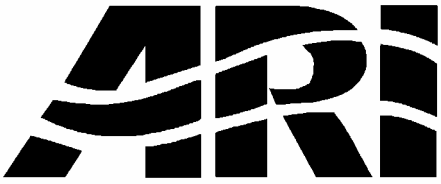
2003 STANDARD for

UNITARY AIR-CONDITIONING AND AIR-SOURCE HEAT PUMP EQUIPMENT



AIR-CONDITIONING & REFRIGERATION INSTITUTE

Standard 210/240

4100 N. FAIRFAX DR.,STE. 200 • ARLINGTON, VIRGINIA 22203

IMPORTANT

SAFETY DISCLAIMER

ARI does not set safety standards and does not certify or guarantee the safety of any products, components or systems designed, tested, rated, installed or operated in accordance with this standard/guideline. It is strongly recommended that products be designed, constructed, assembled, installed and operated in accordance with nationally recognized safety standards and code requirements appropriate for products covered by this standard/guideline.

ARI uses its best efforts to develop standards/guidelines employing state-of-the-art and accepted industry practices. ARI does not certify or guarantee that any tests conducted under its standards/guidelines will be non-hazardous or free from risk.

ARI CERTIFICATION PROGRAM PROVISIONS

Scope of the Certification Program

The Certification Program includes all Unitary Air-Conditioning and Air-Source Unitary Heat Pump equipment rated below 65,000 Btu/h [19,000 W] at ARI Standard Rating Conditions (Cooling).

Certified Ratings

The following Certification Program ratings are verified by test:

Unitary Air-Conditioners

A. Air-cooled under 65,000 Btu/h [19,000 W]
   1. ARI Standard Rating Cooling Capacity, Btu/h [W]
   2. Seasonal Energy Efficiency Ratio, SEER, Btu/(W·h)

B. Water-cooled and evaporative-cooled under 65,000 Btu/h [19,000 W]
   1. ARI Standard Rating Cooling Capacity, Btu/h [W]
   2. Energy Efficiency Ratio, EER, Btu/(W·h)

Air-Source Unitary Heat Pumps

Air-cooled under 65,000 Btu/h [19,000 W]
1. ARI Standard Rating Cooling Capacity, Btu/h [W]
2. Seasonal Energy Efficiency Ratio, SEER, Btu/(W·h)
3. High Temperature Heating Standard Rating Capacity, Btu/h [W]
4. Region IV Heating Seasonal Performance Factor, HSPF, Minimum Design Heating Requirement, Btu/(W·h)

Conformance to the requirements of the Maximum Operating Conditions Test, Voltage Tolerance Test, Low-Temperature Operation Test (Cooling), Insulation Effectiveness Test (Cooling), and Condensate Disposal Test (Cooling), as outlined in Section 8, are also verified by test.

Note:

This standard supersedes ARI Standard 210/240-94.

Price $20.00 (M) $40.00 (NM)
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UNITARY AIR-CONDITIONING AND AIR-SOURCE HEAT PUMP EQUIPMENT

Section 1. Purpose

1.1 *Purpose.* The purpose of this standard is to establish, for Unitary Air-Conditioners and Air-Source Unitary Heat Pumps: definitions; classifications; test requirements; rating requirements; minimum data requirements for Published Ratings; operating requirements; 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 factory-made Unitary Air-Conditioners and Air-Source Unitary Heat Pumps as defined in Section 3.

2.1.1 *Energy Source.* This standard applies only to electrically operated, vapor compression refrigeration systems.

2.2 *Exclusions.* This standard does not apply to the rating and testing of individual assemblies, such as condensing units or coils, for separate use.

2.2.1 This standard does not apply to heat operated air-conditioning/heat pump equipment, or to packaged terminal air-conditioners/heat pumps, or to room air-conditioners/heat pumps.

2.2.2 This standard does not apply to Unitary Air-Conditioners as defined in ARI Standard 340/360 with capacities of 65,000 Btu/h [19,000 W] or greater.

2.2.3 This standard does not apply to Air-Source Unitary Heat Pumps as defined in ARI Standard 340/360 with cooling capacities of 65,000 Btu/h [19,000 W] or greater, or to water-source heat pumps, to ground water-source heat pumps, and to ground source closed-loop heat pumps.

2.2.4 This standard does not include water heating heat pumps.

2.2.5 This standard does not apply to rating units equipped with desuperheater/water heating devices in operation.

Section 3. Definitions

All terms in this document shall 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.

Note: See Appendix C for definitions that apply to the testing and calculation procedures required by Appendix C.

3.1 *Air-Source Unitary Heat Pump.* One or more factory-made assemblies which normally include an indoor conditioning coil(s), compressor(s), and outdoor coil(s), including means to provide a heating function. When such equipment is provided in more than one assembly, the separated assemblies shall be designed to be used together, and the requirements of rating outlined in the standard are based upon the use of matched assemblies.

3.1.1 *Functions.* They shall provide the function of air heating with controlled temperature, and may include the functions of air-cooling, air-circulating, air-cleaning, dehumidifying or humidifying.

3.2 *Degradation Coefficient (C_D).* The measure of the efficiency loss due to the cycling of the units as determined in Appendices C and D.

3.3 *Design Heating Requirement (DHR).* This is the amount of heating required to maintain a given indoor temperature at a particular outdoor design temperature.

3.4 *Energy Efficiency Ratio (EER).* A ratio of the cooling capacity in Btu/h to the power input value in watts at any given set of Rating Conditions expressed in Btu/(W·h).

3.4.1 *Standard Energy Efficiency Ratio*. A ratio of the capacity to power input value obtained at Standard Rating Conditions.

3.5 *Heating Seasonal Performance Factor (HSPF).* The total heating output of a heat pump, including supplementary electric heat necessary to achieve building heating requirements during its normal annual usage period for heating divided by the total electric power during the same period, as determined in Appendices C (Section C4.2) and D, expressed in Btu/(W·h).