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Quick Start Installation Guide

RI-ENERGYFLOW-MODULAR SERIES

Installation safety precautions:

- This system must only be installed by qualified personnel familiar with applicable wiring regulations.
- Isolate all power supplied to the device prior to undertaking any work on the system.
- Check all wiring connections before energising any part of the system.
- Do not remove or dismantle the device modules. There are no user serviceable parts within the products. Dismantling or tampering with the modules will void the warranty.
- Only clean the modules with a clean cloth.
- Suitable RCD protection must be installed according to local wiring regulations
- Read the full user manual prior to commencing installation.

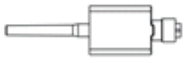
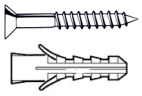
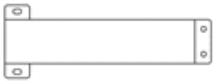
Getting Started

Step 1: Remove all modules from the cardboard boxes and associated packaging materials. Ensure that the brackets and included accessories are kept.

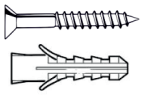
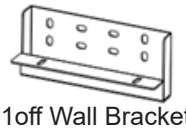
Step 2: Inspect all parts for damage. Do not proceed with the installation if damage is observed. If in doubt please call the supplier.

Step 3: Ensure all accessories are present and correct. The included accessories should be as shown below.

Inverter Module Accessories:

 4off M5x12mm Screws	 2 pairs of MC4 plugs	 1off WIFI Module	 1off AC Grid Connector and 2.5mm Allen Key	 1off Back-up Connector
 2off Mounting Screws and Nylon Wall Plugs	 1off CT/ Meter Connector (4Way)	 1off DRM Connector (6Way)	 1off Wall Bracket	 1off Current Transformer

Battery Module Accessories:

 4off Mounting Screws and Nylon Wall Plugs	 2off M5x12mm Screws	 4off M6 Flat Washers	 1off Wall Bracket	 Wiring Kit **

**An additional wiring kit will be required if the installation contains more than one battery module. Refer to table below.

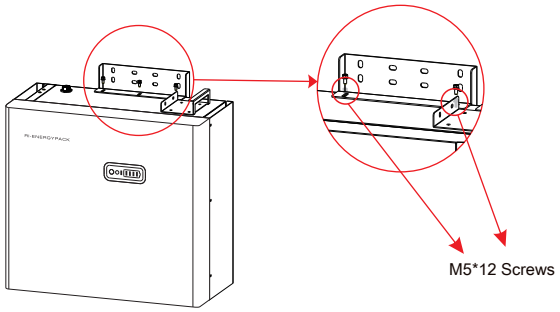
Wiring Kits for Additional Battery Modules:

Total Number Of Battery Modules	Wiring Kit Part Number
2	RI-MOD-KIT10.2
3	RI-MOD-KIT15.3
4	RI-MOD-KIT20.4

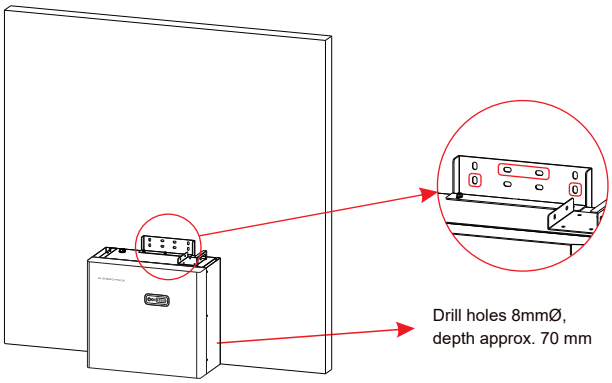
E&OE. Please check critical parameters at time of order. ISSUE : 20221213

Battery Installation - Note: The installation location must be in accordance with the full User Manual

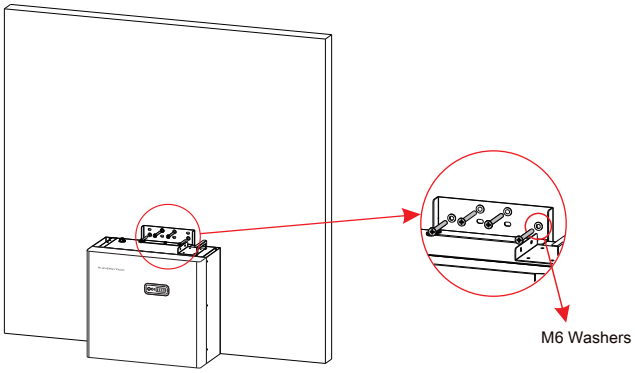
Step 1: Attach the supplied wall mounting bracket to the battery module using the supplied M5x12mm screws.



