



A Guide to Understanding Indoor Air Quality Solutions

AIR CLEANERS

DEHUMIDIFIERS

HUMIDIFIERS

UV SYSTEMS

VENTILATION

Why Is Indoor Air Quality Important?

Poor indoor air quality (IAQ) is a serious problem facing homeowners today, according to the American Lung Association.[®] The roots of this problem can be traced directly to the desire for energy-efficient homes to minimize the effects of higher energy costs. Unfortunately, making homes tighter and more energy efficient also reduces the naturally occurring exchange of indoor and outdoor air. Fresh outside air stays out, while air pollutants, excessive humidity and/or overly dry conditions stagnate the indoor air over time.

While homeowners can't see the majority of indoor air contaminants, they certainly see the effects. These microscopic particles slowly stain walls, ceilings, furniture, drapes and carpets. Lack of humidity control can keep a home damp and sticky, while excessive dryness can crack woodwork and antiques, or create static electricity and dry skin. Particles attaching to your home's interior have to be scrubbed, laundered or dry cleaned away at the expense of the homeowner's time, money and effort.

But costly cleaning isn't the only consequence of dirty, humid, or dry indoor air. It is estimated that one in ten people living in North America suffer from asthma or allergies, and pollen, mold spores and dust-mite debris are among the most troublesome triggers of such ailments. Likewise, bacteria and viruses that can be found in indoor air have the potential to cause and spread disease.

Every cubic foot of air breathed carries a mixture of millions of these tiny annoyances. In small concentrations, these particles and gases may cause discomfort in the home. In significant concentrations, they can cause sickness.



Indoor air quality is maintained in three ways — reduction, dilution and source control

Controlling Indoor Air Pollution

Reduction

Filters or neutralizes particulates found in indoor air. Air cleaners installed just ahead of the heating and cooling equipment remove a portion of airborne pollutants each time air is pulled into the return air ducts.

Dilution

Replaces a portion of the indoor air with fresh outdoor air. This process occurs naturally in all homes, but at different rates depending on the structure's tightness. Opening windows is one way to increase the pace of air exchange, although it's an energy-wasting solution. Energy-efficient ERV and HRV ventilation systems exchange indoor air for outdoor air while recovering most of the energy used to heat or cool the air being exhausted. Controlling fresh air entering the home allows it to be conditioned by an efficient air cleaner, dehumidifier and UV Treatment System prior to passing through the home's furnace or air conditioner.

Source Control

Involves eliminating air pollutants before they enter the home. For example, by not allowing people to smoke or have pets in the home, homeowners practice source control. Such examples are not always practical. Installing whole-house humidifiers, dehumidifiers and UV Treatment Systems help stop the problem before they start. By maintaining optimal relative humidity levels in the home with humidity control equipment, and sterilizing pathogens with UV Treatment Systems, homeowners deter such harmful contaminants as mold, mildew, bacteria and viruses from forming.



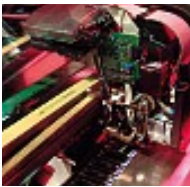
Why Honeywell Indoor Air Quality (IAQ)?

Experience



With 50+ years of IAQ experience, Honeywell is known, trusted and preferred by millions of professional contractors and the homeowners they serve. Honeywell takes this leadership role seriously, and continues to invest millions of dollars to provide product solutions that meet your needs.

Product



The powerful combination of functionality and reliability is what customers expect from Honeywell products, and these expectations are met by Honeywell with the most extensive line of whole-house IAQ products available, including electronic and media air cleaners, humidifiers, dehumidifiers, ultraviolet treatment systems and ventilation solutions. In addition, almost all Honeywell IAQ equipment can be controlled with a single thermostat — the VisionPRO® IAQ Total Home Comfort System.

The need for IAQ solutions has increased dramatically in the past 15 years as homes are constructed more tightly to meet building codes, and people become more aware of health related issues.

- Annual IAQ market growth rate is 7.2%, whereas typical HVAC markets grow at only 3% – 5%.
- It is estimated that 1-in-10 Americans have allergies, asthma or respiratory problems.
- 62% of homeowners are not satisfied with their home's IAQ.
- Homeowners spend roughly 90% of their time indoors.

Despite this greater demand, it is estimated that only 18% of U.S. homes have whole-house IAQ products installed. This growing need and low installation base creates an opportunity for IAQ products to be included with standard furnace sales and service calls.

Support

Honeywell provides toll-free access to product application, installation and support experts. The local technical expertise of Honeywell Contractor Development Specialists (CDS) is also available, including diagnostics, on-site training and more.

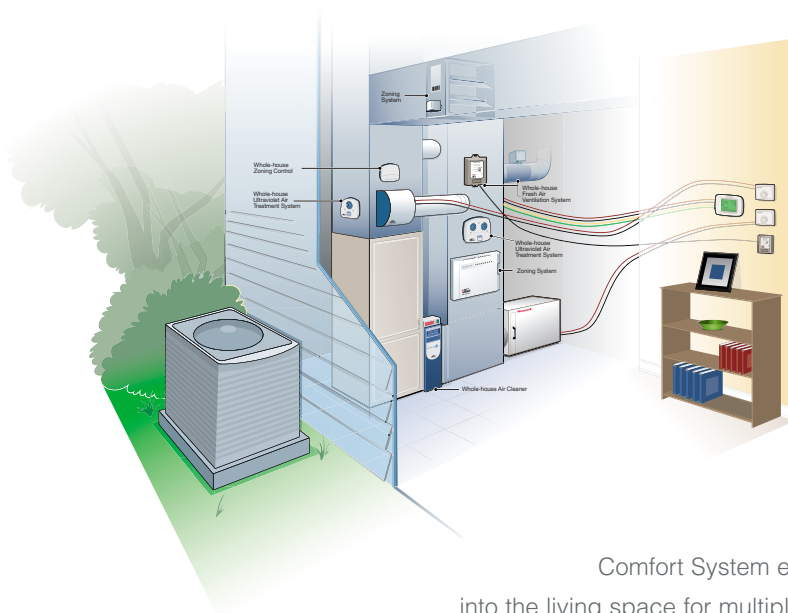
Technical Support: 1-800-468-1502

Ventilation Hotline: 1-800-814-9452

Marketing And Training Support

Honeywell backs your IAQ equipment with technical expertise, training and demonstrations, as well as homeowner literature. You'll also earn ContractorPROSM points with every purchase, and you can use those points for additional products and marketing materials, which can help your business thrive.

One Control for IAQ Equipment

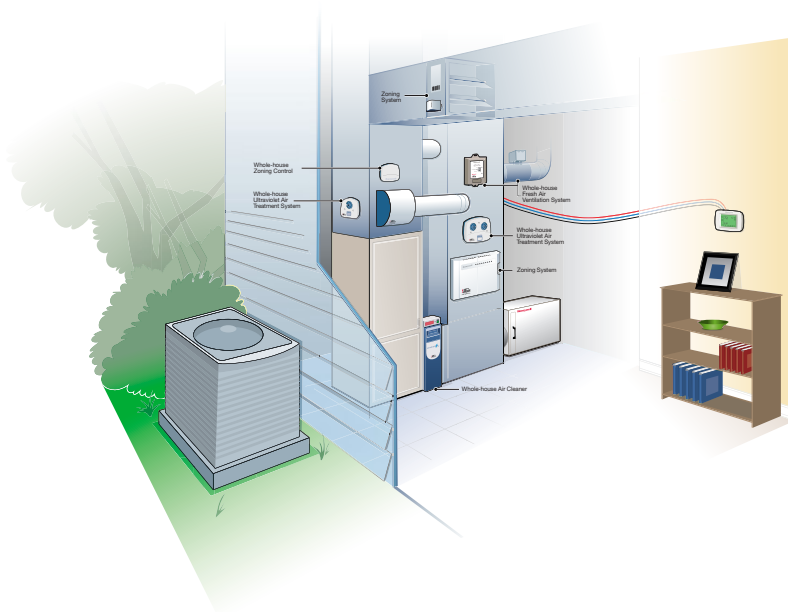


In the past, installing multiple IAQ solutions in a home meant running wires to multiple IAQ controllers — a pain both for the contractor installing the equipment, and the homeowner maintaining the operation of several controls.

No more.

Requiring only the existing thermostat wires for installation, the VisionPRO® IAQ Total Home

Comfort System eliminates the need for pulling new wires into the living space for multiple IAQ controls. With VisionPRO IAQ, the home's temperature, humidification, dehumidification and ventilation can be managed from one easy-to-use and powerful touchscreen control.



Those who know Honeywell, know Honeywell is and always has been the leader in HVAC controls. The VisionPRO IAQ Total Comfort System adds to this legacy, providing IAQ equipment control in the powerful VisionPRO thermostat design.

What are Airborne Particles and Where Do They Come From?

You may be surprised to learn that some common household items pollute the air you breathe, including:

- Pollen and spores
- Human skin flakes
- Candle soot
- Infiltrating dust
- Viruses, bacteria and fungi
- Pet dander
- Tobacco or wood smoke
- Cooking smoke and airborne grease
- Radon gas seeping through the walls and foundations
- Chemical fumes and volatile organic compounds generated by household cleaners

Every cubic foot of air you breathe carries a mixture of millions of such airborne particles — objects so small you could fit 749 of them in the eye of a needle!

Although the larger particles are more visible, and catch attention more easily, the smallest of these particles are of greatest concern for indoor air quality. Viruses, bacteria, smoke and grease are amongst the smallest and can be most damaging to the home and the individuals who live there.

Honeywell provides a wide variety of air filters and air cleaners that reduce the number of airborne particulates flowing into the home.

Measuring Air Filtration Efficiency

Air filtration efficiency depends on the type of air cleaner used, and the type, number and size of the particles in the air stream. It varies from as little as 3% for ordinary throw-away fiberglass filters, to up to 100%¹ for Honeywell's electronic air cleaner.

Every time the furnace or air conditioner comes on, the blower motor circulates air through the ductwork. The force it must overcome to move this air is called "static pressure." All air cleaners, because they are designed to capture particles, present a barrier to this air-flow. This barrier causes air pressure in the ductwork to drop as the blower motor pulls air through the air cleaner.

