

The Philips logo, consisting of the word "PHILIPS" in a bold, blue, sans-serif font, is positioned in the upper left corner of the advertisement. It is set against a white background that has a curved bottom edge, which transitions into a dark blue background below it.

MASTER LEDtube



# The right LED tube every time

Whatever you need, the Philips MASTER LEDtube portfolio offers it all. From optimised energy efficiency, to the highest light output for even the most demanding applications.

# The right LED tube every time

Whatever you need, the Philips MASTER LEDtube portfolio has it all. We've repositioned the way that our lamps are labelled into three new categories of light output – Standard, High and Ultra output. A simple change that will make it even easier to choose the right lamp, for the right application. From optimised energy efficiency to the highest light output.

A simple switch that comes in a choice of three lengths and color temperatures, with the option of rotating end-caps. So with our lamps, you have the right LED tube every time.



“

The new LED tubes provide a power saving of 53% per fitting.”

Ulrik Leth, Electricity Installer  
Dansk Supermarked A/S

## The right tube, right now

Our portfolio of LED tubes is now available with a range of options in Standard, High and Ultra Output.

## Save on energy costs

LED tubes are up to 65% more efficient than TL-D lamps, so you can save on energy costs without compromising on light quality.

## Long-lasting and reliable

With a lifetime of 50,000 hours they outshine TL-D lamps by 25,000 hours for lower maintenance and operation costs.

## High quality of light

Our LED tubes won't flicker or cause glare. The 100% instant light has a high color consistency and uniform visual appearance in a choice of color temperatures.

## NEW Ultra output, ultra efficient

Choose Ultra Output for ultra efficiency of 148 lm/W and exceptional light quality. Philips has a long history of ground-breaking innovation in lighting technologies. Our Ultra Output LED tubes are specially designed for demanding applications that require a high light output to comply with ergonomic norms. In fact they raise the bar in lighting efficiency and comfort by meeting all office, supermarket and healthcare standards.

## A green choice

LED tubes are a mercury-free alternative to traditional fluorescent tubes, a responsible choice that can also contribute towards your green credentials.

## 100% safe installation

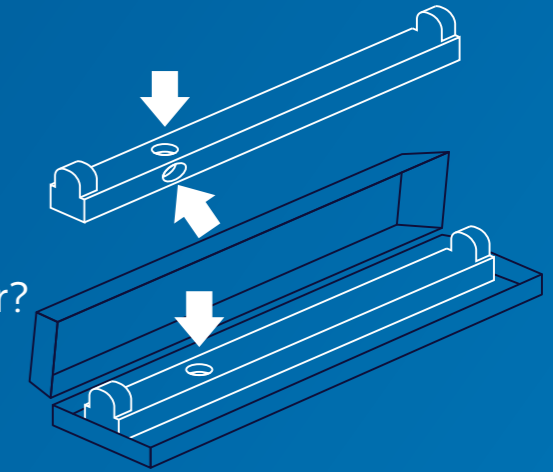
LED tubes are the fastest and easiest way to upgrade existing luminaires to LED technology. Installation is 100% safe and 0% hassle with a simple lamp-for-lamp replacement.

Ultra  
Output HF  
available  
NOW





# Finding the right fit



## 1 Does your luminaire have a starter?

This illustration shows its typical location in an open or closed luminaire with the length of 1200 and 1500 mm tubes.

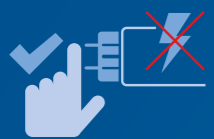
# The installer's choice

If you're an installer there are even more reasons for you to choose Philips MASTER LEDtubes. As you'd expect from the world's leading name in lighting, our quality and attention to detail means that we can also make your life safer and easier.



### HF compatibility

No wires to replace, no hassle changing drivers; our InstantFit solution works with High Frequency electronic ballast, making it easy and safe for all installation methods. All you have to do is slot the tube into your existing fitting.



### Pin safety

With Philips products you can safely touch the other end-cap when installing the tube. The integrated driver is also safely isolated from touchable parts. Philips LED tubes adhere to all UL and IEC pin safety requirements.

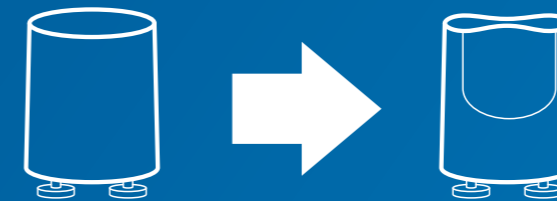


### Rotating end-caps

In many applications the pin fitting is rotated. This can be a problem as LED tube only provide directional light. MASTER LEDtubes have rotating end-caps to allow you to rotate the tube by up to 90 degrees. So you can always direct the light to best effect.

## 2 Yes.

The luminaire works on Electro Magnetic ballast. Simply replace the old starter with the new (EM) LED starter included in the packaging. Choose the LED tube with one ring on the cap.



## No.

The luminaire works on High Frequency electronic ballast (HF). Choose MASTER LEDtube InstantFit with the end-cap with two rings. No need to change drivers or rewire. It's a plug and play solution that works straight out of the box.

Quick and easy installation.

