Safe LED tube connection system

Eltako only uses the save LED tube connection system for its LED tubes. LED tubes with the identification ⚠ are dimmable.

- Open pins never carry live voltage if the tubes are plugged into a socket on one side and then twisted.

- If Eltako LED tubes are used in luminaries instead of fluorescent lamps which were previously operated with a **conventional or low loss ballast,** only the starter needs to be replaced with the supplied starter bridge. Eltako LED tubes can be used in any position. See the wiring examples for **single circuit** and **double circuit**.
  If dimmable Eltako LED tubes need to be dimmed, the electronic ballast must be bridged or removed by a qualified electrician.
- If Eltako LED tubes are used in luminaries instead of fluorescent lamps which were operated in **tandem circuits**, they must be rewired and then rewired or bridged like the conventional or low loss ballast. However, this can only be carried out by a qualified electrician using the connection example we specified. Eltako LED tubes can then be used in any position.
- If the starter is not removed from conventional or low loss ballast circuits, or if it was removed but not replaced by a starter bridge, the LED tube does not function but there is no short circuit.
- In addition to the energy consumption of LED tubes, a magnetic ballast which is not removed or not bridged has a high and unnecessary power loss and also causes high voltage peaks which may shorten the service life of LED tubes. Removal or bridging may only be carried out by a qualified electrician. The power loss of electronic ballasts is much lower, therefore it is not as important to remove or bridge them over, unless the Eltako LED tubes need to be dimmed.
- If a fluorescent tube is refitted to a lamp that was previously equipped with magnetic or electronic ballast and converted to LED tubes, the previous wiring with magnetic or electronic ballast must be restored to avoid a short circuit.

- If Eltako LED tubes are fitted to lamps with an **electronic ballast** instead of fluorescent tubes, it must be rewired and the electronic ballast must be disconnected. However, this can only be carried out by a qualified electrician using the connection example we specified. Eltako LED tubes can then be placed in any position, even several tubes in parallel.
- If a fluorescent lamp is fitted to a lamp previously fitted with an electronic ballast and converted to LED tubes, the previous wiring with the electronic ballast must be restored to avoid a short circuit.

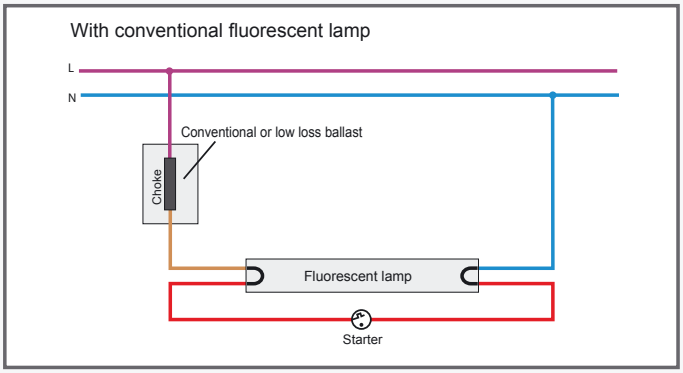
Further information

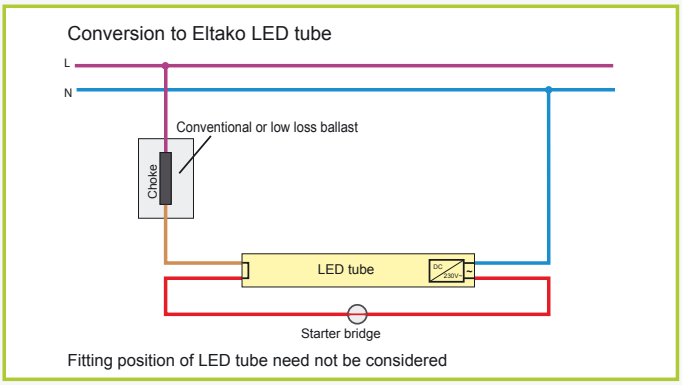
- Operating fluorescent tubes in parallel should be avoided since they create high voltage peaks.
- The luminosity of LEDs is mainly dependent on the power feed. If the power feed is too high, it shortens service life. Instead we undershoot the reference values of the LED manufacturer by at least 5% and invest in better LEDs. In addition, we optimise the efficiency of power supply and heat dissipation.
- The luminous flux of the LED tube also depends on the colour temperature K and the colour rendering index R_a besides power feed and the number of LEDs. The higher the colour temperature and the lower the R_a value, the brighter the LED tube. An R_a value of 80 should not be undershot.
- Eltako LED tubes are CE-conformant and comply with EN 62471 und IEC 62560.

