

**SANYO DENKI**

# **SANYO DENKI San Ace PWM Controller**



**First PWM Controller by Fan Manufacturer**

**September 22nd, 2016**

**Cooling Systems Division  
Sanyo Denki America, Inc.**

[www.sanyodenki.us](http://www.sanyodenki.us)

# Products Highlights

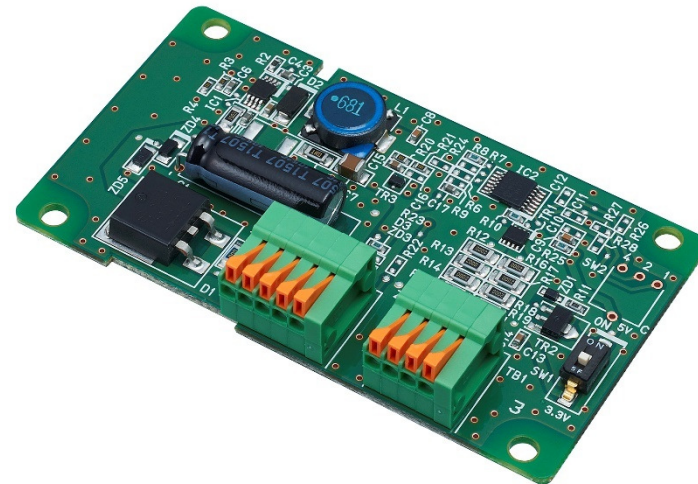
---

- First PWM Controller released by SANYO DENKI
- Reduces system power consumption and fan noise
- Up to four PWM-input fans can be connected
- Can be powered by the fan power supply at rated voltages of 12, 24, and 48 VDC

# First PWM Controller by SANYO DENKI

---

- Newly designed PWM signal generator to control the speed of PWM control fans
- Box type and PCB type
- Control the PWM duty with DC voltage, variable resistor (internal / external), or thermistor

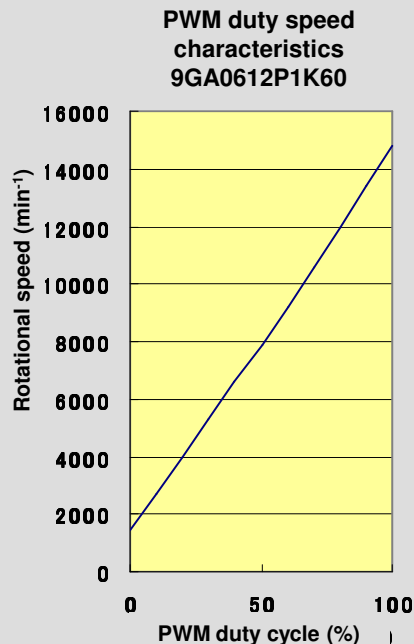


**SANYO DENKI AMERICA, INC.**

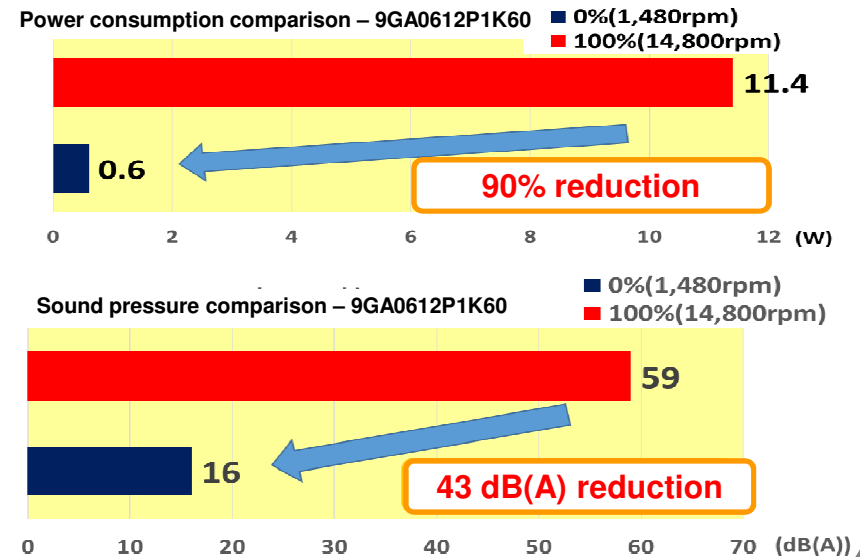
# Reduce System Power Consumption & Fan Noise

