

Verification No.: VHC2407160090GC01-R1

Date of issue: 2025-04-15

Applicant:	Sigenergy Technology Co., Ltd. No.175 Weizhan Rd., Lin-gang 201304 Shanghai PEOPLE'S REPUBLIC OF CHINA		
Device Category:	Inverter		
Device Type:	PV Inverter, Hybrid Inverter, Power Conversion System		
PGM categories:	☒ Typ A	☒ Typ B	☒ Typ C ☐ Typ D
Model(s):	Sigen PV xM1	Sigen PV xM1-HYA	Sigen PV xM1-HYB
	Sigen PV xM2	Sigen PV xM2-HYA	Sigen PV xM2-HYB
	Sigen PCS xM1-A	Sigen PCS xM2-A	
	(x: 50, 60, 80, 100, 110, 125, 150)		
Trademark:	 SIGENERGY		
Technical data:	(For further details see A.2 Technical data of the power generating unit(s) on p.2)		
Firmware version:	V100R001		
Grid connection code:	[1] TOR Stromerzeugungsanlagen Typ A: 2024-07 (Version 1.3) Anschluss und Parallelbetrieb von Stromerzeugungsanlagen des Typs A und von Kleinstenergieanlagen (Maximalkapazität < 250 kW und Nennspannung < 110 kV) TOR Stromerzeugungsanlagen Typ B: 2024-07 (Version 1.3) Anschluss und Parallelbetrieb von Stromerzeugungsanlagen des Typs B (Maximalkapazität ≥250 kW und < 35 MW und Nennspannung < 110 kV) TOR Stromerzeugungsanlagen Typ C: 2024-07 (Version 1.3) Anschluss und Parallelbetrieb von Stromerzeugungsanlagen des Typs C (Maximalkapazität ≥35 MW und < 50 MW und Nennspannung < 110 kV)		
Testing standard:	[2] OVE-Richtlinie R25:2020-03 Prüfanforderungen an Erzeugungseinheiten (Generatoren) vorgesehen zum Anschluss und Parallelbetrieb an Niederspannungs-Verteilernetzen [3]FGW Technical Guidelines TG3, Revision 26, dated 5 April 2022 (Published by: FGW e.V.Fördergesellschaft Windenergie und andereDezentrale Energien)		
Test report no.:	[4] R25: HC2407160090GC01 (2025-04-11) [5]TG3: HC2407160090GC02_FRT (2025-04-14)		

This verification confirms that the above-mentioned generating unit(s) with corresponding software meet the requirements of the referenced grid connection code at the time the tests were conducted.

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Jack Shi
 Project Manager

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A.1 Revision history of the certificate

Rev. No.	Date	Changes	Status
0 (VHC2407160090GC01)	2025-04-11	Initial issue	Replaced no VHC2407160090GC01 -R1
1 (VHC2407160090GC01-R1)	2025-04-15	Updated to TOR Stromerzeugungsanlagen Typ A/B/C: 2024-07 (Version 1.3)	Active

A.2 Technical data of the power generating unit(s)

Model/Type reference	Sigen PV 50M1	Sigen PV 60M1	Sigen PV 80M1	Sigen PV 100M1
	Sigen PV 50M2	Sigen PV 60M2	Sigen PV 80M2	Sigen PV 100M2
PV Input				
Max.Input Voltage [V]	1100 / 1250*			
MPPT Voltage Range [V].....	160-1000 / 160-1150*			
Max. Input Current [A].....	4*40	5*40	6*40	8*40
Isc PV [A]	4*60	5*60	6*60	8*60
AC Output				
Nominal Output Voltage [V]	3/(N)/PE,230/400Va.c,50Hz			
Nominal Output Power [kW].....	50	60	80	100
Max. Output Apparent Power [kVA]	55	66	88	110
Nominal Output Current [A].....	72,5	87,0	115,9	144,9
Max. Output Current [A].....	83,6	100,3	133,7	167,1
Software version	V100R001			

