Please Visit our indiegogo campaign at http://www.indiegogo.com/RaceCapture

RACE CAPTURE/PRO

DATA ACQUISITON AND CONTROL

AUTOSPORT LABS

http://www.autosportlabs.com

"I was already on pole, then by half a second and then one second and I just kept going. Suddenly I was nearly two seconds faster than anybody else, including my team mate with the same car." - Ayrton Senna

You didn't spend all that time and money to come in second. You play to win, you always have.

A small change in performance can be the difference between winning and not. This is true for driver or car. If you're a good driver in a good car, it's hard to know exactly what change is needed. Maybe it's tire pressure, a suspension tweak, a different line through corner 5 and 6, who knows? Occasionally you stumble across the solution, but much of the time it goes unnoticed or unresolved. None of this is a mystery to a professional race team. They know exactly what's going on. They've spent the money. *They've got all the data*.

If you had this kind of data, if you knew exactly what was going on, you could make the change, big or small, that makes the difference.

Lucky you! Collecting that data just got a lot more affordable.

Meet Race Capture Pro

Race Capture Pro collects data. Lots of it. It's a powerful, multi-channel data acquisition and control system designed to be installed in your street or race car.

We've packed it with advanced features normally reserved for high end systems.

Race Capture Pro puts at your disposal:

- High Frequency **10Hz GPS** for accurately tracking your position in the world
- Precision 3 Axis **digital accelerometer** to measure G-forces in all directions
- **Yaw Sensor** to measure car rotation and detect oversteer and understeer conditions
- **Sensor Inputs** to measure engine temperature, throttle / brake position, boost pressure, wheel speed, RPM and more
- **Hardware expansion** to add OBD-II and CAN interface upgrades
- All in a **compact, rugged enclosure** you'd be proud to show off.

Software

A data acquisition system like this wouldn't be complete without software. Race Capture Pro includes software which allows you to configure the hardware settings as well as perform analysis on your racing data. Read on for more details!

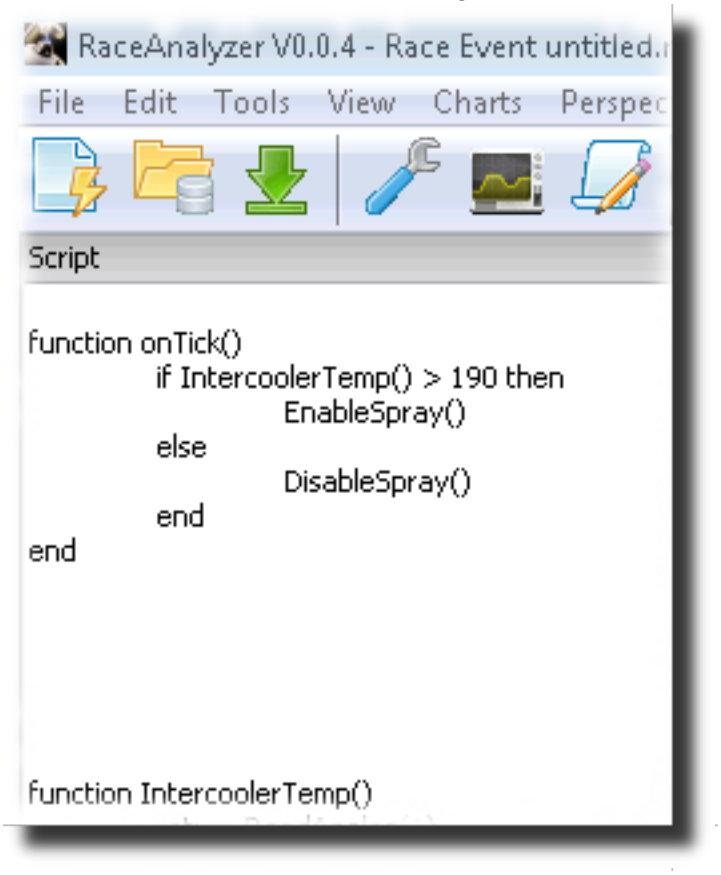
Control your world

Race Capture Pro doesn't only collect data; it can process it in real-time and control devices on your race car.
With Race Capture Pro's control capability you can do things that range from simple to sophisticated. Things such as:

