E-CORE™
LED Lighting

Enjoy LED Light

TOSHIBA
Leading Innovation

Lighting increases a sense of security and well being

Light is malleable and can therefore be varied according to our needs and our environment. Light enables us to plan by being a solution in itself for even the most tailored requirements - whether traditional or innovative, practical or emotional. Toshiba has been producing lighting for over 120 years. With our wide range of products, we offer the optimal solution for perfect light.

Our LED lamps and luminaires meet the highest standards thanks to their efficiency and functionality as well as their outstanding aesthetics.

Be inspired by this product brochure with the many ways to achieve your lighting solution.

CONTENTS

E-CORE LED Lighting

TOSHIBA Leading Innovation

A 120 year history of success

- VERY LOW COLOUR TOLERANCE
- EXTREMELY LONG LIFETIME
- NO HEAT IN BEAM
- EXTREMELY LOW POWER CONSUMPTION
- HARMONIOUS LIGHT COLOURS
- NO UV OR IR RADIATION
- LEAD AND MERCURY-FREE
- INSTANT QUALITY LIGHT
- DIMMABLE* BETWEEN 10 AND 100%

Lighting technology from Toshiba

1875
Hisashige Tanaka founded the company Tanaka Engineering Works (Tanaka Seizo-sho), which was later renamed Shibaura Engineering Works (Shibaura Seisaku-sho).

1890
Ichisuke Fujioka founded the company Hakunetsu-sha & Co. Ltd., Japan‘s first incandescent lamp factory. It produced carbon filament lamps.

1899
Renamed Tokyo Electric Company (Tokyo Denki).

1939
Merger of the Tokyo Electric Company and Shibaura Engineering Works Co. Ltd. (Tanaka Seisaku-sho) in Tokyo Shibaura Electric Co. Ltd. - In short, Toshiba.

1940
Production of Japan‘s first fluorescent lamp.

1980
Production of the world‘s first compact bulb-shaped fluorescent lamp - the "NeoBall" - characterised by its low energy consumption rate.

2007
Development of the E-CORE LED Downlights - with a lamp life of over 40,000 hours. LED becomes a universal means of lighting.

2008
Toshiba‘s Environmental Vision 2050 seeks to harmonize the environment with a better future for people. Toshiba Lighting therefore announces the termination of the production of conventional light bulbs in 2010.

2009
Production E-CORE LED Lamp: LED enters a new market by becoming compliant with classical lamps.

2010
March 2010: termination of the production of incandescent light bulbs.

2012
Expand further in the european market thanks to a fixture line-up covering commercial lighting applications.

* Trailing edge dimmer; Compatibility list at www.toshiba.eu/lighting

E-CORE LED Lighting

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Toshiba's environmental vision for 2050

"Improving our global efficiency by a factor of 10 by 2050"

Do you believe it? At Toshiba, we do.

We are convinced that economy compliments ecology and that each corporation is responsible for the economical, social and environmental issues of its products.

One of many examples: after years of hard work, our LEDs use up to 80 % less energy than incandescent lamps.

Environment is our priority.

Welcome to Toshiba.

TOSHIBA eco style

LED: 3 letters for 1 solution

With such ambitious goals, Toshiba Lighting had to find means to produce much better light bulbs than incandescent and halogen lamps. This aim combined with an economic and environmental issues: we blazed our path to the solution.

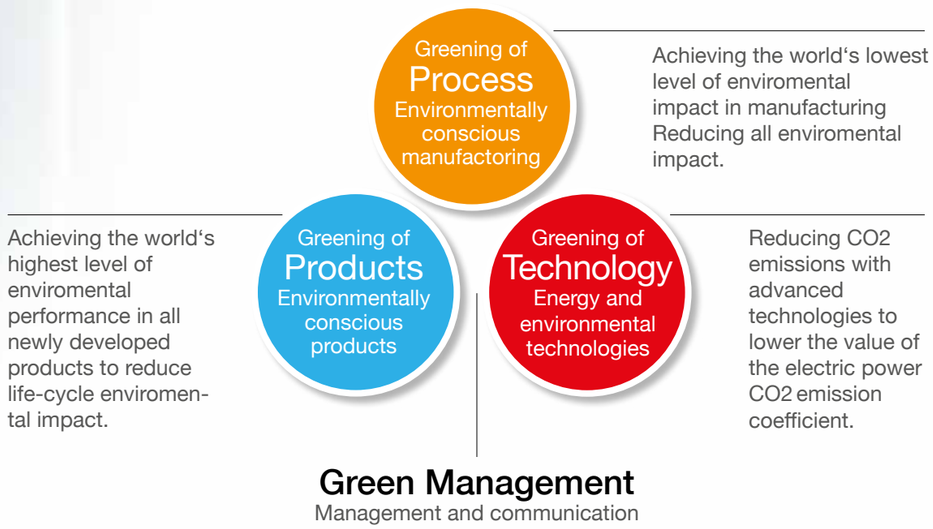
In the 70's, an LED was used as coloured indicator or warning lights.

In 1996, we obtained white light LEDs.

Today LEDs light large areas like museums, public places and parks to houses.

We began developing LEDs in the very early stages of the technology as we saw its potential for vast energy savings and long life. It was a gamble that we are now seeing return on many years later. A true sign of our commitment to this innovative technology.

The three "Greens" and the management supporting them



E-CORE LED Lighting

TOSHIBA
Leading Innovation

Who else but Toshiba!

Toshiba Lighting makes history

Back in 2008, we announced that we anticipated the end of the production of conventional incandescent lamps by 2010. And, as it happens we were right - with production completely shut down in 2010. Toshiba Lighting sees itself as the brand that researches, develops and manufactures with man and the environment in mind.

We have given a name to this consistent thought and action: Akari. Focus on the needs of people as well as thinking and acting sustainably. This is the driving force behind Toshiba‘s continuous innovation processes.

This shapes Toshiba E-CORE LED products and makes them unique and exemplary. Exemplary in: operating life, energy consumption, reduction of CO2 emissions by 80 % compared to conventional incandescent lamps, the range of the performance and colour spectrum and the resulting application possibilities. „Leading Innovation“ - in no other area is this claim of Toshiba more directly experienced than here.

E-CORE LED Lighting, your partner for the future

From the beginning, E-CORE LED Lighting was praised by a large public composed of retailers, professionals, architects and end users, as its 73% growth over last year shows.

Whether it be „a light to see“ for your general lighting or a „light accent“ for your shop displays, E-CORE LED Lighting will meet your needs.

Let’s discover our catalogue for 2013.
Just follow the light.

Why does everybody choose E-CORE LED Lighting?

Last year, hundreds of thousands of professionals and customers from the whole world chose our LEDs. How can we explain such a success?
Let’s ask them!

- Our LEDs last up to 60,000 hours without any maintenance
- Our LEDs use up to 80 % less energy than incandescent lamps
- Our LEDs withstand shock and vibration
- Our LEDs generate virtually no ultraviolet and no infra red
- Our LEDs can reduce CO2 emissions by 80 % compared to incandescent lamps
- Generate less heat thereby contributing towards lower air-conditioning costs
- A very wide range with many sizes and colours offering new creative opportunities

A very wide range for many different needs

With E-CORE LED Lighting, Toshiba wants to make as many people as possible benefit from its progress. For many years, our engineers worked altogether to develop our LED technology.

We are very demanding with ourselves in order to reach one goal: Answer all your lighting needs.

This catalogue is made for you.
Read it carefully: the future is under your eyes.

E-CORE LED Lighting

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Lamps

LED - lighting for all moods

It is time to change because conventional incandescent lamps are a thing of the past. With the modern E-CORE LED lamps from Toshiba, you can create the atmosphere you want in the private and commercial sector - indoors and outdoors.

With all the advantages that LED lamps offer you:

- Very low energy consumption
- Extremely long life
- Low heat production
- Shock and vibration resistant

E-CORE™ LED Lighting

TOSHIBA
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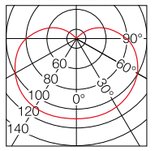
E-CORE GLS WIDE 10W

At over 800 lumen, Toshiba‘s design classic is way ahead from an aesthetic and performance perspective. As a lamp with an extremely intense beam of the retrofit segment, it is the substitute for all fields of application of 60 W bulbs. Its broad reflected beam angle makes it the ideal light source even for large rooms – in brief: powerful, elegant and unbeatably efficient.

LIGHT DISTRIBUTION



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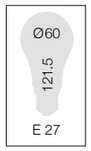
DIMENSIONS



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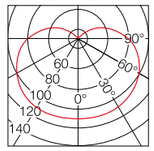
	COLOUR TEMPERATURE	LUMINOUS FLUX	DIMMABLE	WATTAGE	VOLTAGE 50/60 Hz	Ra (min)	LIFESPAN (L70)	BASE
WARM WHITE								
LDAC1027WE7EU	2,700 K	806 lm	No	10 W	220 - 240 V	80	20,000 h	E27
NEUTRAL WHITE								
LDAC1040WE7EU	4,000 K	806 lm	No	10 W	220 - 240 V	80	20,000 h	E27

E-CORE GLS WIDE 7W

The new version of the popular archetype offers light in a familiar shape. However, its revolutionary inner workings marry minimal technology and the maximum angle of radiation perfectly.

product design award 2012

LIGHT DISTRIBUTION



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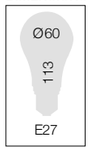
DIMENSIONS



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DIMMABLE

	COLOUR TEMPERATURE	LUMINOUS FLUX	DIMMABLE	WATTAGE	VOLTAGE 50/60 Hz	Ra (min)	LIFESPAN (L70)	BASE
WARM WHITE								
LDAC0827WE7EU	2,700 K	470 lm	No	7.7 W	220 - 240 V	> 80	25,000 h	E27
LDAC0827WE7EUD		470 lm	Yes	7.5 W	220 - 240 V	> 80	25,000 h	E27
NEUTRAL WHITE								
LDAC0840WE7EU	4,000 K	470 lm	No	7.7 W	220 - 240 V	> 80	25,000 h	E27
LDAC0840WE7EUD		500 lm	Yes	7.5 W	220 - 240 V	> 80	25,000 h	E27

E-CORE™ LED Lighting

Dimmable on suitable dimmers. Please see compatibility list at www.toshiba.eu/lighting

TOSHIBA
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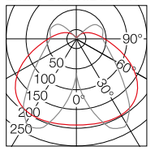
E-CORE CANDLE 6W

With its facetted crystal optics, this candle is a real head-turner. With exceptional light distribution and smooth dimming, this light is the magic every chandelier needs.

LIGHT DISTRIBUTION



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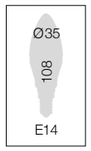
DIMENSIONS



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DIMMABLE

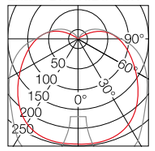
	COLOUR TEMPERATURE	LUMINOUS FLUX	FINISH	WATTAGE	VOLTAGE 50/60 Hz	Ra (min)	LIFESPAN (L70)	DISTRIBUTION	BASE
WARM WHITE									
LDCC0627CE4EUD2	2,700 K	260 lm	• clear	6 W	220 - 240 V	> 80	20,000 h	260°	E14
LDCC0627FE4EUD	2,700 K	250 lm	• frosted	6 W	220 - 240 V	> 80	20,000 h	–	E14

Dimmable on suitable dimmers. Please see compatibility list at www.toshiba.eu/lighting

E-CORE SPHERICAL 6W

This is what the master of directed accent lighting looks like: dimmable and compact in size, the ideal light source for ambient lighting.

