Directional Airflow Manager
(For 1U Devices that use Side to Rear Cooling)
part number AFDCS2U
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About This Guide

This guide describes how to install and configure the Wright Line Directional Airflow Manager (Airflow Manager) part number AFDCS2U.

Audience

Read this document if you are installing or configuring the Airflow Manager for a 1U electronic device.

Document Organization

This document is organized by task, in the order that each task needs to be completed:

- **Introduction** – describes the Airflow Manager, applications, inventory list, and configurations.
- **Preparing to Install the Directional Airflow Manager** – lists the steps that must be completed prior to beginning the installation.
- **Installing the Directional Airflow Manager** – describes how to install the Airflow Manager in an equipment rack.
- **Reconfiguring the Directional Airflow Manager** – explains how to change airflow for an installed Airflow Manager.

Document Conventions

This document uses the following conventions:

- Notes, important options, and referenced steps appear in **bold**.
- Links are **underlined**.
- Document names appear in *italics*.
- Acronyms are defined the first time they occur. The original term appears first, followed by the acronym in parentheses. For example: electrostatic discharge (ESD).

Related Documentation

Product Announcement: *Cisco 2U Air Flow Director Kit for Enclosures that are TIA/EIA-310-D 19” compliant.*

Product Announcement: *Cisco 9U Air Flow Director Kit for Paramount Enclosures.*

Technical Support

For Data Center Technical Support call 800-321-9954, e-mail dc.support@wrightline.com, or contact your Wright Line sales representative.

Precautions

When handling electronic devices, use approved grounding straps to prevent electrostatic discharge (ESD) that can damage the device.
Introduction

The Wright Line Directional Airflow Manager redirects air intake from the front (cold aisle) to the side, and exhaust air to the rear (hot aisle) for 1U electronic devices that use side intake and rear exhaust.

Applications

The Airflow Manager provides front to rear airflow for the following rack mounted 1U devices:

- Cisco Catalyst 4948
- Cisco Catalyst Express 500
- Other rack-mount 1U electronic devices with side-to-rear airflow

Before You Begin

Before you begin, make sure you have the following:

- Wright Line Directional Airflow Manager Installation Kit as listed in the Inventory section on page 3.
- Existing equipment rack such as Wright Line Paramount® data center enclosure.
- 2U of clear space in the equipment rack.
- 1U electronic device with side-to-rear airflow.
- Common installation tools including a #2 Phillips screwdriver.
Inventory

The Directional Airflow Manager, part number AFDCS2U, includes the following components:

Qty. 1 Left Side Air Deflector

Qty. 1 Right Side Air Deflector

Qty. 2 Alignment Key Plate

Qty. 1 Support Shelf

Qty. 1 Intake / Exhaust Tunnel

Qty. 1 Grill
Directional Airflow Manager

Qty. 1 Airflow Director

Qty. 1 Rear Air Exhaust Deflector

Qty. 2 Device Mounting Bracket

Qty. 2 Airflow Director Support Bracket

Qty. 28 #10-32 Machine Screw

Qty. 12 #10-32 Cage Nut

Qty. 4 Panhead Screw Self Tapping

Qty. 2 #10-32 Flathead Screw

Qty. 2 #10-24 Lock Nut

Qty. 1 Cable Manager

Not Included: Velcro Strap BX45V11
Directional Airflow Manager Configurations

The Airflow Manager provides four configuration options:

1. For device mounted to rear/hot aisle side, above airflow director.

2. For device mounted to rear/hot aisle side, below airflow director.

3. For device mounted to front/cold aisle side, above airflow director. This view includes the optional cable manager.

4. For device mounted to front/cold aisle side, below airflow director. This view includes the 1U device.
Preparing to Install the Directional Airflow Manager

Complete the following procedures before installing the Directional Airflow Manager.

Prepare the Equipment Rack

Clear at least 2 rack units (2U) of vertical space in the rack.

Make sure there is enough room to completely open the front and rear equipment rack doors.

