



Performance Automotive Electronics Master Catalog

- | | |
|---------------------------------|-----------------------------------|
| ENGINE MANAGEMENT | ON-VEHICLE DYNAMOMETERS |
| WIDEBAND CONTROL SYSTEMS | WATER / METHANOL INJECTION |
| IGNITION SYSTEMS | PERFORMANCE GAUGES |
| FUEL SYSTEMS | DATA LOGGERS |

2012 / 2013

ABOUT AEM:

Engineered to Outperform—by Racers for Racers

We are dedicated to the design and engineering of premium performance electronics for racers. We live Motorsports and our involvement in both professional and amateur racing—on four wheels or two; in the dirt, sand, salt, snow, water or track—is what inspires us to create our products. We strive to deliver the best racing electronics solutions at the best price.

But what does that really mean? It means that we race (or help someone who does) in our off time. We buy and install parts just like you, and we don't like to compromise. So, if we identify a unique product idea that delivers a real solution or figure out a way to make something work better for less money, we make it. We are inspired by helping race teams go faster, set records and win championships because that is what drives us both professionally and personally. WE GET IT—from your point of view.

Constant Innovation:

When racers and enthusiasts buy AEM performance parts, they are getting the finest engineering, highest quality and best value our industry has to offer. Look no further than our products for proof. Years ago, we wanted to make stand alone engine management available to the masses by developing a Programmable Engine Management System (EMS) that plugs into a factory wiring harness. We did, and our Series 1 and 2 Plug & Play EMS systems are on thousands of racecars. But if you aren't improving, you aren't winning, which is why we are proud to introduce our Infinity programmable engine management system. It's a quantum leap over our existing technology, and almost any engine control technology you can find anywhere. Its only tuning limitation is—truly—your imagination.

Our Wideband UEGO Controller was the first product to incorporate a gauge interface with a wideband air/fuel controller. We've upped the ante again by introducing a Wideband Failsafe Device—a combined Wideband controller unit and boost gauge that proactively monitors AFR and Boost to save your engine should your AFR stray outside of a selected range.



In 2007, we introduced our Water/Methanol Injection System and have refined the components to deliver what we feel is the most reliable system on the market. But failures happen, and since we could not find a Failsafe device that truly protected an engine, we designed one. Our Water/



Methanol Failsafe device monitors the entire injection curve to trigger an alarm event under any condition, allowing you to use your water/methanol system with complete peace of mind.

And there's more! From our new AQ1 Data Logger, to our Dyno-Shaft on-car dyno system to our High Output Coils that deliver CDI spark energy and inductive coil-like duration, we design, engineer and source parts that work better, offer more features and ultimately help you win.

Vetted by the Media

Top magazines and websites constantly put our products to the test. We put these articles and article links on our website so you can see for yourself. What you will find is that time and again, the results of these independent reviews prove our products are engineered to outperform the competition. It's our mission, and also why you find our products under the hood of top race teams in all forms of Motorsports.

Our Vision

We want to be the top competitor in performance electronics, and we plan to do it through constant product innovation, the highest level of product integrity, being a price/value leader and most importantly, by putting our customers first. If you ever want to tell us how we are doing, give us a call. We will listen. Your faith in our products and critical feedback will ensure we achieve our Vision.



NEW PRODUCTS

Infinity-10 Programmable Engine Management System.
The Future Has Arrived.

Wideband Failsafe Device.
Monitors AFR and makes adjustments if it runs lean.

Dyno Shaft.
An on-vehicle dynamometer system.

AQ-1 OBDII Data Logger.
Reads and stores data from OBDII port and ancillary sensors.

High Output Ignition Coils.
CDI-level spark energy without a CDI.

Water/Methanol Failsafe Device.
Monitors entire WM injection curve to prevent engine catastrophe.



TABLE OF CONTENTS

Standalone Engine Management Systems

| | |
|--|---|
| Infinity Engine Management Systems | 2 |
| AEMdata Data Analysis Software | 4 |
| Series 2 Plug & Play Programmable EMS | 5 |
| AEMtuner Software & AEMnet Communications | 6 |
| Serial Datastream Gauge for Series 1 & 2 EMS Systems | 7 |
| EMS-4 Universal Standalone Programmable EMS | 7 |
| EMS Harnesses/Accessories | 8 |

Piggyback Fuel/Ignition Controllers for Forced Induction

| | |
|---|---|
| F/IC 6-Cylinder | 9 |
| F/IC 8-Cylinder | 9 |
| F/IC Plug & Play for Powersports Applications | 9 |

Data Loggers

| | |
|-----------------------|----|
| AQ1 Data Logger | 10 |
| AQ1 OBDII Data Logger | 11 |

Boost Control

| | |
|---------------------------------|----|
| Tru-Boost Gauge-Type Controller | 12 |
|---------------------------------|----|

Wideband UEGO Air/Fuel Systems

| | |
|---------------------------------------|----|
| Wideband FAILSAFE Device | 13 |
| 4-Channel Wideband UEGO Controller | 14 |
| Digital & Analog Wideband UEGO Gauges | 14 |
| Inline Wideband UEGO Controller | 15 |
| X-WiFi Wideband/EGT Sensor Controller | 15 |

Ignition Components

| | |
|--|----|
| High-Output "Smart" & "Dumb" Inductive Coils | 16 |
| 4-Channel Ignition Coil Driver | 16 |
| Twin-Fire Capacitive Ignition Discharge Module | 17 |
| Engine Position Module | 18 |
| CDI Pencil Coils | 18 |
| B-Series Coil-on-Plug Conversion | 19 |

Sensors, Amplifiers, Drivers & Accessories

| | |
|---|----|
| Peak & Hold Injector Driver | 20 |
| 4-Channel K-Type Thermocouple Amplifier | 20 |
| Sensors & Component Accessories | 20 |

Performance Gauges

| | |
|----------------------------|----|
| Digital Performance Gauges | 22 |
| Analog Performance Gauges | 23 |

Water/Methanol Injection Systems

| | |
|----------------------------------|----|
| Water/Methanol Injection Systems | 24 |
| Water/Methanol FAILSAFE Device | 26 |

Billet Fuel Delivery/Cam Gears

| | |
|-------------------------------------|----|
| Adjustable Fuel Pressure Regulators | 27 |
| High Volume Fuel Rails | 27 |
| High Flow Fuel Filters | 27 |
| Tru-Time Adjustable Cam Gears | 27 |

On-Vehicle Dynamometer System

| | |
|------------|----|
| Dyno-Shaft | 28 |
|------------|----|



Infinity-10 EMS System

AEM's new Infinity Programmable Engine Management System represents a quantum leap in technological capability over virtually all existing engine management controllers available today and eases the tuning process for even the most sophisticated engine combinations. It is quite possibly the most advanced programmable engine controller available. Here's why:

Unmatched Processing Power for Engine Controllers:

At the heart of the Infinity-10 EMS, there are 2 powerful processors. The primary automotive MCU is a 200 MHz, 32 bit processor running a programmable-state machine on a real-time operating system. It features a full 32-bit floating point unit with a math co-processor, and if we translate this into Millions of Instructions (or 'thoughts') Per Second (MIPS), it is able to process 400 MIPS (400,000,000 'thoughts' per second). By comparison, one of the fastest OEM ECUs available is reportedly capable of only 125 MIPS. The average aftermarket EMS has less than 50 MIPS processing power. A secondary 16 bit 20 MHz automotive MCU is also included for intelligent on-board power management and future peripheral I/O growth.

Manufacturing Technology

Infinity is manufactured using the latest printed circuit board (PCB) manufacturing processes for Ball Grid Array (BGA) and Quad Flat No-Lead (QFN) components. Its PCB size is roughly 5.5" x 5.5" and includes 12 peak and hold injector drivers, 10 ignition outputs and a host of other Inputs/Outputs (I/O). See the complete specifications sheet on www.aemelectronics.com, and the features box (next page) for more detail.

Reliability

The Infinity EMS is constructed using automotive-rated components designed to withstand the harshest racing environments, and it features an advanced wear-leveling strategy for flash memory to ensure a lifetime of reliable performance. The enclosure and connectors are sealed and suitable for engine bay mounting.

User Interface

The Infinity-10's user interface is custom and was designed from the ground up. It is optimized for speed and performance with super high-resolution 3D graphics, and features user-selectable control types for custom layouts. An ECU Setup Wizard takes complex calibration setup work and simplifies it through a smart interface. The Infinity-10's data logging playback mode allows for calibration editing and all controls are synced to the logged data. This allows you to edit calibration data exactly where you need to and minimize your tuning time. A new, advanced data logging analysis package also included.

Model & Airflow Based Calculations

Infinity systems are model based and calculate an engine's requirements in real time based on an advanced engine model. The development environment used to generate the files in the Infinity-10 EMS does not require the developer to write code.

Infinity system models are purely airflow based and feature various modes for calculating flow. This eliminates the need to reference lookup tables for injector pulsewidth.

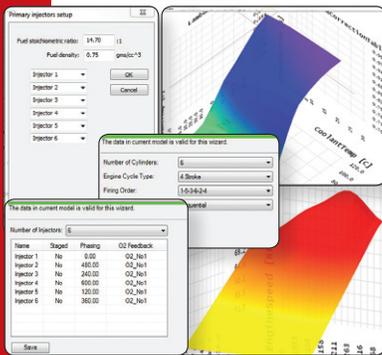
Fuel Control—the Highest Resolution Available

The Infinity EMS calculates injector pulsewidth in units of 1/10th of a microsecond. There are 1,000 microseconds in one millisecond. A millisecond is a lifetime to the hardware on this unit. This is fuel control resolution to 0.0000001 seconds.

Accurate Ignition Timing Under Any Condition

The Infinity-10 EMS has NO practical crank tooth resolution limit. Infinity's software continuously calculates engine acceleration in between the teeth edges to predict accurate firing locations even under the most adverse conditions like high compression cranking and high engine acceleration rates. The Infinity EMS's back-end timing code is tested to 100,000 RPM. You read that right.

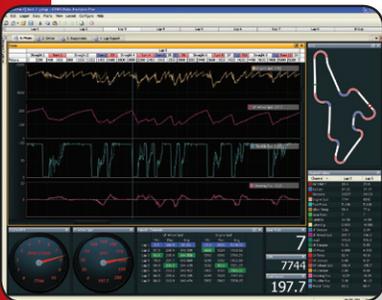
This level of accuracy eliminates 'dancing' timing at start up and misfires from incorrectly interpreted timing patterns because timing patterns are defined as a unique situation. It's like looking at your ignition map with a microscope instead of a magnifying glass.



Infinity Tuner set up Wizard simplifies the calibration process.



Infinity system models are purely airflow based, eliminating the need to reference lookup tables for injector pulsewidth.



AEMdata data analysis software provides an advanced interface for viewing log files.

AEMdata Data Analysis Software

AEMdata provides an advanced interface for viewing the log files generated by the Infinity-10 EMS. It features superior graphics with a custom data analysis package that lets you review and playback logged data and overlay it using charts, dash displays, gauges or custom display configurations. It will also track map and allow you to overlay logged data onto the track if you have installed a vehicle speed sensor (VSS) and accelerometer.

All logged channels are listed as individual channels in the software to ease set up. Users simply drag a channel log to a window to start logging. If your logging interface has an oil pressure gauge and you want to change it to log fuel pressure, drag the fuel pressure channel into the oil pressure gauge in your log interface and the software makes the change.



Lightning-Fast Data Logging

The Infinity-10 includes 2GB of logging memory standard, and its internal logging feature supports both FAT and non-FAT USB storage. FAT file system support will allow 10 channels at up to 1KHz, 20 channels at up to 500Hz and 100 channels at up to 200Hz. Non-FAT file systems will support 100 channels at up to 1KHz. Additionally, the user can log directly to the PC when connected at up to 500Hz.

Dual Internal Lambda Interface

A 2-channel Bosch wideband controller is built into the Infinity-10 EMS. Closed-loop heater control is automatic and designed to optimize sensor performance and reliability. Full diagnostics software is included to ensure reliable operation.



Infinity is capable of making automatic adjustments for multiple fuel types.

Multi-fuel Capable

The Infinity-10 EMS's core control model is designed for flex fuel compatibility. It makes automatic adjustments for ethanol content and applies them to fuel flow, ignition timing and boost target (sensor is not included).

Knock Sensing

Dual proprietary knock signal conditioning circuits reside within the Infinity-10 EMS and allow for precise measurements of knock levels.

Adaptive Intelligence

Infinity-10 has auto learning modes available for airflow, idle and boost control.

| | |
|------------------|---|
| ErrorAirTemp | 0 |
| ErrorCoolantTemp | 0 |
| ErrorThrottle | 0 |
| ErrorMAP | 0 |
| ErrorLambda1 | 0 |
| ErrorLambda2 | 0 |
| ErrorBaro | 1 |
| ErrorMAFAnalog | 0 |
| ErrorMAFDigital | 0 |
| ErrorEBP | 1 |

Advanced, real-time diagnostics constantly monitor current and signal quality.

Real-time Advanced Diagnostics

The Infinity-10 EMS includes advanced sensor and I/O diagnostics, including current monitoring and feedback. The Infinity-10's diagnostics software constantly monitors signal and current quality to alert the user of a potential issue before it creates the potential for engine damage.

Integrated Engine Protection Strategies

Engine protection strategies are incorporated into the Infinity-10 EMS. Available strategies are based on airflow, fuel pressure, oil pressure, engine temperatures, RPM and knock.

Communications

Infinity uses the latest in high speed USB technology (up to 480 Mb/second). It features a fully-sealed IP67 connection system (Ingress Protection rating for total dust protection and submersion between 15cm and 1m) for PC communication and logging to a USB storage device.

Security

The Infinity-10 EMS has advanced cryptographic technology that allows each ECU's programming to be completely unique and secure.



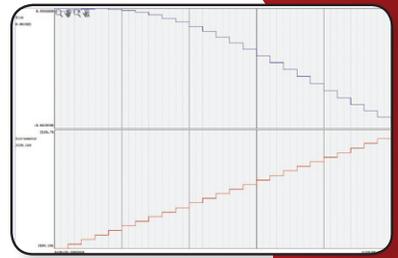
A powerful input simulator allows you to see whether your tune will work before running the engine.

Simulator

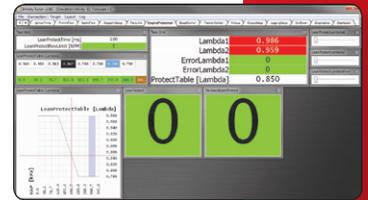
A powerful input simulator feature is included that allows the user to simulate input channels to the Infinity EMS. This allows you to make tuning changes and test the results by modifying input channels. It allows you to see whether or how well your tune will work before ever running the engine.

Network Interfaces

Infinity-10 is AEMnet enabled and will communicate with all other AEMnet-equipped devices. A 2-Channel CAN is included for custom vehicle network communications in plug and play applications or for output to 3rd party dash/logger devices. Visit www.aemelectronics.com for a list of compatible devices.



Infinity's data logging supports 20 channels at up to 500Hz (100 channels at up to 200Hz) with an external FAT-formatted storage device.



Infinity includes engine protection strategies based on airflow, fuel pressure, oil pressure, engine temps, RPM and knock.

Room to Grow

Infinity's advanced model-based code generation allows AEM the freedom to design engine control for virtually any system imaginable. There are essentially zero limitations to future system growth. Plug & Play applications will be available.

| | | |
|--|---|--|
| <p>Infinity-10 Features:</p> <ul style="list-style-type: none"> > 6" L x 6" W x 2" H (1.125" H w/o connectors) 24 Ounces/680.4 Grams > Cast, sealed aluminum enclosure > 126 pin Motorsports-quality harness with fully-sealed automotive connectors > Compatible with all factory and performance aftermarket sensors > Includes start up configurations > Runs on Windows-compatible software > Tune using weatherproof USB communication port > Encrypted maps prevent unauthorized usage or sharing > 12 peak and hold injector drivers | <ul style="list-style-type: none"> > 10 (0-5V) ignition outputs > 23 analog inputs > 14 general-purpose outputs > 8 digital inputs > 6 VR differential pairs > 4 Cam Controls > *2GB of internal data logging standard, 32GB max > Electronic boost control > Flex fuel compensated – Fuel, Ignition and Boost > Full idle control > 2 channel H-Bridge for drive by wire or other DC motor control | <ul style="list-style-type: none"> > Programmable traction control based on wheel speed or engine acceleration > 2-channel adaptive knock control > Programmable launch control > User configurable soft-cut rev limiters, two-step rev limiters and anti-lag > Wet or dry nitrous control (up to 4 stages) > Works with all AEMnet-equipped devices > 2-Channel CAN included > Internal Engine Simulator <p><i>*Ultimately dependent on flash drive size.</i></p> |
|--|---|--|

AEM's Infinity-10 Programmable Engine Management System is legal in California only for racing vehicles which may never be used upon a highway.