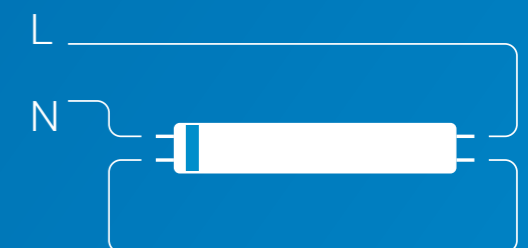
Check the ballast compatibility list on [www.philips.com/ledtube](http://www.philips.com/ledtube)



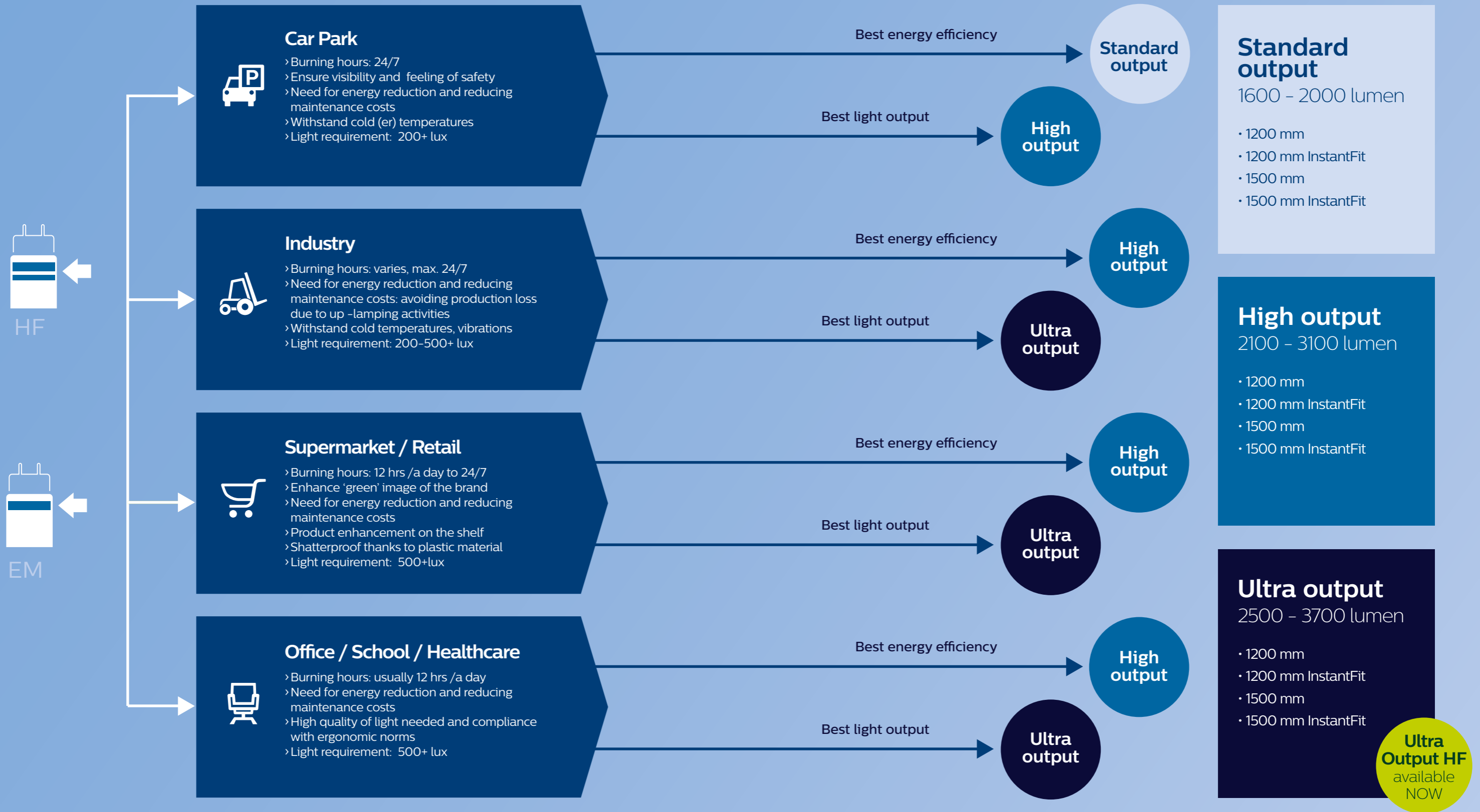
## 3 No.

Your luminaire works on High Frequency Electronic Ballast (HF) but you can't use MASTER LEDtube InstantFit or your ballast is not compatible.

Cut wires, remove ballast and connect direct to mains. Use the MASTER LEDtube EM with one ring on the cap.



# Finding the right tube



# Finding the right output


For ultra-output applications, our solutions meet lighting industry standards (EN12464-1) by providing high light levels without causing discomfort or glare\*.

## Lux

Working, typing reading and data processing require sufficient light with a minimum lux level

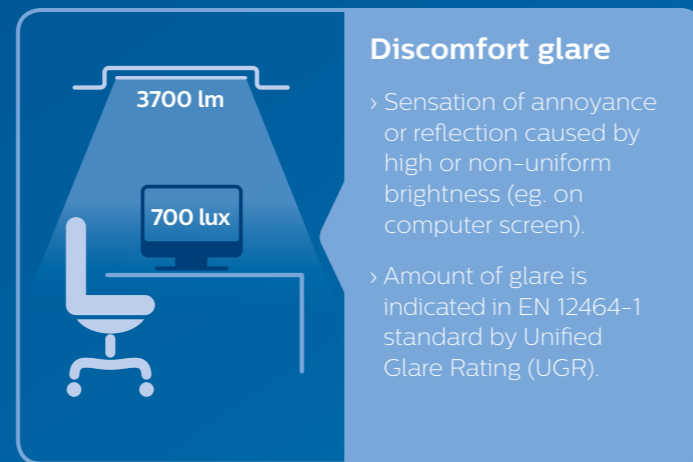
## Unified Glare Rating (UGR)

The amount of glare, annoyance or reflection created by high or non-uniform brightness must be kept to a minimum



**Sufficient light**

- > Key parameter for indicating the amount of minimum required light is indicated in EN12464-1 in lux (unit of illuminance per square meter).
- > EN12464-1 prescribes minimum lux values, uniformity of illumination, and color rendering index, depending on the task.



**Discomfort glare**

- > Sensation of annoyance or reflection caused by high or non-uniform brightness (eg. on computer screen).
- > Amount of glare is indicated in EN 12464-1 standard by Unified Glare Rating (UGR).