- **Activate a fan** when a temperature threshold is exceeded
- Log data at a **higher resolution** near a certain GPS coordinate, like at that one problematic corner of the track
- **Control an intercooler sprayer** based on temperature and boost level
- **Intercept and re-map** an OEM sensor to override stock engine management behavior
- Experiment with **active aerodynamics** by controlling a wing based on GPS velocity
- Lay down a thick **smoke screen** against your competitors ;)

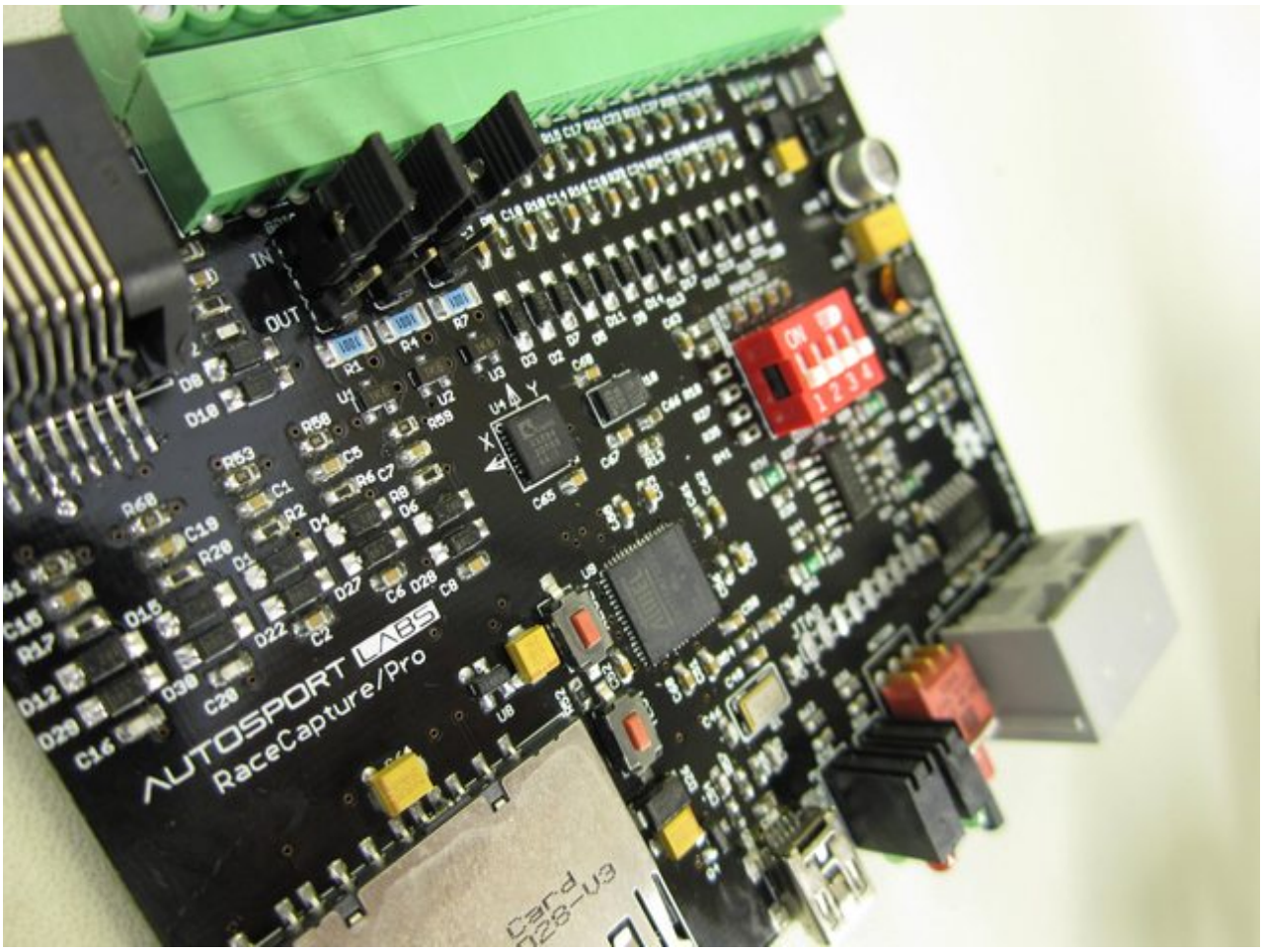
How does this work?

