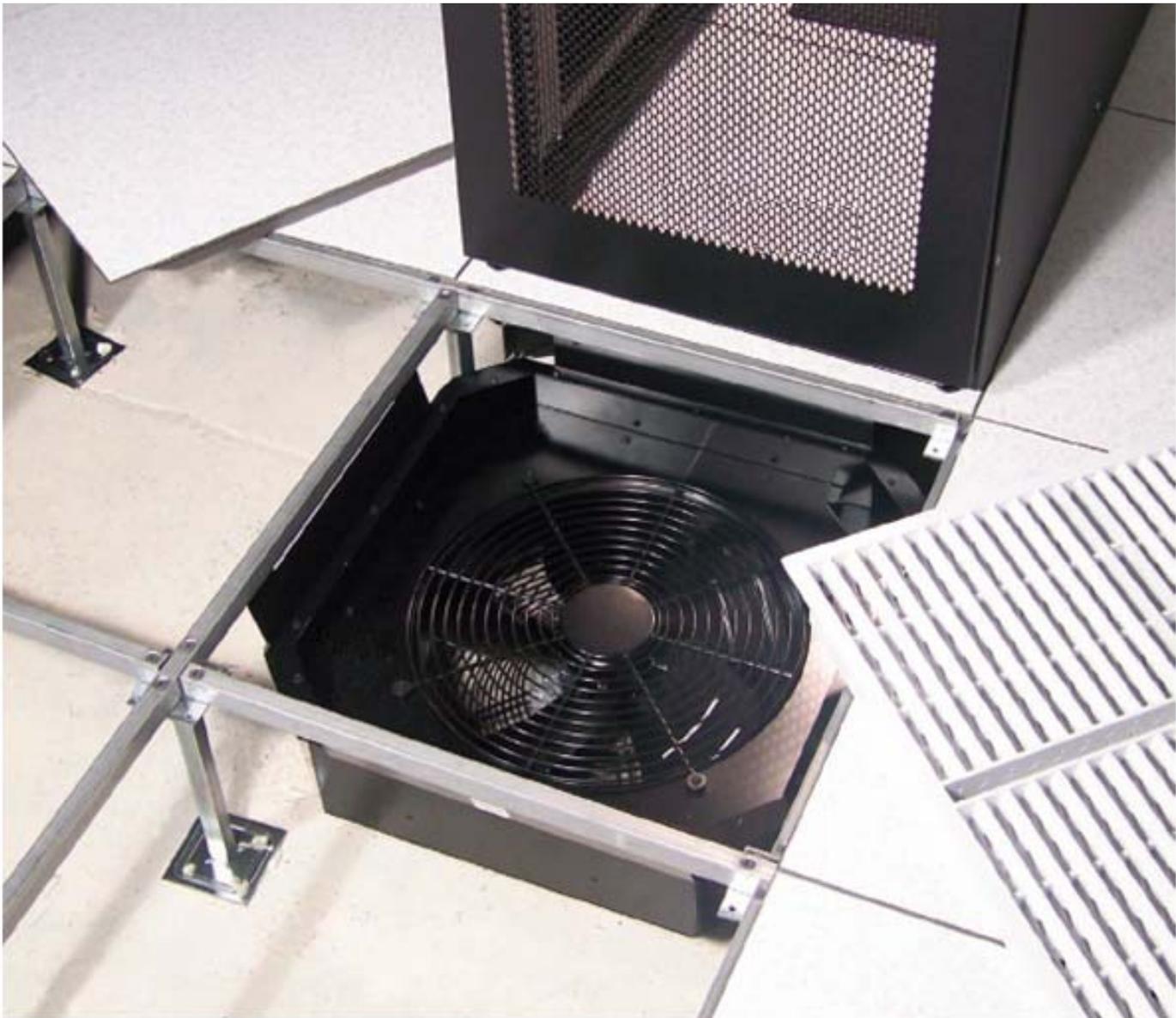




PowerAire® C Installation Guide

Rev. 5, 10/13/11



Tate®

Introduction

Tate's PowerAire™ Variable Speed Fan Assist device provides the user with unparalleled remote control of airflow to precisely meet individual rack cooling demands in areas of low or no static pressure without user intervention. A client unit model allows control based on user 3rd party sensor networks ensure that the IT hardware installed in the users rack is supplied with sufficient air volume at all times.