Wiring Examples of Eltako LED Tubes

Wiring example of a single circuit luminaire with conventional or low loss ballast.

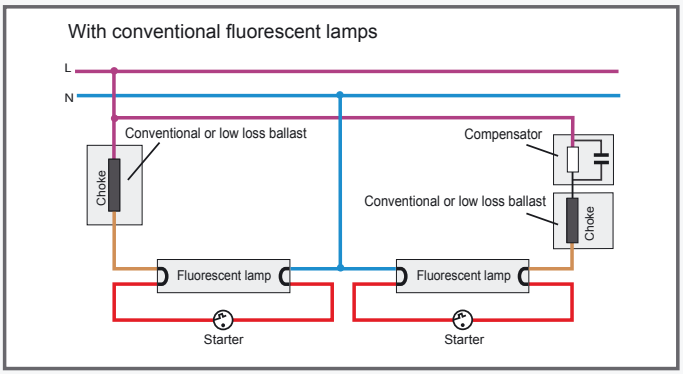
- No wiring change is required, only the starter must be replaced by the starter bridge.
  If dimmable LED tubes need to be dimmed, the ballast must be bridged or removed.

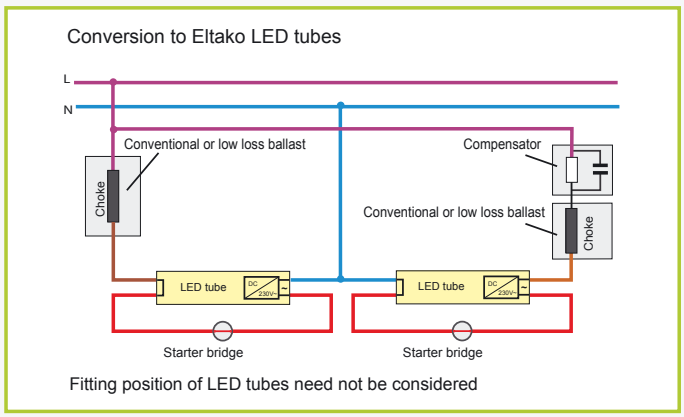




Wiring example of a double circuit luminaire with conventional or low loss ballast.

- No wiring change is required, only the starter must be replaced by starter bridges.
  If dimmable Eltako LED tubes need to be dimmed, the ballasts and compensators must be bridged or removed.

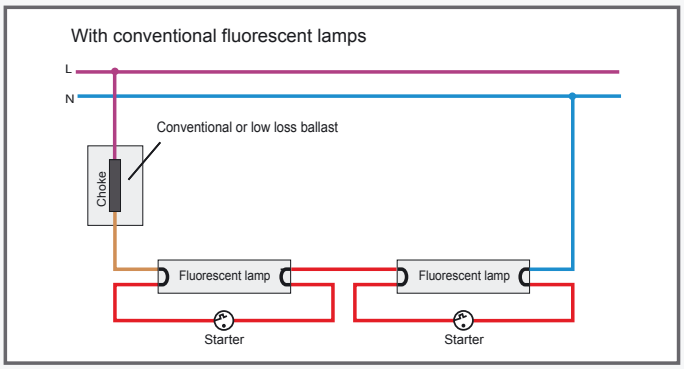


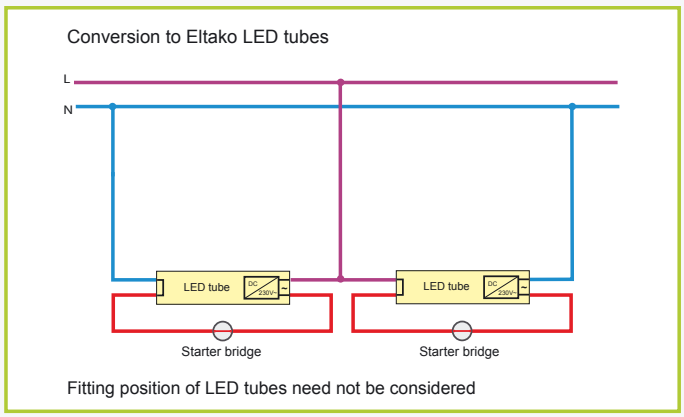


Wiring Examples of Eltako LED Tubes

Wiring example of a tandem circuit with conventional or low loss ballast.

