
**Road vehicles — Electrical and electronic
equipment for a supply voltage of 42 V —
Electrical loads**

*Véhicules routiers — Équipement électrique et électronique pour une
tension d'alimentation de 42 V — Contraintes électriques*



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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 21848 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 3, *Electrical and electronic equipment*.

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Road vehicles — Electrical and electronic equipment for a supply voltage of 42 V — Electrical loads

1 Scope

This International Standard describes the electrical loads that can affect electric and electronic systems and components of road vehicles for a supply voltage of 42 V, which may be used in a single or a multiple voltage electrical system.

In addition, it specifies the tests and resulting requirements, test equipment accuracy being agreed upon between the vehicle manufacturer and the supplier. It does not cover electromagnetic compatibility (EMC).

NOTE Electrical loads are independent from the mounting location.

This International Standard also provides design guidance for the interaction of 42 V with other system voltages.

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 7637-2, *Road Vehicles — Electrical disturbances by conduction and coupling — Part 2: Electrical transient conduction along supply lines only*

ISO 16750-1:2003, *Road vehicles — Environmental conditions and testing for electrical and electronic equipment — Part 1: General*

ISO 16750-2:2003, *Road vehicles — Environmental conditions and testing for electrical and electronic equipment — Part 2: Electrical loads*

ISO 16750-4:2003, *Road vehicles — Environmental conditions and testing for electrical and electronic equipment — Part 4: Climatic loads*

UL¹⁾ 94, *Standard for Test for Flammability of Plastic Materials for Parts in Devices and Appliances*

3 Terms and definitions

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

3.1

U_{high}

upper limit of the normal d.c. supply voltage range

1) Underwriters Laboratories Inc.

3.2

U_{low}

lower limit of the normal d.c. supply voltage range

3.3

$U_{\text{max,dyn}}$

maximum dynamic overvoltage associated with generator load dump transient protection

3.4

U_{T}

voltage applied during testing under defined conditions and which may be static voltage or transient

3.5

U_{S}

minimum permissible dynamic undervoltage associated with the starting pulse

3.6

U_{A}

minimum permissible steady-state voltage during cranking of the combustion engine including a possible ripple

4 Supply voltage

4.1 Direct current

4.1.1 Purpose

This test verifies the device under test (DUT) functionality in the range between minimum and maximum supply voltage.

4.1.2 Test

Set the supply voltage in accordance with Table 1 to all relevant inputs (connections) of the DUT.

Measure all voltages at the relevant terminals of the DUT.

The voltages given in Table 1 are relevant within the operating temperature range according to ISO 16750-4:2003, Table 1, without time limits.

Table 1 — Supply voltage for $U_{\text{N}} = 42 \text{ V}$ system devices

Code	Supply voltage V	
	U_{low}	U_{high}
L	30	48

4.1.3 Requirement

All DUT functions shall remain Class A as defined in ISO 16750-1:2003, Clause 6.