



**BUREAU
VERITAS**

Certificate for the NS protection

Manufacturer / applicant:

JIANGSU GOODWE POWER SUPPLY TECHNOLOGY CO., LTD
No.90 Zijin Rd., New District,
Suzhou, 215011,
China

Type of grid and plant protection:	Integrated NS protection
Assigned to generation unit type:	GW700-XS, GW1000-XS, GW1500-XS, GW2000-XS, GW2500-XS, GW3000-XS

Firmware version:

V1.00.08

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):2019-09 – 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
- Integrated interface switch that can also be used in conjunction with a central interface protection relay (VDE-AR-N 4105:2018-11 §6.4.1)
- 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

BV project number:

ZEM-19JY3055FTSHP

Certification program: NSOP-0032-DEU-ZE-V01

Certificate number:

U20-0264

Date of issue:

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Certification body of Bureau Veritas Consumer Products Services Germany GmbH Accredited according to DIN EN ISO/IEC 17065

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

Extract from test report for NS protection
 “Determination of electrical properties”

Nr. ZEM-19JY3055FTSHP

NS protection as integrated NS protection

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Type of grid and plant protection:	Integrated NS protection
Assigned to generation unit type:	GW700-XS, GW1000-XS, GW1500-XS, GW2000-XS, GW2500-XS, GW3000-XS
Firmware version:	V1.00.08
Integrated interface switch:	Type of switching equipment 1: Relay Type of switching equipment 2: Relay
Measurement period:	2020-01-02 – 2020-03-09

Protection function	Setting value	Trip value	Disconnection time ^a
Voltage drop protection U <	184,0 V	184,1 V	3028 ms
Voltage drop protection U <<	103,5 V	103,6 V	352 ms
Rise-in-voltage protection U >	253,0 V	--	465 s ^b
Rise-in-voltage protection U >>	287,5 V	286,0 V	181 ms
Frequency decrease protection f <	47,50 Hz	47,50 Hz	194 ms
Frequency increase protection f >	51,50 Hz	51,50 Hz	184 ms

^a proper time of interface switch 15 ms

^b 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 passive method (three-phase voltage monitoring).

The above mentioned NS protection meets the requirements for synchronization.