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Edition 1.0 2017-05

INTERNATIONAL STANDARD

NORME INTERNATIONALE

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Mechanical structures for electrical and electronic equipment – Tests for IEC 60917 and IEC 60297 series – Part 6: Security aspects for indoor cabinets

Structures mécaniques pour équipements électriques et électroniques – Essais pour les séries IEC 60917 et IEC 60297 – Partie 6: Aspects liés à la sécurité des baies intérieures

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MECHANICAL STRUCTURES FOR ELECTRICAL AND ELECTRONIC EQUIPMENT – TESTS FOR IEC 60917 AND IEC 60297 SERIES –

Part 6: Security aspects for indoor cabinets

FOREWORD

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International Standard IEC 61587-6 has been prepared by subcommittee 48D:Mechanical structures for electrical and electronic equipment, of IEC technical committee 48: Electrical connectors and mechanical structures for electrical and electronic equipment.

This bilingual version (2019-10) corresponds to the monolingual English version, published in 2017-05.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
48D/634/FDIS	48D/641/RVD

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

The French version of this standard has not been voted upon.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 61587 series, published under the general title *Mechanical structures for electrical and electronic equipment – Tests for IEC 60917 and IEC 60297 series*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

The security of electrical and electronic equipment or systems, which nowadays is being applied in many electronic equipment or systems in the fields of ICT (information and communication technology) and of industrial/infrastructure control systems, is becoming a critical issue.

In general, security is achieved by restrictions and protections against improper or unauthorized accesses from both hardware and software sides of the systems.

Considering the security of the hardware of electronic equipment or systems, which are built up in the mechanical structures such as cabinets based on IEC 60297 series and IEC 60917 series, it depends on conditions of their installation sites, on the security level of system hardware which provides access protection at the installation sites, and on the robustness of the mechanical structures and of their mechanical locks both at the access gates/doors of the installation sites and of the mechanical structures.

Therefore, a classification of the installation conditions and of the levels of security measures for hardware is very important for design and practices of various electronic equipment or systems, which are used in the field of ICT, industrial control, transportation and others.

From this point of view, this document intends to clarify the relationship between the installation conditions and the security requirements for indoor cabinets, and to provide the required performances and test methods on mechanical components related with security provisions for indoor cabinets which are in accordance with IEC 60297 series and IEC 60917 series.

Vandalism protection aspect is applied by user-specific requirements in general. Therefore, this document has no definition of vandalism.

MECHANICAL STRUCTURES FOR ELECTRICAL AND ELECTRONIC EQUIPMENT – TESTS FOR IEC 60917 AND IEC 60297 SERIES –

Part 6: Security aspects for indoor cabinets

1 Scope

This part of IEC 61587 specifies security aspects and security performance levels of indoor cabinets in accordance with IEC 60917 and IEC 60297.

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.

IEC 60297 (all parts), *Mechanical structures for electronic equipment – Dimensions of mechanical structures of the 482,6 mm (19 in) series*

IEC 60529, *Degrees of protection provided by enclosures (IP Code)*

IEC 60917 (all parts), *Modular order for the development of mechanical structures for electronic equipment practices*

IEC 60917-1, *Modular order for the development of mechanical structures for electronic equipment practices – Part 1: Generic standard*

IEC 61587-1, *Mechanical structures for electronic equipment – Tests for IEC 60917 and IEC 60297 series – Part 1: Environmental requirements, test set-up and safety aspects for cabinets, racks, subracks and chassis under indoor condition use and transportation*

IEC 61587-2, *Mechanical structures for electronic equipment – Tests for IEC 60917 and 60297 series – Part 2: Seismic tests for cabinets and racks*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60917-1 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1
handle
mechanical component to open or close the door of a cabinet, equipped on the door of a cabinet

3.2
key
device to allow only authorized access to a cabinet, assembled into the handle of the cabinet or on the door of the cabinet configured with a mechanical lock

3.3
mechanical lock
mechanical component assembled in the door of a cabinet, deemed to provide closure of the door of the cabinet for security

3.4
access protection
protection against unauthorized access to a cabinet mainly dependent on the access security level within the location and functional requirements where the cabinet is installed

3.5
security performance
required performance of the mechanical components of a cabinet to achieve the intended access security level

SEE Figure 1.

