

Elektrobank 14 Installer & User Manual



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AMENDMENT RECORD

Issue Number	Date	Description
1.0	4 th Dec 2020	First draft release sent to Austest for validation
2.0	22 nd Apr 2021	Updated to meet all safety standards and CEC listing requirements
3.0	16 th July 2021	Replaced Backup RCD Type B requirement with RCD Type A requirement. Added 2 nd option to protective earthing option
4.0	31 st Jan 2022	Updated to meet new 4777.2:2020
5.0	2 nd Mar 2022	Updated for public release

Associated / Referenced documents

Document number / Revision number	Date	Document title

1 Table of Contents

1	TABLE OF CONTENTS	5
2	MARKINGS & SYMBOLS	8
2.1	Battery Markings.....	9
3	EXTERNAL RCD REQUIREMENTS	9
4	WARNINGS	10
5	DIMENSIONED DRAWING	12
6	PACKING LIST	13
7	MOUNTING THE UNIT	14
7.1	Wall Mount:.....	15
7.1.1	Install wall bracket	15
7.1.2	Mount unit on wall bracket	16
7.2	Floor Mount.....	16
7.3	Battery Installation.....	17
7.4	Close and fasten door.....	19
8	WIRING	20
8.1	External Isolation Device Requirements.....	20
8.2	Port Locations	21
8.3	Ferrite Attachments	22
8.4	Grid Port Including Protective Earthing.....	22
8.5	Backup Port.....	23
8.6	UPS Safety Stickers.....	24
8.7	PV Ports	24
8.8	DRM0.....	25
8.9	Ethernet.....	25
8.10	Meter Connections.....	26
8.10.1	Acrel	26
9	COMMISSIONING	28
9.1	Closing Unit.....	28
9.2	Connecting to the unit for the first time via its hotspot	28
9.3	Installer Inputs (inc Regional Settings)	28
9.3.1	Connect the unit to the house internet.....	28
9.3.2	PV Settings.....	29
9.3.3	Grid settings (inc Regional Settings and Power Quality Modes))	29

9.3.4	Earth Fault Alarm	31
9.3.5	User Training.....	31
9.3.6	Read-only inverter settings.....	32
10	MAINTENANCE.....	33
10.1	Turning off the Unit.....	33
10.2	User Maintenance.....	33
10.3	Trained Service Professional Maintenance	33
11	ELECTRICAL RATINGS.....	35
12	APPENDIX A – METER PROGRAMMING.....	36
12.1	Programming the ADL400 meter	36

2 Markings & Symbols

1. To identify the location where the operator's manual is stored or to identify information that relates to the operating instructions. To indicate that the operating instructions should be considered when operating the device or control close to where the symbol is placed.



2. To identify equipment that has risk of electric shock.



3. To identify energy storage timed discharge – that is the time required after disconnecting the unit from all energy sources and turning off the battery circuit breaker until the capacitor energy storage in the unit is less than 48VDC.




4. To indicate that caution is necessary when operating the device or control close to where the symbol is placed, or to indicate that the current situation needs operator awareness or operator action to avoid undesirable consequences.



5. To identify any terminal which is intended for connection to an external conductor for protection against electric shock in case of a fault, or the terminal of a protective earth (ground) electrode.



2.1 Battery Markings

Battery Type	Secondary (rechargeable) Li or Li-ion
Cell Designation	IFpP/34/201/173/M/-10+40/90
Module Designation	IFpP34/201/173[8S]M/-10+40/90
Battery System Designation	IFpP34/201/173[48S]M/-10+40/90
System Capacity	100Ah
Nominal Voltage	153.6V
Watt-hour	15.36kWh
Caution Statement	WARNING! A battery can present a risk of electrical shock, fire, or explosion from vented gases. Observe proper precautions.
Disposal	 <p>Electronic Device: Do not throw away Proper disposal of batteries is required. Refer to your local codes for disposal requirements.</p>
Recommended Charge instructions	Charging is only allowed using the provided Elektrobank 14 system, do not try charging with a different charger

3 External RCD Requirements

This product requires an external RCD Type A, 30mA to be installed on every subcircuit powered by the backup port

4 Warnings

1. When the photovoltaic (PV) array is exposed to light, it supplies a d.c. voltage to the PCE.
2. External RCD Type A 30mA is required on backup port (if connected).
3. **An RCD is not permitted on the grid/supply side of the device** as it is a multi-mode inverter and an RCD would allow disconnection of the neutral MEN connection for backup loads.
4. It is required that any PV modules connected to the device have an IEC 61730 Class A rating.
5. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
6. Only a qualified professional (e.g. service person) may install the Elektrobank 14.
7. Servicing or replacement of batteries shall not be conducted in the field by anyone other than Empower personnel. Initial installation is allowed as per this manual.
8. CAUTION: Do not dispose of batteries in a fire. The batteries may explode.
9. CAUTION: Do not open or damage batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic.
10. CAUTION: The backup port should not be used for devices providing safety or health critical devices
11. SAFE HANDLING: Elektrobank 14 and battery modules are heavy. To minimise risk when handling the goods, lift and transport the goods carefully and wear personal protective equipment such as steel-toe boots and gloves. Use of lifting equipment is recommended
12. SAFE TRANSPORT: Always transport the goods to site in the original packaging. During unpacking, inspect the goods for damage such as large dents or deep scratches, which may indicate the unit was dropped. Do not use Elektrobank 14 if it is defective or appears damaged in any way, internal or external. Contact your supplier for further advice.
13. Touch current is above the limit. Ensure 10mm² copper PE cable is used for connection to PE terminal.
14. The Elektrobank 14 cannot be used in multiple inverter combinations as per section 5 of the AS/NZS 4777.2:2020.

Warnings

See installation instructions before connecting to the supply



WARNING! A battery can present a risk of electrical shock, fire, or explosion from vented gases. Observe proper precautions.



Charging is only allowed using the provided Elektrobank system, do not try charging with a different charger

WARNING: This product requires an external RCD Type A, 30mA to be installed on every sub-circuit powered by the backup port

Electronic Device: Do not throw away. Proper disposal of batteries is required. Refer to your local codes for disposal requirements.

