Radium
Die Lichtmarke

Installation Instructions

RaLED Tube

HF (High Frequency = for ECG operation)

and

EM (Electro Magnetic = for CCG operation)

Radium
Die Lichtmarke

Portfolio

Product line	RaLED Tube EM	RaLED Star Tube EM	RaLED Star Tube HF
Product picture			
Compatibility	Electromagnetic driver (EM/CCG) and line voltage (220-240V)	Electromagnetic driver (EM/CCG) and line voltage (220-240V)	High frequency / electronic driver (HF/ECG). Operation with ECG in luminaire only!

Agenda

1. **Installation Options**

2. **RaLED Tube EM** (Electro Magnetic = for CCG operation)
   2.1 Retrofitting in a CCG luminaire
      2.1.1 Luminaires with compensating capacitor
      2.1.2 Duo circuit lamp luminaire

   2.2 Conversion / Direct Wiring
      2.2.1 Direct line voltage connection
      2.2.2 Example installation direct wiring

3. **RaLED Star TUBE HF** (High Frequency = for ECG operation)

   3.1 Retrofitting in an ECG luminaire

   3.2 Multi circuit lamp luminaire

1. Installation options

1.1 Retrofitting a CCG luminaire accord. to EN 62776

Replacing fluorescent T8-tube and installed starter by RaLED Tube EM T8 and RaLED Tube starter. The CCG remains in luminaire and electric circuit.

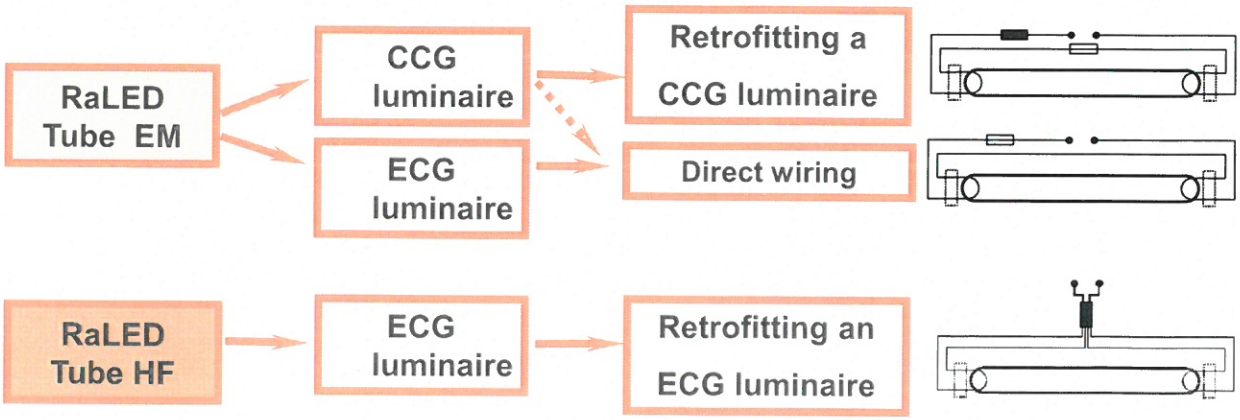
1.2 Conversion of an ECG or CCG luminaire

Basically, rewiring of the luminaire becomes necessary if fluorescent tubes in ECG-luminaires shall be replaced by RaLED Tube EM. This also applies to CCG-luminaires if the CCG should be taken out of the electric circuit.
Installation must be done by qualified electricians and all security precautions described herein must be followed. Please, refer to chapter 2.2.2 'Example installation direct wiring' for more details.

1.3 Retrofitting an ECG luminaire accord. to EN 62776

Replacing conventional fluorescent T8 tube by RaLED Tube HF T8. The ECG remains in luminaire and electric circuit.
Note: Please, check the driver compatibility list at www.radium.de before the change, as the RaLED Star Tube HF must be compatible with the installed ECG.

