

# INTERNATIONAL STANDARD



This extended version of IEC 61010-2-034:2023 includes the content of the references made to IEC 61010-1:2010 and IEC 61010-1:2010/AMD1:2016

GROUP SAFETY PUBLICATION

**Safety requirements for electrical equipment for measurement, control, and laboratory use –  
Part 2-034: Particular requirements for measurement equipment for insulation resistance and test equipment for electric strength**

[IEC 61010-2-034:2023](#)

<https://standards.iteh.ai/catalog/standards/iec/7ba6cdb3-e09e-4590-a63d-e601a0f3465e/iec-61010-2-034-2023>





**THIS PUBLICATION IS COPYRIGHT PROTECTED**  
**Copyright © 2023 IEC, Geneva, Switzerland**

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

IEC Secretariat  
3, rue de Varembe  
CH-1211 Geneva 20  
Switzerland

Tel.: +41 22 919 02 11  
[info@iec.ch](mailto:info@iec.ch)  
[www.iec.ch](http://www.iec.ch)

**About the IEC**

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

**About IEC publications**

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

**IEC publications search - [webstore.iec.ch/advsearchform](http://webstore.iec.ch/advsearchform)**

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee, ...). It also gives information on projects, replaced and withdrawn publications.

**IEC Just Published - [webstore.iec.ch/justpublished](http://webstore.iec.ch/justpublished)**

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

**IEC Customer Service Centre - [webstore.iec.ch/csc](http://webstore.iec.ch/csc)**

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: [sales@iec.ch](mailto:sales@iec.ch).

**IEC Products & Services Portal - [products.iec.ch](http://products.iec.ch)**

Discover our powerful search engine and read freely all the publications previews. With a subscription you will always have access to up to date content tailored to your needs.

**Electropedia - [www.electropedia.org](http://www.electropedia.org)**

The world's leading online dictionary on electrotechnology, containing more than 22 300 terminological entries in English and French, with equivalent terms in 19 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

International Standards  
Document Preview  
[standards.iteh.ai](http://standards.iteh.ai)

[IEC 61010-2-034:2023](https://standards.iteh.ai/catalog/standards/iec/7ba6cdb3-e09e-4590-a63d-e601a0f3465e/iec-61010-2-034-2023)

<https://standards.iteh.ai/catalog/standards/iec/7ba6cdb3-e09e-4590-a63d-e601a0f3465e/iec-61010-2-034-2023>



IEC 61010-2-034

Edition 2.0 2023-07  
EXTENDED VERSION

# INTERNATIONAL STANDARD



This extended version of IEC 61010-2-034:2023 includes the content of the references made to IEC 61010-1:2010 and IEC 61010-1:2010/AMD1:2016

GROUP SAFETY PUBLICATION

**Safety requirements for electrical equipment for measurement, control, and laboratory use –  
Part 2-034: Particular requirements for measurement equipment for insulation resistance and test equipment for electric strength**

[IEC 61010-2-034:2023](https://standards.iteh.ai/catalog/standards/iec/7ba6cdb3-e09e-4590-a63d-e601a0f3465e/iec-61010-2-034-2023)

<https://standards.iteh.ai/catalog/standards/iec/7ba6cdb3-e09e-4590-a63d-e601a0f3465e/iec-61010-2-034-2023>

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

ICS 19.080; 71.040.10

ISBN 978-2-8322-7284-8

**Warning! Make sure that you obtained this publication from an authorized distributor.**



**SAFETY REQUIREMENTS FOR ELECTRICAL EQUIPMENT  
FOR MEASUREMENT, CONTROL, AND LABORATORY USE –**

**Part 1: General requirements**

**INTERPRETATION SHEET 1**

This interpretation sheet has been prepared by IEC technical committee 66: Safety of measuring, control and laboratory equipment.

The text of this interpretation sheet is based on the following documents:

ISH	Report on voting
66/497A/ISH	66/505/RVD

Full information on the voting for the approval of this interpretation sheet can be found in the report on voting indicated in the above table.