# Lighting requirements

EN12464-1 prescribes minimum lux values, uniformity of illumination and color rendering index, depending on the task



## Supermarkets / Retail

- > For Supermarket and Retail applications 500 lux counts as minimum value.
- > UGR standard for Supermarket applications is also set at max 19 UGR.



## Industry

- > For Industry applications, there are many sub segments, each having their own specific standards, in storage industry segment 300 lux counts as minimum value.
- > UGR standard for Industry applications is set at max 25 UGR.



## Office / School / Healthcare

- > For Office applications 500 lux per square meter counts as minimum value for writing, typing, reading, data processing, conference and meeting rooms.
- > UGR standard for Office applications is set at max 19 UGR.
- > For most Healthcare applications 200 lux counts as minimum value.
- > UGR standard for applications is set at max 22 UGR.

\* Final light quality, besides the LED tube, also depends on application circumstances like e.g. type of luminaire used and amount of daylight.

# Finding the right solution for your application



## New standard for car parks

Car parks and transportation networks need to feel bright and welcoming 24 hours a day. White LED light has a higher perceived brightness and superior color rendering, so people feel safer. And because LED is highly reliable and energy efficient, your customers will welcome the savings too.

	Fluorescent TL-D 1500 mm	MASTER LEDtube SO 1500 mm
<b>Standard Output</b> 1600 - 2000 lumen	588 lx	426 lx
<b>Longer lifetime</b>	15,000 Hrs	50,000 Hrs
<b>Energy savings</b>	72W	20W
Average buying price installer ex VAT	2 €	37.50 €
Total costs / year	80 €	30 €

Based on the European average of 12 cent/kWh hours (including maintenance and lamp replacement cost)


**5,130 €**

Savings / year

**9 months**

Payback period

Number of lamps	100
Burning hours per year	8,760 Hrs
Energy costs	0.12 Euro/kWh



> Choose Standard Output LED tubes for a lower TCO with the best energy efficiency



## High output for higher standards in car parks

High Output LED tubes raise the standards in car parks even higher. With a light output of up to 3100 lumen they provide maximum visibility and safety – particularly important in car parks that operate right around the clock.

	Fluorescent TL-D 1500 mm	MASTER LEDtube HO 1500 mm	MASTER LEDtube SO 1500 mm
<b>High Output</b> 2100 - 3100 lumen	588 lx	660 lx	426 lx
<b>Longer lifetime</b>	15,000 Hrs	50,000 Hrs	50,000 Hrs
<b>Energy savings</b>	72W	23W	20W
Average buying price installer ex VAT	2 €	42.50 €	
Total costs / year	80 €	35 €	

Based on the European average of 12 cent/kWh hours (including maintenance and lamp replacement cost)


**4,018 €**

Savings / year

**11 months**

Payback period

Number of lamps	85
Burning hours per year	8,760 Hrs
Energy costs	0.12 Euro/kWh

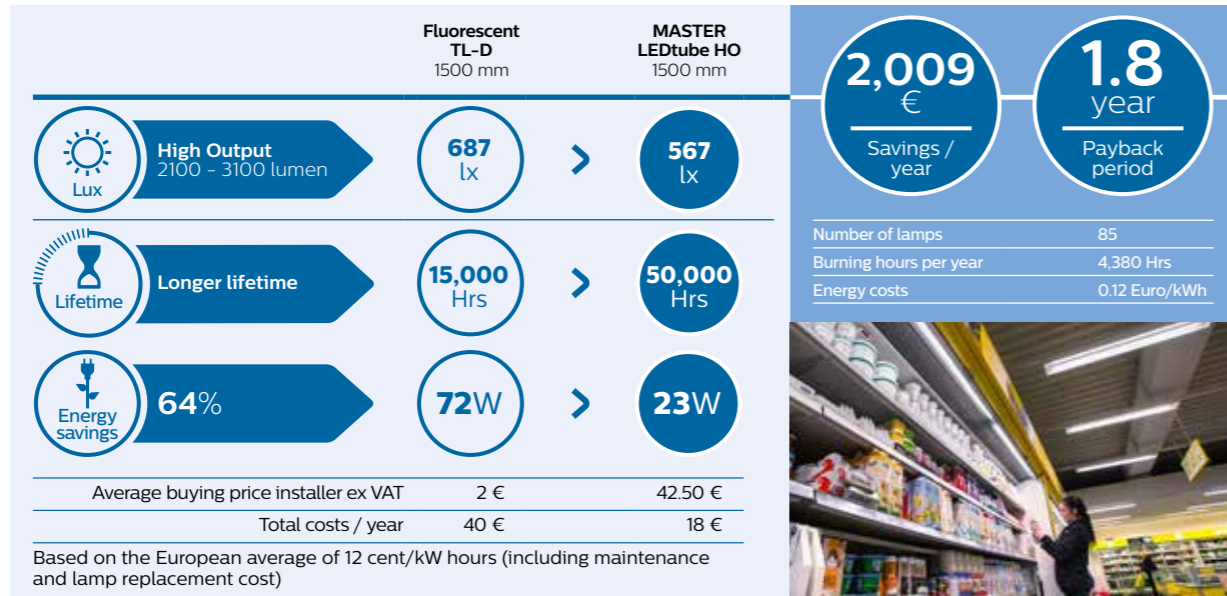


> Choose High Output LED tubes for high light output with the best lm/w



### High output on the high street

Retail stores and hospitality venues know light has the power to attract. It creates irresistible displays, brings brands to life and encourages customers to spend longer in store. With our LED tubes you can light up sales at the same time as reducing energy and maintenance costs.