LIGHT DISTRIBUTION



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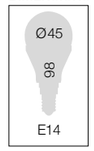
DIMENSIONS



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DIMMABLE

	COLOUR TEMPERATURE	LUMINOUS FLUX	FINISH	WATTAGE	VOLTAGE 50/60 Hz	Ra (min)	LIFESPAN (L70)	BASE
WARM WHITE								
LDGC0627CE4EUD	2,700 K	250 lm	• clear	6 W	220 - 240 V	> 80	20,000 h	E14
LDGC0627FE4EUD			• frosted					

Dimmable on suitable dimmers. Please see compatibility list at www.toshiba.eu/lighting

E-CORE LED Lighting

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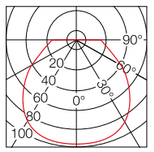
E-CORE GLS 6W

Less is more. A real light source whose design combines efficiency with classically streamlined styling. A light that can be seen – and also dimmed as you wish!

LIGHT DISTRIBUTION



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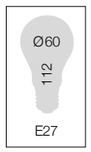
DIMENSIONS



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DIMMABLE

	COLOUR TEMPERATURE	LUMINOUS FLUX	DIMMABLE	WATTAGE	VOLTAGE 50/60 Hz	Ra (min)	LIFESPAN (L70)	BASE
WARM WHITE								
LDAC0627E7EU	2,700 K	325 lm	No	5.5 W	220 - 240 V	> 80	40,000 h	E27
LDAC0627E7EUD			Yes	6.0 W	220 - 240 V	> 80	40,000 h	
NEUTRAL WHITE								
LDAC0640E7EU	4,000 K	340 lm	No	5.5 W	220 - 240 V	> 80	40,000 h	E27
LDAC0640E7EUD			Yes	6.0 W	220 - 240 V	> 80	40,000 h	

E-CORE LED Lighting

Dimmable on suitable dimmers. Please see compatibility list at www.toshiba.eu/lighting

This concerns all of us:

Energy efficient lighting solutions

It is time to upgrade

All over the world, solutions are being sought for efficient use of energy. One key area is lighting. In Europe, its share in total energy consumption is about 14%.

Already back in 2008, Toshiba announced the cessation of the production of conventional incandescent lamps because their energy efficiency is too low - they only reach efficiency classes D, E, F and G.

And in 2010, Toshiba actually ceased manufacturing incandescent lamps worldwide.

Since then, we have replaced incandescent lamps with modern LED lamps in almost all areas of lighting. Their low energy consumption and optimal light quality and excellent design make the transition so simple.

No matter where you need light, there is an energy-and cost-saving solution using Toshiba LED lamps and luminaires. Check for yourself, because this is the only way we can achieve the ambitious goals of energy reduction.

So simply take advantage of LED

Save on the cost of electricity - with our LED lamps and luminaires, this can be up to 85%.

Your investment will pay for itself sooner than you think. Modern LED lighting solutions offer a very long operating life. They pay for themselves over a very short period of time.

You also avoid the heat of conventional incandescent lamps. And, depending on the number of incandescent lamps used, this reduces the need for additional cooling.

And, you reduce unnecessary CO2 pollution of our environment.

Thus, we are in a position to do something ourselves - for ourselves and for the environment.

Let‘s enter our world!

TOSHIBA
Leading Innovation

Reflector Lamps

The freedom to set the tone

Lighting offers so many possibilities for the illumination of spaces, scenes and objects. With the rich variety of our reflector lamps, you can set the tone you want.

Whether as ceiling or wall spotlight - Toshiba reflector lamps are available with various beam angles at the desired lighting levels and with plug-in or bayonet plugs. Just as you please.

E-CORE PAR16 9W

The elegant mains-voltage spotlights with robust GU10 base shine with their excellent energy-saving credentials and ease of use. Suitable for a multitude of uses, they can be dimmed to offer atmospheric lighting or daylight-brightness accents – even at considerable distance. That is in brief the best-in-class lumen and light quality in the GU10 world.

DIMENSIONS

(mm)

DIMMABLE

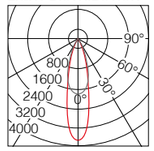
	COLOUR TEMPERATURE	LUMINOUS FLUX	BEAM ANGLE	LUMINOUS INTENSITY	WATTAGE	VOLTAGE 50/60 Hz	Ra (min)	LIFESPAN (L70)	BASE
WARM WHITE									
LDRC0927MU1EUD2	2,700 K	520 lm	25°	1,900 cd	9 W	220 - 240 V	> 80	40,000 h	GU10
LDRC0927WU1EUD2			40°	950 cd					
LDRC0930MU1EUD2	3,000 K	550 lm	25°	2,000 cd	9 W	220 - 240 V	> 80	40,000 h	GU10
LDRC0930WU1EUD2			40°	1,000 cd					
NEUTRAL WHITE									
LDRC0940MU1EUD2	4,000 K	580 lm	25°	2,000 cd	9 W	220 - 240 V	> 80	40,000 h	GU10
LDRC0940WU1EUD2			40°	1,000 cd					

Dimmable on suitable dimmers. Please see compatibility list at www.toshiba.eu/lighting

E-CORE PAR16 7,1W FIT

Another product from our PAR family with the bayonet socket, which has even more compact dimensions than the E-CORE PAR16 6,5W FIT. Furthermore, it offers a wider beam angle and significantly higher radiant power.

LIGHT DISTRIBUTION



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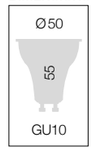

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DIMMABLE

	COLOUR TEMPERATURE	LUMINOUS FLUX	BEAM ANGLE	LUMINOUS INTENSITY	WATTAGE	VOLTAGE 50/60 Hz	Ra (min)	LIFESPAN (L70)	BASE
WARM WHITE									
LDRC0627MU1EUD2	2,700 K	355 lm	25°	• 1,320 cd	7.1 W	220 - 240 V	> 80	40,000 h	GU10
LDRC0627WU1EUD2			40°	• 640 cd					
LDRC0630MU1EUD2	3,000 K	355 lm	25°	• 1,320 cd	7.1 W	220 - 240 V	> 80	40,000 h	GU10
LDRC0630WU1EUD2			40°	• 640 cd					
NEUTRAL WHITE									
LDRC0640MU1EUD2	4,000 K	370 lm	25°	• 1,420 cd	7.1 W	220 - 240 V	> 80	40,000 h	GU10
LDRC0640WU1EUD2			40°	• 680 cd					

Dimmable on suitable dimmers. Please see compatibility list at www.toshiba.eu/lighting

E-CORE LED Lighting

TOSHIBA
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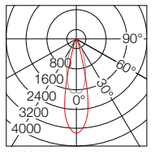
E-CORE PAR16 6,5W FIT

More compact dimensions, a wider colour temperature spectrum, a more variable range of luminous flux - these reflector lamps, as compared to E-CORE PAR16 8,5W, offer a number of advantages, depending on the area of application, and do this with the lower consumption of energy.

E-CORE MR16 7W

If you choose the same colour temperature, this low-voltage reflector lamp offers even more light intensity than the E-CORE MR16 6,7W: Depending on the choice, it offers from 390 to 420 lumen of light output with the same number of watts.

LIGHT DISTRIBUTION



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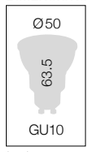

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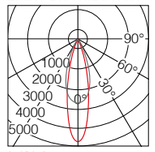
DIMMABLE

	COLOUR TEMPERATURE	LUMINOUS FLUX	BEAM ANGLE	LUMINOUS INTENSITY	WATTAGE	VOLTAGE 50/60 Hz	Ra (min)	LIFESPAN (L70)	BASE
WARM WHITE									
LDRC0627MU1EUD	2,700 K	270 lm	25°	900 cd	6.5 W	220 - 240 V	> 80	25,000 h	GU10
LDRC0627WU1EUD			35°	460 cd					
LDRC0630MU1EUD	3,000 K	280 lm	25°	950 cd	6.5 W	220 - 240 V	> 80	25,000 h	GU10
LDRC0630WU1EUD			35°	480 cd					
NEUTRAL WHITE									
LDRC0640MU1EUD	4,000 K	280 lm	25°	950 cd	6.5 W	220 - 240 V	> 80	25,000 h	GU10
LDRC0640WU1EUD			35°	480 cd					

Dimmable on suitable dimmers. Please see compatibility list at www.toshiba.eu/lighting

LIGHT DISTRIBUTION



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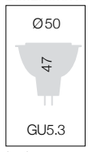

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	COLOUR TEMPERATURE	LUMINOUS FLUX	BEAM ANGLE	LUMINOUS INTENSITY	WATTAGE	VOLTAGE 50/60 Hz	Ra (min)	LIFESPAN (L70)	BASE
WARM WHITE									
LDRA0727MU5EU	2,700 K	390 lm	25°	• 1,830 cd	7 W	12 V	> 80	25,000 h	GU5.3
LDRA0727WU5EU			35°	• 1,050 cd					
LDRA0730MU5EU	3,000 K	390 lm	25°	• 1,830 cd		12 V	> 80	25,000 h	GU5.3
LDRA0730WU5EU			35°	• 1,050 cd					
NEUTRAL WHITE									
LDRA0740MU5EU	4,000 K	420 lm	25°	• 1,930 cd	7 W	12 V	> 80	25,000 h	GU5.3
LDRA0740WU5EU			35°	• 1,150 cd					

SELV 12V transformers. Please see compatibility list at www.toshiba.eu/lighting

E-CORE™ LED Lighting

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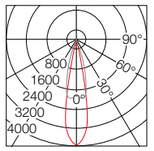
E-CORE MR16 6,7W

With this classic low-voltage reflector lamp and plug-in base, you will increase your light output from 300 to 320 LM in comparison to the E-CORE MR16 4W.

LIGHT DISTRIBUTION



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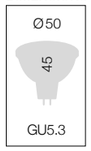
DIMENSIONS



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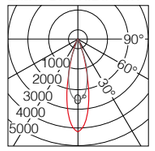
	COLOUR TEMPERATURE	LUMINOUS FLUX	BEAM ANGLE	LUMINOUS INTENSITY	WATTAGE	VOLTAGE 50/60 Hz	Ra (min)	LIFESPAN (L70)	BASE
WARM WHITE									
LDRA0727MU5EUD	2,700 K	300 lm	25°	• 1,200 cd	6.7 W	12 V	> 80	25,000 h	GU5.3
LDRA0727WU5EUD			35°	• 650 cd					
LDRA0730MU5EUD	3,000 K	310 lm	25°	• 1,250 cd		12 V	> 80	25,000 h	GU5.3
LDRA0730WU5EUD			35°	• 700 cd					
NEUTRAL WHITE									
LDRA0740MU5EUD	4,000 K	320 lm	25°	• 1,250 cd	6.7 W	12 V	> 80	25,000 h	GU5.3
LDRA0740WU5EUD			35°	• 700 cd					

SELV 12V transformers. Please see compatibility list at www.toshiba.eu/lighting

E-CORE MR16 4W

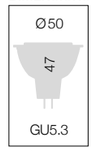
E-CORE makes our all-rounder for low-voltage lighting fit for the future. The GU5.3 pin-base lamp is available in several versions, providing maximum flexibility when it comes to economical accent and general lighting.

