PCS300 Photometer Characterisation Solution

The PCS300 provides accurate characterisation of key parameters relating to the performance of luxmeters, luminance meters and components.

Set around a tuneable monochromatic light source, the PCS300 enables the spectral responsivity measurement of photometers to determine their deviation from the desired CIE V(λ) function, represented by the f1' mismatch index. Furthermore, product development is empowered by the possibility of measuring the component detectors and filters of photometers, ensuring blocking out of band. The addition of a motorised goniometer allows the measurement of directional response.

Easy to use, the PCS300 will directly report the values important to demonstrate the performance of your photometers. Compliment the PCS300 with the LuxCal250 for the calibration of lux and luminance meters according to ISO/CIE 19476:2014.

Core benefits

- Characterise key parameters of photometers in accordance with ISO/CIE 19476:2014
- Easy to use and interface devices under test
- No darkroom or optical bench required (except for directional response measurement)
- Calibration traceable to PTB, Germany

Features

- Xenon lamp/ single monochromator tuneable light source
- Dual optical path optic to couple light to DUT and reference photodiode for parallel measurement (luxmeters)
- Integrating sphere accessory for characterisation of luminance meter spectral mismatch
- Collimated deuterium/ halogen source option for measurement of filter transmission
- Motorised single axis goniometer with manual DUT 90° rotation for directional response measurement
- Fully automated using Benwin+ spectral acquisition application
- Calibration traceable to Physicalish Technische Bundesanstalt (PTB, Germany)

PCS300 Photometer Characterisation Solution

BENTHAM

Specification

Tuneable Light Source

Probe light source	150W xenon
Monochromator configuration	Triple grating, symmetric, single Czerny-Turner, 300mm focal length
Bandwidth	Adjustable fixed slit, 1-10nm typical
Wavelength range	2400 g/mm grating: 250-320nm 1800 g/mm grating: 320-800nm 1200 g/mm grating: 800-1100nm
Resolution	250-320nm: 0.15nm 320-800nm: 0.2nm 800-1100nm: 0.3nm
Dispersion	250-320nm: 1.35nm/mm 320-800nm: 1.8nm/mm 800-1100nm: 2.7nm/mm
Wavelength accuracy	250-320nm: ± 0.1nm 20-800nm: ± 0.15nm 800-1100nm: ± 0.2nm

Picoammeter

Channel 1 input	Current input to picoammeter
Channel 2 input	Current input to picoammeter
Gain ranges	10^{10}-10^{5} V/A
Maximum current Input	100μA
Frequency response	DC to 30Hz
Gain accuracy	+1%
Gain stability	200ppm/°C
Output stability	5ppm/°C to 500ppm/°C depending on sensitivity
Linearity	< 0.025% departure from linearity from zero to full scale
ADC resolution	4½ digit BCD (0 to 19999) i.e. > 14 bit resolution
ADC integration time	100ms
Picoammeter input impedance	Virtual earth

PCS300 Photometer Characterisation Solution

BENTHAM

PCS300_0001 luxmeter measurement accessory

Probe beam	Size 3x3mm
Beam splitter	Synthetic fused silica window
Reference photodiode	Si-CAL spectral responsivity standard
Calibration type and range	Short-circuit spectral responsivity, 360-830nm
Calibration traceability	Physicalish Technische Bundesanstalt (PTB, Germany)
DUT mount	Custom mount. Please use our online form to enquire.
Software report	Spectral responsivity, f1′

PCS300_0002 luminance meter measurement accessory

Sphere diameter	100mm
Sphere exit port diameter	10mm
Sphere coating	$BaSO_4$
Calibration type and range	Short-circuit spectral responsivity, 360-830nm
Calibration traceability	Physicalish Technische Bundesanstalt (PTB, Germany)
Software report	Spectral responsivity, f_1'

PCS300_0003 directional response accessory

Source	CL6-H enclosed 150W Halogen lamp
Typical lamp distance	2m
DUT mount	Custom mount. Please use our online form to enquire.
DUT rotation	One axis motorised, manual rotation of mount through 90°
Angular accuracy	≤0.1°
Angular resolution	≤0.001°
Software report	Directional responsivity, f_2

PCS300_0004 filter transmission accessory

Illumination type	Polychromatic, collimated beam
Light source	ILD-D2-QH deuterium-halogen source
Collimator	COL_2_UV-VIS collimator
Detectors	DH_30 multi-alkali photomultiplier & DH_Si silicon photodiode
Sample holder	Custom sample holder up to 15mm diameter. Please use our online form to enquire.

Configuration Options

PCS300_0001	General V(λ) mismatch index of luxmeters, f1′
PCS300_0002	General V(λ) mismatch index of luminance meters, f1′
PCS300_0003	Directional response index, f2
PCS300_0004	Filter transmission (%)

Software

The PCS300 may be controlled over the USB 2.0 interface using our Windows application Benwin+ or by user written code based on our SDK on a wide range of platforms (Labview, Matlab, C++ etc.) Using configuration files, both applications allow:

- Accessing grating filter wheel and slit properties
- Wavelength selection
- Spectral measurements

Benwin+ includes higher functionality including:

- Easy system calibration
- Obtain spectrally integrated (and weighted) quantities
- Instantly obtain colorimetric data
- Perform transmission, absorption and reflection measurements
- Perform simple arithmetic functions
- Utilities for control of translation stages, goniometers, RSB, data acquisition from other instruments etc.