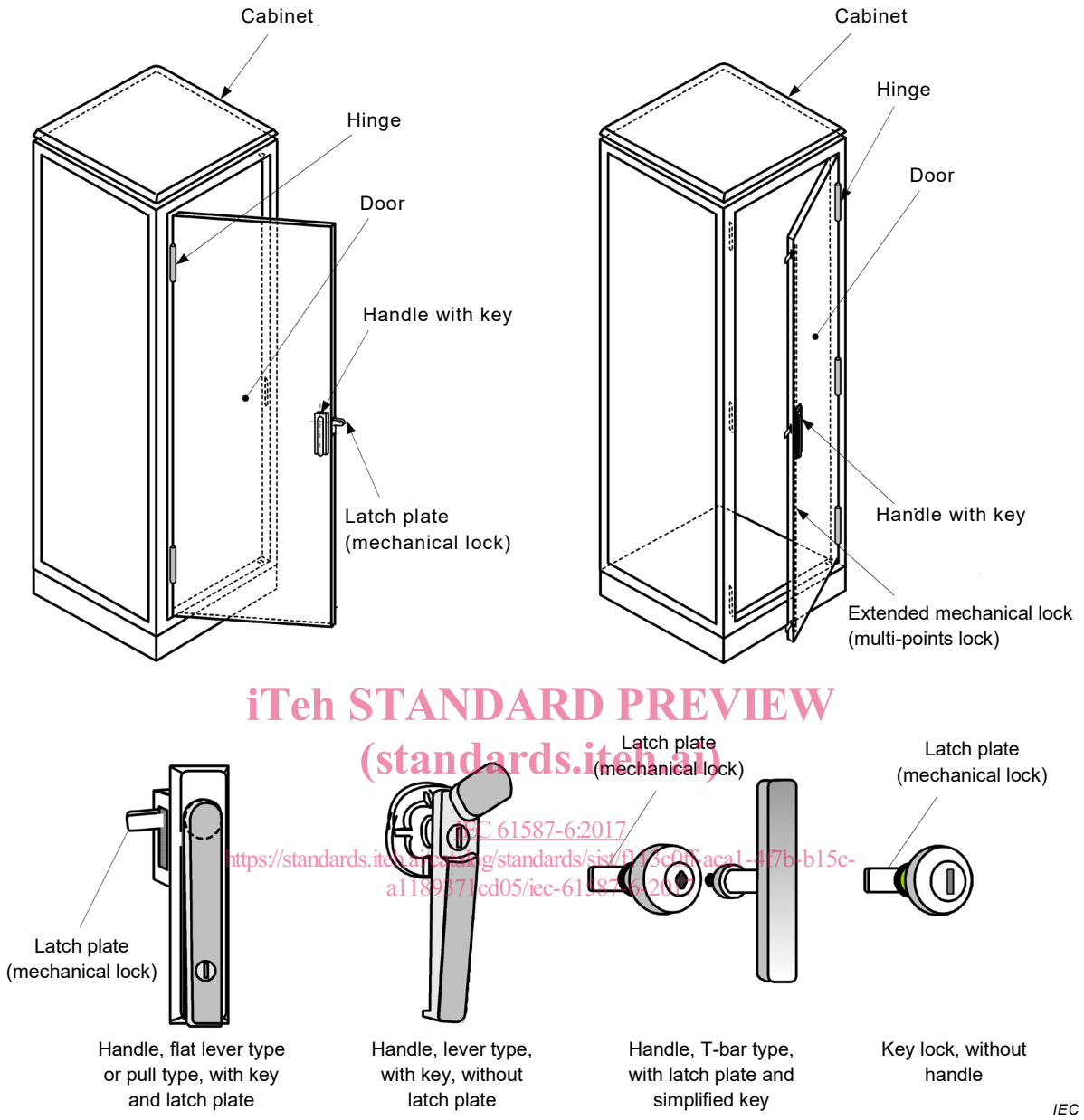

Figure 1 – Typical mechanical components for security provision of the cabinet

4 Security aspects for indoor cabinets

4.1 General

In general, security for cabinets for electronic equipment should be designed on both points of view from hardware and software. Considering the security on hardware of the cabinets, security aspects of the cabinets depends on the following factors:

a) access security level of the cabinet installation site(access security within the building);

b) security performance of the cabinet.

The access security within the building, as part of the so-called physical security, is primarily aimed to be effective against unauthorized forced entry. In this regard, many international or regional regulations and specifications for building doors, gates, building door handles and key-locking systems and other building physical security facilities are defined.

