

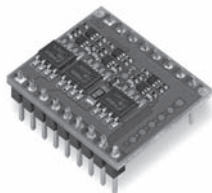
# 1-Q-EC Amplifier Summary

The basic function of EC motors electronics is the electronic commutation of the motor winding. Simple speed controls are possible with Hall

sensors. A further distinction is made between open or closed loop speed control.

1-Q amplifier functions in motor operation. Direction reverse via digital signal.

## DEC Module 24/2 1-Q-EC Amplifier



The DEC Module 24/2 (Digital EC Controller) is a 1-quadrant amplifier for controlling EC motors with Hall sensors with a maximum output of 48 watts.

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### Operating modes

Digital speed control or open loop speed control operation can be preset by a digital signal.

### Excellent price/performance ratio

Reasonably priced 1-Q-EC amplifier optimised for OEM applications in small appliances.

### OEM Module

Miniaturized open electronics board. Two connector arrays arranged in a 2.54 mm (0.1") pattern support easy connectivity and integration into the motherboard.

### Functionality

Direction of rotation preset by a digital signal. The motor shaft can be enabled or disabled. Adjustable maximum current limitation. Set value speed input through external analog voltage. Status indicator with "Ready"-Output.

### Protection circuit

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

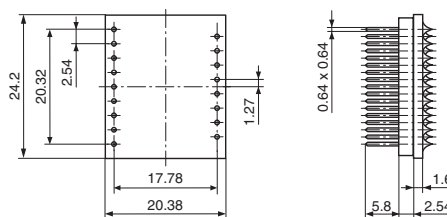
### DEC Module 24/2

#### Connections

Male header 8 + 9 = 17 poles  
Pitch 2.54 mm

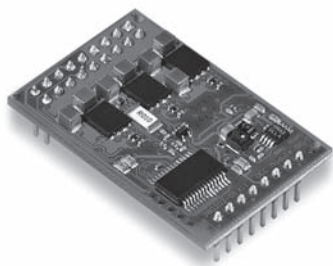
DEC Module 24/2

367661



Dimensions in [mm]

## DEC Module 50/5 1-Q-EC Amplifier



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

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### Operating modes

Digital speed control or open loop speed control operation can be preset by a digital signal.

### Excellent price/performance ratio

Reasonably priced 1-Q-EC amplifier optimised for OEM applications in small appliances.

### OEM Module

Miniaturized open electronics board. Connector arrays arranged in a 2.54 mm (0.1") pattern support easy connectivity and integration into the motherboard.

### Functionality

Direction of rotation preset by a digital signal. The motor shaft can be enabled or disabled. Adjustable maximum current limitation. Set value speed input through external analog voltage. Speed can be monitored through the speed monitor output. Status indicator with "Ready"-Output.

### Protection circuit

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

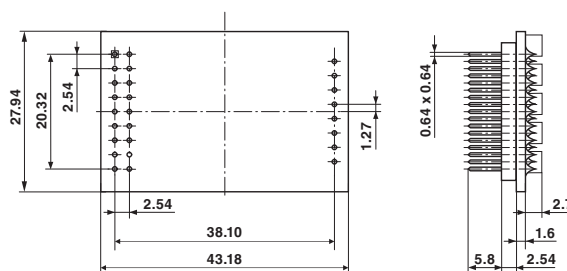
### DEC Module 50/5

#### Connections

Male header 1 2 rows, 2 x 9 poles  
Male header 2 1 row, 8 poles  
Pitch 2.54 mm

DEC Module 50/5

380200



Dimensions in [mm]

# 1-Q-EC Amplifier Data



**DEC Module 24/2** 1-Q-EC Amplifier  
1-quadrant amplifier for controlling EC motors with Hall sensors with a maximum output of 48 watts.



**DEC Module 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	Speed Controller (closed and open loop)	Speed Controller (closed and open loop)
<b>Electrical Data</b>		
Operating voltage $V_{CC}$	8 - 24 VDC (optional 5.0 VDC)	6 - 50 VDC (optional 5.0 VDC)
Max. output voltage	$V_{CC}$	$0.95 \times V_{CC}$
Max. output current $I_{max}$	3 A	10 A
Continuous output current $I_{cont}$	2 A	5 A
Switching frequency of power stage	46.8 kHz	46.8 kHz
Band width current controller		
Max. speed (1 pole pair)	80 000 rpm	80 000 rpm
Built-in motor choke per phase		
<b>Input</b>		
Set value	"Speed" 0...+5 V (1024 steps)	"Speed" 0...+5 V (1024 steps)
Current limit	"Current Limit" external resistor against GND	"Current Limit" external resistor against GND
Enable	"Enable" +2.4...24 V	"Enable" +2.4...50 V
Direction	"Direction" +2.4...24 V	"Direction" +2.4...50 V
Stop / Brake		
Configurable		
<b>Output</b>		
Monitor		"Monitor n", digital, (5 V)
Status reading "Ready"	"Ready", digital, (5 V)	"Ready", digital, (5 V)
<b>Voltage outputs</b>		
Hall sensors supply voltage $V_{CC}$ Hall	+5 VDC, max. 35 mA	+5 VDC, max. 35 mA
Auxiliary voltages		
<b>Possible adjustments</b>		
	Input "Mode 0" and "Mode 1"	Input "Mode 0" and "Mode 1"
<b>Trim potentiometer</b>		
<b>Indicator</b>		
<b>Protective functions</b>		
Blockage protection	Motor current limitation if motor shaft is blocked for longer than 1.5 s	Motor current limitation if motor shaft is blocked for longer than 1.5 s
Thermal protection of power stage	$T > 95^{\circ}\text{C}$	$T > 100^{\circ}\text{C}$
Dynamic current limit		
Under- / Overvoltage protection	Switches off when $V_{CC} < 6.5 \text{ V}$ or $V_{CC} > 30 \text{ V}$	Switches off when $V_{CC} < 6 \text{ V}$ or $V_{CC} > 56 \text{ V}$
<b>Ambient temperature and humidity range</b>		
Operation	-10...+45°C	-10...+45°C
Storage	-40...+85°C	-40...+85°C
No condensation	20...80%	20...80%
<b>Mechanical Data</b>		
Weight	Approx. 4 g	Approx. 9 g
Dimensions (L x W x H)	24.2 x 20.38 x 12.7 mm (see page 345)	43.18 x 27.94 x 12.7 mm (see page 345)
Mounting threads	mountable on socket terminal strips pitch 2.54 mm	mountable on socket terminal strips pitch 2.54 mm
<b>Connections</b>		
	See page 345	See page 345
<b>Part Numbers</b>		
	<b>367661</b> DEC Module 24/2 1-Q-EC Amplifier	<b>380200</b> DEC Module 50/5 1-Q-EC Amplifier

<b>Accessories</b>	<b>370652</b> DEC Module Eva-Board	<b>370652</b> DEC Module Eva-Board
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