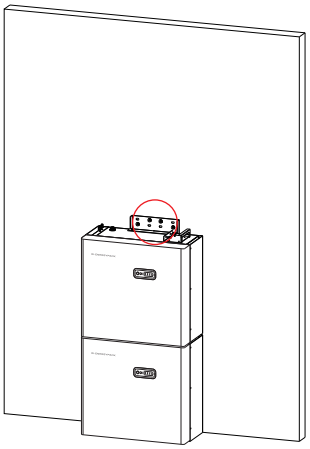
Step 2: Place the battery module against the wall and mark the 4 holes indicated below that are to be drilled. Using an 8mm Ø masonry drill bit, drill 4 x holes approximately 70mm depth. Gently tap supplied nylon wall plugs in to the holes.



Step 3: Remove any debris. Secure the battery module to the wall using the supplied mounting screws and M6 washers. On the last battery module of the stack, leave the two central screws unfitted and proceed to the next section for **Inverter Installation**

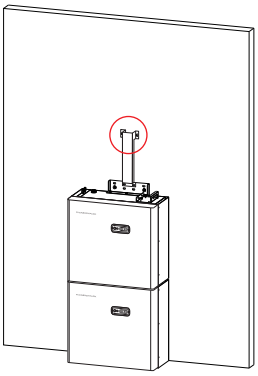


Step 4: Repeat steps 1-3 for any additional batteries. Please note, for installs with more than 2 battery modules it will be necessary to start a second battery stack to the right-hand side of the first. **See full user manual for mandatory separation distances.**

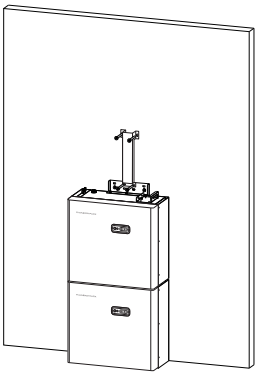


Inverter Installation

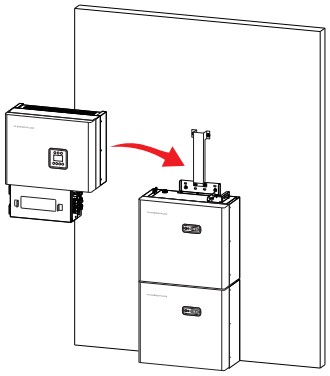
Step 1: Place the wall mounting bracket included with the inverter against the wall and mark the two top holes. Using an 8mmØ masonry drill bit, drill 2 x holes approximately 70mm depth. Gently tap supplied nylon wall plugs in to the holes.



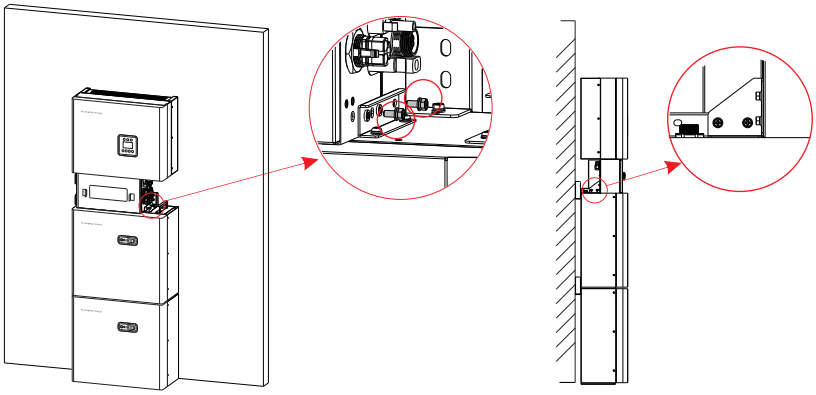
Step 2: Remove any debris. Secure the inverter bracket to the wall using the supplied screws (2 from battery installation + washers for the bottom holes and 2 without washers for the top holes).



Step 3: Fit the inverter on to the bracket. Take care to ensure the rear tang correctly engages with the bracket.