IEC 61010-1:2010 contains a requirement in 6.8.3.1 pertaining to voltage testers for type tests as follows:

*“The generator shall be able to supply a power of at least 500 VA.”*

This has given rise to the following questions:

How does one interpret the requirement for voltage testers in 6.8.3.1 of IEC 61010-1:2010? Specifically, this subclause requires that “The generator shall be able to supply a power of at least 500 VA.” Does this requirement apply throughout the rated output range of the voltage tester? What is meant by the word “generator”? Is the “generator” the power supply within the voltage tester, or the voltage tester output, or something else?

**Interpretation:**

“A voltage tester used for type tests must be able to deliver at least 500 VA at its full-rated output voltage. It does not necessarily need to deliver 500 VA if set for lower voltages.

For example, a voltage tester that can deliver 100 mA at any test output voltage up to 5 000 V (and a current corresponding to 500 VA above 5 000 V) would meet the requirement.

The requirements for voltage testers used for routine (production line) tests are included in Annex F. The requirements of 6.8.3.1 do not apply to these voltage testers.”

## CONTENTS

FOREWORD.....	11
INTRODUCTION to IEC 61010-1:2010 and IEC 61010 1:2010/AMD1:2016.....	15
<b>INTRODUCTION.....</b>	<b>16</b>
<b>1 Scope and object.....</b>	<b>17</b>
1.1 Scope.....	17
1.1.1 Equipment included in scope .....	17
1.1.2 Equipment excluded from scope .....	17
1.1.3 Computing equipment.....	18
1.2 Object .....	18
1.2.1 Aspects included in scope .....	18
1.2.2 Aspects excluded from scope .....	18
1.3 Verification .....	18
1.4 Environmental conditions .....	19
1.4.1 Normal environmental conditions .....	19
1.4.2 Extended environmental conditions .....	19
<b>2 Normative references .....</b>	<b>19</b>
<b>3 Terms and definitions .....</b>	<b>22</b>
3.1 Equipment and states of equipment.....	22
3.2 Parts and accessories .....	22
3.3 Quantities.....	23
3.4 Tests.....	23
3.5 Safety terms.....	24
3.6 Insulation .....	25
<b>4 Tests.....</b>	<b>27</b>
4.1 General.....	27
4.2 Sequence of tests.....	27
4.3 Reference test conditions.....	27
4.3.1 Environmental conditions.....	27
4.3.2 State of equipment .....	28
4.4 Testing in SINGLE FAULT CONDITION .....	29
4.4.1 General .....	29
4.4.2 Application of fault conditions .....	30
4.4.3 Duration of tests .....	32
4.4.4 Conformity after application of fault conditions.....	32
<b>5 Marking and documentation.....</b>	<b>33</b>
5.1 Marking.....	33
5.1.1 General .....	33
5.1.2 Identification.....	33
5.1.3 MAINS supply .....	34
5.1.4 Fuses .....	35
5.1.5 TERMINALS, connections and operating devices.....	36
5.1.6 Switches and circuit-breakers .....	38
5.1.7 Equipment protected by DOUBLE INSULATION or REINFORCED INSULATION.....	38
5.1.8 Field-wiring TERMINAL boxes .....	38
5.2 Warning markings .....	39

