Philips MASTER Value LEDtube HO T8

Technical Application Guide

PHILIPS

A high performance LED solution, the professional Master Value LED tube is ideal for replacing T8 fluorescent lamps using EM ballast or installing directly on the mains. This product provides a uniform lighting effect for use in all general lighting, as well as instant energy efficiency, making for an environmentally friendly solution.

Product Features

Highly Reliable
- Reliable operation between -20 °C to 45 °C ambient temperature
- Rated 50,000 hours lifetime according to F50L70
- 200,000 switching cycles

Highly Comfortable
- Wide beam angle of 240 ° due to glass platform
- CRI83 typical
- Advanced optical design ensures a uniform light output and superior optical efficiency

Highly Safe
- Protection circuit inside ensuring people's safety in case of mis-use, complying with IEC safety requirements
- Pass 4KV high-pot test, insulation & safety guaranteed
- Pass 1KV surge test (vs. IEC standard 500V), avoiding the damage caused by input voltage fluctuation and lightning strike

Perfect Fit
- 100% comply with IEC requirement on T8 dimension, fitting into fluorescent luminaire perfectly

Highly Energy Efficient
- Energy savings of up to 60%*

Highly Environmental Friendly
- No mercury
- No breakage and pollution risk

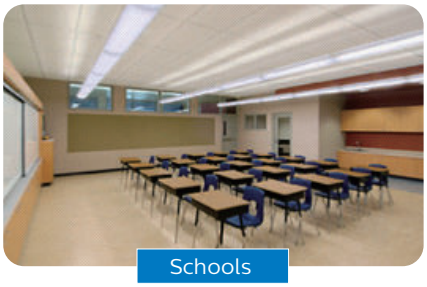
Product features
- Uniform light effect
- Robust construction
- Fits in well with conventional technology
- Easy installation

* *Based on comparison between 8W & 14W LEDtube and Philips TLD standard 36W(40~44W) & 58W system power when working with Electro Magnetic Ballasts*

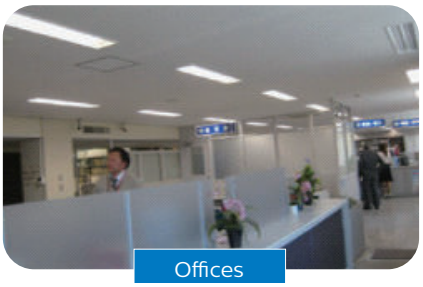
Application


Retail

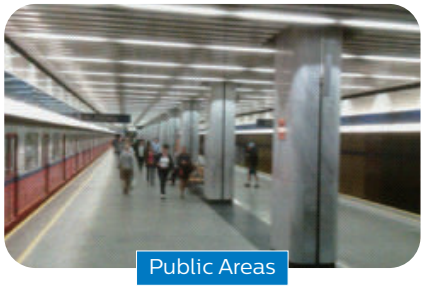

Industry


Schools


Hospitals


Offices

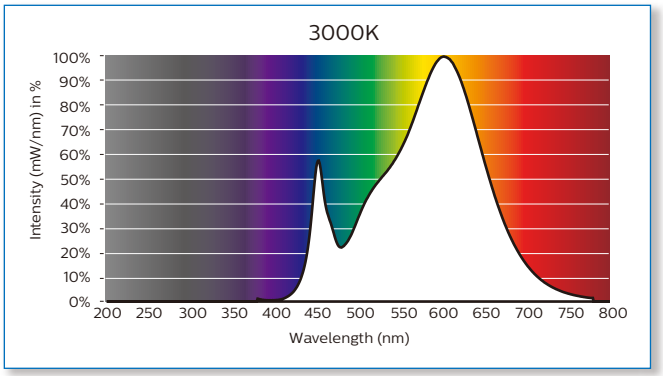

Warehouses

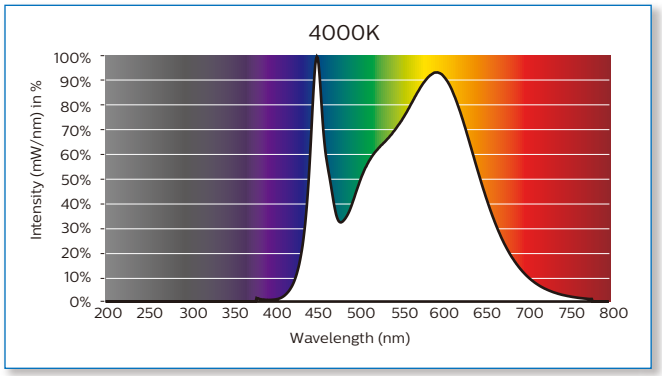

Public Areas

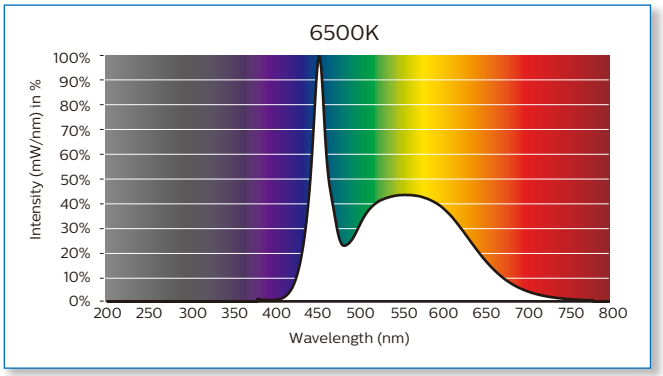
Spectral Power Distribution

Light may be precisely characterized by giving the power of the light at each wavelength in the visible spectrum. The resulting spectralpower distribution (SPD) shows that the MASTER Value LEDtube HO 600mm and 1200mm T8 contains the visible light only. No harm from UV and IR.

