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**KSC100
FAN & BLOWER
SPEED CONTROLLER

INSTALLATION &
OPERATOR'S MANUAL**

CAUTION

BEFORE INSTALLING AND
USING THIS SPEED
CONTROLLER, IT IS IMPORTANT
THAT THIS MANUAL BE READ
AND UNDERSTOOD
THOROUGHLY



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I. Description

The Kooltronic KSC100 Fan and Blower Speed Control is a solid state "smart" controller packaged in a NEMA 1 type enclosure for remote mounting. The allowable input power supply range is 95 to 250 Volts, 47 to 63 Hz. It is furnished standard with an IEC 320 connector, a power supply fuse and a temperature sensor. Additional temperature sensors are optional.

The controller is furnished with one temperature sensor. It will operate single or multiple fans or blowers of compatible voltage and frequency up to a combined load of 6 Amps. For stable operation, the minimum current draw must be 0.50 Amps. The controller may be operated by up to three temperature sensors. With multiple temperature sensors, the controller will respond to the hottest sensed temperature.

The controller can also be operated by either a control voltage signal of 0 to 10 VDC, or a control current signal of 0 to 20 mA. See Section V for instructions if this mode of operation is desired. The control circuit board is furnished with a terminal strip for field connecting the sensor and fan wires. A pressure type strain relief connector is furnished in the enclosure. If required by the installation or by code, this connector can be replaced with a 1/2 inch trade size conduit connector.

An alarm circuit output is provided on terminals 9 (-ALM) and 10 (ALM+). This contact is closed during normal operation and opens on alarm. Alarm relay can support up to 300 Volts AC or DC across its terminals. Contact Kooltronic for instructions if the alarm is desired.

II. Installation

1. Mount controller on a suitable surface close to the fan(s) being controlled. The controller is not sensitive to position or orientation, but installation in a heated air stream should be avoided.
2. Connect the black fan lead to the terminal "L".
3. Connect the white fan lead to the terminal marked "F".
4. Connect the sensor leads to terminals "T-" and "T1" respectively. If multiple sensors are used, the "T-" terminal is common to all sensors. Terminals "T2" and "T3" are used individually as required.
5. Connect the power supply cord to an AC power supply suitable for the fans being controlled. The controller will automatically accept any Voltage from 95 to 265 VAC and frequency from 47 to 63 Hz.
6. Insert the cord's IEC connector into the mating connector in the controller.

III. Settings

As shipped from the factory, the DIP Switch (SW1) on the control board is set with all the switches in the OFF (UP) position. This will result in the most normal mode of operation. If it is desired to change the controller's operating mode, the tables below may be used. **DISCONNECT THE CONTROLLER FROM POWER BEFORE MAKING ANY CHANGES IN THESE SETTINGS.** Replace enclosure cover after connections and settings are complete.

| | | |
|-------|--|--|
| SW1-1 | Operating mode below set idle temperature. (Tc-Td) | |
| OFF | Fans run below the set idle temperature. (factory setting) | |
| ON | Fans turn off below the set idle temperature. | |

| | | | |
|-------|-------|------------------------------------|--|
| SW1-2 | SW1-3 | Idle speed as % of supply Voltage. | |
| ON | OFF | 30 % | |
| OFF | ON | 40 % | |
| OFF | OFF | 50 % (factory setting) | |
| ON | ON | 60 % | |

| | | | |
|-------|-------|---------------------------|------------------------|
| SW1-4 | SW1-5 | Control Temperature. (Tc) | |
| OFF | ON | 30°C | 86°F |
| OFF | OFF | 35°C | 95°F (factory setting) |
| ON | OFF | 40°C | 104°F |
| ON | ON | 45°C | 113°F |

| | | |
|-------|--|-----------------------|
| SW1-6 | Control Temperature Differential. (Td) | |
| OFF | 4°C | 7°F (factory setting) |
| ON | 10°C | 18°F |

| | | |
|-------|---|--|
| SW1-7 | Operating mode. | |
| OFF | Temperature control mode. (factory setting) | |
| ON | Control signal mode. | |

| | | |
|-------|---------------------|--|
| SW1-8 | Factory set at OFF. | |
|-------|---------------------|--|

IV. Notes

1. In temperature operation mode, the fans will run at full speed if a temperature sensor is not connected.
2. The "T-" terminal is a NON-ISOLATED input. Line voltage can be present. Wiring to the temperature sensor(s) must be protected.

