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Draft Indian Standard

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

(First Revision)

ICS 29.120.50

Low Voltage Switchgear and Controlgear
Sectional Committee, ETD 07

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NATIONAL FOREWORD

This draft Indian Standard (First Revision) which is identical with IEC 62752:2024 “In-cable control and protection device (IC-CPD) for mode 2 charging of electric road vehicles” issued by the International Electrotechnical Commission (IEC) will be adopted by the Bureau of Indian Standards on the recommendation of the Low Voltage Switchgear and Controlgear Sectional Committee and approval of the Electrotechnical Division Council.

This standard was first published in 2019 and was identical with IEC 62752: 2016. This revision has now been undertaken to align this standard with the latest international practices. This edition includes the following significant technical changes with respect to the previous edition:

- Subclause 8.3.1 revised to add requirements for a mandatory control device that detects the temperature of the current carrying parts in the household plug;
- Test requirements added in a new Subclause 9.36 for the temperature control device;
- General improvement of test and requirements.

The text of IEC Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain terminologies and conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

- a) Wherever the words ‘International Standard’ appear referring to this standard, they should be read as ‘Indian Standard’.
- b) Comma (,) has been used as a decimal marker, while in Indian Standards the current practice is to use a point (.) as the decimal marker.

In this adopted standard, reference appears to International Standards for which Indian Standards also

exists. The corresponding Indian Standards, which are to be substituted, are listed below along with their degree of equivalence for the editions indicated:

<i>International Standard</i>	<i>Corresponding Indian Standard</i>	<i>Degree of Equivalence</i>
IEC 60068-2-1, Environmental testing – Part 2-1: Tests – Test A: Cold	IS/IEC 60068-2-1: 2007 Environmental Testing Part 2 Tests Section 1 Test A: Cold	Identical with IEC 60068-2-1:2007
IEC 60068-2-5:2018, Environmental testing – Part 2-5: Tests – Test S: Simulated solar radiation at ground level and guidance for solar radiation testing and weathering	IS/IEC 60068-2-5 : 2018 Environmental Testing Part 2 Tests Section 5 Test S: Simulated solar radiation at ground level and guidance for solar radiation testing and weathering	Identical with IEC 60068-2-5:2018
IEC 60068-2-27, Environmental testing – Part 2-27: Tests – Test Ea and guidance: Shock	IS 9000 (Part 7/Sec 1) : 2018/ IEC 60068-2-27 : 2008 Basic environmental testing procedures for electronic and electrical items: Part 7 impact test: Sec 1 shock (Test Ea) (<i>Second Revision</i>)	Identical with IEC 60068-2-27: 2008
IEC 60068-2-30, Environmental testing – Part 2-30: Tests – Test Db: Damp heat, cyclic (12 h + 12 h cycle)	IS/IEC 60068-2-30 : 2005 Environmental testing Part 2 Tests Section 30 Test Db: Damp heat cyclic 12 h 12 h cycle	Identical with IEC 60068-2-30:2005
IEC 60068-2-31, Environmental testing – Part 2-31: Tests – Test Ec: Rough handling shocks, primarily for equipment-type specimens	IS 9000 (Part 7/Sec 3) : 2019/ IEC 60068-2-31 : 2008 Environmental testing: Part 7 tests :: Sec 3 test Ec: rough handling shocks, primarily for equipment - Types specimens (<i>First Revision</i>)	Identical with IEC 60068-2-31 : 2008
IEC 60068-3-4, Environmental testing – Part 3-4: Supporting documentation and guidance – Damp heat tests	IS/IEC 60068-3-4: 2023 Environmental testing Part 3 Supporting documentation and guidance Section - 4: Damp heat tests (<i>First Revision</i>)	Identical with IEC 60068-3-4:2023
IEC 60112, Method for the determination of the proof and the comparative tracking indices of solid insulating materials	IS 2824: 2007 / IEC 60112: 2003 Method for the determination of the proof and the comparative tracking indices of solid insulating materials (<i>Second Revision</i>)	Identical with IEC 60112: 2003
IEC 60309-1:2021, Plugs, fixed or portable socket-outlets and appliance inlets for industrial purposes – Part 1: General requirements	IS/IEC 60309-1: 2021 Plugs fixed or portable socket-outlets and appliance inlets for industrial purposes Part 1: General requirements (<i>Second Revision</i>)	Identical with IEC 60309-1:2021
IEC 60309-2, Plugs, fixed or portable socket-outlets and appliance inlets for industrial purposes – Part 2: Dimensional compatibility requirements for pin and contact-tube accessories	IS/IEC 60309-2: 2021 Plugs fixed or portable socket-outlets and appliance inlets for industrial purposes Part 2: Dimensional compatibility requirements for pin and contact-tube accessories (<i>Second Revision</i>)	Identical with IEC 60309-2: 2021
IEC 60529:1989, Degrees of protection provided by enclosures (IP Code) IEC 60529:1989/AMD1:1999 IEC 60529:1989/AMD2:2013	IS/IEC 60529: 2001 Degrees of protection provided by enclosures (IP Code)	Identical with IEC IEC 60529: 2001
IEC 60664-1:2020, Insulation coordination for equipment within low-voltage supply systems – Part 1: Principles, requirements and tests	IS 15382 (Part 1): 2022 / IEC 60664-1:2020 Insulation Coordination for Equipment Within Low-Voltage Systems Part 1 Principles Requirements and Tests	Identical with IEC 60664-1:2020

