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Electricity metering equipment (AC) - General
requirements, tests and test conditions - Part 31:
Product safety requirements and tests

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 62052-31:2016 sisaldab Euroopa standardi EN 62052-31:2016 ingliskeelset teksti.	This Estonian standard EVS-EN 62052-31:2016 consists of the English text of the European standard EN 62052-31:2016.
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English Version

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General requirements, tests and test conditions -
Part 31: Product safety requirements and tests
(IEC 62052-31:2015)**

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Exigences générales, essais et conditions d'essai -
Partie 31 : Exigences et essais sur la sécurité de produit
(IEC 62052-31:2015)

Wechselstrom-Elektrizitätszähler -
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Teil 31: Sicherheitsanforderungen und Prüfungen
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European foreword

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In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60038	NOTE	Harmonized as EN 60038.
IEC 60060-1:2010	NOTE	Harmonized as EN 60060-1:2010 (not modified).
IEC 60065	NOTE	Harmonized as EN 60065.
IEC 60068-1:2013	NOTE	Harmonized as EN 60068-1:2014 (not modified).
IEC 60071-1	NOTE	Harmonized as EN 60071-1.
IEC 60079-0	NOTE	Harmonized as EN 60079-0.
IEC 60228	NOTE	Harmonized as EN 60228.
IEC 60255-27:2013	NOTE	Harmonized as EN 60255-27:2014 (not modified).
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IEC 60364-1:2005	NOTE	Harmonized as HD 60364-1:2008 (modified).
IEC 60364-4-41	NOTE	Harmonized as HD 60364-4-41.

IEC 60364-5-52	NOTE	Harmonized as HD 60364-5-52.
IEC 60664-3:2003 Amd 1:2010	NOTE	Harmonized as EN 60664-3:2003 (not modified) and as EN 60664-3:2003/A1:2010 (not modified).
IEC 60688:2012	NOTE	Harmonized as EN 60688:2013 (not modified).
IEC 60721-3-0:1984 Amd 1:1987	NOTE	Harmonized as EN 60721-3-0:1993 (not modified).
IEC 60721-3-3:1994 Amd 2:1997	NOTE	Harmonized as EN 60721-3-3:1995 (not modified) and as EN 60721-3-3:1995/A2:1997 (not modified)
IEC 60947-1:2007, Amd 1:2010 Amd 2:2014	NOTE	Harmonized as EN 60947-1:2007 (not modified), as EN 60947-1:2007/A1:2011 (not modified) and as EN 60947-1:2007/A2:2014 (not modified).
IEC 60990	NOTE	Harmonized as EN 60990.
IEC 61008-1	NOTE	Harmonized as EN 61008-1.
IEC 61000-4-5:2014	NOTE	Harmonized as EN 61000-4-5:2014 (not modified).
IEC 61010-1:2010	NOTE	Harmonized as EN 61010-1:2010 (not modified).
IEC 61030-2-030	NOTE	Harmonized as EN 61030-2-030.
IEC 61140	NOTE	Harmonized as EN 61140.
IEC 61180-1:1992	NOTE	Harmonized as EN 61180-1:1994 (not modified).
IEC 61558-1	NOTE	Harmonized as EN 61558-1.
IEC 61558-2-16	NOTE	Harmonized as EN 61558-2-16.
IEC 61643-12	NOTE	Harmonized as CLC/TS 61643-12.
IEC 61869-3	NOTE	Harmonized as EN 61869-3.
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IEC 62053-23:2003	NOTE	Harmonized as EN 62053-23:2003 (not modified).
IEC 62053-24:2014	NOTE	Harmonized as EN 62053-24:2015 (not modified).
IEC 62053-31:1998	NOTE	Harmonized as EN 62053-31:1998 (not modified).
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ISO 7010	NOTE	Harmonized as EN ISO 7010.

