PERFORMANCE ELECTRONICS

SPECIFICATIONS	INFINITY 506 PN: 30-7106	INFINITY 508 PN: 30-7108
2-Stroke Engines	Yes	Yes
4-Stroke Engines	Yes	Yes
Cylinders	Up to 6	Up to 8
High Impedence Injectors (Sequential)	Up to 6	Up to 8
Low Impedence Injectors (Sequential)	Up to 6	N/A
Coils (0-5V Falling Edge)	Up to 6	Up to 8
Digital Inputs	Up to 6	Up to 6
VR/Mag Inputs	Up to 4	Up to 4
Analog Voltage Inputs	Up to 9	Up to 9
Analog Temp Inputs	Up to 3	Up to 3
Knock Control	2-Channel	2-Channel
On Board Wideband Air/Fuel Controllers	1	1
Drive-By-Wire	Single	Single
H-Bridge Channels	1	1
High Side Outputs	1	1
Low Side Outputs	8	6
Low Side Outputs that can be PWM	8	6
4-Wire Stepper Motor Control	Yes	Yes
CAN Channels	2	2
RS232 Channels*	1	1
Boost Control (RPM, Time, Gear, VSS, Switch Input, Flex Fuel Content)	Yes	Yes
Variable Cam Control	Up to 2	Up to 2
Engine Protection**	Yes	Yes
Launch Control	Yes	Yes
Nitrous Control	Single Stage	Single Stage
Traction Control	Up to 2-Wheel Speed	Up to 2-Wheel Speed
Data Logging	Up to 64GB	Up to 64GB
Weather Resistant Sealed Electronics	Yes	Yes
Connector Pins	80	80
Enclosure Dimensions	5.85" x 5.55" x 1.8"	5.85" x 5.55" x 1.8"
Weight	16.8oz / 476.27g	16.8oz / 476.27g

* Dual use pins. Tx and Tx shared with 2 digital inputs. DOES NOT OUTPUT AEM SERIAL DATA.
** Engine protection is programmable and can be coolant temp-, oil temp-, oil pressure-, AFR vs MAP, intake air temp-, knock- or fuel pressure-based.

AIRFLOW MODEL BASED CALCULATIONS
Infinity's airflow model-based systems greatly reduce the amount of time it takes to set up and tune an engine by eliminating many of the lookup and trim tables (correction tables) necessary in previous generation ECUs. The Infinity's airflow based, or volumetric efficiency (VE) based models calculate an engine's requirements in real time based on an advanced algorithm that has various modes for calculating air flow. Once the user inputs an engine's basic parameters (displacement, cylinders, ignition type, and firing order) and methods of calculation for airflow and ignition they can begin setting the engine's VE table in the software.

InfinityTuner USER INTERFACE SOFTWARE
InfinityTuner is optimized for speed and performance. The software has the power to control a multitude of features found in today's modern racecars, and features an advanced tuning Wizard to reduce set up time. An ECU Setup Wizard takes complex calibration setup work and simplifies it through a smart interface that features tabs for quick set up of vital engine functions. (SHOW IMAGE OF WIZARD). Each tab includes a description of the function.

InfinityTuner software is highly flexible. It allows you to choose from multiple strategies for boost control, idle control, wheel speed-based traction control, charge air temp blend, launch control and more.

All controls in the Infinity ECU are synched to logged data which allows users to edit calibration data during log playback to minimize tuning time. AEMdata, AEM's advanced data logging analysis software is also included for reviewing data logs.

ULTRA-HIGH RESOLUTION FUEL CONTROL
The Infinity ECU calculates injector pulsewidth in units of 1/10th of a microsecond (0.0000001 second). Individual cylinder fuel trim is included and user adjustable.

ACCURATE IGNITION TIMING UNDER ANY CONDITION
InfinityTuner software features a 3D ignition trim map (coolant and air temp based), and its back-end timing code is tested to 100,000 RPM. Individual cylinder ignition trim is included.

FLEX FUEL COMPENSATION
Flex fuel compatibility is included, and the Infinity is able to make automatic adjustments for ethanol content in the fuel with the addition of an ethanol content sensor (sold separately).

MULTI-FUEL CAPABLE
The Infinity has the ability to run two separate fuel types simultaneously through staged fuel injection

DRIVE BY WIRE CAPABILITY
The Infinity Series 5 ECU can control one drive by wire throttle body and includes auto calibration for DBW sensors. It includes idle control, an optional drive by wire rev limiter (for use as a launch limiter, holding limiter or in conjunction with other rev limiters) and necessary failsafes based on redundant sensor inputs.

IDLE CONTROL
The Infinity ECU uses a coolant temp based idle control model. It includes an RPM vs. Engine

Speed Rate idle decel feature that provides accurate control of the IAC and allows for adjustment of engine braking. The Infinity's idle TPS offset provides smoother low idle operation when necessary, like driving in the pits or return lane following a pass.

MULTIPLE BOOST CONTROL STRATEGIES
Choose from time, gear, vehicle speed, switch-based or other boost control strategies. The Infinity's boost control includes two 2D base duty tables and two 2D boost target tables. The second tables can be used as a trim, and users can choose from multiple strategies including IAT, MAP, Baro (kpa), throttle %, flex fuel content, boost target and more. Please visit our Forum for an in-depth review of the Infinity's boost control capabilities.