- PWM control function controls the rotational speed of the fan by varying the duty cycle.
- Running the fan at low speeds while the device is on standby reduces both noise and power consumption.

■ Set an optimal rotation speed in accordance with the temperature



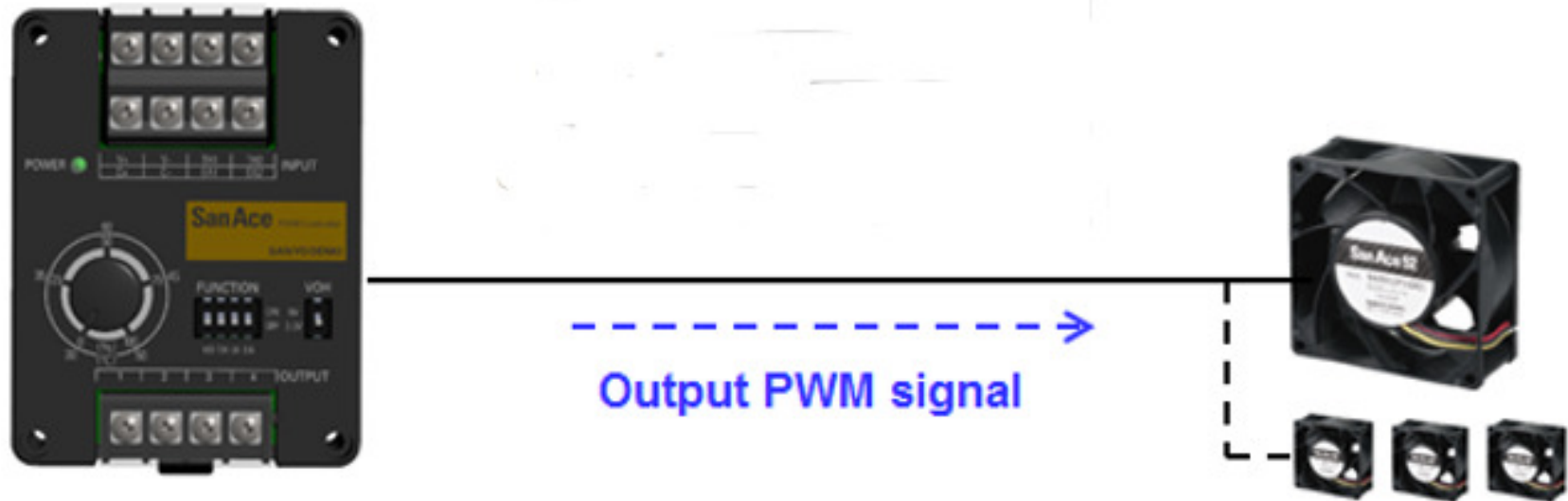
■ Improved energy efficiency and noise



# Up to 4 PWM-Input Fans Connected

---

- Up to four PWM-input fans can be connected to each controller, without requiring a costly function generator



# Powered by the Fan Power Supply

---

- Powered by the fan power supply at rated voltages of 12, 24, and 48 VDC
- No separate power supply required

# Target Customers

---

- Customers who do not have capability/time to design a PWM signal generator
  - Small to medium size customers
  - R&D Departments and/or Laboratories in large customers

# Specifications 1

---

## □ Specifications

	BOX Type	PCB Type		
Model no.	9PC8666X-S001	9PC8045D-V001	9PC8045D-R001	9PC8045D-T001
Size [mm]	86 (H) × 66 (W) × 38 (D)	80 (H) × 45 (W) × 17 (D)		
Rated voltage [VDC]	12, 24, and 48			
No. of connectable fans	Up to 4 fans			
Control functions	Dial, voltage, variable resistor, and thermistor controls*	Voltage control	Variable resistor control*	Thermistor control*

