



# Colorimeter PCE-CSM 21



**Colorimeter PCE-CSM 21**  
**High-quality spectrophotometer /**  
**Custom aperture size / Pass or Fail delta display /**  
**Evaluation via SW over Bluetooth or USB / 9-color LED as light source**

PCE-CSM 21 is a handheld spectrophotometer colorimeter used for high-quality color measurement. Featuring a custom 4 mm aperture and including SCI and SCE specular modes for industrial color measuring applications, the PCE-CSM 21 offers a long battery life, a 9-color lamp and an easy-to-use portable design. The PCE-CSM 21 covers the full spectrum from 400 to 700 nm in 10 nm increments. The powerful battery allows up to 5000 daily measurements. The software supports both SCI and SCE spectral measurements at once. The unit features a 3.5 inch TFT color touch screen and a 256 image element CMOS image array for superior usability and accuracy. Camera/illumination locating for small samples.

The high-quality processing of the spectrometer is very fast. The ability to choose aperture size and light source allows the user to discriminate between colors that may look the same. Six color space choices allow the user to choose the best space for their samples. The 256 image element double array CMOS imager allows measurement from 400 to 700 nm in 10 nm increments. The measured data can be transmitted to a computer via Bluetooth or USB. Sophisticated analysis software is also included in the delivery contents that includes the USB cable.

- ▶ Long battery life
- ▶ USB cable for data transfer to included software
- ▶ Portable for ease of use
- ▶ Reference memory of 2000 colors, storage for 20,000 samples
- ▶ Includes white and black calibration standards
- ▶ High measuring accuracy and stability with 9 illumination choices
- ▶ Single and average measurements with delta pass/fail display
- ▶ Spectrophotometer measures from 400 to 700 nm in 10 nm increments
- ▶ Conforms with CIE No. 15, GB/T 3978, GB2893, GB/T 18833, ISO7724/1, ASTM E1164, DIN5033 Teil

# Specifications

Measuring geometry	8° / d
Size of integrated sphere	48mm / 1.9 in
Light source	LED lighting system, UV light
Spectrophotometric operation	Concave grating
Sensor	256 pixels CMOS image sensor
Wavelength range	400... 700 nm
Wavelength interval	10nm
Measured reflection range	0... 200%
Measuring aperture	4mm (0.15")
Specular component color ranges	SCI, SCE CIE Lab, XYZ, Yxy, LCh, CIE LUV, Hunter LAB
Formulas for color inequality	$\Delta E^*_{ab}$ , $\Delta E^*_{uv}$ , $\Delta E^*_{94}$ , $\Delta E^*_{cmc}$ (2: 1), $\Delta E^*_{cmc}$ (1: 1), $\Delta E^*_{00v}$ , $\Delta E$ (Hunter)
Other colorimetric index	WI (ASTM E313, CIE/ISO, AATCC, Hunter), YI (ASTM D1925, ASTM 313), TI (ASTM E313, CIE/ISO), Metamerism Index MI, Staining Fastness, Color Fastness, Color Strength, Opacity, 8° Glossiness
Light Sources	D65, A, C, D50, D55, D75, F2, F7, F11
Viewing angle	2° / 10°
Data display	Spectrogram values, color values samples, color difference values / graph, pass / fail result, color balance
Measuring time	2.6 seconds
Repeatability	Standard deviation within $\Delta E^*_{ab}$ 0.05 Average of 30 measurements of standard white plate
Error between equipment	$\Delta E^*_{ab}$ 0.2
Measurement mode	Single measurement, average value measurement
Location method	Finding the measuring points by camera
Power supply	Built-in Li-ion battery
Dimensions	184 x 77 x 105 mm / 7.2 x 3 x 4.1 in
Mass	600g
Luminous life	5 years / more than 3 million measurements
Display	3.5" TFT color LCD, capacitive touch screen
Data interface	USB
Data storage	2000 standards, 20000 samples
Menu languages	English, Chinese
Operating conditions	0... 40°C / 32 ... 104°F 0 ... 85% relative humidity (non-condensing)
Storage conditions	-20... 50°C / -4 ... 122°F 0 ... 85% relative humidity (non-condensing)