

# MANUAL

## SA-10C

Temperature Variable  
Speed Control



**Installation / User's Guide**

This guide will inform the electrician on proper wiring and installation procedures and, will also inform the user on how to use the SA-10C controller.

The manufacturer recommends that the following installation instructions be followed to as closely as possible, and that all work be performed by a certified electrician. Failure to do so may void the warranty.

## **Description**

The SA-10C controller is designed to control a variable speed fan according to a set point and a temperature sensor. The **Temperature Set Point, Differential, Minimum Speed** and **Full Speed Start** are completely adjustable. The controller operates on 115/230V and 50/60Hz.

The SA-10C comes in a PVC non-corrosive enclosure that is protected from dust and humidity. The SA-10C is covered by a complete two-year warranty.

## **Unpacking**

Unpack the SA-10C module and inspect contents for damage. Should the contents appear to be damaged, contact your local distributor to return the material.

The package should contain the following standard items:

- 1 SA-10C
- 1 2004-10K inside temperature probe
- 1 Installation / User's guide

## **Mounting hardware required**

This is the list of the mounting hardware needed, which is not included with the product:

- Screws (to mount the module on the wall)
- Screwdriver
- Soldering iron kit or approved sealed connectors

## General installation guidelines

- It is recommended to install the unit in a hallway to limit the SA-10C exposure to noxious gases.
- In order to avoid condensation problems inside the SA-10C, it is recommended to install the module on an inside wall. If it is not possible, use spacers to have an air gap between the wall and the controller.
- The SA-10C should be installed in easy-access location but away from damaging elements (heat, cold, water, direct sunlight...).
- Do not install the SA-10C near high-voltage equipment, power supply or transformer.

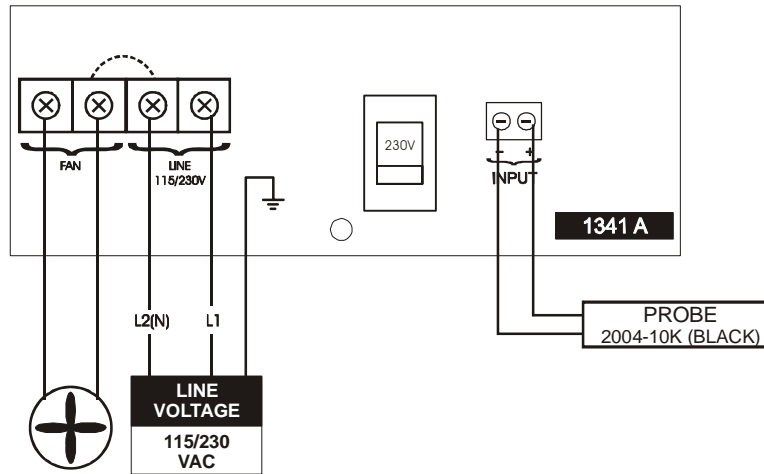
## Wiring Procedure

1. Open the SA-10C controller enclosure.
2. Verify the technical specifications to know which wire to use.
3. Connect the equipment to the 2 black terminal block identified as FAN as shown in figure 1.
4. Connect the power source to the 2 black terminal block identified as LINE as shown in figure 1.
5. Connect the probe to the 2 green terminal block identified as INPUT as shown in figure 1.

**IMPORTANT:** Low-voltage and high-voltage wire must be passed through different conduits at least 1 foot (30 cm) apart. If low-voltage and high-voltage conduits must be crossed, the crossing must be at a 90-degree angle.

6. Make sure that the voltage selector switch is set to the correct voltage before powering up the SA-10C (refer to figure 2 for the location of the switch).
7. Power up the SA-10C controller. Verify that the controller operates correctly.
8. Close the SA-10C enclosure. Don't forget to put a security screw or a padlock.

