

CS-150/CS-160

Технические характеристики

По вопросам продаж и поддержки обращайтесь:

Алматы (7273)495-231
Архангельск (8182)63-90-72
Астрахань (8512)99-46-04
Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Брянск (4832)59-03-52
Владивосток (423)249-28-31
Волгоград (844)278-03-48
Вологда (8172)26-41-59
Воронеж (473)204-51-73
Екатеринбург (343)384-55-89
Иваново (4932)77-34-06
Ижевск (3412)26-03-58
Иркутск (395)279-98-46
Россия (495)268-04-70

Казань (843)206-01-48
Калининград (4012)72-03-81
Калуга (4842)92-23-67
Кемерово (3842)65-04-62
Киров (8332)68-02-04
Краснодар (861)203-40-90
Красноярск (391)204-63-61
Курск (4712)77-13-04
Липецк (4742)52-20-81
Магнитогорск (3519)55-03-13
Москва (495)268-04-70
Мурманск (8152)59-64-93
Набережные Челны (8552)20-53-41
Нижний Новгород (831)429-08-12
Киргизия (996)312-96-26-47

Новокузнецк (3843)20-46-81
Новосибирск (383)227-86-73
Омск (3812)21-46-40
Орел (4862)44-53-42
Оренбург (3532)37-68-04
Пенза (8412)22-31-16
Пермь (342)205-81-47
Ростов-на-Дону (863)308-18-15
Рязань (4912)46-61-64
Самара (846)206-03-16
Санкт-Петербург (812)309-46-40
Саратов (845)249-38-78
Севастополь (8692)22-31-93
Симферополь (3652)67-13-56
Казахстан (7172)727-132

Смоленск (4812)29-41-54
Сочи (862)225-72-31
Ставрополь (8652)20-65-13
Сургут (3462)77-98-35
Тверь (4822)63-31-35
Томск (3822)98-41-53
Тула (4872)74-02-29
Тюмень (3452)66-21-18
Ульяновск (8422)24-23-59
Уфа (347)229-48-12
Хабаровск (4212)92-98-04
Челябинск (351)202-03-61
Череповец (8202)49-02-64
Ярославль (4852)69-52-93

Luminance & Colour Meter CS-150 / CS-160

Next generation portable tristimulus colorimeter for light sources and irradiated objects, commonly used to measure display lights, signal lights and to make non-contact surface colour measurements. These instruments build on the key design features of their predecessor with new features, improved accuracy and increased measurement range.



Introduction

Spot measurement of colour and luminance in a handheld portable instrument

The CS-150 and CS-160 are lightweight, compact and battery powered luminance and colour meters for the measurement of a wide range of luminance conditions and non contact measurement of colour. A worthy successor to the CS-100A, the new instruments offer improved features and usability. These next generation instruments provide an increased measurement range and a sensor that more closely matches the CIE 1931 color-matching functions.

To provide the most accurate measurement of luminance, the relative spectral response of the measuring instrument should perfectly match the sensitivity of the human eye for photopic vision, as represented by the CIE spectral luminous efficiency $V(\lambda)$. Alongside improved usability, the CS-150 and CS-160 feature an improved correlation to $V(\lambda)$ and a greatly improved measurement range up to 999,900 cd/m² (CS-150) and 9,999,000 cd/m² (CS-160).

The CS-150 and CS-160 feature the same user friendly features as the popular CS-100A:

- SLR (single lens reflex) optical system and pistol grip design gives the operator precise control over targeting and ensures that the viewfinder shows the exact area to be measured, even at very short distances.
- The measured luminance value is displayed inside the viewfinder whilst full measurement data is shown on the large external monochrome display.
- The optical system is virtually flare-free, eliminating the influence of light from outside the measurement area.
- Areas as small as 0.4mm diameter (CS-160) can be measured when using the optional close-up lenses (for information on measurement areas please check the table within the instrument specifications).

