

Installation and Operation Manual

Serenity™ Series

Auto Sensing Everything Bathroom Fan

Serenity Solo Kit Includes:

- (1) 4-inch Exhaust Fan
- (2) 4-inch Pressure Collars
- (1) Fan Mounting Bracket
- (1) Recessed Luminaire (4-inch take off)
- (1) 10W LED bulb
- (4) Hanger Bars
- (1) Grille Set (Back Plate, Grille, Vent Cap)
- (1) Low Voltage Primary Wall Switch (Max,Auto, Off)
- (1) 25 ft CAT5E cable (White)
- (1) 50 ft CAT5E cable (Red)
- (1) Hardware Pack (fan mounting)
- (1) Hardware Pack (luminaire/grille mounting)
- (1) Grille/ Back Plate Installation Templates

Serenity Duet Kit Includes:

- (1) 6-inch Exhaust Fan
- (2) 6-inch Pressure Collars
- (1) Fan Mounting Bracket
- (1) Wye (6x4x4)
- (2) Recessed Luminaire (4-inch take off)
- (2) 10W LED bulb
- (8) Hanger Bars
- (2) Grille Set (Back Plate, Grille, Vent Cap)
- (1) Low Voltage Primary Wall Switch (Max,Auto, Off)
- (1) Low Voltage Secondary Wall Switch (Max,Auto)
- (1) 25 ft CAT5E cable (White)
- (1) 50 ft CAT5E cable (Red)
- (1) 25 ft CAT5E cable (Blue)
- (1) 50 ft CAT5E cable (Black)
- (1) Hardware Pack (fan mounting)
- (2) Hardware Pack (luminaire/grille mounting)
- (2) Grille/ Back Plate Installation Templates



Serenity Duet shown






Technical / Customer Support:

United States Tel.: 800.747.1762

Canada Tel.: 800.565.3548



fantech®
a systemair company

				
Note	Warning / Important note	Information	Technical information	Practical tip



Before installation, servicing or cleaning unit, switch power off at service panel and lock the service disconnect to prevent power from being switched on accidentally. When the service disconnect cannot be locked, securely fasten a prominent warning device, such as a tag, to the service panel.

1. Because this product has rotating parts, safety precautions should be exercised during all phases of installation, operation and maintenance.

2. **CAUTION:** "For General Ventilation Use Only. Do Not Use To Exhaust Hazardous Or Explosive Material and Vapors."

3. Remove unit from package and inspect within 15 days after receipt. If damaged, report damage to carrier. Do Not operate this unit with visible damage to the blower or impeller assembly.

4. **CAUTION:** "This unit has an unguarded impeller. Do not use in locations readily accessible to people or animals".
WEAR HAND PROTECTION AND STAY CLEAR OF SHARP EDGES!

5. Screen guards must be installed within reach of personnel, within (7) feet of the working area, or when advisable for safety.

6. Use only Fantech LED bulb (model PBB10-ES, 10W max)

Introduction

Serenity™ Series is a quiet, energy efficient bathroom exhaust system that takes ventilation to the next level with its built in demand based control features and continuous local or whole building ventilation operating modes.

All operating features and modes can be easily configured to be enabled or disabled as desired. Serenity™ is available in single or dual grille configurations suitable for residential low rise buildings and meet ASHRAE 62.2 indoor air quality standards.

Humidity Tracking

Humidity tracking is a demand feature that continuously monitors the %RH. Serenity™ differentiates itself from other bath fan systems by knowing what the "normal" %RH is at any given time and for any given space. Proper ventilation is then enabled when abnormal humidity conditions are detected. Most other systems have a set %RH that would enable ventilation and then run for a pre-set period of time. Because Serenity™ knows what normal humidity levels should be prior to detecting high humidity, ventilation will continue until humidity levels are back to within normal limits, protecting your property and ensuring comfort.

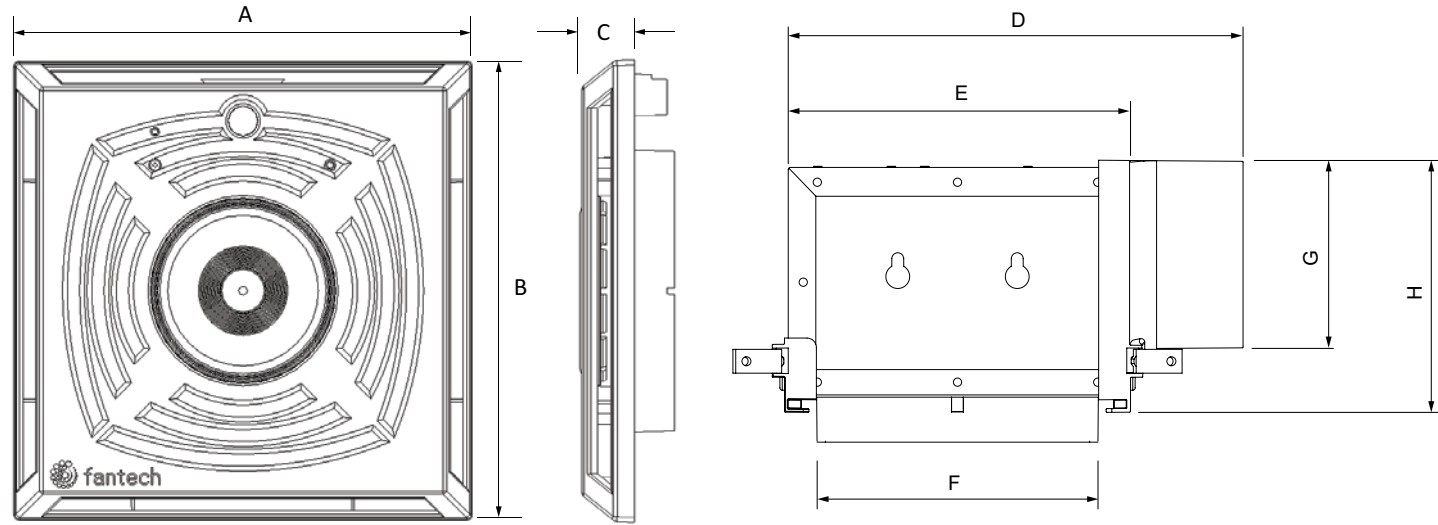
Motion Detection

Motion detection is a demand feature included in the Serenity™ Series that monitors occupancy of the space. After detecting continuous motion for 1 minute, ventilation will automatically be enabled. Ventilation will remain enabled for the duration the room is occupied and then run for a period of time (adjustable) before turning off.

