

Euro-4

Much more than just an engine management system....

Euro-4 is the latest generation engine management system from EFI Technology. It is one of the smallest and yet one of the most powerful ECU's for use on engines with up to 8 cylinders.

Based on a modern production car ECU, Euro-4 is built to conform to the latest high automotive technology standards.

The ECU is designed to form the centre of an integrated electronic system in a modern racing car and offers an extraordinary high level of features at an attractive price.

The price of the ECU includes full-option software specifications. All features and strategies are available to the user at no extra cost.

Features

Euro-4 can control normally aspirated, turbo charged and super charged engines. Additionally, the ECU can control a drive-by-wire operated throttle body, including safety features recognised from production cars. It has built-in ignition drivers for both inductive and logically operated ignition coils and can control engines with up to 8 cylinders in full sequential fuel injection – or using staged injection in 4-cylinder mode.

It accepts up to 4 crankshaft and camshaft sensors, being either inductive or Hall effect. The ECU can control many bespoke variable camshaft timing systems found on modern engines.

Euro-4 has a total of 22 analogue and 13 digital sensor inputs. The advanced software allows the user to configure the ECU to accept inputs from many different sensors. Page 3 shows a suggested configuration of the ECU for a typical racing car.

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Euro-4 is homologated by FIA for use in S2000 rally cars and in WTCC.



CAN Communication

Its extensive CAN (Controller Area Network) capabilities, having 2 individual CAN busses, ensures a simplified electrical installation combined with very advanced features. The data export includes a user-defined CAN configuration with 16 available CAN identifiers.

Data from eight additional sensors and commands from other CAN bus systems in the car can be imported via CAN.

Data Recording

Data can be recorded using Euro-4's internal 8 Mb data logger. As well as ECU and sensor data channels, Euro-4 can also log data from other systems, such as external CAN modules, the OBR PCM and membrane switch panel.

Special Features

The ECU comes with a software package including advanced features, for example:

- Traction control using a target slip map with sophisticated user controls.
- Programmable flat shift strategy.
- Paddle shift and air compressor control.
- Dual channel knock control.
- Use of 4 individual wide band lambda sensors.
- Driver adjustable launch control.
- Intelligent closed loop lambda fuel control.
- Variable camshaft timing
- VTEC control on Honda engines
- Variable inlet length control
- Stepper motor and IAV idle control.

System Overview

- PowerPC microprocessor
- Up to 4 cylinders in full sequential mode;
- 6 and 8 cylinders in full sequential injection and wasted spark mode
- Ignition coil drivers for both inductive and logic operated coils, including plug-top coils
- Drive-by-Wire throttle PID control
- On-board data logging with 8 Mb memory
- Automatic fuel mapping
- Closed loop lambda control
- Closed loop boost control
- Variable camshaft timing with PID control strategy
- Idle speed control
- 2 selectable engine maps

General

- Very small and flat die cast aluminium enclosure
- 2 automotive main connectors with high pin density; 96 pins in total
- Dimensions 165 x 95 x 21 mm
- Weight 365 grams

Communication

- 2 x CAN 2.0B interfaces
- Standard EFI Technology or user defined CAN data export and import
- 16 CAN identifiers available for data export
- 2 CAN identifiers available for data import

Inputs

- 4 inductive or Hall effect engine speed and synchronisation sensor inputs
- 4 Hall effect wheel speed sensors
- 3 spare Hall effect / digital switch inputs
- 2 knock sensor inputs
- 1 direct NTK UEGO lambda sensor input
- 20 analogue 0..5 Volts external sensor inputs (can also be used as switch inputs)
- 1 built-in barometric air pressure sensor
- 8 spare analogue sensor inputs via CAN
- 4 Hall effect wheel speed sensors

Outputs

- 8 on-off fuel injector drivers
- 4 inductive ignition coil drivers
- 4 logic ignition coil drivers
- 8 multipurpose switches and PWM's
- 1 lambda sensor heater
- 1 H-bridge drive-by-wire throttle controller
- 1 four-phase stepper motor drive
- 4 independent 5.0 V sensor power supplies

Special Features

- Up to 4 wide band sensors can be used for closed loop fuel control
- Special engine type configurations including several motorcycle engines
- Control strategy for paddle shift and air compressor
- Control strategy for sequential gear change
- Traction control with target slip map
- Pit lane, launch and adjustable manual limiter
- Programmable firing order
- Comprehensive CAN features
- Special version available with fully encrypted software
- Special version homologated for use in S2000 rally cars
- Special version homologated for use in world touring cars

Conditions for Use

- Temperature range -40...+125 degrees C
- Power supply 7..16 volts

EFI Technology Euro-4 – The Complete Solution

The intention of the Euro 4 ECU is to be an integrated engine management and data logger unit. As such it offers a very comprehensive range of inputs;

Example Configuration

Analogue	Sensor
1	Throttle Potentiometer
2	Manifold Air Pressure
3	Fuel Pressure
4	Oil Pressure
5	Gear Box Potentiometer
6	Lateral G Sensor
7	Gear Shift Sensor
8	Front Brake Pressure
9	Rear Brake Pressure
10	Traction Control Trim
11	Steering Angle
12	RF Damper
13	LF Damper

Analogue	Sensor
14	RR Damper
15	LR Damper
16	Spare Input
17	Spare Input
18	Spare (via CAN)
19	Spare (via CAN)
20	Spare (via CAN)
21	Spare (via CAN)
22	Spare (via CAN)
23	Spare (via CAN)
24	Spare (via CAN)
25	Spare (via CAN)

Temp	Sensor
1	Water Temperature
2	Air Temperature

Temp	Sensor
3	Oil Temperature
4	Gear Oil Temperature

Digital	Sensor
HE 1	LF Wheel Speed
HE 2	RF Wheel Speed
HE 3	LR Wheel Speed
HE 4	RR Wheel Speed
HE 5	Lap Beacon
HE 6	Map Selector
HE 7	Pit Lane Limiter

Digital	Sensor
EM 1	Crank Sensor
EM 2	Inlet Camshaft Timing
EM 3	Exhaust Camshaft Timing
EM 4	Spare digital input

Lambda	Wide Band NTK UEGO Lambda Sensor

The flexible functionality of the ECU reduces the complexity of a traditional system solution. Not only does a single unit offer considerable financial advantages, it also avoids the weight incurred by adding a second system and its wiring.

Communicating via CAN also reduces the amount of wires in a traditional loom. The CAN line uses two wires to exchange data between connected modules.

Euro 4 really does offer a complete single unit solution.