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INTERNATIONAL STANDARD

Low-voltage switchgear and controlgear -
Part 5-5: Control circuit devices and switching elements - Electrical emergency stop device with mechanical latching function

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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Low-voltage switchgear and controlgear - Part 5-5: Control circuit devices and switching elements - Electrical emergency stop device with mechanical latching function

FOREWORD

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IEC 60947-5-5 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. It is an International Standard.

This second edition cancels and replaces the first edition published in 1997. This edition constitutes a technical revision.

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

a) re-shaping the document with the clause numbers and names to be in line with other documents of the 60947 series;
b) review of the test method to reasonably determine that the latch mechanism meets the requirements of the document;

c) new Annex B for special requirements for illuminated push-button type emergency stop devices, including the reference to a function to distinguish between "active and inactive" by changing the colour of the push-button depending on the illumination.

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

Draft	Report on voting
121A/699/FDIS	121A/703/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

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.

This International Standard is to be used in conjunction with IEC 60947-1:2020 and with IEC 60947-5-1:2024.

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

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

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

– reconfirmed,

– withdrawn, or

– revised.

INTRODUCTION

This document deals specifically with electrical emergency stop devices with mechanical latching function and gives additional electrical and mechanical requirements to those given in the following International Standards:

– ISO 13850, giving requirements for the emergency stop function of a machine, whatever be the energy used;

– IEC 60204-1, giving additional requirements for an emergency stop function realized by the electrical equipment of a machine;

– IEC 60947-5-1, specifying electrical characteristics of electromechanical control circuit devices.

1 Scope

This part of IEC 60947-5 provides detailed specifications relating to the electrical and mechanical construction of emergency stop devices with mechanical latching function and to their testing.

This document is applicable to electrical control circuit devices and switching elements which are used to initiate an emergency stop signal. Such devices can be provided with their own enclosure and will be installed according to the product documentation.

This document does not apply to:

– emergency stop devices for non-electrical control applications, for example hydraulic or pneumatic;
– emergency stop devices without mechanical latching function.

An emergency stop device conforming to this document can also be used as part of an emergency switching off means in compliance with IEC 60364-5-53.

NOTE See also IEC 60204-1:2016 and IEC 60204-1:2016/AMD1:2021, 9.2.3.4.

This document does not address specific requirements on acoustic noise as the noise emission of electrical emergency stop devices with mechanical latching function is not considered to be a relevant hazard.

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.

IEC 60068-2-1, *Environmental testing - Part 2-1: Tests - Test A: Cold*

IEC 60068-2-2, *Environmental testing - Part 2-2: Tests - Test B: Dry heat*

IEC 60068-2-6, *Environmental testing - Part 2-6: Tests - Test Fc: Vibration (sinusoidal)*

IEC 60068-2-11, *Environmental testing - Part 2-11: Tests - Test Ka: Salt mist*

IEC 60068-2-27, *Environmental testing - Part 2-27: Tests - Test Ea and guidance: Shock*

IEC 60068-2-30, *Environmental testing - Part 2-30: Tests - Test Db: Damp heat, cyclic (12 h + 12 h cycle)*

IEC 60068-2-75, *Environmental testing - Part 2-75: Tests - Test Eh: Hammer tests*

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

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

IEC 60947-5-1:2024, *Low-voltage switchgear and controlgear - Part 5-1: Control circuit devices and switching elements - Electromechanical control circuit devices*

ISO 13850:2015, *Safety of machinery - Emergency stop function - Principles for design*

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IEC 60050-441:1984, *International Electrotechnical Vocabulary (IEV) - Part 441: Switchgear, controlgear and fuses*
IEC 60050-441:1984/AMD1:2000

IEC 60073:2002, *Basic and safety principles for man-machine interface, marking and identification - Coding principles for indicators and actuators*

IEC 60204-1:2016, *Safety of machinery - Electrical equipment of machines - Part 1: General requirements*
IEC 60204-1:2016/AMD1:2021

IEC 60364-5-53:2019, *Low-voltage electrical installations – Part 5-53: Selection and erection of electrical equipment – Devices for protection for safety, isolation, switching, control and monitoring*
IEC 60364-5-53:2019/AMD1:2020
IEC 60364-5-53:2019/AMD2:2024

IEC 62061:2021, *Safety of machinery - Functional safety of safety-related control systems*
IEC 62061:2021/AMD1:2024

IEC 62683-1, *Low-voltage switchgear and controlgear - Product data and properties for information exchange - Part 1: Catalogue data*

ISO 3864 (all parts), *Graphical symbols - Safety colours and safety signs*

ISO 12100:2010, *Safety of machinery - General principles for design - Risk assessment and risk reduction*

ISO 13849-1:2023, *Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design*

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