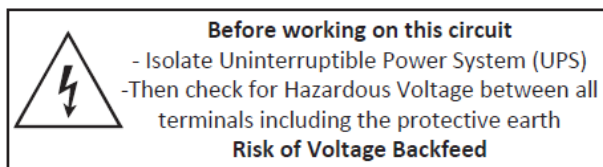
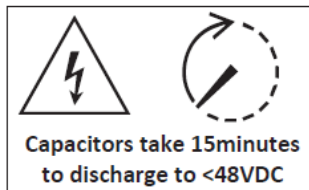
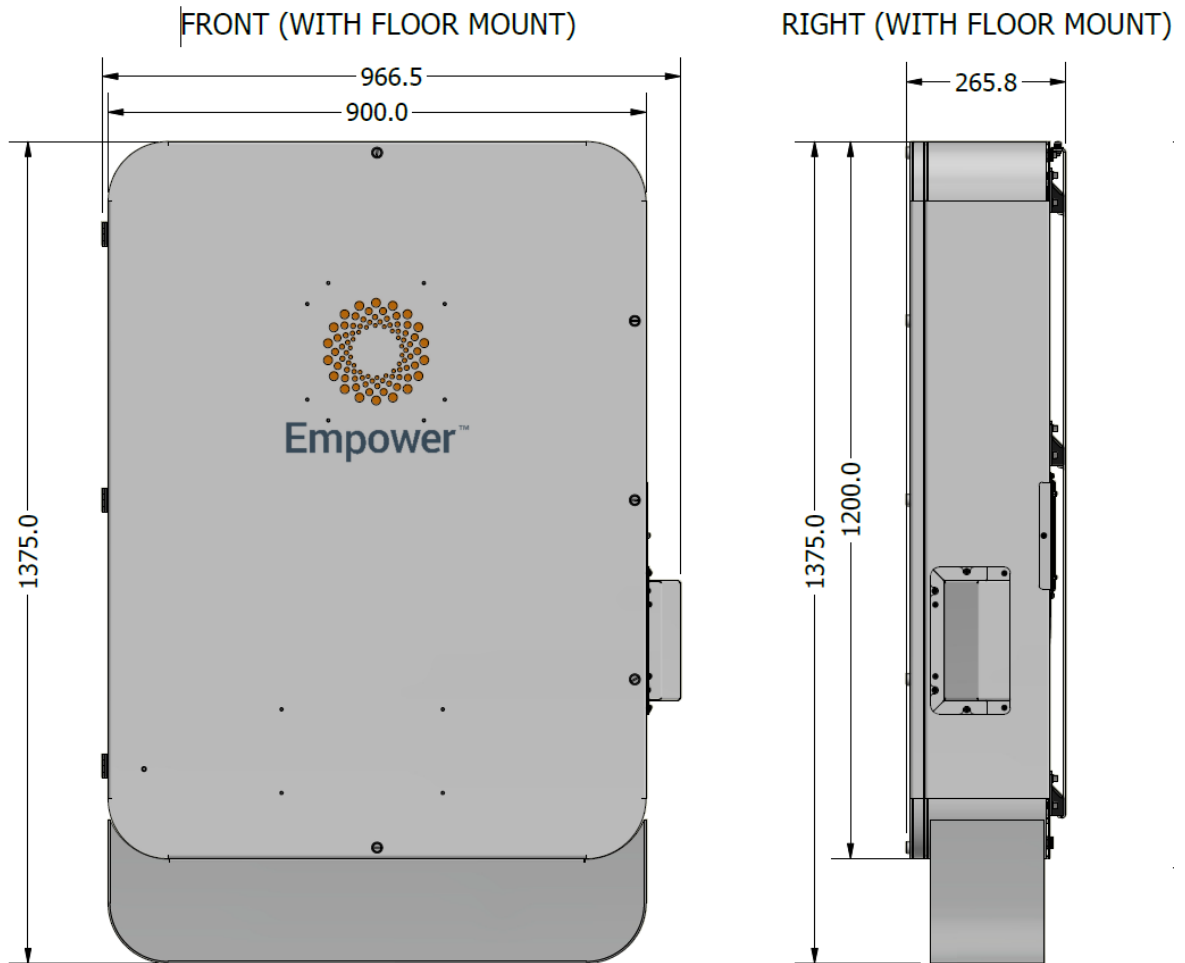


Figure 1 - Warnings from product warning label

5 Dimensioned Drawing



6 Packing List

The product Elektrobank 14 contains the following parts:

- 1) Main Enclosure box, including:
 - a. Main Enclosure
 - b. Wall Mount Bracket
 - c. Front of House Meter – PN: ADL400/C
 - d. 3 x Current Transformers – PN: AKH-0.66/K K-24 150/5A
 - e. Installer Manual
 - f. Polythene Bag containing
 - i. 28 x M6 Battery Mounting bolts
 - ii. 28 x M6 Battery Mounting Washers
 - iii. Assortment of glands and plugs for cable entry
 - iv. EMC Ferrites for grid, backup and ethernet wires
 - v. 4 x Phoenix Contact PV Connectors
- 2) Battery Assembly 1
- 3) Battery Assembly 2
- 4) Battery Assembly 3
- 5) Battery Assembly 4
- 6) Battery Assembly 5
- 7) Battery Assembly 6

7 Mounting the Unit

Installation shall follow and comply with AS 5139, AS 3000 as well as any requirements from this manual.

1. Find a suitable mounting location as per AS 5139
 - a risk assessment for the mounting location shall be completed
2. The Elektrobank 14 can be mounted on a wall with the wall mount kit or floor standing, with the addition of the floor mount kit.
 - The wall mount bracket shall always be used
 - The wall shall always be capable of taking the full weight of the unit, whether wall mount or floor standing.
3. Mounting Location
 - The Elektrobank 14 is rated to IP66 so can be mounted inside or outside
 - Do not mount the Elektrobank 14 in a location with direct sunlight. Outdoor suggested (but not limited to) locations include:
 - i. Under an awning
 - ii. On a South Facing wall
 - Ensure no animals or insects are likely to be able to nest close to the unit.
 - No plants can be growing inside 1m radius from the mounting location
 - Ensure there are no obstructions (to ensure adequate ventilation) inside the dimensions from Figure 1, including, but not limited to:
 - i. Wall, floor, Ceiling/roof
 - ii. Any other devices or equipment
 - iii. Vents to any wall or other structure
 - iv. Any Heat sources
 - No heat source should be within the clearance limits indicated or below the unit at any distance
 - Installation position shall not prevent access to disconnection means.
 - If indoor mounted,
 - i. a fire alarm is required to be installed in the same room as the Elektrobank 14
 - ii. The room should have at minimum one external wall vent