Continuous Ventilation

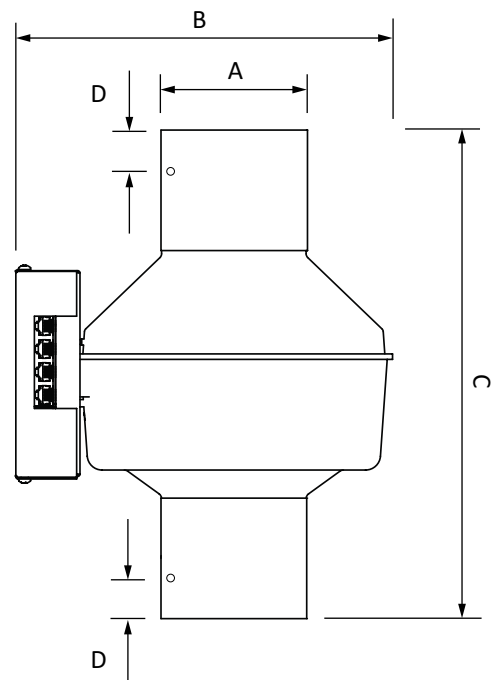
Continuous ventilation is an operating mode that can also be enabled. Whether it's local demand or continuous airflow rates, Serenity™ can be set to suit your life style.

Dimensions



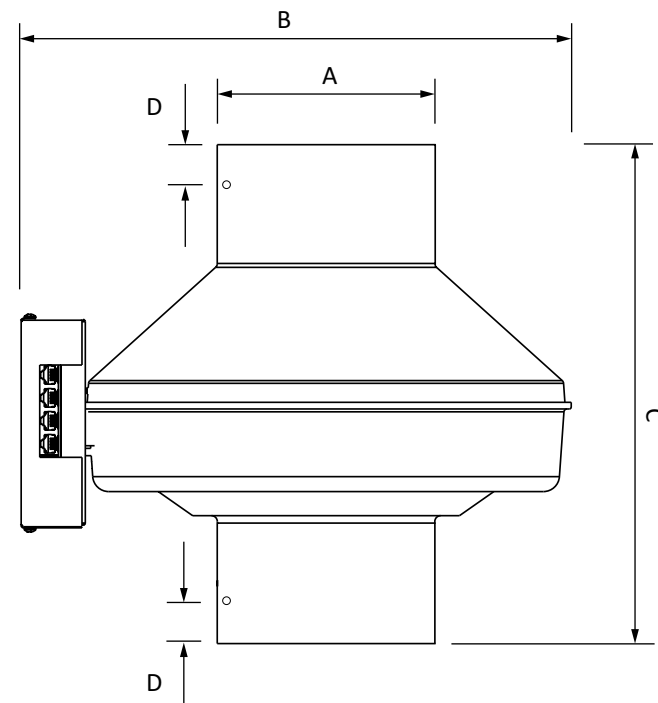
	A	B	C	D	E	F	G	H
Grille	9 3/8 (238)	9 3/8 (238)	1 (25.4)	9 9/16 (243)	7 3/16 (182.5)	5 13/16 (148)	4 (102)	5 5/16 (134)

Dimensions are in inches (mm).



	A	B	C	D
Serenity Solo	4 (102)	10 3/8 (263.5)	13 1/8 (333)	1 5/8 (14.3)

Dimensions are in inches (mm).



	A	B	C	D
Serenity Duet	5 7/8 (149)	15 (381)	13 3/4 (349)	1 5/8 (41)

Dimensions are in inches (mm).

Performance Specification

The performance charts below indicate the maximum delivered airflow with the supplied grilles and fittings in place.

Proper duct design and installation is important for achieving adequate airflow performance.

