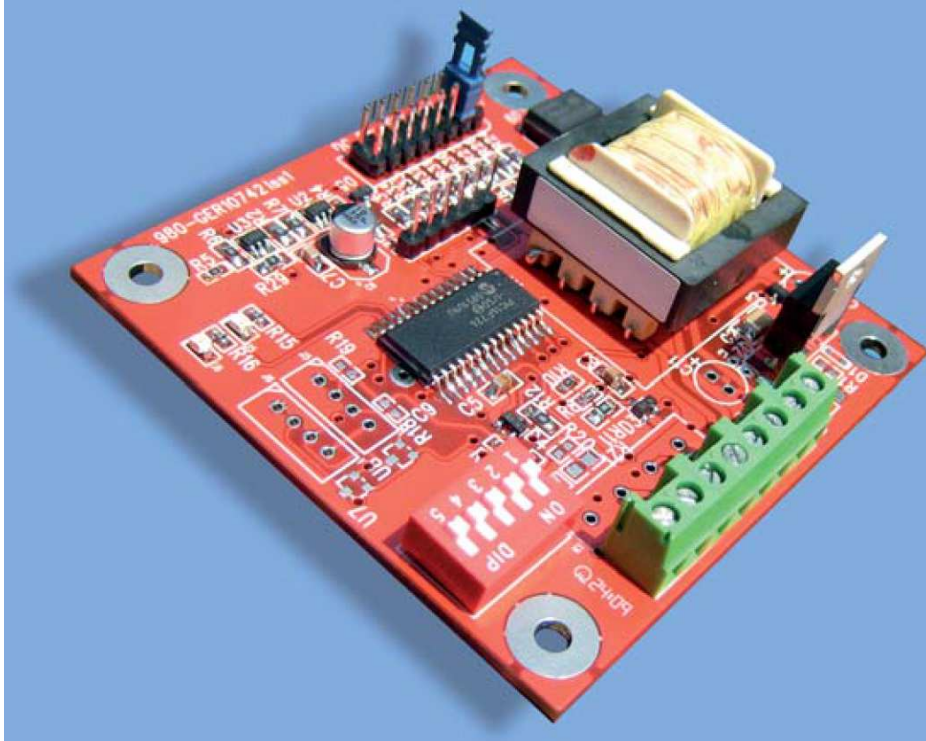


Part No	210-OMI10878
Description	DC Temperature Controller



Issue	Date	Bug no	Comments
1	16/07/09		1 st Issue
2	22/08/16	Bug 1975	Tacho and 48V references removed
3			

Safety Notice

⚠ CAUTION – Safety and Supply Voltage Range

- The controller is only suitable for a low voltage supply stated in the specification table below
- Electrical installations should only be carried out by qualified personnel

⚠ CAUTION – Electro-Static Discharge

Many modern electronic components are susceptible to damage from Electro-Static Discharge (Static Electricity). During programming and commissioning, avoid unnecessary contact with electronic components on PCB's. PCB's which are sensitive to static discharges should be stored and transported in anti-static packaging until they are required to be used.

⚠ Warning – Do not operate in an explosive atmosphere

⚠ Warning – Fan may start during connection and programming/configuring. Secure fan safely before applying power

All Components used on this controller are RoHs compliant.



This is an electrical and electronic device, please dispose correctly

210-OMI10878	ORIGINAL INSTRUCTIONS	Page 1 of 6
ebm-papst UK Ltd	Chelmsford Business Park Chelmsford Essex CM2 5EZ Telephone: +44(0)1245468555 Fax: +44(0)1245466336 e-mail sales@uk.ebmpapst.com	

Table of Contents

Safety Notice	1
Introduction.....	2
Specification	2
Installation and Connection Details	3
Operation.....	3
DIP Switch Settings.....	3
Configuration	4
Troubleshooting.....	4
DC Temperature Controller - Fan Compatibility List.....	5
Maintenance and Servicing	5
Declaration of Conformity	6

Introduction

Traditional fan speed controllers use voltage-chopping which can lead to reduced life expectancy, damage to motor electronics and reduced performance. The DC Temperature Controller regulates the electrical power supplied to the fan to maintain optimum performance and reliability.

