



## Work Instruction Document

<b>Document Title</b>	HECO Compliance Verification for Sol-Ark 30K-3P
<b>Document Control Number</b>	SK150-0077-002
<b>Status</b>	Released
<b>Issue Date</b>	03/06/2024
<b>Department</b>	Engineering

### Document Revision History

Rev.	Date	Author	Description of Changes
001	03/06/2024	Alessandra B.	Document Created
002	09/25/2024	Michael I.	Reformat and Changed Parameters To L-N

**NOTICE:** Sol-Ark has a policy of continuous improvement and reserves the right to modify the information contained in this document at any time and without prior notice. Please visit [sol-ark.com](http://sol-ark.com) for the latest information.

### Purpose:

In addition to normal Sol-Ark setup requirements (day/time, battery size, battery voltages, Grid mode: Sell or limited load, TOU, and others), this document shows the HECO grid parameters that need to be changed during the inverter commissioning phase to be compliant with HECO regulations.

### Scope:

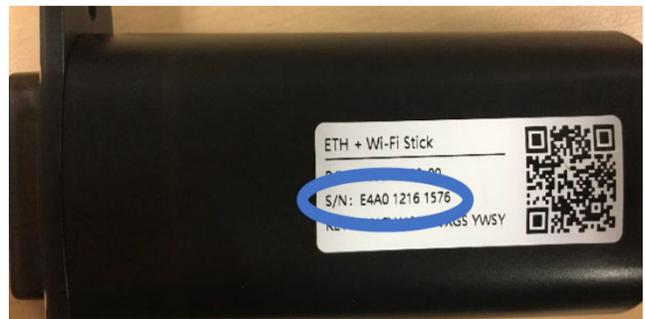
The following work instructions for the HECO grid parameters that apply to the following inverter model numbers: Sol-Ark 30K-3P-208V. These steps must be completed before HECO submission.



**CAUTION:** Consult with HECO to verify any settings before changing the interconnection parameters shown.

### Instructions:

1. Take a photo of the serial numbers on the side of the system. The top ID is for the unique Sol-Ark computer. The pictures below show the inverter serial number (on the left) and the WIFI serial number (on the right). These numbers are used for monitoring registration. They are both



unique to your system. Example shown below:

2. Take a photo of the settings screen to verify the date/time, Communication (Comm), and MCU versions. Example below. Software versions of this value or higher.

System Setup  1/25/2021 03:05:27 PM Mon.

Basic Setup

System Alarms

Battery Setup

Li-Batt Info

Grid Setup

Sol-Ark 5k/8k/12k/15k-P  
 - ID: ##### SD  
 - COMM: ####  
 - MCU: Ver####

Firmware Versions
<b>30K – MCU: v1057 or later</b>
<b>30K – COMM: v101F or later</b>

3. Take a photo of the **Grid selection** (found under Grid Setup) where you must select the proper Grid Mode and set the Constant Power Factor [Power Factor in our GUI].
  - a. Set Grid Mode to **SRD-UL-1741**.
  - b. Power Factor = **-0.900**.
  - c. Grid reconnection time = **300s (default)**.
  - d. Select LN: **120V/LL:208V(AC)**.

The screenshot shows the 'Grid Param' dialog box with the 'Grid Selection' tab selected. The settings are as follows:

Grid Selection	Connect	IP	F(W)	V(W)/V(Q)	P(Q)/P(F)
Grid Mode: 3/3 SRD-UL-1741					
Grid Frequency: 50Hz <input type="checkbox"/> 50Hz <input checked="" type="checkbox"/> 60Hz					
Grid Reconnect Time: 300s					
Power Factor: -0.900					
Grid Level: LN:120V/LL:208V(AC)					
Phase Type: 0/240/120					
<input type="checkbox"/> IT system-neutral is not GND					

CANCEL OK

4. Under the **Connect** tab adjust the “Reconnect” and “Normal Connect” settings according to the grid type (120/208V). Take a photo.