LIGHT DISTRIBUTION



(cd/klm)

DIMENSIONS



(mm)

	COLOUR TEMPERATURE	LUMINOUS FLUX	BEAM ANGLE	LUMINOUS INTENSITY	WATTAGE	VOLTAGE 50/60 Hz	Ra (min)	LIFESPAN (L70)	BASE
WARM WHITE									
LDRA0527MU5EU2	2,700 K	220 lm	25°	• 920 cd	4 W	12 V	> 80	25,000 h	GU5.3
LDRA0527WU5EU2			35°	• 550 cd					
LDRA0530MU5EU2	3,000 K	230 lm	25°	• 950 cd		12 V	> 80	25,000 h	GU5.3
LDRA0530WU5EU2			35°	• 600 cd					
NEUTRAL WHITE									
LDRA0540MU5EU2	4,000 K	260 lm	25°	• 1,050 cd	4 W	12 V	> 80	25,000 h	GU5.3
LDRA0540WU5EU2			35°	• 650 cd					

SELV 12V transformers. Please see compatibility list at www.toshiba.eu/lighting

E-CORE LED Lighting

TOSHIBA
Leading Innovation

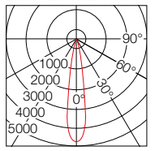
E-CORE AR111 15W

The new AR111 pin-base lamps are in a class of their own in the low-voltage sector: pure luminosity for downlights, gimbal and catenary lights. Their potential for savings is also as eye catching as it is impressive.

E-CORE PAR20 9W

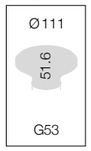
The E-CORE PAR range's performance class, beam distribution characteristics and light quality leave no lighting wish unanswered. With its high efficiency, it provides the suitable way in to contemporary room lighting.

LIGHT DISTRIBUTION



(cd/klm)

DIMENSIONS

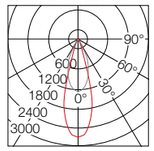


(mm)

	COLOUR TEMPERATURE	LUMINOUS FLUX	BEAM ANGLE	LUMINOUS INTENSITY	WATTAGE	VOLTAGE 50/60 Hz	Ra (min)	LIFESPAN (L70)	BASE
WARM WHITE									
LDRA1527MG5EU	2,700 K	750 lm	24°	3,600 cd	15 W	12 V	> 80	25,000 h	G53
LDRA1530MG5EU	3,000 K	800 lm		3,600 cd					
NEUTRAL WHITE									
LDRA1550MG5EU	5,000 K	900 lm	24°	4,300 cd	15 W	12 V	> 72	25,000 h	G53

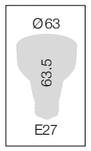
SELV 12V transformers. Please see compatibility list at www.toshiba.eu/lighting

LIGHT DISTRIBUTION



(cd/klm)

DIMENSIONS



(mm)

DIMMABLE

	COLOUR TEMPERATURE	LUMINOUS FLUX	BEAM ANGLE	LUMINOUS INTENSITY	WATTAGE	VOLTAGE 50/60 Hz	Ra (min)	LIFESPAN (L70)	BASE
WARM WHITE									
LDRC0927ME7EUD	2,700 K	370 lm	25°	• 950 cd	9 W	220 - 240 V	> 80	40,000 h	E27
LDRC0927WE7EUD			40°	• 450 cd					
NEUTRAL WHITE									
LDRC0940WE7EUD	4,000 K	380 lm	40°	• 460 cd	9 W	220 - 240 V	> 80	40,000 h	E27

Dimmable on suitable dimmers. Please see compatibility list at www.toshiba.eu/lighting

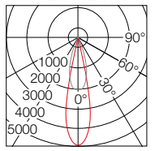
E-CORE™ LED Lighting

TOSHIBA
Leading Innovation

E-CORE PAR30 16W

It can be used in almost all areas: Since you will receive the E-CORE PAR30 16W in warm white, neutral white and cold white. It can be dimmed and equipped with an E27 screw base to work as a high-voltage reflector lamp.

LIGHT DISTRIBUTION



(cd/klm)

DIMENSIONS

(mm)

DIMMABLE

	COLOUR TEMPERATURE	LUMINOUS FLUX	BEAM ANGLE	LUMINOUS INTENSITY	WATTAGE	VOLTAGE 50/60 Hz	Ra (min)	LIFESPAN (L70)	BASE
WARM WHITE									
LDRC1627ME7EUD	2,700 K	740 lm	23°	• 3,400 cd	16 W	220 - 240 V	> 80	40,000 h	E27
LDRC1627WE7EUD			32°	• 1,500 cd					
LDRC1630ME7EUD	3,000 K	740 lm	23°	• 3,400 cd	16 W	220 - 240 V	> 80	40,000 h	E27
LDRC1630WE7EUD			32°	• 1,500 cd					
NEUTRAL WHITE									
LDRC1640ME7EUD	4,000 K	740 lm	23°	• 3,400 cd	16 W	220 - 240 V	> 80	40,000 h	E27
LDRC1640WE7EUD			32°	• 1,500 cd					
COOL WHITE									
LDRC1665ME7EUD	6,500 K	760 lm	23°	• 3,400 cd	16 W	220 - 240 V	> 65	40,000 h	E27
LDRC1665WE7EUD			32°	• 1,500 cd					

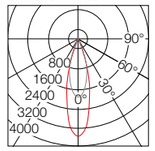
E-CORE LED Lighting

Dimmable on suitable dimmers. Please see compatibility list at www.toshiba.eu/lighting

E-CORE PAR38 19,7W

If you need even more light, then you can choose the E-CORE PAR38 19,7W. The 950 LM, its wide range of colour temperatures and a service life of up to 40,000 hours makes it a true all-rounder.

LIGHT DISTRIBUTION

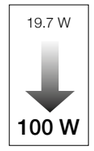


(cd/klm)

DIMENSIONS

(mm)

DIMMABLE



	COLOUR TEMPERATURE	LUMINOUS FLUX	BEAM ANGLE	LUMINOUS INTENSITY	WATTAGE	VOLTAGE 50/60 Hz	Ra (min)	LIFESPAN (L70)	BASE
WARM WHITE									
LDRC2027ME7EUD	2,700 K	920 lm	25°	• 3,200 cd	19.7 W	220 - 240 V	> 80	40,000 h	E27
LDRC2027WE7EUD			35°	• 1,650 cd					
LDRC2030ME7EUD	3,000 K	920 lm	25°	• 3,200 cd	19.7 W	220 - 240 V	> 80	40,000 h	E27
LDRC2030WE7EUD			35°	• 1,650 cd					
NEUTRAL WHITE									
LDRC2040ME7EUD	4,000 K	920 lm	25°	• 3,200 cd	19.7 W	220 - 240 V	> 80	40,000 h	E27
LDRC2040WE7EUD			35°	• 1,650 cd					
COOL WHITE									
LDRC2065ME7EUD	6,500 K	950 lm	25°	• 3,300 cd	19.7 W	220 - 240 V	> 65	40,000 h	E27
LDRC2065WE7EUD			35°	• 1,700 cd					

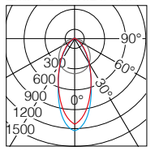
Dimmable on suitable dimmers. Please see compatibility list at www.toshiba.eu/lighting

TOSHIBA
Leading Innovation

E-CORE GX53

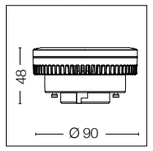
This LED MODULE is compact and offers a great light output. Use this module with GX53 socket in your creations and get an economical and sustainable light source.

LIGHT DISTRIBUTION



(cd/klm)

DIMENSIONS



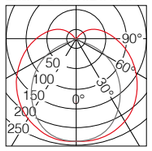
(mm)

	COLOUR TEMPERATURE	LUMINOUS FLUX	BEAM ANGLE	WATTAGE	VOLTAGE 50/60 Hz	Ra (min)	LIFESPAN (L70)	BASE
WARM WHITE								
LDFC727MX5EU	2,700 K	• 510 lm	40°	6.9 W	220 - 240 V	> 80	25,000 h	GX53
LDFC727WX5EU		• 510 lm	100°		220 - 240 V	> 80	25,000 h	GX53
LDFC927MX5EU	2,700 K	• 700 lm	40°	8.9 W	220 - 240 V	> 80	25,000 h	GX53
LDFC927WX5EU		• 700 lm	100°		220 - 240 V	> 80	25,000 h	GX53
NEUTRAL WHITE								
LDFC740MX5EU	4,000 K	• 550 lm	40°	6.9 W	220 - 240 V	> 80	25,000 h	GX53
LDFC740WX5EU		• 550 lm	100°		220 - 240 V	> 80	25,000 h	GX53
LDFC940MX5EU	4,000 K	• 750 lm	40°	8.9 W	220 - 240 V	> 80	25,000 h	GX53
LDFC940WX5EU		• 750 lm	100°		220 - 240 V	> 80	25,000 h	GX53

E-CORE LED TUBE

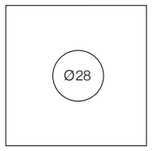
The LED TUBE lets you perfectly light up large rooms and offices. It will ensure bright light and a low consumption of energy. It is available either in warm white, neutral white or cold white, in 800 to 2,200 lm.

LIGHT DISTRIBUTION



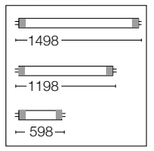
(cd/klm)

DIMENSIONS



(mm)

DIMENSIONS



(mm)

	COLOUR TEMPERATURE	LUMINOUS FLUX	BEAM ANGLE	WATTAGE	VOLTAGE 50/60 Hz	Ra (min)	LIFESPAN (L70)	SIZE (mm)
WARM WHITE								
LDL82C930G1EU	3,000 K	800 lm	160°	9 W	220 - 240 V	> 80	40,000 h	598
NEUTRAL WHITE								
LDL82C940G1EU	4,000 K	900 lm	160°	9 W	220 - 240 V	> 80	40,000 h	598
LDL84C1840G1EU	4,000 K	1,900 lm	160°	19 W	220 - 240 V	> 80	40,000 h	1,198
LDL85C2240G1EU	4,000 K	2,200 lm	160°	22 W	220 - 240 V	> 80	40,000 h	1,498
COOL WHITE								
LDL84C1865G1EU	6,500 K	1,900 lm	160°	19 W	220 - 240 V	> 80	40,000 h	1,198
LDL85C2265G1EU	6,500 K	2,200 lm	160°	22 W	220 - 240 V	> 80	40,000 h	1,498

E-CORE LED TUBE operates only with conventional control gears (ferromagnetic ballasts) in combination with its dummy starter (enclosed in your packaging)

Toshiba LED LIGHT ENGINE

A revolutionary new LED light source designed around the LED to maximise performance and efficiency

LED LIGHT ENGINE enables you to make choices with your lighting, and change your mind later.

This interchangeability allows you to extend the possibilities of your lit space and easily change the look and feel of the room depending on what you are lighting.

LIGHT ENGINE is a lamp in the traditional sense of the word.

- **You don‘t need to attach a driver.**
- **You don‘t need to add optical controls.**

Concept

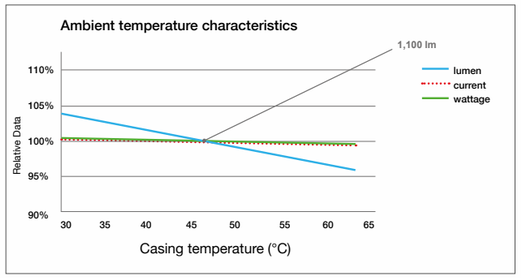
LIGHT ENGINE from Toshiba has been designed as an evolution to conventional lighting to maximise the potential of LED and provide long life, high efficiency, instant light and higher luminous flux.