NITROUS CONTROL
The Infinity's software allows you to run a single-stage wet or dry nitrous set up (four-stage available soon). This feature includes nitrous timing delay to account for nitrous bleed out, and can be set up for water/methanol injection tuning. Four stage nitrous will be upgraded for free for existing Infinity users when it becomes available.

VARIABLE VALVE CAM CONTROL
Set base duty, limit and VVC cam target for up to four cams through the InfinityTuner Wizard. Users are able to achieve a VVC cam target by setting Cam 1 base timing and base duty cycle % in a 2D table, and the software features a 1D base duty % table that controls the base duty cycle for the VVC output, which is tunable based on the VVC target.

MAP SWITCHING
The Infinity includes up to four separate ignition maps, four separate Lambda maps and two separate VE maps with independent values. Using AEM's 12 Position Trim Pot, this powerful feature delivers many valuable tuning options including:

- Multiple maps for multiple track conditions (practice map, rain map, qualifying map, FTW map)
- Change boost target
- Change Lambda target
- Change ignition target
- Tie boost, Lambda and ignition targets together and change them all
- Ideal for test mapping during tuning
- Change boost base duty
- Control PWM switches (like water/methanol injection)
- Choose between 2 VE tables for VVC or when restrictors are in place
- Blend between flex fuel ignition maps
- Blend by cam position and gear

ENGINE PROTECTION
Multiple engine protection strategies are incorporated into the Infinity ECU. Available strategies include:

- MAP (create limp mode using Assumed Pressure Ratio table to compensate for pressure if sensor fails)
- Overboost (boost fuel cut until boost/throttle decreases)
- Fuel pressure (injector flow compensated for variations in pressure, sensor required)
- Oil pressure (trigger light or limit RPM if pressure drops below set value, sensor required)
- RPM (rev limiter)
- Coolant temperature, Temp vs. RPM (fuel and ignition cut, sensor required)
- Knock control with feedback

- Lean protection (fuel and ignition cut)

REAL-TIME ADVANCED DIAGNOSTICS
The Infinity's diagnostics software can be configured to constantly monitor signal and current quality to alert the user of a potential issue before it creates the potential for engine damage.

INTERNAL WIDEBAND CONTROLLER
A Bosch wideband controller is built into the Infinity ECU. This provides highly accurate closed-loop AFR targeting and enables the sensor diagnostics in the ECU to determine the operational condition of the sensor.

LIGHTNING-FAST DATA LOGGING
Infinity's logging feature supports 2 different file systems. A custom file system option will support 100 channels at up to 1 KHz using a high-performance USB flash drive (sold separately). A standard FAT file system will support 10 channels at up to 1KHz, 20 channels at up to 500Hz or 100 channels at up to 200Hz. The Infinity includes a 4GB USB memory stick and the user can replace this with up to 64GB. Additionally, the user can also log directly to the PC at up to 500Hz when connected.

AEMdata DATA ANALYSIS SOFTWARE
AEMdataprovides an advanced interface for viewing the log files generated by the Infinity ECU.

DUAL KNOCK SENSING
Dual knock signal conditioning circuits allow for precise measurements of knock levels. The Infinity can utilize both Piezoelectric and Flat Response type knock sensors.

RELIABILITY
The Infinity ECU is constructed using automotive-rated components designed to withstand the harshest racing environments. Its enclosure and connectors are sealed to make it suitable for engine bay mounting. An advanced wear-leveling strategy for flash memory ensures a lifetime of reliable performance.

COMMUNICATIONS
The Infinity ECU is able to transfer data via USB at up to 480 Mb/second. It features a fully-sealed IP67 communications connection system.

NETWORK INTERFACES
Infinity is AEMnet enabled and will communicate with another AEMnet-equipped device. It is able to output to 3rd party dash/logger devices (not all 3rd party dash/logger devices may be supported). Please contact your AEM dealer for more info.

INFINITY ECU ADVANCED TUNING PACKAGE
Certain Advanced Tuning functions, hardware outputs and sensor inputs are available for the Infinity Programmable ECU. The Infinity ECU's Advanced Tuning Package is available at no charge for a limited time. Please contact your AEM dealer for more info.

INFINITY SERIES 5 EMS CAPABILITIES:

- Airflow model based calculations
- VE-based engine startup
- Multi-fuel capable
- Flex fuel compensated – fuel, ignition and boost with blend
- Multiple boost control strategies (time, gear, vehicle speed, switch and more)

- Drive by wire control (single H-bridge channel)
- 2-step and 3-step programmable launch control
- Anti-lag and rolling anti-lag
- Programmable traction control,up to 2-wheel speed
- No-lift shift
- User configurable soft-cut rev limiters
- User configurable anti-lag
- Map switching (4 Separate ignition maps, 4 separate Lambda target maps, 2 separate VE tables)
- Single stage wet or dry nitrous control
- Integrated engine protection strategies
- Target Lambda table, 10x10
- Open-loop fuel pressure compensation
- O2 lean-out protection
- 2-channel adaptive knock control
- Configurable coil dwell (RPM, voltage and load based)
- Individual cylinder ignition trim (RPM based)
- Individual cylinder fuel trim (RPM based)
- 3D ignition trim maps (coolant and air temp)
- Real-time sensor diagnostics
- Ignition table, 20x20