BS IEC 61084-1:2017

BSI Standards Publication

Cable trunking systems and cable ducting systems for electrical installations

Part 1: General requirements

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National foreword

This British Standard is the UK implementation of IEC 61084-1:2017.

The UK participation in its preparation was entrusted to Technical Committee PEL/213, Cable management.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Published by BSI Standards Limited 2017

ISBN 978 0 580 89532 6
ICS 29.060.01; 29.120.10

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This Published Document was published under the authority of the Standards Policy and Strategy Committee on 30 April 2017.

Amendments/corrigenda issued since publication

Date	Text affected

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

CABLE TRUNKING SYSTEMS AND CABLE DUCTING SYSTEMS FOR ELECTRICAL INSTALLATIONS –

Part 1: General requirements

FOREWORD

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International Standard IEC 61084-1 has been prepared by subcommittee 23A: Cable management systems, of IEC technical committee 23: Electrical accessories.

This second edition cancels and replaces the first edition published in 1991 and Amendment 1:1993. This edition constitutes a technical revision.

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

- classification;
- construction;
- mechanical and electrical properties.

This part of the IEC 61084 series is not intended to be used by itself.

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

FDIS	Report on voting
23A/826/FDIS	23A/833/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 61084 series, published under the general title *Cable trunking and cable ducting systems for electrical installations*, 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.

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CABLE TRUNKING SYSTEMS AND CABLE DUCTING SYSTEMS FOR ELECTRICAL INSTALLATIONS –

Part 1: General requirements

1 Scope

This part of the IEC 61084 series specifies requirements and tests for cable trunking systems (CTS) and cable ducting systems (CDS) intended for the accommodation, and where necessary for the electrically protective separation, of insulated conductors, cables and possibly other electrical equipment in electrical and/or communication systems installations. The maximum voltage of these installations is 1 000 V AC and 1 500 V DC.

This document does not apply to conduit systems, cable tray systems, cable ladder systems, power track systems or equipment covered by other standards.

NOTE This part of the IEC 61084 series is not intended to be used by itself.

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 60417, *Graphical symbols for use on equipment*

IEC 60423:2007, *Conduit systems for cable management – Outside diameters of conduits for electrical installations and threads for conduits and fittings*

IEC 60529:1989, *Degrees of protection provided by enclosures (IP Code)*
IEC 60529:1989/AMD1:1999
IEC 60529:1989/AMD2:2013

IEC 60695-2-11:2014, *Fire hazard testing – Part 2-11: Glowing/hot-wire based test methods – Glow-wire flammability test method for end-products (GWEPT)*

IEC 60695-11-2:2013, *Fire hazard testing – Part 11-2: Test flames – 1 kW pre-mixed flame – Apparatus, confirmatory test arrangement and guidance*

IEC 61032:1997, *Protection of persons and equipment by enclosures – Probes for verification*

ISO 2768-1:1989, *General tolerances – Part 1:Tolerances for linear and angular dimensions without individual tolerance indications*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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

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

3.1
cable trunking system
CTS
assembly comprising a trunking length and possibly other system components to provide an enclosure for the accommodation and laying in of insulated conductors and cables and possibly the accommodation of other electrical equipment

Note 1 to entry: Different types of CTS are shown in Figure 1 and explained in Annex A.

3.2
cable ducting system
CDS
assembly comprising a ducting length and possibly other system components to provide an enclosure for the accommodation and drawing in of insulated conductors and cables and possibly the accommodation of other electrical equipment

Note 1 to entry: Different types of CDS are shown in Figure 1 and explained in Annex A.

3.3
system component
part of the system which includes:

a) trunking length or ducting length;

b) trunking fitting or ducting fitting;

c) fixing device;

d) apparatus mounting device;

e) system accessory

Note 1 to entry: A system does not necessarily include all system components a) to e). Different combinations of system components can be used.

3.4
trunking length
main component of a cable trunking system comprising a base with one or more access covers which may be opened or removed

3.5
ducting length
main component of a cable ducting system, characterized by a closed non-circular cross section

3.6
fitting
system component to connect, change direction or terminate trunking lengths or ducting lengths

3.7
fixing device
system component to secure other system components to the wall, ceiling, floor or other structure

3.8
apparatus mounting device
system component to accommodate electrical apparatus (switches, socket outlets, circuit-breakers, telephone outlets, etc...) which can be an integral part of electrical apparatus

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Note 1 to entry: An apparatus mounting device can also be a fitting, a trunking length, etc.

3.9
system accessory
system component which provides a supplementary function

EXAMPLE 1: Examples of system accessories are partition, cable retainer, cable outlet, etc.

