

EG4[®] FLEXPRESS SCREEN KIT

QUICK-START GUIDE

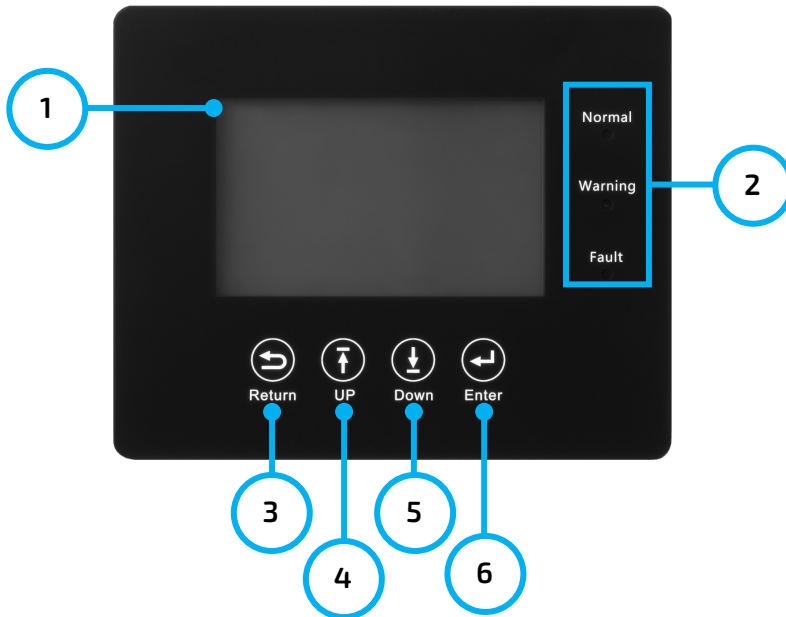


1. PRODUCT OVERVIEW

1.1 PACKING LIST

- Remote LCD Screen
- Ribbon Cable Extension
- Cable Adapter
- 3M Clips (x3)
- Mounting Plate

1.2 LCD DESCRIPTION



NO.	DESCRIPTION
1	LCD Screen
2	LED Lights
3	Return
4	Up
5	Down
6	Enter

2. INSTALLATION

1. While the FlexBOSS is de-energized, remove the three screws on the plastic arc flash cover.



2. Locate the ribbon cable on the communication board. There will be a "CN 21" silk screened to the bottom right of the point of connection. Carefully open the clamps by spreading both sides of the clamp and unplug the topmost ribbon cable. See image below.

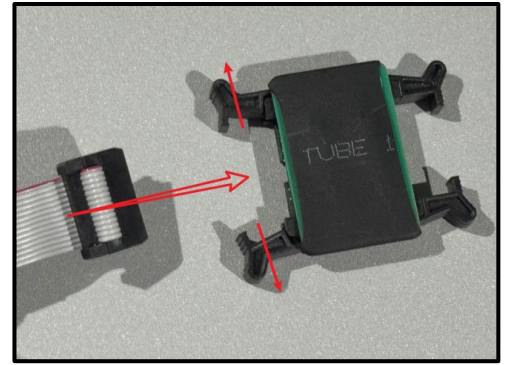


DANGER!

Do not disconnect any other wiring/cabling on the communications board. This will void the warranty!



3. Connect the provided cable adapter to the end of the inverter's ribbon cable and close both sides around the cable.
4. Connect the end of the LCD's ribbon cable to the cable adapter and close both sides around the cable.



NOTE:

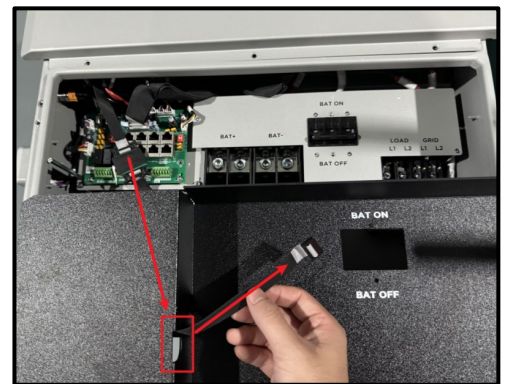
Check all cable connections. If the clamps around the cables are not secure, the LCD screen will not function properly.

5. Using the hole in the arc flash cover, carefully thread the ribbon cable through, then reattach the cover using the three screws from step 1.

