



UL RP 9691

Recommended Practice for Nameplates for Use in Electrical Installations

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Recommended Practice for Nameplates for Use in Electrical Installations, UL RP 9691

First Edition, Dated March 22, 2021

Summary of Topics

This is the first edition of UL RP 9691, Recommended Practice for Nameplates for Use in Electrical Installations.

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MARCH 22, 2021

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This UL Recommended Practice consists of the First Edition.

Comments or proposals for revisions on any part of the Recommended Practice may be submitted to UL at any time. Proposals should be submitted via a Proposal Request in UL's On-Line Collaborative Standards Development System (CSDS) at <https://csds.ul.com>.

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Preface

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1 Scope

1.1 This document provides general guidance for consistency in nameplates for electrical equipment in accordance with the National Electrical Code (NEC), NFPA 70. This recommended practice addresses nameplate content, formatting of the nameplate information, nameplate location on the equipment, and the durability of the nameplate.

1.2 The guidance provided does not replace the requirements contained in product standards or installation instructions. This document is intended to cover the basic nameplate information needed to safely select and install correctly sized power conductors and overcurrent devices and does not include all required markings for electrical equipment.

1.3 This document was developed due to product standards allowing for flexibility related to how information is displayed on equipment nameplates resulting in nameplate information that can vary significantly between products certified to the same standard. This variability causes difficulties in the field, as every manufacturer provides essential information in a different format based on their interpretation and application of the requirements. As products become more complex, nameplates can become more complex, so if uniformity and consistency are not put into place, issues and confusion in the field may increase.

1.4 Product standard requirements take precedence over any guidance provided in this document.

1.5 This recommended practice does not apply to the factory or field-installed caution, warning, and danger markings.

2 Units of Measurement

2.1 Values in parentheses are explanatory or approximate information.

3 Referenced Publications

3.1 Any undated reference to a code or standard appearing in this recommended practice shall be interpreted as referring to the latest edition of that code or standard.

3.2 The following publications are referenced in this recommended practice.

IEC 60050, International Electrotechnical Vocabulary (IEV)

IEC 62683-1, Low-voltage switchgear and control gear – Product data and properties for information exchange – Part 1: Catalogue data

IEEE 802.3, IEEE Standard for Ethernet

ISO/IEC 17030, Conformity assessment – General requirements for third-party marks of conformity (Updates for electronic labeling pending)

NFPA 70, National Electrical Code (NEC)

NFPA 79, Electrical Standard for Industrial Machinery

NEMA EL P1, NEMA Position Paper on Electronic Labeling

NEMA MG 1, Motors and Generators

UL 50E, Enclosures for Electrical Equipment, Environmental Considerations

UL 73, Motor-Operated Appliances

UL 444, Communications Cables

UL 499, Electric Heating Appliances

UL 508, Industrial Control Equipment (solid-state motor controllers only)

UL 508A, Industrial Control Panels

UL 845, Motor Control Centers

UL 969, Marking and Labeling Systems

UL 197, Commercial Electric Cooking Appliances

UL 1004-1, Rotating Electrical Machines – General Requirements

UL 1004-2, Impedance Protected Motors

UL 1004-3, Thermally Protected Motors

UL 1004-4, Electric Generators

UL 1004-6, Servo and Stepper Motors

UL 1004-7, Electronically Protected Motors

UL 1004-8, Inverter Duty Motors

UL 1004-9, Form Wound and Medium Voltage Rotating Electrical Machines

UL 2108, Low Voltage Lighting Systems

UL 2111, Overheating Protection for Motors

UL 2200, Stationary Engine Generator Assemblies

UL 60034-1, Rotating Electrical Machines – Part 1: Rating and Performance

UL 60730-1, Automatic Electrical Controls – Part 1: General Requirements

UL 60335-2-40, Household and Similar Electrical Appliances – Safety – Part 2-40: Particular Requirements for Electrical Heat Pumps, Air-Conditioners and Dehumidifiers, 3rd Edition

UL 60947-4-1, Low-Voltage Switchgear and Controlgear – Part 4-1: Contactors and motor starters – Electromechanical contactors and motor-starters