Chart 1: Serenity Solo Performance

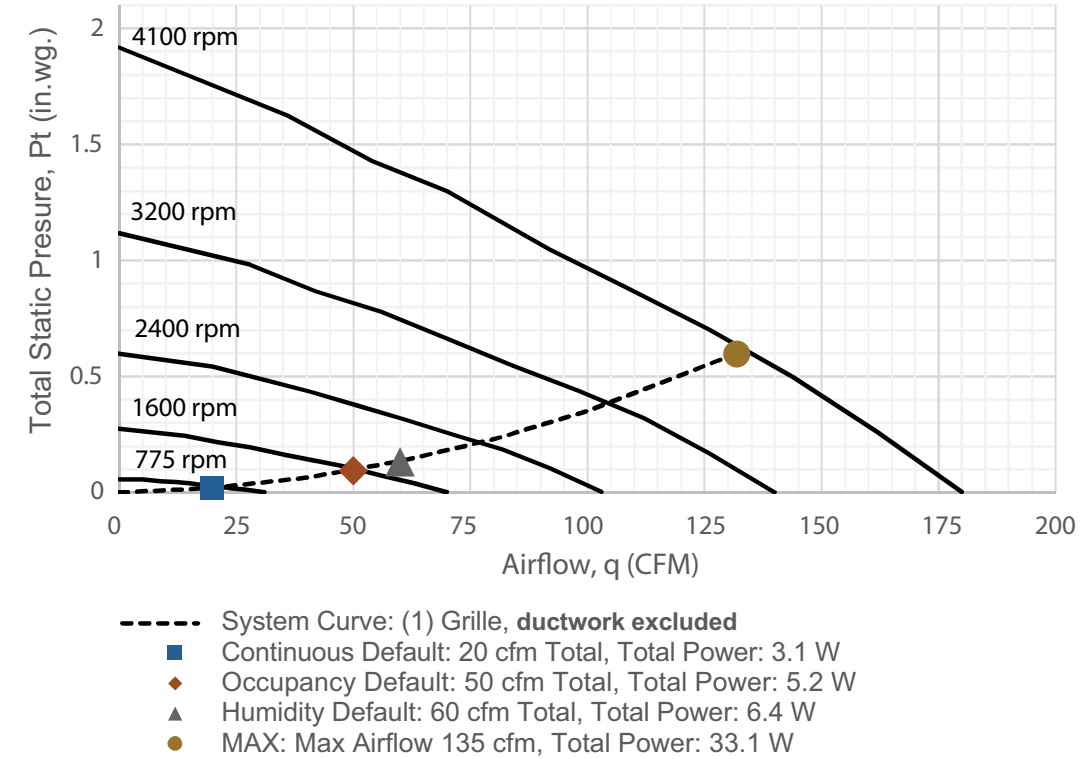
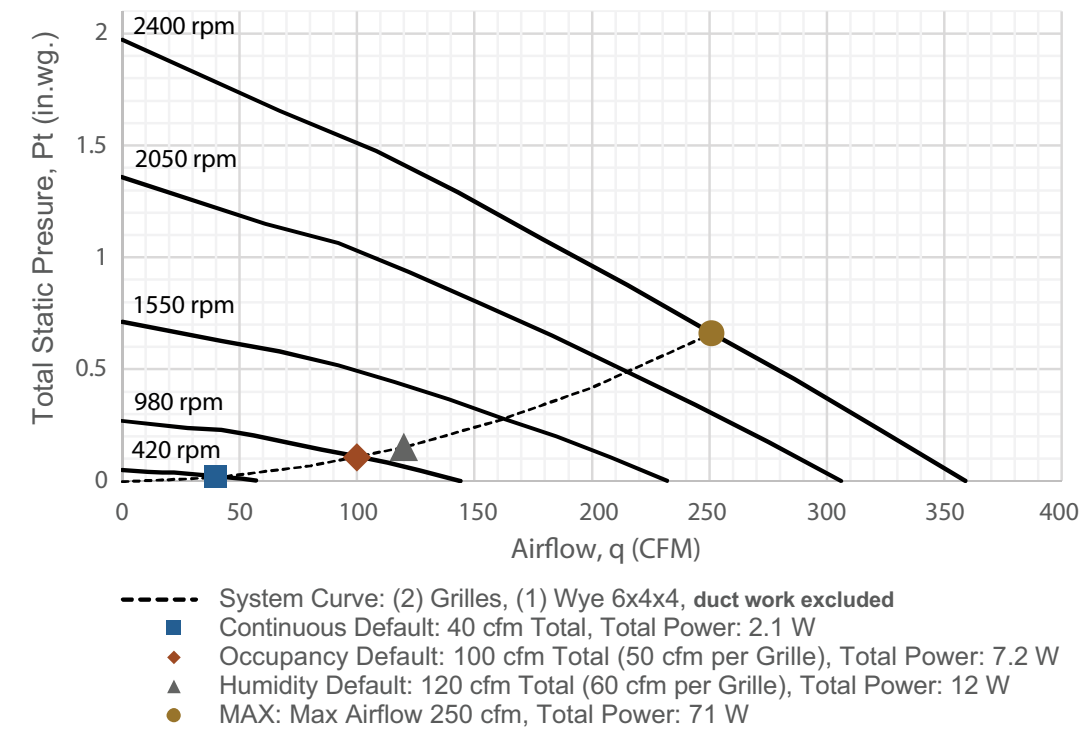


Chart 2: Serenity Duet Performance



Installation

Basic Installation Rules

1. For sound attenuation, at least 4 feet of flex duct is recommended between grille and fan.
2. An effort should be made to keep dual grille installations balanced by maintaining equal duct lengths between both grilles.
3. For accurate airflow measurement, verify that the pressure tubes are connected to the inlet and outlet of the fan, there is a minimum of 3 duct diameters of straight duct at the inlet and outlet of the fan, and the system is completely installed with all ductwork/grilles/vent cap and light in place prior to commissioning.
4. Fan should be permanently energized (120V). A low voltage wall switch is included for fan ON/OFF control.
5. For lighted models, a separate 120V branch circuit is required. Switching/control of the light is not included. Installer must furnish a switch/control suitable for use with the included LED bulb.
6. The ducting from this fan to the outside of the building has a strong effect on the air flow, noise and energy use of the fan. Use the shortest, straightest duct routing possible for best performance, and avoid installing the fan with smaller ducts than recommended. Insulation around the ducts can reduce energy loss and inhibit mold growth. Fans installed with existing ducts may not achieve their rated air flow.
7. DO NOT wrap communication cables around duct work and avoid running communication cables next to line voltage wires.

Grille Installation

1. Plan Location of Inlet Grilles

Based on the bathroom layout and fixtures, plan the location of the ceiling grille(s) for the most effective ventilation. The grille register is UL listed for wet location and can be installed within the shower envelope if desired. If existing construction, cut a 6-inch round hole in the desired location.

Caution: Make sure edge of 6-inch hole is a minimum of 5/8-inch from the edge of the nearest joist.