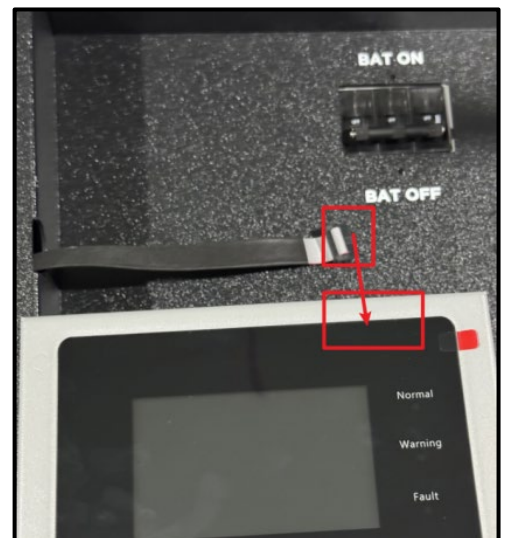


IMPORTANT:

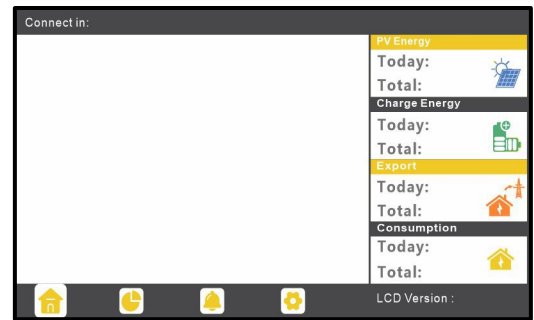
At this point, it is recommended to attach the 3M clips together and apply the sticky side to the back of the screen, and then the other sticky side to the temporary mounting location (optional).



6. Connect the end of the ribbon cable extension to the top of the LCD screen.
7. *Optional:* Mount the LCD screen to a temporary mounting location to complete commissioning.



8. Turn on the FlexBOSS by following the steps below and ensure the LCD screen turns on:
 - a. Turn on the BAT breaker located in the cable box of the inverter and then power on the battery system one battery at a time.
 - b. Turn on the PV isolator switches between the inverter and array and then turn on the PV switch on the side of the inverter.
 - c. Turn on the grid power breaker if applicable.



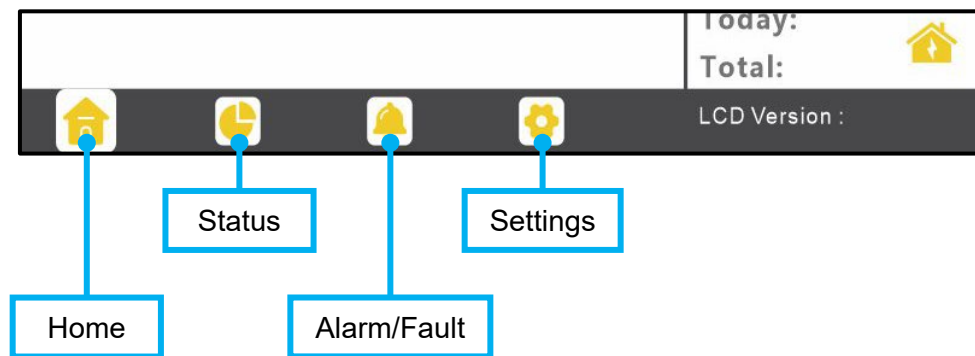
NOTE:

If the LCD screen does not turn on, re-perform steps 1-8 checking that all cable connections are secure.

9. Once commissioning is complete, perform the following:
 - a. De-energize the FlexBOSS.
 - b. Remove the plastic arc flash cover.
 - c. Disconnect the LCD cable in Step 2 from the adapter, and re-install onto the communication board. Ensure the retention clamps are closed and the cable is secure.
 - d. Remove the LCD, LCD ribbon cable extension and cable adapter from the FlexBOSS.
 - e. Reattach the arc flash cover using the 3 screws from Step 1.
 - f. Power on the FlexBOSS following the instructions from Step 8.

