

Self-Declaration Regarding the Settings Required by FD C11-519

This document applies to the following scope:

Smart PV Controller (Inverter):

- SUN2000-30/36/40KTL-M3
- SUN2000-50KTL-M3
- SUN2000-100KTL-M2
- SUN2000-115KTL-M2
- SUN2000-150K-MG0
- SUN5000-150K-MG0

Content of the declaration:

Huawei Digital Power, as a manufacturer of Photovoltaic inverters, hereby confirms that the above mentioned inverters fullfill EN 50549-1:2019 and fullfill the the requirements according to FD C11 519 when the following parameters in Appendix are set on the inverters. This software will be officially released on April 30, 2025

钟明明
ZHONG MINGMING

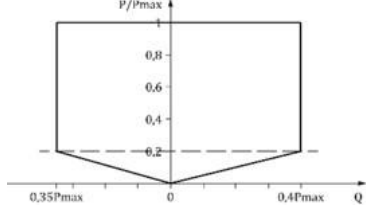
Huawei Digital Power Technologies Co., Ltd

January 5, 2025

Appendix:

Article(s) / subsection(s) of the Standard	Ref.	Parameter	Typical range of values	Default value	HW Declaration	Requirement of the DSG
4.3.2 Decoupling switch	n.a.	Simple Fault Immunity for switch of decoupling required	yes no	no	YES	Yes, yes
4.4.2 Frequency	A	47.0 – 47.5 Hz Duration	0 – 20 s	0 s	100ms	0 s
	A	47.5 – 48.5 Hz Duration	30 – 90 min	30 minutes	Can be functional on grid for minimum 30 minutes	30 minutes
	A	48.5 – 49.0 Hz Duration	30 – 90 min	30 minutes	Can be functional on grid for minimum 30 minutes	30 minutes
	A	49.0 – 51.0 Hz Duration	non-configurable	not limited	Compliance	not limited
	A	51.0 – 51.5 Hz Duration	30 – 90 min	30 minutes	Can be functional on grid for minimum 30 minutes	30 minutes
	A	51.5 – 52 Hz Duration	0 – 15 min	0 s	100ms	0s
4.4.3 Requirements minimum for the active power supply insituations of sub-frequency	A	Reduction threshold	49Hz – 49.5Hz	49.5 Hz	Compliance	Non Synchronous: Not applicable Synchronous only: — 49.5 Hz if $f < 49.5$ Hz more than 30s — 49 Hz if $f < 49.5$ Hz less than 30 s
	A	Maximum rate of reduction	2 – 10% PM/Hz	10% PM/Hz	Compliance	Non Syn chronous : No drop allowed Synchronous only: — 10% Pmax/Hz if $f < 49,5$ Hz more than 30 s — 2% Pmax/Hz if $f < 49.5$ Hz less than 30 s and return to P (produced before threshold crossing) within 2 s
Voltage range of continuous operation	n.a.	Upper limit	non-configurable	110% One	Compliance	105% Uc without time limit Between 105 and 110% uc for atleast 20 minutes without loss of power exceeding 5% (Uc=One)
	n.a.	Lower limit	non-configurable	85% One	Compliance	95%Uc with no time limit Between 95 and 90% uc during at least 20 minutes without loss of power greater than 5% (Uc = Un)
4.5.2 Immunity at therate of change in frequency (ROCOF)	A	With stand capacity ROCOF (defined with a window measuring slippery of 500 ms) technology of production no synchronous: — Production technology synchronous	undefined	2 Hz/s 1 Hz/s	Compliance	2 Hz/s (non-synchronous) 1 Hz/s (synchronous)