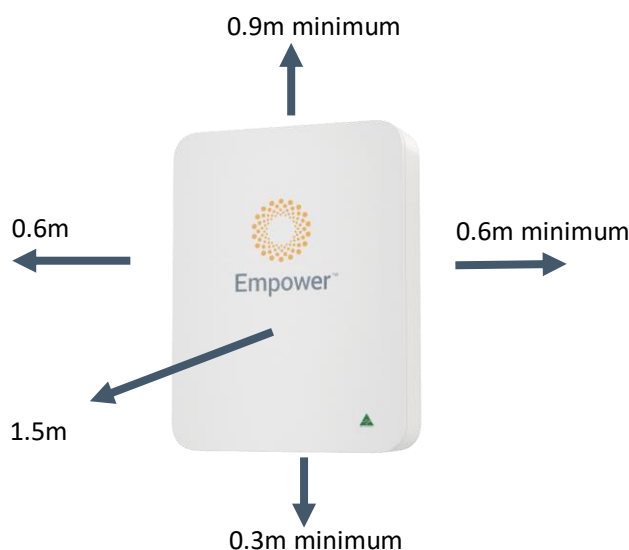


Figure 2 - Clearance around unit

7.1 Wall Mount:

1. Conform to AS 5139 requirements and conduct risk assessment on mounting method
2. Ensure the wall is vertical and flat across the full width and height of the Elektrobank 14
3. Ensure the wall is structurally sound to take the weight of the Elektrobank 14
4. Remove external packaging and remove wall mount bracket from packaging.

7.1.1 Install wall bracket

Determine mounting method from below or equivalent minimum total Working Load Limit (WLL) 6kN, minimum 6 fasteners (12 into wood).

Wall material	Anchor type	Product Example	Quantity
Solid brick or concrete, with no risk of internal voids	AnkaScrew 8x100 mm	Ramset Australia AS08100WGM	At least 6 per system
Brick or concrete with internal voids	M8 glue in studs with sleeves	Ramset Australia CS08110GH	At least 6 per system
		Ramset Australia ISS08 Ramset Australia Chemset 101 PLUS (Curing time is around 50 minutes)	
Timber	Coach screws M8x100mm	Zenith M8 x 100mm Stainless Steel Hex Head Coach Screw Bunnings Warehouse	At least 12 per system

5. Mount wall bracket on wall
 - Use spirit level to ensure bracket is level
 - If fixing into a timber framed wall, the wall bracket must be secured into two different studs, and has been designed to span the usual spacing of 600mm.

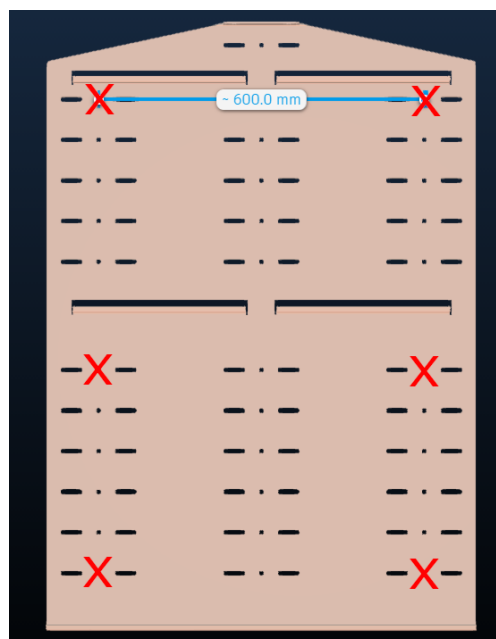


Figure 3 - Wall Mount Bracket Fixing Locations

7.1.2 Mount unit on wall bracket

6. Using a two-man lift, place the Elektrobank 14 onto the wall bracket.
7. Fix the small top fixing bracket with the 2x supplied M6 bolts



Figure 4 - Top Fixing Bracket

7.2 Floor Mount

1. Floor Mounting is suitable when the wall is considered not completely structurally sound to mount the unit, this could be the case for many types of wooden structures or walls with plastic/wooden cladding.
2. Floor Mounting is only viable when there is a suitable vertical structural member or wall to fix the top of the unit to. The unit cannot be mounted freestanding.
3. Floor mounting can only take place on a flat concrete base. A separate risk assessment shall be carried out to ensure the platform is structurally sound to mount the unit to.
4. Fit the base unit to the unit using the provided M6 bolts and washers.
5. Place the unit next to the wall with the wall bracket and mark the height that the wall bracket should be fitted at to still provide support to stop the unit from toppling forwards.
6. Fit the wall bracket ensuring level
7. Lift the unit onto the wall bracket and adjust the feet until the feet begin to take the weight of the unit
8. Fix the small top fixing bracket with the 2x supplied M6 bolts as per Figure 4 - Top Fixing Bracket

7.3 Battery Installation

1. Before starting, ensure the enclosure is securely fixed (wall mounted or floor mounted) as per above instructions.
2. Ensure all internal covers are still attached
3. Ensure all Circuit breakers are off, and the unit is completely isolated from mains and PV
4. Specifically, ensure that the integrated battery circuit breaker is turned OFF to ensure isolation.