We've embedded a simple yet powerful scripting language right on board called Lua, which lets you easily create commands to read sensors and activate outputs based on logic you define. It's easy, and you don't have to be a firmware developer!
And if you need help getting something to work, our community will get you started with sample scripts, help and reference - sharing at its best.



Open to the Core

Race Capture Pro isn't just a powerful data acquisition and control system; It's an **Open Source Hardware and Software** project. We've opened the design for your inspection, tweaking, and customization. No secret file formats and no expensive, proprietary add-ons. Frankly, we think this is silly and it's time that a project like this exists to serve the enthusiasts first. And we're excited to share it and see where we all can take it together!



Software / Firmware Features

Race Capture Pro includes software that allows to to configure the system and perform analysis on your recorded data: Race Analyzer.
The powerful 32 bit ARM processor combined with the onboard firmware allows Race Capture Pro to record **real-world values in real time -** not just raw values that have to be dechiphered later as found on other, even more expensive systems.

Configuration

GPS

- Configure Latitude, Longitude, Velocity and Time channels. Logging rate of 1, 5 and 10Hz are supported
- Configure start / finish line detection for Lap Count and Lap Time

Accelerometer / Yaw

Measure G forces in 3 axis using one of the most precise digital accelerometers in the industry. A yaw sensor measures car rotation to detect oversteer / understeer conditions.

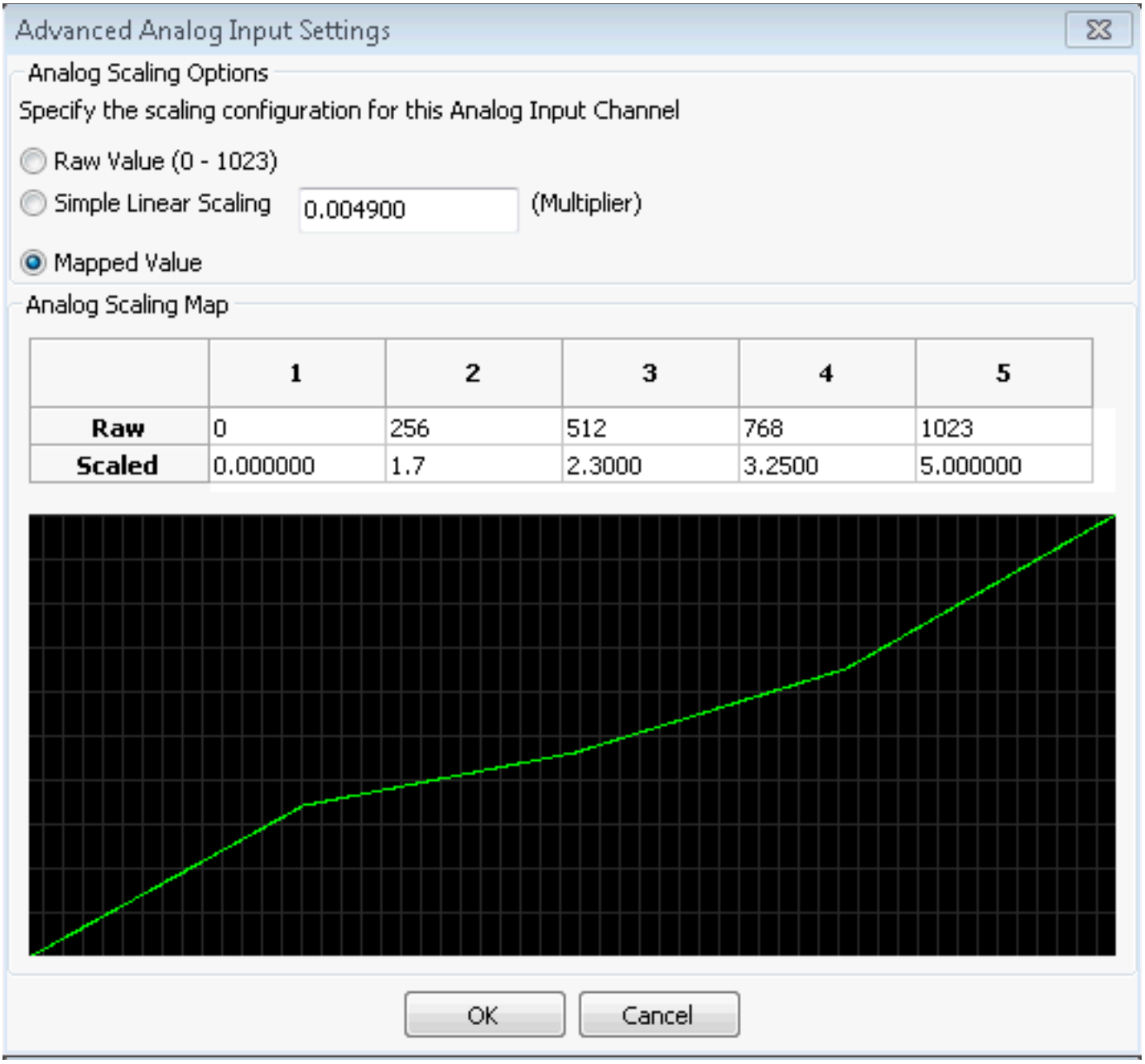
- Configure channel name and logging rate (1, 5, 10, 20, 30, 50, 100Hz)

