

Inverter Backup System Basic Operation Manual

General Safety

- This device should only be used in accordance with the instructions within this manual and in compliance with local, regional, and national laws and regulations. Only allow this device to be installed, operated, maintained, and repaired by other person(s) who have read and understood this manual. Ensure the manual is included with this device should it be passed to a third party.
- DO NOT allow minors, untrained personnel, or person(s) suffering from a physical or mental impairment that would affect their ability to follow this manual, install, maintain or repair this device.
- Any untrained personnel who might get near this device while it is in operation MUST be informed that it is dangerous and instructed carefully on how to avoid injury.
- Do not disassemble the inverter. If you need repair or maintenance, contact a professional service centre.
- Disconnect all wires/cables before performing any maintenance or cleaning to reduce the risk of electrical shock
- This unit contains no user-serviceable parts. Always consult an authorised contractor for repairs.

Inverter Display



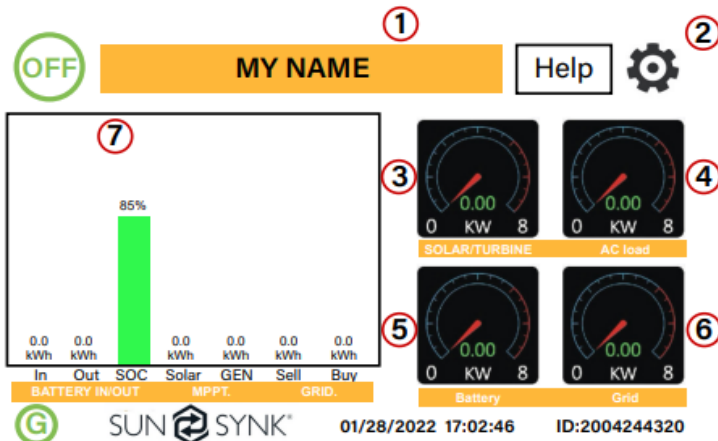
LED indicator		Meaning
DC	Green LED solid light	PV connection normal
AC	Green LED solid light	Grid connection normal
Normal	Green LED solid light	Inverter functioning normally
Alarm	Red LED solid light	Fault
Function Key	Description	
Esc	To exit the previous mode	
Up	Increase the value of a setting	
Down	Decrease the value of a setting	
Enter	Confirm setting change (If not pressed each time the setting will not be saved)	

Switching the Inverter ON/OFF

1. Once the final inspection has been done on all connection terminals and the Battery is Switched ON (Button located on the bottom of the Battery) the Inverter can be switched ON by Pressing the Silver button (On the Bottom of the Inverter) where the Light around the Inverter will illuminate Blue indication that the Inverter has been Activated.
2. The Normal Indication light will illuminate after 60 seconds and Indicates the system is Operation in a Normal State.

Home Page

To access the Home page, press the Esc button on any page:



1. Customer name
2. Access the settings menu page
3. Access solar history
4. Access system status page
5. Access system status page
6. Access grid history
7. Access system flow page

What this page displays:

- Total daily power into the battery (kWh).
- Total daily power out of the battery (kWh).
- SOC (State of charge of the battery) (%).
- Total daily solar power produced in (kWh).
- Total hourly usage of the generator (Time).
- Total daily power sold to the grid (kWh).
- Total daily power bought from the grid (kWh).
- Real-time solar power in (kW).
- Real-time load power in (kW).
- Real-time battery charge power in (kW).
- Real-time grid power in (kW).
- Serial number.
- Time date.
- Fault condition.
- Access stats pages.
- Access the status page.
- Access the fault diagnostic page.