This is important because air cleaner efficiency ratings can be related to static pressure and pressure drops. Achieving an apples-to-apples comparison between different air cleaners is a difficult task because every manufacturer measures this efficiency differently.

Types of Efficiency Testing

Initial Fractional Efficiency Testing measures the efficiency of brand-new media filters and recently-cleaned electronic air cleaners. The higher the test figure, the better the efficiency.

Minimum Efficiency Reporting Value (MERV) measures the efficiency of media air filters and cleaners that have been in service for a period of time. The higher the media MERV rating, the better the efficiency over the life of the filter.

Weight Arrestance Testing measures the weight of particles trapped by the air cleaner.

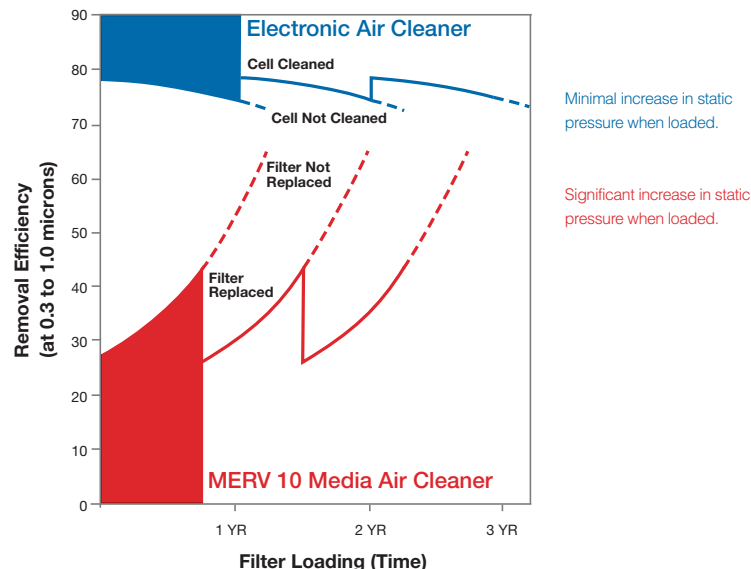
Initial pressure drop measures the decrease in air pressure across brand-new media filters or recently cleaned electronic air cleaners. The lower the pressure drop, the better for the system.

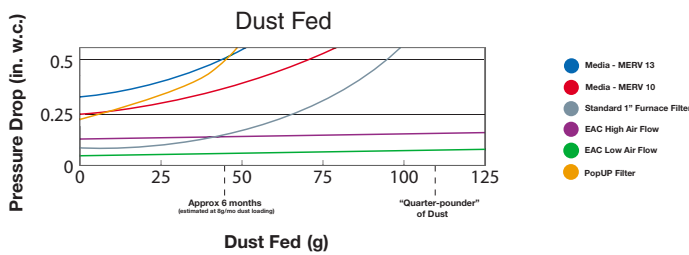
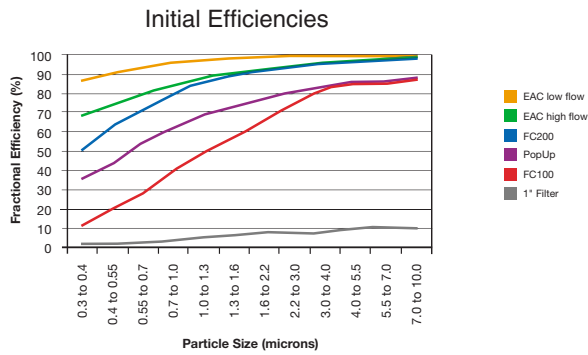
Honeywell air cleaners are tested using the Fractional Efficiency Testing, MERV Testing, and Initial Pressure Drop measurements because Weight Arrestance Testing does not differentiate high-efficiency filters. Only a fraction of all particles (10%) account for 99% of the weight of all particles in the air. These heavy particles tend to settle out of the air before reaching an air cleaner.

¹Based on ASHRAE 52.2 initial efficiency testing of new air cleaners tested at 3-10 micron particles at 295 fpm using SAE fine dust.

²Based on ASHRAE 52.2 initial efficiency testing of new air cleaners using SAE fine dust.

³Based on ASHRAE 52.2 initial efficiency of new filters.





Growing Demand

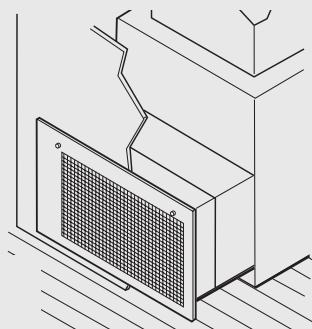
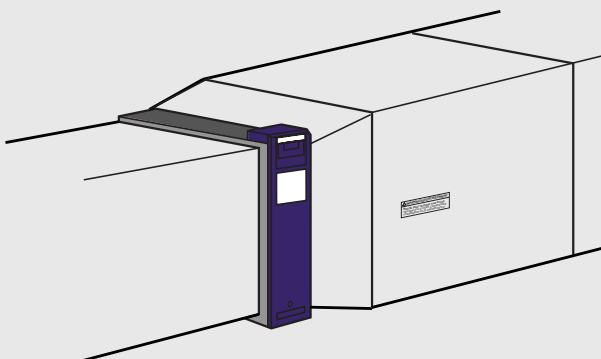
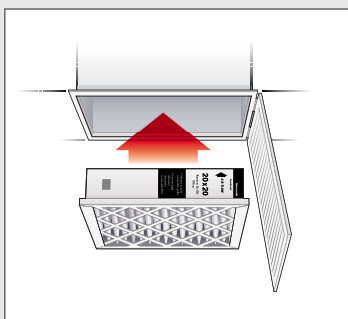
Consumer demand for air cleaners has been on the rise in recent years. According to the Environmental Protection Agency (EPA), indoor air can be 2–5 times worse than outdoor air. Informing homeowners of how filtered air can increase overall comfort is an important selling point to convey.

Signs That A Home Needs Air Filtration

- Pets
- Allergy issues
- Portables in multiple locations

Typical Installations

The air cleaner or filter should be installed where maximum air circulation is passing through the HVAC system. The best location is in the return air duct next to the blower compartment so the air cleaner can help to keep the blower motor and evaporator coils clean. For the most efficient air cleaning, spread airflow evenly across the face of the media, and choose a location that is readily accessible for filter maintenance.



Honeywell Air Cleaners and Filters

Central system air cleaners and filters are generically categorized by:

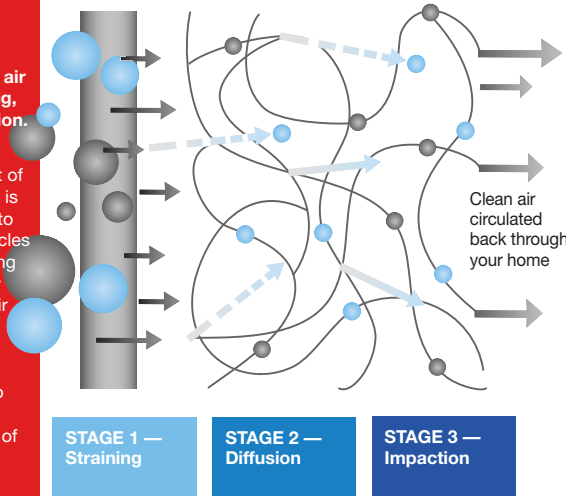
Basic Furnace Filters, which come standard with most HVAC systems. These filters only protect the furnace from bulk dust that can clog equipment before the warranty runs out; they do little to clean the air of smaller particles.

Media Filters, which filter the air using webs of polypropylene fibers. Honeywell offers several media air cleaners and replacement filters, including the latest addition, the PopUP™ media replacement filter. The PopUP™ revolutionizes installation and maintenance with a design that is collapsed down for space-saving shipping and self-assembles without the need for combs, pleat spacers and end caps.

Here's How It Works

Media Filters clean the air in three ways – straining, interception and diffusion.

In the first stage, larger particles are strained out of the air like cooked pasta is strained when poured into a colander. Smaller particles pass through this straining stage, and are jostled by random collisions with air molecules in the media filters, which causes diffusion. This diffusion causes many particles to collide with and stick to the fibers in the process of impaction. The filter-cleaned air is circulated back through your home.

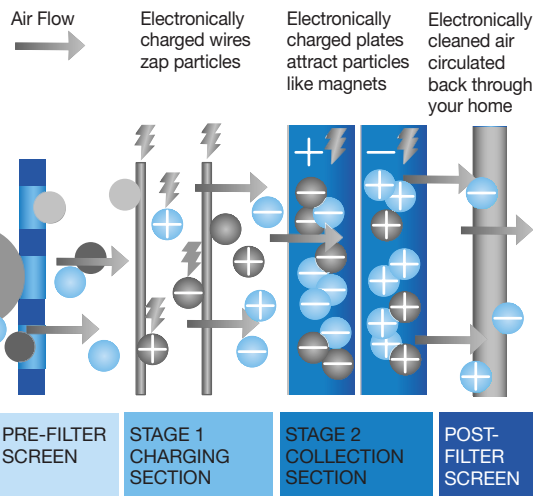


Electronic Air Cleaners, which electrically charge and collect airborne particles on a collection grid. The Honeywell F300 EAC captures up to 100%¹ of airborne particles passing through the product. The design of the F300's collection grid section offers the most surface area available for collecting these charged particles. The F300 power supply also increases voltage based on the amount of particles collected on these plates, so that efficiency over time stays high; an important aspect in EAC selection.

Here's How It Works

The scientific name for the air cleaning process is— Two-Stage Electrostatic Precipitation

Most large particles are caught on the pre-filter screen. Smaller particles flow through the screen to the first section of the cell where they are zapped by an electrical charge. Charged particles are then trapped in the collecting section. The electronically cleaned air is circulated back to your home.



