THOUSLITE

LEDCube Any SPD Simulator

About Us

Thousand Lights Lighting (Changzhou) Limited (THOUSLITE) is a high-tech enterprise focusing on multi-channel LED lighting technology and light quality management. THOUSLITE produces a variety of LED-based standard lighting environments and is active in international technical conferences and standardization societies.THOUSLITE's full range of multi-channel LED lighting products are used for lighting research, industrial color assessment, total appearance communication, and camera & sensor testing. THOUSLITE also provides customized products and services for your lighting needs. Our 36-hour fast response policy provides you with superior service. Based on our extensive technical experience.THOUSLITE is committed to provide you with excellent products, advanced solutions, and professional service.

◆ Reproducing high quality daylight illuminant

◆ Blackbody locus simulator

◆ SPD match

◆ Dynamic lighting

◆ Fast & accurate feedback

◆ Flexible installation

Thousand lights lighting (Changzhou) Limited (Sino - British Joint Venture)

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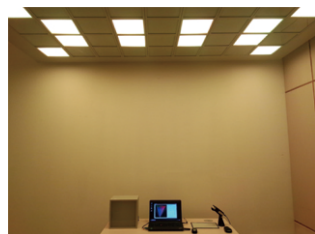   Xinbei District, Changzhou City, Jiangsu Province, China
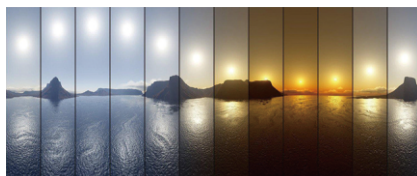
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LEDCube Any SPD Simulator

Based on our proprietary optimization algorithm and more than 10 carefully selected high power LEDs，THOUSLITE LEDCube can easily and accurately simulate any lighting environment having different Spectral Power Distribution (SPD). Currently, LEDCube is the best **commercialized spectral tunable lighting apparatus** in the world. The target applications include **lighting research, surface color visual assessment standard lighting, camera & sensor evaluation & calibration lighting,** such as daylight simulator, non-visual effect, large test chart illumination, color rendering, whiteness evaluation etc. In addition, LEDCube can create a **large standard lighting environment** for color visual assessment and camera sensor calibration.

LEDCube Features

● **Reproducing high quality daylight illuminant**

To reproduce any phase of daylight with highest quality on the market in terms of Color Rendering Index[1] (CRI) 99 and Metamerism Index[2] (MI) Grade A

● **Blackbody locus simulator**

To accurately produce a range of sources from tungsten to daylight varying Correlated Color Temperature (CCT) from 2000K to 20000K with user-defined CIE Ra and Duv

● **SPD match**

To accurately reproduce any measured or imported SPD to record any light you want. It is easy to spread SPD files between different locations for light communication

● **Luminance adjustable**

The light is dimmable while keeping the same light quality

● **Faster change between illuminants**

Same illuminant properties during illuminant changes

● **Single-channel control**

Arbitrarily control the intensity of each channel in LEDCube to design any light wanted

● **Dynamic lighting**

Programmable illuminant light sequence and interval.

● **Fast & accurate feedback**

Maintain the same light quality, compensating for age and variable environments with external microspectrometer. It is much more consistent over conventional lighting

● **User-friendly software**

Provide an easy and user-friendly software LEDNavigator-LC, and can be further customerized
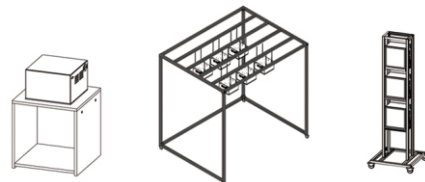
● **Flicker free**

It provides a uniform and flicker free lighting environment

● **Longer life time and excellent long term stability**

Much longer lifetime compared to fluorescent technology, and optimized heat management resulting in excellent long term stability
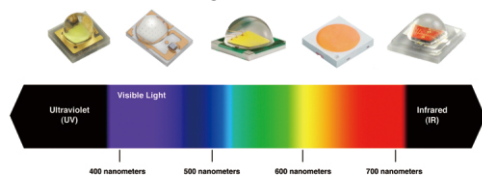
● **Flexible installation**

Provide flexible installation methods for different applications, such as viewing cabinet, lifting, customerized support etc