- Re-map accelerometer channels so the enclosure can be mounted in any orientation

Analog Input Channels (1 - 8)

Measure sensors for engine temperature, air intake temperature, suspension travel, boost pressure, oil pressure, and much more.

- Configure channel name and logging rate (1, 5, 10, 20, 30, 50, 100Hz)
- Map the input to real-world representations of pressure, temperature and so on using these 3 options:
    - Raw Value
    - Linear Scaling (simple)
    - Mapped Value (using a interpolated table)
- Channel 8 is a dedicated channel for measuring battery voltage



Pulse Input channels (1 - 3)
Measure engine RPM, wheel speed, and any other pulse or frequency signal.

- Configure channel name and logging rate (1, 5, 10, 20, 30, 50, 100Hz)
- Configure the channel scaling so real-world values are logged, such as RPM, MPH, frequency, etc.

General Purpose Input / Output Channels
These channels are individually configurable for input or output (jumper configurable).
When configured as output, these can be used for activating accessories, such as video cameras (e.g. GoPro) , warning lights, relays, and more.
When configured as input, these can be used to read a switch, the state of a low speed sensor, and so on.

- Configure channel name and logging rate (1, 5, 10, 20, 30, 50, 100Hz)
- Set for input or output mode in software (also requires jumper setting)

Analog / Pulse output channels
The analog / pulse output channels can be used to provide a variable voltage or pulse for controlling other system or devices. This can be used to control external systems, override ECU settings

Analysis

Race Capture Pro's included analysis software, Race Analyzer, lets you import data from multiple sessions and compare them side by side, using a variety of charts, gauges and visualization tools.
Furthermore, Race Capture Pro records data in a simple comma-separated value (CSV) format, allowing you to load your data into a variety of other tools.

Expandability

Real Time Telemetry

In beta testing now is a dedicated cellular module that allows streaming of race car data right to the internet, allowing monitoring from the pits or anywhere else in the world. With just a pre-paid SIM card, race cars can now have a dedicated connection to the internet! Plans such as T-mobile offer unlimited data at $3 a day - $6 for an entire weekend of racing.
Do you want early access to what high-end race teams use every time? We have a special, limited perk level for adding telemetry capabilities to your Race Capture Pro.