IEC 60664-3, Insulation coordination for equipment within low-voltage systems – Part 3: Use of coating, potting or moulding for protection against pollution	IS 15382 (Part 3): 2019 / IEC 60664-3: 2006 Insulation coordination for equipment within low-voltage systems: Part 3 use of coating potting or moulding for protection against pollution	Identical with IEC 60664-3: 2006
IEC 60695-2-10, Fire hazard testing – Part 2-10: Glowing/hot-wire based test methods – Glow-wire apparatus and common test procedure	IS/IEC 60695-2-10: 2021 Fire hazard testing Part 2: Glowinghot - wire based test methods Section 10: Glow-wire apparatus and common test procedure	Identical with IEC 60695-2-10:2021
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)	IS/IEC 60695-2-11: 2021 Fire Hazard Testing Part 2: Glowinghot-wire based test methods Section 11: Glow-wire flammability test method for end products GWEPT	Identical with IEC 60695-2-11:2021
IEC 61000-4-2, Electromagnetic compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test	IS 14700 (Part 4/Sec 2): 2018 / IEC 61000-4-2: 2008 Electromagnetic compatibility (EMC): Part 4 testing and measurement techniques: Sec 2 electrostatic discharge immunity test (<i>Second Revision</i>)	Identical with IEC 61000-4-2: 2008
IEC 61000-4-3, Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test	IS 14700 (Part 4/Sec 3): 2023 / IEC 61000-4-3: 2020 Electromagnetic compatibility EMC Part 4 Testing and Measurement Techniques Section 3 Radiated radio-frequency electromagnetic field immunity test (<i>Second Revision</i>)	Identical with IEC 61000-4-3: 2020
IEC 61000-4-4, Electromagnetic compatibility (EMC) – Part 4-4: Testing and measurement techniques – Electrical fast transient/burst immunity test	IS 14700 (Part 4/Sec 4): 2018 / IEC 61000-4-4: 2012 Electromagnetic compatibility (EMC): Part 4 testing and measurement techniques: Sec 4 electrical fast transient / burst immunity test (<i>Second Revision</i>)	Identical with IEC 61000-4-4 : 2012
IEC 61000-4-5:2014, Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test. IEC 61000-4-5:2014/AMD1:2017	IS 14700 (Part 4/Sec 5): 2019 / IEC 61000-4-5: 2017 Electromagnetic compatibility (EMC): Part 4 testing and measurement techniques: Sec 5 surge immunity test (<i>First Revision</i>)	Identical with IEC 61000-4-5: 2017
IEC 61000-4-6, Electromagnetic compatibility (EMC) – Part 4-6: Testing and measurement techniques – Immunity to conducted disturbances, induced by radio-frequency fields	IS 14700 (Part 4/Sec 6): 2016 / IEC 61000-4-6: 2013 Electromagnetic compatibility (EMC): Part 4 testing and measurement techniques: Sec 6 immunity to conducted disturbances, induced by radio - Frequency fields	Identical with IEC 61000-4-6: 2013
IEC 61439-7:2022, Low-voltage switchgear and controlgear assemblies – Part 7: Assemblies for specific applications such as marinas, camping sites, market squares, electric vehicle charging stations	IS/IEC/TS 61439-7: 2023 Low-voltage switchgear and controlgear assemblies Part 7: Assemblies for specific applications such as marinas camping sites market squares electric vehicle charging stations (<i>First Revision</i>)	Identical with IEC TS 61439-7: 2023
IEC 61543:2022, Residual current-operated protective devices (RCDs) for household and similar use – Electromagnetic compatibility	IS 14614: 2023 / IEC 61543: 2022 Residual current-operated protective devices RCDs for household and similar use Electromagnetic compatibility (<i>First Revision</i>)	Identical with IEC
IEC 62262, Degrees of protection provided	IS 17050: 2023 / IEC 62262: 2021 (Ed	Identical with