5.3	Durability of markings .....	39
5.4	Documentation .....	39
5.4.1	General .....	39
5.4.2	Equipment RATINGS .....	40
5.4.3	Equipment installation .....	41
5.4.4	Equipment operation .....	41
5.4.5	Equipment maintenance and service .....	42
5.4.6	Integration into systems or effects resulting from special conditions .....	43
5.101	HAZARD indicator .....	43
5.101.1	General .....	43
5.101.2	HAZARD indicator light for fixed equipment .....	43
6	Protection against electric shock .....	44
6.1	General .....	44
6.1.1	Requirements .....	44
6.1.2	Exceptions .....	44
6.2	Determination of ACCESSIBLE parts .....	44
6.2.1	General .....	44
6.2.2	Examination .....	45
6.2.3	Openings above parts that are HAZARDOUS LIVE .....	45
6.2.4	Openings for pre-set controls .....	45
6.3	Limit values for ACCESSIBLE parts .....	46
6.3.1	Levels in NORMAL CONDITION .....	46
6.3.2	Levels in SINGLE FAULT CONDITION .....	46
6.4	Primary means of protection .....	49
6.4.1	General .....	49
6.4.2	ENCLOSURES and PROTECTIVE BARRIERS .....	49
6.4.3	BASIC INSULATION .....	49
6.4.4	Impedance .....	49
6.5	Additional means of protection in case of SINGLE FAULT CONDITIONS .....	49
6.5.1	General .....	49
6.5.2	PROTECTIVE BONDING .....	50
6.5.3	SUPPLEMENTARY INSULATION and REINFORCED INSULATION .....	54
6.5.4	PROTECTIVE IMPEDANCE .....	55
6.5.5	Automatic disconnection of the supply .....	55
6.5.6	Current- or voltage-limiting device .....	55
6.6	Connections to external circuits .....	56
6.6.1	General .....	56
6.6.2	TERMINALS for external circuits .....	56
6.6.3	Circuits with TERMINALS which are HAZARDOUS LIVE .....	56
6.6.4	TERMINALS for stranded conductors .....	56
6.6.101	Measuring circuit TERMINALS .....	57
6.7	Insulation requirements .....	59
6.7.1	The nature of insulation .....	59
6.7.2	Insulation for MAINS CIRCUITS of OVERVOLTAGE CATEGORY II with a nominal supply voltage up to 300 V .....	62
6.7.3	Insulation for secondary circuits derived from MAINS CIRCUITS of OVERVOLTAGE CATEGORY II up to 300 V .....	65
6.8	Procedure for voltage tests .....	71
6.8.1	General .....	71

6.8.2	Humidity preconditioning .....	72
6.8.3	Test procedures .....	73
6.9	Constructional requirements for protection against electric shock .....	74
6.9.1	General .....	74
6.9.2	Insulating materials .....	74
6.9.3	Colour coding .....	74
6.10	Connection to the MAINS supply source and connections between parts of equipment .....	74
6.10.1	MAINS supply cords .....	74
6.10.2	Fitting of non-detachable MAINS supply cords .....	75
6.10.3	Plugs and connectors .....	77
6.11	Disconnection from supply source .....	77
6.11.1	General .....	77
6.11.2	Exceptions .....	77
6.11.3	Requirements according to type of equipment .....	78
6.11.4	Disconnecting devices .....	78
6.101	Protection against HAZARDOUS LIVE outputs .....	79
6.101.1	Insulation between MAINS CIRCUITS and output circuits .....	79
6.101.2	Protection against unintended energising of the outputs .....	79
6.101.3	Protection against automatic energising of the outputs .....	79
6.102	Discharging residual voltages .....	80
6.102.1	General .....	80
6.102.2	d.c. voltage tests .....	80
6.102.3	a.c. voltage tests .....	80
7	Protection against mechanical HAZARDS .....	81
7.1	General .....	81
7.2	Sharp edges .....	81
7.3	Moving parts .....	81
7.3.1	General .....	81
7.3.2	Exceptions .....	82
7.3.3	RISK assessment for mechanical HAZARDS to body parts .....	82
7.3.4	Limitation of force and pressure .....	83
7.3.5	Gap limitations between moving parts .....	84
7.4	Stability .....	86
7.5	Provisions for lifting and carrying .....	87
7.5.1	General .....	87
7.5.2	Handles and grips .....	87
7.5.3	Lifting devices and supporting parts .....	87
7.6	Wall mounting .....	87
7.7	Expelled parts .....	88
8	Resistance to mechanical stresses .....	88
8.1	General .....	88
8.2	ENCLOSURE rigidity tests .....	89
8.2.1	Static test .....	89
8.2.2	Impact test .....	89
8.3	Drop test .....	90
8.3.1	Equipment other than HAND-HELD EQUIPMENT and DIRECT PLUG-IN EQUIPMENT .....	90
8.3.2	HAND-HELD EQUIPMENT and DIRECT PLUG-IN EQUIPMENT .....	91



