LEUTRON®




# SURGE PROTECTION
# LED LIGHTING SYSTEMS

WWW.LEUTRON.DE

## Surge Protection for new LED Lighting Systems

Light-emitting diodes (LED) are about to comprehensively change in the general lighting in Europe.

The advantages of LED refer to service life, energy consumption, flexibility, disposal and maintenance. It can be expected that this technology will catch on in the years to come and that conventional light sources will almost entirely disappear from the market.

The specifications regarding energy efficiency of luminaires and lamps are defined within the ErP directive 2009/125/EC. The EU regulation no. 245/2009 of the Commission from 18 March 2009 regulates the implementation of this ErP directive in Germany. Herein, the disappearance of inefficient lamps and ballasts is defined in several steps.

Many municipalities have already adapted to this situation and are using LED technology when installing new street lighting. (see also: „Kommunen im neuen Licht“, Technical University of Darmstadt, a study funded by the Federal Ministry of Education and Research, May 2013). Funding programmes encourage this transition.

However, it has been found that today's lighting systems cannot easily be replaced by LED technology. Technical design, processing, installation, maintenance and usage require a completely new approach to the new lighting systems.

Often, the planning process does not cover surge protection. A nearby lightning strike with surges of several thousand to ten thousand volts may cause over-voltage damages, that require the replacement of LED lamps and, thus, may burden municipal funds furthermore.

Surge arresters should preferably be placed in the lamp head close to the sensitive elements like control unit, ballast, driver electronics, printed circuit board carrying the LED lamps and optical sensors.

For already installed LED street lighting the lightning and surge protection can be added into the lamp head afterwards. In this case, an installation of surge arresters in the cable junction box at the stub of the lamppost is recommended.

Additionally, the control cabinet has to be protected against surges.

A lightning current arresters of class I should be used for the power supply (see fig. 1).

Whereas, a lightning current arrester of class II provides the best protection for the control electronics inside the control cabinet (see fig. 1).

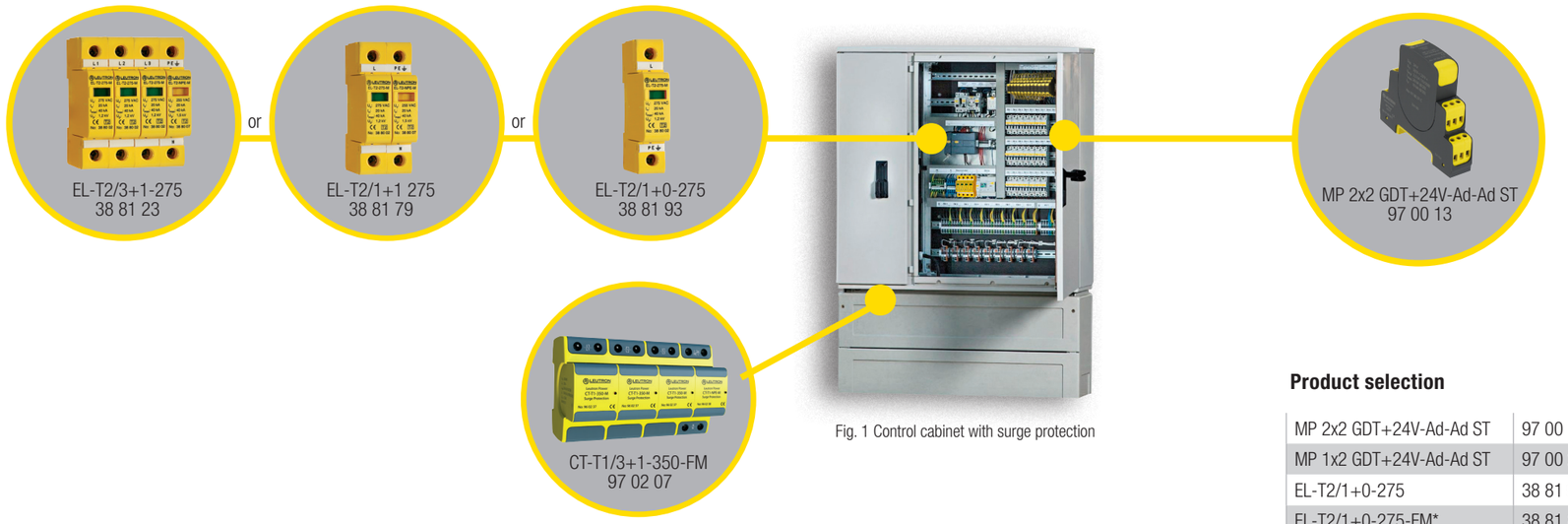
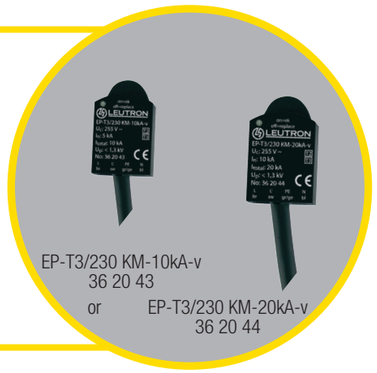