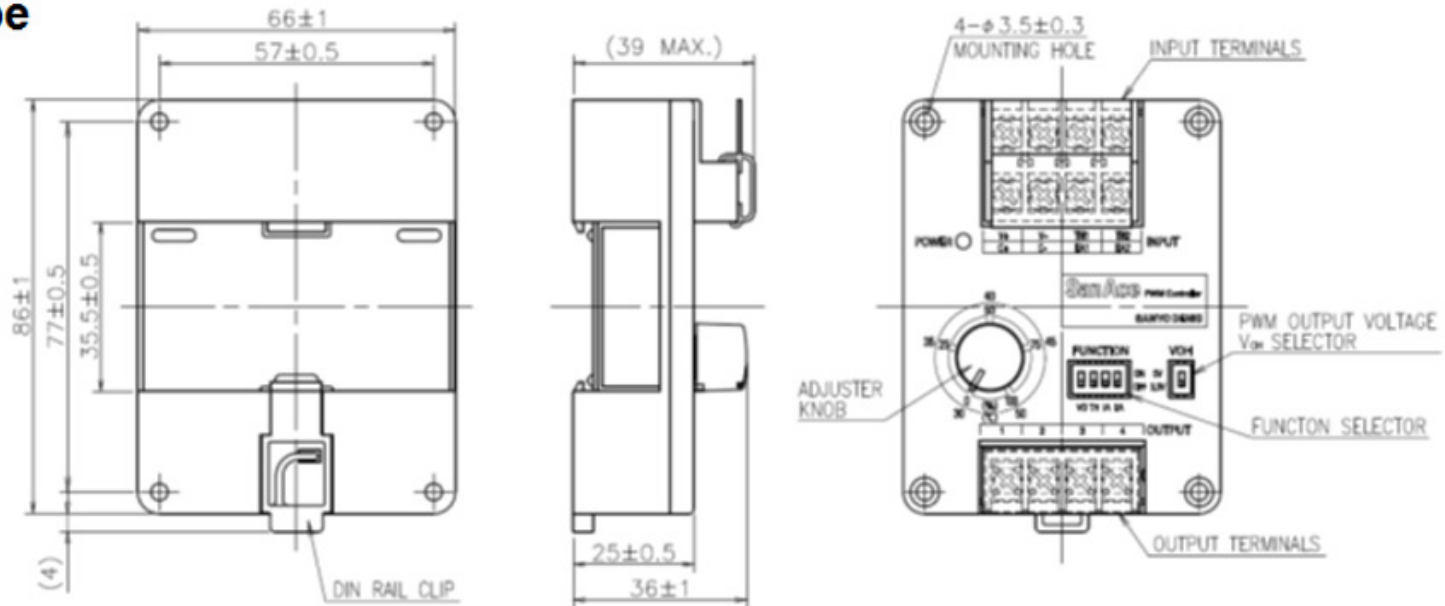
\* Variable resistor and thermistor are not supplied with the controller and need to be prepared separately.



