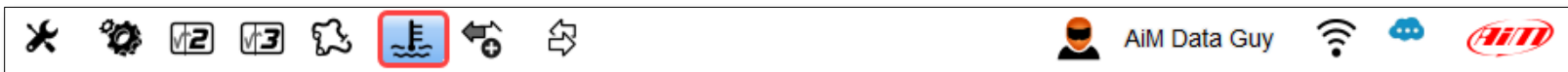
- Gauge
The sensor value is zero, 'at rest'
- Absolute
The sensor value is the pressure of atmosphere, 'at rest' (appx 14.7psi)

Typical thread pitch available are:
M10, 3/8 24 and 1/8 NPT

Plus almost all other non AiM sensors can be
used with the RS3 Custom Sensor function



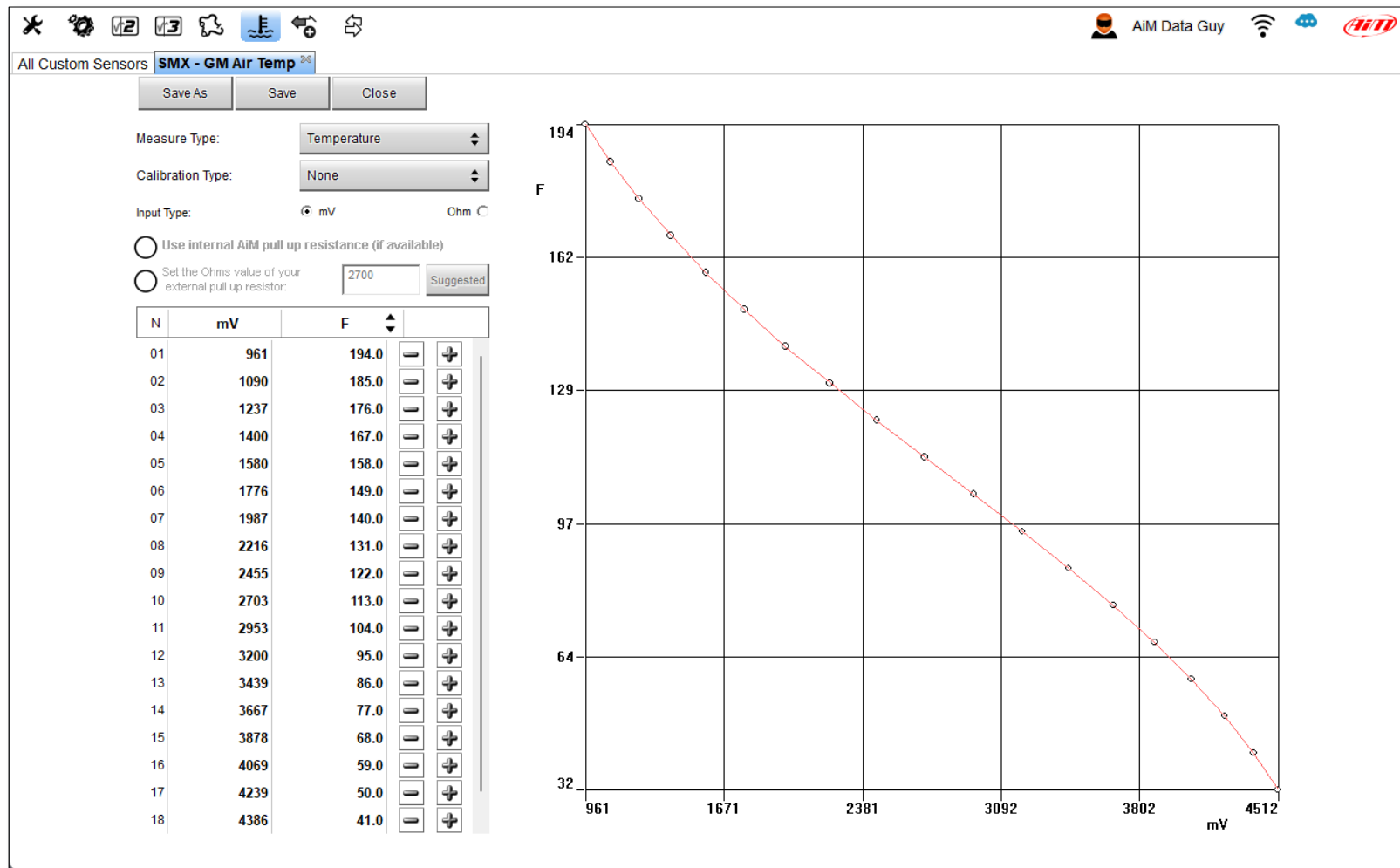
RS3 Custom Sensors



Race Studio 3 Custom Sensor Function

- Every channel needs sensor information to convert electrical values to the physical channel values
- AiM Sports Race Studio 3 program has an extensive list of pre-programmed sensors
- But you may want to use a sensor that is not available in the list of sensors available in Race Studio 3
- The Custom Sensor function is a very powerful and easy solution
- You do however need to know/find the sensors information (How many mV = a specific channel value)
- The Custom Sensor function can be linear or non linear

RS3 Custom Sensors



Temps/Pressures in Race Data

RS3 Custom Sensors

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Sensor Resolution



Selecting the correct sensor is important

- The best example for this is selecting the best pressure sensor for the range that you are measuring
- You should not use a 0-2000psi sensor designed for brake pressure for oil pressure where the range may be 0-150psi
- If you do, the large range will not be accurate at the very low and narrow range desired for oil pressure
- Most pressure sensors have a range of 500 to 4500mV and then the sensor configuration is designed for the pressure range need.
- An example would be **500mV = 0psi** to **4500mV = 2000psi**
Another would be **500mV = 0psi** to **4500mV = 150psi**
You can see where it is important to use the correct resolution sensor

AiM Pressure Sensor Setup



AiM Data Guy

All Configurations **AiM Webinar MXS v2**

Channels | ECU Stream | CAN2 Stream | CAN Expansions | Math Channels | Status Variables | Parameters | Shift Lights and Alarms | Commands | Icons Manager | Display | SmartyCam Stream | CAN Output

