

# Ultraviolet Light Specification

## Coil Capacity Maintenance and Mold Control

### High Output 360° Lamp Fixturing

**Independent Testing** – All UV-C components shall be tested and labeled as UL Listed.

**Fixturing** - shall consist of a Lamp Driver, Driver Housing, Wiring Loom, Lamp Holder, Lamp Holster, and UV-C Lamp.

**Irradiation** – Fixtureless lamps shall be installed in sufficient quantity to provide a minimum of 6 UV-C lamp Watts per square foot of coil surface area, consistent with ASHRAE 2011 Handbook, Chapter 60.8. They shall provide an “equal” distribution of 360 degree irradiation using the lowest possible shadowed losses in the plenum to provide the highest UV-C energy absorption by airborne microbial products. The energy striking “all” surfaces shall be sufficient to maintain coil capacity by degrading all surface mold, bacteria and other organic material found in HVAC systems.

**Power Supply** – The power supply shall be UL Listed, 120-277Vac - 50/60Hz, HO type. They shall be High Power Factor, Low THD, Class P, Sound Rated “A”, Type 1 Outdoor designs with inherent Thermal Protection, no PCB’s and labeled for field wiring. They shall be capable of operating at temperatures of from 1-90 degrees C while producing the specified output and organism destruction at no more than 10 Watts of power consumption for each square foot of treated, cross sectional plane. The power supply shall be capable of ensuring a minimum of 9000 hours of lamp life, and with 85% of its initial output at end of the lamps useful life. The power supply shall be protected against “end of lamp life” conditions, and warranted for 5 years.

**Power Supply Housing** – shall be NEMA 2/IP11 compliant, constructed of 20ga galvanized, powder coated steel and designed to facilitate NEC style Driver installations outside of plenums. The Housing shall accommodate the required number of Drivers while protecting against electrical shock and moisture incursion.

**Plenum Wire Loom**-- Wire Loom shall be plenum rated with an option for a metallic cladding and of sufficient length to facilitate lamp connection to a remotely located Power supply. The Loom shall be capable of carrying the striking and operational voltage and meet UL Subject 13 and UL 1581, and Article 725 of the NEC. The optional metallic Loom cladding shall be UL recognized DXUZ2 and constructed of flexible galvanized steel and cover the entire Loom.

**Lamp Plug & Holder** - Shall be UL listed, 4-pin SE type capable of accommodating a single-ended lamp. The Holder shall be constructed of UV resistant materials and designed to connect the Lamp to the Plug, Holder and Plenum Wiring Loom to protect against electrical shock, moisture and separation.

**Lamp Holsters** - shall be a Dual type and permanently affixed within the irradiated cavity. They shall be constructed of UV-C resistant materials and provide for maximum flexibility in Lamp positioning, removal and fastening strength.

**Lamps** - Lamp Watts shall be printed on all lamps, no exceptions. They shall be high output (HO), T5 diameter, hot cathode, single-ended 4-pin types that produce UV-C energy primarily at the 254nm wavelength. Each lamp shall contain no more than 8 mg of mercury and be capable of operating in air temperatures of 1-70° C, at any velocity. Useful lamp life shall be 9000 hours (minimum) with no more than a 15% output loss at the end of the lamps life. They shall not produce measurable ozone.

**Lamp and Lamp Power Monitoring** - shall supply continuous monitoring device that provides a direct on/off LED display lamp, and a 3V-5V on/off signal, as an indicator to a building management system that lamp(s)/power supply(s) is/are operational. Optional remote monitor(s) shall be installed outside the plenum in a NEMA 4 enclosure to directly/remotely monitor up to 8 lamp/ power supply combinations or more with the option for a single signal to the building management system.

**Safety** – UV-C system On/Off switch(s) shall be installed on the exterior of all UV-C plenums next to the plenum access door. Mechanical interlock switches and UV-C warning labels shall be installed on all UV-C accesses to insure that the UV-C fixtures are de-energized and personnel properly cautioned before any access is opened.