



Active Thermal Management

*The trusted name in thermal protection*

**Parts list** – before proceeding, check that you have received all of the following:

- (1) Cool-stack II main chassis
- (1) Thermal probe
- (1) Power supply
- (1) Front panel

## **Installation of the Cool-stack II™ rack-mount ventilator**

The Cool-stack II is a very powerful 2U high ventilator, well-suited for removing heated air from large rack installations. Some of the features of the Cool-stack II are:

- Two-speed operation, with automatic selection of speeds via a thermal probe and control assembly; also controllable by external contact closure.
- Sufficient depth (18") to pull heated air from the back of a rack, where it is most often generated.
- Six large (120mm/4.7") high-quality fans for quiet ventilation.
- Ability to exhaust heated air through the front, rear, or top, or any combination of these for maximum installation flexibility. (With optional exhaust kits)

### **General description:**

The Cool-stack II is an exhaust-mode ventilator. It will usually be located at the top of a rack, where its six 120mm fans will pull heated air up from the equipment below and exhaust it through its front panel. It is extremely quiet in low speed, and makes little noise in full speed.

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There are installations in which there is a door or other obstruction in front of the rack, making front exhaust impractical. The installer then has a choice of exhausting hot air through the top or rear panels. (Top exhaust will move more air than rear exhaust.) Vent kits for top exhaust (ATM part number 03-303-04) and rear exhaust (ATM part number 03-303-03) are available through your distributor or from ATM.

Additional tubing can be added to the top or rear panel exhaust kits if necessary, although the amount of air moved will be reduced by the resistance to air flow introduced by each additional foot of tubing. Tubing will also create a pathway from the equipment rack to another area of the home or office. If this other area is likely to exhibit temperature extremes, insects, odors, etc., these may travel down the tube to the rack. A "one-way" valve, such as a check valve, may be needed to prevent unpleasant surprises in the home theater! Avoid running tubing to these areas, if possible. If needed, a suitable check valve (or "backdraft damper") is available from Active Thermal Management (part number 03-103-02).

### **IMPORTANT:**

***The use of a 2U or 3U vent panel near the bottom of the rack is highly recommended. It is necessary to allow fresh air to enter (preferably at a low level) if hot air is to be removed. If a door would block the vent panel, vent slots, holes, etc., should be provided low on the sides of the rack enclosure. A minimum opening of 8 square inches is recommended; 12 - 16 square inches is preferable.***

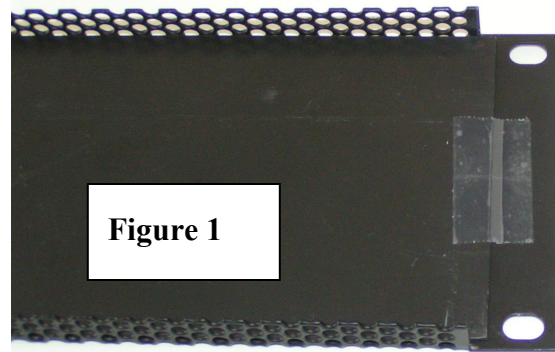
### **Tubing sizes:**

- The top panel exhaust port uses ATM 4" tubing (4" ID, 6" OD), with 8' (included) being the recommended maximum length.
- Rear panel exhaust ports use ATM 2" tubing (thin wall), with 1 4' length on each port (included) being the maximum recommended length.

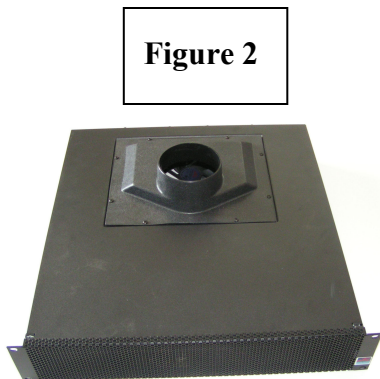
### **Preparation:**

- **If exhausting through the front panel**, no preparation of the Cool-stack II is needed. Proceed to step 1 of the installation section.