ID	☒	Name	Function	Sensor	Unit	Freq	Parameters
RPM	☒	RPM	Engine RPM	RPM Sensor	rpm	20 Hz	max: 16000 ; factor: /1 ;
Spd1	☒	FR Speed	Wheel Speed - Front Right	Speed Sensor	mph 0.1	50 Hz	wheel: 65.25 ; pulses: 4 ;
Spd2	☐	Speed2	Speed	Speed Sensor	mph 0.1	20 Hz	wheel: 40 ; pulses: 1 ;
Spd3	☐	Speed3	Speed	Speed Sensor	mph 0.1	20 Hz	wheel: 40 ; pulses: 1 ;
Spd4	☐	Speed4	Speed	Speed Sensor	mph 0.1	20 Hz	wheel: 40 ; pulses: 1 ;
Ch01	☒	Oil Pressure	Oil Pressure	0-150 psi (X05PSA00150P18)	psi 0.1	20 Hz	
Ch02	☐	Channel02					
Ch03	☐	Channel03					
Ch04	☐	Channel04					
Ch05	☐	Channel05					
Ch06	☐	Channel06					
Ch07	☐	Channel07					
Ch08	☐	Channel08					
Acc1	☒	InlineAcc					
Acc2	☒	LateralAcc					
Acc3	☒	VerticalAcc					
Gyr1	☒	RollRate					
Gyr2	☒	PitchRate					
Gyr3	☒	YawRate					
PAccu	☒	GPS PosAccuracy					
Spd	☒	GPS Speed					
Alt	☒	Altitude					
OdD	☒	Odometer					

Channel Settings

Name:

☒ Analog
 ☐ Digital

Function:

Sensor:

Sampling Frequency:

Unit of Measure:

Display Precision:

Temps/Pressures in Race Data

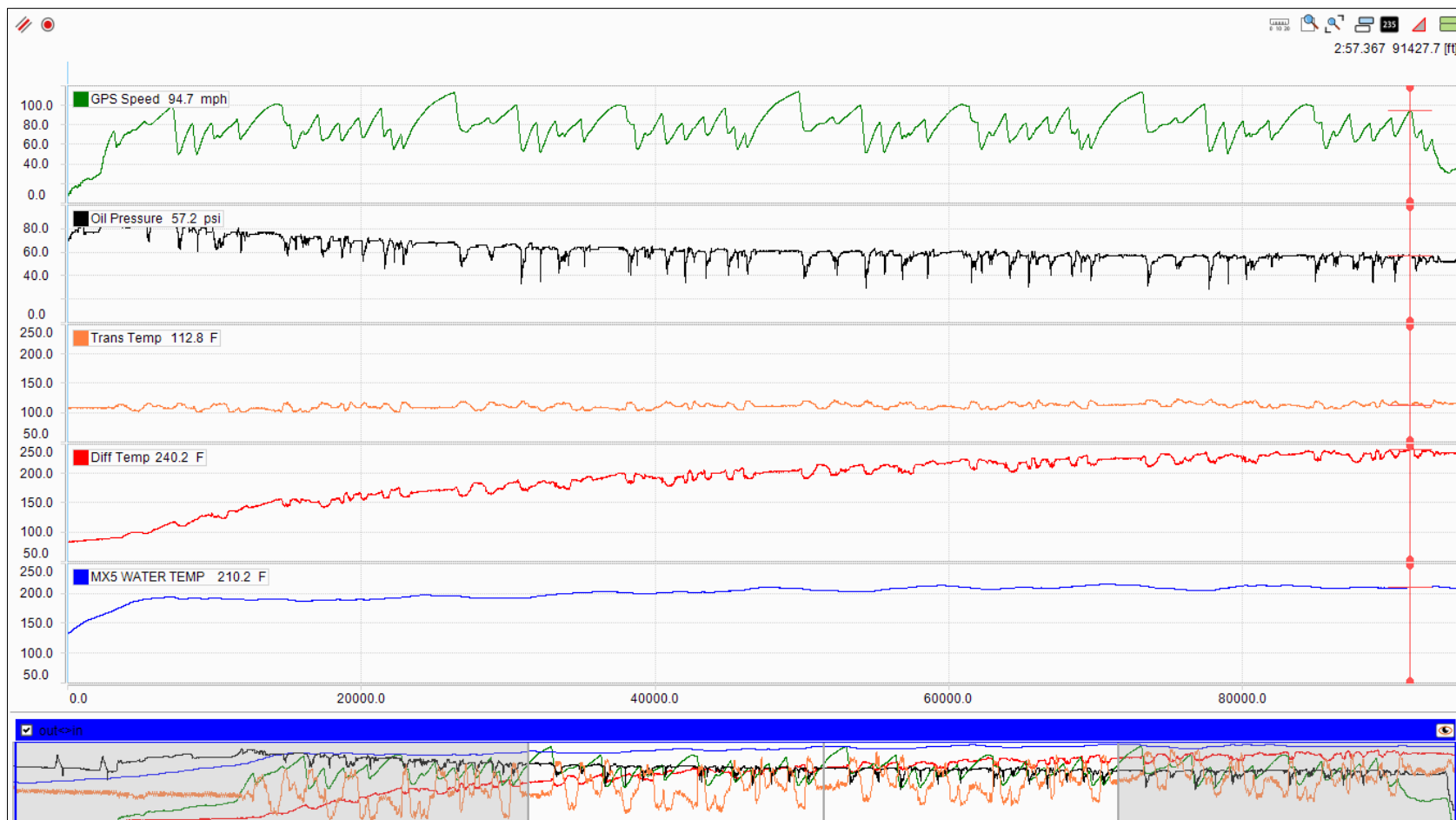
AiM Pressure Sensor Setup

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Road Race – Sports Car



Temps/Pressures in Race Data

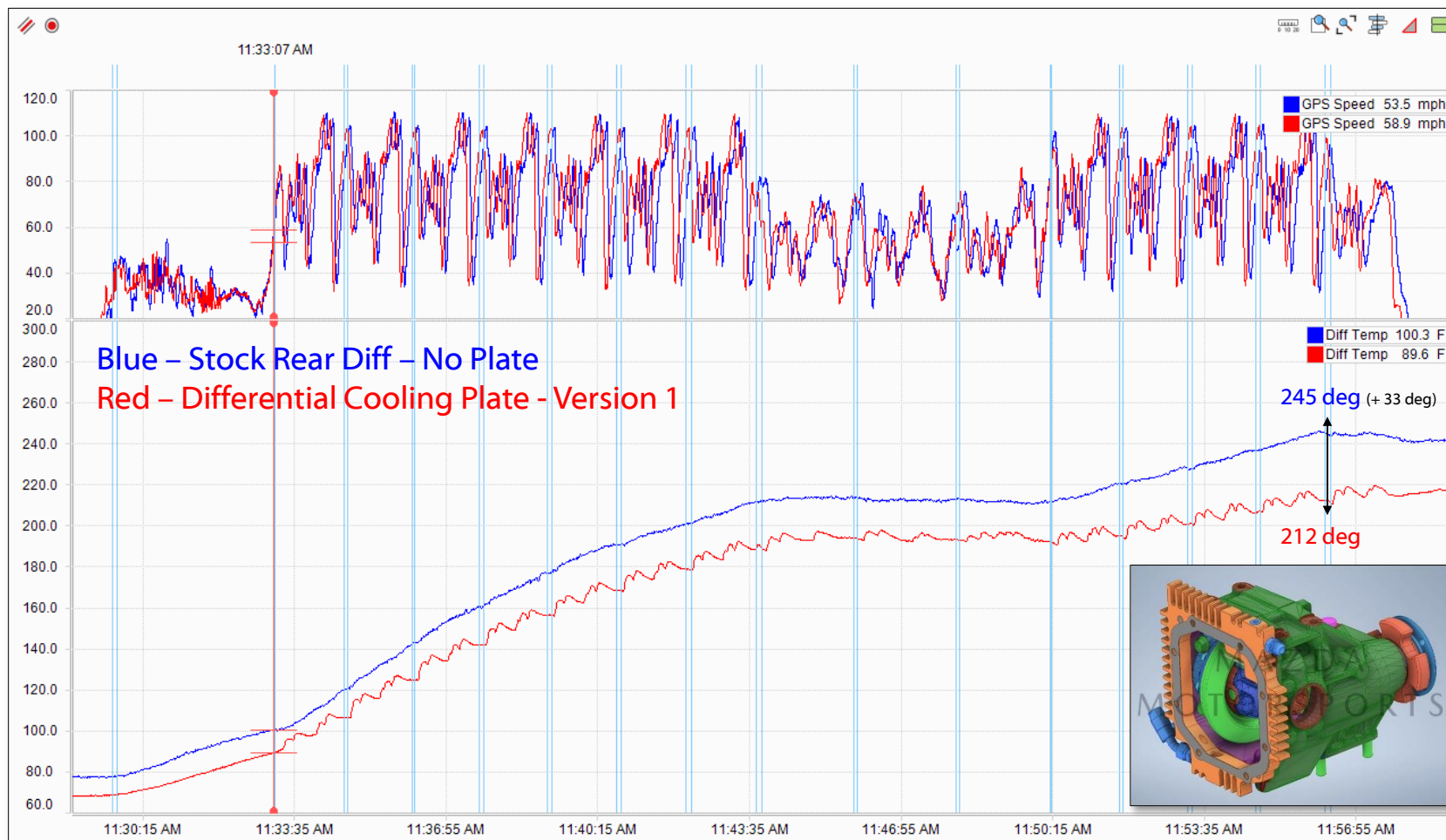
2007 MX-5 Cup Qualifying - Utah

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Road Race – Sports Car