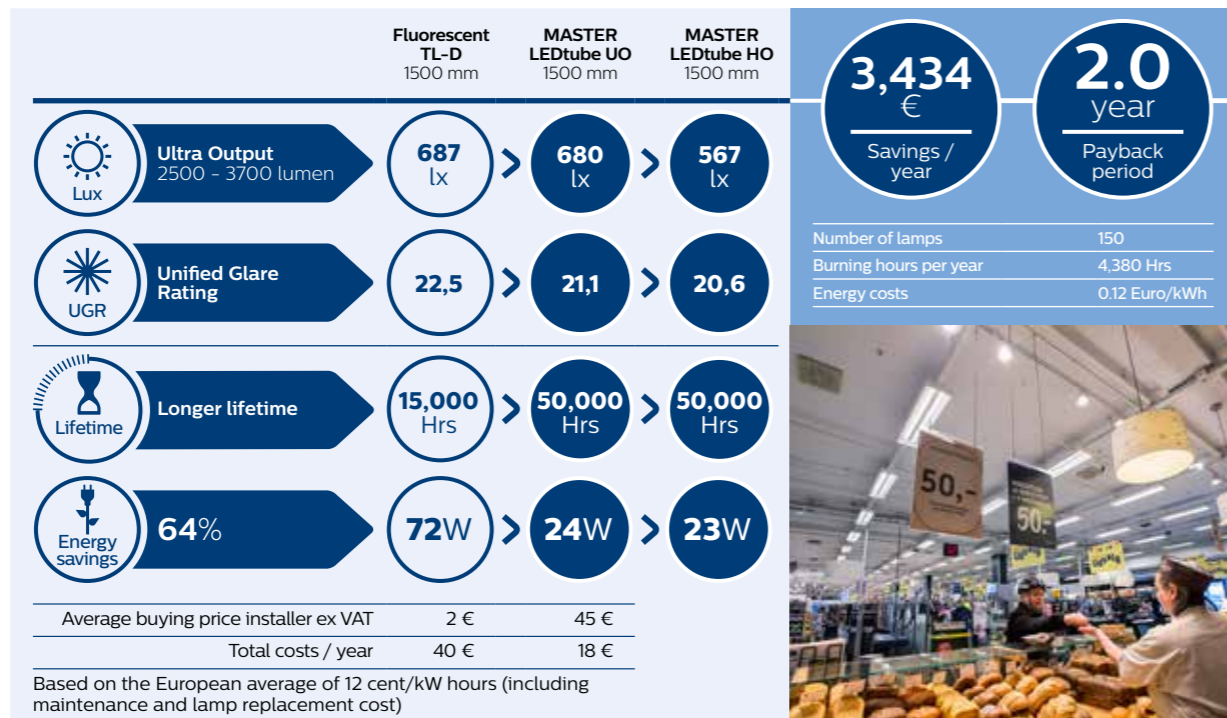


› Choose High Output LED tubes for **high light output** with the **best lm/w**



### Ultra output for ultra efficient supermarkets and retail

Beautiful lighting brings out the best in the products on display and enhances the shopping experience for customers. But with lamps burning for up to 18 hours a day, food retailers want solutions that will reduce energy and maintenance costs – and show their green credentials in the best light.

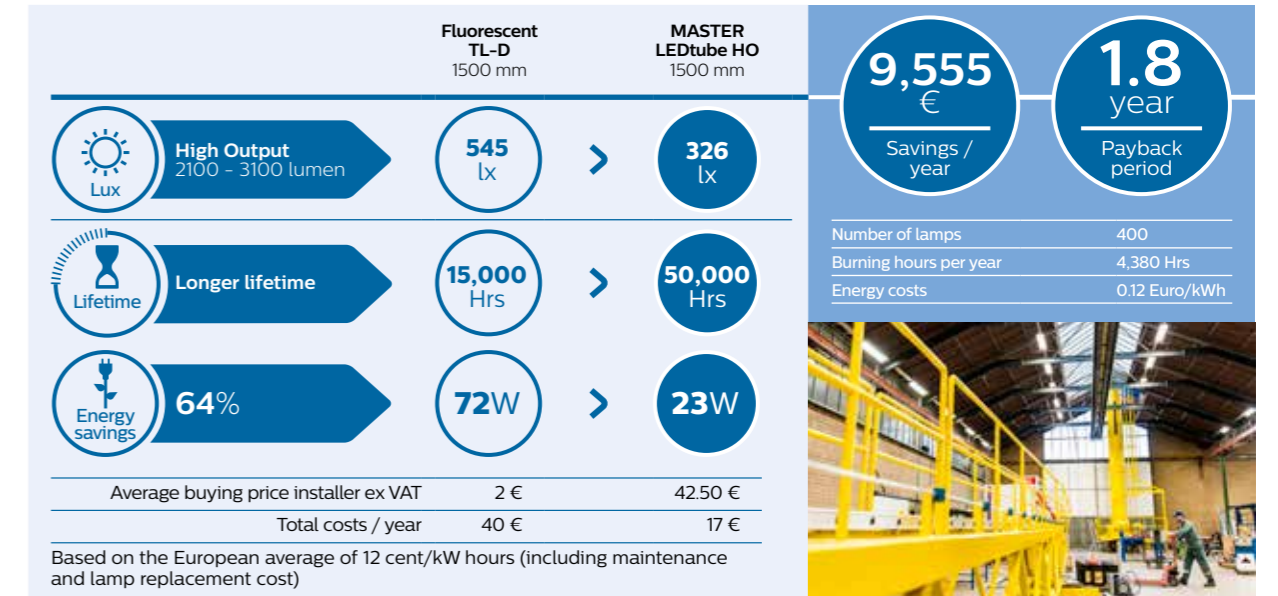


› Choose Ultra Output LED tubes for **ultra efficiency** in the most demanding supermarket and retail applications



### High output for highly-efficient industry

Industry demands high visibility, efficiency and safety. But 24/7 operations can run up expensive energy bills. Our solutions save energy and maintain their energy efficiency, even in extremely cold conditions. So they reduce maintenance costs and avoid expensive production down time.