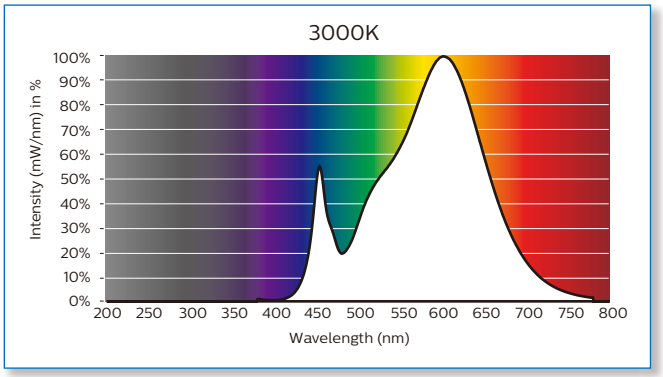
600mm

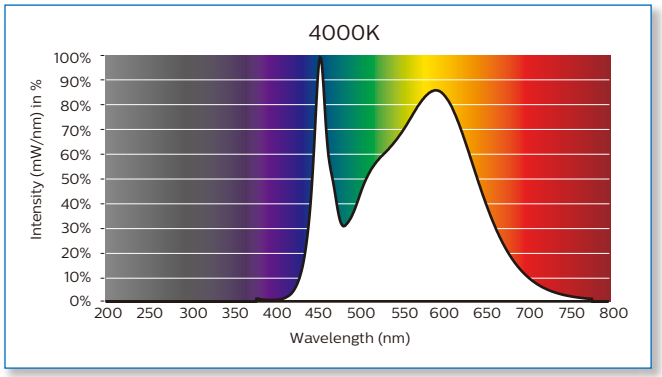


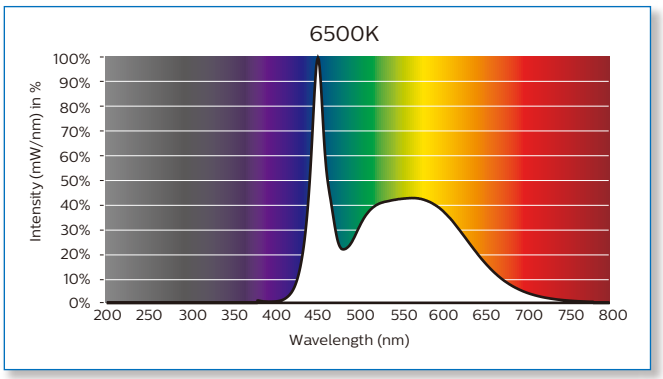




1200mm







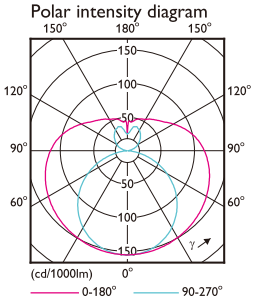
Photometric Diagrams

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 MASTER Value LEDtube application.

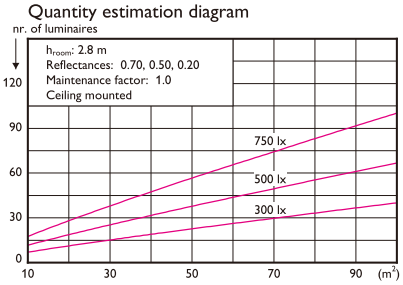
MAS LEDtube VLE 600mm HO 8W 830 T8

1 x 1000 lm

Polar intensity diagram



Quantity estimation diagram



Utilisation factor table

Room Index k	Reflectances (%) for ceiling, walls and working plane (CIE)											
	0.80	0.80	0.70	0.70	0.70	0.70	0.50	0.50	0.30	0.30	0.00	
	0.50	0.50	0.50	0.50	0.50	0.30	0.30	0.10	0.30	0.10	0.00	
	0.30	0.10	0.30	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.00	
0.60	0.39	0.37	0.37	0.36	0.35	0.28	0.25	0.20	0.22	0.19	0.14	
0.80	0.48	0.45	0.45	0.44	0.43	0.35	0.32	0.27	0.28	0.24	0.19	
1.00	0.56	0.52	0.53	0.51	0.49	0.41	0.37	0.32	0.33	0.29	0.23	
1.25	0.64	0.59	0.60	0.57	0.55	0.48	0.43	0.38	0.38	0.34	0.27	
1.50	0.70	0.63	0.65	0.63	0.60	0.53	0.47	0.43	0.42	0.38	0.31	
2.00	0.79	0.71	0.74	0.70	0.67	0.60	0.54	0.50	0.49	0.45	0.36	
2.50	0.86	0.76	0.80	0.76	0.72	0.66	0.59	0.55	0.53	0.49	0.40	
3.00	0.90	0.79	0.84	0.79	0.75	0.70	0.63	0.59	0.56	0.53	0.43	
4.00	0.97	0.84	0.90	0.84	0.80	0.75	0.68	0.64	0.60	0.58	0.47	
5.00	1.01	0.87	0.94	0.88	0.82	0.78	0.71	0.68	0.63	0.61	0.50	

Luminance Table

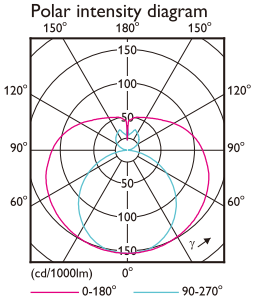
Plane Cone	0.0	15.0	30.0	45.0	60.0	75.0	90.0
45.0	6031	6006	6025	6088	6317	6936	8366
50.0	5956	5918	5906	5912	6060	6607	8130
55.0	5916	5867	5823	5770	5813	6248	7837
60.0	5912	5849	5782	5662	5590	5856	7449
65.0	5944	5871	5780	5596	5391	5422	6943
70.0	6016	5935	5822	5577	5240	4966	6261
75.0	6133	6044	5917	5621	5153	4487	5279
80.0	6297	6203	6069	5742	5166	4074	4025
85.0	6519	6416	6286	5950	5322	3862	2205
90.0	6805	6702	6587	6276	5680	4105	663

