

Dimmable and not dimmable 230V LED tubes **up to 170 lumen per watt**

Exchanging fluorescent tubes with dimmable LED tubes not only saves a great deal of energy and money. At the same time, constant light control is just as simple as light scene control. Quite apart from normal light dimming to obtain cosy lighting.

- Energy consumption drops by at least 50%. Energy efficiency class A++.
- Service life is up to 10 times longer and this means a considerable reduction in replacement costs that far outweigh the higher prices for the lamps.
- Dimmable LED tubes can also be switched to 100% brightness without dimmer.
- Eltako LED tubes have been certified by KEMA-KEUR to EN and IEC regulations and therefore bear the test mark: 

LR06865M-10 W



230 V LED tube 600 mm long, 27 mm diameter, 10 W power consumption, luminous flux up to 1700 lm, colour rendering index $R_a > 83$, colour temperature 6500 K. Socket G13, reflected beam angle 140°, enclosure in frosted plastic.

Of course dimmable LED tubes can also be undimmed when switched.

LED tubes are an energy-saving alternative to classic fluorescent tubes and have a much more pleasant illumination. No flickering on switch-on, no flickering in operation, no UV radiation, no IR radiation, no major colour change and no black ends due to ageing.

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.

Tubes with conventional single or double switched electromagnetic ballasts (conventional and low loss ballast) can be simply replaced by tubes and starters.

For technical data, see page 5 and the safe LED tube connection system from page 6.

LR06865M-10 W

LED tubes 600mm, 10W, 6500K, cool daylight

EAN 4010312401385

53,20 €/pc.

LR12865M-18 W



230 V LED tube 1200 mm long, 27 mm diameter, 18 W power consumption, luminous flux up to 3060 lm, colour rendering index $R_a > 83$, colour temperature 6500 K. Socket G13, reflected beam angle 140°, enclosure in frosted plastic.

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LR12865M-18 W

LED tubes 1200mm, 18W, 6500K, cool daylight

EAN 4010312401392

70,50 €/pc.

LRS

LED tubes starter bridge (Only for spare part orders. 1 unit is enclosed with every LED tube free of charge.)

EAN 4010312400913

1,00 €/pc.

LR15865M-28 W



230V LED tube 1500 mm long, 27 mm diameter, 28 W power consumption, luminous flux up to 4760 lm, colour rendering index $R_a > 83$, colour temperature 6500 K. Socket G13, reflected beam angle 140°, enclosure in frosted plastic.

Of course dimmable LED tubes can also be undimmed when switched.

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Tubes with conventional single or double switched electromagnetic ballasts (conventional and low loss ballast) can be simply replaced by tubes and starters.

For technical data, see page 5 and safe LED tube connection systems from page 6.

LR15865M-28 W	LED tubes 1500mm, 28 W, 6500K, cool daylight	EAN 4010312401408	78,60 €/pc.
LRS	LED tubes starter bridge (Only for spare part orders. 1 unit is enclosed with every LED tube free of charge.)	EAN 4010312400913	1,00 €/pc.

230V LED Tubes

LR15840E and LR15850E, 1500mm, 28W

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LR15840E-28W



230V LED tube 1500 mm long, 27 mm diameter, 28W power consumption, luminous flux up to 4200 lm, colour rendering index $R_a > 83$, colour temperature 4000K. Socket G13, reflected beam angle 140°, enclosure in frosted plastic.

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For technical data, see page 5 and safe LED tube connection systems from page 6.

LR15840E-28W

LED tubes 1500mm, 28W, 4000K, cool white

EAN 4010312401682

60,00 €/pc.

LR15850E-28W



230V LED tube 1500 mm long, 27 mm diameter, 28W power consumption, luminous flux 4200 lm, colour rendering index $R_a > 83$, colour temperature 5000K. Socket G13, reflected beam angle 140°, enclosure in frosted plastic.

LED tubes are an energy-saving alternative to classic fluorescent tubes and have a much more pleasant illumination. No flickering on switch-on, no flickering in operation, no UV radiation, no IR radiation, no major colour change and no black ends due to ageing.

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.

Tubes with conventional single or double switched electromagnetic ballasts (conventional and low loss ballast) can be simply replaced by tubes and starters.

For technical data, see page 5 and safe LED tube connection systems from page 6.