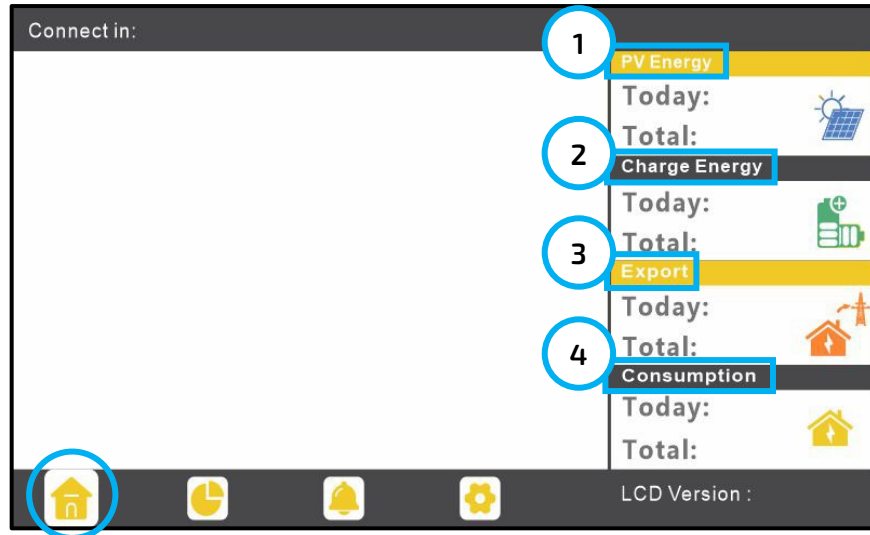
3. LCD SETTING DESCRIPTION

Touch the screen to wake it up. There are four (4) icons along the bottom to navigate to each of the areas described below.



3.1 HOME

After waking up the screen, the home page will show on the screen by default. Users will see a system overview diagram along with the real-time information of each component, such as battery SOC, battery charging/discharging power, grid import/export power, load power, etc. On the right side of the screen, users can view:



1. PV Energy: The amount of PV energy produced, both daily and accumulated.
2. Charge Energy: The amount of DC energy added to battery storage, both daily and accumulated.
3. Export: The amount of AC energy exported to the grid, both daily and accumulated.
4. Consumption: The amount of AC energy consumed by loads, both daily and accumulated.

3.2 STATUS

Select the pie icon at the bottom of the screen to view detailed real-time system information; used for system monitoring by installers and distributors. Visit eg4electronics.com for more detailed information.

Solar

The voltage (V), power (W), and amount of energy (kWh) created by each string currently, per day, and over the lifetime of the system.

Solar	Vpv1	Ppv1	
Battery	Vpv2	Ppv2	
Grid	Vpv3	Ppv3	
UPS	Epv1_day	Epv1_all	
Other	Epv2_day	Epv2_all	
	Epv3_day	Epv3_all	

Battery

Detailed battery data, including battery voltage (V), current (I), and power (W).

Solar	Vbat	Ibat	
Battery	Pchg	Pdischg	
Grid	Vbat_inv	BatState	
UPS	SOC/SOH	CycleCnt	
Other	Vchgrf/Vcut	Bat capacity	
	I maxchg	I maxdischg	
	Vcellmax	Vcellmin	
	Tcellmax(°C)	Tcellmin(°C)	
	BMSEvent1	BMSEvent2	
	Echg_day	Edischg_day	
	Echg_all	Edischg_all	

Grid

Detailed information about energy imported and exported from the grid.

Solar	Vgrid	Fgrid
VgridL1N	VgridL2N	
Pimport	Pexport	
Pinv	Prec	
Pload		
Eimport_day	Eexport_day	
Eimport_all	Eexport_all	
Einv_day	Erec_day	
Einv_all	Erec_all	
Eload_day	Eload_all	

UPS

Detailed information about energy used on loads (Line 1 to Neutral and Line 2 to N), including voltage (V), power (W), and energy (kWh).

Solar	Vups	Fups
VupsL1N	VupsL2N	
Pups	Sups	
PupsL1N	Supsl1N	
PupsL2N	Supsl2N	
Eups_day	Eups_all	
EupsL1N_day	EupsL1N_all	
EupsL2N_day	EupsL2N_all	

Other

Detailed information about the inverter.

Solar	Status	StatusPre
Battery	SubStatus	SubStatusPre
Grid	FaultCode	AlarmCode
UPS	Vbus1/Vbus2	VbusP/VbusN
Other	T0/T1(°C)	T2/T3(°C)
	OCp/Grd OnOff Cnt	ExitReason1/2
	InnerFlag/Run Trace	NoDis/chgReason
	Dis/chg LimitReason	Dis/chg CurrLimit
	Inv/Rec LimitReason	Inv/Rec CurrLimit
	Para status	

3.3 ALARM/FAULT

Select the bell icon at the bottom of the screen to see historical and current fault and alarm information. If the dot on the left of the fault item is red, the fault is active. When the dot is grey, the fault is inactive.

