



## eM051 4-Cylinder ECU

*eM051 is a compact high-performance fully-programmable Engine Control Unit designed to control four stroke engines up to 8-cylinder, 8 injectors 4 coils. It has an integrated wide lambda control for Bosch LSU 4.2 or 4.9 with auto-tuning functionalities to get best performance from the engine. Datalogger integrated as optional with 3-axis accelerometer and datalogger for off-line data analysis. Configuration software and firmware updates are freely available.*

### MAIN FEATURES

- ◆ Up to 8 injectors
- ◆ Up to 4 coils
- ◆ Integrated Wideband Lambda Controller (Bosch LSU 4.2 or 4.9)
- ◆ Inductive VSR sensor and digital (Hall) pickups
- ◆ 1 Step motor for idle control
- ◆ 2 Drive-By-Wire
- ◆ CAN 2.0b communication protocol
- ◆ Optional Integrated datalogger
- ◆ 3 axis accelerometer
- ◆ Map switch selection
- ◆ Quick-Shifter input
- ◆ MIL, LIGHTS, FAN, FUEL PUMP outputs
- ◆ 4 speed inputs, 8 digital inputs, 16 analog inputs (5V@ 10 bit) for pressure and temp. sensors.
- ◆ Fully programmable with eMoticom PC Software **Caltool**
- ◆ PC communication: USB and CAN (eM008 USB dongle required)
- ◆ Operative voltage: 8-16V (with reverse polarity protection)
- ◆ Operative Ambient Temperature Range: -40... +105°C
- ◆ Encluse: CNC machined anodized aluminum
- ◆ Size: 123 x 74 x 27mm
- ◆ Weight: about 200g

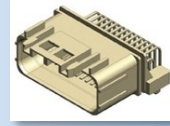
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# PINOUT

eM051 Side Connector: **JAE MX47039NF1**  
**WIRING** Side Connector: **JAE MX47039SF1**  
**WIRING** Side Pin: **JAE M47565H4FA**  
**WIRING** Side Retainer **JAE MX47039XF1**



eM051 Side Connector: **JAE MX47039NF2**  
**WIRING** Side Connector: **JAE MX47039SF2**  
**WIRING** Side Pin: **JAE M47565H4FA**  
**WIRING** Side Retainer **JAE MX47039XF1**



	SIGNAL	FUNCTION		SIGNAL	FUNCTION
1	TPS B2	TPS B - Signal Trace 2	21	NEUTRAL	NEUTRAL Switch input
2	TPS B1	TPS B - Signal Trace 1	22	LAUNCH	LAUNCH Switch input
3	TPS A2	TPS A - Signal Trace 2	23	FRONT LEFT SPEED	FRONT LEFT SPEED Sensor Input
4	SCAM-	CamShaft Position Sensor [-]	24	FRONT RIGHT SPEED	FRONT RIGHT SPEED Sensor Input
5	TPS A1	TPS A - Signal Trace 1	25	SPEE-DLIM	SPEEDLIM Switch Input
6	SUB-THROTTLE	SUBTHROTTLE Analog Input	26	GEAR POS	GEAR POS Sensor Analog Input
7	GRIP 1	GRIP 1 Analog Input	27	+VBAT	+12V POWER SUPPLY
8	AN SPARE 2	Analog Input 2 (Spare)	28	+VBAT	+12V POWER SUPPLY
9	T AIR	Air Temperature Sensor (NTC)	29	ANTI LAG / CLUTCH	ANTI LAG / CLUTCH Switch Input
10	T H2O	Water Temperature Sensor (NTC)	30	CAN A H	CAN H - Bus A
11	P OIL	Oil Pressure Sensor	31	CAN A L	CAN L - Bus A
12	P FUEL	Fuel Pressure Sensor	32	SHIFTER	SHIFTER Input Signal
13	P TURBO	Turbo Pressure Sensor	33	START IN / DIG	START IN / DIGITAL Input 2
14	MAPSEL	MAP Selection Switch	34	REAR RIGHT SPEED	REAR RIGHT SPEED Sensor Input
15	SMOT-	Crankshaft Position Sensor [-]	35	REAR LEFT SPEED	REAR LEFT SPEED Sensor Input
16	SMOT+	Crankshaft Position Sensor [+]	36	+VREF1	+5V VREF1 External Sensors
17	GRIP 2	GRIP 2 Analog Input	37	+VREF2	+5V VREF2 External Sensors
18	SCAM+	CamShaft Position Sensor [+]	38	SGND	ANALOG GND for External Sensors
19	STOP Switch	STOP Switch input	39	SGND	ANALOG GND for External Sensors
20	SIDE-STAND DIGITAL1	SIDESTAND 1 Switch input			

	SIGNAL	FUNCTION		SIGNAL	FUNCTION
1	INJ5	INJECTOR 5 Output	21	LAMBDA RE	LAMBDA WideProbe - RE Signal
2	INJ4	INJECTOR 4 Output	22	DBW 2-	DRIVE BY WIRE 2 [-]
3	INJ2	INJECTOR 2 Output	23	DBW 2+	DRIVE BY WIRE 2 [+]
4	INJ1	INJECTOR 1 Output	24	DBW 1+	DRIVE BY WIRE 1 [-]
5	INJ3	INJECTOR 3 Output	25	DBW 1-	DRIVE BY WIRE 1 [+]
6	LAMBDA H-	LAMBDA Wideband HEATER Output	26	COIL4	COIL4 Output
7	COIL1	COIL 1 Output	27	TACHO	TACHO Output
8	FUEL PUMP	FUEL PUMP Output	28	STEP B	STEP MOTOR - B Wire
9	LIGHT	LIGHT Output	29	PWM1	PWM1 Output
10	FAN	FAN Output	30	PWM2	PWM2 Output
11	INJ7	INJECTOR 7 Output	31	STEP A	STEP MOTOR - A Wire
12	COIL2	COIL2 Output	32	STEP C	STEP MOTOR - C Wire
13	COIL3	COIL3 Output	33	STEP D	STEP MOTOR - D Wire
14	INJ6	INJECTOR 6 Output	34	PWM3 / WASTE-GATE PWM	PWM3 / WASTE-GATE PWM Output
15	CODE-LOAD	BOOTLOAD MODE Input	35	INJ8	INJECTOR 8 Output
16	START OUT	START RELAY Output	36	GND	GND POWER SUPPLY
17	MIL	MIL Output	37	GND	GND POWER SUPPLY
18	LAMBDA IPN	LAMBDA WideBand Probe - IPN Signal	38	GND	GND POWER SUPPLY
19	LAMBDA CalR	LAMBDA WideBand Probe - CalR Signal	39	GND	GND POWER SUPPLY
20	LAMBDA IP	LAMBDA WideProbe - IP Signal			

