

SECTION 15930

AIR TERMINAL UNITS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Variable Volume Terminal Units.
- B. Integral Heating Coils.

1.02 PRODUCTS FURNISHED BUT NOT INSTALLED UNDER THIS SECTION

- A. Section 15975 - Automatic Temperature Controls: Actuators and control components.

1.03 RELATED SECTIONS

- A. Section 15510 - Hydronic Piping: Connections to heating coils.
- B. Section 15515 - Hydronic Specialties: Connections to heating coils.
- C. Section 15790 - Air Coils.
- D. Section 15890 - Ductwork.
- E. Section 15910 - Ductwork Accessories.
- F. Section 15940 - Air Outlets and Inlets.
- G. Section 15975 - Automatic Temperature Controls.
- H. Division 16 - Electric: Electrical characteristics and wiring connections.

1.04 REFERENCES

- A. ADC 1062 - Air Distribution and Control Device Test Code.
- B. NFPA 70 - National Electrical Code.
- C. NFPA 90A - Installation of Air Conditioning and Ventilation Systems.
- D. UL 181 - Factory-Made Air Ducts and Connectors.

1.05 PERFORMANCE TOLERANCES

- A. Base performance on tests conducted in accordance with ADC 1062.

1.06 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Shop Drawings: Indicate configuration, general assembly, and materials used in fabrication, and electrical characteristics and connection requirements.

- C. Product Data: Provide data indicating configuration, general assembly, and materials used in fabrication. Include catalog performance ratings which indicate air flow, static pressure, and NC designation. Include electrical characteristics and connection requirements.
- D. Include schedules listing discharge and radiated sound power level for each of second through sixth octave bands at inlet static pressures of 1 to 4 inch wg (250 to 1000 Pa).
- E. Manufacturer's Installation Instructions: Indicate support and hanging details, and service clearances required.

1.07 PROJECT RECORD DOCUMENTS

- A. Submit under provisions of Section 01700.
- B. Record actual locations of units.

1.08 OPERATION AND MAINTENANCE DATA

- A. Submit under provisions of Section 01700.
- B. Operation and Maintenance Data: Include manufacturer's descriptive literature, operating instructions, maintenance and repair data, and parts lists. Include directions for resetting constant volume regulators.

1.09 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum three years experience.

1.10 REGULATORY REQUIREMENTS

- A. Products Requiring Electrical Connection: Listed and classified by Underwriters' Laboratories Inc., as suitable for the purpose specified and indicated.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Trane.
- B. Enviro-Tec.
- C. Price.
- D. Carrier.

2.02 MANUFACTURED UNITS

- A. Ceiling mounted variable air volume supply air control terminals for connection to single duct, central air systems, with electronic variable volume controls, hot water heating coils.
- B. Identify each terminal unit with clearly marked identification label and air flow indicator. Include unit nominal air flow, maximum factory set airflow, minimum factory set air flow, and coil type.

2.03 SINGLE DUCT VARIABLE VOLUME UNITS

- A. Basic Assembly:
1. Casings: Single wall construction with minimum 22 gauge (0.8 mm) galvanized steel outer wall and minimum 26 gauge phosphatized steel inner wall.
 2. Insulation: Minimum 3/8 inch thick closed cell insulation, 4.4 lb/cu ft density, meeting NFPA 90A and UL 181 requirements. No exposed edges of insulation.
 3. Plenum Air Inlets: Round stub connections for duct attachment.
 4. Plenum Air Outlets: Slip and drive connections.
- B. Basic Unit:
1. Configuration: Air volume damper assembly inside unit casing. Locate control components inside protective metal shroud.
 2. Volume Damper: Construct of galvanized steel with peripheral gasket and self lubricating bearings; maximum damper leakage: 1 percent of design air flow at 4 inches (1.0 kPa) inlet static pressure.
 3. Inlet airflow measurement: Two-axis differential-velocity-pressure airflow sensor with a minimum of 12 sensing points, with an averaging pressure chamber creating an amplified output signal of at least 0.03 in. WG (7.46 Pa) at 450 fpm (2.29 m/s). Provide brass balancing taps and tubing to sensor and chamber. Trane ring-type sensor will be acceptable as a substitute.
 4. Mount damper operator to position damper normally open.
- C. Electric Heating Coil: The electric heater is factory provided and mounted with integral control box, UL recognized resistance open-type heater with airflow switch. It also contains a disc type automatic pilot duty thermal primary cutout, and manual reset load carrying thermal secondary device. Heater element material shall be nickel-chromium. Provide with the following options:
1. Electric heat transformer: An optional transformer is an integral component of the heater control panel (dependent on unit load requirements) to provide 24 VAC for controls. There is 19 VA available for controls.
 2. Mercury Contactor: An electric heater 24-volt contactor for use with direct digital control (DDC) or analog electronic controls.
 3. Air Flow Switch: An air pressure device designed to disable the heater when the system fan is off.
 4. Disconnect Switch: A factory provided door interlocking disconnect switch on the heater control panel disengages primary voltage to the terminal.
- D. Automatic Damper Operator:
1. DDC controller with integral electronic motor, provided under Section 15975 - Automatic Temperature Controls.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Provide ceiling and/or wall access doors or locate units above easily removable ceiling components.
- C. Support units individually from structure. Do not support from adjacent ductwork.
- D. Connect to ductwork in accordance with Section 15890.
- E. Install heating coils in accordance with Section 15790.
- F. Verify that electric power is available and of the correct characteristics.

- G. Install VAV box equipped with electric heating coil with minimum clearances for NEC and local codes. Insulate with duct wrap exterior of VAV box at coil location.

3.02 ADJUSTING

- A. Adjust work under provisions of Section 01700.
- B. Reset volume with damper operator attached to assembly allowing flow range modulation from 100 percent of design flow to minimum flow rate as specified.

END OF SECTION