(cd/m²)

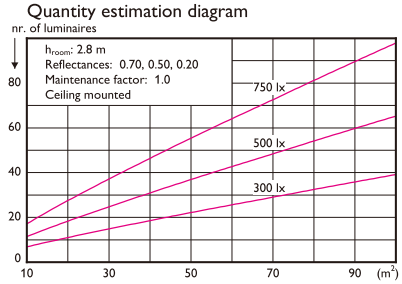
MAS LEDtube VLE 600mm HO 8W 840 T8

1 x 1050 lm

Polar intensity diagram



Quantity estimation diagram



Utilisation factor table

Room Index k	Reflectances (%) for ceiling, walls and working plane (CIE)											
	0.80	0.80	0.70	0.70	0.70	0.70	0.50	0.50	0.30	0.30	0.00	
	0.50	0.50	0.50	0.50	0.50	0.30	0.30	0.10	0.30	0.10	0.00	
	0.30	0.10	0.30	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.00	
0.60	0.38	0.36	0.36	0.35	0.34	0.27	0.24	0.20	0.22	0.18	0.14	
0.80	0.47	0.44	0.44	0.43	0.42	0.34	0.31	0.26	0.28	0.23	0.18	
1.00	0.55	0.51	0.51	0.49	0.48	0.40	0.36	0.31	0.32	0.28	0.22	
1.25	0.62	0.57	0.58	0.56	0.54	0.47	0.42	0.37	0.37	0.33	0.27	
1.50	0.68	0.62	0.64	0.61	0.58	0.51	0.46	0.42	0.41	0.37	0.30	
2.00	0.77	0.69	0.72	0.68	0.65	0.59	0.53	0.49	0.47	0.44	0.36	
2.50	0.83	0.74	0.78	0.74	0.70	0.64	0.58	0.54	0.52	0.48	0.40	
3.00	0.88	0.77	0.82	0.77	0.73	0.68	0.61	0.58	0.55	0.52	0.43	
4.00	0.94	0.82	0.88	0.82	0.77	0.73	0.66	0.63	0.59	0.56	0.47	
5.00	0.98	0.84	0.92	0.86	0.80	0.76	0.69	0.66	0.62	0.59	0.49	

Luminance Table

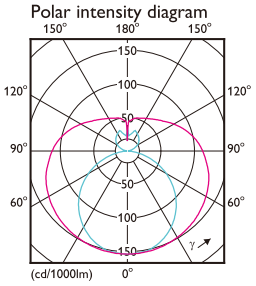
Plane Cone	0.0	15.0	30.0	45.0	60.0	75.0	90.0
45.0	6305	6236	6217	6249	6458	7101	8632
50.0	6223	6137	6086	6054	6205	6746	8387
55.0	6178	6072	5989	5889	5895	6359	8079
60.0	6169	6048	5925	5753	5638	5940	7721
65.0	6200	6056	5899	5658	5409	5502	7242
70.0	6275	6114	5924	5612	5215	5049	6587
75.0	6377	6206	6000	5624	5119	4504	5678
80.0	6491	6307	6089	5689	5079	3945	4345
85.0	6689	6486	6243	5778	5075	3593	2677
90.0	6995	6775	6545	6102	5316	3604	1199

(cd/m²)

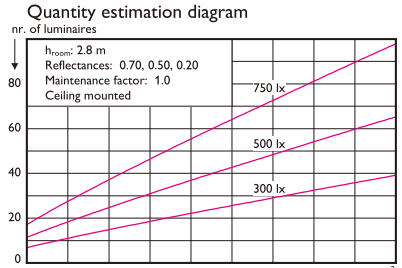
MAS LEDtube VLE 600mm HO 8W 865 T8

1 x 1050 lm

Polar intensity diagram



Quantity estimation diagram



Utilisation factor table

Room Index k	Reflectances (%) for ceiling, walls and working plane (CIE)											
	0.80	0.80	0.70	0.70	0.70	0.70	0.50	0.50	0.30	0.30	0.00	
	0.50	0.50	0.50	0.50	0.50	0.30	0.30	0.10	0.30	0.10	0.00	
	0.30	0.10	0.30	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.00	
0.60	0.38	0.36	0.36	0.35	0.34	0.27	0.24	0.20	0.22	0.18	0.14	
0.80	0.47	0.44	0.44	0.43	0.42	0.34	0.31	0.26	0.28	0.23	0.18	
1.00	0.55	0.51	0.51	0.49	0.48	0.40	0.36	0.31	0.32	0.28	0.22	
1.25	0.62	0.57	0.58	0.56	0.54	0.47	0.42	0.37	0.37	0.33	0.27	
1.50	0.68	0.62	0.64	0.61	0.58	0.51	0.46	0.42	0.41	0.37	0.30	
2.00	0.77	0.69	0.72	0.68	0.65	0.59	0.53	0.49	0.47	0.44	0.36	
2.50	0.83	0.74	0.78	0.74	0.70	0.64	0.58	0.54	0.52	0.48	0.40	
3.00	0.88	0.77	0.82	0.77	0.73	0.68	0.61	0.58	0.55	0.52	0.43	
4.00	0.94	0.82	0.88	0.82	0.77	0.73	0.66	0.63	0.59	0.56	0.47	
5.00	0.98	0.84	0.92	0.86	0.80	0.76	0.69	0.66	0.62	0.59	0.49	