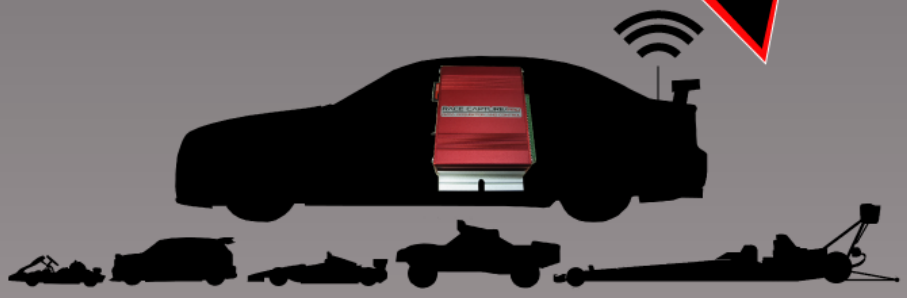
RACE CAPTURE/PRO

DATA ACQUISITION AND CONTROL

REAL TIME TELEMETRY

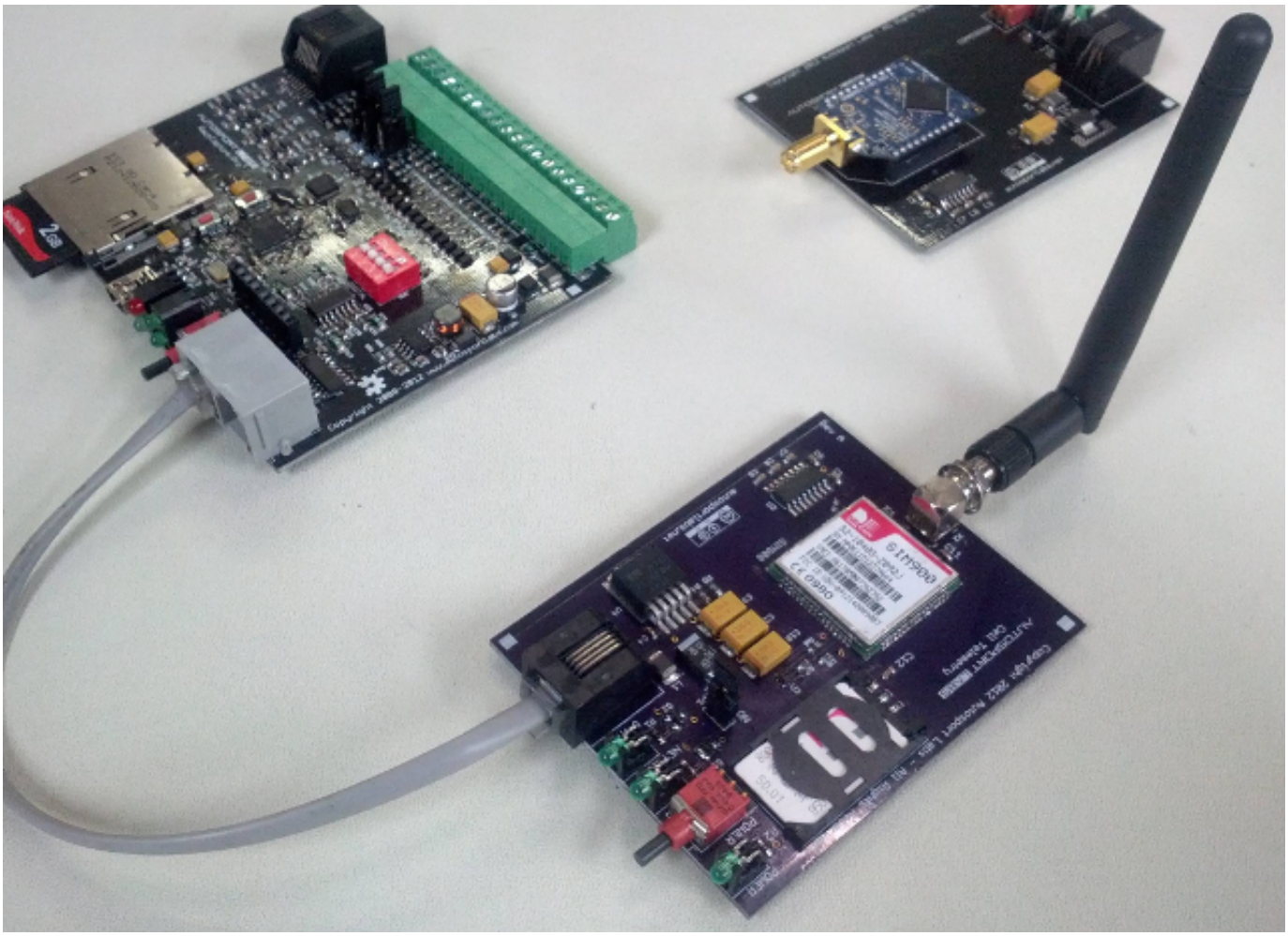
DASH& WEB

CLOUD



AUTOSPORT LABS

TECHNOLOGY FOR RACE AND STREET



Race Capture Pro Technical Specifications

Race Capture Pro offers over 25 input and output channels, enough to handle complex logging and control tasks.

