

# Guide Specifications

## PART 1 —

### 1.01 STANDARD COMPONENTS

#### A. CABINET CONSTRUCTION

- 1 Exterior panels shall be 18 gauge metal with 5 lb/ft<sup>3</sup> (80 kg/m<sup>3</sup>) density foam insulation. Insulation complies with UL94-5VA ASTM E84 flame spread and smoke developed rating of 25/50. Front and rear exterior panels shall be 18 gauge perforated steel with 69.5% open free area, and equipped with a keyed lock to provide a means of securing access to the internal components of the unit.
- 2 The frame shall be constructed of 16 gauge formed steel welded for maximum strength. All units shall provide full service from the front and rear, allowing units to be placed within a row of racks.
- 3 All exterior panels and frame shall be powder coated for durability and attractive finish. Exterior frame and panel color shall have color values: L = 74.50, a = -.53, b = +8.20.
- 4 Units shall include casters and leveling feet to allow ease of installation in the row and provide a means to level the equipment with adjacent IT racks.

#### B. VARIABLE SPEED DIRECT DRIVE MIXED FLOW DC FAN ASSEMBLY

- 1 Fan: The unit shall be configured for draw-through air pattern to provide uniform air flow over the entire face of the coil. Each unit shall include eight 200 mm mixed flow direct drive DC axial fans. Each fan assembly should be designed to provide 362.5 CFM (171.1 l/s) for total unit airflow of 2900 CFM (1368.6 l/s).
- 2 Variable Speed Fans: Fans shall be variable speed capable of modulating from 30-100%. Fans shall soft start to minimize in-rush current when starting.
- 3 Fan Protection: Each fan assembly shall consist of a plastic injection molded bezel with integral fan discharge finger guard. Inlet of the fan should include a cage type finger guard.
- 4 Operation and Service: The unit should be capable of operation in the event of a fan failure. Fans shall be replaceable while the unit is in operation.

#### C. DUAL POWER SUPPLIES AND A-B POWER INPUT

- 1 Input Power Feeds: Dual A-B power inputs should be a locking NEMA or IEC plug connection suitable for the input power selected.
- 2 Power Supplies: The unit shall include two power supplies, each capable of running the unit at 60% capacity in the event of a single power supply failure. Unit power consumption is not to exceed 1100 watts during normal operation.
- 3 Operation and Service: Power supply shall be user replaceable.

#### D. MICROPROCESSOR CONTROLLER

- 1 Monitoring and Configuration: The master display shall allow monitoring and configuration of the air conditioning unit through a menu-based control. Functions include status reporting, set-up, and temperature set points. Four LEDs report the operational status of the connected air conditioning unit.
- 2 Controls: The microprocessor controller shall come equipped with control keys to allow the user to navigate between menus, select items, and input alpha numeric information.

- 3 Alarms: The microprocessor controller shall activate a visible and audible alarm in the occurrence of the following events:
  - a. Internal Communications Fault
  - b. Link Isolation Relay Fault
  - c. Cooling Failure
  - d. Rack Inlet High Temperature
  - e. Air Filter Clogged
  - f. Lower Return Air Sensor Fault
  - g. Upper Return Air Sensor Fault
  - h. Lower Supply Air Sensor Fault
  - i. Upper Supply Air Sensor Fault
  - j. Rack Inlet Temperature Sensor
  - k. Coil Fluid Valve Actuator Fault
  - l. Fan Fault
  - m. Water Detection Fault
  - n. Condensate Pump Fault
  - o. Fluid Flow Meter Failure
  - p. Entering Fluid High Temperature
  - q. Entering Fluid Temperature Sensor
  - r. Leaving Fluid Temperature Sensor
  - s. Condensate Pan Full Alarm
  - t. Power Feed Failure
  - u. Fan Power Supply Fault
  - v. Air Filter Run Hours Exceeded
  - w. RACS Air Pressure High
  - x. Supply Air High Temperature
  - y. Return Air High Temperature
  - z. Group Communications Lost
  - aa. Filter Sensor Fault
  - ab. RACS Pressure Sensor Fault
- 4 Logging: The microprocessor controller shall log and display all available events. Each alarm log shall contain time/date stamp as well as operating conditions at the time of occurrence. Controller shall display the run time hours for major components.

