Integrating with SolarEdge

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 auxiliary 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

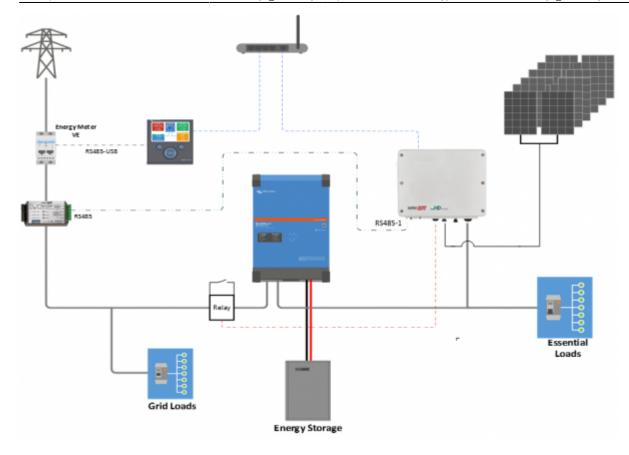


Figure 1

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

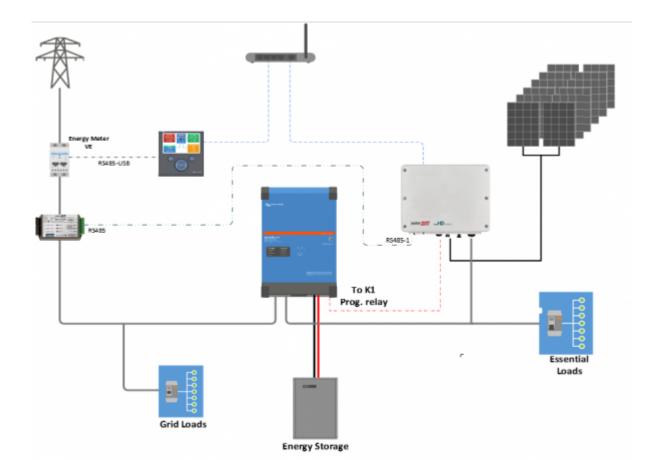


Figure 2

Programmable relay K1 Set up



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.

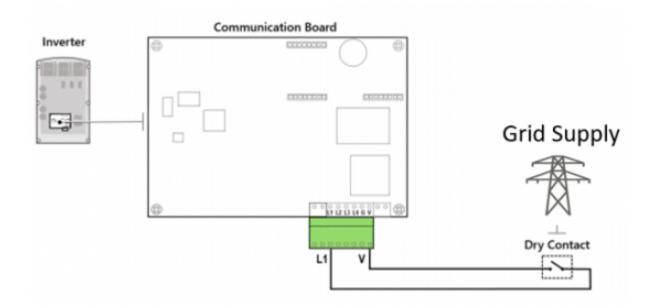


Figure 4

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 \rightarrow Communication \rightarrow GPIO \rightarrow Power Reduction Interface (RRCR) Mode \rightarrow Alternative Power Source.

÷	SN 7319F6D9-58	8	÷	solar 2000 SN 7319F6D9-58	:		÷	SOIAC.000		
0	Communication			GPI0			Pov	wer Reduction Interfa (RRCR) Mode	ce	
Server	LAN	>	Power Reduc	CB) Alternative Powe		_ 1	Disabled			
LAN	DHCP	>	Mode	Source Source	e					
RS485-1	Modbus (Multi- Device)	>					RRCR AC Relay			
RS485-2	SolarEdge Slave	>					RRCR & AC	Relay		
ZigBee	Not Connected							RM 0		
Ni-Fi	Not Connected	>				4	Alternative	Power Source	~	
GPIO	Alternative Power Source	>								
Modbus TCP pr	ort Disabled	>								
	Disconnect from device			Disconnect from device				Disconnect from device		

Inverters with LCD

- Enter the inverter's setup menu using the SolarEdge Password.
- Communication \rightarrow GPIO Conf \rightarrow Device Type \rightarrow Alternative Power Src.



3. How to configure Frequency Shifting

Important note: Please ensure the SolarEdge inverter and your VE.Bus Config is set up for the same frequency bandwidth.

For systems that can feedback into the grid or for pure off-grid systems:

1. Enable frequency shifting

- Go into Power Control
- Ensure Grid control is Enabled

← solar_adg		÷
Power Cont	rol	
Grid Control	Enabled	>
Energy Manager		>
Reactive Power	CosPhi	>
Active Power		>
Phase Balancing	Disabled	>
Wakeup Profile		>
Advanced		>
Alternative Power Source	Enabled	>
Disconnect from d	evice	

Inverters with LCD



> Grid Control <En> Energy Manager RRCR Conf. <Dis> Reactive Pwr Conf.