Model/Type reference	Sigen PV 110M1	Sigen PV 125M1	Sigen PV 150M1
	Sigen PV 110M2	Sigen PV 125M2	Sigen PV 150M2
PV Input			
Max.Input Voltage [V]	1100 / 1250*		
MPPT Voltage Range [V].....	160-1000 / 160-1150*		
Max. Input Current [A].....	8*40	8*40	8*40
Isc PV [A]	8*60	8*60	8*60
AC Output			
Nominal Output Voltage [V]	3/(N)/PE,230/400Va.c,50Hz		
Nominal Output Power [kW].....	110	125	150
Max. Output Apparent Power [kVA]	121	137,5	150
Nominal Output Current [A].....	159,4	181,2	217,4
Max. Output Current [A].....	183,8	208,9	217,4
Software version	V100R001		

Annex to the Verification No.: **VHC2407160090GC01-R1**

Model/Type reference.....:	Sigen PV 50M1-HYA	Sigen PV 60M1-HYA	Sigen PV 80M1-HYA	Sigen PV 100M1-HYA
	Sigen PV 50M2-HYA	Sigen PV 60M2-HYA	Sigen PV 80M2-HYA	Sigen PV 100M2-HYA
	Sigen PV 50M1-HYB	Sigen PV 60M1-HYB	Sigen PV 80M1-HYB	Sigen PV 100M1-HYB
	Sigen PV 50M2-HYB	Sigen PV 60M2-HYB	Sigen PV 80M2-HYB	Sigen PV 100M2-HYB
PV Input				
Max.Input Voltage [V]	1100 / 1250*			
MPPT Voltage Range [V].....:	160-1000 / 160-1150*			
Max. Input Current [A].....:	4*40	5*40	6*40	8*40
Isc PV [A]	4*60	5*60	6*60	8*60
Battery Input				
Input Voltage Range[V] :	550-1000			
Max. Input Current [A] :	180			
AC Output				
Nominal Output Voltage [V]	3/(N)/PE,230/400Va.c,50Hz			
Nominal Output Power [kW].....:	50	60	80	100
Max. Output Apparent Power [kVA]	55	66	88	110
Nominal Output Current [A].....:	72,5	87,0	115,9	144,9
Max. Output Current [A]	83,6	100,3	133,7	167,1
Software version	V100R001			

Model/Type reference.....:	Sigen PV 110M1-HYA	Sigen PV 125M1-HYA	Sigen PV 150M1-HYA
	Sigen PV 110M2-HYA	Sigen PV 125M2-HYA	Sigen PV 150M2-HYA
	Sigen PV 110M1-HYB	Sigen PV 125M1-HYB	Sigen PV 150M1-HYB
	Sigen PV 110M2-HYB	Sigen PV125M2-HYB	Sigen PV 150M2-HYB
PV Input			
Max.Input Voltage [V]	1100 / 1250*		
MPPT Voltage Range [V].....:	160-1000 / 160-1150*		
Max. Input Current [A].....:	8*40	8*40	8*40
Isc PV [A]	8*60	8*60	8*60
Battery Input			
Input Voltage Range[V] :	550-1000		
Max. Input Current [A] :	180		
AC Output			
Nominal Output Voltage [V]	3/(N)/PE,230/400Va.c,50Hz		
Nominal Output Power [kW].....:	110	125	150
Max. Output Apparent Power [kVA]	121	137,5	150
Nominal Output Current [A].....:	159,4	181,2	217,4

Annex to the Verification No.: **VHC2407160090GC01-R1**

Max. Output Current [A].....:	183,8	208,9	217,4
Software version	V100R001		

	Sigen PCS 50M1-A	Sigen PCS 60M1-A	Sigen PCS 80M1-A	Sigen PCS 100M1-A
	Sigen PCS 50M2-A	Sigen PCS 60M2-A	Sigen PCS 80M2-A	Sigen PCS 100M2-A
Battery Input				
Operating DC Voltage Range [V]:	550-1000/550-1150*			
Max charge power [kW] :	55	66	88	110
Max discharge power [kW] :	55	66	88	110
Max operating current [A]:	180			
AC Output				
Nominal Output Voltage [V] :	3/(N)/PE,230/400Va.c,50Hz			
Nominal Output Power [kW]..... :	50	60	80	100
Max. Output Apparent Power [kVA]..... :	55	66	88	110
Nominal Output Current [A]..... :	72,5	87,0	115,9	144,9
Max. Output Current [A]..... :	83,6	100,3	133,7	167,1
Software version :	V100R001			

