

# Powerful performance – high stability.

## Bosch Solar Module c-Si P 60

### EU30123

**High-quality – high-performance – reliable.**  
Solar modules from Bosch Solar Energy.



**BOSCH**

#### Our crystalline solar modules offer impressive features including:

- ▶ Excellent quality assured through use of the best European-standard components
- ▶ Excellent processing and long-term stability right along the value-added chain
- ▶ Higher specific yields due to positive power sorting

#### Our certificates – quality stamped in writing

Bosch Solar Energy modules go through strict quality tests during the different stages of production according to international standards.



• Qualified IEC 61215  
• Safety tested IEC 61730  
• Salt corrosion resistance tested  
• Ammonia resistance tested  
• Periodic inspection



#### Quality

Salt corrosion resistance tested  
Ammonia resistance tested



#### Product features

Performance sorting  $-0/+4.99$  Wp  
Temperature coefficient  $P_{mpp}$   $-0.44\%$  K



#### Components

Silver frame, polycrystalline cell, MC4



#### Warranty

10 years product and  
25 years performance guarantee  
(90% up to 10 years, 80% up to 25 years)



#### Power classes

230 – 240 Wp

Length [x]	Width [y]	Frame height [z]	Weight	Junction box	Plug connector type	Cable [l]	Front glass surface
1660	990	50	21	Spelsberg PV 1410	MC4	-800 +1200	Structured
x, y, l in mm, ±2; z in mm, ±0.3; weight in kg ±0.5							

Crystalline solar module	
Performance classes	230 Wp, 235 Wp, 240 Wp
Performance sorting	-0/+4.99 Wp
Structure	<b>Glass-foil laminate</b> ▶ Anodized aluminum frame ▶ Junction box (IP 65) with 3 bypass diodes ▶ Weather-resistant back sheet (white)
Cells	60x polycrystalline solar cells in 156 mm x 156 mm format

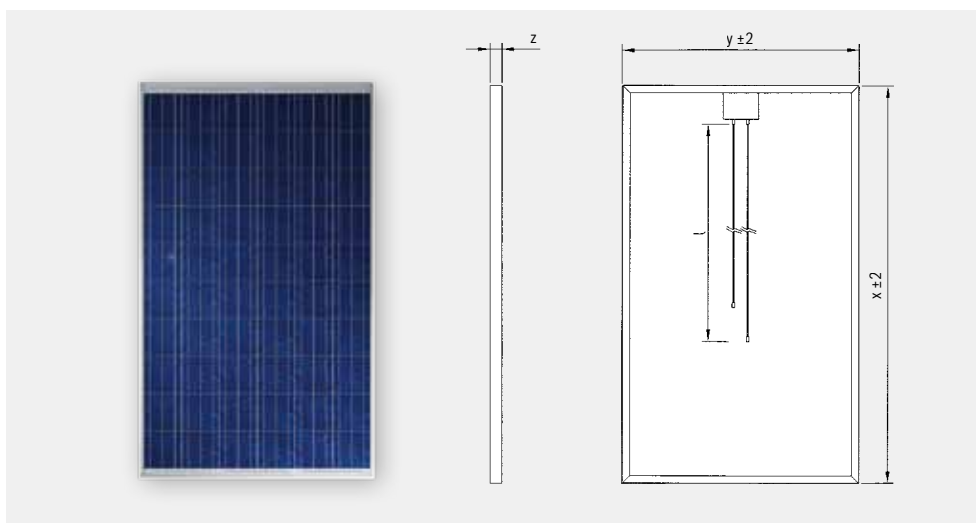
**Electrical characteristics for STC<sup>1</sup>:**

Designation	P <sub>mpp</sub> [Wp]	V <sub>mpp</sub> [V]	I <sub>mp</sub> [A]	V <sub>oc</sub> [V]	I <sub>sc</sub> [A]	Reverse-current load capacity [A]
P240	240	30.03	8.11	37.50	8.64	15
P235	235	29.83	7.99	37.30	8.53	15
P230	230	29.62	7.88	37.10	8.43	15
Reduction in module efficiency with decrease in irradiation level from 1000 W/m <sup>2</sup> to 200 W/m <sup>2</sup> (at 25 °C): -0.40% (absolute); measuring tolerance P <sub>mpp</sub> ±3%:						

**Electrical characteristics for NOCT<sup>2</sup>:**

Designation	P <sub>mpp</sub> [W]	V <sub>mpp</sub> [V]	V <sub>oc</sub> [V]	I <sub>sc</sub> [A]
P240	173	27.28	34.74	6.96
P235	169	27.08	33.54	6.87
P230	166	26.87	33.34	6.78
NOCT: Normal Operation Cell Temperature 46 °C; Irradiation level 800 W/m <sup>2</sup> , AM 1.5, temperature 20 °C, wind speed 1 m/s, electrical open circuit operation				

**Dimensions<sup>2</sup>:**



<sup>1</sup> Electrical parameters are typical mean values from historical production data. No guarantee is made for the accuracy of this data for future production batches.

<sup>2</sup> Drawings are not to scale. For detailed dimensions and tolerances, see above.

**Notes on assembly:**

- ▶ See installation and operating manual at: [www.bosch-solarenergy.com/products](http://www.bosch-solarenergy.com/products)
- ▶ Horizontal and vertical assembly possible
- ▶ System voltage max. 1000 V
- ▶ Operating temperature range -40 to 85 °C

**Weak light performance:**

Intensity [W/m <sup>2</sup> ]	V <sub>mpp</sub> [%]	I <sub>mp</sub> [%]
800	1.0	-20
600	0.3	-40
400	-0.2	-60
200	-1.8	-80
100	-5.0	-90
The electrical data applies for 25 °C and AM 1.5.		

**Thermal characteristics:**

Temperature coefficient	TK [%/K]
P <sub>mpp</sub>	-0.44
U <sub>oc</sub>	-0.31
I <sub>sc</sub>	0.04

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