

AiM Sports Hardware

A Deeper Technical Discussion



Host:

Roger Caddell

AiM Sports - National Training Manager

Co-Host:

Fabrizio Rizzi

AiM Sportline - Hardware Team Manager



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Tuesday Mar 9th, 2021

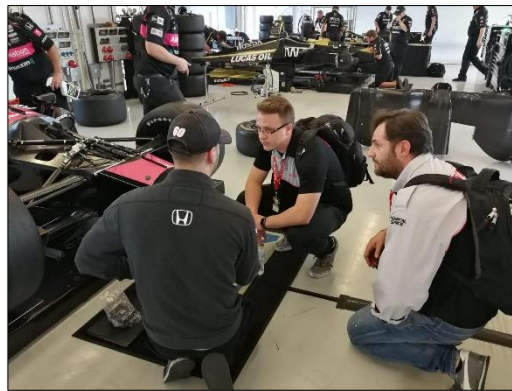
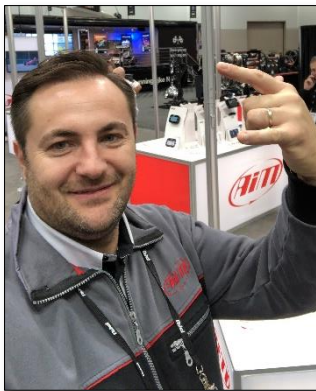
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Fabrizio Rizzi

Fabrizio.Rizzi@aim-sportline.com



- Currently is the Head of Hardware Development for AiM Sportline in Italy. He has worked for AiM Sportline since 2014
- Career started in 1999 as a firmware developer for microcontrollers. A couple of years later he also started hardware development of the board where the microcontrollers were mounted



Fabrizio Rizzi

Hardware Team Manager



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AIM Italy

SMD Assembly Department



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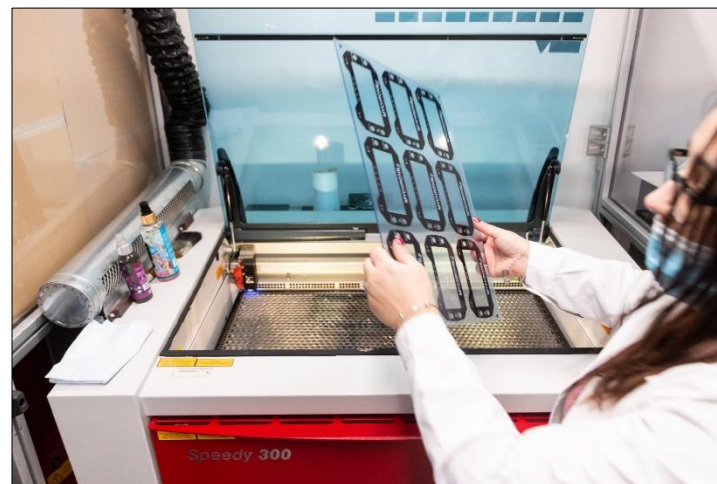
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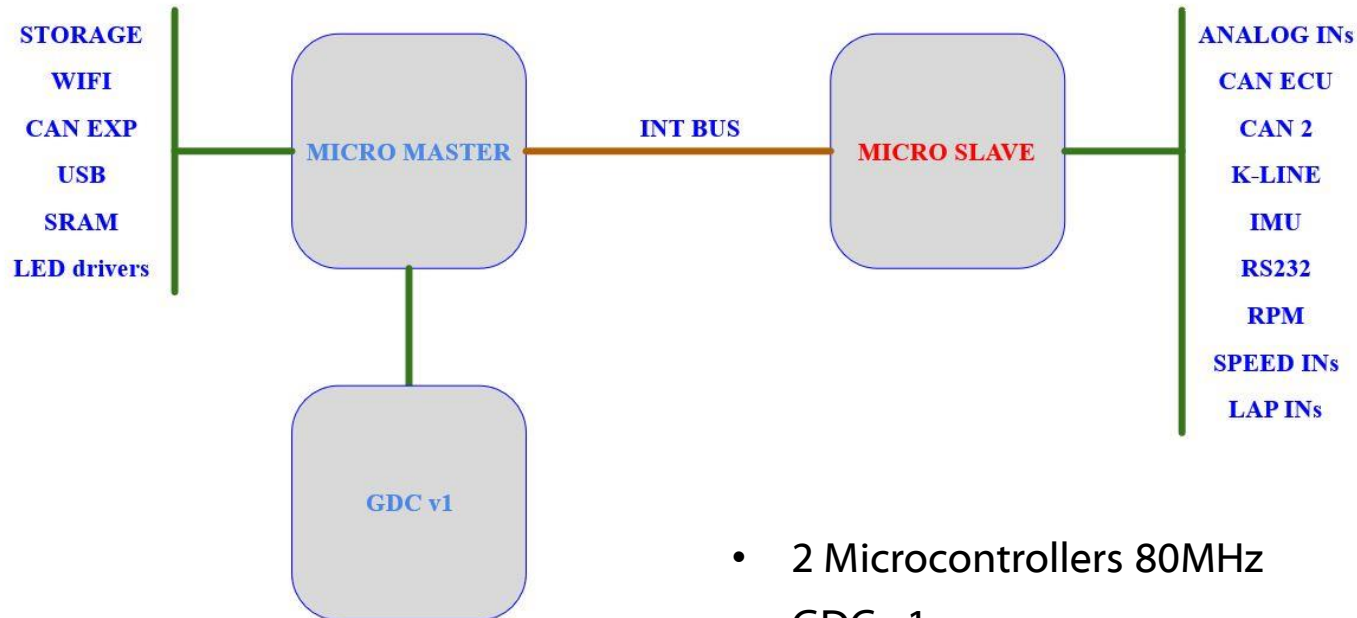
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MXS - MXG