LIGHT ENGINE is a new generation of replaceable light sources, using LED. Just as you would replace your fluorescent tube, the LIGHT ENGINE too can be replaced or exchanged. This means that you do not have to replace the entire luminaire should the LED fail but simply untwist the old lamp and replace it.

Design for Life and Efficiency

Without effective thermal management, LEDs will not operate well and could fail prematurely or operate inefficiently. The LIGHT ENGINE has been designed to take all that worry off your shoulders.

With its 40mm cross-sectional silicon heat pad, the LIGHT ENGINE ensures that all the heat generated is driven directly to the heatsink, away from the LED chip.



Note: The values above is the relation of Tc and engines´s specifications where the product is turned on the following conditions:
· the input voltage is 230 V
· base-up positioned

LIGHT ENGINE uses a special connector that presses the LIGHT ENGINE‘s silicon heat pad down with exact pressure to the heatsink to ensure a good thermal connection with no air gaps.

LIGHT ENGINE offers 40,000 hours of life (L70), that‘s up to 4 times longer than CFL, dramatically reducing maintenance costs.

Delivering 53 Lm/W+, the LIGHT ENGINE offers high light output without draining your wallet. Combined with its dimming capabilities, the LIGHT ENGINE is the perfect choice for efficient, flexible, low energy lighting.

Reduce Investment Risk

TOSHIBA LED LIGHT ENGINE is a future-proof solution. Indeed through this engine, we created a new standardized socket: GH76p-2.
Thus, the LED engine becomes a lamp allowing end-users to upgrade their luminaires with the latest technology.

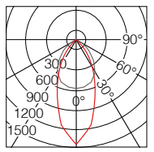
E-CORE™ LED Lighting

TOSHIBA
Leading Innovation

E-CORE LED LIGHT ENGINE

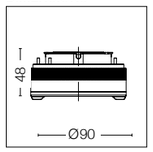
The unusual LED LIGHT ENGINE from Toshiba offers creative users unlimited opportunities for a large number of lighting solutions. Depending on the application, you have a choice between different beam angles and luminous fluxes. The LIGHT ENGINE is easy and safe to assemble; it can be dimmed with a trailing edge dimmer.

LIGHT DISTRIBUTION



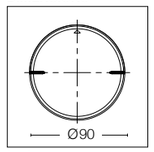
(cd/klm)

DIMENSIONS



(mm)

DIMENSIONS



(mm)

DIMMABLE

	COLOUR TEMPERATURE	LUMINOUS FLUX	BEAM ANGLE	WATTAGE	VOLTAGE 50/60 Hz	Ra (min)	LIFESPAN (L70)	BASE	DIMMABLE
WARM WHITE									
LEV112320M827TE	2,700 K	1,050 lm	45°	20 W	220 - 240 V	> 80	40,000 h	GH76p-2	PC
LEV112320W827TE		1,050 lm	85°		220 - 240 V	> 80	40,000 h	GH76p-2	
LEV162324M827TE		1,400 lm	45°	24 W	220 - 240 V	> 80	40,000 h	GH76p-2	
LEV162324W827TE		1,400 lm	85°		220 - 240 V	> 80	40,000 h	GH76p-2	
LEV112320M830TE	3,000 K	• 1,100 lm	45°	20 W	220 - 240 V	> 80	40,000 h	GH76p-2	
LEV112320W830TE		• 1,100 lm	85°		220 - 240 V	> 80	40,000 h	GH76p-2	
LEV162324M830TE		1,400 lm	45°	24 W	220 - 240 V	> 80	40,000 h	GH76p-2	
LEV162324W830TE		1,400 lm	85°		220 - 240 V	> 80	40,000 h	GH76p-2	
NEUTRAL WHITE									
LEV112318M840TE	4,000 K	• 1,100 lm	45°	18 W	220 - 240 V	> 80	40,000 h	GH76p-2	PC
LEV112318W840TE		• 1,100 lm	85°		220 - 240 V	> 80	40,000 h	GH76p-2	
LEV162323M840TE		1,600 lm	45°	23 W	220 - 240 V	> 80	40,000 h	GH76p-2	
LEV162323W840TE		1,600 lm	85°		220 - 240 V	> 80	40,000 h	GH76p-2	

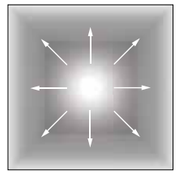
E-CORE LED Lighting

LED LIGHTING – GENERAL GLOSSARY

Basic Photometric Units

There are several photometric base quantities in the definition of light sources, which characterise different qualities.

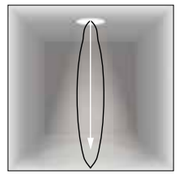
LUMINOUS FLUX (Phi/lm)



Luminous flux ϕ in lm (Lumen)

The total radiating power emitted by a light source, which the eye perceives as light.

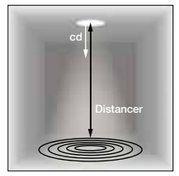
LUMINOUS INTENSITY (I/cd)



Luminous intensity I in cd (candela)

The luminous flux of a light source per solid angle. With the same luminous flux, the light intensity increases the more the light source focuses the light.

ILLUMINANCE (E/lx)



Illuminance E in lx (Lux)

A measure of lighting power per lit surface. A minimum luminance is specified for many visual tasks and must be considered in the planning of the visual task and choice of light source.

Colour Rendering Index Ra

Colour Rendering Index (CRI) is a measure of how well a light source is able to accurately reproduce colours of objects being lit respective to the colour temperature (CCT) of the light source. The higher the colour rendering index, the more naturally the colours of an object are reproduced and therefore perceived by the observer. The sun has the highest CRI of 100. Most artificial light source are below that. The colour rendering index is determined using 8 standardised test colour references.

Dimmability by trailing edge phase control

DIMMABLE

Luminaires can be dimmed very easily using trailing edge phase control. The advantage of trailing edge phase control compared with circuits in which the voltage is controlled by a resistance is that they have a very low power loss and are widely used in existing installations. The main disadvantage of trailing edge phase control is the non-sinusoidal current profile. Because current and voltage do not have the same shape, so-called distortion reactive power occurs. Shifting the current backwards compared with the voltage curve has the same effect as an inductive load, which electricity supply companies can only tolerate at low power levels. Leading edge phase control is not recommended for Toshiba lamps. Because there is no general compatibility between all dimmers available on the market, Toshiba has provided a list of recommended dimmers on its website www.toshiba.eu/lighting.

Colour temperature (K Kelvin)

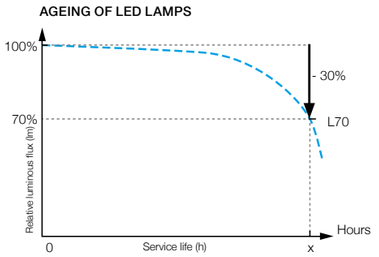
Colour temperature is a measure of the colour effect of a light source. Colour temperature is defined as the temperature of a black body which belongs to a particular light colour of this emission source.
Typical colour temperatures for light sources are:

- below 3,300 K = warm white, preferred for interior lighting
- 3,300 K to 5,300 K = neutral white, typical light colour for office, industrial and exterior lighting
- above 5,300 K = cool white, especially common in exterior lighting.

L70 service life of LED light sources

LEDs are characterised by their excellent service life. Because LEDs hardly ever fail completely, the service life is defined as having an L70 value. Their useful life is considered to be over when the luminous flux has dropped to 70% of the initial luminous flux. After this time the LEDs age at a dramatically accelerated rate.
The service life of an LED light source is not set by the LEDs alone, the other electrical components and the thermal design are also a factor. Therefore the given service life varies from product to product.

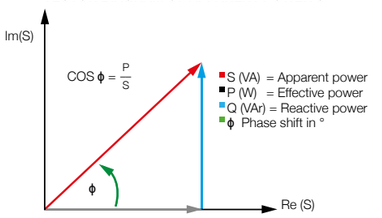
AGEING OF LED LAMPS



Power factor λ = cos ϕ

The LED light sources need driver modules to operate which act capacitively from an electrical point of view. This leads to a phase shift between voltage and current consumption and consequently the apparent power S (given in Volt Amperes VA) has an effective power proportion P (Watts) and a reactive power Q (Volt Ampere reactive VAr). The relationship between effective power P and apparent power S is represented as the power factor λ.

VECTOR DIAGRAM OF APPARENT POWER S



TOSHIBA
Leading Innovation

PACK Series

Ready for the good light

Interior designer popular classic: when it is not the luminaire but the light that is key, the Toshiba PACK Series products are ideal for restaurants, shops, and for hall or room lighting.

They can be integrated into the wall or ceiling, swivelled and dimmed at will, and have a wide beam angle or spot light depending on the application.

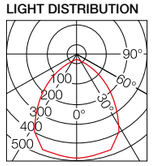
PACK omni

This product is a classic downlight. With its neutral white light colour, wide angle of radiation and powerful luminous flux, it is a suitable replacement for compact fluorescent lamps and a good allrounder in all secondary areas of buildings, such as access and waiting areas and corridors. The advantages of its economical, eco-friendly design become clear after 40,000 hours of operation with the Toshiba LIGHT ENGINE, a light source that can be replaced in an instant.

FEATURES

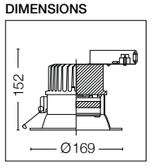
- Replaceable bulb: Yes / LED LIGHT ENIGINE
- Dimmable: yes / Trailing Edge phase control andD 1-10 LED LIGHT ENGINE are available (seperate to order)
- Class: I
- Protection rating: IP 20
- Power factor: 0.7
- Temperature range: 5°C – 35°C

LIGHT DISTRIBUTION



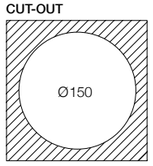
(cd/klm)

DIMENSIONS



(mm)

CUT-OUT



(mm)

DIMMABLE

	COMPLETE WITH LAMP	FINISH	COLOUR TEMPERATURE	LUMINOUS FLUX	BEAM ANGLE	WATTAGE	VOLTAGE 50/60 Hz	Ra (min)	LIFESPAN (L70)
NEUTRAL WHITE									
LEDEUD00076S40	Yes	White	4,000 K	1,040 lm	90°	18 W	220 - 240 V	> 80	40,000 h
LEDEUD00077S40				1,560 lm		23 W			
LEDEUD00075C	No	White	Fixture only - Order lamp separately (see page 34)				220 - 240 V		

DIMMABLE

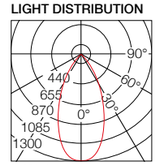
PACK accent PAR20

The PACK accent PAR20 line up provides you with a low luminance easy-to-fit solution, for decorative and architectural lighting. Equipped with an E-CORE retrofit PAR20 lamp (9 W), this spot light greatly reduces investment risk tackling demand for flexibility in the lighting design field. With the benefits of LED lighting, the PACK accent PAR20 offers reliable lighting solution along with low-carbon footprint and minimum environmental impact.