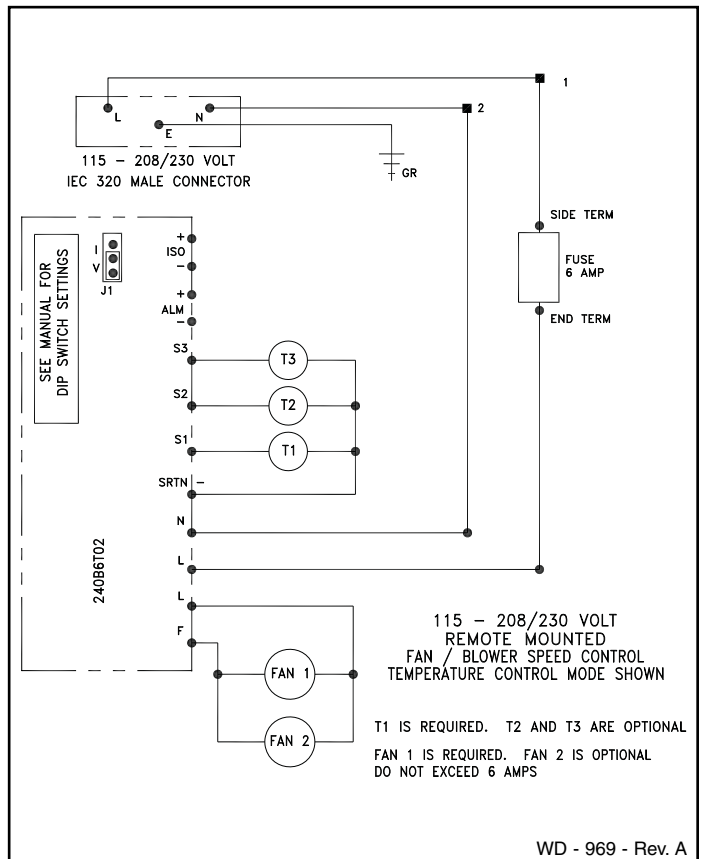
V. Setting Control Modes (switches # 7, 8)

USING CURRENT OR VOLTAGE CONTROL MODE

Unless otherwise specified, the unit is factory set to control fans in the "Temperature Control" mode. To control via a current or voltage source, remote powered transducer or fixed speed setting, set switches 7 and 8 as shown below. To switch to controlling fan speed via a "Control Signal", refer to Table 2. Select the type of control signal you are using [I for 0-20mA (30mA Max.) or V for 0-10VDC (15VDC Max.)] using the jumper on header J1.

| Control Via | DIP Switch | |
|---------------------------|------------|-----|
| | 7 | 8 |
| Current or Voltage | ON | OFF |
| Remote Powered Transducer | OFF | ON |
| Temperature | OFF | OFF |
| Fixed Speed | ON | ON |

VI. Wiring Diagram



VII. Warranty

KOOLTRONIC products are warranted to be free of defects in workmanship, materials and components. The following warranty periods apply:

- Defects in material or workmanship for a period of one (1) year from the date of sale. The liability of the Seller is limited, at its option to repair, replace or issue a non-case credit for the purchase price of the goods which are proved to be defective.

The above warranty applies when the equipment is operated under the following conditions:

- Ambient temperature within the operating range of 0°F (-20°C) to 125°F (52°C) in normal atmosphere or as stated on product nameplate
- Voltage variation no greater than ±10% from nameplate rating
- Compliance to all other installation, maintenance and operating instructions, as supplied
- The purchaser assumes the responsibility of grounding the unit and installing it in accordance with local electrical and safety codes, as well as the National Electric Code (NEC) and OSHA

KOOLTRONIC assumes no liability beyond the repair or replacement of its own product. This Warranty does not cover:

- Labor or reimbursement of labor for evaluation, removal, installation, repair, or cost of any warranted part, unless authorized in writing by KOOLTRONIC
- Use of equipment for other than its designed purpose or operating conditions
- Operation in harsh, oily, corrosive or other abnormal environmental conditions, without the proper filtration, sealing, protective coatings and/or weather protection
- Customer modification or abuse
- Shipping damage or other accident (Claims for shipping damage are the responsibility of the customer. Timely claims must be filed by the customer with the freight carrier)
- Any and all conditions resulting from noncompliance with the preceding operating conditions
- Returned freight must be paid by customer
- **This standard warranty does not apply to custom products. Consult your KOOLTRONIC representative for limitations**

KOOLTRONIC cannot assume responsibility for mis-application of its products or the erroneous selection of an inappropriate product by a non-authorized KOOLTRONIC representative. Our applications engineers will gladly assist in the selection of the proper product, provided all required details of the application are furnished.

THIS WARRANTY CONSTITUTES THE ENTIRE WARRANTY WITH RESPECT TO THE PRODUCT AND IS IN LIEU OF ALL OTHERS, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY AND WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE AND IN NO EVENT IS KOOLTRONIC RESPONSIBLE FOR ANY CONSEQUENTIAL DAMAGES OF ANY NATURE WHATSOEVER.

RETURN AUTHORIZATION (RA) PROCEDURE

- All returns require a Return Authorization number whether the return is for warranty or non-warranty repair, rotation of stock, damage or any other reason. Returns without an RA number will be refused.
- Customer must call the Kooltronic Customer Service Department at Pennington, New Jersey (609•466•3400) to obtain an RA number.
- The following information is required when an RA is requested:
 - Original customer Purchase Order number and date
 - Date product was received by customer
 - Number of parts to be returned
 - Product description, model and serial number
 - Reason for return
 - Action requested
- Contact name, telephone, FAX numbers and e-mail address
- Pack unit in a suitable container for shipment, preferably the original packaging if available. **Improper packaging may void warranty claim.**
- Mark carton prominently with KOOLTRONIC's Return Authorization Number.
- Enclose all pertinent documents.
- Freight charges on all products returned to KOOLTRONIC shall be paid by the customer. Unauthorized collect shipments will be refused.
- If a unit is repaired under Warranty, KOOLTRONIC will pay the freight charges both ways within the Continental USA at KOOLTRONIC's negotiated rates. Warranty repaired units will be returned to customer at Kooltronic expense only within the Continental USA.
- All authorized returns are subject to a restocking fee.