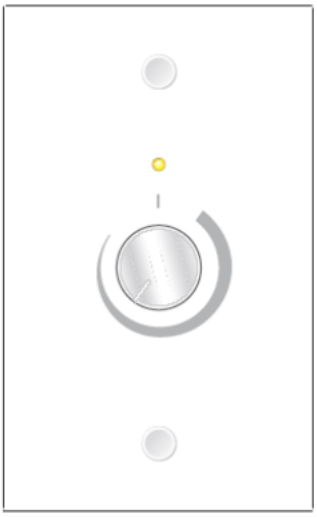
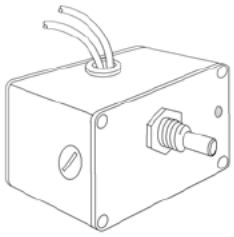
PRODUCT ADVICE SHEET

Model VA5.0

Solid State PSC Fan Speed Control





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FEATURES

- Stepless electronic speed control of single phase PSC induction motors in fan and blower applications.
- Integral LED indicator that does not need a separate neutral.
- Integral ON/OFF switch incorporated into rotary control
- Suitable for all Fantech fans that are speed controllable.
- 1200 VA 5 amps 240 VAC
- Energy efficient 3-wire control of capacitor PSC fan motors.
- Multiple / mixed load capability
- Separately adjustable preset minimum speed.
- Sturdy front mounted rotary control knob allows user adjustable fan speed between the pre-set minimum and maximum motor speed.
- Ready to install. Can be flush or surface mounted
- RoHS & C tick compliant

VA5.0 SPECIFICATIONS	
RATING	240 volt, 5 A, 50 Hz, 1200 VA RMS up to 30 ^{0}/C in free air. Peak start current / power rating 5x (<$^{1}/_{3}$ sec) 2.5x (<8 sec). Maximum case temperature 70 ^{0}C. Derate at 30 VA / ^{0}C above 30 ^{0}C.
MINIMUM SPEED SETTING	Screwdriver pre-set adjustment of minimum speed setting of the front control over a wide range of motor speeds
MOUNTING & DIMENSIONS	Controller is a 'click fit' into HPM / Clipsal wall plates. HPM 770/1PLWE switch plate. Controller enclosure dimensions (mm): 53W x 37H x 50D excl earth bolt
CONNECTIONS	3x65mm leads 24/020 250 volt V105 PVC. Red=main White=aux Brown=input
SHAFT / KNOB	6mm plastic shaft with brushed aluminium knob. Integral ON/OFF switch.
ON/OFF & Indication	Potentiometer coupled 2 x 4A parallel connected double pole switch. Indication via integral LED that glows slightly brighter at low speed settings.
EMI COMPLIANCE ACA C Tick no. N29529	Internal Electromagnetic Interference (EMI) suppressed to comply with AS/NZS CISPR 14.1:2003 when correctly installed (see over page).
RELIABILITY	Fantech controllers are built for long service life and are proudly designed & manufactured in Australia for Fantech. Appropriate quality control is ensured throughout their manufacture and all units are hand soldered and assembled using high grade commercial duty rated components. Fantech have a commitment to on-going research and development of their products.

GUIDELINES FOR INSTALLING THE VA5 CONTROLLER

The VA5.0 controller effectively varies the AC power supplied to a PSC induction motor using phase angle control. In normal fan applications, as the conduction angle is reduced, the effective power decreases and the motor slows. This power reduction is accompanied by a reduction in the AC current and voltage across the load. The reduction in AC voltage can be used as an indicator of the speed change. If a reasonably linear change in speed is required, the motor must be suitable for speed control, it must be optimally sized for the load and the load torque characteristics must increase with speed. Poorly matched motor / load combinations are more difficult to speed control!

Motor selection Ensure that the motor to be controlled is suitable for speed control and the manufacturers recommendations for connection are followed. For PSC (capacitor) motors, Fantech recommends only the 3-wire method of connection – needs 3 wires (main winding, capacitor, common) between the motor and controller. Although this is slightly more complex than the traditional 2-wire, it offers better efficiency, lower motor temperatures, lower motor noise and better speed control. The VA5.0 can control more than one motor provided the maximum current of all motors does not exceed 5A.

Overload Protection. The VA5.0 is adequately rated for motor starting and a generous short term overload margin is provided for in its design. Generally it does not need any additional overload protection other than what would normally be recommended by the manufacturer of the fan motor and/or local wiring regulations. As a guide, fit a 'domestic duty 'magnetic/thermal circuit breaker (5/6 kA type B with C curve) rated at 5 amps or the max fan motor nameplate current.

Electromagnetic Compliance When properly installed, the VA5 controller meets the Electromagnetic Compliance (EMC) requirements of Australia & New Zealand. Correct installation requires that the conductor between the controller red wire and the motor main winding be screened (shielded), and that the screen be earthed at one point. If more convenient, the screening may be accomplished by enclosing all the cables between the controller and motor in an earthed screen.