Principal Applications

- Chromaticity and luminance measurements of LEDs and other small light sources.
- Chromaticity and luminance measurements of tungsten and fluorescent lamps.
- Surface colour measurements of freshly painted walls and other surfaces that cannot be touched.
- Surface colour measurements of complex shapes and items that cannot be touched for hygiene reasons.
- Chromaticity and luminance measurements of signal lighting including rail signals, road signals and aviation signals.
- Chromaticity and luminance measurements of colour displays.
- Luminance measurements of monochrome displays.
- Chromaticity and luminance measurements of video projectors

Features

Main Features

■ Lightweight and portable

Light weight, compact and battery powered, the CS-150/160 weighs just 850g (not including batteries). These ergonomic and portable instruments include a hard case as standard meaning they are easy to transport and operate for prolonged periods.

■ SLR (single-lens-reflex) optical system

The CS-150/160 single-lens-reflex design ensures that there is no difference between area indicated in the viewfinder and the actual measurement area. The easy to use SLR optical system has been designed to be practically flare free which eliminates the effect of illumination outside the measurement area, ensuring accuracy.

■ Spot measurement for small target areas

The 1° acceptance angle of the CS-150 can measure areas with a diameter as small as 14.4 mm (at a distance of 1,014 mm); using the optional close-up lens, this can be reduced down to measurement diameters as small as 1.3 mm (at a distance of 205 mm).

The 1/3° acceptance angle of the CS-160 can measure areas with a diameter as small as 0.4 mm (with close-up lens 110 attached).

■ Provides tristimulus colour data

The colour of the object inside the measuring area can be measured quickly without the influence of the surrounding area and without needing to touch the sample.

■ Colour-difference measurement

Once a target colour has been set (by direct numerical input or measurement), colour-difference measurements can be made, facilitating quick and easy colour management.

■ Data memory for 1000 measurements

■ USB 2.0 communication

Connect with a PC via USB 2.0 to send measurement data and receive control signals. The instrument can also be powered by USB cable, ideal for use in measuring rigs or when working with a PC/tablet computer. Data-management software CS-S20w is included as a standard accessory.

■ 10 Calibration channels available for calibration to a user reference light source

The CS-150 can be calibrated to a user reference light source, this can be used to further reduce errors and improve inter instrument agreement when using multiple devices.

Areas of application

Besides the measurement of absolute values, the instrument can also display values relative to a defined standard (target). That way differences in brightness and colour on large surfaces or similar items can be quickly ascertained.

The CS-150/160 Spot Incident Colour Meter can measure the luminance and colour values for all types of light sources including signal and traffic lights, airport runway lighting, lamps, LED's, etc. The wide measurement range of 0.01 cd/m² to 999,900 cd/m² (CS-160 0.1 cd/m² to 9,999,000 cd/m²) and adjustable integration time ensures that the CS-150 or CS-160 can be used for most luminance and chromaticity applications.

Specifications

Specifications of the CS-150 and CS-160

Model	Chroma Meter CS-150	Chroma Meter CS-160
Type	SLR Spot Luminance and Chroma meter	
Measuring Angle	1°	1/3°
Optical System	SLR Viewing System f=85mm F2.8 lens	
Angle of View	9°	
Relative Spectral response	CIE1931 Standard Observer curves (xλ, yλ, zλ)	
Receptors	Silicon photocell (3x)	
Minimum measuring Area	14.4mm (1.3mm - w Close-up lens)	4.5mm (0.4mm w Close-up Lens)
Focusing Distance	1012mm to infinity 213mm (with Close-up Lens)	
Display modes	Absolute colour, difference, ratio; Lv,x,y, Lv,u',v', Lv,Tcp,duv, Lv ,λd,Pe, XYZ	
Measurement modes	Luminance; (Lv)Cont, Peak/Valley, DLv, Lv% (xy) Dx,Dy	
Response time	Auto(default) : 0.7 - 4.3s Manual : 0.7 - 7.1 sec.	
Sync measurement	Internal 20 Hz – 400 Hz	
Luminance unit	cd/m ² or fL (menu setting)	
Measuring Range	0.01 - 999,900 cd/m ²	0.1 - 9,999,000 cd/m ²