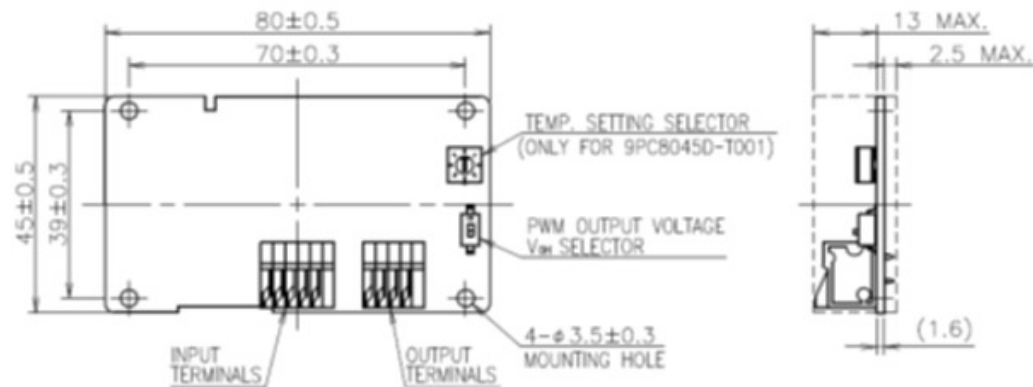
# Specifications 2

## □ Dimensions

### Box type



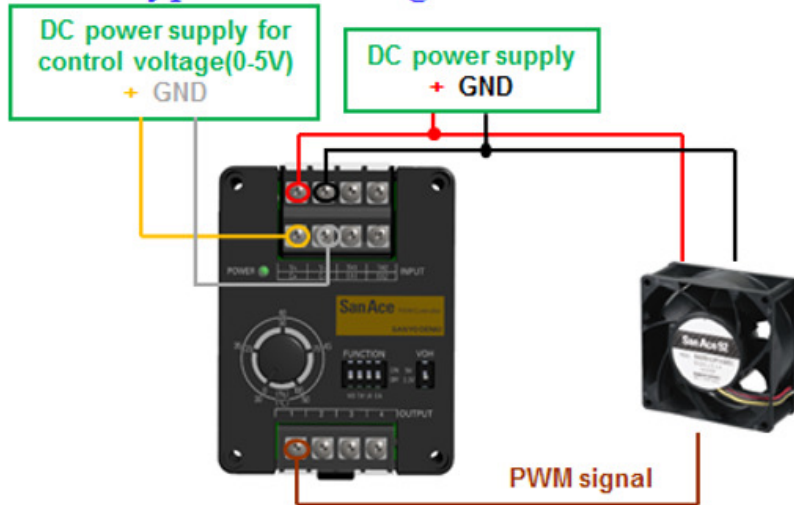
### PCB type



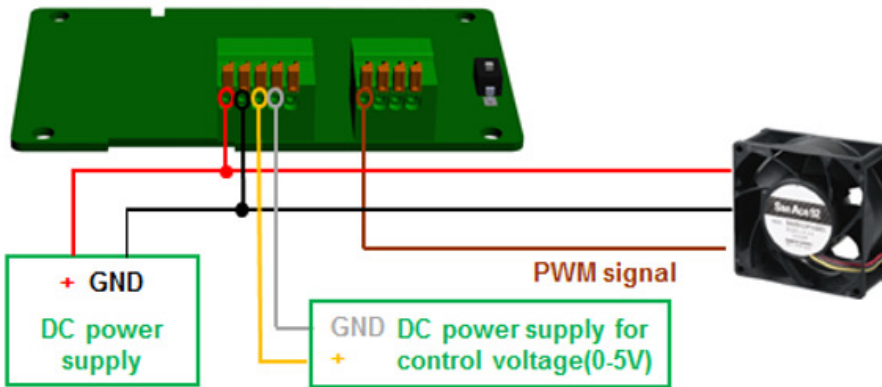
**SANYO DENKI AMERICA, INC.