Temps/Pressures in Race Data

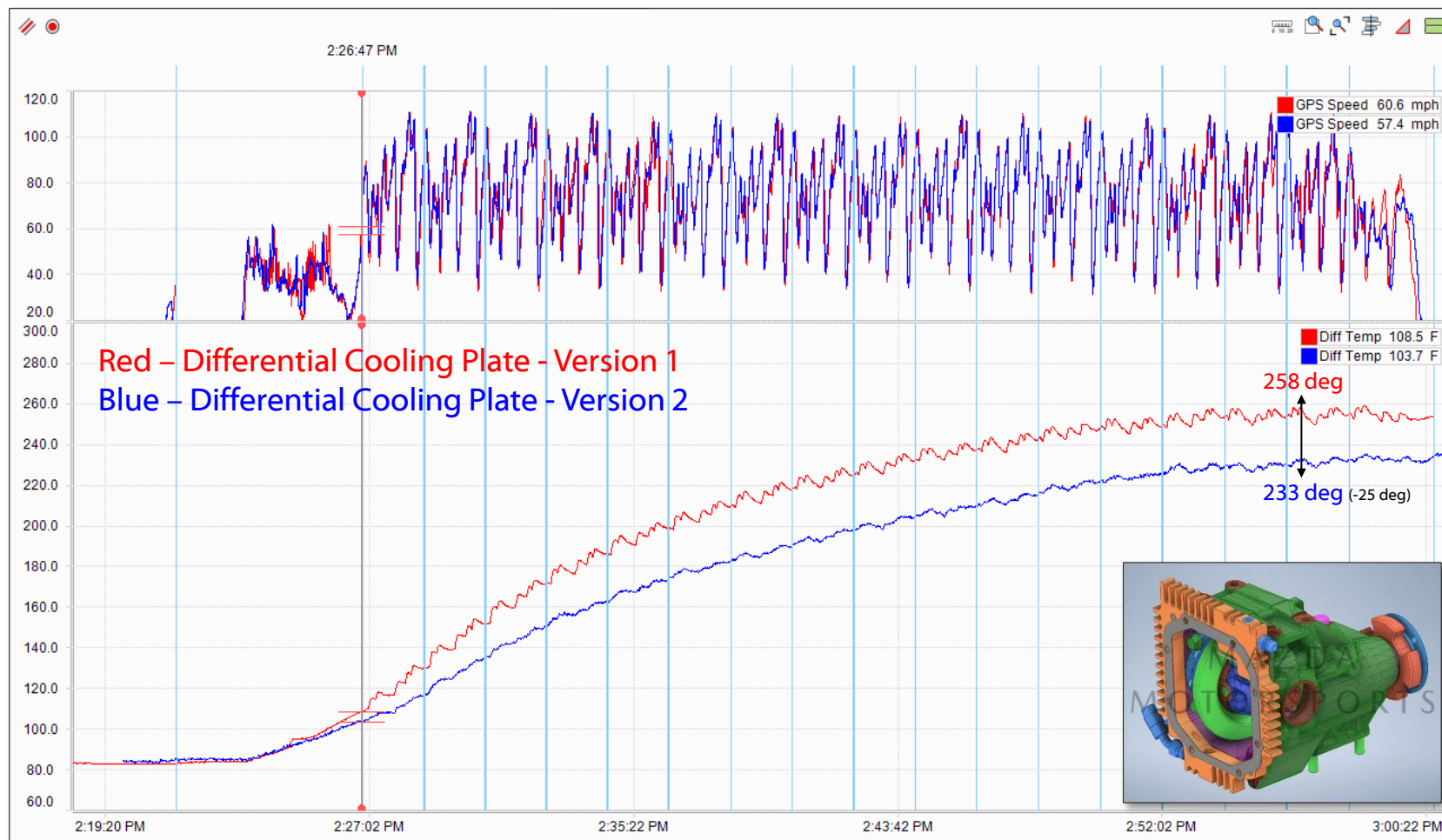
Mazda Spec MX-5 Diff Temps

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Road Race – Sports Car



Temps/Pressures in Race Data

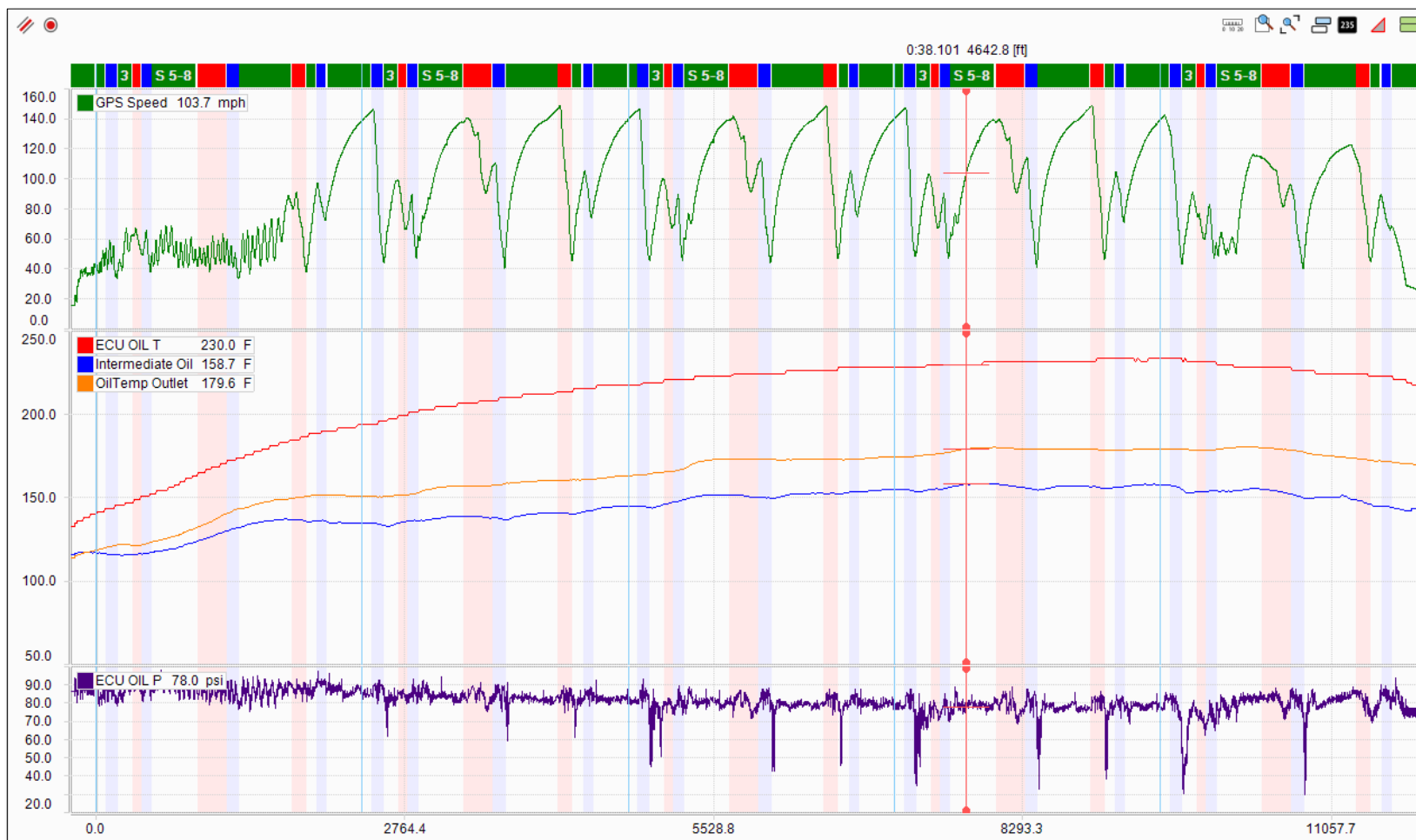
Mazda Spec MX-5 Diff Temps

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Road Race – Sports Car



