Panasonic is the premier manufacturer of powerful, energy-efficient ventilation fans that quietly exhaust unhealthy, unpleasant or moist air from your home or business. Contractors, builders, architects and homeowners rely on us for our quality and for the wide array of solutions we offer—from bathroom fans with both motion and humidity sensors to remote in-line fans. Panasonic is also proud to be recognized by the EPA for the third consecutive year, garnering their most prestigious ENERGY STAR® honor, the Sustained Excellence 2012 Award.

The idea of delivering a breath of fresh air to our customers is consistent with a simple mission statement eloquently articulated by our founder nearly a century ago: Panasonic serves society with high-quality products that make peoples’ everyday lives more healthy, productive and enjoyable. This guiding principle continues to drive everything we do and is what we call “ideas for life.”

Fresh air driven by fresh ideas. Breathe new life into your environment with Panasonic Ventilation.

Panasonic Advanced Ventilation Solutions


Quiet Solution Retrofit Solution ASHRAE 62.2 Compliance Solution Multi-Family Solution Balanced Air Solution Cal Green Compliance Solution Design Solution
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Formaldehyde and these types of gases—Volatile Organic Compounds (VOCs)—can build up in the kitchen, bathroom, utility room, garage, and home office. This secondary process serves to exhaust these problem areas quickly, before bad air can spread throughout the house. Just as important as continuous ventilation, intermittent ventilation complements the effort to improve indoor air quality.

Both systems exhaust pollutants from the air, but intermittent ventilation is more effective in concentrated areas.

**Ways to improve indoor air quality**

The first step to improve indoor air quality is to reduce or remove the source of the pollutants.

Unfortunately, indoor pollutants are virtually impossible to eliminate completely, creating the need for a second step to improve indoor air quality—mechanical ventilation. Mechanical ventilation is used to remove stale air and replace it with fresh outside air. Two widely used methods in today’s building industry are continuous and intermittent ventilation.

**Continuous Ventilation**

Sometimes referred to as general, central, whole-house or primary ventilation, continuous ventilation is used to remove stale air and provide fresh air on a slow, continuous basis. A well-designed airtight home can generally use low volume continuous ventilation.

**Intermittent Ventilation**

Sometimes referred to as spot, local or secondary ventilation, intermittent ventilation is used to capture and remove pollutants quickly at the source. Pockets of excessive moisture and pollutants can build up in the bathroom, kitchen, utility room, garage and home office. This secondary process serves to exhaust these problem areas quickly, before bad air can spread throughout the house. Just as important as continuous ventilation, intermittent ventilation complements the effort to improve indoor air quality.

Both systems exhaust pollutants from the air, but intermittent ventilation is more effective in concentrated areas.

**Sizing Information and Instructions**

Properly sized ventilation in airtight homes helps to ensure healthy indoor air quality. Both intermittent (spot) and continuous (whole house) ventilation should be considered. Intermittent ventilation is used to exhaust sources of moisture and odors, while continuous ventilation is used to remove accumulated indoor air pollutants.

**Continuous (whole house) ventilation:**

Most building codes have adopted the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Standard 62. The most current version, ASHRAE 62.2-2010, calls for continuous mechanical ventilation as shown below.

I. Bathrooms - 8 ACH or 1 CFM/sq ft
II. Kitchens - 8 ACH or 1 CFM/sq ft
III. Other Rooms - 6 ACH or .75 CFM/sq ft

Continuous ventilation: 

- The first step when sizing for a ventilating fan is to determine the application. Decide whether you are sizing for intermittent or continuous ventilation (see pages 6 and 7). If intermittent, determine which application, (i.e. bathroom, kitchen or other). Use the following industry recommendations to determine Air Changes per Hour (ACH) for your specific application.

**Intermittent (spot) ventilation:**

The Home Ventilating Institute (HVI) recommends the following Air Changes per Hour (ACH). (See HVI on page 43.)

I. Bathrooms - 8 ACH or 1 CFM/sq ft
II. Kitchens - 8 ACH or 2 CFM/sq ft
III. Other Rooms - 6 ACH or .75 CFM/sq ft

**Ventilation fans help to maintain indoor air flow and air quality.**

**Ideally, an airtight home designed with both continuous and intermittent ventilation will contribute to a healthy and comfortable living environment for the entire family.**

**Fan Selection Guide**

1. What is the size of the bathroom?
   - a. Need 1 CFM (cubic foot per minute) per square foot
   - b. Length x Width = CFM (length) x (width) = (Total CFM needed)
   - c. Example: 8 ft length x 10 ft wide = 80 CFM is needed to properly ventilate the bathroom

2. What features are needed/wanted?

3. What type of construction is available?
   - Truss size is necessary if it is smaller than 2 x 8 construction so the selected fan housing size will fit the installation.
   - a. 2 x 8 construction – can use any fan combination that fits 2 x 6 or 2 x 4 construction
   - b. 2 x 6 construction – can use our fan combinations that fit 2 x 6 or 2 x 4 construction
   - c. 2 x 4 construction – can use our fan combinations that fit 2 x 4 construction

4. Now that you know the CFM needed, the features wanted and the construction size, you are ready to find your fan combination.

**Performance Curves on pages 28-35  /  Dimensional Drawing on pages 36-41  /  WhisperControl Cross Reference on page 25

**Why is ventilation necessary?**

Today’s homes are designed and built to improve energy efficiency. However, these airtight homes may actually cause health problems due to the build-up of pollutants and unincorporated stale air. What do they need? Mechanical ventilation!

**Airtight Homes**

Homes designed and built in recent years are more airtight and energy efficient than in the past. To obtain this airtight design, house wraps, newly designed windows and doors, sealing caulks and other insulating materials are used to create better energy efficiency. The resulting benefit is fewer drafts, which lowers the cost to heat and air-condition a home. But pollutants retained in airtight buildings can be hazardous to their occupants and can jeopardize structural integrity. That’s why Panasonic stresses a “build tight and ventilate right” platform. Proper mechanical ventilation design can address these airtight homes may actually cause health problems due to the build-up of pollutants and unincorporated stale air. What do they need? Mechanical ventilation!

**Biology Pollutants**

Biological pollutants, to some degree, are found in all homes. These include mold, mildew, pollen, dust mites, pet dander, viruses and bacteria. Accumulation of these biological pollutants can result in hazardous health effects for the occupants, as well as structural damage to the building.

**Volatile Organic Compounds (VOCs)**

Volatile Organic Compounds are carbon-based compounds that easily evaporate. Formaldehyde and these types of gases are released from building materials, carpets, furniture and many other solid household items as part of aging, decomposition or curing, all of which are natural processes known as off-gassing. Some other household items that emit VOCs include hair sprays, paints, lacquers, finishes, oven cleaners and other cleaning solvents, pesticides, etc. Often colorless and odorless, VOCs can ultimately be hazardous to their occupants.

**Pollutants such as smoke, formaldehyde, dust, humidity and VOCs accumulate in a poorly ventilated building.**
Panasonic Ventilation Fan Benefits

Certified & Code Compliant
Panasonic ventilation fans are certified by the Home Ventilating Institute (HVI) and ENERGY STAR® qualified, where guidelines exist. All models also comply with ASHRAE 62.2, the ventilation standard required by LEED for Homes, ENERGY STAR IAQ, CalGreen, NAHB Green Building Standard, EarthCraft, Washington Ventilation Code and other building programs.

Powerful & Quiet
Fully enclosed DC and AC condenser motors assure remarkable performance and quiet operation at industry standard, .25” w.g.