UL 60950-1, Information Technology Equipment – Safety – Part 1: General Requirements

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UL 61800-5-1, Adjustable Speed Electrical Power Drive Systems – Part 5-1: Safety Requirements – Electrical, Thermal and Energy (Note: Replaces UL 508C)

UL 62368-1, Audio/video, information and communication technology equipment – Part 1: Safety requirements

4 Glossary

4.1 For the purpose of this recommended practice, the following definitions apply.

4.2 **AMBIENT TEMPERATURE RATING** – A rating assigned to equipment that refers to the maximum ambient temperature of the room or space outside of the device enclosure or intended enclosure. (UL 508 or UL 60947-4)

4.3 **AMPACITY** – The maximum current, in amperes, that a conductor can carry continuously under the conditions of use without exceeding its temperature rating. (NEC 100)

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4.4 **APPLIANCE (S)** – Utilization equipment, generally other than industrial, that is normally built in standardized sizes or types and is installed or connected as a unit to perform one or more functions such as clothes washing, air-conditioning, food mixing, deep frying, and so forth. (NEC 100)

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4.5 **BRANCH CIRCUIT (NEC)** – The circuit conductors between the final over-current device protecting the circuit and the outlet(s). (NEC 100)

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4.6 **BRANCH CIRCUIT (UL)** – The conductors and components following the last overcurrent protective device protecting a load. (UL 508A)

4.7 **BRANCH CIRCUIT OVERCURRENT PROTECTIVE DEVICE** – A fuse or circuit breaker that has been evaluated to a safety standard for providing overcurrent protection. (See UL 508A for additional information.)

4.8 **CURRENT** – The flow of electric charge in a circuit. Examples of electric current rating values that may be provided on equipment nameplates include amperes, rated-load amperes, interrupting current, full-load current, and continuous current. The type of current rating is based on the type and use of the equipment and defined by the applicable codes and standards.

4.9 **DAMP LOCATION** – Locations protected from weather and not subject to saturation with water or other liquids but subject to moderate degrees of moisture.

Informational Note: Examples of such locations include partially protected locations under canopies, marquees, roofed open porches, and like locations, and interior locations subject to moderate degrees of moisture, such as some basements, some barns, and some cold-storage warehouses. (NEC 100)

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4.10 DRY LOCATION – A location not normally subject to dampness or wetness. A location classified as dry may be temporarily subject to dampness or wetness, as in the case of a building under construction. (NEC 100)

4.11 ENCLOSURE – A surrounding case constructed to provide a degree of protection to personnel against access to hazardous parts and to provide a degree of protection to the enclosed equipment against specified environmental conditions. (UL 50E)

4.12 FEEDER CIRCUIT – The conductors and circuitry on the supply side of the branch circuit overcurrent protective device. (UL 508A)

4.13 FREQUENCY – The measure of the rate of oscillation of current or voltage, measured in the number of cycles per second. The corresponding SI unit for frequency is Hertz (Hz). Equipment may be rated for multiple frequencies such as 50/60 Hz or may be rated "dc" to denote that it is rated for direct current.

4.14 HERMETIC REFRIGERANT MOTOR-COMPRESSOR – A combination consisting of a compressor and motor, both of which are enclosed in the same housing, with no external shaft or shaft seals, with the motor operating in the refrigerant. (NEC 100)

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4.15 HORSEPOWER – A measure of mechanical output. In the context of this Standard, one horsepower is defined as, and shall be used interchangeably with, 0.746 kilowatts of output power. (UL 1004-1)

4.16 INDUSTRIAL CONTROL PANEL – An assembly of two or more components consisting of one of the following:

- a) Power circuit components only, such as motor controllers, overload relays, fused disconnect switches, and circuit breakers;
- b) Control circuit components only, such as push buttons, pilot lights, selector switches, timers, switches, and control relays; or
- c) A combination of power and control circuit components.

These components, with associated wiring and terminals, are mounted on, or contained within, an enclosure or mounted on a subpanel.

