
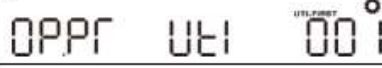
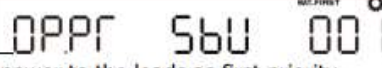







Recommended settings for Growatt SPF5000ES Hybrid Inverter

These settings are based on connected to grid with solar, battery priority.

Program	Description	Setting Option
01	Output source priority: To configure load power source priority	Solar first  <p>Solar energy provides power to the loads as first priority. If solar energy is not sufficient to power all connected loads, battery energy will supply power the loads at the same time. Utility provides power to the loads only when any one condition happens: - Solar energy is not available - Battery voltage drops to either low-level warning voltage or the setting point in program 12.</p>
		Utility first (default)  <p>Utility will provide power to the loads as first priority. Solar and battery energy will provide power to the loads only when utility power is not available.</p>
		SBU priority  <p>Solar energy provides power to the loads as first priority. If solar energy is not sufficient to power all connected loads, battery will supply power to the loads at the same time. Utility provides power to the loads only when battery voltage drops to either low-level warning voltage or the setting point in program 12.</p>
		SUB priority  <p>Solar energy provides power to the loads as first priority. If solar energy is not sufficient to power all connected loads, solar and utility will power loads at the same time. Battery provides power to the loads only when solar energy is not sufficient and there is no utility.</p>

02	Maximum charging current: set total charging current for solar and utility chargers. (Max. charging current = utility charging current + solar charging current)	 SPF 3500 ES: Default 60A, 10A~80A Settable SPF 5000 ES: Default 60A, 10A~100A Settable (If LI is selected in Program 5, this program can't be set up)
----	---	---

03	AC input voltage range	Appliance (default)  If selected, acceptable AC input voltage range will be within 90~280VAC
		UPS  If selected, acceptable AC input voltage range will be within 170~280VAC
		Generator  If selected, acceptable AC input voltage range will be within 90~280VAC In this mode, the MAX. charging current is 30A

04	Power saving mode enable/disable	Saving mode disable (default) SAVE DIS 004° If disabled, no matter connected load is low or high, the on/off status of inverter output will not be effected.
		Saving mode enable SAVE ENA 004° If enabled, the output of inverter will be off when connected load is pretty low or not detected.

If you are using Cells & BMS which does not communicate to the Inverter.

05	Battery type	AGM (default) bAtt AG1 005°
		Flooded bAtt FLd 005°
		Lithium (only suitable when communicated with BMS) bAtt LI 005°
		User-Defined bAtt USE 005° If "User-Defined" is selected, battery charge voltage and low DC cut-off voltage can be set up in program 19, 20 and 21.
		User-Defined 2 (suitable when lithium battery without BMS communication) bAtt US2 005° If "User-Defined 2" is selected, battery charge voltage and low DC cut-off voltage can be set up in program 19, 20 and 21. It is recommended to set to the same voltage in program 19 and 20(full charging voltage point of lithium battery). The inverter will stop charging when the battery voltage reaches this setting.

If you are using a Rack Battery or BMS which can communicate with inverter.

05	Battery type	AGM (default) bAtt AG1 005°
		Flooded bAtt FLd 005°
		Lithium (only suitable when communicated with BMS) bAtt LI 005°
		User-Defined bAtt USE 005° If "User-Defined" is selected, battery charge voltage and low DC cut-off voltage can be set up in program 19, 20 and 21.
		User-Defined 2 (suitable when lithium battery without BMS communication) bAtt US2 005° If "User-Defined 2" is selected, battery charge voltage and low DC cut-off voltage can be set up in program 19, 20 and 21. It is recommended to set to the same voltage in program 19 and 20(full charging voltage point of lithium battery). The inverter will stop charging when the battery voltage reaches this setting.