Long Life
Permanently lubricated motors are engineered for trouble-free, continuous operation for 30,000 hours on AC motors, along with rust-proof paint and galvanized housing.

Easy Installation
Detachable duct adapters, adjustable mounting brackets (up to 24” o.c.), fan/motor units that easily detach from the housing and uncomplicated wiring all lend to user-friendly installation. Double-hanger bar systems allowing for ideal positioning.

Energy Savings
For high energy efficiency, input wattage readings are among the lowest in the industry.

Safety
WhisperGreen models are protected by UL Class 2 Power Unit while all other models are equipped with thermal fuse protection. With the exception of the ERV and heater fans, all models are UL listed for tub/shower enclosure when used with a GFCI branch circuit wire.

Airflow
A built-in damper in all ceiling-mounted models prevents backdraft.

Illumination
ENERGY STAR rated compact fluorescent light bulbs can be used to comply with Title 24 has 10,000 hours of rated life and a 4-Watt night light are available on select models.

Green Manufacturing
All fan only models are RoHS Approved. Restriction of Hazardous Substances Directive (RoHS) restricts the use of the following six substances in the manufacturing process: Lead, Mercury, Cadmium, Hexavalent chromium [Cr(VI)], Polybrominated biphenyls (PBB), and Polybrominated diphenyl ether (PBDE).

Warranty
6 Year warranty on DC motor and 3 Year warranty on all other models and parts.
WhisperSense Key Benefits:
• Dual motion and humidity sensors with versatile functionality.
  - Motion On / Motion Off
  - Motion On / Humidity Off
  - Humidity On / Humidity Off
• Adjustable delay timer from 30 seconds to 60 minutes
• Variable humidity controls from 30-80% RH (Relative Humidity)
• Built-in sensors, timers and controls
• Detachable dual 4" or 6" duct adapter included
• Fits in 2 x 8 construction

WhisperWelcome Key Benefits:
• Low-profile housing design — ideal for remodeling!
  - SmartAction® motion sensor with built-in 20-minute delay timer
• Fits in 2 x 6 & 2 x 8 construction

WhisperGreen Key Benefits:
• Built-in variable speed controls and high/low sticky timer up to 6 minutes
• Detachable dual 4" or 6" duct adapter on 80 CFM models included
• Fits in 2 x 8 construction

WhisperGreen Characteristics:
- Static pressure in inches w. g.: 0.1 / 0.25 / 0.1 / 0.25 / 0.1 / 0.25 / 0.1 / 0.25 / 0.1 / 0.25 / 0.1 / 0.25
- Air Volume (CFM): 80 / 79 / 75 / 59 / 54 / 40 / 39 / 30 / 20 / 10 / 0 / 10 / 0 / 10
- Noise (sones): 0.3 / 0.4 / 0.5 / 0.6 / 0.3 / 0.5 / 0.3 / 0.6 / 0.5 / 0.6 / 0.4 / 0.6 / 0.5
- Power Consumption (Watts): 7.0 / 11.0 / 15.5 / 9.7 / 6.3 / 4.3 / 7.5 / 3.7 / 3.6 / 5.8 / 3.1 / 4.1 / 3.6 / 4.6
- Energy Efficiency (CFMs/Watt): 12.1 / 7.5 / 6.3 / 7.9 / 5.3 / 7.6 / 7.1 / 1.1 / 1.4 / 0.7 / 1.2 / 1.1 / 0.7 / 1.4
- Current: 0.02 / 0.03 / 0.04 / 0.01 / 0.02 / 0.03 / 0.05 / 0.06 / 0.02 / 0.07 / 0.04 / 0.07 / 0.09
- Power Rating (V/Hz): 120/60

WhisperWelcome Characteristics:
- Static pressure in inches w. g.: 0.1 / 0.25 / 0.1 / 0.25 / 0.1 / 0.25 / 0.1 / 0.25 / 0.1 / 0.25 / 0.1 / 0.25 / 0.1 / 0.25 / 0.1 / 0.25 / 0.1 / 0.25 / 0.1 / 0.25 / 0.1 / 0.25
- Air Volume (CFM): 50 / 30 / 50 / 30 / 50 / 30 / 50 / 30 / 50 / 30 / 50 / 30 / 50 / 30 / 50 / 30 / 50 / 30 / 50 / 30 / 50 / 30 / 50 / 30
- Noise (sones): -0.3 / -0.5 / -0.6 / -0.9 / -0.9 / -1.1 / -1.0 / -1.0 / -1.0 / -1.0 / -1.0 / -1.0 / -1.0 / -1.0 / -1.0 / -1.0 / -1.0 / -1.0 / -1.0 / -1.0 / -1.0 / -1.0 / -1.0 / -1.0 / -1.0
- Energy Efficiency (CFMs/Watt): 3.6 / 2.4 / 3.2 / 2.7 / 2.7 / 2.4 / 2.4 / 2.4 / 2.4 / 2.4 / 2.4 / 2.4 / 2.4 / 2.4 / 2.4 / 2.4 / 2.4 / 2.4 / 2.4 / 2.4 / 2.4 / 2.4
- Speed: 678 / 924 / 740 / 958 / 749 / 945 / 868 / 1003
- Current: 0.13 / 0.13 / 0.13 / 0.13 / 0.20 / 0.19 / 0.20 / 0.19
- Power Rating (V/Hz): 120/60
Single Speed Fans (On/Off)

Included:
- Single Speed Fans
- On/Off

WhisperCeiling Key Benefits:
- Detachable 4" or 6" duct adapter
- Fits in 2 x 8 construction

FV-05VQ5 50 CFM 4" or 6" Duct
FV-08VQ5 80 CFM 4" or 6" Duct
FV-11VQ5 110 CFM 4" or 6" Duct

WhisperGreen Key Benefits:
- SmartFlow™ technology for optimal CFM output
- Fully enclosed DC motor for long life – rated for 60,000 hours continuous run
- Detachable 4" or 6" duct adapter included
- Fits in 2 x 8 construction

FV-05VK3 50 CFM 4" or 6" Duct
FV-08VK3 80 CFM 4" or 6" Duct
FV-11VK3 110 CFM 4" or 6" Duct

FV-15VQ5 150 CFM 6" Duct

WhisperValue Key Benefits:
- Low profile housing design – ideal for remodeling
- Fits in 2 x 6 & 2 x 8 construction

FV-05VS1 50 CFM 4" Oval Duct
FV-08VS1 80 CFM 4" Oval Duct
FV-10VS1 100 CFM 4" Oval Duct

WhisperFit Key Benefits:
- Low profile housing design – ideal for remodeling!
- Fits in 2 x 6 & 2 x 8 construction

FV-05VF2 50 CFM 4" or 3" Duct
FV-08VF2 80 CFM 4" or 3" Duct
FV-11VF2 110 CFM 4" or 3" Duct

WhisperValue U-Can Contractor Pack

The Contractor Pack includes four complete fans. The housing and motor/grille are packaged separately for flexibility during installation.

