GX SolarEdge Manual

1. Introduction

In 2019 SolarEdge has introduced a new feature that allows AC-coupling with alternative power sources (or non-grid power sources) such as the Victron Energy Inverter/chargers range, facilitating continuous solar production during outages or in off-grid scenarios.

When a solar inverter is operating concurrently with a non-grid source, it may be subjected to voltage and frequency fluctuations that exceed trips, which are preset according to regional grid connection requirements. To support simultaneous operation while powered by a non-grid energy source, SolarEdge has introduced an "Alternative Power Source mode" (APS) with extended, userconfigurable, frequency&voltage operating range and frequency-power & voltage-power "off-grid" dedicated droops.

With this feature you can now build custom size AC Coupled Hybrid systems with the capability to enable zero feed-in to the grid when in On-Grid mode and frequency shifting power control in Off-Grid situations

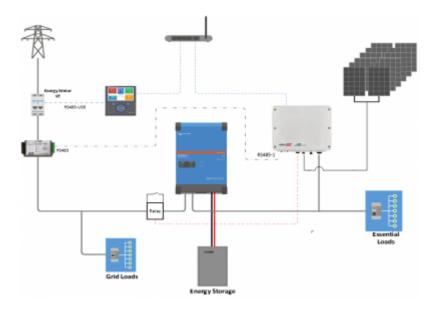
The AC coupled system sizing guideline, Factor 1.0 rule, from Victron Energy for AC coupled system must be adhered to.

2. How to configure APS mode

Requirements: • For SetApp (screenless) inverters: Firmware 4.8.24 or higher • For LCD inverters: Firmware 3.25xx or higher • Dry-contact for sensing the grid supply. (Victron's auxilary Dry-Out can also be used) • SolarEdge grid meter (required for Zero feedback)

Note: APS mode is mandatory for systems requiring both zero feed-in in on-grid mode and frequency shifting in off-grid mode.

Configuration example 1: Use of external relay and dry contact, see figure 1





Configuration example 2: Use of Internal programmeble relay K1, See Figure 2

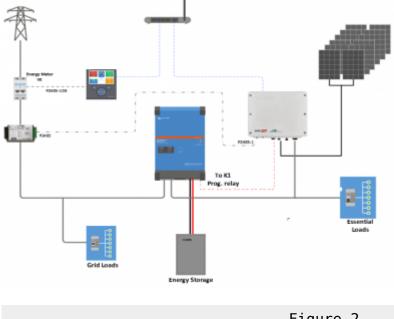
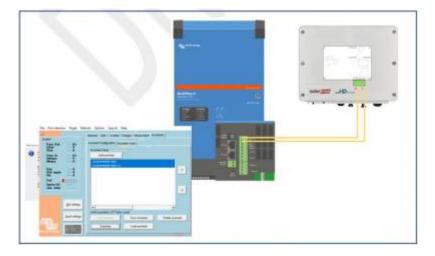


Figure 2

Programmble relay K1 Set up



2.1. Dry contact installation:

Install a dry contact, sensing the grid availability. Connect twisted pair wires from the dry contact terminals to the L1 and V terminals of the Communication Board inside the inverter, see figure 4.

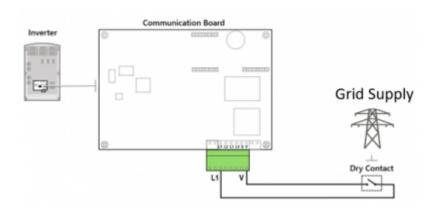


Figure 4

2. Alternative Power Source mode.

Alternative Power Source mode should be configured on the master inverter. Once configured, the master inverter automatically sets all detected slave inverters to Alternative Power Source mode.

To Configure Alternative Power Source mode: • Commissioning [] Communication [] GPIO [] Power Reduction Interface (RRCR) Mode [] Alternative Power Source.

÷	Solar Sile	÷				1	÷	solar zone
0	Communication			G	iPi0		F	ower Reduction Interfac
Server	LAN	>	-	Pewer Reduction Interface (RRCR)	Alternative Power		Disable	4
LAN	DHCP	>		Mode	Source			-
R5485-1	Medbus (Multi- Device)	>					AC Rela	v
R\$485-2	SelarEdge Slave	>					RECE &	AC Relay
Zigliee	Nat Connected						DRM 0	
Wifi	Net Connected	>				L,	Alternal	ive Power Source
6710	Alternative Power Source	>						
Modbus TCP pr	ut Disabled	>						
	Disconnect from device			Disconne	of from device			Disconnect from device

Inverters with LCD • Enter the inverter's setup menu using the SolarEdge Password. • Communication [] GPIO Conf [] Device Type [] Alternative Power Src.

