

AiM Sports & Flagtronics

An Important Merging of Technology



Host:

Roger Caddell

AiM Sports - National Training Manager

Co-Host:

Cameron Buseth

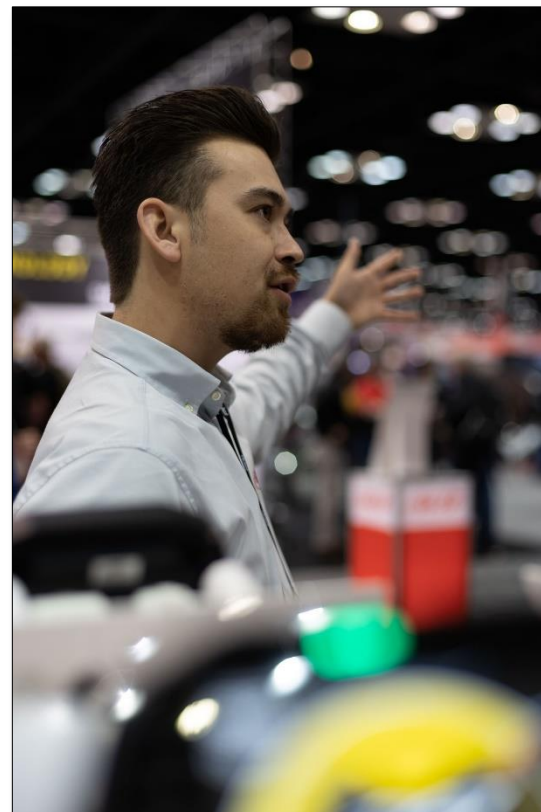
AiM Sports Tech Support Specialist

Cameron Buseth

AiM Sports Tech Support Specialist



- AiM Sports Tech for the Past 3 Years
- AiM Sports Tech in the Trans AM Series
- AVID Golfer
- Full-Time Father
- First Time AiM Sports Webinar Co-Host!



Cameron Buseth

AiM Sports Tech Support Specialist



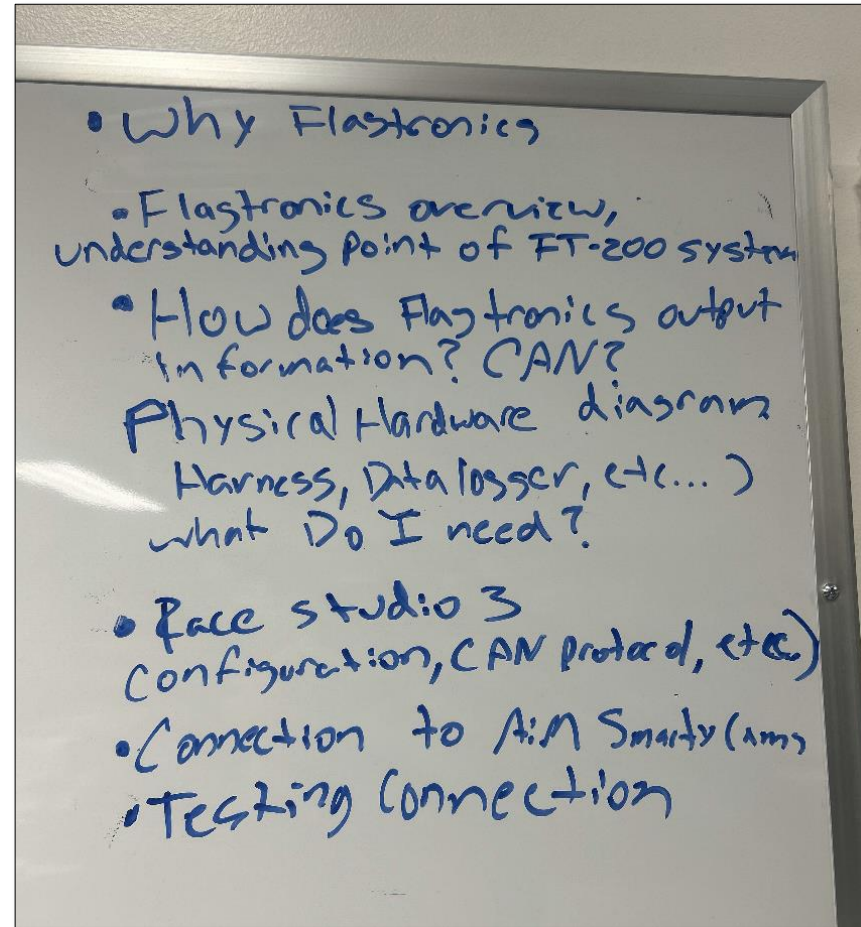
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Webinar Topics