Unpack the Airflow Manager

Unpack all Airflow Manager components near the rack where it will be installed. See the Inventory section on page 3 for a list of components.

Unpack or Remove the 1U Electronic Device

If you are installing a new electronic device in the Airflow Manager, unpack the device near the rack where it will be installed.

If you are installing a previously mounted electronic device in the Airflow Manager, disconnect all communication and power cables and remove the device from the rack.
Installing the Directional Airflow Manager

Complete the following procedures to install the Airflow Manager and associated 1U electronic device in an equipment rack.

Install Airflow Manager for Rear Mounted Device

Complete this procedure to install the Airflow Manager for a rear-mounted electronic device.

**Note:** In this configuration, the electronic device faces the rear of the rack, exhaust air vents to the rear, and air intake is from the front.

1. For equipment racks with square holes and inner mounting rails, insert two cage nuts into the inner mounting rail to align with the mounting holes of the left and right air intake deflectors.

   For equipment racks with no inner mounting rail, continue to the next step.

2. From the rear of the rack, align the left side air deflector with the left rear rail. The tab with threaded holes must be behind the front edge of the rail.

3. For equipment racks with round holes, align the component and insert three #10-32 screws. Do not fully tighten screws until the entire assembly is installed. The bottom screw on each side is used to attach the optional cable manager.

   For equipment racks with square holes, use the alignment key plate provided. Complete the following steps a through c when using the alignment key plate:
   a. Hold the deflector behind the rail.
   b. Insert the alignment key plate from the front of the rail so that the top and bottom tabs slide through the rack into the slots cut in the deflector. The holes in the plate and rail should now align with the threaded holes in the deflector.
   c. Insert the screws. Do not fully tighten screws until the entire assembly is installed.
4. For racks with inner mounting rails, insert two #10-32 screws through the left airflow deflector into the inner mounting rail. Do not fully tighten screws until the entire assembly is installed.

For racks without inner mounting rails, seal the air deflector mounting holes with an engineer-approved material.

From the rear of the rack, align the right side air intake deflector with the right rear rail and repeat steps 2 through 4.

5. From the rear of the rack, install the support shelf between the two side air deflectors. Align the four raised dimples in the air deflectors with the four rectangular cut-outs in the shelf.

The shelf rests on the left and right air deflectors. Press down gently to make sure the shelf is securely aligned.

**Note:** The support shelf must slide underneath the intake tunnel, and must be as flush as possible with the support surfaces of the side air deflectors.

6. From the front of the equipment rack, align the intake tunnel to slide inside the previously installed airflow deflectors and support shelf.

**Optional:** Wright Line recommends using the included grill, which can be during or after tunnel installation. This figure also shows the tunnel inside the left and right air intake deflectors.

For equipment racks with square holes, insert eight cage nuts aligned with the holes in the tunnel mounting tab.

7. From the front of the equipment rack, insert four #10-32 screws in the four corner holes.

**Note:** Use the two center holes to mount the grill.

8. Tighten all screws installed to this point.
9. Fasten the rear air exhaust deflector to the airflow director using four #10-32 screws.

10. Insert two #10-32 screws halfway into the threaded standoffs on the airflow director tabs. Do not allow screws to pass through the bottom of the tabs because it will interfere with installation.

11. Align the device mounting brackets and slide halfway into the slots in the front of the airflow director.

12. Attach two #10-24 lock nuts to the threaded studs underneath the airflow director. **Do not tighten the lock nuts.**
13. Place the device on the airflow director. Route the power cable through the center air channel to the rear of the rack.

14. Adjust the sliding brackets to hold the device against the edges of the rear airflow deflector and then tighten the lock nuts.

**Note:** To ensure proper airflow, align the rear of the device against the edges of the rear air exhaust deflector. The required alignment is also noted on the rear airflow deflector.

15. If the device includes mounting screws, insert screws through the slotted tabs into the electronic device and tighten.