Luminance Table

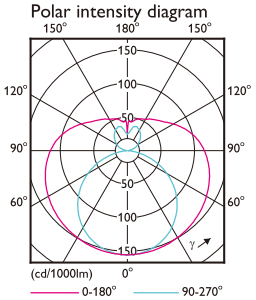
Plane Cone	0.0	15.0	30.0	45.0	60.0	75.0	90.0
45.0	6305	6236	6217	6249	6458	7101	8632
50.0	6223	6137	6086	6054	6205	6746	8387
55.0	6178	6072	5989	5889	5895	6359	8079
60.0	6169	6048	5925	5753	5638	5940	7721
65.0	6200	6056	5899	5658	5409	5502	7242
70.0	6275	6114	5924	5612	5215	5049	6587
75.0	6377	6206	6000	5624	5119	4504	5678
80.0	6491	6307	6089	5689	5079	3945	4345
85.0	6689	6486	6243	5778	5075	3593	2677
90.0	6995	6775	6545	6102	5316	3604	1199

(cd/m²)

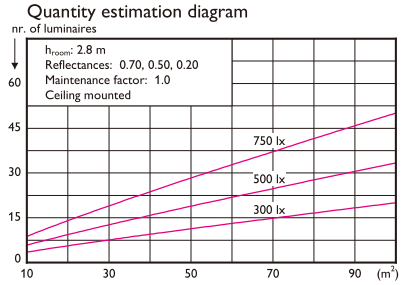
MAS LEDtube VLE 1200mm HO 14W830 T8

1 x 2000 lm

Polar intensity diagram



Quantity estimation diagram



Utilisation factor table

Room Index k	Reflectances (%) for ceiling, walls and working plane (CIE)											
	0.80	0.80	0.70	0.70	0.70	0.70	0.50	0.50	0.30	0.30	0.00	
	0.50	0.50	0.50	0.50	0.50	0.30	0.30	0.10	0.30	0.10	0.00	
	0.30	0.10	0.30	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.00	
0.60	0.39	0.37	0.37	0.36	0.35	0.28	0.25	0.20	0.22	0.19	0.14	
0.80	0.48	0.45	0.45	0.44	0.43	0.35	0.32	0.27	0.28	0.24	0.19	
1.00	0.56	0.52	0.53	0.51	0.49	0.41	0.37	0.32	0.33	0.29	0.23	
1.25	0.64	0.59	0.60	0.57	0.55	0.48	0.43	0.38	0.38	0.34	0.27	
1.50	0.70	0.63	0.65	0.63	0.60	0.53	0.47	0.43	0.42	0.38	0.31	
2.00	0.79	0.71	0.74	0.70	0.67	0.60	0.54	0.50	0.49	0.45	0.36	
2.50	0.86	0.76	0.80	0.76	0.72	0.66	0.59	0.55	0.53	0.49	0.40	
3.00	0.90	0.79	0.84	0.79	0.75	0.70	0.63	0.59	0.56	0.53	0.43	
4.00	0.97	0.84	0.90	0.84	0.80	0.75	0.68	0.64	0.60	0.58	0.47	
5.00	1.01	0.87	0.94	0.88	0.82	0.78	0.71	0.68	0.63	0.61	0.50	

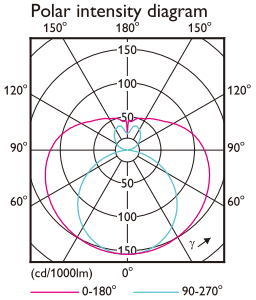
Luminance Table

Plane Cone	0.0	15.0	30.0	45.0	60.0	75.0	90.0
45.0	6031	6024	6062	6147	6401	7058	8557
50.0	5956	5938	5946	5974	6150	6740	8350
55.0	5916	5888	5867	5836	5909	6392	8090
60.0	5912	5871	5828	5734	5692	6010	7738
65.0	5944	5896	5830	5674	5501	5586	7274
70.0	6016	5962	5877	5662	5360	5139	6639
75.0	6133	6074	5978	5715	5285	4671	5702
80.0	6297	6236	6136	5847	5316	4274	4495
85.0	6519	6452	6362	6071	5499	4098	2669
90.0	6805	6744	6675	6420	5901	4434	1327

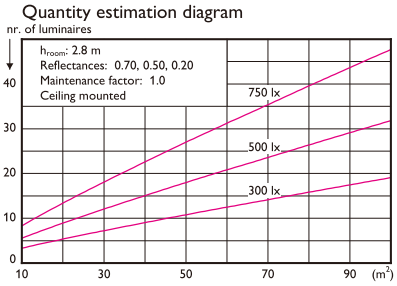
(cd/m²)

