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Alarm systems - Part 10: Alarm systems for road vehicles - Section 1: Passenger cars

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Systèmes d'alarme - Partie 10: Systèmes d'alarme pour véhicules routiers - Section 1: Véhicules pour passagers

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Alarm systems

Part 10:
Alarm systems for road vehicles –
Section 1: Passenger cars

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FOREWORD

1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international cooperation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.

2) The formal decisions or agreements of the IEC on technical matters, express as nearly as possible an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.

3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical reports or guides and they are accepted by the National Committees in that sense.

4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.

5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.

6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 839-10-1 has been prepared by the Joint Working Group IEC/TC 79: Alarm systems, and ISO/TC 22: Road vehicles.

The text of this standard is based on the following documents:

FDIS		Report on voting
IEC	79/137/FDIS	79/139/RVD
ISO	ISO/DIS 12016	

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

Annex A is for information only.

INTRODUCTION

Due to the coordination problems regarding alarm systems for road vehicles, a decision was made to develop a joint IEC/ISO standard.

Space protection systems, which are optional, need to be tested individually, and in consequence are not required to be tested in this standard, other than by testing the actual detectors against their own specifications. Therefore, examples of testing of installed systems are given in an informative annex.

Any revision of this standard is submitted to the common agreement of IEC/TC 79 and ISO/TC 22.

ALARM SYSTEMS –

Part 10: Alarm systems for road vehicles – Section 1: Passenger cars

1 Scope

This section of IEC 839-10 specifies requirements and test methods for vehicle security alarm systems (VSAS) intended for installation within vehicles used for the carriage of passengers and having not more than eight seats in addition to the driver's seat.

The object of the standard is to ensure a high standard of safety, performance and reliability of the VSAS and the reduction of false alarms.

The standard covers VSAS designed to detect and signal the unauthorized opening of any of the vehicle doors, boot/luggage compartment, bonnet/engine hood and, in addition, to immobilize the vehicle when set.

The standard covers VSAS intended both for installation as original equipment and for installation after delivery of the vehicle.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this section of IEC 839-10. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this section of IEC 839-10 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 68-1: 1988, *Environmental testing – Part 1: General and guidance*

IEC 68-2: 1988, *Environmental testing – Part 2: Tests*

IEC 529: 1989, *Degrees of protection provided by enclosures (IP Code)*

IEC 839-1-3: 1988, *Alarm systems – Part 1: General requirements – Section Three – Environmental testing*

CISPR 12: 1990, *Limits and methods of measurement of radio interference characteristics of vehicles, motor boats and spark-ignited engine-driven devices*

ISO 512: 1979, *Road vehicles – Sound signalling devices – Technical specifications*

ISO 7637-1: 1990, *Road vehicles – Electrical disturbancess by conduction and coupling – Part 1: Passenger cars and light commercial vehicles with nominal 12 V supply voltage – Electrical transient conduction along supply lines only*

ISO 7637-3: 1995, *Road vehicles – Electrical disturbances by conduction and coupling – Part 3: Passenger cars and light commercial vehicle with nominal 12 V supply voltage and commercial vehicles with 24 V supply voltage – Electrical transient transmission by capacitive and inductive coupling via lines other than supply lines*

ISO/TR 10605: 1994, *Road vehicles – Electrical disturbances from electrostatic discharge*

ISO 11451-1: 1995, *Road vehicles – Electrical disturbances by narrowband radiated electromagnetic energy – Vehicle test methods – Part 1: General and definitions*

ISO 11451-2: 1995, *Road vehicles – Electrical disturbances by narrowband radiated electromagnetic energy – Vehicle test methods – Part 2: Off-vehicle radiation source*

ISO 11451-3: 1994, *Road vehicles – Electrical disturbances by narrowband radiated electromagnetic energy – Vehicle test methods – Part 3: On-board transmitter simulation*

ISO 11451-4: 1995, *Road vehicles – Electrical disturbances by narrowband radiated electromagnetic energy – Vehicle test methods – Part 4: Bulk current injection (BCI)*

ISO 11452-1: 1995, *Road vehicles – Electrical disturbances by narrowband radiated electromagnetic energy – Component test methods – Part 1: General and definitions*