Model	Chroma Meter CS-150	Chroma Meter CS-160
Accuracy	Lv $\pm 2\% + 1$ digit (above 5cd/m ²)	Lv $\pm 2\% + 1$ digit (above 50cd/m ²)
	xy ± 0.004 (above 5cd/m ²)	xy ± 0.004 (above 50cd/m ²)
Repeatability	Lv $\pm 0.2\% + 1$ digit xy ± 0.001 (above 10cd/m ²) xy ± 0.002 (above 5cd/m ²)	Lv $\pm 0.2\% + 1$ digit xy ± 0.001 (above 100cd/m ²) xy ± 0.002 (above 50cd/m ²)
Calibration mode	Konica Minolta standard/User-selected standard	
Reference luminance	10ch : set by measurement or numerical input	
Data memory	1000 data	
Display	External : 4-digits LCD with Backlight and dimmer function Viewfinder : 4-digits LCD with Backlight	
Data communication	USB2.0	
Power source	2 AA-Size Batteries, USB power bus, AC adapter (Option)	
Operating temperature/humidity	0 to 40 ⁰ C, relative humidity 85% or less (at 35 ⁰ C) with no condensation	
Storage temperature/humidity	0 to 45 ⁰ C, RH85% or less (at 35 ⁰ C) with no condensation	
Dimensions	71×214×154mm	
Weight	850g without Battery	
Standard accessories	Lens cap, ND eyepiece filter, Eyepiece cap, 2 AA-size batteries, Case, Wrist wrap, USB Cable, data management software CS-S20	

Specifications are subject to change without notice.

Accessories

Optional Accessories CS-150/160

Close-up lenses

Close-Up Lenses	CS-150	CS-160	Item Order Code
-----------------	--------	--------	-----------------



No. 153	Ø 8.0 mm	Ø 2.7 mm	1804-740
No. 135	Ø 5.2 mm	Ø 1.8 mm	1804-741
No. 122	Ø 5.2 mm	Ø 1.1 mm	1804-742
No. 110	Ø 1.3 mm	Ø 0.4 mm	1804-743

White calibration plate (for 45-0)

Item Order Code: 1852-711

CCD Camera Adapter

Item Order Code: A8A8-710

Illuminance Adapter

Item Order Code: A8A8-711

AC-Adapter AC-A305M

Item Order Code: A80F-713

По вопросам продаж и поддержки обращайтесь:

Алматы (7273)495-231	Казань (843)206-01-48	Новокузнецк (3843)20-46-81	Смоленск (4812)29-41-54
Архангельск (8182)63-90-72	Калининград (4012)72-03-81	Новосибирск (383)227-86-73	Сочи (862)225-72-31
Астрахань (8512)99-46-04	Калуга (4842)92-23-67	Омск (3812)21-46-40	Ставрополь (8652)20-65-13
Барнаул (3852)73-04-60	Кемерово (3842)65-04-62	Орел (4862)44-53-42	Сургут (3462)77-98-35
Белгород (4722)40-23-64	Киров (8332)68-02-04	Оренбург (3532)37-68-04	Тверь (4822)63-31-35
Брянск (4832)59-03-52	Краснодар (861)203-40-90	Пенза (8412)22-31-16	Томск (3822)98-41-53
Владивосток (423)249-28-31	Красноярск (391)204-63-61	Пермь (342)205-81-47	Тула (4872)74-02-29
Волгоград (844)278-03-48	Курск (4712)77-13-04	Ростов-на-Дону (863)308-18-15	Тюмень (3452)66-21-18
Вологда (8172)26-41-59	Липецк (4742)52-20-81	Рязань (4912)46-61-64	Ульяновск (8422)24-23-59
Воронеж (473)204-51-73	Магнитогорск (3519)55-03-13	Самара (846)206-03-16	Уфа (347)229-48-12
Екатеринбург (343)384-55-89	Москва (495)268-04-70	Санкт-Петербург (812)309-46-40	Хабаровск (4212)92-98-04
Иваново (4932)77-34-06	Мурманск (8152)59-64-93	Саратов (845)249-38-78	Челябинск (351)202-03-61
Ижевск (3412)26-03-58	Набережные Челны (8552)20-53-41	Севастополь (8692)22-31-93	Череповец (8202)49-02-64
Иркутск (395)279-98-46	Нижний Новгород (831)429-08-12	Симферополь (3652)67-13-56	Ярославль (4852)69-52-93
Россия (495)268-04-70	Киргизия (996)312-96-26-47	Казахстан (7172)727-132	