

## Broan SmartSense® Intelligent Ventilation System

# READ AND SAVE THESE INSTRUCTIONS

### WARNING



**TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS, OBSERVE THE FOLLOWING:**

1. Use this unit only in the manner intended by the manufacturer. If you have questions, contact the manufacturer at the address or telephone number listed in the warranty.
2. Before servicing or cleaning unit, switch power off at service panel and lock the service disconnecting means to prevent power from being switched on accidentally. When the service disconnecting means cannot be locked, securely fasten a prominent warning device, such as a tag, to the service panel.
3. Installation work and electrical wiring must be done by a qualified person(s) in accordance with all applicable codes and standards, including fire-rated construction codes and standards.
4. Sufficient air is needed for proper combustion and exhausting of gases through the flue (chimney) of fuel burning equipment to prevent backdrafting. Follow the heating equipment manufacturer's guideline and safety standards such as those published by the National Fire Protection Association (NFPA), and the American Society for Heating, Refrigeration and Air Conditioning Engineers (ASHRAE), and the local code authorities.
5. When cutting or drilling into wall or ceiling, do not damage electrical wiring and other hidden utilities.
6. This unit must be grounded.
7. Do not connect this product as a load on a fan speed control or light dimmer.
8. Read and understand entire instructions before proceeding with installation.

### WARRANTY

#### BROAN-NUTONE ONE YEAR LIMITED WARRANTY

Broan-NuTone warrants to the original consumer purchaser of its products that such products will be free from defects in materials or workmanship for a period of one year from the date of original purchase. THERE ARE NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

During this one-year period, Broan-NuTone will, at its option, repair or replace, without charge, any product or part which is found to be defective under normal use and service.

THIS WARRANTY DOES NOT EXTEND TO FLUORESCENT LAMP STARTERS, TUBES, AND FUSES. This warranty does not cover (a) normal maintenance and service or (b) any products or parts which have been subject to misuse, negligence, accident, improper maintenance or repair (other than by Broan-NuTone), faulty installation or installation contrary to recommended installation instructions.

The duration of an implied warranty is limited to the one-year period as specified for the express warranty. Some states do not allow limitation on how long an implied warranty lasts, so the above limitation may not apply to you.

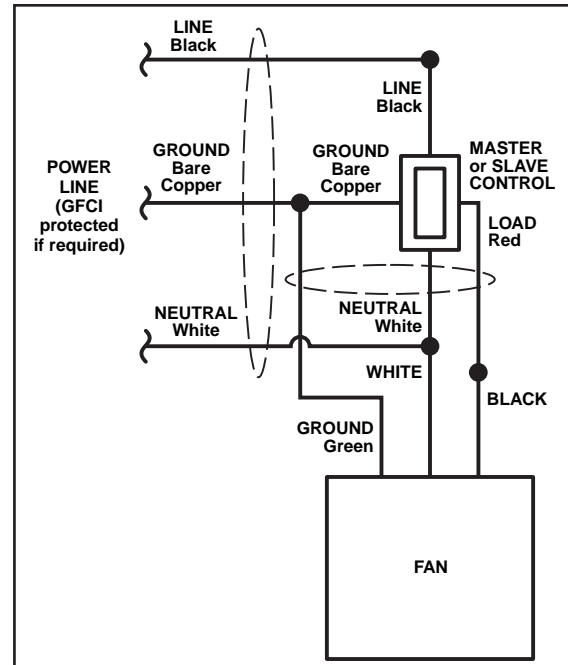
BROAN-NUTONE'S OBLIGATION TO REPAIR OR REPLACE, AT BROAN-NUTONE'S OPTION, SHALL BE THE PURCHASER'S SOLE AND EXCLUSIVE REMEDY UNDER THIS WARRANTY. BROAN-NUTONE SHALL NOT BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES ARISING OUT OF OR IN CONNECTION WITH PRODUCT USE OR PERFORMANCE. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state. This warranty supersedes all prior warranties.

To qualify for warranty service, you must (a) notify Broan-NuTone at the address or telephone number below, (b) give the model number and part identification and (c) describe the nature of any defect in the product or part. At the time of requesting warranty service, you must present evidence of the original purchase date.