Annex ZA

(normative)

Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60027-1	-	Letter symbols to be used in electrical technology - Part 1: General	EN 60027-1	-
IEC 60068-2-75	2014	Environmental testing - Part 2-75: Tests - Test Eh: Hammer tests	EN 60068-2-75	2014
IEC 60068-2-78	-	Environmental testing - Part 2-78: Tests - Test Cab: Damp heat, steady state	EN 60068-2-78	-
IEC 60085	-	Electrical insulation - Thermal evaluation and designation	EN 60085	-
IEC 60112	-	Method for the determination of the proof and the comparative tracking indices of solid insulating materials	EN 60112	-
IEC 60269-3	-	Low-voltage fuses - Part 3: Supplementary requirements for fuses for use by unskilled persons (fuses mainly for household or similar applications) - Examples of standardized systems of fuses A to F	HD 60269-3	-
IEC 60332-1-2	2004	Tests on electric and optical fibre cables under fire conditions - Part 1-2: Test for vertical flame propagation for a single insulated wire or cable - Procedure for 1 kW pre-mixed flame	EN 60332-1-2 + A11	2004 2016 ¹⁾

1) To be published.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60332-2-2	2004	Tests on electric and optical fibre cables under fire conditions - Part 2-2: Test for vertical flame propagation for a single small insulated wire or cable - Procedure for diffusion flame	EN 60332-2-2	2004
IEC 60364-4-44 (mod)	2007	Low-voltage electrical installations - Part 4-442: Protection for safety - Protection of low-voltage installations against temporary overvoltages due to earth faults in the high-voltage system and due to faults in the low voltage system	HD 60364-4-442	2012
IEC 60364-4-44 (mod)	2007	Low-voltage electrical installations - Part 4-444: Protection for safety - Protection against voltage disturbances and electromagnetic disturbances	HD 60364-4-444	2010
IEC 60417-DB	-	Graphical symbols for use on equipment	-	-
IEC 60529	1989	Degrees of protection provided by enclosures (IP Code)	EN 60529	1991
-	-		+ corrigendum May	1993
+ A1	1999		+ A1	2000
+ A2	2013		+ A2	2013
IEC 60617-DB	-	Graphical symbols for diagrams	-	-
IEC 60664-1	2007	Insulation coordination for equipment within low-voltage systems - Part 1: Principles, requirements and tests	EN 60664-1	2007
IEC 60695-2-11	-	Fire hazard testing - Part 2-11: Glowing/hot-wire based test methods - Glow-wire flammability test method for end-products (GWEPT)	EN 60695-2-11	-
IEC 60695-10-2	-	Fire hazard testing - Part 10-2: Abnormal heat - Ball pressure test method	EN 60695-10-2	-
IEC 60695-11-10	-	Fire hazard testing - Part 11-10: Test flames - 50 W horizontal and vertical flame test methods	EN 60695-11-10	-
IEC 60950-1 (mod)	2005	Information technology equipment - Safety -	EN 60950-1	2006
-	-	Part 1: General requirements	+ A11	2009
+ A1 (mod)	2009		+ A1	2010
-	-		+ A12	2011
-	-		+ AC	2011
+ A2 (mod)	2013		+ A2	2013

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61032	1997	Protection of persons and equipment by enclosures - Probes for verification	EN 61032	1998
IEC 61180-2	-	High-voltage test techniques for low-voltage equipment - Part 2: Test equipment	EN 61180-2	-
IEC 62053-52	-	Electricity metering equipment (AC) - Particular requirements - Part 52: Symbols	EN 62053-52	-
ISO 75-2	-	Plastics - Determination of temperature of deflection under load - Part 2: Plastics and ebonite	EN ISO 75-2	-
ISO 306	-	Plastics - Thermoplastic materials - Determination of Vicat softening temperature (VST)	EN ISO 306	-
ISO 3864-1	-	Graphical symbols - Safety colours and safety signs - Part 1: Design principles for safety signs and safety markings	-	-
ISO 7000	2004	Graphical symbols for use on equipment - Index and synopsis	-	-

