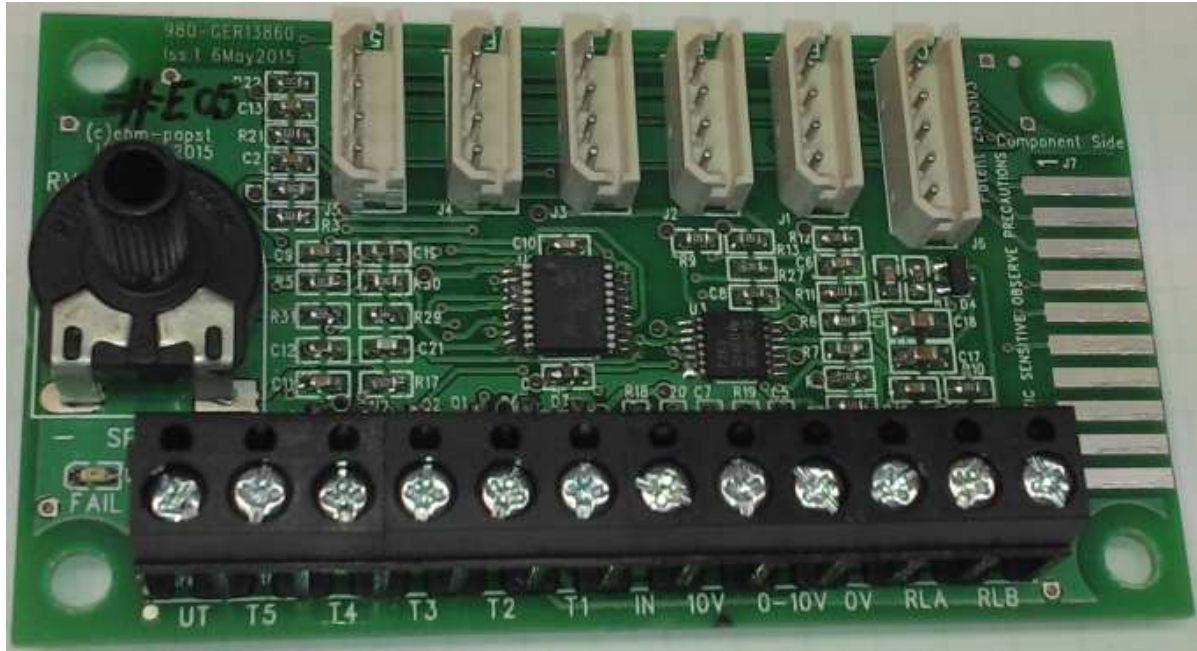


Part No	CN1101
Description	Fan Tachometer Monitor Board – 5 way with 0-10V control



Issue	Date	Bug no	Comments
1	12 June 2015		Updates for latest layout
2	13 Jan 2016		Added signed CE front sheet
3	29 Apr 2016		Document formatting

Location of master: T:\Design Projects\01855 - Fan Coil Monitor Board - epUK\Specifications\OMI

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Summary

The Fan Tachometer Monitor Board CN1101 can be used to monitor from 1 to 5 fan tachometer signals. Boards can be linked to allow monitoring of more fans.

Isolated alarm output, with LED identification of faulty fan.

300 RPM / 15-20 second alarm threshold for one tachometer pulse per revolution (programmable, see factory).

On board potentiometer to adjust 0 - 10V Fan Speed control output voltage.

Optional 0-10V External input to set Fan Speed, scaled down 0-100% by on-board potentiometer

Operates from 10V 1mA supply, may be powered by EC Fan (Patent 2431303).

Specification

Product	CN1101
Supply Voltage	10V \pm 10% DC
Supply Current	Up to 1 mA
Isolated Alarm Output rating	Contacts 100mA, 60V, 100mW Max
Tachometer Inputs	Open Collector fan Tachometer (1 – 5)
External Control Input	0-10V, 100kOhm load
Control Output	Fan speed control signal, 0-10V, 2kHz PWM
Operating Environment	-20°C to +60°C, 90%RH at 40°C max.

Installation

Four fixing holes are available for mounting.

Keep control wiring separate from mains supply wiring.

The board must be fitted within the user's equipment to prevent access, or an enclosure / cover provided.

4 way Molex connector F1-F5 (Fan1 – Fan 5) mating half part number: 50375043, crimp 08-70-1039.

5 way Molex connector CON (External Controller) mating half part number: 50375053, crimp 08-70-1039.

If the screw terminal block is used for fan connection, a daisy-chain type cable harness will be required. Use of the individual connectors 'F1' - 'F5' allow use of simpler point-to-point cables.