High-Efficiency Particulate Air (HEPA) Filters use deeply folded media to trap a minimum of 99.97% of 0.3 micron particles passing through the filter. HEPA filters come in portable, bypass ducted and stand-alone configurations. The Honeywell F500 HEPA filter can be used as a bypass or in-line configuration. Beware of manufacturers who use terms like “HEPA-style” or “HEPA-like” filters. Many manufacturers offer HEPA-style filters, but they may only be HEPA at initial efficiencies or by circulating air through the filter numerous times. The Honeywell F500 is HEPA quality at initial and average efficiency testing and with only one pass through the filter, which meets the true definition of HEPA.

Air Cleaner Selection Guide

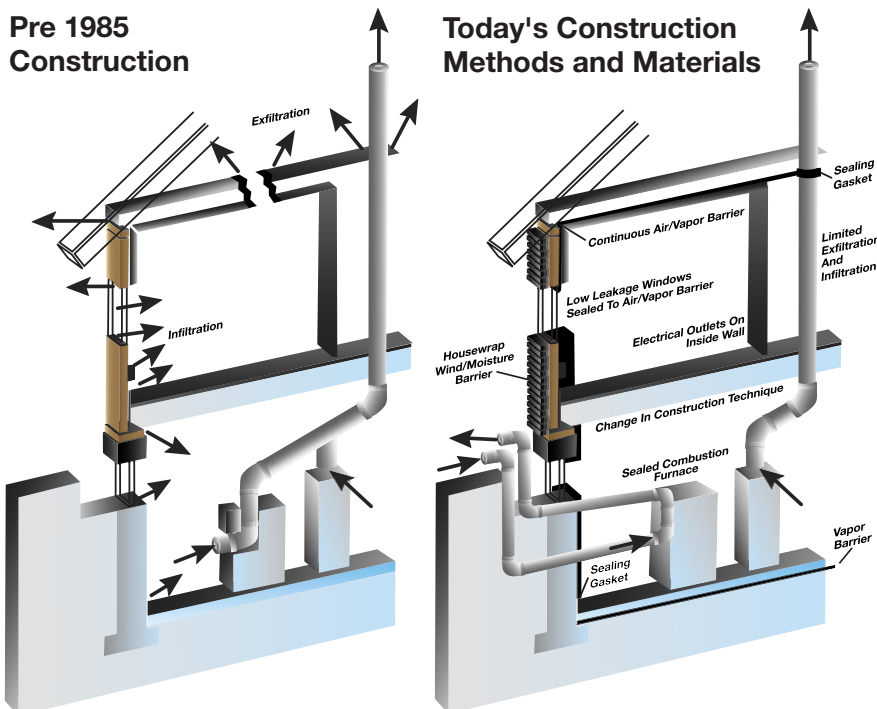
| Picture | Model | Type | OS# | | | |
|---|---------|------------|--|-------|-------|-----------|
|  BEST | F500 | HEPA | F500A1000 | | | |
| | | | F500B1009 | | | |
|  BEST | F300E | Electronic | F300E1001 | | | |
| | | | F300E1019 | | | |
| | | | F300E1027 | | | |
| | | | F300E1035 | | | |
| | | | F300A1620 | | | |
| | | | F300A1625 | | | |
| | | | F300A2020 | | | |
| | | | F300A2025 | | | |
| | | | F300A2012 | | | |
| | | | F300B2012 | | | |
| | F300A,B | | F52F1048 | | | |
| | | | F52F1055 | | | |
|  BETTER | F200E | Media | F200E1003 | | | |
| | | | F200E1011 | | | |
| | | | F200E1029 | | | |
| | | | F200E1037 | | | |
|  NEW | PopUP | Media | POPUP1620 | | | |
| | | | POPUP1625 | | | |
| | | | POPUP2020 | | | |
| | | | POPUP2025 | | | |
| | | | POPUP2200 | | | |
| | | | POPUP2400 | | | |
|  GOOD | F100F | Media | F100F1004 | | | |
| | | | F100F1012 | | | |
| | | | F100F1020 | | | |
| | | | F100F1038 | | | |
| | | | F100F1067 | | | |
| | | | F100F1095 | | | |
| | | | F100F2028 | | | |
| | | | F100F2002 | | | |
| | | | F100F2036 | | | |
| | | | F100F2010 | | | |
| | | | F100F2044 | | | |
| | | | F100F2051 | | | |
| | | |  GOOD | FC40R | Media | FC40R1094 |
| | | | | | | FC40R1037 |
| | | | | | | FC40R1102 |
| FC40R1110 | | | | | | |
| FC40R1128 | | | | | | |
| FC40R1045 | | | | | | |
| FC40R1169 | | | | | | |
| FC40R1052 | | | | | | |
| FC40R1060 | | | | | | |
| FC40R1136 | | | | | | |
| FC40R1003 | | | | | | |
| FC40R1144 | | | | | | |
| FC40R1011 | | | | | | |
| FC40R1029 | | | | | | |
| FC40R1151 | | | | | | |
| FC40R1078 | | | | | | |
| FC40R1177 | | | | | | |

| Model | Size | Application | Features and Functions | | | | | | | | | | | Warranty | | |
|-------|---------------------------|-----------------------|------------------------|-----------------|---|--|--|--|---|--|---|---|------------------------------------|----------|---------|------------|
| | | | Rated Airflow | Electric Rating | Efficiency (MERV not applicable to electronic air cleaners) | Initial Pressure Drop at Rated airflow | Replacement Filter/Postfilter | Standard Efficiency Enhancing Postfilter with Anti-Microbial Coating | AIRWATCH™ Maintenance Reminder | Maintenance Cycle | Self-Regulating Power Supply | Dual Voltage Output Efficiency Optimization | Test Button Operating Verification | | | |
| 00 | Conditioned Space | Bypass or Stand Alone | 360 CFM | 120V | 0.3 microns=99.97% | | 32006026-001 Carbon 32006027-001 2-inch Prefilter 32006028-001 HEPA Filter | | | Wireless reminder included | Carbon = up to 4 months 2-inch Prefilter = up to 16 mo. HEPA Filter = up to 5 years. | | | | 5 Year | |
| 09 | Unconditioned Space | | | | | | | | | | | | | | | |
| 11 | 16X20 | Inline air filtration | 1200 CFM | 120V | 0.3 to 1.0 microns=81% 1.0 to 3.0 microns=93% 3.0 to 10.0 microns=99% | 0.26 in. w.c. | 50000293-001 | Yes | Optional | | Vacuum prefilter = up to 6 months Wash cells = up to 1 year Replace postfilter = 6 months | Yes | Yes | Yes | 5 Year | |
| 19 | 16X25 | | 1400 CFM | | | | 50000293-002 | | | | | | | | | |
| 17 | 20X20 | | 1400 CFM | | | | 50000293-003 | | | | | | | | | |
| 15 | 20X25 | | 2000 CFM | | | | 50000293-004 | | | | | | | | | |
| 00 | 16X20 | Inline air filtration | 1200 CFM | 120V | 0.3 to 1.0 microns=73% 1.0 to 3.0 microns=88% 3.0 to 10.0 microns=95% | 0.21 in. w.c. | 50000293-001 | Optional | Optional | Vacuum prefilter = up to 3 months Wash cells = up to 1 year | Yes | Yes | Yes | 5 Year | | |
| 15 | 16X25 | | 1400 CFM | | | | 50000293-002 | | | | | | | | | |
| 00 | 20X20 | | 1400 CFM | | | | 50000293-003 | | | | | | | | | |
| 15 | 20X25 | | 2000 CFM | | | | 50000293-004 | | | | | | | | | |
| 2 | 20X12.5 | | 1000 CFM | | | | 50000293-004 | | | | | | | | | |
| 2 | 20X12.5 | | 1000 CFM | | | | 50000293-004 | | | | | | | | | |
| 8 | 20X12.5 | Central return grille | 1000 CFM | 120V | 0.3 to 1.0 microns=73% 1.0 to 3.0 microns=88% 3.0 to 10.0 microns=95% | 0.2 in. w.c. | | | Optional | Vacuum prefilter = up to 3 months Wash cells = up to 1 year | Yes | Yes | | 5 Year | | |
| 5 | 20X25 | | 2000 CFM | | | | | | | | | | | | | |
| 13 | 16X20 | Inline air filtration | 1200 CFM | | MERV 13 at 492 FPM 0.3 to 1.0 microns=63% 1.0 to 3.0 microns=90% 3.0 to 10.0 microns=97% | 0.22 in. w.c. | FC200E1003 | | Wireless RF with pressure sensor included | Replace filter = up to 1 year | | | | | 5 Year | |
| 1 | 16X25 | | 1400 CFM | | | | FC200E1011 | | | | | | | | | |
| 9 | 20X20 | | 1400 CFM | | | | FC200E1029 | | | | | | | | | |
| 7 | 20X25 | | 2000 CFM | | | | FC200E1037 | | | | | | | | | |
| 20 | 16X20 | Inline air filtration | 1200 CFM | | MERV 11 at 492 FPM | 0.24 in. w.c. | optional replacement for F200, F100 or Space-Gard | | Optional | Replace filter = up to 1 year | | | | | Limited | |
| 25 | 16X25 | | 1400 CFM | | | | | | | | | | | | | |
| 20 | 20X20 | | 1400 CFM | | | | | | | | | | | | | |
| 25 | 20X25 | | 2000 CFM | | | | | | | | | | | | | |
| 00 | RP2200 Replacement Filter | | 2000 CFM | | | | | | | | | | | | | |
| 00 | RP2400 Replacement Filter | | 2000 CFM | | | | | | | | | | | | | |
| 14 | 16X20 | Inline air filtration | 1200 CFM | | MERV 10 at 492 FPM 0.3 to 1.0 microns=25% 1.0 to 3.0 microns=62% 3.0 to 10.0 microns=85% | 0.23 in. w.c. | | | Wireless reminder included | Replace filter = up to 1 year | | | | | 5 Year | |
| 2 | 16X25 | | 1400 CFM | | | | | | | | | | | | | FC100A1029 |
| 0 | 20X20 | | 1400 CFM | | | | | | | | | | | | | FC100A1011 |
| 8 | 20X25 | | 2000 CFM | | | | | | | | | | | | | FC100A1037 |
| 7 | 25X20 | | 2000 CFM | | | | | | | | | | | | | FC100A1037 |
| 5 | 25X22 | | 2000 CFM | | | | | | | | | | | | | FC100A1037 |
| 8 | 16X20 | | 1200 CFM | | | | | | | | | | | | | FC100A1003 |
| 2 | 16X25 | | 1400 CFM | | | | | | FC100A1029 | | | | | | | |
| 6 | 20X20 | | 1400 CFM | | | | | | FC100A1011 | | | | | | | |
| 0 | 20X25 | | 2000 CFM | | | | | | FC100A1037 | | | | | | | |
| 4 | 25X20 | | 2000 CFM | | | | | | FC100A1037 | | | | | | | |
| 1 | 25X22 | | 2000 CFM | | | | | | FC100A1037 | | | | | | | |
| 4 | 12X12 | | 500 CFM | | | | | | | | | | | | | |
| 7 | 12X24 | | 1000 CFM | | | | | | | | | | | | | |
| 2 | 14X14 | 680 CFM | | | | | | | | | | | | | | |
| 0 | 14X20 | 972 CFM | | | | | | | | | | | | | | |
| 8 | 14X24 | 1167 CFM | | | | | | | | | | | | | | |
| 5 | 14X25 | 1215 CFM | | | | | | | | | | | | | | |
| 9 | 14X30 | 1458 CFM | | | | | | | | | | | | | | |
| 2 | 16X20 | 1111 CFM | | | | | | | | | | | | | | |
| 0 | 16X25 | 1389 CFM | | | | | | | | | | | | | | |
| 6 | 18X24 | 1500 CFM | | | | | | | | | | | | | | |
| 3 | 20X20 | 1389 CFM | | | | | | | | | | | | | | |
| 4 | 20X24 | 1667 CFM | | | | | | | | | | | | | | |
| 1 | 20X25 | 1736 CFM | | | | | | | | | | | | | | |
| 9 | 20X30 | 2083 CFM | | | | | | | | | | | | | | |
| 1 | 20X36 | 2500 CFM | | | | | | | | | | | | | | |
| 8 | 24X24 | 2000 CFM | | | | | | | | | | | | | | |
| 7 | 24X30 | 2500 CFM | | | | | | | | | | | | | | |

