UL 2735

STANDARD FOR SAFETY

Electric Utility Meters

Documents
Document Sharing Hub

Full document details: UL 2735 2014

Documents
Document Sharing Hub

Full document details: UL 2735 2014

UL Standard for Safety for Electric Utility Meters, UL 2735

First Edition, Dated May 30, 2013

Summary of Topics

This revision of UL 2735 includes the update of minimum layer thickness for 300V.

Text that has been changed in any manner or impacted by UL's electronic publishing system is marked with a vertical line in the margin. Changes in requirements are marked with a vertical line in the margin and are followed by an effective date note indicating the date of publication or the date on which the changed requirement becomes effective.

The revised requirements are substantially in accordance with Proposal(s) on this subject dated January 27, 2014.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form by any means, electronic, mechanical photocopying, recording, or otherwise without prior permission of UL.

UL provides this Standard ″as is″ without warranty of any kind, either expressed or implied, including but not limited to, the implied warranties of merchantability or fitness for any purpose.

In no event will UL be liable for any special, incidental, consequential, indirect or similar damages, including loss of profits, lost savings, loss of data, or any other damages arising out of the use of or the inability to use this Standard, even if UL or an authorized UL representative has been advised of the possibility of such damage. In no event shall UL's liability for any damage ever exceed the price paid for this Standard, regardless of the form of the claim.

Users of the electronic versions of UL's Standards for Safety agree to defend, indemnify, and hold UL harmless from and against any loss, expense, liability, damage, claim, or judgment (including reasonable attorney's fees) resulting from any error or deviation introduced while purchaser is storing an electronic Standard on the purchaser's computer system.

The requirements in this Standard are now in effect, except for those paragraphs, sections, tables, figures, and/or other elements of the Standard having future effective dates as indicated in the note following the affected item. The prior text for requirements that have been revised and that have a future effective date are located after the Standard, and are preceded by a ″SUPERSEDED REQUIREMENTS″ notice.

Documents
Document Sharing Hub

Full document details: UL 2735 2014

No Text on This Page

Documents
Document Sharing Hub

Full document details: UL 2735 2014

MAY 30, 2013
(Title Page Reprinted: October 6, 2014)

UL 2735

Standard for Electric Utility Meters

Prior to the first edition, the requirements for the products covered by this standard were included in the Outline of Investigation for Electric Utility Meters, UL 2735.

First Edition

May 30, 2013

This UL Standard for Safety consists of the First Edition including revisions through October 6, 2014.

Comments or proposals for revisions on any part of the Standard may be submitted to UL at any time. Proposals should be submitted via a Proposal Request in UL's On-Line Collaborative Standards Development System (CSDS) at http://csds.ul.com.

UL's Standards for Safety are copyrighted by UL. Neither a printed nor electronic copy of a Standard should be altered in any way. All of UL's Standards and all copyrights, ownerships, and rights regarding those Standards shall remain the sole and exclusive property of UL.

COPYRIGHT © 2014 UNDERWRITERS LABORATORIES INC.

Documents
Document Sharing Hub

Full document details: UL 2735 2014

No Text on This Page

Documents
Document Sharing Hub

Full document details: UL 2735 2014

CONTENTS

INTRODUCTION

1 Scope 5
2 Glossary 5
3 Units of Measurement 6
4 Components 7
5 Undated References 7

CONSTRUCTION

6 General 7
7 Enclosure 8
7.1 General 8
7.2 Access panels 9
8 Clearance and Creepage Distances 9
9 Current Transformers 12
10 Batteries and Battery Charging 12
11 Load Control Switches 13
12 Printed Wiring Boards 13

PERFORMANCE

13 General 13
14 Testing in SINGLE FAULT CONDITION 14
14.1 General 14
14.2 Application of fault conditions 14
14.3 Duration of tests 15
14.4 Conformity 15
15 Tests based on ANSI C12.1 15
16 Flammability – 127 mm (5 inch) Flame 18
16.1 General 18
16.2 Test specimens and conditioning 18
16.3 Test equipment 18
16.4 Test method 19
16.5 Assessment of test results 20
17 Extended Overvoltage Test 21
18 Mechanical Tests 21
18.1 Static test 21
18.2 Impact test 23
18.3 Drop test 25
18.4 Conformity 25

RATINGS

19 General 25

MARKINGS

20 General 26

Documents
Document Sharing Hub
Full document details: UL 2735 2014

INSTRUCTIONS

21 General 27

APPENDIX A

Standards For Components A1

Documents
Document Sharing Hub

Full document details: UL 2735 2014

INTRODUCTION

1 Scope

1.1 These requirements cover the electrical safety of electric utility (revenue) meters rated up to 600 V, which measure, monitor, record, transmit, or receive electrical energy generation or consumption information.

1.2 Meters covered by this standard may be provided with one or two-way communication capabilities, by means of carrier signals, telephone, cable, wireless communication, or other methods.

1.3 These meters may additionally provide signals, either by direct connection or wirelessly, for the control of electrical loads or electrical power generation equipment in response to signals received from the utility or local communication networks.