Broan-NuTone LLC Hartford, Wisconsin www.broan.com 800-558-1711

### INSTALLATION



Install controls and wire them as shown. Use following guidelines:

- **IMPORTANT:**  
 QTXE080 Ultra Silent™ fan must be wired to SMSC080 SmartSense® control.  
 QTXE110 Ultra Silent™ fan must be wired to SMSC110 SmartSense® control.
- Use minimum 75 °C rated electrical wiring.
- Except for required neutral wire, these controls install like normal switches. Make sure electrician knows each control location must have a neutral wire. Neutral wire at switch locations may be code requirement or regular practice in installation municipality; but unless explicitly specified, electrician might not install it.
- Specify deep device electrical boxes where controls will be installed. These controls fit in most North American electrical boxes; however, deep boxes provide extra working space which eases installation. Labor cost savings can offset higher box costs, which is usually less than a dollar over standard depth boxes. Use boxes that have 18 cu. in. minimum volume and are at least 1-1/2 in. deep.
- All controls must be grounded using attached ground wire.

## CONTROL OPERATION

### HOW SYSTEM WORKS

Broan SmartSense® system is design to provide recommended ventilation for desirable indoor air quality. Related ventilation requirements of \*ANSI/ASHRAE Standard 62, “Ventilation for Acceptable Indoor Air Quality” are fulfilled when this system is installed accordingly. Ventilation level, which is based on home square footage and number of bedrooms, is easily set during installation. Power outages do not affect settings, since they are stored in power independent (nonvolatile) memory. Energy usage is optimized by monitoring fan on-time and adjusting automatic ventilation as needed. Indoor air quality is provided 24-hours a day, 7-days a week.

A single Broan SmartSense® system is powerful enough to fulfill ventilation rates for larger homes; however, it is recommended to use multiple installations for homes with multiple bathrooms. Multiple installations provide distributed ventilation throughout the home. Multiple installations are linked and communicate through home’s normal power circuits to form an indoor air quality network. In typical multiple installations, Master control is located in master bathroom. Broan and Best by Broan LinkLogic™ enabled range hoods and LinkLogic™ enabled electric dampers can be linked with SmartSense® so their indoor air quality ventilation contribution is included.

Additional features, which are turned off at factory, include Vacation, Disabled, Automatic-Off, and Delayed-Off modes. Vacation mode temporarily disables system until Master fan is manually turned on. Disabled mode removes fan from automatic ventilation usage. Disabled mode does not affect manual operation and its ventilation is credited toward system level requirement, but Broan SmartSense® will not turn it on for automatic ventilation.

If fan is manually left on, Automatic-Off turns it off after 60-minutes. Delayed-Off turns fan off after 20-minutes from when Off paddle is pressed. Fan can be immediately turned off by pressing Off paddle twice.

\* American National Standards Institute / American Society of Heating, Refrigerating and Air-Conditioning Engineers

### HOW LED WORKS

LED works differently in Run and Program/Feature Selection modes.

**Run Mode:** LED is off when fan is off. LED is on when fan is on manual ventilation; turned on by pressing On paddle. LED turns on briefly every second (fast-blink) when fan is on automatic ventilation; turned on by Broan SmartSense®.

**Program/Feature Selection Mode:** LED turns on and off every second (slow-blink) when system is in Program or Feature Selection mode. LED is off when Feature associated with pressed paddle is off. LED is on when Feature associated with pressed paddle is on.

### INDOOR AIR QUALITY NETWORK

A single Broan SmartSense® system is powerful enough to fulfill ventilation rates for larger homes; however, it is recommended to use multiple installations for homes with multiple bathrooms. Multiple installations provide distributed ventilation throughout the home.

Multiple installations communicate through a home’s electrical power circuits to form an indoor air quality network. Communication pathways are called links. A phase coupler is required if multiple installations are connected to both electrical power phases.

If multiple installations are connected to both electrical power phases, a phase couple is required. Have an electrician install an SMSCPLR Broan SmartSense® Phase Coupler near circuit breaker panel.