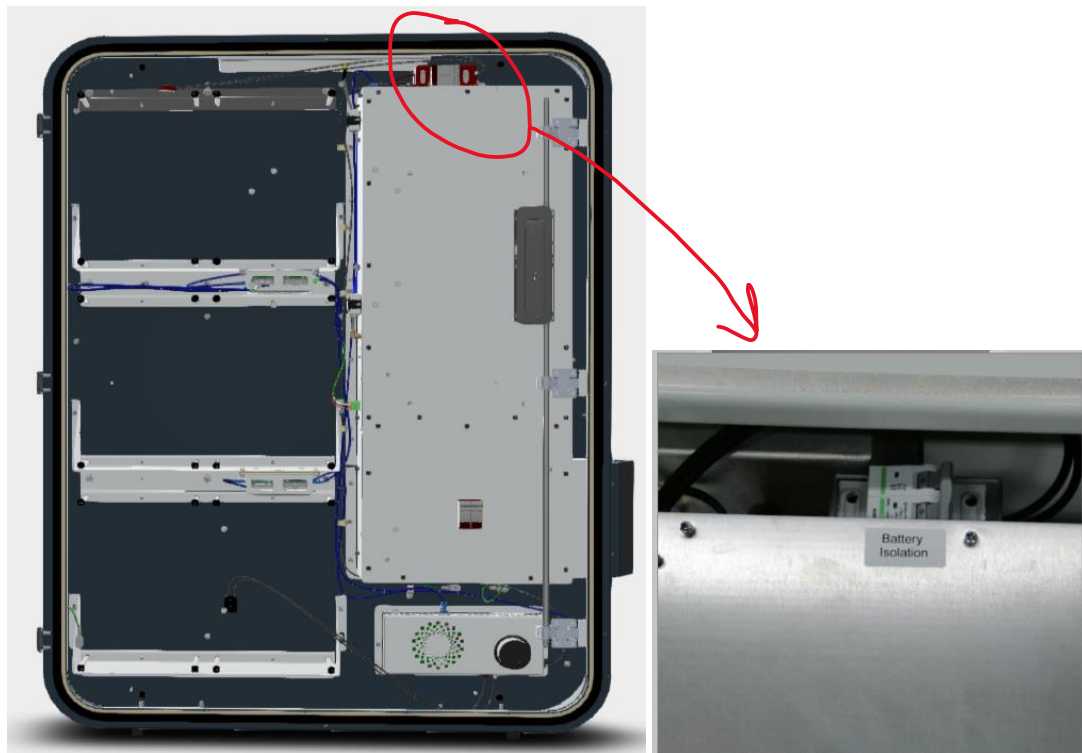
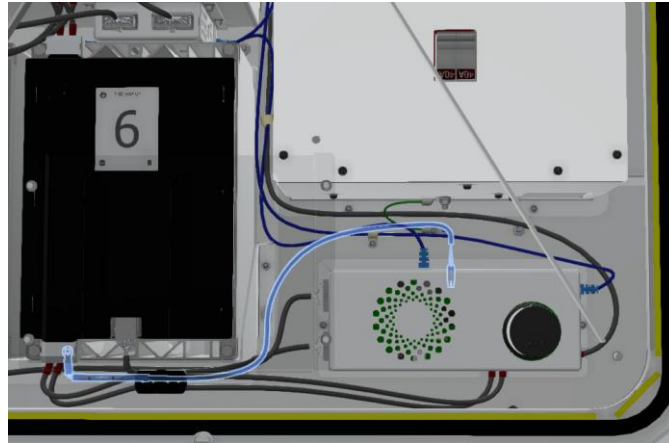


Figure 5: Unit before installing batteries

5. Fit the battery modules in the below order, ensuring not to trap any wires behind each module and to fix the module before fitting the next module, using the long M6 bolts provided, tighten to approximately 1N.m
 - a. ASYH006 - bottom left
 - b. ASYH007 – bottom right
 - c. ASYH004 – middle left
 - d. ASYH005 – middle right
 - e. ASYH002 – top left
 - f. ASYH003 – top right
6. Tighten all the 24 mounting bolts to 5N.m +/- 1N.m
7. Connect the fuel gauge temperature sensor from battery 6 to the master BMS as shown below



8. Connect all the modules together, starting at the bottom Left Hand blue connector and working up



Figure 6 - Module Connections

8. Next, connect the 6x BMS connectors, ensuring to connect the right size into the correct receptacle and again working from the bottom up



Figure 7 - BMS Connections

9. Finally connect the battery stack connections, the black connector at the bottom and then the red connector at the top

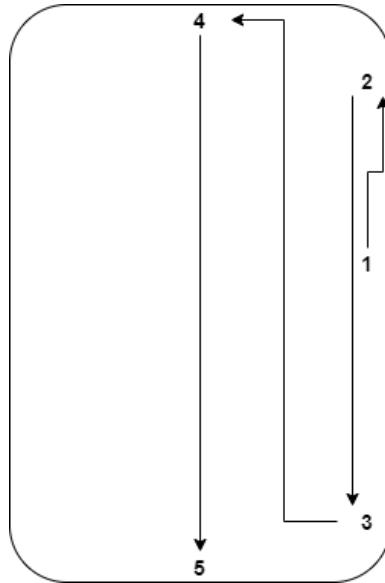


Figure 8 - Battery Stack Connections

7.4 Close and fasten door

These should be done following the following process to ensure the correct seating and loading of the environmental seals

1. Bolts shall be seated and loaded to 0.5Nm in the following pattern, starting from the middle bolt



2. The bolts shall then be tightened to 1Nm in the same pattern

8 Wiring

In addition to all requirements in this document, ensure all wiring conforms to AS/NZS 3000 and AS/NZS 4777.1 for Australia.

Connection Summary:

Connection Name	Connection Type	DVC Class
PV	4 Sunclix External Connectors	DVC-C
Grid	2 x 6mm ² minimum Live and Neutral into terminal block	DVC-C
Backup	2 x 4mm ² minimum Live and Neutral into terminal block	DVC-C
Earth	Either a) or b) below a) Single earth cable made of copper and 10mm ² or greater (but less than 16mm ²), into 'Grid' terminal b) One 6mm ² minimum earth cable into 'Grid' terminal block and a second earth cable into 'Backup' terminal block, of the same cross sectional area	DVC-A
LAN	RJ45	DVC-A
DRMO	2 wires into terminal block	DVC-A
Meter RS485	2 wire twisted pair into terminal block	DVC-A

Table 1 - Connection Summary

8.1 External Isolation Device Requirements

The following isolation devices are required

1. 40A single pole circuit breaker for grid port, connected to active conductor only

- a. Never put a circuit breaker/RCD on the supply/grid side neutral conductor otherwise it may disrupt the continuity of the neutral to the backup circuits.**
 2. A double pole solar PV isolator (suitably rated and certified) for each MPPT
 3. If backup circuits are connected then this product requires
 - a. A 20A circuit breaker on the output of the backup port to protect the inverter
 - b. an external RCD Type A 30mA to be installed on every subcircuit that is backed up.

8.2 Port Locations



8.3 Ferrite Attachments

1. Grid Active and Neutral Cables Only – 2 turns of Wurth Part Number 74271211
2. Backup (if used) Active and Neutral Cables Only - 2 turns of Wurth Part Number 742700790
3. Ethernet Cable – 2 turns of Wurth Part Number 74271112

8.4 Grid Port Including Protective Earthing

1. **Cable used for protective earth shall conform to option a) or b) below**
 - a. **made of copper and 10mm² or greater (but less than 16mm²)**
 - b. **One 6mm² minimum earth cable into 'Grid' terminal block and a second earth cable into 'Backup' terminal block, of the same cross sectional area**
2. Use minimum 6mm² cable for the grid port active and neutral connections.
3. Only Copper wire is suitable for use
4. Make sure all grid/earth cabling is rated for outdoor use as per local standards. Recommend running all external cabling in conduit. Connect cable as in the below image, live (L), neutral (N) and earth (earth symbol) to terminal block as marked
5. Ensure the main >10mm² minimum earth wire is longer than the live and neutral wire so that if the cable pulls out the earth wire is the last to be disconnected, It shall be connected to one of the Grid connector Earth points. The spare Earth port can be used for a second earth that may be present in the twin core and earth cable used.
6. The wires shall be stripped to 18mm and the connections are push fit spring connections.
 - a. Insert, push until no copper can be seen and then do an approximately 1kg pull test and confirm no copper can be seen.
7. At this stage confirm all grid cables, especially earth is well connected mechanically and confirm with multimeter that the enclosure has continuity to earth.
8. Ensure gland is tightened to IP66 (note – do not replace gland that is provided with the unit)



