Powerful performance – high stability.
Bosch Solar Module c-Si M 48

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
- 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 IEC 61215 (ed. 2)
- Protection class II / IEC 61730
- CE conformity

Manu-facturer	Length [x]	Width [y]	Height [z]	Weight	Junction box	Plug connector type	Cable [l]
11	1343.0	988.0	40.0	16	Tyco	Tyco Solarlok	2 x 1000
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

x, y, z, l in mm, ±2 mm; weight in kg ±0.5

Crystalline solar module	
Performance classes	**180 Wp, 185 Wp, 190 Wp, 195 Wp, 200 Wp**
Performance sorting	–0/+4.99 Wp (±2.5 Wp applies for manufacturer 12)
Structure	**Glass-foil laminate** ▶ Anodized aluminum frame ▶ Junction box (IP 65) with 3 bypass diodes ▶ Weather-resistant back sheet (white)
Cells	**48x monocrystalline solar cells** in 156 mm x 156 mm format
Mechanical load	**5400 Pa superimposed load, 2400 Pa suction load,** in accordance with IEC 61215 (extended test)

Electrical characteristics for STC*:

Designation	Pmpp [Wp]	Vmpp [V]	Impp [A]	Voc [V]	Isc [A]	Reverse-current load capacity Ir [A]
M200	200	24.40	8.10	29.70	8.70	17
M195	195	24.30	8.05	29.50	8.65	17
M190	190	24.10	8.00	29.30	8.60	17
M185	185	23.70	7.95	29.10	8.55	17
M180	180	23.40	7.90	28.90	8.50	17

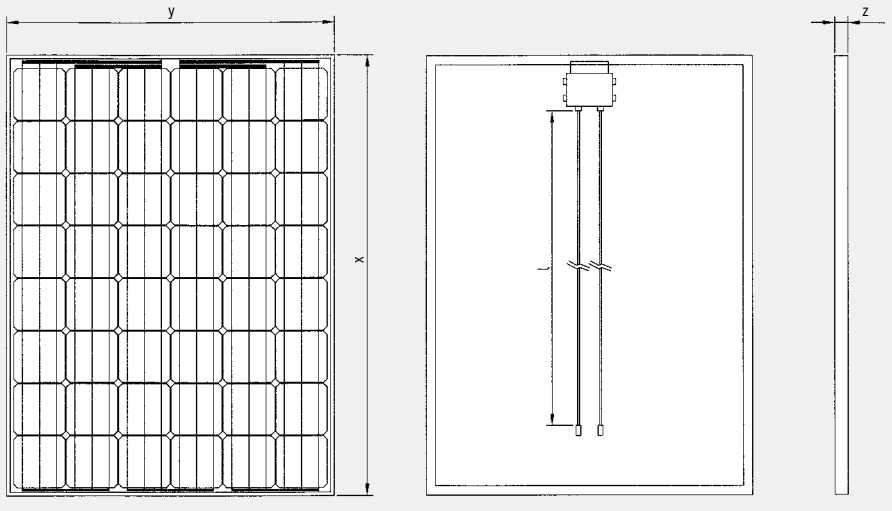
Reduction in module efficiency with decrease in irradiation level from 1000 W/m² to 200 W/m² (at 25 °C): –0.64 % (absolute); measuring tolerance P ±3 %

Electrical characteristics for NOCT*:

Designation	Pmpp [W]	Vmpp [V]	Voc [V]	Isc [A]
M200	144	22.13	27.49	6.92
M195	140	22.04	27.31	6.88
M190	137	21.86	27.12	6.84
M185	133	21.49	26.94	6.80
M180	130	21.22	26.75	6.76

NOCT: Normal Operation Cell Temperature 48.4 °C: Irradiation level 800 W/m², 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/
- ▶ Horizontal and vertical assembly possible
- ▶ System voltage max. 1000 V

Weak light performance:

Intensity [W/m²]	Vmpp [%]	Impp [%]
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	–0.47 %/K
Temperature coefficient Voc	–0.34 %/K
Temperature coefficient Isc	0.035 %/K

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

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

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