Fault status	M3 Rx failure	Model fault	Eps short circuit
Alarm status	Eps power reversed	Bus short circuit	Relay fault
Fault record	M8 Tx failure	M3 Tx failure	Vbus over range
Alarm record	Eps connect fault	PV volt high	Hard over Curr
	Neutral fault	PV short circuit	Temperature fault
	Bus sample fault	Inconsistent	M8 Rx fault
	Para Comm error	Para master loss	Para rating Diff
	Para Spec Diff	ParaPhase set error	Para Gen unAccord
	Para Sync loss	MID Breaker open	Fault A
	Fault B	Fault C	Fault D

Alarm status	Bat Com failure	AFCI Com failure	AFCI high
Fault record	Meter Com failure	Bat fault	Auto test failure
Alarm record	Lcd Com failure	Fw mismatch	Fan stuck
	Bat reversed	Trip by no AC	Trip by Vac abnormal
	Trip by Fac abnormal	Trip by iso low	Trip by gfci high
	Trip by dci high	PV short circuit	GFCI module fault
	Bat volt high	Bat volt low	Bat open
	Offgrid overload	Offgrid overvolt	MID Com failure
	Offgrid dcv high	RSD Active	Gen over load
	Para Phase loss	Para no BM set	Para multi BM set

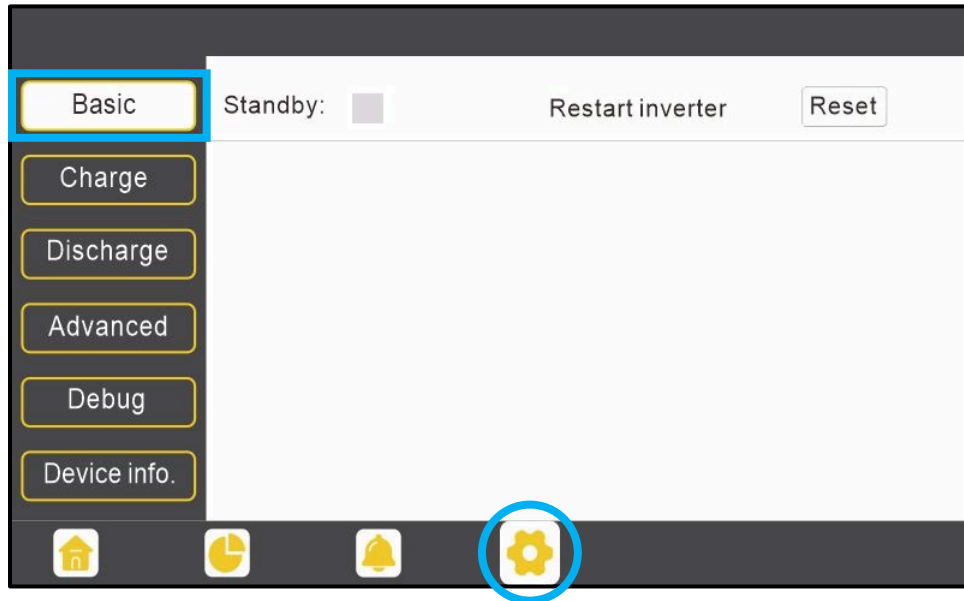
Fault status	Error code	Error time
Alarm status	1	
Fault record	2	
Alarm record	3	
	4	
	5	
	6	
	7	
	8	
	9	
	10	

Alarm status	Alarm code	Alarm time
Fault record	1	
Alarm record	2	
	3	
	4	
	5	
	6	
	7	
	8	
	9	
	10	

3.4 SETTINGS

Select the gear icon at the bottom of the screen to alter inverter settings.

Basic



- **“Standby”**: This setting is to set the inverter to normal or standby status. In standby status, the inverter will stop any charging, discharging, or solar feed-in operations. Some settings and features will require the system to be in standby mode before enabling.
- **“Restart Inverter”**: This selection restarts the system. Restarting the inverter will also reset the screen when connected.



NOTE:

Power will be interrupted when the unit is restarted.

Charge

The screenshot shows the 'Charge' settings page. On the left, there is a sidebar with tabs: Basic, Charge (selected), Discharge, Advanced, Debug, and Device info. The main area contains the following settings:

- Operating Mode:** Use SOC % ☐ Use Bat V ☐ Set
- Bat charge current limit(A):**
- AC charge:** ☐ According to SOC/Volt ☐ Set
- AC charge power(kW):** **Start AC charge SOC(%):**
- Time 1:** **Start AC charge Volt (V):**
- Time 2:** **Stop AC charge SOC(%):**
- Time 3:** **Stop AC charge Volt (V):**

At the bottom, there is a navigation bar with icons for Home, Dashboard, Notifications, and Settings.