CONTENTS

FOREWORD.....	8
INTRODUCTION.....	10
1 Scope and object.....	12
1.1 Scope	12
1.2 Object.....	13
1.2.1 Aspects included in scope	13
1.2.2 Aspects excluded from scope	13
1.3 Verification.....	14
1.4 Environmental conditions	14
1.4.1 Normal environmental conditions	14
1.4.2 Extended environmental conditions	14
1.4.3 Extreme environmental conditions	15
2 Normative references	15
3 Terms and definitions	16
3.1 Equipment and states of equipment	16
3.2 Parts and accessories.....	17
3.3 Quantities	19
3.4 Tests	21
3.5 Safety terms	21
3.6 Insulation	25
3.7 Terms related to switches of metering equipment.....	29
4 Tests	31
4.1 General.....	31
4.2 Type test – sequence of tests	31
4.3 Reference test conditions.....	32
4.3.1 Atmospheric conditions.....	32
4.3.2 State of the equipment.....	32
4.4 Testing in single fault condition	36
4.4.1 General	36
4.4.2 Application of fault conditions	36
4.4.3 Duration of tests	38
4.4.4 Conformity after application of fault conditions.....	38
5 Information and marking requirements.....	39
5.1 General.....	39
5.2 Labels, signs and signals	41
5.2.1 General	41
5.2.2 Durability of markings	43
5.3 Information for selection	43
5.3.1 General	43
5.3.2 General information	43
5.3.3 Information related to meters / metering elements	44
5.3.4 Information related to stand-alone tariff-and load control equipment	44
5.3.5 Information related to supply control and load control switches.....	44
5.4 Information for installation and commissioning	44
5.4.1 General	44
5.4.2 Handling and mounting	45

5.4.3	Enclosure	45
5.4.4	Connection	45
5.4.5	Protection	47
5.4.6	Auxiliary power supply	48
5.4.7	Supply for external devices	48
5.4.8	Batteries	48
5.4.9	Self-consumption	48
5.4.10	Commissioning	49
5.5	Information for use	49
5.5.1	General	49
5.5.2	Display, push buttons and other controls	49
5.5.3	Switches	49
5.5.4	Connection to user's equipment	50
5.5.5	External protection devices	50
5.5.6	Cleaning	50
5.6	Information for maintenance	50
6	Protection against electrical shock	50
6.1	General requirements	50
6.2	Determination of accessible parts	51
6.2.1	General	51
6.2.2	Examination	51
6.2.3	Openings above parts that are hazardous live	52
6.2.4	Openings for pre-set controls	52
6.2.5	Wiring terminals	53
6.3	Limit values for accessible parts	53
6.3.1	General	53
6.3.2	Levels in normal condition	53
6.3.3	Levels in single fault condition	53
6.4	Primary means of protection (protection against direct contact)	56
6.4.1	General	56
6.4.2	Equipment case	56
6.4.3	Basic insulation	56
6.4.4	Impedance	56
6.5	Additional means of protection in case of single fault conditions (protection against indirect contact)	57
6.5.1	General	57
6.5.2	Protective bonding	57
6.5.3	Supplementary insulation and reinforced insulation	61
6.5.4	Protective impedance	61
6.5.5	Automatic disconnection of the supply	61
6.5.6	Current- or voltage-limiting device	62
6.6	Connection to external circuits	62
6.6.1	General	62
6.6.2	Terminals for external circuits	63
6.6.3	Terminals for stranded conductors	63
6.7	Insulation requirements	63
6.7.1	General – Electrical stresses, overvoltages and overvoltage categories	63
6.7.2	The nature of insulation	64
6.7.3	Insulation requirements for mains-circuits	68