06	Auto restart when overload occurs	Restart disable (default) LdRS dIS 008	Restart enable LdRS ENA 008
07	Auto restart when over temperature occurs	Restart disable (default) tRS dIS 007	Restart enable tRS ENA 007
08	Output voltage *This setting is only available when the inverter is in standby mode (Switch off).	230V (default) OUtV 230 008	220V OUtV 220 008
		240V OUtV 240 008	208V OUtV 208 008
09	Output frequency *This setting is only available when the inverter is in standby mode (Switch off).	50Hz (default) OUtF 50 009	60Hz OUtF 60 009
10	Number of series batteries connected	bAtN 4 010 (e.g. Showing batteries are connected in 4 series)	
11	Maximum utility charging current Note: If setting value in Program 02 is smaller than that in Program 11, the inverter will apply charging current from Program 02 for utility charger	ACI 30 ^A 011 SPF 3500 ES :Default 30A, 0A~60A Settable SPF 5000 ES :Default 30A, 0A~80A Settable (If LI is selected in Program 5, this program can't be set up)	
12	Setting voltage point back to utility source when selecting "SBU priority" or "Solar first" in program 01	b2AC 46.0 ^{48.5V} 012 Default 46.0V, 44.0V~51.2V Settable	
13	Setting voltage point back to battery mode when selecting "SBU priority" or "Solar first" in program 01	AC2b 54.0 ⁵⁸ 013 Default 54.0V, 48.0V~58.0V Settable	
14	Charger source priority: To configure charger source priority	If this off grid solar inverter is working in Line, Standby or Fault mode, charger source can be programmed as below:	
		Solar first CGPF ^{sol} 050 014	Solar energy will charge battery as first priority. Utility will charge battery only when solar energy is not available.
		Solar and Utility CGPF ^{sol-uti} 500 014	Solar energy and utility will both charge battery.
		Only Solar CGPF ^{only sol} 050 014	Solar energy will be the only charger source no matter utility is available or not.
If this off grid solar inverter is working in Battery mode or Power saving mode, only solar energy can charge battery. Solar energy will charge battery if it's available and sufficient.			

15	Alarm control	Alarm on (default) bUZZ ON 0 15°	Alarm off bUZZ OFF 0 15°
16	Backlight control	Backlight on (default) LEdb ON 0 16°	Backlight off LEdb OFF 0 16°
17	Beeps while primary source is interrupted	Alarm on (default) ALAr ON 0 17°	Alarm off ALAr OFF 0 17°
18	Overload bypass: When enabled, the unit will transfer to line mode if overload occurs in battery mode.	Bypass disable (default) bYP diS 0 18°	Bypass enable bYP ENA 0 18°
19	C.V. charging voltage. If self-defined is selected In program 5, this program can be set up	CU 56.4V 0 19° Default 56.4V, 48.0V~58.4V Settable	58V
20	Floating charging voltage. If self-defined is selected in program 5, this program can be set up	FLEU 54.0V 0 20° Default 54.0V, 48.0V~58.4V Settable	
21	Low DC cut-off voltage. If self-defined is selected in program 5, this program can be set up. Low DC cut-off voltage will be fixed to setting value no matter what percentage of load is connected.	CUEU 42.0V 0 21° Default 42.0V, 40.0V~48.0V Settable	48V

- When reach Low DC cut-off voltage:
- 1) If battery power is only power source available, inverter will shut down.
 - 2) If PV energy and battery power are available, inverter will charge battery without AC output.
 - 3) If PV energy, battery power and utility are all available, inverter will transfer to line mode and provide output power to loads, and charge the battery at the same time.

If running a single inverter:

23	<p>AC output mode *This setting is only available when the inverter is in standby mode (Switch off). Note: Parallel operation can only work when battery connected</p>	<p>Single:</p>	<p>Parallel:</p>
		<p>L1 Phase:</p>	<p>L2 Phase:</p>
		<p>L3 Phase:</p>	
		<p>When the units are used in parallel with single phase, please select "PAL" in program 23.</p>	
		<p>It requires 3 inverters to support three-phase equipment, 1 inverter in each phase. Please select "3P1" in program 23 for the inverters connected to L1 phase, "3P2" in program 23 for the inverters connected to L2 phase and "3P3" in program 23 for the inverters connected to L3 phase.</p> <p>Be sure to connect share current cable to units which are on the same phase. Do NOT connect share current cable between units on different phases. Besides, power saving function will be automatically disabled.</p>	

