

# FINAL VERSION

# VERSION FINALE

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**In-cable control and protection device for mode 2 charging of electric road vehicles (IC-CPD)**

**Appareil de contrôle et de protection intégré au câble pour la charge en mode 2 des véhicules électriques (IC-CPD)**



## CONTENTS

FOREWORD.....	10
INTRODUCTION.....	12
1 Scope.....	13
2 Normative references.....	14
3 Terms and definitions .....	16
3.1 Terms and definitions relating to plugs and socket-outlets.....	17
3.2 Terms and definitions relating to terminals.....	18
3.3 Terms and definitions relating to residual current functions .....	19
3.3.1 Terms and definitions relating to currents flowing from live parts to earth.....	19
3.3.2 Terms and definitions relating to the energization of the residual current function .....	20
3.3.3 Terms and definitions relating to the operation and to the functions of the IC-CPD .....	20
3.3.4 Terms and definitions relating to values and ranges of energizing quantities.....	22
3.3.5 Terms and definitions relating to values and ranges of influencing quantities.....	24
3.3.6 Conditions of operation .....	24
3.3.7 Terms and definitions relating to control functions between electric vehicle and IC-CPD.....	25
3.4 Terms and definitions relating to tests .....	25
3.5 Terms and definitions relating to construction .....	26
4 Classification.....	26
4.1 According to the supply .....	26
4.1.1 General .....	26
4.1.2 IC-CPD supplied from one phase and neutral (LNSE or LNE).....	26
4.1.3 IC-CPD supplied from two phases (LLSE or LLE).....	26
4.1.4 IC-CPD supplied from three phases and neutral (LLLNSE or LLLNE) .....	26
4.2 According to the construction .....	26
4.2.1 General .....	26
4.2.2 IC-CPD including the function box separated from the plug and connector.....	26
4.2.3 IC-CPD with the function box integrated together with the plug.....	26
4.2.4 Modular IC-CPD.....	27
4.3 According to the method of connecting the cable(s) .....	27
4.3.1 General .....	27
4.3.2 Non-rewirable IC-CPDs .....	27
4.3.3 IC-CPDs wired by the manufacturer.....	27
4.3.4 Pluggable IC-CPD.....	27
4.4 Classification according to the protective conductor path .....	27
4.4.1 General .....	27
4.4.2 IC-CPDs with switched protective conductor .....	27
4.4.3 IC-CPDs with non-switched protective conductor .....	28
4.5 Classification according to behaviour in case of open protective conductor.....	28
4.5.1 General .....	28

4.5.2	IC-CPD with verification of the availability of the upstream protective conductor.....	28
4.5.3	IC-CPD without verification of the availability of the upstream protective conductor.....	28
4.6	Classification according to the usage.....	28
4.6.1	IC-CPD for portable use .....	28
4.6.2	IC-CPD for wall mounting .....	28
4.6.3	IC-CPD for portable use and for wall mounting.....	28
5	Characteristics of IC-CPDs .....	28
5.1	Summary of characteristics .....	28
5.2	Rated quantities and other characteristics .....	29
5.2.1	Rated voltages.....	29
5.2.2	Rated current ( $I_n$ ).....	29
5.2.3	Rated residual operating current ( $I_{\Delta n}$ ) .....	29
5.2.4	Rated residual non-operating current ( $I_{\Delta no}$ ).....	30
5.2.5	Rated frequency.....	30
5.2.6	Rated making and breaking capacity ( $I_m$ ) .....	30
5.2.7	Rated residual making and breaking capacity ( $I_{\Delta m}$ ) .....	30
5.2.8	Operating characteristics in case of residual currents comprising a d.c. component.....	30
5.2.9	Insulation coordination including creepage distances and clearances .....	30
5.2.10	Coordination with short-circuit protection devices (SCPDs) .....	30
5.3	Standard and preferred values .....	31
5.3.1	Preferred values of rated operational voltage ( $U_e$ ) .....	31
5.3.2	Preferred values of rated current ( $I_n$ ).....	31
5.3.3	Standard values of rated residual operating current ( $I_{\Delta n}$ ) .....	31
5.3.4	Standard value of rated residual non-operating current ( $I_{\Delta no}$ ) .....	31
5.3.5	Standard minimum value of the non-operating overcurrent through the IC-CPD .....	32
5.3.6	Preferred values of rated frequency .....	32
5.3.7	Minimum value of the rated making and breaking capacity ( $I_m$ ) .....	32
5.3.8	Minimum value of the rated residual making and breaking capacity ( $I_{\Delta m}$ ) .....	32
5.3.9	Standard value of the rated conditional short-circuit current ( $I_{nc}$ ) .....	32
5.3.10	Standard value of the rated conditional residual short-circuit current ( $I_{\Delta c}$ ) .....	32
5.3.11	Limit values of break time.....	32
6	Marking and other product information .....	33
6.1	Data to be marked on the IC-CPD.....	33
6.2	Information to be provided to the end-user.....	35
7	Standard conditions for operation in service and for installation .....	35
7.1	Standard conditions .....	35
7.2	Conditions for installations .....	36
8	Requirements for construction and operation.....	36
8.1	Mechanical design .....	36
8.2	Pluggable electrical connections of pluggable IC-CPDs according to 4.3.4 .....	37
8.2.1	General .....	37
8.2.2	Degree of protection of pluggable electrical connection against solid foreign objects and water for pluggable IC-CPD.....	38

