

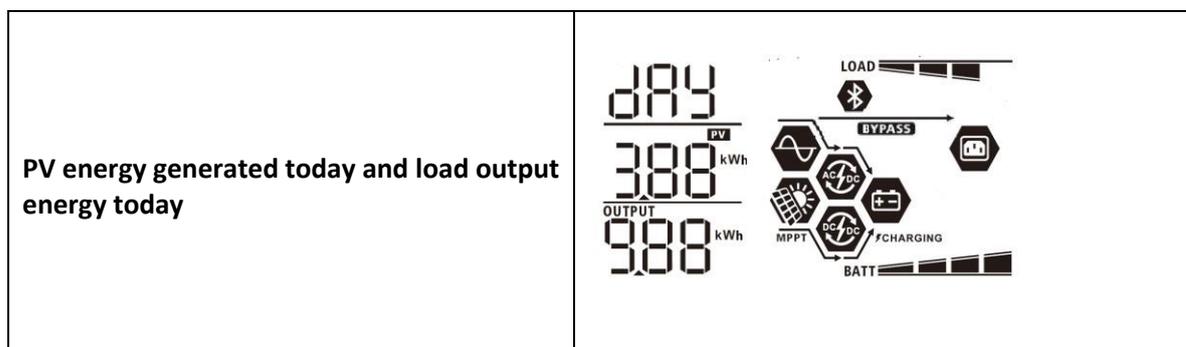
BlackMax FAQs

Q: Why is my battery flat?

A: During long periods of cloudy weather or if supplying electrical loads that exceed the solar input to the system the battery may become discharged to the point that the inverter will beep and show fault code “04”. If battery is further depleted the unit may stop supplying power.

It is recommended during prolonged (more than 2 days) bad weather and if the battery voltage drops below 50V, that you start the generator and charge the battery

The balance of “energy input” (solar) to “energy output” (connected loads) in the last 24hr period is shown by pushing the down arrow on the Sure Power display until you reach the “dAY” screen. If output exceeds input the battery is in deficit for that day.



This screenshot is displaying PV input last 24hrs = 3.88kWh, Power output last 24hrs= 9.88kWh

This results in a shortfall of 6kWh drawn from the battery.

Q: What generators are recommended to charge the BlackMax?

A: The Sure Power inverter in the BlackMax system requires a generator with certain output specifications. These specifications are provided by the generator manufacturer. We recommend a minimum size of **6kVA** for sufficient margin to charge the batteries and run connected loads. Two wire auto-start capability is desirable to allow generator to automatically charge when batteries are low.

Supported generators should meet or exceed the following specifications:

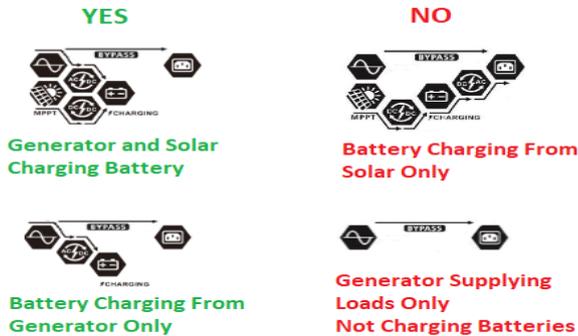
- Generator waveform THD < 10%.
- Generator Vrms range 180 ~ 270Vac
- Generator voltage crest factor (Vpeak/Vrms) < 1.6
- Generator peak voltage < 380V
- Frequency range 45Hz ~ 63Hz
- Frequency slew rate < 0.3Hz/sec

Testing has confirmed the **Honda EU22i** is able to charge the BlackMax but has limited capacity to run appliances at the same time. The **Able KP7K1** can charge the BlackMax and cover substantial connected appliances simultaneously.

Q: Why won't my generator charge my batteries?

- Confirm batteries are being charged by generator (see below):

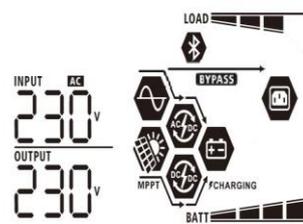
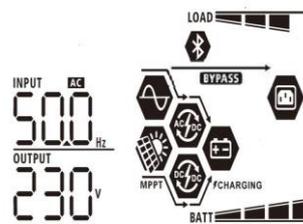
Is my generator actually charging my batteries? LCD Display Outputs



If the LCD display shows no charging from generator:

- Some generators have a timed start to allow voltage to settle before outputting. It may take around 5 minutes before charging will start. Some auto start generators have a setting that can be changed to allow shorter syncing times.
- Turn eco mode off if this option is available on your generator.
- You may have connected loads that are drawing all the power. Turn off connected loads (lights and small loads are ok) while charging.
- Your generator's output may be outside the specifications for supported generators.

You can observe the voltage and frequency of the generator input, by scrolling through the LCD display with the up and down buttons until you reach these screens:

Selectable information	LCD display
Input voltage/Output voltage (Default Display Screen)	<p>Input Voltage=230V, output voltage=230V</p> 
Input frequency	<p>Input frequency=50Hz</p> 

Note, this is showing an acceptable generator input of 50Hz, 230V charging the battery.

Q: Why has the generator, BlackMax or switchboard RCD tripped?

A: Has this occurred when connecting the BlackMax or generator for the first time?