Master Pack
- FV-05VF2 FV-08VF2 FV-11VF2 4

Panasonic ideas for life

Performance Curve on page 28-35 / Dimensional Drawing on page 36-41 / WhisperCentral Cross Reference on page 25

WhisperValue Characteristics

<table>
<thead>
<tr>
<th>Model</th>
<th>CFM</th>
<th>Static Pressure (in. w.g.)</th>
<th>Air Volume (CFM)</th>
<th>Noise (sones)</th>
<th>Power Consumption (Watts)</th>
<th>Energy Efficiency (CFMs/Watt)</th>
<th>Speed (RPM)</th>
<th>Current (amps)</th>
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<td>71</td>
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WhisperFit Characteristics

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<th>Static Pressure (in. w.g.)</th>
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<th>Noise (sones)</th>
<th>Power Consumption (Watts)</th>
<th>Energy Efficiency (CFMs/Watt)</th>
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<th>Current (amps)</th>
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<tr>
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<td>26.5</td>
<td>1.9</td>
<td>937</td>
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<tr>
<td>FV-11VF2</td>
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<td>60</td>
<td>1.5</td>
<td>40.0</td>
<td>1.6</td>
<td>954</td>
<td>0.12</td>
<td>120/60</td>
</tr>
</tbody>
</table>
WhisperSense-Lite Key Benefits:
- Dual motion and humidity sensors with versatile functionality.
  - Motion On / Motion Off
  - Motion On / Humidity Off
  - Humidity On / Humidity Off
- Adjustable delay timer from 30 seconds to 60 minutes.
- Variable humidity controls from 30-80% RH (Relative Humidity).
- Built-in sensors, timers and controls.
- Detachable dual 4” or 6” duct adapter included.
- Fits in 2 x 8 construction.

WhisperGreen-Lite Key Benefits:
- SmartFlow™ technology for optimal CFM output.
- Fully enclosed DC motor for low life – rated for 60,000 hours continuous run.
- SmartAction® motion sensor. (FV-08VKML3, FV-13VKML3)
- Built-in variable speed controls and high/low delay timer up to 60 minutes.
- Detachable dual 4” or 6” duct adapter for 80 CFM models included.
- Fits in 2 x 8 construction.

WhisperSense-Lite Characteristics

<table>
<thead>
<tr>
<th>Model</th>
<th>CFM</th>
<th>Speed</th>
<th>Current</th>
<th>Power Rating (V/Hz)</th>
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WhisperGreen-Lite Characteristics

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<th>Speed</th>
<th>Current</th>
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</thead>
<tbody>
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<td>FV-08VKML3</td>
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<td>687</td>
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<td>120/60</td>
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<tr>
<td>FV-13VKML3</td>
<td>90</td>
<td>957</td>
<td>0.05</td>
<td>120/60</td>
</tr>
</tbody>
</table>

Fan/Lights with Built-in Controls

INCLUDES: One 32-Watt Panasonic CFL/3500 Kelvin/High CRI/3000 Lumens/ENERGY STAR® qualified 10,000 hours rated average life. Equivalent to (2) 75-Watt incandescent lamp/electronic ballast for longer operation/better 4-Watt night light.

INCL. Built-in Controls
Single Speed Fans with Lights (On/Off)

**WhisperRecessed Key Benefits:**
- Architectural grade recessed fan/light
- Variable, energy efficient, and powerful ventilation at .25” w.g.
- Adjustable lamp positioning and deeper regression reduces glare
- Beautiful illumination with 6-1/2” aperture

**WhisperGreen-Lite Key Benefits:**
- SmartFlow™ technology for optimal CFM output
- Fully enclosed DC motor for long life – rated for 60,000 hours continuous run
- Detachable dual 4” or 6” duct adapter included
- Fits in 2 x 8 construction

**WhisperValue-Lite Key Benefits:**
- Super low profile housing design
- First in 2 x 4, 2 x 6 and 2 x 8 construction

**WhisperFit-Lite Key Benefits:**
- Low profile housing design – ideal for remodeling
- Fits in 2 x 6 & 2 x 8 construction

**WhisperFit-Lite U-Can Contractor Pack**
- Includes four complete fans. The housing and motor/grille are packaged separately for flexibility during installation.

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**WhisperRecessed Characteristics**

<table>
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<tr>
<th>Model</th>
<th>CFM</th>
<th>Duct Size</th>
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<td>FV-08VRL1</td>
<td>80</td>
<td>4” or 6”</td>
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<td>FV-11VRL3</td>
<td>110</td>
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**WhisperGreen-Lite Characteristics**

<table>
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<th>CFM</th>
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<td>4” or 6”</td>
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<td>FV-11VL5</td>
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<td>4” or 6”</td>
</tr>
<tr>
<td>FV-15VL5</td>
<td>150</td>
<td>6” Duct</td>
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</table>

**WhisperValue-Lite Key Benefits:**
- Super low profile housing design
- First in 2 x 4, 2 x 6 and 2 x 8 construction

**WhisperValue-Lite U-Can Contractor Pack**

<table>
<thead>
<tr>
<th>Model</th>
<th>CFM</th>
<th>Duct Size</th>
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</thead>
<tbody>
<tr>
<td>FV-08VS2</td>
<td>80</td>
<td>4” Oval Duct</td>
</tr>
<tr>
<td>FV-10VS2</td>
<td>100</td>
<td>4” Oval Duct</td>
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**WhisperFit-Lite Characteristics**

<table>
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<th>Model</th>
<th>CFM</th>
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<tbody>
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<td>FV-08VF3</td>
<td>50</td>
<td>4” or 3”</td>
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<td>FV-08VF8</td>
<td>80</td>
<td>4” or 3”</td>
</tr>
<tr>
<td>FV-11VF3</td>
<td>110</td>
<td>4” or 3”</td>
</tr>
</tbody>
</table>

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**WhisperFit-Lite U-Can Contractor Pack**
- Includes four complete fans. The housing and motor/grille are packaged separately for flexibility during installation.

---

**Performance Curves on pages 28-35** / **Dimensional Drawing on pages 36-41** / **WhisperCentral Cross Reference on page 25**
Specialty Fans

FV-11HVL2 110 CFM 4” Duct
FV-11HVL2 110 CFM 4” Duct

FV-11HVL2 includes two 18-Watt Panasonic CFL/2500 Kelvin/hour CRI>9500 Lumens each/Energy STAR qualified/10,000 hour rated average CEK supplied to 120-Volt incandescent lamp/electronic ballast for 240-Volt operation/4-Watt right-light

WhisperWarm Key Benefits:
- Durable 1400 Watt stainless steel shrouded heating element
- Thermal fuse protection on motor and 3-Level safety device for heater
- Quick 1 minute warm-up
- Fits in 2x8 construction

WhisperCeiling Key Benefits:
- Large volume exhaust fans ideal for light commercial applications

WhisperWall Key Benefits:
- UL listed for through-the-wall application
- 10” galvanized sleeve and steel exterior hood included

WhisperComfort Key Benefits:
- EER balanced air pressure by supplying fresh exterior air while exhausting stale interior air
- MERV 6 supply filter and damper employed
- Exchange capillary core recovers temperature and moisture
- Dual setting air volume for 40/20 or 20/10 CFM
- Ideal for new air tight houses built to meet energy efficiency standards
- Compact size fits in ceilings and 2x8 construction
- Sensible Energy Recovery 66%
- Latent Energy Recovery 34%
- Does not require a condensation line or drain

WhisperLine Key Benefits:
- Remote mount in-line fan for single or multiple inlets
- Insulated housing to prevent condensation and noise
- Tapered duct adapter for easy connection
- 2 positions for installation
- Jolt or truss attachment brackets included
- Suspension brackets included

FV-20VQ3 190 CFM 6” Duct
FV-40VQ3 380 CFM 6” Duct

40/20 CFM or 20/10 CFM 2x4 Ducts
Optional Exterior Wall Cap
Optional Elbow
Supply and exhaust air flows through a single exterior opening