MAS LEDtube VLE 1200mm HO 14W840 T8 1 x 2100 lm

Polar intensity diagram



Quantity estimation diagram



Utilisation factor table

Room Index k	Reflectances (%) for ceiling, walls and working plane (CIE)										
	0.80	0.80	0.70	0.70	0.70	0.70	0.50	0.50	0.30	0.30	0.00
	0.50	0.50	0.50	0.50	0.50	0.30	0.30	0.10	0.30	0.10	0.00
	0.30	0.10	0.30	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.00
0.60	0.39	0.37	0.37	0.36	0.35	0.28	0.25	0.20	0.22	0.19	0.14
0.80	0.48	0.45	0.45	0.44	0.43	0.35	0.32	0.27	0.28	0.24	0.19
1.00	0.56	0.52	0.53	0.51	0.49	0.41	0.37	0.32	0.33	0.29	0.23
1.25	0.64	0.59	0.60	0.57	0.55	0.48	0.43	0.38	0.38	0.34	0.27
1.50	0.70	0.63	0.65	0.63	0.60	0.53	0.47	0.43	0.42	0.38	0.31
2.00	0.79	0.71	0.74	0.70	0.67	0.60	0.54	0.50	0.49	0.45	0.36
2.50	0.86	0.76	0.80	0.76	0.72	0.66	0.59	0.55	0.53	0.49	0.40
3.00	0.90	0.79	0.84	0.79	0.75	0.70	0.63	0.59	0.56	0.53	0.43
4.00	0.97	0.84	0.90	0.84	0.80	0.75	0.68	0.64	0.60	0.58	0.47
5.00	1.01	0.87	0.94	0.88	0.82	0.78	0.71	0.68	0.63	0.61	0.50

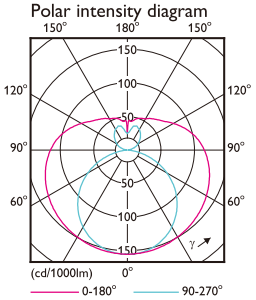
Luminance Table

Plane / Cone	0.0	15.0	30.0	45.0	60.0	75.0	90.0
45.0	6333	6325	6365	6454	6721	7411	8985
50.0	6253	6234	6243	6273	6457	7077	8768
55.0	6211	6182	6160	6128	6205	6711	8494
60.0	6208	6165	6120	6021	5977	6310	8125
65.0	6241	6191	6121	5957	5776	5865	7638
70.0	6317	6260	6171	5945	5627	5396	6970
75.0	6440	6377	6277	6001	5549	4905	5987
80.0	6612	6547	6443	6140	5582	4488	4720
85.0	6845	6775	6680	6374	5774	4303	2802
90.0	7145	7081	7008	6741	6196	4656	1393

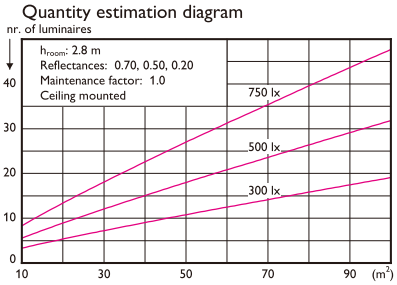
(cd/m²)

MAS LEDtube VLE 1200mm HO 14W865 T8 1 x 2100 lm

Polar intensity diagram



Quantity estimation diagram



Utilisation factor table

Room Index k	Reflectances (%) for ceiling, walls and working plane (CIE)										
	0.80	0.80	0.70	0.70	0.70	0.70	0.50	0.50	0.30	0.30	0.00
	0.50	0.50	0.50	0.50	0.50	0.30	0.30	0.10	0.30	0.10	0.00
	0.30	0.10	0.30	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.00
0.60	0.39	0.37	0.37	0.36	0.35	0.28	0.25	0.20	0.22	0.19	0.14
0.80	0.48	0.45	0.45	0.44	0.43	0.35	0.32	0.27	0.28	0.24	0.19
1.00	0.56	0.52	0.53	0.51	0.49	0.41	0.37	0.32	0.33	0.29	0.23
1.25	0.64	0.59	0.60	0.57	0.55	0.48	0.43	0.38	0.38	0.34	0.27
1.50	0.70	0.63	0.65	0.63	0.60	0.53	0.47	0.43	0.42	0.38	0.31
2.00	0.79	0.71	0.74	0.70	0.67	0.60	0.54	0.50	0.49	0.45	0.36
2.50	0.86	0.76	0.80	0.76	0.72	0.66	0.59	0.55	0.53	0.49	0.40
3.00	0.90	0.79	0.84	0.79	0.75	0.70	0.63	0.59	0.56	0.53	0.43
4.00	0.97	0.84	0.90	0.84	0.80	0.75	0.68	0.64	0.60	0.58	0.47
5.00	1.01	0.87	0.94	0.88	0.82	0.78	0.71	0.68	0.63	0.61	0.50

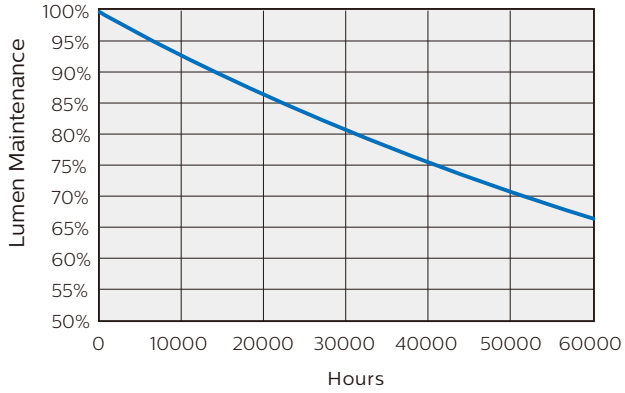
Luminance Table

Plane / Cone	0.0	15.0	30.0	45.0	60.0	75.0	90.0
45.0	6333	6325	6365	6454	6721	7411	8985
50.0	6253	6234	6243	6273	6457	7077	8768
55.0	6211	6182	6160	6128	6205	6711	8494
60.0	6208	6165	6120	6021	5977	6310	8125
65.0	6241	6191	6121	5957	5776	5865	7638
70.0	6317	6260	6171	5945	5627	5396	6970
75.0	6440	6377	6277	6001	5549	4905	5987
80.0	6612	6547	6443	6140	5582	4488	4720
85.0	6845	6775	6680	6374	5774	4303	2802
90.0	7145	7081	7008	6741	6196	4656	1393

(cd/m²)