WARNING: This installation is not for the tuning novice! Use this system with EXTREME caution! The AEM EMS System allows for total flexibility in engine tuning. Misuse or improper tuning of this product can destroy your engine! If you are not well versed in engine dynamics and the tuning of engine management systems DO NOT attempt the installation. Refer the installation to a AEM-trained tuning shop or call 800-423-0046 for technical assistance. You must also visit the AEM Tech Forum at <http://forum.aempower.com/forum> to ensure that you are using the most current information and software.



NOTE: All supplied AEM calibrations, Wizards and other tuning information are offered as potential starting points only. IT IS THE RESPONSIBILITY OF THE ENGINE TUNER TO ULTIMATELY CONFIRM THE CALIBRATION IS SAFE FOR ITS INTENDED USE. AEM holds no responsibility for any engine damage that results from the misuse or mistuning of this product!



AEMDATA DATA ANALYSIS SOFTWARE

AEMdata is a custom data analysis package with advanced 3D graphics and a user-friendly interface. It allows the user to review data, playback data and overlay data using charts, dash displays, gauges, or custom displays that you create. High-speed logging is saved to a file internally or via PC connection.

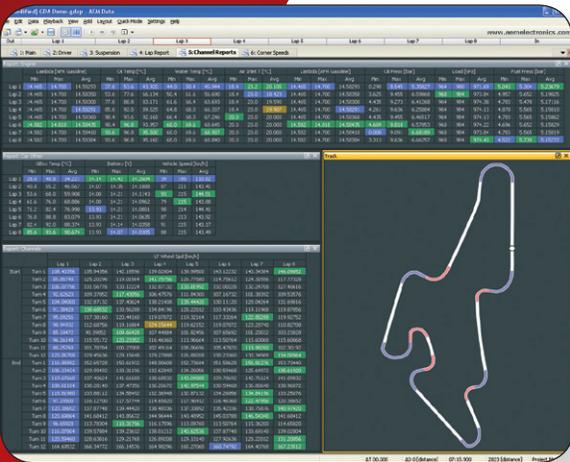
Easy to Set Up and Custom Displays

All Channels are listed in the Set Up menu. Simply drag and drop the channel that you want to log into the window and it will start logging.

Changing your display couldn't be easier. For instance, users with a gauge set up on their display interface who want to change the gauge from oil pressure to fuel pressure just grab the fuel pressure channel from the menu and drag it to the gauge display. The program then changes the gauge from oil to fuel pressure.

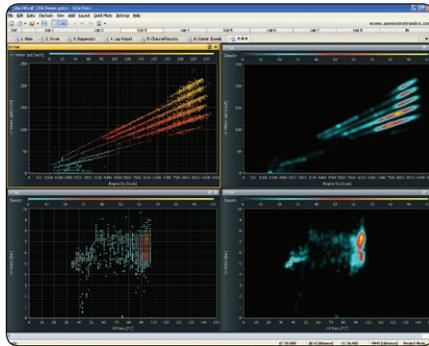
Customizable Interface

AEMdata features a functional workspace that allows information to quickly be accessed. It is designed to be customizable by the user. From the layout interface to the gauge styles, it's your call.



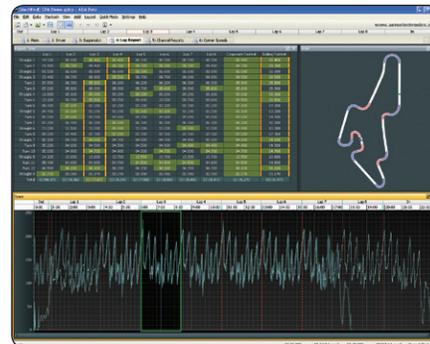
Channel Reporting

AEMdata logs each channel and allows you to overlay the data on a track map to know exactly what your car was doing.



Powerful

AEMdata has powerful features including custom maths channels, x/y plots and histograms, stage or circuit modes and more, all aimed at making sure you get the most out of your data.



Track Mapping

Vehicles equipped with a Vehicle Speed Sensor (VSS) and accelerometer can log this data to create track maps and overlay their logged channels data on track.

AEMdata Key Features:

- > Multi-tabbed, customizable workspace
- > Log playback
- > Circuit or stage modes
- > Multi-lane log trace
- > Multiple channels per lane
- > Track maps
- > Unlimited lap overlays
- > Analog-style and bar gauges
- > X/Y Plots
- > Histograms
- > Lap/sector analysis
- > Channel statistics
- > User defined maths channels
- > Alarm Reports
- > User Defined Reports
- > FFT
- > 3D scatter plot
- > Smart Data Organization
- > Data Export (CSV/Matlab etc.)
- > Time/Distance plots

AEM Programmable Engine Management Systems are legal in California only for racing vehicles which may never be used upon a highway.



SERIES 2 PLUG & PLAY PROGRAMMABLE ENGINE MANAGEMENT SYSTEMS

POWERFUL STAND-ALONE ENGINE CONTROL FOR THE RACING MASSES!

AEM was the first company to offer complete engine control using a vehicle's factory wiring harness and sensors. Our Series 2 Plug & Play EMS is a culmination of this original program. It combines robust construction with our proven AEMtuner Software to deliver total engine control for the racing masses.

AEM's Series 2 Plug & Play EMS plugs directly into a vehicle's factory ECU harness and requires no additional wiring or hardware. Windows™ compatible software (XP, Vista, 7) simplifies copying, viewing and data manipulation.

Series 2 Plug & Play EMS Key Features:

- > Delivers complete control of your racecar's engine and driveline
- > Plugs into your racecar's factory wiring harness and uses existing sensors
- > Systems are unlocked and fully enabled—never pay for upgrades!
- > Works with all AEM gauges and communicates with AEMnet enabled electronics (see AEMnet, next page)

Series 2 Plug & Play EMS User Features:

- > Start-up calibrations included
- > AEMtuner software simplifies tuning process
- > Runs on Windows-compatible software
- > Internal Data Logger with 2MB memory
- > Logging Software for data analysis
- > Sequential fuel injection
- > Electronic boost control
- > Full idle control
- > Programmable traction control
- > Software-definable knock control
- > Two-step launch control
- > Configurable soft-cut rev limiters
- > Wet or dry nitrous control
- > Laptop tunable via USB or Serial connection



Plugs directly into the factory wiring harness



USB and Serial connectivity

SERIES 2 TECHNICAL SPECIFICATIONS

| OUTPUTS | | INPUTS | |
|---|----------|---|----------|
| Injector outputs | Up to 12 | Trigger inputs (Ref/Sync) | 3 |
| Ignition outputs | Up to 8 | Analog voltage inputs | Up to 12 |
| General purpose Low Side outputs | Up to 12 | Analog temperature inputs | Up to 6 |
| General purpose High Side outputs | Up to 4 | Switch inputs | Up to 8 |
| Individual cylinder ignition trims | Yes | Lambda inputs | 2 x |
| Individual cylinder fuel trims | Yes | Internal barometric pressure sensor | Yes |
| | | Knock sensors | 2 |
| | | User adjustable knock sensor center frequency | Yes |
| COMMUNICATION | | DATA ACQUISITION | |
| USB | Yes | Internal data logging | 2 MB |
| CAN | 2 Ch | Maximum internal logging rate (per channel) | 250 Hz |
| RS232 | Yes | PC logging | Yes |
| AEMnet | Yes | Data analysis using AEMLog | Yes |
| FUNCTIONS AND FEATURES | | | |
| Groundspeed based boost target | Yes | Drive by wire throttle control | P&P Only |
| Staged nitrous injection | Yes | Main Relay control | Yes |
| Ground speed limiting | Yes | VTEC Control | Yes |
| Overrun boost enhancement (anti-lag) | Yes | Fuel & Ignition rev limiters | Yes |
| Gear change ignition cut (shift-without-lift) | Yes | "In-cockpit" global fuel trim capability | Yes |
| Stepper motor idle control | Yes | Gear dependent shift light | Yes |
| Continuously variable cam control | 4 cams | Password Protected Maps | Yes |



AEM's Series 2 Programmable Engine Management System is legal in California only for racing vehicles which may never be used upon a highway.

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Extruded aluminum enclosure



Conrad Grunewald
Drift/Time Attack Camaro

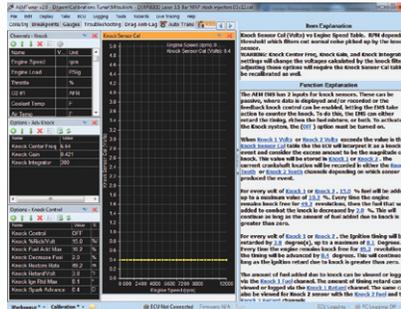
STANDALONE ENGINE MANAGEMENT SYSTEMS

AEMTUNER SOFTWARE & AEMNET

AEMTuner Software—Comprehensive, Easy To Use

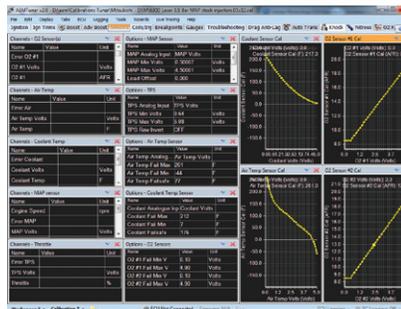
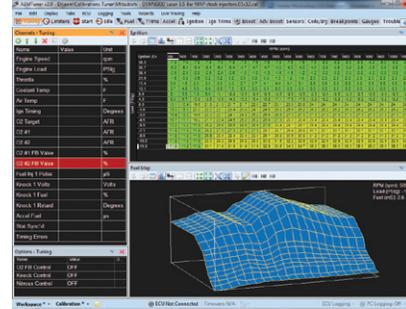
AEMTuner software is infinitely adjustable. It allows tuners to program virtually any combination of engine control, power adders and auxiliary devices, and accurately delivers proper amounts of fuel and correct ignition timing for any boost level or operating condition.

AEMTuner Features:



Support Pane Delivers Live, Context Sensitive Help

- > Want to know what "KNK% Rich/V" means? Mouse over it and the Support Pane window will display an explanation of each item
- > Not sure how to set up your nitrous system? The Support Pane has function explanations for everything, with a live link to the function's worksheet so you can make adjustments as you familiarize yourself with the Series 2 EMS's functions

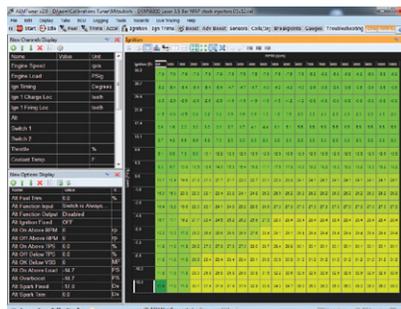


View All Outputs In One Window

- > Easily make changes and eliminate the possibility of assigning multiple items to the same output

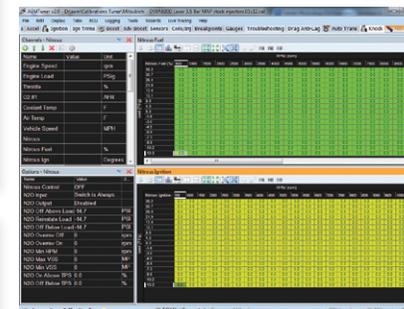
A Usable Workspace—Not a Bunch of Templates

- > Puts your tuning world in one space!
- > Display Explorer allows you to fully customize workspace, add what you need and hide what you don't
- > Save workspace packages for specific apps and password protect them



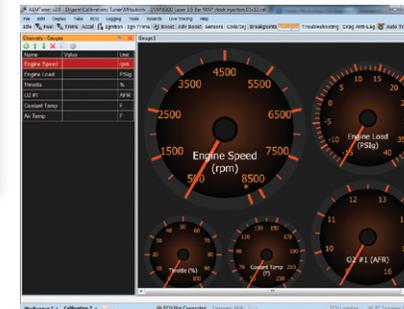
Compare Calibrations Feature

- > Graphically compare tables and maps for easy analysis



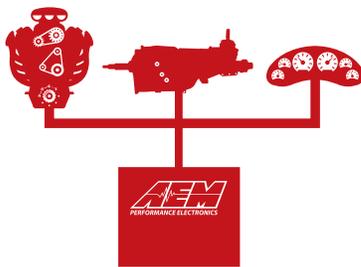
Internal Conflict Detection

- > Errors happen. This feature will detect obvious errors in the assignment of inputs/outputs and alert you



Colored Tables and Maps

- > Fully customizable 2D and 3D Maps and graphs, including color spectrum, fonts, etc.



Current AEMnet Equipped Devices

- > Infinity Programmable EMS
- > Series 2 Plug & Play Programmable EMS
- > EMS-4 Universal Programmable EMS
- > 4-Channel Wideband UEGO Controller
- > Wideband FAILSAFE Device
- > AQ-1 Data Logger/AQ-1 OBDII Data Logger
- > Dyno-Shaft On-Vehicle Dynamometer

AEMNET—DAISY CHAIN CAPABILITY FOR EQUIPPED AEM DEVICES

CAN 2.0-Spec Architecture Allows AEMnet-equipped Devices to Communicate Through a Single Cable

AEMnet is an open architecture software and hardware interface based on the CAN 2.0 specification, which provides the ability for multiple enabled devices to easily communicate with each other through a single cable.

AEMnet data is published data (open data) and is included in each instruction manual for AEMnet-equipped products. We do this so that any programmable EMS systems, dashes, loggers, etc., that can read the CAN 2.0 protocol have the ability to read AEMnet data.

The hardware connection is made through a Deutsch 4P DTM connector and contains 12 volt switched power and ground (2A max) as well as the CAN data lines. Devices connected to the AEMnet transmit data through this one connection, and most of these devices will receive power from this same connection.

AEM Programmable Engine Management Systems are legal in California only for racing vehicles which may never be used upon a highway.



SERIAL DATASTREAM GAUGE—SIMULTANEOUSLY MONITORS 19 CHANNELS OF INFO!

For the Information Freak in All of Us

If you like to monitor everything, but don't want your dashboard to look like a 747 jet, this is the gauge for you. The AEM Serial Datastream gauge plugs into our Series 1 and 2 EMS systems only (NOT for use with Infinity or F/IC units), and can simultaneously monitor up to 19 channels of outputs. It provides immediate reference to all monitored channels like boost, AFR, EGT, IAT, RPM, knock, volts, vehicle speed or any other channel you want to monitor. Alarm values are user-selectable and include qualifiers to eliminate false warnings. Plus, you can link multiple Serial Datastream gauges together if you want to divide input monitoring over a few gauges.

Serial Datastream Gauge Key Features:

- > For use with Series 1 and 2 EMS systems only
- > Monitor 19 channels of inputs simultaneously for reference to boost, AFR, EGT, IAT, RPM, and more
- > User selectable alarm values—set it up to flash and change to the input function that triggered the alarm! Includes user-programmable qualifiers to eliminate false warnings

Serial Datastream Gauge User Features:

- > All necessary hardware and software included for installation
- > User-programmable datastream channels (PC interface)
- > User-programmable MIN/MAX values for every channel (PC interface)
- > Includes two input buttons for scrolling through displayed channels and for clearing MIN/MAX values
- > 24 LEDs and three-digit center display programmable via PC interface
- > User-selectable alarm priorities in the event multiple alarms are triggered
- > Two outputs included to trigger ancillary warning lights or other devices (lights not included)
- > Silver and black bezels and pin guides, and black and white faceplates included for creating custom look
- > Quick daisy chaining connection eases installation
- > Standard 52mm (2-1/16") gauge housing

EMS-4 UNIVERSAL STANDALONE PROGRAMMABLE EMS

Designed Specifically for 4-Cylinder Racing and Powersports Applications That Compete in Harsh Environments

If you need complete engine control for your Powersports or 4-cylinder race vehicle, look no further than AEM's EMS-4 Universal Standalone engine management system. This light, compact and powerful computer features robust Series 2 EMS hardware in a weather and shock proof enclosure, with a 36-pin connector specifically designed to survive harsh racing environments.

Durability aside, a main advantage to the EMS-4 Universal Standalone is its affordability. It has all of the features you need and nothing you don't (like AC, power locks, stereo, etc). If you have converted your racecar, motorcycle, quad, side by side or other race vehicle (up to four cylinders) to dedicated race status, it will save you money and time.

EMS-4 Key Features:

- > Affordable, powerful engine control for your Powersports or 4-cylinder (or less) dedicated race vehicle
- > Durable weather/shock proof enclosure designed for harsh environments
- > Compact size (4.8" x 4.55" x 1.44")
- > Light weight (7.2 ounces/204 grams)
- > Available flying-lead wiring harness simplifies installation (sold separately)

EMS-4 User Features:

- > Fully enabled and unlocked—never pay for upgrades
- > Runs on proven AEMtuner software (page 6)
- > Password protected maps
- > Works with MAG or HALL crank inputs
- > Can directly drive smart coils (Page 16) or an external igniter (4-Channel Coil Driver, page 16)
- > 4 Saturated Injector Drivers
- > 4 Coil Triggers
- > 8 General Purpose Inputs/Outputs
- > O2 Input
- > Knock Input
- > 8 MB Internal Data Logger
- > VSS Hall Input
- > Can Data Stream
- > USB Comm Port



AEM's EMS-4 Programmable Engine Management System is legal in California only for racing vehicles which may never be used upon a highway.

