



## ACTIVE VENTING

### **INSTRUCTIONS FOR ACTIVE VENTING**

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This document outlines the installation and operation of active venting solutions for outdoor signs exposed to direct sunlight and high-temperature environments.

When electronics-heavy signs are mounted in direct sun, heat can accumulate inside the enclosure, potentially leading to premature failure of internal components—particularly the 5” numeric display segments. Installing active venting helps dissipate excess heat, promoting longer lifespan and reliable performance of the sign’s internal electronics.

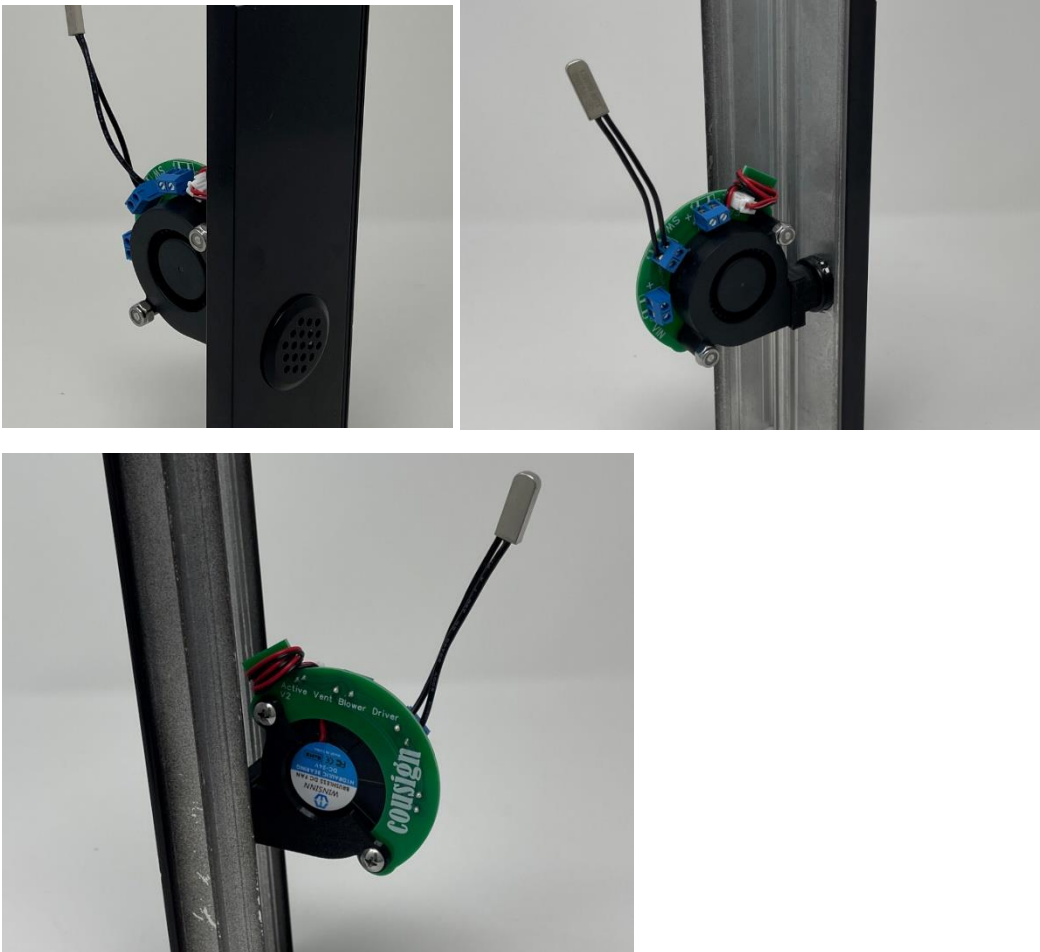
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## Solution Overview

The active venting solution is designed to be as easy as possible to retrofit into existing signs exhibiting premature failure issues.

Note: This solution is experimental



## Installation Overview

Tools required (not included):

25mm step bit



Deburring tool



Hot glue or other  
Any mechanism for securing the fan  
assembly to the frame. This can be  
hot glue, silicone, etc.

## Parts Included

1. 2 x 1" Air Vent
2. 1 x 5015 Blower Fan 24V
3. 1 x Blower fan mount (3d print)
4. 1 x KSD9700 Temperature Switch
5. 2 x 8-32 stainless steel machine screws + nuts

## Installation

Note: If installing multiple blowers repeat steps for each kit. To ensure proper air flow all inlets and exhaust vents must be installed. Larger signs, or signs with lots of electronics may need more than 1 kit to efficiently vent.

### Step 1: Drill Exhaust and Inlet Holes

1. Locate suitable spots for installation of your exhaust and inlet vents
  - a. Exhaust should be located as high as possible on the left or right side of the enclosure.
  - b. Inlet should be located on the bottom extrusion, **opposite** the exhaust.
2. Drill 1" hole in frame extrusion near the top of the sign (where hot air will collect) for exhaust.

Note: Ensure adequate space for blower assembly and temperature switch. The temperature switch should float freely in the upmost area of the sign so it is exposed to the hottest air.

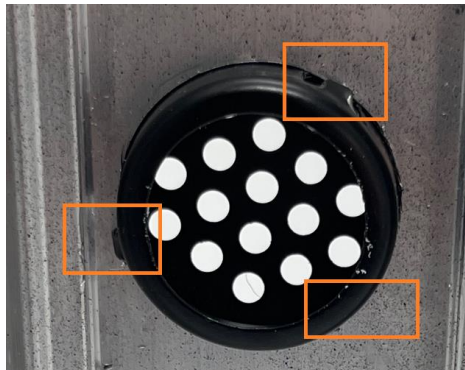
3. Drill 1" hole in bottom frame extrusion for inlet



Note: A 25mm step bit (.98") with some deburring creates a perfectly snug fit for the air vents

### Step 2: Install Air Vents

1. Place air vents in each hole and bend locking tabs to prevent pullout



### Step 3: Install Blower Assembly

1. Press fit the blower assembly into the exhaust vent
2. The blower assembly includes a KSD9700 temperature switch which will automatically turn the fan on and off as needed
3. Connect wires to 24V power supply with 20AWG hookup wire.
4. Ensure temperature switch is floating in air and not in contact with any glue, enclosure, or other surface. The temperature probe should be surrounded by air only and positioned so that it is as high as possible in the enclosure without touching the top or sides of the enclosure itself.
5. The blower assembly will press fit into the vent, but should be further secured with hot glue or silicone as to prevent migration of the assembly caused by temperature fluctuations or vibration over time.

### Step 5: Install Optional Aquarium Monitor (Or Similar)

1. In addition to the temperature controller, we recommend you also install an aquarium thermometer (not included) to keep tabs on the internal temperature of the sign. Place the probe near the temperature switch(es) so that it is monitoring the same air, and route the wire outside the sign so that temperature inside the sign can be monitored when the sign enclosure is closed.



### Step 6: Install Sign Face

1. Installation complete. The fans will turn on and exhaust hot air and will shut off when the internal temperature is lowered.

## Fan Mount Source

The fan mount is a 3d printable part. Model below. Print with PTEG or other heat resistant material. Do not use PLA as it will warp over time.

