

Certificate for the NS protection

Manufacturer / applicant:

Fronius International GmbH Günter Fronius Straße 1

4600 Wels Austria

Type of grid and plant protection:	Integrated NS protection	
Assigned to generation unit type:	ECO27.0-3-S, ECO25.0-3-S	

Firmware version: beginning with V1.1.4.0

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 DIN VDE V 0124-100 (VDE V 0124-100):2020-06 - Grid integration of power generation systems

low voltage

directives: 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.

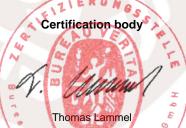
- Setting values and disconnect times
- Properly functioning functional chain "NS protection interface switch"
- Technical requirements of the switching device
- Integrated interface switch that can also be used in conjunction with a central interface protection relay (VDE-AR-N 4105:2018-11 §6.4.1)
- 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: 15TH0304-VDE-0124-100:2020_0 Certification program: NSOP-0032-DEU-ZE-V01

Certificate number: U21-0400 Date of issue: 2021-05-20





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

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Annex to the Certificate for the NS-protection No. U21-0400

E.7 Requirements for the test report for the			
Extract from test report for NS protection "Determination of electrical properties"			Nr. 15TH0304-VDE-0124-100:2020_0
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NS protection as integrated NS	T		
Manufacturer / applicant:	Fronius Internationa		
	Günter Fronius Stra	še 1	
	4600 Wels Austria		
Type of grid and plant protection:		ation	
· · · · ·	Integrated NS protection		
Assigned to generation unit type:			
Firmware version:	beginning with V1.1.4.0		
Integrated interface switch:	Type of switching equipment 1: Relay		
	Type of switching ed	uipment 2: Relay	
Measurement period:	2019-10-14 – 2020-01-07		
	Invert	er	
Protection function	Setting value	Trip value	Disconnection time ^a
Voltage drop protection U <	184,0 V	183,0 V	3,050 s
Voltage drop protection U <<	103,5 V	103,6 V	0,316 s
Rise-in-voltage protection U>	253,0 V		507 s ^b
Rise-in-voltage protection U>>	287,5 V	288,7 V	0,115 s
Frequency decrease protection f<	47,50 Hz	47,50 Hz	0,120 s
Frequency increase protection f>	51,50 Hz	51,51 Hz	0,121 s
a proper time of interface switch 5 ms	•		•

a proper time of interface switch 5 ms

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.

^b longest disconnection of the rise-in-voltage protection as a moving 10-minute-average, tested according clause 5.7.7 Protection devices and protection settings of VDE 0124-100