by enclosures for electrical equipment against external mechanical impacts (IK code)	1.1) Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts IK Code	IEC 62262: 2021
IEC 62368-1:2023, Audio/video, information and communication technology equipment – Part 1: Safety requirements	IS/IEC 62368-1: 2018 Audio / Video, Information and Communication Technology Equipment Part 1 Safety Requirements (<i>First Revision</i>)	Identical with IEC 62368-1: 2018
CISPR 14-1, Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus – Part 1: Emission	IS 6873 (Part 2/Sec 1) : 2024 / CISPR 14-1: 2020 Limits and Methods of Measurement of Radio Disturbance Characteristics Part 2 Electromagnetic Compatibility (EMC) — Requirements for Household Appliances, Electric Tools and Similar Apparatus Section 1 Emission (<i>Fourth Revision</i>)	Identical with CISPR 14-1: 2020
ISO 178, Plastics – Determination of flexural properties	IS 13360 (Part 5/Sec 7) : 2022/ ISO 178: 2019 Plastics Method of Testing Part 5 Mechanical Properties Section 7 Determination of Flexural Properties	Identical with ISO 178: 2019
ISO 4892-2:2013, Plastics – Methods of exposure to laboratory light sources – Part 2: Xenonarc Lamps	IS 17863 (Part 2): 2022 / ISO 4892-2:2013 Plastics Methods of Exposure to Laboratory Light Sources: Part 2 Xenon-Arc Lamps	ISO 4892-2:2013

The technical committee has reviewed the provisions of the following international standards referred in this adopted standard and decided that they are acceptable for use in conjunction with this standard.

<i>International Standard</i>	<i>Title</i>
IEC 60068-2-11	Environmental testing – Part 2-11: Tests – Test Ka: Salt mist
IEC 60227 (all parts)	Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V
IEC 60245 (all parts)	Rubber insulated cables – Rated voltages up to and including 450/750 V
IEC 60364-4-44:2007	Low-voltage electrical installations – Part 4-44: Protection for safety – Protection against voltage disturbances and electromagnetic disturbances
IEC 60384-14:2023	Fixed capacitors for use in electronic equipment – Part 14: Sectional specification – Fixed capacitors for electromagnetic interference suppression and connection to the supply mains
IEC 60417	Graphical symbols for use on equipment (available at: https://www.graphicalsymbols.info/equipment)
IEC 60884-1:2022	Plugs and socket-outlets for household and similar purposes – Part 1: General requirements
IEC 60068-2-64	Environmental testing – Part 2-64: Tests – Test Fh: Vibration, broadband random and guidance
IEC 61540	Portable residual current devices (PRCDs) without integral overcurrent protection for household and similar use
IEC 62893-3	Charging cables for electric vehicles for rated voltages up to and including 0,6/1 kV – Part 3: Cables for AC charging according to modes 1, 2 and 3 of IEC 61851-1 of rated voltages up to and including 450/750 V

ISO 2409	Paints and varnishes – Cross-cut test
ISO 4628-3	Paints and varnishes – Evaluation of degradation of coatings – Designation of quantity and size of defects, and of intensity of uniform changes in appearance – Part 3: Assessment of degree of rusting
ISO 16750-5:2010	Road vehicles – Environmental conditions and testing for electrical and electronic equipment – Part 5: Chemical loads
ISO 17409:2020	Electrically propelled road vehicles – Conductive power transfer – Safety requirements
IEC 61851-1:2017	Electric vehicle conductive charging system – Part 1: General requirements
IEC 62196 (all parts)	Plugs, socket-outlets, vehicle connectors and vehicle inlets – Conductive charging of electric vehicles
IEC 62196-1:2022	Plugs, socket-outlets, vehicle connectors and vehicle inlets – Conductive charging of electric vehicles – Part 1: General requirements
ISO 179 (all parts)	Plastics – Determination of Charpy impact properties

Only the English language text has been retained while adopting it in this Indian Standard, and as such, the page numbers given here are not the same as in the IEC Publication.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated expressing the result of a test or analysis shall be rounded off in accordance with IS 2: 2022 ‘Rules for rounding of numerical values (*second revision*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Note: The technical content of the document is not available on website. For details, please refer the corresponding IEC 62752: 2024 or kindly contact:

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