IEC 60947-6-2

Edition 3.0 2020-12

INTERNATIONAL STANDARD

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Low-voltage switchgear and controlgear –
Part 6-2: Multiple function equipment – Control and protective switching devices (or equipment) (CPS)

Appareillage à basse tension –
Partie 6-2: Matériels à fonctions multiples – Appareils (ou matériel) de connexion de commande de protection (ACP)



IEC 60947-6-2:2020-12(en-fr)

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LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

Part 6-2: Multiple function equipment – Control and protective switching devices (or equipment) (CPS)

FOREWORD

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International Standard IEC 60947-6-2 has been prepared by subcommittee 121A: Low-voltage switchgear and controlgear, of IEC technical committee 121: Switchgear and controlgear and their assemblies for low-voltage.

This third edition cancels and replaces the second edition published in 2002 and its Amendment 1:2007. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- editorial changes according to ISO/IEC directives Part 2,
- alignments with IEC 60947-1:2020:
  - markings ("s", "sol", "r" or "f");
  - constructional requirements including material requirements;
  - requirements for screwless terminals;

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  - measurement method of the pole impedance;
  - EMC requirement and testing;
  - procedure to determine data for electromechanical CPS's used in functional safety applications;
- harmonisation with IEC 60947-2:2016:
  - operation tests of under-voltage relays and shunt releases;
  - CPS for IT systems (Annex G);
  - coordination with other short-circuit protective devices;
- alignments with IEC 60947-4-1:2018:
  - test at the rated conditional short-circuit current I_q of protected switching devices;
  - short-circuit tests harmonisation with North America;
  - reliability data for functional safety applications (new Annex K);
  - safety aspects related to electronic circuits and protective impedance (new Annex N);
  - introduction of provisions covering the impact of higher locked rotor current to achieve high efficiency class;
  - mention of dedicated wiring accessories;
  - definitions and measurement method of the power consumption of the control circuit during holding and pick-up operations;
  - load monitoring indicators (new Annex M).

The text of this International Standard is based on the following documents:

FDIS	Report on voting
121A/384/FDIS	121A/392/RVD

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

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

A list of all the parts in the IEC 60947 series, under the general title *Low-voltage switchgear and controlgear*, can be found on the IEC website.

This document shall be read in conjunction with IEC 60947-1, *Low voltage switchgear and controlgear – Part 1: General rules*.

The provisions of the general rules are applicable to this part of IEC 60947-6, where specifically called for. General rules clauses and subclauses thus applicable as well as tables, figures and annexes are identified by reference to IEC 60947-1, for example, 1.2.3, Table 4, or Annex A of IEC 60947-1:2020.

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LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

Part 6-2: Multiple function equipment – Control and protective switching devices (or equipment) (CPS)

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1 Scope

This document applies to control and protective switching devices (or equipment) (CPS), the main contacts of which are intended to be connected to circuits of rated voltage not exceeding 1 000 V AC or 1 500 V DC.

It covers control and protective switching device (CPS):

– which provides protective and control functions for circuits and motors;
– where its control function is operated exclusively otherwise than by hand;
– which provides continuity of service after over-current conditions; and
– which can have additional functions, such as isolation or communication.

This document does not apply to:

– auxiliary contacts, covered by IEC 60947-5-1;
– CPS used downstream to frequency drive[1];

NOTE Additional requirements for CPS used downstream to frequency drive are under consideration for the next maintenance cycle.

– the use of the product with additional measure within explosive atmospheres, covered by IEC 60079 (all parts);
– embedded software design rules, covered by IEC TR 63201;
– cyber security aspects, covered by IEC TS 63208.

The object of this document is to state:

– the characteristics of CPS's;
– the conditions with which CPS's are complying with reference to their operation and behaviour, their dielectric properties, the degree of protection provided by their enclosure where applicable, its construction including safety measures against electric shock, fire hazard and mechanical hazard;
– the tests intended to verify that these conditions have been met, and the methods to be adopted for these tests;
– the information to be marked on or given with the CPS's.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

[1] For this subject, the manufacturer is responsible to take additional safety measures.

IEC 60034-1:2017, *Rotating electrical machines – Part 1: Rating and performance*

IEC 60085:2007, *Electrical insulation – Thermal evaluation and designation*

IEC 60417, *Graphical symbols for use on equipment* (available at http://www.graphical-symbols.info/equipment)

IEC 60617, *Graphical symbols for diagrams* (available at http://std.iec.ch/iec60617)

IEC 60715:2017, *Dimensions of low-voltage switchgear and controlgear – Standardized mounting on rails for mechanical support of switchgear, controlgear and accessories*

IEC 60730-1, *Automatic electrical controls – Part 1: General requirements*

IEC 60947-1:2020, *Low-voltage switchgear and controlgear – Part 1: General rules*

IEC 60947-2:2016, *Low-voltage switchgear and controlgear – Part 2: Circuit-breakers*
IEC 60947-2:2016/AMD1:2019

IEC 60947-5-1:2016, *Low-voltage switchgear and controlgear – Part 5-1: Control circuit devices and switching elements – Electromechanical control circuit devices*

IEC 61000-6-2, *Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity standard for industrial environments*

IEC 61051-2, *Varistors for use in electronic equipment – Part 2: Sectional specification for surge suppression varistors*

CISPR 11:2015, *Industrial, scientific and medical equipment – Radio-frequency disturbance characteristics – Limits and methods of measurement*
CISPR 11:2015/AMD1:2016
CISPR 11:2015/AMD2:2019

CISPR 32, *Electromagnetic compatibility of multimedia equipment – Emission requirements*

ISO 3864-2, *Graphical symbols – Safety colours and safety signs – Part 2: Design principles for product safety labels*

3 Terms and definitions

3.1 General

For the purposes of this document, the terms and definitions of Clause 3 of IEC 60947-1:2020, as well as the following terms, definitions, symbol and abbreviations apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
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