LED tubes

Switching from fluorescent tubes to LED tubes: FAQs on product compliance and the CE mark

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RoHS ban on fluorescent tubes and LED lighting

The EU Restriction of Hazardous Substances (RoHS) directive restricts the use of certain hazardous substances in electrical and electronic equipment to preserve the environment, improve recycling possibilities, and minimize the risk of substance exposure.

For the lighting sector in particular, the RoHS directive regulates the use of mercury in lighting products. In 2022, the European Commission amended the RoHS directive, revoking most of the mercury exemptions for fluorescent lamps. As a result, the ban on T5 and T8 fluorescent tubes for general lighting purposes became effective from August 24, 2023.

Currently, many professional businesses still have fluorescent lighting installations, and they must now decide what to do. There are three main options for replacing fluorescent tubes:

1. Re-lamp with LED lamps
2. Renovations with LED luminaires
3. Upgrade to a connected lighting system

The best solution depends on the current installation as well as the customer requirements and the customer budget.

Signify offers all three options. We help customers to decide which option fits best, and we have designed our portfolio to make the switch easy and reliable, whether lamp replacement, a luminaire upgrade, or an upgrade to a connected lighting system.

All Signify solutions – whether lamps, luminaires, or connected lighting systems – come with:

- Product design in accordance with applicable safety and EMC standards such as IEC and CISPR. Our policy is 100% product compliance. We are committed to manufacturing and supplying lighting products that comply with all applicable laws and regulations.
- CE marking
- A clear warranty policy

When switching existing fluorescent tubes to LED tubes, there are still frequently asked questions in the market regarding installation options, product compliance, and CE mark considerations. This document is intended to answer these questions.

Frequently asked questions

1. What are the installation options when switching to LED tubes?

There are two options when switching existing fluorescent tubes to LED tubes:

1. Plug-and-play (keep the ballast and exchange only the lamp). Plug-and-play replacements enable existing luminaires to be retrofitted with LED tube alternatives.
2. Re-lamp with modification (bypass the ballast and rewire directly to mains voltage). A customer might prefer this option because it eliminates the ballast, avoiding future ballast maintenance costs and increasing system efficiency.

2. Is switching to LED tubes in line with internationally recognized safety standards?

To verify the safety and performance of our products, we adhere to internationally recognized safety standards, such as those defined by the International Electrotechnical Commission (IEC). Switching to LED tubes and ensuring that installation is done by a qualified professional in accordance with relevant local electrical codes and the instructions supplied by Signify are in line with these recognized safety standards.

3. Is safety and electromagnetic compatibility (EMC) affected by relamping when the ballast is kept (plug-and-play option)?

Our retrofit LED tubes have been tested and approved by an independent third-party lab against EN/IEC 62776 – Double-capped LED lamps designed to retrofit linear fluorescent lamps – Safety specifications. This harmonized standard specifies the safety and interchangeability requirements and the test methods and conditions required to demonstrate compliance. It applies to double-capped LED lamps (with GS and G13 caps) such as retrofit LED tubes intended as replacements for fluorescents with the same caps.

Note that EN/IEC 62776 also covers the replacement conditions and information and marking requirements for any additional steps in the process—for example, if a starter needs replacing, or if a safety check must be carried out to determine whether the correct combination of lamp and starter has been used.

Signify's LED tubes have been tested and approved by an independent third-party lab against applicable EMC standards such as CISPR 15, EN/IEC 61547, and EN/IEC 61000-3-2. As a result, relamping does not impact compliance with EMC standards as long as the installation is conducted in accordance with relevant local electric codes and the instructions supplied by Signify.

In addition, we ensure that our LED tubes comply with the Energy-related Products directive (ErP) and RoHS directives.