Overview of possible installations



2. EM-Types

2.1 Retrofitting of a CCG luminaire

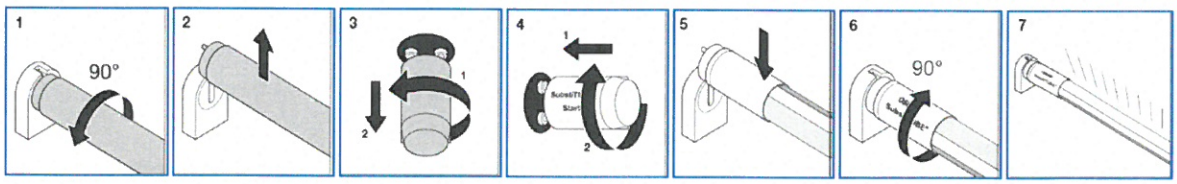
2.1 Retrofitting of a CCG luminaire

The fluorescent T8 lamp is exchanged with a RaLED Tube EM T8 and the starter is replaced by a RaLED Tube starter. The built-in CCG can be used as it is and existing certifications remain valid. Its losses are reduced to ohmic losses of usually about 1W.

Note: If the starter has **not** been changed to RaLED Tube starter, the lamp will start blinking. Please, switch off immediately and change the starter, because in this case RaLED Tube EM can be damaged.

RaLED Tube EM can be used in luminaires with changeable starters only.

Retrofitting for common lamp holders



Exchange conventional T8 lamp | Remove T8 lamp | Remove conventional starter | Insert RaLED Tube starter | Insert RaLED Tube EM | Swivel RaLED Tube EM | Power on and light-up

Installation Instructions

- Make sure that the supply voltage is disconnected
- Remove the conventional T8 lamp
- Replace the old starter with RaLED Tube starter
- Insert RaLED Tube EM into lamp holders

The RaLED Tube starter with integrated fuse 250V, T2A is absolutely required for operation and safety!

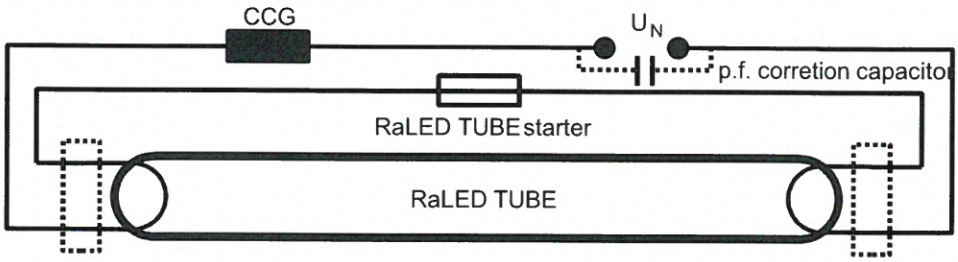
2. EM-Types

2.1 Retrofitting of a CCG luminaire

2.1.1 Luminaires with compensating capacitors

RaLED Tube EM can be applied in luminaires with integrated compensating capacitors. The maximum number of RaLED Tube EM in compensated luminaires possibly operated at one automatic fuse can be found in the RaLED Tube product data sheet → download area at related product (www.radium.de).

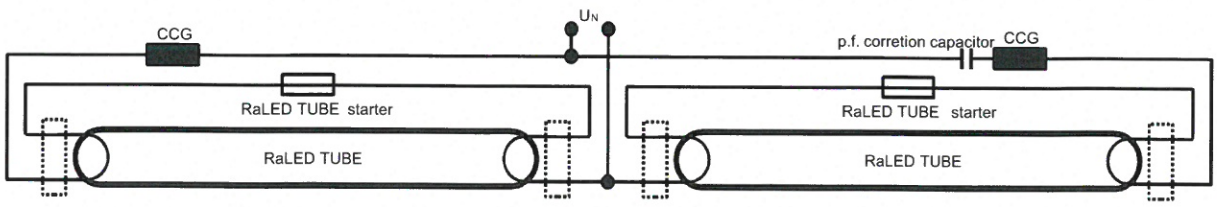
Circuit diagram of a retrofitted CCG luminaire



2.1.2 Duo circuit lamp luminaires

Double lamp luminaires can be refitted in analogy to below scheme to single lamp luminaires if they show duo circuit wiring. Usage in tandem circuitry luminaires with serially wired lamps requires rewiring (typically in 2ft installations). → see chapter 2.2.