Performance Curves on pages 28-35 / Dimensional Drawing on pages 36-41 / WhisperControl Cross Reference on page 25

WhisperWarm Characteristics
- FV-11HVL2
  - Static pressure in inches w.g.
  - Air Volume (CFM)
  - Noise (sones)
  - Power Consumption (Watts)
  - Energy Efficiency (CFMs/Watt)
  - Speed
  - Current
  - Heat Rating (Watts)

WhisperCeiling Characteristics
- FV-20VQ3
  - Air Volume (CFM)
  - Noise (sones)
  - Power Consumption (Watts)
  - Energy Efficiency (CFMs/Watt)
  - Speed
  - Current
  - Heat Rating (Watts)

WhisperWall Characteristics
- FV-20VQ3
  - Static pressure in inches w.g.
  - Air Volume (CFM)
  - Noise (sones)
  - Power Consumption (Watts)
  - Energy Efficiency (CFMs/Watt)
  - Speed
  - Current
  - Heat Rating (Watts)

WhisperComfort Characteristics
- FV-10NL1
  - Static pressure in inches w.g.
  - Air Volume (CFM)
  - Noise (sones)
  - Power Consumption (Watts)
  - Energy Efficiency (CFMs/Watt)
  - Speed
  - Current
  - Heat Rating (Watts)

WhisperLine Characteristics
- FV-10NL1
  - Static pressure in inches w.g.
  - Air Volume (CFM)
  - Noise (sones)
  - Power Consumption (Watts)
  - Energy Efficiency (CFMs/Watt)
  - Speed
  - Current
  - Heat Rating (Watts)
Accessories

WhisperControl
Condensation Sensor

On/Off—
FV-WCCS1-W (White), FV-WCCS1-A (Light Almond)
On/Off/Light—
FV-WCCS2-W (White), FV-WCCS2-A (Light Almond)

WhisperControl Condensation Sensor Features & Benefits:
• Humidity Control – Automatically turns on when relative humidity and temperature change is detected
• 30 minute countdown timer
• Manual On/Off Control
• Compatible with single-speed fans or fan/lights
• Stylish design with wall plate included
• ENERGY STAR®, LEED for Homes, ASHRAE 62.2, and CALGreen compliant
• LED indicator

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<tr>
<th>Specifications</th>
<th>FV-WCCS1-W</th>
<th>FV-WCCS1-A</th>
<th>FV-WCCS2-W</th>
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WhisperControl Switches
1 Function Control
FV-WCSW11-W (White)
FV-WCSW11-A (Light Almond)

WhisperControl Switches Features & Benefits:
• Pilot light rocker visible when fan is on
• Back & side wiring terminals accept both solid & stranded wire for easier installation
• Full-rated current capacity with fluorescent or resistive loads. Motor capacity is 80% of switch rating
• Commercial grade
• Includes matching wall plate

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WhisperControl Switches
2 Function Control
FV-WCSW21-W (White)
FV-WCSW21-A (Light Almond)

WhisperControl Switches Features & Benefits:
• Multi-switch combination saves space and adds convenience
• Common feed shunted internally to all switches
• Includes matching wall plate
• Commercial grade
• Elegant styling provides multiple controls in a single-gang wall box

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<tr>
<th>Specifications</th>
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WhisperControl Switches

3 Function Control
FV-WCSW31-W (White)
FV-WCSW31-A (Light Almond)

4 Function Control
FV-WCSW41-W (White only)
Designed for model FV-11VHL2 Heater/Fan/Light/Night-light

Preset Count Down Delay Off
FV-WCD01-W (White)
FV-WCD01-A (Light Almond)

WhisperControl Switches Features & Benefits:
- Multi-switch combination saves space and adds convenience
- Common feed shunted internally to all switches
- Commercial grade
- Includes matching wall plate
- Elegant styling provides multiple controls in a single-gang wall box

Specifications
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## Cross Reference for Applicable Combination of WhisperControl to Product

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*Whisper/WhisperSense, WhisperSense, and WhisperGreen SD42 remotes are not compatible with the above models.
* Needs 1 control per functions; ** Switch is for light and night-light only.
Ceiling Radiation Damper

Radiation Damper Features:
- UL classification (UL standard 555C) for use in 1, 2 or 3 hour fire-rated floor/ceiling and roof/ceiling designs
- Compatible with 50-150 CFM fans, fans with motion sensor and select fanlights
- Galvanized steel frame with 165˚ F fusible link
- High temperature, non-asbestos, reinforced fiber thermal fabric

Passive Inlet Vent

Inlet Vent Features:
Panasonic Passive Inlet provides make-up air to help balance indoor vs. outdoor air pressure.
- Foam pad reduces outdoor noise and condensation
- Insulation lining to prevent condensation
- Durable ABS and PP resin body
- 7 stainless steel installation screws included
- Sturdy open/close lever
- 2-position air delivery

Designer Grilles

Designer Grille Features:
- Easy and affordable to change
- Change your grille to fit your room decor without compromising the performance and quality of the unit
- Applicable Models: WhisperGreen: FV-13VK3, FV-11VK3, FV-08VK3, FV-06VK3, FV-06VK3, FV-06VK3
  WhisperCeiling: FV-15VQ5, FV-11VQ5, FV-08VQ5, FV-05VQ5
  WhisperFit: FV-11VF2, FV-08VF2, FV-05VF2
  WhisperValue: FV-10VS1, FV-08VS1, FV-05VS1 (For FV-GL3MTL only)

Fan Model approved for:
- WhisperGreen, WhisperGreen-Lite, WhisperCeiling 50-150 CFM, WhisperLite, WhisperSense, WhisperSenseLite, WhisperWelcome, WhisperFit, WhisperValue

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Fans with Built-in Controls — Performance Curves

**FV-08VKM3/S3**
800 CFM, 4" or 6" Duct

**FV-13VKM3/S3**
1300 CFM, 6" Duct

**FV-05VFM2**
50 CFM, 3" Duct

**FV-08VFM2**
80 CFM, 6" Duct

**FV-05VQC5**
80 CFM, 4" or 6" Duct

**FV-08VQ5**
80 CFM, 4" or 6" Duct

**FV-11VQC5**
110 CFM, 4" or 6" Duct

**FV-11VK3**
110 CFM, 4" Duct

**FV-08VK3**
80 CFM, 4" or 6" Duct

Single Speed Fans — Performance Curves

**FV-05VK3**
50 CFM, 4" or 6" Duct

**FV-08VK3**
80 CFM, 4" or 6" Duct

**FV-11VK3**
110 CFM, 4" or 6" Duct

**FV-05VK3**
50 CFM, 4" or 6" Duct

**FV-08VK3**
80 CFM, 4" or 6" Duct

**FV-11VK3**
110 CFM, 4" or 6" Duct

**FV-05VQ5**
50 CFM, 4" or 6" Duct

**FV-08VQ5**
80 CFM, 4" or 6" Duct

**FV-11VQ5**
110 CFM, 4" or 6" Duct

**FV-15VQ5**
150 CFM, 6" Duct
Single Speed Fans — Performance Curves (cont’d)

Fan/Lights with Built-In Controls — Performance Curves

FV-05VF2 50 CFM 3” Duct
FV-08VF2 80 CFM 3” Duct
FV-11VF2 110 CFM 3” Duct
FV-05VS1 50 CFM 4” Oval Duct
FV-08VS1 80 CFM 4” Oval Duct
FV-10VS1 100 CFM 4” Oval Duct
FV-08VF2 80 CFM 4” Duct
FV-05VF2 50 CFM 4” Duct
FV-08VS1 80 CFM 4” Oval Duct
FV-10VS1 100 CFM 4” Oval Duct
FV-11VF2 110 CFM 4” Duct
FV-05VS1 50 CFM 4” Oval Duct
FV-08VS1 80 CFM 4” Oval Duct
FV-10VS1 100 CFM 4” Oval Duct