 Use the provided corrugated template pad for hole and feature location.

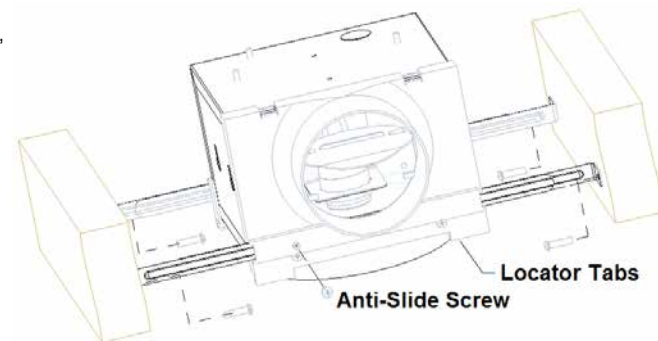
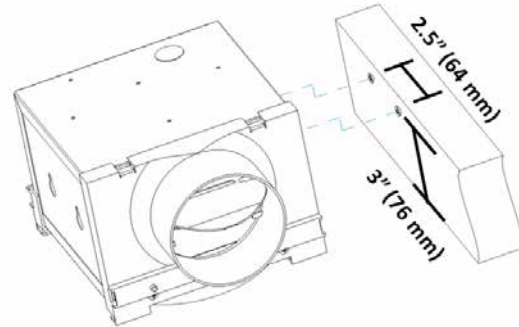
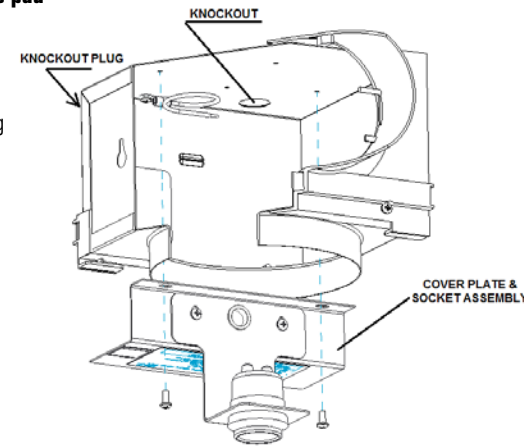
2. Lamp Feature

If using the lamp feature, prepare the housing for wiring by removing the knockout located either on top of the housing or by removing the plug located on the back of the housing. Remove the two screws shown and remove the cover plate and socket assembly from the housing. Attach a strain relief per NEC requirements.

3. Securing the Housing to the ceiling joists

Option A: To fasten the housing directly to the joists, remove the keyhole knockouts located on the side of the housing. The keyholes are spaced 2-1/2 inches on center and located 3-inches from the bottom of the joist. Mark screw location and thread screws into the joist until approximately 1/8-inch of the screw is protruding from the joist. Align screws with keyhole slots in housing. It may be necessary to apply a small amount of force to the inside wall of the housing to allow the screws to properly seat in the keyhole slots.

Option B: To suspend the housing between ceiling joists, install the 4 hanger bars as shown. Housing locator tabs should be resting on the ceiling or flush with the bottom of the ceiling joists if properly installed. Extend the hanger bars out and secure to the ceiling joists using the provided hardware. Once secured, tighten the anti-slide screw to keep hanger and housing in place.



Installation (cont.)

Grille Installation (cont.)

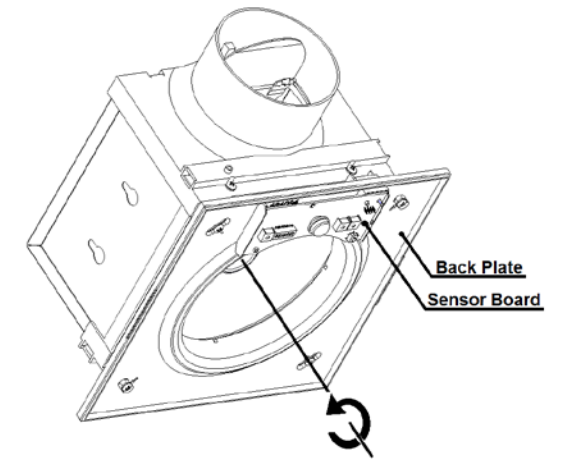
4. Secure Back Plate to Ceiling

With the ceiling or dry wall in place, determine the proper orientation of the back plate so that the occupancy and humidity sensor can be most effective. The back plate can be oriented at 90 degree angles.