Why Is Ventilating Indoor Air Important?

Today's building regulations require homes be tightly built for energy efficiency, but that same tightness can also restrict the intake of fresh air and trap potentially hazardous indoor air pollutants, such as humidity, dry air, wood material off-gassing, cleaning agents, radon, carbon monoxide/dioxide and odors from people themselves.

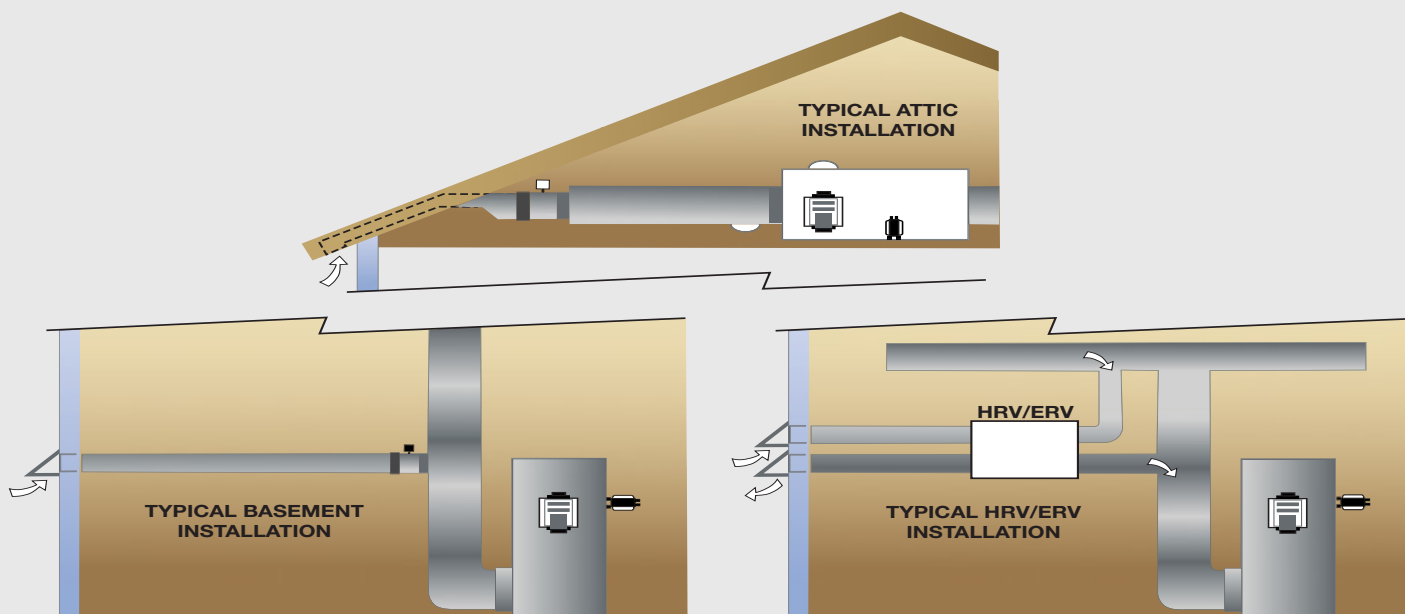
These new codes have increased the need for mechanical ventilation, and because of their versatility with both new construction and retrofit projects, ventilation systems provide immediate benefits to a home.



Typical Installations

Energy and Heat Recovery Ventilation (ERV and HRV) systems function with existing HVAC equipment or can function as a stand-alone system. These systems can be suspended from exposed ceiling joists or surface, or floor mounted.

For fresh air system installation, the air duct and damper must be installed between the outdoors and the return side of the HVAC system. The control is mounted near the HVAC system and wired between the thermostat and fan control. Simple diagnostics and a test button let you know that the system is properly installed and if the ventilation rate meets the required standard for that particular building.

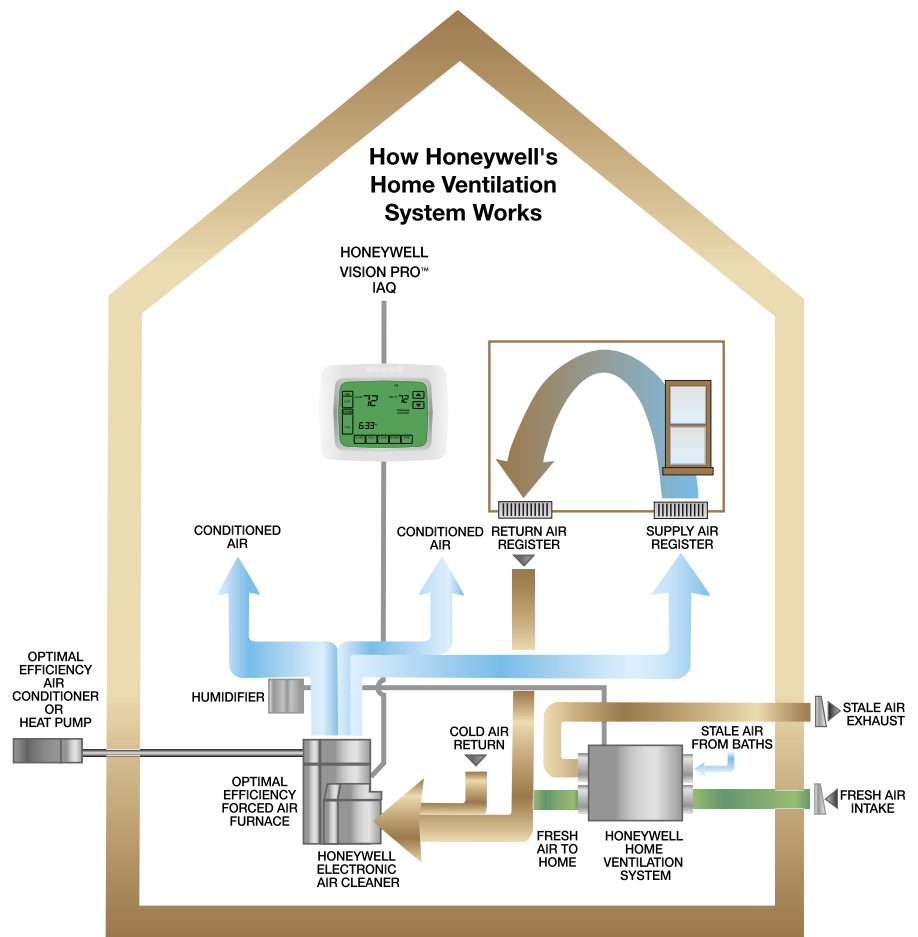


Measuring Indoor Ventilation

According to the ASHRAE Standard 62.2-2004, the required amount of outdoor air to be introduced into the home is .01 CFM per square foot plus 7.5 CFM per person.

There are also provisions in ASHRAE 62.2 that allow ventilation to be delivered on a non-continuous basis, providing maximum output at a fraction of the time. The American Lung Association (ALA), Energy Star, and Environments for Living (EFL) are requiring homes to install ventilation per this standard as a prerequisite to certification.

The basic functionality of the Honeywell W8150 Ventilation Control is to provide ventilation in an energy efficient and cost-effective manner, while still meeting the requirements set in ASHRAE 62.2. The control does this by matching ventilation cycles to the HVAC system's normally occurring heating and cooling cycles. During these times, the HVAC blower is already operating so ventilation is essentially free. In the event the HVAC blower does not operate enough to meet required ventilation, the W8150 control automatically activates the HVAC blower just long enough to do so. Over time, the W8150 "learns" the time and length of the heating and cooling cycles and adapts to provide as much ventilation as possible using the HVAC blower cycles. In short, the control adapts and customizes its operation for each home.



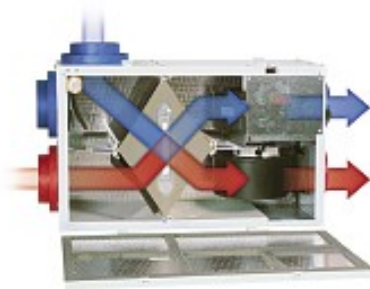
Education

As homes are built tighter to conserve energy, natural air exchanges are substantially reduced, which changes the way homes respond to excess air contaminants and moisture. Educating your customers on this, as well as the effectiveness of whole-house ventilation over portable units (quieter, cost less, and more capacity) will encourage the correct ventilation solutions.

