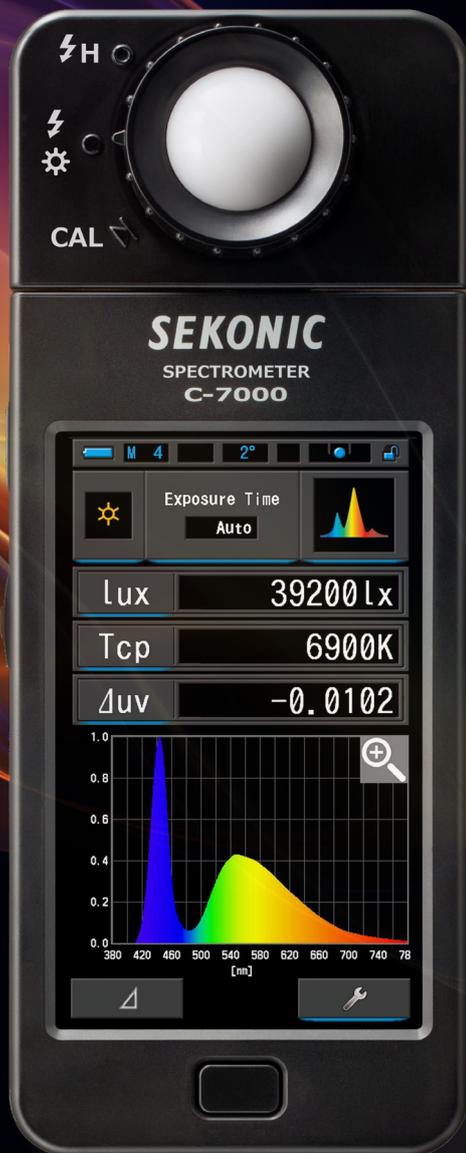


SEKONIC

INDUSTRIAL

LIGHT METERS
SPECTROMETERS

THE ULTIMATE COLOR AND LIGHT CONTROL BECAUSE ILLUMINATION MATTERS



SEKONIC

The Ultimate Light and Color Control, Because Illumination Matters

Lighting solutions and applications have never been in greater demand and expansion as they are today. Fueled by advances in lighting technology such as OLED's, lighting has become just as much a lifestyle today as it is a necessity in our daily lives.

Lighting and design play an integral part in nearly every lighting market. Applications ranging from automobile, residence, horticulture, medical and manufacturing, just to name a few have increases their use and demand for better quality and efficient lighting designs. Over the years several lighting solutions have been introduced to challenge the filament light bulb, but none has come as close as the Light Emitting Diodes (LED). LED meet the basic goals of output, efficiency, and cost for nearly every category of the lighting industry. From the first Space Shuttle missions, NASA and their scientists recognized the value of LED's and developed it. Their focus on plant growth in space led the way for LED technology and it continues in today's plant growth industry, in addition to other markets.

The demands for high quality, color consistency and high output remain the key component in lighting design. Driven by demanding professional imager both still and motion, full color spectrum lighting has helped to drive the new lighting solutions towards perfection in every application. Industries such as horticulture, interior architecture, aeronautics, medical and much more have demanded significant quality control and accurate color rendering characteristics.

With the overwhelming popularity of these new light sources, the need to understand, manage and control them has never been more critical. Manufacturing quality along with varying color and illumination can often result in consistency issues. In response, Sekonic, a leader for 70 years in light measurement instruments (Photo, Video, Cinema), offers ergonomic, intuitive and an advanced array of light measuring instruments

to meet and exceed the needs of today's lighting engineers and light designers.

Sekonic stepped into the industrial market in 2010, with the introduction of the Illuminometer i-346., offering a compact and affordable foot-candles and LUX meter. In 2014 the Spectrometer C-700 series was launched. It was first large color touch screen interface and provided color measurements of all light sources including wireless flash. In 2015, the Spectrometer C-7000 was added to the product line-up to address industrial color control and precision color measurement interpretation metrics.

In 2016 Sekonic released the SpeedMaster L-858D, offering multi-function light meter capabilities. It provided industrial lighting technicians, the ability to measure flash duration, flash output, 1-degree spot or incident, Illuminance or Luminance measurements through its intuitive large color touch LCD screen.

In 2018, the Spectrometer C-800 entered the market with expanded color rendering properties to address the evolution of the lighting industry. Software enhancements broadened its functionality in both the imaging and industrial markets.

Most recently, the C-7000 software upgrade has addressed demands for new lighting interpretation metrics and metering applications for industrial lighting. The software upgrade offers the popular measuring modes in addition to Continuous/Single measurement, SDK for Remote Control, MAC OS Ready and Preset Display.

The Spectrometer C-7000 continues to lead the way for SEKONIC's expansion and diversification into the industrial lighting market by offering unique and advanced color measurement and analyzing features. It has become a popular handheld solution for countless light and color conscious engineers and designers.

THE ULTIMATE TOOL FOR COLOR CONTROL

The Spectrometer C-7000 is a portable handheld spectrometer, designed especially for industrial use. At home in any lighting designer's firm or engineering lab, the C-7000 provides an extensive selection of measuring modes for every application. Utilizing Sekonic's CMOS linear image sensor design and software, the C-7000 can measure every light source (LED, HMI, Fluorescent, Flash, Natural Light spectrum) with remarkable precision and data feedback. Offering either a 2° or 10° angle of view measurement, select CIE Chromaticity Coordinates, XYZ values, as well as Lux/fc measurements, the C-7000 is the lighting tool for every industrial project. In addition, with recent firmware enhancements it offers expanded lighting interpretation metrics and metering applications for industrial lighting. The new firmware provides expanded color interpretation (TM-30, TLCI/TLMF, SSI and CRI comparison), to enhance its precision color control for every light source. New enhancements provide single and continuous measurement modes, Windows and MAC OS compatibility, Preset Display and SDK (Software Development Kit) in Visual Basic for remote control operation. Finally with the C-7000 Utility software, output of memorized data is provided at every 1nm (nanometer) increments in CSV format.

PRECISION COLOR INTERPRETATION FOR EVERY LIGHT SOURCE

SPECTROMETER (COLOR METER)

- ✓ Measures Color Temperature (TCP) from 1,563 to 100,000 K
- ✓ Expanded Color Interpretation
- ✓ Provides Light Quality Information such as CRI, TM-30, SSI, TLCI/TLMF, and Spectrum distribution graph
- ✓ Measures PPF for plant growth
- ✓ 1nm / 5nm increment spectrum output in CSV format
- ✓ Continues/Single measurement selection
- ✓ Preset Display (Toolbox menu)
- ✓ Windows (7 to 10) and MAC OS (10.13 to 10.15) Ready Utility
- ✓ MiniB USB cable included
- ✓ SDK in Visual Basic (Windows only) for Remote Control
- ✓ For Industrial & Commercial applications
- ✓ For all Light Sources

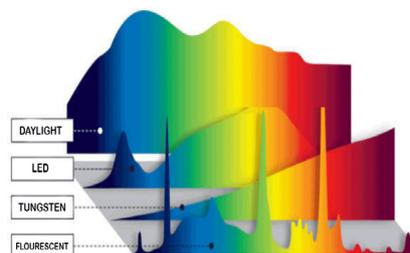
ILLUMINANCE (LIGHT METER)

- ✓ Measures Brightness of Light Sources
- ✓ Provides LUX, Foot-Candle, LUX SECOND and FOOT-CANDLE SECOND
- ✓ Provides AMBIENT or FLASH Measurements
- ✓ Illuminance (1 to 200,000lx = 0.1 to 18,600fc in ambient light, 20 to 20,500lx • s = 1.86 to 1,900fc • s in flash light).
- ✓ It conforms to requirement of "Illuminance meter class" for JIS C 1609-1: 2006 "Illuminance meters Part 1: General measuring instruments" Class A, and DIN 5032 Part 7 Class C.



Precise Measurement

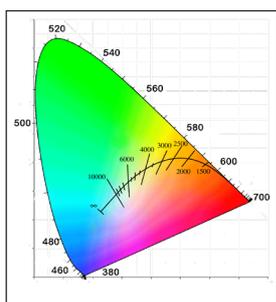
Measures LED, HMI, Fluorescent, Tungsten, Natural Light and Flash in 1 nanometer (nm) output wavelength increments from 380 to 780 nm.



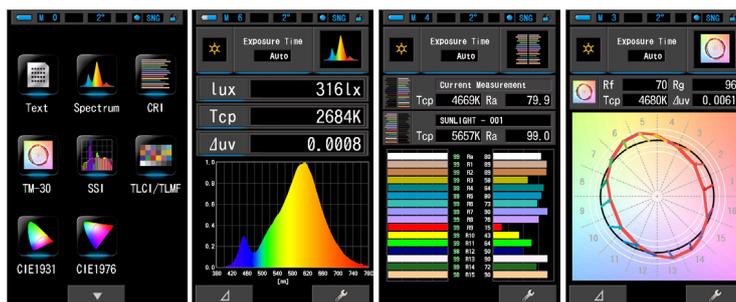
Relative Spectral Power Distribution Graphs



Utilizing a CMOS Linear Image sensor the C-7000 series spectrometer measures any light source with repeatable and precise accuracy