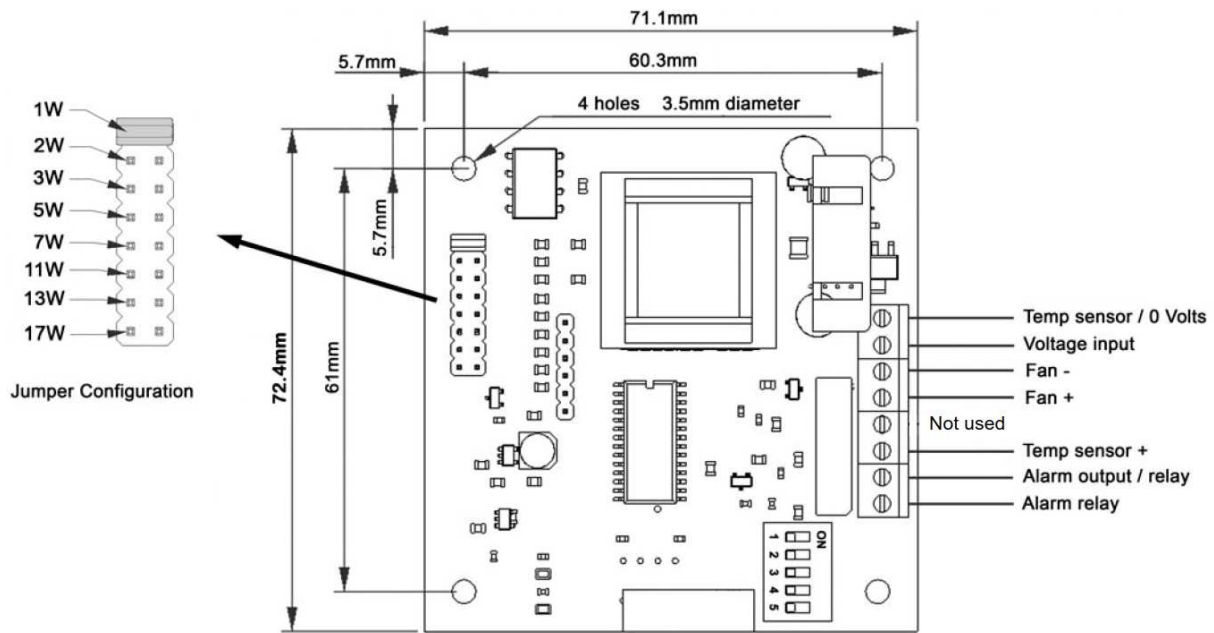
- For temperature sensitive speed control of 12V, 24V ebm-papst DC compact fans.
- Fan speed increases with temperature between 20°C and 40°C or 35°C and 55°C according to the selected profile.
- Alarm output through Open Drain connection or optional relay.
- Supplied complete with 2 metre long NTC thermistor.

*Note: Due to variations in motor electronics, a small number of mainly high speed fans may not work correctly with this controller. A list of fans which have been tested for compatibility is attached to this document.

Specification

		12V	24V
Supply Voltage	V DC	11.4 – 12.6	22.8 – 25.2
Supply Current	mA	36	37p
Ambient Temperature	°C	-20 to 75	-20 to 75
Output Power	W	20	20
Max humidity (non-condensing)	%RH	95	95
Open drain alarm Max current	mA	500	50
Max AC voltage	V AC	50	50
Max DC voltage	D DC	50	50
Max current	A	1	1

Installation and Connection Details



Note:

Open Drain Alarm Output: Connect the alarm output to the input of the monitoring device then connect a pull-up resistor (typically 100K Ω) between this connection and the supply voltage of the monitoring device. During normal operation the alarm output will be 0 volts. In an alarm condition the output will be the same as the supply voltage of the monitoring device.

Relay Alarm Output: This is a volt free contact that is held closed during normal operation and opens when an alarm condition is detected.

Temperature sensor: The 0 volt wire of the sensor must only be connected to the terminal provided on the controller and not to any other 0 volt source.

Fan Supply: The fan must be only by connected to the terminals provided on the controller or it will not be able to monitor and regulate the fan speed correctly.

Operation

Fan speed is controlled according to the selected profile, as shown in the chart opposite.

The fan will run at approximately 15% of maximum speed below the minimum temperature and increase to 100% at the maximum temperature. If preferred, DIP switch 4 can be used to switch the fan off below the set point.

If the voltage input limit to the controller or the current output limit to the fan is exceeded, the controller and fan will switch off to prevent risk of damage and an alarm indication is given.

A yellow LED flashes during normal operation. A blue LED indicates an alarm condition.

DIP Switch Settings

Dip Switch	OFF	ON
1	Profile 2: 35°C to 55°C	Profile1: 20°C to 40°C
2	Not Used	Not Used
3	Not Used	Not Used
4	15% fan speed at minimum set point	Fan off at minimum set point
5	Soft start on	Soft start off

Configuration

For optimum performance it is necessary to configure the controller to match the maximum total power requirements of all of the connected fans. The maximum power rating for each fan will be available on the fan label or datasheet. For example, if running 4 fans rated at 2 Watts each, the total power requirement is $4 \times 2 = 8$ Watts. The controller must then be configured to the lowest setting which exceeds the total power. In this case, 11 Watts.

To configure the controller, set the jumper links shown as shown in the connection diagram.