6.7.4	Insulation requirements for non-mains-circuits	74
6.7.5	Insulation in circuits not addressed in 0 or 6.7.4	78
6.7.6	Reduction of transient overvoltages by the use of overvoltage limiting devices	84
6.8	Insulation requirements between circuits and parts	84
6.9	Constructional requirements for protection against electric shock	88
6.9.1	General	88
6.9.2	Insulating materials	88
6.9.3	Colour coding	88
6.9.4	Equipment case	88
6.9.5	Terminal blocks	89
6.9.6	Insulating materials of supply control and load switches	89
6.9.7	Terminals	90
6.9.8	Requirements for current circuits	92
6.10	Safety related electrical tests	99
6.10.1	Overview	99
6.10.2	Test methods	101
6.10.3	Testing of voltage circuits	104
6.10.4	Dielectric tests	106
6.10.5	Electrical tests on current circuits of direct connected meters without supply control switches (SCSs)	112
6.10.6	Electrical tests on current circuits of direct connected meters with SCSs	113
6.10.7	Electrical tests on load control switches (LCSs)	119
7	Protection against mechanical hazards	122
7.1	General	122
7.2	Sharp edges	122
7.3	Provisions for lifting and carrying	123
8	Resistance to mechanical stresses	123
8.1	General	123
8.2	Spring hammer test	123
9	Protection against spread of fire	124
9.1	General	124
9.2	Eliminating or reducing the sources of ignition within the equipment	125
9.3	Containment of fire within the equipment, should it occur	125
9.3.1	General	125
9.3.2	Constructional requirements	126
9.4	Limited-energy circuit	126
9.5	Overcurrent protection	128
10	Equipment temperature limits and resistance to heat	128
10.1	Surface temperature limits for protection against burns	128
10.2	Temperature limits for terminals	129
10.3	Temperatures of internal parts	130
10.4	Temperature test	132
10.5	Resistance to heat	133
10.5.1	Non-metallic enclosures	133
10.5.2	Insulating materials	134
11	Protection against penetration of dust and water	134
12	Protection against liberated gases and substances explosion and implosion – Batteries and battery charging	136

13	Components and sub-assemblies	136
13.1	General.....	136
13.2	Mains transformers tested outside equipment	138
13.3	Printed wiring boards	138
13.4	Components bridging insulation	138
13.5	Circuits or components used as transient overvoltage limiting devices	138
14	Hazards resulting from application – Reasonably foreseeable misuse	138
15	Risk assessment	139
Annex A	(normative) Measuring circuits for touch current	140
A.1	Measuring circuit for a.c. with frequencies up to 1 MHz and for d.c.	140
A.2	Measuring circuits for sinusoidal a.c. with frequencies up to 100 Hz and for d.c.	141
A.3	Current measuring circuit for electrical burns at high frequencies.....	141
A.4	Current measuring circuit for wet location	142
Annex B	(informative) Examples for insulation between parts	143
B.1	Insulation between parts – Example 1	143
B.2	Insulation between parts – Example 2	144
B.3	Insulation between parts – Example 3	145
B.4	Insulation between parts – Example 4	146
B.5	Insulation between parts – Example 5	147
Annex C	(informative) Examples for direct connected meters equipped with supply control and load control switches	149
Annex D	(normative) Test circuit diagram for the test of long term overvoltage withstand	151
Annex E	(normative) Test circuit diagram for short current test on the current circuit of direct connected meters	152
Annex F	(informative) Examples for voltage tests.....	154
Annex G	(normative) Additional a.c. voltage tests for electromechanical meters	158
Annex H	(normative) Test equipment for cable flexion and pull test	159
Annex I	(informative) Routine tests	161
I.1	General.....	161
I.2	Protective earth	161
I.3	AC power-frequency high-voltage test for mains-circuits	161
I.4	Mains-circuits with voltage limiting devices	161
Annex J	(informative) Examples of battery protection.....	162
Annex K	(informative) Rationale for specifying overvoltage category III	163
K.1	Transient overvoltage requirements in TC 13 standards	163
K.2	Electricity meters mentioned in basic safety publications and group safety publications	163
K.2.1	IEC 60664-1	163
K.2.2	IEC 60364-4-44	164
K.2.3	IEC 61010-1	164
K.3	Conclusion.....	165
Annex L	(informative) Overview of safety aspects covered.....	166
Annex M	(informative) Index of defined terms	181
Bibliography	184