**

# Voltage Control Example

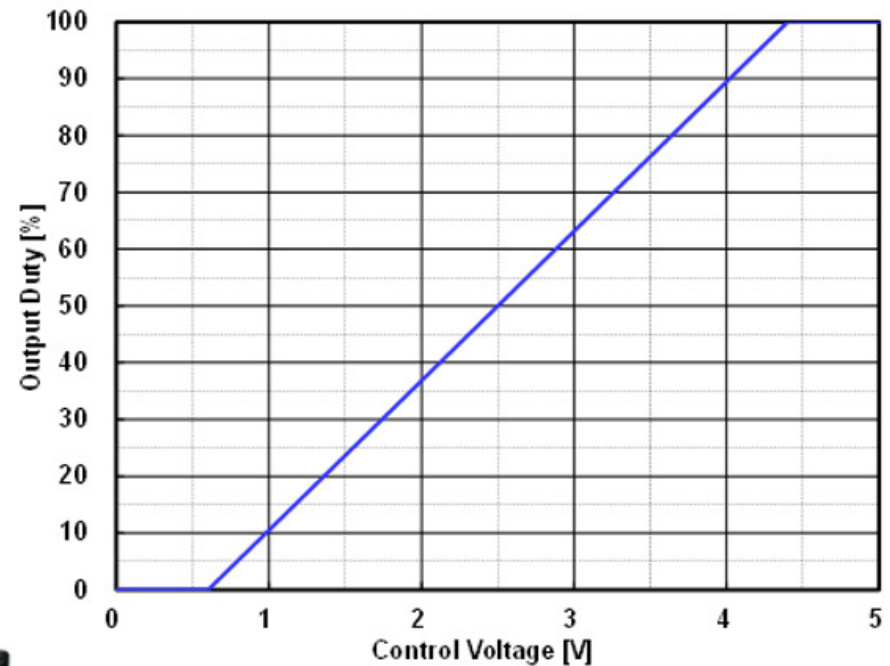
Box type : For voltage control



PCB type : 9PC8045D-V001  
(Voltage control)



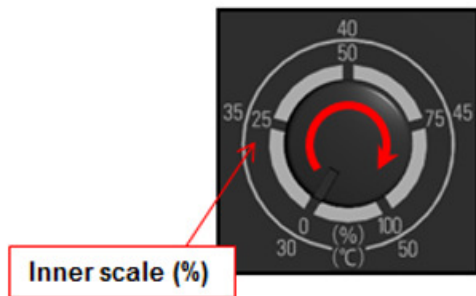
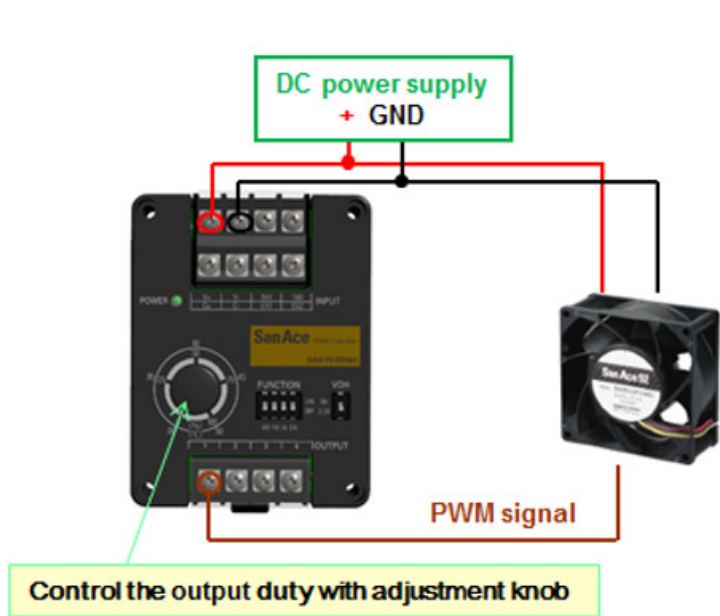
Control output duty with DC voltage (0V to 5V)