LR15850E-28W

LED tubes 1500mm, 28W, 5000K, daylight

EAN 4010312401705

60,00 €/pc.

LRS

LED tubes starter bridge (Only for spare part orders. 1 unit is enclosed with every LED tube free of charge.)

EAN 4010312400913

1,00 €/pc.

Recommended retail price plus statutory VAT.

Type designation	LR06865M-10 W	LR12865M-18 W	LR15865M-28 W	LR15840E-28 W LR15850E-28 W
Labelling of dimmable and not dimmable LED tubes				
Length	600mm	1200mm	1500mm	1500mm
Diameter	27 mm	27 mm	27 mm	27 mm
Socket	G13	G13	G13	G13
Weight	210g	360g	460g	460g
Service life in hours, max. approx.	50.000	50.000	50.000	50.000
Supply voltage ¹⁾	230V/50-60Hz	230V/50-60Hz	230V/50-60Hz	230V/50-60Hz
Current draw	0.04A	0.08A	0.12A	0.12A
Power consumption	10W	18W	28W	28W
Power factor	0.98	0.98	0.98	0.98
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%
Protection degree	IP 50 ²⁾	IP 50 ²⁾	IP 50 ²⁾	IP 50 ²⁾
Colour temp. K and luminous flux lm ± 5% Cool white 4000K Daylight 5000K Cool Daylight 6500K	1700lm; 170lm/W	3060lm; 170lm/W	4760lm; 170lm/W	4200lm; 150lm/W 4200lm; 150lm/W
Preservation of luminous flux at the end of service life	0.80	0.80	0.80	0.80
Colour rendering index (CRI) R _a	>83	>83	>83	>83
Reflected beam angle	140° ³⁾	140° ³⁾	140° ³⁾	140° ³⁾
Cover 360° (plastic)	frosted	frosted	frosted	frosted
Shatter resistance	yes	yes	yes	yes
Rear	strong aluminium profile inside the 360° cover	strong aluminium profile inside the 360° cover	strong aluminium profile inside the 360° cover	strong aluminium profile inside the 360° cover
Photobiological class as per DIN EN 62471 (RG0 = no risk)	RG0	RG0	RG0	RG0
Energy efficiency class according to EU Directive 874/2012	A++	A++	A++	A++
Weighted energy consumption according to EU Directive 874/2012	10kWh/1000h	18kWh/1000h	28 kWh/1000h	28 kWh/1000h

¹⁾ Also suitable for emergency lighting with 130-220V DC.
²⁾ Applications in humid zones can also be implemented using a luminaire with suitable protection class.
³⁾ At the edge of the 140° beam angle, the brightness is still 50%. This value is reduced to 10% at 220°.

Operation in parallel with fluorescent tubes should be avoided since fluorescent tubes generate high voltage peaks.

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.

Eltako LED tubes have been certified by KEMA-KEUR to EN and IEC regulations and therefore bear the test mark: 

Eltako only uses the save LED tube connection system for its LED tubes.

LED tubes with the identification  are dimmable.

LED tubes with the identification  are not dimmable.

- Open pins never carry live voltage if the tubes are plugged into a socket on one side and then twisted.
Do not connect L and N to the same socket base.

- 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 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

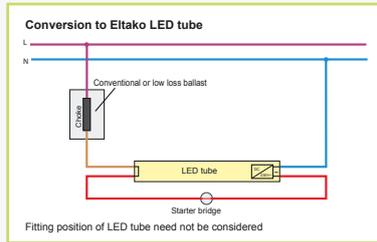
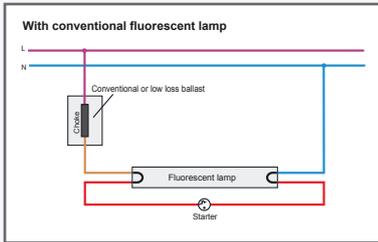
- **Operation in parallel with fluorescent tubes should be avoided since fluorescent tubes generate high voltage peaks.**
- The luminosity of LEDs is mainly dependent on the power feed. If the power feed is too high, it shortens service life. Instead we undershoot the reference values of the LED manufacturer by at least 5% and invest in better LEDs. In addition, we optimise the efficiency of power supply (Power factor 0.98!) and heat dissipation.
- The luminous flux of the LED tube also depends on the colour temperature K and the colour rendering index R_G besides power feed and the number of LEDs. The higher the colour temperature and the lower the R_G value, the brighter the LED tube. A R_G value of 80 may not be undershot, otherwise colours in the room are incorrectly reproduced. An R_G value of > 83 is even better!
- Eltako LED tubes are CE-conformant and comply with EN 62471, EN 62776 as well as IEC 62560.
- Eltako LED tubes have been certified by KEMA-KEUR to EN and IEC regulations and therefore bear the test mark:



Only a trained electrician may install our switchgear, power supply units and energy meters, otherwise there is a risk of fire or electric shock. It is therefore prohibited to sell to other customers for this reason otherwise the risk passes to the seller.

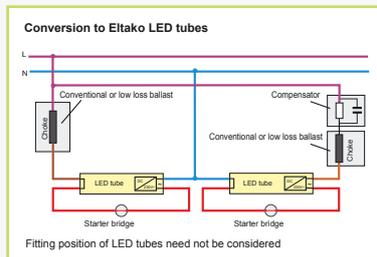
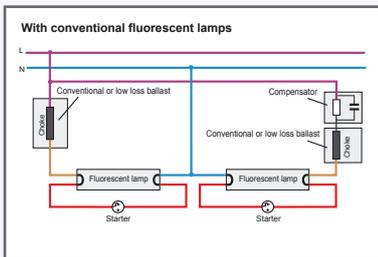
Wiring example of a single circuit luminaire with conventional or low loss ballast.

- No wiring change is required (retrofit lamp), only the starter must be replaced by the starter bridge.
- If dimmable Eltako LED tubes need to be dimmed as well as switched, the electronic ballast must be bridged or removed.**



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

- No wiring change is required (retrofit lamp), only the starter must be replaced by starter bridges.
- If dimmable Eltako LED tubes need to be dimmed as well as switched, the electronic ballast and the compensator must be bridged or removed.**

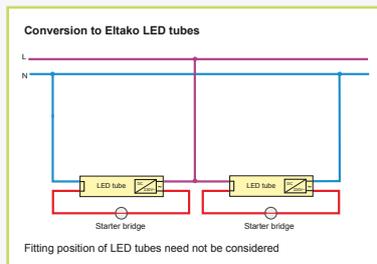
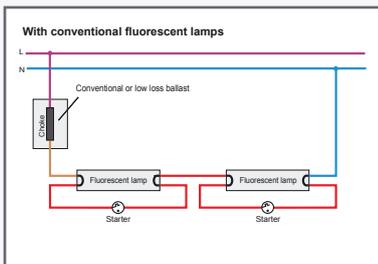


Installation instructions when used as retrofit lamp

- Switch off power supply
- Rotate conventional tubes through 90°
- Remove conventional tubes carefully
- Remove starter
- Fit starter bridge (LRS)
- Fit LED tubes
- Rotate LED tubes through 90°. Note beam direction
- Switch on power supply

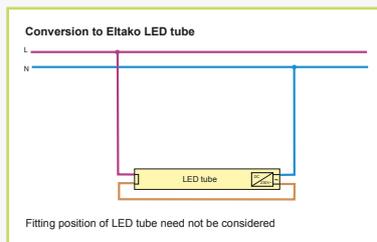
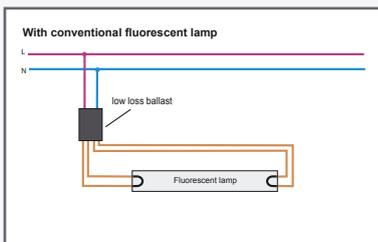
Wiring example of a tandem circuit with conventional or low loss ballast.

- A wiring change is required (conversion lamp) and starters must be replaced by starter bridges.



Wiring example of a luminaire with electronic ballast.

- A wiring change is necessary (conversion lamp), but no starter bridge is required.



Installation instructions when used as conversion lamp

- Switch off power supply
- Rotate conventional tubes through 90°
- Remove conventional tubes carefully
- Remove ballast and modify wiring
- Remove starter
- If necessary, fit starter bridge (LRS)
- Fit LED tubes
- Rotate LED tubes through 90°. Note beam direction
- Switch on power supply

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