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NORME INTERNATIONALE

colour inside

Electrical supply track systems for luminaires

Systèmes d'alimentation électrique par rail pour luminaires

IEC 60570:2003-01+AMD1:2017-04 CSV(en-fr)

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Electrical supply track systems for luminaires

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IEC 60570:2003-01+AMD1:2017-04 CSV(en-fr)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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ELECTRICAL SUPPLY TRACK SYSTEMS FOR LUMINAIRES

FOREWORD

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IEC 60570 edition 4.1 contains the fourth edition (2003-01) [documents 34D/770/FDIS and 34D/774/RVD] and its amendment 1 (2017-04) [documents 34D/1221/CDV and 34D/1242A/RVC].

In this Redline version, a vertical line in the margin shows where the technical content is modified by amendment 1. Additions are in green text, deletions are in strikethrough red text. A separate Final version with all changes accepted is available in this publication.

International Standard IEC 60570 has been prepared by subcommittee 34D: Luminaires, of IEC technical committee 34: Lamps and related equipment.

This fourth edition constitutes a minor revision.

This standard shall be used in conjunction with IEC 60598-1.

NOTE In this standard, the following print types are used:

– requirements proper: in roman type;

– *test specifications: in italic type;*

– notes: in smaller roman type.

The committee has decided that the contents of the base publication and its amendment will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

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- withdrawn,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

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ELECTRICAL SUPPLY TRACK SYSTEMS FOR LUMINAIRES

1 Scope

This International Standard applies to the following track systems with two or more poles for the connection of luminaires to the electrical supply consisting of, either

– a system with a rated voltage not exceeding 440 V between poles (live conductors) with provision for earthing (class I) and a rated current not exceeding 16 A per conductor, or

– a SELV system with a rated voltage not exceeding 25 V a.c. or 60 V d.c. without provision for earthing (class III) and a rated current not exceeding 25 A per conductor, or

– a combination of the two systems mentioned above (mixed supply system) for the connection of both mains voltage luminaires (class I or II) and SELV supplied luminaires (class III) simultaneously, but in different sector openings (mains or SELV).

The track systems may also provide for the mechanical support of the luminaires.

It applies to track systems designed for ordinary interior use for mounting on, or flush with, or suspended from walls and ceilings. These track systems are not intended for locations where special conditions prevail as in ships, vehicles and the like and in hazardous locations, for example, where explosions are liable to occur.

2 Normative references

The following referenced documents are indispensable for the application 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 60417-2, *Graphical symbols for use on equipment – Part 2: Symbol originals*

IEC 60598-1:1999, *Luminaires – Part 1: General requirements and tests*

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

3 Terms and definitions

For the purposes of this standard, the definitions of section one of IEC 60598-1 apply, together with the following definitions.

NOTE The use of the term luminaire (see IEC 60598-1) hereinafter also includes components of the luminaire track system.

3.1
luminaire track system
system, including a track with conductors, for the connection of luminaires to an electrical supply in a range of different positions determined only by the length and location of the track and comprising some or all of the components defined in 3.2 to 3.14 (see also Figure 1)

3.2
track
generally linear assembly of conductors within a housing providing the electrical connection and in most instances mechanical support of luminaires

NOTE Luminaires can be positioned or repositioned along the length of track in a simple manner (that is, without the use of tools).

3.3
track* coupler
component enabling electrical or mechanical connection to be made between tracks, but electrically only on the same sector opening (mains voltage or SELV)

3.4
track* supply connector
component used for the electrical connection of a supply to the track system, but always operating on one sector opening only

NOTE 1 The function of a coupler and a track supply connector may be combined.

NOTE 2 For the SELV sector, the track supply connector may incorporate a SELV convertor or safety isolating transformer supplied directly from the mains voltage sector.

3.5
luminaire supply connector
component for the electrical connection of a luminaire to the track. A connector does not provide mechanical connection of a luminaire to the track

The electrical connection shall operate on one sector only (mains or SELV)

3.6
track* adaptor
component used for the electrical and mechanical connection of a luminaire to the track, but electrically and mechanically only on the same sector opening (mains voltage or SELV)

NOTE An adaptor may incorporate a switch or a fuse.

