SPX LIGHTING

LIGHTING SPECIALIST & MANUFACTURER **FOR MUSEUM & GALLERY APPLICATIONS**

www.spx-lighting.com

A T-Rex in Paris - MNHN Paris

BNF Richelieu Paris 8’18” Paris

SYCLOP

Framing / Gobo projector
Lumen output*: 1880 lm
Beam angles: Adjustable zoom 18° to 42°
Colour temperature: 3000 / 4000 K
CRI*: 97 R9>95
Pot. / Phase / DALI / DMX / BLE Casambi

SYCLOP TUNABLE WHITE

Framing / Gobo projector
Lumen output*: -
Beam angles: Adjustable zoom 18 to 42°
Colour temperature: 2700 to 6500 K
CRI*: >90
Pot. / DALI / BLE Casambi

SYCLOSPOT

Spotlight
Lumen output*: 1830 / 1880 lm
Beam angles: 22° / 40°
Colour temperature: 3000 / 4000 K / UV
CRI*: 97 R9>995
Pot. / Phase / DALI / DMX / BLE Casambi

EXPOLIGHT

Display Lighting
Lumen output*: 1200 lm
Beam angle: Fixed 36°
Colour temperature: 4000 K
CRI*: 90
Fixed / Potentiometer

ILYAD W

Wallwasher
Lumen output*: 2500 / 2800 lm
Beam angle: Asymetrical
Colour temperature: 3000 / 4000 K
CRI*: 97 R9>95
Pot. / Phase / DALI / BLE Casambi / DMX

MOOVEO

Focusable mini-spotlight
Lumen output*: 1800 lm
Beam angles: Adjustable zoom
7° to 30° / 17° to 37°
Colour temperature: 3000 / 4000 K
CRI*: 95
Pot.- Track: DALI / BLE Casambi / DMX

Caen Memorial - Sté Contact - C. Colin

ODYSEE

Focusable spotlight
Lumen output*: 1830 / 1880 lm
Beam angles: zoom
Colour temperature: 3000 / 4000 K
CRI*: 97 R9-90
Pot. / Phase / DALI / BLE Casambi

LEXYS

Spotlight
Lumen output*: 1100 / 1200 lm
Beam angles: 14° / 25° / 40°
Colour temperature: 3000 / 4000 K
CRI*: 98 R9-98
Pot. / Phase / DALI / BLE Casambi

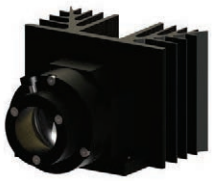
ILYAD S / Fresnel

Spotlight
Lumen output*: 2500 / 2800 lm
Beam Angle (S): 20° / 35° / 48° /90°
Beam Angle (Fresnel): 23° / 36° / 61°
Colour temperature: 3000 / 4000 K
CRI*: 97 R9>95
Pot. / Phase / DALI / BLE Casambi / DMX

DELTALINE 1R

Linear Led fitting
Lumen output*: 1200 lm
Beam angles: 22° / 40°/ 19x46° / 75x120°
Colour temperature: 3000 K
CRI*: 95
Pot. - Track:DALI / BLE Casambi /DMX

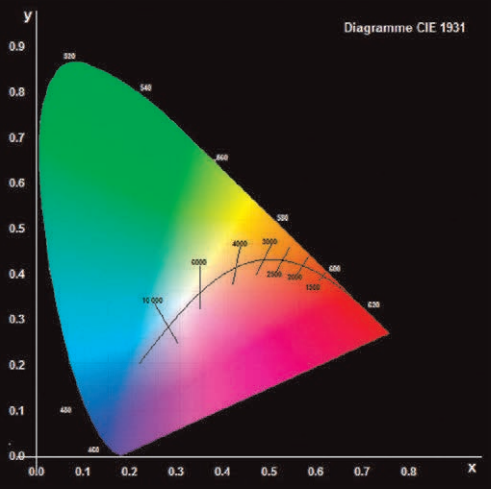
MINI PIXIS



Fiber optic Led Generator
Lumen output*: 1415 / 1450 lm
Fibre optic cable end piece diam.: 30 mm
Colour temperature: 3000 / 4000 K
CRI*: 97 R9>95
Fixed / Potentiometer / 1-10V