8.2.3	Breaking capacity of pluggable electrical connection for pluggable IC-CPD .....	38
8.2.4	Additional requirements.....	38
8.3	Construction .....	39
8.3.1	General .....	39
8.3.2	Terminations of IC-CPDs.....	40
8.3.3	Enclosure of IC-CPDs according to 4.3.3.....	40
8.3.4	Terminal screws or nuts of IC-CPDs according to 4.3.3.....	40
8.3.5	Strain on the conductors of IC-CPDs according to 4.3.3.....	40
8.3.6	Additional requirements for IC-CPDs according to 4.3.3.....	40
8.3.7	Insulating parts which keep the live parts in position .....	41
8.3.8	Screws for IC-CPD according to 4.3.3.....	41
8.3.9	Means for suspension from a wall or other mounting surfaces.....	41
8.3.10	Plug as an integral part of plug-in equipment .....	41
8.3.11	Flexible cables and cords and their connection .....	41
8.4	Electrical performance.....	42
8.4.1	Protective conductor path.....	42
8.4.2	Contact mechanism.....	43
8.4.3	Clearances and creepage distances (see Annex C) .....	43
8.5	Protection against electric shock .....	46
8.5.1	General .....	46
8.5.2	Requirements relating to plugs, whether incorporated or not in integral items .....	47
8.5.3	Degree of protection of the function box .....	47
8.5.4	Requirements relating to vehicle connectors .....	47
8.6	Dielectric properties .....	47
8.7	Temperature rise.....	48
8.8	Operating characteristics.....	48
8.8.1	General .....	48
8.8.2	Safe connection operating characteristics.....	48
8.8.3	Operating characteristics with a.c. residual currents and residual currents having a d.c. component.....	48
8.8.4	Operating characteristics with smooth d.c. residual current .....	49
8.8.5	Behaviour of the IC-CPD after a residual current operation .....	49
8.8.6	Residual pulsating direct currents which may result from rectifying circuits supplied from two phases .....	49
8.8.7	Residual pulsating direct currents which may result from rectifying circuits supplied from three phases.....	49
8.9	Mechanical and electrical endurance .....	49
8.10	Performance at short-circuit currents .....	50
8.11	Resistance to mechanical shock and impact .....	50
8.12	Resistance to heat .....	50
8.13	Resistance to abnormal heat and to fire.....	50
8.14	Performance of the test function .....	50
8.15	Behaviour in case of loss of the supply voltage .....	51
8.16	Resistance of IC-CPDs against unwanted tripping due to surge currents to earth resulting from impulse voltages.....	51
8.17	Control pilot function controller .....	51
8.18	Reliability.....	51
8.19	Resistance to tracking .....	51