Inverter Sub-Distribution Board

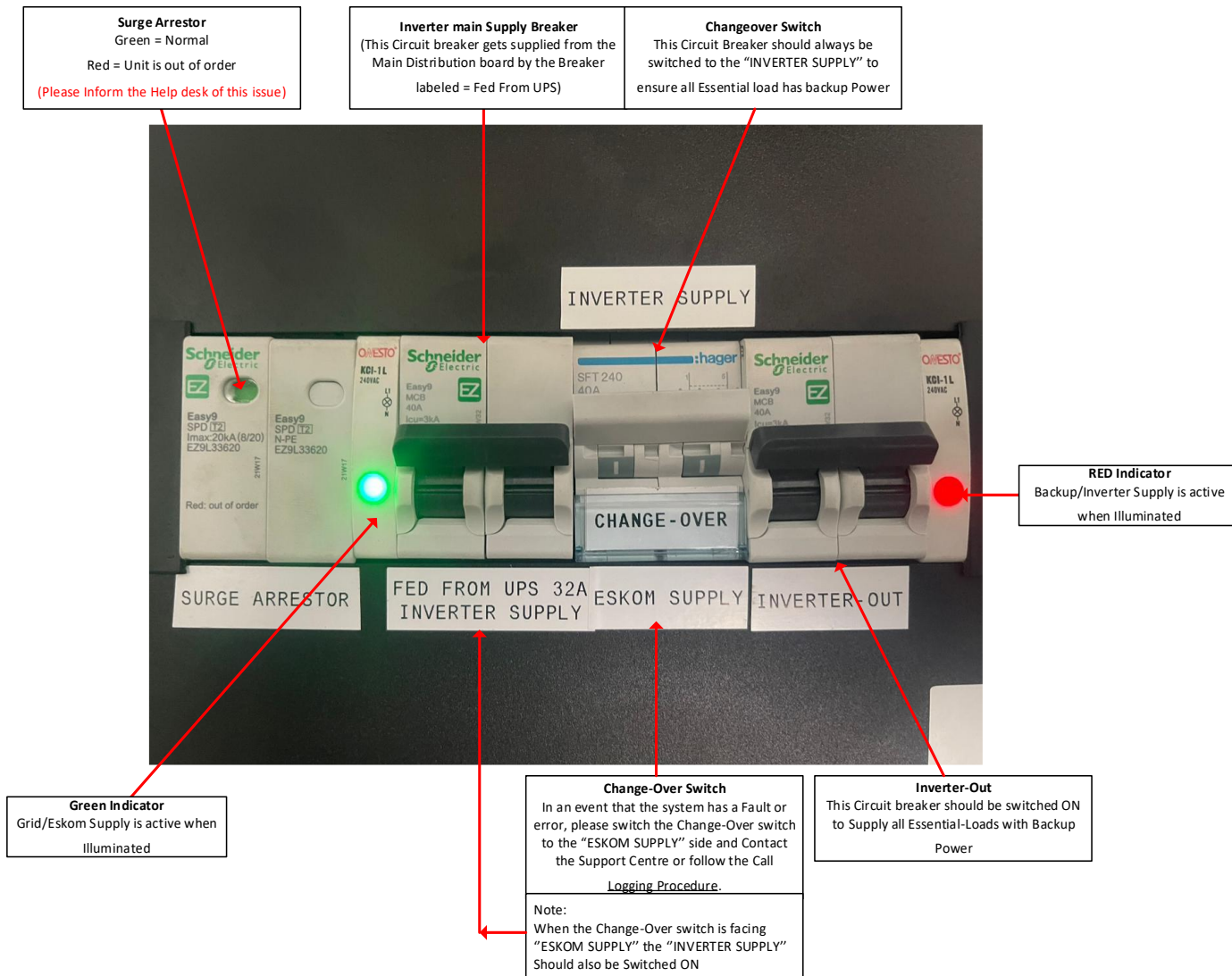
As per Regulation the Inverter has an Electrical Distribution Switch board installed below the System that Controls the Inverter Grid Connection, Essential Load output and Change-Over switch.

The Sub-Distribution board at the Inverter comprises of the following equipment:

1. **AC Surge-Protector:** The SPD device will protect the Inverter from Voltage Spikes or transients from the Electrical Grid connection.
2. **Green Indicator:** This indicator light will illuminate if the Grid/Eskom connection is available
3. **Inverter Supply:** This Circuit Breaker Controls the Electricity Input into the inverter and Changeover Switch.

