ASA
Reg. U.S. Pat. Off.
C37.19-1963

UDC 621.316.57:621.3.025:
621.3.027.2

American Standard Safety Requirements for

Low-Voltage AC Power Circuit Breakers and Switchgear Assemblies

Sponsor

Electrical Standards Board

Approved June 17, 1963

AMERICAN STANDARDS ASSOCIATION
INCORPORATED

Documents
Document Sharing Hub

Full document details: IEEE ASA C37.19-1963

American Standard

Registered United States Patent Office

An American Standard implies a consensus of those substantially concerned with its scope and provisions. An American Standard is intended as a guide to aid the manufacturer, the consumer, and the general public. The existence of an American Standard does not in any respect preclude anyone, whether he has approved the standard or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the standard. American Standards are subject to periodic review and users are cautioned to obtain the latest editions. Producers of goods made in conformity with an American Standard are encouraged to state on their own responsibility in advertising, promotion material, or on tags or labels, that the goods are produced in conformity with particular American Standards.

Published by

AMERICAN STANDARDS ASSOCIATION
INCORPORATED
10 East 40th Street, New York 16, N. Y.

Copyright 1963 by American Standards Association, Incorporated

Universal Decimal Classification 621.316.57:621.3.025:621.3.027.2

Printed in USA

D4M1063/150

Documents
Document Sharing Hub

Full document details: IEEE ASA C37.19-1963

Foreword

(This Foreword is not a part of American Standard Safety Requirements for Low-Voltage AC Power Circuit Breakers and Switchgear Assemblies, C37.19-1963.)

This publication provides information concerning safety considerations for the rating, application, construction, installation, operation, and maintenance for low-voltage ac power circuit breakers and low-voltage ac power switchgear assemblies, within the scope of the ASA Sectional Committee on Power Switchgear, C37.

This standard is designed to provide a guide for the satisfactory installation of electrical equipment within its scope, and the installation and maintenance of such equipment in accordance with the following requirements and recommendations should provide insurance for the protection of personnel, buildings, and equipment from injury and damage.

In commercial and industrial installations, where low-voltage ac power circuit breakers and low-voltage ac power switchgear assemblies are usually installed, the protective and distribution equipment is characterized by high continuous current requirements, high interrupting requirements, or both. These systems are usually engineered systems designed specifically for the requirements of the installation. The ratings of the products and equipment used in these systems are selected and coordinated by competent engineers who are familiar with the characteristics of both the system and equipment.

This standard is based upon records of tests, the growth of the art in designing switchgear, and many years of field experience. It is subject to revision as further experience and investigation show this to be necessary or desirable.

The equipment covered in this standard is used for the protection of distribution and utilization circuits, service entrance, motors, and other electrical equipment.

This publication is one of a series of complimentary American Standards:

American Standard Low-Voltage AC Power Circuit Breakers (600-Volt Insulation Class), C37.13-1963.

American Standard for Low-Voltage DC Power Circuit Breakers, C37.14. (C37.14 is being developed by Sectional Committee C37 and when approved will be published as a part of this group.)

American Standard Rated Control Voltages and Their Ranges for Low-Voltage Air Circuit Breakers, C37.15-1954 (Reaffirmed 1961).

American Standard Preferred Ratings and Related Requirements for Low-Voltage Power Circuit Breakers, C37.16-1963. (Ratings for dc circuit breakers will be added after C37.14 is developed.)

American Standard on Tripping Devices (Opening Releases) for Alternating- and Direct-Current Low-Voltage Power Circuit Breakers, C37.17-1962.

American Standard Safety Requirements for Low-Voltage AC Power Circuit Breakers and Switchgear Assemblies, C37.19-1963.

American Standard for Switchgear Assemblies and Metal-Enclosed Bus, C37.20-1955. (This standard is under revision.)

American Standards are subject to periodic review. Users are cautioned to secure the latest edition. Suggestions for improvement gained in the use of this standard will be welcome. They should be sent to the American Standards Association, Incorporated, 10 East 40th Street, New York, N. Y. 10016.

AVA Documents
Document Sharing Hub

Full document details: IEEE ASA C37.19-1963

The ASA Sectional Committee on Power Switchgear, C37, which reviewed and approved this standard, had the following personnel at the time of approval:

V. L. Cox, *Chairman* O. B. Vikoren, *Secretary*

Organization Represented	*Name of Representative*
American Institute of Electrical Engineers	J. W. Graff E. J. Harrington H. L. Lowe R. C. Van Sickle C. A. Woodrow R. E. Friedrich *(Alt)* J. H. Vivian *(Alt)*
Association of American Railroads	W. O. Muller
Association of Iron and Steel Engineers	T. S. Novak
Electric Light and Power Group	Harris Barber Oscar Bauhan R. G. Meyerand R. L. Webb J. P. Markey *(Alt)* R. R. Wagstaff *(Alt)*
National Electrical Manufacturers Association	V. L. Cox L. L. Fountain A. W. Hill G. N. Lester Paul M. Ross B. K. Sturgis L. W. Dyer *(Alt)*
Tennessee Valley Authority	R. M. Milton
U. S. Department of the Army *(Liaison)*	William K. Cave
U. S. Department of the Interior, Bureau of Reclamation	D. C. Millard
U. S. Department of the Navy, Bureau of Yards and Docks	C. D. Friday