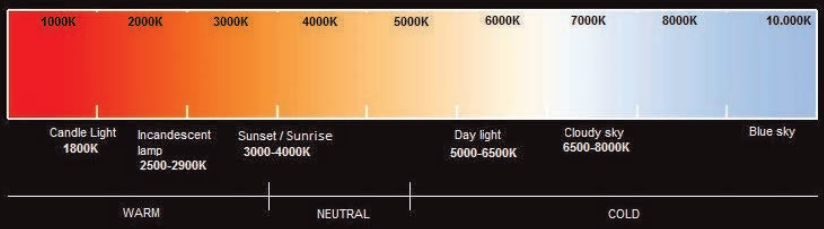
PIXIS

Fiber optic Led Generator
Lumen output*: 3645 / 3735 lm
Fibre optic cable end piece diam.: 30 mm
Colour temperature: 3000 / 4000 K
CRI*: 97 R9>95
Potentiometer / 1-10V



The effect of colour temperature

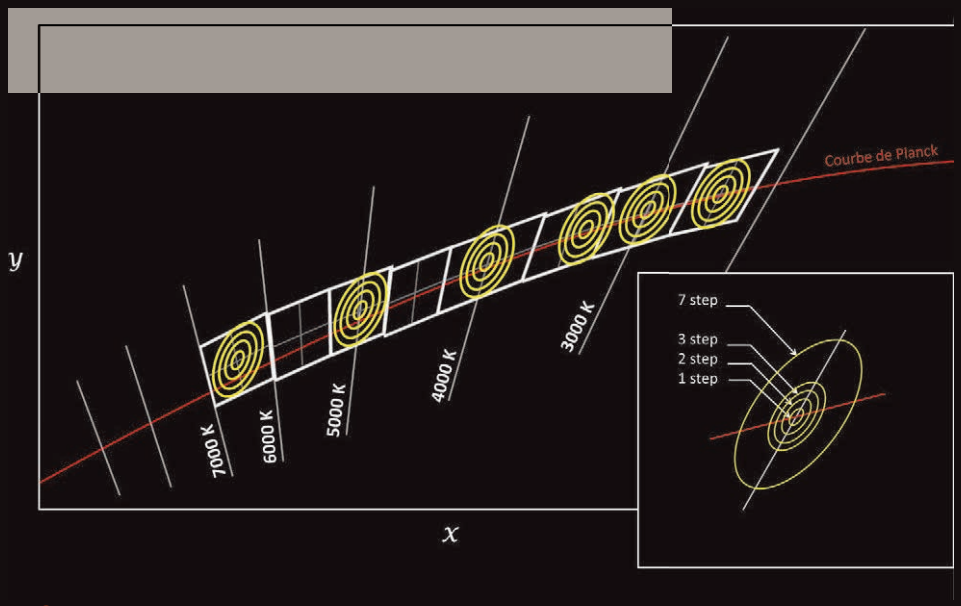
The choice of colour temperature is mainly determined by the works of art, the objects and the materials needing to be illuminated.
The colour outputs from LEDs vary from warm white to cool white (according to the prevailing red or blue colour shades of the light spectrum).



Scale of reference for white light expressed in degrees Kelvin

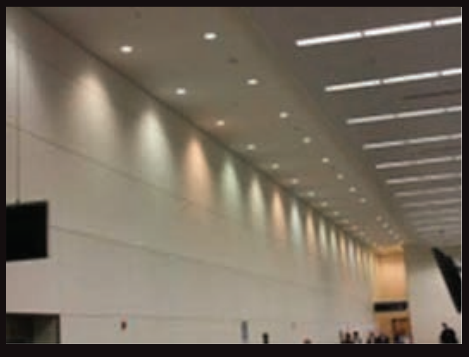
What is a Macadam Ellipse (SDCM)?