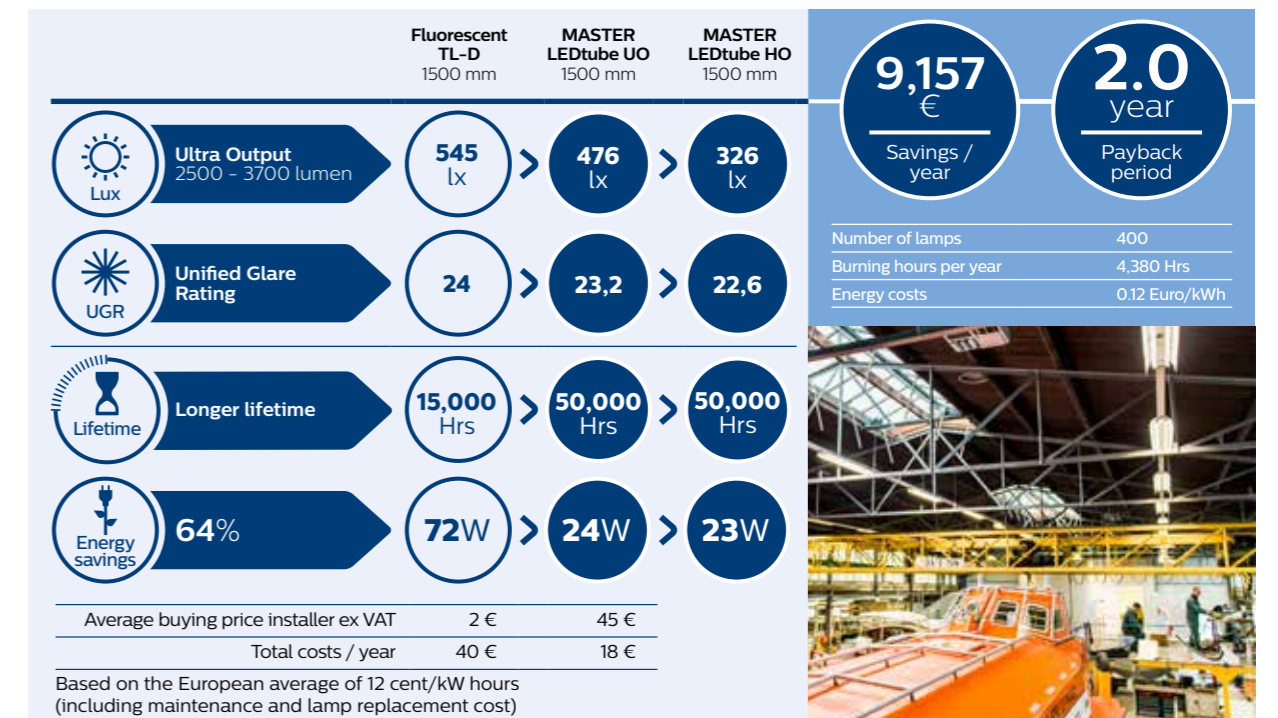


› Choose High Output LED tubes for **high light output** with the **best lm/w**



### Ultra output for ultra-efficient industry

In ultra-demanding applications, our Ultra Output LED tubes take safety and performance to the next level. With a super bright light output of up to 3700 lumen they offer the best light output for maximum visibility and minimal maintenance.

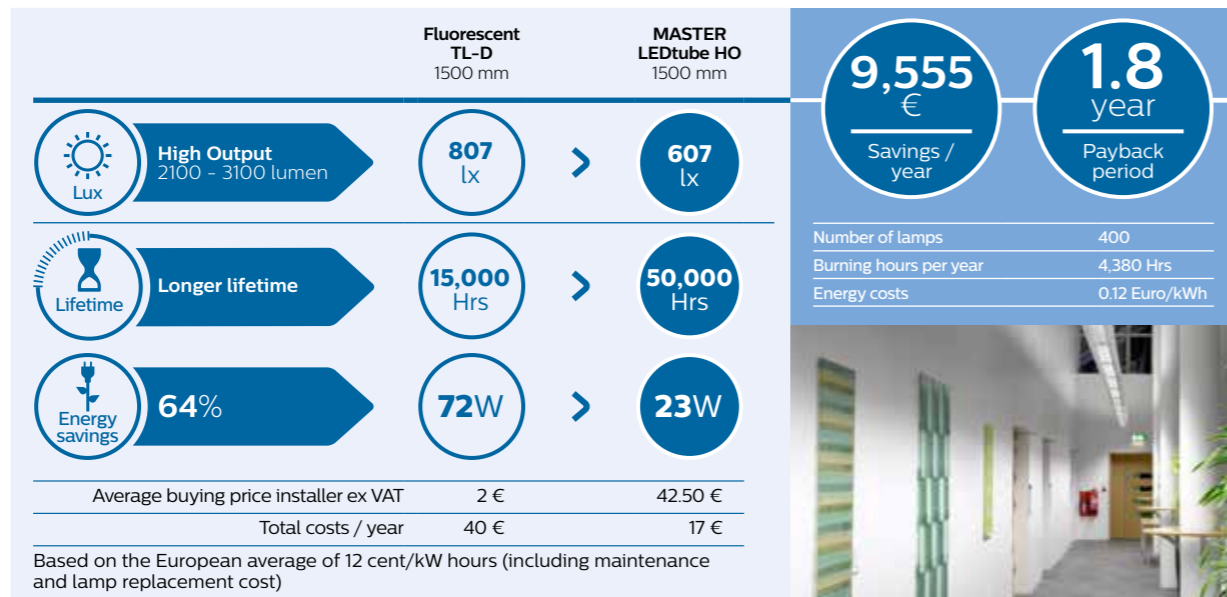


› Choose Ultra Output LED tubes for the **best light output** in the most demanding industry applications



### High output for highly efficient offices

With a light output of up to 3100 lumen, our High Output LED tubes provide brilliant light quality with the best lumen per watt. A simple switch for offices and healthcare settings that save on energy but feel bright and welcoming.

