

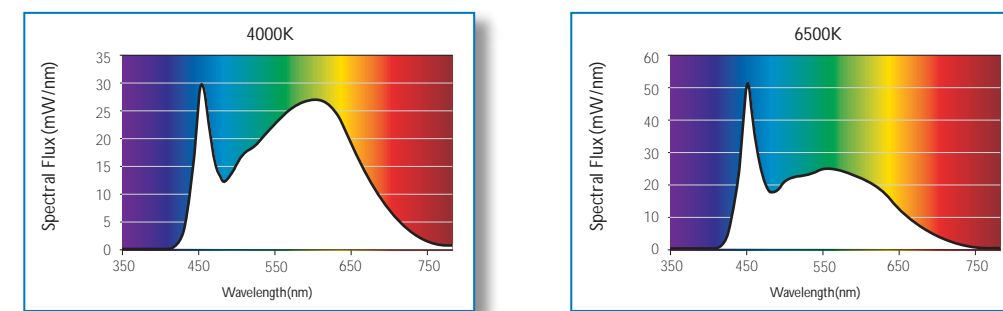
To ensure full application safety, the new EMP050 Protector needs to be installed into system to replace existing glow switch starter, only applicable with the EM ballast operating system. This device switches off in case the MASTER LEDtube fails or a mis-use caused by the customer; the EMP050 needs to be replaced. EMP050 Protector is compatible with all the standard starter connections.

mm	Min	Max
A	12.5	12.9
B	—	21.5
D	4.7	5.0
E	2.8	3.2
H	33.0	36.0
L	—	4.3
S	1.7	—
T	1.9	2.0



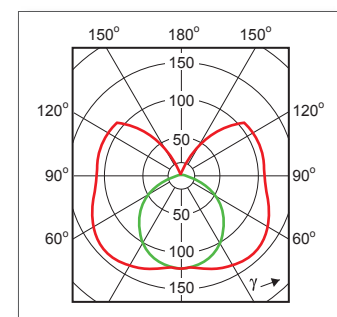
Spectral Power Distribution

Light may be precisely characterized by giving the power of the light at each wavelength in the visible spectrum. The resulting spectral power distribution (SPD) of the MASTER LEDtube contains all the basic physical data about the light.

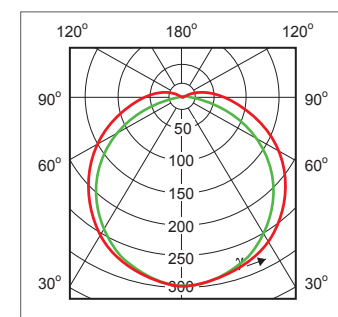


Photometric Diagrams

The Photometric diagram depicting the top down mounted lighting fixtures in a specific area and a numerical grid of the maintained lighting levels that the fixture will produce in that specific area. Pictures below show the photometric diagrams of a typical Philips application.

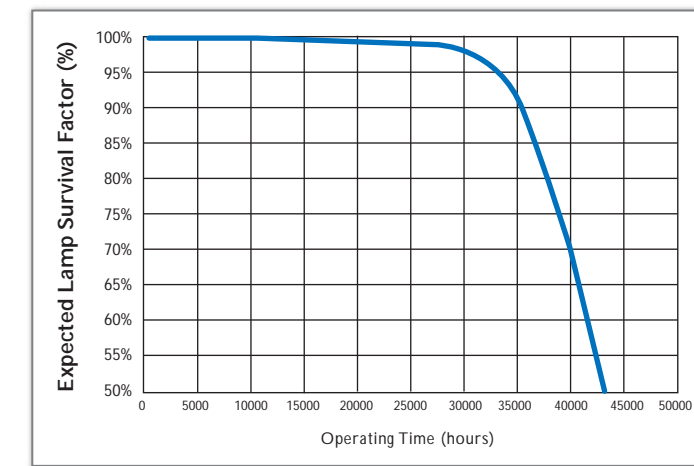


Batten + 1 x Philips TL-D36W



Batten + 1 x MASTER LEDtube GA 22W

Life Expectancy Diagram Prediction



- Philips MASTER LEDtube GA has a lifetime of 40,000 hrs. After this light output is below 70% of its initial lumens. Early failure rate is <1% at 1000 hours and <3% 30,000 hours.
- Lifetime estimation based on application environment condition; at room temperature (25°C), free air burning, base down burning position, and at rated voltage.

Temperature

MASTER LEDtube's thermal management is designed for operation in all G13 bi-pin based lighting installations.

