



## DATASHEET

Module PB 160 | PB 165 | PB 170 | PB 175 | PB 180 | PB 185

The solar modules distinguishes itself by processing of high-quality components. 72 mono-crystalline silicon cells in every module allow a high achievement yield, even with limited solar irradiation. The highest claims fulfil a low achievement tolerance of +/-5 %.

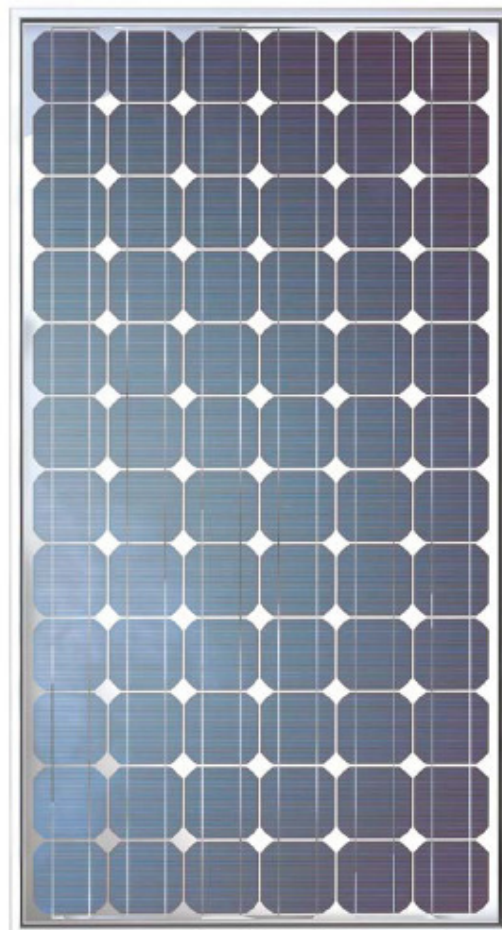
The solar cells are embedded in Ethylen vinyl acetate who is continuously against ultraviolet rays. The frame exists of a warp resistant aluminum alloy resistant to corrosion. With it the modules are stable and can be mounted in varied way.

The front side of the modules exists of thermally pretence solar glass. This glass guarantees on the one hand a high light permeability and, on the other hand, protects the solar cells against external effects of the weather, like Hagel, snow or ice.

A polyester hybrid foil at the back guarantees a good isolation with long life span. The junction box at the module back is equipped with bypass diodes which decrease the Hot-Spot-Effect of single solar modules. Several solar modules can be simply switched about a remounted solar cable with solar plug in row.

The solar modules are certified according to the valid European and international requirement IEC 61215:2005 and IEC 61730.

The power warranty is 10 years on 80% of the nominal power.



### High quality module

TÜV certificated

IEC 61215 and IEC 61730

ISO 9001:2000 certificated

### Fast and Inexpensive Mounting

TÜV passed and weatherproof connectors

Pre-confectioned cables

Integrated Bypass diodes

Red-D B.V.  
Händellaan 18  
7522 KM Enschede

053-4366557 (T)  
084-8188745 (F)  
info@red-d.eu



• Qualified IEC 61215  
• Safety tested  
• IEC 61730  
• Periodic inspection

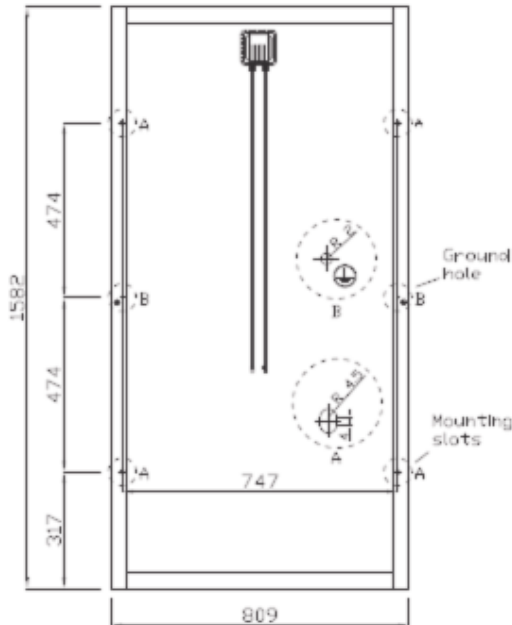




## DATASHEET

Module PB 160 | PB 165 | PB 170 | PB 175 | PB 180 | PB 185

### Mechanical data



### Physical characteristics

Cell type	72 Mono-crystalline cells connected in series 5"
Dimensions	1582 x 809 mm
Weight	16,5 kg
Connector type	
Bypass diodes	3 x 10 A/1000 V
Max.back current	10 A
Junktion box	IP 65, 95 x 95 x 30mm
Electric classification	Safety class II, Application Class A

### Limit values

Max. system voltage	1.000 V DC
Temperature of modul	- 40 to + 90 °C
relative humidity 85°C	85 %
Mechanical load	2400 N/m <sup>2</sup>

### Thermal characteristics

Temperature coefficient of $I_{SC} \alpha$ [A/°C]	0,0035
Temperature coefficient of $V_{OC} \beta$ [V/°C]	-0,1533
Temperature coefficient of $P_{MPP} \gamma$ [W/°C]	-0,7824
NOCT <sup>1)</sup> [°C]	47,5

### Electrical Data (STC <sup>2)</sup>)

Parameter		PB-160	PB-165	PB-170	PB-175	PB-180	PB-185
Rated power	$P_{mpp}$ [W]	160	165	170	175	180	185
Current at mpp	$I_{mpp}$ [A]	4.64	4.66	4.78	4.89	4.97	4.89
Voltage at mpp	$V_{mpp}$ [V]	34.5	35.4	35.6	35.8	36.2	37.8
Short circuit current	$I_{sc}$ [A]	5.07	5.08	5.15	5.25	5.36	5.6
Open circuit voltage	$V_{oc}$ [V]	43.2	43.6	44.2	44.2	44.2	44.6
Tolerance	[%]	±5	±5	±5	±5	±5	±5
Modul efficiency	$\eta$ [%]	12,5	12,9	13,3	13,7	14,1	14,5
Warranty		80% power output over 10 years					

### Electrical Data (NOCT <sup>3)</sup>)

Parameter		PB-160	PB-165	PB-170	PB-175	PB-180	PB-185
Rated power	$P_{mpp}$ [W]	143.1	147.6	152.1	156.5	161	165.5
Current at mpp	$I_{sc}$ [A]	5.15	5.16	5.23	5.33	5.44	5.69
Voltage at mpp	$V_{oc}$ [V]	39.81	40.18	40.73	40.73	40.73	41.10

<sup>1)</sup> normal operating cell temperature

<sup>2)</sup> All Data at STC: 1000 W/m<sup>2</sup>, AM 1,5, Temperature 25°C) All Data at STC: 1000 W/m<sup>2</sup>, AM 1,5, Temperature 25°C

<sup>3)</sup> Data at NOCT: 800 W/m<sup>2</sup>, NOCT, AM1.5

Red-D B.V.  
Händellaan 18  
7522 KM Enschede

053-4366557 (T)  
084-8188745 (F)  
info@red-d.eu



- Qualified, IEC 61215
- Safety tested, IEC 61730
- Periodic inspection

