



SONNENSTROM
FABRIK

Optional
Low reflection edition
Snow load module edition
1500 volts module edition
Full black module edition
Total Care for the entire system
Extended product guarantee



EXCELLENT M60 smart | black

MONOCRYSTALLINE 320-330 WP

Aesthetic design, simple installation and maximum stability

Optionally available as full
black edition

Extended clamping areas
and upside down
installation possible

Maximum test load
8.100 Pascal ²

Stability optimized for
increased requirements
due to slipping snow loads
(optional)

Optimized for performance

PID-free monocrystalline
high performance solar
cells

Antireflective-coated
solar glass

Low-light optimized

Positively classified
-0/+4.99 Wp

Industry-leading
NMOT values

Highest quality standards

Manufactured
according to
DIN EN ISO 9001:2015
DIN EN ISO 14001:2015
BS OHSAS 18001:2007

PV-module
type approval
according to
IEC 61215:2016 ³

PV-module
safety qualification
according to
IEC 61730:2016 ³

Guaranteed performance ¹

26 years of linear
performance guarantee

12 years product
guarantee, optional
extension to 25 years

Total Care for the entire
system (optional)

¹ For detailed information please consult the CS Wismar GmbH warranty conditions

² See backside for detailed test loads

³ Subject to recertification

EXCELLENT 320 | 325 | 330 M60 smart | black

Performance STC

Under standard Test Conditions STC:
1000 W/m²; spectrum AM 1.5;
Cell temperature 25°C
Measurement tolerance STC:
P_{mpp} ±3%; I_{sc} ±10%; U_{oc} ±10%

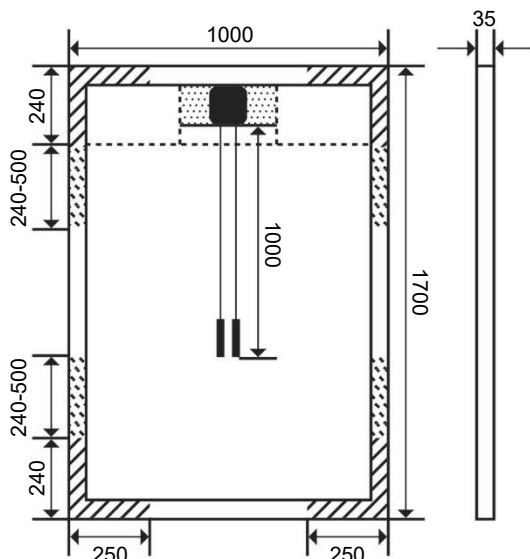
Nominal Power P _{mpp} (Wp)	320	325	330
Open Circuit Voltage U _{oc} (V)	40,22	40,41	40,60
Voltage U _{mpp} (V)	33,61	33,85	34,09
Short Circuit Current I _{sc} (A)	10,20	10,31	10,42
Current I _{mpp} (A)	9,52	9,60	9,68
Efficiency η (%)	18,8	19,1	19,4

Reduction of module efficiency at reduction from 1000 W/m² to 200 W/m²: 3,3% ± 0,5% (relative)

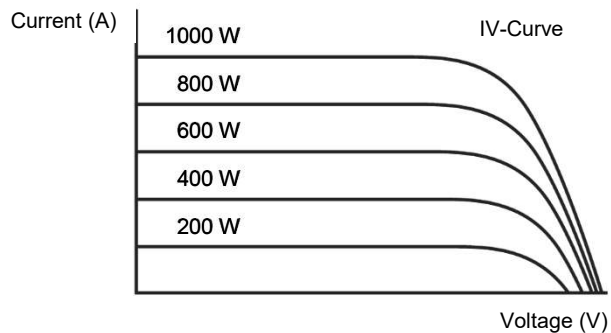
Performance NMOT

Nominal operating temperature of module
800 W/m², NMOT, AM 1.5

Nominal Power P _{mpp} (Wp)	250	254	258
Open Circuit Voltage U _{oc} (V)	37,61	37,79	37,97
Voltage U _{mpp} (V)	32,94	33,17	33,40
Short Circuit Current I _{sc} (A)	8,24	8,33	8,42
Current I _{mpp} (A)	7,60	7,66	7,72



measurements in mm



clamping area
 approved up to 2.400 Pa
 approved up to 5.400 Pa
 no contact between junction box and mounting profile permitted in this area.

Other Technical Specification

Max. system voltage	1000 V
Weight	19.0 ± 0.5 kg
Reverse Current Load I _R	15 A
Junction box	IP 67 with 3 bypass diodes
Connectors	IP 67, MC4
Fire rating	class C
Operating temperature	-40°C ... +85°C
Design load: snow	5.400 Pa *
Max test load	8.100 Pa
Design load: wind	2.400 Pa *
Max test load	3.600 Pa

* safety factor 1.5

Thermal Properties

TC P _{mpp}	-0.39 %/K
TC U _{oc}	-0.28 %/K
TC I _{sc}	0.040 %/K
NMOT	45 +/- 2 °C

Material Used

No. of cells	60 cells
Type of cells	monocrystalline
Front	hardened solar glass
Frame	anodized aluminium
Frame height	35 mm

