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BUREAU OF INDIAN STANDARDS
DRAFT FOR COMMENTS ONLY

Draft Indian Standard

Low- voltage switchgear and controlgear – Part 5-1: Control circuit devices and switching elements – Electromechanical control circuit devices

(*Third Revision*)

ICS 29.120.40, 29.130.20

Low Voltage Switchgear and Controlgear Sectional Committee, ETD 07

Last date of receipt of comments**:** 06-September-2024

NATIONAL FOREWORD

This draft Indian Standard (Third Revision) which is identical with IEC 60947-5-1:2024 "Low- voltage switchgear and controlgear – Part 5-1: Control circuit devices and switching elements – Electromechanical control circuit devices" issued by the International Electrotechnical Commission (IEC) will be adoptedby 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 2008 and was identical with IEC 60947-5-1: 2003. The first revision was brought in 2018 identical to IEC 6047-5-1: 2009. The second revision was brought in 2023 identical to IEC 60947-5-1: 2016. This revision hasnow 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:

- update of the scope structure and exclusions;
- requirements for control circuits;
- update of the normal service conditions (e.g. shock and vibration);
- update of the constructional requirements and the corresponding tests considering safety aspects (e.g. artificial optical radiation, security aspects, limited energy source, stored charge energy circuit);
- update of the EMC requirements according to the generic documents;
- new requirements for reed contact magnetic switches in Annex D;
- requirements for class II circuit devices achieved by double or reinforced insulation in Annex F;
- update of pull-out tests in Annex G;
- information requirements for audible signalling device in Annex J;
- insertion of new Annex O.

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:

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
IEC 60068-2-6:2007, Environmental testing – Part 2-6: Tests – Test Fc: Vibration (sinusoidal)	IS/IEC 60068-2-6 : 2007 Environmental Testing Part 2 Tests Section 6 Test Fc: Vibration sinusoidal	Identical with IEC 60068-2-6:2007
IEC 60068-2-14:2023, Environmental testing – Part 2-14: Tests – Test N: Change of Temperature	IS/IEC 60068-2-14 : 2009 Environmental testing Part 2: Tests Section 14: Test N: Change of temperature	Identical with IEC 60068-2-14:2009
IEC 60068-2-27:2008, Environmental testing – Part 2-27: Tests – Test Ea and guidance: Shock	IS 9000 (Part 7/Sec 1) : 2018 Basic environmental testing procedures for electronic and electrical items: Part 7 impact test: Sec 1 shock (Test Ea) (*Second Revision*)	Identical with IEC 60068-2-27 : 2008
IEC 60068-2-30:2005, 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 60068-2-78:2012, Environmental testing – Part 2-78: Tests – Test Cab: Damp heat, steady State	IS 9000 (Part 4): 2020 / IEC 60068-2-78: 2012 Environmental Testing Part 4 Tests - Test Cab: Damp Heat, Steady State (*Second Revision*)	Identical with IEC 60068-2-78: 2012
IEC 60695-2-10:2021, 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 60695-2-11:2021, 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 60695-2-12:2021, Fire hazard testing – Part 2-12: Glowing/hot-wire based test methods – Glow-wire flammability index (GWFI) test method for materials	IS/IEC 60695-2-12: 2021 Fire Hazard Testing Part 2: Glowinghot-wire based test methods Section 12: Glow-wire flammability index GWFI Test method for materials	Identical with IEC 60695-2-12:2021
IEC 60730-1:2022, Automatic electrical controls – Part 1: General requirements	IS/IEC 60730-1: 1999 Automatic electrical controls for household and similar use : part 1 General Requirements	Identical with IEC 60730-1: 1999
IEC 60947-1:2020, Low-voltage switchgear and controlgear – Part 1: General rules	IS/IEC 60947-1: 2020 Low-Voltage switchgear and controlgear Part 1 General Rules	Identical with IEC 60947-1:2020