8.20	Electromagnetic compatibility (EMC).....	52
8.21	Behaviour of the IC-CPD at low ambient air temperature.....	52
8.22	Operation with supply failure and hazardous live protective conductor conditions .....	52
8.23	Verification of a standing current in the protective conductor in normal service.....	52
8.24	Behaviour at specific environmental conditions .....	52
8.25	Resistance to vibration and shock .....	52
9	Tests.....	53
9.1	General.....	53
9.1.1	Opening and closing of contacts.....	53
9.1.2	Type tests.....	53
9.1.3	Test sequences.....	54
9.1.4	Routine tests.....	55
9.2	Test conditions.....	55
9.3	Test of indelibility of marking .....	55
9.4	Verification of protection against electric shock.....	56
9.5	Test of dielectric properties .....	56
9.5.1	Resistance to humidity .....	56
9.5.2	Insulation resistance of the main circuit .....	57
9.5.3	Dielectric strength of the main circuit .....	58
9.5.4	Secondary circuit of detection transformers .....	58
9.5.5	Verification of impulse withstand voltages (across clearances and across solid insulation) and of leakage current across open contacts .....	58
9.6	Temperature-rise test.....	61
9.6.1	Test conditions .....	61
9.6.2	Test procedure.....	61
9.6.3	Measurement of the temperature rise of different parts .....	62
9.6.4	Temperature rise of a part.....	62
9.7	Verification of the operating characteristic .....	62
9.7.1	General .....	62
9.7.2	Test circuit.....	62
9.7.3	Residual sinusoidal alternating currents tests .....	63
9.7.4	Verification of the correct operation with residual currents having a d.c. component.....	65
9.7.5	Verification of behaviour in case of composite residual current.....	66
9.7.6	Verification of the correct operation in case of smooth d.c. residual current.....	68
9.7.7	Miswiring and supply failure tests .....	68
9.7.8	Verification of protective conductor contact behaviour.....	72
9.7.9	Verification that the protective conductor is connected to the electric vehicle.....	73
9.7.10	Verification of standing current in the protective conductor connection in normal service .....	73
9.7.11	Verification of the correct operation in case of residual direct currents which may result from rectifying circuits supplied from two phases .....	73
9.7.12	Verification of the correct operation in case of residual direct currents which may result from rectifying circuits supplied from three phases .....	74
9.8	Verification of mechanical and electrical endurance .....	74
9.8.1	Endurance of plug and vehicle connector part.....	74
9.8.2	Endurance of the residual current function of the IC-CPD.....	74

9.9	Verification of the behaviour of the IC-CPD under overcurrent conditions .....	76
9.9.1	List of the overcurrent tests .....	76
9.9.2	Short-circuit tests .....	76
9.9.3	Verification of the making and breaking capacity of the plug of the IC-CPD .....	82
9.10	Verification of resistance to mechanical shock and impact.....	82
9.10.1	General .....	82
9.10.2	Drop test.....	82
9.10.3	Test for screwed glands of IC-CPDs .....	82
9.10.4	Mechanical strength test on IC-CPDs provided with cords .....	83
9.10.5	Verification requirements for IC-CPD according to 4.6.2 and 4.6.3 .....	83
9.11	Test of resistance to heat .....	83
9.11.1	General .....	83
9.11.2	Temperature test in heating cabinet.....	83
9.11.3	Ball pressure test for insulating material necessary to retain in position current-carrying parts.....	84
9.11.4	Ball pressure test for insulating material not necessary to retain in position current-carrying parts .....	84
9.12	Resistance of insulating material to abnormal heat and to fire .....	85
9.13	Verification of the self test.....	85
9.14	Verification of the behaviour of IC-CPDs in case of loss of the supply voltage.....	86
9.14.1	Verification of correct operation at the minimum operating voltage ( $U_x$ ).....	86
9.14.2	Verification of the automatic opening in case of loss of the supply voltage .....	86
9.14.3	Verification of the reclosing function .....	87
9.15	Verification of the limiting values of the non-operating current under overcurrent conditions .....	87
9.16	Verification of resistance against unwanted tripping due to surge currents to earth resulting from impulse voltages.....	87
9.17	Verification of reliability .....	88
9.17.1	Climatic test.....	88
9.17.2	Test at a temperature of 45 °C .....	89
9.18	Resistance to ageing.....	90
9.19	Resistance to tracking .....	91
9.20	Test on pins provided with insulating sleeves.....	91
9.21	Test of mechanical strength of non-solid pins of plugs.....	91
9.22	Verification of the effects of strain on the conductors .....	91
9.23	Checking of the torque exerted by IC-CPDs on fixed socket-outlets.....	91
9.24	Tests of the cord anchorage .....	92
9.25	Flexing test of non-rewirable IC-CPDs .....	92
9.26	Verification of the electromagnetic compatibility (EMC) .....	93
9.27	Tests replacing verifications of creepage distances and clearances.....	94
9.27.1	General .....	94
9.27.2	Abnormal conditions.....	94
9.27.3	Temperature rise resulting from fault conditions.....	94
9.28	Verifications for single electronic components used in IC-CPDs .....	95
9.28.1	General .....	95
9.28.2	Capacitors .....	95
9.28.3	Resistors and inductors.....	96
9.29	Chemical loads .....	98