FEATURES

- Replaceable bulb: Yes / PAR20
- Dimmable: yes
- Class: II
- Protection rating: IP 20
- Power factor: 0.8
- Temperature range: 5°C – 35°C

LIGHT DISTRIBUTION



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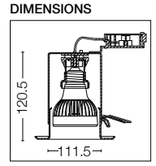
DIMENSIONS



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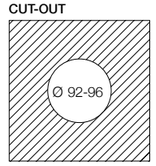
CUT-OUT



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	FINISH	COLOUR TEMPERATURE	LUMINOUS FLUX	BEAM ANGLE	WATTAGE	VOLTAGE 50/60 Hz	Ra (min)	LIFESPAN (L70)
WARM WHITE								
LEDEUD00015S27	White	2,700 K	359 lm	40°	9 W	220 - 240 V	> 80	40,000 h
LEDEUD00016S27	Black		278 lm	40°	9 W	220 - 240 V	> 80	40,000 h
LEDEUD00017S27	Silver		322 lm	40°	9 W	220 - 240 V	> 80	40,000 h
NEUTRAL WHITE								
LEDEUD00015S40	White	4,000 K	369 lm	40°	9 W	220 - 240 V	> 80	40,000 h
LEDEUD00016S40	Black		285 lm	40°	9 W	220 - 240 V	> 80	40,000 h
LEDEUD00017S40	Silver		332 lm	40°	9 W	220 - 240 V	> 80	40,000 h

E-CORE™ LED Lighting

TOSHIBA
Leading Innovation

Downlights

Light - as you like it

Anyone who wants to be able to use all possible means to save energy uses LED lighting solutions. In particular, our downlights inspire and save in many ways, because they are used almost universally - in large offices, classrooms, auditoriums, halls and corridors, shops and homes.

They combine an inspiring atmosphere of light, functional lighting and the highest energy and cost saving potential. A lighting solution could hardly be more complete.

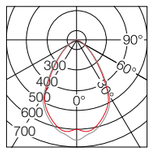
E-CORE LED DOWNLIGHT 1100/1600

Uniform light levels – the suitable job description for this high-performance downlight for the retail sector. With its simple, minimalist shape and flush mounting, it integrates excellently with your design concept. And the replaceable Toshiba LIGHT ENGINE makes it a sustainable long-term investment, wherever it‘s used.

FEATURES

- Replaceable bulb: yes / LED LIGHT ENGINE
- Dimmable: yes / trailing edge phase control
- Class: I
- Protection rating: IP20
- Power factor: > 0.7
- Temperature range: 5°C – 35°C

LIGHT DISTRIBUTION



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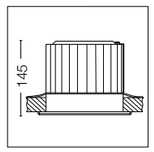
DIMENSIONS



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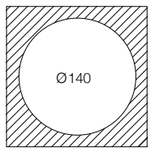
CUT-OUT



(mm)

DIMMABLE

	FINISH	COLOUR TEMPERATURE	LUMINOUS FLUX	BEAM ANGLE	WATTAGE	VOLTAGE 50/60 Hz	Ra (min)	LIFESPAN (L70)
WARM WHITE								
LEDEUD00049S30	White	3,000 K	• 1,060 lm	72°	18 W	220 - 240 V	> 80	40,000 h
LEDEUD00062S30	Silver			36°		220 - 240 V	> 80	40,000 h
LEDEUD00050S30	White	3,000 K	• 1,480 lm	72°	23 W	220 - 240 V	> 80	40,000 h
LEDEUD00064S30	Silver			37°		220 - 240 V	> 80	40,000 h
NEUTRAL WHITE								
LEDEUD00049S40	White	4,000 K	• 1,060 lm	72°	18 W	220 - 240 V	> 80	40,000 h
LEDEUD00062S40	Silver			36°		220 - 240 V	> 80	40,000 h
LEDEUD00050S40	White	4,000 K	• 1,530 lm	72°	23 W	220 - 240 V	> 80	40,000 h
LEDEUD00064S40	Silver			37°		220 - 240 V	> 80	40,000 h

CUSTOMIZATION

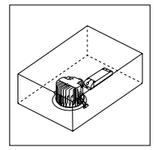
The E-CORE LED DOWNLIGHT 1100 / 1600 can be customized according:

- Outer frame finishing : white, silver, black
- Glare: UGR16 / UGR19 / UGR22 / UGR25
- Order lamp separately (see page 34)

E-CORE LED Lighting

DIMMABLE

DALI



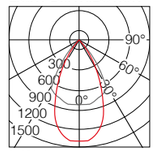
E-CORE LED DOWNLIGHT 3000

Events centres, conference rooms, cinemas – large spaces with sophisticated lighting design set the stage for this DALI dimmable downlight. With a powerful, easy-to control luminous flux, it creates adaptable lighting scenarios and is a convenient replacement for all fluorencent systems up to 54 W and HID systems up to 37 W. Alongside its technical benefits to your lighting concept, it has an impressibly small installation depth.

FEATURES

- Dimmable: yes / DALI
- Class: II
- Protection rating: IP20
- Power factor: > 0.9
- Temperature range: 5°C – 35°C
- 1 driver has to be ordered separately

LIGHT DISTRIBUTION



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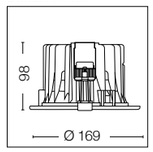
DIMENSIONS



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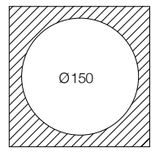
CUT-OUT



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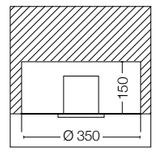
DIMENSIONS



(mm)

	FINISH	COLOUR TEMPERATURE	LUMINOUS FLUX	BEAM ANGLE	WATTAGE	VOLTAGE 50/60 Hz	Ra (min)	LIFESPAN (L70)
UGR 19								
LEDEUD00028D30	White	3,000 K	2,680 lm	50°	46 W	220 - 240 V	> 80	50,000 h
LEDEUD00028D40	White	4,000 K	• 2,820 lm	50°	46 W	220 - 240 V	> 80	50,000 h
UGR 22								
LEDEUD00026D30	White	3,000 K	2,630 lm	73°	46 W	220 - 240 V	> 80	50,000 h
LEDEUD00026D40	White	4,000 K	• 2,760 lm	73°	46 W	220 - 240 V	> 80	50,000 h
UGR 25								
LEDEUD00029D30	White	3,000 K	2,675 lm	55°	46 W	220 - 240 V	> 80	50,000 h
LEDEUD00029D40	White	4,000 K	2,815 lm	55°	46 W	220 - 240 V	> 80	50,000 h
UGR 28								
LEDEUD00128D30	White	3,000 K	2,730 lm	77°	46 W	220 - 240 V	> 80	50,000 h
LEDEUD00128D40	White	4,000 K	2,870 lm	77°	46 W	220 - 240 V	> 80	50,000 h

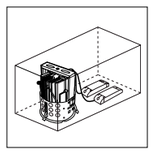
Exists also in black and silver. Please contact your representative for forther information.

Renewal plate	Recessing diameter: 250mm, White: LEDEUDX0001, Black: LEDEUDX0003, Silver: LEDEUDX0005
LEK-50001CA01O	50 W CC Driver (separately order)

TOSHIBA
Leading Innovation

DIMMABLE

DALI



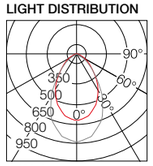
E-CORE LED DOWNLIGHT 6000

Brilliant, controllable light even with high ceilings: the DOWNLIGHT 6000 is the contemporary replacement light for areas where 70 W HID were traditionally used. High foyers, large auditoriums, open staircases or shops – with up to 5800 lumen this effective powerhouse covers all the bases in lighting design for public and commercial buildings.

FEATURES

- Dimmable: yes / DALI
- Class: II
- Protection rating: IP20
- Power factor: > 0.9
- Temperature range: 5°C – 35°C
- 2 drivers have to be ordered separately

LIGHT DISTRIBUTION



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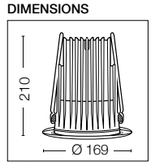
DIMENSIONS



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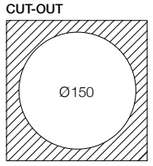
CUT-OUT



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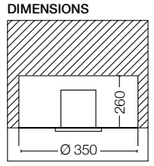
DIMENSIONS



(mm)

	FINISH	COLOUR TEMPERATURE	LUMINOUS FLUX	BEAM ANGLE	WATTAGE	VOLTAGE 50/60 Hz	Ra (min)	LIFESPAN (L70)
WARM WHITE								
LEDEUD00129D30	White	3,000 K	• 5,650 lm	75°	92 W	220 - 240 V	> 80	50,000 h
NEUTRAL WHITE								
LEDEUD00129D40	White	4,000 K	• 5,945 lm	75°	92 W	220 - 240 V	> 80	50,000 h
LEK-50001CA01O	50 W CC Driver (separately order, 2 drivers required)							

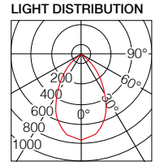
E-CORE LED BANKLIGHT

The basis of the DALI dimmable E-CORE LED BANKLIGHT is the E-CORE LED DOWNLIGHT 6000. Integrated into robust housing, simple surface mounting is possible. On account of its high light intensity and its long service life, the E-CORE LED BANKLIGHT is good for lighting in shopping malls, theatres, industrial plants or entryways.

FEATURES

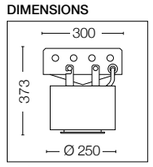
- Dimmable: yes / DALI
- Class: II
- Protection rating: IP20
- Power factor: > 0.95
- Temperature range: 0°C – 35°C
- 2 drivers have to be ordered separately

LIGHT DISTRIBUTION



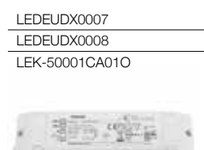
(cd/klm)

DIMENSIONS



(mm)

	FINISH	COLOUR TEMPERATURE	LUMINOUS FLUX	BEAM ANGLE	WATTAGE	VOLTAGE 50/60 Hz	Ra (min)	LIFESPAN (L70)
WARM WHITE								
LEDEUD00130D30	White	3,000 K	5,650 lm	75°	92 W	220 - 240 V	> 80	50,000 h
NEUTRAL WHITE								
LEDEUD00130D40	White	4,000 K	5,945 lm	75°	92 W	220 - 240 V	> 80	50,000 h
LEDEUD00073D40	White	4,000 K	5,805 lm	65°	92 W	220 - 240 V	> 80	50,000 h
LEDEUDX0007	Cylinder case							
LEDEUDX0008	Surface-mounting frame							
LEK-50001CA01O	50 W CC Driver (separately order, 2 drivers required)							



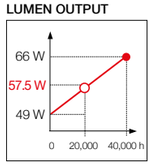
E-CORE™ LED Lighting

TOSHIBA
Leading Innovation

E-CORE LED BASELIGHT

This standard ceiling grid light lives up to its name: absolutely constant and homogeneous general lighting for extensive office or sales areas. It provides a rich 2,700 lumen at only 57.5 W power consumption. With a glare reduction and UGR value of 19 in all fields of application of conventional fluorescent lamps it offers a completely new light quality because its constant light flux control ensures uniform brightness for the entire operating duration. This creates contemporary working conditions.

