

UL 61010-1

STANDARD FOR SAFETY

Electrical Equipment For Measurement, Control, and Laboratory Use; Part 1: General Requirements



JULY 19, 2019 – UL 61010-1 tr1

UL Standard for Safety for Electrical Equipment For Measurement, Control, and Laboratory Use; Part 1: General Requirements, UL 61010-1

Third Edition, Dated May 11, 2012

Summary of Topics

This revision to ANSI/UL 61010-1 dated July 19, 2019 is an editorial correction to Table I.1, per IEC 61010-1, Cor1:2019 to align with the IEC version.

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.

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.

tr2 JULY 19, 2019 – UL 61010-1

No Text on This Page

This is a preview. Click here to purchase the full publication.



CSA Group CAN/CSA-C22.2 No. 61010-1-12 Third Edition (IEC 61010-1:2010, MOD)



ISA ANSI/ISA-61010-1 (82.02.01) Third Edition



Underwriters Laboratories Inc. UL 61010-1 Third Edition

Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use – Part 1: General Requirements

May 11, 2012

(Title Page Reprinted: July 19, 2019)

This amendment is an adoption of IEC Amendment 1:2016 to publication IEC 61010-1:2010, Third Edition.





Commitment for Amendments

This standard is issued jointly by the Canadian Standards Association (operating as "CSA Group"), the International Society of Automation (ISA) and Underwriters Laboratories Inc. (UL). Comments or proposals for revisions on any part of the standard may be submitted to CSA Group or UL at anytime. Revisions to this standard will be made only after processing according to the standards development procedures of CSA Group and UL. CSA Group and UL will issue revisions to this standard by means of a new edition or revised or additional pages bearing their date of issue. ISA will incorporate the same revisions into their edition of the standard bearing the same date of issue as the CSA and UL pages.

CSA, ISA, and UL are separate and independent entities and each is solely responsible for its operations and business activities. The CSA trade names and trademarks depicted in this document are the sole property of the Canadian Standards Association (CSA). The ISA trade names and trademarks depicted in this document are the sole property of the International Society of Automation (ISA). The UL trade names and trademarks depicted in this document are the sole property of Underwriters Laboratories Inc. (UL).

ISBN 978-1-4883-1568-8 © 2018 Canadian Standards Association

All rights reserved. No part of this publication may be reproduced in any form whatsoever without the prior permission of the publisher.

This Standard is subject to review within five years from the date of publication, and suggestions for its improvement will be referred to the appropriate committee. The technical content of IEC and ISO publications is kept under constant review by IEC and ISO. To submit a proposal for change, please send the following information to inquires@csagroup.org and include "Proposal for change" in the subject line: Standard designation (number); relevant clause, table, and/or figure number; wording of the proposed change; and rationale for the change.

To purchase CSA Group Standards and related publications, visit CSA Group's Online Store at store.csagroup.org or call toll-free 1-800-463-6727 or 416-747-4044.

ISBN 978-1-64331-003-9 Copyright © 2019 ISA

All rights reserved. Not for resale. No part of this publication may be reproduced in any form, including an electronic retrieval system, without the prior written permission of ISA.

Copyright © 2019 Underwriters Laboratories Inc.

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.

This ANSI/UL Standard for Safety consists of the Third Edition including revisions through July 19, 2019. The most recent designation of ANSI/UL 61010-1 as an American National Standard (ANSI) occurred on November 16, 2018. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, Title Page (front and back), or the Preface. The National Difference Page and IEC Foreword are also excluded from the ANSI approval of IEC-based standards.

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 https://csds.ul.com.

To purchase UL Standards, visit UL's Standards Sales Site at http://www.shopulstandards.com/HowToOrder.aspx or call toll-free 1-888-853-3503.

No Text on This Page

No Text on This Page

CONTENTS

INTER	PRETA	TION SHEET 1	. 8
Prefac	:е		9
—			
NATIC	DNAL DI	IFFERENCES	12
	WODD		10
FUKE	WORD		13
4	Saana	and object	17
'		Scope	
		Object	
		Verification	
		Environmental conditions	
2		ative references	
		and definitions	
		Equipment and states of equipment	
		Parts and accessories	
		Quantities	
		Tests	
		Safety terms	
		Insulation	
4			
		General	
		Sequence of tests	
		Reference test conditions	
		Testing in single fault condition	
5		ng and documentation	
		Marking	
	5.2	Warning markings	43
	5.3	Durability of markings	43
	5.4	Documentation	44
6	Protec	tion against electric shock	47
		General	
	6.2	Determination of ACCESSIBLE parts	48
		Limit values for ACCESSIBLE parts	
		Primary means of protection	
		Additional means of protection in case of single fault conditions	
		Connections to external circuits	
		Insulation requirements	
		Procedure for voltage tests	
		Constructional requirements for protection against electric shock	
		O Connection to the MAINS supply source and connections between parts of equipme	
		0.4DV.1 PERMANENTLY CONNECTED EQUIPMENT	
		0.4DV.2 PERMANENTLY CONNECTED EQUIPMENT	
	6.1	1 Disconnection from supply source	88A
_		1.5DV.1 Polarity of Connections to the MAINS Circuit	
/		tion against mechanical HAZARDS	
		General	
		Sharp edges	
	73	IVIOVITIU DATIS	/

	7.4 Stability	
	7.5 Provisions for lifting and carrying	
	7.6 Wall mounting	98
	7.7 Expelled parts	99
8	Resistance to mechanical stresses	99
	8.1 General	99
	8.2 ENCLOSURE rigidity tests	100
	8.3 Drop test	102
9	Protection against the spread of fire	
	9.1 General	
	9.2 Eliminating or reducing the sources of ignition within the equipment	
	9.3 Containment of fire within the equipment, should it occur	
	9.4 Limited-energy circuit	
	9.5 Requirements for equipment containing or using flammable liquids	
	9.6 Overcurrent protection	
10	Equipment temperature limits and resistance to heat	
10	10.1 Surface temperature limits for protection against burns	
	10.2 Temperature of windings	
	10.3 Other temperature measurements	
	10.4 Conduct of temperature tests	
	10.5 Resistance to heat	
11	Protection against HAZARDS from fluids and solid foreign objects	
11	11.1 General	
	11.2 Cleaning	
	11.3 Spillage	
	11.4 Overflow	
	11.5 Battery electrolyte	
	11.6 Equipment RATED with a degree of ingress protection (IP code)	
	11.7 Fluid pressure and leakage	
10	Protection against radiation, including laser sources, and against sonic and ul	
12	pressure	
	12.1 General	
	12.2 Equipment producing ionizing radiation	
	12.4 Microwave radiation	
	12.5 Sonic and ultrasonic pressure	
40	12.6 Laser sources	
13	Protection against liberated gases and substances, explosion and implosion	
	13.1 Poisonous and injurious gases and substances	
4 4	13.2 Explosion and implosion	
14	Components and subassemblies	
	14.1 General	
	14.2 Motors	
	14.3 Overtemperature protection devices	
	14.4 Fuse holders	
	14.5 MAINS Voltage selection devices	
	14.6 MAINS transformers tested outside equipment	
	14.7 Printed wiring boards	
	14.8 Circuits used to limit transient overvoltage	
	14.9DV.1 Enclosures intended for outdoor use	
	14.10DV.1 Conductive coatings	
	14.10DV.2 Conductive shield or tape	
	14 11DV 1 Direct plug-in transformer units	134