Figure 9 - Grid Connections

8.5 Backup Port

1. Use minimum 4mm² cable for the backup and connect to the terminals as shown in Figure 9 below.
 - a. Insert, push until no copper can be seen and then do an approximately 1kg pull test and confirm no copper can be seen.
2. The stripping length is 15mm and the connections are push fit spring connections
3. Outside the Elektrobank 14 the backup wiring should wire directly to a single pole Circuit breaker with 20A tripping current.
4. After the Circuit breaker, each backed up house circuit should have a separate Type A 30mA RCD/RCBO



Figure 10 - Backup Connections

Voltage Backfeed Warning Label, similar to Figure 11 - Voltage Backfeed Warning Label) shall be provided on the UPS input and on all primary power isolators installed remotely from the UPS (for example the circuit breaker in the backup circuit board) and on any external access points between the isolators and the UPS

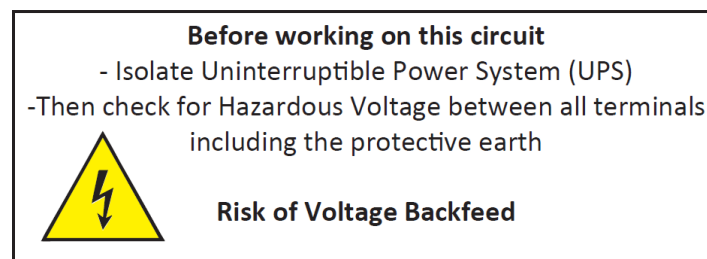


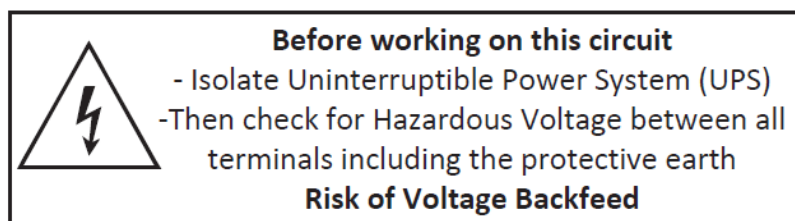
Figure 11 - Voltage Backfeed Warning Label

Maintaining Neutral Continuity to Earth:

1. The neutral input from the grid port is internally always connected through to the neutral output from the backup port.
2. Ensure that the neutral input to the grid port is only connected to earth at the single point back at the main fuse board (MEN connection)

8.6 UPS Safety Stickers

One UPS safety warning sticker is provided on the external of the unit, another two warning labels are provided. These should be placed adjacent to any isolation device on the backup and grid circuits and are shown below.



8.7 PV Ports

1. There are 2 sets of PV connectors, one for each MPPT.
2. Use the following connectors, ensure the right polarity wire is put into the correct connector.
3. Connect to the unit ensuring a single MPPT is connected across the PV1 connectors and the second MPPT is connected across PV2 connectors.

Negative Polarity – Phoenix Contact:

- PV-CM-S 2,5-6 -
- P/N: 1774687
- <https://www.phoenixcontact.com/online/portal/nz/?uri=pxc-oc-itemdetail:pid=1774687&library=nzen&pcck=P-20-06-12&tab=1&selectedCategory=ALL>

Positive Polarity – Phoenix Contact:

- PV-CF-S 2,5-6
- P/N: 1774674
- <https://www.phoenixcontact.com/online/portal/nz/?uri=pxc-oc-itemdetail:pid=1774674&library=nzen&pcck=P-20-06-12&tab=1&selectedCategory=ALL>

8.8 DRM0

If required place 2 core DRM0 cable through gland and attach DRM0 (Blue) into pin 5 and DRM_RTN (black) into pin 6 of TR6.

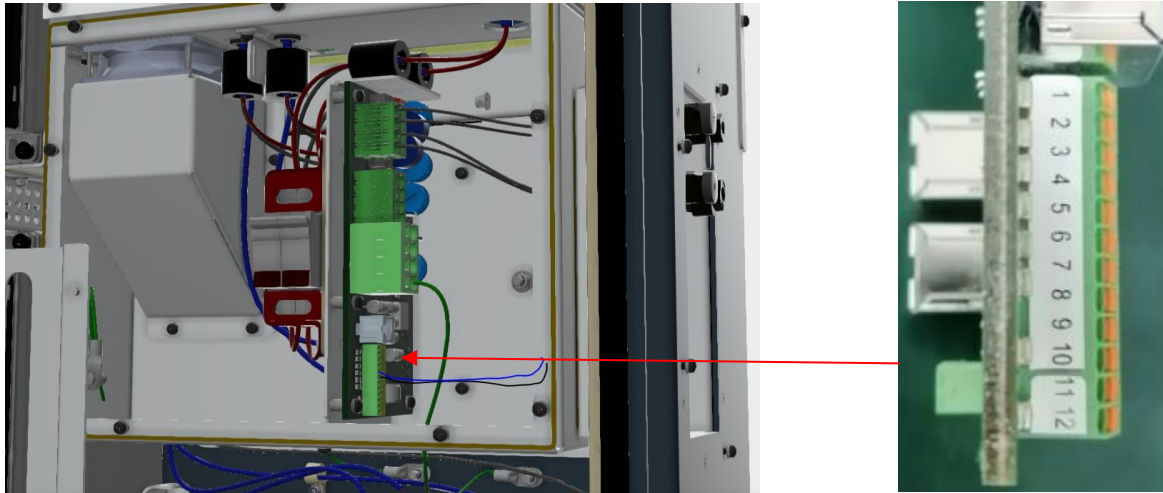


Figure 12 - DRM0 Connections

8.9 Ethernet

If the unit requires hard wiring to the LAN put cable through gland, crimp on an RJ45 connector and connect to Ethernet RJ45 connector.