● **LED channel wavelength selection service**

Provide LED channel wavelength selection service from UV, VIS to NIR

● **Wireless control**

Up to 256 LEDCubes can be controlled separately or simultaneously via Zigbee technology, easy to build large standard lighting space
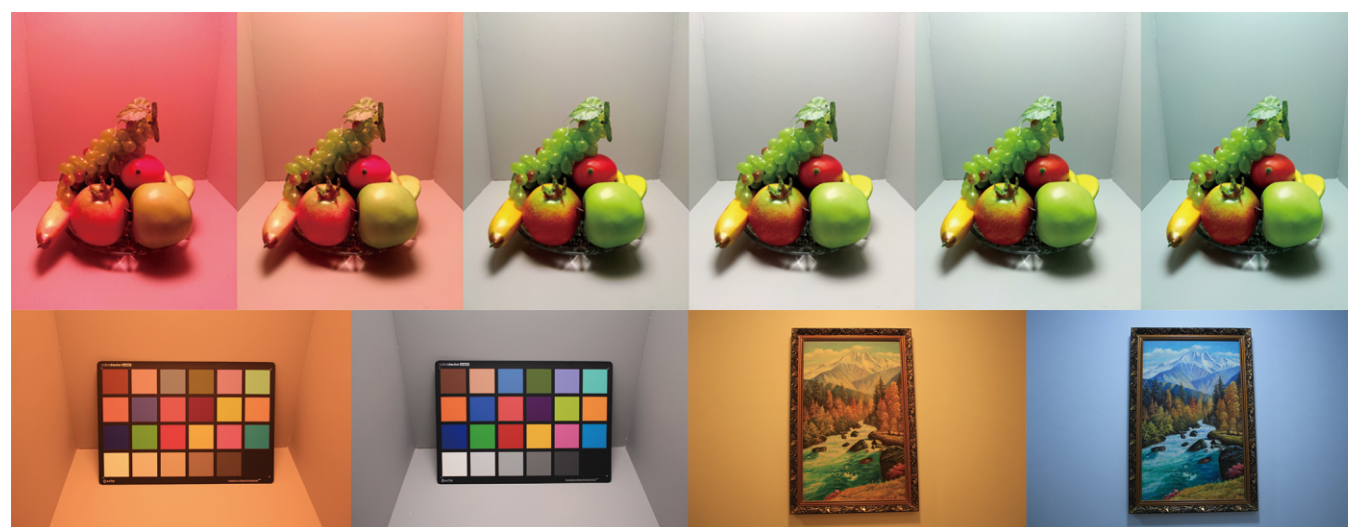
● **36 hours customer response**

If customers report any problems or issues related to the products in working day, we will response in 36 hours for both domestic and international customers

1. CIE 13.3-1995, Method of Measuring and Specifying Colour Rendering Properties of Light Sources
2. ISO 23603-2005 / CIE S 012/E, Standard method of assessing the spectral quality of daylight simulators for visual appraisal and measurement of colour