Method of Operation

Tate's PowerAire™ product is designed to work in conjunction with the DirectAire™ Directional Grate, to meet high airflow requirements and accurate air flow deliver to the rack face. The PowerAire™ is designed to alleviate airflow issues in areas where little to no static pressure exists due to underfloor restrictions, or insufficient floor heights. The PowerAire™ is designed to function on most finished floor heights greater than 10.5". Since IT loads are rarely stable on a rack to rack basis, the PowerAire™ is designed to throttle the amount of air delivered to an individual rack based on user defined control system. The PowerAire-C is designed to take a 0-10V or 4-20mA input signal supplied by the users control network. This control system may be of many different configurations, as outlined in figure 1.

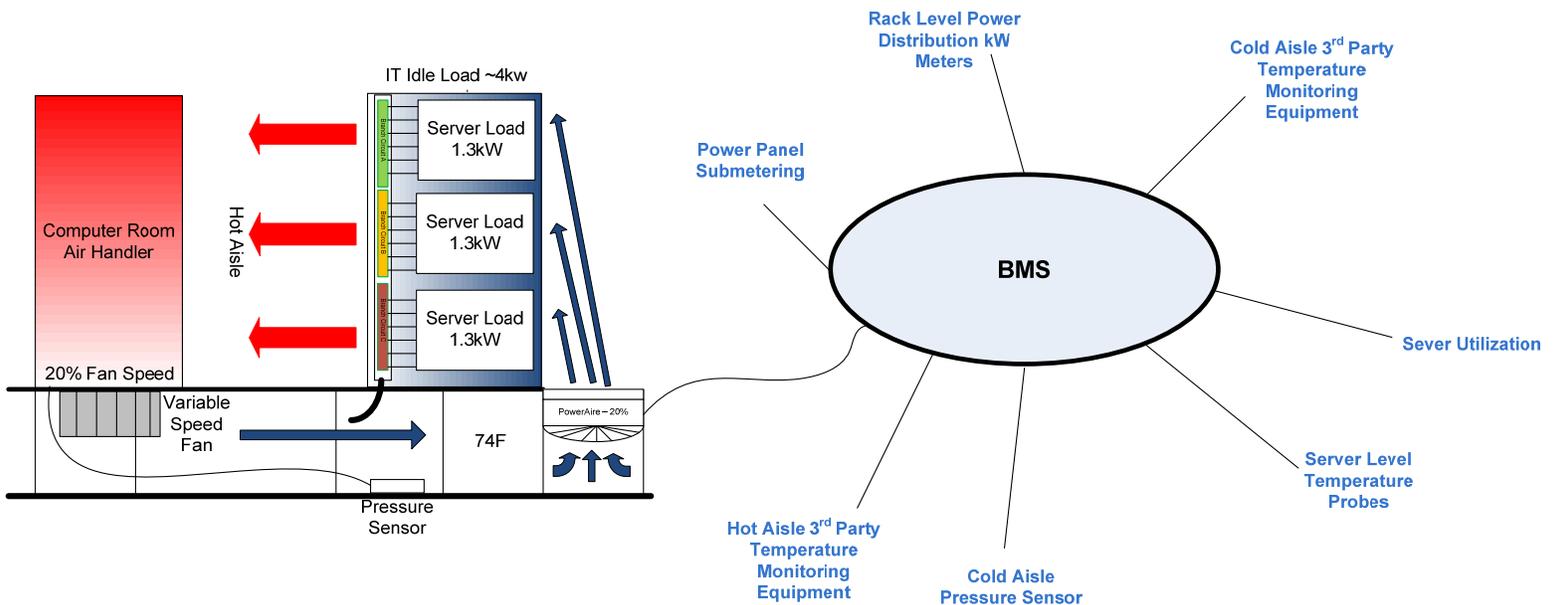


Figure 1 – Control Configuration of PowerAire™ - C

Installation Instructions

1. Remove the PowerAire™ unit from the factory packaging. Take care to check that each required separate component is in the shipping packaging as listed below, and figure 4 for details.
 - A. 1 x PowerAire™ Fan Assist Device
 - B. 1 x PowerAire™ power cord
 - C. 10 x Temperature Sensor Tree Zip Ties
 - D. 4 x Tool Less Roll Formed Stringer Hangers
 - E. DirectAire™ Panel
2. The PowerAire™ is designed for optimum use with Tate's DirectAire™ airflow panel ordered separately; other airflow panels may reduce the performance of the PowerAire™.

