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nema

Automatic Circuit Reclosers, Automatic Line Sectionalizers and Oil-Filled Capacitor Switches for Alternating-Current Systems

NEMA

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

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Foreword

This is one of six* NEMA Standards Publications covering the range of low- to high-voltage switchgear products. Such products are generally applied to utility and industrial use with a portion going to commercial applications. User and general interest input played a significant part in the development of the product requirements carried by this publication. It, as well as the other NEMA Standards Publications, is not intended to stand alone for without exception:

1. It adopts by reference the appropriate American National Standards (approved by ANSI Standards Committee C37) as the main body of this NEMA publication.
2. It offers a vehicle for getting into print the proposed NEMA revisions of the pertinent C37 Standards, until such time as those revisions can be evaluated, approved and published as a revision of the particular American National Standard.
3. It covers additional information about a product of specific interest to the manufacturing community, which the ANSI Standards Committee does not include in its scope.

Within this NEMA publication, therefore, the main focus is on American National Standards and the consensus method of standards approval used by ANSI.

Switchgear standards are, for the most part, developed through the combined and separate efforts of IEEE, AEIC and NEMA. ANSI Standards Committee C37 serves as the administrator through which are channeled all switchgear proposals intended for eventual publication as American National Standards. It is within these organizations that the principal manufacturer-user exchange is accomplished. This exposes product requirements to those people having the direct responsibility for the use, design, application, maintenance and acceptance of the products and thus assures a most objective and critical review within the voluntary standards program.

SG 2 High Voltage Fuses
SC 3 Low-voltage Power Circuit Breakers
SC 4 High-voltage Power Circuit Breakers
SG 5 Power Switchgear Assemblies
SG 6 Power Switching Equipment
*SG 13 Automatic Circuit Reclosers, Automatic Line Sectionalizers and Oil-filled Capacitor Switches for Alternating-current Systems

These standards are periodically reviewed by the Automatic Circuit Recloser Voting Classification of the Switchgear Section of NEMA for any revisions necessary to keep them up to date with advancing technology. Proposed or recommended revisions should be submitted to:

Manager, Engineering Department
National Electrical Manufacturers Association
2101 L Street, N.W.
Washington, D.C. 20037

Scope

These standards include requirements for automatic circuit reclosers, automatic line sectionalizers, and oil-filled capacitor switches used in electrical circuit protection.

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AUTOMATIC CIRCUIT RECLOSERS, AUTOMATIC LINE SECTIONALIZERS AND OIL-FILLED CAPACITOR SWITCHES FOR ALTERNATING-CURRENT SYSTEMS

Section 1

AUTOMATIC CIRCUIT RECLOSERS

The American National Standard *Requirements for Overhead, Padmounted, Dry Vault and Submersible Automatic Circuit Reclosers and Fault Interrupters for Alternating-Current Systems ANSI/IEEE,* C37.60-1981 was approved as a NEMA Standard on September 3, 1980.
C37.60-1981 constitutes Section 1 of this NEMA Publication No. SG 13-1983.
Copies of C37.60-1981 are available from the:

American National Standards Institute
1430 Broadway
New York, NY 10018

Section 2

AUTOMATIC LINE SECTIONALIZERS

The American National Standard *Requirements for Overhead, Padmounted, Dry Vault and Submersible Line Sectionalizers for Alternating-Current Systems, ANSI/IEEE,* C37.63-1983.

C37.63-1969 and together with the following revisions which were approved by NEMA on May 17, 1971; May 17, 1972; and May 16, 1977 constitute Section 2 of this NEMA Publication No. SG 13-1977.

Copies of C37.63-1969 are available from the:

American National Standards Institute
1430 Broadway
New York, NY 10018

NEMA revisions to C37.63-1983

Table 3 of C37.63-1983
Replace this table by Table 3 as shown on page 8.

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Table 4 Test Voltages and Limits of C37.63-1983
Conducted Radio Influence Voltage

Replace this table by the following:

Rated Maximum Voltage, kV	60-hertz Test Voltage, kV	Limit of Radio Influence Voltage, Microvolts at 1000 kHz
15.0 and 15.5	9.41	500
27.0	16.4	650
38.0	23.0	650

NOTE 1—In the case of sectionalizers having voltage ratings not covered by this table, the test shall be made at 105 percent of the line-to-neutral voltage, based on the rated maximum voltage.
NOTE 2—Sectionalizers having two or more voltage ratings shall be tested on the basis of the highest voltage rating given on the nameplate.

NEMA Standard 5-16-1977.

5.7.3 Test Equipment and Procedure

Replace this paragraph by the following:

The equipment and general method used in making radio influence voltage tests shall be in accordance with the recommendations given in the NEMA Standards Publication No. 107-1964 (R 1971, 1976, 1981), *Methods of Measurement of Radio Influence Voltage (RIV) of High-Voltage Apparatus.*

NEMA Standard 5-16-1977.