Article(s) / subsection(s) of the Standard	Ref.	Parameter	Typical range of values	Default value	HW Declaration	Requirement of the DSG	
4.5.3.2 Power plant with non-synchronous generation technology	A	Maximum recovery time of the power (electrical)	undefined	1 s	400ms	Default value strongly recommended, but not mandatory.	
	A	Template voltage-time	See Figure 6.	Time [s]	U [p.u.]		Default Template Strongly recommended, but not mandatory. As a reminder, none of the protective devices of the installation of production shall not, by its design or its setting be activated in less conditions than those that trigger the protective function of decoupling
				0,0	0,2	Compliance	
				0,15	0,2	Compliance	
				1,5	0,85	Compliance	
4.5.3.3 Power plant electric with technology of synchronous production	A	Maximum recovery time of the power (electrical)	undefined	3 s	Not involved	Default value strongly recommended, but not mandatory.	
	A	Template voltage-time	See Figure 7.	Time [s]	U [p.u.]		Default Template Strongly recommended, but not mandatory. As a reminder, none of the protective devices of the installation of production shall not, by its design or its setting be activated in less conditions than those that trigger the protective function of decoupling
				0,0	0,3	Not involved	
				0,15	0,3	Not involved	
				0,15	0,7	Not involved	
				0,7	0,7	Not involved	
1,5	0,85	Not involved					
4.5.4 Peak voltage resistance (OVRT)	n.a.	Template voltage-time	non-configurable	Time [s]	U [p.u.]		Default Template Strongly recommended, but not mandatory. As a reminder, none of the protective devices of the installation of .25 production must, by its design or its setting be activated in less conditions than those that trigger the protective function of decoupling
				0,0	1,25	Compliance	
				0,1	1,25	Compliance	
				0,1	1,20	Compliance	
				5,0	1,20	Compliance	
				5,0	1,15	Compliance	
				60	1,15	Compliance	
60	1,10	Compliance					
4.6.1 Potential response to the over-frequency	A	Threshold frequency f1	50.2 Hz – 52 Hz	50.2 Hz	Compliance	Compliance	
	A	Statism	2% – 12%	5%	Compliance	Compliance	
	A	Power Reference	PM Pmax	Pmax, for production technologies synchronous and EESS PM for non-synchronous production technologies	Compliance	Compliance	

Article(s) / subsection(s) of the Standard	Ref.	Parameter	Typical range of values	Default value	HW Declaration	Requirement of the DSG
	n.a.	Intentional delay	0 – 2 s	0 s	1.5s	After an activation time of 1.5 s (unless otherwise stated in the TFP) Total response time of the function: 2 s for asynchronous units for $\Delta P/P_{max}$ of 50% 8 s for synchronous units for $\Delta P/P_{max}$ of 45% Statism of the upswing in power during the decrease of frequency identical to that of the decrease in active power during frequency increase, with a response time of: — 30 s for asynchronous units 6 minutes for synchronous units
	n.a.	Threshold of disabling fstop	50.0 Hz – f1	Disabled	Compliance	Disabled
	n.a.	Time-limit disabling tstop	0 – 600 s	—	Compliance	Disabled
	A	Accepting tiered decoupling	yes no	Yes, yes	Compliance	No. On the other hand, once it minimum output power P_{min} reached, the producer continues to operate at P_{min}
4.6.2 Response under-frequency power	n.a.	Threshold frequency f1	49.8 Hz – 46 Hz	49.8 Hz	Compliance	Not required
	n.a.	Statism	2 – 12%	5%	Compliance	Not required
	n.a.	Power Reference	PM P_{max}	P_{max}	Compliance	Not required
	n.a.	Intentional delay	0 – 2 s	0 s	Compliance	Not required
4.7.2.2 Capacities [inactive power]	A	Overexcited reactive power factor range	0.9 – 1	0,9	Compliance	In the voltage range $U_{n\pm 10\%}$ the operating range [P, Q] of the Unit shall at least encompass the range defined in the following diagram:  At P_{max} the Unit can work with: — $\cos(\phi) = 0.94$ underexcited; — $\cos(\phi) = 0.93$ overexcited.
	A	Underexcited reactive power factor range	0.9 – 1	0,9	Compliance	
4.7.2.3 Control methods	n.a.	Control mode enabled	Q set point Q Q(U) Set point of $\cos\phi$ $\cos\phi$ (P)	Point of set point Q	Compliance	A minima and default: setpoint mode $\tan(\phi)$ ($\cos(\phi)$)
	n.a.	Q set point and excitation	0 – 48% PD	0	Compliance	No requirement