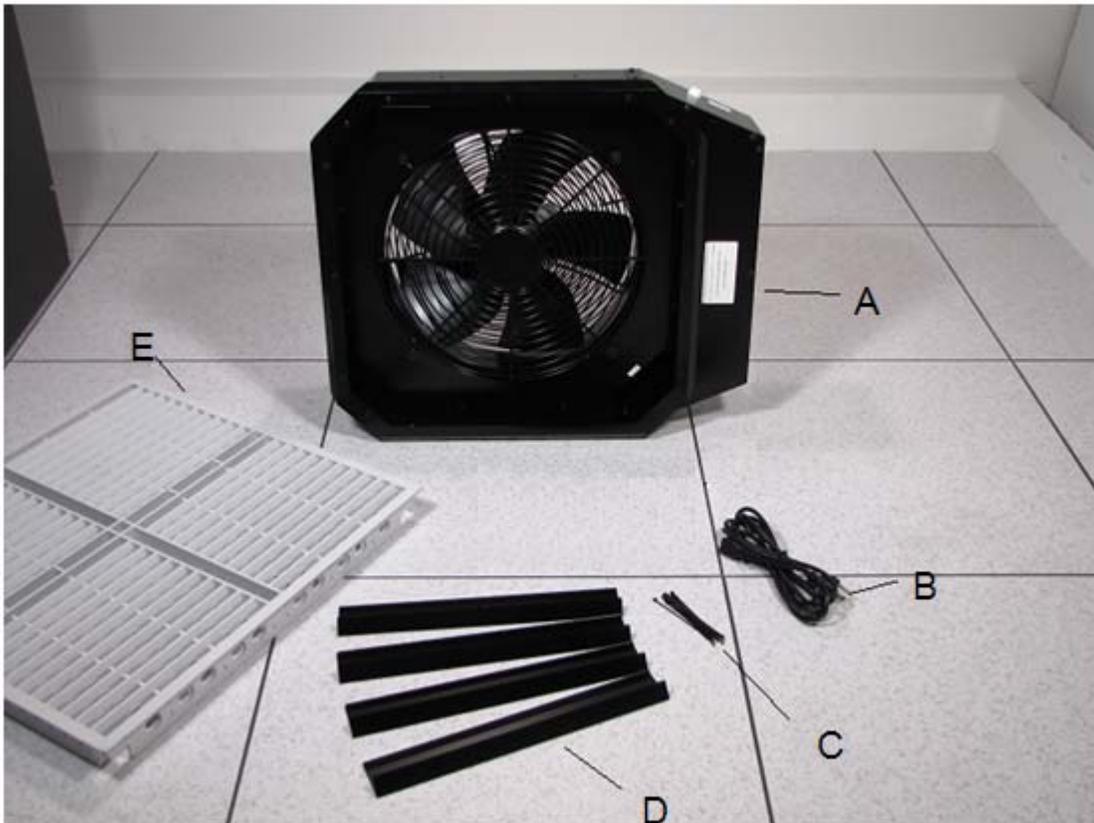


Figure 4 - Illustrated Parts List

3. Remove the existing airflow panel, and installed the four Tool Less Roll Formed Stringer Hangers into the stringer system. The hangers should be oriented with the larger angled bottom hook facing into the center of the removed panel. Simply orient the hanger at a 45 degree angle with the floor, sliding hanger's smaller angled hook surface into the gap in the roll formed stringer's bottom surface, and then allow the hanger to roll back perpendicular to the floor surface. Repeat this for all four sides of the panel. See figure 5 below.



Figure 5 –Position hanger parallel to the floor with short angled edge aligned to opening in roll form stringer



Figure 6 - Insert hanger into roll form opening and catch the top angle inside the stringer



Figure 7 - Release hanger and allow it to return perpendicular to the floor

A more flexible alternative method of attaching the unit to the raised floor understructure can also be realized by the use of the corner cable hangers. These cable hangers shown in the figure below, can allow unit to hang from the pedestal head in cases where non roll formed stringers are in use. It may be necessary to install a screw in the pedestal head on which to hook the unit for hanging.