Internal HW Architecture



Schematic Block



- 2 Microcontrollers 80MHz
- GDC v1
- SRAM 1MB
- LED drivers v1
- IMU 6 DOF

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MXS – MXG Hardware Architecture

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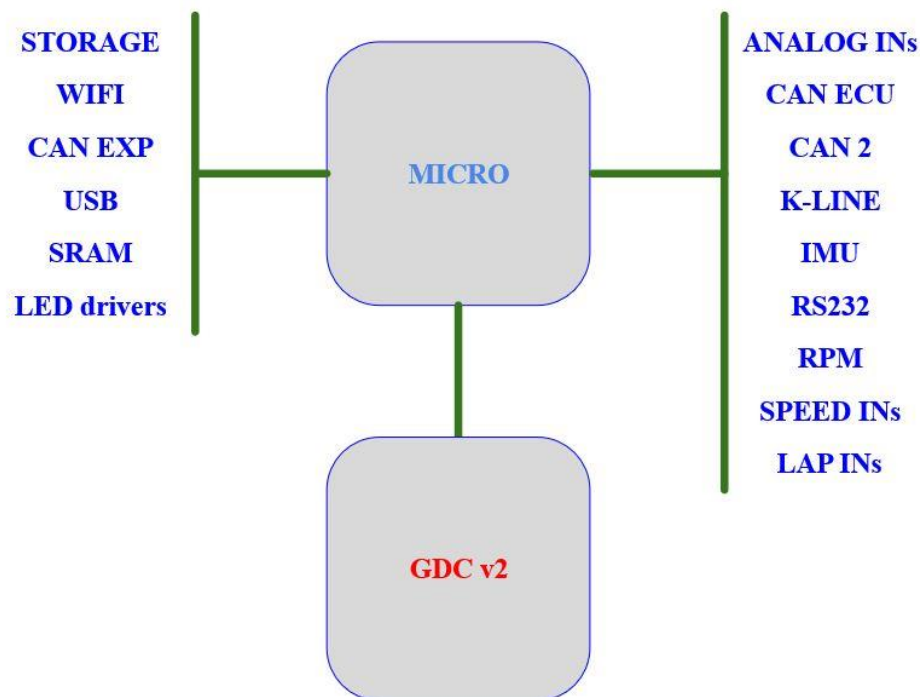
MXS 1.2 - MXP - MXG 1.2



Internal HW architecture

Schematic Block

- 1 Microcontroller 200MHz
- GDC v2
- Mirror Camera Input
- SDRAM 32MB
- LED Drivers v2
- IMU 9 DOF
- CAN Programmable Resistors
- Internal Pullup/Pulldown



