



Certificate of compliance

Applicant: FSP TECHNOLOGY INC.
No.22, Jianguo East Road,
Taoyuan City, 330
Taiwan

Product: MPPT Solar Hybrid Inverter

Model: FSP Power manager 10KW
FSP103PV-230TH-48

Use in accordance with regulations:

Automatic disconnection device with three-phase mains surveillance in accordance with EN50549-1:2019 for photovoltaic systems with a three-phase parallel coupling via an inverter in the public mains supply. The automatic disconnection device is an integral part of the aforementioned inverter.

Applied rules and standards:

EN 50549-1:2019

Requirements for parallel connection of installations with distribution networks - Part 1: Connection to an LV distribution network - Production of installations up to and including Type B

EN 50438:2013

Requirements for micro-generating plants to be connected in parallel with public low-voltage distribution networks

DIN V VDE V 0126-1-1:2006 (4.1 Functional safety)

Automatic disconnection device between a generator and the public low-voltage grid

At the time of issue of this certificate the safety concept of an aforementioned representative product corresponds to the valid safety specifications for the specified use in accordance with regulations.

Report number: 20TH0159-EN50549-1_0

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

Certificate number: U20-0012

Date of issue: 2020-01-15



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

A partial representation of the certificate requires the written approval of Bureau Veritas Consumer Products Services Germany GmbH

Appendix

Extract from test report according to EN 50549-1

Nr. 20TH0159-EN50549-1_0

Type Approval and declaration of compliance with the requirements of EN 50549-1.

Manufacturer / applicant:	FSP TECHNOLOGY INC. No.22, Jianguo East Road, Taoyuan City, 330 Taiwan
Micro-generator Type	MPPT Solar Hybrid Inverter
	FSP Power manager 10KW, FSP103PV-230TH-48
MPP DC voltage range [V]	400 – 800
Input DC voltage range [V]	300 – 900
Input DC current [A]	2 x 18,6
Battery Input DC voltage range [V] (Discharge)	48
Battery Input AC current [A] (Discharge)	275
Output DC voltage range [V] (Charge)	48
Output DC current [A] (Charge)	200
Output AC voltage [V]	3/N/PE, 230/400, 50Hz
Output AC current [A]	14,5
Output power [VA]	10,0
Firmware version	00G
Measurement period:	2019-08-19 to 2019-12-04

Description of the structure of the power generation unit:

The power generation unit is equipped with a PV and line-side EMC filter. The power generation unit has no galvanic isolation between DC input and AC output. Output switch-off is performed with single-fault tolerance based on two series-connected relays in each line and neutral. This enables a safe disconnection of the power generation unit from the network in case of error.

Appendix

Extract from test report according to EN 50549-1

Nr. 20TH0159-EN50549-1_0

Setting of the interface protection:

Parameter	Max. disconnection time	Min. operate time	Trip value
Over voltage (stage 1) ^a	3s	-	230V +10% (253V)
Over voltage (stage 2)	0,2s	0,1s	230V +15% (264,5V)
Under voltage	1,5 s	1,2 s	230V -15% (195,5V)
Over frequency	0,5 s	0,3 s	50Hz +4% (52 Hz)
Under frequency	0,5 s	0,3 s	50Hz -5% (47,5 Hz)
Reconnection settings for voltage	$0,85U_n (195,5V) \leq U \leq 1,10U_n (253V)$		
Reconnection settings for frequency	$49,5 \text{ Hz} \leq f \leq 50,1 \text{ Hz}$		
Reconnection time	$\geq 60 \text{ s}$		
Active power gradient after reconnection	10% P_{Emax} / per minute		
Permanent DC-injection	0,5% of rated inverter output current or 20mA		
Loss of mains according EN 62116 (LoM)	2,0 s		

Note:

^a Over voltage – stage1: 10 min-mean-value corresponding to EN 50160.

Default interface setting according to EN 50438:2013 are used.

The settings of the interface protection are password protected adjustable.

In case the above stated generators are used with an external protection device, the protection settings of the inverters are to be adjusted according to the manufacturer's declaration.

The above stated generators are tested according to the requirements in the EN 50549-1:2019. Any modification that affects the stated tests must be named by the manufacturer/supplier of the product to ensure that the product meets all requirements of the EN 50549-1:2019.