Temps/Pressures in Race Data

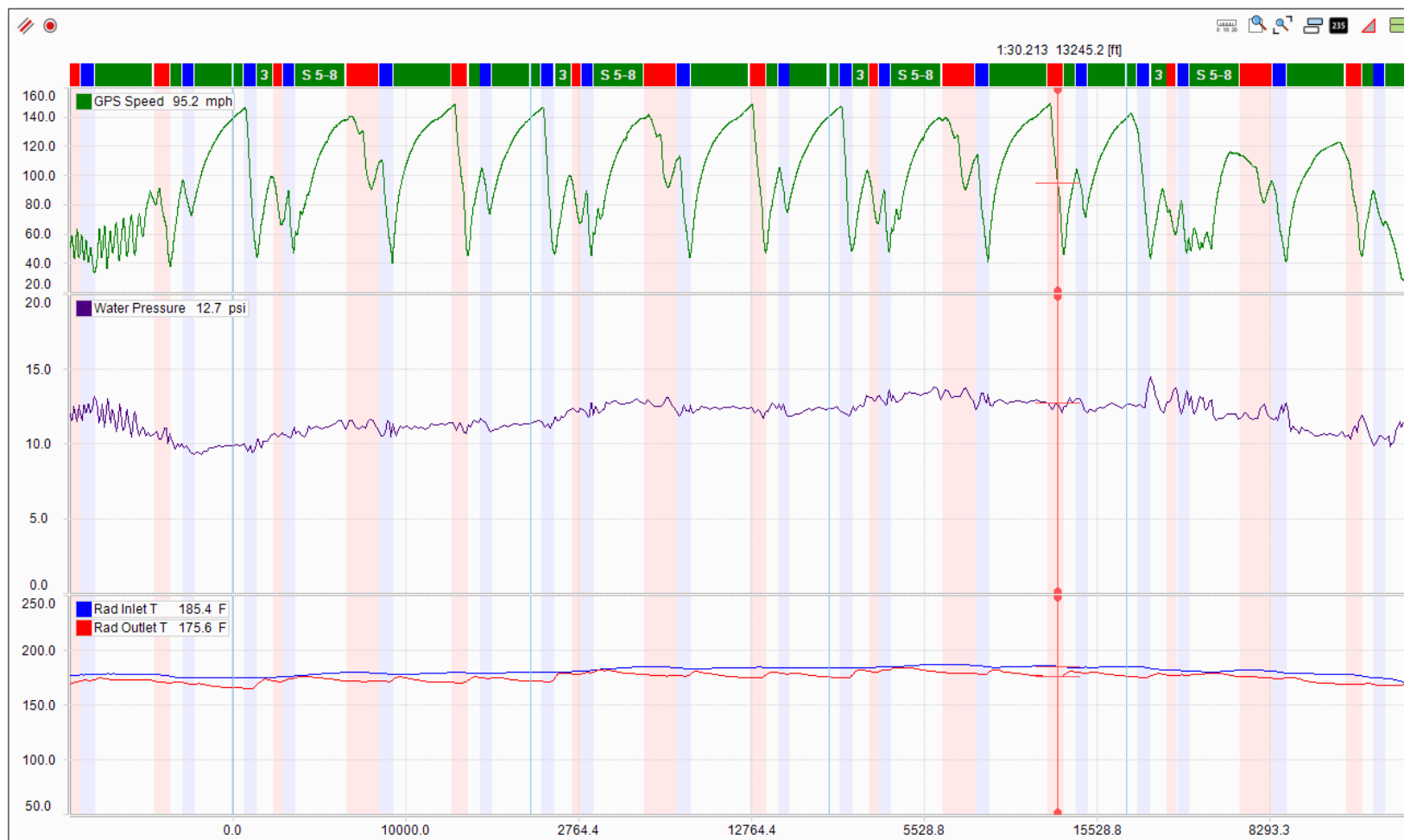
Multiple Oil Temps

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Road Race – Sports Car



Temps/Pressures in Race Data

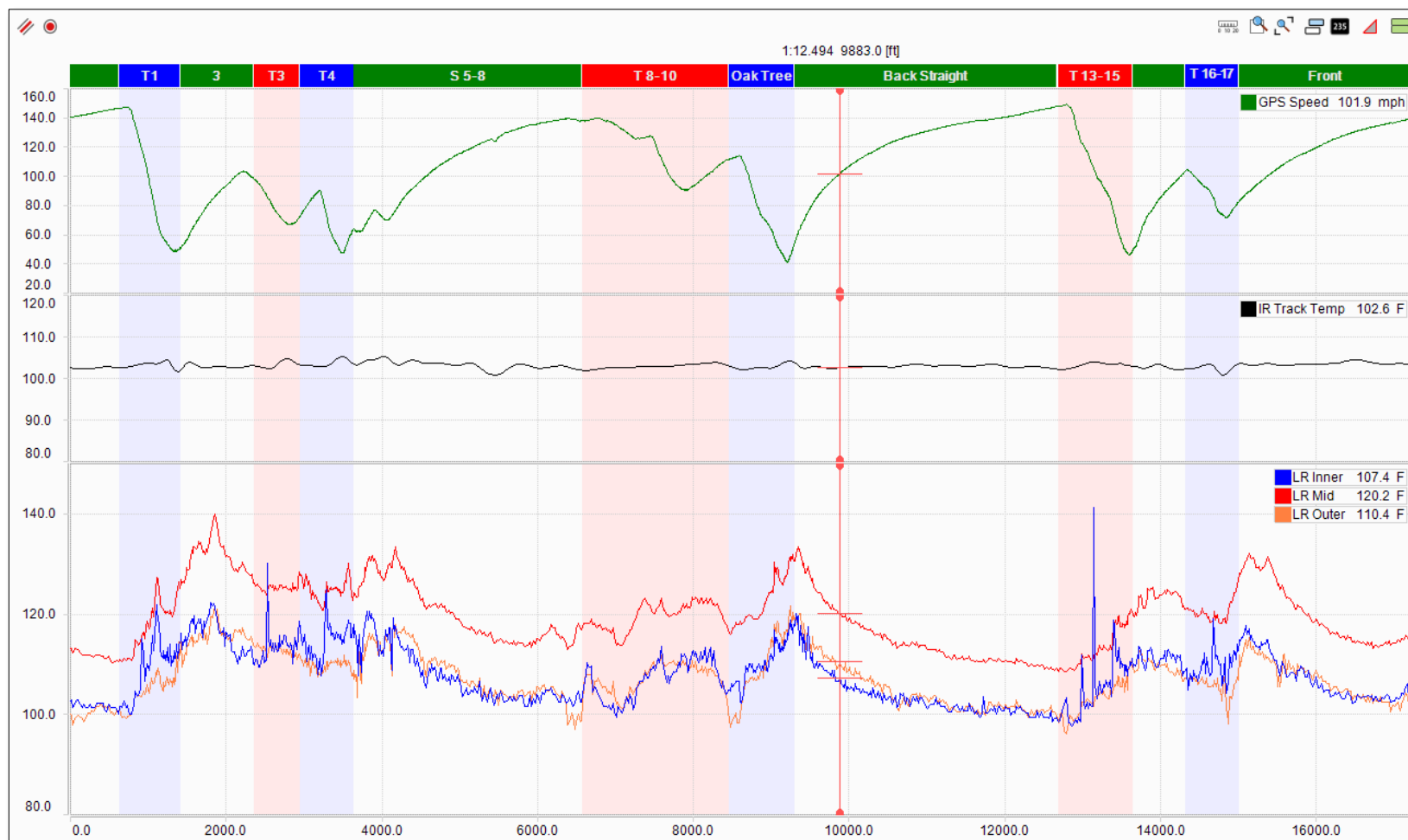
Engine Water Pressures

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Temps/Pressures in Race Data