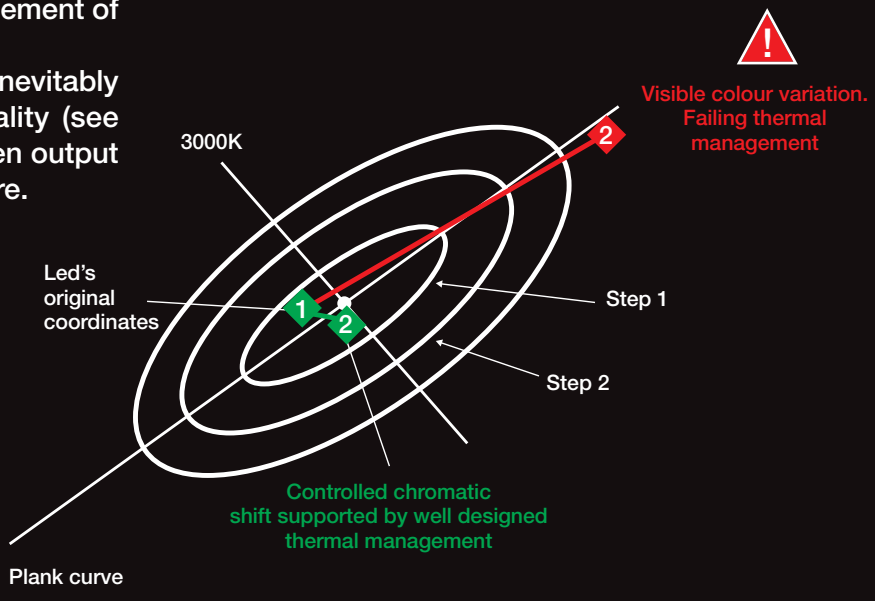
Due to the variable nature of the colour produced by white light LEDs, a convenient metric for expressing the extent of the colour difference within a batch (or bin) of LEDs is the number of SDCM (MacAdam) ellipses steps in the CIE colour space that the LEDs fall into. If the chromaticity coordinates of a set of LEDs all fall within 1 SDCM ("1-step MacAdam ellipse"), most people would fail to see any difference in colour. If the colour variation is such that the variation in chromaticity extends to a zone that is twice as big (2 SDCM or a 2-step MacAdam ellipse), you will start to see some colour difference. A 2-step MacAdam ellipse is better than a 3-step zone, and so on.
Steps 1 to 3 are particularly applicable for museum & gallery applications with high specifications. This precautionary measure avoids any colour differences between the output of identical light fittings.



What about chromaticity shift?

The importance of chromaticity shift phenomenon depends on the quality of thermal management of the LED.
An undersized or confined heat sink will inevitably lead to a shift in the colour output quality (see photo), as well as a reduction of the lumen output and, consequently, an early product failure.





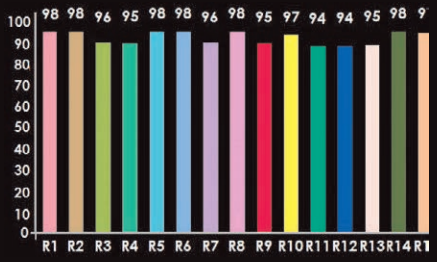
What is the definition of CRI?

The Colour Rendering Index measures the ability of a light source to accurately reproduce the colours of the object it illuminates. The CRI is rated on a scale from 0 to 100.

CRI 80

CRI 90

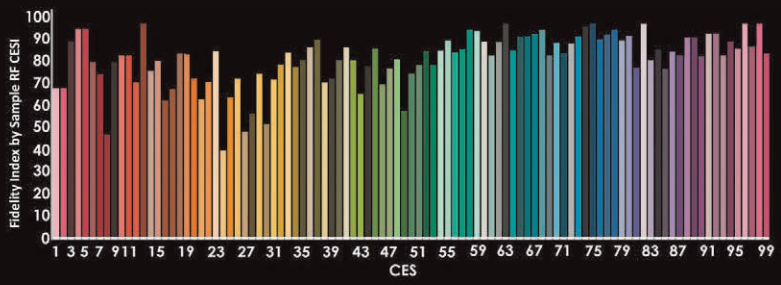
CRI 95-100

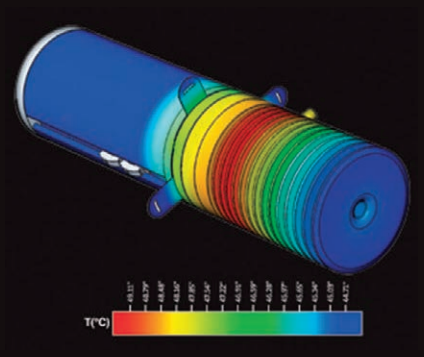


CRI calculation methods

There are several methods used to calculate the rendering index.

