SECTION 23 34 39

AIR DESTRATIFICATION FANS

Display hidden notes to specifier. (Don't know how? In Word, select File>Options>Display>check box for ‘hidden text’)

\*\* NOTE TO SPECIFIER \*\* Airius fans are designed to equalize the layers of hot and cold air in facilities with high ceilings. This state-of-the-art energy saving product is designed to create a more pleasant indoor environment and to reduce total energy consumption, which results in significant annual cost savings. The Pearl is an extremely efficient air turbine that is hung at the top of the space. Each unit takes in resident hot ceiling air and silently transports it to the floor in the form of a slow moving air column. During the heating season, thermal equalization creates a more thermally pleasant environment while reducing heating system cycle times and intensity. During the cooling season in non-conditioned spaces, air speed is increased to create enough air movement for occupants to perceive a cooling effect. During the cooling season in conditioned spaces, there are reduced startup loads, short cycling, and wear on the air conditioning system. If you have any questions in regards to product selection or the available options, please contact us via one of the methods listed below.

Keywords: Airius, LLC; HVAC Fans, destratification fans, ceiling fans, commercial ceiling fans, industrial ceiling fans.

Contact Information:

Airius, LLC  
811 South Sherman Street  
Longmont, CO 80501  
Toll Free Tel: 888-247-7327  
Tel: 303-772-2633  
Email: request info (info@airiusfans.com)   
Web: www.airiusfans.com  
  
[[ Click Here ]](https://www.airiusfans.com/) for additional information.

May be covered by one or more of the following United States Patents: 7,381,129 B2; D514688. Other patents pending.

1. GENERAL
   * + 1. SECTION INCLUDES

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + - * 1. Destratification fans for thermal equalization of buildings.
      1. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.

* + - * 1. Section 26 00 00, "Common Work Results for Electrical".
      1. REFERENCES

\*\* NOTE TO SPECIFIER \*\* Delete references from the list below that are not actually required by the text of the edited section.

* + - * 1. UL 507: Underwriters Laboratory Standard for Electric Fans
        2. CAN//CSA-C22.2 No. 1113: Safety of household and similar electrical appliances.
        3. CE: Product is certified to meet EU consumer safety, health or environmental requirements.
        4. UL 94 5VA: Tests for Flammability of Plastic Materials for Parts in Devices and Appliances.
        5. ISO3744 Engineering Grade Acoustical Testing
        6. NEC: National Electric Code.
        7. ETL: Listed for US and Canada in Intertek Directory of Listed Products.
      1. SUBMITTALS
         1. Submit under provisions of Section 01 33 00, "Administrative Requirements".
         2. Product Data: Manufacturer's data sheets for each product, including:

Power requirements and mounting recommendations.

Fan velocity profile showing isothermal feet per minute (FPM) delivery at various distances from fan.

* + - * 1. Shop Drawings:

Placement Drawings: Include manufacturer’s placement recommendation diagram.

Wiring Diagrams.

Mounting details, including safety restraint where required.

* + - * 1. Revit Files
        2. Manufacturer’s Instructions: Provide manufacturer’s “Installation, Operation, and Maintenance Manual”
        3. Schedule
      1. QUALITY ASSURANCE
         1. Manufacturer Qualifications: Minimum of fifteen (19) years of product experience. Providing sole source for fans, accessories, and controls.
      2. DELIVERY, STORAGE, AND HANDLING
         1. Deliver products and materials to project site in manufacturer's unopened packaging.
         2. Store products in manufacturer’s unopened packaging until ready for installation.
      3. PROJECT CONDITIONS
         1. Maintain temperature, humidity, and ventilation within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
      4. WARRANTY
         1. Warranty: Refer to warranty information contained in the “Installation, Operation & Maintenance Manual”.
         2. Factory Refurbish Program: Users can purchase a motor replacement or a new discounted system upon failure outside the warranty period. Contact manufacturer for details.

1. PRODUCTS
   * + 1. MANUFACTURERS
          1. Acceptable Manufacturer: Airius, LLC, which is located at: 811 S. Sherman St., Longmont, CO 80501 Toll Free Tel: 888-247-7327; Tel: 303-772-2633; Email: [info@airiusfans.com](mailto:info@theairpear.com); Web: www.airiusfans.com
       2. AIRIUS PEARL DESTRATIFICATION FANS
          1. Performance: Coordinated design of housing, stator and motor shall provide columnar laminar airflow to produce a minimum of 100 fpm at center of column at grade level when installed within 2’-0” of ceiling. Refer to manufacturer’s airflow velocity profiles for jet pattern and throw data.
          2. Housing: The fan housing shall be made of PC/ABS resin, rated 5VA for flame resistance.

