1998 STANDARD for

AIR TERMINALS

AIR-CONDITIONING &
REFRIGERATION
INSTITUTE

Standard 880

4301 NORTH FAIRFAX DRIVE • ARLINGTON, VIRGINIA 22203

IMPORTANT

SAFETY RECOMMENDATIONS

It is strongly recommended that the product be designed, constructed, assembled and installed in accordance with nationally recognized safety requirements, appropriate for products covered by this standard.

ARI, as a manufacturer's trade association, uses its best efforts to develop standards, employing state-of-the-art and accepted industry practices. However, ARI does not certify or guarantee safety of any products, components or systems designed, tested, rated, installed or operated in accordance with these standards or that any test conducted under its standards will be non-hazardous or free from risk.

ARI CERTIFICATION PROGRAM PROVISIONS

Scope of the Certification Program

The certification program includes all air terminals as defined in Section 3.

Exclusion: This certification program does not apply to the rating and testing of retrofit units.

Certified Ratings

The following certification program ratings are verified by test at the standard rating conditions (see Section 6.2):

Primary Air Flow, cfm [m^3/s]
Induced or Fan Air Flow, cfm [m^3/s]
Electrical Power Input, watt [W]
Minimum Operating Requirement, in. H_2O [kPa]
Radiated Sound Power Level, dB (125 to 4000 Hz octave band)
Discharge Sound Power Level, dB (125 to 4000 Hz octave band)

USE OF THE SOUND RATINGS

Sound power level data generated by use of this standard with air terminals are directly applicable to ARI Standard 885, a procedure for using published sound ratings in the estimating of sound levels in occupied spaces.

Note:

This Standard supersedes ARI Standard 880-94.

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AIR TERMINALS

Section 1. Purpose

1.1 *Purpose.* The purpose of this standard is to establish for air terminals: definitions and symbols; classifications; requirements for testing and rating; minimum data requirements for published ratings; marking and nameplate data; and conformance conditions.

1.1.1 *Intent.* This standard is intended for the guidance of the industry, including manufacturers, engineers, installers, contractors and users.

1.1.2 *Review and Amendment.* This standard is subject to review and amendment as technology advances.

Section 2. Scope

2.1 *Scope*. This standard applies to air control and distribution devices used in commercial air distribution systems which are ducted air devices and provide control of air volume and/or air temperature by one or more of the following means:

a. Fixed or adjustable directional vanes.
b. Pressure dependent volume dampers or shutoff valves (including air induction nozzles and dampers).
c. Pressure compensated volume dampers or shutoff valves (including air induction nozzles and dampers).
d. Heat exchange.
e. On/off fan control.
f. Variable speed fan control.

These devices may or may not have a fan to deliver air into a space.

2.2 *Exclusions.* This standard does not apply to registers, diffusers and grilles or to products specifically covered by:

a. The Air Heating and Cooling Coils Sub-Section of the Air Conditioning Heat Transfer Products Section of ARI. ARI Standard 410.
b. The Room Fan-Coil and Air-Induction Units Sub-Section of the Air Conditioning Heat Transfer Products Section of ARI. ARI Standard 440.

Section 3. Definitions and Symbols.

3.1 *Definitions.* All terms in this document will follow the standard industry definitions in the current edition of ASHRAE *Terminology of Heating, Ventilation, Air Conditioning, and Refrigeration* unless otherwise defined in this section.

3.2 *Acoustically Isolated.* The specimen under test shall have a sound pressure level at least 10 dB higher than any extraneous sound sources, such as sound generated from the air supply or duct walls, to insure that the test specimen is the sole contributor to the sound level being measured (see Figure 1).

3.3 *Air.*

3.3.1 *Primary Air*. Air supplied to an air terminal inlet under positive static gage pressure, normally from an air handling unit.

3.3.2 *Secondary Air.* Air drawn into an air terminal by means of induction and discharged through the air terminal outlet.

3.3.3 *Standard Air*. As defined in ASHRAE *Terminology of Heating, Ventilation, Air Conditioning and Refrigeration*, dry air at 70°F [20°C] and 14.696 psia [101.325 kPa]. Under these conditions, dry air has a mass density of 0.075 lb/ft^3 [1.204 kg/m^3].

3.4 *Airflow.* Unit volume displacement of standard air per unit time. Normally measured in cubic feet per minute (cfm) or cubic meters per second (m^3/s). The various types of airflow are defined as follows:

3.4.1 *Design Airflow*. The flow of conditioned air through an air terminal required to meet a given heating or cooling design load.

3.4.2 *Rated Airflow*. The flow of air through an air terminal at which test or performance data is generated.

3.4.3 *Standard Airflow.* Airflow corrected for standard air density. $Q_s = Q_a\ (\rho_a/\rho_s)$.

3.4.4 *Induced Airflow.* The flow of secondary air into an air terminal resulting from a pressure differential created by the velocity of the flow of primary air through the terminal.