

IAQ-1 DESCRIPTION

Advanced 3-stage whole house air disinfection system utilizing a 5" pleated mechanical filter for the control of dust, pollen, spores and other airborne particulates; UVGI (ultraviolet germicidal irradiation) for the control of germs (virus, bacteria, fungus), and allergens; and Photocatalytic Oxidation for the control of VOC's (volatile organic chemicals) that may cause odors. System will provide a theoretical URV-12 rating, 99% air disinfection when properly sized to air path dimensions and CFM. Ultraviolet disinfection system complete with all lamps, miscellaneous accessories and mounting hardware included.

QUALITY ASSURANCE

The IAQ-1 is classified by UL (Underwriters Laboratories) as an ABQK (air duct mounted accessory). Device meets UL standards 1598, UL 153, UL 1995; CSA standard C22.2 No. 9-M1989, and UL/CSA harmonized standard C22.2 No. 236-M90/UL1995. Each product and component is tested under ANSI/ASQCZ 1.4.

GENERAL CONSTRUCTION

Cabinet

- Designed for use with an HVAC system.
- Double walled to provide an insulated air passage barrier and to prevent condensation sweating.
- Will support 200 PSI of equally applied down force without collapse or distortion.
- Powder coated on all surfaces, inside and out.
- All openings for the cabinet door and power cord are gasketed with a continuous plane of foam or rubber to prevent air seepage.
- Cabinet doors are hinged and operate in a vertical or horizontal position.
- Cabinet door has a viewport for homeowner quick access and assurance of lamp operation.
- Viewport is safety glass, ¼" thick.

UVGI Device

- In-duct Type UV Disinfector Bank wired to properly energize two Philips PL-L36W TUV Lamps (included).
- Designed to achieve a probable URV-13 rating, 99% disinfection of air passing through the AHU. 64" or UV lamp/tube will irradiate the air and interior surface of the cabinet.
- Powered with a 6' grounded power cord for the appropriate voltage.
- Captive Lamp Sockets.
- Operate at 120V – 277V, 50Hz – 60Hz.
- Integral GLR Fuse.
- UV Germicidal Lamps positioned to provide 360° disinfection.
- UV fixture is completely removable for ease of service.

Ultraviolet Lamps

- Lamps are manufactured by Philips.
- Lamp(s) are 36 nominal watt, 12 UV watt high output, and operate at 253.7 nanometer.
- Lamp(s) are a single-ended twin tube design so that no external wires are exposed.
- Lamp(s) contain 4.5 mg or less of mercury per lamp.
- Lamp(s) provide 175 microwatts/cm² at 400fpm/45°F, measured 1 meter from the lamp.
- Lamp change can be performed without UV fixture disassembly, without the use of tools, and does not require personnel to enter the wiring compartment to facilitate lamp change.
- Lamp life rated by manufacturer at a minimum of 9000 hours, based on 3-hour start/stop cycles; lamp depreciation not to exceed 15% at rated life.

Ballasts

- Ballasts are CBM, ETL and UL listed for the lamp provided.
- Ballasts high power factor, class P, Sound Rating A, Type 1 Outdoor.
- "Suitable for air handling spaces" and meet the harmonic distortion requirements of ANSI.

Pleated Filter

- 5" pleated mechanical filter, with UV-resistant assembly glues and poly-blend media. Captures airborne particulate and allergens such as hair, pollen, mold, and other allergens.
- MERV 11 rating. The MERV is based on the worst-case performance of a filter through all six stages of dust loading and all particles. A rating of MERV 11 corresponds to 50-65% efficiency for particles 1-3 microns and above 85% efficiency for particles 3-10 microns.
- Filters dimensions 20 x 16 x 5" for 17" AHU/furnaces; 20 x 20 x 5" for 21" AHU/furnaces; 20 x 23 x 5" for 24" AHU/furnaces.

PCO

- Patented St. Gobain Quartzel felt media embedded with titanium dioxide (TiO₂) to provide high degree of odor, chemical and bio-aerosol removal through the continuous process chemical reaction.
- High substrate purity (SiO₂ ≥ 99.99%) of Quartzel® fibers (used for fiber-optic transmission) provides excellent UV lamp transmission into the mass of the material (depth-load or volume efficiency rather than surface-load inefficiency).
- Media area weight of 65 g/m² minimum.
- Metal frame with expanded metal air passages to capture and support the Quartzel PCO media.