Individual systems in a multiple installation home can operate independently; although, it is recommended to link multiple installations as an indoor air quality network. If single system is installed or independent system operation is desired, proceed with “How To Set System Level” section.

One Broan SmartSense® control is selected as system Master during set up. Any control can be selected as system Master, but typically master bathroom control is chosen. All controls are factory set as system Masters; therefore, installations will operate as independent systems at factory set system level after installation if following set up is not done.

One Master control can link up to 10 Broan SmartSense® and LinkLogic™ devices. SmartSense® controls that are linked to Master control are called Slaves.

### HOW TO LINK SMARTSENSE® SYSTEM

1. Unless another control is designated and clearly marked on frame, under decorative plate, or documented on this instruction sheet as Master control, go to master bathroom control.

2. Put Master control in Program mode; press and hold SET button for 3-seconds and then release it.

Note: In order to help with single person installation, Master control will wait 6-minutes in Program mode for Slave link.

3. LED should be turning on and off every second (slow-blink); if it isn’t then repeat step 2.

4. Go to first control to link as a Slave.

5. Press and hold SET button until fan turns on. If fan doesn’t turn on in less than 5-seconds, make sure Master is still in Program mode; which is indicated with LED slow-blink.

Note: At same time Slave turns on, Master fan turns on. Master fan should turn off automatically in less than 15-seconds.

6. Release Slave’s SET button.

7. Press Slave’s Off paddle to manually turn fan off.

8. If there are more Slave installations then go to next control and repeat steps 5 through 8; otherwise continue with next step.

Note: In order to help with single person installation, Master control will remain in Program mode for 6-minutes after last Slave is linked.

9. When all Slaves are linked, exit Master Program mode; go to Master control, press and release SET button.

10. Master fan and LED turn on for 1 to 2-seconds and then turn off; this action confirms Program mode exit.

11. If any aforementioned fan and LED actions don’t transpire as described, repeat process.

## HOW TO SET SYSTEM LEVEL

Installer, homeowner, or building science expert may adjust Broan SmartSense® ventilation system level.

1. System Level is only set in Master control. If home has more than one installation then locate Master control; it is usually in master bathroom or it should be clearly marked or documented.
2. Circle, mark or highlight System Level in Table A using home's square footage and number of bedrooms.  
Note: Building science experts may calculate different rate based on air infiltration measurements.
3. Circle, mark or highlight same System Level in Table B.
4. If home's System Level is 30 then next steps are not necessary, since System Level is set at factory to 30.
5. Put Master control in Program mode; press and hold SET button for 3-seconds and then release it.
6. LED should be turning on and off every second (slow-blink); if it is not then repeat step 5.
7. Press and release (tap) On paddle number of times from Table B. If you tap On paddle too many times, tap Off paddle and System Level will be reduced once for each Off paddle tap.  
In order to reset System Level to 30, immediately after entering Program mode (Steps 5-6), tap On paddle only once and then tap Off paddle only once.  
If you lose On paddle counts, tap Off paddle 9 times or more then tap On paddle twice; System Level will be at 30; proceed with On paddle taps from Table B.
8. Exit Program mode; press and release SET button.
9. After exiting Program mode, LED will fast-blink a number of times.  
LED will fast-blink the same number of times in three sets with a slight pause in between each set.
10. Count number of times LED fast-blinks in a set.
11. Compare number of times LED fast-blinks in a set to number for System Level in Table B.
12. If they are the same then System Level is set accordingly; otherwise, re-adjust System Level starting with step 5.

