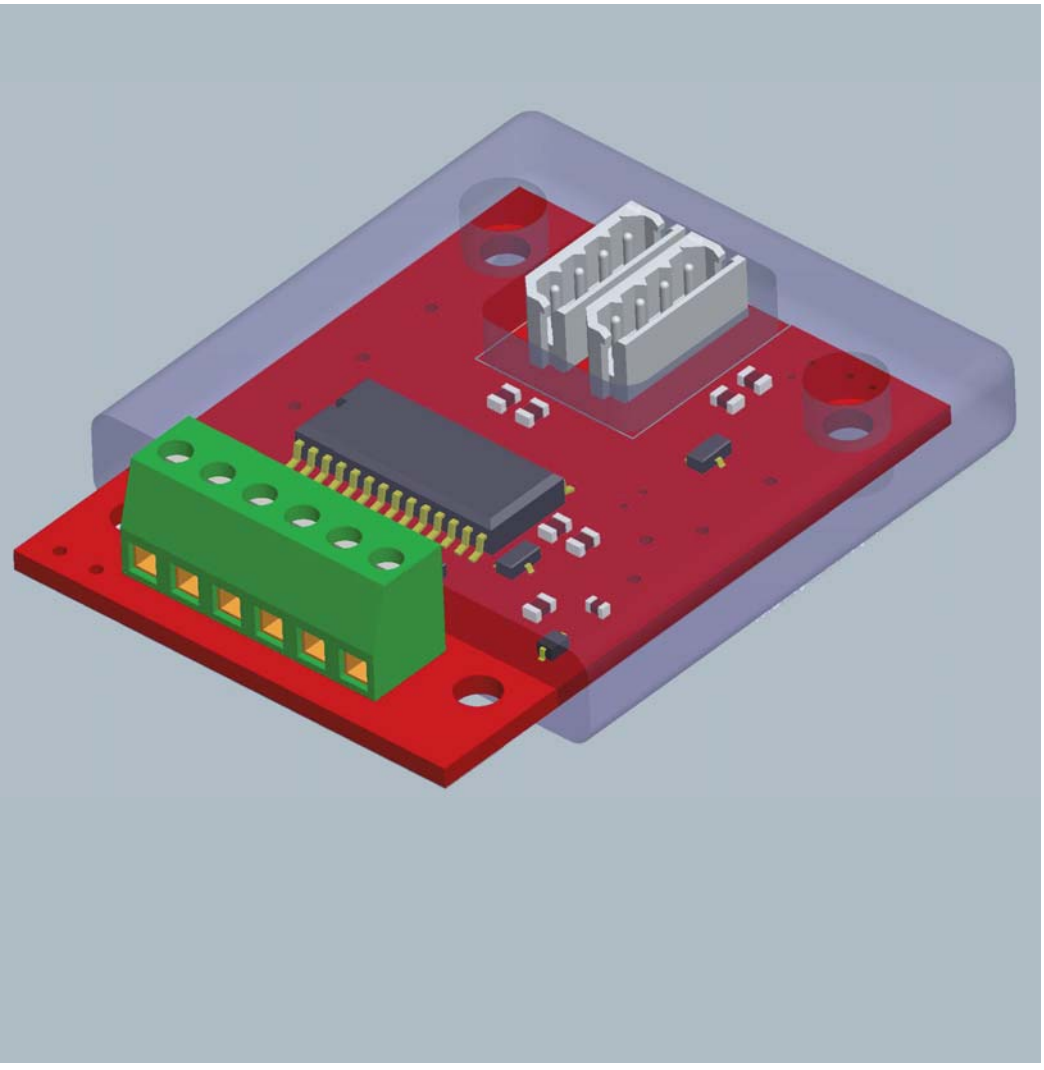
DCP Fan Controller

Version 01/2009



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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 25ºC 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 20ºC to 40ºC or 35ºC to 55ºC (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

