

PART 2 PRODUCTS

2.1 PRODUCTS INCLUDED IN THIS SECTION

A. Outside air intake mounted airflow and temperature measurement devices (ATMD) with integral airflow alarm for installation in rooftop packaged units 15 tons and under.

2.2 ACCEPTABLE MANUFACTURERS and MODELS

A. Subject to compliance with all requirements of this section, provide products that comply with this specification by one of the following vendors:
   1. Greentrol Automation, Inc., Models GF-2100 and GF-2200
   2. Ebtron, Inc., Model HTA104-P
   3. Substitutions to basis of design
      a) All other vendors shall be considered as substitutions only. Substitutions for the basis of design requesting acceptance less than 30 days prior to bid date or products submitted in non-conformance with the requirements of this specification will not be considered.
      b) For any product or assembly to be considered for substitution, a written request shall be submitted to the engineer detailing exceptions and compliance items within this specification, section-by-section with supporting documentation, before an approval will be considered.
      c) Any product submitted as an equal shall be expected to comply with all performance, capabilities and functional aspects of this specification. Submitting vendors will also be required to present a functioning demonstration sample for review in the specifying engineer's office. Nonfunctioning samples will not be considered and submissions will be rejected.

B. The following specific technologies are excluded.
   1. Pitot tubes, arrays and other devices using a pressure sensor to determine the airflow rate are not acceptable.

2.3 LOW TONNAGE (<=15 TON) OUTSIDE AIRFLOW / TEMPERATURE MEASUREMENT DEVICES WITH ALARM

A. Provide one airflow/temperature measurement device (ATMD) with an integral airflow alarm in the outside air intake of each rooftop packaged unit less than or equal to 15 tons.
   1. Airflow measurement shall use the principal of thermal dispersion and have one zero-power and one heated thermistor at each sensing node. The heated thermistor shall be "bead-in-glass" type.
      a) Each sensor node shall be independently calibrated at a minimum of 7 airflow rates to NIST traceable standards and have an airflow measurement accuracy better than 4% of reading between 50 and 2,000 FPM [MPS] over a temperature range of -20° to 160° F [-28.9° to 71° C]
      b) Each sensor node shall have a temperature measurement accuracy better than or equal to 0.36° F [0.2° C].
      c) Technologies using "chip-in-glass", "chip-in-epoxy" or other "chip" type thermistors for the heated thermistor are not acceptable.
      d) Pitot tubes, arrays and other devices using a pressure sensor to determine the airflow rate are not acceptable.
   2. Each ATMD shall consist of one or more sensor probes consisting of one node in each probe.
      a) Each sensor probe shall be provided with a UL listed, FEP plenum rated cable and plug for connection to a remotely mounted transmitter.
   3. Each ATMD shall be provided with a single, remotely mounted transmitter.
      a) The transmitter shall be microprocessor-based with an integral LCD display and pushbutton user interface for display of airflow, temperature and alarm and be used for configuration and diagnostics.
      b) The transmitter shall be mounted in an environment protected from direct contact with water.
      c) The transmitter shall independently process the airflow and temperature of each sensor node prior to averaging and output.
   4. The transmitter shall provide two linear analog output signals field configurable as 0-5, 0-10 or 2-10 VDC (20 mA max.).
      a) One analog output signal shall provide the average airflow rate in CFM [LPS].
      b) One analog output signal shall provide the average temperature or the velocity weighted temperature in degrees F [C].
   5. The transmitter shall have alarm capability and provide a dry contact relay capable of passing 30 VDC or 24 VAC @ 3 amp max. or be configured to drive an LED (15 mA typ., by others). When the alarm is active, the alarm condition shall be indicated on the LCD display.
   6. The transmitter shall have a built-in field calibration wizard for one or two point adjustments to the factory calibration when required.