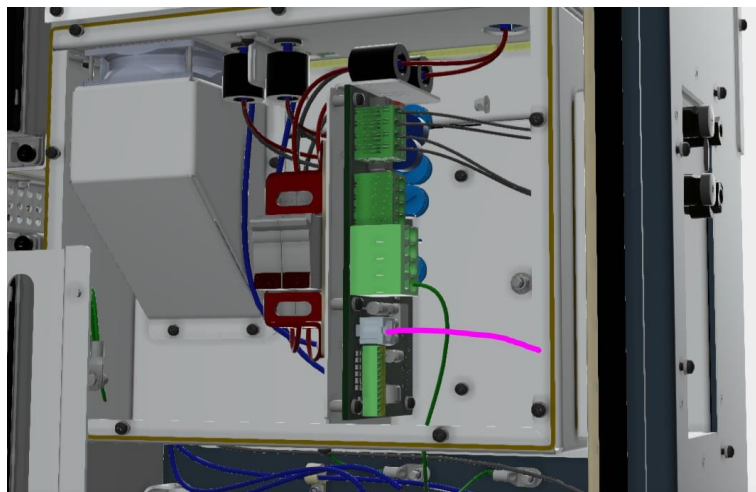


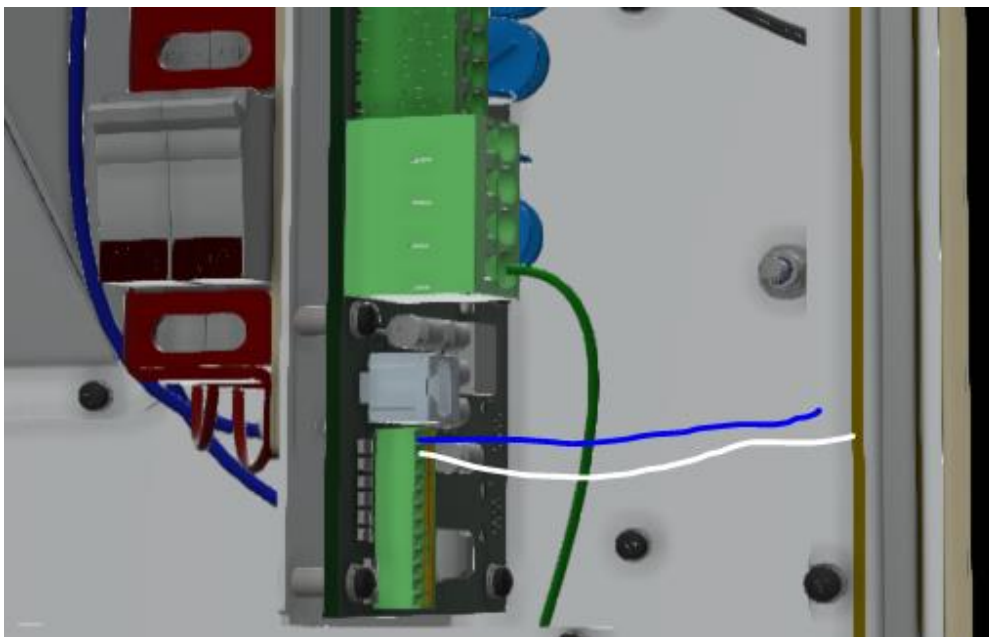
Figure 13 - Ethernet Connection

8.10 Meter Connections

Meter pin (Acrel)	Net	Wire colour	Filter board pin
21	A(+)	Blue	1
22	B(-)	White	2

The 485 comms bus must be terminated at the meter end with a 120R resistor between the nets. A DIN clip is provided for this purpose. Net A is to the top terminal on the termination clip, and B to the bottom, the link to the meter has already been provided.

The CT(s) must be clamped onto main house consumption live wire(s), with the arrow pointing towards the Elektrobank 14.



8.10.1 Acrel

1. Install the meter in the fuse board along with the termination resistor.
2. For single phase the meter is powered from the grid between Un and Ua.
 - a. Ensure a single pole 10A CB protects the meter
3. For 3-phase connect Ua, Ub, Uc and N
 - a. Ensure a 10A three phase CB protects the meter
4. RS485 cable shall be twisted pair cable, using a single pair from an Ethernet cable is acceptable.
 - a. Run blue and white RS485 lines into the unit and connect to terminal block, ensuring:
 - i. A+ goes into pin 21 on the meter, pin 1 in the unit
 - ii. B- goes into pin 22 on the meter, pin 2 on the unit
5. Up to 3 CTs should be connected to the connectors at the bottom of the meter.
 - a. The red (S1) wire should be placed into the IA* port, and the black (s2) one placed into the IA port
 - b. The black wires should be connected together, and to ground as shown below for the 3 phase diagram.

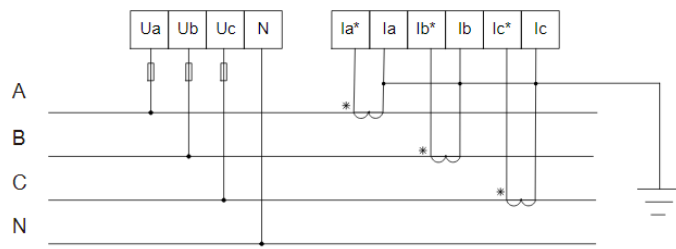
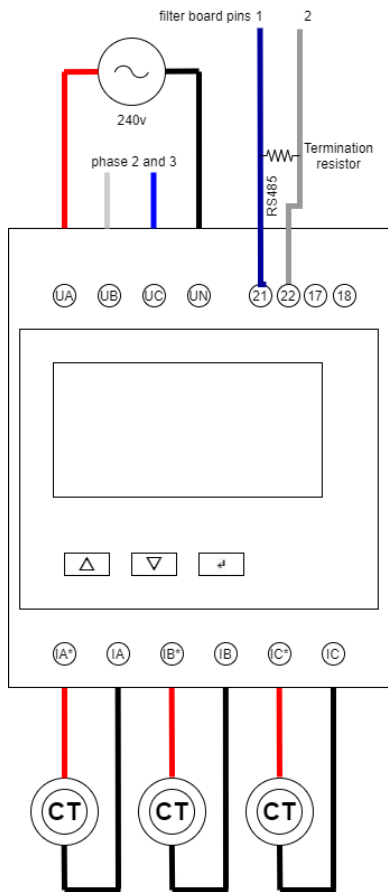