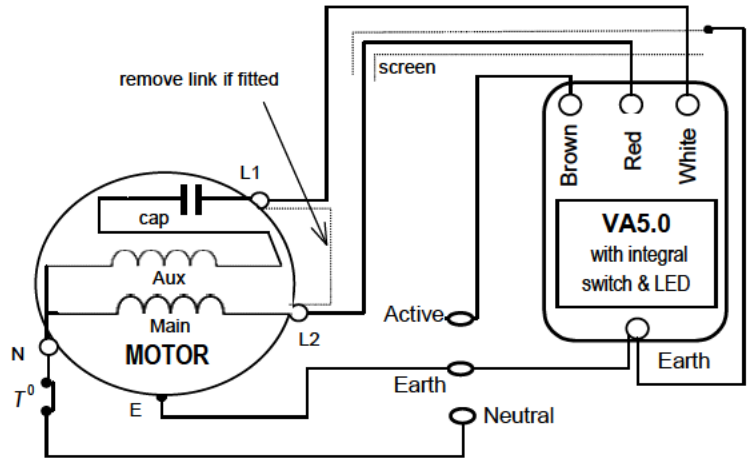
Earthing The controller must be installed in accordance with AS/NZS3000:2000 and the case of the controller should be earthed. **NB –** the cross-sectional area of the screening on a screened single core cable may not be sufficient for it to be used as an earth conductor and a separate earth should be provided.

How fast / slow? A 240V AC voltmeter between neutral and the red wire will give a "relative reading" proportional to motor speed and can be used as a calibration reference. Please note that different voltmeters may shown slightly different readings by up to $^{+}/_{-}$ 10%. If the voltmeter reading is used as a calibration standard, the same make / model voltmeter should always be used.

Recommended Wiring Diagram

The wiring diagram shows the recommended 3-wire connection configuration and how the motor is wired to the VA5.0 face plate assembly. This differs slightly to the diagrams shown in the Fantech catalogue section M as the VA5.0 has an integral internal switch mech & LED. Note that for some fan motors, you will need to disconnect one side of the capacitor from the main winding and take it back to the controller as the "3rd wire". Most Fantech fans make this easy with a link that is removed when using a speed control device. However, you will still need to make provision for 3 wires plus an earth from the motor to the controller face plate.

VA5.0 as a replacement item. The older versions of the VA5.0 prior to ~1st July 2007 have a separate neon switch mechanism and slightly more complex wiring diagram. The new VA5.0 is slightly deeper and fully backwards compatible as a 3-wire controller provided the wiring diagram shown here is followed.



T^0 = thermal overload (if provided) - usually white wires

Model VA5.0 Fan Speed Controller 240 VAC 5A 1200VA



Minimum Speed Adjustment

The knob on the controller will vary the motor speed between full speed and a minimum speed. The minimum speed is set after the controller has been installed, by turning the front knob fully clockwise (min) and then carefully adjusting the blue min speed trim potentiometer at the side of the controller until the required lowest speed is attained. Turning the trim pot anti-clockwise will reduce the min speed setting. Be careful not to force the blue trim potentiometer beyond its stops. The VA5.0 minimum speed preset is factory set to a recommended 120 VAC or approximately 40% of motor speed. Do not set the minimum speed too low as the fan motor relies on air flow to keep it cool and a low setting may cause overheating. Generally and as a guide, the motor case temperature should not exceed 65 ^{0}C under the hottest likely ambient conditions.

If you are unsure of any aspect of the contents of this product advice sheet, connection, wiring, application or operation, please contact Fantech.

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GOODS AND WARRANTY

1. When supplying goods to a consumer, the following mandated statement applies:
   "Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure."

2. The benefits of this warranty are in addition to any rights and remedies imposed by Australian State and Federal legislation that cannot be excluded. Nothing in this warranty is to be interpreted as excluding, restricting or modifying any State or Federal legislation applicable to the supply of goods and services which cannot be excluded, restricted or modified.

3. Subject to the conditions and limitation below, the Company warrants products of its manufacture to be free of defects in workmanship and/or materials at the time of delivery to the Buyer.

4. Any part, assembly or portion thereof found to be defective within one year from the date of commissioning or eighteen (18) months from date of shipment from our factory, whichever is the sooner, unless expressly stated otherwise in the Company's Publications or Literature, will be repaired or exchanged F.O.B factory.

5. The Company reserves the right to replace defective parts of the goods with parts and components of similar quality, grade and composition where an identical component is not available.

6. Goods presented for repair may be replaced by refurbished goods of the same type rather than being repaired. Refurbished parts may be used to repair the goods.

7. Goods or parts that have been returned for repair (except where the repair is as a result of the Company's failure to comply with the statutory guarantees in the ACL) or warranty assessment are deemed to have been abandoned by the Buyer if not collected within 30 days after the Company has notified the Buyer in writing of the warranty assessment outcome or the completed repair.

8. The Company reserves the right to dispose or otherwise deal with an abandoned product or part at its discretion.

9. This warranty does not apply if:
   (i) the goods have not been paid for by the Buyer as per the credit terms provided; or
   (ii) the goods have not been installed in accordance with AS NZS 3000/2000 Australian/New Zealand Wiring rules; or
   (iii) the goods have been misused or neglected.

10. The Company assumes no responsibility under this warranty for the labour costs involved in the removal of defective parts, installation of new parts or service charges related thereto.

11. If a fault covered by this warranty occurs, the Buyer must first contact the Company at the contact address listed below.

12. Any warranty claim must be accompanied by:
    (i) proof of purchase;
    (ii) written details of the alleged defect; and
    (iii) appropriate documentation (such as installation and maintenance records etc).

13. The Company shall have the option of requiring the return of the defective part (transportation prepaid by the Buyer) to establish the claim.

14. The Company makes no warranties or representations other than set out in this clause 7.

15. The repair or exchange of the goods or part of the goods, is the absolute limit of the Company's liability under this express warranty.

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Intelligent Ventilation

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