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Interested committees:

Title: Draft BS ISO 10924-2 Road vehicles - Circuit breakers. Part 2: User's guide.

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Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

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Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/ Figure/Table/Note	Type of comment	Comment (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	

DRAFT INTERNATIONAL STANDARD

ISO/DIS 10924-2

ISO/TC 22/SC 32

Secretariat: JISC

Voting begins on:
2024-01-22

Voting terminates on:
2024-04-15

Road vehicles — Circuit breakers —

Part 2: User's guide

*Véhicules routiers — Coupe-circuits —
Partie 2: Guide de l'utilisateur*

ICS: 43.040.10

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information/TC 22, *Road vehicles*, Subcommittee SC 3, *Electric 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 2: User's guide*
- *Part 4: Medium circuit breakers with tabs (Blade type), Form CB15*
- *Part 3: Miniature circuit breakers*
- *Part 5: Circuit breakers with tabs with rated voltage of 450 V*

Road vehicles — Circuit breakers —

Part 2: User's guide

1 Scope

This part of ISO 10924 gives guidance for the choice and application of automotive circuit breakers. It describes the various parameters which have to be taken into account when selecting circuit breakers.

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.

ISO 10924-1, *Road vehicles — Circuit breakers — Part 1: Definitions and general test requirements*

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

ISO 16750-2, *Road vehicles — Environmental conditions and testing for electrical and electronic equipment — Part 2: Electrical loads*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions in ISO 8820-1 and ISO 10924-1 and the following apply.

4 General

The various parts of ISO 10924 define basic requirements and test methods for nominal voltage, rated current, I_R , and time/current characteristics to give comparable and reproducible results of circuit breakers.

In practice, however, there are other parameters to be considered for the correct selection of circuit breakers in road vehicles, such as

- continuous current,
- operating time,
- overload protection of one or more electrical/electronic devices,
- connection resistance,
- types of cables, e.g. different cross section, length, insulation, bundling,
- internal resistances (voltage drop) of the circuit breakers, contacts, cables, and devices,
- power dissipation of the components comprising the system,

- short-circuit parameters,
- inrush parameters of devices,
- operating mode of the load,
- operating of one or more electrical/electronic devices,
- orientation and location of the circuit breakers, e.g. engine, passenger or luggage compartment,
- different currents, voltages, and temperatures of the system and surroundings,
- distances or clearances inside circuit breaker boxes or holders,
- different circuit breakers, circuit breaker holders and boxes (see [Annex B](#)),
- environmental conditions (mechanical loads, climatically loads, chemical loads), and
- forced cooling of the circuit breakers.

NOTE Users are advised to consult the manufacturers of circuit-breaker, contacts and cables, because not all of the above points can be addressed in this guide.

The parameters listed are not intended to cover all the possible parameters that need to be taken into consideration for circuit breaker selection nor is it intended that all parameters will need to be considered in each vehicle applications.

4.1 Circuit breaker nominal voltage

See ISO 16750-1

4.2 Supply voltage maximum (U_{smax})

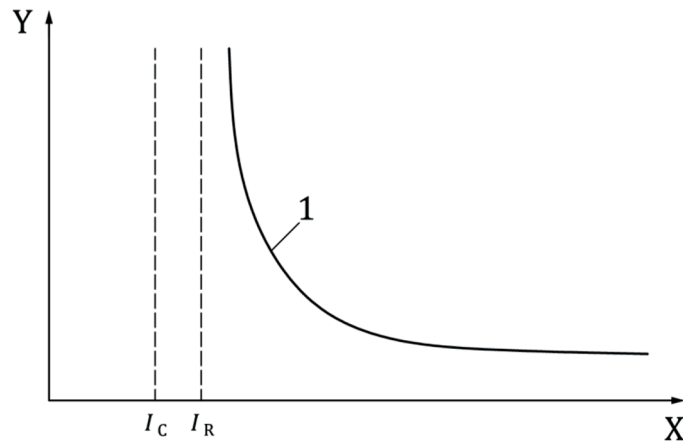
See ISO 16750-2

4.3 Rated current (I_R) and continuous current

The rated current (I_R) is the current used for identifying the circuit breaker.

The continuous current (I_C) in [Figure 1](#) is the maximum current which the circuit can continuously carry under specified conditions: ambient temperature (23 °C), duration maximum 1 h, standard test holder, cross sections of wires. The continuous current can be lower than the rated current, I_R .

See [A.2.2.3](#)

**Key**

- X current, I
- Y operating time, t
- I_C continuous current
- I_R rated current
- 1 Time current characteristic

Figure 1 — Rated current (I_R), continuous current, and time-current characteristic

5 Current and conductors (cables)

The temperature rise of a cable is a function of current, conductor cross-section, strands, insulating materials time duration, and ambient temperature.

See [A.2.2.4](#)

[Figure 2](#) shows stabilized temperature rise for various conductor cross sections at RT .