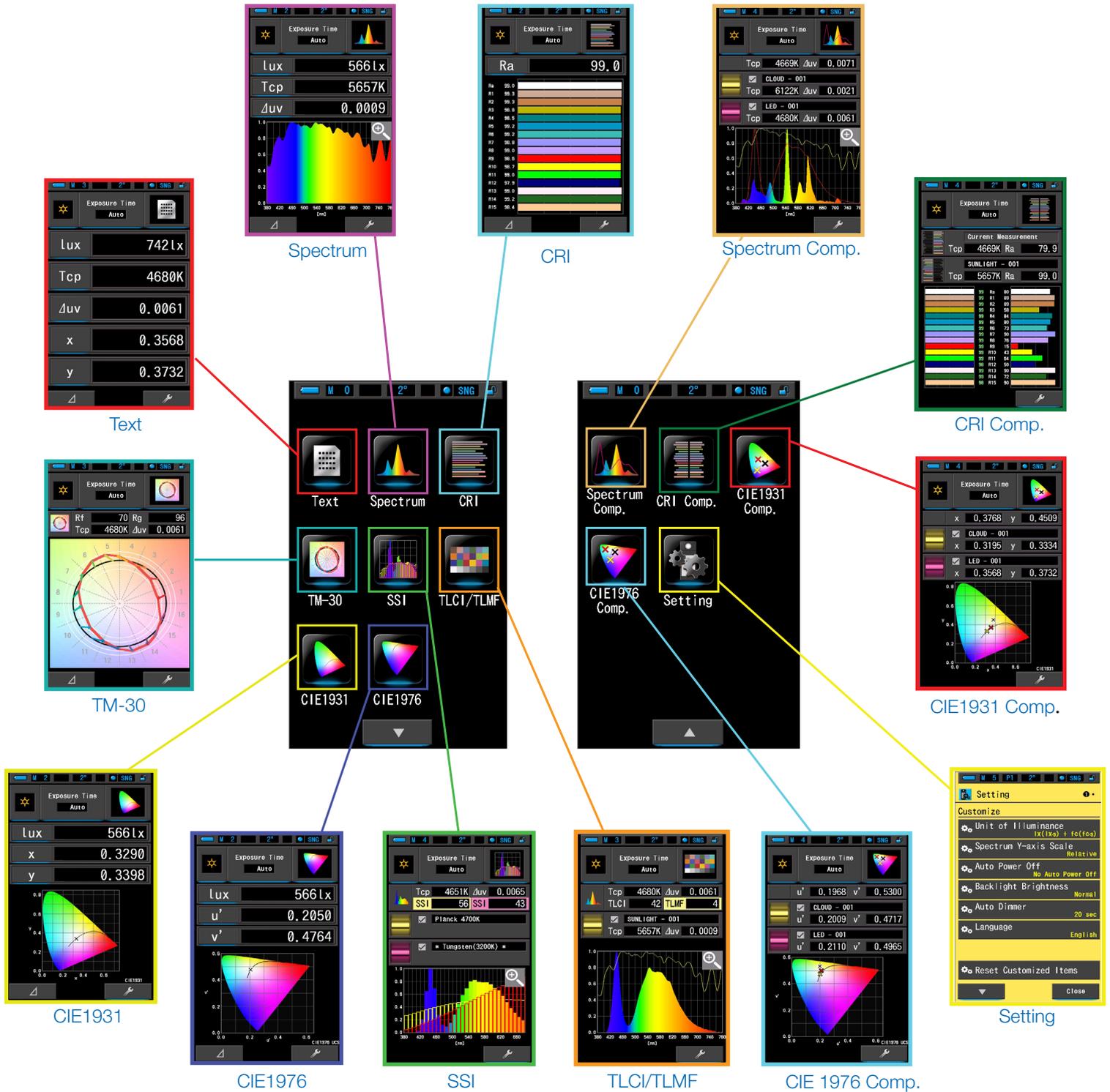
Wide measuring range
*Correlated color temperature (1,563 to 100,000K)
*Illuminance (1 to 200,000lx)



Intuitive color touch screens offer easy navigation through Spectral distribution, lighting comparisons, CRI color data and more

VARIOUS DISPLAY MODES WITH INTUITIVE COLOR TOUCH SCREEN

The C-7000's 4.3" large color touch dot-matrix screen displays various modes and functions in a logical and intuitive layout. The main selection screen displays the quick icons for the following Display Modes.



EXPANDED MEASUREMENT

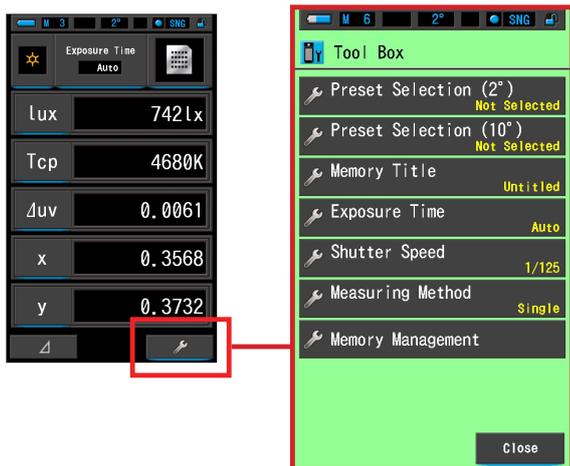
The Spectrometer C-7000 offers a wide selection of measuring values. Access to these values can be quickly selected by a tap of your finger on the appropriate icon.

Field of view	2°	10°	Name	Description
No.	Icon			
1			Correlated Color temperature	Displays the color temperature.
2			Deviation	Displays a deviation from the black body radiation.
3			Tristimulus value	Displays tristimulus value X or X ₁₀ .
4				Displays tristimulus value Y or Y ₁₀ .
5				Displays tristimulus value Z or Z ₁₀ .
6			Chromaticity coordinates	Displays CIE1931 chromaticity coordinates x, or CIE1964 chromaticity coordinates X ₁₀ .
7				Displays CIE1931 chromaticity coordinates y, or CIE1964 chromaticity coordinates y ₁₀ .
8				Displays CIE1931 chromaticity coordinates z, or CIE1964 chromaticity coordinates z ₁₀ .
9				Displays CIE1976 chromaticity coordinates u' or u' ₁₀ .
10			Displays CIE1976 chromaticity coordinates v' or v' ₁₀ .	
11			Dominant wavelength	Displays the dominant wavelength or the complementary wavelength (if the measurement value is negative).
12			Excitation purity	Displays the excitation purity.
13			Peak wavelength	Displays the peak wavelength.
14			Illuminance / luminous	Displays the illuminance or luminous exposure. It can be set on this spectrometer.
15				
16			Fidelity Index	Displays the Fidelity index of TM-30-18 in the value from 0 to 100.
17			Gamut Index	Displays the Gamut index of TM-30-18 in the value from 0 to 200.
18			SSI Tungsten	Displays the SSI index in the value from 0 to 100 in comparison with CIE Tungsten (3200K).
19			SSI Daylight	Displays the SSI index in the value from 0 to 100 in comparison with CIE D55 (5500K).
20			SSI #1	Displays the SSI index in the value from 0 to 100 in comparison with #1 selected light source (yellow graph) in
21			SSI #2	Displays the SSI index in the value from 0 to 100 in comparison with #2 selected light source (red graph) in
22			TLCl	Displays the TLCl index in the value from 0 to 100.
23			TLMF	Displays the TLMF index in the value from 0 to 100 in comparison with selected memorized value.
24			Average Color Rendering Index	Displays the average CRI of R1 to R8.
25			Special Color Rendering Index	Displays the CRI of R1 to R15.
26			Photosynthetic photon flux density	Displays the PPFD.

* Models sold in some countries do not display illuminance and exposure in "fc (fc·s)" due to legal restrictions

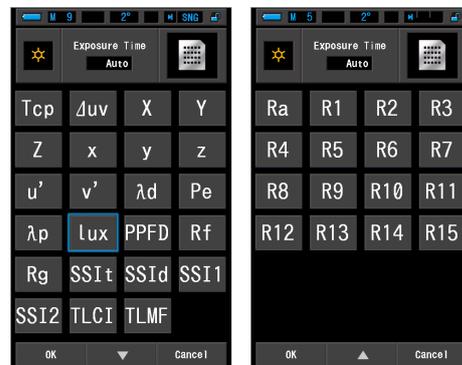
Tool Box

Frequently used settings such as Present selection, Memory titles and Memory management can be selected in the Tool Box by tapping your finger on the wrench icon on all Measuring screen.



Tool Box Item list

No.	Part Name	Description
1	Preset Selection (2°)	Select Field of view angle Preset of (2°)
2	Preset Selection (10°)	Select Field of view angle Preset of (10°)
3	Memory Title	Create special titles for memorized values
4	Exposure Time	Set a Exposure Time for ambient measurement
5	Shutter Speed	Set a shutter speed that is appropriate for the intended flash-ambient measurement
6	Measuring Method	Set a measuring Method from single measurement or continuous measurement
7	Memory Management	Memorized values can be cleaned, renamed or recalled in Memory Management
8	[Close] Button	Closes the Tool Box screen and returns to the Measurement screen.



Customize Your Meter

All settings and preferences can be selected and adjusted within this Setting menu.





Pic 1



Pic 2



Pic 3



Pic 4

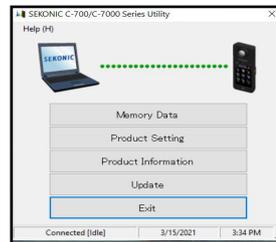
Other Functions

- ✓ Up to 999 readings can be memorized (pic 1).
- ✓ TEXT Screen displays up to 5 user-selected items in numeric values. (pic 2)
- ✓ Dark calibration can be done by turning the Light Selection Ring to set to the dark calibration position or perform it from Setting menu without a cap to cover the light receiving section (pic 3).
- ✓ Two AA batteries or rechargeable batteries conveniently provide portable power (pic 4). A USB cable provides continuous power during measurement, firmware updates, data uploads or downloads and custom settings.
- ✓ 270° swivel head

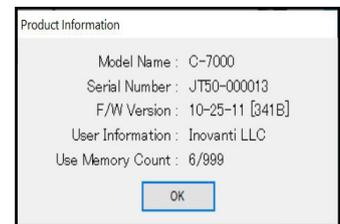
C-7000 Series Utility Software

The C-7000 series Utility (included with the meter) offers an easy way to make meter settings such as shutter speed increments, filter brand selection and Illuminance units (lux or fc). Memorized data can be evaluated and analyzed using the advantage of a larger screen from a desktop or notebook computer. The latest firmware can be quickly and easily updated to the meter.