WARNING: This installation is not for the tuning novice! Use this system with EXTREME caution! The AEM EMS System allows for total flexibility in engine tuning. Misuse or improper tuning of this product can destroy your engine! If you are not well versed in engine dynamics and the tuning of engine management systems DO NOT attempt the installation. Refer the installation to a AEM-trained tuning shop or call 800-423-0046 for

technical assistance. You must also visit the AEM Tech Forum at <http://forum.aempower.com/forum> to ensure that you are using the most current information and software.

NOTE: All supplied AEM calibrations, Wizards and other tuning information are offered as potential starting points only. IT IS THE RESPONSIBILITY OF THE ENGINE TUNER TO ULTIMATELY CONFIRM THE CALIBRATION IS SAFE FOR ITS INTENDED USE. AEM holds no responsibility for any engine damage that results from the misuse or mistuning of this product!



Flashes input function that triggers alarm!



Interchangeable faceplates, pins and bezels.



Quick connection for easy installation.



Available wiring harness sold separately.



Durable weather- and shock-proof enclosure.

STANDALONE ENGINE MANAGEMENT SYSTEMS

WIRING HARNESSES

AEM's wiring harnesses simplify the process of wiring your vehicle.

Infinity EMS Universal Master Flying Lead Harness with Fuse and Relay Panel

- > The perfect starter harness for a custom installation
- > High-quality automotive grade wire
- > Inkjet wire labels for easy identification
- > Pre-spliced and terminated power and ground distribution
- > Spare parts kit includes 100 pre-terminated multi-color flying leads and cavity seals. Use only what your installation requires!

EMS-4 96" Wiring Harness With Fuse and Relay Panel

- > Simplifies wiring the EMS-4 into your 4-cylinder or smaller racecar or Powersports vehicle
- > Color-coded wires are silkscreened with each function and are bundled with identifiers to reduce misidentification
- > Flying lead design with fuse and relay panel harness that includes fuses and relays for fans, pumps, auxiliary power and more
- > Cam and Crank signal wires are shielded with ground drains
- > Connector is pre-wired for USB & CAN
- > Positive locking, weather/dust-resistant connector with plug and wire seals



Lever locking automotive connection system.



Dual Lambda interface and AEMnet.



40-amp, automotive-grade main relay included

EMS ACCESSORIES

ECU Patch/Extension Harnesses Eliminates the Need to Cut Your Factory Harness to Add Devices



ECU Patch/Extension Harness Features:

- > Eliminates need to cut your factory wiring harness to add ancillary electronics!
- > Constructed with original ECU and harness connectors to ensure exact fitment
- > Provides easy access to all ECU signals/wires
- > Designed for out-of-car access to ease wiring process and troubleshooting
- > Simplifies removal of unnecessary ancillary items in the future
- > Straight through connection for all wires

Universal 12-position Trim Pot Ideal for Trimming Boost, Fuel, Ignition Timing and More!

AEM's Universal 12-Position Trim Pot can be used to adjust a number of trims including ignition timing, fuel, boost and more! It can be used with virtually any Engine Management System.

The Universal 12 Position Trim Pot includes a weatherproof-over-molded flying lead that has 12-inch insulated, color-coded wires, two brushed silver Trim Position decals (-5 to +6 and 0 to +11 ranges), and black AEM logo adjustment knob. PN 30-2056.



Brushed trim position decals in 0-11 and -5 to 6. Rotation and voltage output available on www.aemelectronics.com.

Micro Relay Kit

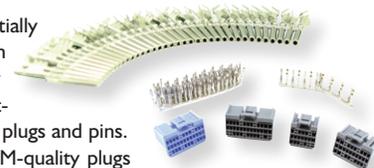
AEM's 12v/30a Micro Relay kit includes relay, connector and contacts. PN 30-2060.



Rhys Millen
Rhys Millen Racing (RMR)
2011 Pikes Peak PM580

Plug & Pin Kits

AEM Plug & Pin Kits essentially allow you to "start over" with your harness to create a new harness or replace your existing factory harness using new plugs and pins. Each kit includes four (4) OEM-quality plugs and all the OEM-quality pins you will need to re-wire the harness to the EMS.



Plug & Pin Kit for Series 2 EMS Systems: (30-) All 6050s, 6060.

Includes A, B, C & D connectors, 15 large contacts & 100 small contacts. PN 35-2610.

Plug & Pin Kit for Series 2 EMS Systems: (30-) All 6040s, All 6310s, 6710, 6720.

Includes A, B, C & D connectors, 16 large contacts & 60 small contacts. PN 35-2611.

Plug & Pin Kit for Series 1 EMS Systems: (30-) 1002, All 1040s, 1310, 1311, 1312, All 1313s, 1710 & 1720

Includes A, B, C & D connectors, 15 large contacts & 100 small contacts. PN 35-2611.

Plug & Pin Kit for Series 1 EMS Systems: (30-) 1010, 1012, 1020, All 1050s, All 2015s & All 1060s

Includes A, B, C & D connectors, 15 large contacts & 100 small contacts. PN 35-2610.

Plug & Pin Kit For EMS-4

PN 30-2905-0. Pre-wired for power, ground, CAN & USB communications.

72" Serial Communications Cable For EMS

For when four feet of cable just isn't enough! PN 35-3001.

120" USB Communications Cable for Series 2 EMS

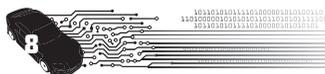
PN 35-3008.

We Have Sensors, Lots of Sensors!

AEM has a comprehensive inventory of the highest quality sensors you will find in stock and ready to ship. Please see our sensor section on page 20.



AEM Programmable Engine Management Systems are legal in California only for racing vehicles which may never be used upon a highway.



FUEL/IGNITION CONTROLLERS (F/IC)

F/IC-6, F/IC-8 and Plug & Play F/IC A Piggyback Controller for Aftermarket Boosted Vehicles with or without Variable Cam Timing

AEM's F/IC gives users with OBD-II race vehicles and non-factory forced induction systems the ability to retard ignition and deliver accurate amounts of fuel without the need for outdated FMUs or "boost hiding" controllers. This system works parallel to the factory ECU, preventing tuning limitations due to complex factory timing patterns. F/IC maps with configurable load and RPM breakpoints are easily accessed with the F/IC's Windows-based tuning software, and easily viewable on a 21x17 map display. The F/IC draws power from PC USB interface for quick and easy calibration changes.

Precise Fuel Delivery

The F/IC intercepts the signal to the stock injectors, allowing the user to modify pulse-width by +/-100%. It is among the only piggy-back systems that can decrease injector pulse-width, allowing the user to drive larger aftermarket injectors while still maintaining proper air/fuel ratios. This powerful system can also tap into the factory injector signal and work independently to drive additional injectors.

Timing Retard Control

The F/IC can retard timing from the factory system based on engine RPM and load inputs. This is achieved by intercepting and delaying the outputs from the cam and crank position sensors to the engine. There are no adverse effects on racing applications equipped with variable cam timing.

Sensor Calibration & Control

The F/IC can also be used to recalibrate / 'clamp' the MAF sensor, eliminating common problems with non-boosted factory MAFs. The F/IC's on-board MAP sensor allows for proper fueling in boosted conditions.

CAN-bus Systems Not Affected

Since the F/IC works in conjunction with the factory ECU, late model-vehicles equipped with a CAN-bus system retain functionality of climate controls, dash and other components on the network.

F/IC Key Features:

- > Affordable engine control for race vehicles with aftermarket forced induction systems
- > Ideal for non-factory forced induction vehicles with variable cam timing (VTEC, VVTi, MiVEC, etc)
- > Will not affect climate controls, dash or other components on CAN-bus network
- > Available for 4-6 cylinders (F/IC 6) and 8 cylinders (F/IC 8)

F/IC User Features:

- > Can Draw power from PC USB for calibration changes when removed from vehicle
- > Configurable load and RPM break points
- > Modify injector pulse-width by +/- 100%--drive larger aftermarket injectors and maintain proper AFR!
- > Drive up to 8 additional injectors (6 in F/IC-6, 8 in F/IC-8)
- > Drives high- or low-impedance injectors with addition of AEM Peak & Hold Injector Driver (Page 20)
- > Retards timing based on engine RPM and load inputs
- > "Clamp" the MAF for proper fueling in boosted conditions
- > On-board 41 PSIA (25 PSI boost) MAP sensor
- > Internal data logging (64kb for F/IC-6, 2Mb for F/IC-8)

Plug & Play F/IC Additional Key Features:

- > Plugs directly into the factory harness. No rewiring necessary
- > Includes start up calibrations
- > Visit www.aemelectronics.com for applications

Product comparison chart on www.aemelectronics.com!

PLUG & PLAY POWERSPORTS F/IC-4

Plug & Play Control for '01-'04 Suzuki GSXR1000 and '99-'01 Hayabusa GSX1300R

AEM offers a Powersports Plug & Play F/IC-4 for the venerable Suzuki GSXR 1000 and GSX 1300R Hayabusa. This controller includes the same features of our F/IC-6 & 8 units, and comes with a harness that mates to the factory plug, wiring harness guide and start-up calibrations. A chart with specific Plug & Play Powersports F/IC-4 features is below:

POWERSPORTS F/IC-4 FEATURES

| | |
|--|------|
| Injector Channels | 4 |
| Advanced Injector Load Simulation & Filtering | Yes |
| Timing Channels (Cam + Crank) | 2 |
| High/Low Voltage Selectable MAG-Driver Outputs | Yes |
| TPS Input | Yes* |
| MAP Sensor (Onboard) | Yes |
| External AFR Input | Yes* |
| PC Datalogging | Yes |
| Internal Logging Memory | 2mb |

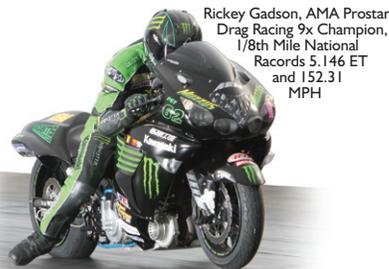
*Input can be used as TPS or AFR, not both.



AEM's Fuel/Ignition Controllers (F/IC) are legal in California only for racing vehicles which may never be used upon a highway.

WARNING: This installation is not for the tuning novice! Use this system with EXTREME caution! AEM F/IC Systems allow for total flexibility in engine tuning. Misuse or improper tuning of this product can destroy your engine! If you are not well versed in engine dynamics and the tuning of engine management systems DO NOT attempt the installation. Refer the installation to a AEM-trained tuning shop or call 800-423-0046 for technical assistance. You must also visit the AEM Tech Forum at <http://forum.aempower.com/forum> to ensure that you are using the most current information and software.

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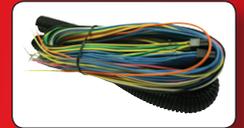
Rickey Gadson, AMA Prostar Drag Racing 9x Champion, 1/8th Mile National Records 5.146 ET and 152.31 MPH



AEM includes a Plug & Play Powersports F/IC wiring harness that mates to the factory plug.



AEM F/IC 6. Visit web-site for applications.



24" F/IC flying lead harness (sold separately). PN 35-2910-24.



F/IC Bypass Harness (sold separately). PN 35-2911



AQ-1 DATA LOGGER

AEM's AQ-1 Data Logger is an easy-to-use vehicle data acquisition device designed for racers and performance enthusiasts of all types who want affordable, dynamic, accurate data logging.

The decision to purchase a data logger can be intimidating for most enthusiasts for many reasons: many competitive data loggers are costly, they can be challenging to install and configure, and you end up repeatedly paying for software upgrades and supplementary components to unlock their full potential. AEM has developed the AQ-1 Data Logger with this in mind. The AQ-1 data logger installs and sets up easily, reads live parameters from ancillary sensors, AEMnet enabled devices, GPS and more, and puts them into a single log to make it easy to view. And it's available for less than half of the cost of most other data loggers.

Fast Logging—Lots of Memory

With logging rates of up to 1000 samples/second per channel, it is one of the fastest data loggers on the market. It has 2GB of logging memory standard, one of the largest. Additionally it features an internal 3-axis accelerometer, a removable SD card for virtually unlimited logging (up to 32GB at a time), and allows you to add an NMEA GPS device.

Records What You Want In One Log File

The AQ1 Data Logger can record AEM gauges, MAP/pressure sensors, TPS, APP, shock travel, load cell sensors, analog and frequency MAF sensors, any 2-wire temp sensor, any 3-wire pressure sensor, RTD, EGT, vehicle speed, injector duty cycle, boost control solenoid, flow sensor, HALL sensor, clutch pressure, brake pressure, and more! It includes three switched-to-ground digital inputs for clutch, brake, cooling fan ground switch, nitrous solenoid ground or ground switch to start and stop the AQ1 Data Logger (ground activated input).

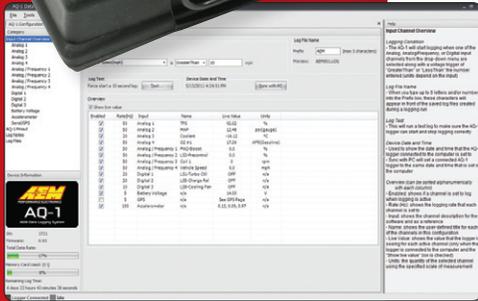
True Daisy Chain Capability Via AEMnet

It also has true daisy chain capability via AEMnet-equipped devices. After they are connected, the AQ1 Data Logger will detect all AEMnet devices with the click of a single button. It's that easy!

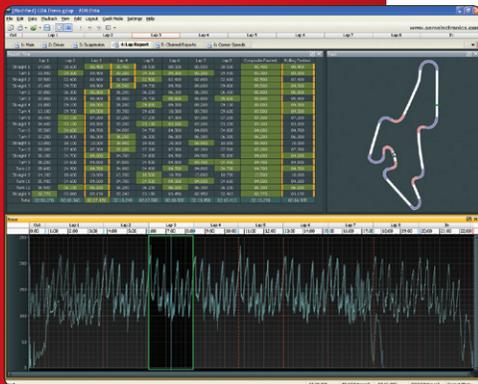
Track Mapping

The AQ-1's built-in accelerometer, in conjunction with a vehicle speed sensor allows for track mapping capability without the need for a GPS device. You can also add a 1Hz or 5Hz GPS with power and ground to achieve latitude and longitude channels, accelerometer, ground speed, etc. Either of these methods can be used to create track maps by exporting your 'traveled path' data to Google Earth to overlay your logs on the track.

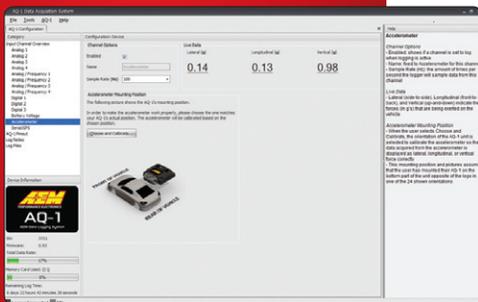
To create a track map, users can simply highlight sample data of the section of the log file where the car was on the track, then select whether or not you want to do a GPS track map or Accel/VSS track map. Regardless of whether you select a GPS-based track map or Accel/VSS-based map, the next step is to define which channel is latitude and which channel is longitude. Once you have defined the channels, simply hit enter and you have mapped your logs against the track.



The AQ-1's software simplifies configuration of outputs.



Records all logs in one log file.



The AQ-1's built-in accelerometer, combined with a vehicle speed sensor, allows for track mapping.

AQ-1 Data Logger Key Features:

- > Logging rates of up to 1000HZ (1000 samples/second) per channel (ancillary channels)
- > Four 0-5 V or 0-16 V analog inputs for that can optionally measure frequency
- > Four 0-5V analog inputs with optional pull-up resistor for RTD/Thermistor-style sensor
- > Three switched to ground digital inputs, 16.5 V MAX tolerance
- > AEMnet connection included for easy connection to AEMnet enabled devices
- > RS-232 serial input included for adding NMEA GPS device or for reading the serial datastream on AEM Series I ECUs
- > Internal 3-axis accelerometer (+/- 4g MAX)
- > Log files generated in our new advanced AEMdata analysis software (Page 4)
- > Flying lead harness with labeled wires and sealed Packard connector available (sold separately)
- > CAN-bus logger included for decoded CAN-bus channels. Provides configurable CAN-bus for interface with other manufacturer's CAN-enabled devices. Contact AEM for more info

AQ-1 Data Logger User Features:

- > Set-up Wizard and sensor library simplifies set up process
- > Intuitive software
- > Logging rate of up to 1000 samples/second per channel!
- > Removable SD card for virtually unlimited logging (2GB card included, supports cards up to 32GB)
- > Log AEM gauges, MAP/pressure sensors, TPS, APP, shock travel, load cell sensors, analog and frequency MAF sensors, any 2-wire temp sensor, any 3-wire pressure sensor, RTD, EGT, vehicle speed, injector duty cycle, boost control solenoid, flow sensor, HALL sensor, clutch pressure, brake pressure, and more!
- > Three switched-to-ground digital inputs for clutch, brake, cooling fan ground switch, nitrous solenoid ground or ground switch to start and stop AQ1 Logger (ground activated input)
- > True daisy chain capability with AEMnet-enabled devices
- > All data (sensors, AEMnet daisy-chain) saved to single log file with real-time clock!
- > Compact and lightweight (4.8" x 4.55" x 1.44", 10.4oz/295 grams)
- > Track mapping capability

AQ-1 OBDII Data Logger

The AQ-1 OBDII Data Logger (PN 30-2501) records and stores vehicle data so that it can be downloaded and analyzed. The AQ1 OBDII includes all the features of our base AQ-1 Data Logger and includes a plug that connects it to the OBDII port of your vehicle. It's ideal for late-model domestic or import EFI-equipped vehicles with a factory or piggyback EMS system or re-flashed ECU.