9	Protection against the spread of fire .....	91
9.1	General .....	91
9.2	Eliminating or reducing the sources of ignition within the equipment.....	93
9.3	Containment of fire within the equipment, should it occur .....	93
9.3.1	General .....	93
9.3.2	Constructional requirements .....	93
9.4	Limited-energy circuit .....	96
9.5	Requirements for equipment containing or using flammable liquids .....	97
9.6	Overcurrent protection.....	97
9.6.1	General .....	97
9.6.2	PERMANENTLY CONNECTED EQUIPMENT .....	98
9.6.3	Other equipment.....	98
9.101	Protection of measuring circuits.....	98
9.101.1	General .....	98
9.101.2	Protection against mismatches of inputs and ranges.....	99
9.101.3	Protection against MAINS overvoltages .....	101
9.101.4	Protection against extraneous voltages from distribution system.....	102
9.101.5	Protection against currents and voltages induced by the environment .....	102
10	Equipment temperature limits and resistance to heat.....	104
10.1	Surface temperature limits for protection against burns .....	104
10.2	Temperatures of windings .....	105
10.3	Other temperature measurements .....	105
10.4	Conduct of temperature tests .....	105
10.4.1	General .....	105
10.4.2	Temperature measurement of heating equipment .....	106
10.4.3	Equipment intended for installation in a cabinet or a wall.....	106
10.5	Resistance to heat.....	106
10.5.1	Integrity of CLEARANCES and CREEPAGE DISTANCES.....	106
10.5.2	Non-metallic ENCLOSURES .....	106
10.5.3	Insulating material .....	107
11	Protection against HAZARDS from fluids and solid foreign objects .....	108
11.1	General .....	108
11.2	Cleaning.....	108
11.3	Spillage.....	108
11.4	Overflow.....	108
11.5	Battery electrolyte .....	109
11.6	Equipment RATED with a degree of ingress protection (IP code).....	109
11.6.1	General .....	109
11.6.2	Conditions for testing.....	109
11.6.3	Protection against solid foreign objects (including dust).....	110
11.6.4	Protection against water .....	110
11.7	Fluid pressure and leakage .....	110
11.7.1	Maximum pressure .....	110
11.7.2	Leakage and rupture at high pressure .....	111
11.7.3	Leakage from low-pressure parts.....	112
11.7.4	Overpressure safety device .....	112
12	Protection against radiation, including laser sources, and against sonic and ultrasonic pressure .....	113
12.1	General .....	113

12.2	Equipment producing ionizing radiation .....	113
12.2.1	Ionizing radiation .....	113
12.2.2	Accelerated electrons .....	114
12.3	Optical radiation .....	114
12.4	Microwave radiation .....	115
12.5	Sonic and ultrasonic pressure .....	115
12.5.1	Sound level .....	115
12.5.2	Ultrasonic pressure.....	116
12.6	Laser sources.....	116
13	Protection against liberated gases and substances, explosion and implosion .....	117
13.1	Poisonous and injurious gases and substances .....	117
13.2	Explosion and implosion .....	117
13.2.1	Components .....	117
13.2.2	Batteries and battery charging .....	117
13.2.3	Implosion of cathode ray tubes .....	118
14	Components and subassemblies .....	118
14.1	General .....	118
14.2	Motors .....	119
14.2.1	Motor temperatures .....	119
14.2.2	Series excitation motors .....	119
14.3	Overtemperature protection devices .....	120
14.4	Fuse holders .....	120
14.5	MAINS voltage selection devices .....	120
14.6	MAINS transformers tested outside equipment.....	120
14.7	Printed wiring boards.....	121
14.8	Circuits used to limit TRANSIENT OVERVOLTAGES.....	121
14.101	Probe assemblies and accessories .....	121
15	Protection by interlocks .....	122
15.1	General .....	122
15.2	Prevention of reactivating .....	122
15.3	Reliability .....	122
16	HAZARDS resulting from application .....	122
16.1	REASONABLY FORESEEABLE MISUSE .....	122
16.2	Ergonomic aspects .....	122
17	RISK assessment .....	123
101	Measuring circuits .....	123
101.1	General .....	123
101.2	Current measuring circuits.....	124
101.3	Indicating devices.....	124
101.3.1	General .....	124
101.3.2	Battery level .....	124
101.3.3	Over-range indication .....	125
101.3.4	Permanent overvoltages .....	125
Annex A (normative)	Measuring circuits for touch current (see 6.3).....	127
Annex B (normative)	Standard test fingers (see 6.2) .....	130
Annex C (normative)	Measurement of CLEARANCES and CREEPAGE DISTANCES .....	132
Annex D (normative)	Parts between which insulation requirements are specified (see 6.4 and 6.5.3) .....	136

