Section 23 34 00

HVAC Fans

Part 1 General

1. 1.1 Summary
	1. 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 Big Ass Fans.
	2. 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 Big Ass Fans. 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.
2. 1.2 Related Sections
	1. 21 00 00 Fire Suppression
	2. 23 00 00 Heating, Ventilating, and Air Conditioning (HVAC)
	3. 26 00 00 Electrical
3. 1.3 References
	1. Canadian Standards Association (CSA)
	2. International Organization for Standardization (ISO)
	3. National Electrical Code (NEC)
	4. National Fire Protection Association (NFPA)
	5. Norma Oficial Mexicana (NOM)
	6. Underwriters Laboratories (UL)
	7. Nationally Recognized Testing Laboratory (NRTL)
	8. European Community (CE)
	9. UK Conformity Assessed (UKCA)
4. 1.4 Submittals
	1. Shop Drawings: Drawings detailing product dimensions, weight, and attachment methods
	2. Product Data: Specification sheets on the ceiling-mounted fan, specifying electrical and installation requirements, features and benefits, and controller information
	3. Revit Files: Files provided for architectural design
	4. Product Documentation: The manufacturer shall furnish a copy of all installation, operation, and maintenance instructions for the fan.
	5. Schedule
5. 1.5 Quality assurance
	1. Certifications
		1. Safety
			1. The fan assembly, as a system, shall be Nationally Recognized Testing Laboratory (NRTL)-certified and built pursuant to the guidelines set forth by UL standard 507 and CSA standards 22.2 No. 60335-1 and 22.2 No. 113.
			2. The fan assembly, as a system, shall be CE- and UKCA-compliant.
			3. The fan motor shall be NRTL-certified and built pursuant to the following standards.
				1. Canada

CSA C22.2 No. 100. Standard for Safety for Motors and Generators.

CSA C22.2 No. 77. Standard for Safety for Motors with Inherent Overheating Protection.

* + - * 1. United States

UL 1004-1. Standard for Safety for Rotating Electrical Machines - Part 1 General Requirements.

UL 1004-3. Standard for Safety for Thermally Protected Motors.

UL 1004-7. Standard for Safety for Electronically Protected Motors.

* + 1. Sustainability Certification
			1. Forest Stewardship Council (FSC) certification
			2. ENERGY STAR® certification – ENERGY STAR Most Efficient 2021
	1. Manufacturer Qualifications
		1. The fan and any accessories shall be supplied by Big Ass Fans, which has a minimum of twenty (20) years of product experience.
		2. ISO 9001-compliant
1. 1.6 Delivery, storage, and handling
	1. Deliver product in original, undamaged packaging with identification labels intact. The fan shall be new, free from defects, and factory tested.
	2. The fan and its components must be stored in a safe, dry location until installation.
2. 1.7 Warranty
	1. 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, FOB Lexington, KY), pursuant to the complete terms and conditions of the Big Ass Fans Warranty in accordance to the following schedule:

**Application Period of Coverage**

Residential 5 years

Non-Residential 3 years

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

Part 2 Product

1. 2.1 Manufacturer
	1. Delta T LLC, dba Big Ass Fans, PO Box 11307, Lexington, Kentucky 40575.
	Phone (877) 244-3267. Fax (859) 233-0139. Website: www.bigassfans.com
2. 2.2 Haiku® Indoor
	1. Complete Unit
		1. Regulatory Requirements: The entire fan assembly shall be NRTL-certified and built pursuant to the construction guidelines set forth by UL standard 507 and CSA standards 22.2 No. 60335-1 and 22.2 No. 113.
		2. Sustainability Characteristics: The fan shall possess the ENERGY STAR Most Efficient 2021 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
			1. The Haiku Light Kit, Haiku Uplight, or Haiku with UV-C Technology may be selected at the time of order.

One type of light accessory can be selected for each fan.

The Haiku Uplight and Haiku with UV-C Technology shall be available for Universal Mount fans.