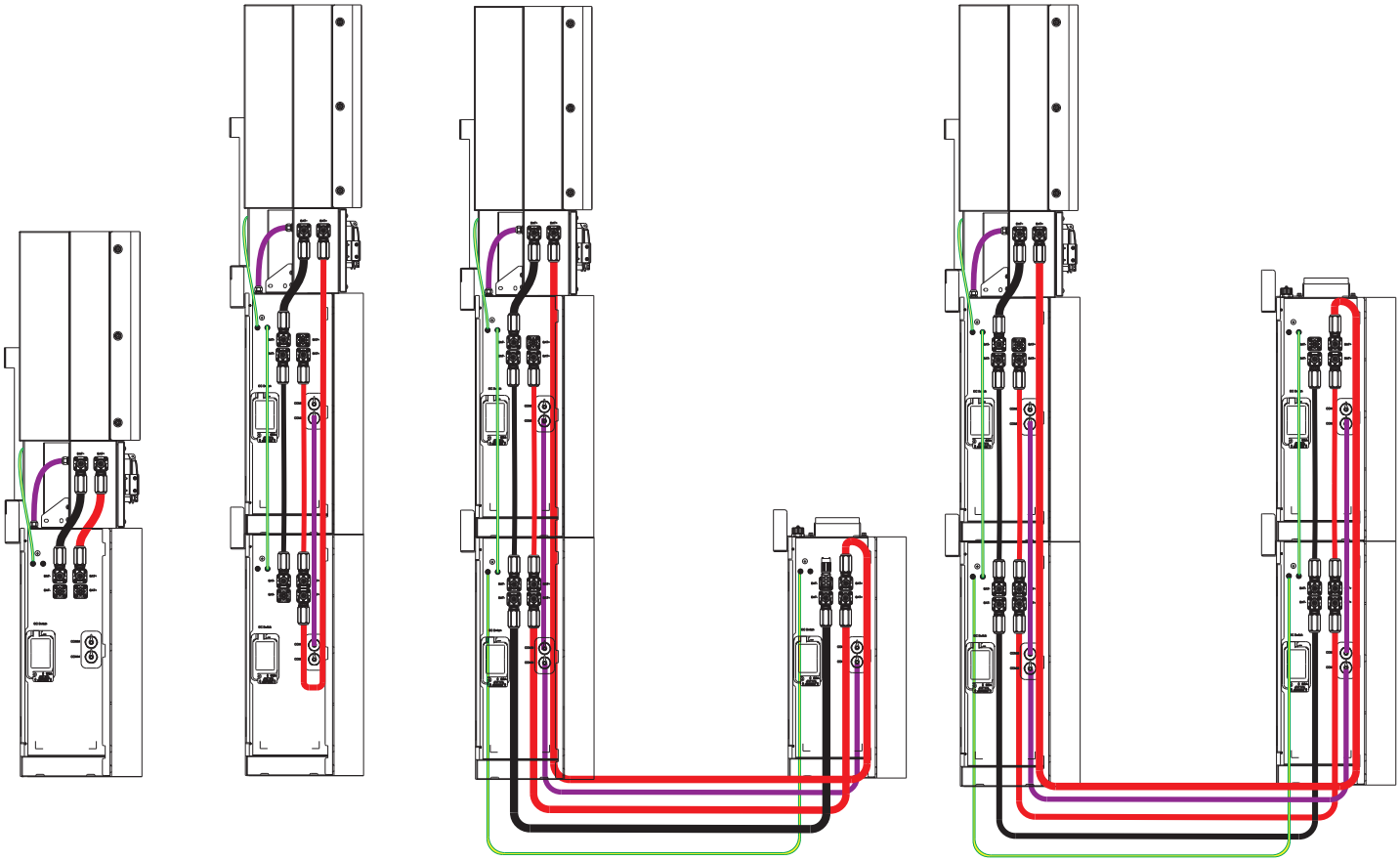


Step 4: Loosely fit the 4xM5x12mm screws through the battery brackets in to the inverter. Before tightening the screws position the inverter so that the removable inverter cover fits flush with the battery front panel(s). Do not fit the cover at this stage.

