NEMA Standards Publication

ANSI C119.6-2011

American National Standard for Electric Connectors - Non-Sealed, Multiport Connector Systems Rated 600 Volts or Less for Aluminum and Copper Conductors

National Electrical Manufacturers Association

ANSI C119.6-2011

American National Standard

For Electric Connectors—
Non-Sealed, Multiport Connector Systems
Rated 600 Volts or Less
for Aluminum and Copper Conductors

Secretariat:

National Electrical Manufacturers Association

Approved May 5, 2011

American National Standards Institute, Inc.

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Published by

National Electrical Manufacturers Association
1300 North 17th Street, Rosslyn, VA 22209

Printed in the United States of America.

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Foreword

(This Foreword is not part of American National Standard C119.6-2011)

This standard describes current cycle and mechanical tests used to establish performance characteristics of non-sealed, multiport distribution connectors used to join aluminum-to-aluminum, aluminum-to-copper, or copper-to-copper conductors.

This revision has been reorganized to follow international formatting, and to improve the organization of information throughout the document when compared to the previous version.

Substantive changes to the standard have been made in the C119.6-2011 version of the standard. A substantive change is one that directly and materially affects performance of a product and which requires testing or retesting to meet the current edition of a standard. The substantive changes to the standard are:

This version of the standard requires retesting the performance of a product if there have been substantive changes made to the product.

This revision includes the addition of spreadsheet files in Annex D which can be used to collect current cycle test data, calculate connector stability, and generate graphs of the data and print the data to provide test results as part of the test report. The spreadsheets are provided to give test laboratories a standardized method to collect, calculate and report test data and prepare test reports. These spreadsheets were not part of earlier editions.

This standard incorporates an alternate, accelerated current cycle test method, henceforth referred to as the current cycle submersion test (CCST). The CCST method differs from the traditional current cycle test in that test conductors are rapidly cooled by immersion in chilled water at the beginning of the current-OFF cycle and requires fewer total current-ON and current-OFF cycles. The CCST method differs from the traditional current cycle test (CCT) in that test connectors are rapidly cooled by immersion in chilled water at the beginning of the current-OFF cycle. Comparative testing has demonstrated that the CCST method will provide essentially the same performance test results as the traditional current cycle test (CCT) in fewer test cycles. The current cycle test remains the preferred test method recommended for qualification of a connector.

The Subcommittee on Multiport Connectors of the Accredited Standards Committee on Connectors for Electric Utility applications, C119, in its constant review of the publication, continues to seek out the views of responsible users that will contribute to the development of better standards.

Suggestions for improvement of this standard will be welcome. They should be sent to the National Electrical Manufacturers Association, 1300 North 17th Street, Suite 1752, Rosslyn, Virginia 22209.

This standard was processed and approved for submittal to American National Standards Institute (ANSI) by the Accredited Standards Committee on Connectors for Electrical Utility Applications, C119. Committee approval of this standard does not necessarily imply that all committee members voted for its approval. At the time the committee approved this standard, the ANSI ASC C119 Committee had the following members:

Douglas Harms, Chairman
Ronald Lai, Vice Chairman
Paul Orr, Secretary

Organization Represented:

Aluminum Association	Jean-Marie Asselin
Electric Utility Industry	Michael Dyer

	Warren Hadley Douglas Harms James Harris Harry Hayes Alan Kasanow Curt Schultz James Sprecher Gerald Wasielewski David West Michael Zaffina
National Electrical Manufacturers Association	Jason Bundren Scott Casler David Dembowski Barry Johnson Ronald Lai John Mallal Colin McCullough Greg Nienaber Wayne Quesnel Carl Tamm Carl Taylor James Zahnen
Rural Utilities Service (RUS)	Trung Hiu
Tennessee Valley Authority	Jeffrey Nelson
Testing Laboratories	Jake Killinger Chris Morton Craig Pon Paul Springer Giovanni Velazquez
Other	Peter Bowers Tip Goodwin Stanley Hodgin John Olenik Joe Renowden Allen Wilcox

The C119.6 Subcommittee on Non-Sealed, Multiport Connector Systems Rated 600 Volts or Less for Aluminum and Copper Conductors, which developed the revisions of this standard, had the following members:

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James Zahnen, Vice Chairman
Paul Orr, Secretary

Peter Bowers
Jason Bundren
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American National Standard ANSI C119.6-2011

For Electric Connectors—
Non-Sealed, Multiport Connector Systems Rated 600 Volts or Less for Aluminum and Copper Conductors

1 Scope and Purpose

1.1 Scope

This standard covers non-sealed, multiport distribution connectors rated 600 volts or less used for making electrical connections between aluminum-to-aluminum, aluminum-to-copper, or copper-to-copper conductors for above grade, electric utility applications.

This standard establishes the electrical and mechanical test requirements for connectors used at normal operating temperatures not to exceed 90°C (194°F) and is not intended to recommend any other operating conditions.

1.2 Purpose

The purpose of this standard is to give reasonable assurance to the user that connectors meeting the requirements of this standard will perform in a satisfactory manner, provided they have been properly selected for the intended application and are installed in accordance with the manufacturer's recommendations. The service operating conditions and the selection of the connector is the responsibility of the user.

2 Referenced Standards

This standard is intended to be used in conjunction with the following standards. When a referenced standard is superseded by a revision approved by the American National Standards Institute, Inc., the referenced revision shall apply.

ASTM E4-10 *Standard Practices for Force Verification of Testing Machines*

IEEE 837-2002 *Standard for Qualifying Permanent Connections Used in Substation Grounding*

3 Definitions

Bolted-type connector: A connector in which the contact between the conductor and the connector is made by pressure exerted by one or more clamping bolts.

CCT (Current Cycle Test): Current cycle heating and cooling are done in air.

CCST (Current Cycle Submersion Test): Current cycle heating is done in air and cooling is done using water submersion.

Conductor: Conducting material used as a carrier of electric current.

Connector: A device joining two or more conductors for the purpose of providing a continuous electrical path.