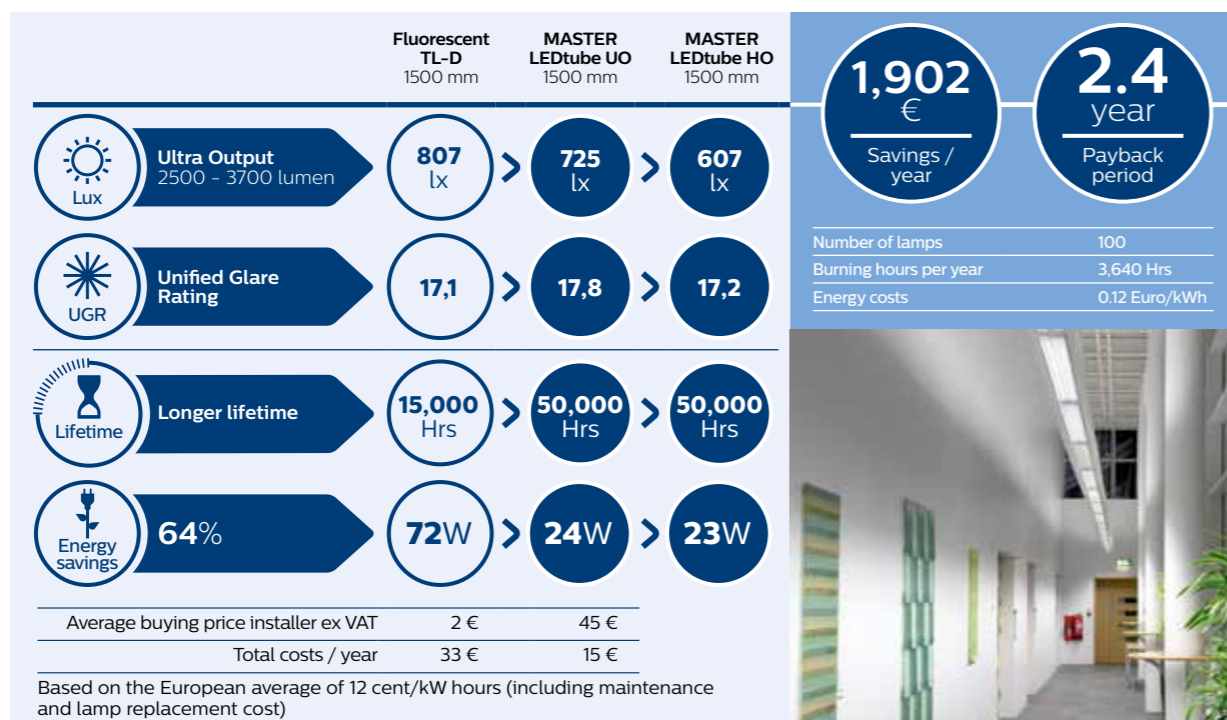


> Choose High Output LED tubes for **high light output** with the **best lm/w**



### Ultra output for ultra-efficient offices

Office and school lighting can influence energy levels, performance and wellbeing. Our solutions shine with impressive, high quality light to create the most comfortable ambience that complies with all office norms and still saves on energy. So business is always a pleasure.



> Choose Ultra Output LED tubes for the **best light output** in the most demanding office and healthcare applications

Calculate your own **savings** on [www.philips.com/ledtube](http://www.philips.com/ledtube)



### Case study

# Dansk Supermarked saves 53%

#### Background

In September 2014, Dansk Supermarked began replacing more than 80,000 fluorescent lamps with Philips MASTER LEDtubes. The process is expected to carry on into late summer 2015 and involves all Bilka, Føtex and Netto stores in Denmark as well as Netto in Sweden and Germany. Altogether, more than 500 stores are having most of their lighting renovated in store areas, stock rooms, administration etc. In many of the stores, the lighting is also being replaced in most of the chilled display cabinets.

Electricity Installer Ulrik Leth, Dansk Supermarked, says: "This change is part of our ongoing energy renovation in which we are constantly looking for ways to minimise our power consumption and the corresponding CO<sub>2</sub> emissions. When it comes to lighting, the quality of the light is especially important because the goods in our stores have, of course, to be presented in the best possible way. We have followed the development of LED tubes closely and we're convinced that they are the right solution, both in terms of power consumption and light quality."

#### Project

Several types of the new MASTER LEDtubes are being used; for example, T8 fluorescent tubes 36 W with glow starter switches are being replaced by LED tubes 20 W.

"We have reused the existing fittings and have only had to repair very few of them. Otherwise, it's only been the capacitors that have been removed and the glow starter switches replaced with dummy starters. Also, the bases on the LED tubes can be rotated to fit the fittings, so it's a really simple operation," says Ulrik. "We haven't made any changes to the electrical installations, and we can happily say that the LED tubes have not caused any problems for the stores' existing electronics, such as the electronic front edges of the shelves, WiFi network etc."

The actual replacement is being carried out by AURA Energi's installation department, which also uses cooperation partners in eastern Denmark. "We've had a special 'Philips van' to drive around in with the new LED tubes for all the stores," explains Thomas Vraa Baiemler, Departmental Manager of AURA Energi's installation department. "The LED tubes have been easy to work with and our biggest challenge was accessibility, as since it's been a total replacement, we've also been working in basements, toilets etc."