Figure 1 – Measurements through openings in enclosures	52
Figure 2 – Maximum duration of short-term accessible voltages in single fault condition (see 6.3.3 a))	54
Figure 3 – Capacitance level versus voltage in normal condition and single fault condition (see 6.3.2 c) and 6.3.3 c)).....	55
Figure 4 – Acceptable arrangements of protection means against electric shock.....	57
Figure 5 – Examples of binding screw assemblies	59
Figure 6 – Distance between conductors on an interface between two layers.....	72
Figure 7 – Distance between adjacent conductors along an interface of an inner layer	72
Figure 8 – Distance between adjacent conductors located between the same two layers.....	74
Figure 9 – Example of recurring peak voltage	82
Figure 10 – Flowchart of safety related electrical tests.....	100
Figure 11 – Flow chart to explain the requirements for protection against the spread of fire.....	125
Figure 12 – Ball-pressure test apparatus.....	134
Figure 13 – Flow chart for conformity options 13.1 a), b), c) and d).....	137
Figure A.1 – Measuring circuit for a.c. with frequencies up to 1 MHz and for d.c.	140
Figure A.2 – Measuring circuits for sinusoidal a.c. with frequencies up to 100 Hz and for d.c.	141
Figure A.3 – Current measuring circuit for electrical burns	142
Figure A.4 – Current measuring circuit for wet contact	142
Figure B.1 – Insulation between parts – Example 1	143
Figure B.2 – Insulation between parts – Example 2	144
Figure B.3 – Insulation between parts – Example 3	145
Figure B.4 – Insulation between parts – Example 4	146
Figure B.5 – Insulation between parts – Example 5.....	147
Figure C.1 – Single phase two wire meter with UC2 SCS and 25A LCS	149
Figure C.2 – Three phase four wire meter with UC2 SCS and 2A auxiliary control switch	150
Figure D.1 – Circuit for three-phase four-wire meters to simulate long term overvoltage, voltage moved to L3.....	151
Figure D.2 – Voltages at the meter under test	151
Figure E.1 – Test circuit for verification of short-time withstand current test on current circuits with and without supply control switches	152
Figure E.2 – Example of short-circuit carrying test record in the case of a single-pole equipment on single-phase a.c.	153
Figure F.1 – Test arrangement for voltage tests: 3 phase 4 wire direct connected meter with supply control and load control switches	154
Figure F.2 – Test arrangement for voltage tests: 3 phase 4 wire transformer connected meter	156
Figure H.1 – Test equipment for cable flexion and pull test (see 6.9.7.3)	159
Figure J.1 – Non-rechargeable battery protection.....	162
Figure J.2 – Rechargeable battery protection.....	162

Table 1 – Test copper conductors for current and switch terminals	35
Table 2 – Information requirements.....	40
Table 3 – IEC 60417 symbols and ISO 7000 that may be used on metering equipment.....	42
Table 4 – Tightening torque for binding screw assemblies	60
Table 5 – Multiplication factors for clearance for altitudes up to 5 000 m.....	64
Table 6 – Overview of clauses specifying requirements and tests for insulations	67
Table 7 – Nominal / rated voltages and rated impulse voltages	68
Table 8 – Clearances for mains-circuits	69
Table 9 – Creepage distances for mains-circuits	70
Table 10 – Test voltages for solid insulation in mains-circuits	71
Table 11 – Test voltages for testing long-term stress of solid insulation in mains-circuits.....	71
Table 12 – Minimum values for distance or thickness of solid insulation.....	73
Table 13 – Clearances and test voltages for non-mains-circuits derived from mains-circuits of overvoltage category III	75
Table 14 – Creepage distances for non-mains-circuits	75
Table 15 – Minimum values for distance or thickness (see 6.7.4.4.2 to 6.7.4.4.4)	77
Table 16 – Clearance values for the calculation of 6.7.5.2	80
Table 17 – Test voltages based on clearances.....	81
Table 18 – Clearances for basic insulation in circuits having recurring peak voltages	83
Table 19 – Isolation classes for non-mains-circuits	85
Table 20 – Insulation requirements between any two circuits	86
Table 21 – Summary of requirements for current circuits of direct connected meters without SCS.....	95
Table 22 – Summary of requirements for current circuits of direct connected meters with SCS.....	96
Table 23 – Summary of requirements for load control switches	98
Table 24 – Correction factors according to test site altitude for test voltages for clearances	104
Table 25 – AC voltage test.....	109
Table 26 – Test sequence and sample plan for supply control switches	113
Table 27 – Power factor ranges of the test circuit	116
Table 28 – Test sequence and sample plan for load control switches.....	120
Table 29 – Limits of maximum available current.....	127
Table 30 – Values for overcurrent protection devices	127
Table 31 – Surface temperature limits in normal condition	129
Table 32 – Temperature limits for terminals	130
Table 33 – Maximum measured total temperatures for internal materials and components	131
Table G.1 – AC voltage tests of electromechanical meters.....	158
Table H.1 – Test values for flexion and pull-out tests for round copper conductors	160
Table L.1 – Overview of safety aspects.....	166