9.30	Heat test under solar radiation.....	98
9.31	Resistance to ultra-violet (UV) radiation.....	98
9.32	Damp and salt mist test for marine and coastal environments.....	99
9.32.1	Test for internal metallic parts .....	99
9.32.2	Test for external metallic parts only .....	99
9.32.3	Test criteria .....	99
9.33	Hot damp test for tropical environments.....	99
9.34	Vehicle drive-over .....	99
9.34.1	General .....	99
9.34.2	Test at crushing force 5 000 N.....	100
9.34.3	Test at crushing force 11 000 N.....	100
9.34.4	Performance after the tests .....	100
9.35	Low storage temperature test .....	100
9.36	Vibration and shock test.....	101
Annex A (normative) Test sequences and number of samples to be submitted for verification of conformity to this standard.....		141
A.1	Verification of conformity .....	141
A.2	Test sequences.....	141
A.3	Number of samples to be submitted for full test procedure .....	143
A.4	Number of samples to be submitted for simplified test procedures in case of submitting simultaneously a range of IC-CPDs of the same fundamental design.....	146
Annex B (normative) Routine tests .....		148
Annex C (normative) Determination of clearances and creepage distances .....		149
C.1	Overview.....	149
C.2	Orientation and location of a creepage distance.....	149
C.3	Creepage distances where more than one material is used .....	149
C.4	Creepage distances split by a floating conductive part .....	149
C.5	Measurement of creepage distances and clearances.....	149
Annex D (informative) Switched-protective conductor application .....		154
D.1	Explanation of switched-protective conductor (SPE) function and application.....	154
D.2	Examples of incorrect supply wiring.....	155
Annex E (informative) Example of IC-CPD for mode 2 charging .....		158
Annex F (informative) Types of IC-CPD according to construction and assembly .....		159
Annex G (informative) Methods for determination of short-circuit power factor.....		160
G.1	Overview.....	160
G.2	Method I – Determination from d.c. components.....	160
G.3	Method II – Determination with pilot generator .....	160
Bibliography .....		162

Figure 1 – Desired characteristics for maintaining the same level of protection over the frequency range.....	62
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Figure 2 – Test circuit for the verification of operating characteristic (9.7.3), endurance test (9.8.2) and reduced supply voltage (9.14.1) .....	103
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Figure 3 – Test circuit for the verification when plugged in incompatible supply systems (9.7.7.4) .....	106
--	-----

Figure 4 – Verification of correct operation for hazardous live PE (see Table 14 and Table 15).....	109
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Figure 5 – Verification of temperature rise of the protective conductor.....	110
--	-----