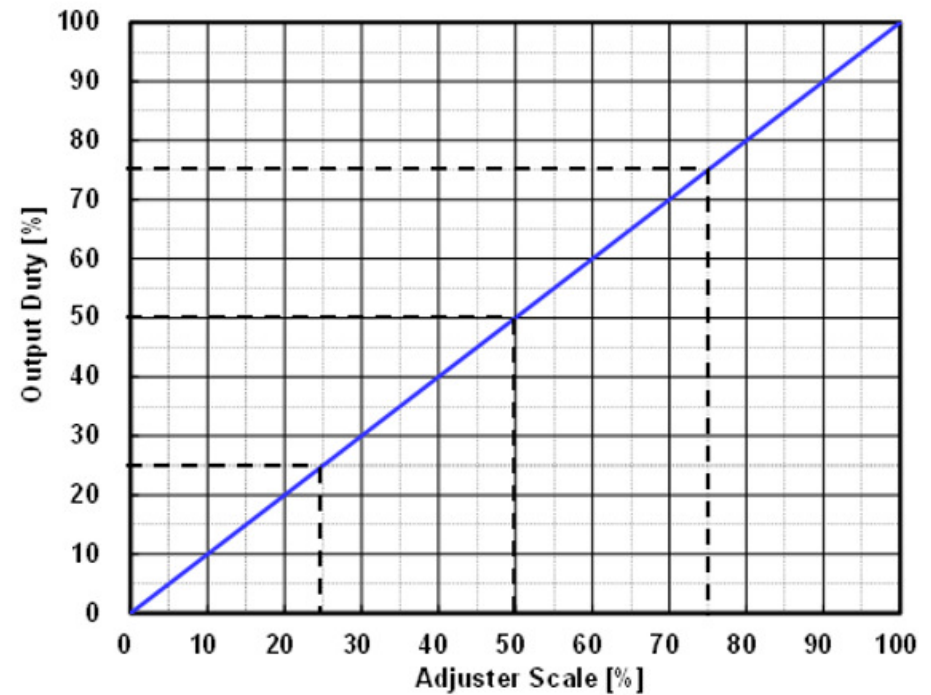
Do not input voltage over 5.5V

# Variable Resistor Control (internal) Example

Box type: For internal adjustment control

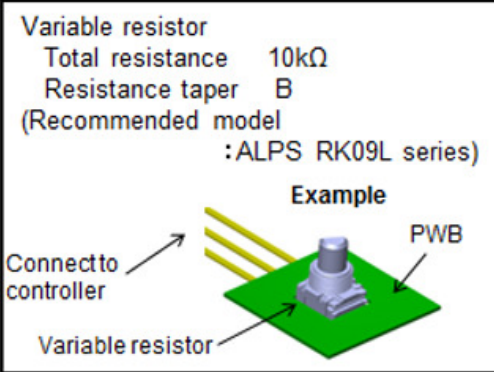
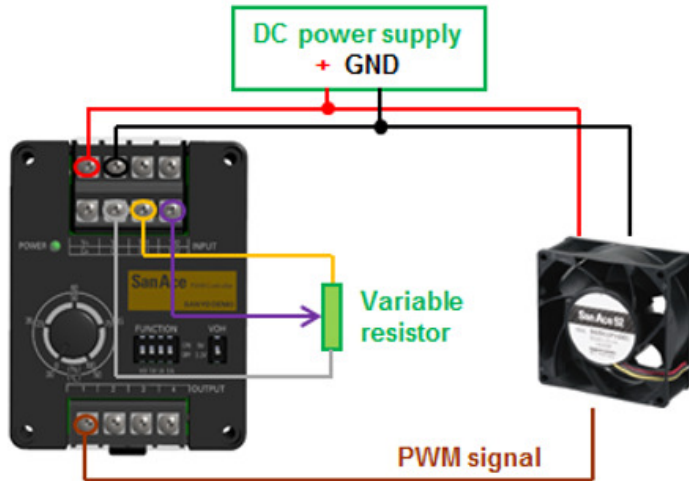