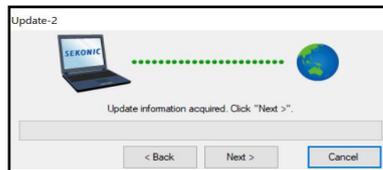
- ✓ Analyzes and saves the memorized data in the computer.
- ✓ Provides convenient selection and adjustment of meter settings.
- ✓ Quick view of Meter Information (serial number, user name, etc)
- ✓ Output 1nm / 5nm increment spectrum memorized data.
- ✓ Updates the meter and Utility Software



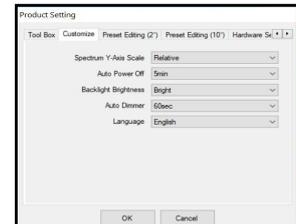
Main Screen



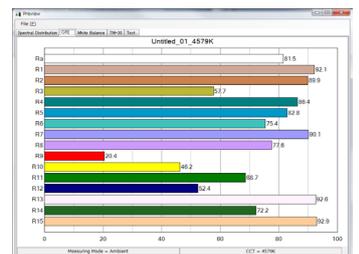
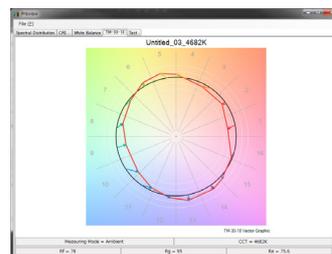
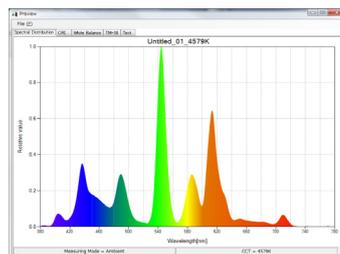
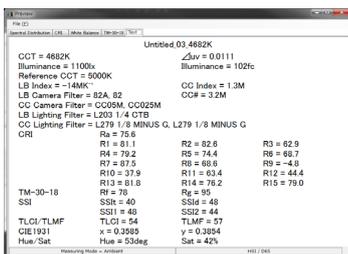
Product Information



Update Screen



Product Setting



Memory Data Preview

THE SUPER TOOL FOR COLOR CORRECTION

The Spectrometer C-800 is a portable handheld spectrometer, designed especially for the still and motion capture industry. However, it addresses many industrial lighting applications, that require its unique color interpretation and color correction modes. Utilizing Sekonic's CMOS linear image sensor design and software, the C-800 can measure every light source (LED, HMI, Fluorescent, Flash, Natural Light spectrum) with accurate color control and expanded color interpretation. Developed from the same platform as the Spectrometer C-7000, the C-800 capture spikes in light source output, especially fluorescent and LED lighting, providing unmatched color measurement performance. In addition, it offers color correction in both CCI and LBi (Camera/Lighting) filters, as well as White Balance corrections and Multi-Light comparison, defining the C-800 as a color evaluation and color balancing spectrometer. With its expanded Color Rendering Properties, the C-800 addresses the evolutionary progress of emerging light sources. Software enhancements now include Spectral Similarity Index (SSI) Television Lighting Consistency Index (TLCI), Television Luminaire Matching Factor (TLMF) and Technical Memorandum (TM-30).



PRECISION COLOR CORRECTION FOR EVERY LIGHT SOURCE

Spectrometer (Color Meter)

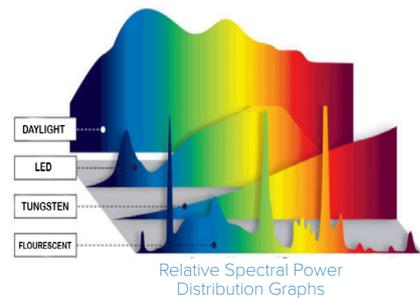
- ✓ Measures Color Temperature (CCT) from 1,600 to 40,000K
- ✓ Expanded Color Interpretation
- ✓ Provides Color Compensation DATA
- ✓ Provides Light Quality Information such as CRI, TM-30, SSI, TLCI/TLMF, and Spectrum distribution graph
- ✓ For Still, Motion and Industrial applications
- ✓ For all Light Sources

Illuminance Meter (Light Meter)

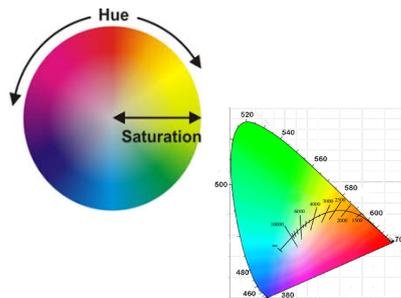
- ✓ Measures Brightness of Light Sources
- ✓ Provides LUX, Foot-Candle, LUX SECOND and FOOT-CANDLE Second
- ✓ Provides AMBIENT or FLASH Measurements
- ✓ Illumination (1 to 200,000lx = 0.09 to 18,600fc in ambient light, 20 to 20,500lx • s = 1.86 to 1,900fc • s in flash light).
- ✓ Conforms to Class A of JIS C 1609-1: 2006

Precise Measurement

Measures every light sources such as LED, HMI, Fluorescent, Tungsten, Natural Light and Flash.



Utilizing a CMOS linear image sensor, the C-800 Spectrometer measures any light source with repeatable and precise accuracy



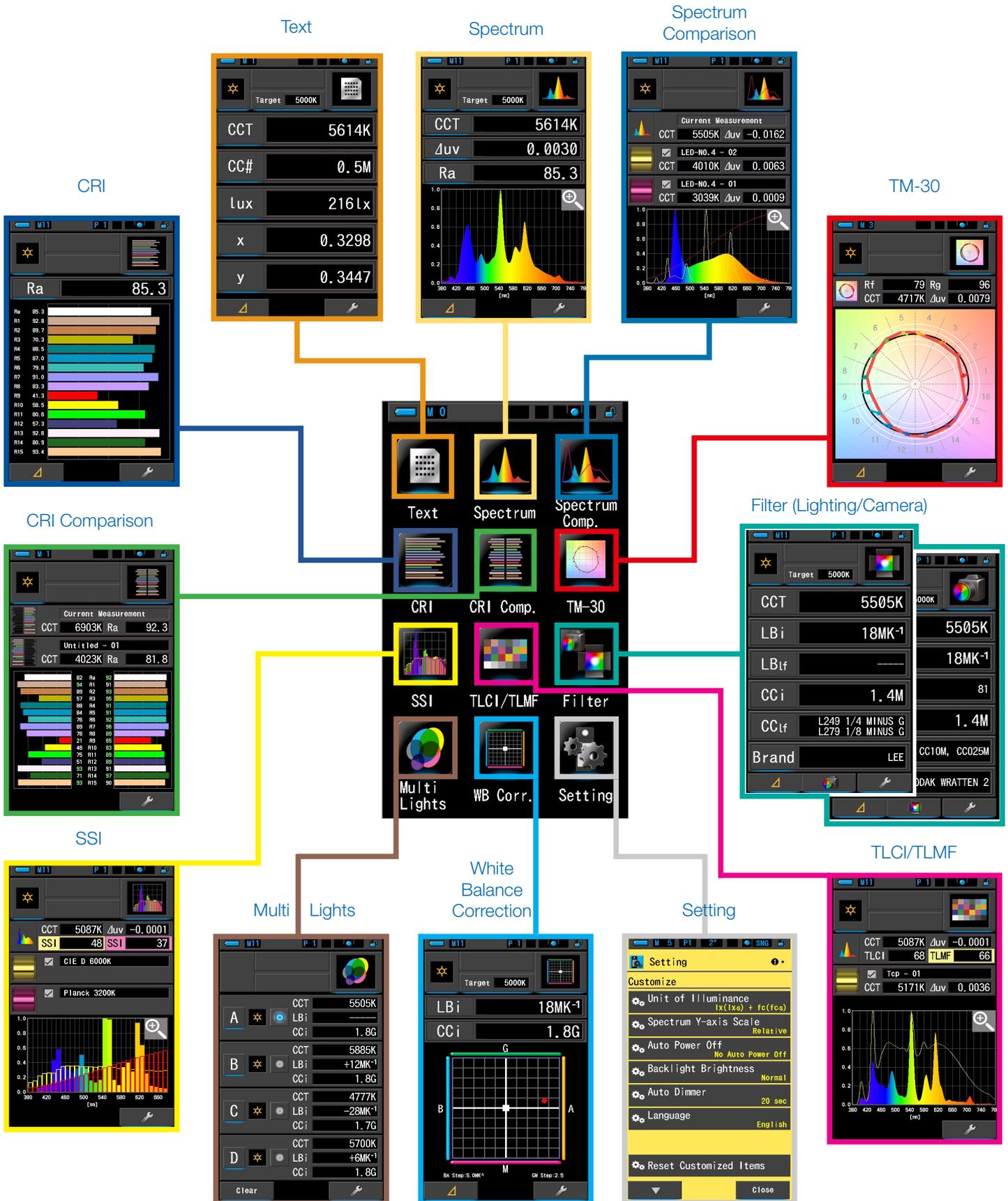
Extended color control parameters such as hue/saturation and x, y (CIE 1931) offer further interpretation and understanding of new data fields for quick and easy use in various lighting applications



Expanded color rendering properties such as SSI (Spectral Similarity Index), TLCI (Television Lighting Consistency Index), TLMF (Television Luminaire Matching Factor) and TM-30 (Technical Memorandum) on top of CRI (Color Rendering Index).

VARIOUS DISPLAY MODES WITH INTUITIVE COLOR TOUCH SCREEN

The C-800's 4.3" large color touch dot-matrix screen displays various modes and functions in a logical and intuitive layout. The main selection screen displays the quick icons for the following Display Modes.

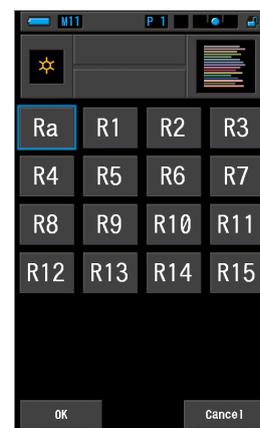


EXPANDED MEASUREMENT AND COMPENSATION VALUES

The C-800 Spectrometer offers a wide selection of measuring values and various compensation solutions. Access to these values can be quickly selected by a tap of your finger on the appropriate icon.