Figure 6 – Verification of open neutral for LNSE types, and open line for LLSE types .....	111
Figure 7 – Verification of a standing current in the protective conductor in normal service .....	112
Figure 8 – Test circuit for the verification of the making and breaking capacity and the short-circuit coordination with an SCPD (see 9.9.2) .....	116
Figure 9 – Standard test wire 1,0 mm .....	116
Figure 10 – Test circuit for the verification of the correct operation in the case of residual pulsating direct currents (see 9.7.4) .....	118
Figure 11 – Test circuit for the verification of the correct operation in the case of residual pulsating direct currents superimposed by a smooth direct current (see 9.7.4.3).....	120
Figure 12 – Verification of open protective conductor (see 9.7.7.5) .....	122
Figure 13 – Arrangement for compression test for verification of protection against electric shock .....	123
Figure 14 – Ball-pressure test apparatus .....	123
Figure 15 – Test circuit for IC-CPD according to 4.1.3 to verify the correct operation in case of residual pulsating direct currents which may result from rectifying circuits supplied from two phases.....	124
Figure 16 – Tests circuit for IC-CPD according to 4.1.4 to verify the correct operation in case of residual pulsating direct currents which may result from rectifying circuits supplied from three phases .....	125
Figure 17 – Apparatus for testing the cord retention.....	126
Figure 18 – Apparatus for flexing test.....	127
Figure 19 – Arrangement for mechanical strength test on IC-CPDs provided with cords (9.10.4) .....	128
Figure 20 – Stabilizing period for reliability test (9.17.1.4).....	128
Figure 21 – Reliability test cycle (9.17.1.4) .....	129
Figure 22 – Example for test circuit for verification of ageing of electronic components (9.18) .....	130
Figure 23 – Current ring wave 0,5 $\mu$ s/100 kHz .....	130
Figure 24 – Example of test circuit for the verification of resistance to unwanted tripping.....	131
Figure 25 – Minimum creepage distances and clearances as a function of peak value of voltage (see 9.27.3 a) .....	132
Figure 26 – Minimum creepage distances and clearances as a function of peak value of operating voltage (see 9.27.3 a).....	132
Figure 27 – Test cycle for low temperature test .....	133
Figure 28 – Test circuit for verification of connection of protective conductor to the EV, according to 9.7.9.....	134
Figure 29 – Verification of correct operation in case of smooth d.c. leakage current, according to 9.7.6.....	135
Figure 30 – Example of a test circuit for the verification of correct operation in case of residual sinusoidal alternating currents composed of multi-frequency components .....	136
Figure 31 – Test circuit for endurance test according to 9.8 .....	137
Figure 32 – The use of the IC-CPD .....	138
Figure 33 – Informative wave shape of inrush current for tests according to 9.8.2.....	139
Figure 34 – Test finger.....	140
Figure D.1 – Examples of incorrect supply wirings for LLSE types.....	156
Figure D.2 – Examples of incorrect supply wirings for LNSE types .....	157

Figure E.1 – Example for IC-CPD showing the different parts and functions .....	158
Figure F.1 – Example of IC-CPD including function box, cables, plug and connector according to 4.2.2 .....	159
Figure F.2 – Example of plug integrated function box according to 4.2.3 .....	159
Figure F.3 – Example of modular IC-CPD according to 4.2.4a).....	159
Figure F.4 – Example of modular IC-CPD according to 4.2.4b).....	159
Table 1 – Preferred values of rated current and corresponding preferred values of rated voltages.....	31
Table 2 – Limit values of break time for a.c. residual currents at rated frequency .....	32
Table 3 – Limit values of break time for smooth d.c. residual currents .....	33
Table 4 – Limit values of break time for residual pulsating direct currents which may result from rectifying circuits supplied from two or three phases.....	33
Table 5 – Standard conditions for operation in service .....	36
Table 6 – Minimum cross-sectional area of flexible cable or cord .....	42
Table 7 – Minimum clearances and creepage distances (rated voltage 230 V, 230/400 V).....	45
Table 8 – Temperature-rise values .....	48
Table 9 – List of type tests .....	54
Table 10 – Test voltage for verification of impulse withstand voltage.....	60
Table 11 – Tripping current ranges for IC-CPDs in case of pulsating d.c. current.....	66
Table 12 – Different frequency component values of test currents and starting current values ( $I_{\Delta}$ ) for verifying the operating in case of steady increased residual current.....	67
Table 13 – Operating current ranges for composite residual current.....	67
Table 14 – Supply failure and hazardous live protective conductor (PE) connections for test with reference to correct supply connections for LNSE / LNE and LLSE / LLE types.....	69
Table 15 – Supply failure and hazardous live protective conductor (PE) connections for test with reference to correct supply connections for LLLNSE / LLLNE types.....	70
Table 16 – Tests to verify the behaviour of IC-CPDs under overcurrent conditions .....	76
Table 17 – Minimum values of $I^2t$ and $I_p$ .....	77
Table 18 – List of tests of resistance to mechanical shock and impact.....	82
Table 19 – Torque applied to the spanner for the test .....	83
Table 20 – Tests already covered for EMC by this standard .....	94
Table 21 – Maximum permissible temperatures under abnormal conditions .....	97
Table 22 – PSD value depending on frequency for vibration testing .....	101
Table A.1 – Test sequences.....	142
Table A.2 – Number of samples to be submitted for full test procedure.....	145
Table A.3 – Reduction of number of samples.....	147