Control output duty with adjustment knob on the box



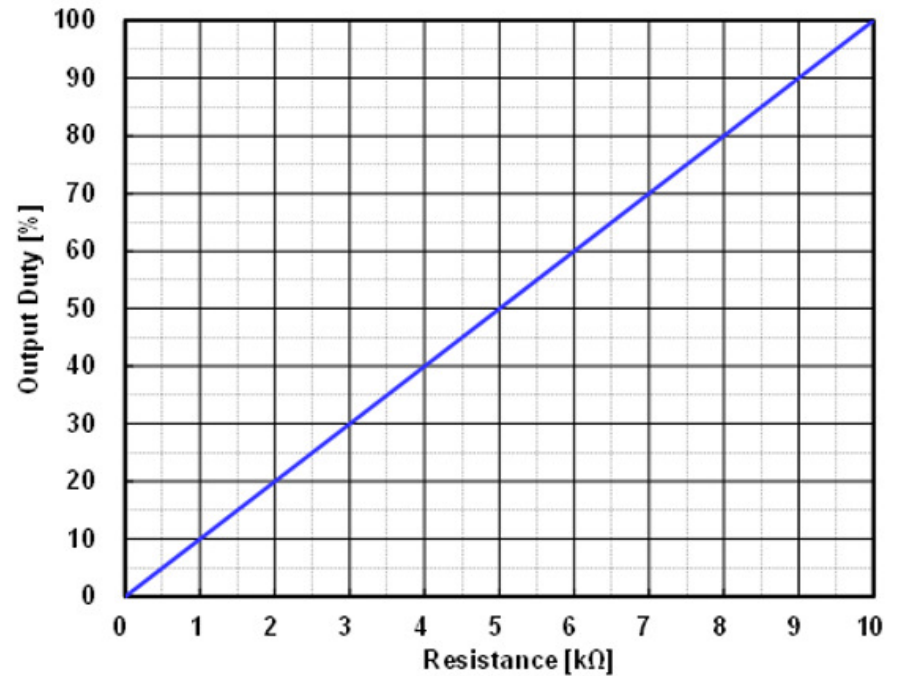
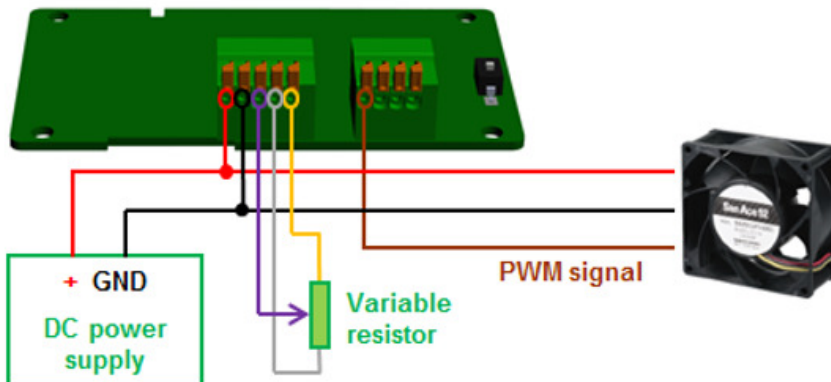
# Variable Resistor Control (external) Example

Box type: For external adjustment control



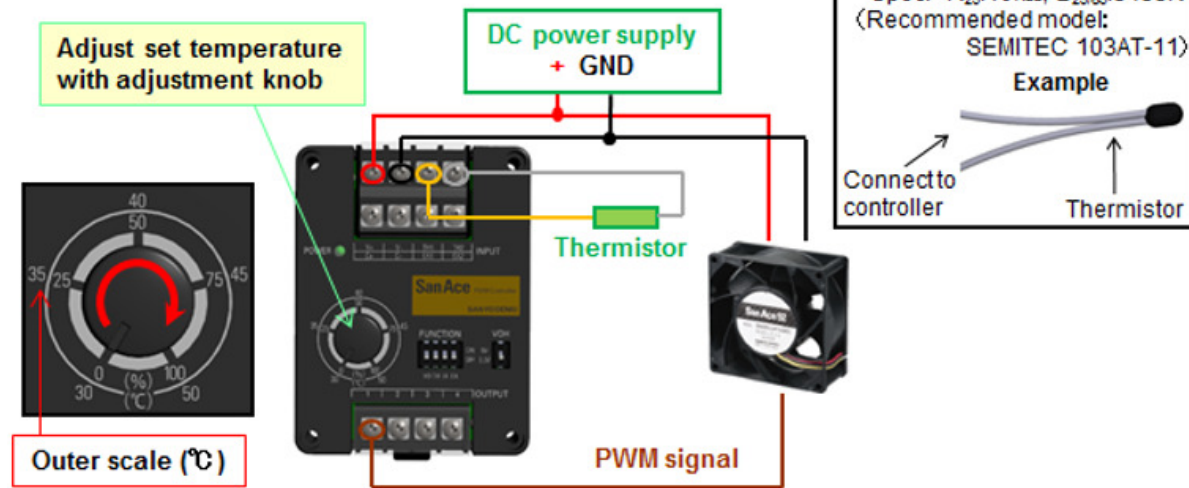
Control output duty with a variable resistor connected to the terminal