- Why Flagtronics?
- Flagtronics Overview
- Hardware
- Flagtronics Output
- FT-200 Configuration
- RS3 Configurations
- SC3 / Data Systems
- Testing Connections
- Alarms



Why Flagtronics?



The Flagtronics Story

- In endurance racing, there are many instances of miscommunication at the pro and amateur levels, particularly between track officials and racers
- Flagtronics aims to reduce that miscommunication with a device inside the car that will inform the driver the live track conditions or other communications



Flagtronics Overview

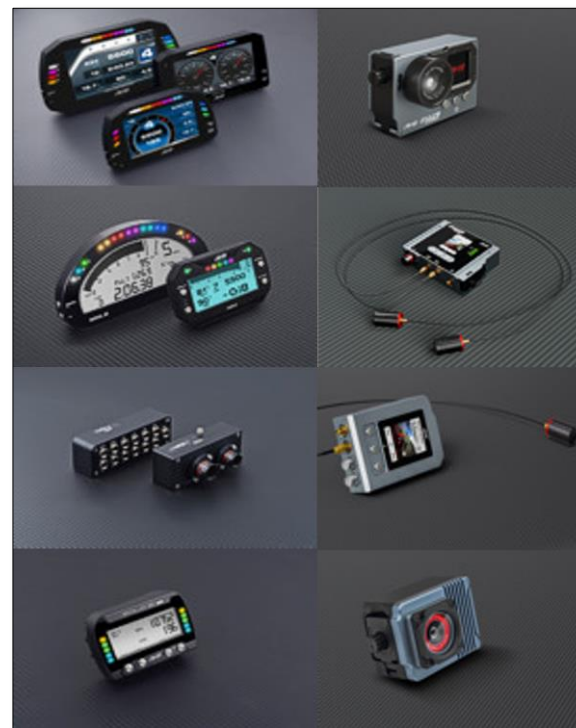
- The Flagtronics FT200 unit operates as a receiver, gathering information sent out by race officials to provide a live in-car track status for all local and full course conditions
- Confirmation signals are also sent back to race control to ensure track status messages are received
- Built-in accelerometers allow for instant messaging to race control when a major impact is detected
- When equipped with a GPS unit, added features include Timing & Scoring ability, local flagging, and pit timer



Hardware

FT-200, Harness, Data Logger, etc.

- AiM Sports Data Logger/Dash Display (CAN BUS Comms are Necessary)
- FT-200 Flagging System, CAN Output Harness, Flagtronics GPS