Installation/Mounting

- All mounting hardware is supplied with the unit.
- Pleated filter, UVGI fixture, and PCO are completely removable from the cabinet for maintenance and lamp change.
- Device must be installed as per the manufacturers written installation instructions and drawing concerning proper placement, wiring and unit testing.

Safety Features

- Germicidal lamps emit UV-C radiation, thereby posing a potential risk of exposure to eyes and bare skin during maintenance. Always dress appropriately.
- IAQ-1 employs an integral Safety Interlock Switch to interrupt power when unit is open for servicing.
- Safety Interlock Switch meets the following UL, CSA and CCC standards: (UL508 (E76675), CSA C22.2 No.14 (LR45746), CCC GB14048.5 (2003010303077623).
- Safety Interlock Switch will operate without icing in ambient temperature of -10°C to 80°C (14-176°F); and in ambient humidity of up to 95%.
- IAQ-1 has an integral visual examination port of safety glass, which will withstand a 5-pound impact test to facilitate external inspection of lamps.

Pressure Drop

- Pressure drop when new should not exceed .24" WG at rated air speed, when tested to ASHRAE test 06-809.
- For installation with residential, small commercial AHU and Furnace equipment, please refer to IAQ-1 Selection Guide: .24" in WG ASHRAE test 06-809.



Because of continuing improvements, actual product may differ slightly from photo.
Specifications are subject to change without notice.

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3-Stage Indoor Air Quality System (IAQ-1)








The air inside a climate controlled home can become laden with indoor contaminants such as dust, animal dander, air borne microbials, and food and tobacco odors. EPA studies show that the air inside can be 2-5 times, and up to 100 times, more polluted than the outside air. The tighter the home is (proper weather stripping, good installation, storm windows) the more likely a whole house air cleaning system is needed to continually remove these potentially harmful contaminants.

The **PROTECH™ 3-Stage Indoor Air Quality (IAQ-1) System** utilizes the latest in contamination control technology to reduce indoor pollution. It attacks all three classes of airborne contaminants: particulates, microbial and chemicals (volatile organic compounds). These include small dust particles, airborne mold spores, bacteria, viruses and chemical based odors.

The PROTECH IAQ-1 is installed in the HVAC system. Air in the home then passes through

- 1** A high efficiency pleated particulate filter (MERV11) removing over 95% of particles down to 1 micron including pollen, dust and pet dander.
- 2** Two UV-C ultraviolet lamps remove bio-aerosols by penetrating the microbe's cell preventing reproduction. These include viruses, bacteria, mold spores and fungi.
- 3** The UV-C radiation reacts with a patented Quartzel® felt material containing titanium dioxide. The photocatalytic oxidation (PCO) process effectively destroys volatile organic compounds (VOCs) that create unpleasant odors including paints, cleaning supplies, cooking smells and other gases.

