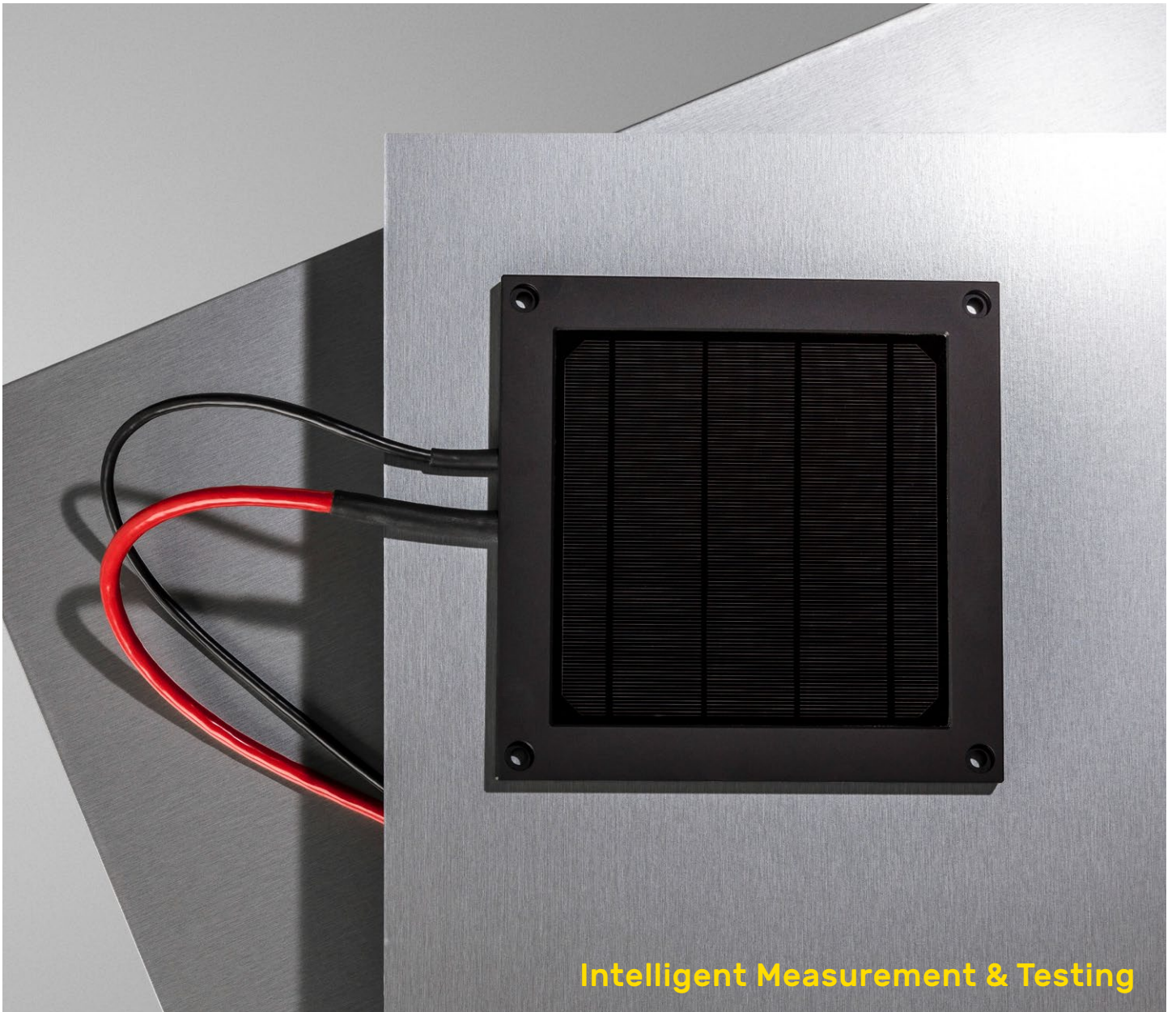




DATA SHEET

# BigRef – Large-area PV Reference Cell



Intelligent Measurement & Testing

## The Large-area PV Reference Cell

Calibrate your sun simulators with utmost precision thanks to IMT Technology’s large-area BigRef reference cell. With its extremely precise calibration, BigRef allows users to determine the irradiance intensity of sun simulators precisely. BigRef is also suitable for determining local non-uniformities in sun simulators for PV modules.

The size of the solar cell as a sensor element brings considerable advantages compared to more compact WPVS reference cells since the size of the cell surface compensates for the non-uniformities in irradiation intensity to a certain extent.

BigRef was developed and designed in cooperation with the solar cell calibration laboratory at the ISFH CalTeC in the German town of Hamelin.