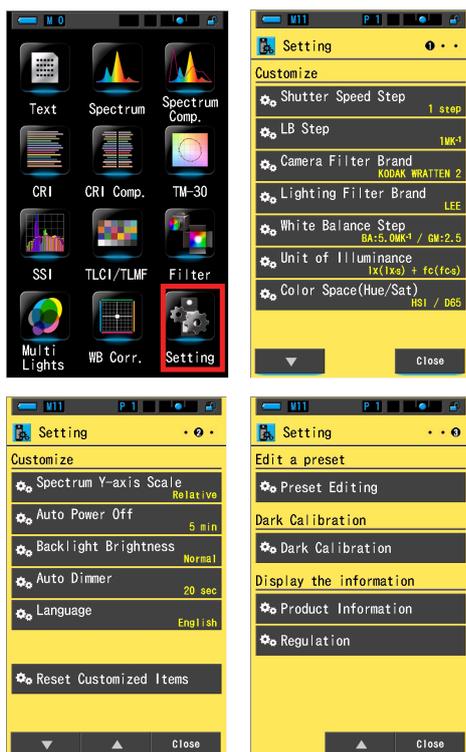
No.	Indication	Name	Description
1	CCT	Color Temperature Display	Displays correlated color temperature.
2	Δuv	Color Temperature Deviation	Displays deviation from the black-body radiation.
3	Lux, fc	Illuminance *	Displays illuminance in lux or foot-candle.
4	Hlx, Hfc	Exposure *	Displays exposure in lux-second or foot-candle-second.
5	CCi	CC Index Correction	Displays the CC correction value in CC index.
6	CC#	CC Filter Number	Displays the CC corrected value in total value of CC filter number.
7	CCcf	CC Camera Filter Correction	Displays the CC correction value in the compensation filter name. The filter brand is selected in the Measuring screens and Setting Mode.
	CClf	CC Lighting Filter Correction	
8	LBi	LB Index Correction	Displays the LB correction value in LB index.
	LBcf	LB Camera Filter Correction	Displays the LB correction value in the compensation filter name. The filter brand is selected in the Measuring screens and "Customize" in the Setting screen.
9	LBlf	LB Lighting Filter Correction	
10	Rf	Fidelity Index	Displays the Fidelity index of TM-30 in the value from 0 to 100.
11	Rg	Gamut Index	Displays the Gamut index of TM-30 in the value from 0 to 200.
12	SSI#	SSI Tungsten	Displays the SSI index in the value from 0 to 100 in comparison with CIE Tungsten (3200K).
13	SSI#	SSI Daylight	Displays the SSI index in the value from 0 to 100 in comparison with CIE D55 (5500K).
14	SSI#1	SSI #1	Displays the SSI index in the value from 0 to 100 in comparison with #1 selected light source (yellow graph) in SSI mode.
15	SSI#2	SSI #2	Displays the SSI index in the value from 0 to 100 in comparison with #2 selected light source (red graph) in SSI mode.
16	TLCI	TLCI	Displays the TLCI index in the value from 0 to 100.
17	TLMF	TLMF	Displays the TLMF index in the value from 0 to 100 in comparison with selected memorized value.
18	x	Chromaticity coordinate x	CIE1931 Chromaticity coordinate x
19	y	Chromaticity coordinate y	CIE1931 Chromaticity coordinate y
20	Hue	Hue	Displays the color (i.e. red, green, blue) in the value from 0 to 359 degrees.
21	Sat	Saturation	Displays the saturation in the value from 0 to 100.
22	Ra	Average CRI	Displays the average value of CRI R1 to R8 in the value of from 0 to
23	R1 to R15	CRI Number	Displays Individual CRI number from R1 to R15 in the value of from 0 to 100.

* Models sold in some countries do not display illuminance and exposure in "fc (fc-s)" due to legal restrictions.



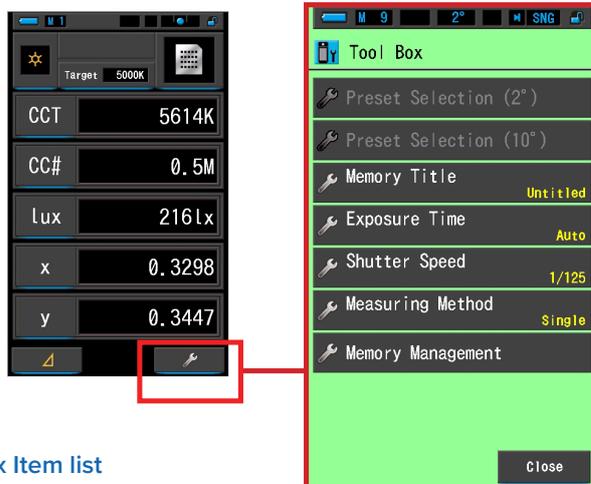
Customize Your Meter

All settings and preferences can be selected and adjusted within this Setting menu.



Tool Box

Frequently used settings such as Present selection, Memory titles and Memory management can be selected in the Tool Box by tapping your finger on the wrench icon on all Measuring screen.

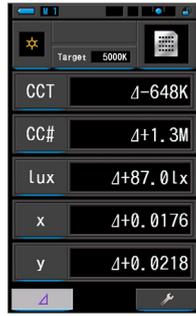


Tool Box Item list

No	Name	Description
1	Preset Selection	Selection screen to apply preset preferences such as camera or lighting filter settings or change the target color temperature.
2	Memory Title	Creates special titles for memorized values.
3	Memory Management	Memorized values can be cleared renamed or recalled.



Pic 1



Pic 2



Pic 3



Pic 4

Other Functions

- ✓ Up to 99 readings can be memorized (pic 1).
- ✓ Comparison Function to show the difference between standard value and currently being measured value (pic 2).
- ✓ Dark calibration can be done by turning the Light Selection Ring to set to the dark calibration position or perform it from Setting menu without a cap to cover the light receiving section (pic 3).
- ✓ Two AA batteries or rechargeable batteries conveniently provide portable power (pic 4). A USB cable provides continuous power during measurement, firmware updates, data uploads or downloads and custom settings.
- ✓ 270° swivel head

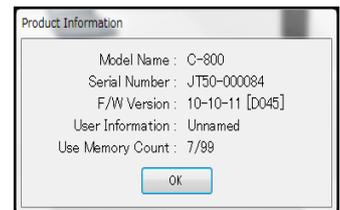
C-800 Series Utility Software

The C-800 series Utility (included with the meter) offers an easy ways to make meter settings such as shutter speed increments, filter brand selection and Illuminance units (lux or fc). Memorized data can be evaluated and analyzed using the advantage of a larger screen from a desktop or notebook computer. The latest firmware can be quickly and easily updated to the meter.

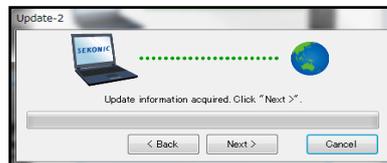
- ✓ Analyzes and saves the memorized data in the computer
- ✓ Provides convenient selection and adjustment of meter settings
- ✓ Quick view of Meter Information (serial number, user name, etc)
- ✓ Updates the meter and Utility Software
- ✓ Captures the meter screen
- ✓ Saves data on computer can be transferred to the meter



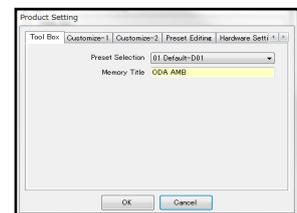
Main Screen



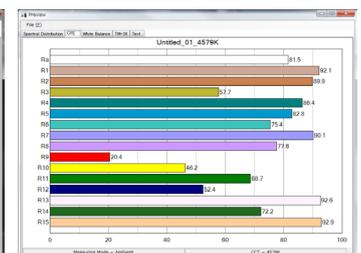
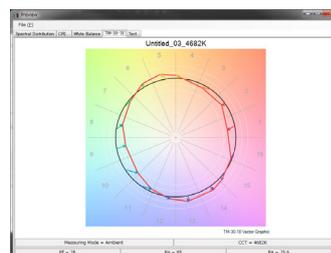
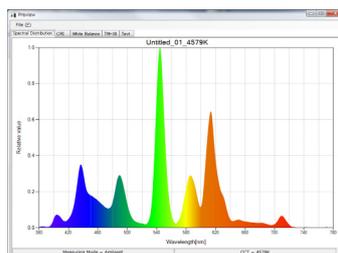
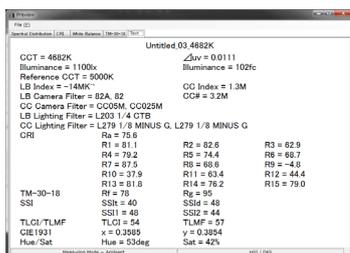
Product Information



Update Screen



Product Setting



Memory Data Preview

THE MOST INNOVATIVE & MULTI-PURPOSE LIGHTING TOOL

The Sekonic SpeedMaster L-858D combines more than 70 years of Sekonic innovation with cutting-edge, light meter design to bring you the most accurate, easy-to-use, innovative, and flexible hand-held device to meet any lighting demand. Incorporating a 1°-degree spot metering system with illuminated viewfinder display, the SpeedMaster L-858D provides luminance measurements without ever taking your eye off the light source. In addition, a built-in retractable and rotating Lumisphere offers illuminance measurements even in tight spots, all in one meter. As you would expect, units of measurements are selectable from luminance foot-lambert (fl) to cd/m^2 and illuminance foot-candle (fc) to lux (lx) respectively. However, the SpeedMaster L-858D doesn't stop there, it incorporates an extensive array of measuring functions to meter every light source's brightness and lighting ratio. Providing up to 20 different measuring modes, the SpeedMaster L-858D meets and exceeds the expectations of demanding lighting engineers and field evaluations technicians. With its flexible multi-function capabilities, the SpeedMaster L-858D measures ambient light, as well as flash bursts such as traffic camera systems, industrial, manufacturing, and scientific applications. Critical flash data required for calculating the effects of ambient-flash conditions are easily displayed simultaneously while taking a measurement. As its name implies, the SpeedMaster L-858D also measures brief flash burst for precision flash duration calculations. In addition, the SpeedMaster L-858D is loaded with Photo, Video and Cinema features and functions to meet and exceed every lighting condition. All weather design, wireless triggering (with optional radio transmitter), utility software and optional accessories all add to an incredible measuring tool in the palm of your hand.

