



## SECTION 23 34 00 HVAC Fans

### PART 1 GENERAL

#### 1.1 SUMMARY

- A. Section Includes
  - 1. The ceiling-mounted circulation fan is the model scheduled with the capacities indicated. The fan shall be furnished with mounting hardware, a remote control, and SenseME™ Technology as manufactured by Haiku® Home.
- B. Summary of Work
  - 1. Installation of the fan, wireless network, miscellaneous or structural metal work (if required), field electrical wiring, cable, conduit, fuses and disconnect switches, other than those addressed in the installation scope of work, shall be provided by others. Installation services are available through Haiku Home. Consult the appropriate installation scope of work for information on the available installation options, overview of customer and installer responsibilities, and details on installation site requirements.

#### 1.2 RELATED SECTIONS

- A. 21 00 00 Fire Suppression
- B. 23 00 00 Heating, Ventilating, and Air Conditioning (HVAC)
- C. 26 00 00 Electrical

#### 1.3 REFERENCES

- A. Canadian Standards Association (CSA)
- B. International Organization for Standardization (ISO)
- C. National Electric Code (NEC)
- D. National Fire Protection Association (NFPA)
- E. Norma Oficial Mexicana (NOM)
- F. Underwriters Laboratory (UL)

#### 1.4 SUBMITTALS

- A. Shop Drawings: Drawings detailing product dimensions, weight, and attachment methods
- B. Part 2 Product Data: Specification sheets on the ceiling-mounted fan, specifying electrical and installation requirements, features and benefits, and controller information
- C. Revit Files: Files provided for architectural design
- D. Part 2 Product Documentation: The manufacturer shall furnish a copy of all installation, operation, and maintenance instructions for the fan.
- E. Schedule

#### 1.5 QUALITY ASSURANCE

- A. Certifications
  - 1. Safety
    - a. The fan assembly, as a system, shall be Intertek/ETL-certified and built pursuant to the following standards.
      - a. Canada
        - a) CSA C22.2 No. 113. Standard for Safety for Fans and Ventilators.
      - b. United States
        - a) UL 507. Standard for Safety for Electric Fans.
    - b. The fan motor shall be Intertek/ETL-certified and built pursuant to the following standards.
      - a. Canada



- a) CSA C22.2 No. 100. Standard for Safety for Motors and Generators.
    - b) CSA C22.2 No. 77. Standard for Safety for Motors with Inherent Overheating Protection.
  - b. United States
    - a) UL 1004-1. Standard for Safety for Rotating Electrical Machines - Part 1 General Requirements.
    - b) UL 1004-3. Standard for Safety for Thermally Protected Motors.
    - c) UL 1004-7. Standard for Safety for Electronically Protected Motors.
- 2. Sustainability Certification
  - a. Forest Stewardship Council (FSC) certification
  - b. ENERGY STAR® certification – ENERGY STAR Most Efficient 2018
- B. Manufacturer Qualifications
  - 1. The fan and any accessories shall be supplied by Haiku Home that has a minimum of ten (10) years of product experience.
  - 2. ISO 9001-certified

**1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver product in original, undamaged packaging with identification labels intact. The fan shall be new, free from defects, and factory tested.
- B. The fan and its components must be stored in a safe, dry location until installation.

**1.7 WARRANTY**

- A. The manufacturer shall replace any products or components defective in material or workmanship, free of charge to the customer (including transportation charges within the USA, F.O.B. Lexington, KY), pursuant to the complete terms and conditions of the Haiku Home Non-Prorated Warranty in accordance to the following schedule:

**Industrial and Commercial Installations**

<b>Item</b>	<b>Period of Coverage</b>
Motor	2 years
All other components	1 year

Labor to repair the defect will be provided free of charge at the Haiku Home service center for defects arising during the Warranty Period.

**Residential Installations**

<b>Item</b>	<b>Period of Coverage</b>
Motor	Lifetime of motor
All other components	1 year

Labor to repair the defect will be provided free of charge at the Haiku Home service center for defects arising during the Warranty Period.

**PART 2 PRODUCT**

**2.1 MANUFACTURER**

- A. Haiku Home, PO Box 11307, Lexington, Kentucky 40575.  
Phone (877) 244-3267. Fax (859) 233-0139. Website: [www.haikuhome.com](http://www.haikuhome.com).

**2.2 HAIKU® INDOOR**

- A. Complete Unit
  - 1. Regulatory Requirements: The fan assembly, as a system, shall be Intertek/ETL-certified and built pursuant to relevant safety standards as described above.



