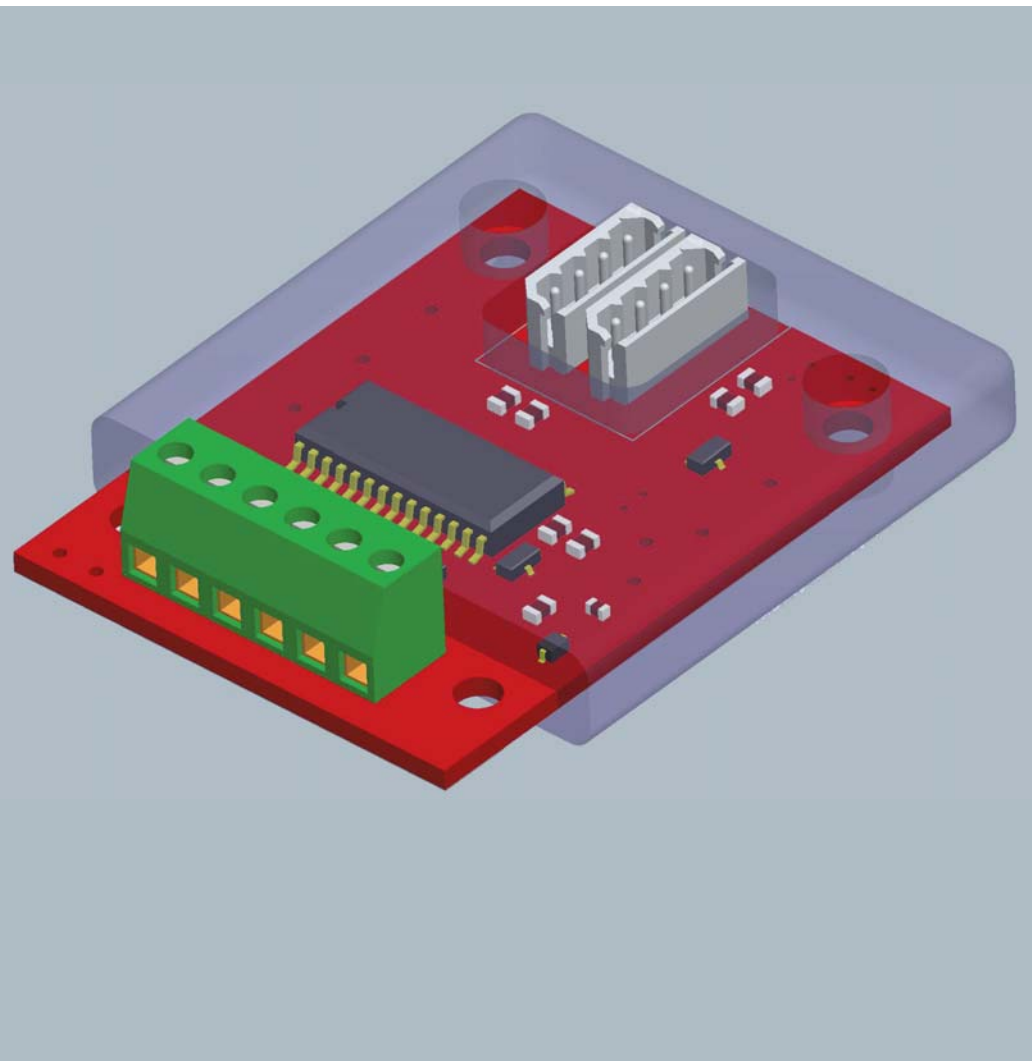




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## 1. Introduction

The ebm-papst UK Ltd DCP Fan Controller has been designed to give end users a low cost, simple and user-friendly controller for use with the large range of DC fans with PWM speed control inputs.

The DCP Fan Controller is designed to operate at the same supply voltage as the fan, therefore a range of controllers in 12/24 and 48 volts are available.

Temperature is measured via an NTC thermistor with a 25°C of 100K. This is supplied in the form of a 2m long lead so that the controller and sensor can be remotely placed.

The unit is shipped with one of two pre-set temperature profiles that cover 20°C to 40°C or 35°C to 55°C (details in section 2.)