- **“Operating Mode”:** Users can choose **“Use SOC%”** or **“Use Bat V”** to control the battery charge logic.
- **“Bat. charge current limit (A)”:** Set the maximum charge current. Limit can be set up to 250A. Follow battery manufacturer’s recommendations for this setting.
- **“AC Charge”:** Grid charge configuration. Enable AC Charge to use grid power to charge the battery bank and set up to three different time periods (in 24-hour format) when AC charging can happen. Set **“AC charge power (kW)”** to limit grid charging power. Set **“Stop AC charge SOC (%)”** as the target SOC for grid charging or set **“Stop AC charge Volt (V)”** as the target battery voltage for grid charging.

The screenshot shows the 'Charge' settings page, specifically the 'Charge first (PV)' and 'Lead-acid' sections. The 'Charge first (PV)' section includes the following settings:

- Charge first(PV):** ☐ Set
- Time 1:** **Charge first power(kW):**
- Time 2:** **Stop charge first SOC(%):**
- Time 3:** **Stop charge first Volt(V):**

The 'Lead-acid' section includes the following settings:

- Absorb voltage(V):** **Float voltage(V):** Set
- Start derate Volt(V):**

At the bottom, there is a navigation bar with icons for Home, Dashboard, Notifications, and Settings.

- **“Charge first (PV)”:** PV charge configuration. PV will charge the battery bank first. Set up to three different time periods when PV charge can happen. **“Charge first power (kW)”** sets PV charge power. **“Stop charge first SOC(%)/Volt(V)”** sets the target SOC/Volt for PV Charge First Priority.
- **“Lead-Acid”:** When using a lead-acid battery, charging parameters will be input here. Follow the battery manufacturer’s recommendations for these settings.

Discharge

The screenshot shows the 'Discharge' settings menu. On the left is a sidebar with buttons: 'Basic', 'Charge', 'Discharge' (which is highlighted with a blue border), 'Advanced', 'Debug', and 'Device info.'. The main content area is divided into sections. The top section has 'Operating Mode' with two radio buttons: 'Use SOC %' and 'Use Bat V', followed by a 'Set' button. Below this are input fields for 'Discharge current limit(A)', 'Discharge start power(W)', 'On-grid Cut-off(%)', 'Off-grid Cut-off(%)', 'On-grid Cut-off(V)', and 'Off-grid Cut-off(V)'. The next section is 'Forced discharge' with a radio button and a 'Set' button. The bottom section has three rows for 'Time 1', 'Time 2', and 'Time 3', each with four input fields for time and corresponding 'Discharge power(kW)', 'Stop discharge SOC(%)', and 'Stop discharge Volt(V)'. At the bottom of the screen is a navigation bar with icons for Home, Dashboard, Notifications, and Settings.

- **“Operating Mode”**: Users can choose **“Use SOC%”** or **“Use Bat V”** to control the battery discharge logic.
- **“Discharge current limit(A)”**: The maximum discharge current from the battery. Limit can be set up to 250A. Follow battery manufacturer’s recommendations for these settings.
- **“Discharge start power(W)”**: When the inverter detects the import power from the grid is higher than this value, the battery will take the loads; otherwise, the battery will stay in standby. The minimum value can be set to 50.
- **“On-grid Cut-off(%), Off-grid Cut-off(%)/On-grid Cut-off(V), Off-grid Cut-off(V)”**: Choose when to stop discharging the battery bank when on or off-grid based on SOC or voltage. The on-grid values should be greater than the off-grid value.
- **“Forced discharge”**: This setting will force the battery to discharge within the programmed time periods. During the time period, the inverter will discharge the battery at the power set by **“Discharge Power(kW)”** until battery SOC or voltage reaches **“Stop discharge”** value.



NOTE:

When using EG4® batteries with the FlexBOSS inverter, it is recommended to set the cut-off SOC to 20% to maintain the 80% Depth of Discharge (DOD).

- **“Grid peak-shaving”**: Peak-shaving is used to avoid peak demand charges from the grid. Peak-shaving can be accomplished by halting grid usage at Time1 and Time2, and Power1(kW) and Power2(kW). Grid peak-shaving can start at Start SOC 1 and Start SOC2(%), or Start Volt1 or Volt2(V).