Circuit diagram of a retrofitted double lamp CCG luminaire



2. EM-Types

2.2 Conversion / Direct Wiring

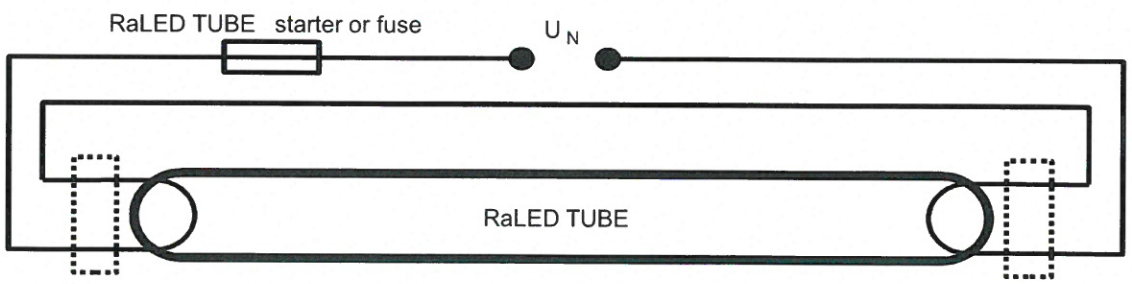
2.2.1 Direct line voltage connection

RaLED Tube EM products can be operated directly at mains voltage 220V-240V. Operation in an ECG luminaire is not possible, so its conversion offers a good way out. When the lamp in a CCG luminaire is just changed, the CCG remains in the luminaire – with all its losses. Direct mains operation of RaLED avoids all these losses.

Conversion must be done according to description below or according to chapter 2.2.2 'Example installation direct wiring'.

Rewire a luminaire on both sides as shown below. Thus, RaLED Tube EM can be inserted in any direction with standardised IEC compliant G13 lamp holders. All wires need to be approved for the existing voltages and the appliance class, respectively. Usually, solid wires with single isolation can be used for class I, double insulation wires could be used for class II. The maximum wire cross-section for lamp holders and starters is typically 0.5 mm^2. Built-in control gears (ballasts) must not remain connected after rewiring.

Direct wiring circuit diagram of a retrofitted luminaire



2. EM-Types

2.2 Conversion / Direct Wiring

Installation instructions

Rework by qualified electricians only

- Make sure that the supply voltage is disconnected
- Remove the conventional lamp
- Remove power factor correction capacitor (if installed to improve power factor)
- Rewire the luminaire as shown in the circuit diagram on the page before

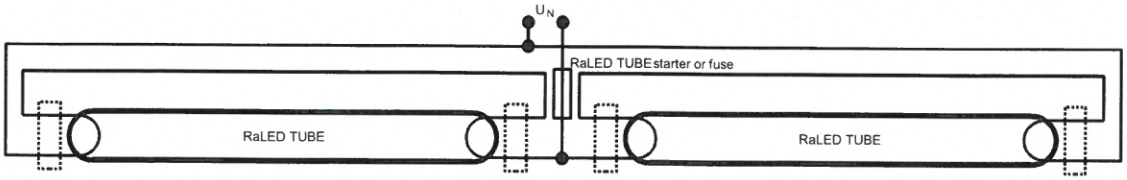
Use RaLED Tube starter or a fuse (250V, T2A)

- Insert RaLED Tube into lamp holders and check light distribution angle
- Make sure with appropriate tests, that the rewired luminaire complies to all relevant safety requirements and other applicable regulations, e.g. acc. to DIN VDE 0701-0702 or 2004/108/EC
- Mark rewired luminaire with new type plate

RaLED Tube starter or fuse (250V, T2A) is necessary for installation protection (possible components on next page)

- Do not insert fluorescent lamps, as they would be destroyed
- Responsibility of technical and safety consequences of the converted luminaire is shifted to the party carrying out the conversion.
- The installer becomes the legally responsible person for the converted luminaire.

