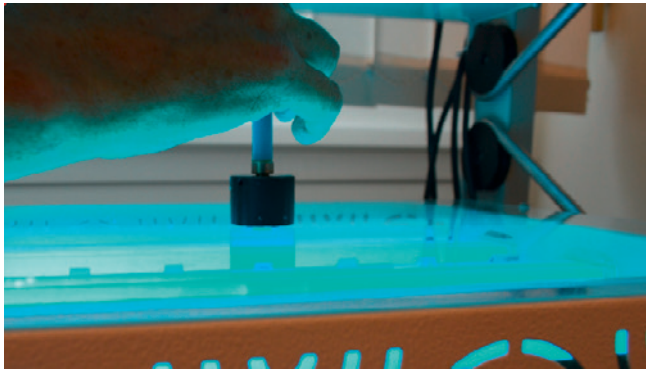
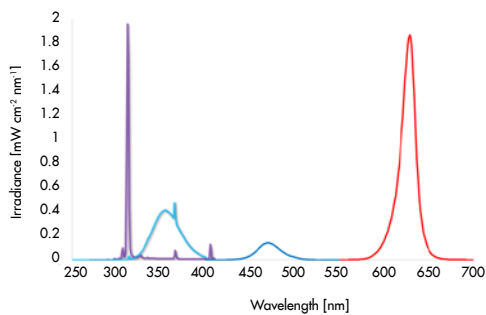


B-PTCal150

Enabling precision dosimetry in phototherapy & PDT



Safe and effective phototherapy relies on accurate dosimetry. Ensure the precise spectral irradiance measurement of all phototherapy sources with the B-PTCal150 spectroradiometer. Benefit from the highest accuracy data on patient exposure and calibrate radiometers with confidence.



Superlative spectral analysis

Ultimate accuracy in spectral irradiance starts with a precision cosine-corrected diffuser and is assured with a double monochromator.

Tailored spectral coverage

A choice of UV and UV-vis configurations adapt the B-PTCal150 to your individual phototherapy requirements.

Simple calibration

Alignment-free calibration standards ensures your link to national metrology standards.

Full automation

Fully automated over the USB interface, directly access spectral irradiance data and integrals appropriate for your application.

Application

In hospitals and in clinical research, the B-PTCal150 is relied upon as the gold standard to determine the spectral irradiance of sources used in phototherapy

1. Direct source spectral irradiance characterisation

- For ultimate measurement confidence and exploring novel sources in research.

2. Calibrate Radiometers for day to day use

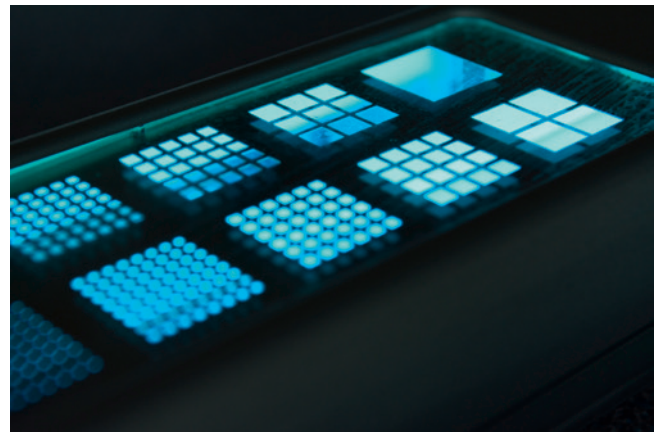
- Perform source-specific calibration of radiometers to provide confidence in regular source checks.

3. Determine warm-up characteristics

- Guide the application of phototherapy with knowledge of the temporal variation of irradiance.

Source of confidence in phototherapy

Accurate determination of the spectral irradiance produced at the plane of the skin is the foundation of safe and effective phototherapy.

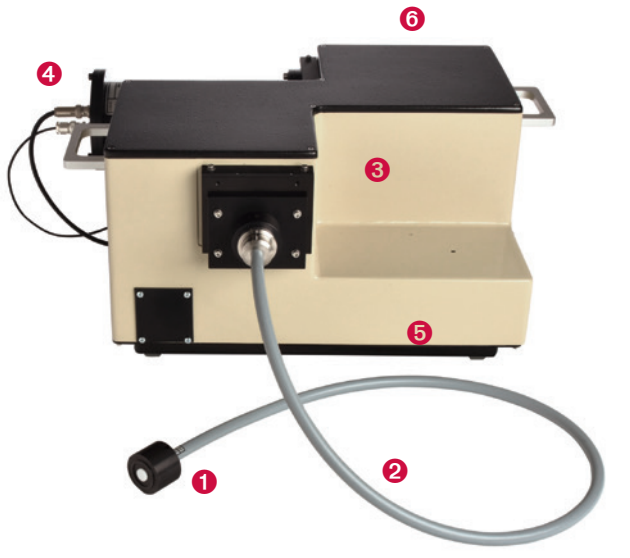


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System components

Designed with leading optical components, the B-PTCal15 sets the benchmark for the precise spectral irradiance measurement of all phototherapy sources.



