

**Mechanical structures for electronic equipment - Tests for IEC 60917 and IEC 60297 series - Part 4: Combination of performance levels for modular cabinets**

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**Mechanical structures for electronic equipment -  
Tests for IEC 60917 and IEC 60297 series -  
Part 4: Combination of performance levels for modular cabinets  
(IEC 61587-4:2012)**

Structures mécaniques pour équipement  
électronique -  
Essais pour les séries CEI 60917  
et CEI 60297 -  
Partie 4: Combinaison des niveaux de  
performance pour les baies modulaires  
(CEI 61587-4:2012)

Mechanische Bauweisen für elektronische  
Einrichtungen -  
Prüfungen für die Normenreihen  
IEC 60917 und IEC 60297 -  
Teil 4: Kombination von  
Anforderungsstufen für modulare  
Schränke  
(IEC 61587-4:2012)

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European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

**Management Centre: Avenue Marnix 17, B - 1000 Brussels**

## Foreword

The text of document 48D/514/FDIS, future edition 1 of IEC 61587-4, prepared by SC 48D "Mechanical structures for electronic equipment" of IEC/TC 48 "Electromechanical components and mechanical structures for electronic equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61587-4:2012.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2013-06-17
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2015-09-17

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The text of the International Standard IEC 61587-4:2012 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60297 Series	NOTE	Harmonised as EN 60297 Series (not modified).
IEC 60917 Series	NOTE	Harmonised as EN 60917 Series (not modified).
IEC 60950-1	NOTE	Harmonised as EN 60950-1.

**Annex ZA**  
(normative)

**Normative references to international publications  
with their corresponding European publications**

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60529	-	Degrees of protection provided by enclosures (IP Code)	EN 60529	-
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 conditions	EN 61587-1	-
IEC 61587-2	-	Mechanical structures for electronic equipment - Tests for IEC 60917 and IEC 60297 - Part 2: Seismic tests for cabinets and racks	EN 61587-2	-
IEC 61587-3	-	Mechanical structures for electronic equipment - Tests for IEC 60917 and IEC 60297 - Part 3: Electromagnetic shielding performance tests for cabinets, racks and subracks	EN 61587-3	-

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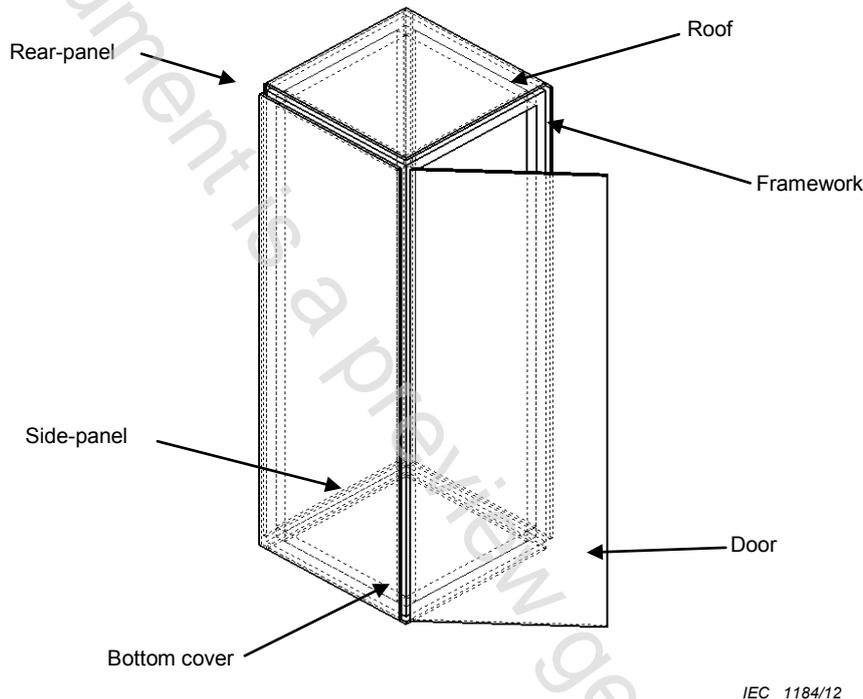
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## INTRODUCTION

Requirements for application specific cabinet systems vary considerably. Typically, applications such as industrial, power distribution, IT, communications, data centres, multimedia, traffic control, etc., require differing features.

These differing features are hardly common and many range from static load to dynamic load, including seismic test, protection (IP), electromagnetic shielding (EMC) provision, and many other detailed requirements. It is unrealistic and uneconomical to expect from an economical system to offer an all compliant cabinet from multiple sources.

