IBC SOLAR

Have sun!

25-year product warranty

Product datasheet

IBC Module Transparent 445, 450 ES-TA1

High-quality double-glazed solar modules made of monocrystalline half-cut cells.

Extended performance warranty

Guaranteed higher long-term electricity profits owed to TOPCon technology.

Higher low light output

Even in low light conditions, for example at dusk and on cloudy days, increased power production is ensured.

Bifacial power generation

Up to 25% higher yield caused by double-sided active module, which absorbs sunlight with the front and back.

Better cell protection

The front and back glass layer protects the cells from damaging and environmental impacts

You also benefit from:

- a positive power tolerance (-0/+3%)
- increased mechanical stability (5,400 Pa)
- a German guarantor
- 100% proved quality
- 15 years combination warranty on modules and mounting systems
- a 30-year performance warranty
- a 25-year product warranty

Online shop:
Find our products and further information here.

Management System ISO 9001:2015 ISO 14001:2015 ISO 45001:2018 www.tuv.com ID 9105069440

ENGINEERED IN GERMANY

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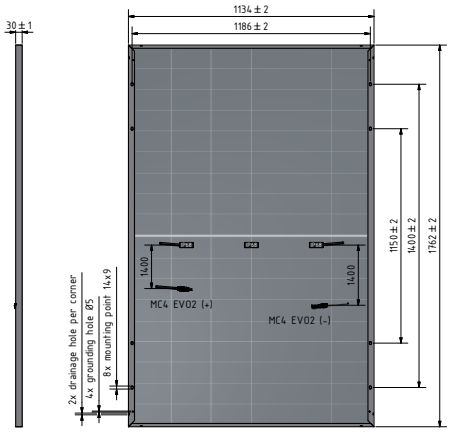

IBC Module	Transparent 445 ES-TA1	Transparent 450 ES-TA1
Article number	2006200015	2006200016
Electrical data (STC)[3]		
STC Power Pmax (Wp)	445	450
STC Nominal Voltage Umpp (V)	33.51	33.69
STC Nominal Current Impp (A)	13.28	13.36
STC Open Circuit Voltage Uoc (V)	38.97	39.17
STC Short Circuit Current Isc (A)	14.07	14.14
Module Efficiency (%)	22.27	22.52
Power Tolerance (%)	-0/+3	-0/+3
Electrical data (NMOT)[6]		
NMOT (°C)	42	42
NMOT Power Pmax (Wp)	333	337
NMOT Nominal Voltage Umpp (V)	32.08	32.26
NMOT Nominal Current Impp (A)	10.39	10.45
NMOT Open Circuit Voltage Uoc (V)	37.32	37.51
NMOT Short Circuit Current Isc (A)	11.36	11.42
Relative Efficiency Reduction at 200 W/m² (%)	≤ 5	≤ 5
Electrical Specifications[4] (BNPI[5])		
BNPI Power Pmax (Wp)	489	495
BNPI Nominal Voltage Umpp (V)	33.67	33.86
BNPI Nominal Current Impp (A)	14.54	14.62
BNPI Open Circuit Voltage Uoc (V)	39.09	39.29
BNPI Short Circuit Current Isc (A)	15.47	15.55
Temperature coefficient (linear)		
Tempcoeff Isc (%/°C)	+0,045	+0.045
Tempcoeff Uoc (mV/°C)	-97.43	-97.93
Tempcoeff Pmpp (%/°C)	-0.28	-0.28

Operating conditions	
Max. System Voltage (V)	1500
Application Class	A
Reverse Current Ir (A)	30
Fuse protection from parallel strings	3
Protection class	II (DIN EN 61140)
Fire protection	Class C (IEC 61730-ANSI/UL790)
Mechanical properties	
Dimensions (L × W × H in mm)	1762 × 1134 × 30
Weight (kg)	24.6
Max. Test load, Push/Pull (Pa)	5400/2400
Max. Design load[2], Push/Pull (Pa)	3600/1600
Front side (mm)	2.0 (low-iron photovoltaic glass and anti-reflective coating)
Back side (mm)	2.0 (low-iron photovoltaic glass)
Frame	anodized aluminium, sturdy hollow-chamber frame
Cells	12 × 9 mono-crystalline silicon cells
Connection type	Stäubli MC4-EVO 2A
Warranties and certification	
Product warranty	25 years[1]
Performance warranty	30 years[1]
Annual degradation	year 1 1.0 % year 2-30 0.4 %
Certification	IEC 61215, IEC 61730-1/-2, ISO 9001, ISO 14001, DIN EN ISO 45001
Packaging information	
Number of modules per pallet	36
Number of pallets per truck	26
Dimensions incl. pallet (L × W × H in mm)	1800 x 1140 x 1250
Gross weight incl. double pallet (kg)	920
Stackability per pallet	2-fold

1) The linear power and product warranty are only valid for installations within Europe and Japan. The warranty requires installation according to the valid installation instructions. Standard test conditions: 1000 W/m² irradiation with a spectral distribution of AM 1.5 and a cell temperature of 25°C. 800 W/m², NOCT. Information according to EN 60904-3 (STC). All values according to DIN EN 50380. Errors and changes reserved.
The precise conditions and content can be taken from the respectively valid version of the product and power warranty, which you can obtain from your IBC Premium Partner.
2) Loads according to IEC 61215-2:2016, max. design load
3) Measurement tolerances +/- 3 % at STC: 1000 W/m², 25 +/- 2 °C, AM 1.5
4) Measurements according to IEC 60904-3, Measurement tolerance: Isc: +/-4%, Voc: +/-3%, Test uncertainty for Pmax: +/-3%
5) BNPI: Front radiation 1000 W/m², Rear radiation 135 W/m², Module temperature 25°C, AM=1.5
6) NMOT: 800W/m², AM1,5

Your Premium Partner

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