



BUREAU  
VERITAS

# Samsvarssertifikat

**Søker:** Kostal Solar Electric  
Hanferstrasse 6  
79108 Freiburg  
Tyskland

**Produkt:** Batteri omformere

**Modell:** PLENTICORE BI 5.5/26 PLENTICORE BI 10/26

## Bruk i samsvar med to forskrifter:

Anordning for automatisk frakopling med overvåking av trefaset nett for fotoelektriske systemer med en trefaset parallellkrets ved hjelp av en strømvender matet fra strømmettet. Anordningen for automatisk frakopling er en integrert del av strømretteren nevnt ovenfor.

## Brukte regler og standarder:

### EN 50549-1:2019, NEK EN 50549-1:2019

Krav til generering av anlegg som skal kobles parallelt med distribusjonsnett - Del 1: Tilkobling til et LV distribusjonsnett - Generering av anlegg til og med type B

- 4.4 Normalt driftsområde
- 4.5 Immunitet mot forstyrrelser
- 4.6 Aktiv respons på frekvensavvik
- 4.7 Effekterespons på spenningsvariasjoner og spenningsendringer
- 4.8 EMC og kraftkvalitet
- 4.9 Grensesnittbeskyttelse
- 4.10 Tilkobling og begynn å generere elektrisk strøm
- 4.11 Opphør og reduksjon av aktiv effekt på settpunkt
- 4.12 Ekstern informasjonsutveksling
- 4.13 Krav til enkel feiltoleranse for grensesnittbeskyttelsessystem og grensesnittbryter

### RENBLAD 342-V2.0:2020-06

Tekniske funksjonskrav til tilknytnings- og nettleieavtale for innmatingskunder i lavspenningsnettet

### DIN V VDE V 0126-1-1:2006 (4.1 Funksjonell sikkerhet)

Automatisk frakoblingsenhet mellom en generator og det offentlige lavspenningsnettet

Ved utstedelsen av dette sertifikatet svarer prinsippet for beskyttelse av grensesnittet for et produkt av typen nevnt ovenfor til sikkerhetsspesifikasjonene for den spesifiserte bruken i samsvar med forskriftene.

**Rapportens nummer:** 19TH0374-BI-EN50549-1\_0 **Sertifiseringsprogram:** NSOP-0032-DEU-ZE-V01  
**Sertifikatets nummer:** U20-0986 **Ustedelsesdato:** 2020-12-10



Thomas Lammel



Institutt for sertifisering Bureau Veritas Consumer Products Services Germany GmbH Akkreditert i henhold til DIN EN ISO/IEC 17065  
En delvis representasjon av sertifikatet krever skriftlig godkjenning av Bureau Veritas Consumer Products Services Germany GmbH

## Appendix

Extract from test report according to EN 50549-1

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### Type Approval and declaration of compliance with the requirements of EN 50549-1.

|                                                                                                                                                                                                                                                                                                                                                                                           |                                                                           |                        |    |    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|------------------------|----|----|
| Manufacturer / applicant:                                                                                                                                                                                                                                                                                                                                                                 | Kostal Industrie Elektrik GmbH<br>Lange Eck 11<br>58099 Hagen<br>Germany  |                        |    |    |
|                                                                                                                                                                                                                                                                                                                                                                                           |                                                                           |                        |    |    |
| Micro-generator Type                                                                                                                                                                                                                                                                                                                                                                      | Photovoltaic inverter                                                     |                        |    |    |
|                                                                                                                                                                                                                                                                                                                                                                                           | PLENTICORE BI<br>5.5/26                                                   | PLENTICORE BI<br>10/26 | -- | -- |
| In-/Output DC voltage range [V]                                                                                                                                                                                                                                                                                                                                                           | 120 – 650                                                                 | 120 – 650              | -- | -- |
| In-/Output Input DC current [A]                                                                                                                                                                                                                                                                                                                                                           | 26                                                                        | 26                     | -- | -- |
| Output AC voltage [V]                                                                                                                                                                                                                                                                                                                                                                     | 3N~, 400V, 50Hz                                                           | 3N~, 400V, 50Hz        | -- | -- |
| Output AC current [A]                                                                                                                                                                                                                                                                                                                                                                     | 7,94                                                                      | 16,04                  | -- | -- |
| Output power [VA]                                                                                                                                                                                                                                                                                                                                                                         | 5500                                                                      | 10000                  | -- | -- |
|                                                                                                                                                                                                                                                                                                                                                                                           |                                                                           |                        |    |    |
| Firmware version                                                                                                                                                                                                                                                                                                                                                                          | Beginning with FW = 01.46 / PAR = 03.19                                   |                        |    |    |
|                                                                                                                                                                                                                                                                                                                                                                                           |                                                                           |                        |    |    |
| Measurement period:                                                                                                                                                                                                                                                                                                                                                                       | 2019-08-02 - 2019-11-07, 2020-04-06 – 2020-05-29, 2020-11-10 – 2020-11-30 |                        |    |    |
|                                                                                                                                                                                                                                                                                                                                                                                           |                                                                           |                        |    |    |
| Description of the structure of the power generation unit:                                                                                                                                                                                                                                                                                                                                |                                                                           |                        |    |    |
| The power generation unit is equipped with a DC and line-side EMC filter. The power generation unit has no galvanic isolation between DC input and AC output. Output switch-off is performed with single-fault tolerance based on two series-connected relays in each line and neutral. This enables a safe disconnection of the power generation unit from the network in case of error. |                                                                           |                        |    |    |
|                                                                                                                                                                                                                                                                                                                                                                                           |                                                                           |                        |    |    |