	Sigen PCS 110M1-A	Sigen PCS 125M1-A	Sigen PCS 150M1-A
	Sigen PCS 110M2-A	Sigen PCS 125M2-A	Sigen PCS 150M2-A
Battery Input			
Operating DC Voltage Range [V]:	550-1000/550-1150*		
Max charge power [kW] :	121	137,5	150
Max discharge power [kW] :	121	137,5	150
Max operating current [A]:	180		
AC Output			
Nominal Output Voltage [V] :	3/(N)/PE,230/400Va.c,50Hz		
Nominal Output Power [kW]..... :	110	125	150
Max. Output Apparent Power [kVA] :	121	137,5	150
Nominal Output Current [A]..... :	159,4	181,2	217,4
Max. Output Current [A] :	183,8	208,9	217,4
Software version :	V100R001		

***Note:**

Sigen PV xM1, Sigen PV xM1-HYA, Sigen PV xM1-HYB: Max.Input Voltage is 1100V and MPPT Voltage Range is 160-1000V.

Sigen PV xM2, Sigen PV xM2-HYA, Sigen PV xM2-HYB: Max.Input Voltage is 1250V and MPPT Voltage Range is 160-1150V.

Sigen PCS xM1-A: Operating DC Voltage Range is 550-1000V.

Sigen PCS xM2-A: Operating DC Voltage Range is 550-1150V.

(x: 50, 60, 80, 100, 110, 125, 150)

Operating temperature range	-30°C ~ +60°C
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Annex to the Verification No.: **VHC2407160090GC01-R1**

Degree of protection	IP66 (according to EN 60529)
Protection class	I (according to IEC 62109-1)
Type of internal transformer	No internal transformer (transformerless)
Firmware version	V100R001
Manufacturer	Sigenergy Technology Co., Ltd. No.175 Weizhan Rd., Lin-gang 201304 Shanghai PEOPLE'S REPUBLIC OF CHINA
Test report: HC2407160090GC01 (2025-04-11)	
Testing laboratory	Lyns-tci Technology Guangdong Co., Ltd. Room 1201, Unit 2, Building 18, No. 7, Science and Technology Boulevard, Houjie Town, Dongguan City, Guangdong, 523960 P.R. China (Accredited acc. ISO/IEC 17025: A2LA Accreditation no. 5200.02)
Testing location	Same as above
Date(s) of performance of tests	2024-08-08 to 2024-12-05
Test report: HC2407160090GC02_FRT (2025-04-14)	
Testing laboratory	Sigenergy Technology Co., Ltd. No.175 Weizhan Road, Lingang New Area, China (Shanghai) Pilot Free Trade Zone Shanghai, P.R.China (Accredited acc. IECEE OD-2048: Stage 1-Full testing carried out by LYNS staff or qualified LTR at CTF)
Testing location	Same as above
Date(s) of performance of tests	2024-09-26 to 2025-03-20

A.3 Tests and assessment

No.	Tests	reference	remark	Assessment
1	Checking of the parameterization according to TOR Generator Type A	OVE-Richtlinie R25 [2], Annex B, TOR Stromerzeugungsanlagen Typ A [1], Annex A3	Proven by [4], See also A.4 <i>Parameter list</i>	Compliant
2	Checking of system perturbations	OVE-Richtlinie R25 [2], chapter 5.1	Proven by [4]	Compliant
3	Checking of the symmetry behaviour of three-phase converters	OVE-Richtlinie R25 [2], Chapter 5.2, TOR Stromerzeugungsanlagen Typ A [1], chapter 6.1.1	Proven by [4]	Compliant
4	Checking of the behaviour of the generating unit connected to the network	OVE-Richtlinie R25 [2], chapter 5.3, TOR Stromerzeugungsanlagen Typ A [1], chapter 5	Proven by [4]	Compliant
5	Checking of the automatic disconnecting device	OVE-Richtlinie R25 [2], chapter 5.4, TOR Stromerzeugungsanlagen Typ A [1], chapter 6.1.2	Proven by [4]	Compliant
6	Checking of the reconnection conditions and synchronization	OVE-Richtlinie R25 [2], chapter 5.5, TOR Stromerzeugungsanlagen Typ A [1], chapter 5.5.2	Proven by [4]	Compliant
7	Checking robustness towards grid faults and dynamic grid support	OVE-Richtlinie R25 [2], chapter 5.6, TOR Stromerzeugungsanlagen Typ A [1], chapter 5.2 FGW Technical Guidelines TG3 [3], chapter 4.6	Proven by [4] & [5]	Compliant