Direct wiring circuit diagram of a retrofitted double lamp luminaire

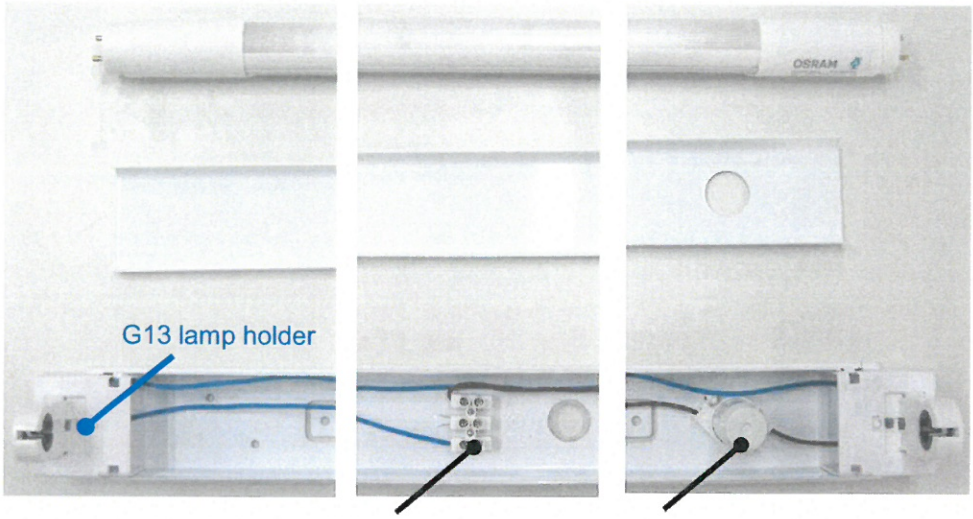


2. EM-Types

2.2 Conversion / Direct Wiring

2.2.2 Example installation direct wiring

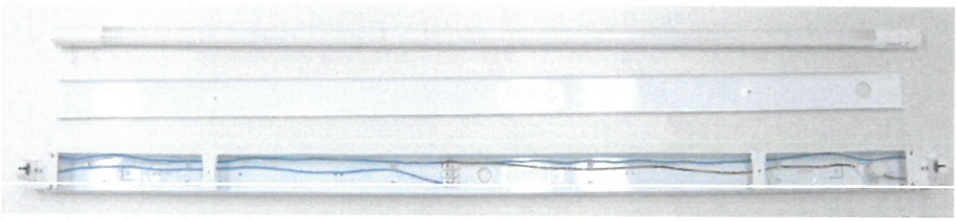
Direct wiring of a luminaire for RaLED Tube EM (control gear removed)



L, N connection unit

RaLED TUBE starter

Make sure to modify the wiring completely, otherwise e.g. short circuits could lead to damage.