The BlackMax is shipped with an “MEN link” installed. This is an internal connection between the earth bar and neutral bar. All electrical installations are required to have only one of these installed. If an MEN link is already installed in the connected switchboard or the generator, the one or all of the RCDs in the connected equipment will trip. It is advised that a **licenced electrician** remove the MEN links from the least permanent pieces of the equipment and leave the MEN link in the most permanent piece of equipment. This generally requires the connected switchboard to retain the MEN link, and it to be removed from the BlackMax and generator.

If this has occurred seemingly randomly, and not when connecting a generator, it is likely to be an appliance or wiring fault.

- If the generator RCD is tripping and no others, **(and there is only one MEN link in the whole connected system)** there may be a fault in the lead connecting the generator to the BlackMax, or water/insect ingress into the generator or BlackMax sockets. If the connection is not hard wired, try a different lead between the generator and BlackMax. Turn the RCD on to test. If this does not resolve the issue, contact an electrician to diagnose further.
- If the BlackMax RCD is tripping, and no others **(and there is only one MEN link in the whole connected system)** disconnect all loads, and generator. Unplug these if they are via leads, switch off the corresponding breaker if they are hardwired. Progressively connect these back to the BlackMax. The fault is then isolated when the RCD trips.
- If an RCD is tripping in the switchboard **(and there is only one MEN link in the whole connected system)** there may be a fault in the circuit connected to that RCD.
If this is a lighting circuit, it is likely a fault in wiring, water in light fitting etc requiring a licensed electrician to resolve.
If this is a power circuit supplying socket outlets unplug all appliances connected to this circuit and reset the RCD. If the RCD trips, it is likely a fault in wiring, water in a socket outlet etc requiring a licensed electrician to resolve. If the RCD stays on, plug in each appliance in turn. When the RCD trips this indicates the faulty appliance, causing the trip.

Q: Why is my BlackMax beeping?

A: The BlackMax unit will beep to indicate several error warnings. The Sure Power display will display a code to define this error.

Warning Indicator

Warning Code	Warning Event	Audible Alarm	Icon flashing
01	Fan is locked when inverter is on.	Beep three times every second	01 
02	Over temperature	None	02 
03	Battery is over-charged	Beep once every second	03 
04	Low battery	Beep once every second	04 
07	Overload	Beep once every 0.5 second	07 
10	Output power derating	Beep twice every 3 seconds	10 
15	PV energy is low.	Beep twice every 3 seconds	15 

Error “04” will occur when the battery is not receiving enough energy inputs to cover outputs and is getting to the bottom of its reserves. See **Q: Why is my battery flat?**

Error “07” will occur if the BlackMax has been overloaded. The unit can handle 5kW of power draw continuously, and higher for short periods of time.

Error “15” is generally not concerning and indicates low solar input, common around sunrise and sunset.

Q: How can I upgrade or replace the solar array connected to my BlackMax?

All electrical work must be completed by a licenced electrician to ensure correct function and to claim STCs (if possible). Panels and configurations must be selected to follow inverter - specifications below:

Max. Input Voltage (VOC) 500VDC

Max. Input Current (IMP) 18ADC

Short Circuit Current (ISC) 22.5ADC

Max PV connected power 5000W

Typical array configurations are 8 panels in series or two strings of 8 in parallel, but this depends on PV panel specifications.

Q: My batteries have shut down and will not wake up, what needs to be done?

After a long period of discharge without sufficient charging the battery BMS will switch off to prevent damage to the batteries. To rectify, when solar or generator charging is available, turn off the battery breakers for 10 minutes, then switch them back on. They should have recovered enough to reconnect the batteries to the system and begin charging. If the screens do not light up (or blue lights on older batteries), they may have discharged too low to recover normally. Contact your installer and RedEarth to obtain a trickle charger.

Q: What does the error code on the LCD display mean?

Fault Reference Code

Fault Code	Fault Event	Icon on
01	Fan is locked when inverter is off.	F01
02	Over temperature	F02
03	Battery voltage is too high	F03

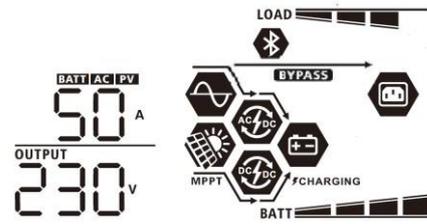
04	Battery voltage is too low	F04
05	Output short circuited or over temperature is detected by internal converter components.	F05
06	Output voltage is too high.	F06
07	Overload time out	F07
08	Bus voltage is too high	F08
09	Bus soft start failed	F09
10	Output power derating	10 ⚠
15	PV energy is low.	15 ⚠
16	High AC input (>280VAC) during BUS soft start	16 ⚠
32	Communication failure between inverter and remote display panel	32 ⚠
51	Over current or surge	F51
52	Bus voltage is too low	F52
53	Inverter soft start failed	F53
55	Over DC voltage in AC output	F55
57	Current sensor failed	F57
58	Output voltage is too low	F58
59	PV voltage is over limitation	F59

Q: How do I check the generator charging rate?

You can observe the generator and/or solar input current, by scrolling through the LCD display with the up and down buttons until you reach this screen:

Charging current display

AC (generator) and PV charging current



AC charging (generator) current only

