

1 Indoor reference cell.

REFERENCE CELLS FOR ACCURATE CALIBRATION

Please send us an E-mail!

We are happy to provide competent advice, without obligation and specific to your application.

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International round robins for photovoltaic calibration, such as the World PV Scale (WPVS), require highly accurate and stable reference cells. This is the only way to guarantee the comparability of the results measured by the participating photovoltaic calibration laboratories.

After ten years of experience with the development and production of reference cells for highest demands on quality as well as the calibration of solar cells and modules, we are now offering user-specific filtrations for novel solar materials.

Next to m-Si and p-Si we also offer filtrations for CdTe, GaAs, Tandem-Bottom or different thin-film cells. In this way, the excellent stability characteristics of the Si cells that are used as reference cells are matched with the spectral response of our customers' cells.

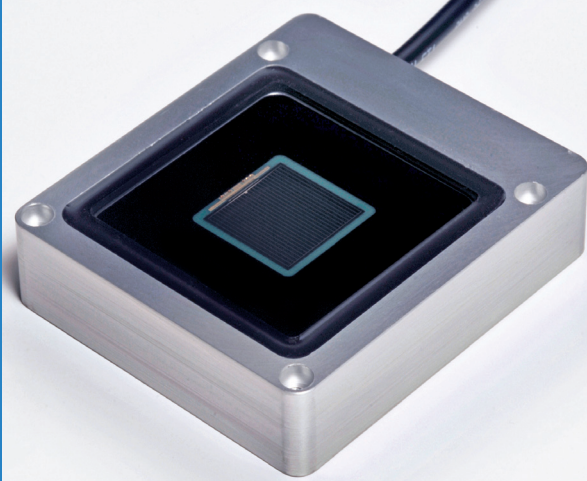
This service, which is currently provided for WPVS (indoor) cells only, will soon be available for outdoor cells, too.

Operators and planners of photovoltaic systems, from small panels on the roof to power stations, can thus accurately check the annual efficiency specified in contracts. Now, this is also possible for less common solar cell types.

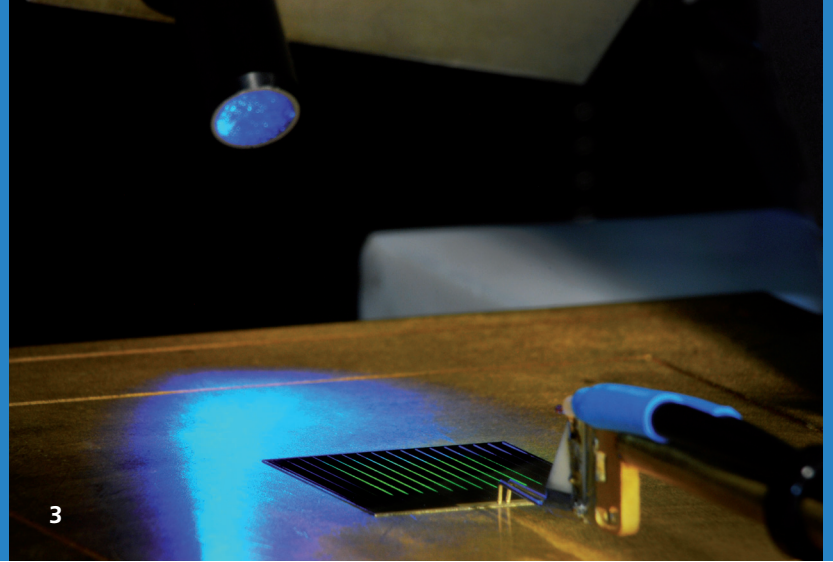
Fraunhofer ISE offers its indoor and outdoor reference cells, which were originally developed for its own needs, to interested professional clients.

www.callab.de

www.testlab-pv-modules.de



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TECHNICAL SPECIFICATIONS



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Indoor Reference Cell

- casing of black anodised, mechanically stable aluminium
- dimensions 70 x 70 x 17 mm³
- solar cell of monocrystalline FZ silicon, 20 x 20 mm²
- potential-free mounting in the casing
- Pt100 temperature sensor
- temperature coefficient: 0.00385 K⁻¹
- contacts via LEMO connectors, durable to cycling
- glass cover with and without filters e.g. for measuring thin-film cells
- calibration according to the client's specifications
- current temperature coefficient: 0.06072 %/K
- voltage temperature coefficient: -0.29381 %/K

Outdoor Reference Cell

- casing of naturally anodised, mechanically stable aluminium IP65
- dimensions 70 x 70 x 11 mm³
- solar cell of monocrystalline FZ silicon, 20 x 20 mm²
- potential-free mounting in the casing
- Pt100 temperature sensor
- temperature coefficient: 0.00385 K⁻¹
- contacts via a permanently connected UV-resistant cable
- glass cover with and without filters e.g. for measuring thin-film cells
- integrated precision resistance
- calibration of the short circuit current in mV/(W m²)
- temperature coefficient: -0.29381 %/K

2 Outdoor reference cell.

3 Precision measurement for calibration.

4 Responsivity spectra of different cell materials.