Figure 1: Wiring Diagram

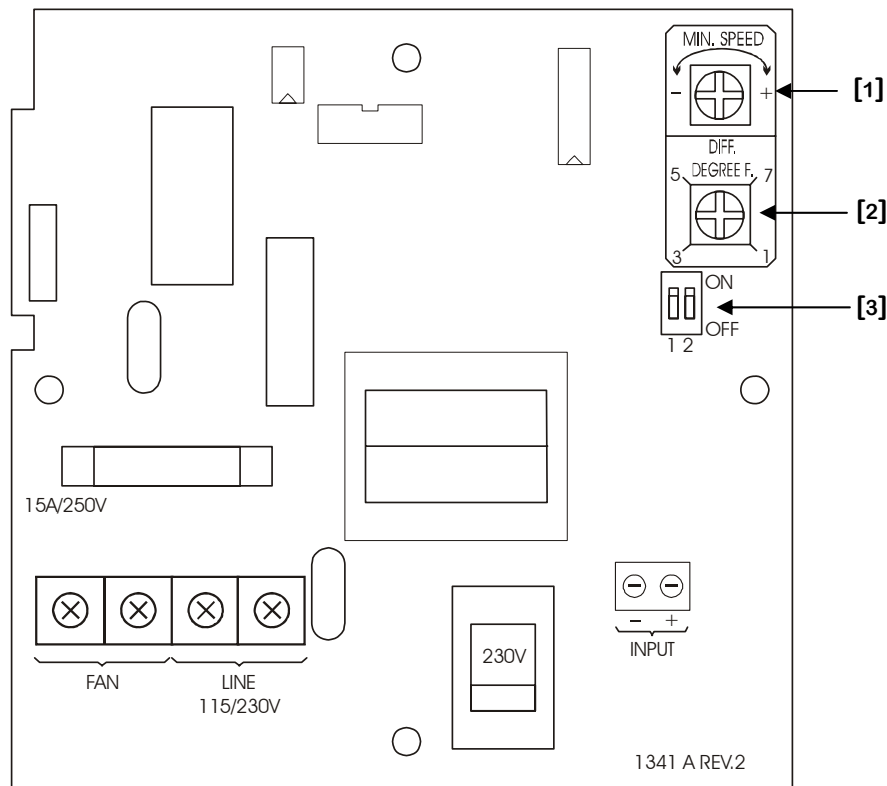
**WARNING!**

- ⚡ To avoid electric shock, disconnect power source prior to installation or troubleshooting.
- ⚡ Make sure that the voltage selector switch is set to the correct voltage before powering up the controller.

## Using the SA-10C

With the SA-10C you can control many aspect of the variable fan behaviour according to the temperature. Refer to figures 2 and 3 for the location of the different switches and selectors of the controller.

Figure 2: Electronic Board and component location



### 1. Minimum Speed Potentiometer

This potentiometer is used to adjust the **Minimum Speed** of the fan. This will be the minimum speed when the **Minimum** selector is set to LO.

### 2. Differential Potentiometer

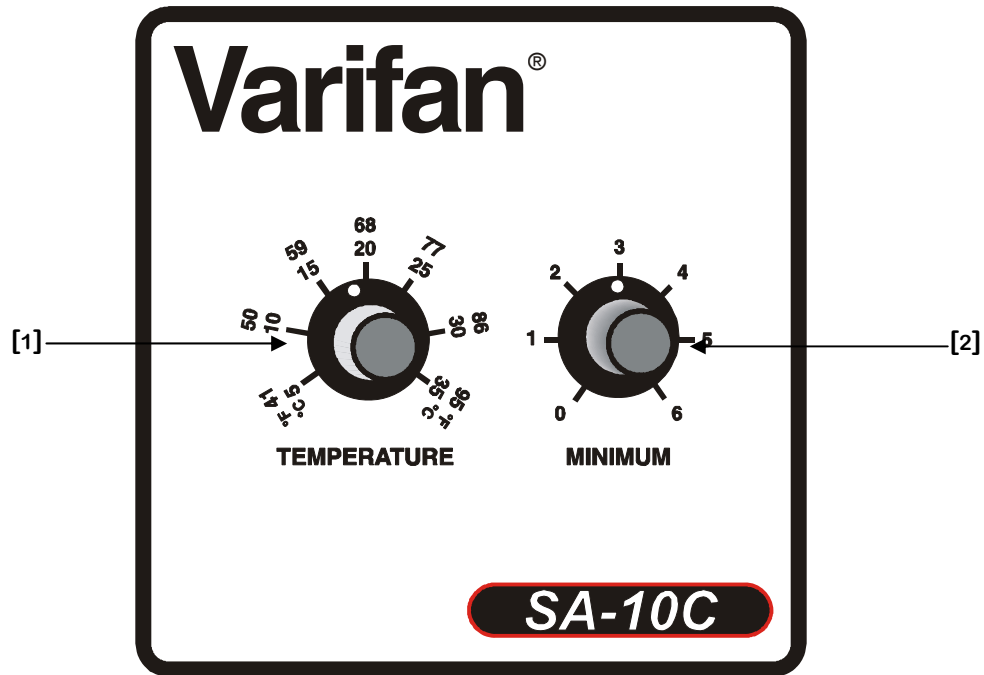
This potentiometer is used to set the **Differential** of the fan. The **Differential** is the temperature range where the fan will modulate from its minimum speed to its maximum speed (100%). The **Differential** is adjustable from 1°F to 7°F (0.6°C to 3.9°C).

### 3. Dip Switches (**Auto Shutoff** and **Full Speed Start**)

Dip Switch 1, is used to select the **Auto Shutoff** mode.

