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 and a remote control as manufactured by Haiku® Home.

B. Summary of Work
   1. Installation of the fan, wireless network (optional), 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. 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.
         1) Canada
            a) CSA C22.2 No. 113. Standard for Safety for Fans and Ventilators.
         2) 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.
         1) 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.

2) 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.

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

Item	Period of Coverage
Motor	2 years
Motor controller & LED light	5 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

Item	Period of Coverage
Motor	Lifetime of motor
Motor controller & LED light	5 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.

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.

2.2 HAIKU® L SERIES

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. Quality: The fan shall display good workmanship in all aspects of its construction. Field balancing of the airfoils shall not be necessary.
   3. Colors: Airfoil colors may be selected by the architect or owner as described in 2.2.C, “Airfoils.”

4. Optional Accessories
    a. One of two wall-mounted controllers (in addition to the standard remote control) may be selected at the time of order.
        1) The Haiku Wall Control shall enable SenseME™ Technology for the fan and shall control both the fan and light (on/off and variable speed/brightness).
        2) The L Series Wall Control shall control both the fan and light (on/off and variable speed/brightness).
    b. 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 3rd party 0–10 V dimmer using an industry-standard protocol.

B. Mounting System
1. The fan shall be suitable for flat or sloped ceilings with heights ranging from 8–18 ft (2.4–5.5 m).
2. The fan shall be equipped with a mounting bracket, control box, wiring cover, mounting ball and wedge, lower cover ring and trim, extension tubes, motor hub and LED light assembly, and mounting hardware.
3. A 6.3-inch (160-mm) and 11.3-inch (287-mm) extension tube shall be included with the fan.
4. The fan shall have a diameter of 52” (1.3 m).

C. Airfoils
1. The fan shall be equipped with three airfoils spanning a total diameter of 52” (1.3 m).
2. Airfoils shall be made of hybrid resin.
3. Airfoils shall be available in a black or white finish as specified by the architect or owner.

D. Motor
1. The fan shall have an electronically commutated motor (ECM) rated for 100–125 VAC, single-phase or 200–240 VAC, single-phase.
    a. The 100–125 VAC motor shall draw 2.5–17.7 watts depending on the speed at which the fan is operated.
    b. The 200–240 VAC motor shall draw 4.1–18.6 watts depending on the speed at which the fan is operated.
    c. The LED light shall draw a maximum of 20 watts.
2. The fan shall be damp-rated for use in covered outdoor spaces.
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 black or white as specified by the architect or owner.

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. LED Light
1. The fan shall be equipped with an LED light.
2. A diffused clear lens shall be installed on the LED light for maximum light emission. For fans with a black finish, an optional smoky lens shall be included for softer light emission.

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: Sleep Mode shall reduce the fan speed by one increment every hour until the lowest speed is reached. When the programmed time period ends, the fan automatically turns off. Sleep Mode is only active when Timer mode is used.

1) When SenseME Technology is enabled for the fan, pressing the Sleep button on the remote shall activate the user's Haiku Home app Sleep settings or Wake Up settings. For fans with SenseME Technology, see 2.2.J, "SenseME Technology."

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 at the base of the wiring cover 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 × 3.4" tall × 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. L Series Wall Control (Optional)

1. The fan shall be equipped with a wired L Series Wall Control in addition to the standard remote control, as specified by the architect or owner.

2. The L Series Wall Control shall control both the fan and light. Fan speed shall be increased or decreased by pressing the Up or Down Fan buttons on the wall control, and the fan shall be turned on or off by pressing the Fan On/Off button. Light brightness shall be increased or decreased by pressing the Up or Down Light buttons on the wall control, and the light shall be turned on or off by pressing the Light On/Off button.

I. Haiku Wall Control (Optional)

1. The fan shall be equipped with a wireless Haiku Wall Control in addition to the standard remote control, as specified by the architect or owner.

2. The Haiku Wall Control shall enable SenseME Technology for the fan and shall include temperature, humidity, and motion sensors.

3. A Wi-Fi module shall be included with the Haiku Wall Control. The Wi-Fi module shall be installed in the fan's control box to enable the wall control to communicate wirelessly with the fan.

4. The user shall be able to use the Haiku Home app on their mobile digital device to group the Haiku Wall control with one or more fans for simultaneous control of fan speed, light brightness, and app features.

5. The Haiku Wall Control buttons shall control both the fan and light (on/off and variable speed/brightness).

J. SenseME Technology (Optional)

1. The optional Haiku Wall Control shall enable SenseME Technology for the fan.

2. The Haiku Wall Control shall be able to wirelessly connect to local Ethernet networks or host a network. The wall control's Wi-Fi capability shall permit over-the-air firmware updates for the fan and wall control.

3. SenseME Technology control features shall be managed by users via the Haiku Home app. The Haiku Home app shall be supported by Android™ and iOS® mobile digital devices.

4. Haiku Home App Control Modes

a. Smart Mode. Alternates between seasonal settings—Smarter Heating and Smarter Cooling—to maintain comfort and maximize energy savings.

1) Smarter Cooling. The user sets their ideal temperature, and the fan automatically adjusts to find the most comfortable fan speed.

2) Smarter Heating. Automatically recirculates heat by increasing in speed when the user exits the room. When the user reenters the room, the fan slows.

3) 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 or the Haiku Wall Control 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 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.

5. Haiku Home Account. Allows for integrated controls between fans and smart thermostats located on the same Wi-Fi network.
6. Haiku Wall Control 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 wall control monitors room temperature and humidity in order to automatically adjust fan speed to reach the user's optimum thermal comfort level.
7. 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 at the base of the wiring cover 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.

K. 0–10 V Module (Optional)
1. The fan shall be equipped with a 0–10 V module, as specified by the architect or owner.
2. The module shall be installed in the fan's control box.
3. The module shall provide independent control of fan speed and light intensity and shall support daisy chaining for one or up to 10 fans.
4. 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 and optional wall control according to the manufacturer's installation guide, which includes acceptable mounting methods.
B. Required Distances
1. Airfoils must be at least 7 ft (2.1 m) above the floor.
2. The airfoils must have at least 2 ft (0.6 m) clearance from all obstructions.
3. If SenseME Technology is enabled, 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.)

4. 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. If SenseME Technology is enabled, install and set up the Haiku Home app according to the manufacturer's instructions.

END OF SECTION