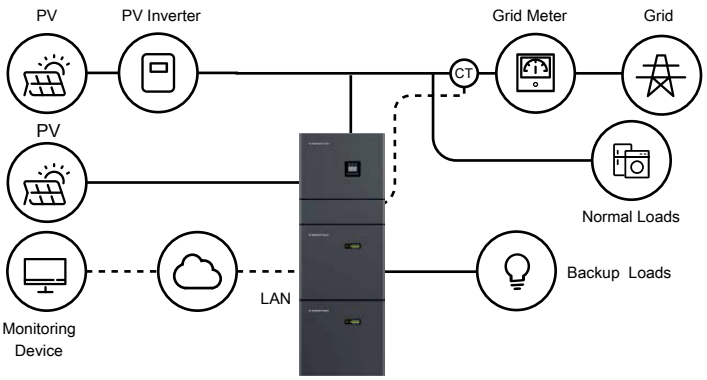


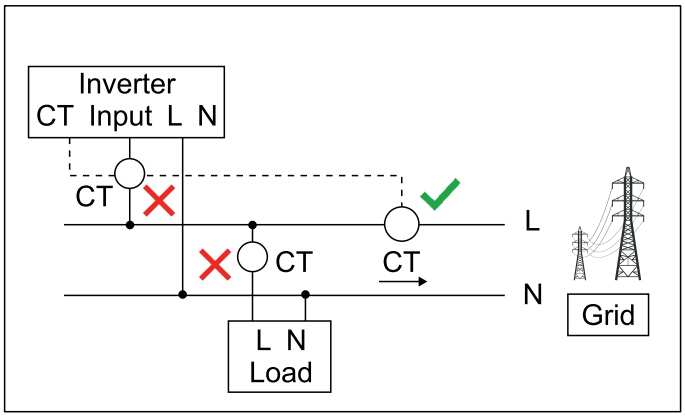
Connecting the Modules

Using the applicable wiring kit, depending on the number of installed battery modules, connect the modules together as shown below



Connecting the Load Sensing Current Transformer

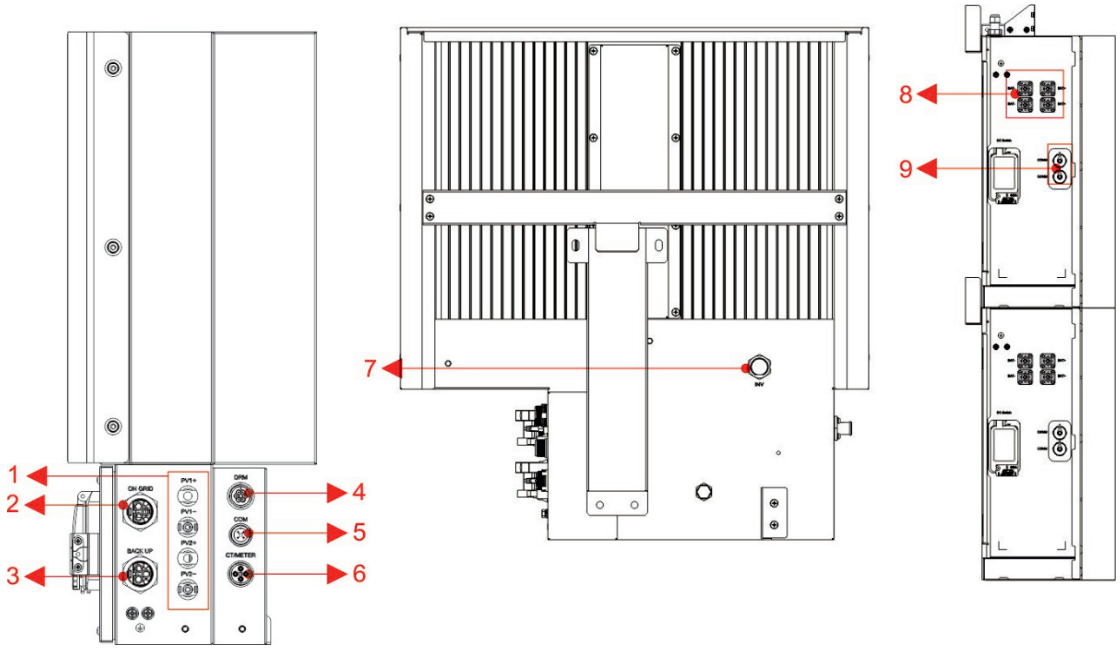




In order for the system to work correctly, a load sensing current transformer MUST be installed. Alternatively, an external Modbus meter may be used. Meter installation is outside of the scope of this guide. Please refer to the full user manual if meter measurement is needed.
The current transformer must be connected to the inverter using the supplied 4 way CT/Meter connector shown on page 1 of this guide - The White wire (S1+) must be connected to pole 1 of the connector. the Black wire (S2-) must be wired to pole 2.
The current transformer must be installed as shown above. The arrow on the transformer **must** point towards the incoming utility meter. The inverter must be able to see 100% of the load or it will not work correctly

External Connections

Using the connectors described in the **Getting Started** section within this guide, proceed to connect the applicable items described in the below table. Connect the included WIFI module to the **COM** connector. All wiring must be performed in accordance with local wiring regulations.



