

# Compliance Document

No. D 086470 0169 Rev. 00

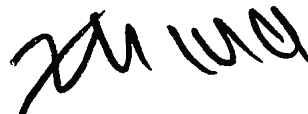
**Holder of Certificate:** **Ginlong Technologies Co., Ltd.**  
No.57 Jintong Road  
Binhai Industrial Park, Xiangshan  
315712 Ningbo, Zhejiang  
PEOPLE'S REPUBLIC OF CHINA

**Product:** **Converter**  
**AC coupled Inverter**

This Compliance document confirms the compliance with the listed standards on a voluntary basis. It refers only to the sample submitted for testing and certification and does not certify the quality or safety of the serial products. For details see: [www.tuvsud.com/ps-cert](http://www.tuvsud.com/ps-cert)

**Test report no.:** 704092304897-00

**Date,** 2023-12-14



( Zhengdong Ma )



# Compliance Document

No. D 086470 0169 Rev. 00

**Model(s):** S5-EA1P3K-L

**Parameters:**  
Please see pages 3 to 5.

**Tested according to:** EN 50549-1:2019

# Compliance Document

No. D 086470 0169 Rev. 00

Model	S5-EA1P3K-L
Battery input parameters	
Max. input voltage d.c.	60 V
MPP voltage range d.c.	40, ..., 60 V
Max. Charge current d.c.	60 A
Max. discharge current d.c.	60 A
AC output parameters	
Rated output power	3000 W
Max. AC output apparent power	3000 VA
Rated grid voltage a.c.	1/(N)/PE~ 230V
Rated grid frequency	50 Hz
Max. continuous output current a.c.	13 A
Adjustable cos $\varphi$	-0.8, ..., 1, ..., +0.8

Clause(s) / subclause(s) of this EN	Ref	Parameter	Typical value range	Value default
4.3.2 Interface switch	n.a.	Single fault tolerance for interface switch required	yes   no	yes
4.4.2 Operating frequency range	A,B	47.0 – 47.5 Hz Duration	0 – 20 s	100 s
	A,B	47.5 – 48.5 Hz Duration	30 – 90 min	unlimited
	A,B	48.5 – 49.0 Hz Duration	30 – 90 min	unlimited
	A,B	49.0 – 51.0 Hz Duration	not configurable	unlimited
	A,B	51.0 – 51.5 Hz Duration	30 – 90 min	unlimited
	A,B	51.5 – 52 Hz Duration	0 – 15 min	100 s
4.4.3 Minimal requirement for active power delivery at underfrequency	A,B	Reduction threshold	49 Hz – 49.5 Hz	No reduction
	A,B	Maximum reduction rate	2 – 10 % P <sub>M</sub> /Hz	N/A
4.4.4 Continuous operating voltage range	n.a.	Upper limit	not configurable	110% U <sub>n</sub>
	n.a.	Lower limit	not configurable	85% U <sub>n</sub>
4.5.2 Rate of change of frequency (ROCOF) immunity	A,B	ROCOF withstand capability (defined with a sliding measurement window of 500 ms)	not defined	-
		non-synchronous generating technology:		2 Hz/s
		synchronous generating technology:		N/A
4.5.3.2 Generating plant with non-synchronous generating technology	B	Maximum power resumption time	not defined	1 s
		Voltage-Time-Diagram		see Figure 6
	B	Maximum power resumption time	not defined	N/A
		Voltage-Time-Diagram		see Figure 7 (N/A)