The industrial control panel does not include the controlled equipment. (NEC 100)

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4.17 LEGIBLE NAMEPLATE – A nameplate that is readable at arm's length [approximately 18 in (457 mm)] by a person with normal or corrected vision. (UL 969)

4.18 MANUFACTURER'S IDENTIFICATION – Method as defined by codes and standards to identify the manufacturer of the equipment. Examples of manufacturer's identification include Identifying Designation, Identifying Name, Manufacturer's Name, Manufacturer's Trademark and Manufacturer's Symbol

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4.19 MAXIMUM OPERATING CURRENT (MOC) – MOC is marked instead of motor FLA on air-conditioning and refrigerating equipment having adjustable speed drives or drive systems. MOC is the current resulting when an electric motor and adjustable speed drive or drive system are operated under any conditions such as maximum speed/maximum load, maximum speed/minimum load, minimum speed/minimum load, minimum speed/maximum load, including locked-rotor such that current to the motor/adjustable speed drive or drive system is at a maximum. The MOC is the current at the input of the adjustable speed drive. (UL 1995)

Note: FLA is full load amps.

4.20 MAXIMUM RATED CURRENT (MRC) – MRC is marked instead of motor-compressor RLA and LRA on equipment having adjustable speed drives or drive systems. MRC is the current resulting when a hermetic refrigerant motor-compressor and adjustable speed drive or drive system are operated under any conditions such as maximum speed/maximum load, maximum speed/minimum load, minimum speed/minimum load, minimum speed/maximum load, including locked-rotor such that current to the motor-compressor/adjustable speed drive or drive system is at a maximum. The MRC is the current at the input of the adjustable speed drive. The test conditions to determine the MRC are found in Annex AA of UL 60335-2-34 or CAN/CSA C22.2 No. 60335-2-34. (UL 1995)

Note: RLA is rated load amps and LRA is locked rotor amps.

4.21 NAMEPLATE – Markings placed on electrical equipment, grouped together and/or on the same label, providing the manufacturer's name and the electrical rating of the equipment. Nameplate requirements are contained in applicable codes and standards.

4.22 NEUTRAL CONDUCTOR – the identified grounded conductor, referred to as "the neutral". (UL 1598)

4.23 NOMINAL VOLTAGE – A nominal value assigned to a circuit or system for the purpose of conveniently designating its voltage class (e.g., 120/240 volts, 480Y/277 volts, 600 volts).

4.24 PERMANENT NAMEPLATE – A nameplate that remains attached to equipment under anticipated use and remains legible.

4.25 POWER – Rating which defines the quantity of the electrical energy that is generated or consumed in an electrical circuit or equipment. Power ratings may be provided as voltamperes, kilovolt-amperes, horsepower (746 watts), or watts.

4.26 SERVICE FACTOR – A multiplier that, when applied to the rated output of a machine, indicates a permissible loading that can be carried continuously at the rated voltage and frequency. (UL 1004-1)

4.27 SHORT CIRCUIT CURRENT RATING – The prospective symmetrical fault current at a nominal voltage to which an apparatus or system is able to be connected without sustaining damage exceeding the defined acceptance criteria. (UL 508A) (NEC 100)

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4.28 VISIBLE NAMEPLATE – A nameplate located on a piece of equipment that can be seen during or, if required, after installation.

4.29 VOLTAGE (OF A CIRCUIT) – The greatest root-mean-square (rms) (effective) difference of potential between any two conductors of the circuit concerned.

Informational Note: Some systems, such as 3-phase 4-wire, single-phase 3-wire, and 3-wire direct current, may have various circuits of various voltages. (NEC 100)

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4.30 VOLTAGE TO GROUND – For grounded circuits, the voltage between the given conductor and that point or conductor of the circuit that is grounded; for ungrounded circuits, the greatest voltage between the given conductor and any other conductor of the circuit. (NEC 100)

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4.31 WET LOCATION – Installations underground or in concrete slabs or masonry in direct contact with the earth; in locations subject to saturation with water or other liquids, such as vehicle washing areas; and in unprotected locations exposed to weather. (NEC 100)

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PART I – ALL EQUIPMENT

5 Durability and Legibility

5.1 General

5.1.1 The guidance in this section for nameplates durability and legibility is provided for use with electrical equipment installed in accordance with the National Electrical Code (NEC). For specific equipment guidance, refer to equipment sections within this recommended practice. Product standard requirements take precedence over guidance provided in this section.