ULTIMATE MULTI-FUNCTION LUMINANCE AND ILLUMINANCE METER

LUMINANCE MODE:

- ✓ 1°-degree built-in Spot Meter- Measure advertising displays, instrument panels, traffic signs or any luminance with quick and consistent real-time measurements.
- ✓ Illuminated EL-digital viewfinder: Read measure values without the need to remove your eye from the light source.
- ✓ Accurate targeting of the selected subject is easy with its SLR lens design.
- ✓ An optional lens shade/step-up ring, accommodates close-up lenses for extreme close measurements.
- ✓ Adjustable diopter eye piece provides sharp viewing.
- ✓ Utilizing its silicon photo diode sensor, the L-858D measures from 0.10 to 980,000 cd/m^2 (0.03 to 290,000 fl)

ILLUMINANCE MODE:

- ✓ Rotating / Retractable Lumisphere: measuring streetlights, retail displays, warehouse, factory, stage lighting or any illuminance is repeatable and precise.
- ✓ 2.7-inch color LCD touch screen: displays continuous measurements to indicate brightness changes in real time, as well as single measurements.
- ✓ Analog scale: simultaneously displays individually measured values.
- ✓ Memory Mode: Up to 9 memorized values can be stored, recalled, and averaged.
- ✓ Custom Adjustments: Filter correction factors, User calibration and compensation for fine tune.
- ✓ Utilizing its silicon photo diode sensor, the SpeedMaster L-858D measures from 0.10 to 2,000,000 lx (0.01 to 180,000 fc)



The rectangular 1° optical spot viewfinder displays, cd/m^2 , foot-lambert, EV, f-stop, shutter speed, percentage of flash and much more with an EL digital display.



Provides direct custom and user settings, firmware update as well as exposure profiling in photo/video modes. Compatible with Windows and mac platforms.



Accurate targeting of a subject is quick with the SLR designed 1 deg Spot lens. For ease of use the eye piece provides an adjustable diopter for sharp viewing.



The L-858D offers illuminance (lx, fc) and luminance (cd/m^2 , fl) independently or combined with other measuring modes.



All Weather Design-All buttons, switches and compartments are sealed, and the housing has been design to endure rugged outdoor conditions.

FLASH DURATION MEASUREMENTS

Measuring the flash duration or “burn time” of a flash is critical when determining the performance and consistent of a flash tube during manufacturing. Safety/hazard, traffic camera strobes, medical, entertainment, as well as photographic industries require accurate measurements of the duration of a strobe. Usually a flash duration meter is offered only as a single function meter, but the SpeedMaster L-858D puts all that in the past with selectable flash duration measures from 1/40s to 1/55,500 sec (25 ms to 18 us) with t0.1 to t0.9 (in 0.1 steps).

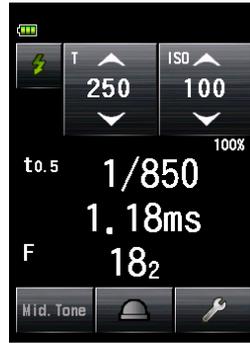
Strobe duration is measured in mill-seconds to set stage lighting effects



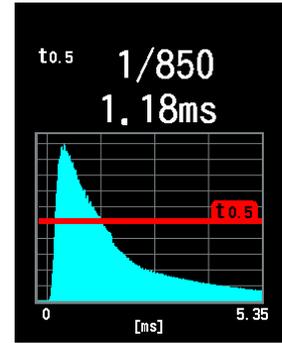
Proper strobe duration is measured for Safety/Hazard strobes using the Spot Metering mode



Flash Duration Analysis Measuring Screen



Flash Duration Analysis Graph Screen



1 DEGREE SPOT WITH DIGITAL DISPLAY

The rectangular 1° spot viewfinder displays cd/m², Footlamberts, EV, f-stop, shutter speed, percentage of flash and much more with an EL (Electronic-Luminescent) digital display after switching from incident to spot measurement mode. It incorporates a parallax-free spot finder preventing erroneous close-up photography light measurements. With its super sensitive sensor, the SpeedMaster L-858D can measure the reflected flash output down to an amazing f/1.0 and ambient measurements as low as EV-1. In addition, it also includes an adjustable diopter eyepiece.



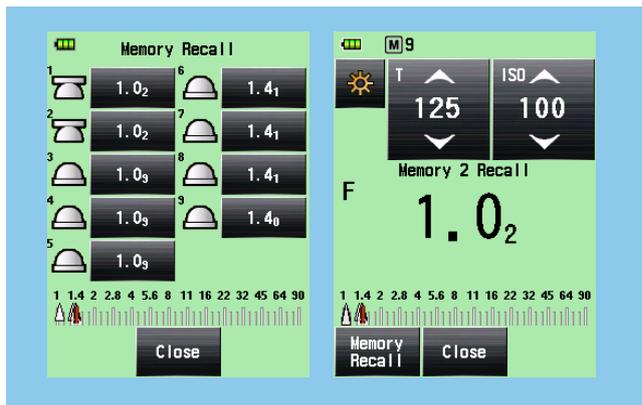
UTILITY – DATA TRANSFER SOFTWARE:

Compatible with Windows or Mac operating systems, the Sekonic Data Transfer Software provides custom and user settings for quick and easy selection. Firmware and Data Transfer Software updates are conveniently checked and uploaded in the update setting tab. The Data Transfer Software also features Exposure Profiling for Photo/Video applications.



MEMORIZE UP TO NINE READINGS:

The SpeedMaster L-858D can memorize measured values in both incident and reflected light modes independently or combined. Memorized values are recalled in the Tool Box menu, and displayed all at once. When one of the memorized values are selected, the value on the Measuring Screen appears. In addition, you can delete individual (selected) or all readings from memory



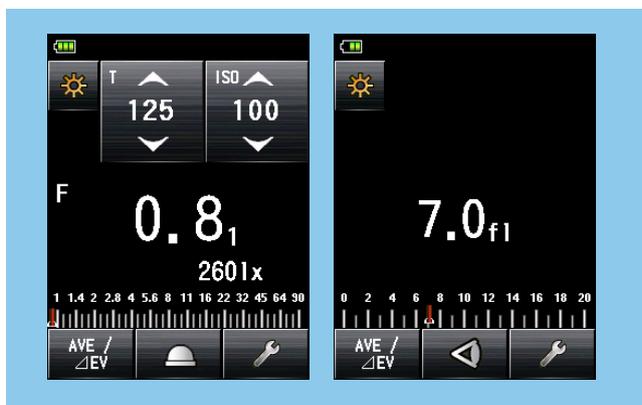
ILLUMINANCE OR LUMINANCE MEASUREMENT

A unique blend of illuminance and luminance measuring capabilities, the SpeedMaster L-858D offers a quick switch from one mode to the next effortlessly. Illuminance are displayed on a 2.7" color touch screen in either lux (lx) or foot-candle (fc). Luminance measurements in either cd/m² or foot-lambert (fl) are view through a 1-deg SLR lens design with an illuminated EL-digital viewfinder display provides real-time measurements without the need to remove your eye from the light source



CONTRAST FUNCTION:

The SpeedMaster L-858D continuous measurement mode provides a contrast range measurement to evaluate the overall lighting conditions. In addition, you can also check lighting ratios or the evenness of an illuminated lightsource or the ambient light distribution of a warehouse, factory, greenhouse or stadium illumination. Changes in the measured values are related to a saved measurement such as the center of a light-source or selected brightness point within the environment by pressing AVE/ΔEV icon.



ALL WEATHER DESIGN:

All buttons, switches and compartments are sealed, and the housing has been designed to endure rugged outdoor conditions with dust-proof and splash-proof (JIS Standard Water Resistance Class 4). Ideal for on-location shooting, at the beach, in the rainy or in humid environments.



