**ECU specifications**

**Actuators control output**
- 2 x injector output: Gasoline/Low impedance injectors, CNG/LPG low impedance injectors
- 2 x coil outputs: Inductive Discharge Ignition (IDI)
- 1 x idle stepper motor control: Idle stepper valve application
- 5 x sensors power supply: Power supply for sensors (5V)

**Sources of information**
- 1 x throttle position sensor (TPS)
- 1 x manifold air temperature sensor (MAT)
- 1 x manifold air pressure sensor (MAP)
- 1 x coolant temperature sensor (CLT)
- 1 x EGO sensor (narrow band)

**Power supply range**
- +6V to +16V

**Power consumption**
- up to 20 watts

**Mechanical Data**
- Dust and waterproof Potting case
- Minimum dimensions with connectors: 180 x 80 x 35 mm
- Weight: approx. 240g
- ECU internal temperature range: -40°C … +85°C

**Connectors**
- 24 way

**Communication interfaces**
- 1 CAN interface (Optional): Diag On Can / J1939 / Calibration Control Protocol 250Kbits/s
- 1 Kline: Diagnosis/calibration 10,4 Kbits/s

**Product Description Part Number**

<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECUONE control unit</td>
<td>ECU hardware</td>
<td>ECUONE001</td>
</tr>
<tr>
<td>KID USB K line interface</td>
<td>USB to Kline interface</td>
<td>KID001</td>
</tr>
<tr>
<td>CAN USB interface</td>
<td>USB to CAN interface</td>
<td>CANID1</td>
</tr>
<tr>
<td>Engine Studio 2K13 K line</td>
<td>Calibration software Kline version</td>
<td>ESTUDIO2K13K</td>
</tr>
<tr>
<td>Engine Studio 2K13 CCP</td>
<td>Calibration software CAN CCP version</td>
<td>ESTUDIO2K13CCP</td>
</tr>
<tr>
<td>Engine Data Reader 2013</td>
<td>Kline Diagnosis SCANTOOL</td>
<td>EDR2013</td>
</tr>
</tbody>
</table>

**Ordering information**

**Product**
- ECUONE control unit
- KID USB K line interface
- CAN USB interface
- Engine Studio 2K13 K line
- Engine Studio 2K13 CCP
- Engine Data Reader 2013

**Part Number**
- ECUONE001
- KID001
- CANID1
- ESTUDIO2K13K
- ESTUDIO2K13CCP
- EDR2013

**CMD S.p.a**
Via Pacinotti, Zona Industriale 81020 San Nicola la Strada (Ce) Tel. +39 0823 424055 Fax +39 0823 422167

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**24 ways ECU pinout detail**

**ECUONE Platform**
Single/dual cylinder ECU for Gasoline/LPG/CNG applications
ECUONE control unit description

OVERVIEW
The ECUONE control unit is a system based on Infineon XC2000 family microcontroller. It controls the spark timing, fuel injection and certain other functions of an internal combustion engine electronically, to ensure an optimum operating efficiency. This ECU system is suitable for Gasoline or LPG/CNG port injection. The ECU is designed to control a single or dual cylinder engine, 4 stroke internal combustion engine up to 12000 RPM. An inductive pick up sensor is used to determine the crankshaft position. Various setup of crank wheel patterns are supported.

COMMUNICATION and TOOLS
The ECU is equipped with a Keyword2000 (Kline) bus and a CANBUS is available on request. The control unit is supported by the following tools provided by CMD:
- Engine Studio 2K13 calibration software based on Kline or CCP. Access is done over CMD KID or CANID USB interface.
- EDR2013 Diagnosis scantool. Access is possible over CMD KID USB gateway.

MEMORY
A flash memory is used to contain the application firmware of the ECU. An EEprom is used to store calibration and configuration data. By doing so, data are retained in the absence of voltage. It is possible to reprogram both ECU firmware and calibration data through Kline or CAN interface.

POWER SUPPLY
The ECU is powered by the vehicle’s normal 12 volts source and is protected against load dump and reverse voltage. When the ECU is turned off, no current will be drawn from vehicle battery.

CONTROL FUNCTIONS
Speed-density control is used together with EGO closed loop correction. It is possible to activate and calibrate various correction algorithms to best suit the application (Ex: Coasting fuel cut-off, ...). Advanced control features are also available such as phasing using MAP pressure or crank wheel deceleration. The necessary control functions are implemented to enable the vehicle to meet emission standards.

SENSORS and ACTUATORS
The ECU has two outputs with power driver integrated to drive single or double ended coil modules. Two power drivers are provided also to control two low impedance injectors.
Idle speed is controlled by the ECU using a stepper motor valve.

The ECU uses the following sensors:
- Manifold absolute pressure (MAP),
- Manifold air temperature (MAT),
- Engine coolant temperature (GCT),
- Exhaust gas oxygen sensor (EGO),
- Throttle position sensor (TPS),
- Inductive crank sensor (VR),
- Throttle effect phase sensor (optional).

It is possible to drive the following actuators:
- Fuel injectors (2),
- Stepper motor (1),
- coil pack (2),
- Auxiliary relay (1),
- Malfunction indicator Lamp (1).

FLEXIBILITY
The ECU has the possibility to adapt to a large variety of sensors and actuators. Entering a sensor transfer function is an easy and quick task by using the Engine studio calibration tool. The ECU can be configured in many ways to better suit a single or dual cylinder engine control applications.

Injection system

OVERVIEW
The figure hereafter shows the injection system handled by the ECUONE platform:

Please, note that some sensors and actuators are omitted for clarity.