Signs That a House Needs Ventilation

- Excessive dust (house under negative pressure)
- Overly humid
- Can still smell breakfast in the afternoon

Honeywell Ventilation



Energy Recovery Ventilation

Energy and Heat Recovery Ventilation

Honeywell Energy Recovery Ventilators (ERV) and Heat Recovery Ventilators (HRV) provide fresh replacement air while recovering much of the exhausted air's sensible heat (up to 70%), as well as some of the latent heat, by transferring moisture from one air stream to the other. The system draws fresh outdoor

air through the ventilator for distribution throughout the house. Stale air is exhausted outside through the ventilator. Heat is transferred from one air stream to the other as the air passes through the opposite sides of the heat transfer core. ERV systems provide the added benefit of reducing the amount of humidity from the incoming air making ERVs a great choice for humid southern climates. HRV and ERV models also offer core defrost as an option for colder climates.

Y8150 Fresh Air Ventilation System



Y8150 Ventilation System

The Y8150 Fresh Air Ventilation System provides an economical way to work with the existing system fan to deliver outside air to the home, automatically meeting the ASHRAE 62 standard. Intuitive, 'set it and forget it' programming keeps your customers from adjusting the controls, helping to reduce callbacks. With an overall low total installed cost, it is easy to wire in any orientation, requiring only the included damper, transformer and control.

Ventilation Selection Guide

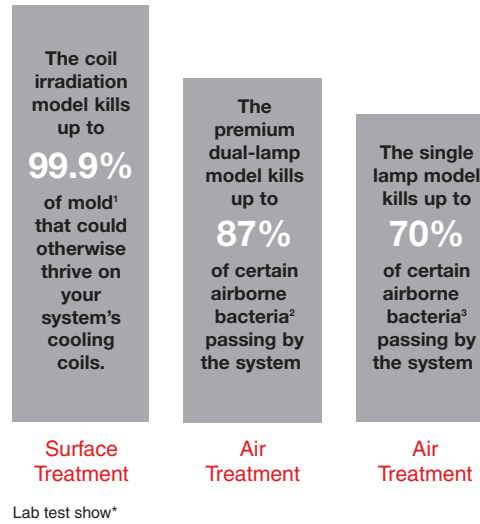
| | Model | |
|---|------------|----|
| | | |
|  | ER150B2006 | Er |
| | ER200B2006 | Er |
| | ER150C2004 | Er |
| | ER200C2004 | Er |
|  | HR150B1005 | H |
| | HR200B1005 | H |
|  | Y8150A1009 | |
| | W8150A1001 | |

* Performance per CAN/CSA-C439-88

| Type | Application | | | Performance | | | | Features and Functions | | | | Warranty |
|----------------------------|---------------|-------------------|-----------------|---------------------------------|-------------------------------|--------------------------|------------------------------------|------------------------|-----------------------|----------------------------|-------------------|----------|
| | Heat Transfer | Moisture Transfer | Defrost Control | Net Supply Airflow @ 0.2 in. wg | Sensible Recovery Efficiency* | Moisture Transfer Ratio* | Nominal Current @ Max speed (amps) | Fan Speeds | Furnace Fan Interlock | Integral Balancing Dampers | Insulated Cabinet | |
| Energy Recovery Ventilator | • | • | • | 164 | 79% | 26% | 1.7 | 5 | Optional | • | • | 5 year |
| Energy Recovery Ventilator | • | • | • | 206 | 79% | 26% | 1.7 | 5 | Optional | • | • | 5 year |
| Energy Recovery Ventilator | • | • | | 164 | 79% | 26% | 1.7 | 5 | Optional | • | • | 5 year |
| Energy Recovery Ventilator | • | • | | 206 | 79% | 26% | 1.7 | 5 | Optional | • | • | 5 year |
| Heat Recovery Ventilator | • | | • | 164 | 66% | | 1.7 | 5 | Optional | • | • | 5 year |
| Heat Recovery Ventilator | • | | • | 206 | 60% | | 1.7 | 5 | Optional | • | • | 5 year |
| Economy Ventilation | | | | | | | 2.1 | | • | | | 5 year |
| Economy Ventilation | | | | | | | 2.1 | | • | | | 5 year |

How Can UV Treatment Systems Control Mold and Bacteria Growth?

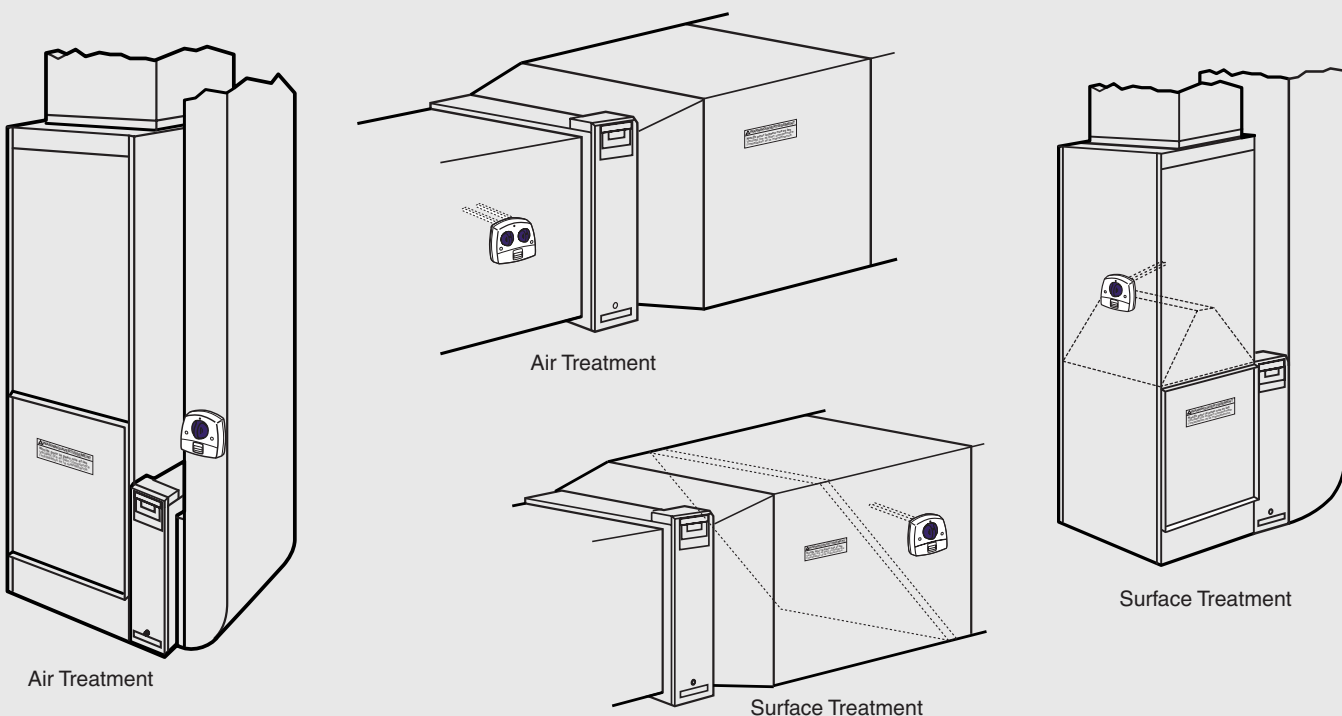
Ultraviolet irradiation has been used for years in a wide variety of disinfection and purification systems, but its newest application is in the HVAC industry. When installed in forced air heating and cooling systems, Ultraviolet Systems kill airborne or surface microorganism contaminants like bacteria and mold. Honeywell UV systems use patented SmartLamp™ control technology that monitors the HVAC system to operate the lamps only when needed. This technology extends bulb life up to five times and reduces power consumption, lowering operating costs. The UV systems also include local diagnostics with the SmartLamp, LED and reset capability.

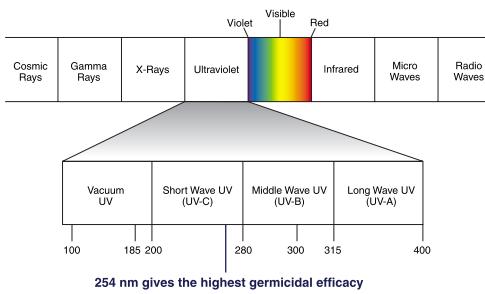


¹Test performed in a test duct showed reduction in colony-forming aspergillus niger mold spores when surface was irradiated at a distance of 18 in. for three hours in still air, using new lamps.
²Test showed single-pass kill rate of serratia marcescens bacteria in a clean metal 12 in. x 25 in. duct at an airflow rate of 2000 cfm using new lamps.
³Test showed single-pass kill rate of serratia marcescens bacteria in a clean metal 12 in. x 25 in. duct at an airflow rate of 2000 cfm using new lamps.

Typical Installations

The UV Air Treatment models are to be installed on the return duct of the HVAC equipment. The single-lamp unit has moderate efficiency and the dual-lamp unit has high-efficiency performance against airborne bacteria in return air applications. The UV Coil Irradiation model is to be installed in the supply side air duct to illuminate the A-Coil section of the air conditioning equipment. It reduces mold growth and spores on duct surfaces, coils and drip pans.

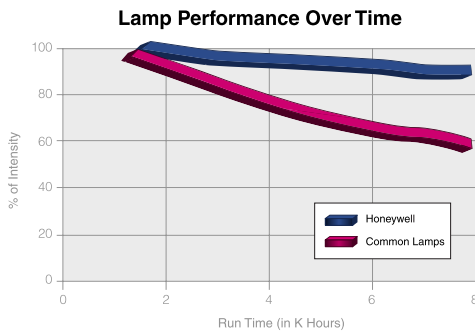
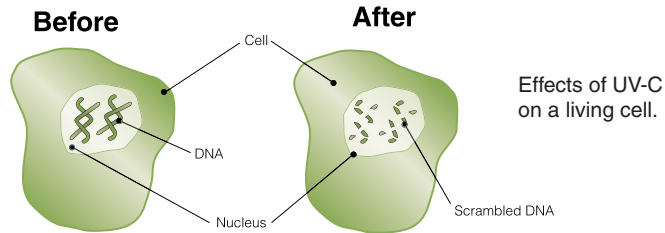




How Does UV Technology Work?