FV-05VF2 50 CFM 3” Duct
FV-08VF2 80 CFM 3” Duct
FV-11VF2 110 CFM 3” Duct
FV-05VS1 50 CFM 4” Oval Duct
FV-08VS1 80 CFM 4” Oval Duct
FV-10VS1 100 CFM 4” Oval Duct
FV-08VF2 80 CFM 4” Duct
FV-05VF2 50 CFM 4” Duct
FV-08VS1 80 CFM 4” Oval Duct
FV-10VS1 100 CFM 4” Oval Duct
FV-11VF2 110 CFM 4” Duct
FV-05VS1 50 CFM 4” Oval Duct
FV-08VS1 80 CFM 4” Oval Duct
FV-10VS1 100 CFM 4” Oval Duct

FV-05VF2 50 CFM 3” Duct
FV-08VF2 80 CFM 3” Duct
FV-11VF2 110 CFM 3” Duct
FV-05VS1 50 CFM 4” Oval Duct
FV-08VS1 80 CFM 4” Oval Duct
FV-10VS1 100 CFM 4” Oval Duct
FV-08VF2 80 CFM 4” Duct
FV-05VF2 50 CFM 4” Duct
FV-08VS1 80 CFM 4” Oval Duct
FV-10VS1 100 CFM 4” Oval Duct
FV-11VF2 110 CFM 4” Duct
FV-05VS1 50 CFM 4” Oval Duct
FV-08VS1 80 CFM 4” Oval Duct
FV-10VS1 100 CFM 4” Oval Duct

FV-08VKML3/SL3 80/0 CFM 4” or 6” Duct
FV-10VKML3/SL3 100 CFM 6” Duct
FV-13VKML3/SL3 130/0 CFM 6” Duct
FV-08VQCL5 80 CFM 4” or 6” Duct
FV-11VQCL5 110 CFM 4” or 6” Duct
FV-08VQCL5 80 CFM 4” or 6” Duct
FV-11VQCL5 110 CFM 4” or 6” Duct
FV-08VQCL5 80 CFM 4” or 6” Duct
FV-11VQCL5 110 CFM 4” or 6” Duct
FV-08VQCL5 80 CFM 4” or 6” Duct
FV-11VQCL5 110 CFM 4” or 6” Duct
### Single Speed Fans with Lights

**—Performance Curves**

<table>
<thead>
<tr>
<th>Model</th>
<th>CFM</th>
<th>Duct Size</th>
<th>Static Pressures (inch w.g.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FV-08VKL3</td>
<td>80 CFM</td>
<td>4&quot; or 6&quot;</td>
<td>0.00, 0.05, 0.10, 0.15, 0.20, 0.25, 0.30, 0.35, 0.40, 0.45, 0.50</td>
</tr>
<tr>
<td>FV-11VKL3</td>
<td>110 CFM</td>
<td>4&quot; or 6&quot;</td>
<td>0.00, 0.05, 0.10, 0.15, 0.20, 0.25, 0.30, 0.35, 0.40, 0.45, 0.50</td>
</tr>
<tr>
<td>FV-08VSL2</td>
<td>80 CFM</td>
<td>4&quot; Oval</td>
<td>0.00, 0.05, 0.10, 0.15, 0.20, 0.25, 0.30, 0.35, 0.40, 0.45, 0.50</td>
</tr>
<tr>
<td>FV-11VQL5</td>
<td>110 CFM</td>
<td>4&quot; or 6&quot;</td>
<td>0.00, 0.05, 0.10, 0.15, 0.20, 0.25, 0.30, 0.35, 0.40, 0.45, 0.50</td>
</tr>
<tr>
<td>FV-08VQL5</td>
<td>80 CFM</td>
<td>4&quot; or 6&quot;</td>
<td>0.00, 0.05, 0.10, 0.15, 0.20, 0.25, 0.30, 0.35, 0.40, 0.45, 0.50</td>
</tr>
<tr>
<td>FV-15VQL5</td>
<td>150 CFM</td>
<td>6&quot;</td>
<td>0.00, 0.05, 0.10, 0.15, 0.20, 0.25, 0.30, 0.35, 0.40, 0.45, 0.50</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model</th>
<th>CFM</th>
<th>Duct Size</th>
<th>Static Pressures (inch w.g.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FV-05VFL3</td>
<td>50 CFM</td>
<td>3&quot; Duct</td>
<td>0.00, 0.05, 0.10, 0.15, 0.20, 0.25, 0.30, 0.35, 0.40, 0.45, 0.50</td>
</tr>
<tr>
<td>FV-08VFL3</td>
<td>80 CFM</td>
<td>3&quot; Duct</td>
<td>0.00, 0.05, 0.10, 0.15, 0.20, 0.25, 0.30, 0.35, 0.40, 0.45, 0.50</td>
</tr>
<tr>
<td>FV-11VFL3</td>
<td>110 CFM</td>
<td>3&quot; Duct</td>
<td>0.00, 0.05, 0.10, 0.15, 0.20, 0.25, 0.30, 0.35, 0.40, 0.45, 0.50</td>
</tr>
</tbody>
</table>

### Whisper Green-Lite

- **FV-08VKL5**: 80 CFM, 4" or 6" Duct
- **FV-11VQL5**: 110 CFM, 4" or 6" Duct
- **FV-15VQL5**: 150 CFM, 6" Duct

### Whisper Fit-Lite

- **FV-08VFL3**: 80 CFM, 3" Duct
- **FV-11VFL3**: 110 CFM, 3" Duct
- **FV-05VFL3**: 50 CFM, 3" Duct

### Whisper Value-Lite

- **FV-08VL1**: 80 CFM, 4" or 6" Duct

### Whisper Recessed

- **FV-08VSL2**: 80 CFM, 4" Oval Duct
- **FV-10VSL2**: 100 CFM, 4" Oval Duct
Specialty Fans — Performance Curves

**FV-04VE1**
40/20 CFM or 20/10 CFM 2 x 4” Ducts

**FV-11VH2**
110 CFM 4” Duct

**FV-11VHL3**
20 Feet
40 Feet
60 Feet
80 Feet
100 Feet

**FV-30VQ3**
290 CFM
6” Duct

**FV-20VQ3**
190 CFM
6” Duct

**FV-40VQ3**
380 CFM
6” Duct

**FV-11VH2**
110 CFM 4” Duct

**FV-11VHL2**
20 Feet
40 Feet
60 Feet
80 Feet
100 Feet

**FV-30NLF1**
340 CFM
6” Duct

**FV-20NLF1**
240 CFM
6” Duct

**FV-40NLF1**
440 CFM
8” Duct

**FV-20NLF1**
20 Feet
40 Feet
60 Feet
80 Feet
100 Feet

**FV-10NLF1**
120 CFM
4” Duct

**FV-04VE1**
40/20 CFM or 20/10 CFM 2 x 4” Ducts

0.00
0.10
0.20
0.30
0.40
0.50
0.60
0.70
0.80
0.90
1.00

0 50 100 150 200 250 300 350 400

0 50 100 150 200 250 300 350

0.05 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.45 0.50 0.55 0.60 0.65 0.70 0.75 0.80 0.85 0.90 0.95 1.00