Fig. 1 Control cabinet with surge protection

**Note:**
If the protection installation is designed according to class II conditions, additional measures have to be taken to ensure a proper surge protection between the neutral conductor and chassis ground/grounding. For example, by placing a PE-N surge arrester at the stub of the lamppost.

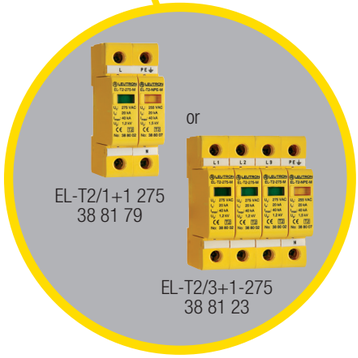
### For the protection of existing LED street lighting

Fig. 2 LED street lighting (Source: TRILUX GmbH & Co. KG)




Protection of the electronic ballast

alternative:




### Product selection

| | | | |
|---|---|---|---|
| MP 2x2 GDT+24V-Ad-Ad ST | 97 00 13 | D1 / C2 / C1 / C3 | Line protection of the control electronics (24 V / 2 DA) |
| MP 1x2 GDT+24V-Ad-Ad ST | 97 00 20 | D1 / C2 / C1 / C3 | Line protection of the control electronics (24 V / 1 DA) |
| EL-T2/1+0-275 | 38 81 93 | Type 2 / class II | Pluggable SPD for the use between L - N wires |
| EL-T2/1+0-275-FM* | 38 81 86 | Type 2 / class II | Pluggable SPD for the use between L - N wires |
| EL-T2/1+1 275 | 38 81 79 | Type 2 / class II | Pluggable SPD for the use in single phase TT and TN systems |
| EL-T2/1+1-275-FM* | 38 81 72 | Type 2 / class II | Pluggable SPD for the use in single phase TT and TN systems |
| EL-T2/3+0-275 | 38 81 37 | Type 2 / class II | Pluggable SPD for the use in 3 phase TNC systems |
| EL-T2/3+0-275-FM* | 38 81 30 | Type 2 / class II | Pluggable SPD for the use in 3 phase TNC systems |
| EL-T2/3+1-275 | 38 81 23 | Type 2 / class II | Pluggable SPD for the use in 3 phase TT and TN systems |
| EL-T2/3+1-275-FM* | 38 81 16 | Type 2 / class II | Pluggable SPD for the use in 3 phase TT and TN systems |
| EP-T3/230-10kA | 36 20 41 | Type 3 / class III | Surge arrester for installation systems and terminal equipment |
| CT-T1/3+1-350-FM | 97 02 07 | Type 1 / class I | Lightning current arrester for the protection of the control cabinet / power supply |
| EP-T3/230 KM-10kA-v | 36 20 43 | Type 2 + 3 / class II + III | Moulded surge arrester with optical signalling |
| EP-T3/230 KM-20kA-v | 36 20 44 | Type 2 + 3 / class II + III | Moulded surge arrester with optical signalling |

* FM: Remote signalling contact

LEUTRON®

**LEUTRON GMBH**

LIGHTNING AND SURGE PROTECTION

GAUSSSTRASSE 2

D-70771 LEINFELDEN-ECHTERDINGEN

T: +49-(0)711-94771-0

F: +49-(0)711-94771-70

INFO@LEUTRON.DE

WWW.LEUTRON.DE

**Dystrybutor:**

RST

**RST Sp. z o.o.**

PROFESJONALNA OCHRONA ODGROMOWA

I PRZED PRZEPIĘCIAMI

ELEWATORSKA 17/1

15-620 BIAŁYSTOK

T: +48 792 350 100

RST@RST.BIALYSTOK.PL

**WWW.RST.BIALYSTOK.PL**

WWW.LEUTRON.DE