Tire/Track Temperatures

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Road Race – Sports Car



Temps/Pressures in Race Data

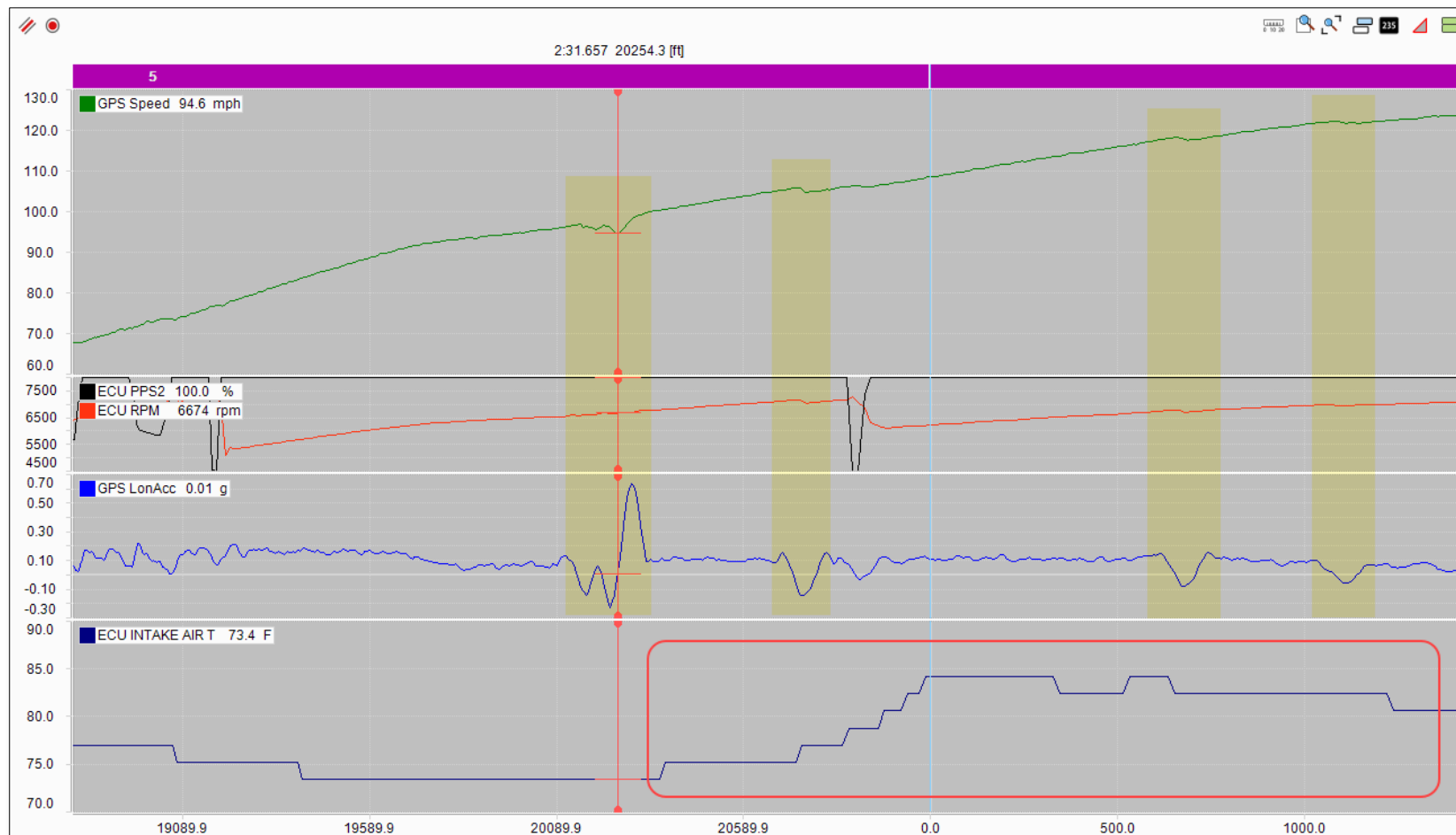
Track Temperature

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Temps/Pressures in Race Data

