

## Hardware Manual for BiRace

**Important Information:** The BiRace can be used with either inductive or Hall Effect type crankshaft and camshaft position sensors. Different internal hardware is necessary for the different types of sensors. Therefore, please specify the type of sensor that you require when ordering your ECU.



<u>Pin(s)</u>	<u>Reference Name(s)</u>	<u>Connection</u>	<u>Specifications</u>
1	VBB	+12V	+12V ECU Power (Under Ignition Switch).
2	MPP2	Idle Valve Stepper Motor Output 2 or Tachometer Output	Stepper Motor Driver output. Maximum current of 1 Ampere.
3	MPP1	Idle Valve Stepper Motor Output 1 Fuel Pump Relay Output	Stepper Motor Driver output with Maximum current of 1 Ampere or switched ground for fuel pump relay.
4	MPP4	Idle Valve Stepper Motor Output 3 or Solenoid Output 2	Stepper Motor Driver output. Maximum current of 1 Ampere.
5	MPP3	Idle Valve Stepper Motor Output 3 or Solenoid Output 1	Stepper Motor Driver output. Maximum current of 1 Ampere.
6	RX	Receive for WinCons/GenTab	Pin 1 on female DB9 connector.
7	INJ1	Injection Cylinder 1 Trigger	Trigger for injectors with impedance in the range of 8 to 20 Ohms.
8	INJ2	Injection Cylinder 2 Trigger	Trigger for injectors with impedance in the range of 8 to 20 Ohms.
9	VREF	5V Reference Voltage	Reference Voltage for Sensors and Serial Communications (pin 6 on DB9 connector).

10	INOILT	NOT USED	
11	INTHROT	Throttle Position Signal	0-5V Input Signal
12	GNDPOWER	ECU Ground	Must be connected to Engine Ground.
13	PRG	Voltage for ECU programming.	When input connected to +12V ECU can be programmed.
14	INENGPOS	Crankshaft Position Signal	Inductive Sensor with peak-to-peak voltage of 12V or Hall Effect Sensor with 5V or 12V signal (sensor type is hardware dependent).
15	GNDINJ	Injection Grounds	Grounds for injector drivers. Must be connected to Engine Ground.
16	IGN2	Ignition Coil Cylinder 2 Trigger	Trigger for inductive ignition coils with maximum charge current of 7.5 Ampere.
17	GNDECU	Ground for all Sensors and Serial Communications.	Ground for Sensors and serial communications (pin 2 on DB9 connector).
18	INAIRT	Air Temperature Sensor Signal	Thermistor with impedance in the range of 100 to 100,000 Ohms.
19	INENGT	Engine Temperature Sensor Signal	Thermistor with impedance in the range of 100 to 100,000 Ohms.
20	INLAMBDA1	Lambda Sensor Signal	Wideband lambda sensor with 0 to 5V signal.
21	TX	Send for WinCons/GenTab	Pin 9 on female DB9 connector.
22	GNDIGN	Ignition Grounds	Grounds for ignition drivers. Both must be connected to Engine Ground.
23	IGN1	Ignition Coil Cylinder 1 Trigger	Trigger for inductive ignition coils with maximum charge current of 7.5 Ampere.