- **If exhausting through the top panel**, remove the front panel of the Cool-stack II and, using adhesive tape, fasten the sheet of black plastic film to the inside of the front panel at each end, blocking the vent openings as



shown in figure 1. Remove the metal blank-out panel from the top of the Cool-stack II and replace it with the large exhaust port as shown in figure 2. (It can be installed with the opening closer to the front panel or further away; either way is acceptable.) Proceed to step 1 of the installation section.



- **If exhausting through the rear panel**, remove the Cool-stack II's front and top panels (4 phillips screws on the rear panel), cover the inside of the front panel as in figure 1, and remove the plastic sheets covering the 2 rear panel exhaust openings. Replace the front and top covers (note that the return bend at the rear of the cover fits *inside* the chassis), and mount the 2 rear panel exhaust ports as shown in figure 3. (Four screws are provided in the accessories box.) Proceed to step 1 of the installation section.

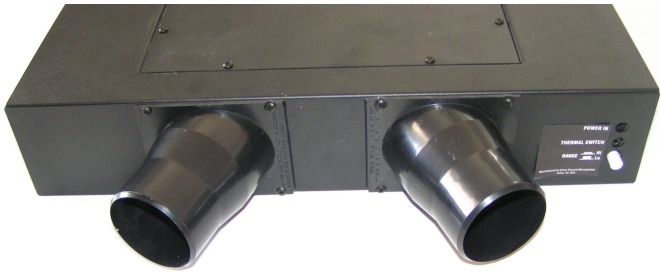


Figure 3

### Installation:

1. Mount the Cool-stack II in a 2 rack-unit space above the highest significant heat-producing equipment with the fans facing down. If using the optional top exhaust kit, mount the Cool-stack II at the top of the rack.
2. Plug the wall-type power supply into an AC outlet that is always energized (not "switched"). Do not connect the power supply to the Cool-stack II yet.
3. Install the thermal probe. It should normally be fastened to or just above the hottest part of the hottest component, usually the receiver or amplifier. It will switch the Cool-stack II from "off" to low speed at about 90 F (31C) and full speed at about 101 F (38C). In installations with several pieces of heat-producing equipment, it may be preferable to position the thermal switch assembly in the air above the highest heat producer where it can sense the combined heat of all of the equipment. ***Note that this arrangement will slow the response time of the Cool-stack II, as the hot equipment will have to heat a column of air, which will then heat the thermal probe.***
4. Plug the thermal probe into the "Thermal Switch" jack on the back of the Cool-stack II. Plug the power supply connector into the "Power In" jack on the back of the Cool-stack II.
5. The Cool-stack II can now be tested. Heating the tip of the probe using an ordinary hair dryer should start the fans turning at low speed after a short time. Continued heating should cause an increase in speed. Do NOT use an open flame (matches, cigarette lighters) or a heat-shrink tubing gun for testing. ***(See below for more information on controlling the Cool-stack II.)***

### Completing the installation:

Verify that there is an opening for fresh air to enter the rack enclosure, preferably low and in the front.

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If the hot air is to be exhausted through the front panel of the Cool-stack II, installation is complete.

If heated air is being exhausted through the top panel, and tubing is being used to carry the heated air away, connect it to the top tubing port now, using the 4" spring clamp supplied. If the tubing ends in an area in which temperature extremes, dust, moisture, odors, etc., are present, the use of a backdraft damper, as mentioned earlier, is recommended. Install it so that the swinging door closes reliably when the Cool-stack II is not operating.

If the hot air is being exhausted through the rear panel, and tubing is being used, connect 2 lengths of 2" tubing to the rear panel ports (force the tubing into the fitting with a twisting motion) and run the tubing to the desired location; trim any excess. Backdraft dampers for this size tubing are not available.