STANDARDS PUBLICATION NO. LA 1

nema

Surge Arresters

NEMA

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION ■ 2101 L STREET, N.W., WASHINGTON, D.C. 20037

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SURGE ARRESTERS

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Foreword

These standards are periodically reviewed by the Surge Arrester Section of NEMA for any revisions necessary to keep them up to date with advancing technology. Your comments or proposed revisions should be submitted to:

Vice President, Engineering
National Electrical Manufacturers Association
2101 L Street, N.W.
Washington, D.C. 20037-1526

Publication No. LA 1-1992 revises and supersedes LA 1-1986.

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Scope

The standards contained in this publication apply to all valve surge arresters for alternating-current systems, including arresters which are an integral part of other apparatus.

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Section 1
REFERENCED STANDARDS

The American National Standard for Surge Arresters for Alternating-Current Power Circuits, ANSI/IEEE C62.1-1990, has been approved as a NEMA Standard and constitutes the major portion of the NEMA Stnadards Publication for Surge Arresters, LA 1-1992.

The American National Standard Guide for Application of Valve Type Lightening Arresters for A-C Systems, C62.2-1987, may also be of interest to users of this publication.

Copies of both are available from:

American National Standards Institute
11 West 42nd Street
New York, NY 10036

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Section 2

GENERAL

The standards given on the following pages of this publication provide revisions, additional standards, and information which have been approved by NEMA but which are not included in C62.1-1990.

NEMA Standard 8-20-1986

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Section 3
TESTING STANDARDS

INTERNAL IONIZATION AND RADIO INFLUENCE VOLTAGE TESTS

The following paragraph has been approved by NEMA to supplement American National Standard C62.1 and C62.11:

8.8 INTERNAL IONIZATION AND RADIO INFLUENCE VOLTAGE TESTS

The test equipment, practices, and procedures for making the tests shall be as specified in ANSI/IEEE C62.1 and C62.11. The permissible maximum radio influence and internal ionization voltage levels shall be as given in Table 3-1.

NEMA Standard 8-20-1986.

Table 3-1
MAXIMUM RADIO INFLUENCE AND INTERNAL IONIZATION VOLTAGE LEVELS

Voltage Rating, kV (1)	MCOV kV (2)	Maximum Radio Influence Voltage, Microvolts (3)	Maximum Internal Ionization Voltage, Microvolts (4)	Voltage Rating, kV (1)	MCOV kV (2)	Maximum Radio Influence Voltage, Microvolts (3)	Maximum Internal Ionization Voltage, Microvolts (4)
0.175	*	50	25	48	39	250	50
0.650	*	50	25	60	48	250	50
1	*	50	25	72	57	250	50
3	2.55	50	25	90	70	500	75
6	5.1	50	25	96	76	500	75
9	7.65	50	25	108	84	500	75
10	8.4	50	25	120	98	500	75
12	10.2	50	25	144	115	1000	125
15	12.7	50	25	168	131	1000	125
18	15.3	100	25	180	144	1000	125
21	17.0	100	25	192	152	1000	125
24	19.5	100	25	240	190	1500	200
27	22.0	150	25	258	209	1500	200
30	24.4	150	25	276	220	1500	200
36	29.0	150	25	294	235	1500	200
39	31.5	150	25				

NOTE 1 - Maximum permissible ambient radio influence or ionization voltages, according to whichever test is being performed, will be 1/2 of the levels specified in columns 3 and 4.

NOTE 2 - No levels of radio influence or internal ionization voltage are included for surge arresters rated above 294 kV because of the present lack of data.

*MCOV values not established for secondary arresters.

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NEMA STANDARDIZATION BACKGROUND

The purpose of NEMA Standards, their classification, and status are set forth in certain clauses of the NEMA *Standardization Policies and Procedures* manual and are referenced below:

Purpose of Standards

National Electrical Manufacturers Association Standards are adopted in the public interest and are designed to eliminate misunderstandings between the manufacturer and the purchaser and to assist the purchaser in selecting and obtaining the proper product for their particular needs. Existence of a National Electrical Manufacturers Association Standard does not in any respect preclude any member or nonmember from manufacturing or selling products not conforming to the standard.

(Standardization Policies and Procedures, p. 1)

Definition of a Standard

A Standard of the National Electrical Manufacturers Association defines a product, process or procedure with reference to one or more of the following: nomenclature, composition, dimensions, tolerances, safety, operating characteristics, performance, rating, testing, and the service for which they are designed.

(Standardization Policies and Procedures, p. 2)

Dimensions

Where dimensions are given for interchangeability purposes, alternate dimensions satisfying the other provisions of the Standards Publication may be capable of otherwise equivalent performance.

(Standardization Policies and Procedures, p. 8)

Categories of Standards

National Electrical Manufacturers Association Standards are of three classes, which have received the affirmative vote of at least two-thirds of the Subdivision votes cast in the affirmative or negative:

1. NEMA Standard, which relates to a product, process, or procedure commercially standardized and subject to repetitive manufacture.
2. Suggested Standard for Future Design, which may not have been regularly applied to a commercial product, but which suggests a sound engineering approach to future development.
3. Adoptive Standard, which is adopted in whole or in part from the standards of another organization, either domestic, regional, or international.

(Standardization Policies and Procedures, pp. 7 & 16)

Authorized Engineering Information

Authorized Engineering Information consists of explanatory data and other engineering information of an informative character not falling within the classification of NEMA Standard or Suggested Standard for Future Design, which standard has received the affirmative vote of at least two-thirds of the Subdivision votes cast in the affirmative or negative.

(Standardization Policies and Procedures, pp. 7 & 16)

Identification of Status

Standards in NEMA Standards Publications are identified as "NEMA Standard," "Suggested Standard for Future Design," or "Adoptive Standard." These indicate the status of the standard. A statement incorporating the auxiliary verb "shall" indicates that compliance with a requirement is mandatory for compliance with the standard. These classes of standards are identified in the foreword or throughout the text.

The material identified as "Authorized Engineering Information" is designated similarly. Statements incorporating other auxiliary verbs such as "should," "may," etc. refer to authorized engineering information and not to procedures required for compliance with the standard.

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