A.4 Parameter list**mySigen APP System
Report Download**

System Info

Parameters	Value
Station Name	test1-HYA
Station Id	82024121900033
Report Generation Time	2025-01-03 12:39:52

System Setting Info

Parameters	Value
Grid Code	AUSTRIA Low-Voltage Type A (TOR Erzeuger 1.2 Type A)
Export Limitation	Disable
Maximum Power Export Limitation (kW)	NA
Import Limitation	Disable
Maximum Power Import Limitation (kW)	NA

Basic Info

Parameters	Value
Device SN of SigenStor	CMU110A42C60012
Device SN of Inverter	110A42C60012
Device Model of Inverter	Sigen PV 150M1-HYA
Device SN of Battery	NA
Device Model of Battery	NA

Inverter (110A42C60012) Info

Parameters	Value
Device SN of Inverter	110A42C60012
Device Model of Inverter	Sigen PV 150M1-HYA
Software Version	V100R001C00B020
Rated Power	150.000

Inverter Setting Info

Parameters	Limits	Value	Units
Maximum apparent power (kVA)	---	150.000	kVA
Maximum active power (fed into the grid) (kW)	---	150.000	kW
Maximum absorbed active power (kW)	---	150.000	kW
Insulation impedance threshold (MΩ)	---	0.037	MΩ
MPPT multi-peak scanning	---	Disable	
MPPT multi-peak scanning period (s)	---	600	s
Level-1 Overvoltage Protection Threshold (V)	---	264.5	V
Level-1 Overvoltage Protection Duration (ms)	---	100	ms
Level-1 Undervoltage Protection Threshold (V)	---	184.0	V
Level-1 Undervoltage Protection Duration (ms)	---	1500	ms

Level-2 Undervoltage Protection Threshold (V)	---	57.5	V
Level-2 Undervoltage Protection Duration (ms)	---	500	ms
Ten-Minute Sliding Window Overvoltage Protection Threshold (V)	---	255.3	V
Ten-Minute Sliding Window Overvoltage Protection Time (ms)	---	100	ms
Level-1 Overfrequency Protection Threshold (Hz)	---	51.50	Hz
Level-1 Overfrequency Protection Duration (ms)	---	100	ms
Level-1 Underfrequency Protection Threshold (Hz)	---	47.50	Hz
Level-1 Underfrequency Protection Duration (ms)	---	100	ms
Overfrequency Derating Enable	---	Enable	
Frequency for triggering	---	50.20	Hz

overfrequency derating (Hz)			
Overfrequency derating power change rate	---	5.00	%
Over-Frequency Derating Exit Frequency (Hz)	---	50.20	Hz
Overfrequency derating response delay (ms)	---	0	ms
Overfrequency Derating Power Reference Mode	---	freeze active power on trigger	
Overfrequency derating exit delay (ms)	---	0	ms
Overfrequency derating exit frequency enable	---	Disable	
Underfrequency rise power Enable	---	Disable	
Frequency for triggering of underfrequency rise power (Hz)	---	49.80	Hz
Power recovery gradient of underfrequency rise (%/min)	---	5.00	
Under-Frequency Power Increase Exit Frequency (Hz)	---	49.80	Hz

Underfrequency power boost power reference mode	---	freeze active power on trigger	
Underfrequency power boost response delay (ms)	---	0	ms
Underfrequency power boost exit delay (ms)	---	0	ms
Underfrequency power boost exit frequency enable	---	Disable	
P-U Voltage Derating Enable	---	Enable	
P-U curve power regulation time (s)	---	15.0	s
Grid Fault Recovery	---	Enable	
Grid Fault Recovery Power Gradient (%/s)	---	0.133	%/s
Grid Fault Recovery Frequency Upper Limit (Hz)	---	50.10	Hz
Grid Fault Recovery Frequency Lower Limit (Hz)	---	47.50	Hz
Grid Fault Recovery Voltage Upper Limit (V)	---	250.7	V
Grid Fault Recovery	---	195.5	V

