

PerCentaSun[©]

Solar Array Calibrator

PerCentaSun is a purpose-designed tool to help the PV installer and user to assess the amount of recoverable energy in any lighting conditions including sunlight.

This simple unit uses a piece of typical photovoltaic cell material to assess the usable strength of light as would be collected by a mono- or poly-crystalline solar array.

The reading is calibrated by reference to "one sun", the test condition of 1kW/sq m at standard atmospheric conditions.

The meter reading is percent of "one sun" with an error not exceeding 10% at 20C.

How to use PerCentaSun:

1. Place PerCentaSun in roughly the same orientation as the proposed or installed array. For convenience, PerCentaSun can be placed within easy reach of the array current measuring position provided that it will experience the same insolation as the array itself.
2. Calculate the short-circuit current of the array under standard test conditions using the plated I_{sc} value.
3. Switch on PerCentaSun.
4. Simultaneously, note the meter reading and measure short-circuit array current.
5. Multiply the calculated short-circuit current by the reading on the instrument (which is a percentage of "one sun").
6. The measured short-circuit current should be within a few percent of the calculated value (but see note below).

Example:

An array comprises two parallel strings each containing panels of peak short-circuit current $I_{sc} = 7.3A$ under Standard Conditions. Thus array $I_{sc} = 2 \times 7.3 = 14.6A$ peak.

The PerCentaSun meter, when placed in the same position as the array, shows 73.2

Multiply 14.6A by 73.2% = 10.7A This is the short-circuit current the array should deliver under the same conditions.

Notes:

1. For some weeks after first exposure to sunlight, PV arrays produce considerably more short-circuit current than specified, typically 10% more. The expected reading for a new array is therefore 110% of the calculated value.
2. Where light levels are fluctuating, eg under partly-clouded sky, make sure that PerCentaSun and I_{sc} for the array are observed at the same instant.
3. Do not operate PerCentaSun with a flat battery (see symbol in display). Battery is PP3 alkaline and should last several thousand hours of continuous use.
4. If the target array will be any type other than mono- or poly-crystalline an adjustment may be necessary. Contact **Engenius** for advice.
5. Other than the battery there are no serviceable parts inside the meter.
6. The meter is splashproof (IP65) but should not be exposed to heavy rain.

PerCentaSun benefits from Engenius' standard 12-month parts-and-labour, return-to-base warranty.

We reserve the right to carry out design improvements without prior notice.

Engenius' liability is limited to the price paid for the supply of this unit.

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PROVISIONAL INFORMATION

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Solar matching:	Polycrystalline cell (mono is similar)
Display:	3½-digit LCD; percent ref. 1kW/sq m
Accuracy:	better than 10% of reading
Dimensions:	125 x 80 x 65mm
Weight:	280g
Protection:	IP65
Operating temperature:	-10C to +40C (subject to battery type)
Power:	Alkaline battery PP3 9V; external drawer
Battery endurance:	typically 2,000 hours

Designed and built in UK in accordance with current EU standards and regulations.

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