Object	Designation	Description
1	PV1, PV2	Connection for PV panels
2	ON GRID	AC Grid tied connection
3	BACKUP	AC Output for up to 16A regardless of grid tied status
4	DRM	DRM Interface (Demand response management)
5	COM	RS485 communications port
6	CT/METER	Connection for external Current transformer or Modbus meter inpu
7	INV	1st battery module communications port
8	BAT+,BAT-	Positive and negative battery connections
9	2x RJ45	2 x RJ45 ports for daisy chainingadditional battery module communications

Switching the System ON

When switching ON the system the user must follow the following procedure to prevent potential damage to the system

Step 1: On the side of each battery module there is a plastic cover, labelled **DC Switch**, lift the cover and switch ON each isolator

Step 2: Switch ON the external PV isolator (usually located in close proximity to the installation).

Step 3: Switch ON the external AC grid isolator or circuit breaker.

Step 4: On the inverter module, lift the hinged plastic cover on the cable box and switch ON **Battery Switch** and the **PV Switch**. If the **Backup** load function is being used, switch the **Load Switch** ON also**.**

Step 5: Close the plastic cable box cover.

Step 6: On each battery module, on the front panel, there is a pushbutton, press the pushbutton until the lights illuminate. Repeat this step for all battery modules.

Step 7: Fit the steel cover over the inverter cable box. Close and secure the hinged side covers on the battery module(s).

Step 8: The system is now powered. At this stage it is wise to switch on a load (for example a kettle) and check that the installation behaves correctly.

Settings to change for UK operation

Step 1: Press the **Return Key** below the inverter display to enter the programming menu.

Step 2: Enter the **Setup** menu. Enter default password 00000 using the **UP** and **Down** keys. Press **Enter** to confirm. Then select **SYS Setting** and press **Enter.**

Step 3: Select option **3: GRID STD** and select option **6:UK** from list and select using the **Enter** key.

Step 4: The inverter will prompt the user to restart the device at this stage. Wait until all other changes are made before doing so.

Step 5: Return one menu level using the **Return Key.** Select option **2: BAT SETTING**, and select sub-menu option **8:BAT WAKE-UP** then select option **2: TIME**, using the **UP** and **DOWN** keys, set time to 5 minutes. Press **Enter** to confirm.

Step 6: Use the **Return** key, return to the **BAT SETTING** menu. Select option **12: FORCE WAKE** then select **Enable**. Press **ENTER** key to confirm.

Step 7: Restart the inverter and scroll through the online pages (shown on page 7 of this guide) to ensure UK is displayed.

Switching the system OFF

Step 1: Press the pushbutton on each battery module and wait for the lights to turn OFF.

Step 2: Remove the steel cover from over the inverter cable box.

Step 3: Open the hinged plastic cover on the inverter cable box.

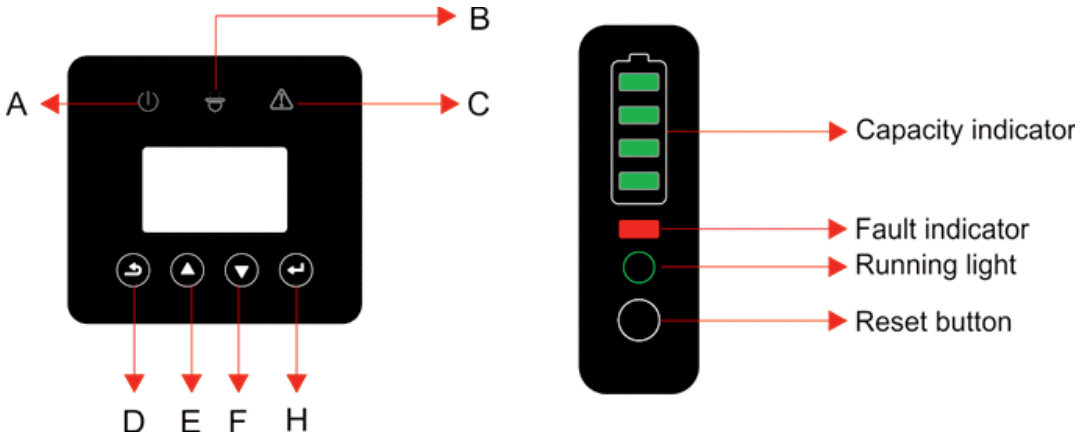
Step 4: Switch OFF the **Battery Switch** and the **PV Switch**. If the **Backup** load function is bei**ng used,** turn OFF the **Load Switch** too**.**