0.05 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.45 0.50 0.55 0.60 0.65 0.70 0.75 0.80 0.85 0.90 0.95 1.00

0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0.40
0.45
0.50
0.55
0.60
0.65
0.70
0.75
0.80
0.85
0.90
0.95
1.00

0.05 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.45 0.50 0.55 0.60 0.65 0.70 0.75 0.80 0.85 0.90 0.95 1.00

0.00
0.10
0.20
0.30
0.40
0.50
0.60
0.70
0.80
0.90
1.00

0 20 40 60 80 100 Feet

Airflow (CFM)

Static Pressure (inch w.g.)
Fans with Built-in Controls — Dimensional Drawings

- FV-08VKS3
- FV-13VKS3
- FV-08VK3
- FV-13VK3
- FV-05VQ5
- FV-08VQ5
- FV-11VQ5
- FV-05VF2
- FV-08VF2
- FV-11VF2
- FV-05VS1
- FV-08VS1
- FV-10VS1

Single Speed Fans — Dimensional Drawings

- FV-08VKM3
- FV-13VKM3
- FV-08VQC5
- FV-11VQC5
- FV-05VFM2
- FV-08VFM2
- FV-11VFM2
- FV-05VK3
- FV-08VK3
- FV-11VK3
- FV-05VQ5
- FV-08VQ5
- FV-11VQ5
- FV-05VF2
- FV-08VF2
- FV-11VF2
- FV-05VS1
- FV-08VS1
- FV-10VS1

4” or 6” Duct

6” Duct
Fan/Lights with Built-In Controls — Dimensional Drawings

Single Speed Fans with Lights — Dimensional Drawings

FV-08VML3
FV-08VSL3
FV-13VML3
FV-13VSL3

FV-08VKML3
FV-08VKSL3
FV-13VKML3
FV-13VKSL3

FV-08VQCL5 / FV-11VQCL5
FV-08VQL5 / FV-11VQL5
FV-15VQL5

FV-08VFL3 / FV-08VFL5 / FV-11VFL3
FV-08VFL5 / FV-11VFL5

Panasonic ideas for life
Specialty Fans — Dimensional Drawings

WhisperWarm

WhisperComfort

WhisperWall

WhisperCeiling

WhisperLine

FV-11/2H2

FV-14/2H2

FV-04VE1

FV-20VQ3 / FV-30VQ3

FV-40VQ3

FV-20VQ3 / FV-30VQ3

FV-40VQ3

Inlet grille and 4" duct adapter height 3-1/2"

Inlet grille and 6" duct adapter height 5"

WhisperLine Dimensions

<table>
<thead>
<tr>
<th>Fan Model</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>FV-10NLF1</td>
<td>13-3/8&quot;</td>
<td>9-1/2&quot;</td>
<td>7-5/16&quot;</td>
<td>7-1/8&quot;</td>
<td>5-5/16&quot;</td>
<td>4&quot;</td>
<td>11&quot;</td>
<td></td>
</tr>
<tr>
<td>FV-20NLF1</td>
<td>13-3/8&quot;</td>
<td>9-1/2&quot;</td>
<td>21-5/8&quot;</td>
<td>9-7/16&quot;</td>
<td>12-5/8&quot; - 24-7/16&quot;</td>
<td>5-16&quot;</td>
<td>6&quot;</td>
<td>11&quot;</td>
</tr>
<tr>
<td>FV-40NLF1</td>
<td>16-1/2&quot;</td>
<td>13-5/8&quot;</td>
<td>22&quot;</td>
<td>11&quot;</td>
<td>12-5/8&quot; - 26&quot;</td>
<td>5-16&quot;</td>
<td>5&quot;</td>
<td>14-7/8&quot;</td>
</tr>
</tbody>
</table>
Sizing
Information and Instructions

Equivalent Duct Length (EDL): The Equivalent Duct Length Table (Figure B) shows you how to calculate the equivalent straight duct length in order to overcome static pressure. The EDL chart helps ensure fan performs as expected under the airflow resistance caused by the listed components.

A ventilating fan’s performance is plotted on a graph called a performance curve. The performance curve shows airflow in cubic feet per minute (CFM) along the horizontal axis and static pressure (resistance) along the vertical axis. Figure A shows how a performance curve works. The fan with a “Closed Duct” has high static pressure and no airflow; and the fan with “No Duct” has low static pressure and high airflow. In reality, an installed fan will be somewhere in between these two points.

Performance Curves are listed on pages 26-33.

Sizing and selecting a Ceiling Mounted Fan:
Proper sizing requires that you determine the needed CFM, the square footage of the room or home, and the length and type of duct.
Example: Sizing for an 8 ft x 10 ft x 8 ft ceiling bathroom using 12 foot long, 4 inch diameter aluminum/foil duct, one elbow, one wall cap.

Step 1: Determine application
Bathroom = 1 CFM/square foot

Step 2: Calculate the area to be ventilated in square feet. Assuming an 8 ft ceiling, room length x width = area in square feet
8 ft x 10 ft = 80 sq ft

Step 3: Calculate your required CFM
1 CFM x 80 sq ft = 80 CFM

Step 4: Use the Equivalent Duct Length chart above to calculate duct run.
4a. 12 ft aluminum/foil duct x 1.25 = 15 ft
4b. One elbow = 15 ft EDL
4c. One wall cap = 30 ft EDL

This is the equivalent duct length (or resistance) the fan must overcome to move air through the duct to the outside.

Step 5: Review models in catalog pages to find a model with desired feature. Features may include light fixture, heater or low-profile housing.

Note: Check with your local building inspector to confirm that these methods are accepted in your area.

FIG. A

FIG. B
Ventilation Controls

Selecting a suitable control that runs ventilation at the proper time and duration will ensure that both the occupant’s health and building structure are protected. There are several types of manual and automatic controls that can be applied to ventilation systems. Some controls are more suitable for intermittent or continuous ventilation. Select Panasonic fans incorporate built-in speed, delay and occupancy controls, making them ideal for both intermittent and continuous ventilation.

Manual Controls: Manual controls require the occupant to activate the ventilation fan when needed. An example of a basic manual control is the Panasonic PV-WC811 On/Off rocker switch. There are other controls with functions available that may be more suitable to the occupant’s lifestyle.

Delay timers: Shower curtains, towels, walls and cabinets retain moisture long after the occupant has left the bathroom. One advantage of Panasonic PV-WCD15 timer delay is that it continues to evacuate moisture and odor after the occupant has finished. WhisperGreen® and WhisperSense™ fans incorporate a delay timer that can be set within the range of 30 seconds to 60 minutes for the desired delay effect.

Manual timers: Electronic timers are more decorative and but allow the occupant to select a time duration with the push of a button. Electronic timers do not produce the sometimes annoying ticking sound that crank timers are known for. WhisperGreen and WhisperSense fans incorporate quiet electronic controls.

Occupancy (motion) sensors: Occupancy sensors are suitable for intermittent ventilation. An advantage is that the ventilation system will operate without having to rely on the occupant’s interaction. The ventilation system will remain “on” and continue working for a duration after the occupant has left the room, much like a delay off timer. Select WhisperGreen and WhisperSense fans have occupancy sensors integrated in the fan grille. Dehumidistats can be used to turn a ventilation system on/off when relative humidity reaches a certain level. These controls are most likely to be used in bathrooms to evacuate excessive moisture. Dehumidistats have a few disadvantages. One disadvantage is that seasonal changes in outdoor relative humidity necessitate seasonal readjustments to function optimally. Finally, it does not automatically remove odors. The new Panasonic PV-WCCS1 condensation sensor checks both Relative Humidity (RH) and temperature to anticipate condensation and exhausts humidity by turning on the fan. Also, Panasonic’s new WhisperGreen fans include both motion and humidity sensors for ultimate moisture control.