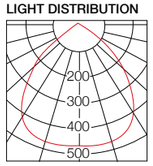
CONSTANT LUMEN OUTPUT



FEATURES

- Replaceable bulb: No
- Dimmable: No
- Protection rating: IP20
- Power factor: 0.95
- Constant lumen output: Yes

LIGHT DISTRIBUTION



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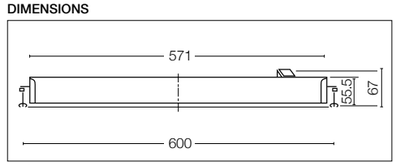
DIMENSIONS



(mm)

SYSTEM CEILING MODULE 600 x 600 mm

600 MODULE

	FINISH	COLOUR TEMPERATURE	LUMINOUS FLUX	WATTAGE	VOLTAGE 50/60 Hz	Ra (min)	LIFESPAN (L70)
WARM WHITE							
LEDEUR00001N30	White	3,000 K	2,700 lm	49 - 66 W	220 - 240 V	> 80	40,000 h
NEUTRAL WHITE							
LEDEUR00001N40	White	4,000 K	2,700 lm	49 - 66 W	220 - 240 V	> 80	40,000 h

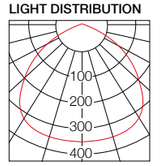
E-CORE LED PANEL

Along with its aerial design, this UGR 22 LED panel is extremely thin and emits homogeneously on its complete surface (3,400 lm / 4,000 K / Ra 80). It can be recessed (in 600 mm grid ceiling) or suspended thanks to an elegant suspension kit (by separated ordering).

FEATURES

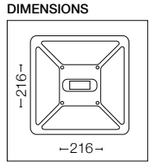
- Dimmable: Yes
- Power factor: 0.9
- Temperature range: -5°C – 40°C

LIGHT DISTRIBUTION



(cd/klm)

DIMENSIONS



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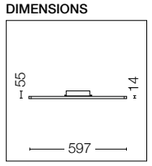
DIMENSIONS



(mm)

DIMMABLE

	COLOUR TEMPERATURE	LUMINOUS FLUX	WATTAGE	VOLTAGE 50/60 Hz	Ra (min)	LIFESPAN (L70)
NEUTRAL WHITE						
LEDEUR00003A40	4,000 K	3,400 lm	48 W	AC100 - 240 V	> 80	30,000 h

E-CORE™ LED Lighting

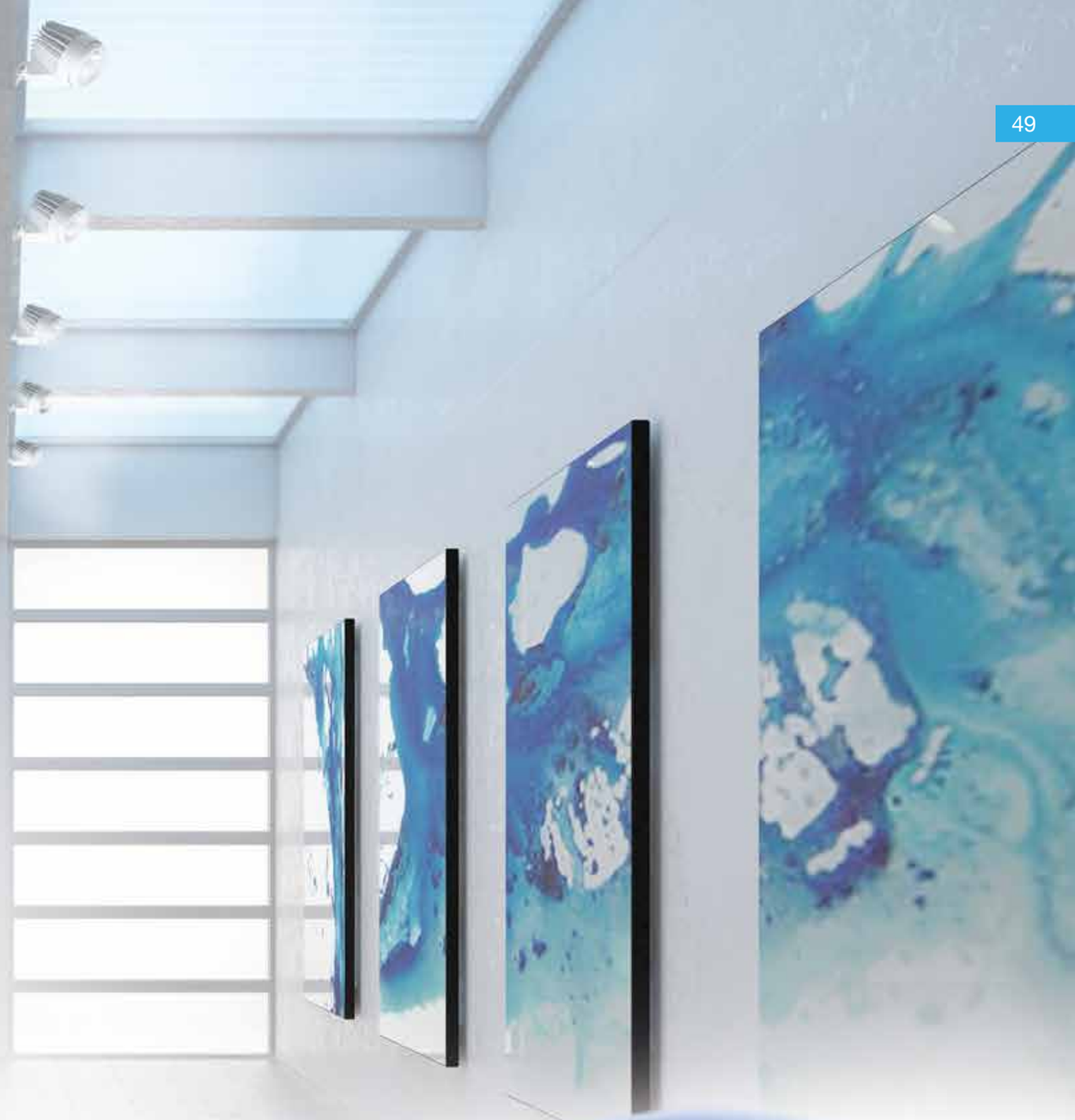
TOSHIBA
Leading Innovation

Spotlights

I want to see just that

To specifically set the scene, to put the focus on what deserves it, to emphasize what is important - these are the strengths of the spotlight. Our spotlights are highly-efficient products for effective lighting effects - from subtle to obvious.

Their broad functionality and excellent design give you a great deal of leeway in the design of your spaces.

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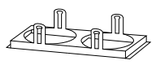
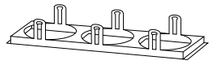

C


D


A

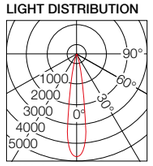
GIMBAL RECESSED SPOT111

As a logical addition to the TRACK SPOT the RECESSED SPOT111 is the perfect downlight insert solution. It creates a discrete lighting architecture – even with low ceilings – and allows you to design the ceilings whichever way you like. The modular structure of this system has room for up to three spots. In this way you create an individual, friendly and balanced lighting atmosphere in shops, hotels and restaurants.

FEATURES

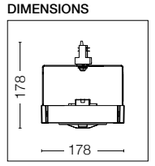
- Replaceable bulb: Yes / AR111
- Dimmable: no
- Protection rating: IP 20
- Temperature range: 5°C – 35°C

LIGHT DISTRIBUTION



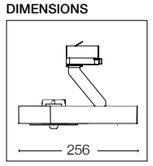
(cd/klm)

DIMENSIONS



(mm)

DIMENSIONS



(mm)

COMPLETE SYSTEM	FINISH	COLOUR TEMPERATURE	LUMINOUS FLUX	BEAM ANGLE	LUMINOUS INTENSITY	WATTAGE	VOLTAGE 50/60 Hz	Ra (min)	LIFESPAN (L70)	BASE
WARM WHITE										
LEDEUS00001S30	White	3,000 K	800 lm	24°	3,850 cd	15 W	230 - 240 V	> 80	25,000 h	G53
LEDEUS00002S30	Silver		800 lm	24°	3,850 cd	15 W	230 - 240 V	> 80	25,000 h	G53
LEDEUS00003S30	Black		800 lm	24°	3,850 cd	15 W	230 - 240 V	> 80	25,000 h	G53

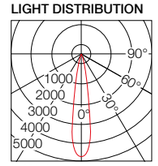
	FINISH	RATED VOLTAGE	FREQUENCY	BASE
FIXTURE				
LEDEUS00001C	White	230 - 240 V	50/60 Hz	G53
LEDEUS00002C	Silver			
LEDEUS00003C	Black			

AR111 lamp to be ordered separately - see page 26

FEATURES

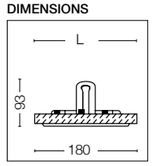
- Replaceable bulb: Yes / AR111
- Dimmable: No
- Protection rating: IP 20
- Temperature range: 5°C – 35°C

LIGHT DISTRIBUTION



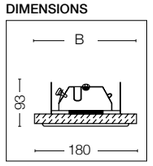
(cd/klm)

DIMENSIONS



(mm)

DIMENSIONS



(mm)

	DESCRIPTION	FINISH	CEILING CUTOUT (mm)	AMBIENT TEMPERATURE	RATED VOLTAGE	FREQUENCY	BASE
FIXTURE							
LEDEUS00013C	Lamp Fitting (A) including SELV transformer	White	-	+5 - +35 °C	230 - 240 V	50 Hz	G53
LEDEUS00014C		Silver	-				
LEDEUS00015C	Frame for 1 Lamp Fitting (B)	White	150 x 150	+5 - +35 °C	-	-	-
LEDEUS00016C		Silver			-	-	-
LEDEUS00017C	Frame for 2 Lamp Fitting (C)	White	150 x 295	+5 - +35 °C	-	-	-
LEDEUS00018C		Silver			-	-	-
LEDEUS00019C	Frame for 3 Lamp Fitting (D)	White	150 x 440	+5 - +35 °C	-	-	-
LEDEUS00020C		Silver			-	-	-

AR111 lamp to be ordered separately, please see page 26

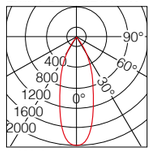
E-CORE LED TRACKLIGHT 1200

This elegant spotlight range stands for demanding lighting solutions with its high-tech components. Whether for the high-quality presentation of goods or for displaying art, the spectrum of different colour and reflected beam characteristics offers exemplary creative leeway. The good colour reproduction makes it a suitable substitute for previous applications of 20 W HID lamps. As a chip-on-board design, the appealing eye-catcher ups the ante in the quality stakes with a shadow-free spotlight, the greatest power density and optimised thermo-management.

FEATURES

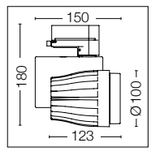
- Replaceable bulb: No
- Dimmable: No
- Class: I
- Protection rating: IP 20
- Temperature range: 5°C – 35°C
- ENEC
- Twist & Lock cover

LIGHT DISTRIBUTION



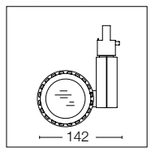
(cd/klm)

DIMENSIONS



(mm)

DIMENSIONS



(mm)

	FINISH	COLOUR TEMPERATURE	LUMINOUS FLUX	BEAM ANGLE	LUMINOUS INTENSITY	WATTAGE	VOLTAGE 50/60 Hz	Ra (min)	LIFESPAN (L70)
WARM WHITE									
LEDEUS00006N30	White	3,000 K	1,000 lm	40°	2,200 cd	21 W	220 - 240 V	> 80	40,000 h
LEDEUS00005N30	White		1,100 lm	22°	4,700 cd	21 W	220 - 240 V	> 80	40,000 h
NEUTRAL WHITE									
LEDEUS00006N40	White	4,000 K	1,300 lm	40°	2,600 cd	21 W	220 - 240 V	> 80	40,000 h
LEDEUS00005N40	White		1,300 lm	22°	5,600 cd	21 W	220 - 240 V	> 80	40,000 h

Exists also in black and silver. Please contact your representative for forther information.

