

# Certificate



This certifies that the company:

## Engelmann Haustechnik GmbH

Zum Kyrbach 14 55481  
Ober Kostenz,  
Germany

is authorized to provide the product(s) mentioned below with the mark as illustrated.

Manufacturer and factory(-ies): See Annex 1

Description of product(s) (details see Annex 2): **Crystalline Silicon Terrestrial Photovoltaic (PV) Modules**

Certification program: P12-VA-01 Rev. 17 / 09.20

Certification fundamental(s): IEC 61215-1:2021 / EN IEC 61215-1:2021,  
IEC 61215-1-1:2021 / EN IEC 61215-1-1:2021, IEC 61215-2:2021 / EN IEC 61215-2:2021,  
IEC 61730-1:2023, IEC 61730-2:2023

It is certified by TÜV NORD CERT GmbH that the product(s) described above has(have) been assessed according to the certification program mentioned above and found in compliance with the requirements of above specified certification fundamental(s). This certification is based on evaluation results as documented in test report(s) referenced below and production site(s) audit results as documented in factory inspection report(s) referenced in Annex 1. This certificate is valid in conjunction with these quoted report(s).

Registration no.: 44 780 26 406749 - 014  
Report no.: 492014215.001  
File no.: PVP12159/25P

Valid from: 2026-01-23  
Valid until: 2029-07-24

Essen, 2026-01-23

Certification Body - Consumer Products

**TÜV NORD CERT GmbH**  
Am TÜV 1, 45307 Essen, Germany  
tuev-nord-cert.de | prodcert@tuev-nord.de

Please also pay attention to the information stated overleaf.

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Visit our database to verify the validity of this certificate.

# Annex 1

to certificate registration no. 44 780 26 406749 - 014

**Manufacturer:** Engelmann Haustechnik GmbH  
Zum Kyrbach 14 55481 Ober Kostenz, Germany

**Factory 1:** Econess Energy Co., Ltd.  
No.58, Haida Road, Huashi Town,  
Jiangyin City, Jiangsu Province, 214421, P.R. China  
Factory inspection report no.: 862010180.013

**Factory 2:** Sunrev (Yangzhou) Photovoltaic Technology Co., Ltd.  
No. 118, Jingang Road, Yangzhou economic and Technological Development Zone  
225100 Yangzhou City, Jiangsu Province, PEOPLE'S REPUBLIC OF CHINA  
Factory inspection report no.: 862010669.004

Remark: Factory inspection is mandatory to be performed annually. Please refer to factory inspection report for detailed information.

Essen, 2026-01-23

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# Annex 2

to certificate registration no. 44 780 26 406749 - 014

**Description of product(s):**

Module types:	<b>PV Modules with Half-cut 182mm TOPCon Mono-crystalline Silicon Solar Cells:</b> 108 cells: Engel.Solar xxxW HQ Serie 1 (xxx=415-445, in increments of 5) Remark: xxx indicates rated output power generated from front side under STC
Maximum system voltage:	1500V
Maximum overcurrent protection rating:	30A
Electrical protection class:	Class II
Pollution degree:	1
98 <sup>th</sup> percentile module operating temperature (T <sub>98</sub> ):	70°C
Design load (positive / negative):	3600Pa / 1600Pa
Safety factors:	1.5
Fire safety class:	Class C according to UL790
Isc bifaciality coefficient (ϕIsc):	80% ± 10%

Module types:	<b>PV Modules with Half-cut 182.2*188mm TOPCon Mono-crystalline Silicon Solar Cells:</b> 108 cells: Engel.Solar xxxW HQ Serie 2 (xxx=435-455, in increments of 5) Remark: xxx indicates rated output power generated from front side under STC
Maximum system voltage:	1500V
Maximum overcurrent protection rating:	30A
Electrical protection class:	Class II
Pollution degree:	1
98 <sup>th</sup> percentile module operating temperature (T <sub>98</sub> ):	70°C
Design load (positive / negative):	3600Pa / 1600Pa
Safety factors:	1.5
Fire safety class:	Class C according to UL790
Isc bifaciality coefficient (ϕIsc):	80% ± 10%

Essen, 2026-01-23



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Module types:	<b>PV Modules with Half-cut 182.2*191.6mm TOPCon Mono-crystalline Silicon Solar Cells:</b> 108 cells: Engel.Solar xxxW HQ Serie 3 (xxx=445-465, in increments of 5) Remark: xxx indicates rated output power generated from front side under STC
Maximum system voltage:	1500V
Maximum overcurrent protection rating:	30A
Electrical protection class:	Class II
Pollution degree:	1
98 <sup>th</sup> percentile module operating temperature (T <sub>98</sub> ):	70°C
Design load (positive / negative):	3600Pa / 1600Pa
Safety factors:	1.5
Fire safety class:	Class C according to UL790
Isc bifaciality coefficient (ϕIsc):	80% ± 10%

Module types:	<b>PV Modules with Half-cut 182*210mm TOPCon Mono-crystalline Silicon Solar Cells:</b> 96 cells: Engel.Solar xxxW HQ Serie 4 (xxx=430-450, in increments of 5) Remark: xxx indicates rated output power generated from front side under STC
Maximum system voltage:	1500V
Maximum overcurrent protection rating:	30A
Electrical protection class:	Class II
Pollution degree:	1
98 <sup>th</sup> percentile module operating temperature (T <sub>98</sub> ):	70°C
Design load (positive / negative):	3600Pa / 1600Pa
Safety factors:	1.5
Fire safety class:	Class C according to UL790
Isc bifaciality coefficient (ϕIsc):	80% ± 10%

**Remark:**

For detailed product information, please refer to CDF (Constructional Data Form) with the same file no.

Isc bifaciality coefficient (ϕIsc) =  $I_{sc\text{rear}}/I_{sc\text{front}}$ , as defined in IEC TS 60904-1-2.

The tolerance of Isc bifaciality coefficient (ϕIsc) is claimed by client.

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