Application of Scene

Specifications

	LEDCube-11 (R27)	LEDCube-C15 (R27)	LEDCube-I14 (R27)	LEDCube-24	LEDCube-C31 (R39)
Diginal driving channels	20	20	20	24	48
LED channels*1	11	15	14	18	>31
Spectral range	400-700nm	350-700nm	380-730nm	350-780nm	350-1000nm
LED channel drive method	Amplitude Modulation, AM / Pulse-width modulation, PWM / AP*2				Amplitude Modulation, AM / Pulse-width modulation, PWM / AP*2
Resolution*3	10 bit (1024 steps dimmable for each channel)				12 bit (4096 steps dimmable for each channel)
Warm up time	No				No
LED Lifetime	>10,000 hours				>10,000 hours
Capacity	80 light source in LEDCube hardware, unlimited in software				80 light source in LEDCube hardware, unlimited in software
Predefined illuminants*4	Daylight Options (exclude UV): CIE D50,CIE Ra> 98 MIvis: A (<0.25) CIE D55,CIE Ra> 98 MIvis: A (<0.25) CIE D65,CIE Ra> 98 MIvis: A (<0.25) CIE D75,CIE Ra> 98 MIvis: A (<0.25) Others: A, CIE Ra>97 or customer specify Sources stored in the hardware can be reprogrammed by software LEDNavigator-LV	Daylight Options (exclude UV): CIE D50,CIE Ra> 98 MIvis: A (<0.25) CIE D55,CIE Ra> 98 MIvis: A (<0.25) CIE D65,CIE Ra> 98 MIvis: A (<0.25) CIE D75,CIE Ra> 98 MIvis: A (<0.25) Others: A, CIE Ra>97 UV or customer specify Sources stored in the hardware can be reprogrammed by software LEDNavigator-LV	Daylight Options (exclude UV): CIE D50,CIE Ra> 98 MIvis: A (<0.25) CIE D55,CIE Ra> 98 MIvis: A (<0.25) CIE D65,CIE Ra> 98 MIvis: A (<0.25) CIE D75,CIE Ra> 98 MIvis: A 9<0.25) Others: A, CIE Ra>97 or customer specify Sources stored in the hardware can be reprogrammed by software LEDNavigator-LV	Daylight Options (exclude UV): CIE D50,CIE Ra> 98 MIvis: A (<0.25) CIE D55,CIE Ra> 98 MIvis: A (<0.25) CIE D65,CIE Ra> 98 MIvis: A (<0.25) CIE D75,CIE Ra> 98 MIvis: A (<0.25) Others: A, CIE Ra>97 LV or customer specify Sources stored in the hardware can be reprogrammed by software LEDNavigator-LV	Daylight Options (exclude UV): CIE D50,CIE Ra> 98 MIvis: A (<0.25) CIE D55,CIE Ra> 98 MIvis: A (<0.25) CIE D65,CIE Ra> 98 MIvis: A (<0.25) CIE D75,CIE Ra> 98 MIvis: A (<0.25) Others: A, CIE Ra>97 UV or customer specify Sources stored in the hardware can be reprogrammed by software LEDNavigator-LV
Tunable range	CCT: 2000~20000K (Duv tolerance<±0.003)				CCT: 2000~20000K (Duv tolerance<±0.003)
Max illuminance	1 light source D65: 1 meter: 850lux; D50: 1 meter: 1250lux Multiple light source can achieve higher intensity			1 light source D65: 1 meter: 1050lux; D50: 1 meter: 1300lux Multiple light source can achieve higher intensity	1 light source D65: 1 meter: 1400lux; D50: 1 meter 1300lux Multiple light source can achieve higher intensity
Short-term stability*5	ΔCCT<±20K; ΔLuminance <±1%				ΔCCT<±20K; ΔLuminance <±1%
Long-term stability*6	ΔCCT<±50K; ΔLuminance <±2%				ΔCCT<±50K; ΔLuminance <±2%
Software instrument compatibility	Konica Minolta CL500A & CS-2000, THOUSLITE FS & FS-VIS-IR Spectrometer Jeti Specbos 1211UV spectroradiometer				Konica Minolta CL500A & CS-2000, THOUSLITE FS & FS-VIS-IR Spectrometer Jeti Specbos 1211UV spectroradiometer
Electrical	110/230V, 50/60Hz, 180W (max)			110/230V, 50/60Hz, 200W (max)	110/230V, 50/60Hz, 500W (max) to drive 48 channels of LEDs
Operating ambient temperature	0-30°C				0-30°C
Connection	USB cable, wireless control, touch screen controller				USB cable, 2.4G wireless (Built-in, Need 2.4G Dongle on PC side), touch screen controller
Dimensions(L/W/H) & Weight	300×300×210 mm, 270×270(emitting size), 7kg				420×420×260 mm, 390×390(emitting size), 18kg
Scope of delivery	LEDCube light source, power cord, USB cable, wireless sender				LEDCube light source, power cord, USB cable, wireless sender
Supplementary accessories	Ceiling installation kit, measurement device, 50×50×60cm Munsell N7 viewing cabinet, customerized aluminium support, touch screen controller				Ceiling installation kit, measurement device, customerized Munsell N7 viewing cabinet, customerized aluminium frame support
Software (optional)	Six modules in LEDNavigator-LC: Blackbody locus simulator, SPD match, Feedback*7, Dynamic lighting, Single channel control, Single LEDCube control; SDK*8 available on request				

*1：The number of LED kinds
*2：AP is the hybrid driving of AM and PWM. The frequency of PWM is from 0.1 Hz to 1000 Hz.
*3：Actually 1000 steps can be used because some steps for low luminance calibration.
*4：Light quality is measured with 80% power
*5：When set light source as D50 without warm up time under enviroment temperature 25°, short-term stability is measured during 24 hours and compared to average value.
*6：When set light source as D50 after 30 minutes warm up time under enviroment temperature 25°, long-term stability is measured during 90 days and compared to average value.
*7：Users need to have the compatible instrument for measurements
*8：Users can utilize the SDK to realized the functions of Dynamic lighting, Single channel control, Single LEDCube control.