

EFI TECHNOLOGY - EURO-1

Presentation

EFI Technology srl is a specialist company in advanced electronics for motor racing and high performance road cars. It is founded in 1985, initially to design and develop the early electronic engine management systems for Cosworth.

Today, EFI Technology is a highly specialised company involved in developing high tech engine control systems for use in the highest classes in motorsport and in high profile sports cars and motorbikes. EFI Technology manages and supports the complete project, from customer specification through hardware and software development, to production and testing of final products.

In addition, EFI Technology offers a standard range of racing products - branded "EFI Technology" - including ECU's (capable of handling engines with 1..12 cylinder), ignition coils, sensors and wiring looms.

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Main Features

- Up to 4 cylinders, aspirated or turbo charged using built-in ignition modules for distributor-less spark distribution.
- 6 and 8 cylinder engines with distributor.
- Up to 8 high impedance fuel injector drivers.
- Automatic self-mapping of fuel injection.
- Engine load selectable as either TPS or MAP.
- Trigger disc configuration:
 - 3 or 4 teeth – 6 or 8 cylinder engines
 - 12+1 – Honda Civic R
 - 36-1 - typically Ford
 - 36-4 - Rover K-series
 - 60-2 - typically Bosch
 - 4+1 - EFI standard (4-cylinder engines)
 - Ducati
 - 8 teeth – Suzuki
 - 4 teeth – Yamaha R6
- Idle speed control for air valve or stepper motor.
- Communication via CAN line and 1 current loop link.
- Full Windows95 / 98 / NT / XP software on-line editing

ECU Inputs for Engine Management

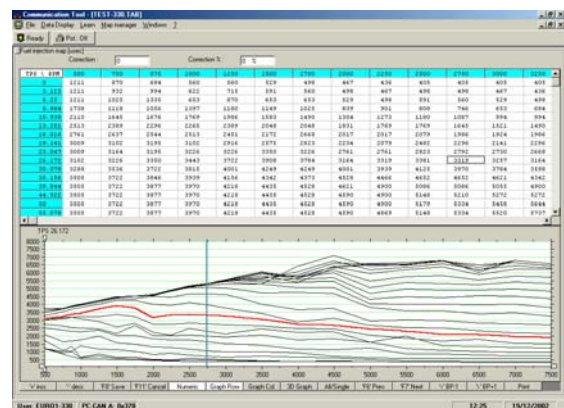
- 1 electromagnetic or Hall effect speed sensor.
- 1 electromagnetic vehicle speed sensor.
- 1 built-in 105 kPa MAP sensor.
- 3 additional linear 0..5 Volt inputs.
- 2 NTC temperature sensor inputs.
- 1 lambda sensor, standard or linear - selectable.
- All sensor inputs are user configurable.

Breakpoints

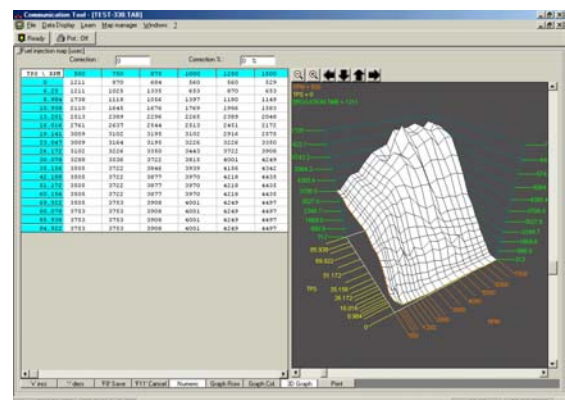
- All breakpoints are user configurable

Fuel Injection

- 32 x 32 breakpoints in basic fuel table.
- Individual cylinder pair fuel trim (4-cyl only).
- Comprehensive fuel injection trims including programmable fuel injection phase.
- Programmable fuel cut-off.
- Programmable soft and hard cut engine RPM limiter.
- Separate fuel injection strategy during cranking.
- Transient fuel trims.



Map Overview with 2-dimensional Graphics



Map Overview with 3-dimensional Graphics

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Ignition

- 32 x 32 breakpoint basic spark advance table 0..64 degrees, 0.25 degree resolution.
- 2 built-in ignition power drivers.
- Comprehensive spark advance trims.
- Separate spark advance strategy during cranking.
- Catalyst light off in some versions.
- Separate spark advance strategy in idle speed.
- Programmable ignition coil dwell time.
- Programmable hard and soft cut engine RPM limiter.