Mechanical Outline

PCB 80 x 45mm, Maximum height (not including potentiometer spindle): 17mm

Fixing Hole Centres 72 x 37mm, diameter: 4mm

EMC Compliance

BS EN61000-6-3 (emissions), BS EN61000-6-2 (immunity)

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

- Installation must be by qualified personnel in accordance with local applicable standards.
- This appliance is intended to be enclosed in the equipment and not accessed by the user.
- Access is limited to service personnel only.
- Residual risk of contact with fan. Maintenance personnel should take due care and attention.

Transport and Storage

PCBs should be transported in anti-static packaging as supplied.

Store in a dry environment, Storage temperature: -30°C to +70°C.

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Connection Details

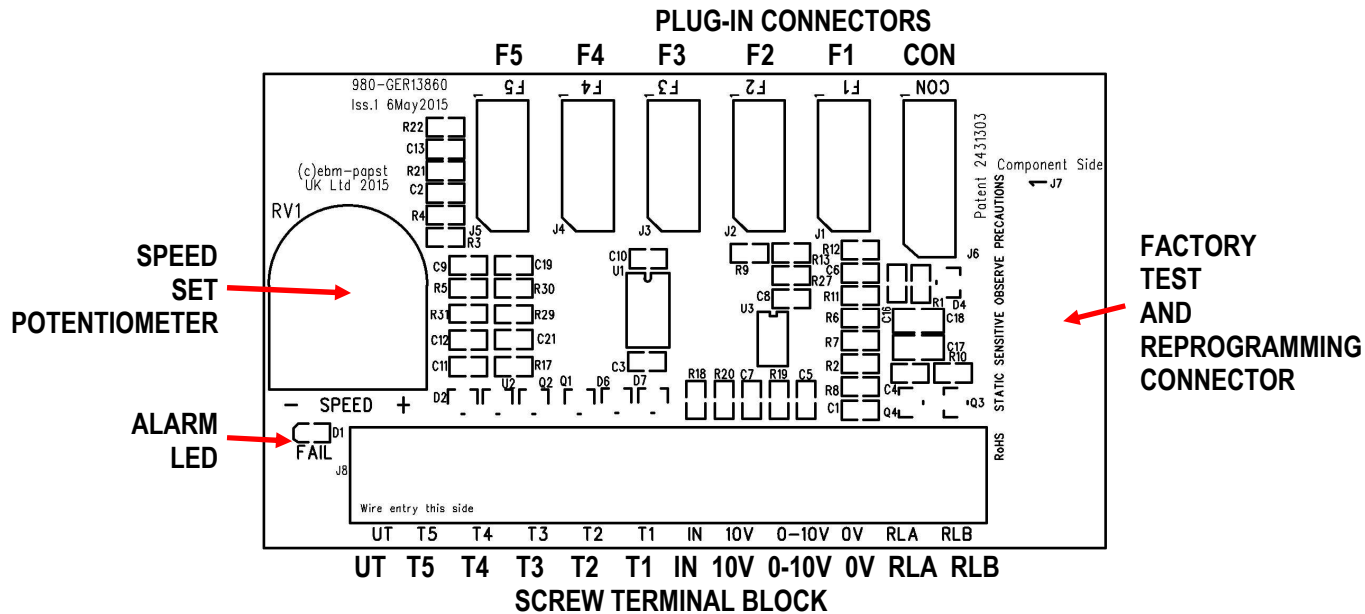
Connection to the PCB may be made by either the Screw Terminal Block or by the separate plug-in connectors.

Screw Terminal Block	Plug-in Connectors	Signal	Connection
RLB	CON, Pin 5	Alarm Output Contact B	Isolated Alarm Output, connect to alarm monitor.
RLA	CON, Pin 4	Alarm Output Contact A	
0V	CON, Pin 3 F1-F5, Pin 3	Circuit Ground reference	Connect to Fan(s) 0V, also External Controller 0V if External 0-10V control input used.
0-10V	F1-F5, Pin 2	0-10V Speed Control Output	Connect to Fan(s) 0-10V speed control input.
10V	CON, Pin 1 F1-F5, Pin 1	10V supply to PCB	Connect to EC Fan(s) 10V output or alternative 10V supply.
IN	CON, Pin 2	0-10V External Control Input	Optional. If <u>unused</u> then must be linked to PCB 10V supply. If <u>used</u> , an external 0-10V speed control signal connected to this input will be scaled-down 0-100% as set by the on-board Potentiometer.
T1	F1, Pin 4	Tachometer Open Collector signal from Fan 1	Connect to Fan 1 tachometer or UT if unused
T2	F2, Pin 4	Tachometer Open Collector signal from Fan 2	Connect to Fan 2 tachometer or UT if unused
T3	F3, Pin 4	Tachometer Open Collector signal from Fan 3	Connect to Fan 3 tachometer or UT if unused
T4	F4, Pin 4	Tachometer Open Collector signal from Fan 4	Connect to Fan 4 tachometer or UT if unused
T5	F5, Pin 4	Tachometer Open Collector signal from Fan 5	Connect to Fan 5 tachometer or UT if unused
UT	-	Unused Tachometer link terminal	If fewer than 5 fans, then link unused Fan(s) T1-T5 input(s) to this terminal