1 Entrance optic

A precision cosine-corrected transmission diffuser ($f_2 < 1\%$) ensures accurate collection of light from the entire hemisphere above the measurement plane.

2 Fibre bundle

A flexible fibre bundle couples light from the transmission diffuser to monochromator, ensuring ease of reaching the required measurement plane.

3 Double monochromator

The unrivalled stray-light rejection of a double monochromator ensures superlative spectral analysis.

4 Photomultiplier

A selected S20 photocathode, end-window photomultiplier offers excellent noise performance and linearity.

5 Detection electronics

Built-in to the B-PTCal15 is a PMT high voltage supply and dual channel, six-decade picoammeter, offering an impressive dynamic range.

6 Single portable unit

Set in a single, robust housing, the B-PTCal15 can easily be transported between clinics and laboratories.

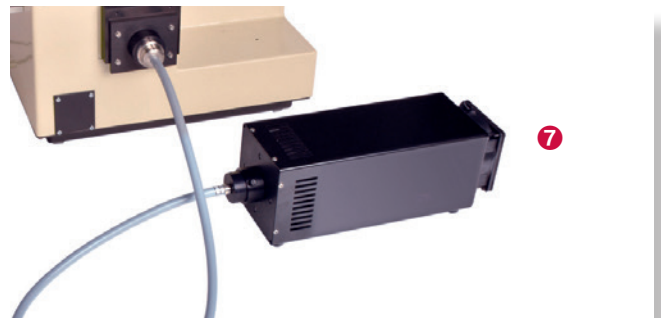


Go beyond the UV

With the UV-Vis configuration of B-PTCal15, characterise a wide range of sources in clinical use and research. Designed with leading optical components, the B-PTCal15 sets the benchmark for the precise spectral irradiance measurement of all phototherapy sources.

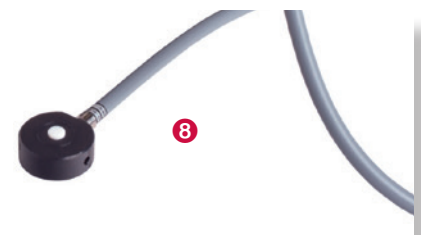
7 Enclosed calibration standards

Enclosed spectral irradiance standards, with NMI traceable calibration and entrance optic adaptors, allow quick and simple alignment-free calibration.



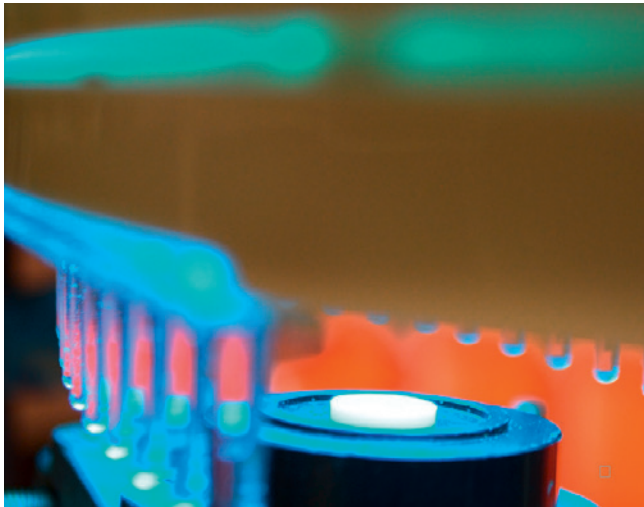
8 Side view entrance optic

For phototherapy products with limited access to the source, a side view entrance optic ensures you can measure in the correct plane.



B-PTCal150

Enabling precision dosimetry in phototherapy & PDT



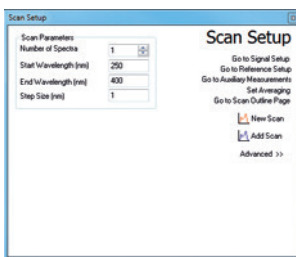
Accurate spectroradiometry starts here

A precision transmission diffuser ($f2 < 1\%$) ensures accurate collection of light from the hemisphere above the measurement plane.