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**IN-CABLE CONTROL AND PROTECTION DEVICE FOR MODE 2  
CHARGING OF ELECTRIC ROAD VEHICLES (IC-CPD)**

## FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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**This Consolidated version of IEC 62752 bears the edition number 1.1. It consists of the first edition (2016-03) [documents 23E/919/FDIS and 23E/938/RVD] and its amendment 1 (2018-09) [documents 23E/1055/FDIS and 23E/1072/RVD]. The technical content is identical to the base edition and its amendment.**

**This Final version does not show where the technical content is modified by amendment 1. A separate Redline version with all changes highlighted is available in this publication.**

International Standard IEC 62752 has been prepared by subcommittee 23E: Circuit-breakers and similar equipment for household use, of IEC technical committee 23: Electrical accessories, in co-operation with ISO TC 22/SC 37 Electrically propelled vehicles.

It is published as a double logo standard.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

In this standard, the following print types are used:

- Requirements proper, in roman type;
- *Test specifications, in italic type;*
- NOTES, in smaller roman type.

The committee has decided that the contents of the base publication and its amendment will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

## INTRODUCTION

The essential purpose of this standard is safe and reliable access of electric vehicles to a supply system. The definition for mode 2 charging of electric vehicle is described in IEC 61851-1.

For all charging modes, protection against electric shock in case of failure of basic protection and/or fault protection is provided, at least by a type A RCD (see IEC 60364-7-722 and IEC 61851-1).

For mode 2 charging including the situation where it cannot be guaranteed that the installation is equipped with RCDs, for example charging the electric vehicle at an unknown installation, a dedicated protection is used for the connected electric vehicle. The intention of this standard is to describe the relevant requirements for an in-cable control and protection device (IC-CPD) to be used for mode 2 charging.

## IN-CABLE CONTROL AND PROTECTION DEVICE FOR MODE 2 CHARGING OF ELECTRIC ROAD VEHICLES (IC-CPD)

### 1 Scope

This International Standard applies to in-cable control and protection devices (IC-CPDs) for mode 2 charging of electric road vehicles, hereafter referred to as IC-CPD including control and safety functions.

This standard applies to portable devices performing simultaneously the functions of detection of the residual current, of comparison of the value of this current with the residual operating value and of opening of the protected circuit when the residual current exceeds this value.

The IC-CPD according to this standard

- has a control pilot function controller in accordance with IEC 61851-1:2017, Annex A;
- checks supply conditions and prevents charging in case of supply faults under specified conditions;
- may have a switched protective conductor.

These IC-CPDs are intended for use in TN-, and TT-systems.

The use of IC-CPDs in IT systems may be limited.

Residual currents with frequencies different from the rated frequency, d.c. residual currents and specific environmental situation are considered.

This standard is applicable to IC-CPDs performing the safety and control functions as required in IEC 61851-1 for mode 2 charging of electric vehicles.

This standard is applicable to IC-CPDs for single-phase circuits not exceeding 250 V or multi-phase circuits not exceeding 480 V, their maximum rated current being 32 A.

NOTE 1 In Denmark, the following additional requirement applies: for IC-CPDs supplied with a plug for household and similar use the maximum charging current is 8 A, if the charging cycle can exceed 2 h.

NOTE 2 In Finland, the following additional requirement applies: for IC-CPDs supplied with a plug for household and similar use the maximum charging current is 8 A for long lasting charging.

This standard is applicable to IC-CPDs to be used in a.c. circuits only, with preferred values of rated frequency 50 Hz, 60 Hz or 50/60 Hz. IC-CPDs according to this standard are not intended to be used to supply electric energy towards the connected grid.

This standard is applicable to IC-CPDs having a rated residual operating current not exceeding 30 mA and are intended to provide additional protection for the circuit downstream of the IC-CPD in situations where it cannot be guaranteed that the installation is equipped with an RCD with  $I_{\Delta n} \leq 30$  mA.

The IC-CPD consists of:

- a plug for connection to a socket-outlet in the fixed installation;
- one or more subassemblies containing the control and protection features;
- a cable between the plug and the subassemblies (optional);