Ultraviolet is a high-energy light invisible to the naked eye, which make up three bands of the light spectrum (UV-A, UV-B and UV-C)

UV-C is the wavelength of light utilized by Honeywell UV Treatment Systems to scramble the DNA coding of bacteria and germs, rendering the pathogen nonviable, unable to reproduce or infect. This is possible because the pathogen's nucleic acid absorbs light energy from 230nm – 290nm, which is within the range of UV-C light.



The dosage required is a measurement of light intensity and exposure time, and differs for each type of pathogen. Many additional factors determine the effectiveness of UV-C irradiation:

- Lamp Intensity – Higher for airborne pathogens as exposure time is limited
- Lamp Life – Industry standard for effective UV-C emission is 8000 hours. Honeywell uses soft lamps that are chemically coated to minimize mercury buildup on lamp walls, increasing effective operation to 10,000 hours.
- Fan Speed – The slower the fan speed, the longer a pathogen is exposed to UV-C. Honeywell models were tested at 2,000 cfm in a 12" x 25" duct to represent real-life applications.
- Lamp Position – Three feet of open space both before and after the lamps wherever possible provides the most effective UV-C dosage.
- Wind Chill – Cooler temperatures make it more difficult for UV-C to penetrate the glass lamp wall, which is why UV Air Treatment Systems should be installed on the return duct so as not to be exposed to chilled air during air conditioning season.
- Maintenance – Dust settling on the outside of lamps has the same effect as mercury on the inside of the lamps. Quarterly lamp cleaning with a soft damp cloth ensure proper UV-C output.

Served By History

UV treatment solutions are fairly new to the HVAC industry, but have been utilized for nearly a century as a germicidal agent in clean zones such as hospitals, restaurants and water treatment plants. UV can be installed in both new construction, retrofit or add-on projects. The following pages highlight the types of Honeywell UV Treatment systems available and the ideal application for each.

Signs That a Home Needs a UV Treatment System

- Children present
- Humid climate
- Closed windows and dry climate in winter

Honeywell UV Treatment Systems

Honeywell UV Air Treatment Systems are installed in the return duct with the goal of irradiating airborne pathogens. Because these pathogens are airborne, UV Air Treatment systems provide higher intensity

UV-C dosages to effectively irradiate these mobile pathogens. UV Air Treatment Systems are available in both dual- and single-lamp configurations, and kill up to 87% of certain airborne pathogens passing through the duct work.



UV Air Treatment System
Dual Lamp Return Air



UV Air Treatment System
Single Lamp Return Air

Honeywell UV Coil Irradiation Systems are installed near air conditioning equipment drain pans and evaporator coils, eradicating up to 99% of surface mold growth on surface areas in the duct work.



UV Surface Treatment
System Coil Irradiation

Patented SmartLamp™ technology is used in UV Treatment Systems to provide additional equipment protection, extended lamp life, and maintenance indications to reduce callbacks.

UV Selection Guide

| | Model |
|---|-------------------|
| | |
|  | UV100E2009 |
|  | UV100E3007 |
|  | UV100E1043 |
|  | UV100A1059 |
| | UV100A2008 |
|  | Replacement Bulbs |

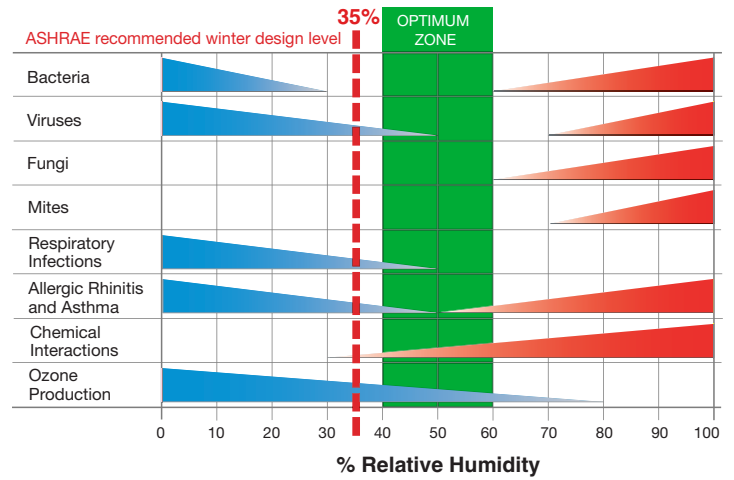
* Air treatment test performed shows a single pass kill rate of 87%.
Surface treatment test performed in a test duct showed a 99% kill rate at a distance of 18" for three hours in still air using new lamps.

| Application | | Features and Functions | | | | | | | | | | | Warranty | |
|---------------|-------------------|--|--|--|--|-----------------------------------|---------------------------------|----------------------------------|---------------------|---------------------------|--|---|----------|---------|
| Air Treatment | Surface Treatment | Quick and easy install and maintenance | Safety is built into sealed design with interlocks | Check operation safely with light pipe in handle | SnapLamp™ replacement bulb provides quick and easy replacement at lower cost | SmartLamp™ Technology | | | | | Kill Rate* | Recommended Application | Voltage | |
| | | | | | | Air Flow Sensor extends bulb life | Bulb cycles to extend bulb life | Protection from harsh conditions | Bulb life indicator | EnviracOM™ communications | | | | |
| • | | • | • | • | • | • | • | • | • | • | 87% Air Treatment | Up to 2,000 CFM | 120V | 5 Year |
| | • | • | • | • | • | • | • | • | • | • | 99.9% Surface Treatment | Any Residential System | 120V | 5 Year |
| • | | • | • | • | • | • | • | • | • | • | 70% Air Treatment | Up to 1,600 CFM | 120V | 5 Year |
| • | • | • | • | • | • | | | | | | 75% Air Treatment 99.9% Surface Treatment | Up to 1,725 CFM Air Treatment Surface Treatment – Any Residential System | 120V | 5 Year |
| • | • | • | • | • | • | | | | | | 75% Air Treatment 99.9% Surface Treatment | Up to 1,725 CFM Air Treatment Surface Treatment – Any Residential System | 240V | 5 Year |
| | | • | • | • | • | N/A | N/A | N/A | N/A | N/A | | | | Limited |

• Reduction of Serratia marcescens bacteria in a clean metal 12" x 25" duct at an airflow of 2,000 cfm using new lamps.
 • Reduction of a 3-log (99.9%) reduction in colony-forming Aspergillus niger mold spores when surface was irradiated at a 2.5 mW/cm² for 15 minutes.

How Can Humidification Control Indoor Air Quality?

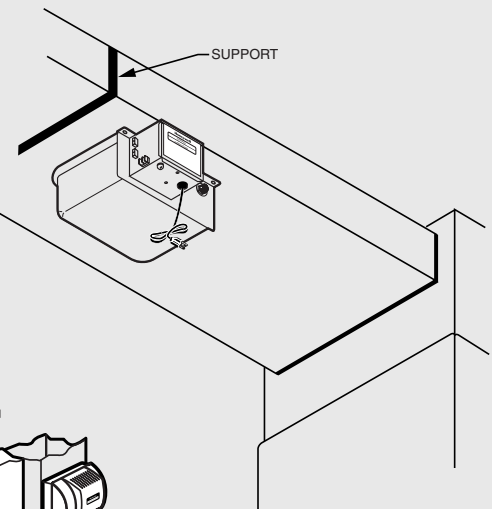
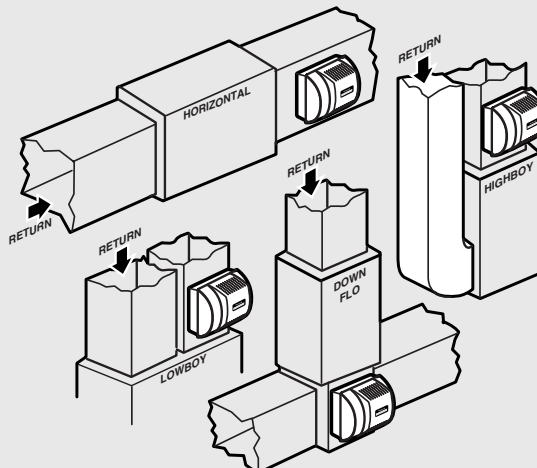
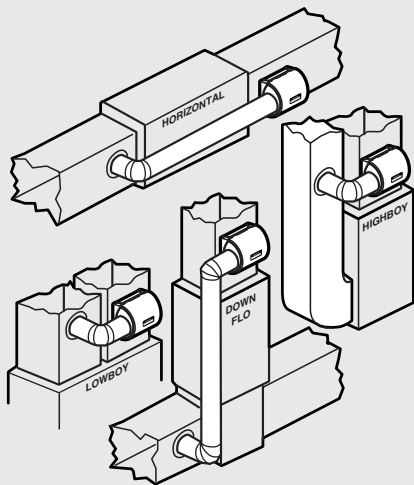
While air cleaners, ventilation and UV treatment systems keep indoor air clean, proper humidification is needed to control relative humidity (RH) levels in the home, minimizing unhealthy airborne pollutants. Too little humidity leaves the body vulnerable to infections, and can cause damage to the home's wood furnishings. Inversely, too much humidity creates ideal breeding grounds for mold, mildew and dust mites.



Typical Installations

Bypass humidifiers are installed on either the supply plenum or return duct, based on what makes most sense in the particular application.

Steam humidifiers are mounted directly to the duct work of the return or supply side of a residential HVAC system. Controlled by a humidistat, the steam humidifier introduces moisture directly into the airstream.



Understanding Humidity

Humidifiers operate by the principle that vapor is created when warm dry air is blown over a water-soaked area (flow-through units), or through evaporated steam from heated water (steam units). As the vapor or steam circulates, the relative humidity rises in the living areas.

