IEC 60364-7-715

Edition 2.0 2011-12

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Low-voltage electrical installations –
Part 7-715: Requirements for special installations or locations – Extra-low-voltage lighting installations

Installations électriques à basse tension –
Partie 7-715: Règles pour les installations et emplacements spéciaux – Installations d'éclairage à très basse tension

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

LOW-VOLTAGE ELECTRICAL INSTALLATIONS –

Part 7-715: Requirements for special installations or locations – Extra-low-voltage lighting installations

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.
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International Standard IEC 60364-7-715 has been prepared by committee 64: Electrical installations and protection against electric shock.

This second edition cancels and replaces the first edition, published in 1999, and constitutes a technical revision.

The major technical changes with respect to the previous edition are listed below:

– clause numbering is aligned with present structure of IEC 60364;
– introduction of references to LED modules and their particular installation requirements;
– modification of requirements for cross-sectional area of conductors.

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

FDIS	Report on voting
64/1807/FDIS	64/1815/RVD

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

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

A list of all parts in the IEC 60364 series, under the general title *Low-voltage electrical installations*, can be found on the IEC website.

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

INTRODUCTION

The requirements of this part of IEC 60364 supplement, modify or replace certain of the general requirements contained in Parts 1 to 6 of IEC 60364.

The clause numbering appearing after 715 refers to the corresponding parts or clauses of IEC 60364, Parts 1 to 6. Numbering of clauses does not, therefore, necessarily follow sequentially. Numbering of figures and tables takes the number of this part followed by a sequential number.

The absence of reference to a part or clause means that the general requirements contained in Parts 1 to 6 of IEC 60364 are applicable.

LOW-VOLTAGE ELECTRICAL INSTALLATIONS –

Part 7-715: Requirements for special installations or locations – Extra-low-voltage lighting installations

715 Extra-low-voltage lighting installations

715.1 Scope

The particular requirements of this part of IEC 60364 apply to the selection and erection of extra-low-voltage lighting installations supplied from sources with a maximum rated voltage of 50 V a.c. or 120 V d.c.

NOTE 1 For the definition of an extra-low-voltage lighting system see IEC 60598-2-23.

NOTE 2 AC voltages are given as r.m.s. values.

715.2 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 60364-4-41:2005, Low-voltage *electrical installations – Part 4-41: Protection for safety – Protection against electric shock*

IEC 60364-4-42:2010, Low-voltage *electrical installation – Part 4-42: Protection for safety – Protection against thermal effects*

IEC 60364-4-43:2008, Low-voltage e*lectrical installation – Part 4-43: Protection for safety – Protection against overcurrent*

IEC 60364-5-52:2009, *Low-voltage electrical installations – Part 5-52: Selection and erection of electrical equipment – Wiring systems*

IEC 60364-5-53:2001, *Electrical installations of buildings – Part 5-53: Selection and erection of electrical equipment – Isolation, switching and control*

IEC 60364-5-55:2001, *Electrical installations of buildings – Part 5-55: Selection and erection of electrical equipment – Other equipment*

IEC 60570:2003, *Electrical supply track systems for luminaires*

IEC 60598-2-23:1996, *Luminaires – Part 2: Particular requirements – Section 23: Extra-low-voltage lighting systems for filament lamps*

IEC 60998-2-1:2002, *Connecting devices for low-voltage circuits for household and similar purposes – Part 2-1: Particular requirements for connecting devices as separate entities with screw-type clamping units*

IEC 60998-2-2:2002, *Connecting devices for low-voltage circuits for household and similar purposes – Part 2-2: Particular requirements for connecting devices as separate entities with screwless-type clamping units*

IEC 61347-2-2:2000, *Lamp controlgear – Part 2-2: Particular requirements for d.c. or a.c. supplied electronic step-down convertors for filament lamps*

IEC 61347-2-13:2006, *Lamp controlgear – Part 2-13: Particular requirements for d.c. or a.c. supplied eletronic controlgear for LED modules*

IEC 61558-2-6:2009, *Safety of transformers, reactors, power supply units and similar products for supply voltages up to 1 100 V – Part 2-6: Particular requirements and tests for safety isolating transformers and power supply units incorporating safety isolating transformers*

715.4 Protection for safety

715.41 Protection against electric shock

715.414 Protective measure: extra-low-voltage provided by SELV and PELV

Add the following:

For extra-low-voltage lighting installations only SELV shall be applied. Where bare conductors are used, the maximum voltage shall be 25 V a.c. or 60 V d.c. according to 414.4.5.

The source of the ELV lighting installation can be one of the following:

– A safety isolating transformer complying with IEC 61558-2-6:2009.

Parallel operation of transformers in the secondary circuit is allowed only if they are also paralleled in the primary circuit and the transformers have identical electrical characteristics.