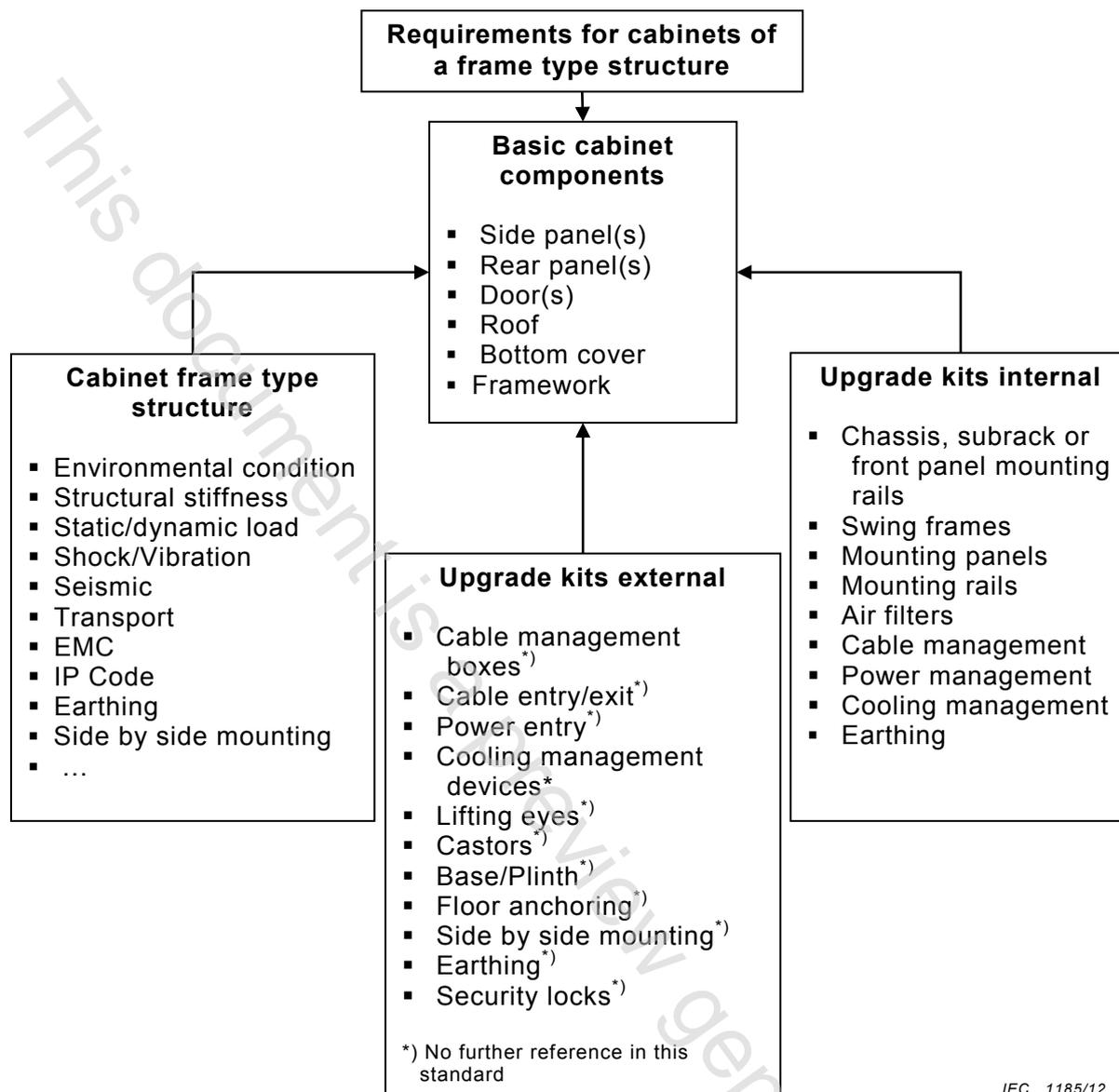


**Figure 1 – Arrangement overview of a modular cabinet system**

This design guide describes an economically optimal solution for a cabinet system consisting of a modular frame type structure design enhanced by basic cabinet components, such as a door(s), a bottom cover, a roof and side and rear panels. See Figure 1. To fulfil the specific application requirements the user can choose external and/or internal upgrade kits. See Figure 2.

Based on this optimal economical solution for a cabinet system, this guide helps the user to select a cabinet matching the performance level of the application.

Based on this economical optimal solution for a cabinet system, this guide helps to provide for a modular cabinet economical system supported by multiple vendors.



IEC 1185/12

Figure 2 – Basic modular cabinet

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

### Part 4: Combination of performance levels for modular cabinets

#### 1 Scope

This part of IEC 61587 provides the combinations of different degrees of protection for cabinet systems regarding IP code, climate levels, static and dynamics load tests, electromagnetic shielding and seismic requirements. Optimal economical solution can be ensured by ordering a cabinet with specific properties for which this design guide provides the easy selection of defined performance levels.

#### 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

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 conditions*

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

IEC 61587-3, *Mechanical structures for electronic equipment – Tests for IEC 60917 and IEC 60297 – Part 3: Electromagnetic shielding performance tests for cabinets, racks and subracks*

#### 3 Selection of performance levels

The environmental and test requirements for cabinets are defined in existing standards.

According to IEC 60529 enclosure systems can be classified by their IP code. The IP code is a 2 digit number where the first digit (0 – 6) indicates the level of protection that the enclosure provides against access to hazardous parts and the entry of solid foreign objects. The second digit (0-8) indicates the protection against harmful entry of water.

As in IEC 61587-1 a cabinet system can meet the standards of climatic levels C1, C2, C3, the levels of industrial atmosphere A1(E), A2(E), A3(E), levels of static loading SL5, SL6, SL7, levels of dynamic loading DL4, DL5, DL6 and levels of impact loading K1, K2 and K3.

A cabinet system can also meet the seismic requirements as defined in IEC 61587-2 and/or the EMC (Electro Magnetic Compatibility) performance tests as defined in IEC 61587-3 and shown in Table 1.