2. Configure Wakeup Conf.

- Power Control \rightarrow Wakeup Profile \rightarrow Edit
- Edit Maximum Wake up Frequency = 51.2Hz

	SN 7319F6D9-58		÷
	Power Control		
Grid Control		Enabled	>
Energy Manager	r		>
Reactive Power		CosPhi	> >
Phase Balancing	9	Disabled	>
Wakeup Profile			>
Advanced			>
Alternative Powe Source	er	Enabled	>
D	lisconnect from device		

Inverters with LCD:

• Power Control → Wakeup Profile → Edit

RRCR Conf. <dis> Reactive Pwr Conf. Active Pwr Conf. > Wakeup Conf.</dis>	Min Wakeup Freq. > Max Wakeup Freq. Min Wakeup Vgrid Max Wakeup Vgrid	Set Freq 51.20

3. Disable Wakeup gradient

• Power Control → Active Power control → Wakeup Gradient → Disable

solar.edge SN 7319F6D9-58		÷		← solar.		:
Power Control			-	Active P	ower	
Grid Control	Enabled	>		Power Limit	100 %	>
Energy Manager		>		Current Limit	56.57 A	>
Reactive Power	CosPhi	>		Wakeup Gradient	Disabled	>
Active Power		>		Gradient Time	60000 ms	>
Phase Balancing	Disabled	>		P(f)		>
Wakeup Profile		>		P(V)		>
Advanced		>		Ramp Rate	0 %	>
Alternative Power Source	Enabled	>				
Disconnect from device				Disconnect fro	om device	

Inverters with LCD

• Power Control → Active Power control → Wakeup Gradie → Disable

RRCR Conf. <dis> Reactive Pwr Conf.</dis>	Power Limit <100%> Current Li<116.6A> > Wakeup Gradie <dis></dis>	Set Wakeup Gradient
> Active Pwr Conf. Wakeup Conf.	P(f)	Select: Disable

4. Set P(F)

- Power Control \rightarrow Active Power control \rightarrow P(f)
- Edit P0: 50.5Hz, 100% Power
- and P1: 51.2Hz, 0% Power

← solar_adg	-	1		÷	SN 7319F6D9-58		÷		÷	SN 7319F6D9-58	÷
Power Con	trol		+		Active Power			+		P(f)	
Grid Control	Enabled	>		Power Limit		100 %	>		P#	Hz	P%
Energy Manager		>		Current Limit		56.57 A	>		P0	50.2	100
Reactive Power	CosPhi	>		Wakeup Gradie	ent	Disabled	>		P1	51.2	0
Active Power		>		Gradient Time		60000 ms	>				
Phase Balancing	Disabled	>		P(f)			>	μ			
Wakeup Profile		>		P(V)			>				
Advanced		>		Ramp Rate		0%	>				
Alternative Power Source	Enabled	>								Edit	
Disconnect from d	levice				Disconnect from devi	e				Disconnect from device	

Inverters with LCD

- Power Control \rightarrow Active Power control \rightarrow P(f)
- 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) Set Point (Hz,P%) 50.20,100.0 > P0 <50.20,100.0> P1 <51.20,0.0> Set Point (Hz,P%) 50.20,100.0 P0 <50.20,100.0> > P1 <51.20,0.0> Set Point (Hz,P%) 51.20,0.0</dis>		
		(Hz,P%)	
		(Hz,P%)	

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 \rightarrow Alternative Power Source \rightarrow P(f)
- Edit P0: 50.5Hz, 100% Power
- and P1: 51.2Hz, 0% Power

-	Diar, 20,95 73196699-58	÷	÷	solar <mark>edge</mark> SN 7319F6D9-58		1	÷		SN 7319F6D9-58	
Pov	ver Control		→ A	Iternative Power	Source		-		P(f)	
Grid Control	Enabled	>	Alternation Source C		Enabled	>		₽#	Hz	
Energy Manager		>	P(f)			>		PO	50.2	
Reactive Power	CosPhi	>	P(V)			>		P1	51.2	
Active Power		>	-10			·				
Phase Balancing	Disabled	>								
Vakeup Profile		>								
Advanced		>								
Alternative Power Source	Enabled	>							Edit	
Discon	nect from device			Disconnect from devi	ice				Disconnect from device	