SPECIFICATION AND COMPARISON CHART



Product Name and Model		C-7000	
Illuminance Meter Class		* Class A of JIS C 1609-1: 2006 "Illuminance meters Part 1: General measuring instruments"	
Sensor		CMOS linear image sensor	
Spectral Wavelength Range		380nm to 780nm	
Output Wavelength Pitch		1nm (Requires the C-7000 Utility to output memorized data)	
Spectral Bandwidth		Approx. 11nm (half bandwidth)	
Measuring Mode		Ambient light:	Yes
		Cord flash	Yes
		Cordless flash	Yes
		Radio triggering	No
Measuring Range	Incident light	Ambient light:	1 to 200,000lx (3 significant digits) 0.09 to 18,600fc 1,563 to 100,000K (more than 5lx required)
		Flash Light:	20 to 20,500lx*s 1.86 to 1,900 fc*s 2,500 to 100,000K
	Reflected light	Ambient light:	N/A
		Flash Light:	N/A
Accuracy (Standard Illuminant A)		Illuminance: $\pm 5\% \pm 1$ digit (1 to 2,990lx), $\pm 7.5\% \pm 1$ digit (3,000 to 200,000lx) x,y: 0.003 (Standard Illuminant A, 800lx)	
Repeatability (Standard Illuminant A)		Illuminance: $1\% + 1$ digit (30 to 200,000lx), $5\% + 1$ digit (1 to 29.9lx) x,y: 0.001 (500 to 200,000lx) x,y: 0.002 (100 to 499lx) x,y: 0.004 (30 to 99.9lx) x,y: 0.008 (5 to 29.9lx)	
Visible-region Relative Spectral Response Characteristics (f1')		Within 9%	
Cosine Response (f2)		Within 6%	
Temperature Drift (fT) (Standard Illuminant A 1,000lx)		Illuminance: $\pm 5\%$ of indicated value x,y: ± 0.006	
Humidity Drift (fH) (Standard Illuminant A 1,000lx)		Illuminance: $\pm 3\%$ of indicated value x,y: ± 0.006	
Power Source		AA (1.5v) x 2 pcs, USB bus power	
Measurement Time	Ambient light:	Auto - Max.: 15 sec., Min.: 0.5 sec. Manual - 0.1s, 1sec.	
	Flash Light:	1s to 1/500s (in 1 step)	
Display Mode		Text mode, Spectrum mode, CRI mode, TM-30 mode, SSI mode, TLCI/TLMF mode, CIE1931 (CIE1964) mode, CIE1976 mode, Spectrum Comparison mode, CRI Comparison mode, CIE1931 (CIE1964) Comparison mode, CIE1976 Comparison mode	
Measuring Capability (Display Item)		Correlated Color Temperature (T _{cp}), Deviation (Δuv), Tristimulus value (XYZ / X ₁₀ Y ₁₀ Z ₁₀), CIE1931/1964 (xyz / x ₁₀ y ₁₀ z ₁₀), CIE1976 (u', v' / u' ₁₀ v' ₁₀), Dominant wavelength (λ_d), Excitation purity (P _e), Peak wavelength (λ_p), Lux(lx) or Foot-Candle(fc) – ambient light, Lux Second(Hlx) or Foot-Candle Second(Hfc) – flash light, PPFd, TM-30 (Rf, Rg), SSI (Tungsten, Daylight, SSI1, SSI2), TLCI/TLMF, CRI (Ra, R1 to R15)	
Other Functions		Up to 999 memory, Preset function, Auto power off, Auto dimmer, 2 or 10 deg. filed of view setting, Continuous/Single measurement selection	
Display languages		English, Japanese, Chinese (Simplified)	
Interface		USB 2.0 (Mini B)	
Operating Temperature		-10 to 40 deg. C	
Storage Temperature		-10 to 60 deg. C	
Dimensions		73mm (w) x 183mm (h) x 27mm (d) = 2.9" (w) x 7.2" (h) x 1.1" (d) (excluding protruding part of light receiving) max. thickness 40mm (d) = 1.6" (d)	
Weight		230g = 8.1oz (without batteries)	
Standard	Software/Utility	Yes (included in the package)	
Accessory	Operating Manual	Yes (Downloaded from website)	
	USB cable	Yes (included in the package)	
	Start Up Guide	Yes (included in the package)	
	Strap	Yes	
	Synchro terminal	Yes (built-in)	
	Soft case	Yes	

Features and specifications are subject to change without notice.

C-800	L-858D
* Class A of JIS C 1609-1: 2006 "Illuminance meters Part 1: General measuring instruments"	N/A
CMOS linear image sensor	Simplified illuminance/luminance measurements only
380nm to 780nm	Silicon Photo Diode
N/A	N/A
Approx. 11nm (half bandwidth)	N/A
Yes	Yes
Yes	Yes
Yes	Yes
No	Yes, (Broncolor, Elinchrom, Godox, Phottix Strato II, PocketWizard)
1 to 200,000lx (3 significant digits)	0.1 to 2,000,000lx (2 significant digits)
0.09 to 18,600fc	0.01 to 180,000fc
1,600 to 40,000K (more than 5lx required)	N/A
20 to 20,500lx*s	F0.5 to F161.2(=128.9)
1.86 to 1,900 fc*s	
2,500 to 40,000K	
N/A	0.1 to 980,000 cd/m ²
N/A	0.03 to 290,000 fl
N/A	F1.0 to F161.2(=128.9)
Illuminance: ±5% ± 1 digit (1 to 2,990lx), ±7.5% ± 1 digit (3,000 to 200,000lx)	N/A
CCT: ±4MK ⁻¹ (Standard Illuminant A, 800lx)	N/A
Illuminance: 1% + 1 digit (30 to 200,000lx), 5% + 1 digit (1 to 29.9lx)	N/A
CCT: 2MK ⁻¹ (500 to 200,000 lx)	N/A
CCT: 4MK ⁻¹ (100 to 499 lx)	N/A
CCT: 8MK ⁻¹ (30 to 99.9 lx)	N/A
CCT: 17MK ⁻¹ (5 to 29.9 lx)	N/A
Within 9%	N/A
Within 6%	N/A
Illuminance: ±5% of indicated value	N/A
CCT: ±12MK ⁻¹	N/A
Illuminance: ±3% of indicated value	N/A
CCT: ±12MK ⁻¹	N/A
AA (1.5v) x 2 pcs, USB bus power	AA (1.5v) x 2 pcs
Auto - Max.: 15 sec., Min.: 0.5 sec.	N/A
N/A	30m to 1/64,000s in 1, 1/2, 1/3 step
1s to 1/500s (plus 1/75, 1/80, 1/90, 1/100, 1/200, 1/400) (in 1, 1/2, 1/3 step)	30m to 1/16,000s in 1, 1/2, 1/3 step
Text mode, Spectrum mode, Spectrum comparison mode, CRI mode, CRI comparison mode, TM-30 mode, SSI mode, TLCI/TLMF mode, Filter mode (Camera / Lighting), Multi Lights Mode, White Balance Correction Mode	T priority mode, F priority mode, TF priority mode, HD_CINE (T priority) mode, CINE (f/s priority) mode, Lux/FC mode, Cd/m ² /FL mode, Cordless/cord-in mode, Radio triggering mode, Multiple cumulative flash mode, HSS mode, Flash duration analysis
Correlated color temperature (CCT), Deviation (Δ uv), LB/CC filter number (camera/gel), LB/CC index, CC number, Lux(lx) or Foot-Candle(fc) – ambient light, Lux Second(Hlx) or Foot-Candle Second(Hfc) – flash light, CRI (Ra, R1 to R15), Rf, Rg, SSI (daylight, tungsten, selected light source), TLCI, TLMF, x, y, Hue, Saturation,	ISO Sensitivity, Aperture, Shutter speed, EV, Flash duration, Lux(lx), Foot-Candle(fc), Cd/m ² , Foot- Lambert(fl), Flash analyzing %
Up to 99 memory, Preset function, Auto power off, Auto dimmer	Up to 9 memory, Exposure profile, Average, Contrast function, Flash analyzing, Filter compensation, Filter factor number compensation, Exposure compensation, Calibration compensation, Custom settings, LCD backlight, Water resistance, Diopter adjustment, Tripod socket
English, Japanese, Chinese (Simplified)	English, Japanese, Chinese (Simplified)
USB 2.0 (Mini B)	USB 2.0 (Micro B)
-10 to 40 deg. C	-10 to 50 deg. C
-10 to 60 deg. C	-20 to 60 deg. C
73mm (w) x 183mm (h) x 27mm (d) = 2.9" (w) x 7.2" (h) x 1.1" (d) (excluding protruding part of light receiving) max. thickness 40mm (d) = 1.6" (d)	94mm (w) x 176mm (h) x 49mm (d) = 3.7" (w) x 6.9" (h) x 1.9" (d) (excluding protruding part of light receiving)
230g = 8.1oz (without batteries)	240g = 8.5oz (without batteries)
Yes (Downloaded from website)	Yes (Downloaded from website)
Yes (Downloaded from website)	Yes (Downloaded from website)
No (optional)	No (optional)
Yes (included in the package)	Yes (included in the package)
Yes	Yes
Yes (built-in)	Yes (built-in)
Yes	Yes

COMPARISON



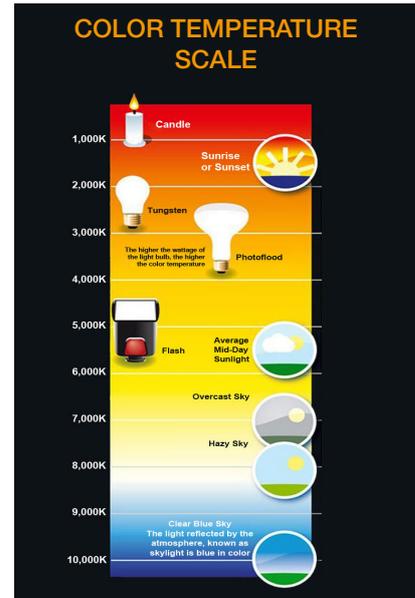
COMPARISON CHART C-7000 VS C-800

	C-7000	C-800
Targeted Users	Industrial (lighting manufacturer, lighting designer, etc.)	Photographer, filmmaker, some industrial use
Measuring Range	1,543 to 100,000K 1 to 200,000lx 20 to 20,500lx · s	1,600 to 40,000K 1 to 200,000lx 20 to 20,500lx · s
Measurement Unit	Kelvin, Δ_{uv} , lx, fc, Hlx, Hfc, Ra, R1 to R15, Rf, Rg, SSIt, SSId, TLCl, XYZ, xyz, u'v', λ_d , λ_p , Pe, PPFd	Kelvin, Δ_{uv} , LB/CC index, LB/CCIf, LB/CCcf, lx, fc, Hlx, Hfc, Ra, R1 to R15, Rf, Rg, SSIt, SSId, TLCl, xy, Hue/Saturation,
Display Mode	Text, Spectrum, Spectrum comp., CRI, CRI comp., TM-30-18, SSI, TLCl/ TLMF, CIE1931 (CIE1964), CIE1931 (CIE1964) comp., CIE1976, CIE 1976 comp.	Text, Spectrum, Spectrum comp., CRI, CRI comp., TM-30-18, SSI, TLCl/TLMF, Filter (Camera or Lighting), Multi lights, WB comp.
Other Functions	Continuous/Single measurement selection, Up to 999 memory, 1nm increment spectrum output by Utility, 2° or 10° field of view	Up to 99 memory, Memory title can be edited in Utility, Memorized value can be saved back and forth between computer and meter.

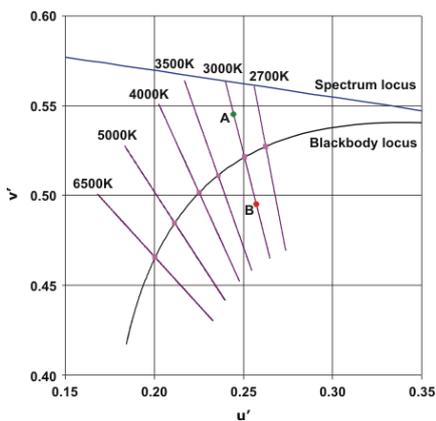
WHAT IS COLOR TEMPERATURE?

