

Lightricity enables sustainable IoT sensors through its unique light energy harvesting technology. Lightricity indoor light simulator (**LightBox**) is the perfect calibrated tool to provide a reliable and accurate performance comparison of solar cells and/or solar-powered devices under indoor light.

Features

- Calibrated benchtop apparatus for the characterisation of solar cells under indoor light
- Automated acquisition of Current-Voltage and Power-Voltage curves
- Simple interfacing with a computer or laptop via USB cable
- Fine control of illuminance between 0 lux and 50k lux intensity
- Array of white LEDs with excellent light source uniformity
- Modular light faces (various CCT, CRI available) and sample holders
- Compatible with standard source-meters (e.g. Keithley, Keysight) via GPIB-USB interface
- Closed looped illuminance control ensured by 4 lux sensors
- Temperature monitored at up to 3 different points within the LightBox
- In line with upcoming indoor measurement standards (NPL)
- Low-cost and highly integrated
- Designed and manufactured in the United Kingdom

Product Description

There are two versions of the LightBox, LightBox 1.0 and LightBox XL. The products are different in size but otherwise share similar features (see specifications below for more information).

LightBox 1.0 - dimension $110 \times 110 \times 80 \text{ mm}^3$, 5×5 array of white LED light



LightBox XL – dimension $185 \times 185 \times 85 \text{ mm}^3$, 11×11 array of white LED Light



Technical Specifications

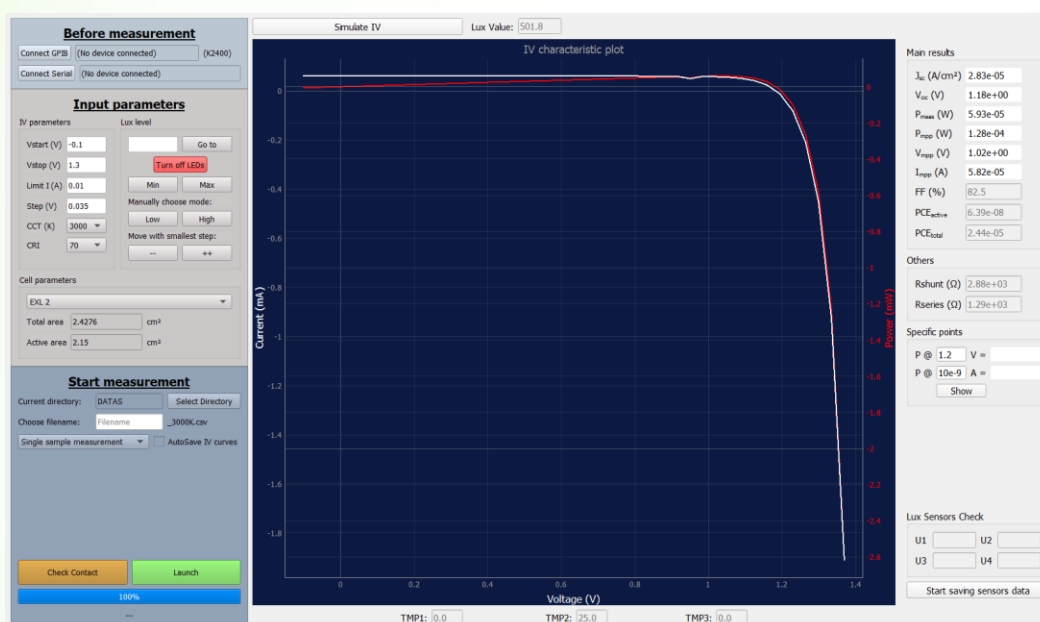
	LightBox 1.0	LightBox XL
Outer dimensions (mm) (including legs and connectors)	110 × 110 × 80	185 × 185 × 80
LED array	5 × 5	11 × 11
Correlated colour temperature (CCT)	From 2500 to 6000K (default 3000K)	
Colour rendering index (CRI)	From 70 to 90 (default 70)	
Illuminance range*	20 to 50,000 lux	50 to 40,000 lux
Light uniformity**	~ 95%	~ 95%
Light modes	High resolution or high illuminance	
Max. DUT sample size	5 cm × 5 cm	10 cm × 12 cm

* Light intensities < 200 lux are reached with a diffuser, included in LightBox 1.0 and XL.

** Light uniformity tested at National Physical Laboratory (NPL) for LightBox 1.0 and estimated in LightBox XL.

LightBox Software

A LightBox Software (Windows, perpetual license) is included to interface with the LightBox and an external source-meter for data acquisition. The light intensity within the LightBox can be controlled from 0 to 50,000 lux. The system can support single, multiple samples or lux sweep measurements.



Outputs (exported as .CSV file)

- Current-Voltage I(V) curve – white curve
- Power-Voltage P(V) curve – red curve

Extracted performance parameters:

- Short-circuit current: I_{sc} (A)
- Open-circuit voltage: V_{oc} (V)
- Current at maximum power point: I_{mp} (A)
- Voltage at maximum power point: V_{mp} (V)
- Power at maximum power point: P_{mp} (W)
- Fill Factor: FF (%)
- Shunt resistance (Ω)
- Series resistance (Ω)