Lifetime and Lumen Maintenance

600mm/1200mm

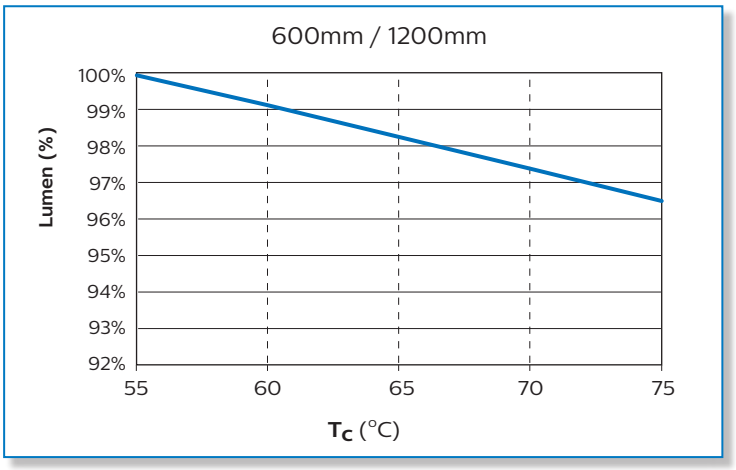


Philips MASTER Value LEDtube has a lifetime of 50,000 hours, defined as the number of hours when 50% of a large group of identical lamps below 70% of its initial lumen (F50L70).

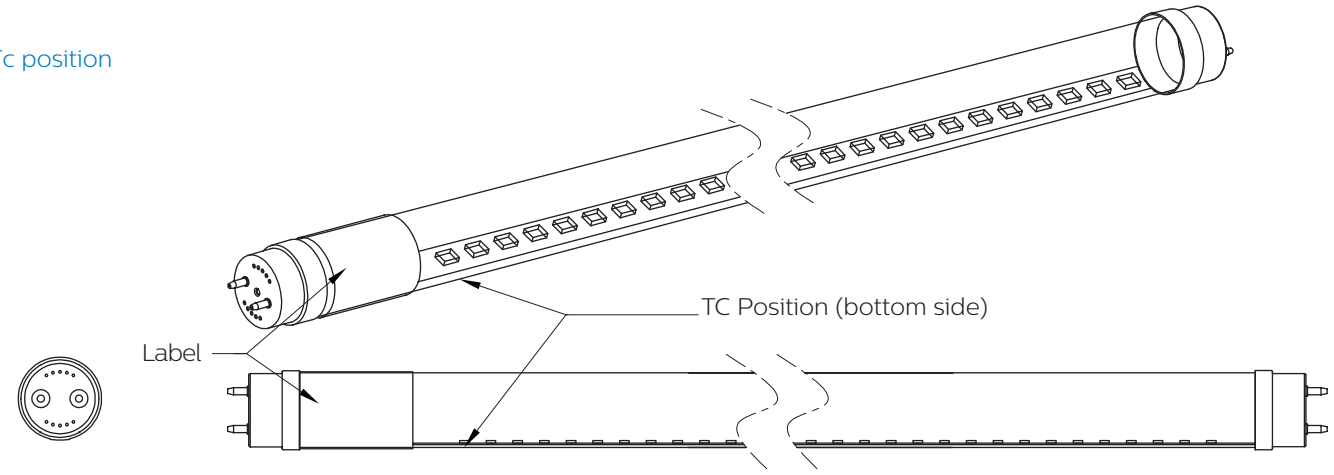
Temperature

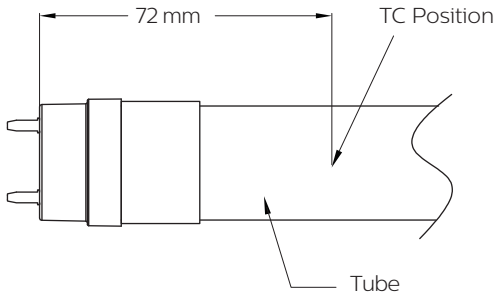
MASTER Value LEDtube's excellent thermal design ensures low temperature during operating, which brings reliable and stable product performance throughout life time.

Operating temperature	T operating	min -20°C	max +45°C
Storage temperature	T storage	min -40°C	max +65°C
Maximum case temperature of tube at Tamb =25°C	T case		+55°C (600mm)
Maximum case temperature of tube at Tamb =25°C	T case		+55°C (1200mm)



Tc position





Approbation & Certificates

Philips MASTER Value LEDtube is designed by strictly following applicable legislation and international standard. The product complies with **KEMA, RoHS** and **REACH**.

Technical specification

12NC	Product Description	Lamp Wattage	Equivalent Wattage	Voltage	Cap	Length	Lifetime	Lumen	Color Temp	CRI
		(W)	(W)	(V)		(mm)	(hrs)	(lm)	(K)	(Typical)*
929003069808	MAS LEDtube VLE 600mm HO 8W 830 T8	8	18	220-240	G13	600	50000	1000	3000	83
929003069908	MAS LEDtube VLE 600mm HO 8W 840 T8	8	18	220-240	G13	600	50000	1050	4000	83
929003070008	MAS LEDtube VLE 600mm HO 8W 865 T8	8	18	220-240	G13	600	50000	1050	6500	83
929003070108	MAS LEDtube VLE 1200mm HO 14W830 T8	14	36	220-240	G13	1200	50000	2000	3000	83
929003070208	MAS LEDtube VLE 1200mm HO 14W840 T8	14	36	220-240	G13	1200	50000	2100	4000	83
929003070308	MAS LEDtube VLE 1200mm HO 14W865 T8	14	36	220-240	G13	1200	50000	2100	6500	83
929003069937	MAS LEDtube VLE 600mm HO 8W 840 T8 MY	8	18	220-240	G13	600	50000	1050	4000	83
929003070037	MAS LEDtube VLE 600mm HO 8W 865 T8 MY	8	18	220-240	G13	600	50000	1050	6500	83
929003070237	MAS LEDtube VLE 1200mm HO 14W840 T8 MY	14	36	220-240	G13	1200	50000	2100	4000	83
929003070337	MAS LEDtube VLE 1200mm HO 14W865 T8 MY	14	36	220-240	G13	1200	50000	2100	6500	83

* Minimum CRI is 80

For DC input:

- The lamp can work at 220V +/-10%.
- Transients must be within the normal start up and shut down behavior of the lamp, when the switching either from AC to DC or DC to AC.