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MXS 1.2 – MXP – MXG 1.2

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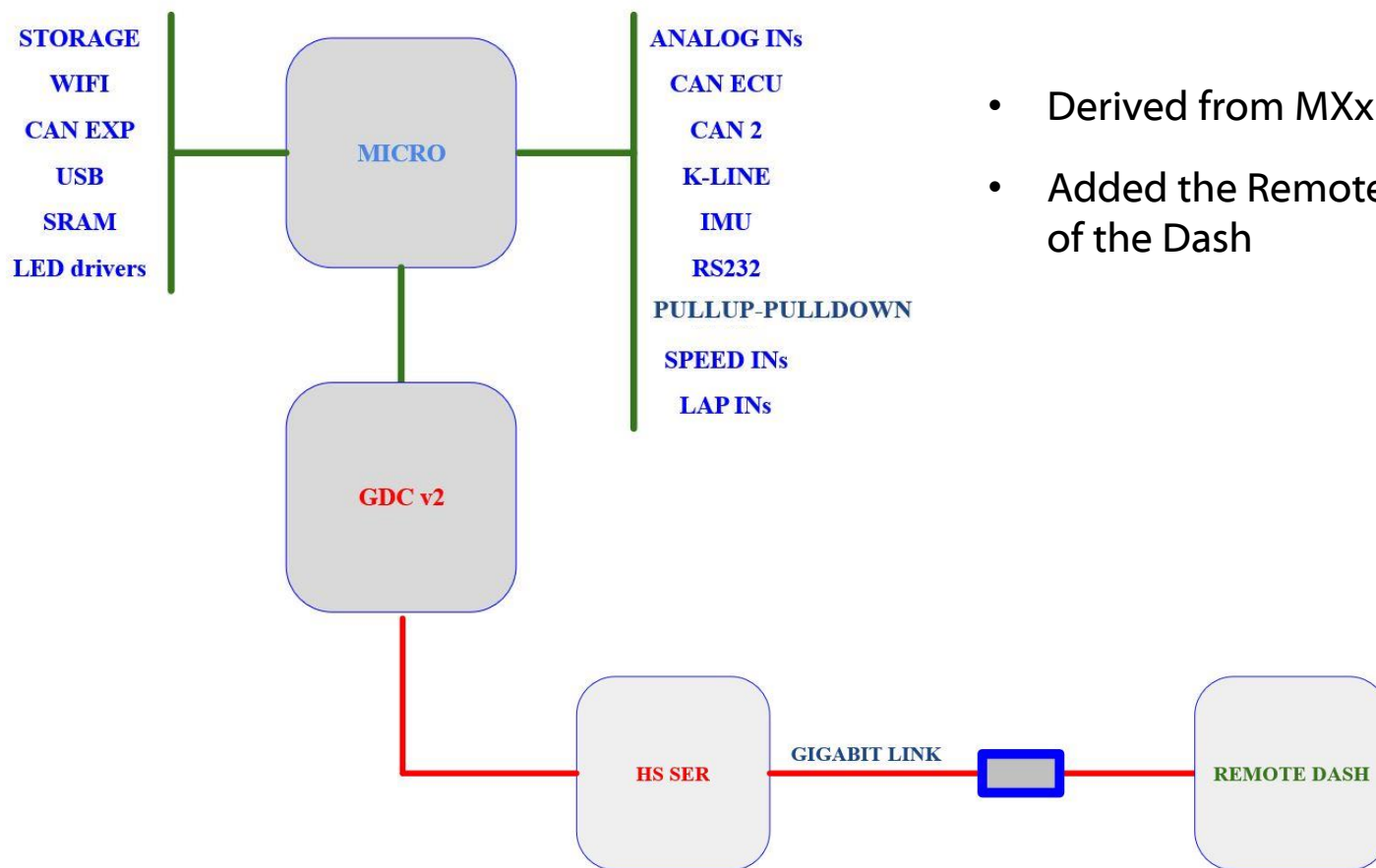
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PDM32 - PDM08 - EPM08



Internal HW Architecture

Schematic block



- Derived from MXx 1.2 Systems
- Added the Remote Management of the Dash

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PDM32 – PDM08 – EPM08



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GPS09

Features



- **Power:**
 - Voltage: 8-16V
 - Current: <50mA
- **GNSS Module:**
 - GPS, GLONASS, BeiDou, Galileo
 - Up to 25 Hz nav. Update Rate
 - Sensitivity ≥ -160 dBm
 - Accuracy Optimal Conditions Less Than 0.5m

AiM Sports Hardware

GPS09 Features



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GPS09 PRO

Features



- **Power:**
 - Voltage: 8-16V
 - Current: <50mA
- **GNSS Module:**
 - GPS, GLONASS, BeiDou, Galileo
 - Up to 25 Hz nav. Update Rate
 - Sensitivity ≥ -160 dBm
 - Accuracy Optimal Conditions Less Than 0.5m
- **IMU:**
 - Acc: ± 16 G
 - Gyro: ± 2000 °/s
 - Mag: ± 1300 μ T