4. Is safety and EMC affected by relamping when the ballast and the luminaire are connected directly to mains voltage?

In general, a rewired luminaire is a simpler system when the ballast is removed, as the LED tube becomes the system's only active component. Signify's LED tubes are designed in accordance with applicable safety and EMC standards such as IEC and CISPR. Our assessment[1] indicates that modified luminaires that use our LED tubes do not introduce new hazards and do not increase safety and electromagnetic compatibility risks. They do not affect compliance with safety or EMC standards as long as the rewiring is conducted in accordance with relevant local electric codes and the instructions supplied by Signify.

The following steps are required by the professional installer modifying the luminaire to ensure the resulting luminaire is compliant with the applicable safety and EMC standard.

> **Step 1: Risk assessment:** The aim of the risk assessment is to determine the technical condition of the luminaire or lighting system that is to be modified, with regard to relevant safety aspects.
>
> The QR code below will lead to a risk assessment document that consists of a list of assessment criteria. To conclude that the risk is reduced or remains unchanged, that the modified luminaires do not introduce new hazards and that they do not increase safety and electromagnetic compatibility risks, all criteria must be met.
>
> Signify recommends using this document for a risk assessment and providing it to the customer once it has been completed and signed by the installer.

Rewiring check list

Step 2: The installation should be conducted in accordance with relevant local electrical codes and the instructions provided by Signify.

5. What is a significant modification (i.e., an important change)?

A modification is considered significant when the nature of the hazard associated with the product has changed or the level of risk has increased.[2]

6. Is relamping considered a significant modification when the ballast is kept?

No. Relamping while keeping the ballast does not modify the luminaire.

7. Is relamping considered a significant modification when the ballast is bypassed?

The luminaire performs its intended function when the conventional lamp and the ballast are effectively replaced by a Philips LED tube. Furthermore, our risk assessment[1] indicates that modified luminaires that use Philips LED tubes do not compromise compliance with safety and EMC standards, provided that the LED tubes are installed according to our instructions. Therefore, relamping is generally not considered a significant modification (i.e. an important change[2]) when the ballast is bypassed.

To determine whether the modification is significant in a specific instance, the professional installer modifying the luminaire should conduct a risk assessment. Refer to the answer to question number 4.

8. What is the CE mark?

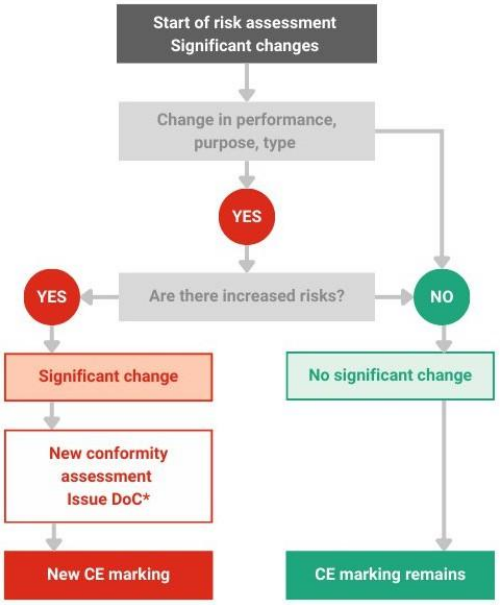
The CE mark is an indicator of a product's compliance with EU legislation. It is a visible mark that manufacturers are required to display on a product when placed on the EU market.[3]

By affixing the CE marking, the manufacturer declares conformity with all applicable requirements when the product is operated as stipulated in specification and design-in guides. Signify's lighting products comply with the requirements of the following directives:

- Low Voltage Directive (LVD) - for electrical and photobiological safety
- Electromagnetic Compatibility Directive (EMC) – ensures that electrical and electronic equipment does not generate, or is not affected by, electromagnetic disturbance
- Energy-related Products Directive (ErP) - for eco-design requirements
- Restriction of Hazardous Substances Directive (RoHS) - to restrict hazardous materials
- Radio Equipment Directive (RED) - for safety and health, electromagnetic compatibility, and the efficient use of the radio spectrum. RED applies only to products that intentionally emit and/or receive radio waves for the purpose of radio communication, such as Philips MasterConnect LED tubes.