Flagtronics and AiM Sports

Hardware

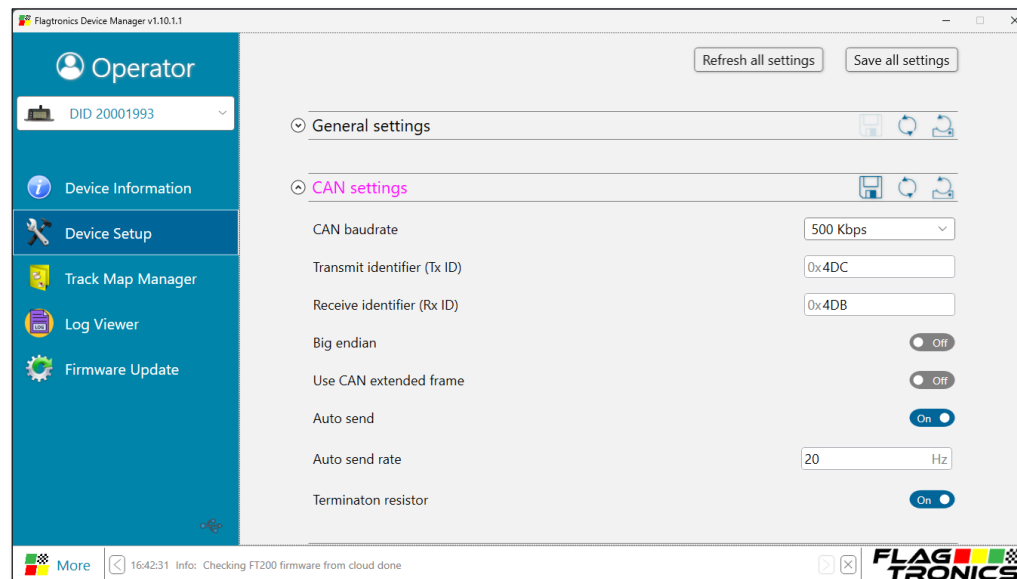
Flagtronics Output



- The Flagtronics FT-200 Outputs Flagcodes via CAN
- Utilizing the CAN Output Harness Included with Flagtronics FT-200 System, you will Connect CAN+ and CAN- to the AiM ECU Stream (CAN 1) or CAN 2 Stream
- Flagtronics Wire Colors
 - CAN+ Blue
 - CAN- Yellow
- AiM Wire Colors
 - CAN+ White
 - CAN- Blue
- Flagtronics offers Public CAN information for Everyone to View
 - Links Provided in the Live Chat or in the YouTube Description Box

Flagtronics FT-200 Configuration

- Make sure you have downloaded Flagtronics Device Manager from the Flagtronics website
- Power on FT-200, connect the unit to your PC, and open Flagtronics Device Manager



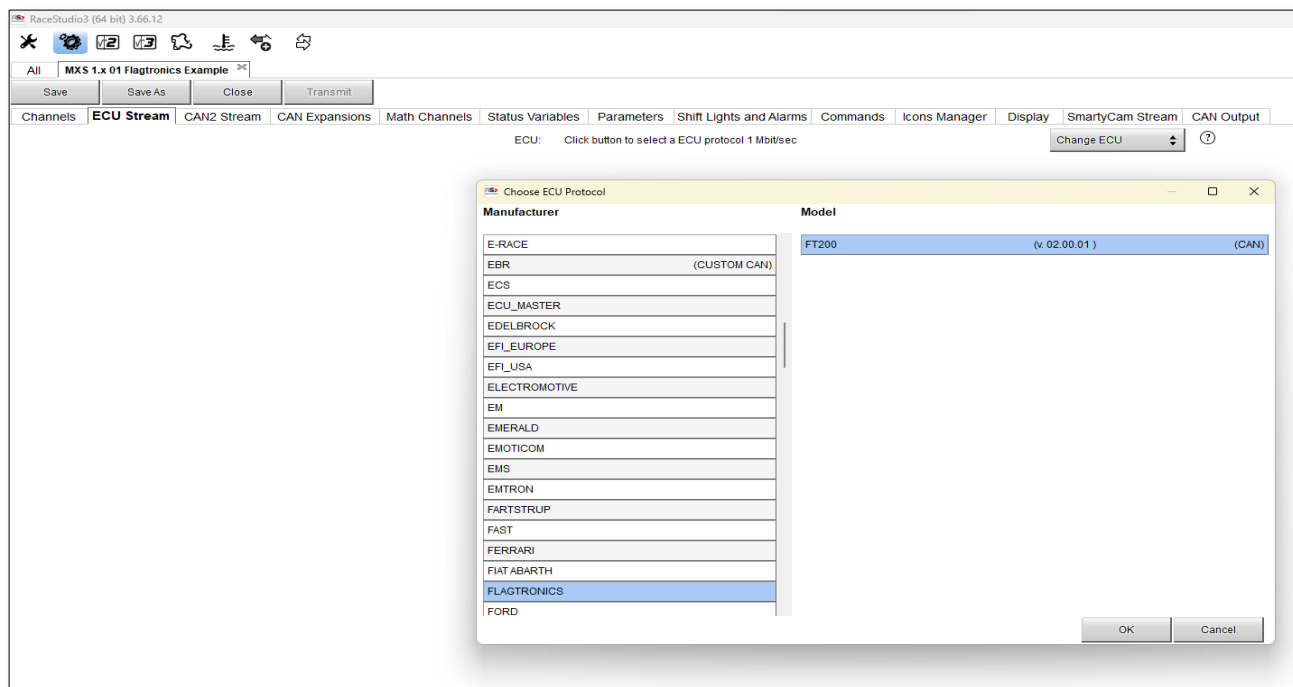
- Once connected select Device Setup on the left hand side of the software and click the down arrow next to CAN Setup
- Change the “Auto Send” option to on. This enables the FT-200 CAN Out and allows information to be sent to the AiM Device
- Download Links in the Live Chat or in the YouTube Description Box