The screenshot shows the 'Grid Param' dialog box with the 'Connect' tab selected. The settings are as follows:

Grid Selection	Connect	IP	F(W)	V(W)/V(Q)	P(Q)/P(F)
	Reconnect				
	Grid Vol High: 126.0V				
	Grid Vol Low: 105.6V				
	Grid Hz High: 60.1Hz				
	Grid Hz Low: 59.5Hz				
	Reconnect Ramp rate: 300s				
	Normal connect				
	Grid Vol High: 144V				
	Grid Vol Low: 60V				
	Grid Hz High: 65.0Hz				
	Grid Hz Low: 50.0Hz				
	Normal Ramp rate: 300s				

CANCEL OK

5. Program the proper Low/High Voltage Ride Through & Low/High Frequency Ride Through in the **IP** screen. Make sure your settings match the picture below corresponding to the appropriate grid type (120/208V). Take a photo.

Grid Param			
Grid selection	Connect	IP	F(W) V(W)/V(Q) P(Q)/P(F)
Over Voltage U>(10 min. running mean)			138V
HV3	144V		
HV2	144V	--	0.16s
HV1	130V	--	13.00s
LV1	105.6V	--	21.00s
LV2	60V	--	2.00s
LV3	60V		
HF3	65.00Hz		
HF2	65.00Hz	--	0.16s
HF1	63.00Hz	--	180.00s
LF1	57.00Hz	--	180.00s
LF2	50.00Hz	--	0.16s
LF3	50.00Hz		
CANCEL		OK	

6. Program **F(W)** - Frequency-Watt to match the picture below. Take a photo.

Grid Param			
Grid selection	Connect	IP	F(W) V(W)/V(Q) P(Q)/P(F)
Over frequency		Droop F	42%PE/Hz
Start freq F	60.04Hz	Stop freq F	60.04Hz
Start delay	0.50s	Stop delay	0.50s
Under frequency		Droop F>	42%PE/Hz
Start freq F>	59.96Hz	Stop freq F>	59.96Hz
Start delay F>	0.50s	Stop delay F>	0.50s
CANCEL		OK	

✓  
F(W)

**Note:** The precision of the values shown in the **F(W)** screen is capped at two decimals.

- 7. Take a picture of the Volt-Watt and Volt-Var **V(W)/V(Q)** Screen where V(W) and V(Q) are both checked.

**Grid Param**

Grid selection	Connect	IP	F(W)	V(W)/V(Q)	P(Q)/P(F)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Response_T	5S				
V1:106.0%	P1:100%			L.in:5.0%	L.out:20.0%
V2:110.0%	P2:0%			V1:92.0%	Q1:44%
V3:110.0%	P3:0%			V2:98.0%	Q2:0%
V4:110.0%	P4:0%			V3:100.0%	Q3:0%
				V4:106.0%	Q4:-44%
CANCEL		OK			

- 8. If Watt-Var or P(Q) must be enabled, it can be found under the **P(Q)/P(F)** tab. "Q" value can be set to absorb or inject.

**Grid Param**

Grid selection	Connect	IP	F(W)	V(W)/V(Q)	P(Q)/P(F)
<input type="checkbox"/>	<input checked="" type="checkbox"/>				
					P(Q)
					P(F)
				L.in:50.0%	L.out:100.0%
P1:20%	Q1:-100%			P1:50.0%	F1:1.000
P2:50%	Q2:-100%			P2:100.0%	F2:0.800
P3:100%	Q3:-100%			P3:100.0%	F3:0.800
P4:100%	Q4:-100%			P4:100.0%	F4:0.800
CANCEL		OK			

9. Take a picture of the **Limitier** Tab. Check Grid Sell.

The screenshot shows the 'Grid Param' window with the 'Limitier' tab selected. The 'Grid Sell' checkbox is checked, and the value '30000' is entered in the adjacent field. The 'Limited Power to Home' and 'Limited Power to Load' checkboxes are unchecked. The 'Time of Use' checkbox is also unchecked, with a 'Setup' button next to it. Below these options is a table with columns for Time, Power(W), Batt, Charge, and Sell. The table contains five rows of data. At the bottom of the window are 'CANCEL' and 'OK' buttons.

	Time	Power(W)	Batt	Charge	Sell
<input checked="" type="checkbox"/> Grid Sell 30000	01:00AM	2000	50%	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Limited Power to Home	05:00AM	2000	50%	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Limited Power to Load	09:00AM	2000	100%	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Time of Use Setup	01:00PM	2000	100%	<input type="checkbox"/>	<input type="checkbox"/>
	05:00PM	2000	50%	<input type="checkbox"/>	<input type="checkbox"/>
	09:00PM	2000	50%	<input type="checkbox"/>	<input type="checkbox"/>