

COMPUTER ROOM AIR CONDITIONING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Computer Room Air Conditioning Units.
2. Air Cooled Condenser Package.
3. Water Cooled Condenser Package.
4. Glycol Cooled Condenser Package.
5. Glycol Pump Package.
6. Glycol Drycooler.
7. Glycol Free Cooling System.
8. Control Package.
9. Recessed Ceiling Units.

B. Related Sections:

1. Section 15010 - Basic Mechanical Requirements.
2. Section 15511 - Hydronic Piping and Specialties.
3. Section 15885 - Air Cleaning.
4. Section 15900 - Ductwork and Accessories.
5. Section 15936 - Air Inlets and Outlets.

1.02 SYSTEM DESCRIPTION

A. Design Requirements:

1. General:

- a. Computer room air conditioning systems shall be self-contained factory assembled units with matching accessories.
- b. Depending on location and user condition, designer may use any of the following types of heat rejection:
 - 1) Directly to central chilled water system.
 - 2) DX with air-cooled condenser.
 - 3) DX with water-cooled condenser.
 - 4) DX with glycol-cooled condenser.

- c. Easily removable panels on all units for maintenance access to equipment. Compressor

serviceable out of airstream.

- d. Solid state electronic control systems, easily accessible with plug-in modules, out of main electrical panel.

2. Humidifiers:

- a. Any of the following:

- 1) Infra-red type consisting of high-intensity quartz lamps mounted above and out of the water supply. (Least desired)
- 2) Electric immersion heaters. (Preferred).
- 3) Lattice electrode steam type.

- b. Evaporator pans arranged to be serviceable for cleaning without disconnecting water supply lines, drain lines or electrical connections.

- c. Lattice electrodes enclosed within disposable plastic cylinder and shall not require periodic cleaning.

- d. Automatic flush cycle.

3. Condensate Pumps:

- a. Provide as an accessory inside cabinets for upflow condensate drain systems.

4. Filters:

- a. Disposable media type in accordance with Section 15885 - Air Cleaning.

5. Floor Stands:

- a. Isolate air conditioning units from raised floors with adjustable floor stands mounted on vibration isolation pads.

6. Air Cooled Condensers:

- a. Low profile, slow speed, multiple direct drive propeller fan type.
- b. Provide low ambient control package to allow start-up and positive head pressure control with ambient temperature as low as -30 F.
- c. Outdoor design temperature: 105 F if on roof.

7. Water Cooled Condensers:

- a. Cleanable, shell and tube, counter flow type with removable heads.

8. Glycol Systems:

- a. Glycol-cooled condenser cleanable, shell and tube, counterflow type with removable heads.
- b. Drycooler, low profile, slow speed, multiple direct drive propeller fan type.
- c. Provide dual pump package with automatic start on stand-by pump upon failure of lead pump.
- d. Consider glycol "free cooling" economizer coil and all controls necessary to provide winter cooling without compressor operation.

e. Outdoor design temperature: 105F if on roof.

9. Controls:

a. During preliminary design meetings, review with the University which controls are required before submitting final design documents.

10. Ceiling Recessed Units (Last choice):

a. Factory assembled, completely packaged for horizontal ceiling mounting and sized to fit a 2 ft by 4 ft. opening of a standard "T-Bar" ceiling.

b. Air cooled types shall have the condenser air (outside air) taken from and discharged to the outside by means of a remote blower pack suitable for duct mounting and having a low limit outside ambient control to operate the unit down to -30 F.

c. Use of ceiling cavity to reject heat of compression is unacceptable.

11. Compressors:

a. Semi-hermetic for 5-ton units and up.

12. Water-Dumping Units:

a. Water cooled types which utilize tap water for condensating, after which the water is disposed of in the drain, will not be permitted.

1.03 QUALITY ASSURANCE

A. Provide factory assembled, package type computer room air conditioning units; product of manufacturer regularly engaged in production of size and type of unit specified and issuing complete catalog data on such products.

B. Manufacturer shall be responsible for selection and operation of components furnished. Provide written certification that related components not furnished by him have been selected in accordance with manufacturer's requirements.

PART 2 - PRODUCTS

2.01 COMPUTER ROOM AIR CONDITIONING UNITS

A. Manufacturer:

Airflow
Carrier
Liebert
Trane

PART 3 - EXECUTION

3.01 INSTALLATION

A. In general, for project specifications, remove "Design Requirements" sub-paragraph A in Part 1, paragraph 1.02 "System Description" of this Design Guide and use list to expand on specific requirements of installation for each product specified.

END OF SECTION