16. From the rear of the rack, slide the assembled airflow director and device into the installed components.
17. Align the two #10-32 screws in the front tabs of the airflow director with the front slots in the support shelf and tighten the screws until they pass through the slots. **Finger tighten only.**

**Note:** To ensure proper airflow, these screws must be inserted into the front slots of the support shelf. Make sure the rear of the device is completely enclosed in the intake tunnel.

The required alignment is also noted on the support shelf.

18. **Optional:** Attach the cable manager to the rear of the rack. Remove the two bottom screws and use them to attach the cable manager.

Use Velcro straps (BX45V11, not supplied) to provide strain relief.

The Airflow Manager installation is complete. Refer to the documentation for the electronic device to complete that part of the installation.
Install Airflow Manager Above Device – Rear

The Airflow Manager can also be installed with the airflow director mounted above the device.

Repeat steps 1 through 4 in the Install Airflow Manager for Rear Mounted Device section starting on page 7, with the side airflow deflectors inverted on the opposite sides.

Complete steps 5 through 12 unchanged.

Complete steps 13 though 15 with the airflow director inverted above the device.

Step 16 must be completed with the support shelf placed above the airflow tray and inserted together.

Step 17 must be completed from below the airflow director.

Complete step 18 unchanged to finish the installation.
Install Airflow Manager for Front Mounted Device

Complete this procedure to install the Airflow Manager for a front mounted electronic device.

**Note:** In this configuration, the electronic device faces the front of the rack, air intake is from the front, and exhaust air vents to the rear.

1. From the front of the rack, complete steps 1 through 4 of the Install Airflow Manager for Rear Mounted Device section on page 7.

   Viewed from the front, the components installed to this point should match the figure.

2. From the rear of the rack, complete steps 5 though 8 on page 8.

   Viewed from the front, the components installed to this point should match the figure.

3. Insert the device mounting brackets as described in step 9 on page 9.
4. Attach the support brackets using two #10-32 flathead screws.

5. Insert two #10-32 screws halfway into the threaded standoffs on the support brackets. Do not allow screws to pass through the bottom of the brackets because it will interfere with installation.

6. Attach the 1U electronic device to the airflow director. Use the slotted mounting tabs or sliding device brackets as needed.

7. From the front of the rack, slide the airflow director and device assembly into the installed components. Route the power cable through the exhaust tunnel.
8. Align the two #10-32 screws in the front brackets of the airflow director with the front slots in the support shelf and tighten the screws until they pass through the slots. **Finger tighten only.**

**Note:** To ensure proper airflow, these screws must be inserted into the front slots of the support shelf. Make sure the rear of the device is completely enclosed in the intake tunnel.

The required alignment is also noted on the support shelf.

9. **Optional:** Attach the cable manager to the front of the rack as described in step 18 on page 11. Use Velcro straps (BX45V11, not supplied) to provide strain relief.

The Airflow Manager installation is complete. Refer to the documentation for the electronic device to complete that part of the installation.

**Install Airflow Manager Above Device – Front**

The Airflow Manager can also be installed with the airflow director mounted above the device.

Repeat steps 1 and 2 in the **Install Airflow Manager for Front Mounted Device** section starting on page 7, with the side airflow deflectors inverted on the opposite sides. Do not attach the support shelf.

Complete steps 3 through 5 unchanged.

Complete step 6 with the airflow director inverted above the device.

Step 7 must be completed with the support shelf placed above the airflow tray and inserted together.

Step 8 must be completed from below the airflow director.

Complete step 9 unchanged to finish the installation.
Reconfiguring the Directional Airflow Manager

Use the procedures in the Installing the Directional Airflow Manager section on page 7 to reconfigure an installed Airflow Manager.

You can flip the airflow director to be above or below the electronic device by removing and inverting all components except the intake / exhaust tunnel. **Do not invert the 1U electronic device.**

To switch the location of the electronic device to the front or rear, you must remove all installed components and re-install using the procedures in the Install Airflow Manager for Rear Mounted Device section on page 7 or the Install Airflow Manager for Front Mounted Device section on page 13.