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## Advanced Engine Management System ECM88Axxx

The ECM88Axxx engine management system meets the performance and reliability needs of converted diesel engines, as well as dedicated Gasoline, CNG, LPG and Hydrogen engines. It is the ideal singlesystem solution.

#### Key Benefits

- Three systems in one integrated fuel, ignition and vehicle speed control
- Best fuel economy and range with Deceleration Fuel Cut-Off (DFCO) - stops fuel flow during gear shifting, coasting and braking
- Maximum power, torque and fuel economy through optimized ignition and fuel control
- **OEM** quality
- Versatile fleet analysis software monitors operation of your fleet
- Professional, experienced turnkey support
- Euro VI emissions standard capable
- On-Board Diagnostics (OBD)
- CAN Capable (J1939)
- Gasoline, CNG, LPG or Hydrogen options
- 4, 6, 8, 10, 12 and 16 cylinder configurations
- 12 or 24 Volt systems
- Weatherproof control module and wiring
- Ideal for buses/trucks/gensets and marine

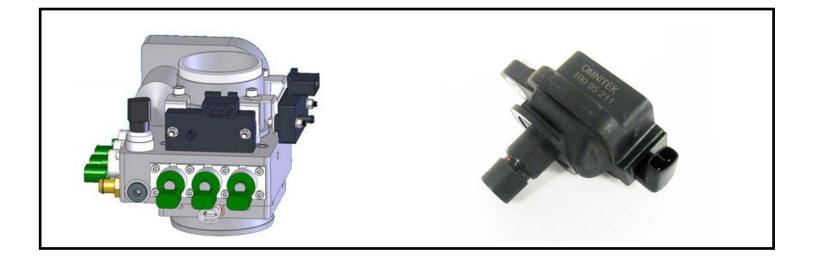


#### Key Features

- Electronic Throttle (Drive-by-Wire)
- Lean-burn Control
- Knock Sensing

### **Additional Features**

- Programmable by authorized technicians
- Coil per cylinder, inductive non-wasted spark ignition
- Active spark diagnostics with protective response logic
- Vehicle speed limiting capability
- Self-learning continually optimizes air/fuel ratio for BEST fuel economy and power



# Advanced Engine Management System ECM88A

	Advanced Engine Management Sy				
		Features & Specifications		Typical Function & Comments	
or	MC9S12X-series Motorola Processor		16bit @ 40 MHz		
Processor		Memory	512 kB	main code storage	
ő	RAM		32 kB	temporary data storage	
۲ ۲	EEPROM		4 kB	Operational data and trouble code storage	
	Operating Voltage				
	Nominal Operating Voltage		12 or 24 VDC, auto-sensing 32 VDC / ~ 40 VDC		
a	Maximum Continuous / Short-term Voltage		32 VDC 7 ~ 40 VDC		
sic	Electrical Protection				
Physical	Spike Protection		6600 W	• 5 x SAE standard	
8	Reverse Polarity Protection		Internally protected to -30V	• applies if power and ground wires are swapped	
Ital	Internal Power Supplies				
ner	1 x 5 V, 800 mA regulated supply			Internal ECM usage only	
Power, Environmental &	3 x 5 V, 34 mA regulated sensor supplies			• sensor supplies are independent of each other	
vir	Environmental				
ш	Rated ambient temperature		-40 - +121 °C	<ul> <li>max internal temp - lower recommended</li> </ul>	
/er,	Enclosure		cast Aluminum	<ul> <li>water, chemical and RFI-resistant</li> </ul>	
Ň	Connectors		52 pin+28 pin sealed camlock	includes 4 high current pins	
	Physical				
	Mass with enclosure		~ 1000 grams		
	Dimensions (L x W x H)		~ 185 mm x 166 mm x 37 mm		
	4	Analog			
	4			<ul> <li>pressure sensors</li> <li>position, other sensors</li> </ul>	
	4	Dual-scale resistor pullup		<ul> <li>coolant &amp; air temp, exhaust temp, fuel temp</li> </ul>	
		High-Speed Digital (Timer)		coolance a un temp, exhaust temp, ract temp	
	2	Variable reluctance with pulldowns		- crankshaft, campbaft position	
uts	2	Digital or Hall-effect with pulldowns		<ul> <li>crankshaft, camshaft position</li> <li>crankshaft, camshaft position or vehicle speed</li> </ul>	
Inputs	5	Standard Digital		· cranshare, canshare posicion or venicle speed	
_	6	Standard digital input		- switches and slow speed digital devices	
	0			switches and slow-speed digital devices	
	2	Specialized			
	2 1	Knock sensor inputs Universal Exhaust Gas Oxygen (UEGO) Sensor input		Lean hum lambde control, come 2, 4	
	1	Stoichiometric oxygen sensor input (2 sensors if UEGO not used)		<ul> <li>lean-burn lambda control, some λ=1</li> <li>λ=1 control, multi-bank, pre &amp; post-catalyst</li> </ul>	
	•	Digital			
	2	5 A PWM output drivers		O2 sensor heaters	
	5	1 A PWM output drivers		Solenoids, indicator lights, relays	
	4	1 A standard output drivers		•	
	1	Tachometer output (low current)		One pulse per cylinder	
uts	8	Ignition coil IGBT outputs with hardware overcurrent protection, dwell time limiting, avalanche, short circuit and low coil current		Distributorless ignition	
Outputs		protection			
ō	8	Peak-and-hold PWM injector drivers: configurable peak and hold		• all common injector styles are software	
		current setpoint and duration, also can be used for saturated		programmable with diagnostic monitoring	
	1	injectors Drive-By-Wire 7 A peak H-bridge driver		electronic throttle control	
	1	Stepper motor 1 A Dual H-bridge driver		<ul> <li>idle air control, feedback carbureted control</li> </ul>	
	'			• Idle air control, feedback carbureted control (fuel restriction or air-bleed)	
Comm	1	Controller Area Network (CAN) data bus channels J1939		industry standard for communication with	
	1	ISO 14230 K-Line serial		<ul><li>peripherals and other control modules</li><li>ISO-standard diagnostic tool protocol</li></ul>	