Automatic timers: Automatic timers operate fans at programmed times throughout the day. Typically a 24-hour programmable timer is used to run a fan in morning and evening hours when there is a high demand for ventilation. For continuous ventilation, the control can be programmed to operate throughout the day to help evacuate any accumulation of VOCs or other indoor air pollutants. Controls can also be used in combination with each other to provide both intermittent and continuous ventilation. For example, a programmable timer may be used to cycle the fan on and off throughout the day to address overall indoor air quality. Select WhisperGreen fans have been designed as an ideal double-duty fan providing both intermittent and continuous ventilation. An advantage is that the ventilation system will operate without having to rely on the occupant’s interaction. The ventilation system will remain “on” and continue working for a duration after the occupant has left the room, much like a delay off timer. Select WhisperGreen and WhisperSense fans have occupancy sensors integrated in the fan grille. Dehumidistats can be used to turn a ventilation system on/off when relative humidity reaches a certain level. These controls are most likely to be used in bathrooms to evacuate excessive moisture. Dehumidistats have a few disadvantages. One disadvantage is that seasonal changes in outdoor relative humidity necessitate seasonal readjustments to function optimally. Finally, it does not automatically remove odors. The new Panasonic PV-WCCS1 condensation sensor checks both Relative Humidity (RH) and temperature to anticipate condensation and exhausts humidity by turning on the fan. Also, Panasonic’s new WhisperGreen fans include both motion and humidity sensors for ultimate moisture control.

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The ENERGY STAR program was created by the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Energy (DOE) to help customers identify products that can save them money and protect the environment by saving energy. When it comes to ventilation fans, ENERGY STAR qualified products feature super quiet operation (low sone levels) and high CFM to Watt efficiency. As an ENERGY STAR Partner of the Year for 2010 and 2011, all Panasonic ventilating fans exceed ENERGY STAR standards.

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HOME VENTILATING INSTITUTE

All Panasonic ventilation fans are tested and certified by the Home Ventilating Institute (HVI). The HVI label is your assurance that the certified airflow and sound rating of Panasonic ventilation fans are the results of testing by an independent laboratory. HVI is a non-profit association comprised of manufacturers of home ventilation products. HVI offers a variety of services including, but not limited to, test standards, certification programs for airflow, sound and energy performance. For more information about HVI contact:

Home Ventilating Institute - HVI
Email: hvihvi.org
Website: www.hvi.org
1000 North Rand Road, Suite 214
Wauconda, IL 60084
Phone: (847) 526-2010
Fax: (847) 526-3903

<table>
<thead>
<tr>
<th>Specification</th>
<th>Min. CFMs/Watt</th>
<th>Sones</th>
<th>Warranty</th>
<th>Airflow (0.25 in. w.g.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bath Fans -10 to 80 CFM</td>
<td>1.4</td>
<td>2.0</td>
<td>1 year</td>
<td>60%</td>
</tr>
<tr>
<td>Bath Fans -80 to 130 CFM</td>
<td>2.8</td>
<td>2.0</td>
<td>1 year</td>
<td>70%</td>
</tr>
<tr>
<td>Bath Fans -140 to 300 CFM</td>
<td>2.8</td>
<td>3.0</td>
<td>1 year</td>
<td>70%</td>
</tr>
<tr>
<td>In-Line Fans</td>
<td>2.8</td>
<td>N/A</td>
<td>1 year</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Proper fan installation is necessary to optimize performance. The following points outline installation techniques to help achieve optimum performance.

**IMPORTANT:** In order to reduce elbows and optimize fan performance, install the fan with the exhaust port pointed in the direction of the termination point. Be sure to use the duct diameter size specified for the selected fan. Reducing the duct diameter (at any point in the duct run) will create substantial static pressure and reduce the fan’s performance by as much as 90%.

**Selecting Duct:** A smooth surface duct allows for optimum airflow. See Figure C. For best results, use galvanized sheet metal or possibly PVC. Flexible aluminum duct is durable, easy to install and often used. However, the ridges in flexible duct increase static pressure and can reduce airflow and fan performance. This results in lower CFMs, higher noise levels and higher energy consumption. The degree to which performance is affected depends on the length of duct, number and degree of elbows.

**Elbows:** Rule number one is to avoid elbows and bends whenever possible. However, the fact is that many installations require at least one elbow, as shown in Figure D. There are two precautions you can take when installing elbows to achieve optimum airflow.

First, allow a 2-3 foot straight run out of the fan before the first elbow. This allows airflow to be uniform before passing through the first elbow. An installation that has a 90-degree elbow immediately after the fan exhaust port will cause air to flow back into the fan. This will reduce fan performance and increase noise. (Figure D)

Second, use a long radius angle, as shown in Figure E, to help ensure optimum airflow and minimum airflow noise.

**Trouble Shooting Advice:**

1. During fan installation, the tape on the duct connector holding the damper shut must be removed.
2. Confirm with your contractor if screws were used to attach the duct to the fan. The damper may not open if obstructed by screws.
3. Check that the backdraft dampers on wall caps and roof jacks are able to move freely. Routine inspections are recommended as birds and other pests may inhabit these areas.
4. Ductwork must be connected securely to wall caps and roof jacks.

**Installation**

**A practical guide to Panasonic fan installation**

The shortest, smooth inner surface duct with the least number of elbows will provide optimum fan airflow.
Green Building Programs & Green FAQs

Green Building Programs
Green building is the practice of increasing energy efficiency while promoting economic health for people and the environment. Effective green building can reduce operating costs through lower energy consumption; improve occupant health by enhancing indoor air quality and lessening the impact on the environment.

ASHRAE 62.2-2010
There are several green building programs within the United States and nearly all adhere to the standards set by the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) for the HVAC industry. ASHRAE Standard 62.2 is the national ventilation standard of design for low-rise residences up to three-story multi-family buildings. 62.2 requires continuous mechanical ventilation for the entire house to be 7.5 CFM per bedroom (master bedroom x 2) plus 1 CFM per 100 sq. ft., with some level not to exceed 1.0. Panasonic's full line of ventilation fans including WhisperGreen and WhisperComfort are affordable and an efficient way to meet this ventilation standard.

LEED and LEED for Homes
The US Green Building Council (USGBC www.usgbc.org) offers the Leadership in Energy and Environmental Design (LEED) program for commercial buildings and the LEED for Homes program for residential buildings. Neither program offers specific product certification, but both require mechanical ventilation. The easiest way to meet the requirements is to use a WhisperGreen fan operating continuously. Most of the single speed Panasonic fans under 1.0 sone can be used to meet 62.2, but the rated flow at 0.25 inches of water gauge must meet the required flow. So WhisperGreen models are the preferred choice.

California Title 24
As the required codes for California, Title 24 is the shorthand name for the Building Energy Efficiency Standards for Residential and Non-Residential Buildings. Developed by the California Energy Commission and first published in 1978, the standards were recently updated for 2008 and will be effective in 2009, including the requirement to meet ASHRAE Standard 62.2.

ENERGY STAR® Homes Program
The US Environmental Protection Agency (EPA) operates the ENERGY STAR® Program, including the ENERGY STAR® Homes Program. This program offers certification of the home as energy efficient based on an examination of energy use and construction features. Even though it does not require a full ventilation strategy, EPA’s Indoor AirPLUS (IAP) is an option to help builders meet the growing consumer preference for improved indoor air quality. The IAP requires compliance with ASHRAE 62.2, so Panasonic’s WhisperGreen is the product of choice.