Housing color:

PMS Cool Gray 2C (off white)

Black

As scheduled

* + - * 1. Safety Cable: Supplied with 6’-0” steel cable fastened to seismic restraint point integrated into the fan housing. Safety restraint attached to primary mounting handle will not be accepted.
        2. Motor Mounting: Enclosed in housing, above stator.
        3. Stator: The fan shall be equipped with a patented curved multiple-vane stator coordinated with fan design for maximizing columnar laminar flow.
        4. Certification: UL Standard 507 for Safety Electric Fans, CAN//CSA-C22.2 No. 1113 and UL 94 5VA as certified by nationally recognized testing laboratory. Acceptable laboratories include ETL, UL or other nationally recognized testing laboratories.
        5. Identification: Permanently affixed manufacturer’s nameplate including the following: Model Number, Serial Number, Motor Power Specifications, Country of Manufacture and Safety Marks: ETL (US & CA) & CE (EU).
        6. Power Cord: 6 foot, 300-volt AC, UL rated. Motors within the voltage range of 100-130VAC are provided with a standard 3-prong plug. Motors within the voltage range of 200-277VAC are not provided with a plug.

\*\* NOTE TO SPECIFIER \*\* Retain one or more of the following destratification fans. If using multiple destratification fan sizes, give each a unique designation and schedule fans on Drawings or at the end of this Section.

Consult Airius for product selection and recommended layout.

\*\* NOTE TO SPECIFIER \*\* The Pearl Model S3 is designed for smaller spaces with a ceiling height up to 12 feet. The Pearl Model S3 provides exceptional thermal equalization through columnar laminar flow from ceiling to floor. Consult manufacturer on proper product selection and layout. Delete if not required.

* + - * 1. Destratification Fan **[DF-1]** shall be a Pearl Model S3.

Size and Weight:

\*\* NOTE TO SPECIFIER \*\* Delete housing size not required for project.

Standard: 13 inch height to bail; 9 inch height to rim; 11.25 inch diameter; 6 lb (2.7 kg).

Motor (SP): Shaded pole motor, 228mm in diameter. Blades molded in one piece with hub. Ball bearings shall be permanently lubricated and shielded. Up to 206 cfm, 860 rpm, 41.8 dBA. Thermally protected motor with an operating range of -4° F (-20° C) to 158° F (70° C).

Recommended ceiling height up to 12 feet (3.6 m) and area coverage up to 500 sq. ft (46 sq. m); 13 feet (4 m) from the fan's center in all directions.

Electrical Requirements:

\*\* NOTE TO SPECIFIER \*\* Delete electrical requirement not required for project.

120V AC, single phase, 60 Hz.; 0.18 Amps; 18 watts

Controls shall be coordinated with motor electrical requirements.

\*\* NOTE TO SPECIFIER \*\* Delete controls not required for project.

Provide with an inline, wall mounted, TRIAC controller for variable speed and on/off.

Provide with Airius 10A transformer for BAS integration. Installed on fan power circuit, accepts 0-10VDC signal to adjust fan speed over 8 steps.

Provide with an Airius Delta T Controller with automatic temperature-based control. Utilizes two manufacturer supplied temperature sensors for mounting at ceiling and floor to vary fan speed based on temperature delta.

None

Motor (EC): Electronically commutated motor, up to 92% efficient, 230mm in diameter. Plastic blades and hub. Ball bearings shall be permanently lubricated and shielded. Up to 266 cfm, 1170 rpm, 62 dBA. Thermally protected motor with an operating range of -22° F (-30° C) to 122° F (50° C).

Recommended ceiling height up to 18 feet (5.5 m) and area coverage up to 800 sq. ft (75 sq. m); 16 feet (4.88 m) from the fan's center in all directions.

Electrical Requirements:

\*\* NOTE TO SPECIFIER \*\* Delete electrical requirement not required for project.

100-130V AC, single phase, 60 Hz.; 0.15 Amps; 18 watts

200-250V AC, single phase, 60 Hz.; 0.08 Amps; 11 watts

Controls

Shall be controlled directly by 0-10VDC control signal from BAS. Uses low voltage control circuit separate from mains power. See wiring diagram.

Provide with wall mounted potentiometer. Uses low voltage control circuit for single or multiple fan control. See wiring diagram.

Provide with PearLink WiFi control. Requires 2.4GHz WiFi network for communication with PearLink mobile application. Mobile application (iOS and Android) to include scheduling, temperature/humidity based automation capability, fan status monitoring and error alerts. See cut sheet for further details.

