



**BUREAU  
VERITAS**

# Certificate for the NS protection

**Manufacturer / applicant:** RCT Power GmbH  
Line Eid Str. 1  
78467 Konstanz  
Germany

|   |   |
|---|---|
| <b>Type of grid and plant protection:</b> | Integrated NS protection                    |
| <b>Assigned to generation unit type:</b>  | Power storage DC 8.0; Power storage DC 10.0 |

**Firmware version:** SW: V2.3 and higher

**Connection rule:** VDE-AR-N 4105:2018-11 – 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):2020-06 – 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
- Technical requirements of the switching device
- Active detection of unintended islanding
- 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

**Report number:** 19TH0431-DC 10.0-VDE0124-100:2020\_0      **Certification program:** NSOP-0032-DEU-ZE-V01

**Certificate number:** U20-0974      **Date of issue:** 2020-12-09



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E.6 and E.7 Requirements for the test report for the NS protection

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

Nr. 19TH0431-DC 10.0-VDE0124-100:2020\_0

## NS protection as integrated NS protection

|                                    |  |
|------------------------------------|--|
| Manufacturer / applicant:          | RCT Power GmbH<br>Line Eid Str. 1<br>78467 Konstanz<br>Germany     |
| Type of grid and plant protection: | integrated NS protection   |
| Assigned to generation unit type:  | Power storage DC 8.0; Power storage DC 10.0                        |
| Firmware version:                  | SW: V2.3 and higher  |
| Integrated interface switch:       | Typ Schalteinrichtung 1: Relais<br>Typ Schalteinrichtung 2: Relais |
| Measurement period:                | 2020-05-27 to 2020-08-04   |

### Inverter

| Protection function               | Setting value | Trip value | Disconnection time <sup>a</sup> |
|-----------------------------------|---------------|------------|---------------------------------|
| Voltage drop protection U <       | 184,0 V       | 183,7 V    | 3019 ms                         |
| Voltage drop protection U <<      | 103,5 V       | 103,4 V    | 386 ms                          |
| Rise-in-voltage protection U >    | 253,0 V       | --         | 485 s <sup>b</sup>              |
| Rise-in-voltage protection U >>   | 287,5 V       | 287,4 V    | 135 ms                          |
| Frequency decrease protection f < | 47,50 Hz      | 47,50 Hz   | 136 ms                          |
| Frequency increase protection f > | 51,50 Hz      | 51,51 Hz   | 145 ms                          |

<sup>a</sup> proper time of interface switch 20 ms

<sup>b</sup> longest disconnection of the rise-in-voltage protection as a moving 10-minute-average, tested according clause 5.5.7 Protection devices and protection settings of VDE 0124-100

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).

The above mentioned NS protection meets the requirements for synchronization.