2. Sustainability Characteristics: The fan shall possess the ENERGY STAR Most Efficient 2018 designation. The fan assembly, as a system, shall be built pursuant to environmental and sustainability standards of the Forest Stewardship Council.
  3. Quality: The fan shall display good workmanship in all aspects of its construction. Field balancing of the airfoils shall not be necessary.
  4. Colors: Airfoil colors may be selected by the architect or owner as described in 2.2.C, "Airfoils."
  5. Optional Accessories
    - a. An LED light may be selected at the time of order.
    - b. Universal Mount fans: A 0–10 V module may be selected at the time of order. The module shall enable the fan to be integrated with a home or building automation system or a 3<sup>rd</sup> party 0–10 V dimmer using an industry-standard protocol.
- B. Mounting System**
1. Low Profile Mount
    - a. The low profile mount shall be suitable for flat ceilings as low as 8 ft (2.4 m) tall.
    - b. The fan shall be equipped with a mounting plate, rubber bumpers, mounting brackets, a compact, low-profile motor hub assembly, and mounting hardware.
    - c. The fan shall be available with a diameter of 52" (1.3 m) or 60" (1.5 m).
  2. Standard Mount
    - a. The standard mount shall be suitable for flat ceilings with heights ranging from 8.5–12 ft (2.6–3.7 m).
    - b. The fan shall be equipped with a rubber bushing, mounting bracket, wiring cover, wiring cover trim, standard motor hub assembly, and mounting hardware.
    - c. The fan shall be available with a diameter of 52" (1.3 m) or 60" (1.5 m).
  3. Universal Mount
    - a. The universal mount shall be suitable for flat or sloped ceilings with heights ranging from 8.5–18 ft (2.6–5.5 m).
    - b. The fan shall be equipped with a mounting bracket, canopy, mounting ball and wedge, extension tubes, wiring cover, motor hub, and mounting hardware.
    - c. A 7-inch (178-mm), 20-inch (508-mm), and 32-inch (813-mm) extension tube shall be included with 52-inch (1.3-m) and 60-inch (1.5-m) fans. A 20-inch (508-mm) and 32-inch (813-mm) extension tube shall be included with 84-inch (2.1-m) fans.
    - d. The fan shall be available with a diameter of 52" (1.3 m), 60" (1.5 m), or 84" (2.1 m).
- C. Airfoils**
1. The fan shall be equipped with three airfoils spanning a total diameter of 52" (1.3 m), 60" (1.5 m), or 84" (2.1 m), as specified by the architect or owner.
  2. Airfoils shall be made of bamboo or aircraft-grade aluminum.
    - a. Bamboo: Airfoils shall be available in Caramel (light brown) or Cocoa (dark brown) as specified by the architect or owner.
    - b. Aluminum: Airfoils shall be available in Black, White, Polished Aluminum, Brushed Copper, Brushed Aluminum, Satin Nickel, or Oil-Rubbed Bronze.
    - c. Airfoils shall be suitable for indoor spaces only.
- D. Motor**
1. The fan shall have an electronically commutated motor (ECM) rated for 100–240 VAC, single-phase.
  2. The motor shall draw 1.41–52 watts depending on the speed at which the fan is operated and if a light is installed.
  3. The fan shall be designed for continuous operation in ambient temperatures of 32–104°F (0–40°C), and a humidity range of 20–90% (non-condensing).
  4. The fan's motor unit and motor unit trim shall be available in the following finishes, as specified by the architect or owner.
    - a. White, black, Satin Nickel, or Oil-Rubbed Bronze
- E. Safety Cable**