Accurate spectroradiometry in just a few steps

Power on the B-PTCal15 and run Benwin+

- Get ready to launch a measurement over your spectral range of interest.



Calibration, your link to National Metrology Standards

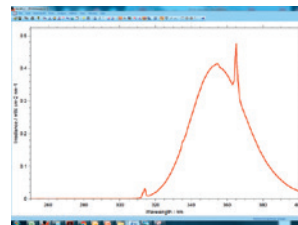
- Simply connect the transmission diffuser to the enclosed irradiance standard, power on and run a calibration procedure.
- It is recommended to calibrate once at the beginning of a measurement session to minimise measurement uncertainty.

Set-up measurement of phototherapy source under test

- Position the cosine-corrected transmission diffuser at the patient exposure plane.
- Where required perform live alignment to find location of peak spectral irradiance.

Run a measurement

- Power on the source, an accurate spectral irradiance measurement is just a click away.
- A warm-up delay can be introduced before acquiring a spectrum.



View results

- The spectral irradiance result will unfold on screen.
- View pre-defined spectral integrals for quick and easy analysis.
- Export a measurement report or transfer the spectral data to your favourite platform.

Measurement	Value
UVA Irradiance	16.292437 mW cm-2
UVB Irradiance	0.073168935 mW cm-2

B-PTCal150

Enabling precision dosimetry in phototherapy & PDT

Specifications		
Entrance optic		
Entrance optic type	Benflect precision cosine-corrected transmission diffuser (in-line or right angle configuration)	
Aperture diameter	10 mm	
f_2'	<1%	
Coupling	Randomised pure fused silica fibre bundle, from 0.5 m long	
Monochromator		
Monochromator type	Compact double monochromator, additive dispersion. Czerny-Turner mount.	
Focal length	150 mm (each unit)	
Slits	Fixed, interchangeable	
Gratings	Grating pair, kinematically mounted, 33 x 33 mm	
Stray light rejection at 10x FWHM from peak	10 ⁻⁸	
Optical performance/ configuration	2400 g/mm (UV configuration)	1800 g/mm (UV-Vis configuration)
Spectral range	200 - 600 nm	250 - 800 nm
Typical bandwidth	1, 2 or 5 nm	
Wavelength accuracy	±0.15 nm	±0.20 nm
Detector and detection system		
Detector type	S20 photocathode end window photomultiplier tube	
Detector high voltage	-750 V (adjustable)	
Detector response range	200 - 850 nm	
Detector dark current (typ.)	500 pA	
Picoammeter current range	Sub 1 pA to 100 µA	
Picoammeter ADC resolution	>14 ½ bit	
Picoammeter ADC integration time	100 ms	

Ordering information	
Ordering number	Description
B-PTCal15-001	B-PTCal15 spectroradiometer (250 - 600 nm)
B-PTCal15-002	B-PTCal15 spectroradiometer (200 - 600 nm)
B-PTCal15-003	B-PTCal15 spectroradiometer (250 - 800 nm)
B-PTCal15-004	B-PTCal15 spectroradiometer (200 - 800 nm)

General	
Interface	USB 2.0
Software control	BenWin+ Windows application
Operating system	Windows 7 or newer
Overall dimensions (LxWxH)	≈ 395 x 315 x 250 (mm)
Power	Mains input 110/220 V, 50/60 Hz
Calibration standard 200 - 300 nm	
Lamp type	Deuterium lamp
Nominal lamp power and voltage	30 W, 100 V
Operating current	300 mA DC
Expected lifetime	2.000 h
Power supply	PSU_706 deuterium lamp supply
Calibration type	Spectral irradiance at 5.5 mm from plane of front face
Wavelength range	200 - 400 nm (2 nm steps)
Calibration traceability	Physikalisch Technische Bundesanstalt (PTB, Germany)
Calibration standard 250 - 800 nm	
Lamp type	Halogen lamp
Nominal lamp power and voltage	150 W, 24 V
Operating current	6.300 A DC
Expected lifetime	2.000 h
Power supply	PSU_610 halogen lamp supply
Calibration time	Spectral irradiance at 5.5 mm from plane of front face
Wavelength range	250 - 800 nm (5 nm steps)
Calibration traceability	Physikalisch Technische Bundesanstalt (PTB, Germany)

