Vägfordon – Ledningsbundna och kopplade elstörningar –
Del 1: Definitioner och allmänt
(ISO 7637-1:2004, IDT)

Road vehicles – Electrical disturbances from conduction and coupling –
Part 1: Definitions and general considerations
(ISO 7637-1:2004, IDT)

Denna standard ersätter SS-ISO 7637-0, utgåva 1.


This standard supersedes the Swedish Standard SS-ISO 7637-0, edition 1.
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 3.

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 part of ISO 7637 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 7637-1 was prepared by Technical Committee ISO/TC 22, Road vehicles, Subcommittee SC 3, Electrical and electronic equipment.

This second edition of ISO 7637-1 cancels and replaces ISO 7637-0:1990, which has been technically revised. The first editions of ISO 7637-1 and ISO 7637-2 (both published in 1990) have been combined to form the second edition of ISO 7637-2.

ISO 7637 consists of the following parts, under the general title Road vehicles — Electrical disturbances from conduction and coupling:

— Part 1: Definitions and general considerations
— Part 2: Electrical transient conduction along supply lines only
— Part 3: Vehicles with nominal 12 V or 24 V supply voltage — Electrical transient transmission by capacitive and inductive coupling via lines other than supply lines
Introduction

Electrical and radio-frequency disturbances occur during normal operation of many items of motor vehicle equipment. They are generated over a wide frequency range, and can be distributed to on-board electronic devices and systems by conduction, coupling or radiation.

In recent years, an increasing number of electronic devices for controlling, monitoring and displaying a variety of functions have been introduced into vehicle designs. It is necessary to consider the electrical and electromagnetic environment in which these devices operate and, in particular, the disturbances generated in the vehicle electrical system itself. Such disturbances can cause degradation (temporary malfunction or even permanent damage) of the electronic equipment. Moreover, “worst-case” situations are usually those resulting from disturbances generated inside the vehicle by, for example, ignition systems, generator and alternator systems, electric motors and actuators.

While narrowband signals generated on or outside the vehicle (by broadcasting and radio transmitters) can also affect the performance of electronic devices, and recognizing that protection from such potential disturbances has to be considered as part of total system certification, these matters are nevertheless outside the scope of ISO 7637 and are not covered by it.

1 Scope

This part of ISO 7637 defines the basic terms relating to electrical disturbances from conduction and coupling used in its other parts, and gives general information on the whole of ISO 7637 and common to all parts.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 7637. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 7637 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

IEC 60050-151, International Electrotechnical Vocabulary — Part 151: Electrical and magnetic devices

IEC 60050-161, International Electrotechnical Vocabulary — Chapter 161: Electromagnetic compatibility

3 Terms and definitions

For the purposes of this part of ISO 7637, the terms and definitions given in IEC 60050-151 and the following apply.

3.1 electromagnetic compatibility
EMC
ability of equipment or system to function satisfactorily in its electromagnetic environment without introducing intolerable electromagnetic disturbance to anything in that environment

[IEC 60050-161]

3.2 electromagnetic disturbance
any electromagnetic phenomenon which may degrade the performance of a device, equipment or system, or adversely affect living or inert matter

NOTE An electromagnetic disturbance may be an electromagnetic noise, an unwanted signal or a change in the propagation medium itself.

[IEC 60050-161]
3.3 electromagnetic interference

EMI
degradation of the performance of equipment, transmission channel or system caused by an electromagnetic disturbance

NOTE The English words “interference” and “disturbance” are often used indiscriminately.

[IEC 60050-161]

3.4 degradation (of performance)
undesired departure in the operational performance of any device, equipment or system from its intended performance

NOTE The term “degradation” can apply to temporary or permanent failure.

[IEC 60050-161]

3.5 immunity (to a disturbance)
ability of a device, equipment or system to perform without degradation in the presence of an electromagnetic disturbance

[IEC 60050-161]

3.6 (electromagnetic) susceptibility
inability of a device, equipment or system to perform without degradation in the presence of an electromagnetic disturbance

NOTE Susceptibility is a lack of immunity.

[IEC 60050-161]

3.7 (electromagnetic) radiation
(1) phenomenon by which energy in the form of electromagnetic waves emanates from a source into space
(2) energy transferred through space in the form of electromagnetic waves

NOTE By extension, the term “electromagnetic radiation” sometimes also covers induction phenomena.

[IEC 60050-161]

3.8 shielded enclosure
screened room
mesh or sheet metallic housing designed expressly for the purpose of separating electromagnetically the internal and the external environment

[IEC 60050-161]

3.9 ground (reference) plane
flat conductive surface whose potential is used as a common reference

[IEC 60050-161]