Declaration of conformity

with the requirements of DEWA 2016

CERTIFICATION BODY: **Bureau Veritas Consumer Products Services Germany GmbH**
DAkkS accreditation, D-ZE-12024-01-00, ref. To DIN EN ISO / IEC 17065
validity date: 15-Oct-2020

APPLIED RULES AND STANDARDS: **DEWA 2016** Version 2.0, March 2016
Standards for Distributed renewable resources generators connected to the distribution network

TOPOLOGY OF THE DEVICE COVERED BY THE DECLARATION

DISCONNECTION DEVICE	INTERFACE PROTECTION DEVICE	DEVICE FOR STATIC CERVERSION	ROTATING GENERATOR DEVICE
	X		

MANUFACTURER: **ZIEHL industrie-elektronik GmbH+Co KG**
Daimlerstraße 13
74523 Schwäbisch Hall
Germany

TYPE DISCRIPTION:	**External IPS (Interface protection system)**
MODEL / TYPE:	**SPI1021**

VERSIONE FIRMWARE: **0-0**

NUMERO DI FASI: **Single-phase + three-phase**

NOTA:
For systems where the power imbalance more than 5kW, the power imbalance must be checked separately.

REFERENCE TO THE LABORATORY, WHICH PERFORMED THE APPROVAL:
Bureau Veritas Consumer Products Services Germany GmbH
DAkkS accreditation, DPL-12024-03-03, ref. To DIN EN ISO / IEC 17025
Date of validity: 11-June-2019

Examined ISO 9001 Certificate of the Manufacturer n° FS 529448/4542D, issued by British Standards Institution (BSI).

Report number: **12TH0488-DEWA-2016_0**

Certificate number: **U16-0447**

Date of issue: **2016-08-04**

Organismo di certificazione

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

Tables Interface Protection System (IPS)

Extracts of the test report **No. 12TH0488**

Interface Protection System (IPS)

Manufacturer / applicant:	**ZIEHL industrie-elektronik GmbH+Co KG** **Daimlerstraße 13** **74523 Schwäbisch Hall** **Germany**
Model:	**SPI1021**
Versione Firmware:	**0-0**

Test at temperature -10°C		Tripping thresholds		Trip time		Resetting Ratio		Resetting time	
		Measured [V]	Required [V] ± 5%	Measured [ms]	Required [ms]	Measured	Required	Measured [ms]	Required [ms]
Voltage threshold	Min	195,9	195,5	397	400 ± 20 ms	1,036	1,03 ≤ r ≤ 1,05	58	10 ≤tr ≤ 40± 20 ms
	Max	263,9	264,5	204	200 ± 20 ms	0,966	0,95 ≥ r ≥ 0,97	60	10 ≤tr ≤ 40± 20 ms

Test at ambient temperature		Tripping thresholds		Trip time		Resetting Ratio		Resetting time	
		Measured [V]	Required [V] ± 5%	Measured [ms]	Required [ms]	Measured	Required	Measured [ms]	Required [ms]
Voltage threshold	Min	196,2	195,5	396	400 ± 20 ms	1,036	1,03 ≤ r ≤ 1,05	58	10 ≤tr ≤ 40± 20 ms
	Max	263,4	264,5	194	200 ± 20 ms	0,966	0,95 ≥ r ≥ 0,97	60	10 ≤tr ≤ 40± 20 ms

Test at temperature +55°C		Tripping thresholds		Trip time		Resetting Ratio		Resetting time	
		Measured [V]	Required [V] ± 5%	Measured [ms]	Required [ms]	Measured	Required	Measured [ms]	Required [ms]
Voltage threshold	Min	195,9	195,5	394	400 ± 20 ms	1,036	1,03 ≤ r ≤ 1,05	58	10 ≤tr ≤ 40± 20 ms
	Max	263,8	264,5	204	200 ± 20 ms	0,966	0,95 ≥ r ≥ 0,97	60	10 ≤tr ≤ 40± 20 ms

Test at temperature -10°C		Tripping thresholds		Trip time		Test at temperature -10 °C Requested [V] ± 5%
		Measured [V]	Required [V] ± 5%	Measured [ms]	Required [ms]	
Voltage threshold	Min	92,0	Voltage threshold	Min	92,0	

Test at ambient temperature		Tripping thresholds		Trip time		Test at ambient temperature Requested [V] ± 5%
		Measured [V]	Required [V] ± 5%	Measured [ms]	Required [ms]	
Voltage threshold	Min	92,0	Voltage threshold	Min	92,0	