Race Studio 3 Configuration

CAN Protocol, Etc.



- To Configure your AiM Device, Open RS3 and Select 'Configurations'
- You will find the Option to Configure the Flagtronics FT-200 to your AiM CAN stream(s), most newer AiM Hardware have 2 CAN Inputs
- Go to the 'ECU Stream' or 'CAN 2 Stream' of your Device's Configuration
- Manufacturer List Select: 'FLAGTRONICS' from the Model List Select: 'FT200'



Flagtronics and AiM Sports

CAN Protocol, Etc.

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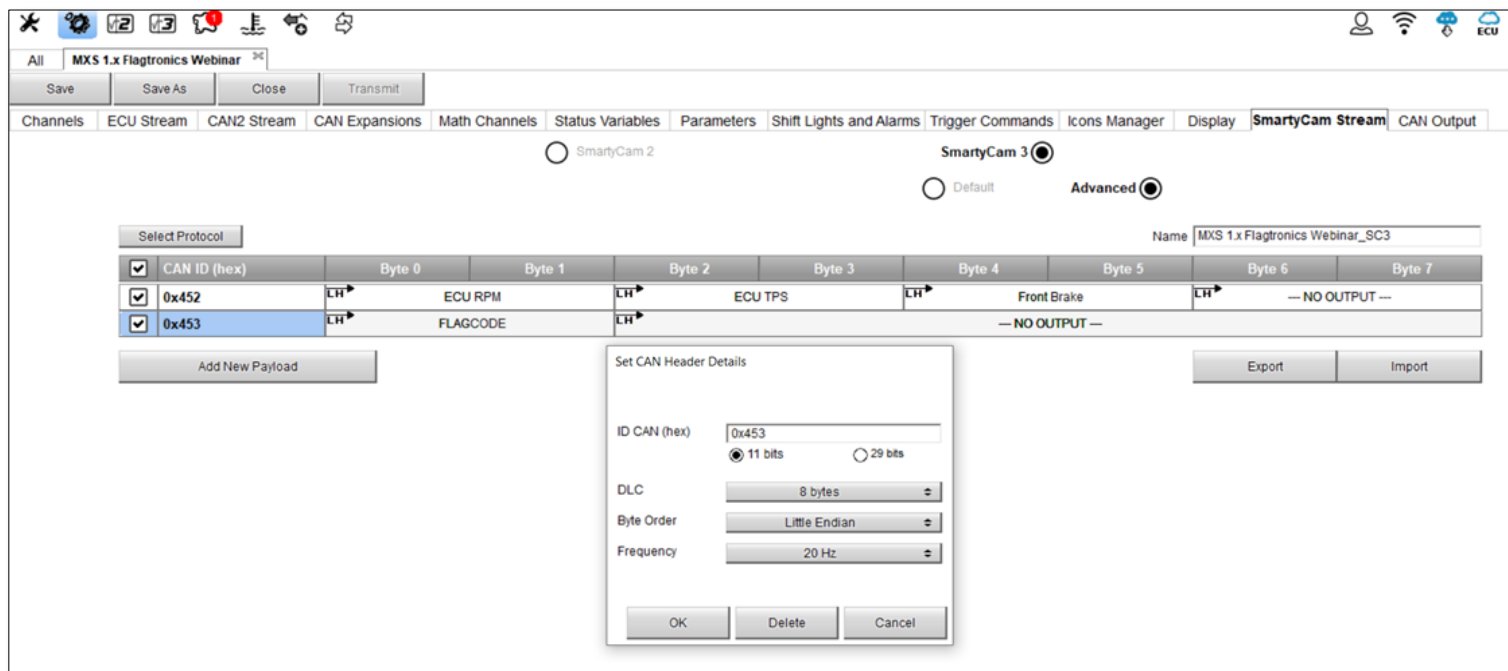