7 dedicated 0-5v analog input channels + Battery Voltage
Measure sensors or process input from other devices.

3 dedicated 0-5v frequency input channels
Measure RPM, wheel speed, or any kind of periodic pulse.

4 configurable 0-5v analog or pulse output (PWM) channels
Control other systems, re-map OEM sensors or even control servo motors

3 configurable digital input or output channels
Receive input from switches or digital signals; or configure as output and use to activate accessories, relays or drive indicator lamps with internal 1A self-protected mosfet drive

3 channel digital accelerometer module plus Z-axis gyro (+/- 2G per axis)

Measure and log 3D G-force in real-time with one of the industry's most accurate accelerometers. Z-axis gyroscope measures yaw/drift in real-time.

High resolution 10Hz GPS module

Plot location, speed and time. Onboard detection of start/finish line for automatic lap count and lap time

Serial expansion port

Provides connectivity expansion for Real Time Telemetry (see funding options), digital dashboard integration or smartphone integration via future bluetooth module.

Digital sensor expansion port

A high speed port provides the ability to add OBD-II, CAN bus expansion, more analog or digital channels, integrate specialty sensor hardware such as thermocouple amplifiers, and so on

Logging

SD memory card slot for data acquisition. Store up to 32GB of logging data. Logging rates up to **100Hz** are supported.

CPU

48Mhz 32 bit ARM processor. Enough juice to perform high resolution logging and running complex, user-defined actions

Input/Output Protection

45v protection on all input pins
Analog outputs protected by auto-resettable fuses
Digital outputs are rated at 1A with self-protected mosfets
Over-current protection on 5V reference
2A internal switching power supply

Mechanical

Compact, rugged design
Unit measures approximately 4 x 3 inches (100 x 82 mm)
Easy to use screw terminal block for wiring
On-board 'action' switch to start/stop logging (or other use)
On-board Status LEDs

Production Plan

Better Faster Stronger

Since 2008 Autosport Labs's misson has been to develop affordable, open technologies for race and street applications, starting with the popular Megajolt crank fired ignition system.
The Megajolt was designed to solve an individual problem and then grew into a global business. We went from ecking out a small space in our garage to expanding to commercial space, where our manufacturing equipment resides side by side with our test benches: race cars in various states of build. As with Megajolt, we are our own first customer, and we're just as proud of the community of customer users supporting and sharing with each other as we are of the products that got us here.

We come to you, Indigogo community, to help us get Race Capture Pro into as many hands (cars) as possible as fast as possible, to create the rich and robust user community to share data, collaborate on command scripts, cheer over victories. This is the real value of Race Capture Pro, and crowd-funding seemed to us the best way to launch an open source project, to hit the track at full speed.

About the Autosport Labs Team

Founded by Brent Picasso and Kelley Picasso in 2008, Autosport Labs is passionate about developing open source technology for motorsport and street applications. We started off small, providing kits for the early version of the Megajolt Ignition controller, and developed our knowledge of what it takes to design and deliver across the entire product lifecycle.
Along the way we developed the expertise and capacity to do assembly of our own electronics. This gives us a tremendous advantage in both agility and removing variables in the process of delivering finished items. In our Lynnwood, WA facility we have a full range of electronic assembly equipment including a solder stencil printer, robotic pick and place machine, and reflow and through hole solder machines.
We run our technology by campaigning our own race car in the demanding and fun 24 Hours of Lemons endurance racing series.

We are all Race Car Drivers

Meet the team
Brent Picasso

Founder, CEO, Race car driver, Chief Mouth Frother and Engineer - responsible for hardware, software, firmware designs

---

Kelley Picasso

Founder, COO, Race car driver, Chief Ass Kicker - responsible for ideation, production expert, business management

---

Scott Miller

Race car driver, Heroic race car fabricator, production assembly, ideation

---

Fred Schechter

Race car driver, industrial designer secret weapon, product design, social media, marketing, testing, ideation

---

Brian Lalor

Race car driver, software and firmware engineering, hardware design, fabrication. Releaser of magic smoke. Dammit, am I bleeding again?!