Annex E (informative) Guideline for reduction of POLLUTION DEGREES .....	139
Annex F (normative) ROUTINE TESTS.....	140
Annex G (informative) Leakage and rupture from fluids under pressure .....	142
Annex H (normative) Qualification of conformal coatings for protection against POLLUTION .....	147
Annex I (informative) Line-to-neutral voltages for common MAINS supply systems .....	150
Annex J (informative) RISK assessment .....	152
Annex K (normative) Insulation requirements not covered by 6.7 .....	155
Annex L (informative) Index of defined terms .....	184
Annex AA (normative) Measurement categories .....	186
Annex BB (informative) HAZARDS pertaining to measurements performed in certain environments .....	189
Annex CC (informative) 4 mm "banana" TERMINALS .....	192
Annex DD (informative) Flowchart for insulation according to the type of circuit.....	194
Annex EE (informative) Determination of CLEARANCES for Table 101 .....	197
Bibliography.....	198
Figure 1 – Measurements through openings in ENCLOSURES.....	45
Figure 2 – Maximum duration of short-term ACCESSIBLE voltages in SINGLE FAULT CONDITION (see 6.3.2 a) .....	47
Figure 3 – Capacitance level versus voltage in NORMAL CONDITION and SINGLE FAULT CONDITION (see 6.3.1 c) and 6.3.2 c)) .....	48
Figure 4 – Acceptable arrangement of protective means against electric shock .....	50
Figure 5 – Examples of binding screw assemblies .....	52
Figure 101 – Duration of current flow versus body current for a.c. and d.c. currents.....	54
Figure 6 – Distance between conductors on an interface between two layers.....	64
Figure 7 – Distance between adjacent conductors along an interface of two inner layers.....	64
Figure 8 – Distance between adjacent conductors located between the same two layers.....	65
Figure 9 – Detachable MAINS supply cords and connections .....	75
Figure 10 – Impact test using a sphere .....	90
Figure 11 – Flow chart to explain the requirements for protection against the spread of fire .....	92
Figure 12 – Baffle .....	95
Figure 13 – Area of the bottom of an ENCLOSURE to be constructed as specified in 9.3.2 c) 1).....	95
Figure 102 – Test circuit for induced voltage and current .....	103
Figure 14 – Ball-pressure test apparatus.....	107
Figure 16 – Ratio between test pressure and maximum working pressure.....	112
Figure 15 – Flow chart for conformity options 14.1 a), b), c) and d).....	119
Figure A.1 – Measuring circuit for a.c. with frequencies up to 1 MHz and for d.c. ....	127
Figure A.2 – Measuring circuits for sinusoidal a.c. with frequencies up to 100 Hz and for d.c. ....	128
Figure A.3 – Current measuring circuit for electrical burns .....	129
Figure A.4 – Current measuring circuit for wet contact .....	129