Provide with an Airius Delta T Controller with automatic temperature-based control. Utilizes two manufacturer supplied temperature sensors for mounting at ceiling and floor to vary fan speed based on temperature delta.

Provide with BACnet MS/TP card for individual fan control and status integration with BAS.

None

\*\* NOTE TO SPECIFIER \*\* The Pearl Model S2 is designed for smaller spaces with a ceiling height up to 18 feet. The Pearl Model S2 provides exceptional thermal equalization through columnar laminar flow from ceiling to floor. Consult manufacturer on proper product selection and layout. Delete if not required.

* + - * 1. Destratification Fan **[DF-2]** shall be a Pearl Model S2.

Size and Weight:

\*\* NOTE TO SPECIFIER \*\* Delete housing size not required for project.

Standard: 13 inch height to bail; 9 inch height to rim; 11.25 inch diameter; 6 lb (2.7 kg).

Motor (SP): Shaded pole motor, 228mm in diameter. Blades molded in one piece with hub. Ball bearings shall be permanently lubricated and shielded. Up to 266 cfm, 1057 rpm, 47.3 dBA. Thermally protected motor with an operating range of -4° F (-20° C) to 158° F (70° C).

Recommended ceiling height up to 18 feet (5.5 m) and area coverage up to 800 sq. ft (75 sq. m); 16 feet (4.88 m) from the fan's center in all directions.

Electrical Requirements:

\*\* NOTE TO SPECIFIER \*\* Delete electrical requirement not required for project.

120V AC, single phase, 60 Hz.; 0.18 Amps; 18 watts

Controls shall be coordinated with motor electrical requirements.

\*\* NOTE TO SPECIFIER \*\* Delete controls not required for project.

Provide with an inline, wall mounted, TRIAC controller for variable speed and on/off.

Provide with Airius 10A transformer for BAS integration. Installed on fan power circuit, accepts 0-10VDC signal to adjust fan speed over 8 steps.

Provide with an Airius Delta T Controller with automatic temperature-based control. Utilizes two manufacturer supplied temperature sensors for mounting at ceiling and floor to vary fan speed based on temperature delta.

None

Motor (EC): Electronically commutated motor, up to 92% efficient, 230mm in diameter. Plastic blades and hub. Ball bearings shall be permanently lubricated and shielded. Up to 266 cfm, 1170 rpm, 62 dBA. Thermally protected motor with an operating range of -22° F (-30° C) to 122° F (50° C).

Recommended ceiling height up to 18 feet (5.5 m) and area coverage up to 800 sq. ft (75 sq. m); 16 feet (4.88 m) from the fan's center in all directions.

Electrical Requirements:

\*\* NOTE TO SPECIFIER \*\* Delete electrical requirement not required for project.

100-130V AC, single phase, 60 Hz.; 0.15 Amps; 18 watts

200-250V AC, single phase, 60 Hz.; 0.08 Amps; 11 watts

Controls

Shall be controlled directly by 0-10VDC control signal from BAS. Uses low voltage control circuit separate from mains power. See wiring diagram.

Provide with wall mounted potentiometer. Uses low voltage control circuit for single or multiple fan control. See wiring diagram.

Provide with PearLink WiFi control. Requires 2.4GHz WiFi network for communication with PearLink mobile application. Mobile application (iOS and Android) to include scheduling, temperature/humidity based automation capability, fan status monitoring and error alerts. See cut sheet for further details.

Provide with an Airius Delta T Controller with automatic temperature-based control. Utilizes two manufacturer supplied temperature sensors for mounting at ceiling and floor to vary fan speed based on temperature delta.

Provide with BACnet MS/TP card for individual fan control and status integration with BAS.

None

\*\* NOTE TO SPECIFIER \*\* The Pearl S1 is designed for a ceiling height up to 25 feet. The Pearl S1 provides exceptional thermal equalization through columnar laminar flow from ceiling to floor. Consult manufacturer on proper product selection and layout. Delete if not required.

* + - * 1. Destratification Fan **[DF-3]** shall be a Pearl Model S1.

Size and Weight:

\*\* NOTE TO SPECIFIER \*\* Delete housing size not required for project.

Standard: 13 inch height to bail; 9 inch height to rim; 11.25 inch diameter; 6 lb (2.7 kg).

Motor (SP): Shaded pole motor, 228mm in diameter. Blades molded in one piece with hub. Ball bearings shall be permanently lubricated and shielded. Up to 412 cfm, 1670 rpm, 60 dBA. Thermally protected motor with an operating range of -4° F (-20° C) to 158° F (70° C).