Quick Installation Guide

Please take the time to read this quick installation guide. Signify does not accept liability for any damages for installations not performed according to this guide or not performed by a professional electrician.

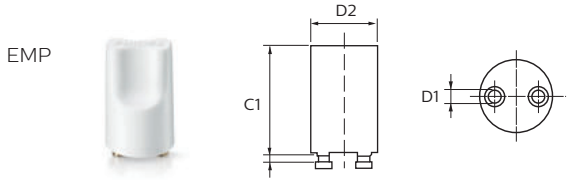
Installation Warning

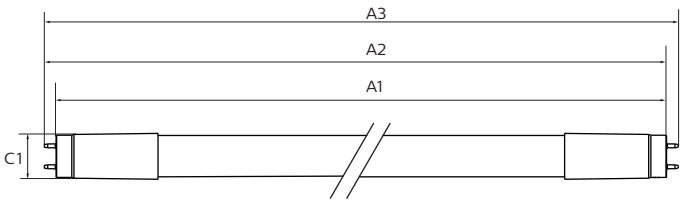
- Check whether the system is an EM (Electro Magnetic) ballast based system or an HF (High Frequency electronic) ballast based system, and follow the appropriate instructions accordingly. For new built luminaries follow section "New built luminaries".
- Product is not dimmable
- Always switch off the power supply before commencing work
- Do not change the structure or any components of the product

Application Notes

- Operation temperature range is between -20°C and +45°C ambience.
- Only to apply in dry indoor usage and environments.
- Not intended for use with emergency light fixtures or exit light.
- For use in fixtures which consist of IEC compliant G13 bi-pin lamp holders which can support 500 gram.

Dimensions





Accessories

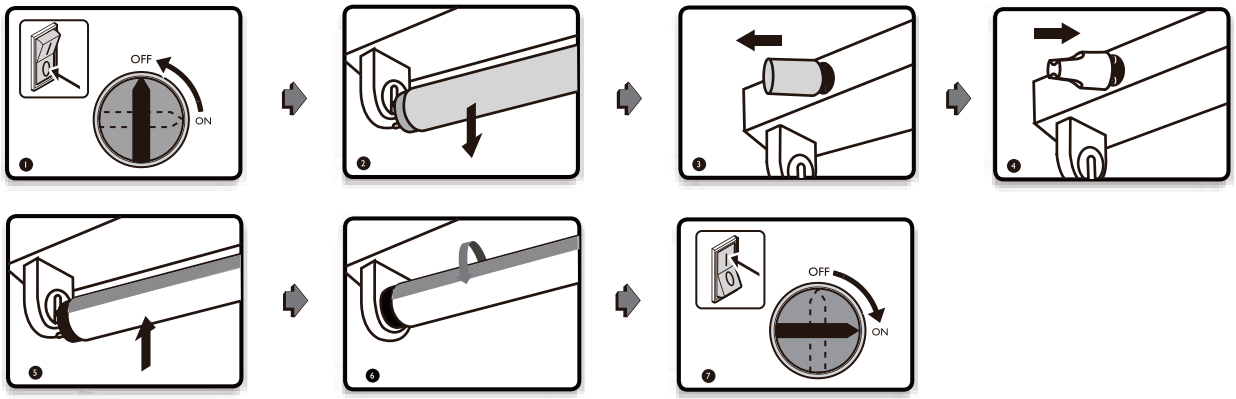
MASTER LEDtube
Protector EMP
871829172930300

Dimensions (mm)

Product	A1	A2	A3	C1	D1	D2
600mm	589.8	595.7	604.0	28	-	-
1200mm	1199.4	1205.3	1213.6	28	-	-
EMP	-	-	-	34.5	3	21.5