Operating temperature	T operating	min -30 C°	max +45 C°
Storage temperature	T storage	min -40 C°	max +65 C°
Maximum surface temperature of metal parts at t _{amb} = 25 C° (not fulfilling specifications)	T surface		max +55 C°

Approbation / compliances and approvals

The Philips MASTER LEDtube complies with all the applicable legislation, such as RoHS (Restriction of Hazardous Substances) and WEEE (Waste Electrical and Electronic Equipment). This means all components used are lead-free and soldered in a lead-free soldering process. Summarizing: **CE, KEMA, VDE, WEE, EMC and RoHS compliant.**



New Generation of Energy Saving Light

Philips MASTER LEDtube for General Application



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sense and simplicity

Introduction



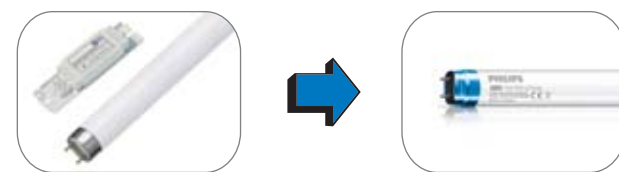
Philips MASTER LEDtube integrates a LED light source with a frosted cover design into the traditional linear fluorescent form. The new light source offers naturally light colors while consuming 22W system energy when replacing T8 36W with electromagnetic ballast, resulting in up to 50% energy saving.

The product's long lifetime (over 3 times long life as standard fluorescent tubes) and excellent lumen maintenance minimize the hassle of re-lamping while reducing maintenance costs. Thanks to MASTER LEDtube's full safety features, there is no risk of the user suffering electric shock, a danger that can exist with cut-price alternatives sometimes found in the market. The EMP050 protector adds more safety to the system in case unforeseen misuse occurs.

Approval certificates give the MASTER LEDtube the 'Most Reliable' LEDtube to work with. Complete portfolio for replacing 600mm, 900mm, 1200mm and 1500mm T8 tubes.

Advantages of Philips MASTER LEDtube

1 50% energy saving

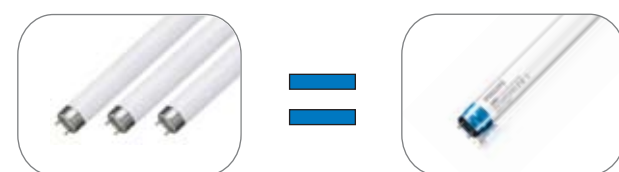


Tube	System Power*	System Power
36W	44W	22W
30W	36W	17W
18W	22W	11W

* With electromagnetic ballast.

2 3 times long life

Over 3 times long life as standard fluorescent tubes or equivalent to 9 years in standard 12 hrs a day application.



3 50% CO2 emission reduction

50% less energy consumption leading to 50% less CO₂ emission. Contributing to global CO₂ footprint reduction.

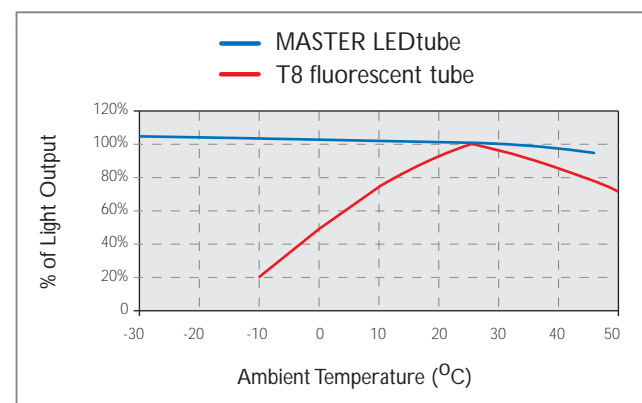


4 Environment Friendly

No mercury in product, which is necessary for fluorescent tube. Completely lead-free component and soldering process. Being harmless to environment and human being. Comply with RoHS and WEEE.