This standard was developed by the National Electrical Manufacturers Association. Review and coordination of this standard was accomplished by the Subcommittee on Low-Voltage Distribution Circuit Breakers and Equipment, ASA Sectional Committee on Power Switchgear, C37. The personnel of this Subcommittee was as follows:

B. S. Beall III, *Chairman*

O. J. Albani
C. E. Asbury
R. N. Bell, Jr
L. W. Dyer
L. L. Fountain
C. R. Joy
W. E. Lauback
J. G. Werner

Documents
Document Sharing Hub

Full document details: IEEE ASA C37.19-1963

Contents

Section		Page
19-1	Scope	7
19-1.1	Low-Voltage AC Power Circuit Breakers	7
19-1.2	Individually Enclosed Low-Voltage AC Power Circuit Breakers	7
19-1.3	Low-Voltage AC Power Switchgear Assemblies	7
19-2	Ratings	7
19-2.1	Rating Information	7
19-3	Application	7
19-3.1	Service Conditions	7
19-3.2	General Application for Low-Voltage AC Power Circuit Breakers	7
19-3.2.1	Voltage	7
19-3.2.2	Frequency	7
19-3.2.3	Continuous Current	8
19-3.2.4	Short-Time Current Rating	8
19-3.2.5	Short-Circuit Current (Interrupting) Rating	8
19-3.2.6	Determination of Symmetrical Current	8
19-3.3	Application of Low-Voltage AC Power Circuit Breakers for Selective Overcurrent Tripping	9
19-3.4	Application Limitations of Low-Voltage AC Power Circuit Breakers	9
19-3.5	Application of Low-Voltage AC Power Circuit Breakers to Full-Voltage Motor Starting and Running Duty of Three-Phase, 60-cps, 40-C Rise Motors	10
19-3.6	Application of Low-Voltage AC Power Circuit Breakers for Capacitance Switching	11
19-3.7	Lightning and Surge Protection	11
19-3.8	Surge Protection for Special Circuits	11
19-4	Design and Construction	11
19-4.1	General	11
19-4.2	Thickness of Enclosure of Low-Voltage AC Power Switchgear Assemblies	12
19-4.3	Cable Space and Supports in Low-Voltage AC Power Switchgear Assemblies	12
19-4.4	Voltage Limits of Instruments and Control Circuits	12
19-4.5	Fusing Potential and Control Power Transformer Circuits	12
19-4.6	Bus and Bus Supports in Low-Voltage AC Power Switchgear Assemblies	12
19-4.7	Ground Bus in Low-Voltage AC Power Switchgear Assemblies	13
19-4.8	Protection and Isolation of Low-Voltage AC Power Switchgear Assemblies Mounted Adjacent and Electrically Connected to Other Power Switching and Circuit Protective Equipment	13
19-4.9	Three-Coil Trip or Equivalent Fault Protection	13
19-4.10	Interlocking	13
19-4.11	Nameplate Markings	13
19-5	Installation	13
19-5.1	Instruction Books	13
19-5.2	Care of Apparatus Before and During Installation	13
19-5.3	Protection from Damage During Storage	14
19-5.4	Grounding	14
19-5.5	Bus Connections	14
19-5.6	Cable Connections	14
19-5.7	Control Connections	14
19-5.8	Pre-Operation Check	15
19-5.9	Preparing Low-Voltage AC Power Circuit Breakers for Service	15
19-6	Operation	15
19-6.1	Placing Drawout Breaker Element in Housing	16
19-6.2	Removing Drawout Breaker Element from Housing	16

Documents
Document Sharing Hub

Full document details: IEEE ASA C37.19-1963

SECTION PAGE

19-7 Inspection and Maintenance 16
19-7.1 General Precautions 16
19-7.2 Buses and Connections 16
19-7.3 Low-Voltage AC Power Circuit Breakers 17
19-7.3.1 Drawout Circuit Breakers 17
19-7.3.2 Stationary Breakers 17
19-7.4 Instruments, Relays, and Other Devices 17
19-7.5 Secondary Wiring 17
19-7.6 Records 17

Tables

Table 1 Application of Low-Voltage AC Power Circuit Breakers for Full-Voltage Motor Starting and Running Duty of Three-Phase, 60-cps, 40-C Rise Motors 10
Table 2 Minimum Areas for Multiple-Wire Connections 12

Documents
Document Sharing Hub

Full document details: IEEE ASA C37.19-1963