Inverters with LCD

- Power Control \rightarrow Alt Power Src \rightarrow P(f)
- Edit P0: 50.5Hz, 100% Power
- and P1: 51.2Hz, 0% Power

Active Pwr Conf. Wakeup Conf. Advanced > Alt Power Src <dis></dis>	> Enable Disable	
	P(V) > P(f) Disable	
	> P0 <50.20,100.0> P1 <51.20,0.0>	Set Point (Hz,P%) 50.20,100.0
	P0 <50.20,100.0> > P1 <51.20,0.0>	Set Point (Hz,P%) 51.20,0.0

4. 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 a minimum when the frequency is 51.2Hz
- 3. The converter will 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 reduce disconnecting.	cing power	and	
Frequencies Enter the frequencies which are used by the PV Inverter for reducing power and			
X Cancel <<	>>		

5 How to configure Sunspec to allow inverter monitoring via Victron GX device

- Ensure that the GX Device and the SolarEdge system are both on the same LAN or WiFi network.
- 2. Enable ModbusTCP
- Communication \rightarrow Modbus TCP port \rightarrow Modbus TCP \rightarrow Edit port to 502.

	n <mark>edge</mark> 202264-02	÷.	•		lar <mark>edge</mark> 70002264-02	- 1		÷	solar edge SN 70002264-02		-
Comm	unication			Modb	us TCP port			N	fodbus TCP port		
Server	Wi-Fi	>		Modbus TCP	Dis	abled >		Modbus TCP		Enabled	;
LAN	DHCP	>					4	Port		502	;
RS485-1	SolarEdge Slave	>									
RS485-2	Modbus (Multi- Device)	>									
ZigBee	Not Connected										
WI-FI	Not Connected	>									
GP10	RRCR	>									
Modbus TCP port	Disabled	>									
Disconnec	t from device			Discon	nect from device				Disconnect from device		

Inverters with LCD

• Communication \rightarrow LAN Conf \rightarrow Modbus TCP \rightarrow TCP Port \rightarrow Edit port to 502

 Last update: 2020-02-27 08:06
 venus-os:gx_solaredge https://www.victronenergy.com/live/venus-os:gx_solaredge?rev=1582787215

 Server <LAN>
 LAN Conf

 R5485-1 Conf <M>

 R5485-E Conf <S>

 Set DNS

 Set Server Addr

 Set Server Port

 Modbus TCP < Dis>

3. Enable SunSpec

• Communication \rightarrow RS481 \rightarrow Protocol \rightarrow SunSpec (Non-SE Logger) \rightarrow Device ID \rightarrow Edit to 126

÷	SN 7C002264-02	:		÷	SN 70002264-02		1		÷	solar.edge sn 70002264-02	:
	Communication				RS485-1					RS485-1 Protocol	
Server	Wi-Fi	>		Protocol	Solar	Edge Slave	>			SolarEdge	>
LAN	DHCP	>		Device ID		1	>			Modbus (Multi- Device)	
RS485-1	SolarEdge Slave	>								SunSpec (Non-	
R\$485-2	Modbus (Multi- Device)	>						-	_	SE Logger)	
ZigBee	Not Connected									None	
WI-FI	Not Connected	>									
GPIO	RRCR	>									
Modbus TCP p	ort 502	>									
	Disconnect from device				Disconnect from device					Disconnect from device	
÷	solar 3000 SN 70002264-02 RS485-1	-		÷	solar 80.00 5N 70002264-02 RS485-1		-				
	SunSpec (Non-SE						_				
Protocol	Logger)	>	1	Device ID	126						
Device ID	1	>	۲.								
Baud Rate	115200	>									
				С	ancel	Done					
	Disconnect from device				Disconnect from devi	ice					

Inverters with LCD

• Communication \rightarrow RS481 \rightarrow Device Type \rightarrow Non-SE Logger \rightarrow Device ID \rightarrow Edit to 126

2025-07-10 02:51	11/11	Integrating with S	SolarEdge
Server <lan> LAN Conf > RS485-1 Conf <m> RS485-E Conf <s></s></m></lan>	> Device Type <se> Protocol <s> Device ID <1> Disable</s></se>		
	SolarEdge > Non-SE Logger <s> Multi Devices <m> None</m></s>	Device Type <lgr> Protocol <ss> > Device ID <1> Baud Rate <115200></ss></lgr>	
		Please Select Device ID 126	

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 SunSpec setting will remain in the memory of the SolarEdge.

Note: It also advised editing 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

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