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Race Studio 3 Configuration



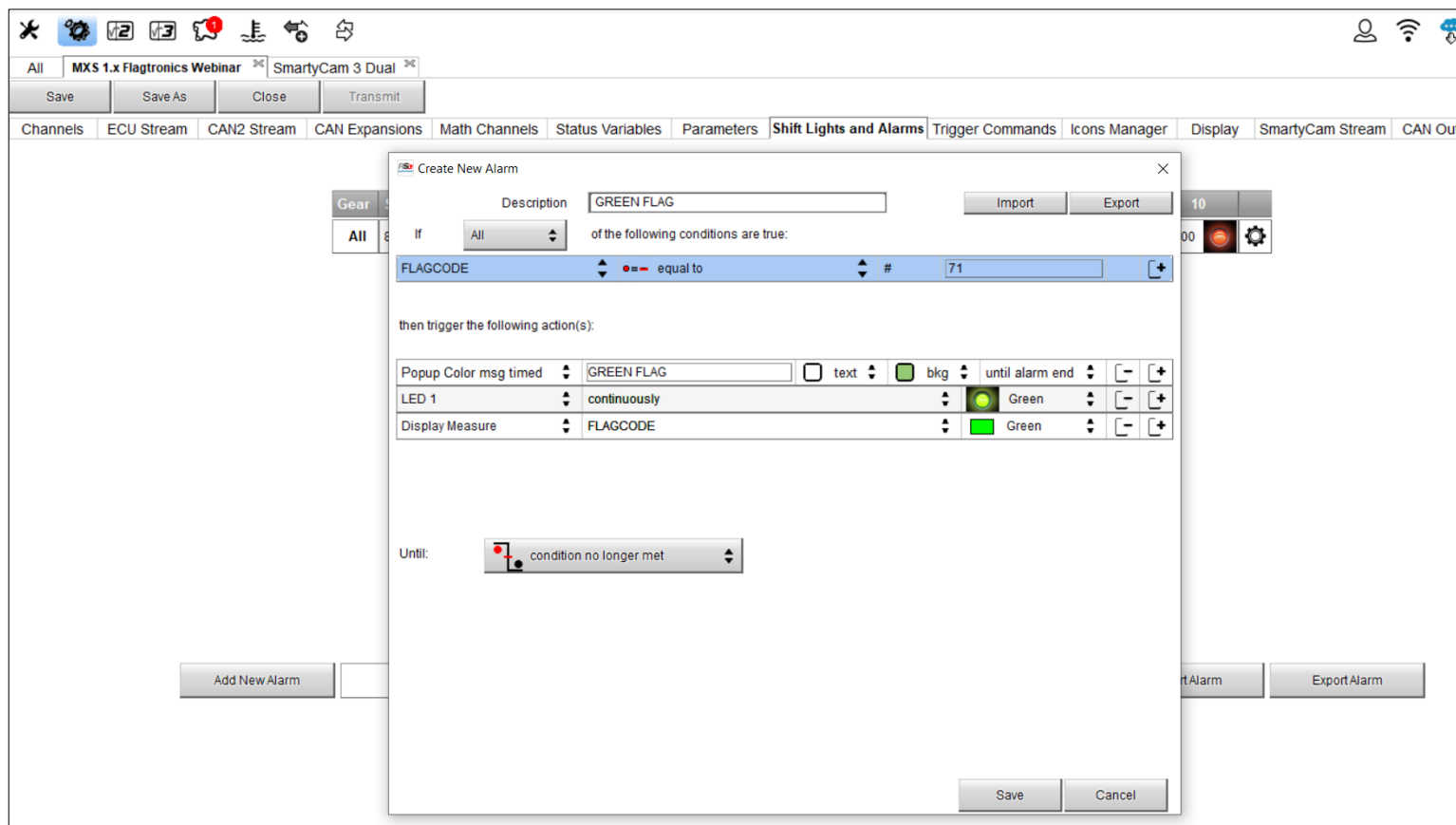
- Once the ECU Stream or CAN2 Stream has been selected, Next we Setup the SmartyCam Output
- In your Devices Configuration, Select “SmartyCam Stream” then ‘Advanced’
- Next is ‘Add New Payload’ and set the CAN ID to 0x453 as Shown Below
- Lastly, Select Bytes 0 and 1 for the FLAGCODE Channel from your ECU Stream or CAN2 Stream, Save and Transmit your Configuration When Finished



