ECO4/ECO4+ Data Sheet

**PHYSICAL PROPERTIES**
- Dimensions, mm: 82 x 63 x 28
- Connector: 12pin
- Indication: 3 LEDs
- Housing: Plastic
- Device is resistible to water drops and humidity of environment

**PRODUCT FAMILY**
- ECO4/ECO4+
- ECO3
- PRO4
- PRO3
- TCO4
- TCO3

**CONTACTS**
- +370 5 272 65 70
- info@ruptela.lt
- www.Ruptela.lt

**Electrical specification**

<table>
<thead>
<tr>
<th>Power supply</th>
<th>12/24 V DC (range: 10 - 32 V DC)</th>
</tr>
</thead>
</table>
| Absolute maximum ratings | 50 V @ 60 s (on ECO4+)
| 72 V @ 0.1 s |

**Power consumption**

<table>
<thead>
<tr>
<th>ECO4</th>
<th>ECO4+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deep sleep mode</td>
<td>6 mA*</td>
</tr>
<tr>
<td>Normal mode, battery</td>
<td>100 mA</td>
</tr>
<tr>
<td>Normal mode, battery charging</td>
<td>•</td>
</tr>
</tbody>
</table>

**Internal supply (ECO4+)**
- Li-Po 3.7 V 190 mAh

**Protections**
- Short circuit protection
- Reverse polarity protection
- Electrostatic discharge protection on USB
- Electrostatic discharge protection on 1-wire data
- Over-current protection on 1-Wire power
- Electrostatic discharge protection on sim card slot
- Charging protection (on ECO4+)**

* Firmware dependent
** If temp is >45°C, charging is disabled, if >60°C battery is disconnected from the system at all

**I/O Characteristics**

<table>
<thead>
<tr>
<th>4 x DIN</th>
<th>Digital inputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threshold</td>
<td>4 V</td>
</tr>
<tr>
<td>2 x DOUT</td>
<td>Digital outputs</td>
</tr>
<tr>
<td>Max output</td>
<td>Open collector 32 V, 1 A max</td>
</tr>
<tr>
<td>2 x AIN</td>
<td>Analog inputs</td>
</tr>
<tr>
<td>Input range</td>
<td>0 - 30 V</td>
</tr>
<tr>
<td>1 - Wire</td>
<td>1-Wire peripherals</td>
</tr>
<tr>
<td>Output current</td>
<td>80 mA</td>
</tr>
<tr>
<td>USB</td>
<td>Configuration interface</td>
</tr>
</tbody>
</table>

**Environmental data, reliability, certification**

<table>
<thead>
<tr>
<th>ECO4</th>
<th>ECO4+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage temperature</td>
<td>-40 - +65</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-35 - +60</td>
</tr>
</tbody>
</table>

**Operating from battery:**
- Charging: • -20 - +45
- Discharging: • -20 - +60

**Operating altitude**
- Up to 2000 m

**Certifications:**
- E-mark: •
- CE ready: •
- RoHS: •
- Temp. Test ISO16750: •
- FCC HW ready: •

**Telecommunication, Positioning**

**GPS/GLONASS module**
- Ublox MAX-7C

**Internal**
- 56 channel
- Sensitivity: -161 dBm
- Cold start: 29 s
- Aided start: 5 s
- Reacquisition: 1 s

**GPS antenna**
- External
- Frequency: 1575.42 ± 3 MHz

**GSM modem**
- Quectel M95

**Internal**
- GSM850/GSM900/DCS1800/DCS1900
- GSM antenna: Internal
- GSM850/GSM900/DCS1800/DCS1900

**Accelerometer**
- 3-axis; 2g/4g/8g/16g
Peripheral Devices

- **Available on 1-Wire**
  - 4 x Temperature sensors DS18B20/DS18S20
  - 1 x iButton DS1990 with passive socket

- **Available on digital outputs**
  - 1 x Buzzer/LED
  - 1 x Eco driving panel

**Pin out**

<table>
<thead>
<tr>
<th>Color</th>
<th>Pin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>Power supply</td>
</tr>
<tr>
<td>Black</td>
<td>Ground</td>
</tr>
<tr>
<td>Purple</td>
<td>DOUT1</td>
</tr>
<tr>
<td>Orange</td>
<td>DOUT2</td>
</tr>
<tr>
<td>White with red stripe</td>
<td>1-Wire power</td>
</tr>
<tr>
<td>Green with yellow stripe</td>
<td>1-Wire data</td>
</tr>
<tr>
<td>Gray</td>
<td>AIN1</td>
</tr>
<tr>
<td>Green</td>
<td>AIN2</td>
</tr>
<tr>
<td>Yellow</td>
<td>DIN4</td>
</tr>
<tr>
<td>Pink</td>
<td>DIN1</td>
</tr>
<tr>
<td>White</td>
<td>DIN3</td>
</tr>
<tr>
<td>Blue</td>
<td>DIN2</td>
</tr>
</tbody>
</table>

**Explanations**

Deep sleep mode – Power saving mode when GPS and GSM modems and all peripheral devices are disabled, except DINs and DOUTs. Device wake up on state change of DIN3 and DIN4.

Device can be installed within 45° angle in any axis but top surface facing up. Device should be installed tightly, does not move or shake.

**Warning!**

All internal components including battery must be replaced only by manufacturer! Any self-willed attempt to open device cases will void any warranty.

Device must be installed in service access area (e.g. under dashboard, behind fuse box).
**Device installation**

- When installing device into vehicle please obey these instructions otherwise you device may not work properly.
- Module should not be seen or easily reached.
- Module should be firmly fixed to the surface. Please avoid mounting module near the metal surface or cables (see the picture below).
- Wrong module mounting may be the cause of module malfunction.
- Module cannot be fixed to heat emitting or moving parts.
- SIM card should be inserted in the module while the connector is plugged off (while module has no power).
- Module must be fitted with double sided stick tape!

![Diagram showing device installation](image)

**Antenna installation**

It is recommended to place GPS/GLONASS antenna behind the dashboard as close to the window as possible. It must be uncovered, installed heads up (see picture).

![Antenna installation](image)