Fig 3 Three phase four lines connect via CT

Figure 14: Excerpt from the Acrel ADL400 manual



9 Commissioning

9.1 Closing Unit

1. Ensure grid supply is isolated at the main switchboard (and at separate AC isolation switch if present)
2. Place wiring escutcheon panel back on and close lid.
3. Turn on battery Circuit breaker.
4. Turn grid and backup circuit breakers on.
5. Ensure you have removed the manual (or taken a photo of the Wifi hotspot details from the inside door)
6. Close the main door and secure with a single screw
7. Turn grid power on.
8. Confirm LED on the front cover lights up
9. Wait until it goes yellow or red (this can take a few minutes)

9.2 Connecting to the unit for the first time via its hotspot

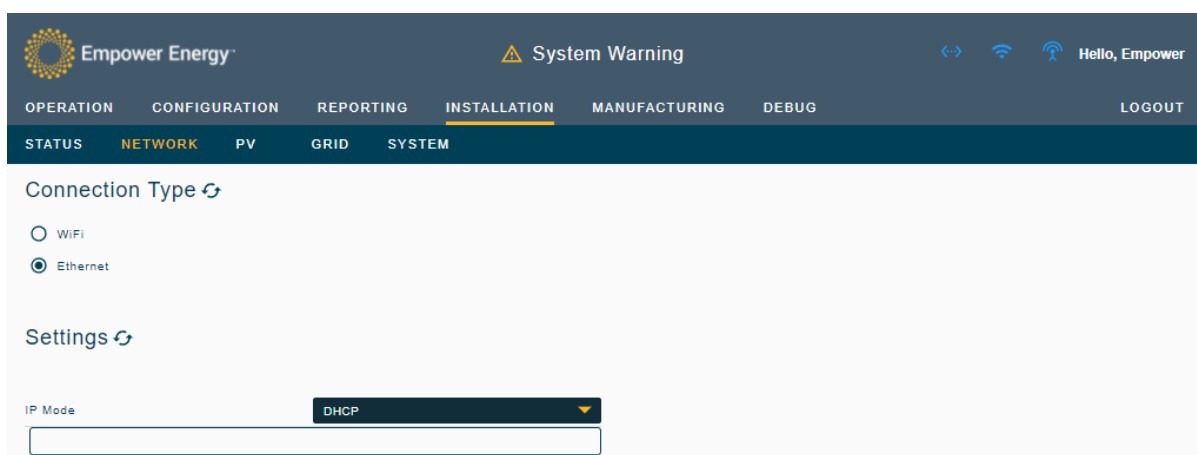
1. Connect to the Elektrobank 14 via Wi-Fi. The WiFi hotspot is always turned on and the SSID and password will be on a sticker on the inside door of the unit and also affixed to the front page of the installer manual.
2. In a browser type 'http://Elektrobank/' (or IP address 192.168.20.1/) and login using username: 'installer', PW: will be given to the installer by Empower privately.

9.3 Installer Inputs (inc Regional Settings)

9.3.1 Connect the unit to the house internet

Ethernet:

The preferred connection is to hardwire using Ethernet. If the Ethernet cable has been connected directly to the house router then that should be configured as the primary connection. Click Ethernet on the Network page. Select DHCP and then the unit should automatically connect and provide a green tick once complete.



The screenshot shows the Empower Energy installer interface. At the top, there is a navigation bar with the Empower Energy logo, a 'System Warning' indicator, and user information 'Hello, Empower'. Below the navigation bar, there are tabs for 'OPERATION', 'CONFIGURATION', 'REPORTING', 'INSTALLATION' (which is active), 'MANUFACTURING', and 'DEBUG'. Underneath, there are sub-tabs for 'STATUS', 'NETWORK', 'PV', 'GRID', and 'SYSTEM'. The main content area is titled 'Connection Type' and shows two radio button options: 'WiFi' and 'Ethernet'. The 'Ethernet' option is selected. Below this, there is a 'Settings' section with a dropdown menu for 'IP Mode' currently set to 'DHCP'.

If no hard wired connection is possible, then a WiFi connection is required. You will need to acquire the consumers preferred SSID and password. Be clear to them that they need to pick one that they think will not change very often and remind them that there are terms in the warranty that are dependent upon providing an internet connection.

Click on Wifi, then Select Network. Choose the network and enter the customers password.

The screenshot shows the Empower Energy web interface. At the top, there is a navigation bar with the Empower Energy logo, a 'System Warning' icon, and user information 'Hello, Empower'. Below this is a menu with 'OPERATION', 'CONFIGURATION', 'REPORTING', 'INSTALLATION' (highlighted), 'MANUFACTURING', and 'DEBUG'. A secondary menu shows 'STATUS', 'NETWORK' (highlighted), 'PV', 'GRID', and 'SYSTEM'. The main content area is titled 'Connection Type' and has two radio buttons: 'WiFi' (selected) and 'Ethernet'. Below this is the 'WiFi Settings' section, which includes a 'SELECT NETWORK' dropdown menu, an 'SSID' field with 'EmpowerEnergy' entered, a 'Password' field with masked characters, and an 'IP Mode' dropdown menu set to 'DHCP'.

9.3.2 PV Settings

Enter the full details of what PV has been connected to the unit (ignore any other PV on the house)

The screenshot shows the Empower Energy web interface with the 'PV' tab selected in the secondary menu. The main content area is titled 'Settings'. Under 'Number Of Inputs', the '2 Channels' radio button is selected. Below this, there are two columns for 'Channel 1' and 'Channel 2'. Each channel has five input fields: 'Power' (4.0 KWPower), 'Open Circuit Voltage' (458 V), 'Short Circuit Current' (8.5 A), 'Maximum Power Point Voltage' (458 V), and 'Maximum Power Point Current' (8.5 A). A 'SAVE' button is located at the bottom of the form.

9.3.3 Grid settings (inc Regional Settings and Power Quality Modes))

The inverter will not be allowed to turn on until the regional settings are chosen

1. Go to the 'installation>>GRID' page
2. Select from the below selection
 - a. Australia A
 - b. Australia B
 - c. Australia C
 - d. New Zealand
3. Click Save (**note once this is saved it cannot be reversed without calling Empower directly!**)
4. Select the state and electric network that the customers house is connected to and then press save.
5. If backup has been wired then enable it using the toggle button. Generally 0% reserve is recommended, but the consumer can request more.
6. If the network requires an export limit then enable the toggle button and select the limit value
 - a. this is normally only required if there is a 2nd inverter/battery on the house and the possible export can exceed 5kW per phase.
 - b. Ensure that only one inverter/charger has the export limit enabled, else they will compete and get confused
7. Power Rate Limit is enabled by default and WGRA should not be changed unless the network requires it under special scenarios.
8. DRMO shall only be enabled if it has been directly connected to an external DRM device (this is not common).

