

2002 STANDARD for

AIR-CONDITIONING AND REFRIGERATING EQUIPMENT NAMEPLATE VOLTAGES



**AIR-CONDITIONING &
REFRIGERATION
INSTITUTE**

Standard 110

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 manufacturers' 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 tests conducted under its standards will be non-hazardous or free from risk.

Note:

This standard supersedes ARI Standard 110-97.

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AIR-CONDITIONING AND REFRIGERATING EQUIPMENT NAMEPLATE VOLTAGES

Section 1. Purpose

1.1 Purpose. The purpose of this standard is to establish, for air-conditioning and refrigerating equipment: definitions; voltage rating requirements; equipment performance requirements; 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.

1.2 The provisions herein are recommendations intended for implementation only through reference by other authoritative documents.

Section 2. Scope

2.1 Scope. This standard applies to 60 Hz electrical voltage ratings and operating limits as applied to air-conditioning and refrigerating equipment, heat pumps, and electric furnaces.

2.1.1 Exclusions. This standard does not apply to 50 Hz electrical voltage ratings

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.

3.1 "Shall" or "Should." "Shall" or "should" shall be interpreted as follows:

3.1.1 Shall. Where "shall" or "shall not" is used for a provision specified, that provision is mandatory if compliance with the standard is claimed.

3.1.2 Should. "Should" is used to indicate provisions which are not mandatory but which are desirable as good practice.

3.2 Voltages.

3.2.1 Equipment Nameplate Voltage Rating. The nominal Utilization Voltage marked on the equipment nameplate by the manufacturer (Table 1).

3.2.2 Nominal System Voltage. A nominal value assigned to the electric power supply system for the purpose of conveniently designating its voltage class.

3.2.3 Service Voltage. The voltage at the point where the electric systems of the supplier and the user are connected.

3.2.4 Utilization Voltage. The voltage at the line terminals of the utilization equipment.

Section 4. Voltage Rating Requirements

4.1 Standard System Voltage Relationships. Table 1 presents the basic relationships between standard Nominal System Voltages and Utilization Voltages for air-conditioning and refrigeration equipment and components. (Data derived from ANSI C84.1).

4.2 Application of Voltage Ranges. (See ANSI C84.1).

4.2.1 Range A-Service Voltage. Electric supply systems are to be so designed and operated that most Service Voltages are within the limits specified for this range. The occurrence of Service Voltages outside of these limits should be infrequent.

4.2.2 Range A-Utilization Voltage. User systems are to be so designed and operated that, with Service Voltages within Range A limits, most Utilization Voltages are within the limits specified for this range.

Utilization equipment shall be designed and rated to give fully satisfactory performance throughout this range.

4.2.3 Range B-Service and Utilization Voltages. This range includes voltages above and below Range A limits that necessarily result from practical design and operating conditions on supply or user systems or both. Although such conditions are a part of practical operations, they shall be limited in extent, frequency and duration. When they occur, corrective measures shall be undertaken within a reasonable time to improve voltages to meet Range A requirements.