**Introduction**

The Pectel SQ6M sets the benchmark for high-performance engine management systems. Its Motorola MPC565 microprocessor and dedicated timer co-processor bring class leading performance in a cost-effective package. No other ECU offers the same combination of price, power, performance and flexibility.

Twelve configurable injector drivers combined with eight IGBT ignition outputs AND eight logic level coil driving outputs make this ECU capable of fully sequential fuelling on normally aspirated, turbo and supercharged engines from one to twelve cylinders. Fly-by-wire capability is included, with Stepper and DC motors catered for.

Put all of this functionality in one small light box and you have an ECU capable of working with almost any combination of coil, injector, OEM sensor and actuator.

An all new crank and camshaft pattern recognition system allows the SQ6M to be used with virtually any OEM timing wheel. This sophisticated pattern recognition algorithm also facilitates synchronisation during slow and uneven cranking conditions.

Hugely flexible, the SQ6M has two, and sometimes three functions on many of its pins:

- unused injector and IGBT ignition outputs can be used as digital outputs
- unused digital inputs can be used as 10 bit analogue inputs
- H-bridge outputs can be used in either full or half bridge mode, H-bridge outputs can be combined to drive a stepper motor or used to provide additional high or low-side drive capability.

All of these features are enabled by software—there are NO hardware build options.

Designed to be robust, the SQ6M has reverse-battery, over-voltage and load dump protection built in as standard. Sensor supply and signal ground pins are also protected against shorts to battery positive and negative.

Advanced software features include traction control, launch control, gearshift strategies, variable valve timing of up to four camshafts (including BMW VANOS), high speed data logging and scrutineering modes for single make championships.

The ECU has optional highly advanced control strategies for semi-automatic/paddle-shift gearboxes which include FBW throttle blip and over rev protection. Customers who have used this have extended gearbox life by 100%.

OE Calibrated with calibration support available on quotation.
**Dimensions**

Dimensions in millimetres (and inches)

**Specifications**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td><strong>Processor</strong></td>
<td>Motorola MPC565 @ 56MHz, 5 MB flash memory &amp; 4MB non-volatile RAM</td>
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<tr>
<td><strong>Supply Voltage</strong></td>
<td>8V to 18V reverse battery, over-voltage and load dump protection</td>
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<td><strong>Engine</strong></td>
<td>1 to 12 cylinders 2/4 stroke or rotary Natural/Forced induction</td>
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<tr>
<td><strong>Digital Outputs</strong></td>
<td>6 PWM dedicated. (10A peak) 8 PWM alternate. (5A peak) 8 Relay alternate function</td>
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<tr>
<td><strong>Digital Inputs</strong></td>
<td>10 dedicated</td>
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<td><strong>Data Logging</strong></td>
<td>4MB standard 2000 samples/second</td>
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<tr>
<td><strong>Crank &amp; Cam Sensor</strong></td>
<td>3 Hall Effect/Inductive</td>
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**Connector Details**

- **ECU Connector**
  - AS2-16-26PN
  - AS2-16-26PA
  - AS2-16-35PN

- **Mating Connector**
  - AS6-16-26SN
  - AS6-16-26SA
  - AS6-16-35SN

See below for pinout information.

**Ordering Information**

<table>
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<tr>
<td>Pectel SQ6M ECU</td>
<td>01E-500720</td>
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<tr>
<td>Pectel SQ6M ECU with gear-box upgrade</td>
<td>01E-500720-E011</td>
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## Pinout Details

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**Ignition Coils**

- IGBTs clipped to 450V. 20A peak

**Injector Outputs**

- Low side drivers clipped to 45V. 5A peak, 2.5A hold

**PWM Outputs**

- Low side drivers. 10A peak. 10k Ohms Pullup to VBAT. Recirculation diode to VBAT.
### AS216-35PN Pin information

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### AS216-26PA Pin Information

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<td>VBAT</td>
<td>ECU Battery Negatives</td>
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Declaration of Conformity

We, the undersigned,

Pi Research
Brookfield Motorsports Centre,
Cottenham,
Cambridgeshire, CB4 8PS
United Kingdom

Certify and declare under our sole responsibility that the following equipment:

SQ6M – part number 500720
An ECU for use only in motorsport applications

Conforms to the following EC directives including applicable amendments:


The following standards have been applied:

2004/104/EC

Cottenham, 27th February 2006

George Lendrum - Director of Motorsport