Autronic
FUEL INJECTION — ADVANCED CONTROLS

AUTRONIC SM3 ECU Specifications

SM3 ECU is available as a Loom kit or Connector set kit

Loom kit includes ECU, unterminated wiring loom, Autronic Air temperature sensor, Serial Communications Cable.

Connector set kit includes ECU, Connector set with pins & seals, Autronic Air temperature sensor, Serial Communications Cable

Microcomputer		Intel 16 bit 20MHz
Power Supply - Voltage	Normal operation	12v to 14v DC nominal
		6.2v to 18v DC continuous
	Supply limits	+/- 24v (5 minutes)
		+/- 1000v inductive spike (10usec)
		80A Alternator load dump
Power Supply - Current	ECU only	< 0.2 Amp
	At Idle	< 1.0 Amp
	At maximum Load	< 16 Amp (depending on injector type)
Operating temperature range	Minimum to Maximum	-40 deg C to +85 deg C
Engine Cylinder selections	Number of cylinders	1, 2, 3, 4, 5, 6, 7, 8, 10, 12
	Types	2 stroke, 4 stroke, Rotary
Engine operation ranges	1 to 4 cylinders	0 to 28000 RPM
	5 or 6 cylinders	0 to 18000 RPM
	7 or 8 cylinders	0 to 14000 RPM
	10 or 12 cylinders	0 to 12000 RPM
Hardware Drivers	Injection	6 saturation
	Ignition	4 Push-Pull 1A max, 0.8A continuous
	Outputs 1 - 4	Push-Pull 1A max, 0.8A continuous
	Outputs 5 – 8	Open-Collector, (2x2.5A, 3.5A, 1A)
	Outputs PWM 1 - 2	PWM up to 1.2kHz, (5A, 3.5A)
Injection Pulse Timing	Minimum pulse time	0.65 msec
	Maximum pulse time	50 msec
	Resolution	0.1% approximately
	Accuracy	< (1% + 10usec)
Injection Phase Timing	4 stroke Range	0 to 717 deg
	2 stroke / Rotary Range	0 to 359 deg
	Resolution	2.8 deg
	Accuracy	< (1.4deg + 0.3 msec)
Ignition timing	Timing modes	Dwell or Pulse
	Timing range	-64 deg to +63.5 deg
	Resolution	0.5 deg
	Accuracy	0.3 deg
Base Fuel & Ignition tables	RPM sites	1 to 32 freely definable
	Load sites	1 to 16 freely definable
Data Logging Memory	Size	112k bytes
Housing	L * W * H	130 * 124 * 48mm
	Type	Anodized aluminium
Weight		0.5 kg
Connectors	Main connector	42 way splash & dust proof
	Communications	3.5mm stereo Serial Data

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AUTRONIC SM3 Input / Output Software Function overview

Input Functions including	Output Functions including
4 Input switch functions are convertible to Toggle, Stretch or Monostable actions	4 Feedback functions including 1 Continuously Variable Camshaft, 2-axis target tables with 2 inhibit parameters
Analogue inputs can be used as switch inputs with 2 different thresholds	Boost, ALS, Idle, Intercooler, Tacho, NOS, Fuel pump
	13 User defined 2-axis functions each with 2 inhibits
Analogue sensor inputs can be defined with preset, Linear or User defined tables	Traction control with Dry / Wet modes and up to 4 wheel speed inputs depending on input channel usage
Selection of Fuel / Ignition trim tables	Air conditioner, 2x Fans, Fuel used, Tumble valve, Error light

AUTRONIC SM3 Input / Output Pin Functions

Pin Name	I / O	Main function / Characteristic	Alternate function / Characteristic	Usage Limits / Characteristic
Injector 1	Output	Saturation drivers. Low resistance injectors must be fitted with ballast resistors to provide minimum 5 ohms resistance per driver (for injector current limiting)	Injector 1 only	
Injector 2	Output		Outputs with 5 ohm minimum resistance load per output	ON/OFF or 10Hz only PWM functions. (Other PWM frequencies not allowed). Switch inputs are switch to Ground type
Injector 3	Output			
Injector 4	Output			
Injector 5	Output			
Injector 6 / Switch 1	Output or Input		Output, 5 ohm min resistance or Switch input (700Hz max)	
Switch 2	Input	Switch Inputs with internal Pull-up resistor, (200Hz max)	Switch 2 & Switch 3 only	
Switch 3	Input			
Ignition 1	Output	Ignition trigger control, Push / Pull driver, 1 Amp per Ignition channel	Ignition 1 only	
Ignition 2	Output		Outputs with Push / Pull driver, 1 Amp per Output channel	Only 10Hz PWM or ON/OFF functions
Ignition 3	Output			
Ignition 4	Output			
Output 1	Output	Stepper motor (4 or 6 wire), Push / Pull driver, 1 Amp per Output	Output with Push / Pull driver, 1 Amp per Output	Outputs are ON/OFF, 10-500Hz PWM or H-Bridge. Multi-Select 10-500Hz PWM outputs to add drive currents
Output 2	Output			
Output 3	Output			
Output 4	Output			
Output 5	Output	Open-collector, 2.5 Amp per Output. Constant or Switched power supply		
Output 6	Output			
Output 7	Output	Open-collector, 3.5 Amp		
Output 8	Output	Tacho, Open-collector, 1 Amp	Constant or Switched supply	
PWM 1	Output	Open-collector 9.5-1220 Hz PWM, PWM1 – 5A, PWM2 – 3.5A		PWM1 - 6A peak current
PWM 2	Output			
HSI 1	Input	Camshaft position inputs or Speed inputs	Switch	7 kHz max
HSI 2	Input		Switch or Digital Airflow	7 kHz max
HSI 3	Input	Speed input	Switch	2.2 kHz max
Analog 1	Input	Spare temp / pressure	Temperature / Pressure, Control potentiometers, High-side switches	2 wire sensors require Pull-up resistor
Analog 2	Input	External MAP / BARO		
O2	Input	Air fuel ratio input		
Sync	Input	Sync input (Hall / Reluctor)	Speed input	7 kHz max
Cylinder	Input	Hall or Reluctor sensor, Generic and OEM trigger patterns		Scope function