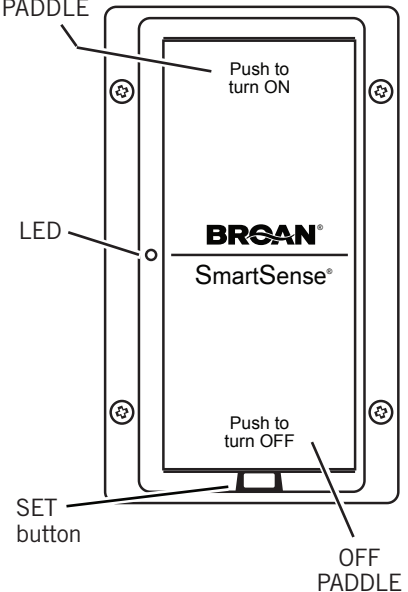
TABLE A

Floor Area (ft²)	Bedrooms				
	0 - 1	2 - 3	4 - 5	6 - 7	> 7
≤ 1500	30	45	60	75	90
1501 - 3000	45	60	75	90	105
3001 - 4500	60	75	90	105	120
4501 - 6000	75	90	105	120	135
6001 - 7500	90	105	120	135	150
> 7500	105	120	135	150	165

TABLE B

System Level	ON Taps	Fast Blinks
165	9	11
150	8	10
135	7	9
120	6	8
105	5	7
90	4	6
75	3	5
60	2	4
45	1	3
30	ON & OFF or OFF 9x & ON 2x	2

ON PADDLE



## FEATURE SELECTIONS

**Vacation Mode:** Used only with Master control. Temporarily disables Broan SmartSense® system. Master control will not automatically turn on its fan or any other system fan. After Feature Selection mode exit, Vacation mode is cancelled when Master control On paddle is pressed.

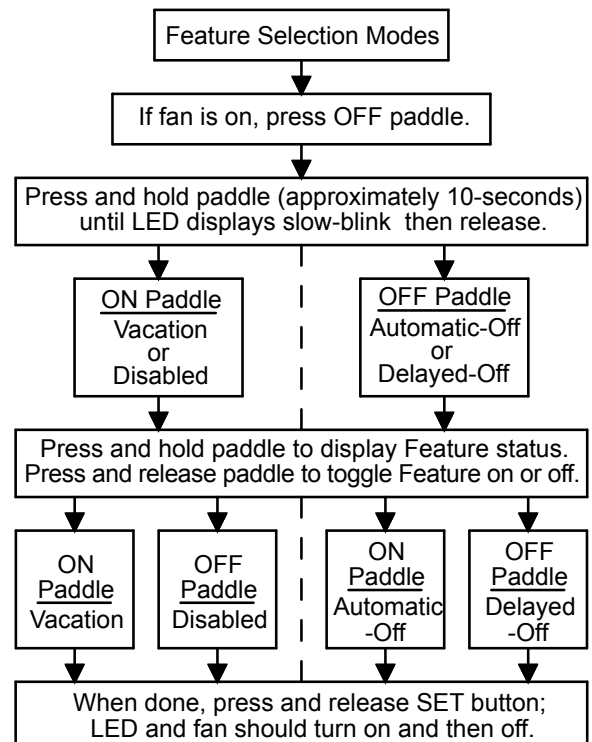
**Disabled Mode:** Excludes fan from automatic ventilation usage. Does not affect manual operation and its ventilation is credited toward system level accumulation. Master control will not turn it on for automatic ventilation requirement fulfillment. If Master control is put in Disabled mode, it will not turn on any fans for automatic ventilation and recommended indoor air quality ventilation level is not assured.

**Automatic-Off:** Automatically turns fan off 60-minutes after it was manually turned on.

**Delayed-Off:** Turns fan off 20-minutes after Off paddle was pressed once. In order to turn fan off immediately, press Off paddle twice.

## HOW TO NAVIGATE FEATURE SELECTION MODE

Refer to diagram. First, make sure fan and LED are off by pressing and releasing Off paddle. Vacation/Disabled Feature Selection mode entry is accomplished by pressing On paddle until LED turns on and off every second (slow-blink). Automatic-Off/Delayed-Off Feature Selection mode entry is accomplished using same method with Off paddle. Once either Feature Selection mode is entered, pressing and holding associated paddle displays Feature's status using LED. Press and release associated paddle to toggle feature on or off. When finished, press and release SET button to exit Feature



Selection mode. Fan and LED will turn on for one to two seconds and then turn off.