Dip Switch 2 is to enable or not the 2-second **Full Speed Start**.

Figure 3: SA-10C Faceplate



### 1. Temperature Set Point

This selector is used to set the **Temperature Set Point** at which the fan will start its modulation.

### 2. Minimum

This selector is used to set the **Minimum** speed of the fan. This speed will be used at the **Temperature Set Point** and below. The **Minimum** speed is influenced by the **Minimum Speed** potentiometer inside the box (refer to figure 2).

The SA-10C controller use a temperature probe to read the room temperature and it makes the fan modulate according to a **Temperature Set Point** and a **Differential**. The **Temperature Set Point** is adjustable on the faceplate (refer to figure 3) and the **Differential** adjustment is inside the controller box on the electronic board (refer to figure 2). User can also adjust the fan **Minimum** speed on the faceplate of the controller (refer to figure 3). It is also possible to adjust more precisely the **Minimum Speed** with the potentiometer located inside the controller box on the electronic board (refer to figure 2). That **Minimum Speed** potentiometer is used to adjust the LO of the **Minimum** speed selector.

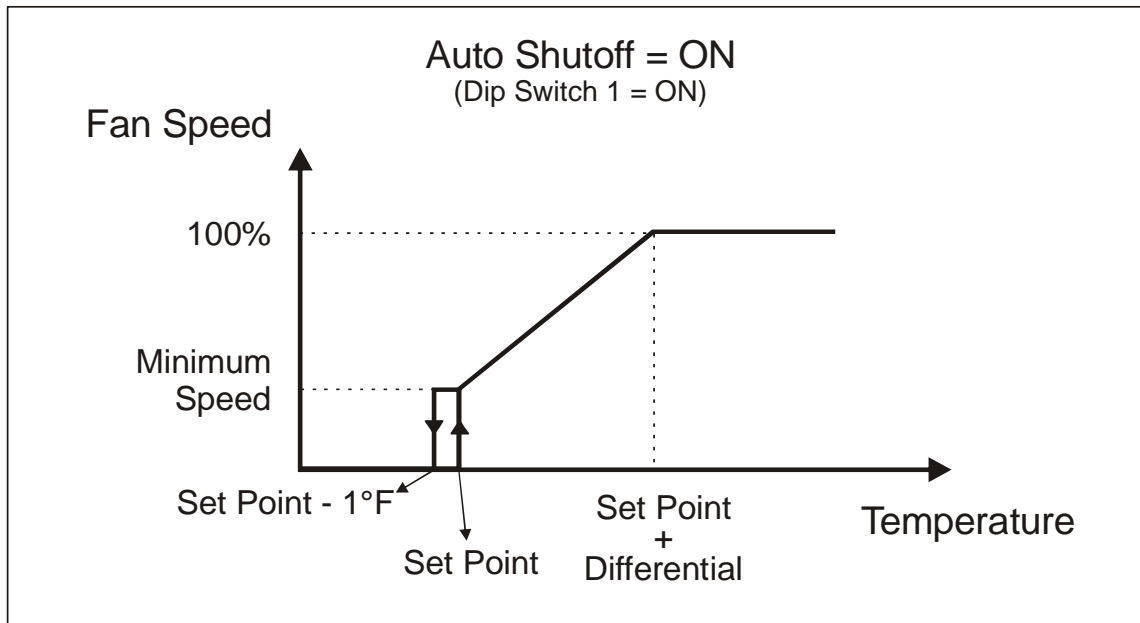
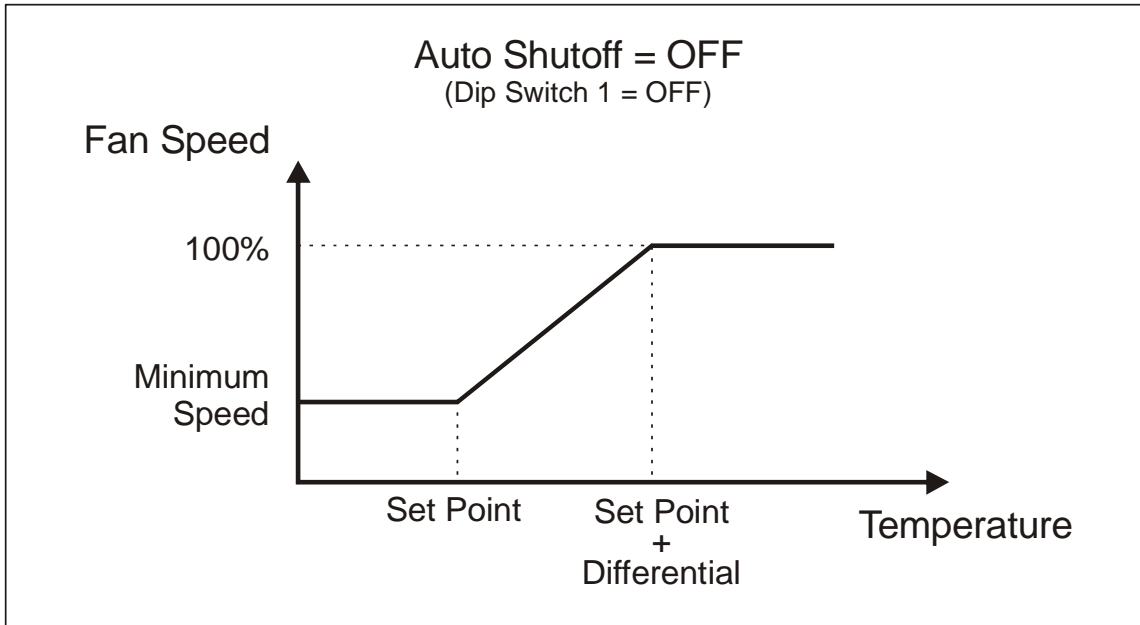
User can set how the fan will operates below the **Temperature Set Point**. The fan can either continue to run at minimum speed (**Auto Shutoff** set to OFF) or can stop below the **Temperature Set Point** (**Auto Shutoff** set to ON). Refer to figure 2 for the location of the **Auto Shutoff** switch.