The optimal range for annual indoor relative humidity is 35% during the heating season, according to ASHRAE standards. Today's Honeywell whole-house humidifiers and humidistat controls help maintain these optimal ranges while preventing condensation (a common cause of mold development). To understand the benefits of humidification, one must first understand the terms and science behind this technology.

Relative humidity – The amount of moisture present at a given temperature versus the maximum amount of humidity the air is capable of holding at that same temperature. If relative humidity is 35% at a given temperature, the air is 35% saturated with water.

Dew point – The temperature at which moisture in the air will condense into water droplets. To prevent condensation, dew point must be below the temperature of the coldest surface in the house. As the temperature of home surfaces (typically windows) drops below dew point, condensation forms.

Mold Prevention – The trick to preventing condensation within a home is not moisture elimination, but moisture control. The majority of mold growth in homes is not caused by humidified air, but standing bulk water; usually around a cold surface (i.e., windows). According to ASHRAE standards, mold can develop when humidity levels are above 60%. Honeywell humidity controls are designed to inhibit relative humidity from exceeding this level, which minimizes the risk of mold growth.

Infiltration – Cold air holds less moisture than warm air. Without adequate humidification, the natural infiltration of cold, dry, outside air into a home will lower the indoor relative humidity far below the comfort level. During the winter months, indoor relative humidity can drop below 6% as a result. Too little humidity can damage wooden assets in the home, including hardwood floors, staircases, furniture and musical instruments.

Multiple Applications

Humidification solutions can be used in both new construction, retrofit or add-on projects. Be aware of concerns about moisture and mold, and educate, discuss options, and ultimately choose the right humidifier for the home. The following pages explain how Honeywell humidifiers work and the ideal application for each.

Signs That a Home Needs Humidification

- Cracking trim
- Dry eyes in the morning
- Gaps in hardwood flooring
- Static electricity

Honeywell Whole-House Humidifiers



HE120 Drum flow-through humidifiers are ideal for homes without a drain located near the HVAC equipment, or where water costs are high. A foam pad is rotated into a basin of water within the HE120 housing, and warm dry air is then blown through the moist pad and out through the duct system into the living areas. Both small in size and lightweight, the HE120 is easy to install and maintain.



HE225/HE265 Bypass flow-through humidifiers provide the most flexible installation options, allowing for mounting on either the supply plenum or return duct. A bypass duct then connects the unit to the duct opposite of the unit installation. When the furnace blower moves air into the supply, higher pressure is created than in the return duct. As these two pressures equalize, air is sucked from the supply, through the humidifier's soaked clay media pad, and into the return duct for recirculation through the furnace and out into the living areas.



HE365 Powered flow-through humidifiers work best with variable speed, multistage furnaces, which reduce airflow during extended runtimes when only the first stage of heating is operational. The HE365 comes with its own internal fan which acts as a booster to the furnace blower during these reduced airflow cycles. Powered flow-through units do not require a bypass duct and can be installed in small, narrow areas of the supply duct.



HE420 Steam Power humidifiers can humidify the air without a call for heat to the HVAC system, which makes them ideal for large homes that require humidity off heating season. This on-demand capability also provides less fluctuation in relative humidity within the home. HE420 steam humidifiers hold water in a stainless steel reservoir with a heating element that boils water when the humidistat indicates the need for humidity, and is mounted under a supply or return air duct.


Honeywell Humidity Controls

H8908 Standard Mechanical Controls put complete responsibility on the homeowner and sometimes require daily adjustments. H8908 controls are ideal for homeowners that desire complete control of the humidity levels in their home, adjusting when needed.

H1008 Automatic Electronic Controls offer 'set-it and forget-it' programming. Once properly adjusted, the H1008 automatically adjusts humidity levels based on outdoor temperature or furnace run time. No user interaction is required.



Humidifier Selection

| | Model | |
|---|------------|---|
| | | |
|  | HE420A1009 | F |
|  | HE365A1006 | F |
| | HE365B1004 | T |
|  | HE265A1007 | |
| | HE265B1005 | |
| | HE225A1006 | T |
| | HE225B1004 | |
|  | HE120A1002 | T |

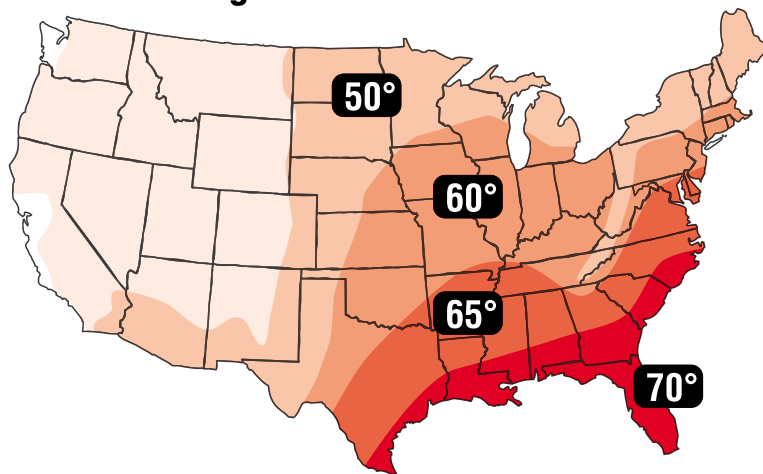
| Type | Features and Functions | | | | | | | | | | | | | | | Warranty | Replacement Pads | | | | | |
|--------------------------|------------------------|------------------------|--------------------|-----------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------|---|---|--|---|---|---|---|----------------------------|------------------|---------------------------|-------------------|---|-------------------------------------|----------------------------|
| | Gallons Per Day | Square Footage Covered | Humidity on Demand | Humidity When System Fan Operates | Drainless Application | Low Water Cut-off Switch | PerfectFlo® Water Distribution Tray | Humidistat | | | H1008 Dewpoint Based Humidity Auto Control | | | | | AglON™ Anti-Microbial Pads | UV Stabilizer | Carbon Black UV Deflector | Integrated Damper | Meets American Lung Association® Health House® Guidelines | Conventional | AglON™ Anti-Microbial Pads |
| | H1010 Auto/Manual | H8908B Manual | H908 Auto/Manual | Dewpoint Control | Self Regulates to Optimize Humidity | Prevent Frost on Windows | Status Indicator LED | Outdoor Sensor Optional | | | | | | | | | | | | | | |
| Steam Powered | 13 | 3,000 | • | | | • | • | • | | | | | | | | | | | • | 5 Year | Inline Chlorine Filter 50019240-001 | |
| Fan Powered Flow-Through | 18 | 3,000 | | • | | | • | | • | | | | | | • | • | • | | • | 5 Year | HC26A1008 | HC26E1004 |
| | 18 | 3,000 | | • | | | • | | • | • | • | • | • | • | • | • | • | | • | 5 Year | HC26A1008 | HC26E1004 |
| Bypass Flow-Through | 17 | 2,800 | | • | | | • | | • | | | | | | • | • | • | • | • | 5 Year | HC26A1008 | HC26E1004 |
| | 17 | 2,800 | | • | | | • | | • | • | • | • | • | • | • | • | • | | • | 5 Year | HC26A1008 | HC26E1004 |
| | 12 | 2,000 | | • | | | • | | • | | | | | | • | • | • | • | • | 5 Year | HC22A1007 | HC22E1003 |
| | 12 | 2,000 | | • | | | • | | • | • | • | • | • | • | • | • | • | | • | 5 Year | HC22A1007 | HC22E1003 |
| Drum Flow Through | 17 | 2,000 | | • | • | | | | | | | | | | | | | | | 5 Year | 32000146-001 | |

How Can Dehumidification Help Control Indoor Air Quality?

ASHRAE industry standards cite ideal indoor relative humidity levels should be below 51% to deter unwanted conditions and boost overall comfort. Any geographic region with summer dewpoint averages above 55° F are potential growth regions for whole-house dehumidifiers.

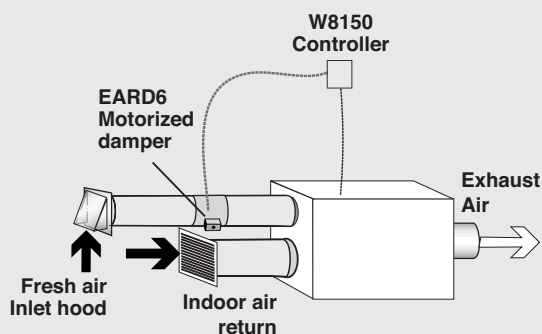
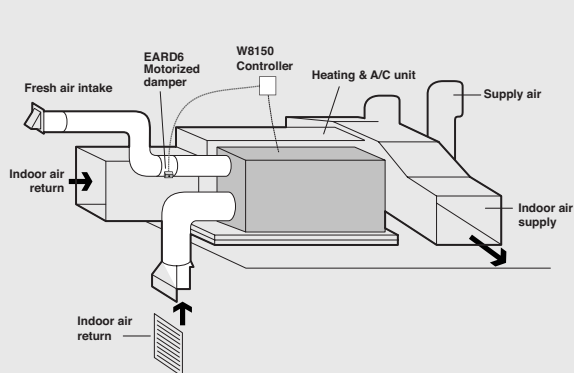
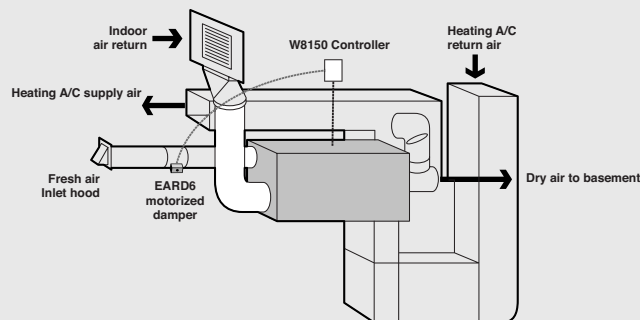
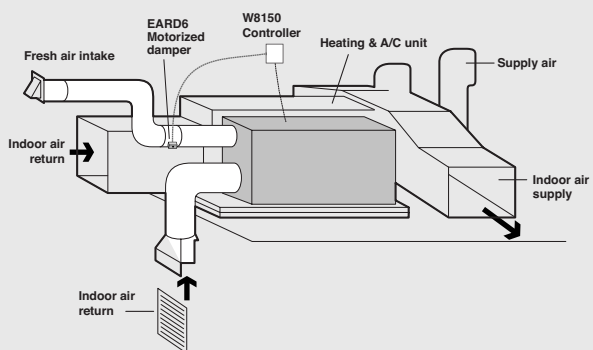
Whole-house dehumidifiers are designed to provide three key components to healthy indoor air — fresh air ventilation, particulate filtration and humidity control.