Race Studio 3 Configuration

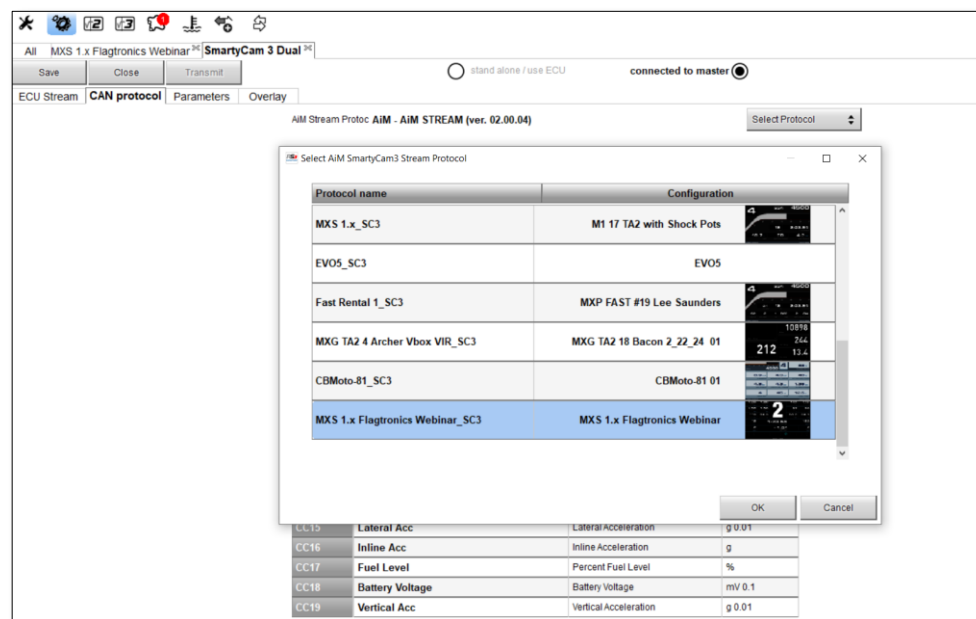


Creating New Alarms with Flag Codes



SmartyCam 3 Connection/Configuration

- With the Flagtronics information now being sent to the AiM Data System, we can send the 'FLAGCODES' over the Advanced SmartyCam Stream to all SmartyCam 3 cameras and have the Flag represented on a Flagcode Overlay
- You will connect the SmartyCam 3's to the CAN Exp input or Data Hub using a 5-pin CAN Patch Cable that's included with every SC3 Camera (Except SC3 Dual)
- In RS3 open your SC3 configuration. You will see the option to select CAN Protocol, then select your saved configuration you just finished



SmartyCam 3 Connection/Configuration

- Next Configure the Cameras Overlays by adding the Flagging System overlay from the 'Extras Tab' of the SmartyCam 3 Configuration
- Make sure the SD card is installed in the Camera, Save and Transmit
- If you have a SC3 Sport, load the file to the SD card and manually update configuration through the SC3 Menu/Settings



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SC3 Connection/Configuration