3.7
track* suspension device
component used for the mechanical connection of the track system to the supporting surface

3.8
luminaire suspension device
component used for the mechanical connection of a luminaire to the track

3.9
end cover
component intended to be fixed at the end of a track, providing electrical and mechanical protection of the ends of the conductors

3.10
class I track
generally linear assembly of conductors and housing designed to be operated from a mains voltage supply providing the electrical connection and in most instances mechanical support of class I and class II luminaires only.

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* The word ‘track’ is occasionally not repeated in the text of the standard where these definitions are used.

3.11
class III track
generally linear assembly of conductors and housing designed to be operated from a SELV supply providing the electrical connection and in most instances mechanical support of class III luminaires only

NOTE A class III SELV supplied system or a SELV sector opening need not have insulation to protect against contact with current-carrying parts, due to its inherently safe nature.

3.12
mixed supply track system – classes I and III
combination of tracks according to 3.10 and 3.11

3.13
rated current
current assigned to the track or the component by the manufacturer

3.14
track* sector opening
opening in the track enabling the electrical connection of the adaptor or the luminaire supply connector to the track conductors

4 Classification

Luminaire track systems shall be either class I, class III or a mixed supply track system with class I and class III sectors in accordance with the provisions of section two of IEC 60598-1.

Track systems shall only be classified as ordinary.

Luminaire/adaptor assemblies that are inseparable can be class II in accordance with the provisions of section two of IEC 60598-1 provided they contain no earthing facilities.

Separate adaptors shall not be classified as class II, but may be used with class II luminaires.

5 General test requirements

5.1 The requirements and tests of this standard shall not be applied to equipment already subject to its own separate IEC standard.

5.2 Tests according to this standard are type tests.

One test sample as described in 5.3 shall be subjected to all relevant tests.

In order to reduce the time of testing and to allow for any tests which may be destructive, the manufacturer may submit additional samples or parts of samples provided that these are of the same materials as the original sample and that the results of the test are the same as if carried out on a single sample.

5.3 Unless otherwise specified, the sample is tested as delivered and under the most unfavourable conditions of use taking into account the manufacturer's instructions, at an ambient temperature of between 10 °C and 30 °C.

* The word ‘track’ is occasionally not repeated in the following text where these definitions are used.

The minimum test sample of a class I or a class III track shall include the following items. For a mixed supply system the minimum sample quantities stated are required for both class I and class III sectors:

a) where a track system provides for interconnection between track lengths, at least 3 sections of track comprising a total length when assembled together of not less than 2,4 m and including 1 section of maximum length as indicated in the manufacturer's literature. Where interconnection is not provided for, only 1 track section of maximum length is required;

b) 1 track supply connector;

c) 1 end cover (if required);

d) 1 coupler per length of track supplied (if applicable) (minimum of 3);

e) 1 adaptor per length of track supplied (minimum of 3);

f) 1 luminaire supply connector per length of track supplied (if applicable) (minimum of 3);

g) the necessary suspension devices and any other components as specified by the manufacturer in his installation instructions;

h) a typical luminaire representing the most unfavourable combination from a testing point of view for the purpose of the test of clause 11;

i) additionally with a class III test sample, one selection of track of each type of class I track made by the same manufacturer.

NOTE Item i) is required for the tests of 8.1.1 when testing a class III track.

5.4 Unless otherwise specified, the tests are carried out in the order of the clauses.

6 Marking

The provisions of section three of IEC 60598-1 apply together with the requirements in 6.1 to 6.7.

6.1 The track shall be marked with rated current (A), rated voltage (V) and the graphical symbol IEC 60417-5180 for class III equipment if appropriate.

A mixed supply system shall be marked with rated current (A), rated voltage (V) on the mains voltage sector and on the SELV sector respectively. The SELV sector shall also be marked with the symbol for class III.

6.2 Adaptors need only be marked with their rated current, rated voltage, manufacturer's name or trade mark and type reference and the graphical symbol IEC 60417-5180 for class III equipment if appropriate.

Adaptors and luminaire supply connectors incorporated in luminaires do not require marking additional to that of the luminaire.

If the adaptor has a fuse incorporated, the rated current and type of fuse shall be marked on the body of the adaptor.

6.3 Couplers and connectors need only be marked with the manufacturer's name or trade mark and type reference and the graphical symbol IEC 60417-5180 for class III equipment if appropriate.