The AQ-1 OBDII Data Logger identifies all parameter IDs (PIDs) from the OBDII port, allowing you to select what you want to log from the OBDII datastream such as RPM, TPS, oil temp, coolant temp, Load (MAF or other), long and short term fuel trims, or any other data accessible via the OBDII port. Additionally, the AQ1 OBDII Data Logger can be used to read and clear trouble codes.

The contextual information from the OBDII port, combined with information gathered from ancillary sensors (all available in one log file), can provide a much clearer picture of a vehicle's operating state.

Easy Install & Set Up

AEM's AQ-1 OBDII Data Logger includes a communications cable to link to the OBDII port. A flying lead harness with a positive locking, weather-proof connector and labeled wires is available for easing installation (sold separately).

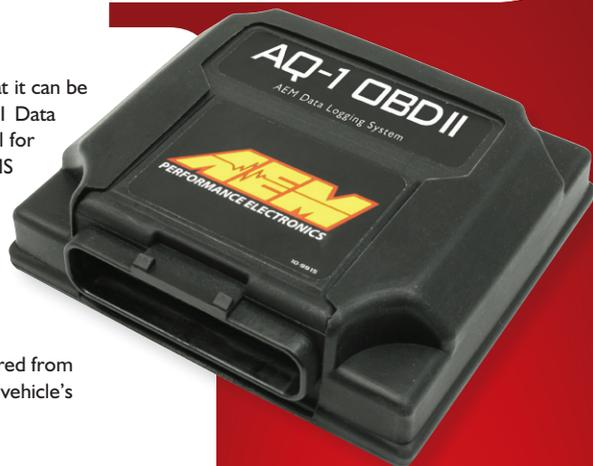
The AQ-1 OBDII Data Logger interfaces via USB connection to a laptop, and the included software is easy to use with detailed configuration screens to simplify set up and use. Log files are generated for use with our advanced AEMdata analysis software.

AQ-1 OBDII Data Logger Key Features (In addition to AQ-1 Features):

- > Reads and clears trouble codes!
- > Able to log data from OBDII port, and add ancillary sensors as needed
- > Track mapping capability

AQ-1 OBDII Data Logger User Features (In addition to AQ-1 Features):

- > Flying lead harness with labeled wires and sealed Packard connector available (sold separately)
- > OBDII Comm cable included
- > CAN BUS logger included for decoded CAN BUS channels. Provides configurable CAN-BUS for interface with other manufacturer's CAN-enabled devices. Contact AEM for more info.



OBDII Plug included with AQ-1 OBDII Data Logger, and included in optional flying lead harness



Weather-resistant USB high-speed connection.

PC Interface and Wizard Simplify Set Up

The AQ-1 Data Logger interfaces with a laptop via USB connection, and the included software features a set-up Wizard with comprehensive AEM sensor library for simple configuration and use.



OBDII AQ-1 Harness

AEM offers an optional flying-lead harness for the AQ-1 OBDII Data Logger that includes an integrated OBDII plug.

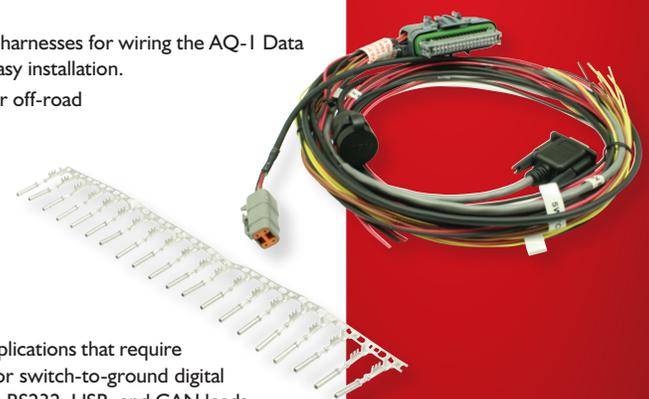
SENSORS!

We have a complete line of sensors for everything you need to control or log! See page 20 for more information.

**18" & 96" AQ-1 Data Logger Wiring Harnesses
Make an Easy Connection and Start Logging!**

AEM offers optional 18" (PN 30-2906-18) and 96" (PN 30-2906-96) flying lead harnesses for wiring the AQ-1 Data Logger. Both harnesses feature weather-proof connectors and labeled wires for easy installation.

- > Specifically designed for wiring the AQ-1 Data Logger into your racecar or off-road vehicle in a single configuration
- > Color-coded wires are silkscreened with each function and are bundled with identifiers to reduce misidentification
- > AQ-1 Connector pre-wired for AEMnet high-speed communication link, Power/Ground, CAN, RS-232 Serial and remote USB
- > Connector, plug, USB and wires seals are weather resistant



**AQ-1 Data Logger Harness Plug & Pin Kit
Simplifies the Custom Harness Pin Population Process**

The AQ1 Data Logger Harness Plug & Pin Kit (PN 30-2906-0) is designed for applications that require a custom harness or that are not using the hard-wired analog, analog/frequency, or switch-to-ground digital inputs. This Plug & Pin kit is pre-wired with all necessary AEMnet, Power/Ground, RS232, USB, and CAN leads. Pin locations for analog, analog/frequency, and switch-to-ground inputs are not populated. A bag of 20 terminals is included for populating and connecting these inputs.





TRU-BOOST GAUGE-TYPE BOOST CONTROLLER

Electronic Boost Controller Precision with Manual Boost Controller Ease-of-Use!

AEM's TRU-BOOST Gauge-Type Controller is an electronic boost controller that combines the simplicity of a manual boost controller with the added ease of adjusting boost levels through a gauge interface. There is no external interface required for set up, and it is fully functional right out of the box. There are no gimmicks or special software programs included. It's simple, and IT WORKS!

AEM's TRU-BOOST Gauge-Type Controller includes an on-board 29 PSIG pressure sensor, built-in overboost protection with two timed shutdown levels, a scramble boost setting and a low-side output for a warning light. AEM offers a 75 PSIA boost sensor for high boost applications (sold separately 30-4351).

AEM's boost control solenoid (included) is the only one specifically manufactured for automotive boost applications, which means it won't corrode and stick from exposure to rich fuel mixtures or oil vapor. It is pressure tested to 100 psi and includes barbed fittings and -4 AN fittings to eliminate any chance of leaks.

Tru-Boost Gauge-Type Boost Controller Features:

- > No external interface required for programming!
- > Complete system includes harness, boost hose, on-board 29 PSIG pressure sensor (external 75 PSIA optional), boost solenoid, gauge display and all necessary fittings
- > Two user selectable boost settings with peak boost memory
- > Scramble boost setting allows user to momentarily change boost levels
- > User selectable overboost alarm includes two timed shutdown levels at 10% and 20% overboost
- > User configurable gauge includes 24 scalable LEDs, and interchangeable black and white bezel, black and silver pin guide and black and white faceplate to customize look of display
- > One (1) low-side output included for warning lights



The Tru-Boost Gauge Controller includes everything you need for installation. Optional 75 PSIA sensor available (sold separately).

BOOST CONTROLLER ACCESSORIES

Boost Control Solenoid Kit

Kit includes: Boost Control Solenoid with 1/8-NPT Fittings, -4 Adaptors, Barb Adaptors and Connector Plug with Flying Lead. PN 30-2400.



Tru-Boost 5BAR External Pressure Sensor Kit

Read boost levels of up to 50PSIG. Sensor kit includes: Stainless-Steel 5BAR/75PSIA Pressure Sensor, 1/8" NPT Female to -4 Male Adapter,, 1/8" NPT Female to 3/16" Barb Adapter and Cable. PN 30-4351.



AMS Time Attack EVO, 2009/2010 CMRC Champion, 50 victories since 2006.

AEM's Tru-Boost Gauge-Type Controller is legal in California only for racing vehicles which may never be used upon a highway.



WIDEBAND FAILSAFE DEVICE

The Wideband FAILSAFE Gauge is a Wideband UEGO controller with an internal boost sensor, an internal logger and a full color Organic Light Emitting Diode (OLED) display, along with technology to activate a failsafe strategy in the event AFR falls outside of a user-defined operating window.

After the engine is tuned and a safe operating window of AFRs is established, the Wideband FAILSAFE Gauge continually monitors AFR and boost or vacuum to make sure that AFR does not fall out of the defined operating window at a given boost or vacuum level. If AFR falls out of the user defined range, the gauge triggers a low side output (ground signal with a 1.5 amp draw max) that can save your engine from catastrophic damage. The gauge's software includes a user-adjustable time delay strategy to prevent false alarms, and is used to configure the low side output and customize the gauge lighting to flash and alert the driver if an alarm is triggered.

The 52mm (2-1/16") Wideband FAILSAFE Gauge includes a Bosch wideband sensor for monitoring and feedback of Air/Fuel Ratios (AFR) and an on-board boost sensor to read vacuum or boost pressures (up to 29 PSIG; users running higher boost levels can upgrade to the optional 5BAR external sensor), both of which can be displayed in real time on the gauge's face using the full color OLED screen and 24 three-color sweeping LEDs. The highly accurate wideband sensor enables fine tuning of AFR from an AEM programmable engine management system, any other programmable EMS or piggyback programmer. For carbureted applications, it can tell you when it's time to swap carb(s), change jets or simply modify fuel pressure.

Once installed, users connect to the gauge via USB port and use the supplied software to establish AFR curves, set minimum and maximum AFR ranges, alarm mode, time delay strategy, failsafe strategy and gauge display configuration via the intuitive Set Up Wizard in the supplied software.



Wideband Failsafe Gauge Key Features:

- > Displays both boost or vacuum and AFR or Lambda simultaneously on the same gauge
- > Internal boost sensor
- > Bosch Wideband UEGO sensor and weld-in bung included
- > On-Board 3+ hour Datalogging capability at 20hz per parameter
- > Full color Organic Light Emitting Diode (OLED) Display in center, user selectable feature (boost/vacuum or AFR)
- > 24 three-color sweeping LEDs, user selectable feature (boost/vacuum or AFR)
- > Intuitive set up software
- > Dimmer input included
- > Interchangeable faceplates and bezels (see options, below)

Wideband Failsafe Gauge User Features:

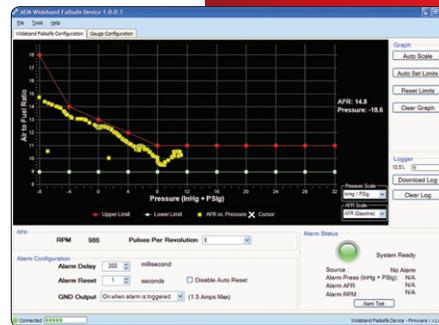
- > Set up to activate failsafe strategy which can save engine from damage
- > Digital Wideband UEGO controller based on Bosch technology
- > AEMnet compatible (CAN 2.0)
- > Differential AFR analog output
- > Differential boost analog output (Configurable RPM input for logging)
- > One low-side driver output (Ground with 1.5 amp max draw)
- > Positive-lock connectors
- > USB-based software
- > Time based reset for outputs

WIDEBAND FAILSAFE GAUGE FACEPLATE STYLES:

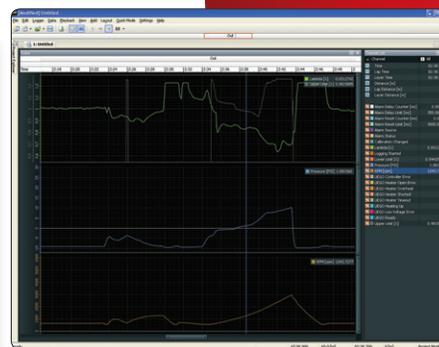
Kit comes with 6 different faceplates and black and silver bezels.

- > Black Vacuum only in sweeping LEDs
- > Black and White AFR in sweeping LEDs
- > Black and White Vacuum/Boost in sweeping LEDs
- > Black Lambda in sweeping LEDs

The Gauge Configuration page is used to select displayed parameters (Boost or AFR), select alarm warnings, and customize the gauge lighting.



Once you establish your AFR curve, set your high and low flow AFR limit curves. Our Auto Set Limits feature can do this automatically for you.



Viewing log files is simple using AEM's new data analysis software, AEMdata. All parameters from the Wideband Failsafe are automatically loaded into the software for easy viewing.



AEM Wideband UEGO Air/Fuel Systems are legal in California only for racing vehicles which may never be used upon a highway.



4-CHANNEL WIDEBAND UEGO CONTROLLER

The Ultimate Tool for Monitoring and Controlling Individual Cylinder Fuel Trims

AEM's 4-Channel Wideband Controller delivers precise feedback of each cylinder's AFR, providing tuners with the ability to tune each individual cylinder to a targeted AFR for maximum engine power and safety. Most modern engine management systems, including our Series 1 EMS, Series 2 EMS and Infinity EMS, are capable of individual cylinder fuel trims. The 4-Channel Wideband UEGO Controller will work on up to 12 cylinders (additional units needed to monitor up to 12 cylinders). The system can be integrated with almost any data logger or engine management system through 4 unique differential analog outputs or the AEMnet datastream output.

Have a Boosted Application? Exhaust Backpressure Compensation Kit Delivers Unmatched Accuracy!

AEM's innovative exhaust back pressure compensation kit (sold separately, PN 30-2064), allows the wideband sensors to be mounted in each exhaust runner BEFORE THE TURBOCHARGER on turbocharged cars. This kit eliminates the need to measure an average AFR over multiple cylinders on turbocharged applications. Kit contents include a high-performance, stainless-steel 100psig sensor, stainless-steel stand-off tube and stainless-steel braided hose with fittings designed for use with the 4-Channel Wideband UEGO Controller.



4-Channel Wideband UEGO Controller Key Features:

- > Allows for monitoring of individual cylinder AFRs for maximum engine power and safety
- > Two status lights per sensor for error detection and operating status
- > Pair multiple units together for use on 6, 8, 10, 12 cylinders
- > Compact (4.8" x 4.55" x 1.44"), weather & shock proof enclosure
- > Accurate to 0.1 AFR

4-Channel Wideband UEGO Controller User Features:

- > Four unique differential analog outputs
- > CAN output for use with AEMnet-enabled devices
- > Exhaust back pressure compensation to correct AFR readings on wideband sensors mounted pre-turbo (sold separately)
- > Two status lights per sensor for error detection and operating status
- > Stainless-steel bungs are specially designed for use in individual port applications and feature a finned, stand-off design that cools the sensor body and minimizes exhaust port restriction



DIGITAL AND ANALOG WIDEBAND UEGO GAUGES

A Gauge and Wideband Air/Fuel Controller in one Unit!

AEM's legendary Wideband UEGO Gauges unite accuracy, speed and control with an easy to read, interface.

Our digital gauge-type controller features a digital LED display and sweeping LED "needle" that changes colors as AFR changes from rich to lean. Our analog gauge-type controller features 320 degrees of resolution for detecting even a tenth of a point change in AFR, and has a high-speed electric stepper motor for fast needle movement. The Analog Wideband also features seven (7) user-selectable backlighting colors that allow you to match it to most factory gauge clusters.

Gauge-Type Digital & Analog UEGO Controller Features:

- > Interchangeable black and white faceplates included for customizing gauge appearance
- > Interchangeable black and silver bezels included
- > User-definable backlighting (Analog Only) to match most factory gauge clusters
- > 52mm (2-1/16") gauge housing

What is a Wideband UEGO Air/Fuel Controller?

AEM's Wideband UEGO (Universal Exhaust Gas Oxygen, pronounced "You-Way-Go") Controllers are powerful, cost effective tuning tools that allow users to accurately monitor the Air/Fuel Ratio (AFR) of their engine.

Why Use a Wideband Air/Fuel Controller?

Accurate AFR data is critical when tuning an engine. Running rich (very low air/fuel ratio, excessive fuel) can cause a loss in power, while running too lean (very high air/fuel ratio, not enough fuel) may result in serious engine damage. Using a wideband air/fuel controller during the tuning process allows you to monitor AFR and adjust tuning parameters to optimize them for maximum power and ef-

iciency. AEM has a comprehensive line of highly accurate, reliable wideband air/fuel controllers that can help ensure your vehicle is optimally tuned.

What is Free-Air Calibration?

Some of our competitors require that you frequently perform a free-air calibration procedure to calibrate their O2 sensors. This process involves removing the sensor from the bung while still connected to the controller device, then waving the sensor in the air so it can read atmospheric O2 levels.