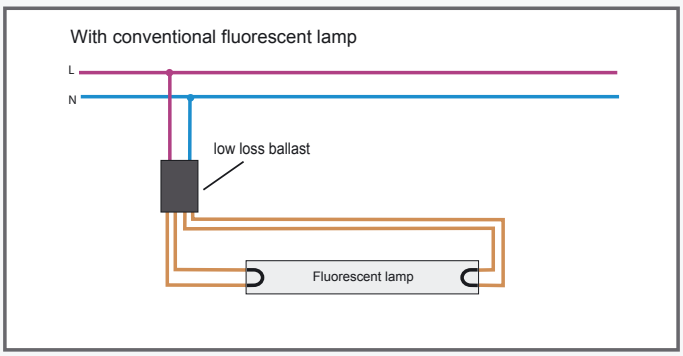
■ A wiring change is required and starters must be replaced by starter bridges.

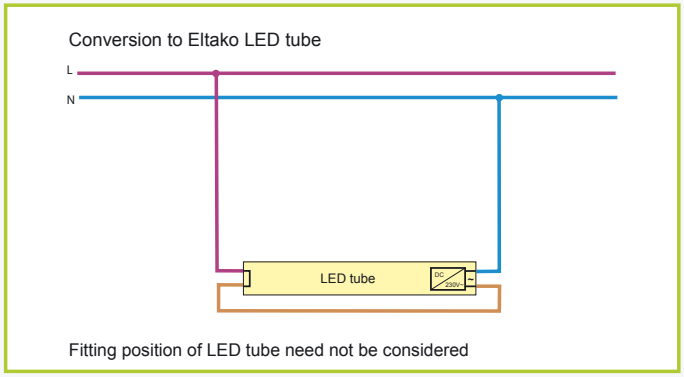




Wiring example of a luminaire with electronic ballast.

■ A wiring change is necessary, but no starter bridge is required.





Type designation	LR06830M-12W LR06840M-12W LR06850M-12W LR06865M-12W	LR12830M-20W LR12840M-20W LR12850M-20W LR12865M-20W	LR15830M-28W LR15840M-28W LR15850M-28W LR15865M-28W	LRH15840M-32W LRH15850M-32W LRH15865M-32W LRH15880M-32W
Labelling of dimmable LED tubes*				
Length	600mm	1200mm	1500mm	1500mm
Diameter	26mm	26mm	26mm	26mm
Socket	G13	G13	G13	G13
Weigth	210g	365g	460g	460g
Number of LEDs per tube	192	360	448	448
Service life in hours, max. approx.	50.000	50.000	50.000	50.000
Supply voltage	230V	230V	230V	230V
Power consumption	12W	20W	28W	32W
Power factor	0.975	0.975	0.975	0.975
Ambient temperature max./ min.	+50°C/-30°C	+50°C/-30°C	+50°C/-30°C	+50°C/-30°C
Air humidity	10-90%	10-90%	10-90%	10-90%
Luminous flux ± 5%/Colour temp. ± 250K Warm white 3000K Cool white 4000K Daylight 5000K Cool Daylight 6500K Skylight 8000K	 950lm; 79 lm/W 1000lm; 83 lm/W 1050lm; 88 lm/W 1080lm; 90 lm/W	 1600lm; 80 lm/W 1700lm; 85 lm/W 1750lm; 88 lm/W 1800lm; 90 lm/W	 2200lm; 79 lm/W 2300lm; 82 lm/W 2400lm; 86 lm/W 2500lm; 89 lm/W	 3000lm; 94 lm/W 3050lm; 95 lm/W 3100lm; 97 lm/W 3100lm; 97 lm/W
Colour rendering index (CRI) R_a	>80	>80	>80	>80
Reflected beam angle	140°	140°	140°	140°
Cover (plastic)	matt	matt	matt	matt
Rear	aluminium profile	aluminium profile	aluminium profile	aluminium profile
Photobiological class as per DIN EN 62471 (RG0 = no risk)	RG0	RG0	RG0	RG0
Energy efficiency class	A++	A++	A++	A++

Operating fluorescent tubes in parallel is not allowed since they create high voltage peaks.

* Earlier series with the same type designation were not dimmable. Therefore please pay attention to the designation  "dimmable" and "non dimmable"  .

LED tubes contain no mercury and after up to 50.000 operating hours, they are therefore not classified as hazardous waste but as recyclable electronic scrap. No UV or IR radiation

To dim these 230V LED tubes, we recommend universal dimmer switches FUD14, FUD61NPN, FMD70+FSD70, FUD70, EUD12NPN, EUD12D, EUD61NPN and MFZ12PMD.

WEEE-Reg.-No. DE 30298319