A switch also located on the electronic board will enable or not a **Full Speed Start** of 2 seconds on the variable fan. Refer to figure 2 for the location of the **Full Speed Start** switch.

Here is a description of the SA-10C operation.

- Below the **Temperature Set Point**, if the **Auto Shutoff** is set to OFF, the fan will run continuously at its minimum speed. If the **Auto Shutoff** is set to ON, the fan will stop 1°F (0.6°C) below the **Temperature Set Point**.
- At the **Temperature Set Point**, the fan will be activated at its minimum speed. It may also run at its full speed for 2 seconds if the fan was stopped below the **Temperature Set Point** (if **Full Speed Start** is set to ON and **Auto Shutoff** is also set to ON).
- Above the **Temperature Set Point**, the fan will modulate from its minimum speed to 100% of its speed. The full speed will be reached when the room temperature is equal to the **Temperature Set Point + Differential**.

Figure 4: Logic Diagrams





## Specifications

DESCRIPTION	VALUE
Storage temperature	-4°F to 131°F (-20°C to 55°C)
Operating temperature	32°F to 113°F (0°C to 45°C)
Humidity	90% maximum Non-condensing
Weight	1,4 lb (0,6 kg)
Size	5 15/16" x 5 15/16" x 3 9/16" (15 cm x 15 cm x 10 cm)
Protection index	IP 66
Warranty	2 years
<b>POWER SUPPLY</b>	
Operational voltage range (SW1 @ 115V)	92 to 125VAC
Operational voltage range (SW1 @ 230V)	184 to 250VAC
Operational frequency range	45 to 65 Hz
<b>PROBE INPUT</b>	
Temperature probe	2004-10K
Maximum wire length	500 feet (150 m)
Recommended wires	2 conductors, stranded, shielded, AWG #22
<b>VARIABLE OUTPUT</b>	
Maximum Allowable Current (Fuse value)	15A, 250VAC
Recommended maximum current for fans	12FLA
Minimum load	300mA @ 230VAC

## Limited Warranty

The manufactured equipment and supplied components have gone through rigorous inspection to assure optimal quality of product and reliability. Individual controls are factory tested under load, however the possibility of equipment failure and/or malfunction may still exist.

For service, contact your local retailer or supplier. The warranty period shall be for two years from manufacturing date. Proof of purchase is required for warranty validation.

In all cases, the warranty shall apply only to defects in workmanship and specifically exclude any damage caused by over-voltage, short circuit, misuse, acts of vandalism, lightning, fortuitous events, acts of God, flood, fire, hail or any other natural disaster. Any unauthorized work, modification or repair on this product automatically voids the warranty and disclaims the manufacturer from all responsibility.

The manufacturer assumes only those obligations set forth herein, excluding all other warranties or obligations. This warranty stipulates that in all cases the manufacturer shall be liable only for the supply of replacement parts or goods and shall not be liable for any personal injury, damages, loss of profits, interrupted operations, fines for infringement of the law or damages to the production of the PURCHASER and the PURCHASER shall take up the defence and hold the manufacturer faultless regarding any legal or extra legal proceedings, notice, or claim by the customer or by a third party, and regarding any legal and extra legal expenses and fees brought forward on by such damages.

