


## Low voltage lighting installations

Low voltage lighting installations are especially attractive for stands, due to their versatility and colour fidelity. For safe use, always comply with the relevant safety instructions, VDE regulations (in particular VDE 0711) and the technical instructions issued by Messe Düsseldorf in this leaflet. These instructions also apply accordingly to other low voltage devices.

### 1 General

- 1.1 Electric installations (here: low voltage lighting systems) may only be installed or modified by qualified electricians and according to approved technical regulations.
- 1.2 The instructions are based on the valid VDE regulations and European standards (EN)
- 1.3 Lighting installations that are equipped with conforming plug connections may be installed by persons that are not qualified electricians.
- 1.4 The electrical equipment must be labelled with the CE mark.

### 2 Transformers and converters (fluorescent lamp ballasts)

- 2.1 The label must identify:
  - ☞ manufacturer
  - ☞ type
  - ☞ primary and secondary voltage in volt (V)
  - ☞ primary and secondary voltage in volt (V)
- 2.2 The protective devices of the equipment must be appropriate for the intended use and comply with the relevant regulations:
  - ☞ protective insulation for exposed devices (label )
  - ☞ temperature protection for installation in or near flammable furniture and fixtures (label "Max. Tc 135°C", "M", "MM").
  - ☞ The automatic switching off in the event of an overload or short circuit must be guaranteed by built-in secondary fuses, independent of the transformer/converter used.
  - ☞ The use of SELF transformers/converters according VDE 0551 is recommended.
- 2.3 The labels on the equipment must be durable. Manufacturer certificates, test reports, etc. can provide useful additional product information, if they are clearly identifiable.
- 2.4 Transformers/converters must be installed in such a way that they are readily accessible at all times.
- 2.5 Ensure adequate carrying off of heat around all electric components. Always maintain a safe distance to highly flammable materials.
- 2.6 If required, transformers/converters must be protected primarily by the fuse indicated by the manufacturer (in addition to secondary fuse protection).
- 2.7 Always observe the instructions regarding tension on the connecting lines and cables.

### 3 Lines and connecting cables

- 3.1 Feed lines from the transformer/converter to the lamps must be fully insulated.
- 3.2 Lines in intermediate ceilings, continuous-line luminaires, beams, girders, etc., must be installed at an adequate distance to built-in lamps and are to be properly secured.
- 3.3 Cable systems must be equipped with at least unipolar insulation from the power supply to the luminaires. According to the relevant VDE regulations, varnish is not a suitable insulator. Clothes-hangers, jewellery and other exhibits must never be hung on cable systems.
- 3.4 Never use parts of the building or stand construction as live conductors.
- 3.5 The conductor cross-section for the power supply from the transformer to the conduit box must be at least 1.5mm<sup>2</sup> Cu. We recommend the use of larger cross-sections to minimise line loss.
- 3.6 The cross-sections of flexible connection lines of lamps or luminaires must be at least 1mm<sup>2</sup> Cu.

### 4 Line safety fuses

- 4.1 The secondary lines are to be protected according to their cross-sections.
- 4.2 The line with the smallest cross-section in the electric circuit determines the size of the fuse in series.
  - ☞ 10A for min. cross-section 1.0 mm<sup>2</sup> Cu
  - ☞ 16A for min. cross-section 1.5 mm<sup>2</sup> Cu
  - ☞ 20A for min. cross-section 2.5 mm<sup>2</sup> Cu
  - ☞ 25A for min. cross-section 4.0 mm<sup>2</sup> Cu
- 4.3 Electronic safety devices are not line safety fuses in terms of the VDE regulations.
- 4.4 The max. protection amperage for single electric circuits for lighting purposes is max. 25 A. This corresponds to a transformer/converter capacity of approx. 300 Watt.
- 4.5 The fuses must be built into transformer housings, fuse-boxes, conduit boxes or low voltage switch distribution boxes so that they are easily accessible in the event of failure. We recommend to use only new transformers/converters equipped with individual secondary fuses for each electric circuit.
- 4.6 For transformers/converters with an output of up to 105 VA (approx. 10 A) with separate connecting points for each lamp feed line, individual fuses are not mandatory, provided that the continuous lines do not exceed a length of 2 metres.

### 5 Terminals

- 5.1 All connections must be secured with screw terminals or by means of other appropriate clamping systems. The connection of lines by means of twisted wires, weights or crocodile clips are not permitted.
- 5.2 All connections must be housed in distribution boxes or suitable connector boxes. Exposed terminal connections are not permitted.



Messe  
Düsseldorf

5.3 The connecting points of suspended cable systems must not be exposed to pull and are to be fully insulated against all conducting parts of the constructions.

#### **6 Lamps and luminaires**

- 6.1 Lamps/luminaires in areas that are accessible to the public must be protected against damage.
- 6.2 Always maintain a sufficient distance between lamps/luminaires and exhibits, furniture and fittings. We recommend the use of luminaires with cold-light reflectors.
- 6.3 Luminaires must be secured to prevent them from falling from the adapter or housing.
- 6.4 Lamps/luminaires must be equipped with safety screens. The use of low voltage or cold-light reflector luminaires is recommended.