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GPS09 PRO Features



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GPS09 PRO Open

Features



- **Specifications:**
 - Same as GPS09 PRO
- **CAN Data:**
 - Bit rate = 1Mb/sec
 - Little Endian Order
 - Default Data Available
 - Soon CAN Messages Completely Configurable

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GPS09 PRO Open Features



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Pressure Sensors



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Pressure Sensors



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Pressure Sensors



PRESSURE SENSORS

Pressure sensor 0-5 bar	 	M10 3/8 24	X05PSA00005B10K X05PSA00005B38K		Datasheet	RS3 conf	RS2 conf	SCF*
Pressure sensor 0-5 bar absolute	 	M10 3/8 24	X05PSA00005B10AK X05PSA00005B38AK		Datasheet	RS3 conf	RS2 conf	SCF*
Pressure sensor 0-10 bar	  	M10 1/8 NPT 3/8 24	X05PSA00010B10K X05PSA00010B18K X05PSA00010B38K		Datasheet	RS3 conf	RS2 conf	SCF*
Pressure sensor 0-100 bar	 	M10 3/8 24	X05PSA00100B10K X05PSA00100B38K		Datasheet	RS3 conf	RS2 conf	SCF*
Pressure sensor 0-160 bar	  	M10 3/8 24	X05PSA00160B10K X05PSA00160B38K		Datasheet	RS3 conf	RS2 conf	SCF*
Pressure sensor 0-50 PSI	 	1/8 NPT	X05PSA00050P18K		Datasheet	RS3 conf	RS2 conf	SCF*
Pressure sensor 0-50 PSI absolute	 	1/8 NPT	X05PSA00050P18AK		Datasheet	RS3 conf	RS2 conf	SCF*
Pressure sensor 0-150 PSI	 	1/8 NPT	X05PSA00150P18K		Datasheet	RS3 conf	RS2 conf	SCF*
Pressure sensor 0-300 PSI	 	1/8 NPT	X05PSA00300P18K		Datasheet	RS3 conf	RS2 conf	SCF*
Pressure sensor 0-2000 PSI	 	1/8 NPT	X05PSA02000P18K		Datasheet	RS3 conf	RS2 conf	SCF*

*Download the sensor configuration file ready to import in RS2

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Pressure Sensors

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Pressure Sensors



Technical Features:

- Supply :8-16 V
- Accuracy :+/- 0.5% FS (CLNH – Combined Non-Linearity and Hysteresis)
- Characterization :500 mV/ 0 bar 4500 mV/ FS bar
- Consumption :< 10 mA
- Temp Working Range :from -20°C to 135°C
- Sealing :IP66
- Housing :316 Stainless Steel
- Weight :30 g
- Cable Length :400 mm
- Thread :M10 – 3/8 24

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Pressure Sensors



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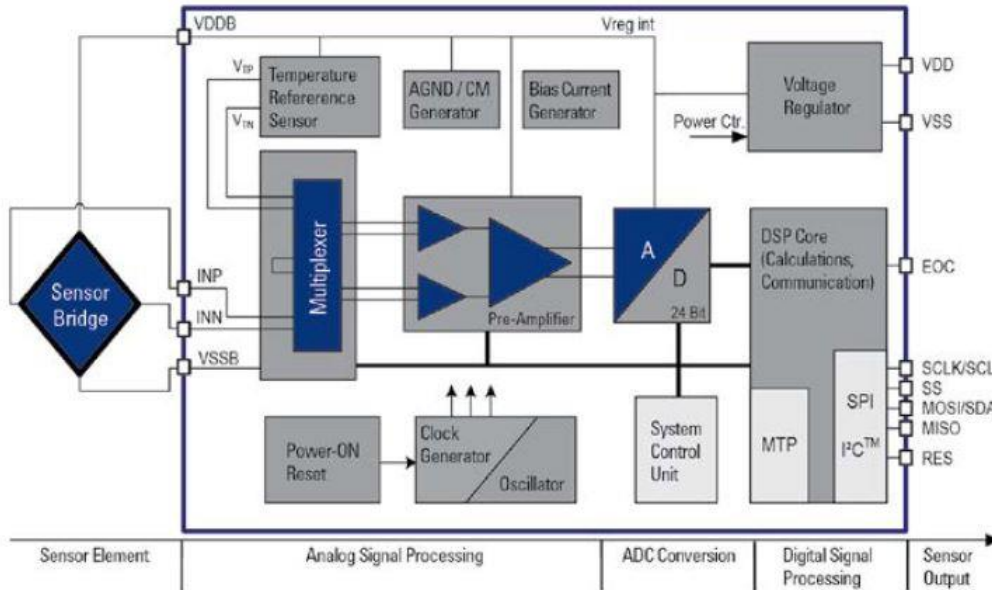
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Pressure Sensors

