

Light Sensor U11364

Instruction Sheet

02/08 Hh



1. Safety instructions

The light sensor must only be used for educational purposes!

- The light sensor is not suitable for safety-related applications!

2. Description

Sensor box incorporating photodiode with optical filter for the measurement of light intensity (illuminance), especially in the visible region.

Push-button selection of measurement ranges 600 lx, 6000 lx or 150000 lx, with visual indication of range.

8 mm light tube for excluding unwanted light from sides.

The sensor box and range setting are recognised automatically by the 3B NETlog™.

3. Equipment supplied

- 1 Sensor box
- 1 Stand with screw thread, 120 mm
- 1 miniDIN 8-pin connecting cable, 600 mm long
- 1 Instruction sheet for U11364

4. Technical data

Measurement ranges and resolution	0 to 600 lx / 0.8 lx 0 to 6000 lx / 8 lx 0 to 150000 lx / 200 lx
Sensor type:	Silicon photodiode with low dark current
Sensitivity:	Typically 0.65 μ A at 100 lx
Non-linearity:	Max. \pm 1 % of the total measurement range
Bandwidth:	Typically 10 kHz

5. Operation

- Place the sensor box close to the experiment.
- Read off the light intensity value on the display of the 3B NETlog™.
- If the light intensity exceeds the measurement range, switch to the next higher range.

6. Experimental applications

Investigation of the inverse square law for a point light source

Properties of polarising filters

Demonstration of the flickering effect of alternating current for fluorescent lamps

Measurement of solar energy

Studies of reflection

Measurements of illuminance at work-stations and personal areas

Relationship between light intensity and growth of plants

7. Sample experiment

Investigation of the inverse square law for a point light source

Apparatus needed:

1 3B NETlog™	U11300
1 3B NETlab™	U11310
1 Light sensor	U11364
1 Experimental lamp, halogen	U17140
1 Transformer 12 V, 60 VA (alternative to the variable transformer shown in Fig. 1)	U13900-230
1 Barrel foot	U8611200
1 Vertical ruler, 1 m	U8401560
2 Universal clamps	U13255

- Set up the experiment as shown in Fig. 1.
- On the 3B NETlab™, open the application program (template) for the experiment with the light sensor.
- Lay the ruler horizontally, and fix the experimental lamp at the 15 cm mark using one of the universal clamps.
- Define this point as distance zero, 0.
- Mount the light sensor on the ruler using the other universal clamp.
- Connect the electric cables to the experimental set-up and switch on.
- Start the template program, select “manual input”, and measure the light intensity at the first point, a distance of 5 cm in front of the experimental lamp.
- Increase the distance in steps of 5 cm up to the 70 cm mark (a distance of 55 cm from the experimental lamp), and record the corresponding light intensities in the 3B NETlab™ (Fig. 2).
- Generate the data curve using the “Fit” function.



Fig. 1 Investigation of the inverse square law for a point light source

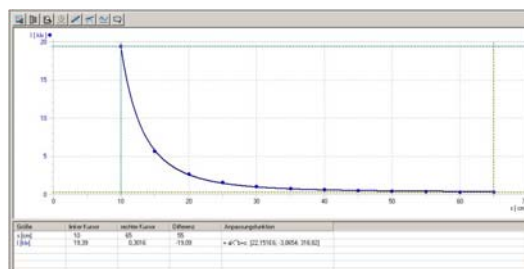


Fig. 2 Plot of the data points from the inverse square law experiment on the monitor screen of the 3B NETlab™ (U11310)