ISO 11452-2: 1995, *Road vehicles – Electrical disturbances by narrowband radiated electromagnetic energy – Component test methods – Part 2: Absorber-lined chamber*

ISO 11452-3: 1995, *Road vehicles – Electrical disturbances by narrowband radiated electromagnetic energy – Component test methods – Part 3: Transverse electromagnetic mode (TEM) cell*

ISO 11452-4: 1995, *Road vehicles – Electrical disturbances by narrowband radiated electromagnetic energy – Component test methods – Part 4: Bulk current injection (BCI)*

ISO 11452-5: 1995, *Road vehicles – Electrical disturbances by narrowband radiated electromagnetic energy – Component test methods – Part 5: Stripline*

ISO/DIS 11452-6: *Road vehicles – Electrical disturbances by narrowband radiated electromagnetic energy – Component test methods – Part 6: Parallel plate antenna* (In preparation)

ISO 11452-7: 1995, *Road vehicles – Electrical disturbances by narrowband radiated electromagnetic energy – Component test methods – Part 7: Direct radio frequency (RF) power injection*

3 Definitions

For the purpose of this section of IEC 839-10, the following definitions apply:

3.1 **vehicle security alarm system (VSAS)**: A system intended for installation on vehicles, that, when set, will indicate actions such as attempted intrusion into or interference with the vehicle.

3.2 **control equipment**: The component of the VSAS which processes the setting and unsetting commands and accepts the signals from the detector/sensors to allow an alarm condition to be indicated.

3.3 **detector/sensor**: Devices that generate or sense an alarm condition.

3.4 **alarm condition**: The condition where a detected action has occurred.

3.5 **set**: The state of the system whereby an alarm condition can be indicated.

3.6 **unset**: The state of the system whereby an alarm condition cannot be indicated.

3.7 **setting – unsetting device**: A device/component of the VSAS that is used to set or unset the VSAS.

3.8 **warning device**: A component of the system that gives an indication of an alarm condition.

3.9 **deliberately operated device (panic alarm)**: A facility that can cause the warning device to operate irrespective of whether the VSAS is in a set or unset state.

3.10 **status display**: A component of the VSAS which indicates the condition of the VSAS.

3.11 **immobilizer**: A device which can prevent the use of the vehicle with its own engine.

3.12 **perimeter protection**: A device designed to detect and signal the opening of any of the vehicle doors, boot/luggage compartment, bonnet/engine hood.

3.13 **volumetric protection**: A device designed to detect the intrusion into and movement within the passenger compartment.

3.14 **key**: A device designed and constructed to provide a method of operating a system which is designed and constructed to be operated only by that device.

4 Requirements

4.1 *System description*

The VSAS shall include, sensor(s)/detector(s), control equipment including setting and unsetting facilities, power supply, warning device(s) and provision for immobilization of the vehicle. All legal requirements shall be complied with.

The VSAS shall include at least one acoustic warning device and in addition may include optical warning devices or remote wirefree signalling devices or any combination of these.

The VSAS may include optical indication to provide information on the status of the VSAS.

The VSAS may include optical and/or acoustic indication to provide information on the change of the status of the VSAS.

The VSAS may include other facilities but all facilities shall comply with this standard.

NOTE – The block diagram shown in figure 1 illustrates the connections between the components which shall (solid lines) or may (dotted lines) be present in the system.

4.2 *System design*

4.2.1 *General*

The VSAS in the set condition shall detect and signal the opening of any of the vehicle doors, boot/luggage compartment, bonnet/engine hood and inhibit the movement of the vehicle under its own power if this has not already been achieved by an independent immobilizing system.

All the components of the VSAS shall be compatible with each other and, when installed, shall not affect the performance of the vehicle in the unset condition.

The VSAS shall not, whether set or unset, inadvertently change its state nor cause any warning device to operate or cease operation.

In the event of power interruption, the VSAS shall not change state on resumption of power.

The failure of any optical devices shall not affect the correct operation of the other parts of the VSAS.

The VSAS, its components and the parts controlled by them shall be designed, built and installed in such a way as to minimize the possibility of false alarms.

NOTE – All VSAS shall be protected against easy and rapid access or tampering by an unauthorized person.

