

Road vehicles — Circuit breakers

Part 1: Definitions and general test requirements

ICS 43.040.10

National foreword

This British Standard is the UK implementation of ISO 10924-1:2009.

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A list of organizations represented on this committee can be obtained on request to its secretary.

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 10924-1 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 3, *Electrical and electronic equipment*.

ISO 10924 consists of the following parts, under the general title *Road vehicles — Circuit breakers*:

- *Part 1: Definitions and general test requirements*
- *Part 4: Medium circuit breakers with tabs (Blade type), Form CB15*

The following part is under preparation:

- *Part 2: User's guide*

The following parts are planned:

- *Part 3: Miniature circuit breakers with tabs (Blade type), Form CB11*
- *Part 5: High current circuit breakers with tabs (Blade type), Form CB29*
- *Part 6: Circuit breakers with bolt-in contacts*

Road vehicles — Circuit breakers —

Part 1: Definitions and general test requirements

1 Scope

This part of ISO 10924 defines terms and specifies general test requirements for circuit breakers for use in road vehicles with a nominal voltage of 12 V or 24 V.

This part of ISO 10924 is intended to be used in conjunction with other parts of ISO 10924.

This part of ISO 10924 is not applicable to circuit breaker holders (electrical centres or fuse-holders) used in vehicles.

2 Normative references

The following referenced documents are indispensable for the application 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.

ISO 6722, *Road vehicles — 60 V and 600 V single-core cables — Dimensions, test methods and requirements*

ISO 8820-1, *Road vehicles — Fuse-links — Part 1: Definitions and general test requirements*

ISO 8820-3, *Road vehicles — Fuse-links — Part 3: Fuse-links with tabs (blade type) Type C (medium), Type E (high current) and Type F (miniature)*

ISO 16750-1, *Road vehicles — Environmental conditions and testing for electrical and electronic equipment — Part 1: General*

ISO 16750-3, *Road vehicles — Environmental conditions and testing for electrical and electronic equipment — Part 3: Mechanical loads*

ISO 16750-4, *Road vehicles — Environmental conditions and testing for electrical and electronic equipment — Part 4: Climatic loads*

ISO 16750-5, *Road vehicles — Environmental conditions and testing for electrical and electronic equipment — Part 5: Chemical loads*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 16750-1, ISO 8820-1 and the following apply.

3.1

circuit breaker

overcurrent protection device that interrupts mechanically the circuit reversibly, responsive to electric current

NOTE The test fixture for the circuit breaker might be identical to the test fixture as described in the appropriate part of ISO 8820, however, some circuit breaker designs do not require a separate test fixture, as the cables are directly connected to the circuit breaker terminals.

3.2 Circuit breaker types

3.2.1

type I – automatic reset

mechanism that provides the reversal of an over-load condition after a cool-down period without any manual activity required by a user

3.2.2

type II – electrically reset

mechanism having a secondary heating circuit which, after an over-load condition occurs, creates heat internally upon the thermal element of the circuit breaker to keep it from reversing, as long as electrical system voltage and a small current flow ($< 1,0$ A) are available

NOTE The reset function is accomplished by removing all electrical power supplied to the circuit breaker until the internal thermal element cools down and returns to its conductive position.

3.2.3

type III – manual reset

reset mechanism to enable the user by manual operation to reverse of a circuit interruption

3.2.4

type IV – switchable

mechanism for manual switch off for testing or maintenance

3.3 Circuit breaker components

3.3.1

housing

electrically non-conductive mechanical support for conductive and non-conductive parts of the circuit breaker

3.3.2

terminal

part of the circuit breaker that makes the electrical connection in the electrical circuit

3.3.3

thermal element

active part that monitors the current and causes the reversible interruption of the circuit in the case of an overcurrent