Color temperature is a way of describing the Color (chromaticity) of a light source in a numeric value. It is usually expressed as either warm (yellowish) or cool (bluish) and measured in Kelvin (K). Color temperatures over 5,000K are called cool colors (bluish white). Clear blue skies, electronic flash and certain continuous light sources are examples of 'cool' blue light. Lower color temperatures (under 3,000 K) are called warm colors (orange or red), candles, sunsets and tungsten bulbs are examples of these types of light sources. The Kelvin Color Temperature scale is based on heating an object at various degrees of physical heat and recording the color changes. For example,

if we heat up a lamp filament at some point, the filament will get hot enough to begin to glow. As it gets hotter, its glowing color will change, moving from deep reds, such as a low burning fire, to oranges and then yellows and finally up to white superhot. Light sources that glow in this manner are considered "incandescent radiators" (like blackbody) and the advantage to them is that they have a continuous spectrum of light. This means that they radiate light energy at all wavelengths of their spectrum, thus render all the colors of a scene being illuminated by them, equally. Only light from sources functioning in similar ways can meet the definition of color temperature.



WHAT IS CORRELATED COLOR TEMPERATURE (CCT)?



Incandescent radiators (such as a filament light bulb) glow in different colors as they get hotter and measured for their color temperature in Kelvin degrees (K). However, light sources, that don't have similar characteristics as incandescent radiators are measured by their color appearance or "Correlated Color Temperature" (CCT). Their reference to any part of the color temperature chart is strictly visually based. These types of light sources are defined by their proximity to the light source's chromaticity's coordinates on the blackbody locus (only one number is used, rather than the two necessary to identify a specific chromaticity). Lights with a correlated color temperature do not have an equal radiation at all wavelengths in their spectrum. These types of light sources create a disproportionate level (high & low) of color rendering. However, because CCT is easier to communicate value than chromaticity, lighting industries have accepted CCT as an abridged version of reporting the color appearance of "white" light emitted from various light sources. Most commercially available light sources offer a CCT range from 2700 K to 6500 K. their values are intended to give lighting designers and specifiers a general indication of the level of "warmth" or "coolness" created by the light source.

WHY IS COLOR TEMPERATURE IMPORTANT?

In order to accurately view or evaluate objects, environments, events or grow various plants, the consistence of color temperature and illumination of light is extremely important.

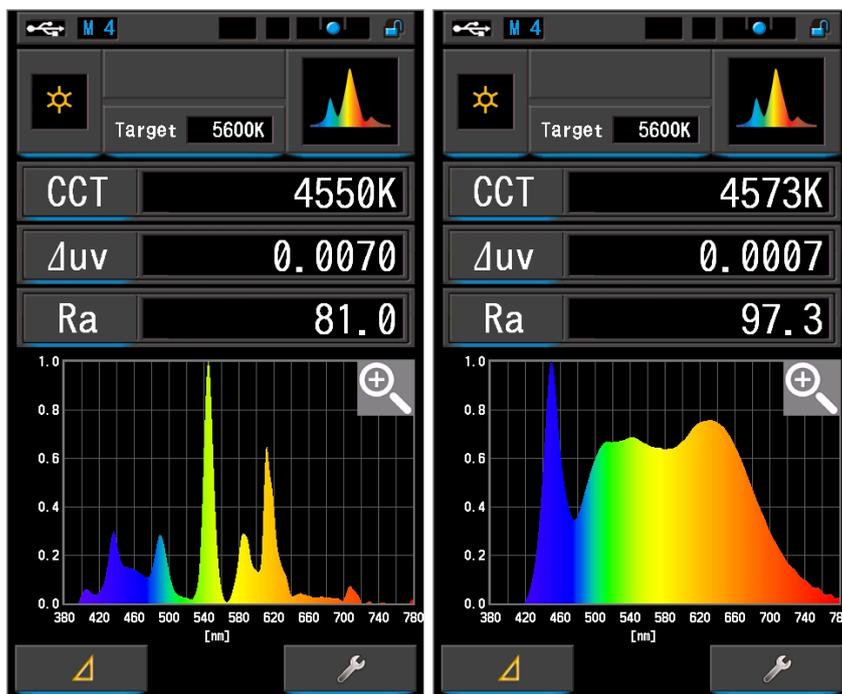
Like photography, videography and cinematography, light sources need to produce consistent, repeatable, and correct color temperature for optimum color representation. However, color temperature can be even more important for industrial lighting applications. Because different light

sources can change the appearance of a product finish, the mood in theater lighting, a medical evaluation, quality control in manufacturing, proper plant growth and even the perceived value of jewelry, its critical to select and maintain the desired color temperature of a light source. Without color temperature control, the color of lighting can have a large impact on how people experience an environment or accurately achieve a desired result.



ARE ALL LIGHT SOURCES THE SAME COLOR TEMPERATURE?

As explained earlier, the color temperature of a light source is based on how it compares to a heated object such as a filament from a light bulb (black body radiator). As this object heats up at some point it will get hot enough to begin to glow. As it gets hotter, its glowing color will change, moving from deep reds up to superhot white. Light sources that glow in this manner are considered as “Incandescent radiators”, and they have a continuous spectrum of light. This means that they radiate light energy at all wavelengths of their spectrum. Light sources that are not “incandescent radiators” don’t react in the same way as they emit energy in different ways and from different power sources. All light sources have varying color temperatures and are often within a projected range that can be classified as closer to warmer (Tungsten balanced), or cooler, (daylight balanced) temperature. However, they may not render color accurately or at all throughout the spectrum even though they have same color temperature.

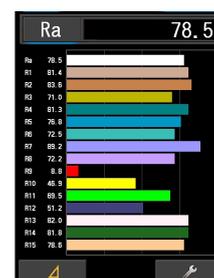


Fluorescent Lamp
4550K
Ra: 81.0

LED
4573K
Ra: 97.3

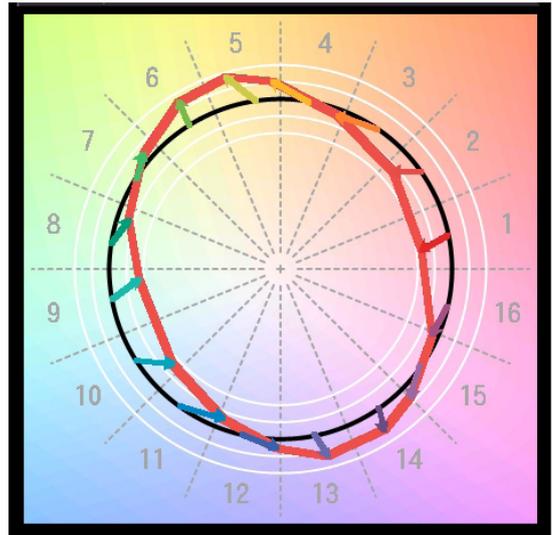
WHAT IS CRI AND WHY IS IT IMPORTANT?

CRI (Color Rendering Index) is a quantitative measure revealing the ability of a light source to represent the colors of various objects faithfully in comparison with an ideal or natural light source. The Color Rendering Index (CRI) is a scale from 0 to 100, which describes how a light source makes the color of an object appear to the human eye and how well subtle variations in colors and shades are revealed. The higher the CRI, the better the color rendering ability. A Black Body Radiator (i.e.: a filament from a light bulb) is considered the “reference” light source and they produce a CRI value of 100. CRI values can be evaluated from R1 through R8 (color rendering index) and R9 through R15 (special color rendering index). Each R value represents a color for specific color rendering performance for the measured light source. Ra is commonly used because it represents an average color rendering performance of a light source from R1 through R8. It is important to measure various light sources for their CRI values before using them.



WHAT IS TM-30 AND WHO USES IT?

TM-30 is an acronym for Technical Memorandum number 30 and is published by the Illumination Engineering Society (IES). It is standard used to evaluate light source color rendering capabilities including LED. The values are based on color appearance of objects with 99 color samples compared to their appearance under the defined reference illuminant. Within the TM-30 standard, there is a Fidelity Index (Rf), which expresses the accurate rendition of color and the Gamut Index (Rg) which expresses what the average level of saturation is. TM-30 is commonly used by lighting producers, designers, and R&D because of its accuracy and expanded range of information provided as compared to predecessor tools for assessing color rendition.

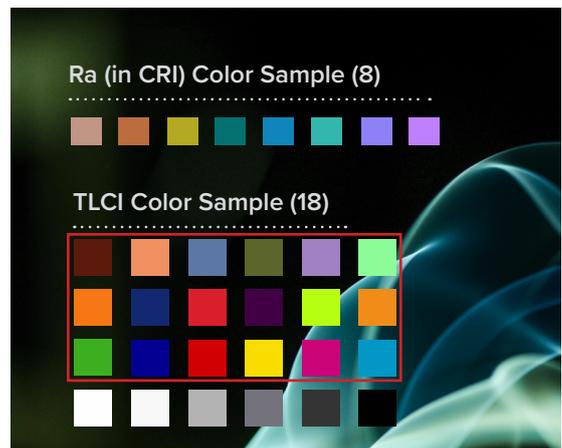


WHAT IS TLCI/TLMF AND WHO USES IT?

TLCI was developed by EBU (European Broadcasting Union) and it is the acronym for Television Lighting Consistency Index. This measuring standard is a method of evaluating the color rendition (the color appearance of objects) under a reference light source with 18 color samples and a mathematical model of a broadcast camera to see the colors. TLCI is an index used to evaluate television lighting equipment.