The DCP Fan Controller also monitors the Tacho output from the fan and then generates an alarm output if a fan fail is detected.

The DCP Fan Controller is fitted with an open drain fail safe alarm output as standard (see section 2). This alarm is activated if a fan fail is detected or if the upper temperature limit is reached. The controller will also generate an alarm if it detects either an open or short circuit on the NTC temperature input. During alarm conditions the fan will be run at full speed.

## 2. Technical specification

This section details the limits and operating conditions the DCP Fan Controller will operate within. It assumes the fan that has been fitted is within operational limits. For details on the fan please refer to the ebm-papst technical datasheet for the device required.

| Controller supply: |                    |      |      |                    |      |      |                    |      |      |       |
|--------------------|--------------------|------|------|--------------------|------|------|--------------------|------|------|-------|
|                    | 12 Volt Controller |      |      | 24 Volt Controller |      |      | 48 Volt Controller |      |      |       |
|                    | Min.               | Typ. | Max. | Min.               | Typ. | Max. | Min.               | Max. | Typ. | Units |
| Supply voltage     | 11                 | 12   | 13.2 | 15                 | 24   | 33   | 36                 | 48   | 55   | Vdc   |
| Supply current     |                    | 1    |      |                    | 1.2  |      |                    | 1.4  |      | uA    |

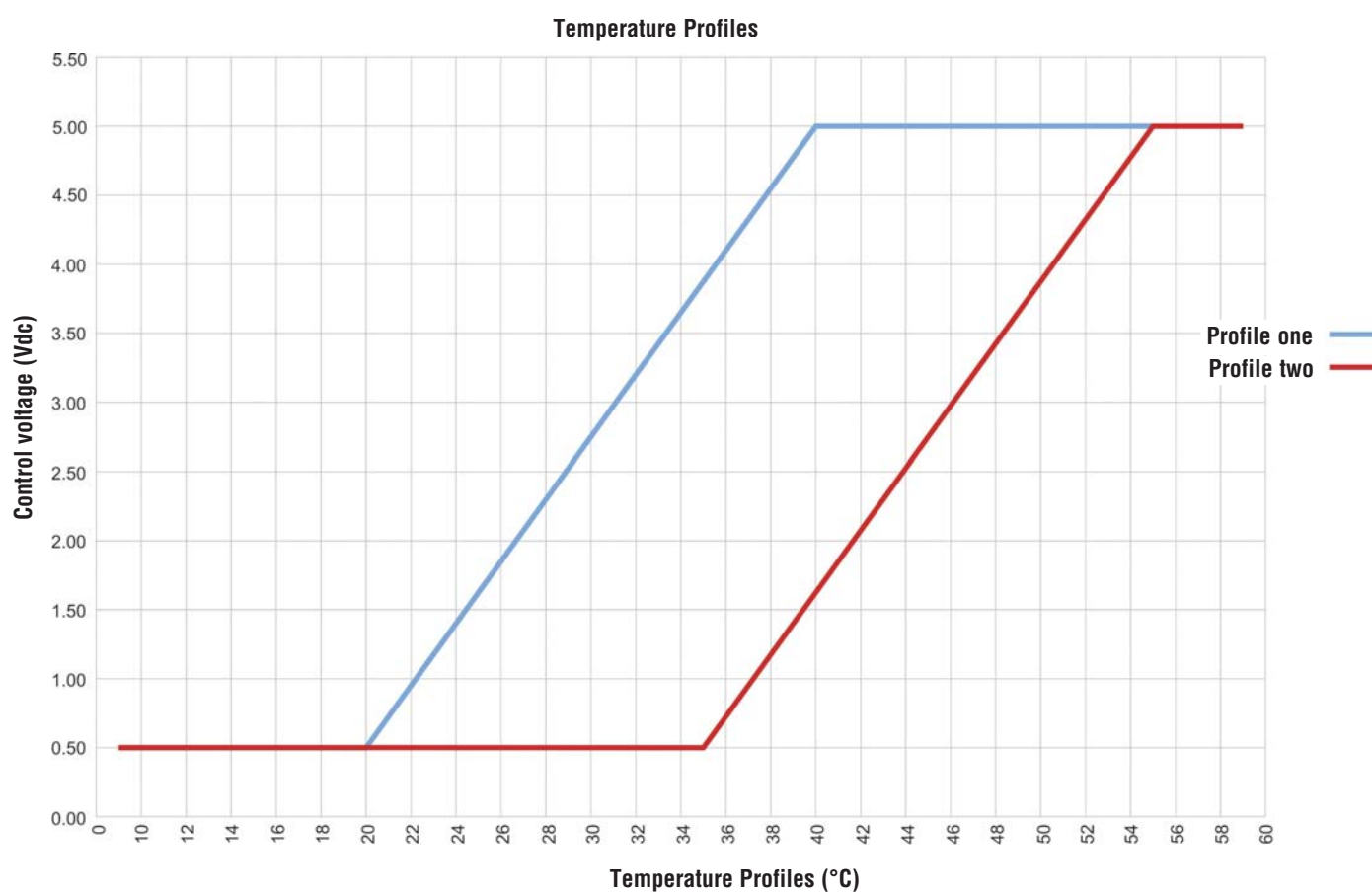
| Output limits:    |      |      |      |           |
|-------------------|------|------|------|-----------|
|                   | Min. | Typ. | Max. | Units     |
| Control Voltage   | 0    | ...  | 5    | Vdc pk-pk |
| Control frequency | ...  | 7.7  | ...  | kHz       |
| Alarm open drain  | ...  | ...  | 100* | mA        |
| Alarm open drain  | ...  | ...  | 50*  | Vdc       |

