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Certification body of BV CPS GmbH
Accredited according to EN 45011 -
ISO / IEC 17011

Certificate of conformity NS protection

Manufacturer / applicant: Delta Energy Systems (Germany) GmbH
Tscheulinstr. 21
79331 Teningen
Germany

Type of grid and plant protection:	Integrated NS protection
Assigned to generation unit type:	SOLIVIA11EUG4TR EOE48030114

Firmware version

SYS: 1.2.x
DC: 1.2.x
AC1: 1.2.x
AC2: 1.2.x
AC3: 1.2.x

Connection rule: VDE-AR-N 4105:2011-08 – Power generation systems connected to the low-voltage distribution network
Technical minimum requirements for the connection to and parallel operation with low-voltage distribution networks.

Applicable standards / directives: E DIN V VDE V 0124-100 (VDE V 0124-100):((2011-11)) – Grid integration of power generation systems – low voltage
Test requirements for power generation units to be connected and operated parallel with the low-voltage distribution networks

The above mentioned grid and plant protection has been tested and certified according to the test guideline VDE 0124-100. The electrical properties required in the connection rule are satisfied.

- Setting values and disconnect times
- Properly functioning functional chain "NS protection – interface switch"
- Technical requirements of the switching device
- Passive detection of stand-alone power systems
- Single-fault tolerance

The certificate contains the following information:

- Technical specifications of the NS protection and corresponding power generation types
- Setting values of the protection functions
- Trip values of the protection functions

BV project number: 11TH0120-VDE0124-100-NA

Certificate number: U12-0306

Date of issue: 2012-04-10

Valid until:

2014-12-14

Certification body

Dieter Zitzmann



D-ZE-12024-01-01

(A partial representation of the certificate requires
the written permission of BV CPS GmbH)



NS protection as integrated NS protection

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Measurement period:	2011-06-01 to 2011-08-12

Protection function	Setting value	Trip value	Disconnection time
Voltage drop protection U <	184 V	183,6 V	171 ms
Rise-in-voltage protection U>	253 V	---	143,6 s ^a
Rise-in-voltage protection U>>	264 V	264,4 V	171 ms
Frequency decrease protection f<	47,50 Hz	47,51 Hz	193 ms
Frequency increase protection f>	51,50 Hz	51,50 Hz	176 ms

^a longest disconnection of the rise-in-voltage protection as a moving 10-minute-average

The disconnect time (sum of trip time of grid and plant protection and delay time of interface switch) must not exceed 200 ms.

A check of the overall functional chain "NS protection – interface switch" resulted in a successful disconnection.

The above mentioned grid and plant protection with the assigned power generation units has met the requirements for islanding detection with the help of the passive method (three-phase voltage monitoring).