Plug-in Connector pinout

External Controller Connector		Fan Connectors 1-5	
Pin	Function	Pin	Function
5	Alarm Output Contact B	4	Fan Tachometer
4	Alarm Output Contact A	3	Fan 0V
3	0V	2	0-10V Control Output
2	0-10V External Input	1	10V from fan
1	10V		

PCB Main Component Locations



Operation

Tachometer Monitor

The Fan Tachometer Monitor Board is designed to monitor up to five fan tachometer signals. The Isolated Alarm Output contacts are closed for no alarm, then open for a tachometer alarm (absence of a tachometer signal or tachometer frequency below the pre-programmed threshold value) or for power fail. The on board LED will flash to identify the alarmed fan. For example, if Fan 3 triggers the alarm the LED will flash three times followed by a pause. The sequence will then repeat. Unused tachometer inputs should be linked to terminal UT to prevent spurious alarms. If more than five fans are used, an additional monitor board CN1101 will be required. The relay contacts of the two boards may be connected in series. More units can be cascaded in this way.

Fan Speed Control, on-board Potentiometer

Note: The 0-10V Control Input must be linked to 10V or connected to an external 0-10V control signal.

Adjust the on-board potentiometer RV1 to set the desired fan speed.

The output control voltage may be monitored at the screw terminal block terminals 0v and 0-10V.

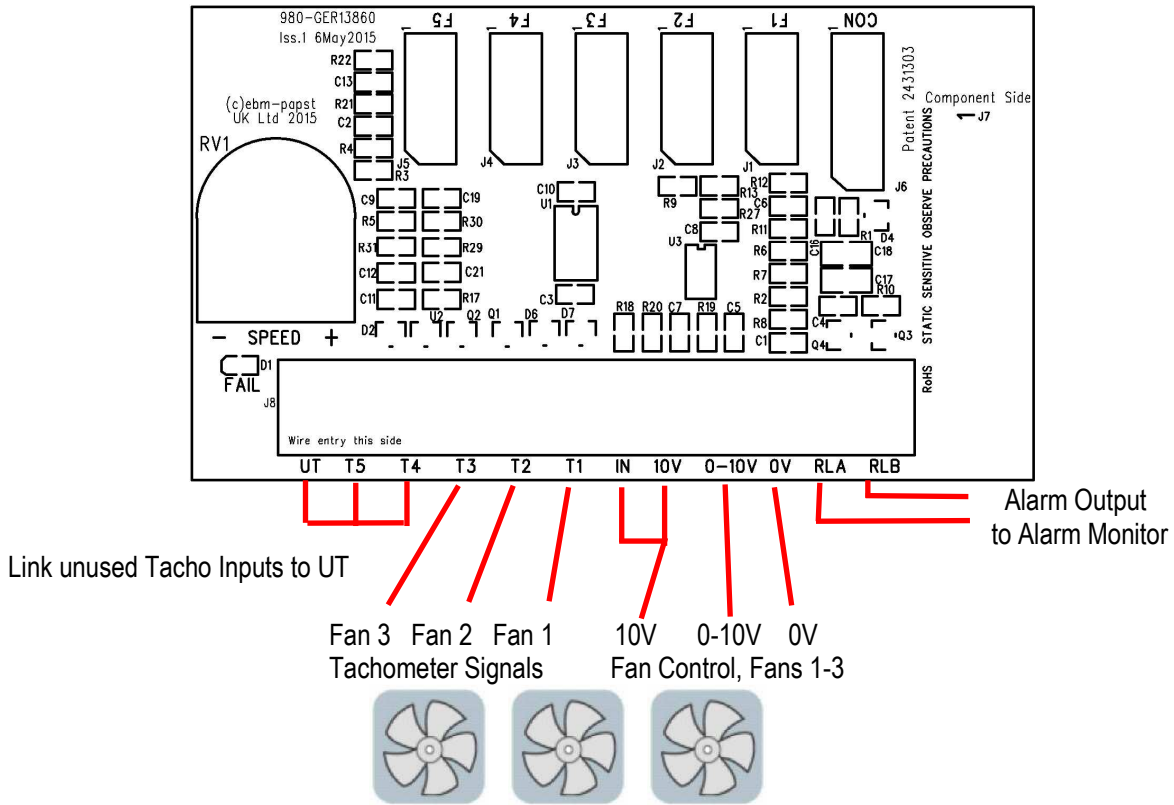
External 0-10V Control Input option

If unused then must be linked to 10V.