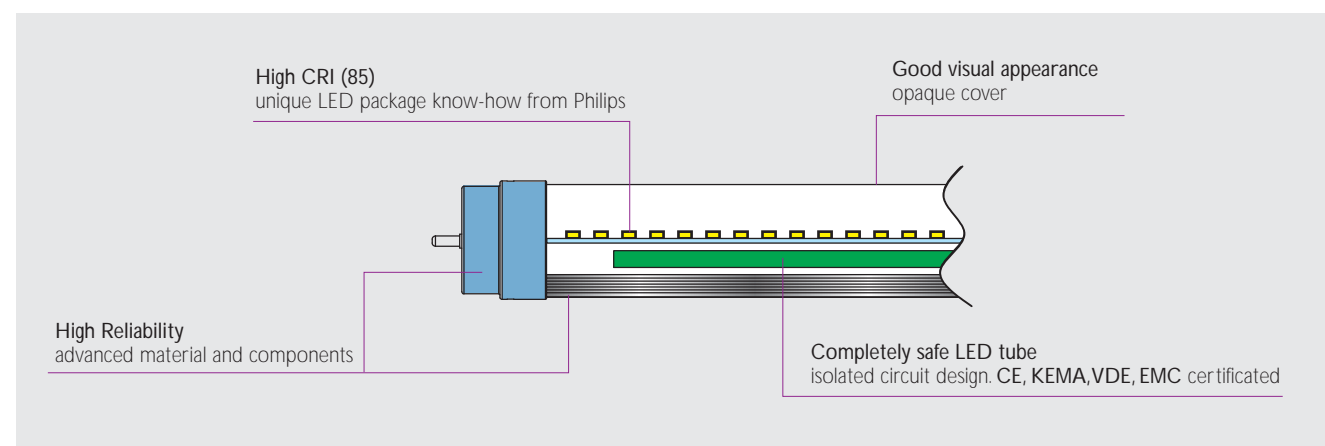
5 Stable lighting quality



Light output of Philips MASTER LEDtube is between 95%~105% of claimed (@ 25°C) from -30°C to +45°C ambient temperature.

While T8 fluorescent tube varies hugely between 50%~100%, from 0°C to +45°C. Less than 50% below 0°C, or even not able to ignite.

6 Technology inside



7 Other features

- Instant ON, no flicker, no buzz
- Over 30% increase in optical application efficiency
- Inrush current controlled
- Low harmonic distortion according to standard
- Peak voltage input protection

Application Areas

Philips MASTER LEDtube is an advanced alternative to the classic linear fluorescent lamp and is designed for multiple general lighting applications such as:

- Offices
- Industrial
- Parking lots
- Railway stations
- Ware houses
- Supermarket / Shops
- School
- Hospital
- Cold stores

Application Notes

- Operation temperature range is between -30°C and +45°C ambience.
- Only to apply in dry indoor usage and environments, outdoor applications requires an IP rated fixtures.
- Not intended for use with emergency light fixtures or exit light.
- For use in fixtures which consist of IEC compliant G13 bi-pin lampholders which can support 500 gram.

Product Specification

Technical Specifications

Product name	Length (mm)	Power (W)	End cap base	Voltage (V _{ac})	Power Factor	Luminous Flux (lm)	CCT (K)	Beam Angle (°)	CRI*	Lifetime (hrs)
MASTER LEDtube GA 600mm 11W 840 G13	600	11	G13	90-264	>0.9	825	4000	140	85	40,000
MASTER LEDtube GA 900mm 17W 840 G13	900	17	G13	90-264	>0.9	1265	4000	140	85	40,000
MASTER LEDtube GA 1200mm 22W 840 G13	1200	22	G13	90-264	>0.9	1650	4000	140	85	40,000
MASTER LEDtube GA 1500mm 25W 840 G13	1500	25	G13	90-264	>0.9	1900	4000	140	85	40,000
MASTER LEDtube GA 600mm 11W 865 G13	600	11	G13	90-264	>0.9	825	6500	140	85	40,000
MASTER LEDtube GA 900mm 17W 865 G13	900	17	G13	90-264	>0.9	1265	6500	140	85	40,000
MASTER LEDtube GA 1200mm 22W 865 G13	1200	22	G13	90-264	>0.9	1650	6500	140	85	40,000
MASTER LEDtube GA 1500mm 25W 865 G13	1500	25	G13	90-264	>0.9	1900	6500	140	85	40,000

* typical value

Ballast compatibility

Fluorescent tubes operate on ballast: two different ballast technologies appear in the market i.e. Electro Magnetic (EM) ballast and High Frequency electronic (HF) ballast. However, Philips MASTER LEDtube operates on mains input voltage therefore both the EM ballast and HF ballast needs to be rewired or bypassed according the quick installation guide.

Fixture Compatibility

Philips MASTER LEDtube is compatible with all the lighting fixtures with standard G13 bi-pin lampholders. In some cases it may require to remove non-standard G13 bi-pin lampholders from the fixtures.

Product	Length (mm)	Power (W)	Length A (mm)	Length B (mm)	Length C (mm)	Weight* (gram)
MASTER LEDtube GA 600mm 11W 840/865 G13	600	11	588.5	595.5	602.5	210
MASTER LEDtube GA 900mm 17W 840/865 G13	900	17	893.5	900.5	907.5	285
MASTER LEDtube GA 1200mm 22W 840/865 G13	1200	22	1198.0	1205.0	1212.0	360
MASTER LEDtube GA 1500mm 25W 840/865 G13	1500	25	1500.0	1507.0	1514.0	450

* typical value