LEDEUSX0001	Colour rendering improvement filter (R9)

COLOUR RENDERING	Ra	R9
3,000 K	80	32
3,000 K with filter	90	94
4,000 K	80	24
4,000 K with filter	87	92

E-CORE™ LED Lighting

Delivering LED Solutions

Case Studies

The Louvre Museum (Paris, France)

For this prestige project Toshiba Corporation has had to develop a bespoke range of outdoor lighting products to meet the very stringent high colour rendering, specific colour temperature and exceptional colour uniformity needed.

Many in the industry said it could not be done but Toshiba, using all the expertise accumulated in its 120 years as a top quality lighting manufacturer, found the solution.

The new LED lighting solutions uses the very latest in efficient lighting technology to deliver a true lighting spectacle, making this leading light in the cultural world a strong innovator and honouring its environmental responsibility to reduce energy usage and carbon footprint. The renovation has meant the end of 4,500 energy sapping xenon lighting and has been replaced with 3,500 LED luminaires, reducing energy consumption by 73% from 393,000 KWh to 105,000 KWh.

Toshiba to light up the Mona Lisa with LED

Toshiba Corporation has reached a basic agreement with the Louvre Museum to replace part of the interior lighting of the Louvre Museum with its own LED lighting. This is Phase 2 of the renovation project that Toshiba Corporation and the Louvre Museum have pursued in partnership since 2010. This next project phase will see renovation of LED lighting in important interior spaces of the museum. It includes specific exhibit lighting for Leonardo da Vinci‘s Mona Lisa, arguably the crown-jewel of the museum, and for the Red Rooms, which displays famous masterpieces such as Jacques-Louis David‘s Consecration of the Emperor Napoleon I and Coronation of the Empress Josephine, as well as the Napoleon Hall, the Louvre‘s main entrance.

As part of the project, a dedicated lighting system will be installed for the Mona Lisa, and the Red Rooms‘ ceiling fixtures will be converted to LED by the end of May 2013. Lighting in the Napoleon Hall is expected be converted to LED by the first half of 2014.

TOSHIBA
Leading Innovation

Outdoor

Go with safety

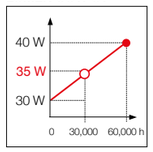
No one likes to be in dark parking lots or on unlit roads. Yet, for cost reasons, many cities practice the nightly shutdown of street lighting or the sparse lighting of car parks and public facilities.

This need not be so. Toshiba offers absolute cost-efficiency with energy-efficient outdoor lighting - combined with intelligent control systems, a very long life and excellent design. Toshiba outdoor lighting - making cities user-friendly.

E-CORE LED FLOODLIGHT 3000

Night-time lighting of buildings and other structures is a standard element of urban spatial design. This pivoting facade spotlight is the suitable tool for the job. Unbreakable, long-lasting and with an impressively uniform light output, it makes modern architectural lighting a reality. In figures, this represents 3,000 lumen at a power consumption of just 35 W and a nominal service life of 60,000 hours.

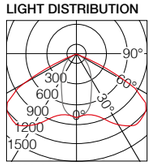
CONSTANT LUMEN OUTPUT



FEATURES

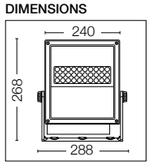
- Dimmable: No
- Class: I
- Protection rating: IP65
- Power factor: 0.9
- Temperature range: -20°C – +35°C
- Constant lumen output
- ENEC

LIGHT DISTRIBUTION



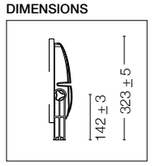
(cd/klm)

DIMENSIONS



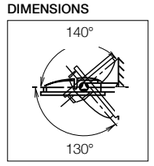
(mm)

DIMENSIONS



(mm)

DIMENSIONS



(mm)

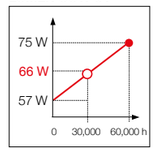
	FINISH	COLOUR TEMPERATURE	LUMINOUS FLUX	BEAM ANGLE	IK	WATTAGE	VOLTAGE 50/60 Hz	Ra (min)	LIFESPAN (L70)
WARM WHITE									
LEDEUF00019I30	Silver	3,000 K	2,015 lm	Narrow - 11°	07	30 - 40 W	220 - 240 V	> 80	60,000 h
LEDEUF00020I30			1,860 lm	Middle - 25°	07	30 - 40 W	220 - 240 V	> 80	60,000 h
LEDEUF00021I30			1,845 lm	Wide - 43°	07	30 - 40 W	220 - 240 V	> 80	60,000 h
LEDEUF00022I30			1,775 lm	Asym - 58° x 127°	07	30 - 40 W	220 - 240 V	> 80	60,000 h
NEUTRAL WHITE									
LEDEUF00019I40	Silver	4,000 K	2,015 lm	Narrow - 11°	07	30 - 40 W	220 - 240 V	> 80	60,000 h
LEDEUF00020I40			1,860 lm	Middle - 25°	07	30 - 40 W	220 - 240 V	> 80	60,000 h
LEDEUF00021I40			1,845 lm	Wide - 43°	07	30 - 40 W	220 - 240 V	> 80	60,000 h
LEDEUF00022I40			1,775 lm	Asym - 58° x 127°	07	30 - 40 W	220 - 240 V	> 80	60,000 h
LEDEUF00019I50		5,000 K	2,880 lm	Narrow - 11°	07	30 - 40 W	220 - 240 V	> 70	60,000 h
LEDEUF00020I50			2,655 lm	Middle - 25°	07	30 - 40 W	220 - 240 V	> 70	60,000 h
LEDEUF00021I50			2,640 lm	Wide - 43°	07	30 - 40 W	220 - 240 V	> 70	60,000 h
LEDEUF00022I50			2,540 lm	Asym - 58° x 127°	07	30 - 40 W	220 - 240 V	> 70	60,000 h

Arm and spike accesssories coming in first quarter of 2013

E-CORE LED FLOODLIGHT 5500

The swivelling architecture light called the E-CORE LED FLOODLIGHT 5500 ensures impressive, bright and thus very cost-effective lighting. You enjoy tremendous flexibility with your light design thanks to the finely graduated light intensities, three different Kelvin ranges and various beam angles. Furthermore, the constant luminous flux control over the entire operational life offers unvarying brightness.

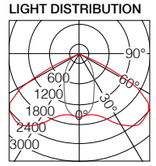
CONSTANT LUMEN OUTPUT



FEATURES

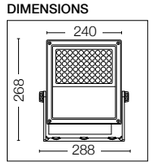
- Dimmable: No
- Class: I
- Protection rating: IP65
- Power factor: 0.9
- Temperature range: -20°C – +35°C
- Constant lumen output
- ENEC

LIGHT DISTRIBUTION



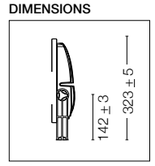
(cd/klm)

DIMENSIONS



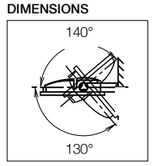
(mm)

DIMENSIONS



(mm)

DIMENSIONS



(mm)

	FINISH	COLOUR TEMPERATURE	LUMINOUS FLUX	BEAM ANGLE	IK	WATTAGE	VOLTAGE 50/60 Hz	Ra (min)	LIFESPAN (L70)
WARM WHITE									
LEDEUF00023I30	Silver	3,000 K	4,035 lm	Narrow - 11°	07	57 - 75 W	220 - 240 V	> 80	60,000 h
LEDEUF00024I30			3,720 lm	Middle - 25°	07	57 - 75 W	220 - 240 V	> 80	60,000 h
LEDEUF00025I30			3,695 lm	Wide - 43°	07	57 - 75 W	220 - 240 V	> 80	60,000 h
LEDEUF00026I30			3,555 lm	Asym - 58° x 127°	07	57 - 75 W	220 - 240 V	> 80	60,000 h
NEUTRAL WHITE									
LEDEUF00023I40	Silver	4,000 K	4,035 lm	Narrow - 11°	07	57 - 75 W	220 - 240 V	> 80	60,000 h
LEDEUF00024I40			3,720 lm	Middle - 25°	07	57 - 75 W	220 - 240 V	> 80	60,000 h
LEDEUF00025I40			3,695 lm	Wide - 43°	07	57 - 75 W	220 - 240 V	> 80	60,000 h
LEDEUF00026I40			3,555 lm	Asym - 58° x 127°	07	57 - 75 W	220 - 240 V	> 80	60,000 h
LEDEUF00023I50		5,000 K	5,760 lm	Narrow - 11°	07	57 - 75 W	220 - 240 V	> 70	60,000 h
LEDEUF00024I50			5,315 lm	Middle - 25°	07	57 - 75 W	220 - 240 V	> 70	60,000 h
LEDEUF00025I50			5,280 lm	Wide - 43°	07	57 - 75 W	220 - 240 V	> 70	60,000 h
LEDEUF00026I50			5,080 lm	Asym - 58° x 127°	07	57 - 75 W	220 - 240 V	> 70	60,000 h

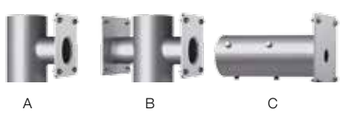
Arm and spike accesssories coming in first quarter of 2013

E-CORE™ LED Lighting

TOSHIBA Leading Innovation

E-CORE LED URBANLIGHT

Walkways, car parks and parking spaces, interior courtyards – the broad beam on this outdoor light provides safe general lighting in these areas. With its impressive specifications, it has become established as an efficient replacement for all high-consumption HQL mercury vapour lamps up to 120 W. The practical adapter range provides a variety of installation options, from individual wall mounting to dual-lamp mast mounting.

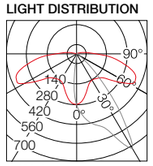


A B C

FEATURES

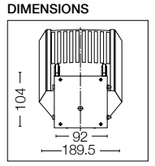
- Replaceable bulb: No
- Dimmable: No
- Class: I
- Protection rating: IP65
- Power factor: 1,250 lm: 0.91 / 2,200 lm: 0.95
- Temperature range: -20°C – +35°C
- ENEC

LIGHT DISTRIBUTION



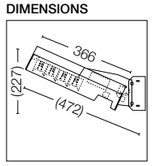
(cd/klm)

DIMENSIONS



(mm)

DIMENSIONS



(mm)

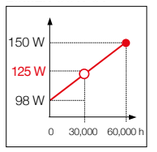
	COLOUR TEMPERATURE	LUMINOUS FLUX	IK	WATTAGE	VOLTAGE 50/60 Hz	Ra (min)	LIFESPAN (L70)
NEUTRAL WHITE							
LEDEUK00001N50	5,000 K	1,250 lm	07	16.5 W	220 - 240 V	> 70	60,000 h
LEDEUK00002N50		2,200 lm		32 W	220 - 240 V	> 70	60,000 h

ACCESSESORIES	
LEDEUKX0001	A I vertical-single fixing
LEDEUKX0002	B I vertical-twin fixing
LEDEUKX0003	C I horizontal-single fixing

E-CORE LED ROADLIGHT

This road light complies with the EN 13201 standard and combines every technological and design advantage to create low-cost, low-maintenance lighting for the 21st century road network. The weatherproof design, eye-friendly soft-start function and constant lument output control, plus 10 kV overload protection, combine to enable an exemplary 60,000 hour service life. Outstanding performance which quickly eclipses conventional 250 mercury lamp systems.