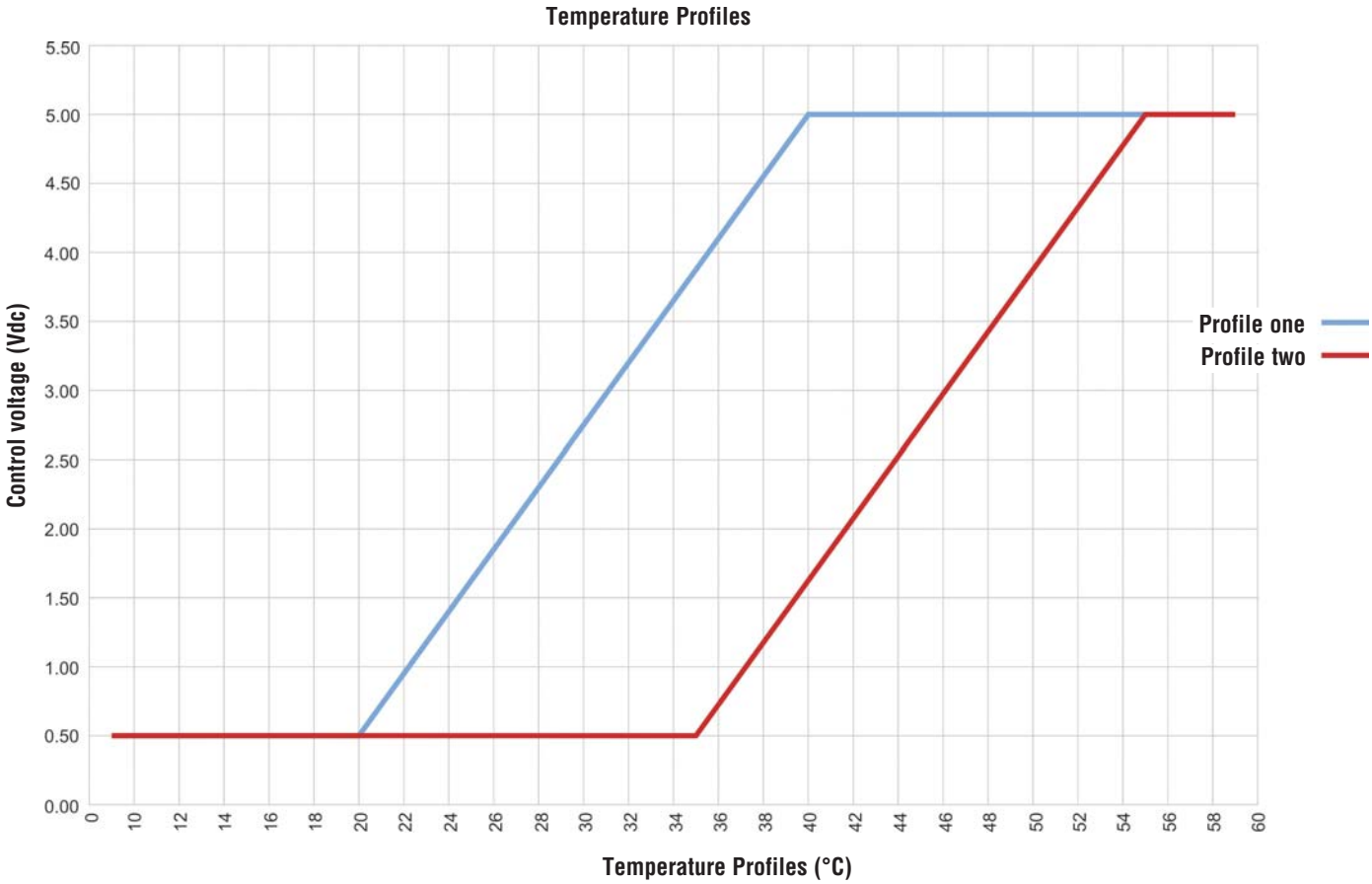
This section details the limits and operating conditions the DCP Fan Controller will operate within. It assumes the fan that has been fitted is within operational limits. For details on the fan please refer to the ebm-papst technical datasheet for the device required.

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

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



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

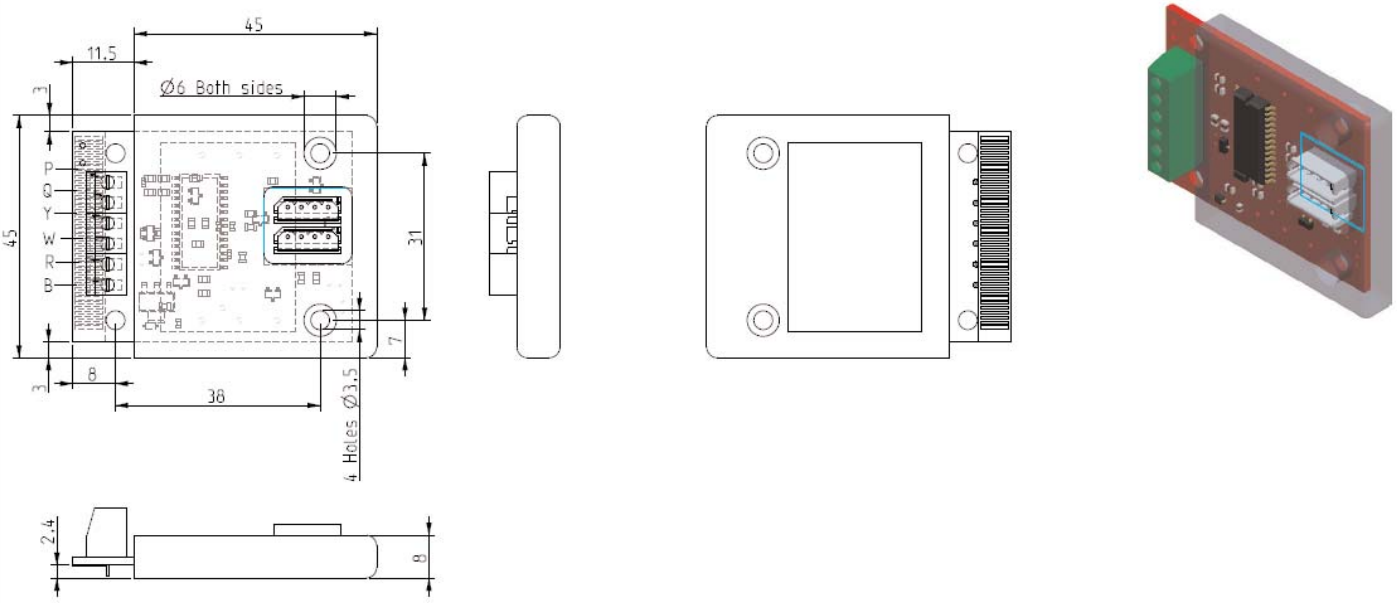
*Max temperature surface of controller will reach
** No heat is generated, Tc will equal environmental temperature