Step 5: Turn off the external AC grid isolator or circuit breaker.

Step 6:Turn OFF the external PV isolator (usually located in close proximity to the installation).

Step 7: The system is now isolated. If maintenance is to be undertaken, the DC switch on the side of each module will also need to be switched OFF.

Inverter and Battery Module Displays



Object	Name	Description
A	Indicator LED	**Green**: Grid connection (Solid). Not connected (Flashing)
B		**Green**: Indication of Off-grid status
C		**Red**: The inverter is in fault.
D	Key Function	**Return** key: Enter programming or return one level
E		**Up** key: Move cursor up or increase value.
F		**Down** key: Move cursor down or decrease value.
H		**Enter** key: Confirm the selection.

The inverter online pages will are shown below. The displayed page will change every 3 seconds automatically. If the user wishes to manually cycle through the pages, use the UP and DOWN buttons. If the user wishes to stop the pages cycling, press the ENTER key to lock the current screen page.

PV1 INPUT		
VOLT :	33.8V	PV1 Input Voltage
CURR :	0.00A	PV1 Input Current
POWER :	0W	PV1 Input Power

PV2 INPUT		
VOLT :	49.8V	PV2 Input Voltage
CURR :	0.00A	PV2 Input Current
POWER :	0W	PV2 Input Power

DC VOLTAGE		
BUS :	310.8V	DC Bus Voltage

BATTERY		
VOLT :	42.2V	Battery Input Voltage
CURR :	20.2A	Battery Current
CAPACITY :	40Ah	Battery Capacity

BMS PARAM		
TYPE :	RI-MOD 5.1	Battery Type
TEMP :	25°C	Battery Temperature
SOC :	90%	Percentage of Battery

BMS PARAM		
CHAR VOLT :	50V	Battery Charging Voltage
CHARGE :	60A	Battery Charging Current
DISCHARGE :	10A	Battery Discharging Current

GRID DATA		
VOLT :	239.8V	Mains Voltage
CURR :	0.00A	Mains Current
FREQ :	50.12Hz	Mains Frequency

INV DATA		
VOLT :	50.0V	Inverter Voltage
CURR :	0.00A	Inverter Current
FREQ :	0.00Hz	Inverter Frequency

BACKUP DATA		
VOLT :	237.3V	Backup Output Voltage
CURR :	0.00A	Backup Output Current

POWER		
INV :	W	Inverter Total Power
GRID :	W	Grid Total Power
LOAD :	W	Load Total Power

POWER		
PV :	W	PV Generation Power
BACKUP :	W	Backup Output Power
BAT :	W	Total Power Supplied from battery

TEMPERATURE		
INV :	23.1°C	Inverter Heat-sink Temperature
DCDC :	21.5°C	DC-DC Heat-sink Temperature
AMBIENT :	24°C	Internal Ambient Temperature

STATE		
SYS :	G-BYPASS	Current System Status
INV :	STANDBY	Current Inverter Status
DCDC :	STANDBY	Current DC-DC Status

ERROR NO.		
WARNING :	W20-1	Warning Code
FAULT :	XXX-X	Fault Code

SYSTEM		
STATE :	SELF CSM	Setup Status (Work Mode)
GRID :	U.K.	Grid Standard
PV I/P :	INDEPEN	PV Mode (PV Input)