Lambda Control - closed loop self mapping

- Adaptive fuel learn strategy with lambda target map.
- Input for linear lambda controller.

Lambda Control - environmental control

- Closed loop lambda 1 control with self-learn.
- User defined matrix sets open loop fuel control.
- Programmable proportional and integral fuel trims.

Turbo Charged Engines

- Closed loop boost control.
- Proportional and integral corrections.

Idle Speed Control

- Control strategy for air valve and stepper motor.
- Separate idle speed spark advance control.
- Closed loop PI idle speed control.

External Switches

- Power shift.
- Launch control.

Auxiliary Outputs

- Programmable universal driver controlling shift light, variable intake length or camshaft position.
- Drivers for fuel pump relay and tachometer.
- Power latch.

Communication Link

- CAN link to external Stack data acquisition systems, dashboards and PC communication.

Diagnostics

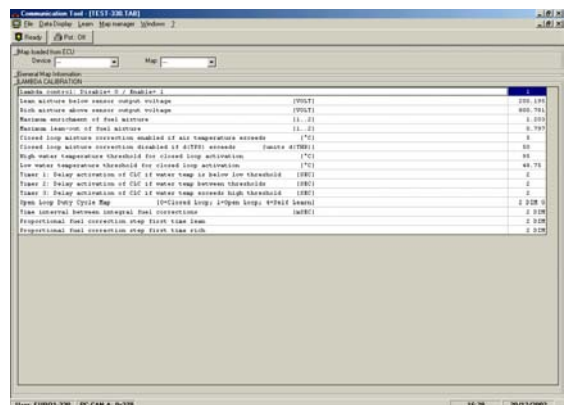
- 12 channels monitored, high/low limits for each sensor channel set by user.
- Error detecting time and conditional parameters configured by the user.
- Highest 12 engine speed levels and the first 12 errors for each channel are stored in memory.

Enclosure and Components

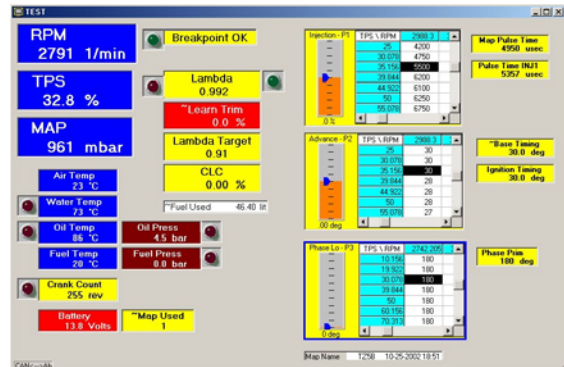
- Sealed plastic housing, 35 pin AMP main connector.
- Dimensions 152 x 122 x 44 mm; weight 340 grams.

Mapping software

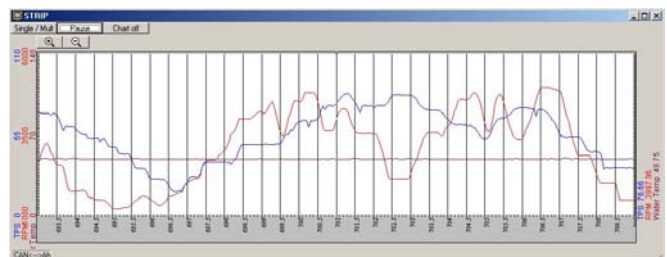
- Software is easy to understand and logic to operate.
- Alterations in real-time of injection, phase, spark advance, boost pressure, idle speed and target lambda value can be done by use of a mapping controller or from the keyboard.
- The ECT communication software runs under Windows 95/98/ME/2000/NT/XP. It is very easy to design individual displays with text, data, potentiometers, LED's, strip charts etc. Any ECU parameter can be altered working either on-line or off-line.
- Full on-line editing of complete map. ECU map is password protected.
- Data acquisition during the mapping procedure with adjustable sampling rate is available.



Lambda Control Calibration



Example of User Defined Display Screen



Easy Configuration of Strip Charts