#### E. NETWORK MANAGEMENT CARD

The unit shall include a network management card to provide management through a computer network through TCP/IP. Management through the network should include the ability to change set points as well as view and clear alarms.

#### F. COOLING COIL AND CONDENSATE PAN

- 1 Cooling coil shall use raised lance type aluminum fin and 3/8 inch OD (9.5 mm) copper tube coils. Coil end supports shall be a minimum 18 gauge galvanized steel. Coil shall be rated for a maximum pressure of 400 psig (2757.9 kPa).
- 2 The unit shall consist of a primary and secondary drain pan. Secondary drain pan shall be piped to primary pan for removal of condensate. Primary drain pan shall include a condensate pump and dual floats for control and overflow protection. Condensate pans are V-0 thermal formed, anti-fungal, non-ferrous material for higher indoor air quality.

#### G. 2-WAY/3-WAY FLOATING POINT VALVE

- 1 Chilled water system shall utilize a three-way valve to regulate the amount of chilled water to the cooling coil to maintain desired conditions. Unit shall be equipped with a manual shut-off to close the by-pass leg for field configuration of 2-way or 3-way operation. Valve shall be piped internally with unions to allow for easy replacement in the field. The standard valve pressure rating shall be 600 psig.
- 2 Valve Actuator: Actuator shall be direct connect rotary floating point style actuator and should be capable of being replaced without disconnecting piping from the valve.

#### H. CONDENSATE PUMP

Factory Installed and wired condensate pump shall pump 1.3 gal/h (5.9 liters/hour) at 16 ft (4.9 m) of lift and a 50 ft (15.2 m) horizontal run.

#### I. FILTERS

- 1 Standard Air filter: <20% efficient per ASHRAE 52.1, MERV 1 per ASHRAE 52.2, 1/2" washable mesh filter
- 2 Optional Air filter: High capacity 2" pleated, UL 900 Class 2, Moisture with average atmospheric dust spot efficiency of 30% per AHRAE Standard 52.1, MERV 8 per ASHRAE 52.2

#### J. SELECTABLE TOP OR BOTTOM PIPING

- 1 Pipe connections for field connection from either the top or bottom of the unit. Unit connections shall be made internal to the unit.
- 2 Pipe adapter: The unit shall include two pipe adapters that convert a 1 in (25.4 mm) NPT to a 1 in (25.4 mm) BSPT (manufactured in accordance with BS21). Pipe adapters shall ship loose with the unit for field installation where applicable.

#### K. REMOTE TEMPERATURE SENSOR

Remote temperature sensor shall ship factory wired to the unit for placement in the field to provide control input based on rack inlet temperature.

#### L. FLOW METER

Flow meter shall be factory piped inside the unit and connected to microprocessor controls to provide water flow rate through the unit. The microprocessor controller shall also use this information to provide total unit capacity out of the unit while in operation.

#### M. CABLE WATER DETECTOR (OPTIONAL)

- 1 A leak detection sensing cable shall be shipped loose with the unit. If water or other conductive liquids contact the cable anywhere along its length, the main controller visually and audibly annunciates the leak.
- 2 The detector shall be provided with a 20 ft (6.1 m) of cable. Cable may be cascaded up to 80 ft (24.4 m).

#### N. BRIDGE POWER CABLE TROUGH

Overhead power distribution bridge between adjacent NetShelter racks that allows for removal of the unit without disrupting the overhead power cabling.

## O. BRIDGE DATA PARTITION

Overhead cable distribution between adjacent racks that allows for removal of the unit without disrupting overhead cabling.

### 1.02 CHILLED WATER

The unit shall be piped in accordance with the highest commercial quality procedures. All pipe forming shall be tool bent with the proper bend radii to prevent flattening in the curve. The chilled water piping shall be insulated with closed neoprene thermal insulation. All piping connections should be made at the rear of the unit for top or bottom accessibility.