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Table 3 of C37.63
RATED CONTINUOUS CURRENT, RATED MINIMUM ACTUATING CURRENT, RATED ASYMMETRICAL CURRENT, RATED MOMENTARY CURRENT, RATED ONE-SECOND CURRENT, AND RATED TEN-SECOND CURRENT OF AUTOMATIC LINE SECTIONALIZERS

		Current Ratings in Amperes*								
		Line 1 & 3 Single-phase Sectionalizers			Line 2 & 4 Single-phase Sectionalizers Line 5 Three-phase Sectionalizers			Line 6, 7 & 8 Three-phase Sectionalizers		
Continuous 60 Hz	Minimum Actuating Current rms Symmetrical	Momentary and Making rms Asymmetrical	1 s rms Symmetrical	10 s rms Symmetrical	Momentary and Making rms Asymmetrical	1 s rms Symmetrical	10 s rms Symmetrical	Momentary and Making rms Asymmetrical	1 s Symmetrical	10 s rms Symmetrical
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
10	16	1600	400	125	1600	400	125			
15	24	2400	600	190	2400	600	190			
25	40	4000	1000	325	4000	1000	325			
35	56	6000	1500	450	6000	1500	450			
50	80	6500	2000	650	7000	2000	650			
70	112	6500	3000	900	8000	3000	900			
10V	160	6500	4000	1250	8000	4000	1250			
140	224	6500	4000	1800	8000	4000	1800			
200	320	6500	4000	2500	8000	5700	2600			
400	†		9000					15000	10000	3500
600	†							15000	10000	3500

* Line 1, 2, 3, 4 & 7 sectionalizers are series coil devices. Current ratings are determined by the series coil or by the maximum rating of the contacts. Line 5, 6, 8 & 9 sectionalizers are nonseries coil units. Current ratings are determined by the rating of the contacts only.

† The minimum actuating current on nonseries coil sectionalizers is independent of the continuous current rating, being selected by means of current taps or similar means.

NEMA Standard 5-16-1977.

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Section 3

OIL-FILLED CAPACITOR SWITCHES

The American National Standard *Requirements for Oil-filled Capacitor Switches for Alternating-Current Systems, ANSI/IEEE,* C37.66-1969 (R 1982), were approved as NEMA Standards on November 12, 1981.

C37.66-1969 (R 1982), together with the following revisions which were approved by NEMA on November 12, 1981, constitute Section 3 of this NEMA Publication No. SG 13-1983.

Copies of C37.66-1969 (R1982) are available from the:

American National Standards Institute
1430 Broadway
New York, NY 10018

NEMA revisions to C37.66-1969 (R1982)

Table 4 Test Voltages and Limits of Conducted Radio Influence Voltage

Replace this table by the following:

Rated Maximum Voltage, kV	60-hertz Test Voltage, kV	Limit of Radio Influence Voltage, Microvolts at 1000 kHz
15.0 and 15.5	9.41	500

NOTE 1—In the case of capacitor switches having voltage ratings not covered by this table, the tests shall be made at 105 percent of the line-to-neutral voltage, based on the rated maximum voltage.

NOTE 2—Capacitor switches having two or more voltage ratings shall be tested on the basis of the highest voltage rating given on the nameplate.

NEMA Standard 11-12-1982.

5.7.3 Test Equipment and Procedure

Replace this paragraph by the following:

The equipment and general method used in making radio influence voltage tests shall be in acordance with the recommendations given in the NEMA Standards Publication No. 107-1964 (R 1971, 1976, 1981), *Methods of Measurement of Radio Influence Voltage (RIV) of High-voltage Apparatus,* 107-1064.

NEMA Standard 11-12-1982.

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September 1984

NEMA STANDARDIZATION

The purpose of NEMA Standards, their classification and status are set forth in certain clauses of the NEMA Bylaws, which are quoted 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 its particular need. 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.

(Bylaw—Art. V, Sec. 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, construction, dimensions, tolerances, safety, operating characteristics, performance, rating, testing, and the service for which they are designed.

(Bylaw—Art. V, Sec. 2, Subsection A)

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.

(NEMA Policy Memorandum 84-2, dated June 7, 1984)

Classes of Standards

National Electrical Manufacturers Association Standards are of two classes:

1. NEMA Standard, which relates to a product commercially standardized and subject to repetitive manufacture, which standard has been approved by at least 90 percent of the members of the Subdivision eligible to vote thereon;
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, which standard has been approved by at least two-thirds of the members of the Subdivision eligible to vote thereon.

(Bylaw—Art. V, Sec. 2, Subsection B)

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.

(Bylaw—Art. V, Sec. 6, 1st Sentence)

Official Standards Proposal

An Official Standards Proposal is an official draft of a proposed standard which is formally recommended to an outside organization(s) for consideration, comment and/or approval.

(Bylaw—Art. V, Sec. 4, Subsection A)

Identification of Status

Standards in NEMA Standards Publications are identified in the foreword or following each standard as "NEMA Standard" or "Suggested Standard for Future Design." These indicate the status of the standard. These words are followed by a date which indicates when the standard was adopted in its present form by the Association.

The material identified as "Authorized Engineering Information" and "Official Standards Proposal" is designated similarly.

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