DEC 24/3 1-Q-EC Amplifier

The DEC 24/3 (Digital EC Controller) is a 1-quadrant amplifier for controlling EC motors with Hall sensors with a maximum output of 72 watts.

Operating modes
Digital speed control or open loop speed control operation can be selected with a built-in DIP switch.

Flexible
Wide supply voltage range 5 - 24 VDC. Two variants for direct connection of different maxon EC motors.

Small design
Open and compact electronics board. Easy mounting with hexagonal distance pins with inside thread.

All-round functionality
Direction can be predetermined with a logic signal. Motor shaft can be disabled or slowed down as required. Adjustable maximum current limitation. Status indicator with green LED.

Flexible set value input
Set value input either through internal potentiometer or external, analog voltage. Different speed ranges can be selected using built-in DIP switches.

DEC 50/5 1-Q-EC Amplifier

The DEC 50/5 (Digital EC Controller) is a 1-quadrant amplifier for controlling EC motors with Hall sensors with a maximum output of 250 watts.

Operating modes
Digital speed control, open loop speed control or current control can be selected with built-in DIP switch.

Small design
Robust and compact modular metallic housing offers various mounting options.

Easy start-up procedure
Plug-in terminal clamp, no extensive adjustment necessary.

All-round functionality
Direction can be set with a logic signal. Motor shaft can be disabled or slowed down as required. Adjustable maximum current limitation. Operating status display with red and green LED.

Flexible set value input
Set value input either through internal potentiometer or external analog voltage. Two preset speeds switchable. Speed ramp can be adjusted.

Protection circuit
The power amplifier is protected against thermal overload and the control inputs against overvoltage.

Technical data page 387
Dimensions and connections page 388
## 1-Q-EC Amplifier Data

**DEC 24/3 1-Q-EC Amplifier**

1-quadrant amplifier for controlling EC motors with Hall sensors with a maximum output of 72 watts.

**DEC 50/5 1-Q-EC Amplifier**

1-quadrant amplifier for controlling EC motors with Hall sensors with a maximum output of 250 watts.

### Operating modes

<table>
<thead>
<tr>
<th>Speed controller, open loop speed controller</th>
<th>Speed controller, open loop speed controller, current controller</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating modes</strong></td>
<td><strong>Operating modes</strong></td>
</tr>
<tr>
<td><strong>Electrical Data</strong></td>
<td><strong>Electrical Data</strong></td>
</tr>
<tr>
<td>Operating voltage V&lt;sub&gt;CC&lt;/sub&gt;</td>
<td>5 - 24 VDC</td>
</tr>
<tr>
<td>Max. output voltage V&lt;sub&gt;CC&lt;/sub&gt;</td>
<td>0.95 x V&lt;sub&gt;CC&lt;/sub&gt;</td>
</tr>
<tr>
<td>Max. output current I&lt;sub&gt;max&lt;/sub&gt;</td>
<td>6 A</td>
</tr>
<tr>
<td>Continuous output current I&lt;sub&gt;cont&lt;/sub&gt;</td>
<td>3 A</td>
</tr>
<tr>
<td>Switching frequency of power stage</td>
<td>39 kHz</td>
</tr>
<tr>
<td>Band width current controller</td>
<td>15 Hz</td>
</tr>
<tr>
<td>Max. speed (1 pole pair)</td>
<td>120 000 rpm</td>
</tr>
</tbody>
</table>

### Input

- **Set value**: “Speed” 0…+5 V (1024 steps)
- **Current limit**
- **Enable**: “Enable” +2.4…24 V
- **Direction**: “Direction” +2.4…24 V
- **Stop / Brake**: “Brake” +2.4…24 V
- **Configurable**: “Speed” 0…+5 V (1024 steps)

### Output

- **Monitor**: “Monitor n”, digital, (5 V)
- **Status reading “Ready”**

### Voltage outputs

- **Hall sensors supply voltage V<sub>Hall</sub>**: +5 VDC, max. 30 mA
- **Auxiliary voltages**: +5 VDC, max. 10 mA

### Possible adjustments

- **DIP switch**
- **Trim potentiometer**: Speed, I<sub>max</sub>
- **Indicator**: Speed 1, Speed 2 / Ramp, I<sub>max</sub>, gain

### Protective functions

- **Blockage protection**
- **Heat monitoring of power stage**: T > 100°C
- **Dynamic current limit**: I<sub>max</sub> = 2 x I<sub>cont</sub> is limited to 0.9 x I<sub>cont</sub> after 1 s
- **Under- / Overvoltage protection**: Switches off when V<sub>CC</sub> < 4.5 V

### Ambient temperature and humidity range

- **Operation**: -10…+45°C
- **Storage**: -40…+85°C
- **No condensation**: 20…80%

### Mechanical Data

- **Weight**: Approx. 28 g
- **Dimensions (L x W x H)**: 65 x 58 x 18 mm (see page 388)
- **Mounting threads**: 4 Hexagonal distance pins with M3 inner thread
- **Connections**: See page 388

### Part Numbers

- **DEC 24/3 1-Q-EC Amplifier**: 336287
- **DEC 24/3 with FPC pitch 1.0 mm**: 336286
- **DEC 50/5 1-Q-EC Amplifier**: 230572
- **DEC 24/3 with a pin connector pitch 2.5 mm**: See page 388

### Accessories