– A safety isolating convertor complying with IEC 61347-2-2:2000, Annex I for incandescent lamps, or IEC 61347-2-13:2006, Annex I for LED.

Parallel operation of convertors is not permitted.

715.42 Protection against thermal effects

715.422.3 Locations with risks of fire due to the nature of processed or stored materials

Add the following:

The manufacturer's installation instructions shall be followed, including those relating to mounting on flammable or non-flammable surfaces.

Luminaires and their accessories shall be designed and placed to avoid harmful heating of materials or surroundings.

NOTE See also IEC 60364-5-55:2001, Clause 559.

Add the following:

715.422.106 Fire risk of transformers/convertors

Transformers shall be either:

– protected on the primary side by the protective device required in 715.422.107.2; or
– short-circuit proof (both inherently and non-inherently), see IEC 60364-5-55, Clause 559, Annex A for the symbol.

Electronic convertors shall comply with IEC 61347-2-2:2000 and, for LED-modules with IEC 61347-2-13:2006, Annex I.

NOTE It is recommended that converters marked with the symbol 

are used. The temperature value limitation (of the convertor) within the triangle is given only as an example.

715.422.107 Fire risk due to short-circuit

715.422.107.1 If both circuit conductors are uninsulated, they shall be either:

– provided with a special protective device complying with the requirements of 715.422.107.2; or

– supplied from a transformer or a convertor, the power of which does not exceed 200 VA; or

– conductors of a system complying with IEC 60598-2-23:1996.

715.422.107.2 The special protective device against the risk of fire shall comply with the following requirements:

– continuous monitoring of the power demand of the luminaires;

– automatic disconnection of the supply circuit within 0,3 s in case of a short-circuit or failure which causes a power increase of more than 60 W;

– automatic disconnection while the supply circuit is operating with reduced power (for example by gating control or a regulating process or a lamp failure) if there is a failure which causes a power increase of more than 60 W;

– automatic disconnection in the case of switching on the supply circuit if there is a failure which causes a power increase of more than 60 W;

– the special protective device shall be fail-safe.

NOTE Account needs to be taken of starting currents.

715.43 Protection against overcurrent

Add the following:

715.430.104 Protection against overcurrent in ELV lighting installations

The use of self-resetting overcurrent protective devices is permitted only for transformers up to 50 VA.

715.5 Selection and erection of electrical equipment

715.52 Wiring systems

715.521 Types of wiring system

715.521.1

Replace the text by the following:

The following wiring systems shall be used:

– insulated conductors in conduit or cable trunking/ducting systems;

– rigid cables;

– flexible cables or cords;

– systems for ELV lighting according to IEC 60598-2-23:1996;

– track systems according to IEC 60570:2003;

– bare conductors (see clause 715.521.06).

Where parts of the ELV lighting installation are accessible, the requirements of Clause 423 also apply.

Metallic structural parts of buildings, for example, pipe systems or parts of furniture, shall not be used as live conductors.

Add the following:

715.521.106 Bare conductors

If the nominal voltage does not exceed 25 V a.c. or 60 V d.c., bare conductors may be used provided that the extra-low-voltage lighting installation complies with the following requirements:

– the lighting installation is designed, installed or enclosed in such a way that the risk of a short-circuit is reduced to a minimum; and
– the conductors used have a minimum cross-sectional area according to 715.524; and
– the conductors or wires are not placed directly on combustible material.

For suspended bare conductors, at least one conductor and its terminals shall be insulated, for that part of the circuit between the transformer and the protective device, to prevent a short-circuit.

NOTE Where bare conductors are used, consideration should be given to the possible presence of combustible material.

Add the following:

715.521.107 Suspended systems

Suspension devices for luminaires, including supporting conductors, shall be capable of carrying five times the mass of the luminaires (including their lamps) intended to be supported, but not less than 5 kg.

Terminations and connections of conductors shall be made by screw terminals or screwless clamping devices complying with IEC 60998-2-1:2002 or IEC 60998-2-2:2002.

Safety of the installation due to expected stresses in the conductors shall be in accordance with 559.5.2 of IEC 60364-5-55:2001.

Insulation piercing connectors and termination wires, with counterweights, hung over suspended conductors shall not be used.

In the case of a suspended system with bare conductors it shall be fixed to walls or ceilings by insulated fixing means and shall be continuously accessible throughout the route.

715.523 Current-carrying capacities

Add the following:

NOTE Values of current-carrying capacity for uninsulated conductors are under consideration.

715.524 Cross-sectional areas of conductors

Replace the text by the following:

The minimum cross-sectional area of the ELV conductors which are connected to the output terminals or terminations of transformers/convertors shall be chosen according to the load current.