Component Certificate

Applicant: **SMA Solar Technology AG**

Address: Sonnenallee 1
34266 Niestetal
Germany

Type of power generating unit:	**Power Generating System (PGS) controller**	**Hybrid Controller** *(HYC)* **Power Plant Manager (PPM-10/PPM-11)*** *(with integrated Hybrid Controller)*			
Technical data:	Voltage Supply Range	9-36 V_{DC}	30-60 V_{DC}	85-240 V_{AC}	90-110V_{DC}
	Analog input	10 analog inputs Internal / external measurement options			
	Digital input	Up to 16 digital inputs / SMA Modbus			
	Digital output	Up to 16 digital outputs I/O-unit: Bachmann electronic GmbH DIO 216			
	Power input	31,5 – 126 W (Current <3,5 A)			
Firmware version:	2.22.20.R / 2.20.10.R/ 2.21.28.R/ 2.22.25.R				
Validated model:	Name	*SMAHYC_022225R02.dll*			
	MD5 – Checksum	fe0fdd986a37b57376737fa831ba9068			

* The Hybrid Controller is in most cases part of the Power Plant Manager (PPM-10 / PPM-11), respectively integrated into its cabinet. Thus, the results of this report automatically apply to the Power Plant Manager (PPM-10 / PPM-11), as well.

Grid connection regulation:

VDE-AR-N 4110:2023-09 – Technical requirements for the connection and operation of customer installations to the medium voltage network (TCR medium voltage) [1]

VDE-AR-N 4120:2018-11 – Technical requirements for the connection and operation of customer installations to the high voltage network (TCR high voltage) [2]

VDE-AR-N 4130:2018-11 – Technical requirements for the connection and operation of customer installations to the extra high voltage network (TCR extra high voltage) [6]

Pertinent standards / Guidelines: Technical guidelines: FGW TR 3 Rev. 25 [3], FGW TR 4 Rev. 09 [4], FGW TR 8 Rev. 09 [5]

The PGS controller, stated in the certificate, were tested and certified according to the technical guidelines referenced to the grid connection regulation. The electrical characteristics fulfil the requirements of the grid connection regulation:

- Active power output and network security management
- Active power control (including P(f) control & ability to provide primary control power)
- Reactive power control (fixed cos(φ), reactive power with voltage limiting function, Q(U), Q(P))
- Switching on after triggering of the decoupling protection

Restrictions or deviations:
UPS/buffer on AC supply may be needed additionally.

The manufacturer has provided proof of certification of the quality management system of his production facility in accordance with ISO 9001

BV project number : **19TH0253**
Certificate no. : **20-0997_2** **Certification scheme** : **NSOP-0032-DEU-ZE-ES-V10**
Issued : **2025-12-12** **Valid until** : **2030-12-11**

Certification body

Georg Loritz
Lab Supervisor Energy Systems

DAkkS Deutsche Akkreditierungsstelle D-ZE-12024-01-00

Bureau Veritas Consumer Products Services Germany GmbH
Businesspark A96
86842 Tuerkheim
certification.deu@bureauveritas.com
www.bureauveritas.de/unsere-services/produktzertifizierung

Description of the revisions of certificate 20-0997_2	
Rev. 0	First issue
Rev. 1	• Removed restriction of No. of supporting points for Q(P) characteristic • Updated Annex 3 – Extract from the test report – Results of functionalities of P(f), ability to provide primary control power and switching on after triggering of the decoupling protection added • Updated references of TG3, TG4 and TG 8 reports • Updated Annex 4 – Validated simulation model • Updated Annex 5 – Certification-relevant parameters
Rev. 2	• New template used • Certificate validity extended for five years • Updated Annex 2 – Technical characteristics of the component (Manufacturer's data) • Updated Description of software version and interfaces • Updated Annex 3 – Extract from the test report – New results for Q(U), cos φ setpoints, prioritization of active power setpoints during an underfrequency event added • Updated references of TG3, TG4 and TG 8 reports • Updated Annex 4 – Validated simulation model