We use Bosch 4.2LSU sensors in our wideband controllers. Each sensor is individually laboratory calibrated by Bosch and never requires free air calibration!

All AEM Wideband Controllers:

- > Are accurate to 0.1 AFR
- > Include a Bosch 4.2 LSU sensor(s) that NEVER requires free-air calibration!
- > Include a 0-5v Analog output(s) for use with data loggers and most engine management systems
- > Will work with virtually all programmable engine management systems, data acquisition systems and dyno systems (visit www.aemelectronics.com for more info)
- > **Never require free-air calibration!**

AEM Wideband UEGO Air/Fuel Systems are legal in California only for racing vehicles which may never be used upon a highway.



INLINE WIDEBAND UEGO CONTROLLER

Ideal AFR Monitoring Tool for Dynos, EFI, and Carbureted Applications when Logging AFR with a Data Logger

AEM's Inline Wideband UEGO delivers all the benefits of AEM's Wideband Air/Fuel Gauges to those who do not require or want an additional gauge in the car. It's also ideal for Motorcycle and Powersports applications where adding a gauge is not easily accomplished. This unit has a very simple wiring configuration and is easy to install, and includes a 0-5v output for use with data loggers and most programmable engine management systems. The controller body is weather proof and this unit can be mounted virtually anywhere on the vehicle.



Inline Wideband UEGO Controller Features:

- > Ideal monitoring tool for dynos, EFI, or carbureted vehicles when logging with a data logger
- > Detects AFR sensor problems and outputs error values which can be used to deactivate feedback. Status LED light included on controller body
- > Weatherproof body—mount it virtually anywhere



X-WIFI WIDEBAND UEGO CONTROLLER & EGT MONITOR

Monitor AFR and EGTs from Your iPhone & iPod Touch!

AEM's X-WiFi Wideband UEGO Controller & EGT Monitor combines a single channel of our proven wideband UEGO technology with an exhaust gas monitoring function that supports up to two EGT sensors (sold separately).

X-WiFi installs easily and is small enough to conceal. It connects effortlessly to an iPhone or iPod Touch, allowing you to use your wireless device as an ancillary real-time AFR and EGT gauge. It is a must have for tuners and enthusiasts who do not want to add an additional set of gauges but want to monitor AFR and EGTs. A datastream output is also included for PC viewing of AFR and EGTs via a USB connection.



X-WiFi Wideband UEGO Controller & EGT Monitor Key Features:

- > Accurately monitor AFR (one bank) and EGTs (up to 2 banks) from your iPhone or iPod Touch in real time
- > Easy to install
- > Effortless connection to your wireless device

X-WiFi Wideband Uego Controller & EGT Monitor User Features:

- > Serial data stream included for output of AFR and EGTs via USB cable
- > Detects AFR sensor problems and outputs error values which can be used to deactivate feedback
- > Reads EGTs from 0-1800F
- > 0-5v outputs for each channel

Can I Change the UEGO Sensor's Connector?

No. There is a laser-etched, calibrated resistor in the sensor's connector body. This resistor is specifically created for the exact sensor that it is attached to. Modifying this will invalidate the sensor's output.



Our stainless-steel tall manifold bung (PN 35-4008) is specifically designed for use with the 4-Channel Wideband UEGO Controller on forced induction applications.

It features a tall, stand-off design that reduces restriction from the sensor body in the inlet port, and is finned to keep the sensor body cool.



All of our Wideband UEGO Controllers use **Bosch 4.2LSU sensors for speed and accuracy** (30-2002 kit shown). These sensors are laboratory-calibrated at the factory and **NEVER, ever require free air calibration!**

(30-2002 Sensor & Bung kit for N/A and after-turbo mounting, see 30-2063 and 30-2064 for pre-turbo mounting with 4-Channel Wideband UEGO Controller).

AFR Value Range by Fuel Type (All AEM Wideband UEGO Controllers):

- > Reads Gasoline values from 8.5 to 18:1 AFR
- > Reads E85 values from 5.7 to 12:1 AFR
- > Reads Ethanol values from 5.2 to 11:1 AFR
- > Reads Methanol values from 3.7 to 7.8: AFR
- > Reads Lambda values from 0.58 to 1.22 AFR



AEM Wideband UEGO Air/Fuel Systems are legal in California only for racing vehicles which may never be used upon a highway.



HIGH-OUTPUT "SMART" AND "DUMB" INDUCTIVE IGNITION COILS
CDI-Level Spark Energy Without a CDI Make These Coils a MUST for Boosted, High RPM, High Compression and Nitrous-Equipped Vehicles!

The tradeoff between adequate spark energy and adequate spark duration ends with AEM's High-Output Inductive Coils, the first inductive coils that deliver CDI-like spark energy and voltage, and the long spark duration necessary for vehicles running high compression, high RPM, forced induction and/or nitrous engines.

AEM's High-Output Inductive Coils each deliver over 100mj of spark energy and a minimum of 40,000 Volts—as much as most CDI systems, without the need for a CDI module! They also provide very long spark duration at full energy, unlike CDI systems and multiple spark systems which fire off small spark events prior to and after their CDI burst to mimic longer spark duration.

"Smart" and "Dumb" Coils Come Without or With an Igniter

AEM offers two versions of its High-Output Inductive Coils; An IGBT (Insulated Gate Bipolar Transistor) 'smart' coil (PN 30-2853) for use without an external igniter, and 'dumb' coil (PN 30-2852) for use with an external igniter.

AEM High-Output Coils easily install in place of your existing coils. They are constructed to operate in harsh environments and are shock and weatherproof allowing them to be mounted virtually anywhere. Our High Output Coils cost less than the cost of aftermarket LSI coils and deliver World Class performance. They are currently running on 2,000-Horsepower nitrous motors without a CDI, and they perform flawlessly. We think they are in a class by themselves.

High Output Inductive Coils Key Features

- > CDI-like spark energy without the need for a CDI
- > Less expensive than aftermarket LSI coils
- > Compact size (3.8" x 3.62" x 1.87" Smart Coil, 3.53" x 3.62" x 2.65" Dumb Coil)
- > Robust construction allows them to be mounted almost anywhere
- > Available for vehicles with or without external igniters

High Output Inductive Coils User Features

- > Massive Spark Energy, up to 118 mJ! (103 mJ 30-2853, 118 mJ 30-2852)
- > Incredibly long spark duration, up to 3.2mS! (2.9 mS 30-2853, 3.2mS 30-2852)
- > Up to 41kV Output Voltage, without a CDI! (40kV 30-2853, 41kV 30-2852)
- > Weather and Shockproof design
- > Can be mounted directly to the Engine
- > Harness connectors and terminals included



Papadakis Racing
 Driver: Stephan Papadakis
 Lucas Oil Off Road Series
 Pro-Lite Honda Ridgeline

HIGH OUTPUT INDUCTIVE COILS TECHNICAL SPECIFICATIONS

| | |
|-----------------------------|---|
| Output (no load): | 40kV minimum |
| Output (50pF load): | 40kV +/- 10% (PN 30-2853), 41kV +/- 10% (PN 30-2852) |
| Output Energy: | 103 mJ +/- 7% (PN 30-2853), 118 mJ +/- 7% (PN 30-2852) |
| Peak Secondary Current: | 102 mA +/- 10% (PN 30-2853), 100 mA +/- 10% (PN 30-2852) |
| Arc Duration: | 2.9mS +/- 10% (PN 30-2853), 3.2mS +/- 10% (PN 30-2852) |
| Turns Ratio: | 71:1 |
| Maximum Current: | 19 Amps |
| Maximum Battery Voltage: | 17 Volts |
| Base Dwell: | 3.0 Ms |
| Max Continuous Dwell: | 9 mS but don't exceed 40% duty cycle |
| Max Intermittent Dwell: | 80% duty cycle, 5 seconds maximum |
| Mating Connector: | Packard/Delphi 12162825 "Pull to Seat" (PN 30-2853), Packard/Delphi 12162182 (PN 30-2852) |
| Mating Contacts: | Packard/Delphi 12124075 "Pull to Seat" |
| High Tension Wire Terminal: | HEI "spark plug top" Style |

4-CHANNEL COIL DRIVER

Affordable Coil-On-Plug Performance Without a CDI!

AEM's 4-Channel Coil Driver is your solution for converting to Coil-On-Plug (COP) when you want to eliminate problematic dwell time issues but do not have room for a CDI. It is specially designed for driving high-power, dwell-controlled ignition coils commonly found on performance engines. It is ideal for ATVs, motorcycles, snowmobiles and racing vehicles with hardware space limitations. The 4-Channel Coil Driver drives two-wire ("dumb") coils in COP applications, and can also be used as a replacement for a stock coil driver.

4-Channel Coil Driver Key Features:

- > Drive ignition coils on a coil-on-plug set-up without a CDI!
- > Ideal for ATVs, motorcycles, snowmobiles and racing vehicles with space limitations or those that do not require additional voltage generated by a CDI
- > The most affordable, reliable way to drive coils on a coil-on-plug set up
- > Simple installation
- > Complete hardware included

AEM High Output Inductive Coils and Four Chambered Ignition Components are legal in California only for racing vehicles which may never be used upon a highway.



TWIN-FIRE CAPACITIVE DISCHARGE IGNITION MODULES

Deliver Spark Energy for Engine Speeds over 10,000 RPM!

AEM's Twin-Fire Capacitive Discharge Ignition (CDI) module is designed specifically for the demands of high compression, high boost and high RPM racing engines. It can deliver full energy to the spark plug at engine speeds over 10,000 RPM— regardless of the duration in between ignition events—to ensure optimum combustion of the air/fuel mixture in the cylinder chamber.

Massive Energy to the Coil...

The Twin-Fire CDI accomplishes this via a design that utilizes a multiple-strike spark strategy. While standard ignition systems generate approximately 250v of spark energy on the coil primary, the Twin-Fire's capacitor delivers over 500v as a fast, high energy pulse to the coil. This increased primary voltage is what allows the Twin-Fire to deliver higher spark voltage.

...drives Massive Energy to the Plugs

A standard inductive ignition system (at a 1:100 turns ratio) will deliver roughly 25,000v to the spark plug. Using the same inductive coil, the Twin-Fire CDI's 540v primary to the coil can drive up to 50,000v to the spark plug. Concern over duration in between ignition events is eliminated by the Twin-Fire's multi-strike capability that can deliver up to 10 sparks per ignition (20 degrees).



Twin-Fire CDI Key Features:

- > Delivers spark energy for engine speeds over 10,000 RPM
- > Smallest and lightest CDI on the market (5.5"x4.625"x1.375", 1.5 lbs.)
- > Available in 4- and 8-channel configurations for up to 8 cylinders (PN 30-2821 up to 4 CYL, PN 30-2820 up to 8 CYL)
- > Works with coil-on-plug and distributed ignition systems

Twin-Fire CDI User Features:

- > 540v primary/54,000v secondary voltage energy
- > 175-189mj spark energy
- > Multi-strike spark capability of up to 10 sparks per ignition trigger (20 degrees)
- > Full spark energy with battery voltage as low as 9v
- > Tachometer output included
- > Extruded enclosure

Bypass plug

For use with Twin Fire Ignition Modules (sold separately, PN 35-3802).



TWIN-FIRE CDI OUTPUTS

| | |
|-----------------------|--|
| Operating Voltage | 8-18 Volts, Negative Ground |
| Operating Current | 10.0 Amps @ 10,000 RPM 4CH 12.0 Amps @ 10,000 RPM 8CH |
| RPM Capacity | 14,000 RPM, 4CH or 8CH @ 14 Volts |
| Ignition Inputs | 2,3,4 - Rising or Falling Edge 4CH 5,6,7,8 - Rising or Falling Edge 8CH |
| Ignition Outputs | 4 - 4CH, 8 - 8CH |
| Energy Store Caps | 1 |
| LED Indicator | Ignition Trigger |
| Tach Output | + 12v Square Wave |
| Multi-Strike Duration | -20 Degrees |
| Energy Output Max | 175- 189 millijoules per Spark |
| Output Voltage | Primary: 500-540 Volts Secondary (assume 100:1): 50,000-54,000 Volts |



Costella-Yacoucci Nebulous Theorem III
8x Bonneville Land Speed Record Holder
Fastest Run: 304.151 MPH, D/GS Class



AEM Twin Fire is legal in California only for racing vehicles which may never be used upon a highway.



ENGINE POSITION MODULE
Replaces Your Distributor for Converting to Coil-On-Plug or Wasted Spark!

AEM's Engine Position Module (EPM) allows users to convert their distributed ignition system to coil-on-plug (COP) or wasted spark. It replaces the factory distributor to allow for the use of COP or wasted spark when used with the necessary additional components (see CDI Pencil Coils below, Twin-Fire CDI on page 17 and Four-Channel Coil Driver on page 16). It provides precise engine position via dual zero-speed optical sensors that deliver immediate signal generation regardless of engine speed (24 and 1 timing signal). A shock absorbing elastomer drive system eliminates potential timing deviation from vibration and protects the EPM module.

The EPM adapts to any positive-drive, half-engine speed device (cam or distributor drive) and can be used with any engine management system that recognizes a 24 & 1 crank tooth pattern for crank and cam signals. Wiring is simplified through a 4-wire connection, which eases installation.

Engine Position Module Key Features:

- > Replaces factory ignition distributor
- > Bolt-on systems for popular Ford and Chevy V8 race engines
- > Bolt-on system for popular Honda race engines
- > Must be used with CDI module (see Twin-Fire, page 17) or Four-Channel Coil Driver (page 16)
- > Easy EMS setup with timing pattern available in AEMtuner Wizard (see page 6)
- > Simple, weatherproof four-wire connection (12v, ground, crank signal & cam signal)
- > EPM manufactured from 6061 T-6 billet aluminum with elastomer drive system to protect against vibration and potential timing deviation from vibration



Engine Position Module for V8 engines includes distributor base with shaft.

CONVERT YOUR FORD OR CHEVY V8, OR HONDA B-, D-, F- OR H-SERIES RACE ENGINE TO COIL ON PLUG FOR MORE SPARK ENERGY!

FORD AND CHEVY V8 RACE ENGINES

| | |
|---------|--|
| 30-3251 | All Chevrolet Distributed Small and Big Blocks |
| 30-3252 | ALL 1986-'95 Ford 5.0L EFI Small Blocks |
| 30-3253 | ALL Ford 351 Windsor Small Blocks |
| 30-3254 | ALL Ford 289 & 302 Small Blocks |

HONDA RACE ENGINES

| | |
|---------|---|
| 30-3255 | ALL Honda B-, D-, F- & H-Series Engines |
|---------|---|

CDI PENCIL COILS

Combine them with our Twin-Fire CDI to Convert to Coil-On-Plug

AEM's CDI Pencil coils are designed for converting your distributed ignition system to a coil-on-plug (COP) system using either a CDI module or 4-Channel Coil Driver. Users can combine CDI Pencil Coils with our Twin-Fire or other CDI module to replace their factory smart coils, or combine a CDI, Engine Position Module and Series 2 EMS (see page 5) or other stand-alone EMS to convert from distributed ignition to COP (see *B-Series COP Conversion*, page 19).

AEM offers two lengths of CDI Pencil Coils to ensure the best fitment on a variety of applications. All CDI Pencil Coils are two-wire CDI compatible, and must be used with a CDI module. Single CDI Pencil Coil kits, 4-pack kits and connector kits are available; visit www.aemelectronics.com for more information.

CDI Pencil Coils Key Features:

- > Convert from distributed ignition to Coil On Plug!
- > Increases spark energy – ideal for high boost, high RPM and high compression engines
- > Available in 5.72-inch and 6.65 inch lengths for optimum plug reach on multiple applications
- > Must be used with CDI module (see Twin-Fire) or Four Channel Coil Driver, (page 14)

CDI Pencil Coils User Features:

- > Compatible with all standard automotive spark plugs (including threaded tip style)
- > CDI Pencil Coil Kits include pencil coil(s), connector pin(s), pin lock(s) and weather seals
- > Two-wire CDI/Igniter compatible coil



Single pencil coils, 4-packs and connector kits available. Available in 5.72" and 6.65".



AEM's Engine Position Module and CDI Pencil Coils are legal in California only for racing vehicles which may never be used upon a highway.

B-SERIES ENGINE COIL-ON-PLUG CONVERSION

Affordable COP Performance That Eliminates Known Factory Ignition Issues

AEM's Coil-On-Plug (COP) B-series Conversion Kit is the perfect ignition upgrade for naturally-aspirated or boosted B-Series engines that do not exceed 15 PSI of boost.

This COP Kit is very affordable as it does not require a CDI module for forced induction race vehicles (up to 15 PSI). It eliminates both the known performance issues common to the B-series engine's factory igniter and the need to replace your aging cap/rotor/wire assembly, which are prone to energy losses as they deteriorate. The included igniter has been tested under the most rigorous conditions we could conceive and is virtually 'bulletproof.'

If your turbocharged B-Series race engine is running boost pressures higher than 15 PSI, adding AEM's Twin-Fire Capacitive Discharge Ignition (page 13, sold separately) in place of the 4-Channel Coil Driver igniter will ensure adequate spark energy is delivered to the plugs regardless of boost pressure.

