Product Features

Highly Reliable

- Reliable operation between -20 °C to 45 °C ambient temperature
- Rated average life of 50,000 hours (tested to B50 L70 requirement)
- 200,000 switching cycles

Highly Comfortable

- CRI 83
- Advanced optical design ensures a uniform light
 output and superior optical efficiency

Highly Energy Efficient

- Energy savings of more than 45%*
 - * Based on comparison between 24W Master VHO LEDtube and competition 46W (50-54W system power when working with Electro Magnetic Ballasts)

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

Highly Fit

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

Highly Environmental Friendly

- No mercury
- No breakage and pollution risk

Application



















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 VHO LEDtube standard contains the visible light only. No harm from UV and IR.





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 VHO LEDtube's application.

1 x MAS LEDtube 1200mm 3700lm 24W840 T8 VN



1 x MAS LEDtube 1200mm 3700lm 24W865 T8 VN



Quantity estimation diagram of luminair h_{room}: 2.8 m Reflectances: 0.70, 0.50, 0.20 Maintenance factor: 1.0 Ceiling mounted 750 lx 500 300

50

70

90 (m²)

Utilisation factor table

	Re	Reflectances (%) for ceiling, walls and working plane (CIE)									
Room	0.80	0.80	0.70	0.70	0.70	0.70	0.50	0.50	0.30	0.30	0.00
Index	0.50	0.50	0.50	0.50	0.50	0.30	0.30	0.10	0.30	0.10	0.00
k	0.30	0.10	0.30	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.00
0.60	0.43	0.41	0.41	0.40	0.40	0.32	0.31	0.26	0.29	0.25	0.22
0.80	0.53	0.50	0.51	0.49	0.48	0.40	0.38	0.33	0.36	0.32	0.28
1.00	0.61	0.57	0.59	0.57	0.55	0.47	0.45	0.40	0.43	0.38	0.34
1.25	0.69	0.63	0.66	0.64	0.61	0.54	0.51	0.46	0.49	0.44	0.40
1.50	0.75	0.68	0.72	0.69	0.66	0.59	0.56	0.51	0.53	0.49	0.44
2.00	0.85	0.76	0.81	0.77	0.73	0.67	0.64	0.59	0.60	0.57	0.51
2.50	0.91	0.81	0.87	0.82	0.78	0.73	0.69	0.65	0.65	0.62	0.56
3.00	0.96	0.84	0.92	0.86	0.82	0.77	0.73	0.69	0.69	0.66	0.60
4.00	1.02	0.89	0.97	0.91	0.86	0.82	0.77	0.74	0.73	0.71	0.65
5.00	1.06	0.91	1.01	0.95	0.89	0.85	0.81	0.78	0.76	0.74	0.68
Ceiling mounted											

Luminance Table

Plane Cone	0.0	15.0	30.0	45.0	60.0	75.0	90.0
45.0	12445	12099	12157	12644	13675	15439	18352
50.0	11714	11315	11325	11769	12727	14467	17534
55.0	11013	10568	10533	10933	11782	13441	16602
60.0	10329	9850	9778	10142	10848	12367	15545
65.0	9686	9175	9070	9398	9924	11233	14322
70.0	9099	8565	8434	8737	9046	10065	12906
75.0	8593	8043	7898	8194	8243	8863	11146
80.0	8155	7586	7427	7717	7477	7583	8692
85.0	7767	7179	7008	7302	6819	6407	5201
90.0	7443	6841	6671	6994	6538	6181	2551

(cd/m²)

1 x 3700 lm

1 x 3700 lm

Lifetime and Lumen Maintenance



Philips Master 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 lumens.

Temperature

Master 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

Lumen (%)	100% 99% 97% 96% 95% 93% 92% 91% 90%					
	5	5	60	65	70	75
				T _C (°C)		

1200mm_14W (Dimension: mm)



Approbation & Certificates

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



Technical specification

10NC	Product Description	Wattage	Equivalent Fluorescent Wattage	Voltage	Сар	Length	Beam angle	Lifetime	Lumen output (Typical)	Color Temp	CRI
		(W)	(W)	(V)						(K)	(Typical*)
9290018282	MAS LEDtube 1200mm 3700lm 24W840 T8 VN	24	46	220-240	G13	1200	160	50000	3700	4000	83
9290018283	MAS LEDtube 1200mm 3700lm 24W865 T8 VN	24	46	220-240	G13	1200	160	50000	3700	6500	83

* Minimum CRI is 80



	A3
	A2
	A1
۵	

Dimensions (mm)

Product	A1	A2	A3	D1
1200mm	1198	1205	1212	27.9

Installation Guide



Mains Off



Remove all existing FLUORESCENT TUBES from luminaire

For 3 lamps use diagram A & B





For 4 lamps use diagram B & B

Bypass existing BALLAST and rewire according to the following diagrams.

Please check the L/N markings on the lamp end and insert the lamp with AC mains supplied to the corresponding end. To install the lamp in the wrong direction will lead to malfunction.



The supplied warning sticker must be placed on the luminaire and must be visible during lamp replacement



Turn on mains

OEM Guideline

Lifetime vs. Failure Rate @ Ta 25 °C



Failure Rate vs. Lifetime vs. Tcase



Lifetime and Lumen Maintenance



Lifetime vs. Tcase





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