

# Powerful performance – high stability.

## Bosch Solar Module c-Si M 60

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



**BOSCH**



Positive power sorting

USA & Canada-version

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

- ▶ Excellent quality assured through use of the best US and German-standard components
- ▶ Excellent processing and long-term stability right along the value-added chain
- ▶ Higher specific yields due to positive power sorting
- ▶ Professional customer service with unbureaucratic order and complaint processing carried out by designated contact persons
- ▶ Simple, safe installation thanks to standardized clamp mechanisms

### **Warranty conditions:**

- ▶ 10 years product warranty
- ▶ 25-year performance guarantee (90% up to 10 years, 80% up to 25 years)
- ▶ Product certification to UL 1703
- ▶ CEC registered
- ▶ Product certification to IEC 61215 (ed. 2)
- ▶ Protection class II / IEC 61730
- ▶ CE conformity

Manufacturer	Length [x]	Width [y]	Height [z]	Weight	Junction box	Plug connector	Cable [l]	Front glass surface
16	64.57 in 1 660.0	39.37 in 1 000.0	1.65 in 42.0	51.81 lb 23.5	Tyco	Tyco Solarlok	39.37 in 1 000.0	Structured
If not stated differently, x, y, z, l in mm, ±2 mm; weight in kg ±0.5								

Crystalline solar module	
Performance classes	220 Wp, 225 Wp, 230 Wp, 235 Wp, 240 Wp
Performance sorting	±2.5 Wp (-0/+4.99 Wp NEW starting July 1 <sup>st</sup> 2010)
Structure	<b>Glass-foil laminate</b> <ul style="list-style-type: none"> <li>▶ Anodized aluminum frame</li> <li>▶ Junction box (IP 65) with 3 bypass diodes</li> <li>▶ Weather-resistant back sheet (white)</li> <li>▶ Cable 12 AWG (4mm<sup>2</sup>)</li> </ul>
Cells	60x monocrystalline solar cells in 156 mm x 156 mm format

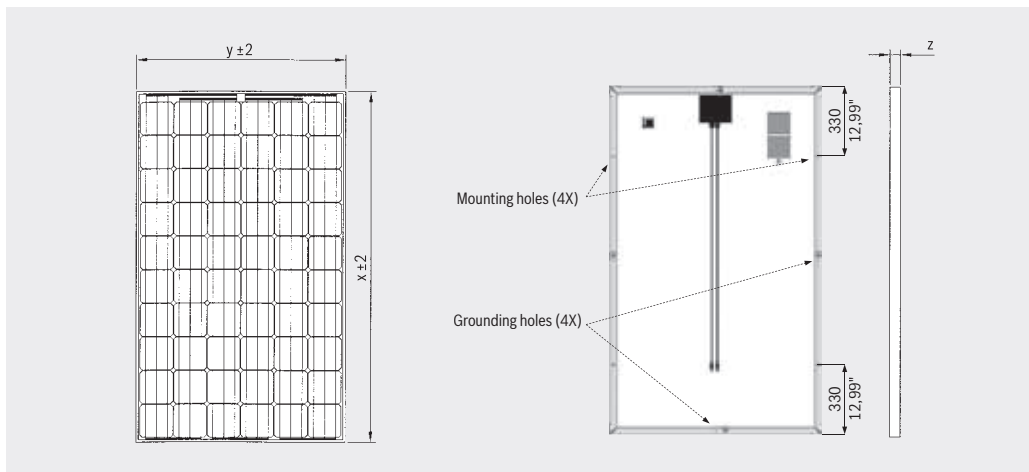
**Electrical characteristics for STC\*:**

Designation	Pmpp [Wp]	Vmpp [V]	Ipp [A]	Voc [V]	Isc [A]	Reverse-current load capacity [A]
M240 3BB	240	29.62	8.11	36.75	8.56	17
M235 3BB	235	29.41	7.99	36.48	8.47	17
M230 3BB	230	29.20	7.88	36.22	8.38	17
M225 3BB	225	29.00	7.76	35.96	8.29	17
Reduction in module efficiency with decrease in irradiation level from 1 000 W/m <sup>2</sup> to 200 W/m <sup>2</sup> (at 25 °C): -0.65% (absolute); measuring tolerance P ±3%						

**Electrical characteristics for NOCT\*:**

Designation	Pmpp [W]	Vmpp [V]	Voc [V]	Isc [A]
M240 3BB	173	27.44	34.09	6.84
M235 3BB	169	27.24	33.89	6.76
M230 3BB	166	27.04	33.69	6.68
M225 3BB	162	26.83	33.49	6.60
NOCT: Normal Operation Cell Temperature 48.4 °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\*\*:**



**Notes on assembly:**

- ▶ See installation and operating manual at [www.bosch-solarenergy.de/en/products/crystallinepvmodules](http://www.bosch-solarenergy.de/en/products/crystallinepvmodules)
- ▶ Horizontal and vertical assembly possible
- ▶ System voltage max. 600 V

**Weak light performance:**

Intensity [W/m <sup>2</sup> ]	Vmpp [%]	Ipp [%]
800	0.0	-20
600	-0.9	-40
400	-2.1	-60
200	-5.1	-80
100	-8.7	-90
The electrical data applies for 25 °C and AM 1.5.		

**Thermal characteristics:**

Operating temperature range	-40 to 85 °C
Temperature coefficient Pmpp	-0,51%/K
Temperature coefficient Voc	-0.37%/K
Temperature coefficient Isc	0.03%/K



\* Electrical parameters are typical mean values from historical production data. Bosch Solar Energy assumes no liability for the accuracy of this data for future production batches.

\*\* Drawings are not to scale. For detailed dimensions and tolerances, see above.

**Bosch Solar Energy, LLC**  
 4009 Miranda Ave  
 Palo Alto, CA 94304  
 USA  
 Phone: +01 650 275 3450  
 Fax: +01 650 812 8035  
[solarenergy@us.bosch.com](mailto:solarenergy@us.bosch.com)  
[www.bosch-solarenergy.com](http://www.bosch-solarenergy.com)

The assembly and operating instructions must be followed. Bosch Solar Energy accepts no liability for damage to equipment operated in conjunction with solar modules from Bosch Solar Energy without regard to the technical datasheets. Subject to technical modifications in the course of product development and mistakes/errors.