AEM's COP B-Series Conversion Kit is ideal for use with the AEM EMS and most aftermarket ECUs, and includes instructions for easy hook-up references for common Honda EMS units. It also allows for individual ignition trim tuning via a programmable EMS.

The COP B-Series Conversion Kit includes the AEM Engine Position Module (Page 18) that delivers a reliable timing pattern to the AEM EMS or other aftermarket EMS, a 4-Channel Coil Driver (page 16) that drives 2-wire "dumb" coils, AEM's CDI Pencil Coils (page 18), and a Motorsports-grade plug & play wiring harness that is labeled and silk screened for a starightforward installation.



AEM B-Series COP Conversion Key Features:

- > Delivers outstanding coil-on-plug performance without the added cost of a CDI!
- > Upgrade to a 'No Maintenance' ignition system! Eliminates all known factory ignition system issues
- > Ideal for B-Series engines from naturally aspirated to boosted versions that do not exceed 15 PSI
- > A complete COP conversion system with comprehensive instructions and design that eases installation

AEM B-Series COP Conversion User Features:

- > For use with most programmable engine management systems
- > Instructions included with easy hook up reference for common Honda EMS units
- > Plug & Play wiring harness is labeled and stamped for easy installation
- > Motorsports-grade harness and connectors
- > Eliminates factory igniter with rigorously-tested 'bulletproof' igniter
- > Includes AEM Engine Position Module to deliver a reliable timing pattern to ECU
- > Includes AEM 4-Channel Coil Driver for driving 2-wire individual 'dumb' coils



B-Series Coil On Plug kit installed on B18 engine.



Bisimoto Engineering
Bisi Ezerioha



AEM B-Series COP is legal in California only for racing vehicles which may never be used upon a highway.



10-channel Peak & Hold Injector Driver Module Delivers a Rapid Current Rise to Injectors in High-Volume Fuel Applications

AEM's 10-Channel Peak & Hold Injector Driver module (PN 30-2710) has 10 independent injector drive channels and allows ECUs with a saturated injector drive circuit to trigger low-impedance injectors using a true, 4:1 peak & hold injector driver circuit. It delivers full battery voltage to fuel injectors for rapid current rise to produce positive opening events.

4-Channel K-Type Thermocouple Amplifier Measure Critical Vehicle Temps with Laboratory-Grade Accuracy

Laboratory-grade accuracy for virtually any on-board temperature measurements. Accurately monitor multiple engine system temperatures, including water, air, coolant, fuel, disc brake and more.

- 4-Channel K-Type Thermocouple Amplifier Features:**
- > Uses ANY K-Type thermocouple with common miniature thermocouple connectors (sold separately)
 - > Includes FOUR (4) 0-5v analog outputs
 - > 0-1,000C (32-1,832F) measurement range
 - > RS-232 serial port included for datalogging (programmable EMS not required)

4-Channel Ignition Coil Driver

AEM's 4 Channel Coil Driver is designed to drive two wire ("dumb") coils in coil-on-plug applications. See page 16 for detailed product information. PN 30-2840.

SENSORS & CONNECTORS
Just About Everything You Need to Complete Your Vehicle's Management System

AEM offers virtually every sensor you need for wiring additional outputs and/or upgrading your hardware over existing sensors.

- Sensor Features:**
- > Stainless-steel sensors accurate to within 1% of full scale (pressure sensors)
 - > Brass sensors accurate to within 3% of full scale (pressure sensors)
 - > High-quality sealed sensor housings are virtually impervious to automotive fluids (360-degree welded wetted area both stainless steel and brass)
 - > Connector and pins included

Visit www.aemelectronics.com for sensor performance specifications and a voltage output graph for each sensor!

Absolute (PSIa) Pressure Sensors

PSIa is referenced to absolute zero. Absolute zero is the pressure measurement when all the pressure exerted by the atmosphere has been removed. The most common use for absolute pressure sensors is reading manifold pressure. PSIa sensors are required of you wish to measure vacuum. A PSIa sensor will read about 14.7 PSI when the sensing element is exposed to atmospheric pressure at sea level however they can be recalibrated to read zero at atmospheric and a negative number at values less than atmospheric pressure.

1 BAR/15 PSIa Map Stainless-steel Sensor Kit

Sensor Kit Includes: 1 BAR/15 PSIa MAP Stainless Steel Sensor, Plug & Pin Connector Kit, 1/8" NPT Male Thread to -4 Adapter & 1/8" NPT to 3/16" Barb Adapter. PN 30-2130-15.

2BAR/30 PSIa Map Stainless-steel Sensor Kit

Sensor kit includes: 2 BAR/30 PSIa MAP Stainless Steel Sensor, Plug & Pin Connector Kit, 1/8" NPT Male Thread to -4 Adapter & 1/8" NPT to 3/16" Barb Adapter. PN 30-2130-30.

2BAR/30 PSIa Map Brass Sensor Kit

Sensor kit includes: 2 BAR/30 PSIa MAP Brass Sensor with 1/8" NPT Male Thread and Plug & Pin Connector Kit. PN 30-2131-30.

3.5BAR/50 PSIa Map Stainless-steel Sensor Kit

Sensor kit Includes: 3.5 BAR/50 PSIa MAP Stainless Steel Sensor, Plug & Pin Connector Kit, 1/8" NPT Male Thread to -4 Adapter & 1/8" NPT to 3/16" Barb Adapter. PN 30-2130-50.

3.5BAR/50 PSIA Map Brass Sensor Kit

Sensor kit includes: 3.5 BAR/50 PSIa MAP Brass Sensor with 1/8" NPT Male Thread and Plug & Pin Connector Kit. PN 30-2131-50.

5BAR/75 PSia Map Stainless-steel Sensor Kit

Sensor kit includes: 5 BAR/75 PSia Stainless Steel Sensor, Plug & Pin Connector Kit, 1/8" NPT Male Thread to -4 Adapter & 1/8" NPT to 3/16" Barb Adapter. PN 30-2130-75.

5BAR/75 PSia map brass sensor kit

Sensor kit includes: 5 BAR/75 PSia MAP Brass Sensor with 1/8" NPT Male Thread and Plug & Pin Connector Kit. PN 30-2131-75.

Gauge Style (PSIG) Pressure Sensors

Gauge style pressure sensors reference pressure above atmospheric pressure. When exposed to atmospheric pressure, gauge style pressure sensors will read 0 psig. Gauge style pressure sensors are commonly used for oil pressure, fuel pressure, brake pressure, nitrous pressure etc.



1 BAR/15 PSIG Map Brass Pressure Sensor Kit

Sensor kit includes: 1 BAR/15 PSIG MAP Brass Sensor with 1/8" NPT Male Thread and Plug & Pin Connector Kit. PN 30-2131-15G.

100 PSIG Stainless-steel Pressure Sensor Kit

Sensor kit includes: 100PSIG Stainless Steel Sensor, Plug & Pin Connector Kit & 1/8" NPT Male Thread to -4 AN Adapter. PN 30-2130-100.

100 PSIG Brass Pressure Sensor Kit

Sensor kit includes: 100PSIG Brass Sensor, Plug & Pin Connector Kit with 1/8" NPT Male Thread and Plug & Pin Connector Kit. PN 30-2131-100.

150 PSIG Brass Pressure Sensor Kit

Sensor kit includes: 150PSIG Brass Sensor, Plug & Pin Connector Kit with 1/8" NPT Male Thread and Plug & Pin Connector Kit. PN 30-2131-150.

150 PSIG Stainless-steel Pressure Sensor Kit

Sensor kit includes: 150PSIG Stainless Steel Sensor, Plug & Pin Connector Kit & 1/8" NPT Male Thread to -4 AN Adapter. PN 30-2130-150.

500 PSIG Stainless-steel Pressure Sensor Kit

Sensor kit includes: 500PSIG Stainless Steel Sensor, Plug & Pin Connector Kit & 1/8" NPT Male Thread to -4 AN Adapter. PN 30-2130-500.

1000 PSIG Stainless-steel Pressure Sensor Kit

Sensor kit includes: 1000PSIG Stainless Steel Sensor, Plug & Pin Connector Kit & 1/8" NPT Male Thread to -4 AN Adapter. PN 30-2130-1000.

2000 PSIG Stainless-steel Pressure Sensor Kit

Sensor kit includes: 2000PSIG Stainless Steel Sensor, Plug & Pin Connector Kit & 1/8" NPT Male Thread to -4 AN Adapter. PN 30-2130-2000.



AEM's Engine Position Module and CDI Pencil Coils are legal in California only for racing vehicles which may never be used upon a highway.



WIDEBAND UEGO SENSORS, INSTALL KITS AND ACCESSORIES

Wideband UEGO Sensor/Stainless Bung Install Kit

This install kit includes a Bosch 4.2LSU Wideband UEGO sensor and steel mounting bung. This sensor is laboratory-calibrated at the Bosch factory and never requires free-air calibration when used with an AEM Wideband Controller. PN 30-2002.

Wideband UEGO Sensor Kit

Sensor kit includes a Bosch 4.2LSU Wideband UEGO sensor that is laboratory-calibrated at the Bosch factory, accurate to 0.1 AFR and never requires free-air calibration when used with an AEM Controller and connector plug. PN 30-2001.



AEM No-Weld O2 Sensor Bung Mounts

If you need to mount an O2 sensor and don't know how to weld (or can't find someone who can), this is a permanent solution for installing an O2 sensor bung in your exhaust system. Simply drill a hole in the exhaust, install the gasket and fasten the clamp of the mount using supplied hardware. It's that easy! Refer to www.aemelectronics.com for part numbers and exhaust diameter sizing.



Male Connector For Bosch Wideband UEGO Sensor

Kit includes: One (1) Male Connector for Bosch Wideband UEGO Sensor used with AEM Wideband UEGO Controllers, terminals and wire seals. PN 35-2613.

Power Cable For 30-4100 Digital Wideband UEGO Gauge

Kit includes: One (1) Replacement Power Cable for 30-4100 Wideband UEGO Controller Gauge (see page 14). PN 35-3401.

144" Wideband Sensor-to-Gauge Replacement Cable For 30-4100

Kit includes: One (1) 6-wire cable that connects the O2 Sensor to the back of the 30-4100 Wideband UEGO Controller Gauge (see page 14). PN 35-3400.

Exhaust Backpressure Compensation Install Kit

The kit is specifically designed for use with the AEM 4-Channel Wideband UEGO Controller (page 14) and allows sensors to be mounted pre-turbo to enable AFR data for individual cylinders on turbocharged applications

Sensor kit includes: AEM high-performance, stainless-steel 100psig pressure sensor (Part#30-2130-100), stainless-steel standoff tube, and stainless-steel braided hose and fittings. PN 30-2064.



TEMPERATURE SENSORS

Air Inlet Temperature (AIT) Sensor Kit

Sensor kit includes: Air Temp Sensor with 3/8" NPT Male Thread, Aluminum Bung and Flying Lead Connector. PN 30-2010.



3/8" NPT Water/Coolant Temp Sensor

Sensor kit includes: Water/Coolant Temp Sensor with 3/8"-18 NPT Male Thread, Aluminum Bung and Flying Lead Connector. PN 30-2011.

1/8" NPT Water/Coolant/Oil Temp Sensor Kit

Sensor kit includes: Water/Coolant/Oil Temp Sensor with 1/8"-27 NPT Male Thread, Plug, Pins and Pin Lock. PN 30-2012.

Exhaust Gas Temp (EGT) Sensor Kit

Sensor kit includes: Stainless-steel RGT Sensor, Connector, Silicone Wire Seal, Terminals and Weld-In Bung. PN 30-2050.

K-Type Thermocouple Sensor Kit

Sensor kit includes: One (1) Stainless-Steel K-Type Thermocouple Sensor, Threaded Stainless-Steel Adapter and Stainless-Steel Bung. PN 30-2065.

K-Type Thermocouple Sensor Wiring Extension Kit

This kit includes a 10 foot (120 inch) long extension for a K-Type Thermocouple. Includes mating plug for EGT gauge or X-WiFi, and two ring terminals on sensor side for connection to 30-2065 thermocouple. PN 30-2066.

X-WiFi K-Type Thermocouple Sensor Wiring Kit

Kit includes one K-Type Thermocouple and complete wiring harness for use with the AEM X-WiFi (see page 15). PN 30-2067.

GAUGE ACCESSORIES

**Universal 52mm Silicone Gauge Boot
A must have for any off road application**

The Universal 52mm Silicone Gauge Boot (PN 30-8444) is designed to stretch onto the back of virtually any 52mm gauge to keep dust out and repel water away from the back of the gauge. It acts like a 'wetsuit' or 'shower cap' and likewise is NOT WATERPROOF.



Digital to Analog Wiring Conversion Kits

AEM'S Digital-To-Analog Wiring Kits allow you to convert your existing AEM digital gauges to AEM analog gauges without having to rewire the vehicle.



Engine Management Accessories and Plug & Pin Kits

See page 8!

Boost Controller Accessories

See page 12!

FUEL DELIVERY ACCESSORIES

Bosch Fuel Injector Plug Kit

Kit includes: Four (4) Connectors and Eight (8) contacts. PN 30-2020.



IGNITION SYSTEM ACCESSORIES

Twin-Fire CDI Bypass Plug (4-channel)

PN 35-3802. See page 17!

Mike Morgan Racing Photography



Rapp Racing Engines
Mark Rapp
2006 PSCA
Mean Street Champion

AEM DIGITAL GAUGES
 See and Log Vital Vehicle Information
 to the Exact Degree!

OEM gauges usually only read three things: cold, warmed up, and "shut it off" (with the last reading sometimes coming too late). Eliminate the guesswork on your high performance racecar or off-road vehicle with AEM's Digital Gauges. They combine unsurpassed accuracy, speed and control with an easy-to-read digital LED interface.

AEM Digital Gauges feature a bright, three-digit LED display and a sweeping LED "needle" that lines the edge of the gauge face. Each gauge includes a 0-5v analog output for use with data loggers and virtually any engine management system, and interchangeable silver and black bezels and black and white faceplates to personalize the look of your gauge. It's like having 4 gauge designs in one!

Digital Gauge Features:

- > Ideal for carbureted or EFI vehicles
- > Easy-to-install Plug & Play harness and sensor included
- > 24 green LED display lights provide immediate reference to monitored engine function
- > Each gauge comes with interchangeable black & silver bezels and black and white gauge faceplates
- > 0-5V analog output included for use with data loggers and virtually any engine management system
- > Three-digit digital readout for quick reference
- > Auto-dimming gauge face and read out lighting
- > No laptop required for monitoring
- > Standard 52mm (2-1/16") gauge housing



Digital Water/Oil/Trans Temp Gauge

PN 30-4402.

- > Gauge readout measures 100-300 degrees F
- > Brass AEM temperature sensor included



Digital Boost Display Gauge

PN 30-4406 (35 PSI).

PN 30-4408 (50 PSI).

- > Gauge readout -30 to +35 PSI of boost (30-4406)
- > Gauge readout -30 to +50 PSI of boost (30-4408)
- > No additional sensors or programs needed for operation
- > Brass AEM pressure sensor included (50 PSIa 30-4406, 75 PSIa 30-4408)



Digital Fuel/Oil Pressure Gauge

PN 30-4401 (Fuel/Oil to 100 PSI).

PN 30-4407 (Oil only to 150 PSI).

- > Gauge readout measures 0-100 PSI (30-4401)
- > Gauge readout measures 0-150 PSI (30-4407, Oil Only)
- > Brass AEM pressure sensor included (100 PSIg 30-4401, 150PSIg 30-4407)



Digital Voltmeter Gauge

PN 30-4400.

- > Gauge readout from 8-18V



Papadakis Racing SCION tC Drift Car
 Driver: Frederick Aasabo



AEM ANALOG GAUGES

Unbeatable Viewing Resolution, Accuracy and Looks!

AEM's Analog Gauges feature quick response and smooth needle movement that is easy to read in all lighting conditions. Each gauge offers a swept area of 320 degrees for the best viewing resolution at almost any angle, and a 0-5V analog output for logging.

All AEM analog gauges feature seven backlight colors that allow you to match your OEM or other gauge backlighting, a silver and black bezel and a white and black faceplate to best match the interior of your vehicle. The backlighting is adjustable via a dial on the rear of the gauge to optimize viewing in all lighting conditions.

Analog Gauge Features:

- > Ideal for carbureted or EFI vehicles
- > Easy-to-install harness and sensor included
- > 320-degrees of viewing resolution
- > Adjustable backlighting
- > Each gauge comes with interchangeable black & silver bezels and black and white gauge faceplates
- > 0-5V analog output included for use with data loggers and virtually any engine management system
- > Standard 52mm (2-1/16") gauge housing



Analog Water/Oil/Trans Temp Gauge

PN 30-5140 (100-300 degrees F SAE).

PN 30-5140M (40-148 degrees C Metric).

- > Brass AEM temperature sensor included



Analog Fuel/Oil/Air Pressure Gauge Put One on Your Tow Rig to Monitor Air Compressor Pressure Too!