**“We get the same level of brightness, a good colour rendering of the goods and much longer lifespan of the light sources, saving us more than half the energy consumption.”**

Ulrik Leth, Electricity Installer  
Dansk Supermarked A/S



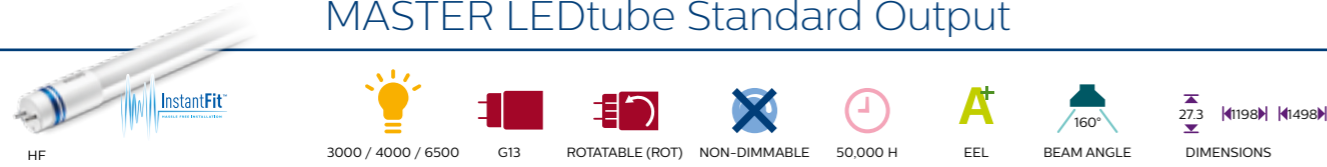
#### The benefits

The new LED tubes provide a power saving of 53% per fitting (for a 36 W fitting). "We used an external company to measure the consumption, as we wanted a completely objective result," says Ulrik Leth. "The LED tubes also offer an extra benefit, as their long lifespan of around 50,000 hours – compared to the T8 tubes at around 15,000 hours – saves the costs of replacement, and the longer burning hours also increases the lifespan of our oldest fittings, as we no longer risk breaking them when replacing the tubes."

The quality of the LED tubes has also been good. "We have had far fewer faulty tubes delivered from Philips," explains Thomas Vraa Baiemler. "In fact, the number is way below the percentage we agreed beforehand."

# Technical specifications

## MASTER LEDtube Standard Output



Product type	LED	Rotatable endcap	Lumen output	Operation	Beam angle	CRI	Color temperature	EOC 1 pcs (C)*	
<b>MASTER LEDtube (HF)</b>	<b>W</b>		<b>lm</b>		<b>°</b>		<b>K</b>	<b>8718696</b>	<b>8718291</b>
1200mm SO 16.5W 840 T8 RN* Instant Fit	16.5	Yes	1600	HF	160	83	4000	40890200	
1200mm SO 16.5W 840 T8 RS* Instant Fit	16.5	Yes	1600	HF	160	83	4000		72885600
1200mm SO 16.5W 865 T8 RN* Instant Fit	16.5	Yes	1600	HF	160	83	6500	40892600	
1200mm SO 16.5W 865 T8 RS* Instant Fit	16.5	Yes	1600	HF	160	83	6500		72887000
1500mm SO 22W 840 T8 Instant Fit	22	Yes	2000	HF	160	83	4000	40078400	
1500mm SO 22W 865 T8 Instant Fit	22	Yes	2000	HF	160	83	6500	40080700	

## MASTER LEDtube High Output

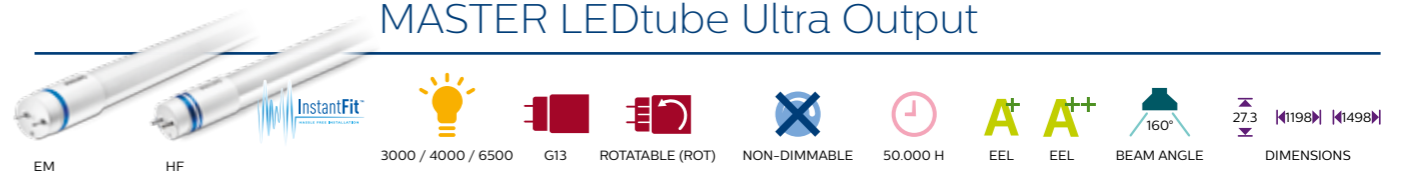


Product type **	LED	Rotatable endcap	Lumen output	Operation	Beam angle	CRI	Color temperature	EOC 1 pcs (C)*	
<b>MASTER LEDtube (EM)</b>	<b>W</b>		<b>lm</b>		<b>°</b>		<b>K</b>	<b>8718696</b>	<b>8718291</b>
1200mm HO 16W830 T8 RN*	16	Yes	2000	EM & Mains	160	83	3000	65664800	
1200mm HO 16W830 T8 RS*	16	Yes	2000	EM & Mains	160	83	3000		42198700
1200mm HO 16W840 T8 RN*	16	Yes	2100	EM & Mains	160	83	4000	65666200	
1200mm HO 16W840 T8 RS*	16	Yes	2100	EM & Mains	160	83	4000		42200700
1200mm HO 16W865 T8 RN*	16	Yes	2100	EM & Mains	160	83	6500	65668600	
1200mm HO 16W865 T8 RS*	16	Yes	2100	EM & Mains	160	83	6500		42202100
1500mm HO 23W 830 T8	23	Yes	2900	EM & Mains	160	83	3000		78956700
1500mm HO 23W 840 T8	23	Yes	3100	EM & Mains	160	83	4000		78958100
1500mm HO 23W 865 T8	23	Yes	3100	EM & Mains	160	83	6500		78960400
<b>MASTER LEDtube (HF)</b>	<b>W</b>		<b>lm</b>		<b>°</b>		<b>K</b>	<b>8718696</b>	
1200mm HO 18W830 T8 InstantFit	18	Yes	2000	HF	160	83	3000	51456600	
1200mm HO 18W840 T8 InstantFit	18	Yes	2100	HF	160	83	4000	47125800	
1200mm HO 18W865 T8 InstantFit	18	Yes	2100	HF	160	83	6500	47127200	
1500mm HO 25W830 T8 InstantFit	25	Yes	2900	HF	160	83	3000	51458000	
1500mm HO 25W840 T8 InstantFit	25	Yes	3100	HF	160	83	4000	40886500	
1500mm HO 25W865 T8 InstantFit	25	Yes	3100	HF	160	83	6500	40888900	

\* RS = Region Southern Europe / RN = Region Northern Europe

\*\* EEL 1200 mm and 1500 mm EM versions A++ / EEL 1200 mm and 1500 mm HF versions A+

