IEC 61537

Edition 3.0 2023-01

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Cable management – Cable tray systems and cable ladder systems

Systèmes de câblage – Systèmes de chemin de câbles et systèmes d'échelle à câbles

IEC 61537:2023-01(en-fr)

IEC Secretariat
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

About the IEC
The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications
The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

IEC publications search - webstore.iec.ch/advsearchform
The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee, …). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished
Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

IEC Customer Service Centre - webstore.iec.ch/csc
If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: sales@iec.ch.

IEC Products & Services Portal - products.iec.ch
Discover our powerful search engine and read freely all the publications previews. With a subscription you will always have access to up to date content tailored to your needs.

Electropedia - www.electropedia.org
The world's leading online dictionary on electrotechnology, containing more than 22 300 terminological entries in English and French, with equivalent terms in 19 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

A propos de l'IEC
La Commission Electrotechnique Internationale (IEC) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications IEC
Le contenu technique des publications IEC est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

Recherche de publications IEC - webstore.iec.ch/advsearchform
La recherche avancée permet de trouver des publications IEC en utilisant différents critères (numéro de référence, texte, comité d'études, …). Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

IEC Just Published - webstore.iec.ch/justpublished
Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et une fois par mois par email.

Service Clients - webstore.iec.ch/csc
Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: sales@iec.ch.

IEC Products & Services Portal - products.iec.ch
Découvrez notre puissant moteur de recherche et consultez gratuitement tous les aperçus des publications. Avec un abonnement, vous aurez toujours accès à un contenu à jour adapté à vos besoins.

Electropedia - www.electropedia.org
Le premier dictionnaire d'électrotechnologie en ligne au monde, avec plus de 22 300 articles terminologiques en anglais et en français, ainsi que les termes équivalents dans 19 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

IEC 61537

Edition 3.0 2023-01

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Cable management – Cable tray systems and cable ladder systems

Systèmes de câblage – Systèmes de chemin de câbles et systèmes d'échelle à câbles

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 29.120.10

ISBN 978-2-8322-6364-8

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

CABLE MANAGEMENT – CABLE TRAY SYSTEMS AND CABLE LADDER SYSTEMS

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as “IEC Publication(s)”). 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. 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 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 IEC National Committees.
3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
6) All users should ensure that they have the latest edition of this publication.
7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

IEC 61537 has been prepared by subcommittee 23A: Cable management systems, of IEC technical committee 23: Electrical accessories. It is an International Standard.

This third edition cancels and replaces the second edition published in 2006. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) new, repositioned and renumbered figures,
b) revised classification for corrosion,
c) revised SWL test types and procedures,
d) new tests for lengths mounted vertical running horizontal and mounted vertical running vertical,
e) tests for support devices: cantilevers, pendants, C shape ceiling supports and trapeze systems,
f) new and revised annexes including use of tray as a protective earth conductor.

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

Draft	Report on voting
23A/1032/FDIS	23A/1039/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

The following differences exist in some countries:

In the USA it is permitted to use cable tray systems and cable ladder systems as a PE conductor, in which case national wiring regulations have to be adhered to.

In France it is not permitted to use cable tray systems and cable ladder systems as a PE conductor.

In France the use of flame propagating cable tray and cable ladder systems is not permitted.

In this document, the following print types are used:

– Requirements proper: in roman type.
– *Test specifications: in italic type.*
– Explanatory matter: in smaller roman type.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under 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.

CABLE MANAGEMENT – CABLE TRAY SYSTEMS AND CABLE LADDER SYSTEMS

1 Scope

This document specifies requirements and tests for cable tray systems and cable ladder systems intended for the support and accommodation of cables and possibly other electrical equipment in electrical and/or communication systems installations. Where necessary, cable tray systems and cable ladder systems can be used for the arrangement of cables into groups.

This document does not apply to conduit systems, cable trunking systems and cable ducting systems or to any current-carrying parts.

NOTE Cable tray systems and cable ladder systems are designed for use as supports for cables and not as enclosures.

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 60068-2-75:2014, *Environmental testing – Part 2-75: Tests – Test Eh: Hammer tests*

IEC 60287 (all parts), *Electric cables – Calculation of the current rating*

IEC 60417, *Graphical symbols for use on equipment* (available at http://www.graphical-symbols.info/equipment)

IEC 60695-2-11:2021, *Fire hazard testing – Part 2-11: Glowing/hot-wire based test methods – Glow-wire flammability test method for end-products (GWEPT)*

IEC 60695-11-2:2017, *Fire hazard testing – Part 11-2: Test flames – 1 kW pre-mixed flame – Apparatus, confirmatory test arrangement and guidance*

ISO 1461:2022, *Hot dip galvanized coatings on fabricated iron and steel articles – Specifications and test methods*

ISO 2081:2018, *Metallic and other inorganic coatings – Electroplated coatings of zinc with supplementary treatments on iron or steel*

ISO 2409:2020, *Paints and varnishes – Cross-cut test*

ISO 3506-1:2020, *Fasteners – Mechanical properties of corrosion-resistant stainless steel fasteners – Part 1: Bolts, screws and studs with specified grades and property classes*