Intake Air Temp

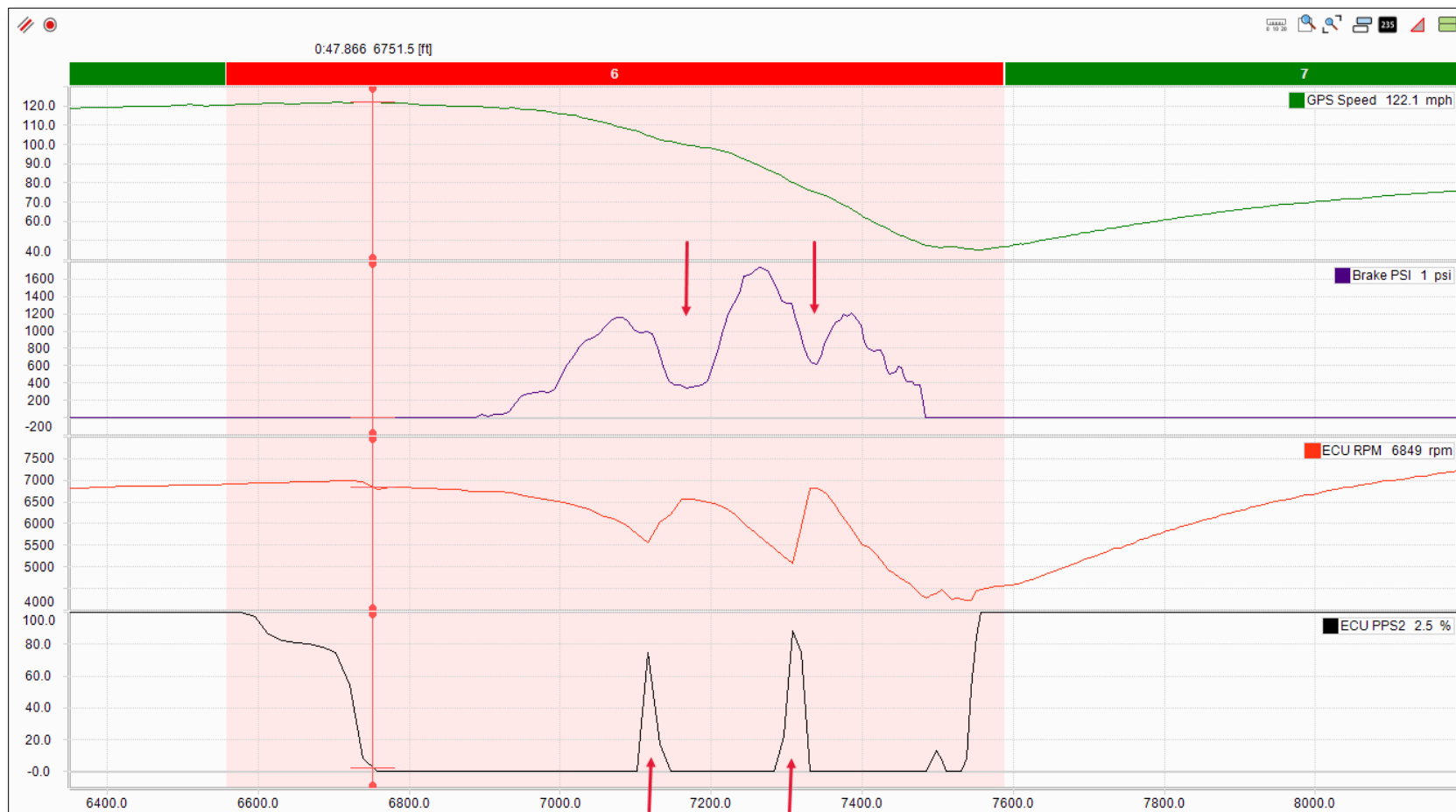


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Road Race – Sports Car



Temps/Pressures in Race Data

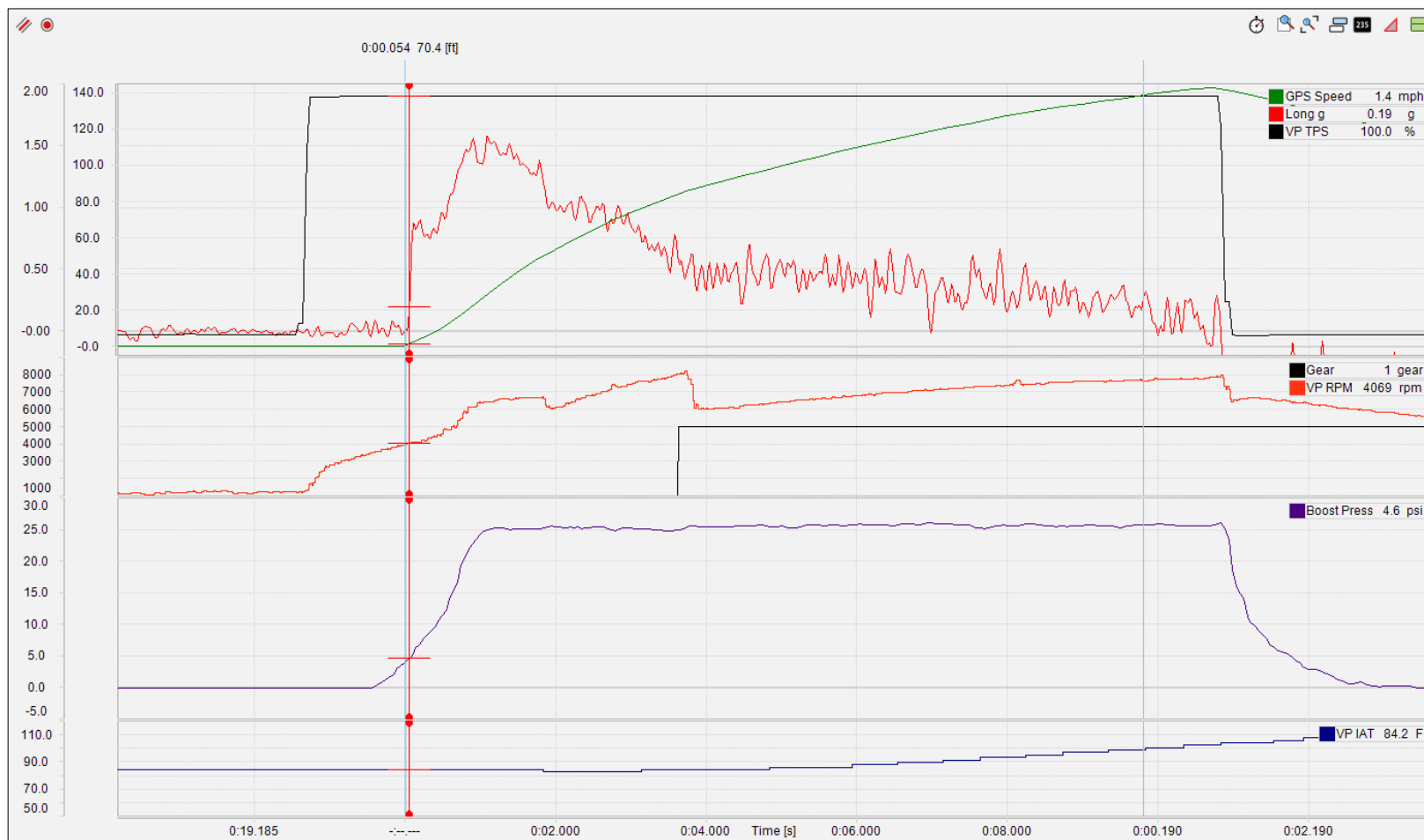
Brake Pressure Dips

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Drag Racing



Temps/Pressures in Race Data

Lagging Boost Pressure

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LearnFast™ E-Training Videos



Currently **263** Videos and Growing

YouTube www.youtube.com/aimdata

Temps and Pressures
in Racing Data Analysis

Host:
Roger Caddell
AIM Sports - National Training Manager

aimsports.com Tuesday October 29th, 2024 LearnFast™

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Accelerometers
in Racing Data Analysis

Host:
Roger Caddell
AIM Sports - National Training Manager

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Webinar Series
Bringing Data Support and Training to You

Data Download Options
in Race Studio 3

March 31st, 2020

www.aimsports.com 1.800.718.9090

- All New 2020 - 24 Live Webinar Videos
 - Software Updates with Race Studio 3
 - Pre-Calculated Gear Position Function
 - Configuring WiFi Communication
 - Customizing AiM Device Logos
 - Race Studio 3 Basic Configuration - Part 1
 - Race Studio 3 Basic Configuration - Part 2
 - **I Have Downloaded my Data, Now What - Part 1*
 - **I Have Downloaded my Data, Now What - Part 2*
 - GPS Lap Insert
 - Selection Criteria
 - Data Views
 - Sensor Calibration
 - Measure Units
 - Conditional Alarms
 - Sort Channels
 - Gear Position
 - Test Properties
 - Firmware Update
 - Per Lap Color
 - Solo Configuration
 - Export Tests
 - Transmit Tracks
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 - Gps Manager Overview
 - Setting Time
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 - Track Mapping
 - Webinars
- * Most Popular and Recommended*

Additional Materials

LearnFast™ E-Training Videos

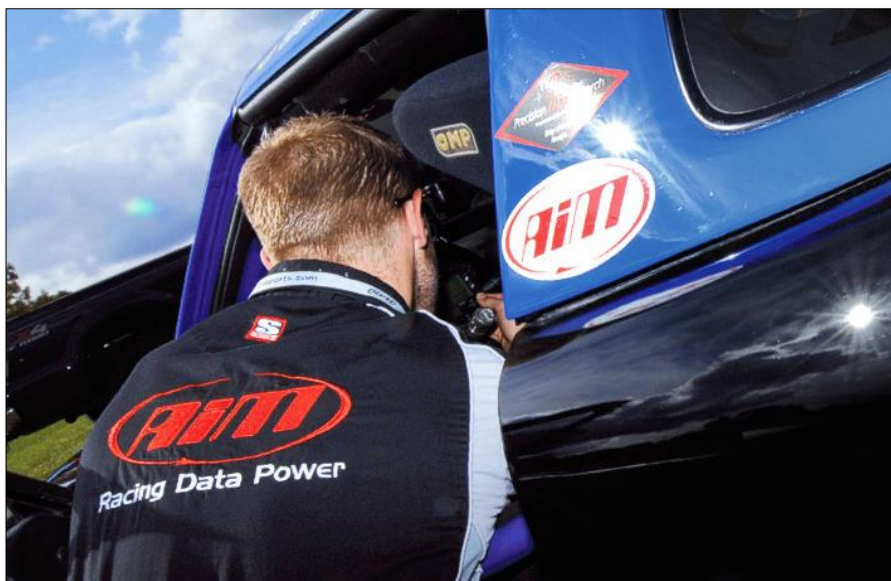
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Customer Support