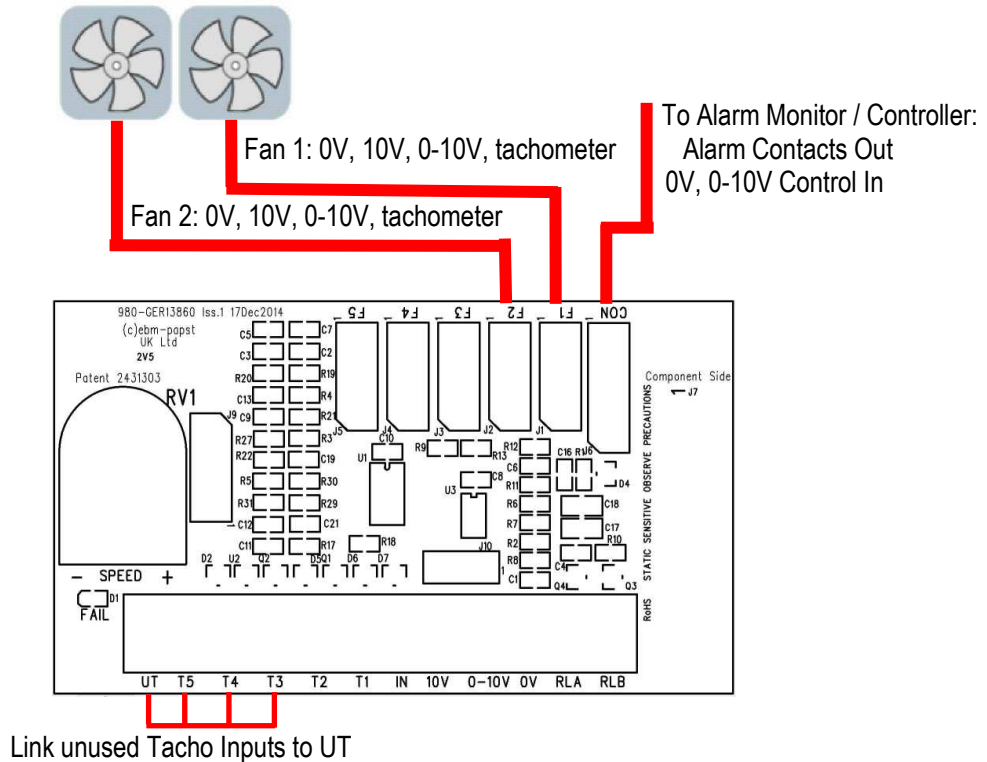
If used, an external 0-10V speed control signal connected to this input will be scaled-down 0-100% as set by the on-board Potentiometer.

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Example Wiring – 3 Fan Monitor, On-Board speed control, Terminal Block Fan Connection



Example Wiring – 2 Fan Monitor, External speed control, Plug-in Fan Connection



Maintenance and Servicing

There are no user serviceable parts

CE Certificate, copy of front sheet



Part No - CN1101

0205

Certificate No - CN1101CE

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 2004/108/EC		
	Declaration Approved	Technical File Compiled
Name	G. M. Lockwood	Louis Abraka
Position	Technical Director	Electronic Design Engineer
Signature		
Date of Declaration	6th January 2016	02-Sep-2015
Issue / Bug No	Issue 1	Bug No 1815
Part number:	CN1101	
Description:	Fan Coil Monitor Board - 5way	
<p>The product(s) have been assessed by the application of the following Standards;</p> <p>BS EN 61000-4-2 - Electromagnetic compatibility (EMC). Testing and measurement techniques. Electrostatic discharge immunity test. Contact Discharge through adjacent objects.</p> <p>BS EN 61000-4-3 - Electromagnetic compatibility (EMC). Testing and measurement techniques. Radiated, radio-frequency, electromagnetic field immunity test. Industrial limits of 10V/m.</p> <p>BS EN 61000-4-4, Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test</p> <p>BS EN 61000-4-6, Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields</p> <p>BS EN 61000-4-11, Electromagnetic compatibility (EMC) - Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests</p> <p>BS EN 61000-6-3:2007, Electromagnetic compatibility (EMC) Generic standards. Emission standard for residential, commercial and light-industrial environments</p>		

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