> **CRI (Ra)** based on 8 samples from R1 to R8
> **CRI (Re)** based on 15 samples from R1 to R15
> **TM30-15** based on 99 samples





Thermal management control for LED efficiency and colour consistency

Spx Lighting uses dedicated thermal simulation software that allows an optimum thermal management solution for the LED lightsource (Tj). This prevents any shift in chromaticity and insures complete consistency of the colour quality of the light output over the lifetime of the luminaire.

This is a fundamental feature on all SPX luminaires

80 000 hrs (L80-B10)

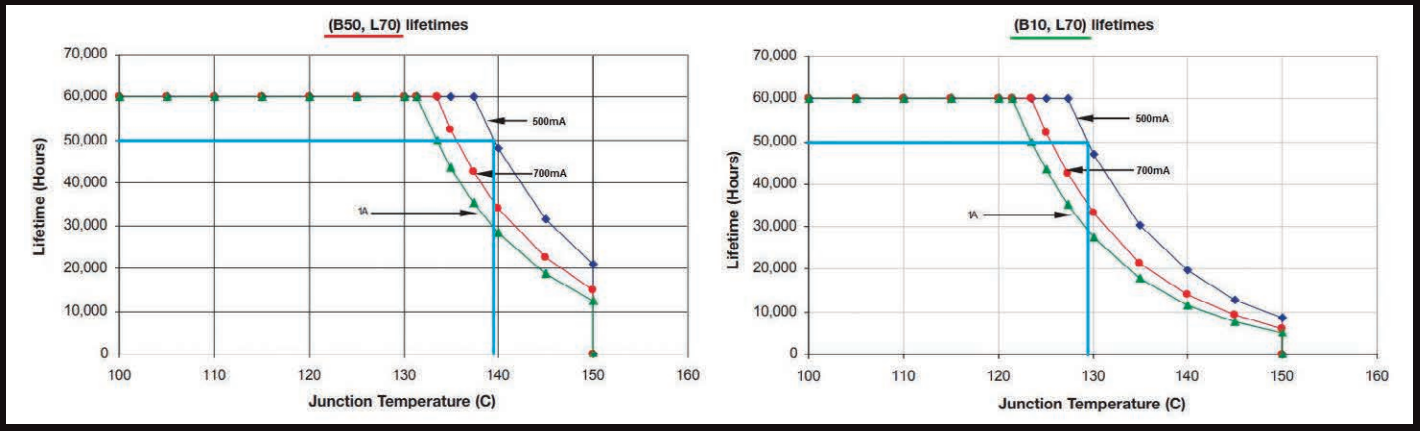
80 000hrs = Number of operating hours
L80 = Rated value of initial lumen output
B10 = Rated value of failure of L data

Lifetime and failure rate

Sustainability of a light fitting is based on 3 main criteria:
Operating time measured in number of hours (Hrs), a maintained lumen output (L), and failure rate (B).

Example: L70-B50 means 70% of the lumen output is maintained with a failure rate of 50%. L70-B10 limits the failure rate to 10%.

The lifetime of the Led MUST ALWAYS be associated to the maintained lumen output and to the failure rate value. By definition, if B value is not indicated, the default value is B50.



The above diagram shows that a 10°C variation on the junction of the LED highly affects the failure rate from 10 to 50%.