### Benefits & Features

- PV reference cell for calibrating and measuring sun simulators
- PV reference cell to measure non-uniformities in sun simulators as per IEC 60904-9
- Excellent linearity for  $I_{sc}$ , significantly above IEC 60904-10 requirements
- Design as per IEC 60904-2
- Excellent thermal attachment of the PV cell to the rear panel
- Pt100 as per IEC 60751 class A to measure cell temperature
- Developed and designed in cooperation with the Institute for Solar Energy Research (ISFH)
- Developed and manufactured in Germany

### Sensor Types

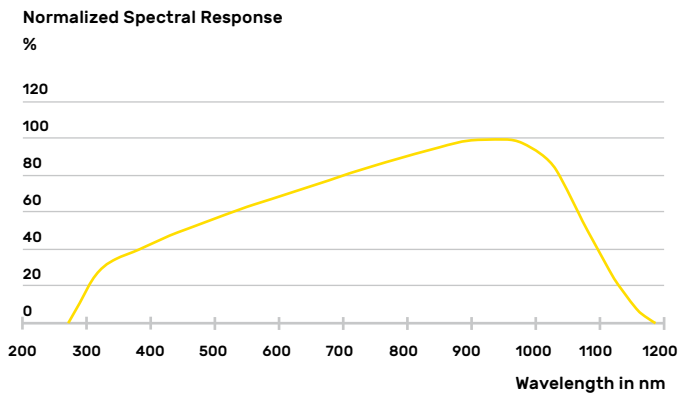
Type	Signal
BigRef-IV-03	I-V curve, 4-wire connection
BigRef-mV-03	Shunt voltage of approx. 80 mV @ STC

## Technical Data

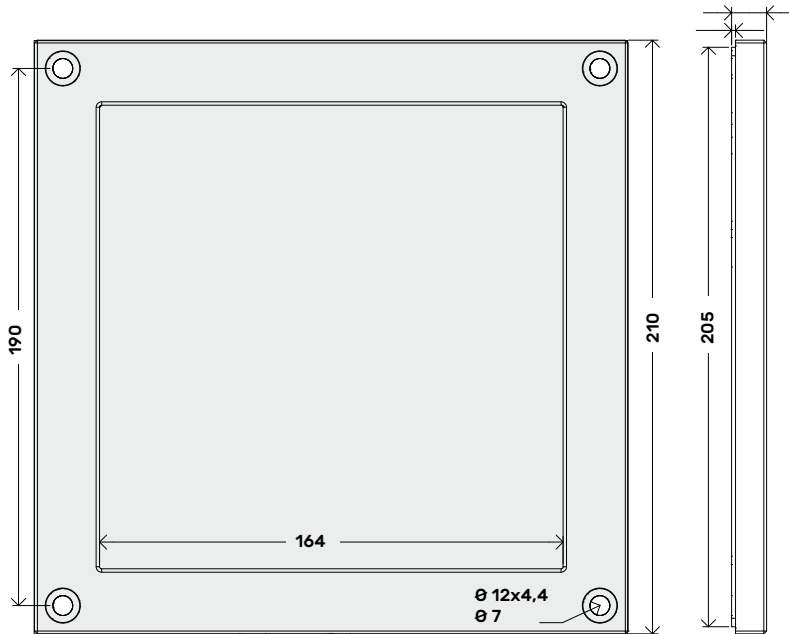
Type	BigRef-IV-03	BigRef-mV-03
Shunt nominal Value / TC	–	9 mOhm / 15 ppm/K
Measurement uncertainty Isc resp. Vshunt with DakkS calibration	typical 1.2% (maximum 1.4%)	typical 1.6% (maximum 1.8%)
Sensor element	Monocrystalline silicon PV cell 156.75 x 156.75 mm <sup>2</sup> , pseudo-square vendor: BigSun, type: B156X1D4A-2020	
Linearity at 25 °C	Typical 0.1% in the range of 100 to 1200 W/m <sup>2</sup>	
Temperature coefficient Isc	Typical 0.0005 1/K	
Temperature measurement PV cell	Pt100 class A as per IEC 60751	
Case size / degree of protection	210 mm x 210 mm x 12.4 mm / IP 50	
Case material	Black anodized aluminium	
Connection cable PV cell	ASS 3x2x0.5 mm <sup>2</sup> , shielded, red, 2 m length	
Connection cable Pt100	LiYCY 2x2x0.14 mm <sup>2</sup> , shielded, black, 2 m length	
Operating temperature	+5 to +70 °C	
Customs tariff number	90 25 19 20	

→ For further technical information please see also the instruction manual.

### Normalized Spectral Response



## Dimensions



## Options

- DakkS calibration in relation to spectrum as per IEC 60904-3
- Measurement of spectral response as per IEC 60904-8
- Measurement of linearity as per IEC 60904-10
- Custom-specific PV cell

## Accessories

Transportation case	BigRef-Case	Transportation case with inlay, 444 mm x 338 mm x 81 mm
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## Scope of Delivery

All types	Instruction manual
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## Intelligent Measurement & Testing