The security performance of the cabinet is designed by the choice of specific handle, key, mechanical lock and other components, which are different from the hardware for buildings and are mostly dedicated to cabinets for electrical and electronic systems.

Designers and users should consider those points properly to establish security aspects for their intended use indoor cabinet.

4.2 Access security level of the cabinet

In case of the indoor cabinet, access security level depends on restriction-severities to reach the cabinet installation sites. Figure 2 and Table 1 show typical access security levels in buildings or premises.

Security aspect for the intended use cabinet should be specified according to the access security levels shown in Table 2.

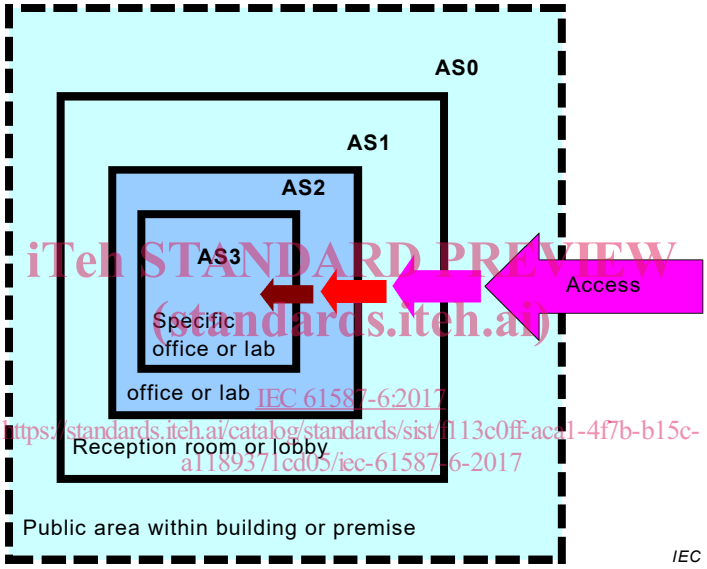

Figure 2 – Concept of access protection within buildings or premises

Table 1 – Access security levels of indoor cabinet installation sites

Access security level	Access protection	Example area
AS0	No restriction to enter the site	Public areas in building or premises
AS1	Restricted area to enter	Receptions rooms or lobbies areas of offices or laboratories within buildings
AS2	Severe restricted area to enter	Offices or laboratories
AS3	Very severe restriction to enter the specific area.	Specific office or laboratories, or control rooms

5 Security performance levels of cabinets

5.1 General

Table 2 shows security performance levels of cabinets and related security performance levels of mechanical components.

Application of security performance levels of cabinets should be defined by required security measures of the cabinet-mounted electronic system and the access security levels of the installation sites. Nevertheless, whatever the access security level of the installation site, the security level of the cabinet may be chosen independently by requirements from the intended electronic system. Designers and users should study and clarify actual conditions of the installation site and the required security measures of the intended electronic system, and apply the optimum security performance levels for cabinets.

Table 2 – Security performance levels of cabinets

Security performance levels of cabinets	Security performance levels of mechanical components[1]		
	Handle and associated mechanical lock (See Table 3)	Key (See Table 5)	Floor anchoring (See Table 6)
CS0	SH1	SK0/SK1	SA0/SA1/SA2
CS1	SH2	SK2	
CS2		SK3	
CS3		SK4	

[1] Other parts of the mechanical components related with the cabinet security performance, e.g. hinges, doors, etc., should meet the requirements in accordance with the security performance level of handle and associated mechanical lock in Table 3.

5.2 Security performance levels of cabinet mechanical components

5.2.1 Handle and associated mechanical lock

5.2.1.1 General

Table 3 shows security performance levels and required mechanical performances of handle and mechanical lock.

Table 3 – Security performance levels of handle and associated mechanical lock

Security performance level of handle and associated mechanical lock	Strength of handle and associated mechanical lock Static loading test at door closed position	Operation of handle and mechanical lock Open/close cycles	Environmental performances level			
			Climate conditions (IEC 61587-1)	Industrial atmosphere (IEC 61587-1)	Impact (IEC 61587-1)	IP (IEC 60529)
SH1	200 N	> 10 000	C1	A1	K1	IP20
SH2	400 N		C1/C2/C3	A1/A2/A3	K2/K3	IP20,IP30, IP42,IP54

5.2.1.2 Tests for strength of handle and associated mechanical lock

Figure 3 shows test method for strength of the handle and the associated mechanical lock.