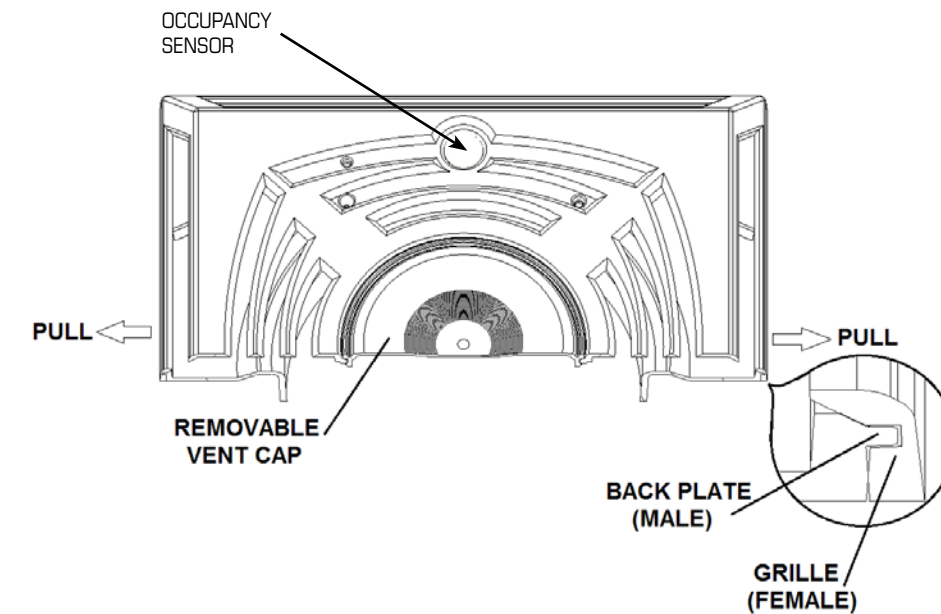
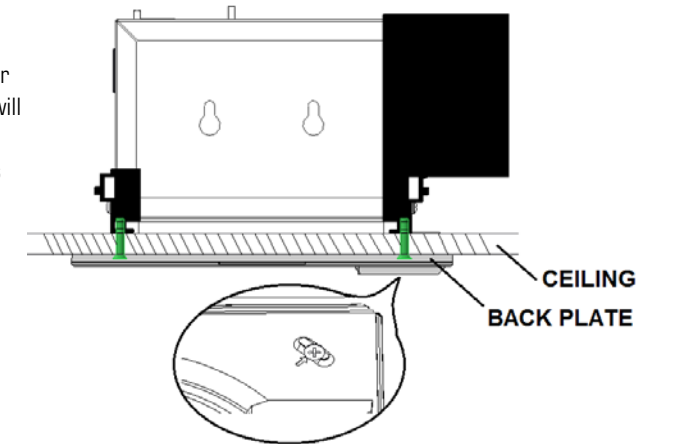
Once orientation is determined, cut a 7/8-inch square hole in the ceiling using the provided corrugated template. Align the inlet collar of the back plate with the inlet collar of the housing and rotate until the RJ45 port, located on the back side of the back plate, fully seats into the 7/8-inch cutout. Using the 4 (1") white screws located in hardware pack 484114, locate the slots in the back plate and drive the screws through the ceiling and into the locator tabs of the housing. Slots are located in the back plate for minor rotational adjustments after installation.


5. Attaching Grille/Detaching Grille

The grille snaps onto the back plate using a locking tab feature built into the grille. To install, align the occupancy lens hole in the grille with the occupancy lens/sensor and push until the grille snaps into the back plate. If installed correctly, the grille will be secured tightly to the ceiling. To remove the grille, locate the sides of the grille opposite of the sensors. Insert fingers into the side slots and gently pull outwards and down. Both sides can be pulled simultaneously or one at a time, whichever is preferred.



Rotate Back Plate 0, 90, 180, or 270 Degree

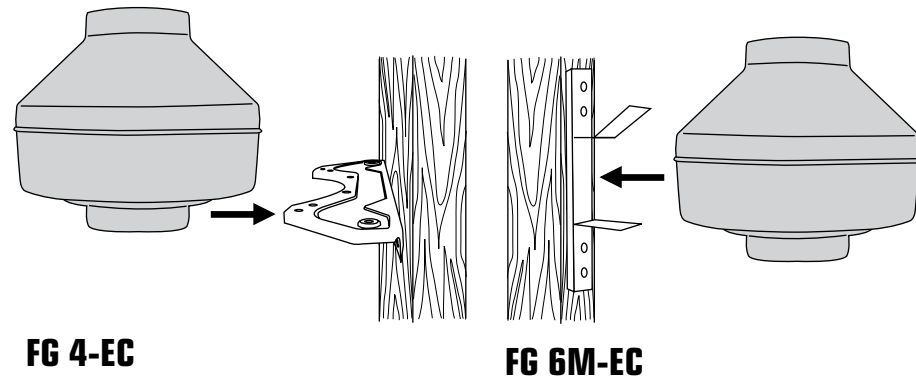


 Each grille comes with a vent cap attached. If the light feature is used, it is recommended to keep the vent cap in place until installation, system commissioning, and system configuration is complete.

Installation (cont.)

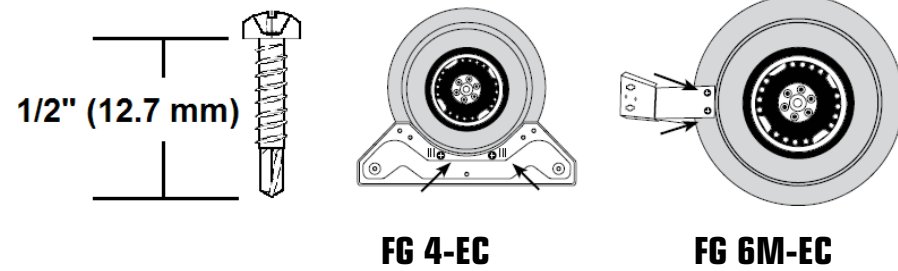
Fan Installation

1. Before installing the fan, it is important to review page 6, Basic Installation Rules.
2. Using the 3/4" long screws located in hardware pack 484115, install the fan mounting bracket to rafter webbing or joist. The fan can be mounted in either the horizontal or vertical position.



