

# Components for Incandescent Lamps

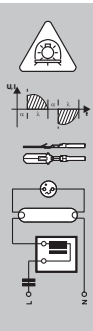
## Assembly Instructions for Mounting and Installing Electromagnetic Transformers for Low-voltage Halogen Lamps

### Mandatory Regulations

DIN VDE 0100	Erection of low voltage installations
EN 60598-1	Luminaires – part 1: general requirements and tests
EN 61558-1	Safety of transformers, power supply units and similar – part 1: general requirements and tests
EN 61558-2-6	Safety of transformers, power supply units and similar – part 2-6: special requirements for safety transformers for general use
EN 61000-3-2	Electromagnetic Compatibility (EMC) – part 3: maximum values – main section part 2: maximum values for mains harmonics (device input current up to and including 16 A per conductor)
EN 55015	Maximum values and testing methods for radio disturbance of electrical lighting facilities and similar electrical equipment
EN 61547	Installations for general lighting purposes – EMC immunity requirements

### Technical Specifications

Mains voltage range	VS safety transformers can be operated at the specified mains voltage within a tolerance range of $\pm 10\%$
Leak current	$\leq 0.1$ mA per safety transformer
Power factor	$\lambda \geq 0.85$
Compensation	Not required



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## Mechanical Mounting

Mounting position Any

Mounting location Safety transformers are designed for installation in luminaires or comparable devices. Independent safety transformers do not need to be built into a casing.

Fastening Preferably using screws,  $\varnothing$  4 mm

Insulation classes and maximum temperatures

In accordance with EN 61558, safety transformers are assigned to insulation classes on the basis of the insulation materials used (also called insulation material classes for this reason) in the transformers.

These insulation classes also prescribe respective maximum winding temperatures that must not be exceeded during normal operation or in the event of overload or short-circuit.

Compliance with the maximum winding temperatures is tested by measuring the resistance of the transformer's copper winding.

Insulation classes for safety transformers in accordance with EN 61558-1

	A	E	B	F	H
Max. winding temperature (1.06 $U_N$ ) during normal operation	100 °C	115 °C	120 °C	140 °C	165 °C
Max. winding temperature in the event of overload or short-circuit	200 °C	215 °C	225 °C	240 °C	260 °C

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## Electromagnetic Compatibility (EMC)

**Interference** Interference voltage measurements do not have to be taken for luminaires with magnetic safety transformers for operating low-voltage halogen lamps as these are systems with lamp voltages of under 100 Hz and it is assumed that such systems do not cause interference.

**Interference immunity** Thanks to the robust design and choice of materials, magnetic safety transformers provide a high degree of interference immunity and are not impaired by admissible mains power interference.

**Mains Harmonics** Owing to the Ohmic resistance characteristics of low-voltage halogen lamps and the low degree of distortion caused by magnetic transformers, mains harmonics remain low.

## Safety Functions of VS Transformers

Load	Transformer features	
	Unprotected (OS)	With self-locking temperature protection (TS)
Overheating	Is not recorded	Protection is provided by the built-in thermal switch
Short-circuit	Protection must be provided by devices fitted in the luminaire	
Overload	(fuse or thermal switch)	

## Dimmer Operation

VS safety transformers can be controlled using progressively adjustable phase-cutting leading-edge dimmers for low-voltage halogen lamps.

## Reliability and Service Life

VS safety transformers are designed for a long service life. Provided the specified maximum values for the winding temperature are complied with during operation, a service life of 10 years can be expected. Failure rate: < 0.025%/1,000 hours.

## Electrical Installation

**Conductors** Primary conductor cross-section: min. 0.75 mm<sup>2</sup>, secondary conductor cross-section: min. 0.75 mm<sup>2</sup> for 50 W output and a min. of 1 mm<sup>2</sup> for 100 W output

**Connections** Terminal screws: max. torque of 0.5 Nm must not be exceeded

**Parallel connection** Parallel connection is admissible on the primary side, but is inadmissible on the secondary side