9. When is a new CE mark needed?

A new CE mark is needed when significant modifications are made to the performance, purpose or type of the luminaire as it is then considered as a new product. [3]



10. Does a luminaire's CE mark need to be renewed when the ballast is kept?

No. In this case, the luminaire is neither modified nor placed on the market, so the CE mark does not need to be renewed. The re-lamping as such is considered as regular product maintenance.

11. Does a luminaire's CE mark need to be renewed when the ballast is bypassed?

If during rewiring of the luminaire no significant changes are made to the performance, purpose or type [3] when converting an existing luminaire with old lighting technology to LED technology, no new product will be created, then the existing CE marking of the luminaire remains valid and a new CE declaration of conformity is not required. As a result, the installer making the conversion will therefore not become a manufacturer.

To assess if new CE declaration of conformity is required, the professional installer modifying the luminaire should conduct a risk assessment. Refer to the answer to question number 4.

12. Can you give some real-life examples?

Example	**Is the luminaire considered a new product?**	**Is a new conformity assessment for the luminaire required?**
Exchanging faulty components or components that reach end of life	No. This is considered product maintenance.	No.

Example	Is the luminaire considered a new product?	Is a new conformity assessment for the luminaire required?
Installer or building owner exchanges a fluorescent tube for an LED tube without making any modifications to the luminaire	No. This is considered product maintenance.	No.
Fluorescent lamps are exchanged for LED tubes, with the ballasts removed and the wiring changed, and the modified luminaires remain in use by the original owner.	If during rewiring of the luminaire no significant changes are made to the performance, purpose or type [3] when converting an existing luminaire with old lighting technology to LED technology, the modified luminaire is not considered a new product. The modification will only be considered significant if it results in a change in performance, purpose or type that increases the level of risk. To determine whether the modification is significant, the professional installer modifying the luminaire should conduct a risk assessment. Refer to the answer to question number 4.	If the modified luminaire is not considered a new product [3], the existing CE marking of the luminaire remains valid and a new CE declaration of conformity is not required. As a result, the installer making the conversion will therefore not become a manufacturer. To determine whether a new CE declaration of conformity is required, the professional installer modifying the luminaire should conduct a risk assessment. Refer to the answer to question number 4.

Who is liable for relamping?

In the case of relamping, liability is very clear[4]: the manufacturer of the light source remains responsible for the light source, and the manufacturer of the luminaire remains responsible for the luminaire. When replacing a lamp with an upgraded product—for example, when an existing product is no longer available—the liability remains the same. That is, the replacement is considered a maintenance activity.

Maintenance activities, such as changing a light source, changing a starter, or carrying out repairs, are not seen as altering the original function of the luminaire, so responsibilities and liabilities remain the same. Even if original spare parts are no longer available and have to be replaced by upgraded parts, this is still considered a maintenance activity.

The installer must perform any rewiring according to our instructions. The liability for the supplied parts (the light source, for example) is the responsibility of the supplier.

Does the luminaire's warranty apply?

In most cases, when retrofitting a luminaire, the luminaire's warranty will expire. The warranty of the light source will still be valid if the installer has followed the installation instructions.

Note: If the luminaires are older than the warranty period, the warranty has expired already.

How do insurance companies handle incidents (for example, fire) after luminaire modification?

An insurance company inspector will carry out an investigation on the status of the luminaire—for example, to determine if maintenance has been done regularly and in the correct manner by qualified personnel. For modified luminaires, the inspector will check whether the modification has introduced new hazards. The inspector will also verify whether the company handling the modification has followed local electrical codes and the manufacturer's guidelines.

Notes

1. Risk of burn, fire, injury, electric shock, and electromagnetic interference are assessed for the use and maintenance of the modified luminaire, as well as for the modification process.
2. The Blue Guide on the implementation of EU product rules (2022/C 247/01), Section 2.1 - Repairs and modifications to products
3. The Blue Guide on the implementation of EU product rules (2022/C 247/01), Section 4.5.1 - CE marking
4. The Blue Guide on the implementation of EU product rules (2022/C 247/01), Section 3.1
5. This document is made in English and translated into some local languages. In case of a conflict the English version prevails.