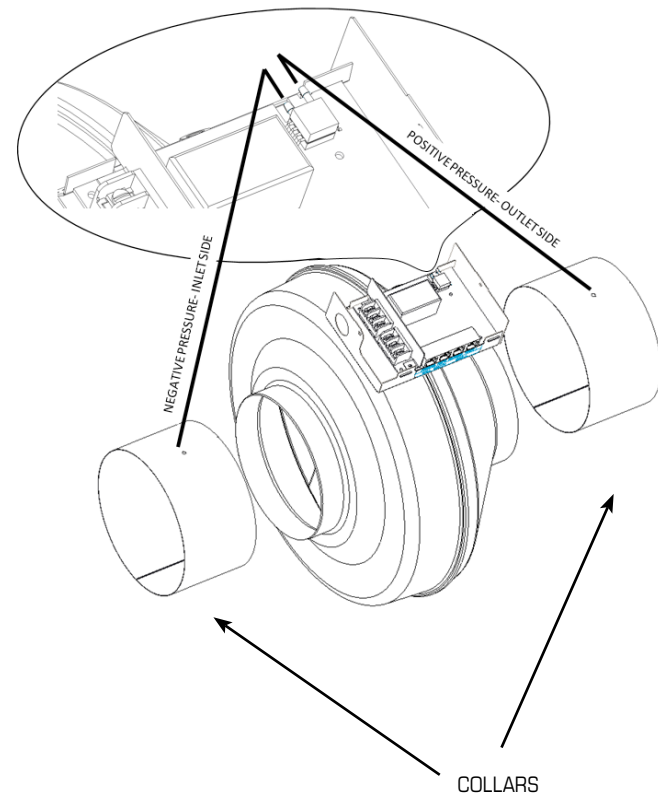
3. Position the fan on the bracket as shown and using the provided 1/2" self-tapping screws, fasten the fan to the bracket.

! Screws longer than 1/2" may cause damage to the motor impeller



4. Align the hole located in the center of each collar with the center of the electrical box. Press the collar onto the fan housing until fully seated.
5. Use the remaining self-tapping screws in hardware pack 484115 to secure the collars to the fan housing (3 screws per collar).
6. Locate the two hoses coming from the electrical box and insert them into the hole located in each collar as shown.
7. Run 120V power to the fan, see wiring details page 9.

✓ Secure the hoses in the collars with a small piece of foil tape to keep them in place during installation.



Installation (cont.)

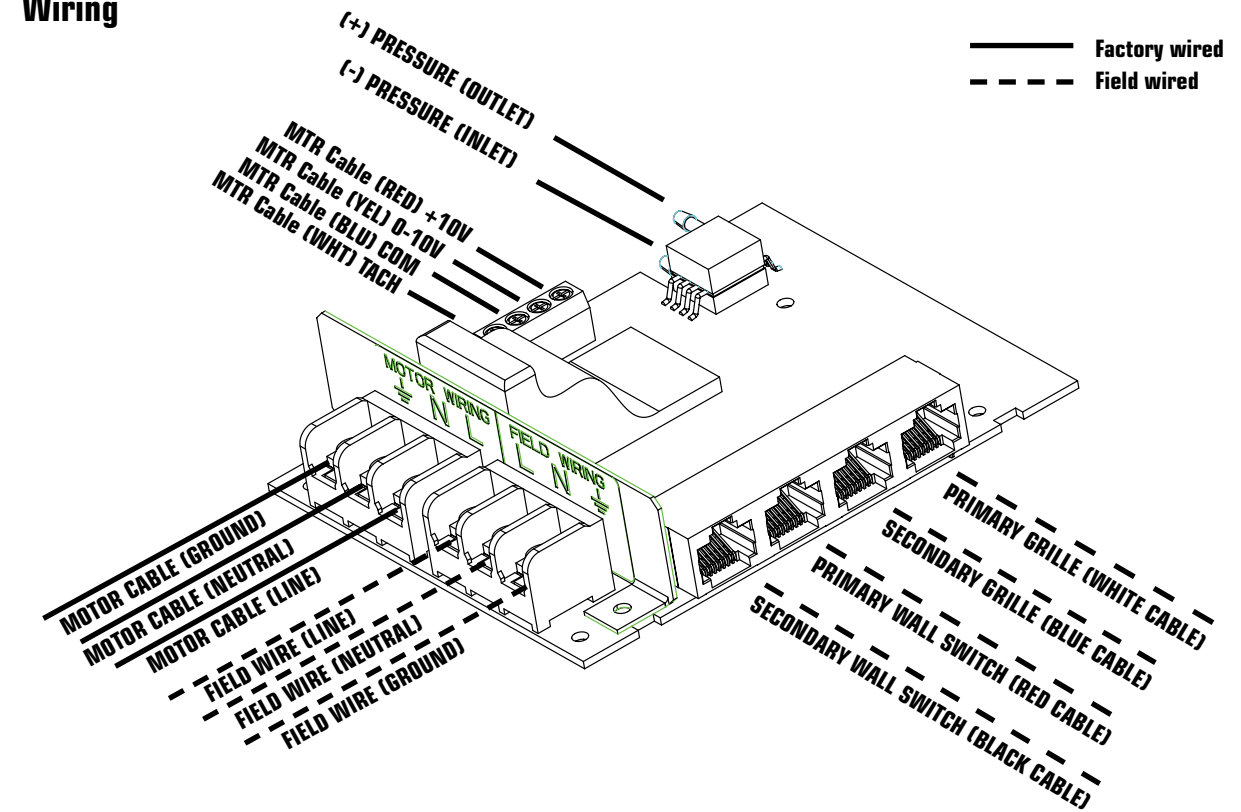
Duct Installation

1. Attach the inner liner of the flex duct to the Grille Housing Collar and seal the connection with tape or mastic per ADC standards.
2. Bring the insulation and outer jacket over the connection and seal it with tape or mastic.
3. Keep bends greater than or equal to one (1) duct diameter bend radius.
4. Keep flex duct stretched tight.
5. Repeat step 1 & 2 for connecting the opposite end to the inline fan.
6. For Ease of Installation, smooth wall galvanized duct can be secured to the grille collar and inlet/outlet of the fan with FC Clamps.

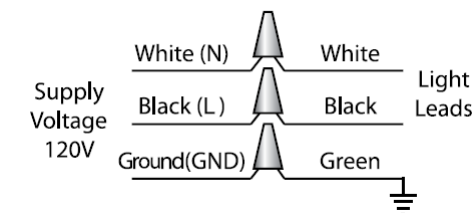
Model	Fan Collar	Grille Housing Collar	Wye
Serenity Solo	4-Inch	4-inch	n/a
Serenity Duet	6-Inch	4-Inch	6 x 4 x 4

Table 1: Recommended Duct Size.