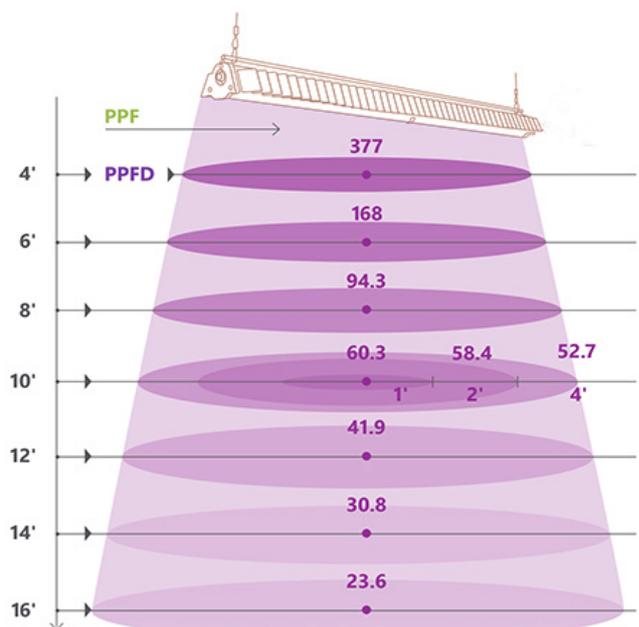
Similar to TLCI, Television Lighting Matching Factor (TLMF) provides the end-user the ability to set the data of their desired Light as the reference point or benchmark. TLMF is useful when several different light sources are being mixed and usually don't share the same light color characteristics.

According to EDU Tech3355, TLCI and TLMF are calculated in the same way (TLMF is an extension to TLCI). The higher the number, the closer you are to your reference. TLCI is comparing a light with a theoretical reference standard. TLMF is comparing a light with another light.



WHAT IS PPF AND WHO USES IT?

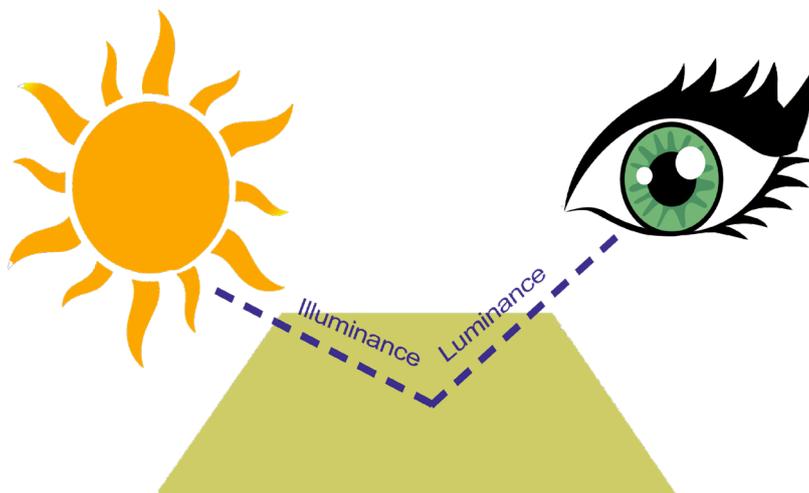
PPFD is the acronym for photosynthetic photon flux density. It is a unit of measurement that measures the number of PAR (photosynthetic active radiation) that arrives at the plant. This is expressed as the number of active photons that fall on a given surface per unit time and unit area needed for photosynthesis micromole-per-meter squared-per second ($\mu\text{mol}/\text{m}^2/\text{s}$) (between a wavelength from 400 nm to 700nm). Widely used by horticulturist or growers who want to optimize their crop growth. PPFD measurements provide the information needed to understand the light source's ability to produce enough energy to attain the growth results desired.



WHAT IS ILLUMINANCE AND LUMINANCE?

Luminance

Luminance is the measurement of how much light is coming from, passing through or reflected from a surface at a particular angle. It also indicates how much light intensity can be perceived by the human eye. The International System of Units (SI) uses candela/square meter (cd/m^2) as the units to measure luminance. In the U.S. one of the most common units of measure is the foot-lambert (fl); 1 foot-lambert (fl) equals $3.426 \text{ cd}/\text{m}^2$. In the screens/display industry the term nit (nt) is commonly used. Nit is a non-SI term used for luminance, and 1 nit is equivalent to $1 \text{ cd}/\text{m}^2$. In the display industry, luminance is used to quantify the brightness of displays.

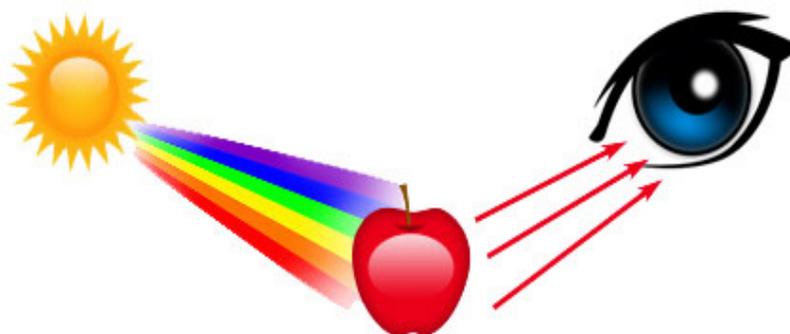


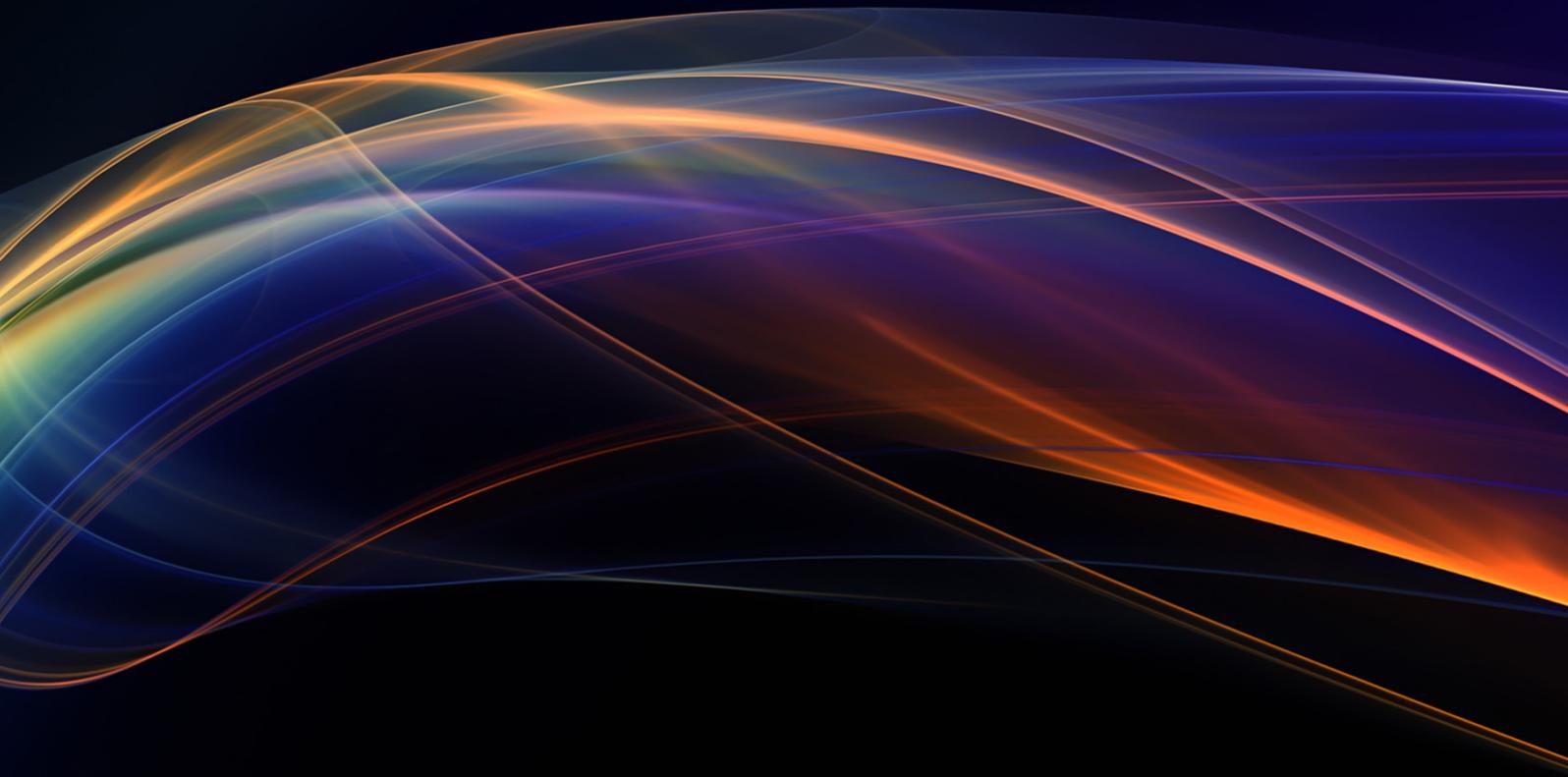
Illuminance

Illuminance is the measurement of how much light is falling onto (illuminating) and covering a surface area. Illuminance also indicates how humans perceive the brightness of an illuminated area. The terms illuminance and brightness can be confusion as the same thing, but they're not, as brightness can also describe luminance. The difference between the two is that illuminance refers to intensity of light falling onto a surface, while brightness refers to the visual and physiological perceptions of light. Brightness should not be used as a quantitative measurement at all. The SI unit for illuminance is lux (lx). In the U.S. people sometimes use the non-SI term foot-candle when referencing illuminance. The term "foot-candle" means "the illuminance on a surface by a candela source one foot away". One foot-candle is equivalent to one lumen per square foot which is approximately 10.764 lux.

HOW DOES COLOR TEMPERATURE EFFECT THE WAY WE SEE?

The human eyes adjust automatically to subtle changes from light sources in brightness levels as well as differences in the color. However our eyes alone are not the sole determining factor in the interpretation of the color of light or its brightness. Our brains are continuously using stored information, our senses as well as our eyes to make the final determination of what we see and what we think we see. If you enter an indoor room, it is common to find warmer color temperature lighting, which promotes comfort and relaxation. Warmer color temperatures are frequent used deliberately in homes as they promote comfort and relaxation, whereas cooler color temperatures are commonly used in office, industry or manufacturing to promote focus and productivity.





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