



Standard Specification for Insulation Resistance Monitor for Shipboard Electrical Motors and Generators¹

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1. Scope

1.1 This specification covers monitoring devices (monitors) for the automatic detection and signaling of low insulation resistance values in idle electrical motors or generators, or both.

1.2 Monitors are intended for permanent installation in both existing or new panels and controller enclosures designed for marine application.

1.3 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

1.4 The following safety hazards caveat pertains only to the test method described in this specification: *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *UL Standard:*

UL 94 Test for Flammability of Plastic Materials for Parts in Devices and Appliances²

2.2 *IEEE Standards:*

IEEE 45 Recommended Practice for Electrical Installations on Shipboard³

IEEE 100 Standard Dictionary of Electrical and Electronics Terms³

2.3 *Government Standard:*

Title 46 Code of Federal Regulations Shipping⁴

¹ This specification is under the jurisdiction of ASTM Committee F25 on Ships and Marine Technology and is the direct responsibility of Subcommittee F25.10 on Electrical.

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² Available from Underwriters Laboratories, Inc., 333 Pfingsten Rd., Northbrook, IL 60062.

³ Available from Institute of Electrical and Electronic Engineers, 445 Hoes Ln., P.O. Box 1331, Piscataway, NJ 08554-1331.

⁴ Available from Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

3. Terminology

3.1 *Definitions*—In general, definitions shall be in accordance with IEEE 100 (see Section 2).

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *idle machine*—rotary machine, when not rotating, owing to the absence of energy.

3.2.2 *monitor*—device, generally located in a motor starter, control panel, or main switchboard, that senses the leakage resistance of electrical machine windings to ground, while the monitored machine stands idle.

4. Monitor Classification

4.1 *Type*—The insulation resistance monitors covered by this specification shall be of the following types:

4.1.1 *Type I*—Alternating current motor monitors.

4.1.2 *Type II*—Alternating current generator monitors.

4.1.3 *Type III*—Direct current motor monitors.

4.1.4 *Type IV*—Direct current generator monitors.

4.2 *Duty Rating*—All monitors shall be capable of continuous duty operations as defined in accordance with IEEE 100.

5. Ordering Information

5.1 Monitoring devices shall be ordered by including the following information:

5.1.1 *Purpose or Use of Monitor(s)*—Application as motor or generator monitor.

5.1.2 Line voltage and frequency.

5.1.3 Control voltage and frequency.

5.1.4 Type of starter (if motor monitor).

5.1.5 Winding configuration (if motor monitor).

5.1.6 Location of monitor.

5.1.7 *Sensitivity*—Set for 1 megohm (optional setting, if requested, from 0.1 to 5 M Ω).

5.1.8 Remote monitoring devices.

5.1.9 Special options requested (that is, test buttons, elevated ambient temperature usage, and so forth.).

6. Materials and Manufacture

6.1 *General*—Materials used in the construction of insulation resistance monitors are to be manufactured and tested in accordance with IEEE 45. Materials conforming to other