Example for an integrated holder for RaLED Tube and Starter

Example for terminal block with integrated fuse holder

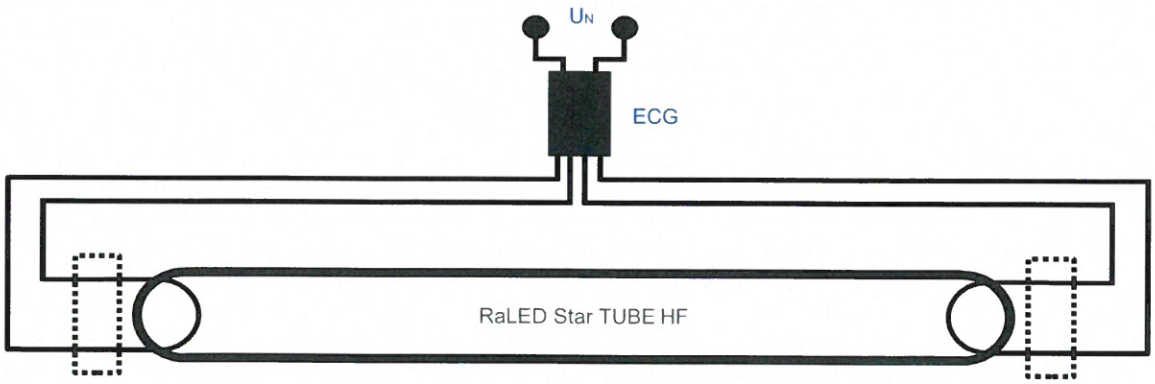
3. HF-Types

3.1 Retrofitting of an ECG luminaire

3.1 Retrofitting of an ECG luminaire

Replacing the lamp is all what needs to be done to upgrade an existing luminaire with electrical control gear to newest Radium HF-LED-technology. Since only the lamp is replaced, there is no constructive modification necessary in the luminaire.
The fluorescent lamp has to be exchanged with RaLED Star TUBE HF.
The RaLED Star TUBE HF tube is compatible with ECGs of various brand manufacturers. For further information regarding the tested ECGs a compatibility list is available on www.radium.de.
The energy consumption of the ballast will not be reduced by retrofitting, as compared to a retrofitted CCG luminaire.
For activating RaLED Star TUBE HF-Type press the safety buttons on either side of the lamp. This is part of the new international safety standard IEC 62776 to prevent electrical shocks during installation. By reconnecting the luminaire to supply voltage you switch the lamp on.

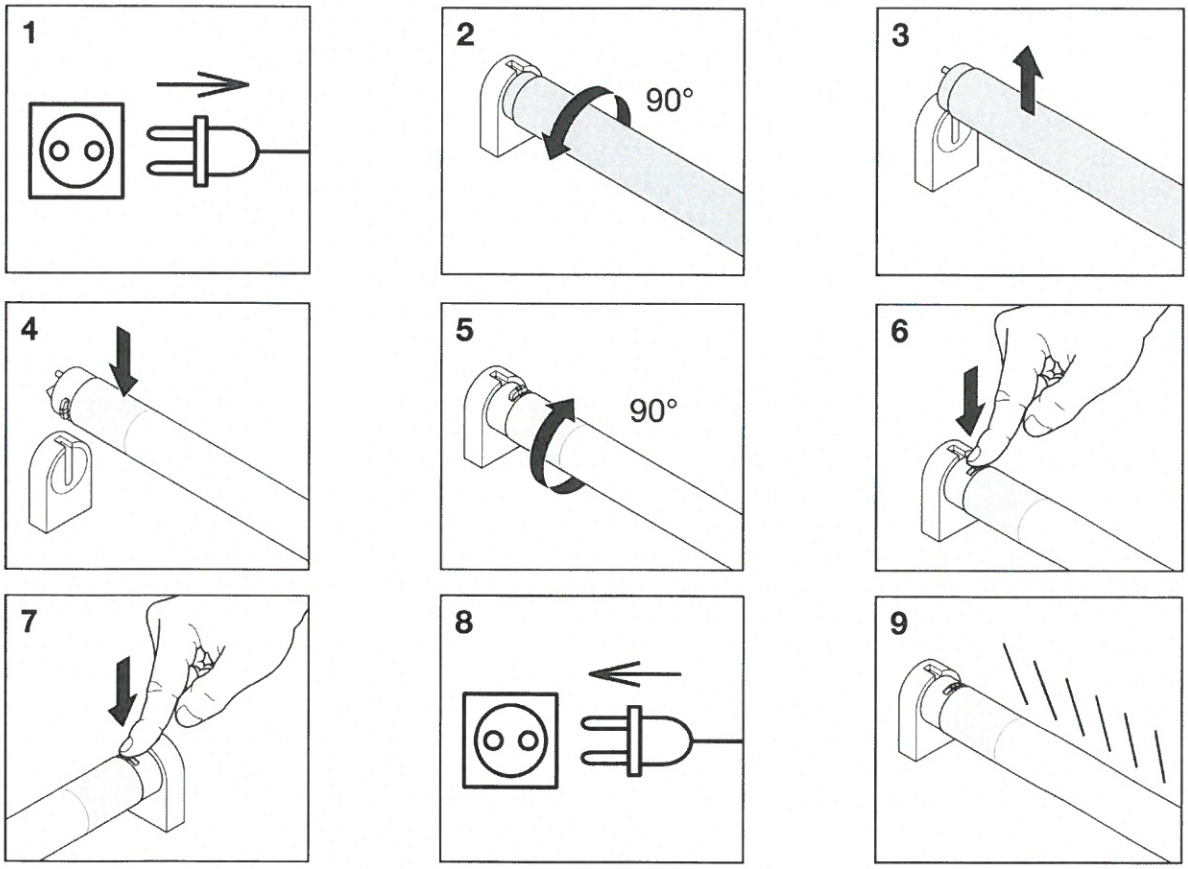
Circuit diagram of a retrofitted ECG luminaire