National Association of Home Builders (NAHB) Green Building Standard
A voluntary standard developed by NAHB to provide a design guide and rating system for houses. Similar to the LEED for Homes program but less stringent, it has both required and optional measures that help show a house is “green.” The more options utilized such as fulfilling ASHRAE 62.2 provides a higher rating.

Green FAQs
What does Built Green or other builder program certification mean in terms of energy efficiency, sustainability, improved interior environment (IAQ), and operational cost? WhisperGreen fans are the most energy efficient and quietest products on the market and the six-year warranty and low energy use ensure sustainability.

What makes a WhisperGreen fan a Green product?
The Green concept is a combination of energy efficiency, sustainable interior environment (IAQ), and operational cost. WhisperGreen fans are the most energy efficient and quietest products on the market and the six-year warranty and low energy use ensure sustainability.

When can I turn the WhisperGreen models with built-in controls off?
Your fan is designed to run 24 hours a day, 365 days a year using very little electricity. Your new home has been built to be very “right” and energy efficient. While this helps on your energy costs, it can also lead to poor indoor air quality. By having a fan run constantly at a low speed, stale indoor air is continuously being ventilated and replaced by fresh air.

When I turn the switch to the “off” position or when the motion sensor is not in use, why doesn’t the fan slow down right away?
Your WhisperGreen fan features a built-in delay timer. This allows the fan to operate at the higher speed for a longer time to help remove excess moisture from the bathroom, for example, after a shower.

Panasonic ideas for life
Frequently Asked Questions

1. **What is a sone?**
   A sone is an internationally recognized measurement of sound output. The smaller the sone, the more quiet it is. Likewise, the higher the sone, the louder the sound. According to HVI, one sone is equivalent to the sound of a quiet refrigerator.

2. **What is CFM?**
   CFM, or Cubic Feet per Minute is a measurement of rate of air flow. The larger the CFM, the more powerful the fan.

3. **What is static pressure?**
   Static pressure is a measure of the resistance against flow as the fan pushes air through a duct. Static pressure is measured in inches of water column or water gauge (w.g). It is expressed as 0.1” w.g or 0.25” w.g to show that the resistance is equal to a column of water one-tenth or one-quarter of an inch tall. Most bath fans sold in North America are rated 0.1” w.g by the Home Ventilating Institute (HVI).

4. **Why are Panasonic Fans so quiet?**
   The Panasonic fan wheel is designed more efficiently than most competitor models, so it turns at lower RPMs, reducing tip speed and noise.

5. **What makes Panasonic Fans so highly energy efficient?**
   The input wattage readings on the Panasonic fans are among the lowest in the industry. This means that for a given airflow, Panasonic fans will use fewer kilowatt hours and cost less to operate than other fans. This lower wattage draw is accomplished in a number of ways:

   **Unique Motor Design.**
   Panasonic’s DC brushless motor provides unparalleled energy efficiency with its magnetic rotor and print circuit board. The magnetic rotor prevents energy loss while standard AC motors that utilize aluminum die cast rotors expend energy. Also, Panasonic’s DC motor is the only one to incorporate a print circuit board containing a unique IC chip which monitors and directs the RPM of the fan blade. The combination of these two unique features allows the DC motor to have higher energy efficiency than an AC motor.

   Panasonic uses a four-pole condenser motor, which is composed on a main coil and a sub coil. The coils in a motor are essentially small electromagnets that are turned on and off to create an electrical field to “pull” the fan shaft around, making the fan blower wheel turn. The condenser is connected with the sub coil, which helps with rotation. The condenser acts like a capacitor to store electrical energy and deliver it quickly and in exact amounts to the coil. This improves the electrical efficiency of the motor and reduces power draw.

6. **Why do Panasonic Fans have such a long life?**
   Panasonic fans are designed to give the consumer trouble-free continuous operation for many years. These fans utilize high quality components and permanently lubricated motors. This leads to fans that provide a long operational life because their components wear very slowly. That is why Panasonic stands behind its products with one of the longest warranty periods in the industry.

   **Motor Production.**
   Panasonic motor production is fully automated, with an automatic defect detecting system. The quality assurance program is exemplary, leading to a defect rate of less than 0.0006%.

   **ISO 9001 plant.**
   The production facilities that build Panasonic fans have earned the distinction of being recognized by the International Standards Organization (ISO) under the ISO 9001 Quality Assurance program. Meeting ISO 9001 means that these factories have met the highest quality standards in the world.

   **Fan Housing.**
   The fan housing is made of heavy-gauge zinc-galvanized steel and painted to protect it from rust.

   **Selectivity Application.**
   Panasonic builds its own motors and components, which means tight control over quality. Panasonic engineers also optimize efficiency by matching the exact motor characteristics with the desired performance of the fans.

   **6. Why do Panasonic Fans have such a long life?**
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7. **Can insulation material be used over fans installed in the ceiling?**
   Panasonic fans can be used above a kitchen range. No. Panasonic fans are not currently rated by UL for above-range installation since it was not designed to handle both grease and high temperature. However, Panasonic fans can be used to provide auxiliary kitchen ventilation. An approach that works well in large kitchens is to use a ducted range hood or downdraft exhaust and a Panasonic ventilation fan to exhaust the generated odors and moisture in the greater kitchen area.

8. **Can a Panasonic fan be used over a bathtub and in showers?**
   Yes. All Panasonic fans, with the exception of heater and Spot EPV models, are listed by Underwriters Laboratories for installation over tubs and showers, provided they are protected by a Ground Fault Circuit Interrupter (GFCI). GFCI is mandated by the National Electrical Code. While not specifically listed by UL as an application, the fan can also be installed in a steam shower enclosure. Keep in mind, however, that any ventilation device located in a damp environment such as a shower enclosure may have a reduced life due to the high humidity and potential for corrosion. Fans installed in a high humidity environment should be operated for longer periods of time to ensure the removal of the moisture and to reduce the potential for condensation in the fan body or ducting.

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   No. Panasonic fans are not currently rated by UL for above-range installation since it was not designed to handle both grease and high temperature. However, Panasonic fans can be used to provide auxiliary kitchen ventilation. An approach that works well in large kitchens is to use a ducted range hood or downdraft exhaust and a Panasonic ventilation fan to exhaust the generated odors and moisture in the greater kitchen area.

10. **Why are Panasonic fans not required to be IC rated?**
    Panasonic fans are not required to be IC rated because they do not have high temperature sources like recessed can lights. The Panasonic fan/light combo units use fluorescent lamps that are mounted in a light lid that is considered to be surface mounted, so they do not create high temperatures within the fan housing that would require an IC rating.

11. **What’s better, a motion sensor or humidity sensor?**
    While the humidity sensor checks the amount of moisture at the ceiling, a motion sensor “sees” the occupant coming into the room. The humidity sensor has to be set to either Rate of Rise or Relative Humidity. Depending on how the fan is set up, it may or may not turn on certain conditions. For instance, if set for Rate of Rise (how quickly moisture builds up in a room), it might not turn on at all when there is a slow, steady build up of humidity over time. On the other hand, a motion sensor will go on once it senses motion to capture both moisture, odors and contaminants from the cleaners and chemicals that may be kept underneath the sink. Panasonic’s new WhisperSense fans include both motion and humidity sensors for ultimate moisture control.