Connectors specifications:

Temperature profiles:	
Screw terminal	
Wire size max	0.75mm^2
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



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
Linear ±0.2
Holes ±0.1
Angular ±0.5°

DO NOT SCALE
IF IN DOUBT PLEASE ASK

Original A3 © 2007
3rd Angle Projection

Units in mm
Scale : 1.500

Drwn by :
Chkd by : PF
Appd by : GL

Issue	BCR	Date
1	First Issue	17-Apr-09

Material :

Finish : ---

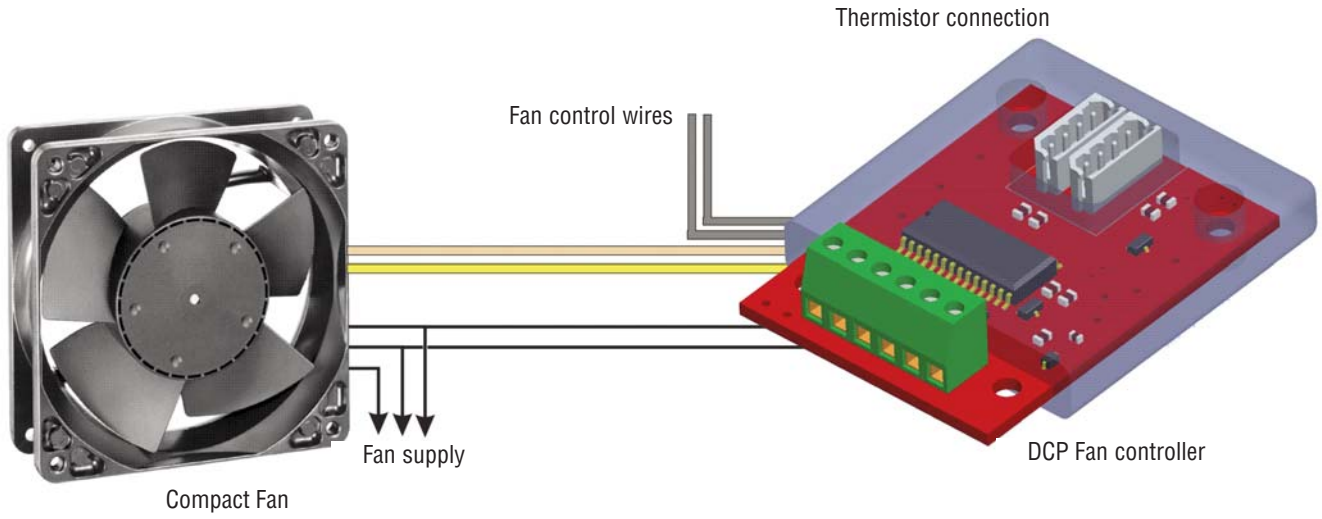
ebm-papst UK Ltd.
CHELMSFORD BUSINESS PARK CHELMSFORD ESSEX CM2 5EZ

Outline drawing - CPCxxxxxx-xxx

210-DRW 10589

3. Connection diagrams

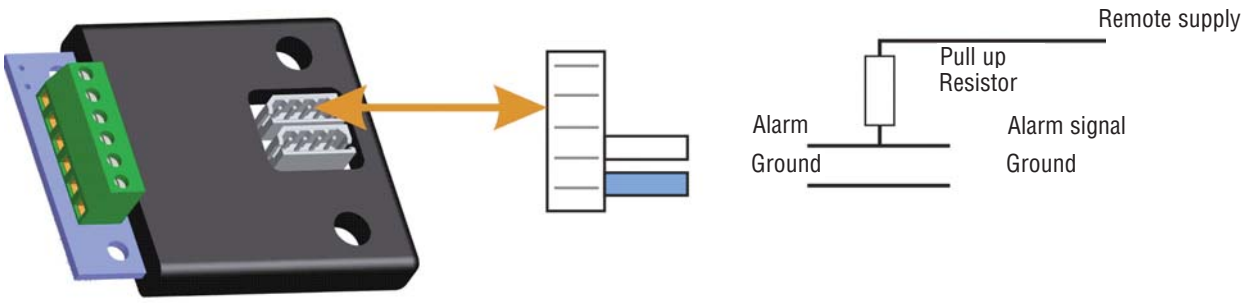
Connection to Fan/Thermistor



Controller size and fixings:

Connection details		
Wire colour	**Function**	**DCP Fan controller connection**
White	Tacho Feedback	W
Yellow (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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