Country <rsa> Liniguage <en> > Communication Power Control</en></rsa>		
RS485-1 Conf <m> RS485-E Conf <s> Cellular Conf<n a=""> > GPIO Conf <gen></gen></n></s></m>	> Device Type <gen></gen>	MTR AC Relay Cirl AC Relay Cirl+RRCR > Ait Power Src

3. How to configure Frequency Shifting Important note: Please ensure the SolarEdge inverter and your VE.Bus Config is setup for the same frequency bandwidth. For systems that can feed back into the grid or for pure off-grid systems: 1. Enable frequency shifting • Go into Power Control • Ensure Grid control is Enabled

←

:



Power Control

Grid Control	Enabled	>
Energy Manager		>
Reactive Power	CosPhi	>
Active Power		>
Phase Balancing	Disabled	>
Wakeup Profile		>
Advanced		>
Alternative Power Source	Enabled	>
Disconnect from device		

Inverters with LCD



2. Configure Wakeup Conf. • Power Control [] Wakeup Profile [] Edit • Edit Maximum Wake up Frequency = 51.2Hz

	SN 7319F6D9-58		:
	Power Control		
Grid Control		Enabled	>
Energy Man	-		>
eactive Po		CosPhi	>
ase Balar	ncing	Disabled	
akeup Pro	file		>
Advanced			>
Alternative F Source	Power	Enabled	>
	Disconnect from device		

Inverters with LCD: • Power Control [] Wakeup Profile [] Edit



3. Disable Wakeup gradient • Power Control [] Active Power control [] Wakeup Gradient [] Disable

e solar			+ solar,		£.	•	solar Stor	1
Power Cor	ntrol	-	Active	Power		•	Wakeup Gradient	
Orid Control	Enabled 3		Power Limit	100 %	>	Enable		
Energy Manager	>		Current Limit	\$6.57 A	>	Disable		1
Reactive Power	CosPhi 3		Wakeup Gradient	Disabled	>			
Active Power	>		Gradient Time	68000 ma	>			
Phase Balancing	Disabled 3		PID		>			
Wakeup Profile	>		P00		>			
Advanced	>		Ramp Rate	0%	>			
Alternative Power Source	Enabled 3							
Disconnect from	device		Decorrect	hore device			Disconnect from device	

Inverters with LCD • Power Control [] Active Power control [] Wakeup Gradie [] Disable



4. Set P(F) • Power Control [] Active Power control [] P(f) • Edit P0: 50.5Hz, 100% Power • and P1: 51.2Hz, 0% Power

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Power control			E.	Phone	i sinci		- T		P(0)	
Drid Control	Enabled	>		Power Limit	180 %	>		P#	82	Ph
Energy Manager		>		Current Limit	56.57 A	>		PD	50.2	100
Reactive Power	CosPhi	>		Wakeup Gradient	Disabled	>		P1	\$1.2	0
Active Power		>		Gradient Time	60000 ma	>				
Phase Balancing	Disabled	>		P()		>				
Wakesp Profile		>		P(V)		>				
Advanced		>		Romp Rate	0%	>				
Alternative Power Source	Enabled	>					1		Edit	
Disconnect from device				Disconvect	I from device			Dis	connect from devis	•

Inverters with LCD • Power Control [] Active Power control [] $P(f) \cdot Edit P0: 50.5Hz$, 100% Power • and P1: 51.2Hz, 0% Power

RRCR Conf. <dis> Reactive Pwr Conf. > Active Pwr Conf. Wakeup Conf.</dis>	Power Limit <100%> Current Li<116.6A> Wakeup Gradie <dis> > P(f)</dis>	
	> P0 <50.20,100.0> P1 <51:20,0.0>	Set Point (Hz,P%) 50-20,100.0
	P0 <\$0.20,100.0> > P1 <\$1.20,0.0>	Set Point (Hz,P%) 51.20,0.0

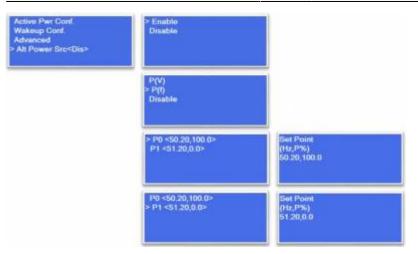
For systems with zero grid feed-in In addition to the frequency settings above, please set the following: 1. Configure P(f) for APS • Power Control [] Alternative Power Source [] P(f) • Edit P0: 50.5Hz, 100% Power • and P1: 51.2Hz, 0% Power