* + - 1. 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 3rd party
			0–10 V dimmer using an industry-standard protocol.
	1. Mounting System
		1. Low Profile Mount
			1. The low profile mount shall be suitable for flat ceilings with heights ranging from 8–10.5 ft
			(2.4–3.2 m).
			2. The fan shall be equipped with a mounting plate, rubber bumpers, mounting brackets, a compact, low-profile motor hub assembly, and mounting hardware.
			3. The fan shall be available with a diameter of 52” (132 cm) or 60” (152 cm).
		2. Universal Mount
			1. The universal mount shall be suitable for flat or sloped ceilings with heights ranging from
			10.5–14+ ft (3.2–4.3+ m).
			2. The fan shall be equipped with a mounting bracket, canopy, mounting ball and wedge, extension tubes, wiring cover, motor hub, and mounting hardware.
			3. A 7-inch (178-mm), 20-inch (508-mm), and 32-inch (813-mm) extension tube shall be included with 52-inch (132-cm) and 60-inch (152-cm) fans. A 20-inch (508-mm) and 32-inch (813-mm) extension tube shall be included with 84-inch (213-cm) fans.
			4. The fan shall be available with a diameter of 52” (132 cm), 60” (152 cm), or 84” (213 cm).
	2. Airfoils
		1. The fan shall be equipped with three airfoils spanning a total diameter of 52” (132 cm), 60” (152 cm), or 84” (213 cm), as specified by the architect or owner.
		2. Airfoils shall be made of bamboo or aircraft-grade aluminum.
			1. Bamboo: Airfoils shall be available in Caramel (light brown) or Cocoa (dark brown) as specified by the architect or owner.
			2. Aluminum: Airfoils shall be available in Black, White, Chrome, Brushed Copper, Brushed Aluminum, Satin Nickel, or Oil-Rubbed Bronze.
			3. Airfoils shall be suitable for indoor spaces only.
	3. 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.
			1. White, Black, Satin Nickel, or Oil-Rubbed Bronze
	4. 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.
	5. 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
			1. Fan Eco. Activate Fan Eco to fully leverage the energy savings from the world's most efficient ceiling fan (applies to 52-inch [132-cm] and 84-inch [213-cm] diameter fans with aluminum blades).
			2. 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.
			3. Scheduling. Sets precise schedules for fan control modes.
			4. Whoosh® Mode. Silently varies fan speed to mimic cooling natural breezes.
			5. Sleep Mode. Responds to changing conditions to provide customized comfort all night long.
			6. Rooms. Enables users to group multiple fans in the same space for synchronized operation. Users shall be able to use the Haiku mobile app to automate fan and light functions or adjust settings manually.
			7. Manual Speed Control. Speed settings range from 0 (Off) to 7 (High).
			8. Manual Light Control. The optional Haiku Light Kit and Haiku Uplight shall have 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, “Haiku Light Kit” or 2.2.I, "Haiku Uplight."
		4. Haiku Account. Allows for integrated controls between fans and smart thermostats located on the same Wi-Fi network.
		5. Sensors
			1. 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.
			2. 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
			1. Changes to fan settings shall be confirmed with auditory feedback (a beep) and/or visual indication of the active setting.
			2. 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.
			3. Users shall have the ability to turn off the indicators and auditory feedback.
	6. 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:
			1. Speeds 0 (Off) through 7 (High).
			2. Sleep Mode: Pressing the Sleep button on the remote shall activate the user’s Haiku mobile app Sleep settings or Wake Up settings.
			3. Timer Mode: In Timer Mode, the fan runs at a set speed until the programmed time period ends.
			4. 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 1.6 in. wide × 5.5 in. tall × 0.9 in. thick (40 mm wide x 140 mm tall x 23 mm thick) and shall operate on two AAA batteries (included).
	7. Haiku Light Kit (Optional)
		1. The fan shall be equipped with the Haiku Light Kit, as specified by the architect or owner.
		2. The light kit shall be installed on the bottom of the fan for downward-directed lighting.
		3. The light kit shall include an LED light module, a diffused clear lens and a smoky lens, a lens trim, and mounting screws.
		4. The diffused clear lens shall be installed for maximum light emission. The smoky lens shall be installed for softer light emission.
		5. The Haiku Light Kit shall not be available for fans with the Haiku Uplight or Haiku with UV-C Technology.
	8. Haiku Uplight (Optional, Universal Mount fans)
		1. The fan shall be equipped with the Haiku Uplight, as specified by the architect or owner.
		2. The Haiku Uplight shall be available for Universal Mount fans.
		3. The Haiku Uplight shall be installed on top of the fan motor hub for upward-directed lighting.
		4. The Haiku Uplight kit shall include an LED light module that shall secure to the fan extension tube with a set screw.
		5. The Haiku Uplight shall not be available for fans with the Haiku Light Kit or Haiku with UV-C Technology.
	9. Haiku with UV-C Technology (Optional, Universal Mount fans)
		1. The fan shall be equipped with a UV-C light, as specified by the architect or owner.
		2. Haiku with UV-C Technology shall be available for Universal Mount fans.
		3. Haiku with UV-C Technology shall be verified zero ozone as tested per UL 867.
		4. The UV-C light shall be installed on top of the fan motor hub and shall emit UV-C light while the fan is spinning.
		5. For safety, the UV-C light shall only be able to be turned on while the fan is spinning.
		6. The UV-C light kit shall include a UV-C LED light module that shall secure to the fan extension tube with a set screw.
		7. Haiku with UV-C Technology shall not be available for fans with the Haiku Light Kit or the Haiku Uplight.
	10. 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

1. 3.1 Preparation
	1. 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.
	2. The fan location must be free from obstacles such as lights, cables, or other building components.
	3. Check the fan location for proper electrical requirements. Consult the installation guide for appropriate circuit requirements.
2. 3.2 Installation
	1. Install the fan according to the manufacturer’s installation guide, which includes acceptable mounting methods.
	2. Required Distances
		1. For 60-inch (152-cm) and 52-inch (132-cm) fans, the airfoils must be at least 7 ft (2.1 m) above the floor.
		2. For 84-inch (213-cm) 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.
	3. Install and set up the Haiku mobile app according to the manufacturer’s instructions.

End of Section