5.1.2 NEC 110.21 requires the marking or label to be of sufficient durability to withstand the environment involved.

5.1.3 In general, UL specifies the following requirements for durability. The final acceptance of a permanent marking in a particular application is to be judged under the applicable requirements in the standard covering the device, appliance, or equipment on which the label or marking is used.

- a) A marking that is required to be permanent may be molded, die-stamped, paint-stenciled, stamped, or etched metal that is permanently secured, or indelibly stamped lettering on a pressure-sensitive label secured by adhesive that, upon investigation, is found to be acceptable for the application.
- b) An adhesive-attached label or related product that complies with the applicable requirements for indoor or outdoor use labels in UL 969 may be considered to be permanent for typical installations.
- c) Ordinary usage, handling, storage, and the like of a product are considered to determine the permanence of a marking.

5.2 UL 969 Marking and Labeling Systems

5.2.1 The following provides an overview of UL 969. Refer to the latest edition of UL 969 for specific requirements and compliance criteria.

5.2.2 Permanence and legibility – After exposure to prescribed conditioning, labels are tested as follows for permanence and legibility as defined in UL 969.

- a) Visual Examination – The labels are viewed at arm's length, approximately 18 inches, by a person with normal or corrected vision.
- b) Legibility Test – Printed surfaces of labels are rubbed with thumb or finger and then examined.
- c) Defacement Test – Labels or unprinted materials are scraped across printed areas and edges using the edge of a thick steel blade held at a right angle to the test surface.
- d) Adhesion Test – This test is conducted to determine if it is possible to remove test strips from surfaces. Note that the adhesion test is not conducted after the low temperature exposure condition.

5.2.3 Indoor use – After exposure to the following conditions, the samples are tested as described in [5.2.2](#).

a) Indoor dry use locations.

- 1) As Received Exposure (Ambient Exposure) – 72 hours at 23 °C (73 °F) and 50 percent relative humidity.
- 2) Humidity Exposure – 72 hours at 32 °C (90 °F) and 85 percent relative humidity.
- 3) Elevated Temperature Exposure – 240 hours (10 days) at the test temperature corresponding to the maximum temperature rating for ten-day oven test temperatures shown in [Table 5.1](#).
- 4) Low Temperature Exposure – 7 hours at the minimum temperature rating. This exposure is only applicable for products intended to be used at ambient air temperatures lower than 0 °C (32 °F).

b) Indoor use where exposed to high humidity or occasionally to water.

- 1) As Received Exposure (Ambient Exposure) – 72 hours at 23 °C (73 °F) and 50 percent relative humidity.
- 2) Water Immersion Exposure- Immersion in water for 48 hours in 23 °C water.
- 3) Elevated Temperature Exposure – 240 hours (10 days) at the test temperature corresponding to the maximum temperature rating for ten-day oven test temperatures shown in [Table 5.1](#).
- 4) Low Temperature Exposure – 7 hours at the minimum temperature rating. This exposure is only applicable for products intended to be used at ambient air temperatures lower than 0 °C (32 °F).

5.2.4 Outdoor Use – After exposure to the following conditions, the samples are tested as described in [5.2.2](#). Note that the NEC defines locations as a wet location, damp location, or dry location. Protected outdoor areas may be considered a wet or damp location, depending on the region and degree of protection.

Recommended Practice: Note that nameplates used in a permanently exposed outdoor area, where the nameplate is unprotected from direct sunlight, should undergo further evaluation by the equipment manufacturer to ensure the markings are sufficiently durable to handle these conditions for the life of the equipment.

- a) As Received Exposure (Ambient Exposure) – 72 hours at 23 °C (73 °F) and 50 percent relative humidity.

- b) Water Immersion Exposure- Immersion in water for 48 hours in 23 °C water.