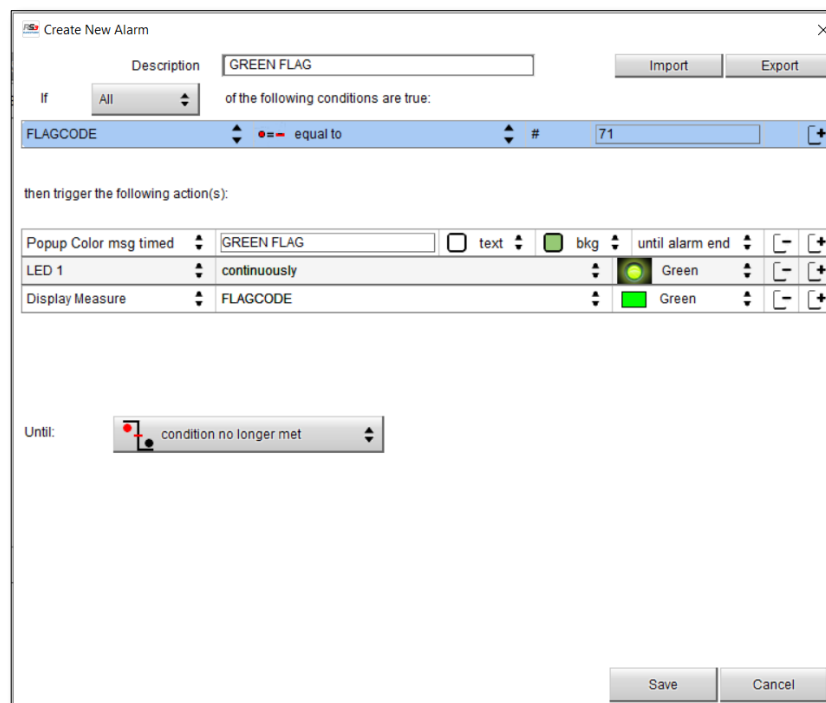
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Setting Up Display Alarms

- To set alarms on your AiM Display based on the Flagtronics Messages, you need to reference the Flagtronics CAN Output states as seen in previous slide and in the Provided Documentation links
- Open the Configuration for your AiM Display in RS3. Go to 'Shift Lights and Alarms'
- Click 'Add New Alarm' and set your alarm (LED, Popup etc..) around the 16 Bit integer the FT-200 available over the CAN Bus
- Ex: If FLAGCODE is equal to 71 then trigger the following actions:
LED 1 continuously
GREEN



Create New Alarm

Description: GREEN FLAG

If: All of the following conditions are true:

FLAGCODE equal to 71

then trigger the following action(s):

Popup Color msg timed	GREEN FLAG	☐ text	☒ bkg	until alarm end
LED 1	continuously		☒ Green	
Display Measure	FLAGCODE		☒ Green	

Until: condition no longer met

Save Cancel

Testing the Connection



- Once your AiM Devices and Flagtronics Systems are configured and physically connected, we can test the connection using the LIVE MEASURES of the connected AiM Device in Race Studio 3
- Go to FLAGCODE in the ECU Stream of LIVE MEASURES and force a value of 71 to the Dash. If you look at your SmartyCam 3 screen or connect and click the 'Live View' of your camera in Connected Devices of RS3, you should see the corresponding Flag on the overlay
- Note: Many times when in the pits, the FT-200 shows the most recent Flagstate sent and we can often just reference this against the Live Measures and SmartyCam to confirm a working connection
- When testing you may want to reference the physical flag colors to the # sent over the CAN Bus. A link of the Output states and correlating flag is provided in the live chat or in the YouTube description box for reference. This will be important when setting alarms