Risk Assessment Checklist 2025

(1) Signify white paper ‘Switching from fluorescent tubes to LED tubes: FAQs on product compliance and the CE mark’.
(2) This document is made in English and translated into some local languages. In case of a conflict the English version prevails.

Switching from fluorescent tubes to LED tubes: Risk assessment*

Checked by: _____

Luminaire type: _____

(Enter protection class/ manufacturer's designation from type plate if applicable)

Installation location: _____

(street, building, room, position in the room)

Date: _____

The aim of the risk assessment is to determine the technical condition of the luminaire or lighting system to be modified with respect to safety-related aspects.

Below, you will find a list of assessment criteria. To conclude that the risk is reduced or remains unchanged, that the modified luminaires do not introduce new hazards and that they do not increase safety and electromagnetic compatibility risks, all criteria must be met.

Signify recommends using this document for a risk assessment and providing it to the customer once it has been completed and signed by the installer.

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The conversion must be performed in accordance with the installation instructions provided with the LED lamp.

If you have any questions, please feel free to contact your local Signify representative.

The following aspects must be examined:

Before switching from fluorescent tubes to LED tubes

Tested

The ambient conditions on site must be verified. The following must be checked:

- ☐ **The ambient temperature** of the luminaire is within the temperature range of -20°C to +45°C.
- ☐ The ambient conditions on site (**dirt, water, dust**) comply with the specification of the luminaire (IP protection).
- ☐ There is no influence of **chemically active substances** (e.g. sulphur).
- ☐ The luminaire is mounted on a **normal surface** OR the luminaire has a D or FF marking when mounted on **highly flammable surfaces**.

General test points

The application and intended purpose of the luminaire must be verified. The following must be checked:

- ☐ The original performance, purpose or type of the luminaires remain unchanged after the conversion. e.g. indoor luminaires, office luminaires or street luminaires must continue to be used as such after the conversion.
- ☐ The luminaire is not intended for emergency lighting.
- ☐ The luminaire is not used in a sports hall OR the luminaire has a ball impact safety sign when used in a sports hall.
- ☐ The luminaire is not ATEX-certified.
- ☐ If the luminaire is connected to a lighting control system, please contact your Signify representative for information on its suitability

Visual inspection of the luminaire

- ☐ The luminaire and mounting show no visible damage (no deformations, dents, openings and cracks or other damage, e.g. damage to any seals. Any seals are in perfect condition).
- ☐ Plastics that hold live parts in position or provide protection against electric shock have sufficient mechanical strength.
- ☐ Lamp holders are in good condition.
- ☐ Wiring and insulation are in good condition.

During switching from fluorescent tubes to LED tubes

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For proper modification, please follow the installation instructions supplied with the LED lamp.

☐ Appropriate wire clamps are on hand.

☐ The installation instructions supplied with the LED lamp is followed

☐ If new cables are used, all requirements regarding e.g. cable crosssections are met

☐ The conversion does not change the protection class. The following requirements must be met:

- All conductive housing parts of protection class 1 luminaires are connected to the protective conductor system of the electrical installation.
- Protection class 2 luminaires have reinforced or double insulation.

■ EMC conformity aspects are preserved when Philips LED lamps are used.

■ Philips LED lamps comply with the blue light classification RG0/RG1 and can be used without further testing

After switching from fluorescent tubes to LED tubes

The converted luminaire must no longer be operated with fluorescent lamps. To indicate this, the enclosed warning sticker shall be applied clearly visible next to the type plate of the luminaire. Give a final check that,

☐ The luminaire is mounted thoroughly.

☐ The provided warning sticker is clearly visible next to the type plate of the luminaire.

Special mechanical properties (optional)

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