ISO 3575:2016, *Continuous hot-dip zinc-coated and zinc-iron alloy-coated carbon steel sheet of commercial and drawing qualities*

ISO 4042:2022, *Fasteners – Electroplated coating systems*

ISO 4046:2016 (all parts), *Paper, board, pulps and related terms – Vocabulary*

ISO 9227:2022, *Corrosion tests in artificial atmospheres – Salt spray tests*

ISO 10289:1999, *Methods for corrosion testing of metallic and other inorganic coatings on metallic substrates – Rating of test specimens and manufactured articles subjected to corrosion tests*

ISO 4628-8:2012, *Paints and varnishes – Evaluation of degradation of coatings – Designation of quantity and size of defects, and of intensity of uniform changes in appearance – Part 8: Assessment of degree of delamination and corrosion around a scribe or other artificial defect*

ISO 4628-3:2016, *Paints and varnishes – Evaluation of degradation of coatings – Designation of quantity and size of defects, and of intensity of uniform changes in appearance – Part 3: Assessment of degree of rusting*

ISO 4998:2014, *Continuous hot-dip zinc-coated and zinc-iron alloy-coated carbon steel sheet of structural quality*

ISO 10684:2004, *Fasteners – Hot dip galvanized coatings*

EN 10346:2015, *Continuously hot-dip coated steel flat products for cold forming. Technical delivery conditions*

3 Terms and definitions

For the purpose of this document, the following definitions 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
cable tray system
assembly of cable supports consisting of cable tray lengths and other system components

3.2
cable ladder system
assembly of cable supports consisting of cable ladder lengths and other system components

3.3
system component
part used within the system

EXAMPLE a) cable tray length or cable ladder length, b) cable tray fitting or cable ladder fitting, c) coupler, d) support device, e) mounting device, f) system accessory.

3.4
cable tray length
system component used for cable support consisting of a base with integrated side members or a base connected to side members

Note 1 to entry: A tray made from wires is referred to as mesh cable tray. Typical examples of cable tray types of length are shown in Annex A, Figure A.1 to Figure A.3.

3.5
cable ladder length
system component used for cable support consisting of supporting side members, fixed to each other by means of rungs

Note 1 to entry: Typical examples of cable ladder types of length are shown in Annex A Figure A.4.

3.6
fitting
system component used to change direction, change dimension or terminate cable tray lengths or cable ladder lengths

Note 1 to entry: Typical examples are bends, tees, crosses.

3.7
cable runway
assembly comprising cable tray lengths or cable ladder lengths and fittings only

3.8
support device
system component designed to provide mechanical support

Note 1 to entry: Typical examples of support devices are shown in Annex B, Figure B.1, Figure B.2, Figure B.3 and Figure B.4; support devices may provide additional functions such as fixings.

3.9
mounting device
system component used to attach or fix other devices to the cable runway

3.10
apparatus mounting device
part used to accommodate electrical apparatus, such as switches, socket outlets, circuit-breakers, telephone outlets, etc., which can be an integral part of the electrical apparatus and which is not part of the cable tray system and cable ladder system

3.11
system accessory
system component used for a supplementary function such as cable retainers, covers, etc.

3.12
protective earthing
protective grounding, US
PE
earthing for purposes of electrical safety

[SOURCE IEC 60050-195:2021, 195-01-11, modified – The abbreviated term PE has been added.]

3.13
metallic system component
system component which consists of metal only

Note 1 to entry: Screws and other fasteners included in the system component are not considered.

3.14
non-metallic system component
system component which consists of non-metallic material only

Note 1 to entry: Screws and other fasteners included in the system component are not considered.

3.15
composite system component
system component which consists of both metallic and non-metallic materials

Note 1 to entry: Screws and other fasteners included in the system component are not considered.

3.16
non-flame propagating system component
system component which can catch fire as a result of an applied flame and the resulting flame does not propagate and extinguishes itself within a limited time after the applied flame is removed

3.17
external influence
presence of water, oil, building materials, corrosive and polluting substances, external mechanical forces from snow, wind, and other environmental hazards

3.18
safe working load
SWL
maximum load that can be applied safely in normal use

3.19
uniformly distributed load
UDL
load applied evenly over a given area

Note 1 to entry: Methods of applying uniformly distributed loads are shown in Annex D and Annex E.

3.20
span
distance between the centres of two adjacent support devices

3.21
internal fixing device
device for joining and/or fixing system components to other system components

Note 1 to entry: This device is part of the system but is not a system component.

Note 2 to entry: Typical examples are nuts and bolts.

Note 3 to entry: A device used for fixing support devices to walls, ceilings or other structural parts, is not part of the system.

3.22
base area
plan area available for cables

3.23
free base area
part of the base area which is open to the flow of the air

Note 1 to entry: This includes the area between cable ladder rungs and the holes in cable ladder rungs.

3.24
load distribution plate
means through which a point load is applied to the sample for testing purposes