MARK INTEGRITY PROGRAM

UL Requirements for Dielectric Voltage Withstand (Test Equipment) Used for UL/C-UL/ULC Mark Follow-Up Services

UL defines minimum requirements for dielectric voltage withstand test equipment utilized as part of its UL Mark Surveillance Program, when such tests are required as part of the UL Follow-Up Services Procedure requirements.

This document applies to all customers of UL's product certification services for the U.S. and Canadian markets, i.e. UL/C-UL/ULC Mark certifications.

Why this requirement is important

A key element in determining compliance with UL requirements is the validity and accuracy of inspection, measurement and test results. Dielectric test equipment used to perform dielectric tests on UL certified product must include certain technical features and also be calibrated to provide the necessary level of confidence in the test results.

REQUIREMENTS

1. Minimum technical features for dielectric test equipment

All dielectric test equipment required as part of a UL Follow-Up Services Procedure and being used to verify compliance with UL requirements must include, at a minimum, the following features:

A. There shall be either a visible or audible means of indicating an electrical breakdown to the operator.

B. There shall be either a manually resettable device to restore the equipment after electrical breakdown, or an automatic feature that rejects any nonconforming unit.

C. If the output of the test-equipment transformer is less than 500 volt-amperes, the equipment shall include a voltmeter in the output circuit to indicate the test potential directly.

D. If the output of the test-equipment transformer is 500 volt-amperes or more, the test potential may be indicated (1) by a voltmeter in the primary circuit or in a tertiary-winding circuit, (2) by a selector switch marked to indicate the test potential, or (3), in the case of equipment having a single test-potential output, by a marking in a readily visible location to indicate the test potential. When a marking is used to indicate the test potential without an indicating voltmeter, the equipment shall include a positive means, such as an indicator lamp, to indicate that the manually resettable device has been reset following a dielectric breakdown.

Manufacturer's responsibilities for compliance with UL requirements

Manufacturers are responsible for selecting dielectric test equipment that is compliant with the above requirements. Certain Follow-Up Services Procedures may contain requirements for dielectric test equipment that are more specific than those outlined in this document, such as a particular machine model number. In such cases, either set of requirements may be applied to determine suitability of the equipment.

Additionally, manufacturers are responsible to ensure that all dielectric test equipment used to test UL certified product is calibrated in accordance with UL's published calibration requirements: Please see "UL Calibration Requirements: Equipment Used for UL/C-UL/ULC Mark Follow-Up Services" at ul.com/fus for more information.

For more information, please contact your local UL Field Representative.

2. Supplemental requirements

Some Follow-up Services Procedures may include requirements for sensitivity checks each year.

Manufacturer's responsibilities for compliance with Sensitivity requirements

a) The resistor used shall be provided by the manufacturer and shall have a resistance found to be equal to or greater than 120,000 ohm. In order to comply with this requirement, the manufacturer has different options:

- Use a 120,000 ohm resistor that is verified with a calibrated ohmmeter.
- Use a calibrated resistor.
- The calibration certificate for the dielectric tester clearly indicates that the equipment meets the sensitivity criteria. In this case, the trip current must be set at or less than the required test voltage divided by 120,000.

b) When applying the required test voltage to the resistor, the equipment shall indicate a breakdown almost instantly (in case of doubt breakdown within 0.5 seconds shall be verified).

3. Output frequency

Dielectric test equipment that is calibrated and used at any output frequency within the range of 40 to 70 Hz is judged to be acceptable by UL for conducting the AC production-line dielectric test.

Questions and responses

Please contact your UL field representative with requests for additional information or clarification of these requirements.

For more information, please contact your local UL Field Representative.