1.4 These requirements cover socket mounted plug-in (Type S) utility meters, and non-socket mounted, bottom connected (Type A) utility meters, intended for installation in ordinary (non-classified) locations. These may or may not be intended to be under the exclusive control of the serving utility.

1.5 These requirements also cover revenue meters that are not socket mounted (Type S) or bottom connected (Type A) meters, including those that are intended for factory installation as components within the enclosure of complete equipment.

1.6 These requirements do not cover equipment intended as test equipment or equipment intended to make measurements for analysis in a laboratory or industrial setting.

2 Glossary

2.1 For the purpose of this standard, the following definitions apply.

2.2 ACCESS PANEL – A panel or door that may be opened or removed to provide access to a portion of the meter interior.

2.3 BOTTOM-CONNECTED METER (Type “A” Meter or “A-Base” Meter) – A non-detachable meter that is connected using wiring terminals on bottom of the meter.

2.4 CLEARANCE – The shortest distance in air between two conductive parts.

2.5 COVER – A portion of the meter that mates with the meter base to form a complete enclosure. The cover is typically transparent or has a transparent portion that allows the meter display to be viewed.

2.6 CREEPAGE DISTANCE – The shortest distance along the surface of a solid insulating material between two conductive parts.

2.7 DETACHABLE METER (Type “S” Meter) – A socket type meter, intended to plug into a meter socket or similar equipment.

2.8 ENCLOSURE – The exterior portion of a meter that prevents access to live parts when the meter is properly installed. For example, the enclosure of a typical Type S meter consists of the meter cover and the meter base.

Documents
Document Sharing Hub
Full document details: UL 2735 2014

2.9 ISOLATED SECONDARY CIRCUIT – A circuit having no direct connection to the mains circuit, that derives its power from a transformer, converter or equivalent isolation device, or from a battery.

2.10 LOAD CONTROL SWITCH – A device, normally external to the meter, that is intended to energize or de-energize an electrical appliance or other device based on a signal provided by the meter.

2.11 MAINS – An electricity supply system to which the equipment concerned is designed to be connected for the purpose of powering the equipment.

2.12 MAINS CIRCUIT – A circuit which is intended to be directly connected to the MAINS for the purpose of powering the equipment.

2.13 NORMAL USE – Operation, including stand-by, according to the instructions for use or for the obvious intended purpose.

2.14 REVENUE METER – A meter intended to measure energy usage for billing purposes. A revenue meter may be used as the main meter for an electrical service, or may be a submeter.

2.15 SERVICE SWITCH – A device internal to the meter that is intended to energize or de-energize the load terminals of the meter.

2.16 SINGLE FAULT CONDITION – A condition in which one means for protection against a risk of fire or shock is defective or one fault is present which could cause a risk of fire or shock.

2.17 SUBMETER – A meter intended for installation on the load side of the main utility meter for an electrical service. Submeters are intended to measure energy usage for a portion of the service to a premise. These devices include meters intended to measure electrical energy usage for subdivided billing, including energy consumption of individual loads and appliances.

2.18 UTILITY METER – A revenue meter intended for installation by an electric utility.

3 Units of Measurement

3.1 Values stated without parentheses are the requirement. Values in parentheses are explanatory or approximate information.

Documents
Document Sharing Hub

Full document details: UL 2735 2014

4 Components

4.1 Other than as indicated in 4.2, a component of a product covered by this Standard shall comply with the requirements for that component. See Appendix A for a list of standards covering typical components used in the products covered by this Standard.

4.2 A component need not comply with a specific requirement that:

a) Involves a feature or characteristic not needed in the application of the component in the product covered by this Standard; or

b) Is superseded by a requirement in this Standard.

4.3 A component shall be used in accordance with its recognized rating established for the intended conditions of use.

4.4 Specific components are recognized as being incomplete in construction features or restricted in performance capabilities. Such components are intended for use only under limited conditions, such as certain temperatures not exceeding specified limits, and shall be used only under those specific conditions for which they have been recognized.

5 Undated References

5.1 Any undated reference to a code or standard appearing in the requirements of this Standard shall be interpreted as referring to the latest edition of that code or standard.

CONSTRUCTION

6 General

6.1 Other than as noted in 6.2, a type A or type S meter shall be of one of the form designations and current classes described in the Standard for Electric Meters – Code for Electricity Metering, ANSI C12.10, and shall comply with all the requirements of ANSI C12.10.

6.2 When intended for installation by a specific utility and when agreeable to all parties concerned, special forms and current classes are not prohibited. When special forms are utilized the meter shall:

a) Be provided with a wiring diagram on a label affixed adjacent to the wiring compartment;

b) Be evaluated in combination with the intended mounting socket (if socket mounted); and

c) Be marked to indicate the socket with which it is intended to be used.

6.3 A meter intended for factory installation as a component of complete equipment need not comply with the form designations in ANSI C12.10, but shall comply with all other requirements of ANSI C12.10 when installed in the complete equipment.

Documents
Document Sharing Hub

Full document details: UL 2735 2014