Internal Overview



TYPICAL SSC BLOCK DIAGRAM



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Pressure Sensors



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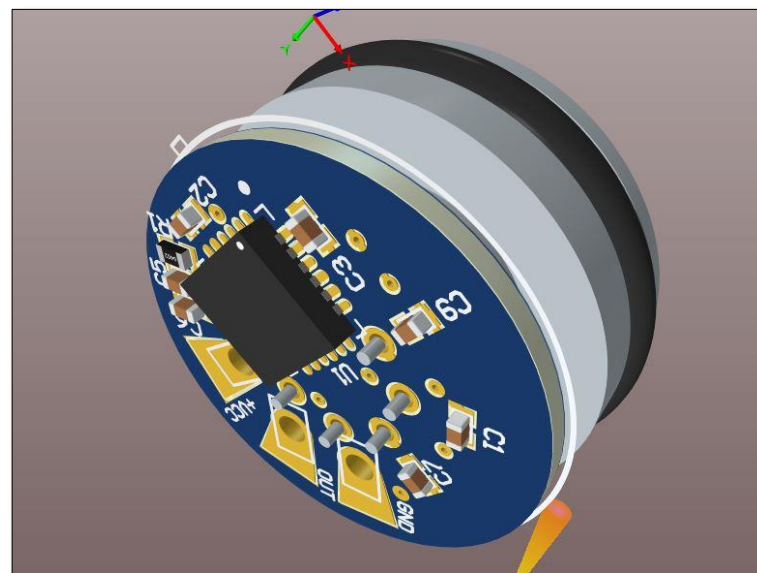
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Internal Overview



High Quality Transducer

Ultra Miniaturized Board



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Pressure Sensors

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Pressure Sensors

Calibration Process



Initial Configuration of SSC

Full Scale Acquisition

3 Temperature Points: -20°C, +25°C, +120°C

2 Pressure Points @ Ref Temperature



Computerized Data Calculation Algorithm

Write Data to Sensors

Final Functional Check

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Pressure Sensors

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LearnFast™ E-Training Videos



Currently 149 Videos and Growing

YouTube www.youtube.com/aimdata

12:10
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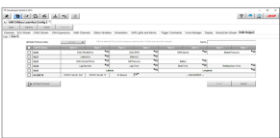
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AIM Sportline - Hardware Team Manager

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Practical CANbus Basics
in the AiM Sports Universe



Host:
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AIM Sports - National Training Manager

Co-Hosts:
Jeff Huitt
Robbie Noonan
AIM Sports and Data Advocate
AIM Sports Technician

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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

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- All New 2020 - 21 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
- Data Views
- Measure Units
- Sort Channels
- Test Properties
- Per Lap Color
- Export Tests
- Channel Reports
- Setting Time
- Track Mapping
- Selection Criteria
- Sensor Calibration
- Conditional Alarms
- Gear Position
- Firmware Update
- Solo Configuration
- Transmit Tracks
- Gps Manager Overview
- New GPS Track
- Webinars

* *Most Popular and Recommended*

Additional Materials

LearnFast™ E-Training Videos

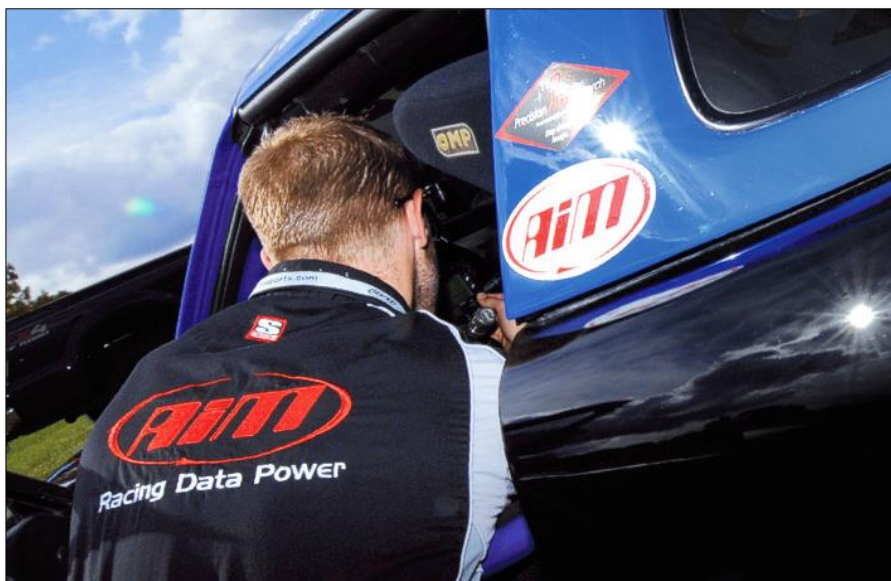
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Customer Support