\*Combination of voltage and current must not exceed 150mW

# DCP Fan Controller

| Temperature profiles:          |      |      |      |       |
|--------------------------------|------|------|------|-------|
| Profile one (20°C to 40°C)     |      |      |      |       |
|                                | Min. | Typ. | Max. | Units |
| Low fault temperature          |      | -16  |      | °C    |
| Low set point                  | 19   | 20   | 21   | °C    |
| High set point                 | 39   | 40   | 41   | °C    |
| High fault temperature         |      | 65   |      | °C    |
| Control voltage low set point  | 1.4  | 1.5  | 1.6  | Vdc   |
| Control voltage high set point | 4.8  | 5.0  | 5.2  | Vdc   |
| Profile two (35°C to 55°C)     |      |      |      |       |
|                                | Min. | Typ. | Max. | Units |
| Low fault temperature          |      | -16  |      | °C    |
| Low set point                  | 34   | 35   | 36   | °C    |
| High set point                 | 54   | 55   | 56   | °C    |
| High fault temperature         |      | 65   |      | °C    |
| Control voltage low set point  | 1.4  | 1.5  | 1.6  | Vdc   |
| Control voltage high set point | 4.8  | 5.0  | 5.2  | Vdc   |

# DCP Fan Controller



| Environmental limits  |      |      |       |       |
|-----------------------|------|------|-------|-------|
|                       | Min. | Typ. | Max.  | Units |
| Operating temperature | -20  | ...  | 75    | °C    |
| Humidity              |      |      | 95    | %RH   |
| Tc *                  |      |      | N/A** | °C    |

\*Max temperature surface of controller will reach

\*\* No heat is generated, Tc will equal environmental temperature

# DCP Fan Controller

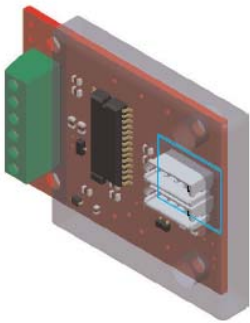
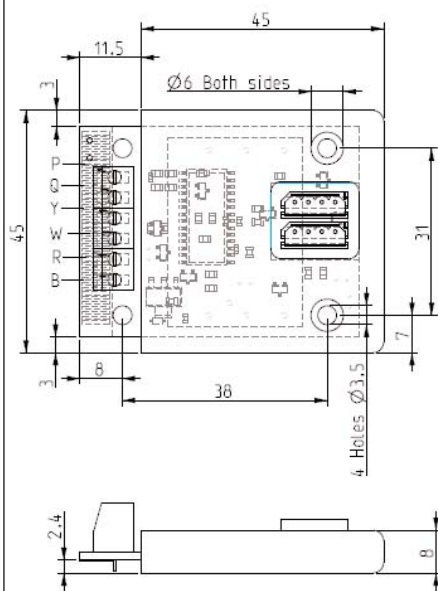
Connectors specifications:

| Temperature profiles:       |                                                              |
|-----------------------------|--------------------------------------------------------------|
| Screw terminal              |                                                              |
| Wire size max               | 0.75mm <sup>2</sup>                                          |
| Clamp                       | Nickel plated brass                                          |
| Screw/torque                | M2 steel, 6u zinc colour passivated and tropicalised / 0.3Nm |
| Max blade size              | 2.5mm                                                        |
| Replacement alarm connector |                                                              |
| Manufacture                 | Molex                                                        |
| Type                        | Micro spox                                                   |
| Part number                 | 50375043                                                     |

Controller size and fixings:

| Controller size and fixings |      |      |      |       |
|-----------------------------|------|------|------|-------|
|                             | Min. | Typ. | Max. | Units |
| Length                      |      | 56.5 |      | mm    |
| Height                      |      | 12.7 |      | mm    |
| Width                       |      | 45   |      | mm    |

# DCP Fan Controller



|                    |                |
|--------------------|----------------|
| CPC122040SC-F or R | 12v 20 to 40°C |
| CPC242040SC-F or R | 24v 20 to 40°C |
| CPC482040SC-F or R | 48v 20 to 40°C |
| CPC123555SC-F or R | 12v 35 to 55°C |
| CPC243555SC-F or R | 24v 35 to 55°C |
| CPC483555SC-F or R | 48v 35 to 55°C |
| Product Part No    | Profile        |

|    |                                |
|----|--------------------------------|
| P  | Input - Voltage or temperature |
| Q  | Input - Ground                 |
| Y  | Control - PWM                  |
| W  | Tacho                          |
| R  | Supply - DC                    |
| B  | Supply - 0V                    |
| ID | Function                       |
|    | Connection Table               |

|                                                                             |                                        |                                    |
|-----------------------------------------------------------------------------|----------------------------------------|------------------------------------|
| Tolerance<br>Linear $\pm 0.2$<br>Holes $\pm 0.1$<br>Angular $\pm 0.5^\circ$ | DO NOT SCALE<br>IF IN DOUBT PLEASE ASK | Dim's in mm<br>Scale : 1:500       |
| Original A3                                                                 | © 2007                                 | Drawn by :                         |
| 3rd Angle Projection                                                        |                                        | CMG by :<br>RF<br>App'd by :<br>CL |

|                   |                                                   |
|-------------------|---------------------------------------------------|
| Material :<br>--- | ebm-papst UK Ltd.                                 |
| Finish : ---      | CHELMSFORD BUSINESS PARK CHELMSFORD ESSEX CM2 3EZ |

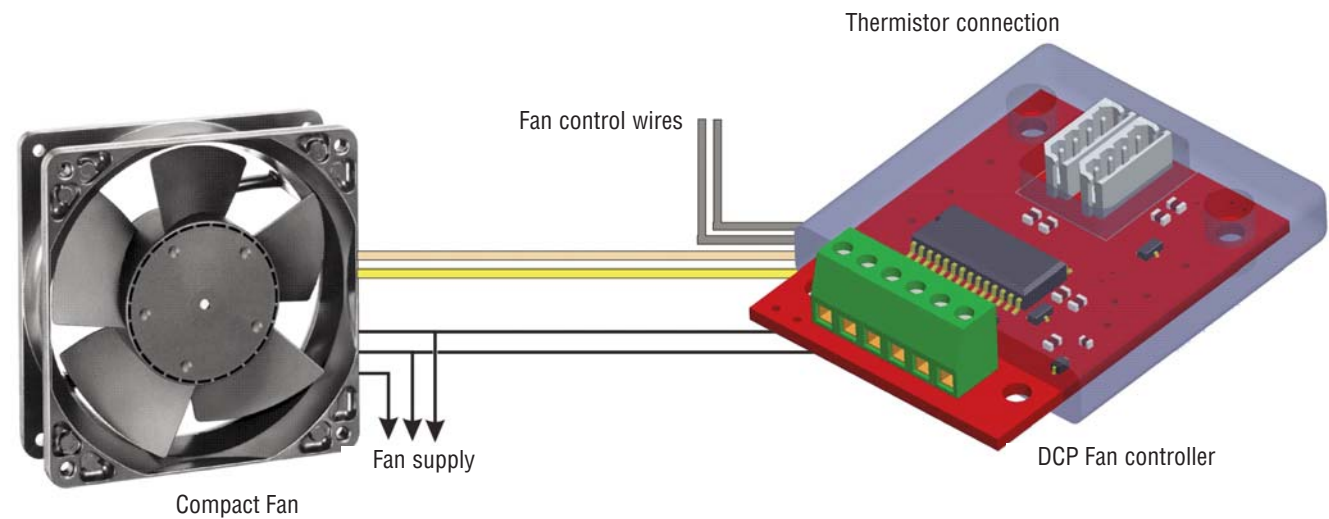
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| 1     | First Issue | 17-Apr-09 |
| Issue | DCR         | Date      |