INTRODUCTION

NOTE 1 The following text is based on IEC Guide 104, ISO/IEC Guide 51 and IEC 60255-27:2013.

The IEC addresses safety aspects by establishing *basic*, *group* and *product* safety publications.

A *basic safety publication* covers a specific safety-related matter, applicable to many electrotechnical products. It is primarily intended for use by technical committees in the preparation of standards in accordance with the principles laid down in IEC Guide 104 and ISO/IEC Guide 51. It is not intended for use by manufacturers or certification bodies. One of the responsibilities of a technical committee is, wherever applicable, to make use of basic safety publications in the preparation of its publications. The requirements, test methods or test conditions of basic safety publications will not apply unless specifically referred to or included in the relevant publications.

A *group safety publication* covers all safety aspects of a specific group of products within the scope of two or more product TCs. Group safety publications are primarily intended to be stand-alone product safety publications, but may also be used by TCs as source material in the preparation of their publications.

A *product safety publication* covers all safety aspects of one or more products within the scope of a single product TC.

Existing product standards established by TC 13 include a range of safety requirements, test methods and test conditions. However, an important requirement of IEC Guide 104:2010, 5.2.3 has not been met so far:

“Safety aspects and performance aspects should not be covered in the same publication, as this makes it difficult to assess conformity with safety requirements alone. If, exceptionally, there are reasons to cover them in the same publication, safety aspects and performance aspects shall be clearly distinguished from each other. If there are performance criteria which have safety implications, these are considered to be safety aspects and this shall be made clear in the publication.”

In addition, some important aspects of product safety, such as safety under single fault conditions, have not been covered so far.

The objectives of the development of this International Standard are the following:

- to specifically reference and include relevant requirements, test methods or test conditions of relevant basic safety publications so that they become applicable;
- to specifically reference and include – where appropriate, in a modified form – relevant requirements, test methods or test conditions of relevant group safety publications;
- to consider the latest developments in the technology used for the design and manufacture of equipment for electrical energy measurement and control;
- to remove any ambiguity resulting from the lack of a comprehensive product safety standard for products in the Scope of TC 13;
- to achieve a uniform approach to product safety throughout the international metering industry.

This *product safety standard* is based on, among others, the following:

- the *basic safety standard* IEC 60664-1:2007, established by TC 109;
- standards from the IEC 60364 series related to electrical installations of buildings, established by TC 64;
- the *group safety standard* IEC 61010-1:2010 established by TC 66;

- the *group safety standard* IEC 62477-1:2012 established by TC 22;
- IEC 60255-27:2013, a *product safety standard* for measuring relays and protection equipment, established by TC 95. These products are similar in their design and to some extent in their use in equipment for electrical energy measurement and control,

To facilitate the use of this standard, an integral text has been prepared, with appropriate 539 references to source documents.

This standard cancels and replaces the safety requirements specified in earlier standards established by IEC TC 13. See also Annex L (Informative).

NOTE 2 When this standard is published, an amendment to the relevant standards affected by this standard in IEC 62052, IEC 62053 and IEC 62054 will be published, to indicate which parts of those standards are replaced / cancelled by this standard.

Being a product safety standard, this standard takes precedence over the group safety standards IEC 61010-1:2010 and IEC 62477-1:2012.