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

At An Event Near You!

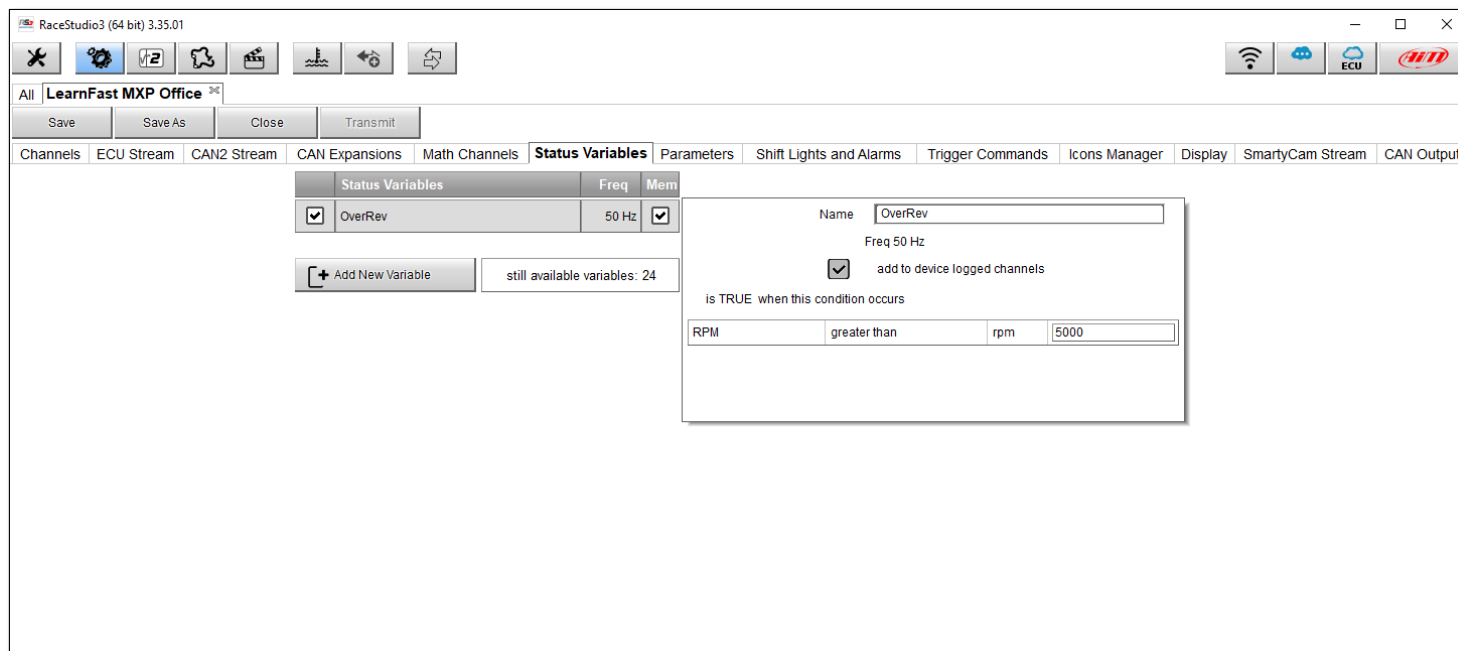


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Race Studio 3 Configuration

Status Variables, Trigger Commands, and More!



Host:

Roger Caddell

AiM Sports - National Training Manager

Co-Host:

Robinson Shay

AiM Sports Technician

Next Webinar: Tuesday March 16th, 2021 - 10:00am Pac/1:00pm East

Next Webinar Topic

Status Variables / Trigger Commands



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Contact Information



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