Initial Start-up

Due to minor differences in motor types and electronics, some fans may work better than others with the default settings.

If the fan or fans fail to run on initial start-up, first check the following;

Soft start setting

The recommended setting is for a soft start with the rate of fan speed increase being managed by the controller but a small number of fan types will only work with a faster ramp up speed. If the fan(s) fail to start properly, switch this function off using the DIP switch and try to start the fan. If it makes no difference, reset the dipswitch.

Power setting

The power requirement of some fans means that they may be on the borderline for a particular power configuration. A slight increase in demand during start-up for example, can be detected as an over current condition by the controller causing an alarm condition and shut down of the fan.

If the fan does not start or starts then stops, move the power configuration jumper link to the next highest setting.

If it makes no difference, return it to the original setting.

If the controller still does not operate correctly, please refer to the troubleshooting guide.

A detailed technical specification for this controller and a list of ebm-papst fans which have been tested for compatibility is available at www.ebmpapst.co.uk/datasheets

Troubleshooting

In normal operation, the yellow LED will flash and the blue LED will be off. The following section is to help diagnose common issues and interpret the different combinations of LED states.

Before referring to the guide, check that all connections are correct and secure and that the power setting jumper link and DIP switches are in the correct position. It is assumed that the fan is known to be serviceable and is correctly installed.

Symptom	LED status	Possible Reasons/Fixes
Fan not running at power on	Both Off	No power to controller, check connection and supply
	Both On	Fan not connected or connected in reverse polarity. Wattage jumper not fitted. Supply voltage too high.
	Both Flashing	Temperature is below minimum set point. Fan off at minimum set point selected on DIP switches.
Fan starts then stops	Both On	Selected power range too low. Soft start selected off.
Fan starts and runs near full speed	Yellow On	Fan is drawing more power than expected during start up. Check power range selection and possible try next range up. Check Fans back pressure.
Fan running at full Speed	Both On	Temperature at maximum set point.

	Yellow On or Off Blue On	Temperature sensor open or short circuit.
Fan speed not in expected range	Yellow Flashing Blue Off	Wrong control profile selected. Temperature sensor poorly positioned in system.
Fan stops after running up	Yellow On Blue On	Excessive supply voltage or fan fault.
Fan stops then ramps up repeatedly	Yellow On Blue On when fan stops	Selected power range too low.

A detailed technical specification for this controller and a list of ebm-papst fans which have been tested for compatibility is available at www.ebmpapst.co.uk/datasheets

DC Temperature Controller - Fan Compatibility List

The DC temperature controller is suitable for use with most ebm-papst compact fans but there are a small number of high speed fans requiring surges of current in excess of 17 Watts which may not operate correctly.

The following ebm-papst fans have been tested for compatibility

252N	3414N	412J	4212NGL	4312
3312	3414NG	412JH	4212NGM	4314
3312L	3414NGH	414	4212NGN	8312
3314	3414NGL	414F	4212NH	8314
3412N	3414NGM	414H	4212NN	
3412N2GLE454	3414NHH	414J	4214NGL	
3412N2GLLE453	412	414JH	4214NGM	
3412NG	412F	414JHH	4214NGN	
3412NGH	412FH	4182NGX	4214NH	
3412NHH	412H	4184NGX	4214NN	

An updated list of ebm-papst fans which have been tested for compatibility is available at www.ebmpapst.co.uk/datasheets

Maintenance and Servicing

There are no user serviceable parts.

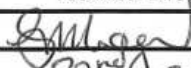

Declaration of Conformity



Part No - CDCxxxxxxxx-xxx

0063

Certificate No - CDCxxxxxxxx-xxxCE

CE DECLARATION OF CONFORMITY		
Declaration		
We, ebm-papst UK Ltd, Chelmsford Business Park, Chelmsford, Essex CM2 5EZ certify that the product(s) listed are in conformity with;		
Electromagnetic Compatibility Directive 2014/30/eu		
	Declaration Approved	Technical File Compiled
Name	G. M. Lockwood	Louis Abraka
Position	Technical Director	Electronics Design Engineer
Signature		
Date of Declaration	22nd Aug 2016	22-Aug-2016
Issue / Bug No	issue 2	Bug 1975
Part number:	CDCxxxxxxxx-xxx	
Description:	DC Temperature Fan Controller	
<p>The product(s) have been assessed by the application of the following Standards;</p> <p>BS EN 55022 - Information technology equipment. Radio disturbance characteristics. Limits and methods of measurement</p> <p>BS EN 61000-4-2 - Electromagnetic compatibility (EMC). Testing and measurement techniques. Electrostatic discharge immunity test.</p> <p>BS EN 61000-4-3 - Electromagnetic compatibility (EMC). Testing and measurement techniques. Radiated, radio-frequency, electromagnetic field immunity test</p>		