Advanced



IMPORTANT:

The following settings may need to be adjusted by the installer after installation. Consult with the installer/distributor before making any changes to avoid conflicting settings or **damage to the system!**

- **“Grid type”**: Choose the grid type – 240/120V or 208/120V.
- **“Grid Freq”**: Default frequency is 60Hz. If the grid frequency is nominal at 50Hz, then the inverter’s frequency will be adjusted to 50Hz automatically. If there is no grid power, and frequency is read as 50Hz, but the devices are 60Hz, set to 60Hz manually. This is based on the rated frequency of the local grid regulation and devices.
- **“Grid regulation”**: Select the correct grid safety regulation.
- **“Reconnect time(S)”**: Select the amount of time in seconds to reconnect to the grid after connection is lost. EG4® recommends setting this at 300 seconds to avoid damage to the system.

- **“Battery type”**: Select “No battery”, “Lead-acid”, or “Lithium”. If “Lead-acid” battery is selected, input the correct **“Lead capacity (Ah)”**. If “Lithium” battery is selected, choose the **“Lithium brand”** in the drop-down list.

The screenshot shows the EG4 inverter settings interface. The 'Advanced' tab is selected and highlighted with a blue box. The interface is divided into several sections with settings and checkboxes. The 'Basic' tab is also visible. The 'Advanced' tab includes settings for PV input, Meter or CT, MODBUS addr, Meter type, Vpv start (V), CT ratio, Offgrid output, CT direction reversed, Seamless switch, Charge last, RSD disable, No Battery, Micro-grid, Run without grid, PV Arc, and PV Arc fault clear. Each setting has a corresponding input field or checkbox, and a 'Set' button is available for several settings.

- **“PV input”**: The connection type for solar modules.
- **“Meter or CT”**: Select how energy is measured coming in and out of the inverter. If using a third-party meter, select “Meter”. If using the CTs that come with the inverter, select “CT”.
- **“MODBUS addr”**: Communication settings.
- **“Meter type”**: The type of third-party meter used to measure energy production/consumption.
- **“Vpv start (V)”**: Voltage at which the MPPT utilizes solar for loads/charging.
- **“CT ratio”**: Select 3000:1, 2000:1, or 1000:1. The CTs provided with the inverter are 3000:1.
- **“Offgrid output”**: Enabling this setting will cause the inverter to provide backup power if the grid is lost and batteries are charged or PV is present.
- **“CT direction reversed”**: Occurs when both CTs are installed in the wrong direction; the installer can remedy this by checking this box.
- **“Seamless switch”**: Must be enabled to transfer the load seamlessly to the inverter backup power if the grid is lost.
- **“Charge last”**: Uses solar power in the following order: 1. Loads > 2. Grid export > 3. Battery charging.
Note: Grid export limits must be set through grid peak-shaving settings under “Discharge Settings”.
- **“RSD disable”**: When this box is checked, the RSD function will not work.
Note: Only use this when performing maintenance on the RSD wiring or switch (button).
- **“No Battery”**: If users do not have a battery bank installed yet, but still wish to have inverter backup power with only solar panels connected, this setting can be enabled. Use solar power to supply load when the grid fails, or during Grid Peak-shaving periods.
- **“Micro-grid”**: Only set when a generator is connected to the inverter’s grid terminal. With this option enabled, the inverter will use AC power to charge the battery bank and will not export any power through the grid terminal if AC power is present.

- **“Run without grid”**: Enable for nominal off-grid operations while utilizing AC input as a backup power source, allowing for absolute zero export.
- **“PV Arc”**: The inverter will detect when there is an arc fault on the PV inputs in order to protect itself from potential damage.
- **“PV Arc fault clear”**: Clear the records of PV arc fault.

- **“Export to Grid”**: This selection is to set a zero-export function. If exporting power is not allowed, disable the **“Export to Grid”** option. If a user’s grid meter is tripped with minimal export, **“Zero Export”** can be enabled, thus, the export detection and adjustment will take place every 20ms, which will effectively avoid any power being exported. If export is allowed, users can enable **“Export to Grid”** and set a maximum allowable export limit in **“Max. Export to Grid(kW)”**.
- **“Role”**: In a parallel system, only one inverter is allowed to be set as “Master”, and the others are set as “Slaves”. Inverter is set to “1 phase master” by default.
- **“Phase”**: The phase code setting of the load output. The system will automatically detect the phase sequence of the inverter (consistent with the phase sequence of the connected the grid mains) and display it on the inverter after it is connected to the grid.
- **“Share battery”**: If all inverters are connected to the same battery bank when configured as a parallel system, this setting must be enabled. If the inverters are configured as a parallel system, and are connected to independent battery banks, this setting must be disabled.
- **“Auto Detect Phase”**: Autodetect the phase for three-phase systems.
- **“Grid Boss”**: Set when using with GridBOSS.