# Compliance Document

No. D 086470 0169 Rev. 00

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4.5.4 Over-voltage ride through (OVRT)	n.a.	Voltage-Time-Diagram	not configurable	Time [s]	4.5.4 Over-voltage ride through (OVRT)
				0.0	1.25
				0.1	1.25
				0.1	1.20
				5.0	1.20
				5.0	1.15
				60	1.15
				60	1.10
4.6.1 Power response to overfrequency	A,B	Threshold frequency $f_1$	50.2 Hz – 52 Hz	50.2 Hz	
	A,B	Droop	2 % – 12 %	5 %	
	A,B	Power reference	$P_M$   $P_{max}$	$P_{max}$ for electrical energy storage systems.	
	n.a.	Intentional delay	0 – 2 s	0 s	
	n.a.	Deactivation threshold $f_{stop}$	50.0 Hz – $f_1$	deactivated	
	n.a.	Deactivation time $t_{stop}$	0 – 600 s	-	
	A	Acceptance of staged disconnection	yes   no	yes	
4.6.2 Power response to underfrequency	n.a.	Threshold frequency $f_1$	49.8 Hz – 46 Hz	49.8 Hz	
	n.a.	Droop	2 – 12 %	5 %	
	n.a.	Power reference	$P_M$   $P_{max}$	$P_{max}$ for electrical energy storage systems.	
	n.a.	Intentional delay	0 – 2 s	0 s	
4.7.2.2 Capabilities	B	Active factor range overexcited	0.9 – 1	0.9	
	B	Active factor range underexcited	0.9 – 1	0.9	
4.7.2.3 Control modes	n.a.	Enabled control mode	Q setp. Q(U) cos $\phi$ setp. cos $\phi$ (P)	Q setpoint	
4.7.2.3.2 Setpoint control modes	n.a.	Q setpoint and excitation	0 – 48 % $P_n$	0%	
	n.a.	cos $\phi$ setpoint and excitation	1 – 0.9	1	
4.7.2.3.3 Voltage related control modes	n.a.	Characteristic curve	-	-	
	n.a.	Time constant	3 s – 60 s	-	
	n.a.	Min cos $\phi$	0.0 – 1	-	
	n.a.	Lock in power	0 % – 20 %	-	
	n.a.	Lock out power	0 % – 20 %	-	
4.7.2.3.4 Power related control mode	n.a.	Characteristic curve	-	disabled	
4.7.4.2.2 Zero current mode for converter connected generating technology	n.a.	Enabling	enable   disable	disabled	
	n.a.	Static voltage range overvoltage	100 % $U_n$ – 120 % $U_n$	115 % $U_n$	
	n.a.	Static voltage range undervoltage	20 % $U_n$ – 100 % $U_n$	85 % $U_n$	
4.9.2 Requirements on voltage and frequency protection	n.a.	Threshold for protection as dedicated device [ in A or kW, kVA]	16 A – 250 kVA	Interface protection integrated	
	B	Undervoltage threshold stage 1	0.2 $U_n$ – 1 $U_n$	0.8 $U_n$	
	B	Undervoltage operate time stage 1	0.1 s – 100 s	3 s	

# Compliance Document

No. D 086470 0169 Rev. 00

	B	Undervoltage threshold stage 2	$0.2 U_n - 1 U_n$	$0.4 U_n$
	B	Undervoltage operate time stage 2	0.1 s – 5 s	1.5 s
	B	Overvoltage threshold stage 1	$1.0 U_n - 1.2 U_n$	$1.2 U_n$
	B	Overvoltage operate time stage 1	0.1 s – 100 s	5 s
	B	Overvoltage threshold stage 2	$1.0 U_n - 1.3 U_n$	$1.25 U_n$
	B	Overvoltage operate time stage 2	0.1 s – 5 s	0.1 s
	B	Overvoltage threshold 10 min mean protection	$1.0 U_n - 1.15 U_n$	$1.1 U_n$
	B	Underfrequency threshold stage 1	47.0 Hz – 50.0 Hz	47.5 Hz
	B	Underfrequency operate time stage 1	0.1 s – 100 s	0.5 s
	B	Underfrequency threshold stage 2	47.0 Hz – 50.0 Hz	47 Hz
	B	Underfrequency operate time stage 2	0.1 s – 5 s	0.1 s
	B	Overfrequency threshold stage 1	50.0 Hz – 52.0 Hz	51.5 Hz
	B	Overfrequency operate time stage 1	0.1 s – 100 s	0.5 s
	B	Overfrequency threshold stage 2	50.0 Hz – 52.0 Hz	52 Hz
	B	Overfrequency operate time stage 2	0.1 s – 5 s	0.1 s
4.10.2 Automatic reconnection after tripping	B	Lower frequency	47.0 Hz – 50.0 Hz	49.5 Hz
	B	Upper frequency	50.0 Hz – 52.0 Hz	50.2 Hz
	B	Lower voltage	$50 \% U_n - 100 \% U_n$	$85 \% U_n$
	B	Upper voltage	$100 \% U_n - 120 \% U_n$	$110 \% U_n$
	B	Observation time	10 s – 600 s	60 s
	B	Active power increase gradient	6 % – 3000 %/min	10 %/min
4.10.3 Starting to generate electrical power	A,B	Lower frequency	47.0 Hz – 50.0 Hz	49.5 Hz
	A,B	Upper frequency	50.0 Hz – 52.0 Hz	50.1 Hz
	A,B	Lower voltage	$50 \% - 100 \% U_n$	$85 \% U_n$
	A,B	Upper voltage	$100 \% - 120 \% U_n$	$110 \% U_n$
	A,B	Observation time	10 s – 600 s	60 s
	A,B	Active power increase gradient	6 % – 3000 %/min	10 %/min
4.11.1 Ceasing active power	A,B	Remote operation of the logic interface	yes   no	yes
4.11.2 Reduction of active power on set point	B	Remote operation NOTE: If yes further definition is provided by the DSO	yes   no	yes
4.12 Remote information exchange	B	Remote information exchange required NOTE: If yes further definition is provided by the DSO	yes   no	no

The Column Ref specifies if a parameter is relevant for COMMISSION REGULATION 2016/631 and for what type of generating module the parameter is relevant. If n.a. is set, this parameter is: not applicable for 2016/631, but is introduced into EN 50549-1 for local DSO network management reasons and is not considered as cross border issues.

Unauthorised access to factory safety parameters setting and software should be prohibited.

A reset to the factory safety parameters requires retesting and verification in conjunction with the end-use system.