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Part No | RM-ECd and CN1100
Description | 0-10V/PWM fan speed Controller with Tacho Display

<table>
<thead>
<tr>
<th>Issue</th>
<th>Date</th>
<th>Bug no</th>
<th>Comments</th>
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<tr>
<td>1</td>
<td>07/05/2014</td>
<td></td>
<td>1st Issue by Louis Abraka</td>
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<tr>
<td>2</td>
<td>03/02/2015</td>
<td>Bug 1770</td>
<td>Issue 2 – explained the CN1100</td>
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<td>3</td>
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Operating and Maintenance Instructions

Summary
The control board can be used to generate 0-10V (control voltage - PWM) for multiple fans. It displays the control voltage value on a legible LCD display. Depending on the DIP switch settings, the speed of the connected fan can be measured and displayed on the LCD screens instead.

Specification

<table>
<thead>
<tr>
<th></th>
<th>RM-ECd</th>
<th>CN1100</th>
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<tbody>
<tr>
<td>Supply Voltage</td>
<td>10V + 10% DC</td>
<td>10V + 10% DC</td>
</tr>
<tr>
<td>Supply Current</td>
<td>Up to 1 mA</td>
<td>Up to 1 mA</td>
</tr>
<tr>
<td>Inputs</td>
<td>Open Collector fan Tachometer (1)</td>
<td>Open Collector fan Tachometer (1)</td>
</tr>
<tr>
<td>Output</td>
<td>0-10V fan speed control signal</td>
<td>0-10V fan speed control signal</td>
</tr>
<tr>
<td>Operating Temp.</td>
<td>-20°C to +60°C</td>
<td>-20°C to +60°C</td>
</tr>
<tr>
<td>Enclosure</td>
<td>94x94x55mm, IP54 Rating</td>
<td>Unboxed version see Mechanical outline below</td>
</tr>
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</table>

Installation
The RM-ECd is supplied in a plastic box enclosure which has a clear lid. Four breakout holes are available on the bottom of the plastic box for mounting. Four fixing holes are also available on the controller board for fixing onto the enclosure. A screw terminal block J1 is provided on the board for connecting signal wires. See the mechanical outline below for the connections.
Mechanical Outline

Connection Details
1. 10V DC Power Supply
2. O/P => 0 -10V Control Signal
3. 0V
4. T => Tacho Signal

Operation
The board is designed to generate a control voltage depending on the potentiometer setting. This can be adjusted by turning the spindle clockwise for a higher duty cycle PWM signal and vice versa. The range of the PWM is 0-100% duty cycle which is equivalent to 0-10v. The potentiometer (R4) and spindle are located as seen in the mechanical outline. A DIP Switch (‘T’) on the board enables the user to toggle between control voltage display and tacho count display. For control voltage display, set the DIP Switch ‘T’ to ON. For tacho count display, set the same DIP switch to OFF. Only one fan tacho can be monitored or its reading displayed at any one time. To set the number of pulses per revolution, use DIP switch S0 and S1. See table below for the various configuration. Set unused DIP switch S2 to OFF before powering the controller to prevent it entering TEST MODE.

<table>
<thead>
<tr>
<th>S0</th>
<th>S1</th>
<th>Pulses per revolution</th>
</tr>
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<tbody>
<tr>
<td>OFF</td>
<td>OFF</td>
<td>1</td>
</tr>
<tr>
<td>OFF</td>
<td>ON</td>
<td>2</td>
</tr>
<tr>
<td>ON</td>
<td>OFF</td>
<td>3</td>
</tr>
<tr>
<td>ON</td>
<td>ON</td>
<td>4</td>
</tr>
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</table>
ESD
Many modern electronic components are susceptible to damage from Electro Static Discharge (Static Electricity). PCB’s which are Static Sensitive should be stored and transported in anti-static packaging until they are required to be installed. The board must be mounted in an enclosure or cover to prevent access.

Safety
- The controller is only suitable for a low voltage (10V DC) supply
- Electrical installations should only be carried out by qualified personnel
- This appliance is intended to be enclosed in an enclosure which can be accessed by the user during commissioning.

Transport and Storage
PCBs should be transported in anti static build-up bag or static dissipative bags.
Store in a dry environment
Storage temperature: -30°C to +60°C.

Maintenance and Servicing
There are no user serviceable parts.
### CE DECLARATION OF CONFORMITY

We, ebm-papst UK Ltd, Chelmsford Business Park, Chelmsford, Essex CM2 5EZ certify that the product(s) listed are in conformity with:


<table>
<thead>
<tr>
<th>Declaration Approved</th>
<th>Technical File Compiled</th>
</tr>
</thead>
<tbody>
<tr>
<td>G. M. Lockwood</td>
<td>Louis Abrak</td>
</tr>
<tr>
<td>Technical Director</td>
<td>Electronic Design Engineer</td>
</tr>
</tbody>
</table>

**Signature:**

**Date of Declaration:** 07-May-2014

**Issue / Bug No.**

**Part number:** CN1100 and RMEC-d

**Description:** 0-10V/PWM Fan speed Control with Tachometer display

The product(s) have been assessed by the application of the following Standards:

- BS EN 61000-4-3 - Electromagnetic compatibility (EMC). Testing and measurement techniques. Radiated, radio-frequency, electromagnetic field immunity test. Industrial limits of 10V/m.
- BS EN 61000-4-4, Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test
- BS EN 61000-4-6, Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields
- BS EN 61000-4-11, Electromagnetic compatibility (EMC) - Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests
- BS EN 61000-6-3:2007, Electromagnetic compatibility (EMC) Generic standards. Emission standard for residential, commercial and light-industrial environments