Displayed State List



Precalculated			
8bit	16bit	Hex (16bit)	Displayed State
0	0	00 00	None
66	66	42 00	Blank
67	67	43 00	Purple (Code 35)
68	68	44 00	Black
71	71	47 00	Green
72	72	48 00	Checkered
80	80	50 00	Pit
82	82	52 00	Red
91	91	5B 00	Full Course Yellow
94	94	5E 00	White
255	255	FF 00	Invalid
0	4096	00 10	None
1	4097	01 10	Yellow
2	4098	02 10	Waving Yellow
4	4100	04 10	Debris
5	4101	05 10	Yellow + Debris
6	4102	06 10	Waving Yellow + Debris
8	4104	08 10	White
9	4105	09 10	Yellow + White
10	4106	0A 10	Waving Yellow + White
12	4108	0C 10	Debris + White
13	4109	0D 10	Yellow + Debris + White
14	4110	0E 10	Waving Yellow + Debris + White
16	4112	10 10	Blue
25	4121	19 10	Local Green
26	4122	1A 10	Local Checkered
0	8192	00 20	None
1	8193	01 20	Black
2	8194	02 20	Meatball
3	8195	03 20	Pit
4	8196	04 20	Stalled Car (Automatic Yellow)
75	8267	4B 20	Emergency 10g
76	8268	4C 20	Emergency 25g
77	8269	4D 20	Emergency 50g
78	8270	4E 20	Emergency 75g
79	8271	4F 20	Emergency 100g
0	12288	00 30	None
1	12289	01 30	Low Battery
2	12290	02 30	Bad Power Supply
3	12291	03 30	High Temperature
14	12302	0E 30	Pit - Time Counter
16	12304	10 30	Pit - Exceeding Speed Limit
17	12305	11 30	Code 35 - Normal (35-)
18	12306	12 30	Code 35 - Exceeding Speed Limit (36-39)
19	12307	13 30	Code 35 - Exceeding Speed Limit (40+), automatic p
32	12320	20 30	SIG - No Signal
33	12321	21 30	CMD - No Flag Commanded

- In this Image you can cross reference the 16 Bit message sent to the AiM Device and the corresponding flag color
- Use these codes when testing and setting alarms
- See provided link in the live chat or in the YouTube description box for a download link to this and all documents/files shown in this webinar

LearnFast™ E-Training Videos



Currently **233** Videos and Growing

YouTube www.youtube.com/aimdata

A Conversation with John Doonan
IMSA - President




Host:
Roger Caddell
AIM Sports - National Training Manager

Guest:
John Doonan
IMSA - President

aimsports.com Tuesday February 13th, 2024 LearnFast™

Race Studio 3 User Profiles



Host:
Roger Caddell
AIM Sports - National Training Manager

aimsports.com Tuesday January 30th, 2024 LearnFast™

Webinar Series
Bringing Data Support and Training to You

Data Download Options
In Race Studio 3

March 31st, 2020

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- 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
 - 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

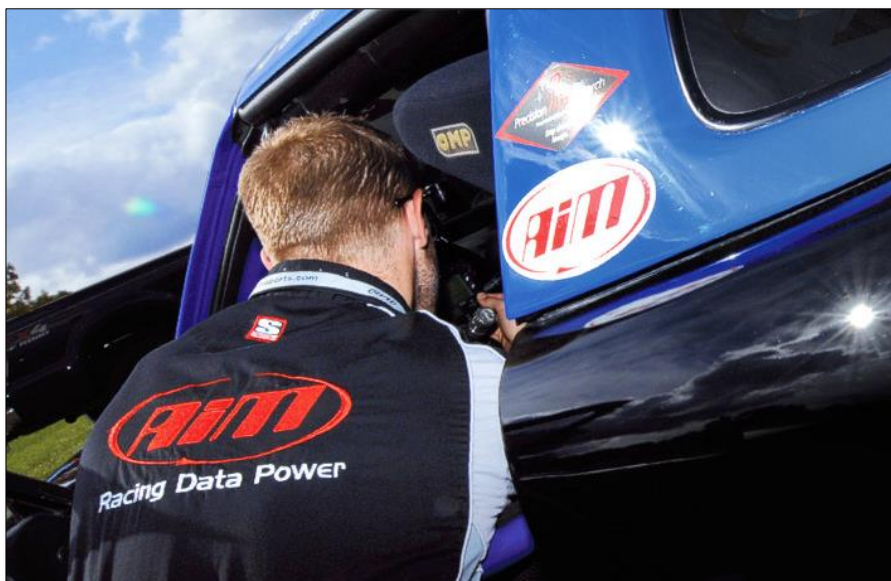
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Customer Support



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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Next AiM Sports Webinar

'This Is A Simulation'

The Power of SIM Racing Data Analysis



Host:

Roger Caddell

AiM Sports - National Training Manager

Co-Host:

Matt Romanowski

TrailBrake.com - Owner

Next Webinar: Tuesday March 12th, 2024 - 6:00pm Pac/9:00pm East



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Next Webinars

The Power of SIM Racing Data Analysis

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Tuesday February 27th, 2024

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We Have Answers!

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