4. **Changeover Switch:** This Circuit Breaker controls the Electricity supply source (Inverter or Grid/Eskom) to the essential loads (lights and all Plug points with Black covers)
5. **Inverter Output:** This Circuit breaker controls the Backup Power from the Inverter
6. **Red Indicator:** This indicator light will illuminate when the Inverter Output Electricity (Backup Power) is available and/or active

Inverter Distribution board typical layout



Battery Fuse Disconnect



The Battery Fuse Disconnect switch prevents a possible explosion of the battery and it will cut the circuit fast enough to prevent the wires from catching fire or getting dangerously hot and also protects the Battery.

In the event of a fuse being faulty it will indicate with a colour that the fuse is defected.

Fuses should be checked on a regular base.

Fault Codes:

To check the fault codes, click on the FAULT CODES icon on the settings menu.

Example of Fault Codes page:

FAULTS CODES		
Alarms Code	ID:2004244320	Occured
F56	DC_VoltLow_Fault	2022-01-26 12:45
F56	DC_VoltLow_Fault	2022-01-24 11:00
F56	DC_VoltLow_Fault	2022-01-07 18:19
F56	DC_VoltLow_Fault	2022-01-08 01:58
F56	DC_VoltLow_Fault	2021-11-09 13:22
F56	DC_VoltLow_Fault	2021-11-03 17:48
F56	DC_VoltLow_Fault	2021-10-27 16:31
F56	DC_VoltLow_Fault	2021-10-20 19:17

Each Alarm Code has a meaning and is caused by erratic behaviour or a Change in the system.

Basic Fault Codes meaning:

Error Code	Description	Solutions
F13	Working Mode Change	Inverter work mode changed 1. Reset the inverter. 2. Seek help from Sunsynk.
F18	AC over current fault or hardware	AC Slide over current fault. 1. Check if the backup load power is within the range of the inverter. 2. Restart, and check if it is normal.
F20	DC over current fault of the hardware	DC Over current fault 1. Check if PV module and battery connections. 2. Reset the system.
F23	AC leakage current is trans over current	Leakage current fault 1. Check the PV module and inverter cables. 2. You may have a faulty PV panel (earth short) 3. Restart inverter

If any of the fault messages listed in the following table appear on your inverter and the fault has not been removed after re-starting the system, please Log a Support ticket.

Call Logging Procedure on Inverter Systems:

The email address for all faults that must be used is: soc@ianet.co.za

Subject: (Must contain the Unit/Stand Number and Inverter Fault Code)

Body of the email must be in the following format:

1. Inverter Serial Number (Located on the Right side of the Inverter)

2. The Battery Serial Number (Located on the Right side of the Battery)
3. The Wi-Fi Dongle Serial Number (Located on the Right bottom side of the Inverter)
4. The Unit/Stand Number and Estate Name
5. Changeover Switch Status:
 - Inverter Supply
 - Middle
 - Eskom Supply
6. The problem description (including the fault code and indicator status displayed on the LCD) with as much detail as possible. (Preferably Pictures)
7. Owners contact Information

If you require further help please contact the following support line 012 883 1800 to report a **CRITICAL** incident.

Please take note:

Any changes/Alterations with the Inverter System will result in an immediate Warranty violation.

1. No Configuration settings or modifications with values will be allowed
2. No electrical connection alterations/modifications are allowed on the system

Inverter detailed

Specifications:



SUN SYNK® www.sunsynk.com

2. TECHNICAL SPECIFICATION

■ SUN-3.6K-SG01/03LP1-EU and SUN-5K-SG01/03LP1-EU

Model	SUN-3.6K-SG01/03LP1-EU	SUN-5K-SG01/03LP1-EU
Battery Input Data	SUN-3.6K-SG01/03LP1-EU	
Battery Type	Lead-acid or Lithium-ion	
Battery Voltage Range (V)	40-60V	
Max. Charging Current (A)	90A	120A
Max. Discharging Current (A)	90A	120A
Charging Curve	3 Stages/Equalisation	
External Temperature Sensor	Optional	
Charging Strategy for Li-Ion Battery	Self-Adaptation to BMS	
PV String Input Data	SUN-5K-SG01/03LP1-EU	
Max. DC Input Power (W)	4680W	6500W
PV Input Voltage (V)	370V (100V-500V)	
MPPT Range (V)	125-425V	
Full Load DC Voltage Range (V)	240-425V	
Start-up Voltage (V)	150V	
PV Input Current (A)	11A+11A	
No. of MPPT Trackers	2	
No. of Strings Per MPPT Tracker	1+1	
AC Output Data	SUN-3.6K-SG01/03LP1-EU	
Rated AC Output and UPS Power (W)	3600W	5000W
Max. AC Power (W)	3960W	5500W
Peak Power (off-grid)	2 times of rated power, 10 S	
AC Output Rated Current (A)	15.7A	21.7A
Max AC Output Current (A)	18A	25A
Max Continuous AC Passthrough (A)	35A	
Power Factor	0.8 leading to 0.8 lagging	
Output Frequency and Voltage	50/60Hz, 220/230/240Vac (single phase)	
Grid Type	Single Phase	
Current Harmonic Distortion	THD<3%(Linear load<1.5%)	
Efficiency		
Max. Efficiency	97.60%	
MPPT Efficiency	96.50%	
Euro Efficiency	99.90%	
Protection		
PV Input Lightning Protection	Integrated	
Anti-islanding Protection	Integrated	
PV String Input Reverse Polarity Protection	Integrated	
Insulation Resistor Detection	Integrated	
Residual Current Monitoring Unit	Integrated	
Output Over Current Protection	Integrated	
Output Shorted Protection	Integrated	
Output Over Voltage Protection	Integrated	
Certifications and Standards		
Grid Regulation	VDE 0126, AS4777, NRS2017, G98, G99, IEC61683, IEC62116, IEC61727, RD1699:2011, XPS C 15-7 12-3:2019-05	
Safety Regulation	IEC62109-1, IEC62109-2	
EMC	EN61000-6-1, EN61000-6-3	
General Data		
Operating Temperature Range (°C)	-25-60°C, >45°C Derating	
Cooling	Fan	
Noise (dB)	<30	
Communication with BMS	RS485, CAN	
Weight (kg)	20.5	
Size (Length x Width x Height)	580 x 330 x 208 mm	
Protection Degree	IP65	
Installation Style	Wall-mounted	
Warranty	5 years	

Hybrid Parity (Super) Inverter 3.6kW/5.5kW/8.8kW Plus Parallel Version

7

Battery detailed Specifications:

V1.0

ITEM	Specification
Model	Hubble AM-2 (Revision 2)
Rated Capacity (5HR)	115 Ah*
System Voltage	48 V
Discharge Cutoff Voltage	44.0 V
Equilized Charge Voltage	53.8 V
Max. Continuous Charging Current	105 A
Max. Continuous Discharging Current	105 A
C Rating (cell)	1.0 C
Weight	Approx. 42 Kg
Display	None
Parallel	Parallel connection up to 15 packs with full communications
Dimensions (WxDxH) mm	375mm x 145mm x 467mm
Ports	1x CAN-bus, 2x RS-485, 1x RS232
Cells	New Li-ion Prismatic Cells
Design Life	+/- 15 Years
Cycle Life @ 1C	+/- 6000 cycles @ 50% DOD, Above 3000 Cycles @ 100% DOD,
Certification	CE, UN38.3, GBT31484-2015, GBT31485-2015, GBT31486-2015
Outer Package Material	White bake lacquer steel case
Operating Temperature	Charging: 0 to +55°C Discharging: -20 to +55°C Storage: -20 to +55°C
Protection	Electronic Circuit Breaker, BMS Voltage Protection, Short Circuit protection

Due to continuous product improvements, specifications are subject to change without further notice.

* Ah design capacity nominally is between 110Ah and 120Ah.

ACCEPTANCE OF BASIC OPERATION TRAINING CONDUCTED ON THE INVERTER BACKUP SYSTEM

I, the undersigned _____, with identity number _____, agree that Basic Operation training has been conducted and I understand the basic functionality, fault logging procedures and General safety measures

Signed at _____ on this _____ day of _____ 2023

Client signature that received the Training

Signed at _____ on this _____ day of _____ 2023

On behalf of I3S

Signature (Trainer)

Print name:

Annexure X

This Document was created on the 23 of February 2023