

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Low-voltage switchgear and controlgear –
Part 4-1: Contactors and motor-starters – Electromechanical contactors and
motor-starters**

**Appareillage à basse tension –
Partie 4-1: Contacteurs et démarreurs de moteurs – Contacteurs et démarreurs
électromécaniques**



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR –**Part 4-1: Contactors and motor-starters –
Electromechanical contactors and motor-starters**

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This fifth edition cancels and replaces the fourth edition published in 2018. This edition constitutes a technical revision.

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

- a) objective in the scope;
- b) instantaneous only motor protective switching device IMPSD (3.5.33);
- c) kinds of equipment (5.2.1);

- d) methods of overload protection of motors (5.2.6);
- e) adoption of the AC-7d from IEC 61095:2023 (in 5.4.2);
- f) separately mounted overload relay of a starter (in 5.7.3 b));
- g) starter and contactor suitable for use downstream to basic drive module (6.1.2 w));
- h) reference to IEC TS 63058 for environmental aspects (in 6.4);
- i) wiring subject to movement (in 8.1.3);
- j) use of voltage transient limiting device (8.1.18);
- k) accessible parts subject to temperature limits (in 8.2.2.3);
- l) reference to Annex X of IEC 60947-1:2020 for the co-ordination of MPSD with SCPD (8.2.5.4);
- m) reference to IEC TR 63216 with different EMC environments (8.3.1);
- n) reference to IEC TR 63201 for the embedded software design (8.4);
- o) reference to IEC TS 63208 for cybersecurity aspects (8.5);
- p) update and completion of the measurement method of the power consumption of the electromagnet (9.3.3.2.1.2);
- q) update of Annex C including rational about AC-3e;
- r) determination of the critical load current for photovoltaic applications (M.8.7).

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This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

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This document shall be read in conjunction with IEC 60947-1:2020, *Low voltage switchgear and controlgear – Part 1: General rules*. The provisions of the general rules are applicable to this document, where specifically called for.

The provisions of the general rules dealt with IEC 60947-1 are applicable to this part of IEC 60947 series where specifically called for. Clauses and subclauses, tables, figures and annexes of the general rules thus applicable are identified by reference to IEC 60947-1:2020. For example, 5.3.4.1 of IEC 60947-1:2020, Table 4 of IEC 60947-1:2020, or Annex A of IEC 60947-1:2020.

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

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LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

Part 4-1: Contactors and motor-starters – Electromechanical contactors and motor-starters

1 Scope

This part of IEC 60947 is applicable to the following equipment:

- electromechanical contactors and starters including motor protective switching devices (MPSD and IMPSD);
- actuators of contactor relays;
- contacts dedicated exclusively to the coil circuit of the contactor or the contactor relay;
- dedicated accessories (e.g. dedicated wiring, dedicated latch accessory);

intended to be connected to distribution circuits, motors circuits and other load circuits, the rated voltage of which does not exceed 1 000 V AC or 1 500 V DC.

This document does not apply to:

- starters for DC motors;
- auxiliary contacts of contactors and contacts of contactor relays. These are covered by IEC 60947-5-1;
- the short-circuit protective device integrated within starters, other than MPSDs. This is covered by IEC 60947-2 and IEC 60947-3;
- motor overload protection function performed by control units for built-in thermal protection (PTC). They are covered by IEC 60947-8;
- the use of the equipment with additional measures within explosive atmospheres. These are given in IEC 60079 series;

The objective of this document is to state:

- the characteristics and composition of the equipment (Clause 5);
- the conditions applicable to the equipment with reference to:
 - its operation (5.2.5) and protection functions (5.2.6, 5.7, 5.8),
 - its intended environments (6.5, 8.3.1) and applications (5.4, Annex C, Annex D, Annex G, Annex H, Annex I, Annex M, Annex O) including safety applications (Annex F, Annex K, Annex L),
 - its construction and performance (Clause 8) including requirements to reduce risks of electric shock, thermal hazard, energy hazard, fire hazard and mechanical hazard, reasonably foreseeable misuse, electromagnetic compatibility (EMC) issues, software errors and security issues;
- the tests intended for confirming that these conditions have been met, and the methods to be adopted for these tests (Clause 9);
- the information to be included with the equipment or in the product documentation (Clause 6).