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METRIC

An American National Standard [METRIC]

Standard Specification for Insulation Monitors for Shipboard Electrical Systems [\][1]

This standard is issued under the fixed designation F 1669M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification covers two (2) types of electrical system insulation monitoring devices.

1.1.1 Type I is an ac device intended as a permanently installed unit for use in the detection of ohmic insulation faults to ground in active ac ungrounded electrical systems up to 1000 VAC, having dc components up to 1500 VDC.

1.1.2 Type II is a dc device intended as a permanently installed unit for use in the detection of ohmic insulation faults to ground in dc ungrounded electrical systems up to 1500 VDC.

1.2 *Limitations*—This specification does not cover devices that are intended for operation in ac ungrounded systems without dc components.

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 precautionary caveat pertains only to the test methods portion, Section 7 of 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 STD 840 Insulation Coordination Including Clearances and Creepage Distances for Electrical Equipment[2]

2.2 *IEC Standards:*

IEC 255-5 Insulation Tests for Electrical Relays[3]

IEC 364-4-41 Electrical Installations of Buildings/ Protection for Safety/Protection Against Electrical Shock[3]

2.3 *Military Standard:*

MIL-STD-1399 (NAVY) Section 300A Interface Standards for Shipboard Systems; Electrical Power, Alternating Current[4]

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *ac or dc ungrounded electrical system, n*—a system that has no intentional connection to ground and can continue to perform normally if one conductor becomes connected to ground.

3.1.2 *measuring signal, n*—the output signal from the insulation monitor that is superimposed between the ac or dc ungrounded system to be monitored and ground.

3.1.3 *response value, n*—the adjustable or preset set-point value of the system insulation resistance at which an insulation monitor will provide an alarm indication.

3.1.4 *system leakage capacitance, n*—the total capacitance to ground of the system including all connected consumers.

3.1.5 *touch voltage, n*—the voltage appearing during an insulation fault, between simultaneously accessible parts. This term is used only in connection with protection against indirect human contacts, that is, no direct human contact with a live conductor. The International Electrotechnical Commission (IEC) limits the maximum prospective touch voltage which can be maintained indefinitely to 50 VAC rms or 120 V ripple-free dc.

4. Ordering Information

4.1 Orders for monitoring devices under this specification shall state the following information:

4.1.1 Type and quantity.

4.1.2 Nominal system voltage and frequency (for ac system).

4.1.3 Input supply voltage.

4.1.4 Response value/set-point range expressed in K-Ohms.

4.1.5 ASTM designation and year of issue.

4.1.6 System leakage capacitance or data from which an estimate of its magnitude can be determined.

4.1.7 Special requirements such as Test/Reset buttons, ohmmeters, visual indicators, memory fault retention, etc.

5. Materials and Manufacturing Methods

5.1 The materials and manufacturing methods used shall be

[1] This specification is under the jurisdiction of ASTM Committee F-25 on Shipbuilding and is the direct responsibility of Subcommittee F25.10 in Electrical, Electronics and Automation.

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

[3] Available from American National Standards Institute, 11 W. 42nd St., 13th Floor, New York, NY 10036.

[4] Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.