SPX LIGHTING, lighting specialist and manufacturer for museum and gallery applications. High quality, technological innovation and sustainability are the 3 cornerstones upon which the SPX Lighting design philosophy is built. With its multi-discipline development team based in Paris, France, SPX Lighting develops its luminaires with 3D Dassault Systems and SOLIDWORKS softwares, FLOW-SIMULATION software for thermal modelling and OPTIS software for optical system development. The production facility, based in the Centre region of France, is equipped with an antistatic manufacturing unit specifically constructed for the production of LED light fittings. The SPX Lighting team brings its support and experience to projects, from conception to reality and can assist in the commissioning and programming of any scheme if required.

SPX have completed many prestigious museum and gallery lighting projects, some of which are featured below:

MUSEUMS
Aga Khan Museum (Toronto)
Archeological Museum (Saint-Romain-en-Gal)
Archeological Museum of Fourvière (Lyon)
Army Museum (Paris)
Bretagne Champs Libres Museum (Rennes)
Contemporary Art Museum (Lyon)
Cantini Museum (Marseille)
East India Company Museum (Port Louis)
En Herbe Museum (Paris)
Fashion Museum (Paris)
Gadagne Museum (Lyon)
Grand Orient de France Museum (Paris)
Great war Museum / Musée de la Grande guerre (Meaux)
Hermitage Museum (Saint-Petersbourg)
L'homme (mankind) Museum (Paris)
Louvre Museum (Lens)
Louvre Museum (Abu Dhabi)
Louvre Museum (Paris)
Modern Art Museum (Saint-Etienne)
Museum of Arras
Museum of Mantes La Jolie
Museum of Port Louis
Museum of the Avelines (Saint-Cloud)
Museum of fine arts (Valenciennes)
Museum of the Confluences (Lyon)
Museum of popular musics (Montluçon)
Natural History Museum
(Paris - La Rochelle - Toulouse - Lyon - Grenoble)
Natural History Museum (Bourges)
Natural History Museum (Paris)
New Qatar Museum (Doha)
Olympique Lyonnais Museum (Lyon)
Orsay Museum (Paris)
Palais de la découverte Museum (Paris)
Petit Palais Museum (Paris)
Petit Palais Museum (Paris)
Porcelain Museum (Limoges)
Quai Branly Museum (Paris)
Thomas Henry Museum (Cherbourg)
Val de Grâce Museum (Paris)
Victor Hugo Museum (Paris)
Volvo Museum (Göteborg)

CASTLES
Château d'Angers
Château de Chambord
Chateau de la Celle Saint-Cloud
Château de la Turbie (Nice)
Château de Versailles
Château des ducs de Bretagne (Nantes)

RELIGIOUS MONUMENTS-BUILDINGS
Notre Dame Church (Pontoise)
Notre Dame de Bon Port church (Les Sables d'Olonne)

LUXURY BRANDS
Dior (Paris)
Givenchy (Paris)
Hermes (Paris)
Trussardi (Milano and Florence)

OTHER CULTURAL PLACES (Foundations, galleries, great libraries, memorials, halls, theaters...)
Arabic world Institute / Institut du Monde Arabe (Paris)
Armenian Heritage Center /
Centre du Patrimoine Arménien (Valence)
Caen Memorial
Carmignac Foundation (Ile de Porquerolles)
Charles de Gaulle Memorial (Colombey-les-Deux Eglises)
European house of photography /
Maison Européenne de la photographie (Paris)
Fire Station Gallery (Doha)
France National Library(Paris)
France Richelieu National Library(Paris)
Galerie Lafayette Foundation (Paris)
Japan Cultural Center / Maison du Japon(Paris)
Maison des Mégalithes - Memorial (Carnac)
Maison du Docteur Gachet - memorial (Auvers/Oise)
Maison Martin Margiela(Paris)
Océanopolis (Brest)
Philarmonic-Music Great Hall /
La Cité de la Musique-Philarmonie (Paris)
Science and Industry Center /
Cité des Sciences et de l'industrie(Paris)
Tapisserie de l'Apocalypse - Medieval tapestry (Angers)

OTHER GREAT PROJECTS
Disneyland (Paris)
Paris public transportation company / RATP (Paris)
Political Science University / Sciences Pô (Reims)
State Council - Conseil d'Etat Palais Royal (Paris)
Trinity Tower - architectured office building (Paris)

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