



ANSI/NEMA C119.4-2004

Electric Connectors -
Connectors for Use
Between Aluminum to
Aluminum or Aluminum
to Copper Bare
Overhead Connectors



National Electrical Manufacturers Association
1300 North 17th Street, Suite 900 • Rosslyn, VA 22209
www.NEMA.org





ANSI C119.4-2004

American National Standard
for Electric Connectors—
Connectors for Use Between
Aluminum-to-Aluminum
or Aluminum-to-Copper
Conductors



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Secretariat:

National Electrical Manufacturers Association

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American National Standards Institute, Inc.

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Foreword (This Foreword is not part of American National Standard C119.4-2004.)

This standard describes current cycle and mechanical tests used to establish performance characteristics of connectors used to join aluminum-to-aluminum or aluminum-to-copper bare overhead conductors.

This revision includes 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 (CCT) 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. 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.

This revision includes an additional current cycle test method (CCT) utilizing elevated temperature testing for an extra heavy duty connector category, Class AA. The intent of elevated test temperature in Class AA testing is to provide a better performing connector.

This standard was initially developed under the direction of the Transmission and Distribution Committee of the Edison Electric Institute (EEI). Tentative performance-type specifications for electrical characteristics were issued in joint report form in 1958 by a steering committee of EEI and an advisory committee of manufacturers on the aluminum conductor research project (EEI Pub. No. 59-70, Tentative Specifications for Connectors for Aluminum Conductors).

Experience gained from extensive trial use further confirmed the performance criteria and test conditions of the tentative specifications and led to the development of Standard TDJ 162 in October 1962 by a joint committee of EEI and the National Electrical Manufacturers Association (NEMA). TDJ 162 was subsequently superseded by this document.

The Subcommittee on Overhead 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 1847, Rosslyn, Virginia 22209.

This standard was processed and approved for submittal to 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 it approved this standard, the C119 Committee had the following members:

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Ronald Lai, Vice Chairperson
Vince Baclawski, Secretary

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Aluminum Association

Edison Electric Institute

Name of Representative:

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Underwriters Laboratories, Incorporated	Jake Killinger
Other	Stanley Hodgin

The C119.4 Subcommittee on Connectors for Use Between Aluminum-to-Aluminum or Aluminum-to-Copper Conductors, which developed the revisions of this standard, had the following members at the time of approval:

Douglas Harms, Chairperson
Ronald Lai, Vice Chairperson
Vince Baclawski, Secretary

Mike Ferretti
Pierre Guyot
Warren C. Hadley
Trung Hiu
Barry Johnson
Jake Killinger
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Walter Romanko
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Carl R. Tamm
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David West
Allen Wilcox
James Zahnen

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Connectors for Use Between Aluminum-to-Aluminum or Aluminum-to-Copper Bare Overhead Conductors

1 Scope and Purpose

1.1 Scope

This standard covers connectors used for making electrical connections between aluminum-to-aluminum or aluminum-to-copper conductors used on distribution and transmission lines for electric utility.

This standard establishes the electrical and mechanical test requirements for electrical connectors. This standard is not intended to recommend operating conditions or temperatures.

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 class is the responsibility of the user.

Although there are 12 possible combinations of electrical and mechanical classes listed in this standard, it is intended that four to six combinations will meet the usual requirements for a given range of conductor sizes. This does not, however, prohibit other combinations.

1.3 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.

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

connector: A device joining two or more conductors to provide a continuous electrical path.

range-taking connector: Connector designed to accept multiple conductor sizes.

run conductor (main): A continuous conductor from which other conductors branch.

splice: A connector joining two conductor ends.

tang (pad): The flat portion of a connector used for electrical connection.

tap conductor: A conductor that branches off from the run conductor.

tap connector: Connector joining a tap conductor to a run conductor without breaking the run conductor.

terminal connectors: A connector that joins a conductor(s) to an electrical device.