1. The fan shall be equipped with a safety cable that provides an additional means of securing the fan assembly to the building structure. The safety cable shall be 1.5 mm in diameter and fabricated of aircraft steel.
  2. Field construction of safety cables is not permitted.
- F. SenseME™ Technology
1. The fan shall be equipped with SenseME Technology for smart automation, and shall be able to wirelessly connect to local Ethernet networks or host a network. The fan's Wi-Fi capability shall permit over-the-air firmware updates.
  2. SenseME Technology control features shall be managed by users via the Haiku mobile app. The Haiku mobile app shall be supported by Android™ and iOS® mobile devices.
  3. Haiku Mobile App Control Modes
    - a. Smart Mode. Alternates between seasonal settings—Smarter Heating and Smarter Cooling—to maintain comfort and maximize energy savings.
      - a. Smarter Cooling. The user sets their ideal temperature, and the fan automatically adjusts to find the most comfortable fan speed.
      - b. Smarter Heating. Automatically recirculates heat by increasing in speed when the user exits the room. When the user reenters the room, the fan slows.
      - c. Smart Thermostat. Automatically signals the fan to switch from Smarter Cooling to Smarter Heating when a connected smart thermostat switches to Cooling or Heating Mode.
    - b. Scheduling. Sets precise schedules for fan control modes.
    - c. Whoosh® Mode. Silently varies fan speed to mimic cooling natural breezes.
    - d. Sleep Mode. Responds to changing conditions to provide customized comfort all night long.
    - e. Rooms. Enables users to group multiple fans in the same space for synchronized operation. Users shall be able to use the Haiku Home app to automate fan and light functions or adjust settings manually.
    - f. Manual Speed Control. Speed settings range from 0 (Off) to 7 (High).
    - g. Manual Light Control. The optional LED light has adjustable brightness and On and Off settings, as well as the ability to be controlled by the motion sensor and scheduling features. For fans with an LED light, see 2.2.H, "LED Light."
  4. Haiku Account. Allows for integrated controls between fans and smart thermostats located on the same Wi-Fi network.
  5. Sensors
    - a. Motion sensor. The fan and light turn off or on to the last enabled speed or brightness when a person leaves or enters the room.
    - b. Temperature and humidity sensor. The fan monitors room temperature and humidity in order to automatically adjust fan speed to reach the user's optimum thermal comfort level.
  6. Display and sound
    - a. Changes to fan settings shall be confirmed with auditory feedback (a beep) and/or visual indication of the active setting.
    - b. The fan mode indicators shall be located on the bottom of the fan and shall be visible from the floor. Indicators shall automatically turn off approximately five seconds after a setting is activated.
    - c. Users shall have the ability to turn off the indicators and auditory feedback.
- G. Remote Control
1. The fan shall be equipped with a compact IR remote control that allows intuitive operation of the fan in the following modes:
    - a. Speeds 0 (Off) through 7 (High).
    - b. Sleep Mode: Pressing the Sleep button on the remote shall activate the user's Haiku Home app Sleep settings or Wake Up settings.
    - c. Timer Mode: In Timer Mode, the fan runs at a set speed until the programmed time period ends.
    - d. Whoosh Mode: Silently varies fan speed to mimic cooling natural breezes.



2. The remote shall control both the fan and light. Light brightness shall be increased or decreased by pressing the Up or Down Light button on the remote, and the light shall be turned on or off by pressing the Light On/Off button.
  3. Each operating mode shall be indicated by a pattern on the fan mode indicators, which shall be located on the bottom of the fan and shall be visible from the floor. All indicators shall automatically turn off approximately five seconds after the last control button is pressed.
  4. The remote shall be 1.2" wide x 3.4" tall x 0.2" thick (30 mm wide x 86 mm tall x 5 mm thick), and shall operate on a CR 2025 3 V lithium battery (included).
- H. LED Light (Optional)
1. The fan shall be equipped with an LED light, as specified by the architect or owner.
  2. The light kit shall include an LED light module, a diffused clear lens and a smoky lens, a lens trim, and mounting screws.
  3. The diffused clear lens shall be installed for maximum light emission. The smoky lens shall be installed for softer light emission.
- I. 0–10 V Module (Optional, Universal Mount fans)
1. The fan shall be equipped with a 0–10 V module, as specified by the architect or owner.
  2. The module shall be compatible with Universal Mount fans.
  3. The module shall be installed in the fan's mounting bracket.
  4. The module shall provide independent control of fan speed and light intensity and shall support daisy chaining for one or up to 10 fans.
  5. The module shall be compatible with any 0–10 V sinking/sourcing dimmer and with most home or building automation systems.

## **PART 3 EXECUTION**

### **3.1 PREPARATION**

- A. The fan location must have an appropriate ceiling-mounted outlet box marked, "Acceptable for Fan Support." If there is not an appropriate outlet box already installed at the location, one must be installed on a ceiling joist or beam and be properly wired. Additional mounting options may be available. Consult the installation guide for additional details.
- B. The fan location must be free from obstacles such as lights, cables, or other building components.
- C. Check the fan location for proper electrical requirements. Consult the installation guide for appropriate circuit requirements.

### **3.2 INSTALLATION**

- A. Install the fan according to the manufacturer's installation guide, which includes acceptable mounting methods.
- B. Required Distances
  1. For 60-inch (1.5-m) and 52-inch (1.3-m) fans, the airfoils must be at least 7 ft (2.1 m) above the floor.
  2. For 84-inch (2.1-m) fans, the airfoils must be at least 8 ft (2.4 m) above the floor.
  3. The airfoils must have at least 2 ft (0.6 m) clearance from all obstructions.
  4. The fan must be within a 30 ft (9.1 m) radius of where the mobile digital device will be used for control. (Line-of-sight obstructions may create a smaller maximum range.)
  5. The fan shall not be located where it will be subjected to rain or continuous wind gusts, or in close proximity to the outputs of HVAC systems or radiant heaters. Consult the installation guide for additional details.
- C. Install and set up the Haiku mobile app according to the manufacturer's instructions.

END OF SECTION