IEC 60947-4-1:2018, Low-voltage switchgear and controlgear – Part 4-1: Contactors and motorstarters – Electromechanical contactors and motor-starters	IS/IEC 60947-4-1: 2012 Low - Voltage switchgear and controlgear: Part 4 contactors and motor - Starters: Sec 1 electromechanical contactors and motor - Starters (*First Revision*)	Identical with IEC 60947-4-1 : 2012
IEC 60947-5-2:2019, Low-voltage switchgear and controlgear – Part 5-2: Control circuit devices and switching elements – Proximity switches	IS/IEC 60947-5-2 : 2019 Low-Voltage Switchgear and Controlgear Part 5 Control Circuit Devices and Switching Elements Section 2 Proximity Switches (First Revision)	Identical with IEC 60947-5-2 : 2019
IEC 60947-5-5:1997, Low-voltage switchgear and controlgear – Part 5-5: Control circuit devices and switching elements – Electrical emergency stop device with mechanical latching function IEC 60947-5-5:1997/AMD1:2005 IEC 60947-5-5:1997/AMD2:2016	IS/IEC 60947-5-5: 2016 Low - Voltage switchgear and controlgear: Part 5 control circuit devices and switching elements: Sec 5 electrical emergency stop devices with mechanical latching function	Identical with IEC 60947-5-5: 2016
IEC 61000-4-2:2008, 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 (*Second Revision*)	Identical with IEC 61000-4-2: 2008
IEC 61000-4-3:2020, 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 (*Second Revision*)	Identical with IEC 61000-4-3: 2020
IEC 61000-4-4:2012, 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 (*Second Revision*)	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 (*First Revision*)	Identical with IEC 61000-4-5 : 2017
IEC 61000-4-6:2023, 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 61000-4-8:2009, Electromagnetic compatibility (EMC) – Part 4-8: Testing and measurement techniques – Power frequency magnetic field immunity test	IS 14700 (Part 4/Sec 8): 2018 / IEC 61000-4-8 : 2009 Electromagnetic compatibility (EMC): Part 4 testing and measurement techniques: Sec 8 power frequency magnetic field immunity test (*Second Revision*)	Identical with IEC 61000-4-8 : 2009
IEC 61140:2016, Protection against electric shock – Common aspects for installation and Equipment	IS 9409 : 2023 / IEC 61140 : 2016 Protection Against Electric Shock - Common Aspects for Installation and Equipment (*First Revision*)	Identical with IEC 61140 : 2016

IEC 62262:2002, Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)	IS 17050 : 2023 / IEC 62262: 2021 (Ed 1.1) Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts IK Code	Identical with IEC 62262: 2021 (Ed 1.1)
IEC 62471:2006, Photobiological safety of lamps and lamp systems	IS 16108 : 2012 / IEC 62471 :2006 Photobiological safety of lamps and lamp systems	Identical with IEC 62471 :2006
CISPR 32:2015, Electromagnetic compatibility of multimedia equipment – Emission requirements CISPR 32:2015/AMD1:2019	IS/CISPR 32: 2015 Electromagnetic Compatibility of Multimedia Equipment Emission Requirements	Identical with CISPR 32 : 2015
ISO 2859-1:1999, Sampling procedures for inspection by attributes – Part 1: Sampling schemes indexed by acceptance quality limit AQL) for lot-by-lot inspection	IS 2500 (Part 1): 2000 / ISO 2859-1:1999 Sampling procedures for inspection by attributes: Part 1 sampling schemes indexed by acceptance quality limit (AQL) for lot - By - Lot inspection (*Third Revision*)	Identical with ISO 2859-1:1999
ISO 14159:2002, Safety of machinery – Hygiene requirements for the design of machinery	IS 16808: 2018 / ISO 14159 : 2002 Safety of machinery - Hygiene requirements for the design of machinery	Identical with ISO 14159 : 2002

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.

International Standard	*Title*
IEC 60417	Graphical symbols for use on equipment, available at http://www.graphicalsymbols.info/equipment
IEC 60999-1:1999	Connecting devices – Electrical copper conductors – Safety requirements for screw-type and screwless -type clamping units – Part 1: General requirements and particular requirements for clamping units for conductors from 0,2 mm2 up to 35 mm2 (included)
IEC 61131-9:2022	Programmable controllers – Part 9: Single-drop digital communication interface for small sensors and actuators (SDCI)
IEC 61000-4-11: 2020	Electromagnetic compatibility (EMC) – Part 4-11: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations immunity tests for equipment with input current up to 16 A per phase
CISPR 11:2015 CISPR 11:2015/AMD1:2016 CISPR 11:2015/AMD2:2019	Industrial, scientific and medical equipment – Radio-frequency disturbance characteristics – Limits and methods of measurement

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 60947-5-1: 2024 or kindly contact:

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