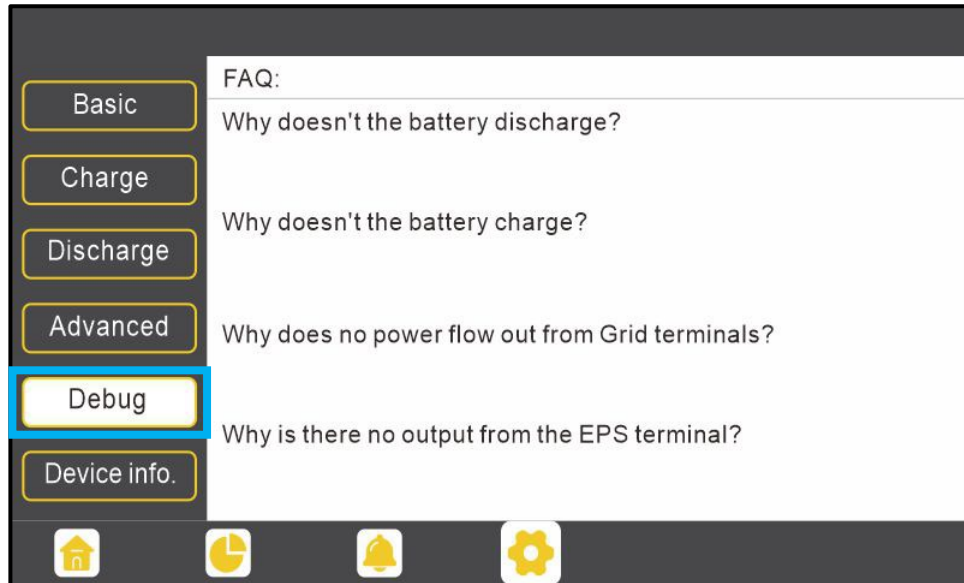


REMINDER:

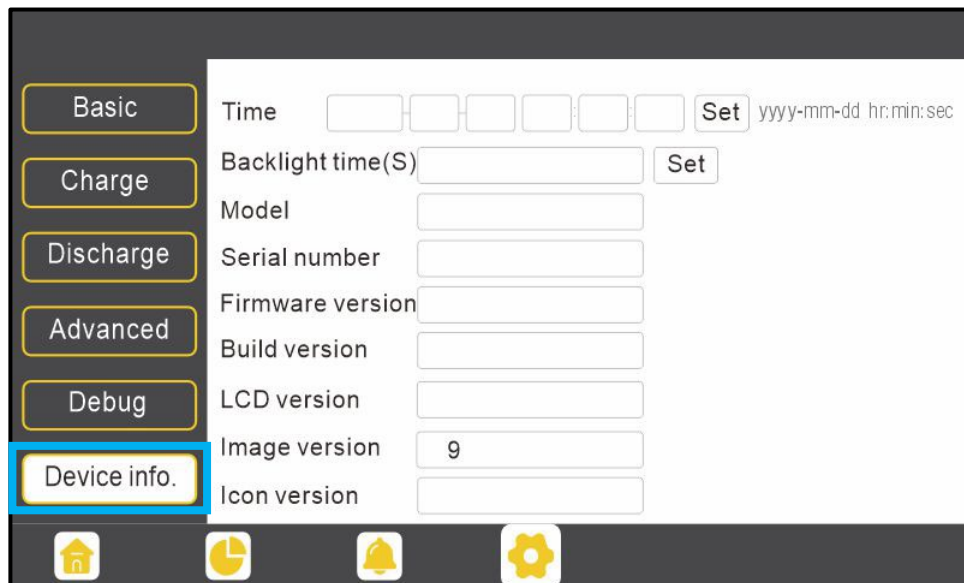
- When configuring two or more inverters in parallel, the inverters must be in standby mode.
- If the system is connected to a lithium battery, the host of the battery bank needs to communicate with the inverter that is set as Master in the parallel system.
- Ensure all settings are the same between each inverter in parallel!

Debug

Frequently asked questions for simple troubleshooting issues. Press the question on the screen to see the answers for each question. If an issue is not addressed on this page, contact the distributor.