4.2.2 *Detection*

The VSAS shall provide perimeter protection, that is:

- opening of the vehicle doors;
- opening of the boot/luggage compartment;
- opening of the bonnet/engine hood.

The VSAS may include additional sensors to detect other interference with the vehicle or intrusion into the vehicle. The operation of such additional sensors may be disabled intentionally by the user. However this disablement shall only be effective for one setting period of the VSAS.

The VSAS may include a deliberately operated device (panic alarm) which may be activated from within the vehicle. This device shall operate the acoustic warning device whether the system is set or unset, but it shall not affect the starting and/or the running of the vehicle.

The device may also operate an optical and/or radio warning signal independent of the state (set or unset) and/or function of the VSAS. Such an alarm shall be triggered from within the vehicle and shall not affect the state of the VSAS. It shall also be possible for the vehicle user to cancel this alarm. In the case of an audible warning signal, its sounding duration per activation shall not be restricted. Such a device shall not immobilize the engine or stop it if it is running.

4.2.3 *Control*

Control equipment shall provide for the connection of circuits capable of accepting the detection devices.

When the VSAS is set the control equipment shall monitor the sensor(s)/detector(s) and in the event of an alarm condition being presented shall provide outputs to the warning devices within 1 s.

Unsetting the VSAS by the normal means shall cancel the alarm condition and the warning signals within 1 s.

4.2.4 *Setting/unsetting*

The VSAS may include optical indication to provide information on the set/unset status of the VSAS.

The VSAS may include optical and/or acoustic indication to provide information on the change of the set/unset status of the VSAS.

The acoustic signal for the indication of the change of the set/unset status of the VSAS shall not exceed 65 dB(A) measured 1 m from the device and the duration of the signal shall not exceed 3 s.

The optical signal for the indication of the change of the set/unset status of the VSAS may also be produced by the hazard warning lamps, the passenger compartment lamp(s) or the vehicle position lamps (including all lamps in the same circuit) or any combination of the above.

4.2.4.1 *Setting*

Setting of the VSAS may be achieved by any suitable means.

The perimeter protection as described in 4.2.2 shall be in the set condition within 10 s after completing the setting procedure of the VSAS. Optional sensors shall be in the set condition within 60 s after completing the setting procedure.

4.2.4.2 *Unsetting*

There shall not be visible indication of any unsetting code on any component of the VSAS.

Unsetting of the VSAS shall be achieved by any one, or a combination of the following.

a) If it is a mechanical key switch:

The key switch shall be either:

– an integrated key mechanism and switch; or

– the door-locking mechanism coupled to a separate switch, in which case it shall not be possible to unset the VSAS by using the internal door-locking mechanism.

The cylinder of the key switch shall not protrude by more than 1 mm from the cowling and the protruding part shall be conical or convex.

The joint between the cylinder core and the cylinder casing shall be capable of withstanding a tensile force of 600 N. It shall also, separately, withstand a torque of 25 Nm.

The key switch shall be provided with a cylinder drill obstruction.

The key profile shall have at least 1 000 effective permutations.

The key switch shall not be operable by a key which differs by only one permutation from the key matching the key switch.

The key aperture to an external key switch shall be shuttered or otherwise protected against the ingress of dirt and/or water.

b) If this is a coded key switch:

The coded key switch shall be fitted within the vehicle in conjunction with a timed entry period, see d).

This switch shall have not less than 10 000 effective combinations.

c) If this is an electrical/electronic device other than those covered in b):

An electrical/electronic device, e.g. remote control switch, shall have a coded transmitter signal with at least 50 000 effective combinations and have a minimum scan time of 24 h per 5 000 variants or shall incorporate rolling codes such that the mathematical chance of obtaining the correct code within 24 h is less than 4 %.

d) If this is a mechanical key switch or an electrical/electronic device within the protected passenger compartment:

If this key switch/device is fitted within the vehicle in conjunction with a timed entry period, the time allowed to unset the VSAS after the opening of the door, shall be not less than 5 s and not more than 15 s.

4.2.5 *Warning signal*

The alarm condition shall be indicated by an acoustic warning signal.

This acoustic warning signal shall be produced by either:

– an acoustic warning device; or

– a sound signalling device in accordance with ISO 512; or

– both of these, in which case interference with either device shall not affect the operation of the other device.