



# Retrofit LED tubes

## Safety requirements under the new standard IEC 62776

The first edition of the new standard IEC 62776 was recently issued, making it easier for importers and distributors to market retrofit LED tubes in Switzerland.

In Switzerland, electrical low-voltage products must comply with the requirements of the Swiss Low Voltage Equipment Ordinance (NEV; SR 734.26) in order to be placed on the market. The ESTI notification «LEDs as a replacement for fluorescent tubes» published in 2010 is confirmed by the new standard IEC 62776, as the main safety requirements of this new standard were already mandatory in Switzerland. With the ongoing market surveillance and associated consulting services of ESTI, such LED tubes currently in use have been tested and approved and thus already comply with the new standard.

ESTI will continue to impose a direct sales ban on the marketing of LED tubes that are found to fall short of the safety requirements of NEV.

### Requirements for retrofit LED tubes according to the standard IEC 62776

- Correct marking on the LED tube, correct installation and operating instructions
- Safe interchangeability in any FL fixtures
- Secured against falling out
- Maximum temperatures in operation
- Protection during inserting and removing
- Protection against unintended contact with live parts
- Construction
- Heat resistance
- Compliance with photobiological safety

### Contact

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### Safe replacement

The main risks apply to the inserting and removing of the LED tubes. The standard demands that the individual steps that are to be completed are clearly described in the operating instructions (figure 1):

### Requirements for marketing according to NEV

■ LED tubes that carry voltage between the two caps are still prohibited. At least basic insulation must be assured.

The maximum permissible touch current for one-sided inserting/locking of an LED tube is 0.7 mA (peak value) (figure 2):

■ The modification of an existing FL fixture according to NEV is only permitted as follows (figure 3):

■ LED tubes which comply with the standard IEC 62776 are permitted in Switzerland, with one exception: it is

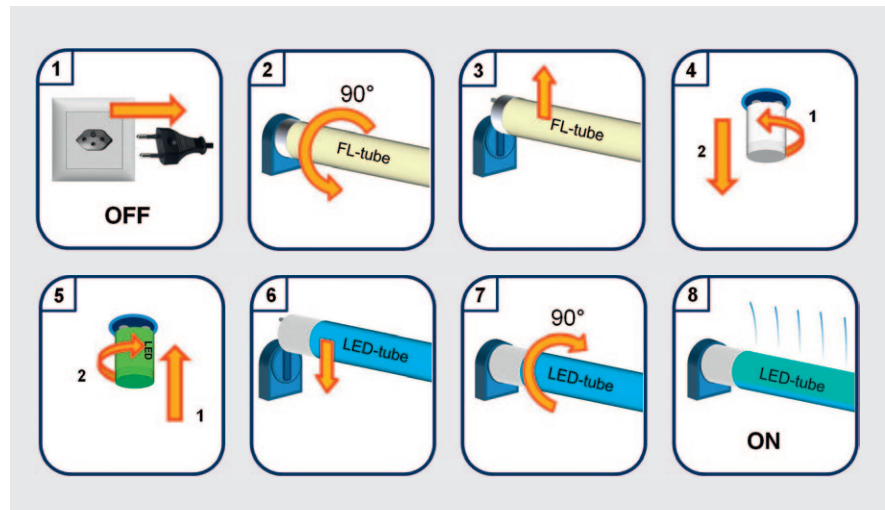


Figure 1 Instructions for safe replacement (IEC 62776).

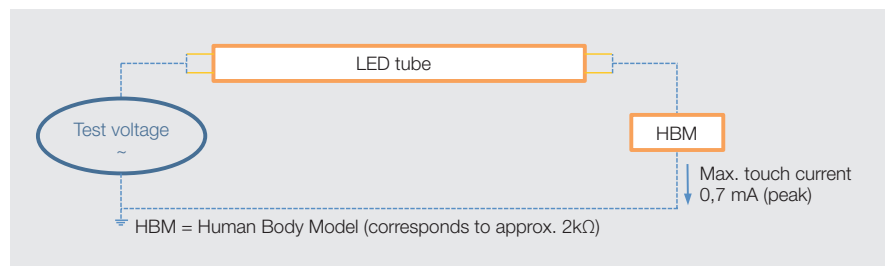


Figure 2 Schematic for measurement of touch current.

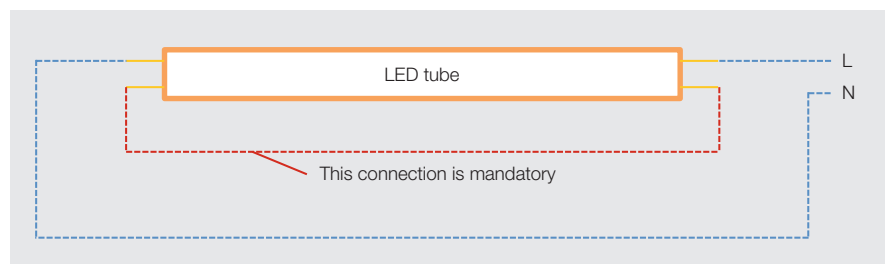


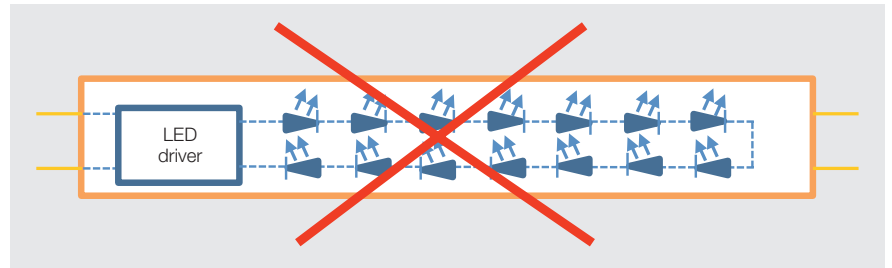
Figure 3 Correct: Schematic applies to all rewiring. Other types of wiring are prohibited in Switzerland.



prohibited to market LED tubes that have an open/blank side (**figure 4**). This is because the configuration does not work in any existing fixture. The use of these LED tubes would require the luminaire to be modified in a non-compliant manner (schematic diagram does not correspond to **figure 3**).

**Swiss safety mark (S)**  
**for LED tubes**

With the coming into force of the standard IEC 62776, the certification of LED tubes with the safety mark is possible. For additional information refer to: [www.esti.admin.ch/en/dienstleistungen\\_sicherheitszeichen.htm](http://www.esti.admin.ch/en/dienstleistungen_sicherheitszeichen.htm)



**Figure 4** Wrong: this configuration is prohibited in Switzerland. An inner connection of the empty connection ends is obligatory. Otherwise such LED tubes cannot be used as a retrofit solution for a fixture with conventional ballast.

The questions uncertain marketers have had regarding electrical safety in the area of LED lighting and the marketability according to NEV are thus an-

swered comprehensively by the ESTI safety mark.

Dario Marty, Director