Device Info.



- **“Time”**: The format for inputting the time is the four-digit year, two-digit month, two-digit day. Followed by the two-digit hour, two-digit minute, and two-digit second (in 24-hour format).
- **“Backlight time(S)”**: How long the backlight on the LCD will stay lit.
- **“Inverter information”**: This information is not editable. It will update as the inverter is updated. For more information on how to update the inverter, see the inverter's documentation.
- **“LCD Version”**: This information is not editable. For more information on how to update the LCD screen, see the following section.

4. UPDATING THE LCD SCREEN

To update the screen, follow the steps below:



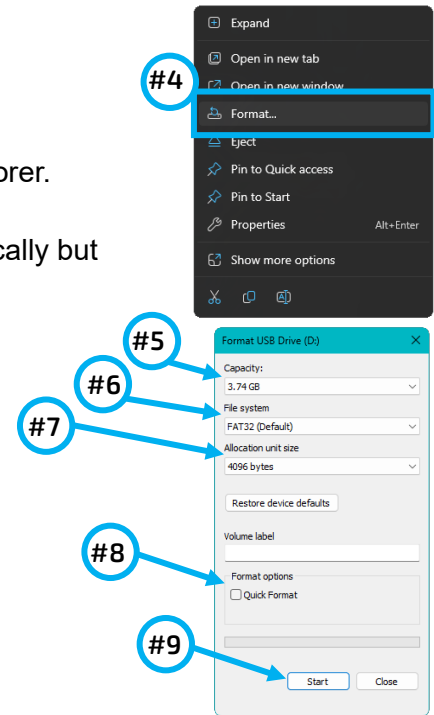
NOTE:

The callout numbers below correlate to the steps taken.

FORMATTING FLASH DRIVE:

Ensure the USB flash drive is ≤16GB for file system compatibility.

1. Plug in a USB drive to a Windows computer.
2. Navigate to “File Explorer”.
3. Locate the USB drive location in the left side pane of File Explorer.
4. Right-click the USB drive and select “Format”.
5. The capacity should reflect the size of the USB drive automatically but if not, ensure “Capacity:” is set to 2, 4, 8 or 16GB.
6. File system: Set to FAT32.
7. Allocation unit size: Set to 4096 bytes.
8. Deselect the “Quick Format” checkbox.
9. Click “Start”.

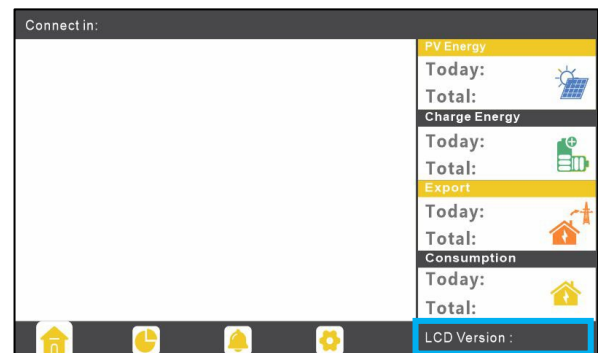


DOWNLOADING AND UN-ZIPPING:

1. Download the latest LCD firmware from eg4electronics.com.
2. Once downloaded, right-click and unzip the downloaded file to the desktop.
3. Once unzipped, open the folder located on the desktop.
4. Select the “DWIN_SET” folder and copy it.
5. Navigate to the USB drive through File Explorer.
6. Paste the “DWIN_SET” folder to the USB Drive.
7. Safely remove the USB drive.

INSTALLING THE UPDATE:

1. Power off the inverter and plug the flash drive into the USB port on the side of the LCD screen.
2. Power on the inverter. The update should begin automatically. The unit will display the start-up screen for several minutes while applying the update.
3. After several minutes (~3), the screen will restart itself and will then point to the standard home screen.
4. Remove the USB drive from the screen.
5. To ensure the update went through successfully, the user can check the LCD Version number in the lower-right hand corner of the physical display, or on the Device Info. screen. The Version number will go up by one digit if the update was successful.



5. CHANGELOG

v1.0.3

- Modified packing list from 3M Dual Lock Re-Closable Fasteners to 3M Clips
- Modified step 2 in section 2 for clarity

v1.0.2

- Modified step 9 in section 2 for additional clarity
- Added step 10 to section 2 for additional clarity

v1.0.1

- Modified final screen mounting location in section 2

v1.0

- Published v1.0



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