Voltage Lower Limit (V)			
Grid fault recovery time to grid (s)	---	300	s
AFCI Enables	---	Disable	
Single-Machine Power Dispatch Enable	---	Enable	
Active power regulation mode	---	Fixed value adjustment	
Percentage active power adjustment (%)	---	100.00	%
Fixed value adjustment of active power (kW)	---	150.000	kW
Reactive power regulation mode	---	PF = 1.0	
Reactive power Q/S regulation (%)	---	0.00	%
Fixed value adjustment of reactive power (kVar)	---	0.000	kVar
Power factor adjustment	---	1.000	
PF-P/Pn Function Status	---	Disable	
PF-P/Pn adjustment time (s)	---	0.1	s
Q(U) Function Status	---	Disable	
Q-U curve trigger power	---	0.01	

Q-U curve exit power	---	0.00	
Q-U curve power regulation time (s)	---	15.0	s
Low Voltage Ride-Through Mode	---	Zero current	
Low Voltage Ride-Through Enable	---	Enable	
Low Trigger Threshold	---	195.5	V
Low Voltage Ride-Through Current Zero Crossing Voltage Threshold (V)	---	184.0	V
High Voltage Ride-Through Enable	---	Disable	
High Trigger Threshold	---	253.0	V
Startup Grid Connection Detection	---	Enable	
Startup Grid Connection Detection Time (s)	---	60	s
Startup Grid Connection Detection Frequency Upper Limit (Hz)	---	50.10	Hz
Startup Grid Connection Detection	---	47.50	Hz

Frequency Lower Limit (Hz)			
Startup Grid Connection Detection Voltage Upper Limit (V)	---	250.7	V
Startup Grid Connection Detection Voltage Lower Limit (V)	---	195.5	V
Startup Grid Connection Detection Power Gradient (%/s)	---	0.133	%/s
Active Islanding	---	Enable	
Passive Islanding	---	Disable	

P-U curve Points included

U/Un	P/Pn
[0,1.5]	[-1,1]
1.0600	1.0000
1.0800	1.0000
1.1000	1.0000
1.1040	0.8000
1.1080	0.6000
1.1120	0.4000
1.1160	0.2000
1.1200	0.0000
1.1400	0.0000
1.1600	0.0000

PF-P/Pn curve Points included

P/Pn	PF
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[-1,1]	[-1,-0.8]#[0.8,1]
0.2000	-1.0000
0.3000	-1.0000
0.4000	-1.0000
0.5000	-1.0000
0.6000	-0.9800
0.7000	-0.9600
0.8000	-0.9400
0.9000	-0.9200
0.9500	-0.9100
1.0000	-0.9000

Q-U curve Points included

U/Un	Q/S
[0,1.5]	[-1,1]
0.9000	0.4360
0.9200	0.4360
0.9400	0.2180
0.9600	0.0000
0.9800	0.0000
1.0000	0.0000
1.0500	0.0000
1.0650	-0.2180
1.0800	-0.4360
1.1000	-0.4360

Low Voltage Ride-Through curve Points included

t(s)	U/Un
[0,65]	[0,1]
0.000	0.90
0.001	0.12
0.150	0.12
1.500	0.82
1.600	0.82
1.700	0.82

3.400	0.82
3.500	0.82
3.600	0.82
3.700	0.82

High Voltage Ride-Through curve Points included

t(s)	U/Un
[0,65]	[1,1.5]
0.000	1.25
0.200	1.25
5.100	1.20
60.100	1.16
60.200	1.16
60.300	1.16
60.400	1.16
60.500	1.16
60.600	1.16
60.700	1.16

Note:

Default setting of the integrated Network and System (NS) protection may deviate to the recommended setting according to Annex A.3, chapter 5 or table 8, chapter 6.3.3.1, TOR Stromerzeugungsanlagen Typ A Version 1.3. If needed the protection setting should be modified according to requirements of the network operator.