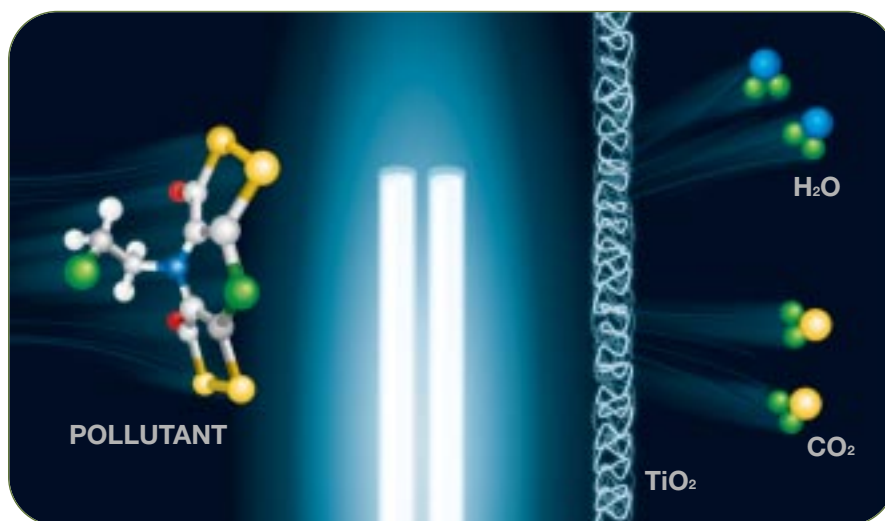
SOURCES OF COMMON HOUSEHOLD POLLUTANTS

	PARTICLES including pollen, dust mites, dirt and pet dander		COMBUSTION PRODUCTS including cigarettes
	BIOAEROSOLS such as certain mold spores and bacteria, viruses and fungi.		VOLATILE ORGANIC COMPOUNDS from building materials, such as upholstered furnishings, carpeting, adhesives, fresh paint, new paneling and pesticides.
	HOUSEHOLD PRODUCTS such as cleaning products, hobby supplies, solvents, adhesives, paints and dry-cleaned clothing		

Three stage purifications attacks all contaminant types

- 1 MERV 11 Filter traps airborne particles such as dust and pet dander
- 2 UV-C lamp destroys airborne pathogens like viruses, bacteria and mold.
- 3 Photocatalytic Oxidation (PCO) removes odor causing volatile organic compounds such as cooking odors and cigarette smoke.

WHAT IS PHOTOCATALYSIS?



The combined action of the UV ray and the Titanium Dioxide in the Quartzel felt acts as a catalyst producing reactive radicals from the H₂O present in the air. These radicals have an oxidation power twice that of chlorine and decompose organic elements into basic molecules such as CO₂ and H₂O reducing odors as a result. Effectively treats: formaldehyde, aldehyde, ethylene, alcene family and phenolic compounds, and sulfur.

PROTECH™ 3-STAGE SYSTEM OFFERS COMPLETE INDOOR POLLUTION CONTROL

	3-STAGE IAQ SYSTEM	ACTIVE CARBON FILTER	HEPA FILTER	HIGH-ENERGY UVC LIGHT	ELECTRONIC AIR CLEANERS	STANDARD BOX FILTER
captures small, breathable particles down to 1 micron	■		■		■	■
captures airborne mold and other bioaerosols down to .01 micron	■		■			
captures and destroys odors (cooking fumes, pet odors)	■	■		■		
captures and destroys chemical vapors (paint, adhesives, solvents)	■	■		■		
does not generate ozone	■	■	■	■*		■
low operating cost	■		■	■	■	■

*With use of non-ozone lamps

FEATURES

- UV-C lamp vs competitors UV-A
- Patented Quartzel felt from Saint Gobain
- Phillips ultraviolet lamps
- Advance ballast
- Dual safety switches
- Viewport
- UL classified for air duct mounting
- Mounts vertically or horizontally
- Only ten inches in height
- Front access door
- Low static pressure .24"WG

BENEFITS

- UV-C controls microbes
- Superior PCO process
- Best performance available anywhere
- Worry-free electrical performance
- Safe handling
- Safe lamp inspection
- Quality assurance
- Adapts to any application
- Saves space
- Easy to service
- Will not restrict airflow



STAGE 3 – GASES AND ODORS

The **PCO** (photocatalytic oxidation) **TiO₂ Saint Gobain Quartzel® Felt** removes volatile organic compounds, including tobacco smoke, pet smells, chemical fumes and most common household odors.



STAGE 2 – MICROBES

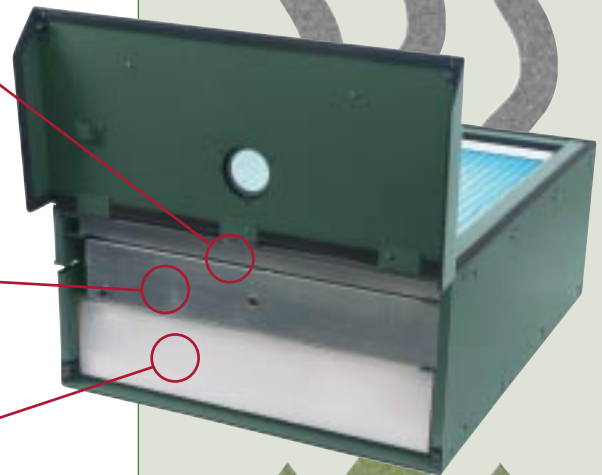
Two **Philips Ultraviolet Germicidal Sterilamps,®** powered by the **Advance Ballast**, destroy viruses and bacteria.