ELECTRICITY METERING EQUIPMENT (AC) – GENERAL REQUIREMENTS, TESTS AND TEST CONDITIONS –

Part 31: Product safety requirements and tests

1 Scope and object

1.1 Scope

This part of IEC 62052 specifies product safety requirements for equipment for electrical energy measurement and control.

NOTE 1 For other requirements, see the relevant standards.

This International Standard applies to newly manufactured metering equipment designed to measure and control electrical energy on 50 Hz or 60 Hz networks with a voltage up to 600 V, where all functional elements, including add-on modules are enclosed in or form a single case.

NOTE 2 The voltage mentioned above is the voltage line-to-neutral derived from nominal voltages. See Table 7.

This International Standard also applies to metering equipment containing supply and load control switches, but only those which are electromechanical in operation.

NOTE 3 For components and sub-assemblies, see Clause 13.

When such equipment is designed to be installed in a specified matching socket, then the requirements apply to, and the tests shall be performed on, equipment installed in its specified matching socket. However, requirements for sockets and inserting / removing the meters from the socket are outside the scope of this standard.

This International Standard is also applicable to auxiliary input and output circuits.

NOTE 4 Examples are impulse inputs and outputs, control inputs and outputs, circuits for meter data exchange.

In this standard distinction is made between:

- electromechanical meters, static meters and equipment for tariff and load control;
- direct connected, current transformer operated, voltage and current transformer operated meters;
- protective class I and protective class II equipment;
- wall or cabinet mounted, rack mounted and panel mounted equipment;
- equipment intended for indoor use and outdoor use.

Equipment used in conjunction with equipment for electrical energy measurement and control may need to comply with additional safety requirements. See also Clause 13.

NOTE 5 Examples are telecommunication modems and customer information units.

This International Standard does not apply to:

- equipment where the voltage line-to-neutral derived from nominal voltages exceeds 600 V;
- portable meters;

NOTE 6 Portable meters are meters that are not permanently connected.

- laboratory and mobile meter test equipment;
- reference standard meters.

The safety requirements of this standard are based on the following assumptions:

- metering equipment has been installed correctly;
- metering equipment is used generally by unskilled persons, including meter readers and consumers of electrical energy. In many cases, it is installed in a way that it is freely accessible. Its terminal covers cannot be removed and its case cannot be opened without removing seals and using a tool;
- during normal use all terminal covers, covers and barriers providing protection against accessing hazardous live parts are in place;
- for installation, configuration, maintenance and repair it may be necessary to remove terminal cover(s), (a part of) the case or barriers so that hazardous live parts may become accessible. Such activities are performed by skilled personnel, who have been suitably trained to be aware of working procedures necessary to ensure safety. Therefore, safety requirements covering these conditions are out of the Scope of this standard.

1.2 Object

1.2.1 Aspects included in scope

NOTE 1 Subclause 1.2 is based on IEC 61010-1:2010, 1.2.

The purpose of the requirements of this standard is to ensure that hazards to the user and the surrounding area are reduced to a tolerable level.

Requirements for protection against particular types of hazard are given in Clauses 6 to 12 as follows:

- a) electrical shock or burn (see Clause 6);
- b) mechanical hazards and stresses (see Clauses 7 and 8);
- c) spread of fire from the equipment (see Clause 9);
- d) excessive temperature (see Clause 10);
- e) penetration of dust and water (see Clause 11);
- f) liberated gases, explosion and implosion (see Clause 12).

Requirements for components and sub-assemblies are specified in Clause 13.

Requirements for protection against hazards arising from reasonably foreseeable misuse are specified in Clause 14.

Risk assessment for hazards or environments not fully covered above is specified in Clause 15.

NOTE 2 Attention is drawn to the existence of additional requirements specified by national authorities responsible for health and safety.

1.2.2 Aspects excluded from scope

This standard does not cover:

- a) performance, reliability or other properties of the equipment not related to safety;
- b) EMC requirements, which are covered by the relevant type testing standards;

NOTE 1 For EMC requirements and test methods, see IEC 62052-11:2003, IEC 62052-21:2004 and IEC 62055-31:2005

- c) protective measures for explosive atmospheres (see IEC 60079-0);