1. Make sure fan and LED are off; press and release Off paddle.
2. Put control in Feature Selection mode; press and hold On or Off paddle (approximately 10-seconds) until LED turns on and off every second (slow-blink).
3. Release paddle.
4. Press and hold On or Off paddle with Feature associated; Feature status is displayed when LED is steady. Feature is off if LED is off. Feature is on if LED is on.
5. Release paddle and LED returns to slow-blink.
6. Press and release paddle to toggle Feature on or off.
7. Check Feature status by repeating steps 4 and 5.
8. When done with Feature Selection mode, press and release SET button.
9. Fan and LED turn on for 1 to 2-seconds and then turn off; this action confirms new setting is stored and Feature Selection mode exit.  
Feature Selection mode will automatically exit if any paddle is not pressed within 3-minutes.

### HOW TO LINK TO OTHER INSTEON™ (NON-LINKLOGIC™) DEVICES

SmartSense® controls can turn other INSTEON™ enabled devices on and off and other INSTEON™ devices can turn SmartSense® controls on and off.

1. Put controller device in link mode; refer to device's installation instructions.  
If SmartSense control is selected as controller then push and hold On paddle (approximately 10-seconds) until LED turns on and off every second (slow-blink). Release On paddle.
2. Go to controlled device and create link according to device's installation instructions. For SmartSense control, press and hold SET button. Continue holding SET button for 3-seconds then release it. Within 2-seconds, fan and LED turn on; stay on for 1 to 2-seconds and then turn off.
3. If devices and/or controls do not respond as described, repeat process beginning with step 1.

### HOW TO REMOVE SMARTSENSE®, LINKLOGIC™, AND INSTEON™ INDIVIDUAL LINKS

Links are two-way communication pathways between devices. It is important to remove both ends of a link. The following "Remove" procedure accomplishes this task.

1. On Master control, push and hold Off paddle.
2. Wait (approximately 10-seconds) until LED turns on and off every second (slow-blink).
3. Release Off paddle.
4. On other control, press and hold SET button.  
Within 2-seconds, fan and LED turn on; stay on for 1 to 2-seconds and then turn off.
5. Continue holding SET button for 3-seconds then release it.  
Within 2-seconds, fan and LED turn on; stay on for 1 to 2-seconds and then turn off.
6. If control does not respond as described, repeat process beginning with step 1.

### HOW TO CHANGE CONTROL COLOR

An almond paddle/frame assembly is included.

1. Use magnetic #1 Philips screwdriver and remove (4) screws from white paddle/frame.

2. Remove white paddle/frame from control.  
Caution: Do not touch or put anything inside control housing; control damage may result.
3. Place almond paddle/frame on control.
4. Replace (4) screws and lightly tighten them.  
Caution: Do not over tighten screws; frame may crack.

### RESTORING POWER TO CONTROL

Control stores all settings in nonvolatile memory; so they are not lost when power is removed. After power loss, control will automatically return fan to its state (on or off) before power was interrupted.

### HOW TO RESTORE CONTROL FACTORY SETTINGS

This "Restore" procedure clears control's nonvolatile memory. It returns control to how it was shipped from factory. All Feature selections are turned off and all links are removed. "Restore" procedure should be used cautiously; usually it is used only when first setting up a system or for single unit installations.

Links are unique for each device pair. If one end of the link is removed, it is important to remove the other end. "Restore" only removes links within its control. Other link-end needs to be removed in other device.

CAUTION: Before continuing, choose one of following options: (a) remove links to target "Restore" control using procedure described in "How To Remove Specific Individual Links" or (b) "Restore" all controls in system and "Restore" all other LinkLogic™ and INSTEON™ devices; then links need to be reestablished using "How To Link SmartSense® System" procedure.

1. Remove power from control's microcontroller; either: (a) turn circuit breaker off or (b) pull SET button until it is fully extended.
2. Wait 15-seconds.
3. Press and hold SET button.
4. For option (1a), turn circuit breaker on while SET button is pressed. For option (1b), push in and press SET button in one motion.
5. Continue holding SET button for 3-seconds after power is applied then release it.  
Within 2-seconds, fan and LED turn on; stay on for 1 to 2-seconds and then turn off.
6. If control does not respond as described, start process over with step 1.