Luminaire supply connectors not incorporated in the luminaire shall, in addition, be marked with rated current and rated voltage.

6.4 Marking of the rated current and the rated voltage of the track system shall be easily discernible during and after installation of the track system.

NOTE National wiring rules may require that adaptors do not have a lower maximum current rating than the track system.

6.5 In addition to the above markings the following details, if they are necessary to ensure proper use and maintenance, shall be given either on the luminaire track system or in the manufacturer's instructions supplied with it:

a) details of the maximum mechanical loading for which each section of the track system and luminaire suspension devices are suitable, inclusive of the weight of luminaires and accessories. In addition, a warning that the mechanical loading shall be intended as the complete loading of the whole system.

b) a warning if the components are unsuitable for the connection of inductive loads, or de-rating for inductive loads if appropriate;

c) the maximum permissible track temperature under normal operating conditions if different from 70 °C;

d) a warning that it is the user's responsibility to ensure electrical, mechanical and thermal compatibility between the track system and luminaires attached to it.

Mounting instructions supplied with the adaptor shall state the track system on which it may be used and warnings shall be given that the use is limited to the track system specified.

6.6 In addition to the above markings and information, the following details shall be given in the manufacturer's instructions supplied with class III and mixed supply track systems;

a) a warning that the class III system or sector opening should only be connected to a SELV supply designed for operating class III equipment;

b) where there is an associated safety isolating transformer, adequate instruction regarding the correct method of connection of the transformer terminals to avoid misinterpretation of the primary and secondary terminals;

c) a warning that class III luminaire track systems/sectors openings and components are not compatible with class I track systems and that class III luminaire connectors/adaptors should not be used on other manufacturer's track systems;

d) instructions concerning suitable means for overload and short-circuit protection of the SELV circuit;

NOTE The means of protection should meet the requirements of IEC 60364-7-715: *Electrical installations of buildings – Extra-low voltage lighting installations*.

e) the minimum cross-sectional area and maximum length of the supply cable between transformer and track supply connector.

6.7 The instruction leaflet for class III track systems/sector openings shall contain the following warning:

CAUTION: TO REDUCE THE RISK OF OVERHEATING AND FIRE
DO NOT BRIDGE CONDUCTORS

7 General requirements and ratings

Track systems shall be so designed and constructed that in normal use they function safely and minimize the risk of danger to persons and surroundings.

In general, compliance is checked by carrying out all tests specified.

The rated voltage between poles for a class I track system shall not exceed 440 V and for a class III system the rated voltage shall not exceed 25 V a.c. or 60 V d.c.. The current rating for a class I track system shall be maximum 16 A and for a class III system it shall be maximum 25 A. For a combined system the rated current of each sector opening shall not exceed the values given for a class I or a class III system respectively.

Compliance is checked by inspection.

8 Construction

The provisions of section four of IEC 60598-1 apply together with the requirements in 8.1 to 8.12.

8.1 Components for class I tracks shall be so designed that there is no risk of accidental contact between the earthing contact of the component and the current-carrying parts of the track during insertion and removal by the user.

This requirement does not apply during installation of the track system.

8.1.1 Adaptors, couplers and supply connectors shall be so constructed that electrical connection with systems/sectors openings of other classes of tracks made by the same manufacturer is effectively prevented.

8.2 Class I adaptors shall incorporate provision for mechanical connection to the track such that the weight of the adaptor and/or luminaire is not supported by the electrical connections of the adaptor and track.

The requirements of 16.3 shall also apply.

Class III adaptors shall incorporate provision for mechanical connection to the track such that the weight of the adaptor and/or luminaire cannot impair electrical connection and safety.

8.2.1 When fuses are incorporated in adaptors they shall be of the high-breaking capacity type.

8.3 Contacts of adaptors shall not be removable without dismantling the adaptor. Also, it shall not be possible to replace the earthing pins or contacts in an incorrect position and this provision shall also apply to neutral pins or contacts where this is a safety requirement of the method of construction of the system.

Where luminaires meet the requirements of class II and are provided with an integral adaptor for connection to track systems, the adaptor may incorporate an earthing contact provided that, when connected to the track, the requirements of class II for the luminaire are maintained.

Compliance is checked by inspection and by the electric strength test of 15.1.