

## Q1 & Q1L INDUCTION TERMINAL SPECIFICATIONS

### 2.02 GENERAL

A. It is the design intent of these specifications to provide a fully integrated HVAC system with all parts working together. These induction units need clean, dehumidified primary air from a dedicated outdoor air unit, hot and chilled water from a boiler and chiller, piping, and controls to coordinate each component to perform as intended. In addition to the items mentioned above that are specified on other sections in division 15, wiring and power requirements in division 16 may also be impacted. Changes, modifications, or substitutions on any component will impact all the other parts of the system and can not be made without a careful review of all related specifications.

B. Induction terminal units shall be constant volume primary air flow units designed to induce a secondary airflow within the conditioned space using the primary conditioned air supply. Units shall be designed for ceiling installation with factory supplied support brackets (angle clips on Q1 & Q1L Models) Hanger rods to be supplied and installed in the field by installing contractor.

C. Units shall be equipped with aerodynamic primary air intake, combination supply / return air grille for a full coanda effect room air distribution, air plenum and air induction nozzles (internal to the unit). The unit shall be capable of inducing the secondary airflow within the conditioned space using the velocity pressure of the primary airflow. This secondary air flow must be directly ducted to the unit and shall not use the ceiling as a return air plenum. Induction units using the ceiling plenum as a return air path are not acceptable.

D. Units shall be equipped with water coils. Control valves, and space temperature controls shall be supplied by **choose one** Induction Unit Manufacturer or by the Temperature Control Contractor. Latent conditioning of the air supplied to the space shall be performed at the Dedicated Outdoor Air unit and controlled by exhaust air humidity sensors. Humidity within the building envelope is to be controlled to not exceed 55% relative humidity.

E. Units shall consist of an induction air plenum and mixing chamber assembly with appropriate duct connections, a baffle plate provided for uniform air distribution and noise attenuation, air induction nozzles, water coils, water piping connections, and supply/return air grille. The return air chamber and baffle plate shall be lined with an open cell poly insulation for sound conditioning. A drainable condensate pan with **choose one** (a safety float switch attached to the drain pan to shut off the coil(s) if condensate should accumulate for non drainable applications) or (a trap for drainable applications) shall be provided by the induction unit manufacturer.

F. Q1 & Q1L Model single unit assembly shall consist of a base frame to hold one single induction unit with a single 23 3/4" by 23 3/4" supply/return grille that is designed to fit into a standard ceiling grid. Supply air (a mix of primary and conditioned room air) is distributed in one direction across the ceiling line. The supply/return grille assembly is removable for access to interior of unit without tools. A single 4" duct connection and 1/2" supply and return water connection for each unit will be provided.

### 2.03 CASINGS

A. The induction air plenum and mixing chamber assembly shall be constructed of 20 gauge galvanized sheet metal. A baffle plate, insulated with closed cell anti microbial poly foam insulation, shall be provided for uniform air distribution to the nozzles and low noise operation.

B. Air diffuser shall be removable for access to interior coil area for cleaning.

### 2.04 INDUCTION NOZZLES

A. Induction nozzles shall be aerodynamically designed and made of LDPE Petrothene food

grade plastic having a tapered discharge diameter for low noise levels.

## **2.05 WATER COIL ASSEMBLY**

A. The water coil assembly shall consist of a two row coil with copper tubes and aluminum fins, and be equipped with a condensate pan to collect any condensate that could temporarily form on system start up.

B. Coils shall be of the water type utilizing aluminum fins and copper tubes. Coils shall be factory leak tested at 350 psi water. Coil connections shall be ½” NPT type as indicated on the drawings.

C. A special slide out flange shall contain the coil seal between the high and low pressure side of the unit.

D. A single control valve can control one or more terminal units. Control valves for the units shall be supplied by **choose one** the Induction Unit Manufacturer or the Temperature Control Contractor.

## **2.06 QUALITY ASSURANCE**

A. All induction terminal units shall be tested by ETL labs for performance and sound levels.

## **2.07 CONTROL SYSTEM**

A. A digital control system shall be provided to, at a minimum, provide the following functions: temperature control for each room, monitor the drain pan float switches to shut of the valve should sufficient condensate occur, monitor the building relative humidity, provide supply air temperature and dew point set point inputs to the dedicated outdoor air unit, control the water loop temperature and changeover from heating to cooling, and provide start stop control for the chiller and boiler as needed. Trending, alarms, and system graphical displays shall also be included. This control system shall be native BACnet and able to directly interface with other building control system using BACnet (ARC156, MS/TP, and PTP), Modbus (RTU & ASCII), N2, and LonWorks.

B. Each room or zone shall be controlled with a single two position water control valve controlled by a digital room thermostat and controller

C. Each induction unit shall be installed with a 24 inch supply and return hose kit that includes manual shut off valves, automatic flow control valve, strainer, and drain valve.

D. Control system shall allow for setting of overall minimum and maximum space temperatures within the building. Local control of space temperature to occupant comfort requirements shall be provided by space thermostat adjustment of no more than +/-2 degrees from set point

## **3.01 EXECUTION**

A. Follow manufacturer’s installation instructions and recommendations for all equipment.

B. Install Induction Terminal Units in ceiling in such a manner as to allow easy access to all controls.

C. Support Induction Terminal Units to supporting structure using field supplied threaded rod. Attach threaded rod to factory supplied mounting brackets located on each side of the Q1 & Q1L units.

D. Provide primary supply air connection and seal with duct sealer after installation.

E. Provide water supply/return connection and Install temperature control valve.

F. Units shall be as manufactured by NuClimate Air Quality Systems Models Q1 & Q1L Single blow 24” x24” as specified on drawings, or approved equal.