PCB type: 9PC8045D-R001  
(Variable resistor control)



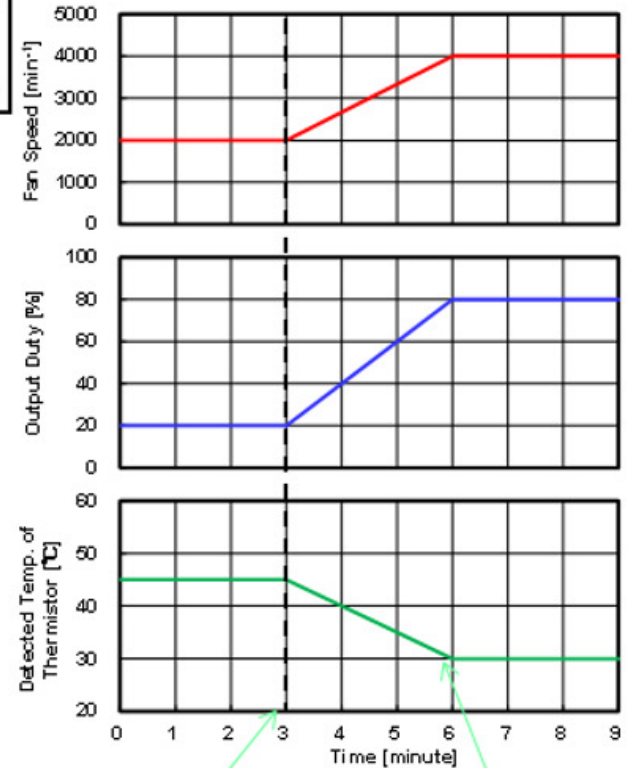
# Thermistor Control Example

Box type: For thermistor control

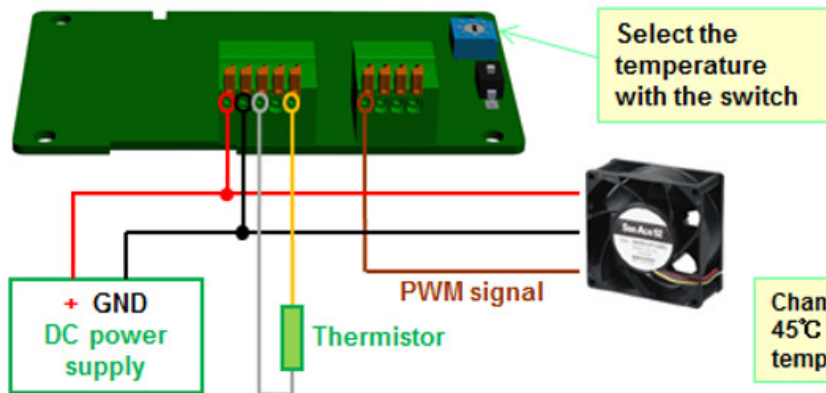


Output duty is automatically controlled by set temperature (30-50 °C) and thermistor's detected temperature.

Example of thermistor control



PCB type: 9PC8045D-T001  
(Thermistor control)



Change controller's set temperature from 45°C to 30°C when thermistor's detected temperature (controller's temperature) is 45°C.

Output duty and fan speed are automatically controlled to decrease thermistor's detected temperature to 30°C.

# Miscellaneous

---

- The controller can only be used on fans with 25 kHz PWM input and  $V_{IH}$  of 3.3 or 5 VDC.
- cUL and TUV will be acquired in December 2016.