Programming and menu

Menu Path: ***Setup > Enter Password (Default 00000) > SYS Setting:***

SYS Setting	Work Mode	Self Consume	Charge from Grid: Enable Disable	Enable	The energy generated by the solar panels will be used in the following order: Feed the home loads; Charge the battery and then, feed into the grid. When the sun is not present, the load will be supported by the battery to enhance self-consumption. If the power supply from the batteries is not sufficient, the grid will support the load demand.
		Peak SFT	Time Setting	Disable	This mode is designed for time-use mode. The customer can set up the desired charging/discharging time & power via the inverter screen or APP.
			Charge		Manually forces the system to charge the batteries from the grid
			DISCHG		Manually forces the system to discharge to the connected load
		BAT Priority		Disable	The battery is only used as a backup power supply when the grid fails. As long as the grid works, the batteries won't be used to power the loads. The battery is charged with the power generated by the PV system or from the grid.
	PV input	Independent CV Parallel		Independent	Allows the user to change the PV array configuration (wiring changes would also apply!)
	Zero export	Disable		Disable	Allows the user to set the export to grid limit
		Enable			If Enable is selected, the user will be prompted to enter the power
	DRM Enable	Disable Enable		Disable	Only applicable in Austrailia and New Zealand at this time
	EPS Enable	Disable Enable		Disable	Enables the Backup output (the Load Switch needs to be turned ON).
	Remote CTRL	Disable Enable		Disable	Allows control via RS485 (Scada system for example)
	Start Delay	20...300		180s (when set to UK)	This is the boot delay from when power is applied to the inverter
	CEI SPI Ctrl	Disable Enable		Disable	This function is only applicable to use via DRM for remote control (Australian and New zealand markets only)
	GFCICHK ENB	Disable Enable		Enable	Ground fault monitoring on the AC grid connection
	DISC MODE	Rated power Load priority		Rated power	Allows the user to select the mode of discharge. Rated power means that the applied discharge power percentage. Load priority mean that the system supplies the full output to drive the load

Menu Path: ***Setup > Enter Password (Default 00000) > SYS Setting: (CONTINUED)***

SYS Setting	DOD Enable	Disable Enable	Enable	Depth of discharge. This should always be enabled. Disabling will result in the battery discharging to 0%
	Generator	Disable Enable	Disable	This option allows the user to install a secondary means of generation. For example, wind generator or diesel generator
	CT or METER	CT	CT	CT option is used for measuring the system current
		Meter: Estron, Acrel, Rayleigh		Meter option is used for measuring the system current
	AC Couple	Disable Enable	Disable	Allows the user to connect an external inverter to the system (either instead of PV, or in-addition to PC - Hybrid mode)
	CT Direction	Positive Negative	Positive	Reverses the direction of current flow measurment
	ISLAND	Disable Enable	Enable	When enabled, the inverter will continue to export power via the BACKUP port in the event grid disconnection (power cut)

Menu Path: ***Setup > Enter Password (Default 00000) > BAT Setting***

BAT Setting	BAT Type	Lead Acid RI-MOD 5.1	RI-MOD 5.1	Shows the user what type of battery is connected to the system
	DISC Depth	0...100%	90%	Sets the maximum depth of discharge during grid connected state
	OFFGRID DOD	0...100%	90%	Sets the maximum depth of discharge when off-grid
	CHG CURR	0...100A	60A	Sets the maximum battery charge current
	DISC Power	0...100%	80%	Sets the maximum discharge power - % of rated output
	CHG Power	0...100%	100%	Sets the maximum charge power - % of rated output
	BAT End Volt	0...48V	43.2V	Sets the voltage that is seen as 0% remaining
	BAT Wake-up	Enable	Enable	The battery will wake up sleep status and check the state of charge and depth of discharge at the interval set
		Time: Set time		If time is selected the user will be prompted to enter a value 0...300 minutes
	Heating FLIM	Automatic ON OFF	Automatic	Allows the user to enable or disable the heating film installed within the battery modules. Automatic means the system measures the Outside temperature and turns the film on as needed. **Only applicable if heating film is requested at time of ordering**
	BMS DOD	Disable Enable	Disable	Leave disabled. The inverter will monitor depth of discharge.
	Maintain SOC	Disable Enable	Enable	Disable: The minimum SOC will not be maintained. Enable: The minimum SOC 2% is maintained. When the battery SOC is less than 2%, the grid charges the battery pack to 5% through the inverter.
	Force Wake	Disable Enable	Disable	Enabling this option means the battery will always remain online and will not go to sleep