Outline drawing - CPCxxxxx-xxx

210-DRW 10589

### 3. Connection diagrams

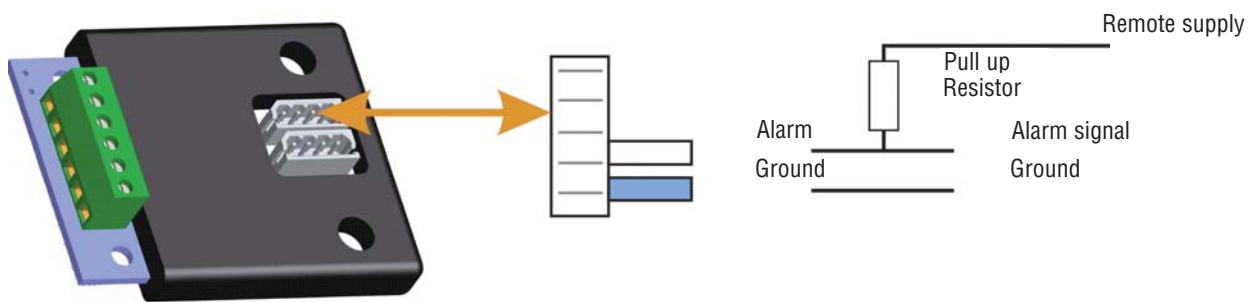
Connection to Fan/Thermistor



Controller size and fixings:

| Connection details                  |                |                               |
|-------------------------------------|----------------|-------------------------------|
| Wire colour                         | Function       | DCP Fan controller connection |
| White                               | Tacho Feedback | W                             |
| Yellow<br>(or violet in some cases) | Control (0-5V) | Y                             |
| Red                                 | +Supply        | R                             |
| Blue                                | Ground         | B                             |

## Connection to alarm output



The alarm output cable should only be connected to the upper of the two connectors shown above. The other is reserved for future expansion.

As shown, the blue wire should be connected to the ground reference of the monitoring device and the white wire to the alarm input on the monitoring device. Note that the alarm output supplies no voltage, it switches to ground instead. Therefore you should connect a pull up resistor from the alarm signal wire to a supply that is local to the monitoring device.

## 4. Configuration

The DCP fan controller is supplied with one of two pre-set temperature profiles and a fixed alarm point. These are not configurable, please contact ebm-papst UK Ltd if you require assistance with selecting a different EC fan controller with a different profile.

## 5. Compatible ebm-papst fan list

The following fans have been 100% tested and are approved for use with the DCP Fan Controller:

- 4114N/2H7P
- 4114N/2H8P
- 4118N/2H7P
- 4118N/2H8P
- 5312/2TDHP
- 5314/2TDHP
- 5314/2TDHHP
- 5318/2TDHP
- 5318/2TDHHP
- 5318/2TDH4P
- 6312/2TDHP
- 6314/2TDHP
- 6314/2TDHHP
- 6318/2TDHP
- 6318/2TDHHP
- 6318/2TDH4P

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