



UL 6703

STANDARD FOR SAFETY

Connectors for Use in Photovoltaic Systems



Documents
Document Sharing Hub

*UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM UL*



Documents
Document Sharing Hub

UL Standard for Safety for Connectors for Use in Photovoltaic Systems, UL 6703

First Edition, Dated August 28, 2014

Summary of Topics

This first edition of ANSI/UL 6703 covers latching or locking type PV connectors either as a free connector (separate entity) or as a fixed connector (panel or bulkhead type) and rated 1000 V dc or less.

The requirements are substantially in accordance with Proposal(s) on this subject dated April 19, 2013 and September 6, 2013.

For further information regarding Summary of Requirements, please visit <https://ifs.ul.com/ifr/ifr.nsf>.

THIS FIRST EDITION REPLACES THE OUTLINE OF INVESTIGATION FOR CONNECTORS FOR USE IN PHOTOVOLTAIC SYSTEMS, UL 6703, AND THE OUTLINE OF INVESTIGATION FOR MULTI-POLE CONNECTORS FOR USE IN PHOTOVOLTAIC SYSTEMS, UL 6703A. AS OF FEBRUARY 29, 2016, OUTLINE UL 6703, THIRD ISSUE AND OUTLINE UL 6703A, FIRST ISSUE WILL BE WITHDRAWN.

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.

No Text on This Page

*UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM UL*



Documents

Document Sharing Hub

August 28, 2014



ANSI/UL 6703-2014

1

UL 6703

Standard for Connectors for Use in Photovoltaic Systems

Prior to the first edition, the requirements for the products covered by this standard were included in the Outline of Investigation for Connectors for Use in Photovoltaic Systems, UL 6703 and the Outline of Investigation for Multi-Pole Connectors for Use in Photovoltaic Systems, UL 6703A.

First Edition

August 28, 2014

This ANSI/UL Standard for Safety consists of the First Edition.

The most recent designation of ANSI/UL 6703 as an American National Standard (ANSI) occurred on August 28, 2014. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, Title Page, or effective date information.

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.

**UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM UL**



Documents

Document Sharing Hub

No Text on This Page

*UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM UL*



Documents

Document Sharing Hub

CONTENTS

INTRODUCTION

1 Scope	4
2 General	4
2.1 Components	4
2.2 Units of measurement	5
2.3 Undated references	5
3 Glossary	5

CONSTRUCTION

4 General	6
5 Current Carrying Parts (Contacts)	7
6 Polymeric Materials	7
6.1 General	7
6.2 Insulating material	8
6.3 Gaskets, Seals and O rings	9
7 Spacings	9
8 Accessibility of Uninsulated Live Parts	10

PERFORMANCE

9 PV Connector Tests	11
9.1 General	11
9.2 Effectiveness of Locking and Strain Relief tests	15
9.3 Gasket tests	16

RATINGS

10 Details	17
------------------	----

MARKINGS

INSTRUCTIONS

12 Assembly Instructions	18
12.1 Dissemination	18
12.2 Required content	19
12.3 Assembly procedure	20
12.4 Verification	20

APPENDIX A

Standards for Components	A1
--------------------------------	----

INTRODUCTION

1 Scope

1.1 This standard covers latching or locking type PV connectors either as a free connector (separate entity) or as a fixed connector (panel or bulkhead type) and rated 1000 V dc or less. These connectors are intended for use in wiring methods detailed in Part IV of Article 690 – Solar Photovoltaic Systems of the National Electrical Code, NFPA 70.

1.2 This standard is intended for single polarity PV connectors suitable for use on insulated, stranded copper type USE-2 or Photovoltaic Wire (PV Wire) rated 90°C, 105°C, 125°C, or 150°C dry; 90°C wet; 600, 1000, or 2000 V.

1.3 This standard also covers latching or locking type multi-pole PV connectors rated 1000 Vac or dc or less. Multi-pole PV connectors consist of connectors, panel mounted connectors, distribution blocks and splitter connectors for the purpose of facilitating connections to and from inverters and like devices in a PV system.

1.4 This standard is also intended for multi-pole PV connectors suitable for use on insulated, stranded copper type TC-ER, USE-2 or Photovoltaic Wire (PV Wire) rated 90°C, 105°C, 125°C, or 150°C dry; 90°C wet; 600, 1000, or 2000 V.

1.5 This standard covers PV connectors whose dimensions are not defined in any national or international technical standard. Connectors are identified and tested with compatible mating part (or parts if multiple exist) and are to be of the same brand, unless multiple product manufacturers are submitting under the same evaluation for the purpose of proving intermatatability.

1.6 This standard does not apply to PV wiring harnesses or cable assemblies consisting of connectors (single pole or multi-pole) assembled on to cables, which are covered by the Outline of Investigation for Distributed Generation Wiring Harnesses, UL 9703. PV Wiring Harnesses may use PV connectors covered by this standard in their assembly. Harnesses have PV connectors factory assembled onto each end of the cable.

2 General

2.1 Components

2.1.1 Except as indicated in 2.1.2, 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 components generally used in the products covered by this standard.

2.1.2 A component is not required to 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.