NEMA Standards Publication

ANSI C119.1-2011

American National Standard for Electric Connectors - Sealed Insulated Underground Connector Systems Rated 600 Volts

National Electrical Manufacturers Association

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for Electric Connectors—
Sealed Insulated Underground
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Secretariat:

National Electrical Manufacturers Association

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Foreword (Neither this foreword nor any of the informative annexes is a part of American National Standard C119.1-2011.)

This standard covers electrical, mechanical, and sealing requirements of connectors rated 600 volts and installed underground.

This standard was initially developed by an EEI-NEMA Joint Committee on Underground Distribution Connectors and Connector Systems and published by the American National Standards Institute in 1974.

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

Substantive changes to the standard have been made in the C119.1-2011 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 revision includes the addition of spreadsheet files in Annex B that can be used to collect current cycle test data, calculate connector stability, 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 revision also includes the addition a spreadsheet file for Integrity of Seal Data in Annex E and a spreadsheet file for Impact Data in Annex F. The spreadsheets are provided to give a standardardized format to collect, calculate, and report test data and test results. These spreadsheets were not part of earlier editions.

Other additions include Torque Strength Requirements for set screws, Impact Test (for Direct Burial Qualification), Resealability Test, Reusability Test, and Current Cycle Temperature Stability calculation.

Suggestions for improvement of this standard are welcome. They should be sent to:

Vice President, Technical Services
National Electrical Manufacturers Association
1300 North 17th Street, Suite 1752
Rosslyn, VA 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 ANSI ASC C119 Committee had the following members:

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

Organization Represented

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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 C119.1 Subcommittee on Sealed Underground Connector Systems, which developed the revisions of this standard, had the following members:

James Zahnen, Chairman
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American National Standard ANSI C119.1-2011

For Electric Connectors—

Sealed Insulated Underground Connector Systems Rated 600 Volts

1 Scope and Purpose

1.1 Scope

This standard covers sealed insulated underground connector systems rated at six hundred (600) volts for utility applications and establishes electrical, mechanical, and sealing requirements for sealed insulated underground connector systems.

1.2 Purpose

The purpose of this standard is to give reasonable assurance to the user that sealed insulated underground connector systems 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.

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, the referenced revision shall apply. Standards that are referenced by inference are shown in Annex A.

ASTM E4-2010 *Standard Practices for Force Verification of Testing Machines*

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

3 Definitions

CCST: Current Cycle Submersion Test, where current cycle heating is done in air and cooling is done using water submersion.

CCT: Current Cycle Test, where current cycle heating and cooling are done in air.

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

connector assembly: The connector system installed on the conductor(s).

connector system: A connector and its associated insulating and sealing components.

control cable: A conductor of the same type and size as the conductor in the current cycle loop that serves as a reference for setting test current and monitoring temperature.

guarded circuit: A circuit used to eliminate or to minimize the current flow between the insulation and conductor ends, caused by surface leakage currents.

input conductor: Conductor on the supply side of the connector.

output conductor: Conductor on the load side of the connector.