÷	solar 11.57		:	÷	solar III III SN 7919F829-50		÷		÷	solar topy	1
	Power Control			Alter	native Power S	ource		F *		P(f)	
Grid Control	ίn.	abled	>	Alternative Pov Source Control		Enabled	>		P#	Hz	P%
Energy Mana;	per .		>	PID			>		PD	58.2	100
Reactive Pow		irflex	>	P00			>		PI	51.2	0
Active Power			>	100							
Phose Balance	ing Dia	abled	>								
Wakeup Profil	e .		>								
Advanced			>								
Alternative Pa Source	wer Dr	nabiled	,							Edit	
	Disconnect from device				Disconnect from devic	•			0	isconnect from device	

Inverters with LCD • Power Control [] Alt Power Src[] P(f) • Edit P0: 50.5Hz, 100% Power • and P1: 51.2Hz, 0% Power

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2. Set ESS assistance The same bandwidth needs to be configured on VE.Bus Config for Victron

Start ESS assistance and set: 1. The solar converter will start reducing its output power at 50.2Hz 2. Output power will be reduced to minimum when the frequency is 51.2Hz 3. The converter wil disconnect when the frequency is higher than 51.5Hz

💁 * ESS (Energy Storage System)	-		×
Frequencies Enter the frequencies which are used by the PV Inverter for reducin disconnecting.	ng power	and	
The solar converter will start reducing its output power at 50.20 Output power will be reduced to minimum when the frequency i The converter will disconnect when the frequency is higher that	s 51.20		
X Cancel <<	>>		

- 4. How to configure Sunspec to allow inverter monitoring via Victron GX device
- 1. Ensure that the GX Device and the SolarEdge system are both on the same LAN or WiFi network.
- 2. Enable ModbusTCP Communication [] Modbus TCP port [] Modbus TCP [] Edit port to 502.

	BF	ł		÷	BOILET SH 7080254-02		÷.	÷	SN 70002364-82		1
Comm	nunication				Modbus TCP p	ort		N	Addbus TCP port		
ierver	W-Fi	>	-	Modbus TOP		Disabled	>	Modbus 10P	0	nabied	>
AN	DHCP	>					L.	Port		502	>
5485-1	SiciarEdge Slave	>									
5485-2	Medbus (Multi- Device)	>									
gliee	Not Connected										
1Fi	Not Connected	>									
P10	RECT	>									
ladeus TCP part	Disabled	>									
Discome	at from device				Disconnect from devi				Disconvect from device		

Inverters with LCD • Communication [] LAN Conf [] Modbus TCP [] TCP Port [] Edit port to 502

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3. Enable SunSpec • Communication [] RS481 [] Protocol [] SunSpec (Non-SE Logger) [] Device ID [] Edit to 126

← solar_===== sv 7000234-62	÷ •	solar, togg	1	+ solar.107
Communication		RS485-1		RS485-1 Protocol
Server WH	> Protoco	i 51	iartidge Slave >	Salarlidge >
LAN DHCP	> Device I	D	1.>	Modbus (Multi- Device)
15451 Solarbige Save	,			Sandpes (Non-
FS485-2 Modbus (Multi- Device)	>		L	→ SE Loggw)
ZigBee Not Connected				None
No.Fi Not Connected	>			
GP10 RRCR	>			
Modbus TOP port S82	>			
Disconvect from device		Discannect from de	nice	Disconnect from device
← solar.add		1	÷	solar.adge sn 70002264-02
RS485-	1			RS485-1
Protocol	SunSpec (Non-SE Logger)		Device ID	126
Device ID	1	>		
Baud Rate	115200	>		
			Canc	el Done
Disconnect from	device			Disconnect from device

Inverters with LCD • Communication [] RS481 [] Device Type [] Non-SE Logger [] Device ID [] Edit to 126

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Once you are done with the Sunspec setup you can re-configure RS485-1 for your SolarEdge Grid meter. The SolarEdge meter is still required for a zero export setup. The suspect setting will remain in the memory of the SolarEdge.

Note: It also advised to edit the SolarEdge inverter's IP address to a static IP by disabling DHCP edit the desired IP address for your SolarEdge inverter and the search for the IP address on your DX Device. The SolarEdge inverter will appear on you GX devices screen From: https://www.victronenergy.com/live/ - Victron Energy

Permanent link: https://www.victronenergy.com/live/venus-os:gx_solaredge?rev=1582782587



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