

Photovoltaic Module
ES 10-20 P36



**More
Efficiency
More
Reliability**



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Electrical Data at 1000 W/m², 25 °C and AM 1.5 (STC in Accordance with EN 60904-3)

rated power at STC ¹	10 Wp	12 Wp	18 Wp	20 Wp
module efficiency at STC ²	10.0 %	9.5 %	10.1 %	11.2 %
open-circuit voltage V _{oc}	21.6 V	21.6 V	21.6 V	21.6 V
short-circuit current I _{sc}	0.60 A	0.72 A	1.05 A	1.20 A
rated voltage V _{mpp}	17.71 V	17.71 V	17.71 V	17.71 V
rated current I _{mpp}	0.57 A	0.68 A	1.02 A	1.14 A

¹ The measurement tolerance of the rated power is ± 3%.

² At low irradiance (200 W/m², 25 °C and AM 1.5) the module yields at least 97% of the STC efficiency.

Electrical Data at 800 W/m², NOCT, 1m/s Wind Speed and AM 1.5

rated power P _{max}	8.1 W	9.7 W	14.6 W	16.2 W
open-circuit voltage V _{oc}	21.4 V	21.4 V	21.4 V	21.4 V
short-circuit current I _{sc}	0.48 A	0.58 A	0.84 A	0.96 A
rated voltage V _{mpp}	17.77 V	17.77 V	17.77 V	17.77 V
rated current I _{mpp}	0.46 A	0.55 A	0.82 A	0.92 A

Thermal Data

temperature coefficient open-circuit voltage	-0.34 %/K
temperature coefficient short-circuit current	+0.05 %/K
temperature coefficient rated power	-0.43 %/K
noct (normal operating cell temperature)	48 °C ± 2K

Mechanical Data

number of cells and cell type	36 polycrystalline solar cells			
module dimensions: length (a) x width (b)	394x253 mm	356x356 mm	388x461 mm	388x461 mm
mounting dimensions: length (c) x width (d)	263x220 mm	237x323 mm	259x428 mm	259x428 mm
weight	1.1 kg	1.2 kg	2.0 kg	2.0 kg
frame thickness	35 mm anodized aluminum			
front glass	3.2 mm high transmission, tempered glass			
embedding	EVA			
back sheet	composite film, white			
junction box	plastic, protection class IP 65			
number of bypass diodes	1			
cables	no			

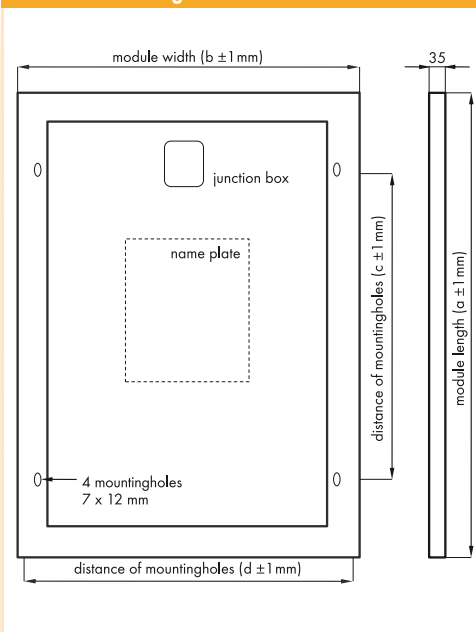
Permissible Operating Conditions

operating temperature range	-40 °C to 85 °C			
max. system voltage	600 V DC			
max. reverse current	2 A	2 A	3 A	3 A
maximum surface load capacity	5400 Pa or 550 kg/m ²			
resistance against hail	maximum diameter of 24 mm with impact speed of 83 km/h			
protection class	II			

Warranty and Certificates

product warranty	5 years
performance warranty	90% up to 10 years
certifications	IEC 61215 Ed. II, IEC 61730 ISO 9001, ISO 14001

Technical Drawing – All Dimensions in mm



Your Retailer:

Datasheet according to EN 50380.