PN 30-5133 (0-100 PSI Fuel/Oil/Air).

PN 30-5135 (0-150 PSI Fuel/Oil).

PN 30-5144 (0-15 PSI Fuel). *Made for carbureted applications!*

PN 30-5133M (0-6.9BAR Metric Fuel/Oil).

PN 30-5135M (0-10.2BAR Metric Oil).

- > Brass AEM 100PSIg sensor included (30-5133)
- > Brass AEM 150PSIg sensor included (30-5135)
- > Brass AEM 15PSIg sensor included (30-5144)
- > Brass AEM 7.5BAR sensor included (30-5133M)
- > Brass AEM 12BAR sensor included (30-5135M)



Analog Exhaust Gas Temperature (EGT) Gauge

PN 30-5131 (0-1800 degrees F SAE)

PN 30-5131M (0-980 degrees C Metric)

- > K-Type thermocouple sensor included



Wideband Display Gauges

30-5130 (8.5:1-18:1 AFR Gasoline)

30-5143 (5.7:1-11.9:1 AFR E85)



Analog H2O Flow Gauge

PN 30-5141 (0-500 cc/min)

PN 30-5142 (0-1000 cc/min)

- > Flow sensor included



Boost Display Gauges

30-5132 (-30-30 PSI SAE)

30-5132M (-1-2.4 BAR Metric)

30-5137 (0-60 PSI SAE)

30-5137M (0-4.1 BAR Metric)

30-5144 (Boost/Fuel Pressure for Carbureted Apps, 0-15PSI SAE)

GAUGE ACCESSORIES

Universal 52mm Silicone Gauge Boot

Our silicone gauge boot (PN 30-8444) repels water (not waterproof), and protects your gauge from dust and contaminants.



Digital To Analog Wiring Conversion Kits

Visit www.aemelectronics.com for conversion kit part numbers.



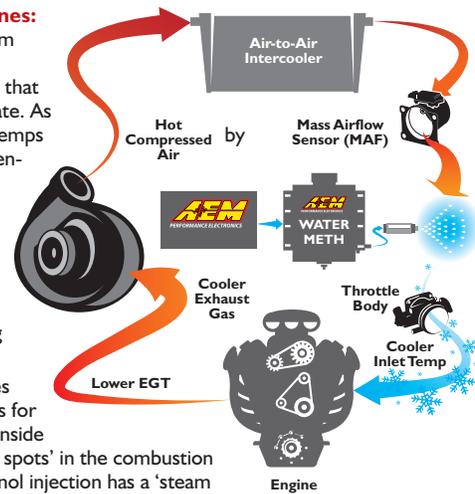
WATER/METHANOL GAS INJECTION SYSTEMS

Race Gas Performance on Pump Gas for Racecars

Water/methanol injection is a proven means to effectively reduce engine inlet air temperatures and suppress harmful detonation on forced induction race vehicles. This allows enthusiasts to reliably increase boost and advance ignition timing—without using high-octane racing fuel—for power gains of up to 20%.

Water/Methanol Injection Advantages for Gas Engines:

- > **REDUCES AIR INLET CHARGE TEMPS** – The term “liquid intercooling” with water/methanol injection refers to a highly atomized mist of water/methanol that is injected into the airstream and begins to evaporate. As it does, this evaporative effect reduces air charge temps as much as 100 degrees, and delivers a more oxygen-rich air charge.
- > **REDUCES DETONATION (KNOCK)** – Water absorbs heat, and methanol is a cool burning, anti-knock rated fuel. When combined and introduced into the inlet stream, they can effectively increase your vehicle’s anti-knock index so you can reliably increase boost pressure and advance ignition timing using pump gas.
- > **REDUCES CARBON DEPOSITS** – Modern vehicles fitted with Exhaust Gas Recirculation (EGR) devices for emissions control promote heavy carbon build up inside the air intake. This carbon build-up can create ‘hot spots’ in the combustion chambers that can cause detonation. Water/methanol injection has a ‘steam cleaning’ effect that reduces this carbon build up, and in some cases can increase fuel economy.



The AEM Water/Methanol Injection System Advantage (Gas):

AEM’s Water/Methanol Injection Systems for forced-induction gas race vehicles utilizes the most robust hardware and more advanced features than any other comparably priced system.

- > **Progressive Controller** – On-demand, boost-referenced progressive controller bases injection flow on manifold pressure to ensure the proper amount of water/methanol injection at all points along the engine’s power curve.
- > **Integrated Boost Safe Feature** – Integrated “Boost Safe” output feature monitors the entire injection system and triggers a ground signal via an output if it



detects a voltage-related error (short, bad connection, broken wire, overheated pump, high or low voltage signal, etc.). Combined with the integral low-fluid switch in the tank, Boost Safe can also put your engine in safe mode before the system runs dry. This exclusive feature is found only on AEM Water/Methanol Injection Systems.

- > **Heavy-Duty High Pressure Injection Pump** – Our internally-bypassed pump does not cycle on an off and provides quiet, smooth operation. It delivers continuous flow and consistent maximum line pressure output to promote optimum atomization or the water/methanol mixture, which reduces EGTs and optimizes combustion (watch the comparison video on www.aemelectronics.com).

AEM Water/Methanol Injection System Contents (Gas):

- > One-gallon tank with anti-slosh technology and integral low-fluid sensor
- > Boost-referenced progressive controller
- > “Boost Safe” output included (see page 26 for complete failsafe operation under all conditions)
- > Heavy-duty high pressure injection pump features integral fittings, a Santoprene diaphragm and EPDM seals to resist corrosion. Our pump maximizes line pressure for optimum atomization and its quiet, smooth operation is almost undetectable
- > Machined, billet-aluminum injector with integral check valves includes multiple nozzle sizes to cover a wide range of Horsepower levels
- > 20 feet of injection tubing included to mount on virtually any vehicle
- > LED dash light for system status and low fluid warning

WATER/METHANOL INJECTION SYSTEM ACCESSORIES

Water/Methanol Nozzle Kit



The AEM Water/Methanol Injection Nozzle kit works with any 1/4” OD water/methanol injection tubing. It is an ideal upgrade part for nearly any water/methanol injection system, and for adding an additional injector to AEM systems. These injectors are CNC machined from 6061-T6 billet aluminum and include an integrated check valve. The injector nozzle kit includes one injector, one of each sized nozzle (.0155, .0315 and .0630 sizes), a “T” fitting with quick connect ends and 48” of nylon hose. PN 30-3012.

The injector nozzle kit includes one injector, one of each sized nozzle (.0155, .0315 and .0630 sizes), a “T” fitting with quick connect ends and 48” of nylon hose. PN 30-3012.



Water/Methanol Injection Filter

Our Water/Methanol Injection Filter can filter particulates as small as 40 microns. It protects the working parts of the water/methanol system and the engine from particulates in the water/methanol mixture when installed in-line before the water/methanol pump. IT CAN BE USED

ON VIRTUALLY ANY WATER/METHANOL SYSTEM USING 1/4” OD TUBING. PN 30-3003.



AEM’s Water/Methanol Injection Systems are legal in California only for racing vehicles which may never be used upon a highway.

WATER/METHANOL DIESEL INJECTION SYSTEMS

More Power, Lower Intake Temps & Lower EGTs

On Diesel applications, water/methanol injection systems reduce air inlet temps and enhance combustion efficiency which allows the engine to deliver more power with less effort. It also offers a host of benefits that promote engine longevity.

The AEM HD Water/Methanol Injection kit with 5 gallon tank includes all the elements necessary to do water/methanol injection right on nearly every turbo Diesel pickup truck or SUV. The AEM HD system is a safe, economical way to increase horsepower and torque at a fraction of the cost of multiple diesel performance add-on products, such as propane injection, nitrous injection, intercooler upgrades, etc. Make more power, reduce EGTs and emissions, and increase fuel economy with one easy to use system!

Water/Methanol Injection Advantages for Diesel Engines:

- > **REDUCES AIR INLET CHARGE TEMPS** – As with gasoline engines, water/methanol's "liquid intercooling" effect reduces air charge temps by as much as 100 degrees, and delivers a more oxygen-rich air charge.
- > **ENHANCES COMBUSTION & EFFICIENCY**– In addition to cooling air inlet temps, as the water absorbs heat in the combustion chamber and converts to steam, the steam's expansion rate increases the mean effective cylinder pressure without causing dangerous pressure spikes. This effective increase in cylinder pressure combined with methanol's promotion of complete combustion allows your Diesel engine to burn fuel more completely. When fuel is being burned more completely less is wasted, which can increase fuel economy.
- > **REDUCES EXHAUST GAS TEMPERATURES (EGTs)** – Because Diesel vehicles using water/methanol injection burn fuel more completely, less un-burnt fuel is present in the exhaust manifold where it can flash ignite to increase EGTs and create particulate matter (soot). Water/methanol injection eliminates this secondary combustion of raw fuel in the exhaust manifold to reduce EGTs by up to 250 degrees, and reduces harmful particulates to extend engine life.



The AEM Water/Methanol Diesel Injection System Advantage:

AEM's Water/Methanol Injection Systems for turbo-Diesel trucks utilize the most robust hardware and more advanced features than any other comparably priced system.

- > **Progressive HD Controller** – The AEM HD Water/Methanol Injection System uses an on-demand boost referenced progressive controller. At lower boost levels where only a small amount of water/methanol flow is needed, the controller drives the pump at low speed delivering the necessary flow rate. As boost increases the controller increases the pump speed allowing for more water/methanol to be injected into the engine, helping to boost power and reduce EGTs when it's needed most.
- > **Integrated Boost Safe Feature** – Integrated "Boost Safe" output feature monitors the entire injection system and triggers a ground signal via an output if it

detects a voltage-related error (short, bad connection, broken wire, overheated pump, high or low voltage signal, etc.). Combined with the integral low-fluid switch in the tank, BoostSafe can also put your engine in safe mode before the system runs dry. This exclusive feature is found only on AEM Water/Methanol Injection Systems.

- > **Heavy-duty High Pressure Injection Pump** – Our internally-bypassed pump does not cycle on an off and provides quiet, smooth operation. It delivers continuous flow and consistent maximum line pressure output to promote optimum atomization or the water/methanol mixture, which reduces EGTs and optimizes combustion (watch the comparison video on www.aemelectronics.com)

AEM Water/Methanol Diesel Injection System Contents:

- > Five-gallon tank with anti-slosh technology and integral low-fluid sensor
- > Boost-referenced progressive HD controller
- > "Boost Safe" output included (see page 26 for complete failsafe operation under all conditions)
- > Heavy-duty high pressure injection pump features integral fittings, a Santoprene diaphragm and EPDM seals to resist corrosion.

Our pump maximizes line pressure for optimum atomization and its quiet, smooth operation is almost undetectable.

- > Two machined, billet-aluminum injectors with integral check valves include multiple nozzles to cover a wide range of Horsepower levels
- > 20 feet of injection tubing included to mount on virtually any vehicle
- > LED dash light for system status and low fluid warning

50-STATE LEGAL WATER INJECTION SYSTEMS FOR DIESEL TRUCKS

50-State Legal System Reduces Inlet Charge Temps & EGTs, Enhances Efficiency

AEM is the first company to introduce a 50-State Legal Water Injection System for Turbo Diesel applications. Run water injection legally on the street to enhance engine efficiency and to reduce both inlet air charge temps and exhaust gas temps.

AEM's 50-State Legal Water Injection System is Legal on the Following Applications:

| Water Injection System | Model Year | Model | Engine |
|------------------------|------------|--|------------------|
| 30-3111 | 2001-2010 | Chevy Silverado HD, Kodiak, Express, GMC Sierra HD, TopKick, Savanna, Hummer H-1 Alpha | 6.6L Duramax |
| | 1994-2003 | Ford F-Series Pickup, Excursion, E-Series Van | 7.3L Powerstroke |
| | 2003-2007 | Ford F-Series Pickup, Excursion | 6.0L Powerstroke |
| | 2003-2010 | Ford E-Series Van | 6.0L Powerstroke |
| | 2008-2010 | Ford F-Series Pickup | 6.4L Powerstroke |
| | 2003-2007 | Dodge Ram Pickup | 5.9L Cummins |
| | 2008-2010 | Dodge Ram Pickup | 6.7L Cummins |

50-State Legal Water Injection System Key Features:

- > CARB EO D-392-35 for applications listed below
- > Red Nozzle denotes 50-state legal kit
- > Non-adjustable progressive controller
- > 5 gallon water reservoir with "Water Only" stamped on cap

WATER/METHANOL INJECTION SYSTEM ACCESSORIES



Water/Methanol Check Valve

AEM's Water/Methanol Check Valve kit features 15 PSI of crack pressure and works with any 1/4"

OD water/water injection tubing. It is ideal for replacing or upgrading a faulty check valve on virtually any water/methanol injection system. PN 30-2155.

Water/Methanol Injection Pump

See features, previous page. PN 30-3015.

Water/Methanol Injection Pump & Jet Kit

A tank-less system for users who already have a tank. PN 30-3002.



Water/Methanol Fuel Tanks

One-gallon tank PN 30-3011, five gallon tank PN 30-3010.



Water/Methanol Analog Flow Gauges!

See page 23.





WATER/METHANOL FAILSAFE DEVICE

Delivers Complete Peace of Mind if Your Water/Methanol System Experiences a Failure

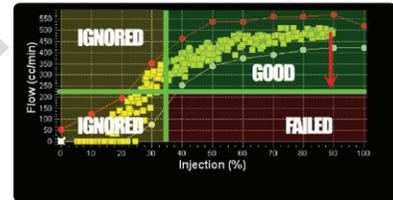
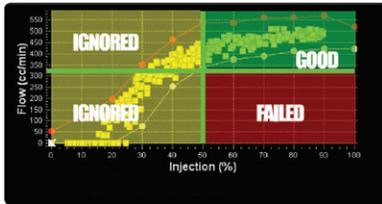
Despite the proven effectiveness and reliability of water/methanol injection, there exists a potential for engine damage if the water/methanol tank runs dry, if the pump stops working or more commonly if flow volume decreases due to fuel contamination, a clogged nozzle or a leak in the system. If you have a water/methanol injection system or are considering one, you will not find a more advanced failsafe device on the market than the AEM Water/Methanol FAILSAFE Device.

Here's Why

Most failsafe devices have settings for high and low range flow parameters, but only monitor flow at a single point. And, without actually calculating volume versus time to establish a flow rate, instead running the system at full blast and using the nozzle's potential for flow as your established flow rate, it is impossible to know the actual flow of the water/methanol system.

This user requires 50% injection % and a minimum of 325cc/min flow at WOT. The graph above shows the area of the injection flow curve that is not monitored by a competitor's single, low flow, set point failsafe device. That's a lot of area in the flow curve that is not being monitored for failure!

This graph shows both the area ignored by a competitor's single, low flow, set point failsafe device and the potential % of blockage that can occur before an alarm event will trigger within the monitored range. This user requires 50% injection % and 325cc/min of flow at WOT, and adjusted the set point to try and increase the covered area. While the part of the graph that is ignored is reduced, the potential for harm to the engine is actually greater, since the system could experience up to 50% flow reduction without triggering an alarm event (noted by red arrow).



Complete hardware included for trouble-free installation.



AEM FAILSAFE's Advantage

AEM's Water/Methanol FAILSAFE Device actively monitors the entire flow curve independent of pressure, continuously collecting flow vs. injection rate data so that any deviation from your established flow curve will trigger an alarm output that can be used to reduce boost or timing, change maps, add fuel, trigger a two-step or perform practically any action you choose to save your engine.

How It Works

Should an alarm trigger, the AEM Water/Methanol FAILSAFE Device has one low-side (ground) driver and one high-side (+12v) driver that can be configured to turn on or off during an alarm condition. For

instance, late-model Subaru WRX STi owners can connect the low-side driver to the 'limp' wire behind the kick panel that will dump boost and pull timing via the factory ECU. If you have a supercharged Chevy 350cid small-block, you can use it to pull timing from a switched aftermarket ignition system. The possibilities are endless.

A high-tech analog gauge is included with the AEM Water/Methanol FAILSAFE Device, with programmable backlighting to match your factory gauges. The gauge needle and backlighting can be configured to flash when an alarm is triggered to notify of a potential system error. This system also includes an internal data logger that records injection and alarm status data for future reference.

Easy To Set Up!

The Water/Methanol FAILSAFE Device is PC programmable (with USB connectivity) which eliminates the guesswork when setting min/max threshold parameters. It features PC-based software and an auto-scaling flow map that simplifies set up, and has an "Auto Set" feature that create a baseline configuration. A video showing its ease of set up is on www.aemelectronics.com. And it will work on virtually ANY water/methanol injection system that uses 1/4" OD or 4mm OD tubing!