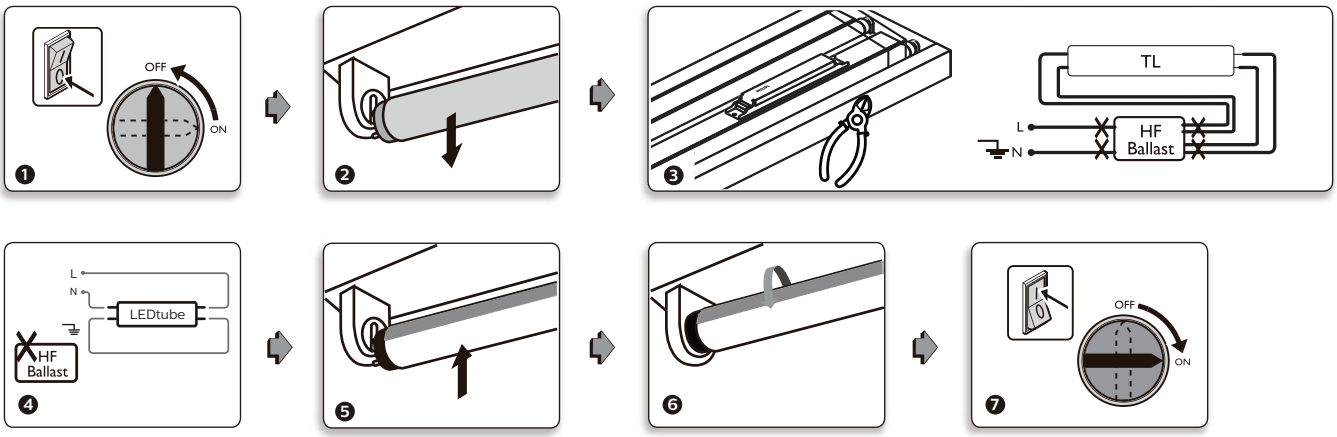
Installation Guide

- EM ballast based system

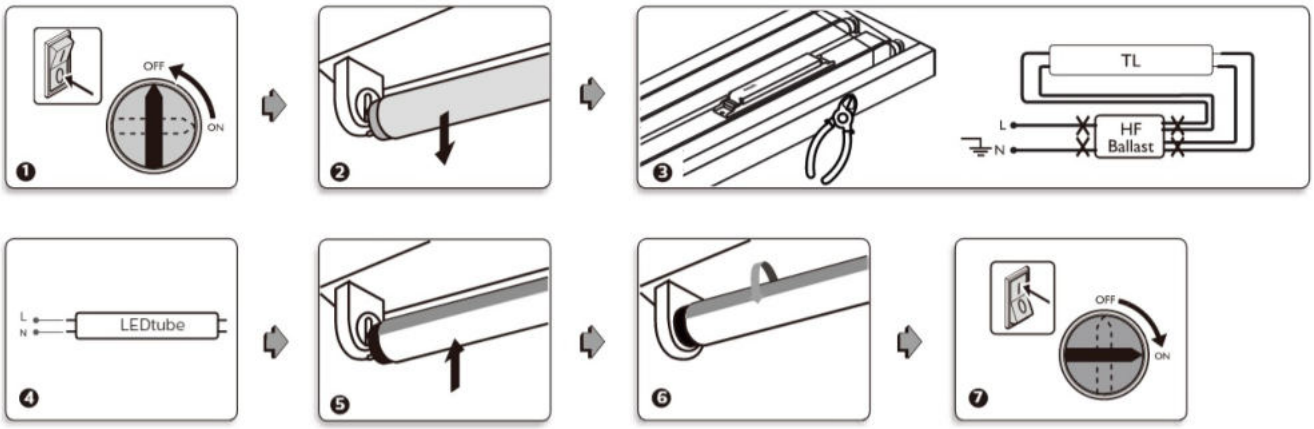


- For EM ballast installation please check if a power factor correcting capacitor is installed in the existing circuit. If yes, please follow the instruction below:
- Please simply remove the capacitor if it is parallel with the EM ballast

- HF ballast based system (double-ended wiring)

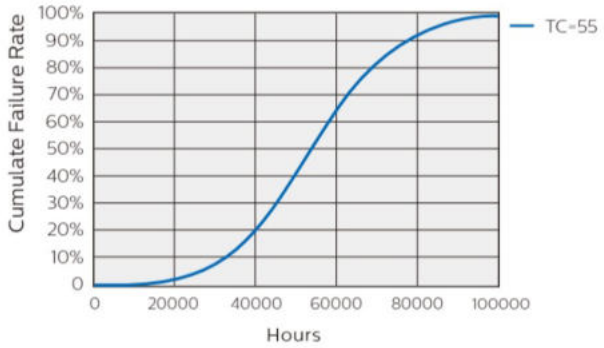


- HF ballast based system (single-ended wiring)

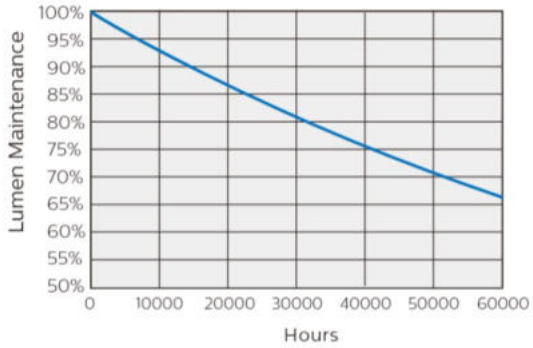


OEM Guideline

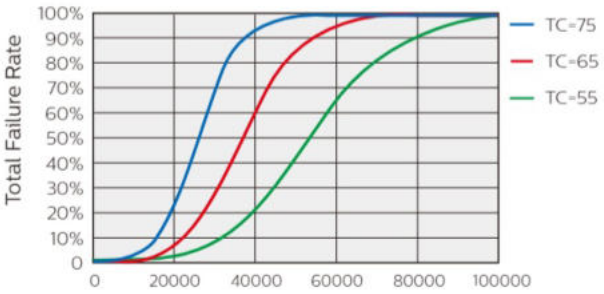
Lifetime Curve



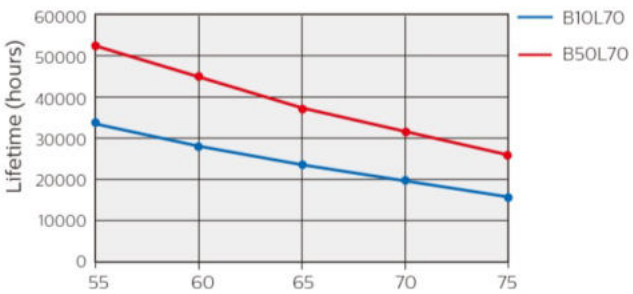
Lifetime and Lumen Maintenance



Failure Rate vs.
Lifetime vs. Tcase



Lifetime vs. Tcase



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