Wiring



Light wiring (optional)



Setup

System Configuration

System configuration is where altitude correction is performed and where the operating modes are selected. Each switch can be configured on the fly at any time during normal operation without repeating the commissioning phase.

The primary grille has control over both Altitude settings and continuous mode. For dual grille systems, the altitude and continuous ventilation switches are disabled on the secondary grille regardless of the switch position.

Feature	Altitude Correction	Humidity Tracking	Occupancy Monitoring	Continuous Ventilation
Primary Grille	✓	✓	✓	✓
Secondary Grille	✗	✓	✓	✗

Table 2: Selectable features

Each grille has its own occupancy and humidity sensor and will operate independently of the other.

For instance, if both grilles have the humidity function enabled, each grille will track its own baseline humidity and call for ventilation as needed.

Altitude Correction (default: 1,000 FT)

Locate the primary grille and remove the grille trim piece. Located on the sensor board is a dip switch terminal. Set the first 3 dip switches using the table below.

Altitude (ft)	Switch 1	Switch 2	Switch 3
Sea Level	Off	Off	Off
1,000 (default)	Off	Off	On
2,000	Off	On	Off
3,000	Off	On	On
4,000	On	Off	Off
5,000	On	Off	On
6,000	On	On	Off
7,000	On	On	On

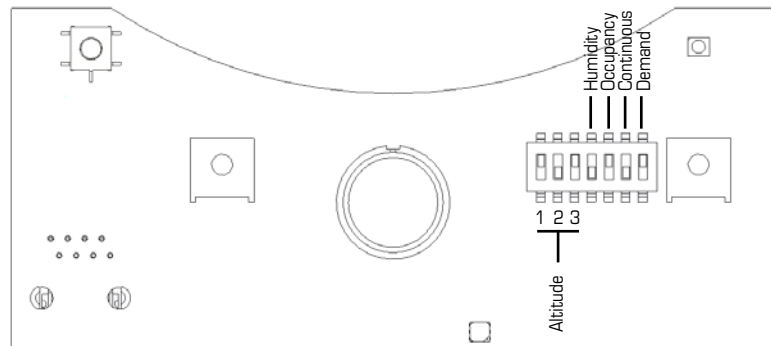


Table 3: Altitude switch positions

Set the desired operating mode(s) for each grille (Humidity, Occupancy, or Continuous Operation). For a dual grille system, configure the secondary grille at this time. Refer to the System Configuration table below for switch positions related to each function.

Modes	Description	Default Settings	Switches (ON)
Demand (Grilles operate independently)	Humidity	Airflow (CFM)= 60 per grille Run time setting: 2	Primary Grille Switches 4 & 7 Secondary Grille Switches 4 & 7
	Occupancy	Activates ventilation after 60 seconds of continuous presence. Ventilation will continue for ___ minutes after exiting the room.	Primary Grille Switches 5 & 7 Secondary Grille Switches 5 & 7
Continuous	Activates continuous ventilation.	Serenity Solo Airflow (CFM)= 20 total Serenity Duet Airflow (CFM)= 40 total	Primary Grille ONLY Switch 6

*WBV: Whole Building Ventilation, See ASHRAE Standard 62.2 for ventilation rate calculation.

Table 4: Default Values & Function Switch Positions

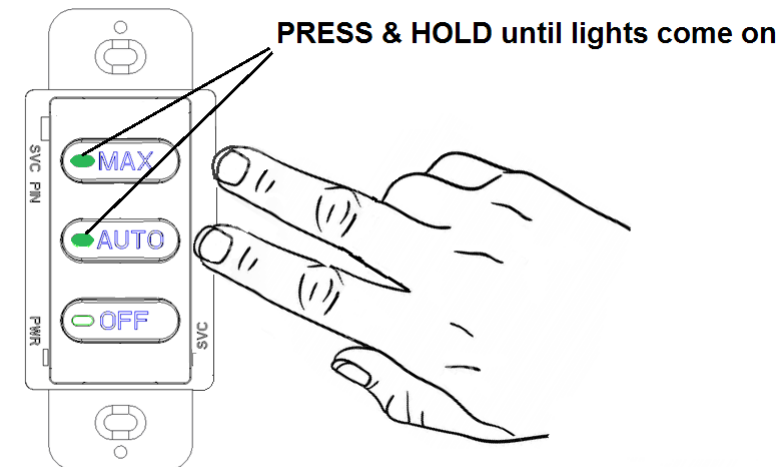
Altitude settings and Continuous mode need only be set on the primary grille, these switches become inactive on the secondary grille regardless of position.

Commissioning

Commissioning mode maps out the system performance and provides a maximum airflow the system can achieve.

It is important that the installation is fully completed prior to entering commissioning mode as this affects system accuracy). Follow the steps below for initiating commissioning mode.

1. Apply power to the fan (120V).
2. Locate the primary wall switch (3 button). The 'OFF' button on the fans primary wall switch will illuminate (solid) to indicate the system has power and has established connection between the Fan, Grille, and Wall Switch.
3. With the primary wall switch in the 'OFF' position, PRESS and HOLD the AUTO and MAX buttons until both button lights illuminate (~5 Sec). Both lights illuminating indicates the commissioning routine has been enabled and will take approximately 2 min to complete. A RED indicator light will energize on the Primary Grille for the duration of the commissioning.
4. Once self commissioning is completed, the ACTION INDICATOR on the primary grille will flash a color sequence indicating the maximum airflow the system can achieve based on the installation.



