

INCH-POUND

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SUPERSEDING

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(see 6.1)

DEPARTMENT OF DEFENSE
TEST METHOD STANDARD
METHOD 307, CONTACT RESISTANCE



AMSC N/A

FSC 59GP



MIL-STD-202-307

FOREWORD

1. This standard is approved for use by all Departments and Agencies of the Department of Defense.
2. This entire standard has been revised. This revision has resulted in many changes to the format, but the most significant one is the splitting the document into test methods. See MIL-STD-202 for the change summary.
3. Comments, suggestions, or questions on this document should be emailed to std202@dla.mil or addressed to: Commander, Defense Logistics Agency, DLA Land and Maritime, ATTN: VAT, P.O. Box 3990, Columbus, OH 43218–3990. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <https://assist.dla.mil>.

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METHOD 307
CONTACT RESISTANCE

1. SCOPE

1.1 Purpose. The purpose of the contact resistance test is to determine the resistance offered to a flow of current during its passage between the electrical contacting surfaces of connecting components, such as plugs, jacks, connectors, and sockets, or between the electrical contacts of current controlling components, such as switches, relays, and circuit breakers. For practical reasons, lead and terminal resistances may be included in the actual measurement, as well as the contact resistance proper. In many applications it is required that the contact resistance be low and stable, so that the voltage drop across the contacts does not affect the accuracy of the general circuit conditions. If large currents are passed through high resistance contacts, excessive energy losses and dangerous overheating of the contacts may occur.

1.2 Precautions. Contact resistance values between two contacting surfaces are influenced by such factors as the resistivities of the surface materials; contact pressure; area; shape; condition (including relative cleanliness, smoothness, and hardness) of surfaces; current; open circuit voltage appearing at the contacts during interruption of current; temperature; and thermal conductivity of leads. These factors should be considered in designing test jigs or clamps, or in performing contact resistance measurements. Contact resistances are usually measured by a 4-terminal procedure, using a Kelvin bridge, or by the voltmeter-ammeter method. The test current used is usually the maximum rated current for the contacting surfaces involved. In measuring contact resistance, it is important to keep the specimen free from vibration, and to prevent changes in normal contact pressure which might result from improper application of test jigs or clamps.

2. APPLICABLE DOCUMENTS

This section not applicable to this standard.

3. DEFINITIONS

This section not applicable to this standard.

4. GENERAL REQUIREMENTS

4.1. Procedure. The resistance of the contacts may be measured directly using a Kelvin bridge, or indirectly using the voltmeter-ammeter method, ammeter-potentiometer method, or other suitable means. The maximum allowable measurement error shall be 5 percent. The point of measurement shall be the point at which the external leads are normally connected to the terminals. Connections between the specimens and the measuring apparatus shall be made as specified, using suitable connecting jigs or clamps, where required. The magnitude of direct current to be passed through the contacts during the measurement and, when necessary, the maximum open circuit test voltage shall be as specified. A series resistor may be used provided the specified open circuit test voltage is not exceeded. The number of activations to cleanse the contacts prior to measurement, the number of test activations, and the number of measurements per activations to be made on each contact shall be as specified.

5. DETAILED REQUIREMENTS

5.1. Summary. The following details are to be specified in the individual specification:

- a. Method of connection (see 4.1).
- b. Test current (see 4.1).
- c. Maximum open circuit test voltage, if applicable (see 4.1).
- d. Number of activations prior to measurement (see 4.1).
- e. Number of test activations (see 4.1).
- f. Number of measurements per activation (see 4.1).

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Supersession data. The main body and 38 parts of this revision of MIL-STD-202 replace superseded MIL-STD-202.

Custodians:

Army - CR
Navy - EC
Air Force - 85
DLA - CC

Preparing activity:
DLA – CC

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Review activities:

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NSA - NS

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