AiM Sports Technical Support Staff Regularly
Attend Races and Other Events

Look For Us At An Event Near You
Or Call Us At **800.718.9090**



Customer Support

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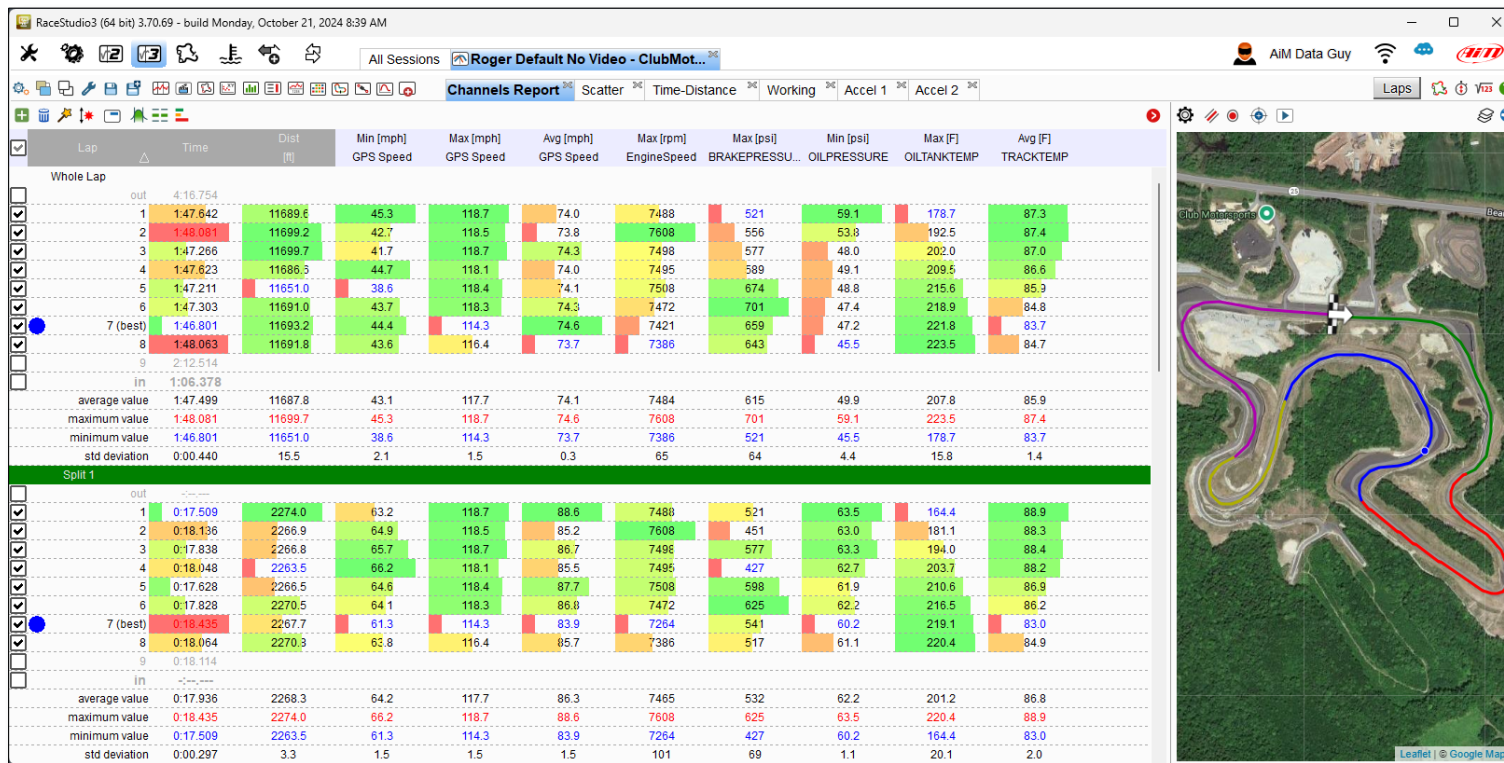
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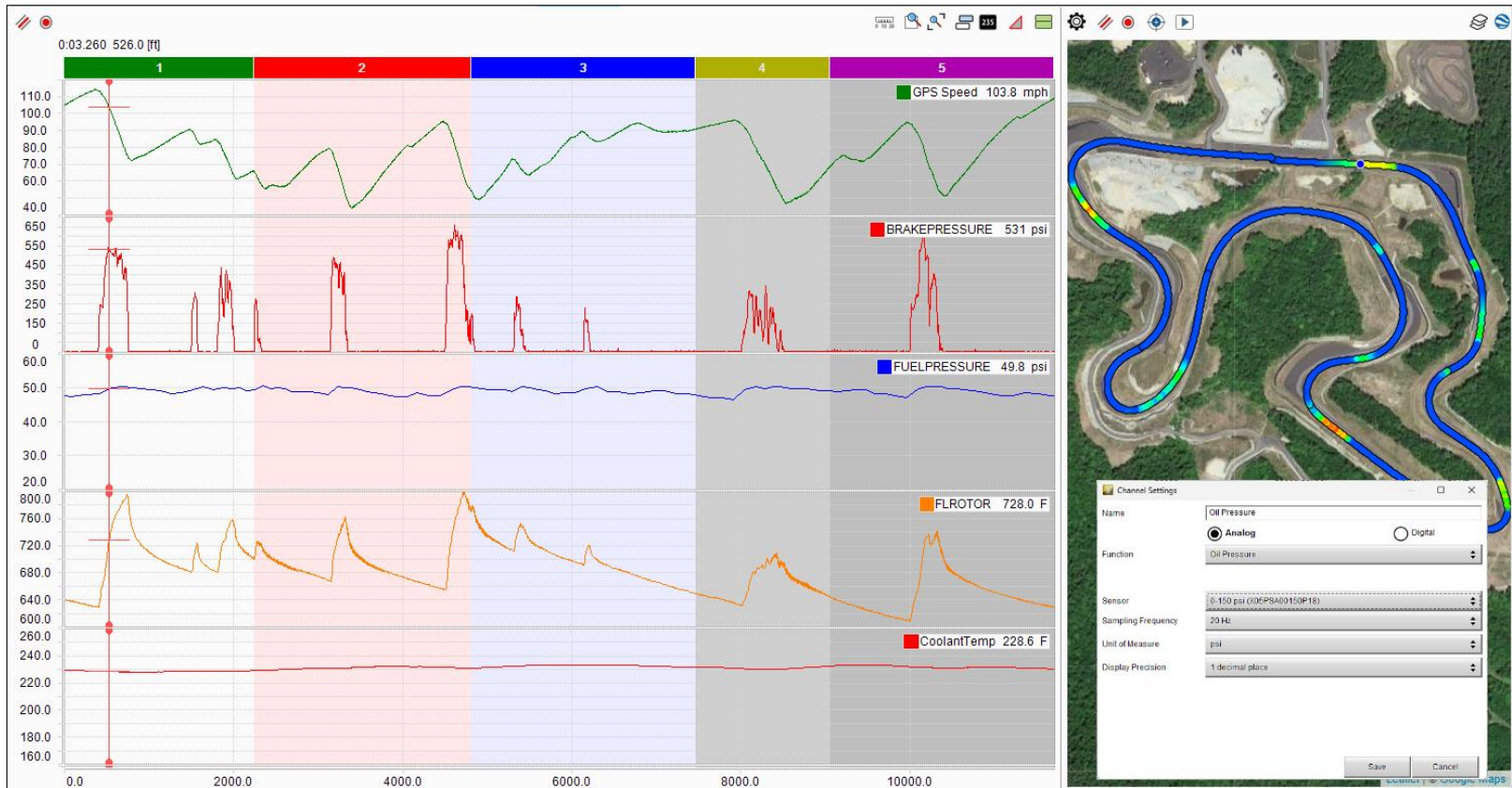
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Contact Information



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Tuesday October 29th, 2024

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