3.10
metallic system component
system component which consists of metal only

3.11
non-metallic system component
system component which consists of non-metallic material only

3.12
composite system component
system component comprising both metallic and non-metallic materials

3.13
non-flame propagating system component
system component which can catch fire as a result of an applied flame, in which the resulting flame does not propagate and self extinguishes within a limited time after the applied flame is removed

3.14
external influence
factor which may affect the system

3.15
gland
device designed to permit the entry of a cable or flexible cable into equipment, and which provides sealing and retention

Note 1 to entry: It may also provide other functions such as earthing, bonding, insulation, cable guarding, strain relief or a combination of these.

3.16
live part
conductor or conductive part intended to be energized in normal operation, including a neutral conductor, but by convention not a PEN conductor or PEM conductor or PEL conductor

[SOURCE: IEC 60050-826:2004, 826-12-08, modified – Note deleted.]

3.17
cable anchorage
system accessory or part of another system component to relieve conductors in terminals and terminations from strain by resisting the pull and twist forces on cable

3.18
cable restrainer
system accessory to relieve conductors in terminals and terminations from strain by resisting the pull force on cable or insulated conductors

3.19
cable retainer
system accessory for the retention of insulated conductors or cables to prevent them from falling out when the access cover is opened or removed

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3.20
grommet
component or an integral part of an enclosure to support and protect the cable, conduit or ducting or trunking at the point of entry

Note 1 to entry: It may also prevent the ingress of moisture or contaminants.

SEE: Figure 7.

3.21
entry membrane
component or an integral part of an enclosure to protect the cable, and may be used to support the cable, conduit or ducting or trunking at the point of entry

Note 1 to entry: It may also prevent the ingress of moisture or contaminants. An entry membrane may be part of a grommet.

SEE: Figure 7.

3.22
protecting membrane
component or an integral part of an enclosure, not to be penetrated in normal use, to provide protection against ingress of water or solid objects and/or to allow the operation of an accessory

SEE: Figure 7.

3.23
gasket
additional part or material or an integral part placed between mating surfaces of an enclosure which in compression contributes to the achievement of the declared ingress protection

3.24
reaction to fire
response of a CTS/CDS in contributing by its own decomposition to a fire, to which it is exposed, under specified conditions

3.25
fire resistance
ability of a CTS/CDS to fulfil for a stated period of time the required stability and/or integrity and/or thermal insulation, and/or other expected duty specified in a standard fire resistance test

Note 1 to entry: Fire resistant (adjective) refers only to this ability.

3.26
skirting CTS/CDS
CTS/CDS intended to be installed on the lower part of a wall

3.27
dry-treatment of floor
process for cleaning and/or care by which the floor is treated without liquids or with only a small quantity of liquid

Note 1 to entry: The required agents are applied and spread in such quantities that no pools are formed and soaking of the floor covering does not occur.

EXAMPLE 1: Examples for dry treatment are: Sweeping with a broom or carpet-sweeper, vacuum cleaning, brushing, cleaning with a dry cleaning powder, dry shampoo treatment, wet shampooing of carpets, treatment with cleaning litter (liquid chemical cleaning agent on a solid material used as carrier, e.g. soaked sawdust, damp cloth, etc.)

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3.28
wet-treatment of floor
process for cleaning and/or care by which the floor is treated with liquid agents such that pools of liquid, or soaking of the floor covering for a brief period of time, cannot be excluded

EXAMPLE 1: Examples of wet treatment are: wet scrubbing, manual or mechanical wiping.

3.29
screen
conductive screen
conductive part that encloses or separates electric circuits and/or conductors

[SOURCE: IEC 60050-195:1998, 195-02-38]

3.30
protective screen
electrically protective screen
conductive screen used to separate an electric circuit and/or conductors from hazardous-live-parts

[SOURCE: IEC 60050-195:1998, 195-06-17]

3.31
protective screening
electrically protective screening
separation of electric circuits or conductors from hazardous-live-parts by an electrically protective screen connected to the protective-equipotential-bonding system and intended to provide protection against electric shock

[SOURCE: IEC 60050-195:1998, 195-06-18]

3.32
protective separation
electrically protective separation
separation of one electric circuit from another by means of:

- double insulation; or
- basic insulation and electrically protective screening; or
- reinforced insulation

[SOURCE: IEC 60050-195:1998, 195-06-19]

3.33
partition
partition of an assembly
part of an assembly separating one compartment from other compartments

[SOURCE: IEC 60050-441:1984, 441-13-06]

3.34
internal protective partition
partition which when used in combination with basic insulation provides electrically protective separation between compartments of the CTS/CDS

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4 General requirements

CTS/CDS shall be so designed and constructed that where required they provide reliable mechanical protection to the insulated conductors, cables and possibly other electrical equipment contained therein. Where required, the system shall also provide adequate electrical protection.

Furthermore, the system components shall withstand the stresses likely to occur under classified minimum temperature for storage and transport, installation and application (see Tables 1 and 2) and maximum temperature for application (see Table 3) and during recommended installation practice and usage.

