CERTIFICATE

Issued to:
Applicant:
Solenso electronic materials Co., LTD.
4F., No.56, Zili 5th St., Zhonglil Dist.
Taoyuan 320, Taiwan

Licensee:
Solenso electronic materials Co., LTD.
4F., No.56, Zili 5th St., Zhonglil Dist.
Taoyuan 320, Taiwan

Product	:	PV Microinverter (NS Protection)
Trade name(s)	:	Solenso
Type(s)/model(s)	:	SG400, SG450 and SG500

The product and any acceptable variation thereof as specified in the Annex to this certificate and the documents referred to therein.

DEKRA hereby declares that the above-mentioned product has been certified based on:
- a type test according to VDE-AR-N 4105:2018 and DIN VDE V 0124-100:2020
- an inspection of the factory location according to CENELEC Operational Document CIG 021
- a DEKRA certification agreement with the number 6069947

DEKRA hereby grants the right to use the DEKRA Mark.

The DEKRA Mark may be applied to the product as specified in this certificate for the duration and under the conditions of the DEKRA Mark certification agreement.

This certificate is issued on 16 April 2025 and expires upon withdrawal of one of the above mentioned standards.

Certificate number: 31-156340

DEKRA Certification B.V.

B.T.M. Holtus
Managing Director

Massimiliano Triulzi
Certification Manager

ACCREDITED BY THE
DUTCH ACCREDITATION
COUNCIL

PRODUCTS
RvA C 001

DEKRA

31-156340

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DEKRA Mark is the new KEMA-KEUR
The DEKRA Mark certificate for this product is to all intents and purposes equivalent to a KEMA-KEUR certificate, the other certification mark used by DEKRA and should be valued and used as such. DEKRA Mark is gradually replacing KEMA-KEUR.
For more information please check: Introducing DEKRA Mark

SPECIFICATION OF THE CERTIFIED PRODUCT

Product data

Product	:	PV Microinverter (NS Protection)
Trade name(s)	:	Solenso
Type(s)/model(s)	:	SG400, SG450 and SG500
Type of NS protection	:	Integrated NS protection
Assigned to Power generation unit type	:	SG400, SG450, SG500
Software version	:	V2.00-2025.01.02

TESTS

Test requirements
VDE-AR-N 4105:2018
DIN VDE V 0124-100:2020

Test result
The test results are documented in DEKRA test file 621753600.

Additional information
This certificate is the NS protection certificate for PV Microinverter

The list of components is laid down in test report 6217536.51.

Conclusion
The examination has confirmed that all requirements were met.

Factory location
Zhejiang Wellsun Intelligent Technology Co., Ltd.
109 Yongchang Road, Shifeng Street, Tiantai County
317200 Taizhou City Zhejiang, China

Trade name(s): Solenso stands for:

E.7 Requirement for the NS protection test report (VDE-AR-N 4105:2018-11)
E.7 Anforderungen an den Prüfbericht zum NA-Schutz

Extract of the test report for NS protection Determination of electrical properties" *Auszug aus dem Prüfbericht für den NA-Schutz Bestimmung der elektrischen Eigenschaften“*	Report No.: 6217536.51 *Bericht Nr.:*
Test report NS protection *Prüfbericht NA-Schutz*	
Type of NS protection: *Typ NA-Schutz:*	**Integrated NS protection** *Integrierter NA-Schutz*
Software version: *Software version:*	V2.00-2025.01.02
Manufacturer: *Hersteller:*	Solenso electronic materials Co., LTD.
Measuring period: *Messzeitraum:*	**From 2025-03-08 to 2025-03-18** *Vom 2025-03-08 bis 2025-03-18*

	Inverter *Umrichter*		
Protection function *Schutzfunktion*	**Setting tripping value** *Einstellwert*	**Measured tripping value** *Auslösewert*	**Measured tripping time** *Auslösezeit NA-Schutz*
Rise-in-voltage protection *U* >> *Spannungssteigerungsschutz U > >*	1.25 * U_n	287.98 V	148.4 ms
Rise-in-voltage protection *U* > *Spannungssteigerungsschutz U >*	1.1 * U_n	--	≤ 100 ms *
Voltage drop protection *U* < *Spannungsrückgangsschutz U <*	0.8 * U_n	183.9 V	3225.0ms
Voltage drop protection *U* << *Spannungsrückgangsschutz U <<*	0.45 * U_n	103.2 V	352.0 ms
Frequency decrease protection *f* < *Frequenzrückgangsschutz f <*	47.5 Hz	47.49 Hz	110.0 ms
Frequency decrease protection *f* > *Frequenzsteigerungsschutz f >*	51.5 Hz	51.48 Hz	112.0 ms

*** The rise-in voltage protection as a running 10-minute mean value, Max. disconnecting time is 509.0s.**
** Der anstiege Spannungsschutz als laufender 10-Minuten-Mittelwert, Max. TrennZeit beträgt 509.0 s.*
The tripping time covers the period from the limit value violation U/f to the tripping signal to the interface switch.
Die Auslösezeit umfasst den Zeitraum von der Grenzwertverletzung U/f bis zum Auslösesignal an den Kuppelschalter.
When planning the power generation system, the inherent time of the interface switch must be added to the highest time value determined above.
Bei der Planung der Erzeugungsanlage ist die Eigenzeit des Kuppelschalters zum höchsten oben ermittelten Zeitwert zu addieren.
The switch-off time (total of the tripping time NS protection plus the inherent time of the interface switch) must not exceed 200 ms.
Die Abschaltzeit (Summe der Auslösezeit NA-Schutz zzgl. Eigenzeit des Kuppelschalters) darf 200 ms nicht überschreiten.

☒ **By integrated NS Protection** *Bei integriertem NA-Schutz*

Assigned to PGU type: *Typ Erzergungseinheit:*	SG400, SG450, SG500
Integrated interface switch type: *Typ integrierter Kuppelschalter*	Xiamen Hongfa Electroacoustic Co.,Ltd. Relay: HF115F/012-2HS4
Interface switch own time with integrated NS protection *Eigenzeit des Kuppelschalters bei integriertem NA-Schutz*	perati Xiamen Hongfa Electroacoustic Co.,Ltd. Relay: HF115F/012-2HS4 operation time: max 15 ms; Release time: max 8 ms

The verification of the full function chain “NS protection- Interface switch” has yield to intended disconnection.
Die Überprüfung der Gesamtwirkungskette „integrierter NA-Schutz – Kuppelschalter“ führte zu einer erfolgreichen Abschaltung.