Figure B.1 – Rigid test finger .....	130
Figure B.2 – Jointed test finger .....	131
Figure C.1 – Examples of methods of measuring CLEARANCES and CREEPAGE DISTANCES .....	135
Figures D.1a) to d) – Protection between HAZARDOUS LIVE circuits and ACCESSIBLE parts .....	137
Figures D.1e) to h) – Protection between HAZARDOUS LIVE circuits and circuits with ACCESSIBLE external TERMINALS .....	137
Figures D.2 a) and D.2 b) – Protection between a HAZARDOUS LIVE internal circuit and an ACCESSIBLE part which is not bonded to other ACCESSIBLE parts .....	138
Figures D.2 c) and D.2 d) – Protection between a HAZARDOUS LIVE primary circuit and circuits which have ACCESSIBLE external TERMINALS .....	138
Figure D.3 – Protection of external ACCESSIBLE TERMINALS of two HAZARDOUS LIVE circuits .....	138
Figure G.1 – Conformity verification process (see G.2) .....	143
Figure H.1 – Test sequence and conformity .....	149
Figure J.1 – Iterative process of RISK assessment and RISK reduction .....	152
Figure J.2 – RISK reduction .....	153
Figure K.1 – Distance between conductors on an interface between two layers .....	159
Figure K.2 – Distance between adjacent conductors along an interface of an inner layer .....	160
Figure K.3 – Distance between adjacent conductors located between the same two layers .....	161
Figure K.4 – Example of recurring peak voltage .....	173
Figure K.101 – Circuit with protective screen .....	175
Figure K.102 – Circuit with DOUBLE INSULATION .....	176
Figure K.103 – Test circuit for evaluation of TRANSIENT OVERVOLTAGE attenuation .....	178
Figure AA.1 – Example to identify the locations of MEASUREMENT CATEGORIES .....	187
Figure CC.1 – Recommended dimensions of 4 mm TERMINALS .....	193
Figure DD.1 – Requirements for CLEARANCE, CREEPAGE DISTANCE and solid insulation .....	196
Table 1 – Symbols .....	35
Table 2 – Tightening torque for binding screw assemblies .....	52
Table 101 – CLEARANCES for unmated measuring circuit TERMINALS .....	58
Table 3 – Multiplication factors for CLEARANCES of equipment RATED for operation at altitudes up to 5 000 m .....	60
TABLE 4 – CLEARANCES and CREEPAGE DISTANCES for MAINS CIRCUITS of OVERVOLTAGE CATEGORY II up to 300 V .....	62
Table 5 – Test voltages for solid insulation in MAINS CIRCUITS of OVERVOLTAGE CATEGORY II up to 300 V .....	63
Table 6 – CLEARANCES and test voltages for secondary circuits derived from MAINS CIRCUITS of OVERVOLTAGE CATEGORY II up to 300 V .....	66
Table 7 – CREEPAGE DISTANCES for secondary circuits .....	68
Table 8 – Minimum values for distance or thickness (see 6.7.3.4.2 to 6.7.3.4.4) .....	70
Table 9 – Distances between TERMINALS and foil .....	71
Table 10 – Correction factors according to test site altitude for test voltages for CLEARANCES .....	72
Table 11 – Values for physical tests on cord anchorages .....	76