Average Summer Dew Points



Typical Installations

For the ideal installation, the whole-house dehumidifier should draw air from the central part of the home and return it to isolated areas, such as bedrooms, the den, utility rooms, or family room. The unit can draw from the return and dump into the supply if needed, and it can be installed in a variety of locations to meet application needs. The control should be installed where it can accurately sense relative humidity.



Attic installation

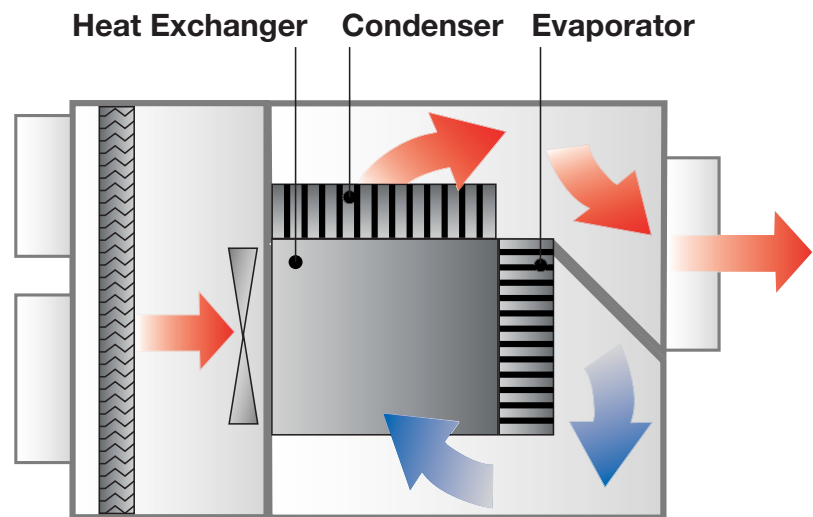
How Does Dehumidification Work?

Whole-house dehumidifiers take on the work an air conditioner (AC) does to remove moisture from the air (latent heat), allowing the AC to focus on the heat sensed by the thermostat (sensible heat). When the AC unit is able to focus on removal of sensible heat, it actually achieves the SEER rating it was designed to achieve.

Whole-house dehumidifiers also provide better levels of comfort for the homeowner when moderate temperatures exist and the AC unit isn't running enough to remove significant moisture — causing the RH in the home to rise. When raining, in the evening, spring and fall – conditions often exist where an air conditioner does not run but humidity remains high. A whole-house dehumidifier does the job in place of lowering the temperature in the house to provide humidity relief.

And when the RH in the house is lowered, the temperature will feel cooler, allowing the homeowner to raise the temperature setting on their thermostat.

The Honeywell DH90 removes up to 90 pints of water per day while using 45% less energy than competitive brands. The secret is in the DH90's core. The core acts much like an HRV, moving the air temperatures from one air stream to another. After the initial air stream is cooled by moving through the evaporator, it moves through the core and pre-cools the new incoming air. The air temperature of the new incoming air is lowered before it hits the evaporator, causing it to be at a much lower temperature when hitting the evaporator than competitive models. The core technology allows the DH90 to remove more moisture during first pass removal, so the DH90 uses less energy and puts much less heat into the air stream than other models.



Not Just New Construction

Retrofit dehumidification sales have been on the rise in recent years, making it the HVAC industry's hot-topic comfort solution. Coupling the energy savings message with the ventilation control included with the DH90 will ensure the home is being provided with high-capacity, cost-effective dehumidification that will safeguard the home from excess moisture.

Signs That a Home Needs Dehumidification

- Low set point on thermostat in hot climate
- Condensation on walls and windows
- Humidity levels above 60%
- Excessive dust
- Uncomfortable sleeping conditions

Honeywell Whole-House Dehumidifiers



DH90 Whole-House Dehumidifier and W8150 Control

The Honeywell DH90 is capable of removing 90 pints of water per day from the home's indoor air, while using minimal energy. This allows the unit to maintain indoor humidity levels below 50% — the level widely recognized as ideal. The DH90 also includes MERV 11 air filtration.

Fresh outside air may be ducted and regulated into the DH90 dehumidifier with the W8150 ventilation control, which comes packaged with the DH90.

Dehumidification Select

| | | Pints per Day |
|--|----------------|---------------|
|  | Honeywell DH90 | 90 |

| Features | | | | | | | | | | | | |
|----------------|--------------|---------|-----------------------------|--------|---------------------|----------------------|----------------------|--------------------------|---------|--|---------------------------|----------|
| Prints per Day | Energy Usage | Airflow | Cabinet size | Weight | Filter | Duct sizes | | | UV Lamp | Bundled Controls | Damper Options | Warranty |
| 10 | 6.2 amps | 200 cfm | 34.5"L x 15.75"W x 20.875"H | 100lb | Merv 11 replaceable | 1" – 10" supply port | 1" – 10" return port | 1" – 6" ventilation port | | W8150 ventilation controller and H8908 Dehumidistat packaged with unit | EARD6 6" damper available | 5 year |

Indoor Air Quality Homeowner Checklist

For your next customer visit, ask the homeowner the following questions to understand if they could benefit from installing Honeywell IAQ solutions:

- Are you exposed to indoor air pollutants such as mold, bacteria, pollen, animal dander or tobacco smoke?
- Do you have dry air?
- Do you have static cling and/or static electricity in the winter?
- Do you have woodwork, wood furnishings, artwork, wooden musical instruments or collectibles that need to be protected and preserved?
- Do you have window condensation when temperatures drop?
- Do you own pets?
- Do you have small children?
- Does the indoor air seem stale during winter months?

Quick Tips

Consider these simple strategies to improve the home's IAQ.

- Control pollution at the source. For example, keep windows closed during the prime ragweed season.
- Ventilate your home. Use exhaust fans when you cook or take a shower, and refresh your air with a Honeywell Ventilation System.
- Filter the air with a whole-house air cleaner.
- Treat the air with an ultraviolet air treatment system.
- Maintain the correct relative humidity levels with a whole-house humidifier and/or dehumidifier.

ContractorPROSM Rewards Program

As a member of Honeywell's ContractorPRO rewards program, you'll earn points on every qualifying Honeywell purchase that you make (\$1 spent = 1 point). Redeem earned points for FREE Honeywell Product, Co-op Advertising, Training, Luxury Rewards and more.

Use the worksheet below to determine the dollar value of annual rewards that you could earn from the ContractorPRO program when you purchase Indoor Air Quality products and other qualifying Honeywell products.

Equation 1

$$\underline{\hspace{2cm}} \# \text{ of IAQ Products Purchased Annually} \times \$ \underline{\hspace{2cm}} \text{ Price Paid Per Product} \\ = \underline{\hspace{2cm}} \# \text{ of Contractor PRO Points}$$

NOTE: Program available to contractors. Do the same equation for other non-Honeywell products purchased throughout the year. Qualifying products include RESIDENTIAL: Thermostats, Zoning Panels and Dampers, Air Cleaners and Replacement Filters, Ventilation, UV Treatment Systems, CO Monitors, Humidifiers, Dehumidifiers, Air Eliminators, Zone Valves, Boiler Trim Kits, Backflow Preventers, Boiler Fill Valves, Mixing Valves, Pressure Reducing Valves, Gas Systems, Oil and Hydronic Systems, Genetron Refrigerants, COMMERCIAL: Actuators, Remote Bulb Controllers, Thermostats, Dampers, Valves, Valve Actuators, Sensors, Pneumatics, Foot Mounted/Modutrol Motors, Economizers, Select Restricted Contractor Classification Products.

Equation 2

$$\underline{\hspace{2cm}} \# \text{ of Contractor PRO Points Earned} \div 50 \\ = \$ \underline{\hspace{2cm}} \text{ Free Product, Co-op, Training, Luxury Rewards*}$$

*Amount varies based on Reward.

The Home Comfort And Energy Efficiency Leader

Only Honeywell provides you with the leading portfolio of residential control products to meet your needs for every application, budget and customer.



Thermostats

Honeywell thermostats are the number one choice of both homeowners and contractors. From the effortless programming of the VisionPRO™ to the popular design of The Round,™ Honeywell helps you meet the needs of every application, customer and budget with just one brand.



Whole-House Air Cleaners

Honeywell whole-house air cleaners and replacement filters have a long history of quality performance and reliability. They also come with exclusive industry features like filter composition, roll-formed steel cabinets and five-year warranties.



Whole-House Humidifiers

Steam. Powered. Bypass. Drum. Honeywell whole-house humidifiers come in a variety of styles, so you can meet any situation. And Honeywell humidifiers let you offer your customers features not available on any other brand, including patented PerfectFlo™ water distribution trays and AgION™ Anti-microbial humidifier pads.



UV Treatment Systems

With built-in safety features, lamps that install without tools and SmartLamp™ Technology that extends lamp life, Honeywell ultraviolet air and surface treatment systems are a great choice. A complete array of single- and dual-lamp systems is available.



Whole-House Dehumidifier and Ventilation Systems

Honeywell offers a variety of energy efficient dehumidifier and ventilation systems for both new construction and retrofit applications.



Zoning Solutions

With Honeywell, you'll have access to the most extensive zoning product line available, including conventional, communicating and wireless zone systems and dampers.



Water Solutions

Grow your business by adding Honeywell water solutions products to your portfolio. From hydronic heating controls to mixing valves, Honeywell water solutions are built with both customer and contractor satisfaction in mind.

Learn More

Call toll-free 1-800-328-5111

E-mail info@honeywell.com

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50-8767
July 2006
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