## MASTER LEDtube Ultra Output

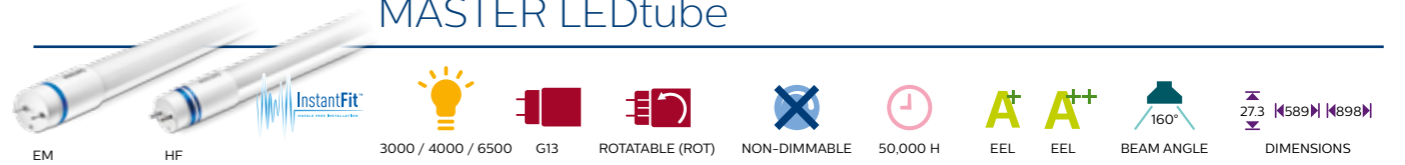


Product type	LED	Rotatable endcap	Lumen output	Operation	Beam angle	CRI	Color temperature	EOC 1 pcs (C)*	
<b>MASTER LEDtube (EM)</b>	<b>W</b>		<b>lm</b>		<b>°</b>		<b>K</b>	<b>8718696</b>	
1200mm UO 18W 830 T8 RN*	18	Yes	2300	EM & Mains	160	83	3000	56527800	
1200mm UO 18W 830 T8 RS*	18	Yes	2300	EM & Mains	160	83	3000		46149500
1200mm UO 18W 840 T8 RN*	18	Yes	2300	EM & Mains	160	83	3000	56529200	
1200mm UO 18W 840 T8 RS*	18	Yes	2500	EM & Mains	160	83	4000	46151800	
1200mm UO 18W 865 T8 RN*	18	Yes	2500	EM & Mains	160	83	6500	56531500	
1200mm UO 18W 865 T8 RS*	18	Yes	2500	EM & Mains	160	83	6500		46155600
1500mm UO 25W 830 T8	25	Yes	3400	EM & Mains	160	83	3000	46157000	
1500mm UO 25W 840 T8	25	Yes	3700	EM & Mains	160	83	4000	46159400	
1500mm UO 25W 865 T8	25	Yes	3700	EM & Mains	160	83	6500	46163100	
<b>MASTER LEDtube (HF)</b>	<b>W</b>		<b>lm</b>		<b>°</b>		<b>K</b>	<b>8718696</b>	<b>8718696</b>
1200mm UO 21W830 T8 RN* Instant Fit	21	Yes	2300	HF	160	83	3000	55282700	
1200mm UO 21W830 T8 RS* Instant Fit	21	Yes	2300	HF	160	83	3000		46149500
1200mm UO 21W840 T8 RN* Instant Fit	21	Yes	2500	HF	160	83	4000	55278000	
1200mm UO 21W840 T8 RS* Instant Fit	21	Yes	2500	HF	160	83	4000		46151800
1200mm UO 21W865 T8 RN* Instant Fit	21	Yes	2500	HF	160	83	6500	55280300	
1200mm UO 21W865 T8 RS* Instant Fit	21	Yes	2500	HF	160	83	6500		46155600
1500mm UO 26W830 T8 InstantFit	26	Yes	3400	HF	160	83	3000	55288900	
1500mm UO 26W840 T8 InstantFit	26	Yes	3700	HF	160	83	4000	55284100	
1500mm UO 26W865 T8 InstantFit	26	Yes	3700	HF	160	83	6500	55286500	

\* RS = Region Southern Europe / RN = Region Northern Europe

\*\* EEL 1200 mm and 1500 mm EM versions A++ / EEL 1200 mm and 1500 mm HF versions A+

## MASTER LEDtube



Product type **	LED	Rotatable endcap	Lumen output	Operation	Beam angle	CRI	Color temperature	EOC 1 pcs (C)*	
<b>MASTER LEDtube (EM)</b>	<b>W</b>		<b>lm</b>		<b>°</b>		<b>K</b>	<b>8718696</b>	<b>8718696</b>
600mm 9W 830 T8 RN*	9	Yes	1000	EM & Mains	160	83	3000	57279500	
600mm 9W 830 T8 RS*	9	Yes	1000	EM & Mains	160	83	3000		46141900
600mm 9W 840 T8 RN*	9	Yes	1050	EM & Mains	160	83	4000	57281800	
600mm 9W 840 T8 RS*	9	Yes	1050	EM & Mains	160	83	4000		46143300
600mm 9W 865 T8 RN*	9	Yes	1050	EM & Mains	160	83	6500	57283200	
600mm 9W 865 T8 RS*	9	Yes	1050	EM & Mains	160	83	6500		46145700
<b>MASTER LEDtube (EM)</b>	<b>W</b>		<b>lm</b>		<b>°</b>		<b>K</b>	<b>8718696</b>	<b>8718291</b>
900mm 15W 840 T8 RN*	15	Yes	1575	EM & Mains	160	80	4000	47121000	
900mm 15W 840 T8 RS*	15	Yes	1575	EM & Mains	160	80	4000		23880500
900mm 15W 865 T8 RN*	15	Yes	1575	EM & Mains	160	80	6500	47123400	
900mm 15W 865 T8 RS*	15	Yes	1575	EM & Mains	160	80	6500		23882900
1800mm 25W 840 T8	25	Yes	3700	EM & Mains	160	85	4000	48037300	
<b>MASTER LEDtube (HF)</b>	<b>W</b>		<b>lm</b>		<b>°</b>		<b>K</b>	<b>87186965</b>	
600mm 10.5W 830 T8 InstantFit	10.5	Yes	1000	HF	160	83	3000	5965900	
600mm 10.5W 840 T8 InstantFit	10.5	Yes	1050	HF	160	83	4000	5967300	
600mm 10.5W 865 T8 InstantFit	10.5	Yes	1050	HF	160	83	6500	5969700	

\* RS = Region Southern Europe / RN = Region Northern Europe

\*\* EEL 1200 mm and 1500 mm EM versions A++ / EEL 1200 mm and 1500 mm HF versions A+



## Protection starter



Product type	EOC 10 pcs (I)
Accessory	8718291
Starter EMP	72928000



Please refer to the site [www.philips.com/masterledlamps](http://www.philips.com/masterledlamps) for the latest information about dimming MASTER LEDlamps and about transformer compatibility.

\*) Note: Some of the products are only available in specific countries. Product descriptions with 'RS' are only available in: France, Spain, Portugal, Italy, Greece and Israel. Product descriptions with 'RN' are only available in the rest of the European countries.