Table 12 – Protective measures against mechanical HAZARDS to body parts.....	83
Table 13 – Minimum maintained gaps to prevent crushing for different body parts .....	85
Table 14 – Maximum gaps to prevent access for different body parts.....	86
Table 15 – Impact energy levels, test height and corresponding IK codes.....	90
Table 16 – Acceptable perforation of the bottom of an ENCLOSURE .....	94
Table 17 – Limits of maximum available current.....	96
Table 18 – Values for overcurrent protection devices .....	97
Table 19 – Surface temperature limits in NORMAL CONDITION.....	104
Table 20 – Maximum temperatures for insulation material of windings .....	105
Table 22 – Lamp or lamp systems considered photobiologically safe .....	115
Table 23 – Lamp or lamp systems considered photobiologically safe under certain conditions .....	115
Table 21 – Impulse voltages for OVERVOLTAGECATEGORY II.....	121
Table C.1 – Dimensions of X.....	132
Table E.1 – Environmental situations .....	139
Table E.2 – Reduction of POLLUTION DEGREES .....	139
Table F.1 – Test voltages for ROUTINE TESTS of MAINS CIRCUITS .....	141
Table G.1 – Test pressures for equipment with pressures above 14 Mpa .....	145
Table H.1 – Test parameters, test conditions and test procedures .....	148
Table I.1 – Line-to-neutral voltages for common MAINS supply systems.....	150
Table J.1 – Severity of harm .....	154
Table J.2 – Probability of harm .....	154
Table J.3 – Risk category .....	154
Table K.1 – Multiplication factors for CLEARANCES for equipment RATED for operation at altitudes up to 5 000 m .....	156
Table K.2 – CLEARANCES and CREEPAGE DISTANCES for MAINS CIRCUITS of OVERVOLTAGE CATEGORY II above 300 V .....	156
Table K.3 – CLEARANCES and CREEPAGE DISTANCES for MAINS CIRCUITS of OVERVOLTAGE CATEGORY III .....	157
Table K.4 – CLEARANCES and CREEPAGE DISTANCES for MAINS CIRCUITS of OVERVOLTAGE CATEGORY IV .....	157
Table K.5 – Test voltages for solid insulation in MAINS CIRCUITS of OVERVOLTAGE CATEGORY II above 300 V .....	158
Table K.6 – Test voltages for solid insulation in MAINS CIRCUITS of OVERVOLTAGE CATEGORY III .....	158
Table K.7 – Test voltages for solid insulation in MAINS CIRCUITS of OVERVOLTAGE CATEGORY IV .....	158
Table K.8 – Test voltages for testing long-term stress of solid insulation in MAINS CIRCUITS.....	159
Table K.9 – Minimum values for distance or thickness of solid insulation .....	160
Table K.10 – CLEARANCES and test voltages for secondary circuits derived from MAINS CIRCUITS of OVERVOLTAGE CATEGORY II above 300 V .....	163
Table K.11 – CLEARANCES and test voltages for secondary circuits derived from MAINS CIRCUITS of OVERVOLTAGE CATEGORY III.....	164
Table K.12 – CLEARANCES and test voltages for secondary circuits derived from MAINS CIRCUITS of OVERVOLTAGE CATEGORY IV .....	165
Table K.13 – CREEPAGE DISTANCES for secondary circuits.....	166

Table K.14 – Minimum values for distance or thickness (see K.2.4.2 to K.2.4.4) .....	168
Table K.15 – CLEARANCE values for the calculation of K.3.2 .....	171
Table K.16 – Test voltages based on CLEARANCES .....	171
Table K.17 – CLEARANCES for BASIC INSULATION in circuits having recurring peak voltages or WORKING VOLTAGES with frequencies above 30 kHz .....	174
Table K.101 – Impulse voltages for circuits connected to MAINS .....	178
Table K.102 – CLEARANCES for measuring circuits RATED for MEASUREMENT CATEGORIES .....	180
Table K.103 – Impulse test voltages for testing electric strength of solid insulation for measuring circuits RATED for MEASUREMENT CATEGORIES .....	181
Table K.104 – a.c. test voltages for testing electric strength of solid insulation for measuring circuits rated for measurement categories .....	181
Table K.105 – Minimum values for distance or thickness of solid insulation for measuring circuits RATED for MEASUREMENT CATEGORIES .....	182
Table AA.1 – Characteristics of MEASUREMENT CATEGORIES .....	188
Table EE.1 – CLEARANCES values for Table 101 .....	197

**iTeh Standards**  
**(<https://standards.iteh.ai>)**  
**Document Preview**

[IEC 61010-2-034:2023](#)

<https://standards.iteh.ai/catalog/standards/iec/7ba6cdb3-e09e-4590-a63d-e601a0f3465e/iec-61010-2-034-2023>