



**BUREAU  
VERITAS**

**Bureau Veritas  
Consumer Products Services  
Germany GmbH**

Businesspark A96  
86842 Türkheim  
Germany  
+ 49 (0) 4074041-0  
cps-tuerkheim@de.bureauveritas.com

Certification body of BV CPS GmbH  
Accredited according to EN 45011 -  
ISO / IEC Guide 65

## Certificate of conformity NS protection

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

<b>Type of grid and plant protection:</b>	Integrated NS protection
<b>Assigned to generation unit type:</b>	SOL5.0-1TR1-G4 EOE46010554

**Firmware version:** SYS: 1.02.x  
DC: 0.1.x; AC: 0.1.x; ENS: 0.1.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:** DIN VDE V 0124-100 (VDE V 0124-100): 2012-07 – 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
- Active 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:** 11TH0375

**Certificate number:** U13-0773

**Date of issue:** 2013-10-25

**Valid until:** 2016-10-24

**Certification body**

Dieter Zitzmann

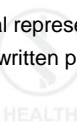
(A partial representation of the certificate requires the written permission of BV CPS GmbH)



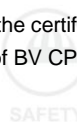
Deutsche  
Akkreditierungsstelle  
D-ZE-12024-01-01



QUALITY



HEALTH



SAFETY



ENVIRONMENT



SOCIAL  
ACCOUNTABILITY



**F.4 Requirements for the test report for the NS protection**

Extract from test report for NS protection  
 "Determination of electrical properties"

Nr. 11TH0375

**NS protection as integrated NS protection**

Manufacturer / applicant:	Delta Energy Systems (Germany) GmbH Tscheulinstraße 21 79331 Teningen Germany
Type of grid and plant protection:	Integrated NS protection
Assigned to generation unit type:	Solivia 5.0EUG4TR EOE46010253
Firmware version:	SYS: 1.02.x DC: 0.1.x; AC: 0.1.x; ENS: 0.1.x
Integrated interface switch:	Type of switching equipment 1: Transformer Type of switching equipment 2: Relay
Measurement period:	2012-03-05 – 2013-10-24

Protection function	Setting value	Trip value	Disconnection time <sup>a</sup>
Voltage drop protection U <	184 V	184,8 V	199 ms
Rise-in-voltage protection U>	257,6 V	---	516 s <sup>a</sup>
Rise-in-voltage protection U>>	264 V	263,9 V	200 ms
Frequency decrease protection f<	47,5 Hz	47,5 Hz	194 ms
Frequency increase protection f>	51,5 Hz	51,50 Hz	194 ms

<sup>a</sup> 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 active method (resonant circuit test).