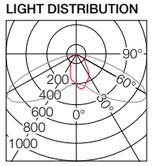
CONSTANT LUMEN OUTPUT



FEATURES

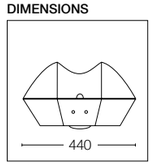
- Dimmable: Yes / step dimming: 50%
- Class: II
- Protection rating: IP65
- Power factor: 0.92
- Temperature range: -30°C – +45°C
- Lighting complies with EN 13201
- Constant lumen output
- Top or side mounted
- ENEC

LIGHT DISTRIBUTION



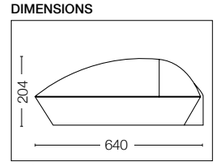
(cd/klm)

DIMENSIONS



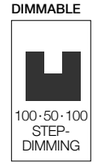
(mm)

DIMENSIONS



(mm)

DIMMABLE



	FINISH	COLOUR TEMPERATURE	LUMINOUS FLUX	IK	WATTAGE	VOLTAGE 50/60 Hz	Ra (min)	LIFESPAN (L70)	DIMMABLE (%)
CLASS II / NEUTRAL WHITE									
LEDEUW00003L50	Silver	5,000 K	9,000 lm	07	98 - 150 W	220 - 240 V	> 70	60,000 h	100 / 50

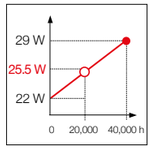
E-CORE LED WEATHERPROOF

The name says it all: designed to IP65, this robust diffuser luminaire is the ideal lighting solution for all areas with particular climatic or functional requirements. Constant lumen output control guarantees a steady flow of light throughout its service life. The result is uniform lighting even after the bulb has been replaced – in warehouses, underground car parks, cold stores and other similar situations.

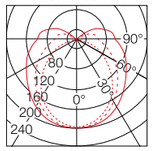
FEATURES

- Replaceable bulb: Yes
- Dimmable: No
- Class: I
- Protection rating: IP65
- Power factor: 0.92
- Polycarbonate cover: impact and weather resistant
- PMMA cover: scratch-resistant, highly transparent
- Mounting: vertical / horizontal
- Temperature range: -20°C – +45°C
- Constant lumen output

CONSTANT LUMEN OUTPUT

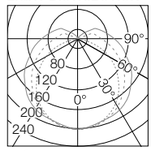


LIGHT DISTRIBUTION



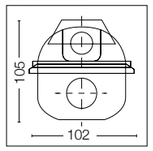
(cd/klm)

LIGHT DISTRIBUTION



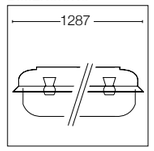
(cd/klm)

DIMENSIONS



(mm)

DIMENSIONS



(mm)

	COVER	COLOUR TEMPERATURE	LUMINOUS FLUX	IK	WATTAGE	VOLTAGE 50/60 Hz	Ra (min)	LIFESPAN (L70)
NEUTRAL WHITE								
LEDEUP00001N50	PC	5,000 K	• 1,760 lm	08	22 - 29 W	220 - 240 V	> 73	40,000 h
LEDEUP00002N50	PMMA		• 1,820 lm	02		220 - 240 V	> 73	40,000 h

Watts vs Lumen
Did you know?

What are Lumens?

Lumen (or Luminous flux) is the standard measure for the mount of light emitted by a light source.

Unlike light intensity (Candela), Lumens is a measure of the amount of light rather than its intensity.

How do I compare incandescent lamp using Lumens?

Using the table below you can see the Lumen values to be reached by LED Lamps and their incandescent equivalent (for non-directional lamp, as defined by EC244/2009).

Equivalence ratings for non-directional lamps (EC244/2009)

Rated lamp luminous flux ϕ [lm]			Claimed equivalent incandescent lamp power
CFL	Halogen	LED and other lamps	
125	119	136	**15 W**
229	217	249	**25 W**
432	410	470	**40 W**
741	702	806	**60 W**
970	920	1,055	**75 W**
1,398	1,326	1,521	**100 W**
2,253	2,137	2,452	**150 W**
3,172	3,009	3,452	**200 W**

Watts vs Lumens – Which should I use?

Lumens are the new way to measure and compare the light output ram a lamp. Wattage is a measure of power consumed not light delivered. As lights are designed to emit light, the correct measurement is Lumen.

With LEDs it is not necessarily the wattage that tells you if it is more powerful than another LED lamp. Two LED lamps with the same wattage could have different Lumen values. To adequately compare the two lamps it is best compare Lumen output.

LED offers a true alternative to incandescent lamps of the drawbacks of other existing technologies.

LED lamps last longer, are more efficient, can be dimmed, and switch on instantly.

GLOSSARY

DIMMABILITY

Dimming of lights

DIMMABLE

LED lights can be dimmed without sacrificing light quality. This is the main difference from lights fitted with fluorescent or high-pressure discharge lamps. Dimming also saves more energy. There are different types of dimming.

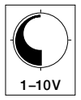
DALI

DIMMABLE

Luminaires are controlled by the digital DALI (Digital Addressable Lighting Interface). This standard, adopted by all manufacturers, overcomes the disadvantages of the 1 – 10 V principle and is being used increasingly, particularly in more complex installations. DALI offers a two-wire line that is protected against polarity reversal, with noise-resistant digital signal transmission, direct addressability, compact instruction set, error feedback and defined brightness values which are independent of line length. DALI is also supported by building and light management systems.

1 – 10 V

DIMMABLE



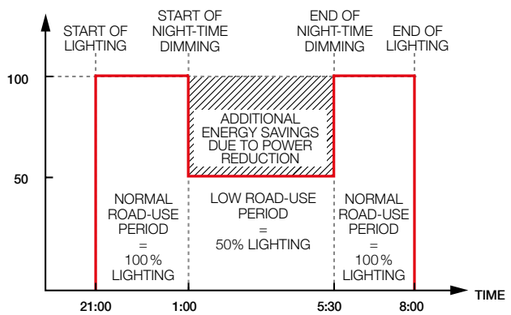
Luminaires can be dimmed via the 1 – 10 V interface. A voltage level between 1 V and 10 V is converted into corresponding lamp brightness.

Step dimming

DIMMABLE

Streetlights have a facility for step dimming via a second, dry-contact circuit. When the second supply is switched to the lamp, the luminous flux and power consumption are reduced to approx. 50 %. This provides a very simple way of reducing the light level at night, enabling further energy savings at times when road usage is low.

POWER CONSUMPTION %
EXAMPLE: STEP DIMMABLE E-CORE LED ROADLIGHT CONTROLLED BY TIMER.



Phase control

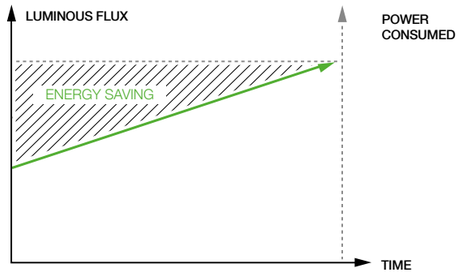
Phase control widely used for incandescent and halogen lamps dimming this analogic control method apply also to LED lamps. Because there is no general compatibility between all dimmers available on the market, Toshiba has provided a list of recommended dimmers on its website www.toshiba.eu/lighting/.

CONSTANT LUMEN OUTPUT

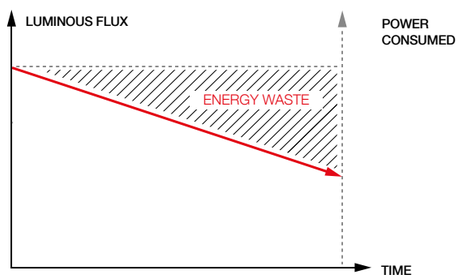
Constant luminous flux over the life of the lamp

The drop in luminous flux due to the LED technology over the service life of the system is compensated by increasing the power input. This results in constant and uniform photometric performance differentiating strongly TOSHIBA products from standard LED systems whose lumen output drastically drops over time lighting.

WITH CONSTANT LUMEN OUTPUT
=> STABLE PHOTOMETRIC PERFORMANCE
OPTIMUM POWER CONSUMPTION



WITHOUT CONSTANT LUMEN OUTPUT
=> DECREASING PHOTOMETRIC PERFORMANCE
ENERGY WASTE



E-CORE LED Lighting

TECHNICAL FEATURES

IK shock resistance rating

The IK shock resistance rating is a measurement of the protection provided by enclosures for electrical equipment against external mechanical impacts. It is laid down in the EN 50102 standard and describes how much impact energy in joules the enclosure can withstand without breaking. The higher the IK number, the more robust and resistant the light. IK 00 = no shock resistance.

IK-CLASSES (EN 50102)	HEIGHT (CM)	ENERGY IMPACT (J)
01	7.5	0.15
02	10	0.20
03	1.5	0.35
04	25	0.50
05	35	0.70
06	20	1
07	40	2
08	29.5	5
09	20	10
10	40	20

0.2 kg
0.5 kg
1.7 kg
5.0 kg

Ingress protection

The ingress protection rating indicates the degree of mechanical protection of a light. It describes the degree to which the light is protected against entry of foreign bodies or moisture.

INGRESS PROTECTION	1ST DIGIT: PROTECTION AGAINST DUST AND FOREIGN OBJECTS	2ND DIGIT: PROTECTION AGAINST WATER AND MOISTURE
IP 00	No protection	No protection
IP 11	Protected against solid foreign objects greater than 50 mm in diameter	Protected against dripping water, angle of incidence 0° from the vertical
IP 20	Protected against solid foreign objects greater than 12 mm in diameter	No protection
IP 22	Protected against solid foreign objects greater than 12 mm in diameter	Protected against dripping water, angle of incidence 15° from the vertical
IP 23	Protected against solid foreign objects greater than 12 mm in diameter	Protected against water sprayed from any angle up to 60° from the vertical
IP 33	Protected against solid foreign objects greater than 2.5 mm in diameter	Protected against water sprayed from any angle up to 60° from the vertical
IP 40	Protected against solid foreign objects greater than 1 mm in diameter	No protection
IP 44	Protected against solid foreign objects greater than 1 mm in diameter	Protected against splash water from any direction
IP 50	Dust protected	No protection
IP 54	Dust protected	Protected against splash water from any direction
IP 55	Dust protected	Protected against a strong water jet from any direction
IP 65	Dust protected	Protected against a strong water jet from any direction

Electrical classes

In lights, measures must be put in place to protect against electric shock. They must guarantee that, even in the event of a fault, accessible housing components cannot become live and therefore dangerous. The different ways of achieving this are classified in protection classes.

CLASS	LIGHT	NOTES
I	Lights with a connection point for an earth conductor to which all the accessible metal components must be connected; the earth conductor can immediately ground the voltage in the event of a fault.	Must be connected to a protective earth. The symbol is placed at the connection point.
II	These lights must have no accessible metal parts which can directly become live in the event of a fault (protective insulation or double insulation).	Light must not have an earth conductor connection point and must not be connected to a protective earth.
III	Lights for operation at safety extra low voltage (SELV), i.e. at a voltage below 50 V, generated by a safety isolating transformer in accordance with DIN VDE 0551 (EN 60742) or drawn from batteries or accumulators.	Light must not have an earth conductor connection point and must not be connected to a protective earth.

TOSHIBA
Leading Innovation

www.toshiba.eu/lighting

PP_ENG_02/13

Specifications and design as of February 2013.
Specifications and design may change without further notice.

E-CORE™ LED Lighting

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