Water/Methanol FAILSAFE Device Key Features:

- > Actively monitors the entire water/methanol fuel injection curve to trigger an alarm event under any defined adverse condition!
- > Can be used on virtually all water/methanol injection systems with either 1/4" or 4mm OD tubing
- > "Auto Set" feature automatically creates baseline configuration
- > Built-in warning lights inform user of an alarm trigger
- > Internal data logger records all injection flow and alarm status data
- > Included high-tech analog gauge has black and white faceplates and bezels to match vehicle interior, and is programmable for either 0-500cc/min or 0-1000cc/min flow ranges
- > Gauge alarm and backlighting are user programmable to match interior lighting

Water/Methanol FAILSAFE Device User Features:

- > Tunable PC-based software with USB connectivity
- > One low-side (ground) driver and one high-side (+12V) driver can be configured to turn on or off during an alarm condition
- > Fully adjustable alarm delay and reset period
- > 0-5v Analog output for use with data loggers and virtually all engine management systems
- > Auxiliary input for use with AEM Water/Methanol "Boost Safe" feature can trigger an alarm event if there is a system readiness issue (open circuit, short circuit, low fluid level, etc.)
- > Precision flow sensor included

HIGH VOLUME ADJUSTABLE FUEL PRESSURE REGULATORS
Supports Fuel Flow for Engines up to 1000 Horsepower

AEM's Adjustable Fuel Pressure Regulators can support enough fuel flow for engines up to 1000 Horsepower. Our patented interchangeable discharge ports enable the regulator's output to match the output of virtually any fuel pump. This unit is tapped to accept a -6 AN, or 9/16"x18 fittings and includes a 1/8 NPT port for a fuel pressure gauge or pressure sensor pick up.

- > CNC-machined from 6061-T6 billet aluminum
- > Adjustable from 20 psi to maximum fuel pump capacity
- > Interchangeable discharge ports match regulator output to output of any fuel pump
- > Diaphragm can handle most fuel types including Methanol and blends
- > Universal (PN 25-302BK) and direct-fit regulators for Honda race engines (visit www.aemelectronics.com for applications)
- > Patent # 6,298,828



Fuel Pressure Regulator 90-degree Return Fitting

This return fitting is designed for AEM Fuel Pressure Regulators. It includes a -6AN banjo bolt, fitting and two o-rings. PN 25-390.



Fuel Pressure Regulator Rebuild Kit

This kit includes a Diaphragm, O-Ring and three (3) Orifices to provide proper flow for different fueling requirements. This rebuild kit works with AEM High Volume Adjustable Fuel Pressure Regulators (PNs 25-300, 25-301, 25-302, 25-303 and 25-304). PN 25-392.



HIGH VOLUME FUEL RAILS FOR 4-CYLINDER VEHICLES

AEM High Volume fuel rails are precision-engineered for popular 4-cylinder vehicles and feature a 1/2-inch fuel bore to support fuel flow for applications up to 1,000 Horsepower. This large bore also dampens backpressure pulses created by larger injectors and works perfectly with stock injector sizes. An additional 1/8th NPT port is included to accommodate a nitrous set up or fuel pressure gauge. A custom fuel line fitting is included for the factory fuel line, and the ends of each rail are pre tapped to accept -6 AN or 9/16"x18 fittings for users who want to use custom fuel lines.

- > No additional parts required for installation
- > Available for Honda/Acura, Mitsubishi, Nissan (KA24DE top-feed conversion) and SCION



-6 AN Adapter Kits

Allows you to adapt an AN fuel line to your fuel rail. Visit www.aemelectronics.com for application information.



UNIVERSAL HIGH FLOW -10 AN INLINE FUEL FILTER
Designed to Support Vehicles up to 2500 HP!

AEM's Universal High Flow -10 AN Inline Filter is specifically designed for maximizing flow without sacrificing filtration. The end caps of our Inline Fuel Filter are machined with -10AN female fittings that allow the filter to flow up to an astonishing 12.32 gpm @ 45 PSI and 2.63 gpm @ 6 PSI. Machined O-ring receiver grooves on the end caps ensure against leaks, and all sealing o-rings and gaskets are made of Viton for outstanding performance when using gasoline, alcohol or gasoline/alcohol blended fuels. PN 25-201BK.

- > Easy mounting virtually anywhere in the vehicle (2" OD x 10" L)
- > Filter's media filters out contaminants as small as 7 microns in size
- > Can filter most fuel types including Methanol and blends
- > Common replacement filter (AEM PN 25-4004, Wix PN 24004, NAPA Gold PN 4004)
- > Dimensional diagram and flow test data available on www.aemelectronics.com



AEM -10 AN Inline Fuel Filter.



500 HP HIGH VOLUME FUEL FILTER
Designed to Support Vehicles up to 500 HP

AEM's High Volume Fuel Filter is capable of supporting fuel flow for vehicles up to 500 Horsepower. Double O-ring seals deliver superior leak protection and the filter's 6061 aluminum body provides excellent durability. The standard high-flow filter element is readily available. This unit is a direct-fit replacement for most Honda/Acura applications or used as a floating application on most vehicles. PN 25-200BK.

- > Thread sizes for filter are 12x1.25 top and 14x1.50 bottom for fittings (universal applications)
- > Uses standard high flow replacement filter (NAPA Gold Part #PN4950 or FRAM part #CH6069)

TRU-TIME ADJUSTABLE CAM GEARS

From the Company That Pioneered Adjustable Cam Gears for 4-Cylinder Racecars

AEM TRU-TIME Adjustable Cam Gears increase Horsepower and Torque without having to change the camshaft(s) and are must-have items for engines that are milled, forced induction, high compression and/or utilizing aftermarket competition cams. TRU-TIME Cam Gears are available in a three- and five-bolt design. Five-bolt cam gears have an "8" in the suffix (23-8XX), and three-bolt cam gears have a "6" in the suffix (23-6XX).

- > Six-point hex bolts stand up to repeated adjustments and feature an integral washer flange for greater load distribution
- > Laser-etched markings on the leading edge of the gear allow for quick, accurate adjustments
- > CNC-machined from 6061-T6 billet aluminum



AEM's Adjustable Fuel Pressure Regulators and Tru-Time Adjustable Cam Gears are legal in California only for racing vehicles which may never be used upon a highway.



DYNO-SHAFT ON-VEHICLE DYNAMOMETER

Measures Torque and RPM at the Vehicle Driveline While You Drive for REAL Power Numbers!

AEM's Dyno-Shaft on-vehicle dynamometer system is literally a dyno on your car. It is as accurate as the most respected dynamometers in the industry. It provides real, accurate Horsepower and Torque numbers that are produced by measuring a vehicle's Torque and RPM at the driveline, while you drive, and does not skew readings like accelerometer-based systems.

Eliminate Guesswork—Know for sure if slower times are due to a loss of power, vehicle set up or driver error.

Engine Tuning – Stop trying to approximate real world test conditions and start testing in real world conditions! Finally, you can test with actual intake air conditions, actual vehicle loading and the hundred other things that make a real vehicle behave very different than it does when on a dyno.

Chassis Set Up—Know when the tires will break loose. Ideal for optimizing drag launches and determining the longitudinal forces your tires can handle in road racing.

Torque Converter and Clutch development – Finally know what your Torque converter or clutch is doing while you are making a pass!

Dyno It All—The Dyno-Shaft accurately reads in all conditions including steady state, uphill or downhill, even while coasting down! It can even measure the effectiveness of an Exhaust Brake on diesel applications.

How It Works

AEM uses a set of laboratory-grade strain gauges inside of a supplied calibrated slip yoke to measure Torque at the driveshaft. Essentially, the Dyno-Shaft slip yoke assembly becomes the sensor for measuring driveshaft Torque. This is combined with a driveshaft speed sensor to precisely measure the rotational speed of the yoke to determine RPM. The combination of real Torque and RPM readings allow the Dyno-Shaft to output Torque and Horsepower numbers as accurately as any dynamometer but in a more useful setting, and eliminates all of the inaccuracies associated with accelerometer or GPS based systems.

The data broadcast device (Controller) for the Dyno-Shaft yoke is non-contact, does not have slip rings, does not require batteries and is maintenance free. This Controller installs over the transmission tail shaft housing and allows information from the Dyno-Shaft to be transmitted via AEMnet (AEM's CAN-bus communications network) to a data logger, AEM or other programmable engine management system or custom dashboard.

The Dyno-Shaft assembly includes laboratory-grade strain gauges inside a supplied slip yoke, and a controller.



Pro Series slip yoke is machined from Chrome Moly to ensure balance and concentricity.



Pro Series slip yoke undergoes a laboratory-grade calibration process.



Controller unit includes integrated driveshaft speed sensor.



What Is AEMnet and CAN-bus?

AEMnet is a high-speed communications system based on CAN-bus 2.0 architecture. AEMnet allows you to daisy chain AEMnet-equipped products together using a single cable to connect each device, reducing the wiring time required to add devices. CAN bus (Controller Area Network) is a single- or dual-wire serial bus protocol that connects systems and sensors and allows them to communicate.

Dyno-Shaft Sportsman & Pro Series Kits

The **Sportsman Series** kit features a slip yoke that is manufactured from ductile cast iron and the splines are manufactured from a broaching process that produces industry-leading mating fit parts. Each Sportsman slip yoke is temperature compensated and individually calibrated for load through a multi-point process. The Dyno-Shaft Sportsman Series is designed for competitive amateur racers and serious performance enthusiasts whose applications can utilize a cast-iron slip yoke. For higher stress applications, see the Dyno-Shaft Pro Series kit below.

The **Pro Series** kit features a slip yoke that is manufactured from Chrome Moly and CNC-machined to ensure balance and concentricity. Each unit is heat treated to ensure optimum tensile strength. The Pro Series yoke is case hardened for applications with roller bearing extension housings and undergoes a Laboratory-Grade calibration process. Each Pro Series slip yoke receives a unique polynomial curve fit to ensure the most accurate readings across the entire Torque band. These processes ensure product reliability and accurate readings race after race regardless of operating conditions.

Sportsman slip yoke is manufactured from ductile cast iron.



Sportsman slip yoke splines are manufactured from a broaching process that produces industry-leading mating fit parts.



Controller unit includes integrated driveshaft speed sensor.



Installation

Installation is relatively straightforward. Users install the Controller and integrated driveshaft speed sensor externally onto the transmission tail shaft housing, then replace the factory slip yoke from their transmission with the Dyno-Shaft slip yoke.

Recording, Reading and Outputting Dyno-Shaft Data

At its core, the Dyno-Shaft is a sensor that measures Torque and RPM and uses this data to output a vehicle's Horsepower and Torque in real time. You will need a 'host device' to record, view and output data from the Dyno-Shaft. The following devices are capable of reading and logging data from the Dyno-Shaft via AEMnet:

- > The **AEM AQ-1 Data Logger** and **Infinity EMS** are the ideal host device solutions for the Dyno-Shaft as they provide the broadest set of features and functionality, including:
 - > The ability to create dyno charts which can be saved, printed or shared electronically.
 - > These products feature complete vehicle data logging capability, so continuous power data can be recorded and replayed along with a wide variety of other vehicle information.
- > **AEM Series 2 Programmable EMS**
 - > Like the AQ-1, the Series 2 EMS allows logging of continuous power data which can be replayed along with a wide variety of vehicle information, however this device currently does not feature the ability to create dyno charts. This functionality will be added in the future.

Certain CAN-enabled devices from other manufacturers are configured to read Dyno-Shaft data. If you do not have one of the AEM devices listed above you will need one of the devices listed below, and will need to confirm that it can read the data from the Dyno-Shaft by contacting AEM Tech Support or Sales Dept at (310) 484-2322, or verifying through your authorized AEM parts supplier:

- > CAN-enabled Data Logger
- > CAN-enabled Programmable Engine Management System
- > CAN-enabled Racing Dash

Please use the DYNOSHAFt APPLICATION GUIDE on www.aemelectronics.com for Dyno-Shaft applications.

AEM Dyno-Shaft Features:

- > Measures Torque and RPM at the driveline to deliver real Horsepower and Torque numbers
- > Does not skew readings like accelerometer-based units
- > Eliminates guesswork when troubleshooting or making changes at the track
- > Laboratory-grade strain gauge requires no slip rings or batteries and is maintenance free
- > Each unit is individually calibrated at AEM
- > Create dyno charts to save, print, or share electronically with AEM AQ-1 Data Logger, AEM Infinity EMS & Dyno-Shaft Gauge
- > Can be used with some CAN-enabled engine management systems, data loggers and displays (contact AEM Technical Support or Sales Dept at (310) 484-2322 or contact your direct vendor to confirm whether your CAN-enabled device can read the Dyno-Shaft datastream)

DYNO-SHAFT POWER GAUGE

NOTE: The Dyno-Shaft Power Gauge is for use with AEM's Dyno-Shaft on-vehicle dynamometer system. It is sold individually for users who are installing or have already installed a Dyno-Shaft. You must have the AEM Dyno-Shaft to be able to read, record and create dyno charts that you can save, print or share electronically from the Dyno-Shaft Power Gauge.

AEM's Dyno-Shaft Power Gauge is a display gauge/dyno interface with logging capabilities that allows you to view Horsepower and Torque data in real time via information transmitted from the Dyno-Shaft, and create dyno charts to save, print or share electronically. The Dyno-Shaft Power Gauge features two buttons for viewing peak Horsepower and Torque values, resetting peak power values and replaying previous runs. In addition to logging Torque and Horsepower, it can perform logging of engine tuning parameters including RPM, Boost, vehicle speed, Air/Fuel Ratios, Throttle Position and driveshaft RPM.

A full-color Organic Light Emitting Diode (OLED) display resides inside the center of the unit's 52mm (2 - 1/16") housing and provides immediate reference to Horsepower or Torque (user-selected). The sweeping LEDs that line the outside of the faceplate can easily be user configured to display Horsepower, Torque, or Boost. Users can program these LEDs to almost any possible configuration imaginable: max Boost, HP or Torque in the color they choose. The Dyno-Shaft Power Gauge also includes interchangeable faceplates (black and white) and bezels (black and silver) to customize its appearance.

Intuitive Software and Set Up

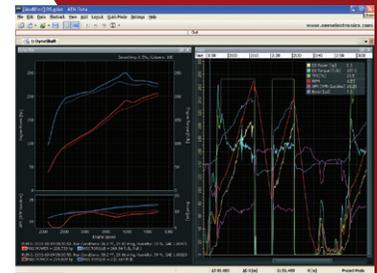
The Dyno-Shaft Power Gauge includes set up software for configuring the gauge and downloading log files/outputting dyno charts in .PNG files via supplied AEMdata software. Set up and downloads are done via a USB connection to a PC.

Easy to Understand:

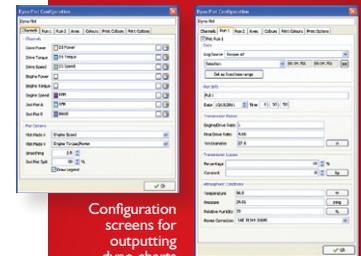
- > View Horsepower and either Torque or Boost in real time!
- > Logs RPM, Boost, AFR, TPS, Torque, Power, VSS, Driveshaft RPM
- > Outputs dyno graphs/charts with logged parameters via USB connection to PC—print the files or save as .PNG images!
- > Full color Organic Light Emitting Diode (OLED) center display
- > User Selectable LEDs—Sweeping LEDs on outside of faceplate can display Horsepower, Torque, or Boost!
- > User configurable LEDs allow the user to select the colors the LEDs display as chosen value changes
- > Two buttons for viewing peak Horsepower and Torque & replaying most recent readings
- > 52mm (2 - 1/16") Standard gauge housing

Simple to Use:

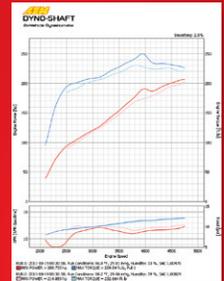
- > Set up software included, USB connection to PC
- > Dyno-Shaft Gauge is able to power Dyno-Shaft via AEMnet connection (one wire!)
- > On-board boost sensor (29 PSIG)
- > Configurable RPM input for logging
- > Configurable Vehicle Speed Sensor channel based on AEMnet driveshaft RPM
- > Differential Analog Inputs for Air Fuel Ratio and Throttle Position Sensor (if unavailable from AEMnet)
- > Dimmer input
- > Positive lock connectors
- > External pressure sensor input for boost levels over 29 psig
- > 5 volt power supply and ground to run power for external boost sensor and TPS



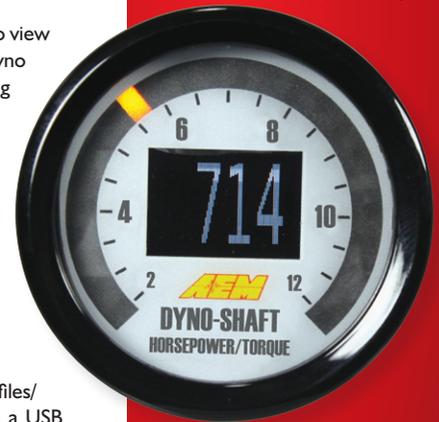
AEMdata software provides the interface for viewing Dyno-Shaft data with our AQ-1 Data Logger, Infinity EMS or Dyno-Shaft Power Gauge.



Configuration screens for outputting dyno charts from the AQ-1 Data Logger.



Dyno charts are outputted in .PNG format for sharing electronically or printing.





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