3. HF-Types

3.1 Retrofitting of an ECG luminaire

Retrofitting for common lamp holders



Installation Instructions

- Make sure that the supply voltage is disconnected (1)
- Turn the conventional lamp 90° degrees (2) and take it out of the socket
- Insert RaLED TUBE HF (4) into socket and locate into position by turning 90°
- Activate tube by pushing the two safety buttons (6), (7)
- Connect RaLED TUBE HF to supply voltage (8)
- Check light emission direction (9)

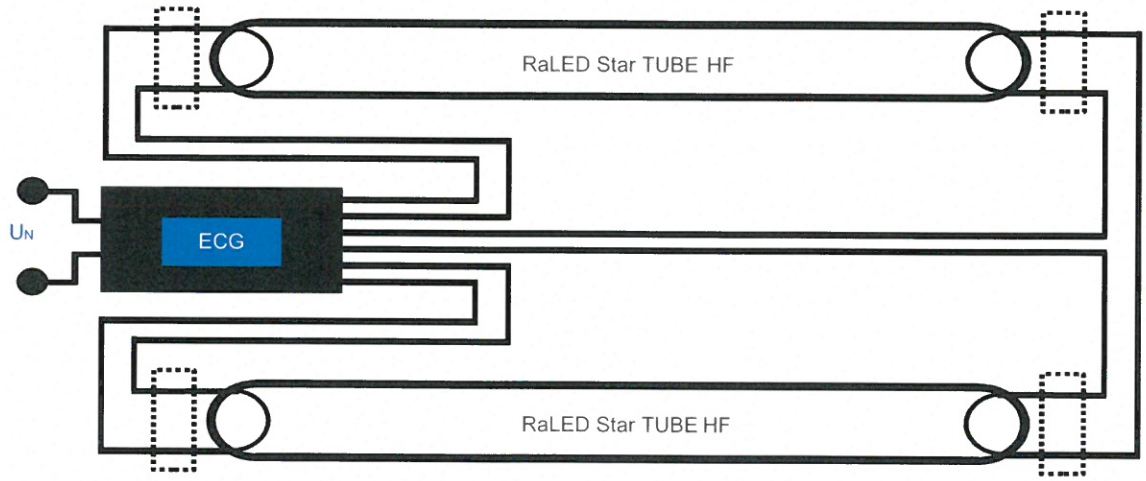
3. HF-Types
3.2 Multi circuit luminaires

3.2 Multi circuit lamp luminaires

Double lamp luminaires can be retrofitted in analogy to single lamp luminaires. However, the compatibility of the newly applied RaLED Star Tubes HF with the integrated ECG has to be checked with the compatibility list at www.radium.de beforehand.

Rewiring of the luminaire is not required. An example wiring for luminaires with OSRAM® ECGs is shown below.

Circuit diagram of a retrofitted double lamp ECG luminaire



Even ECG luminaires with more than two lamps do not need to be changed. However, RaLED Star Tube HF must be compatible with the ECG installed.