Test at temperature +55°C		Tripping thresholds		Trip time		Test at temperature +55 °C Requested [V] ± 5%
		Measured [V]	Required [V] ± 5%	Measured [ms]	Required [ms]	
Voltage threshold	Min	92,0	Voltage threshold	Min	92,0	

Note:

≤ 5% for the voltage thresholds

≤ 3 % ± 20 ms for the Trip time

variation of error during the repetition of the test

- ≤ 2 % for the temperature
- ≤ 1 % ± 20 ms for the tripping times

Tables Interface Protection System (IPS)

Extracts of the test report **No. 12TH0488**

Interface Protection System (IPS)

Frequency 49,5Hz … 50,5Hz

Test at temperature -10°C		Tripping thresholds		Trip time		Resetting Ratio		Resetting time	
		Measured [Hz]	Required [Hz] ± 20 mHz	Measured [ms]	Required [ms]	Measured	Required	Measured [ms]	Required [ms]
Frequency threshold	Min	49,50	49,5	90	100 ± 20 ms	1,002	1,001 ≤ r ≤ 1,003	53	10 ≤tr ≤ 40± 20 ms
	Max	50,48	50,5	98	100 ± 20 ms	0,998	0,997 ≥ r ≥ 0,999	60	10 ≤tr ≤ 40± 20 ms

Test at ambient temperature		Tripping thresholds		Trip time		Resetting Ratio		Resetting time	
		Measured [Hz]	Required [Hz] ± 20 mHz	Measured [ms]	Required [ms]	Measured	Required	Measured [ms]	Required [ms]
Frequency threshold	Min	49,50	49,5	92	100 ± 20 ms	1,002	1,001 ≤ r ≤ 1,003	53	10 ≤tr ≤ 40± 20 ms
	Max	50,50	50,5	102	100 ± 20 ms	0,998	0,997 ≥ r ≥ 0,999	60	10 ≤tr ≤ 40± 20 ms

Test at temperature +55°C		Tripping thresholds		Trip time		Resetting Ratio		Resetting time	
		Measured [Hz]	Required [Hz] ± 20 mHz	Measured [ms]	Required [ms]	Measured	Required	Measured [ms]	Required [ms]
Frequency threshold	Min	49,50	49,5	90	100 ± 20 ms	1,002	1,001 ≤ r ≤ 1,003	54	10 ≤tr ≤ 40± 20 ms
	Max	50,50	50,5	98	100 ± 20 ms	0,998	0,997 ≥ r ≥ 0,999	60	10 ≤tr ≤ 40± 20 ms

Frequency 47,5Hz … 52,5Hz

Test at temperature -10°C		Tripping thresholds		Trip time		Resetting Ratio		Resetting time	
		Measured [Hz]	Required [Hz] ± 20 mHz	Measured [ms]	Required [ms]	Measured	Required	Measured [ms]	Required [ms]
Frequency threshold	Min	47,50	47,5	4000	4000 ± 20 ms	1,002	1,001 ≤ r ≤ 1,003	53	10 ≤tr ≤ 40± 20 ms
	Max	52,50	52,5	97	100 ± 20 ms	0,998	0,997 ≥ r ≥ 0,999	60	10 ≤tr ≤ 40± 20 ms

Test at ambient temperature		Tripping thresholds		Trip time		Resetting Ratio		Resetting time	
		Measured [Hz]	Required [Hz] ± 20 mHz	Measured [ms]	Required [ms]	Measured	Required	Measured [ms]	Required [ms]
Frequency threshold	Min	47,50	47,5	4000	4000 ± 20 ms	1,002	1,001 ≤ r ≤ 1,003	53	10 ≤tr ≤ 40± 20 ms
	Max	52,50	52,5	97	100 ± 20 ms	0,998	0,997 ≥ r ≥ 0,999	60	10 ≤tr ≤ 40± 20 ms

Test at temperature +55°C		Tripping thresholds		Trip time		Resetting Ratio		Resetting time	
		Measured [Hz]	Required [Hz] ± 20 mHz	Measured [ms]	Required [ms]	Measured	Required	Measured [ms]	Required [ms]
Frequency threshold	Min	47,50	47,5	4000	4000 ± 20 ms	1,002	1,001 ≤ r ≤ 1,003	54	10 ≤tr ≤ 40± 20 ms
	Max	52,50	52,5	97	100 ± 20 ms	0,998	0,997 ≥ r ≥ 0,999	60	10 ≤tr ≤ 40± 20 ms

Note:

≤ 5% for the voltage thresholds

≤ 3 % ± 20 ms for the Trip time

variation of error during the repetition of the test

- ≤ 2 % for the temperature
- ≤ 1 % ± 20 ms for the tripping times