Menu Path: ***Setup > Enter Password (Default 00000) > Grid STD):***

Grid STD	1. China 2. Germany 3. Australia 4. Italy 5. Spain 6. UK 7. Hungary 8. Belgium 9. New Zealand 10. Greece 11. France 12. Bangkok	13. Thailand 14. South Africa 15. 50549 16. Brazil 17. 0126 18. Ireland 19. Israel 20. Poland 21. Chile 22. Local 23. 60Hz 24. Denmark	6. UK	Allows the user to select the country that the system is installed in

Menu Path: ***Setup > Enter Password (Default 00000) > Run Setting:***

Run Setting	REACT MODE	Power Factor	Enabled - PF1.0 (UK)	The inverter can monitor reactive power in several ways. This setting is set according to the selected grid standard and should not be changed. For UK grid setting the default method is power factor.
		React Power		
		QU Curve		
		QP Curve		
	GRID POWER	0...110%	100%	Limit or increase the power exported from the system to the grid.
	VOLT MAX	INV Max	264V (UK)	**These settings should not be altered. They are set automatically according to the country selected within Grid Setting.** **If the inverter sees that these values have been reached, or exceeded, then the inverter will stop generating.**
		Grid Max	276V (UK)	
	VOLT MIN	INV Min	184V (UK)	
		Grid Min	172V (UK)	
	FREQ MAX	INV Max	52Hz (UK)	
		Grid Max	53.5Hz (UK)	
	FREQ MIN	INV Min	47Hz (UK)	
		Grid Min	46Hz (UK)	
	OVER VOLT	Disable Enable	Enabled (264V UK)	
	UNDER VOLT	Disable Enable	Enabled (200V UK)	
	OVER FREQ	Disable Enable	Enabled (50.2Hz UK)	
	UNDER FREQ	Disable Enable	Enabled (49.25Hz UK)	
	REACT RESP	0...60	10 Seconds	This is the time it takes for the exported reactive power to reach the grid standard level. This setting should not be changed and is set according to the grid standard.
	VRT ENABLE	Disable Enable	Enable	Voltage-ride-through. This setting should not be changed and is set automatically according to the grid
	POW SI RATE	0...300%	100%	This is the rate of change of the output. This setting should not be changed and is set according to grid standard. 100% means that the output will hit full power

Menu Path: *Setup* > *Enter Password (Default 00000)* > All other settings within Setup *:*

485 Address	1...255	1	Allows the user to select the RS485 address for the COM port
Baud Rate	1. 2400 2. 4800 3. 9600	3. 9600	Allows the user to select the RS485 serial baud rate for the COM port
Language	1. Chinese 2. English 3. Italian	2. English	Allows the user to select Chinese, English or Italian language
Backlight	0...120 seconds	20 seconds	Allows the user to select how long the display back light remains lit
Date/ Time	Set time, date and day		Allows the user to set the time, date and day
Clear REC	Cancel Confirm	Cancel	Clears all stored records
Password	Old password New password Confirm new password	00000	Allows the user to change the programming password
Maintenance	User cannot access	N/A	Not accessible to user
Factory RESET	Cancel Confirm	Cancel	Resets the sytem to factory default settings
Auto Test	Not applcable in UK	N/A	Only applicable in Italy

Menu Path: *Inquire:*

INV Module	Shows the user what model of inverter is in use
Module SN	Shows the user the serial number of the inverter
Firmware	Shows the user the firmware version
Record	Shows the user the active faults or errors
BMS Info	Shows the user the battery modules connected and connection status

Menu Path: *Statistic:*

Time stat	Run: Grid: Unit: hours	Shows the user the hours run of Inverter and Grid connection
Conne Time	Times:	
Peak Power	History: Today: Units: watts	Shows the user the total generated watts and today's generated watts
E-Today	PV: xx kWh Meter: xx kWh Grid: xx kWh Load: xx kWh Charge: xx kWh Discharge: xx kWh	Shows the user what was generated today

Menu Path: ***Statistic: (CONTINUED)***

E-Month	PV: xx kWh Meter: xx kWh Grid: xx kWh Load: xx kWh	Shows the user what was generated this month
E-Year	PV: xx kWh Meter: xx kWh Grid: xx kWh Load: xx kWh	Shows the user what was generated this year
E-Total	PV: xx kWh Meter: xx kWh Grid: xx kWh Load: xx kWh Charge: xx kWh Discharge: xx kWh	Shows the user what has been generated sinced the system was installed

Scan QR Code for Warranty Information and Other Documents.

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