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### Setting of the interface protection:

| Parameter                                                                                                                                            | Min. disconnection time                                                 | Max. disconnection time | Min. operate value | Max. operate value | Standard set value                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|-------------------------|--------------------|--------------------|---------------------------------------------|
| Over voltage (stage 1)                                                                                                                               | 0,05s                                                                   | 24h                     | 1,0V <sub>n</sub>  | 1,35V <sub>n</sub> | 0,5s/1,10V <sub>n</sub>                     |
| Over voltage (stage 2)                                                                                                                               | 0,05s                                                                   | 24h                     | 1,0V <sub>n</sub>  | 1,35V <sub>n</sub> | 0,1s/1,15V <sub>n</sub>                     |
| Over voltage (stage 3)                                                                                                                               | 0,05s                                                                   | 24h                     | 1,0V <sub>n</sub>  | 1,35V <sub>n</sub> | --                                          |
| Under voltage (stage 1)                                                                                                                              | 0,05s                                                                   | 24h                     | 0V                 | 1,0V <sub>n</sub>  | 3,0s/0,80V <sub>n</sub>                     |
| Under voltage (stage 2)                                                                                                                              | 0,05s                                                                   | 24h                     | 0V                 | 1,0V <sub>n</sub>  | 0,3s/0,45V <sub>n</sub>                     |
| Under voltage (stage 3)                                                                                                                              | 0,05s                                                                   | 24h                     | 0V                 | 1,0V <sub>n</sub>  | --                                          |
| Over frequency                                                                                                                                       | 0,05s                                                                   | 24h                     | 50,01Hz            | 53,1Hz             | 20,0s/1,04f <sub>n</sub>                    |
| Over frequency (stage 1)                                                                                                                             | 0,05s                                                                   | 24h                     | 50,01Hz            | 53,1Hz             | 0,5s/1,05f <sub>n</sub>                     |
| Under frequency                                                                                                                                      | 0,05s                                                                   | 24h                     | 46,9Hz             | 49,99Hz            | 20,0s/0,95f <sub>n</sub>                    |
| Under frequency (stage 2)                                                                                                                            | 0,05s                                                                   | 24h                     | 46,9Hz             | 49,99Hz            | 20,0s/0,94f <sub>n</sub>                    |
| Reconnection settings for voltage (normal operational startup)                                                                                       | Ajustement range:<br>min: 0-1V <sub>n</sub> , max:1-2V <sub>n</sub>     |                         |                    |                    | 0,85V <sub>n</sub> ≤ V ≤ 1,10V <sub>n</sub> |
| Reconnection settings for frequency (normal operational startup)                                                                                     | Adjustment range:<br>min: 44-60Hz, max: 50-66Hz                         |                         |                    |                    | 49,9Hz ≤ f ≤ 50,1Hz                         |
| Reconnection time (normal operational startup)                                                                                                       | Adjustment range:<br>0-6000s                                            |                         |                    |                    | ≥ 60s                                       |
| Reconnection settings for voltage (automatic reconnection after tripping)                                                                            | Ajustement range:<br>min: 0-1V <sub>n</sub> , max:1-2V <sub>n</sub>     |                         |                    |                    | 0,85V <sub>n</sub> ≤ V ≤ 1,10V <sub>n</sub> |
| Reconnection settings for frequency (automatic reconnection after tripping)                                                                          | Adjustment range:<br>min: 44-60Hz, max: 50-66Hz                         |                         |                    |                    | 49,9Hz ≤ f ≤ 50,1Hz                         |
| Reconnection time (automatic reconnection after tripping)                                                                                            | Adjustment range:<br>0-6000s                                            |                         |                    |                    | ≥ 60s                                       |
| Active power gradient after reconnection                                                                                                             | Adjustment range:<br>1-10000%                                           |                         |                    |                    | 50% P <sub>E</sub> max / per minute         |
| Active power delivery at under frequency                                                                                                             | electronic inverter, no active power reduction                          |                         |                    |                    |                                             |
| Active power delivery at under frequency:<br>threshold frequency f1:<br>Droop:<br>Intentional delay:<br>Power reference:<br>Deactivation time tstop: | Adjustment range:<br>44-60Hz<br>1-10000%<br>0-2s<br>PM   Pmax<br>0-600s |                         |                    |                    | 49,0Hz<br>5%<br>0s<br>Pmax<br>0s            |
| Active power delivery at over frequency:<br>threshold frequency f1:<br>Droop:<br>Intentional delay:<br>Power reference:<br>Deactivation time tstop:  | Adjustment range:<br>44-60Hz<br>1-10000%<br>0-2s<br>PM   Pmax<br>0-600s |                         |                    |                    | 50,5Hz<br>5%<br>0s<br>Pmax<br>0s            |
| Permanent DC-injection                                                                                                                               | ≤ 0,5% of rated inverter output current or ≤ 20mA                       |                         |                    |                    |                                             |
| Rate of change of frequency (ROCOF)                                                                                                                  | Adjustment range:<br>0,01-100Hz/s                                       |                         |                    |                    | --                                          |
| Loss of mains according EN 62116 (LoM)                                                                                                               | Adjustment range:<br>0-6000s                                            |                         |                    |                    | 1Hz/s<br>[where used]                       |

## Appendix

Extract from test report according to EN 50549-1

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### Note:

<sup>a</sup> Over voltage – stage1: 10 min-mean-value corresponding to EN 50160.

The settings of the interface protection are password protected adjustable in the stated range above.

In case the above stated generators are used with an external protection device, the protection settings of the inverters are to be adjusted according to the manufacturer's declaration.

The above stated generators are tested according to the requirements in the EN50549-1 with deviations Ireland according RENBLAD 342-V2.0:2020-06. Any modification that affects the stated tests must be named by the manufacturer/supplier of the product to ensure that the product meets all requirements of the EN 50549-1:2019.