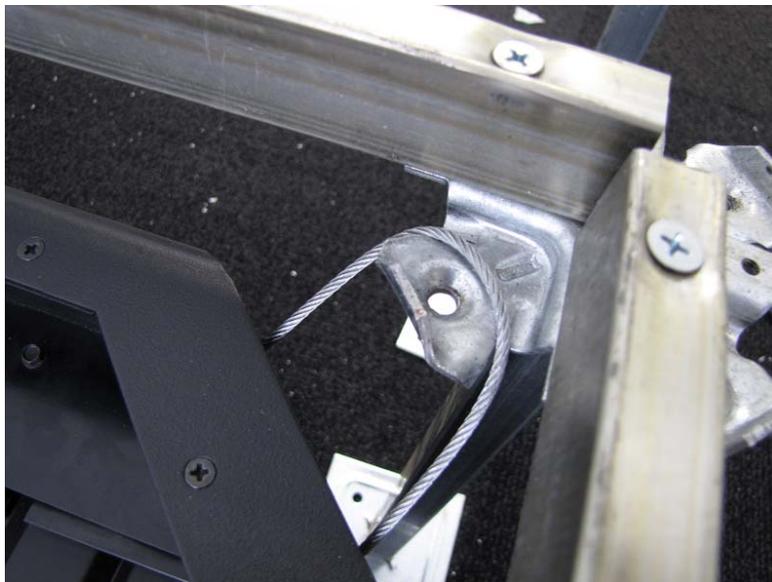


Figure 7 - Cable hanging method

Each PowerAire™ unit must be powered from the appropriate outlet. For 120V and 240V installations, a C14 power inlet is provided on the unit. The supply voltage of the unit will dictate the power cord supplied with the unit, which will be 6' feet in length, a list of the required power outlet is shown below in table 1. If the supplied cord does not meet the site requirements, a use supplied cord set may be used if it meets the voltage and amperage requirements of the power module. Figure 8 shows an example of a power feed to the unit.

Table 1 - Power Feed Requirements for Unit

PowerAire™ Power Feed Requirements	
Voltage	Outlet Required
120V	NEMA 5-15R
240V	NEMA L6-15R



Figure 8 – Power Outlet from Site Source

4. Pickup the PowerAire™ unit using the inside lip around the inside perimeter of the PowerAire™ unit. Be sure to orient the units extended shroud below the rack. Lower the PowerAire™ unit at the edge that extends beyond the perimeter of the unit first so that this edge will be oriented beneath the rack see

figure 9 and 10 below. Lock the lip of the unit into the hanger, then lower the opposite side into the waiting Tool Less hanger. Once this side is also resting in the hanger support, manipulated the unit so that each hanger on the alternate sides are also secure the unit into place.



Figure 9 - PowerAire™ Unit Installed on hangers in correct orientation



Figure 10 - Installation of Fan Unit onto Tool Less Hangers

5. The unit can now be powered on by plugging it into (figure 15) the appropriate power outlet outline in table 1. Once power is applied, and the power switch is turn on, (figure 16) the unit will begin the startup procedure. This process is completed when the user display shows the current peak temperature. Figure 13 shows this connection method.



Figure 15 - Plugging the power cord into the unit



Figure 16 – Location of Power Switch



Figure 17 - Connecting power to the unit

6. Once the user controlled input signal has been connected, reinstall the DirectAire™ or other panel above the PowerAire™ unit and proceed to the next unit. It is best to work right to left due to the connector layout on the PowerAire™ unit. Each subsequent unit can fully access connector points on its neighboring unit, allowing for easier access to power connections.



Figure 20 - Installation of DirectAire Panel

7. The PowerAire™ will now run based on user's controlled input value. The unit is meant to function as a hot spot reduction device, pulling air into areas with little or no static pressure due to underfloor restrictions, and insufficient floor heights. Best practices dictate that underfloor plenum spaces should have all unnecessary restrictions removed from beneath the floor, but often site conditions make this difficult or not cost effective.
8. The PowerAire™ units are completely maintenance free. The temperature display will continue to show the current peak temperature during normal operation. Power failure, or control failure will result in a 0% fan speed although air may still flow from the panel due to the effect of underfloor air pressure alone. After a power interruption event, the PowerAire™ unit will reenter the last operation condition when power is restored.
9. The PowerAire™ unit can affected the air flow that is delivered to other nearby panels if insufficient air delivery is widespread in the data center environment. The installer should verify after installation that sufficient air volume is reaching IT hardware in the vicinity of the PowerAire™ installation location. Failure to do this may result in a reduction of airflow in neighboring panels, and should be avoided.
10. WARNING: The fan unit can start and stop at any time during normal operation, be sure to switch power off at the unit if accessing the PowerAire unit. See figure 22 below.
11. Figure 15 shows the overall view of the unit to provide the user a reference to the user accessible connections.



B. Power inlet location