Recommended ceiling height up to 25 feet (7.6 m) and area coverage up to 1200 sq. ft (112 sq. m); 20 feet (6 m) from the fan's center in all directions.

Electrical Requirements:

\*\* NOTE TO SPECIFIER \*\* Delete electrical requirement not required for project.

120V AC, single phase, 60 Hz.; 0.31 Amps; 37 watts

277V AC, single phase, 60 Hz.; 0.17 Amps; 45 watts

Controls shall be coordinated with motor electrical requirements.

\*\* NOTE TO SPECIFIER \*\* Delete controls not required for project.

Provide with an inline, wall mounted, TRIAC controller for variable speed and on/off.

Provide with Airius 10A transformer for BAS integration. Installed on fan power circuit, accepts 0-10VDC signal to adjust fan speed over 8 steps.

Provide with an Airius Delta T Controller with automatic temperature-based control. Utilizes two manufacturer supplied temperature sensors for mounting at ceiling and floor to vary fan speed based on temperature delta.

None

Motor (EC): Electronically commutated motor, up to 92% efficient, 230mm in diameter. Plastic blades and hub. Ball bearings shall be permanently lubricated and shielded. Up to 421 cfm, 1700 rpm, 69 dBA. Thermally protected motor with an operating range of -22° F (-30° C) to 122° F (50° C).

Recommended ceiling height up to 25 feet (7.6 m) and area coverage up to 1200 sq. ft (112 sq. m); 20 feet (6 m) from the fan's center in all directions.

Electrical Requirements:

\*\* NOTE TO SPECIFIER \*\* Delete electrical requirement not required for project.

100-130V AC, single phase, 60 Hz.; 0.46 Amps; 31 watts

200-250V AC, single phase, 60 Hz.; 0.26 Amps; 30 watts

Controls:

\*\* NOTE TO SPECIFIER \*\* Delete controls not required for project.

Shall be controlled directly by 0-10VDC control signal from BAS. Uses low voltage control circuit separate from mains power. See wiring diagram.

Provide with wall mounted potentiometer. Uses low voltage control circuit for single or multiple fan control. See wiring diagram.

Provide with PearLink WiFi control. Requires 2.4GHz WiFi network for communication with PearLink mobile application. Mobile application (iOS and Android) to include scheduling, temperature/humidity based automation capability, fan status monitoring and error alerts. See cut sheet for further details.

Provide with an Airius Delta T Controller with automatic temperature-based control. Utilizes two manufacturer supplied temperature sensors for mounting at ceiling and floor to vary fan speed based on temperature delta.

Provide with BACnet MS/TP card for individual fan control and status integration with BAS.

None

1. EXECUTION
   * + 1. EXAMINATION
          1. Do not begin installation until supporting structure and interior work have been properly completed.
          2. Check location and availability of utility services to ensure proper voltage and installation preparation.
          3. Installation of miscellaneous support, if required, electrical wire and wiring, conduit, fuses, and disconnect switches other than those provided by fan manufacturer are specified in other sections.
          4. Examine the substrate and conditions under which the Fan is to be installed. Notify the Architect in writing of any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.
       2. INSTALLATION
          1. Install destratification fan according to manufacturer's written recommendations.
          2. Fan to be mounted at a maximum of 2’-0” from ceiling deck to ensure thermal/humidity equalization from ceiling to floor.
          3. Adjust unit as required for proper operation in accordance with manufacturer’s installation instructions.
       3. PROTECTION
          1. Protect installed products until completion of project.
          2. Touch-up, repair or replace damaged products before Substantial Completion.
       4. DESTRATIFICATION FAN SCHEDULE (Sample)

\*\* NOTE TO SPECIFIER \*\* Values in schedule are examples only; modify schedule to suit project requirements. Delete schedule if not required.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Tag** | **Location** | **Manufacturer** | **Model** | **Weight (lb)** | **Height (in.)** | **Max Airflow (CFM)** | **RPM** | **Watts** | **Volts** | **Phase** | **Remarks** |
| DF-1 | Office 305 | Airius | P-S1 | 6 | 13 | 412 | 1670 | 37 | 120 | 1 | 1, 2 |

1: Mount within 2’-0” of ceiling deck

2: Include grille guard

END OF SECTION

Air Pear® and Airius® are trademarks of Airius, LLC. Photohydroionization™ and PHI-Cell™ are trademarks of RGF Environmental. Airius, LLC will not be held liable for any errors or omissions contained in the contents of this document. Subject to change at any time.

Copyright 2023 by Airius, LLC. Qualified design and construction professionals may copy for preparation of construction specifications. Issued September 2023