STAGE 1 – PARTICULATES

The **5" Pleated Merv11 Filter** traps mold, dust, pet dander, and a host of other allergens.

The **PROTECH™ Advanced 3-Stage Indoor Air Quality (IAQ-1) System** combines three proven technologies in one compact, easy-to-install unit. As contaminated air passes through the system, clean, fresh air is then passed into the air handler or furnace unit. Clean, fresh air is then distributed throughout the house.





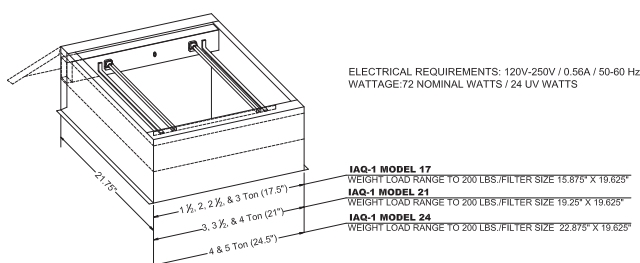
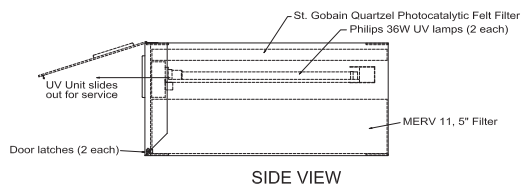
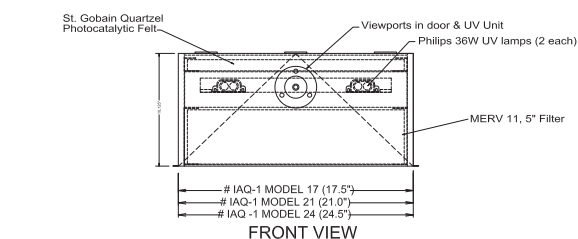
PROTECH™ IAQ-1 COMPLETE SYSTEMS

PART NO.	STYLE	DESCRIPTION	DIMENSIONS
IAQ17AH	IAQ17AH	IAQ System - 17 in. Air Handler	21.75 x 17.5 x 10
IAQ17F	IAQ17F	IAQ System - 17 in. Furnace	28 x 17.5 x 10
IAQ21AH	IAQ21AH	IAQ System - 21 in. Air Handler	21.75 x 21 x 10
IAQ21F	IAQ21F	IAQ System - 21 in. Furnace	28 x 21 x 10
IAQ24AH	IAQ24AH	IAQ System - 24 in. Air Handler	21.75 x 24.5 x 10
IAQ24F	IAQ24F	IAQ System - 24 in. Furnace	28 x 24.5 x 10

ACCESSORIES & REPLACEMENT PARTS

PART NO.	STYLE	DESCRIPTION	DIMENSIONS
540001	5/11 Filter 17	Filter - Pleated 17 in. (4/Cartron)	19.6 x 15.9 x 5
540002	5/11 Filter 21	Filter - Pleated 21 in. (4/Cartron)	19.6 x 19.3 x 5
540003	5/11 Filter 24	Filter - Pleated 24 in. (4/Cartron)	19.6 x 22.9 x 5
540004	PCO17	Filter - PCO Quartz 17 in. (2/Cartron)	19.6 x 15.9 x 1
540005	PCO21	Filter - PCO Quartz 21 in. (2/Cartron)	19.6 x 19.3 x 1
540007	PCO24	Filter - PCO Quartz 24 in. (2/Cartron)	19.6 x 22.9 x 1
864026	TUVPL-L36W/4P	Lamp - Phillips 36W (25/Cartron)	16.5 x 1.7 x .8
864027	MAINTPACK17	Maintenance Pack (2 Yr) - 17 in.	
864028	MAINTPACK21	Maintenance Pack (2 Yr) - 21 in.	
864029	MAINTPACK24	Maintenance Pack (2 Yr) - 24 in.	

IAQ-1 AIR HANDLER UNIT



IAQ-1-F AIR FURNACE UNIT