Article(s) / subsection(s) of the Standard	Ref.	Parameter	Typical range of values	Default value	HW Declaration	Requirement of the DSG
4.7.2.3.2 Modes of set point control	n.a.	Set point $\cos \phi$ and excitation	1 – 0.9	1	0.94	0.94 under excited by default in LV
4.7.2.3.3 Modes of voltage-controlled control	n.a.	Curve characteristic	—	—		No requirement
	n.a.	Time constant	3 s – 60 s	10 s	Compliance	No requirement
	n.a.	$\cos \phi$ min.	0.0 – 1	0.9	0	No requirement
	n.a.	Lock power	0% – 20%	Disabled	20%	No requirement
	n.a.	Power of unlocking	0% – 20%	Disabled	5%	No requirement
4.7.2.3.4 Mode of power-locked control	n.a.	Curve characteristic	—	—		No requirement
4.7.4.2.2 Mode of zero current for technologies of production using a converter	n.a.	Activation	Enable Disable	Disabled	Not required	Disabled
	n.a.	Static voltage range overvoltage	100% U_n – 120% One	120% One		No requirement
	n.a.	Voltage range undervoltage static	20% One – 100% One	50% One		No requirement
4.9.3 Requirements concerning the voltage and frequency protection	n.a.	Threshold for protection as a dedicated device [in A or kW, kVA]	16 A – 250 kVA		Not required	250 kVA
	A	Undervoltage threshold 1	0.2 One – 1 One		Compliance	0.8 V_n (Single phase-neutral voltage)
	A	Under-voltage operating time threshold 1	0.1 s – 100 s		Compliance	0.1 s maximum
	A	Threshold of sub-frequency 1	47.0 Hz – 50.0 Hz		Compliance	47.5 Hz
	A	Time threshold of under-frequency operation 1	0.1 s – 100 s		Compliance	0.1 s max
	A	Threshold of overvoltage 1	1.0 One – 1.2 One		Compliance	115% V_n (Single phase-neutral voltage)
	A	Over-voltage operating time threshold 1	0.1 s – 100 s		Compliance	0.1 s
	A	Threshold of over-frequency 1	50.0 Hz – 52.0 Hz		Compliance	51.5 Hz
	A	Over-Frequency Uptime Threshold 1	0.1 s – 100 s		Compliance	0.1 s max
	A	Threshold of undervoltage 2	0.2 One – 1 One			Not required
	A	Under-voltage operating time threshold 2	0.1 s – 5 s			Not required

Article(s) / subsection(s) of the Standard	Ref.	Parameter	Typical range of values	Default value	HW Declaration	Requirement of the DSG
	A	Threshold of sub-frequency 2	47.0 Hz – 50.0 Hz			Not required
	A	Time threshold of under-frequency operation 2	0.1 s – 5 s			Not required
	A	Threshold of overvoltage 2	1.0 One – 1.3 One			Not required
	A	Over-voltage operating time threshold 2	0.1 s – 5 s			Not required
	A	Threshold of over-frequency 2	50.0 Hz – 52.0 Hz			Not required
	A	Over-Frequency Uptime Threshold 2	0.1 s – 5 s			Not required
	A	Surge threshold Protection averaged on 10 minutes	1.0 One – 1.15 One			Not required
4.10.2 Automatic recoupling after tripping	A	Mini frequency	47.0 Hz – 50.0 Hz	49.5 Hz	Compliance	47.5 Hz
	A	Max frequency	50.0 Hz – 52.0 Hz	50.2 Hz	Compliance	50.1 Hz
	A	Mini voltage	50% One – 100% One	85% One	Compliance	85% Vn (Single phase-neutral voltage)
	A	Max voltage	100% One – 120% One	110% One	Compliance	110% Vn (Single phase-neutral voltage)
	A	Time of observation	10 s – 600 s	60	Compliance	15 s
	A	Gradient of increasing active power	6% – 3,000%/min	10%/min	Compliance	No requirement
4.10.3 Start-up of electricity production	A	Mini frequency	47.0 Hz – 50.0 Hz	49.5 Hz	Compliance	47.5 Hz
	A	Max frequency	50.0 Hz – 52.0 Hz	50.1 Hz	Compliance	50.1 Hz
	A	Mini voltage	50% – 100% One	85% One	Compliance	85% Vn (Single phase-neutral voltage)
	A	Max voltage	100% – 120% One	110% One	Compliance	110% Vn (Single phase-neutral voltage)
	A	Time of observation	10 s – 600 s	60	Compliance	60 s
	A	Gradient of increasing active power	6% – 3,000%/min	Disabled	Compliance	No requirement
Active power cut-off	A	Order to distance from the logical interface	yes no	No	Compliance	Not required
4.11.2 Reduction of active power to a setpoint	A	Remote control NOTE If yes, a definition is provided by the DSG	yes no	No	Compliance	Not required

Article(s) / subsection(s) of the Standard	Ref.	Parameter	Typical range of values	Default value	HW	Requirement of the DSG
4.12 Exchange of remote information	A	Exchange remote information required NOTE If yes, a definition additional is provided by the DSG	yes no	No	Compliance	Not required