

Technical Specification

Gibbons Ultraviolet Solutions

Total Coil Disinfection

Gibbons Ultraviolet Solutions

Product Family: High Output Units

Model: TCD18HO, TCD24HO, TCD36HO, TCD48HO, TCD64HO

Description: Commercial Cooling Coil UVGI Surface Disinfection

Energy Savings to maintain in new build and restore when retrofitting HVAC System Efficiency to as built. Improved Indoor Air Quality (IAQ), achieved from eradication of surface biofilm (bacteria, dust, mould, particulates, viruses etc.) on cooling coils. Without UVGI the airstream flowing to occupied spaces is contaminated.

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1. GENERAL

1.1. RELATED WORK SPECIFIED IN OTHER SECTIONS:

1.1.1. Motor starters, disconnects, power wiring of HVAC equipment variable frequency drives and UVC Photonisers: Division 16.

1.2. QUALITY ASSURANCE:

1.2.1. UL Compliance: Comply with UL Standard 935 as applicable to usage of UVC Photonisers in HVAC Equipment.

1.2.2. ISO Certification: Fixtures must be manufactured in an ISO 9001:2000 registered facility.

1.3. DELIVERY, STORAGE AND HANDLING:

1.3.1. Store UVC Photonisers in a clean dry place and protect from weather and construction traffic. Handle UVC Photonisers carefully to avoid damage to components, enclosures and finish. Leave factory shipping covers in place until installation and only remove when called for in the installation instructions. Do not install damaged components; replace and return damaged components to equipment manufacturer.

1.3.2. Comply with manufacturer's installation instructions, placement, wiring and testing.

2. PRODUCTS

2.1. UVC PHOTONISERS

2.1.1. GENERAL

2.1.1.1. Acceptable Manufacturers: Gibbons Ultraviolet Solutions.

2.1.1.2. Acceptable Models: TCD18HO, TCD24HO, TCD36HO, TCD48HO, or TCD64HO as shown on the drawings.

2.1.1.3. Substitutions: 10 Day prior approval is required and is to include documentation by a recognized Industry Independent Testing Laboratory on UVC Photoniser performances. Results must meet or exceed the performance for Photonisers in an HVAC environment as detailed below.

2.1.1.4. Quality Assurance: Qualifications: Each component and product is to be inbound and outbound tested before shipment in accordance with ISO 9001:2000 test procedures. Output Verification: Independent testing shall indicate total output per one inch arc length shall not be less than $9 \mu\text{W}/\text{cm}^2$, at one meter, in a 500 fpm airstream of 50°F.

2.1.1.5. Warranty: Gibbons Ultraviolet Solutions shall be 100% warranted to be free from defects for a period of one year. The Philips Purevolt ballasts are warranted for 5 years. Provided the UVC Photonisers are replaced biennially on schedule and with original replacements, the warranty shall be 2 years.

2.1.2. DESIGN REQUIREMENTS

2.1.2.1. Irradiation - Photonisers and fixtures are to be installed in sufficient quantity and in such an arrangement so as to provide adequate UVC energy on the coil and in the drain pan, as compliant with ASHRAE or other recognized industry guidelines for UV surface disinfection systems. To maintain energy efficiency, the UVC energy produced shall be of the lowest possible reflected and shadowed losses.

2.1.2.2. Intensity - Shall be measured by a Solid State Photodiode UV Sensor at the coil. Calibration wavelength is 254 nm. Accuracy is to be $\pm 10\%$ and be NIST traceable. Operating range shall be 32°F - 175°. Read by a Display module with a 3.5 digit LCD screen/panel. Irradiance range shall be 0- 1999 ($\times 10$) $\mu\text{W}/\text{cm}^2$ with a resolution of $10 \mu\text{W}/\text{cm}^2$.

2.1.2.3. Installation - Photonisers and fixtures shall be installed downstream or upstream of the

cooling coil at right angles to the coil fins, such that UVC energy bathes all surfaces of the coil and drain pan. In cases where downstream installations are not possible, upstream installations may be permitted, provided that justification is documented.

2.1.2.4. GSA Compliance – Gibbons Ultraviolet Solutions shall be compliant with GSA Facilities Standards for the Public Buildings Service, Section Five, Sub-Section 5.9.

2.1.3. **EQUIPMENT**

2.1.3.1. Units shall be HVAC-type, germicidal UVC light sources, factory assembled and tested. Components shall include a control panel, photon concentrator, high efficiency electronic power source, Photoniser sockets and UVC Photoniser, all constructed to withstand HVAC environments.

2.1.3.2. Gibbons Ultraviolet Solutions shall have electrical connectors on a single end of the Photoniser tubes to simplify gang wiring and wiring to power.

2.1.3.3. Photon Concentrators shall be constructed of high spectral finished aluminium alloy with a minimum 85% reflectance of 254 nm UVC energy.

2.1.3.4. High efficiency electronic power sources shall be of universal voltage 120 - 277V AC, 50/60 Hz. They shall be UL listed to comply with UL Standard 1995 and capable of igniting each Photoniser at temperatures from 32°F - 175° F in airflow velocities common to HVAC systems. They shall be equipped with RF and line noise suppression.

2.1.3.5. UVC Photoniser shall be of hot cathode, T5 (15mm) diameter, and 4-pin type. They shall produce 95% of their energy at 254 nm and be capable of producing the specified output at airflow velocities common to HVAC systems and at temperatures of 32°F - 175°F. UVC Photonisers shall produce no ozone or other secondary contamination.

2.1.3.6. Non ozone producing lamps to be (L Type) and made with a specially doped fused quartz that prohibits the emission of energy at 185nm.

3. **INSTALLATION**

3.1. **INSTALLATION OF GIBBONS ULTRAVIOLET SOLUTIONS-Total Coil Disinfection**

3.1.1. Coordinate with installation of HVAC equipment and install Photonisers as indicated after or before equipment is properly installed.

3.1.2. Provide a Door Interlock switch on the access to Gibbons Ultraviolet Solutions to turn the Photonisers off when the access is opened.

3.1.3. Warning signage to be applied on all access doors.

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