If running multiple inverters in parallel:

23	<p>AC output mode *This setting is only available when the inverter is in standby mode (Switch off). Note: Parallel operation can only work when battery connected</p>	<p>Single:</p>	<p>Parallel:</p>
		<p>L1 Phase:</p>	<p>L2 Phase:</p>
		<p>L3 Phase:</p>	
		<p>When the units are used in parallel with single phase, please select "PAL" in program 23.</p>	
		<p>It requires 3 inverters to support three-phase equipment, 1 inverter in each phase. Please select "3P1" in program 23 for the inverters connected to L1 phase, "3P2" in program 23 for the inverters connected to L2 phase and "3P3" in program 23 for the inverters connected to L3 phase.</p> <p>Be sure to connect share current cable to units which are on the same phase. Do NOT connect share current cable between units on different phases. Besides, power saving function will be automatically disabled.</p>	

If you have multiple inverters connected in parallel the below setting relates to which number inverter is in the string, eg 1=1st inverter, 2=2nd inverter, etc.

28	Address setting (for expansion)	<p>Default 1, 1~255 Settable</p>
----	---------------------------------	----------------------------------

Date and time settings:

37	Real time setting---Year	20 18 03 1	Default 2018, range 2018~2099
38	Real time setting---Month	11 01 12 03 8	Default 01, range 01~12
39	Real time setting---Date	DAY 13 03 9	Default 01, range 01~31
40	Real time setting---Hour	HOUR 13 04 0	Default 00, range 00~23
41	Real time setting---Minute	11 0 50 04 1	Default 00, range 00~59
42	Real time setting---Second	SEC 50 04 2	Default 00, range 00~59

43	Battery equalization	Battery equalization enable	Battery equalization disable(default)
		EQ ENA 04 3	EQ DIS 04 3
		If "Flooded" or "User-Defined" is selected in program 05, this program can be set up.	
44	Battery equalization voltage	EQV 58.4 04 4	Default 58.4V, 48.0V~58.4V Settable
45	Battery equalized time	11 0	Default 60min, 5min~900min Settable
		EQE 60 04 5	
46	Battery equalized timeout	11 0	Default 120min, 5min~900min Settable
		EQE0 120 04 6	
47	Equalization interval	DAY	Default 30days, 1 days~90 days Settable
		EQI 30 04 7	
48	Equalization activated immediately	Equalization activated immediately on	Equalization activated immediately off(default)
		EQ ON 04 8	EQ OFF 04 8
		If equalization function is enabled in program 43, this program can be setup. If "On" is selected in this program, it's to activate battery equalization immediately and LCD main page will shows "EQ". If "Off" is selected, it will cancel equalization function until next activated equalization time arrives based on program 47setting. At this time, "EQ" will not be shown in LCD main page.	

49	Utility charging time	<p>0000(default) Allow utility to charge the battery all day run.</p> <p>CHG E17</p> <p>0000 049^o</p>	<p>The time allows utility to charge the battery. Use 4 digits to represent the time period, the upper two digits represent the time when utility start to charge the battery, setting range from 00 to 23, and the lower two digits represent the time when utility end to charge the battery, setting range from 00 to 23.</p> <p>(eg: 2320 represents the time allows utility to charge the battery is from 23:00 to the next day 20:59, and the utility charging is prohibited outside of this period)</p>
50	AC output time	<p>0000(default) Allow inverter to power the load all day run.</p> <p>0UP E17</p> <p>0000 050^o</p>	<p>The time allows inverter to power the load. Use 4 digits to represent the time period, the upper two digits represent the time when inverter start to power the load, setting range from 00 to 23, and the lower two digits represent the time when inverter end to power the load, setting range from 00 to 23.</p> <p>(eg: 2320 represents the time allows inverter to power the load is from 23:00 to the next day 20:59, and the inverter AC output power is prohibited outside of this period)</p>