Equipment associated with or incorporated in a system component but which is not a system component, shall and need only comply with the relevant standard of this equipment, if any. However, it may be necessary to include such equipment in a test arrangement for the purpose of testing its interface with the CTS/CDS.

Compliance is checked by carrying out all the tests specified.

5 General conditions for tests

5.1 Tests according to this document are called type tests.

5.2 Samples of system components are, hereafter, called samples.

5.3 Unless otherwise specified, tests are carried out, considering the declared classification and functions of the system, with the CTS/CDS assembled and installed as in normal use according to the manufacturer's instructions.

Tests on non-metallic system components or composite system components shall not commence earlier than 168 h after manufacture. During this period, the samples may be aged according to 10.3.1.1 when required.

5.4 Unless otherwise specified, the tests are carried out at an ambient temperature of 20 °C ± 5 °C.

5.5 Samples of trunking lengths or ducting lengths for a given test are taken from different trunking lengths or ducting lengths.

5.6 Unless otherwise specified, all tests are carried out on new samples.

5.7 When toxic or hazardous processes are used, precautions shall be taken to safeguard the test personnel.

5.8 Unless otherwise specified, three samples are subjected to the tests and the requirements are satisfied if all the tests are met.

If only one of the samples does not satisfy a test due to an assembly or a manufacturing fault, that test and any preceding one which may have influenced the results of the test shall be repeated and also the tests which follow shall be carried out in the required sequence on another full set of samples, all of which shall comply with the requirements.

NOTE The applicant, when submitting a set of samples, can also submit an additional set of samples which can be used if one sample fail. The testing station will then, without further request, test the additional set of samples and will reject only if a further failure occurs.

If the additional set of samples is not submitted at the same time, the failure of one sample will entail rejection.

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6 Classification

6.1 According to material

Void.

6.2 According to resistance to impact for installation and application

6.2.1 CTS/CDS for impact 0,5 J

6.2.2 CTS/CDS for impact 0,7 J

6.2.3 CTS/CDS for impact 1 J

6.2.4 CTS/CDS for impact 2 J

6.2.5 CTS/CDS for impact 5 J

6.2.6 CTS/CDS for impact 10 J

6.2.7 CTS/CDS for impact 20 J

6.3 According to temperatures as given in Table 1, Table 2 and Table 3 below

Table 1 – Minimum storage and transport temperature

Minimum storage and transport temperature °C
– 45
– 25
– 15
– 5

Table 2 – Minimum installation and application temperature

Minimum installation and application temperature °C
– 25
– 15
– 5
+ 5
+ 15

Table 3 – Maximum application temperature

Maximum application temperature °C
+ 60
+ 90
+ 105
+ 120

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NOTE The application temperatures given in Table 2 and Table 3 are operating temperatures and not ambient temperatures.

6.4 According to resistance to flame propagation

6.4.1 Flame propagating CTS/CDS

6.4.2 Non-flame propagating CTS/CDS

6.5 According to electrical continuity characteristic

6.5.1 CTS/CDS with electrical continuity characteristic

6.5.2 CTS/CDS without electrical continuity characteristic

6.6 According to electrical insulating characteristic

6.6.1 CTS/CDS without electrical insulating characteristic

6.6.2 CTS/CDS with electrical insulating characteristic

NOTE The electrical insulating characteristic provides supplementary insulation when used with insulated conductors and other live parts, if any, provided with basic insulation.

6.7 According to degrees of protection provided by enclosure according to IEC 60529:1989

6.7.1 According to protection against ingress of solid foreign objects

IP4X or any higher degree of protection shall not be declared when it relies on butt joint or the accuracy of cutting of ducting lengths or trunking lengths or access covers without providing relevant fittings or assembly means or additional factory prefabricated sealing means.

6.7.2 According to protection against ingress of water

IPX1 or any higher degree of protection shall not be declared when it relies on butt joint or the accuracy of cutting of ducting lengths or trunking lengths or access covers without providing relevant fittings or assembly means or additional factory prefabricated sealing means.

6.7.3 According to protection against access to hazardous parts

IPXX-D shall not be declared when it relies on butt joint or the accuracy of cutting of ducting lengths or trunking lengths or access covers without providing relevant fittings or assembly means or additional factory prefabricated sealing means.

6.8 According to protection against corrosive or polluting substances

Under consideration.

6.9 According to the system access cover retention

6.9.1 CTS/CDS access cover, which can be opened without a tool

6.9.2 CTS/CDS access cover, which can only be opened with a tool

7 Marking and documentation

7.1 Each system component shall be marked with:

- the manufacturer's or responsible vendor's name or trade mark or identification mark;
- a product identification mark, which may be, for example, a catalogue number, a symbol or the like.

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