System Type	Aiflow, cfm	
	20's	5's
Serenity Solo	GREEN	RED
Serenity Duet	BLUE	RED

Table 5: Airflow code

Example:
9 Blue flashes followed by 3 Red flashes indicate that the system recognized it's a Serenity Duet and the maximum airflow is 195 CFM.

5. To exit COMMISSIONING MODE, Press and Hold the OFF BUTTON on the primary wall switch until system turns off (approx. 4 seconds) and then turn the system back on by pressing the 'AUTO' button.
6. To re-commission, simply repeat step 3 of the commissioning process otherwise the system is ready to monitor the environment and operate on the factory default airflow rates and run times.

The 'AUTO' button on the primary wall and secondary wall switches allow the system to determine when it needs to operate based on the functions previously set (humidity, occupancy or continuous).

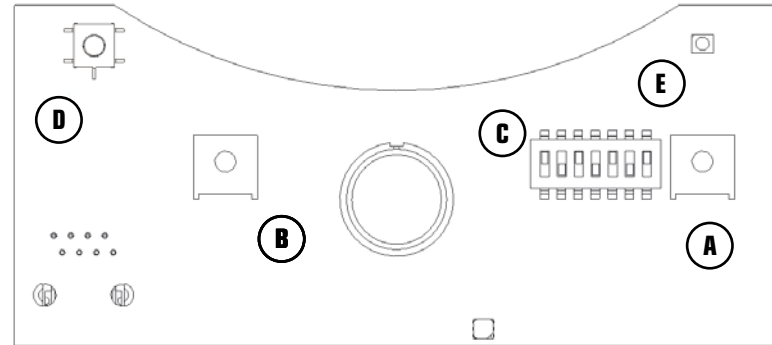
Commissioning

Custom settings

Flexibility is built into the Serenity Series so that each installation could be fine-tuned to satisfy individual needs. Each mode described in the Custom Configuration section has the ability to be adjusted if desired.

Grille Board Layout

- A:** Airflow Adjustment
- B:** Timer or Humidity Adjustment
- C:** Mode Selector (Dip Switch)
- D:** Push Button
- E:** Action Indicator



Modes	Parameters	Range	Default	Action Indicator Flashes
Continuous Local or WBV Demand Humidity Demand Occupancy	Airflow Range	20 CFM to MAX 50 CFM to MAX 50 CFM to MAX	20 CFM 60 CFM 50 CFM	Green or Blue: 20 CFM Red: 5 CFM
Demand Humidity	Run Time*	Scale of 1 to 5 1= shortest 5= longest	2	Red (single flashes)
Demand Occupancy	Run Time	5 - 60 minutes	5 min	Green: 10 min Red: 1 min

Table 6: Adjustable Parameters

* Humidity Run Time:

Compares real time %RH levels to %RH levels prior to the call for ventilation. When real time %RH decreases to within a PERCENTAGE of 'Normal', ventilation will terminate. This PERCENTAGE is user adjustable on a 1 to 5 scale, 1 being the furthest from 'normal' to produce the shortest run time, and 5 being closest to 'normal' to producing the longest run time.

- Place System in 'AUTO' mode on the primary wall switch
- To deviate from the default settings for a particular mode, all other modes must be temporarily disabled on that particular grille. Refer to table 4 in the System Configuration Section for switch positions related to a particular mode.
- With the Grille Trim removed, Press and Hold the Push Button (D) until the Action Indicator (E) turns either a solid Blue or Green and release.
- This manually forces the fan to run at the current airflow (CFM) setting of the selected mode and the Action Indicator begins to flash the airflow. See the table 6 above for the color values.

- To make an airflow adjustment, using a small flat head screw driver, rotate the Airflow Adjustment (A) and pause for the action indicator to flash the airflow at that position.

Clockwise increases airflow, Counter Clockwise decreases airflow.

- Repeat step 5 until the airflow is at the desired position.
- Press and release the grille push button to store the new airflow setting and exit custom mode.
- To make either a humidity or occupancy change, using a small flat head screw driver, rotate the Timer or Humidity Adjustment (B) and pause for the action indicator to flash either the new humidity differential or run timer setting for that position.
- Repeat step 8 until the desired setting is reached.
- Press and release the push button so store the new setting and exit custom mode.

When entering custom mode, airflow is always initially indicated on the action indicator

This step can also be used to demonstrate to a building inspector the air flow rate prescribed for each of the operating modes!

To make an airflow adjustment go to step 5. To make either a Humidity run time or Occupancy run time adjustment go to step 8.

Operation

Wall Switch	Action	Wall Switch Action Button Indicator
Off	• Turn System Off (Press & Hold 4 Seconds)	Solid
Auto	• Operates based on grille configuration • Continuous Mode • Fan Running-Demand Mode (Humidity and/or Occupancy) • Fan Not Running- Demand Mode (Humidity and/or Occupancy)	- ON (Constant) ON with blink ON (Constant)
Max	• Produces maximum ventilation for a period of 10 min • Defaults back to Auto Mode • Max Mode can be terminated early by selecting the Auto button	ON (Constant)

Table 7: Adjustable Parameters

Troubleshooting

Indicator	Fault	Solution
1 Flash	Primary Grille not connected	Check Low Voltage connection at the grille and at the fan
2 Flash	Fan Control too hot or too cold	To protect the fan controls, it is recommended ambient temperature around the fan be below 140°F.
3 Flash	Primary Grille connected, but not communicating	Replace Grille Board
4 Flash	Secondary Grille connected, but not communicating	Replace Grille Board
5 Flash	Fan Run Error- No RPM detected	Check motor tach wire on fan board (white wire)

Table 8: Primary Wall Switch 'OFF BUTTON' Fault Indicator

Notes

Notes

Fantech reserves the right to make technical changes.
For updated documentation please refer to www.fantech.net

Fantech®