SLOVENSKI STANDARD
SIST EN IEC 62966-1:2019

01-julij-2019

Mehanske strukture za električno in elektronsko opremo - Omejitev prehoda za IT-omarice - 1. del: Mere in mehanske zahteve (IEC 62966-1:2019)

Mechanical structures for electrical and electronic equipment - Aisle containment for IT cabinets - Part 1: Dimensions and mechanical requirements (IEC 62966-1:2019)

Mechanische Bauweisen für elektrische und elektronische Einrichtungen – Gangeinhausung für IT-Schränke – Teil 1: Maße und mechanische Anforderungen (IEC 62966-1:2019)

Structures mécaniques pour équipements électriques et électroniques - Confinement d'allées pour les baies informatiques - Partie 1: Dimensions et exigences mécaniques (IEC 62966-1:2019)

Ta slovenski standard je istoveten z: **EN IEC 62966-1:2019**

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EUROPEAN STANDARD

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Mechanical structures for electrical and electronic equipment - Aisle containment for IT cabinets - Part 1: Dimensions and mechanical requirements (IEC 62966-1:2019)

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

The text of document 48D/691/FDIS, future edition 1 of IEC 62966-1, prepared by SC 48D "Mechanical structures for electrical and electronic equipment" of IEC/TC 48 "Electrical connectors and mechanical structures for electrical and electronic equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 62966-1:2019.

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) 2020-01-12
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2022-04-12

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Endorsement notice

The text of the International Standard IEC 62966-1:2019 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 60297-3-100	NOTE	Harmonized as EN 60297-3-100
IEC 60297-3-101	NOTE	Harmonized as EN 60297-3-101
IEC 60297-3-102	NOTE	Harmonized as EN 60297-3-102
IEC 60297-3-103	NOTE	Harmonized as EN 60297-3-103
IEC 60297-3-104	NOTE	Harmonized as EN 60297-3-104
IEC 60297-3-105	NOTE	Harmonized as EN 60297-3-105
IEC 60297-3-106	NOTE	Harmonized as EN 60297-3-106
IEC 60297-3-107	NOTE	Harmonized as EN 60297-3-107
IEC 60297-3-108	NOTE	Harmonized as EN 60297-3-108
IEC 60297-3-109	NOTE	Harmonized as EN 60297-3-109
IEC 60917-1	NOTE	Harmonized as EN 60917-1
IEC 60917-2	NOTE	Harmonized as EN 60917-2
IEC 60917-2-1	NOTE	Harmonized as EN 60917-2-1
IEC 60917-2-2	NOTE	Harmonized as EN 60917-2-2
IEC 60917-2-3	NOTE	Harmonized as EN 60917-2-3
IEC 60917-2-4	NOTE	Harmonized as EN 60917-2-4
IEC 60917-2-5	NOTE	Harmonized as EN 60917-2-5
IEC 62610-2	NOTE	Harmonized as EN IEC 62610-2

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Publication	Year	Title	EN/HD	Year
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	EN 61587-1	-
IEC 61587-2	-	Mechanical structures for electronic equipment - Tests for IEC 60917 and 60297 - Part 2: Seismic tests for cabinets and racks	EN 61587-2	-
IEC 62966-2[1]	-	Mechanical structures for electrical and electronic equipment - Aisle containment for IT cabinets - Part 2: Details of air flow, air separation and air cooling requirements	-	-

[1] Under preparation. Stage at time of publication: CCDV.

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MECHANICAL STRUCTURES FOR ELECTRICAL AND ELECTRONIC EQUIPMENT – AISLE CONTAINMENT FOR IT CABINETS –

Part 1: Dimensions and mechanical requirements

FOREWORD

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International Standard IEC 62966-1 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.

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

FDIS	Report on voting
48D/691/FDIS	48D/698/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.

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

A list of all parts in the IEC 62966 series, published under the general title *Mechanical structures for electrical and electronic equipment – Aisle containment for IT cabinets*, 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

Cabinets of the IEC 60297 and IEC 60917 standard series are used as enclosures of electronical and electric equipment in many different fields of application. A wide field of application is represented by enclosures equipped with electronic information technology (IT) equipment. They are frequently set up in large numbers in server rooms and data centres. During their operation, the electronic equipment installed generates a considerable amount of heat that must be dissipated from the equipment by means of cooling air. Precise adjustment of the supply air temperature and a sufficient cooling air flow are indispensable prerequisites for the fail-safe operation of equipment in information technology.

Currently, it is common use in data centres and server rooms to set up cabinets in rows. The server cabinets along the rows are usually arranged in such a way that surfaces with cold supply air inlets face each other across an aisle, and surfaces with hot exhaust air outlets also face each other across an aisle. This row configuration is generally known as hot aisle/cold aisle configuration. Moreover, air is supplied and discharged exclusively via the front and rear panels of the server cabinets, which are frequently perforated doors. It is assumed that inside the IT equipment, the cooling air is moved in horizontal direction, taking it in at the front and discharging it at the rear.

The required cooling air is provided by room air or row air conditioners. Warm exhaust air is moved by fans usually through a fluid/air heat exchanger that cools it.

In the arrangement described, considerable quantities of cooling air pass by the IT equipment, especially servers, which it is expected to cool, without having any cooling effect. Concurrently, recirculation within and outside the cabinet causes hot exhaust air to be absorbed as cooling air, which results in faulty operation. In order to minimize such recirculation, more cooling air than required needs to be supplied, this adversely affects the energy efficiency of the data centre.

The separation of air flows into enclosed air volumes consisting of either cold supply air or hot exhaust air precludes recirculation to the largest possible extent (see Figure 1). Such separation reduces the required cooling air flow because re-circulations are ruled out. Air flow separation can reduce power consumption by the fans in the cooling units once fan speed control fans are used.

Separation of the cold supply air from the hot exhaust air is achieved by covering the aisles of the same temperature level with top cover elements, adding doors or similar design elements to the end of the aisles, and all openings inside the cabinets at the front 482,6mm (19”) rails shall be closed.

The installations of aisle containments in data centres and IT rooms shall not restrict the air intake demands for the correct usage and operation of servers or other IT equipment. Especially the required supply air temperature and the cooling air flow rate needed shall not be affected by the aisle containment. This can improve the energy efficiency as most of the cooling infrastructure has a higher efficiency with a higher difference between the air intake and the air exhaust temperature.

The temperature difference between supply and exhaust air rises due to the reduced cooling air volume. As the supply air temperature of the cooling air is usually specified, thus being kept constant, an increase in the temperature difference results in an increase of the temperature of the warm exhaust air. This has a positive impact on the temperature difference to the temperature of ambient air, as the energy efficiency of the cooling of the building and infrastructure is improved by the raised temperature gradient.

The period during which system cooling is required to be supported by a mechanical cooling machine is reduced. Both the reduction of the cooling air flow and the reduction of times of mechanical cooling lead to considerable reduction in the consumption of electrical power. This effects significant savings in operating costs for data centres and server rooms. This results in