The screenshot shows the 'INSTALLATION' page in the Empower Energy installer interface. The 'GRID' sub-tab is active. The configuration is as follows:

- Region:** Australia A
- Network:** Australia, New South Wales, Ausgrid
- Backup:** Enabled, Reserve Amount: 0%
- Export Limit:** Disabled
- Power Rate Limit:** WGRA: 18.67 % / Minute
- Settings:** DRMO Enabled, Volt-Watt Response, Volt-Var Response

Figure 15- Installer Grid Configuration

The various power quality response modes are:

1. **Volt-Watt Response** - Power derating for voltage variation
 - a. The inverter power output will vary in response to the AC grid voltage.
 - b. This is switched on by default.
 - c. To disable, press the toggle button in the 'controls' column in Figure 15
2. **Volt Var Response** - Reactive power regulation for voltage variation
 - a. The power output or input will vary in response to the AC grid voltage.
 - b. This function is switched off by default.
 - c. To enable, press the toggle button in the 'controls' column in Figure 15
3. **Fixed Power Factor Mode**
 - a. Some networks require the inverter to import/export power with a fixed Power Factor not equal to 1 in order to support the grid
 - b. The default is a Power Factor = 1
 - c. If required to change, the fixed 'Power Factor' row of the 'settings' column in Figure 15 should be adjusted accordingly, between 0.6 to 1.
 - d. Also a selection between 'absorbing' and 'supplying' power factor needs to be made
4. **Reactive Power Mode**
 - a. Only one of Fixed Power Factor Mode or Reactive Power Mode can be chosen at any one time
 - b. This mode will output a fixed reactive power (VAR), regardless of the real power being input by PV or battery.
 - c. Absorbing or supplying needs to be chosen first and then 0% to 60% of rated power can be selected using the sliding bar.

9.3.4 Earth Fault Alarm

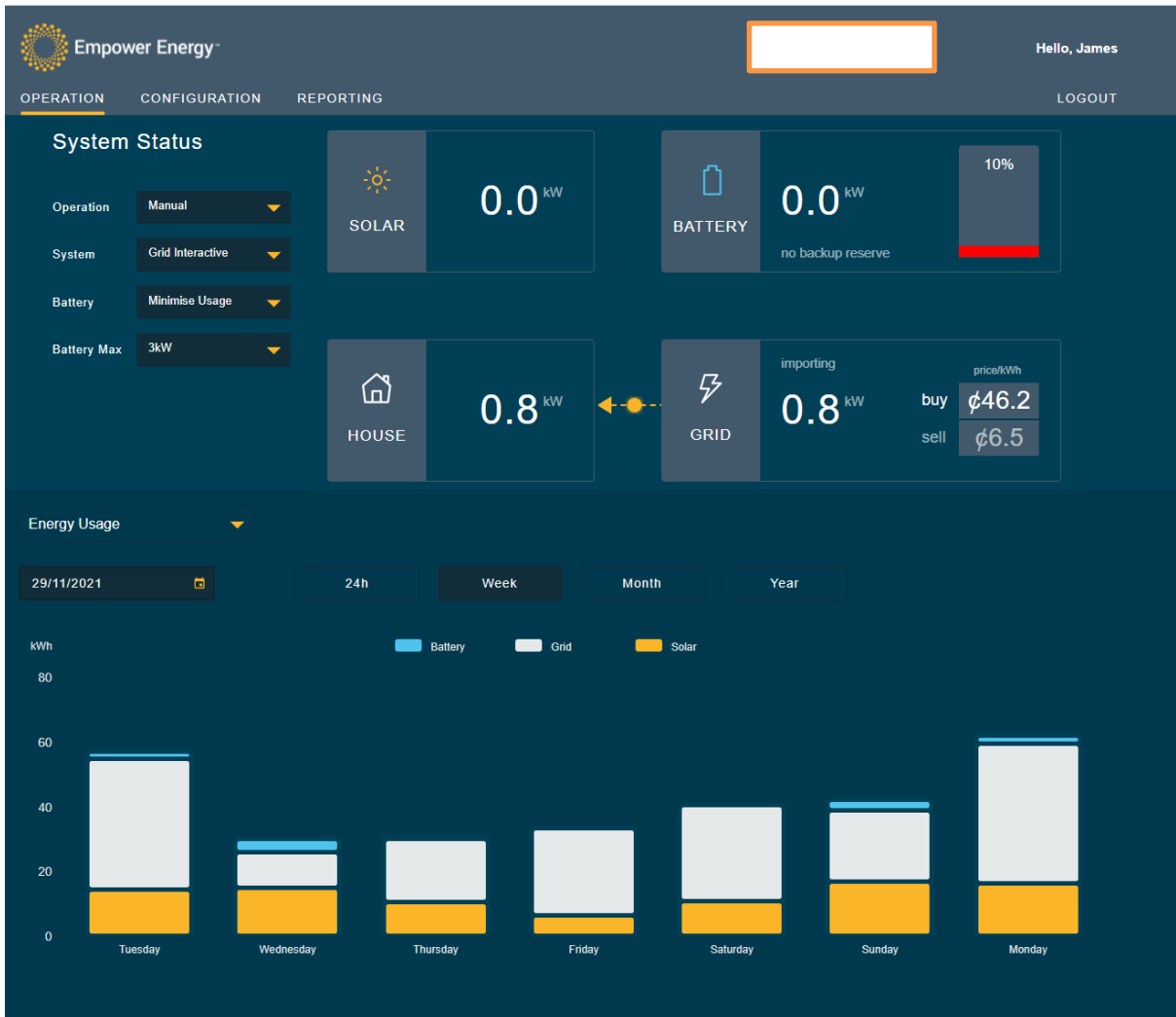
This inverter complies with IEC 62109-2 clause 13.9 for earth fault alarm monitoring.

If an Earth Fault Alarm occurs:

1. The text 'RCD fault' or 'PV Insulation Test Fault' will be displayed on the inverter web based monitoring portal
2. The LED indicator will turn red and the built in audible buzzer alarm will turn on.

9.3.5 User Training

1. The installer shall show the user how to connect to the unit via the website login and ensure everything functions correctly before leaving the premises.
2. Confirm internet connection and that login through the CMS is functional and not slow
3. Test charge, discharge, both PV inputs and backup, controlling through the CMS, using the user's login.
4. Once completed ensure main door is shut and locked with all screws tightened to 1Nm
5. Show the user how to login to view the unit



6. Leave the unit in grid interactive, minimise usage state, 5kW

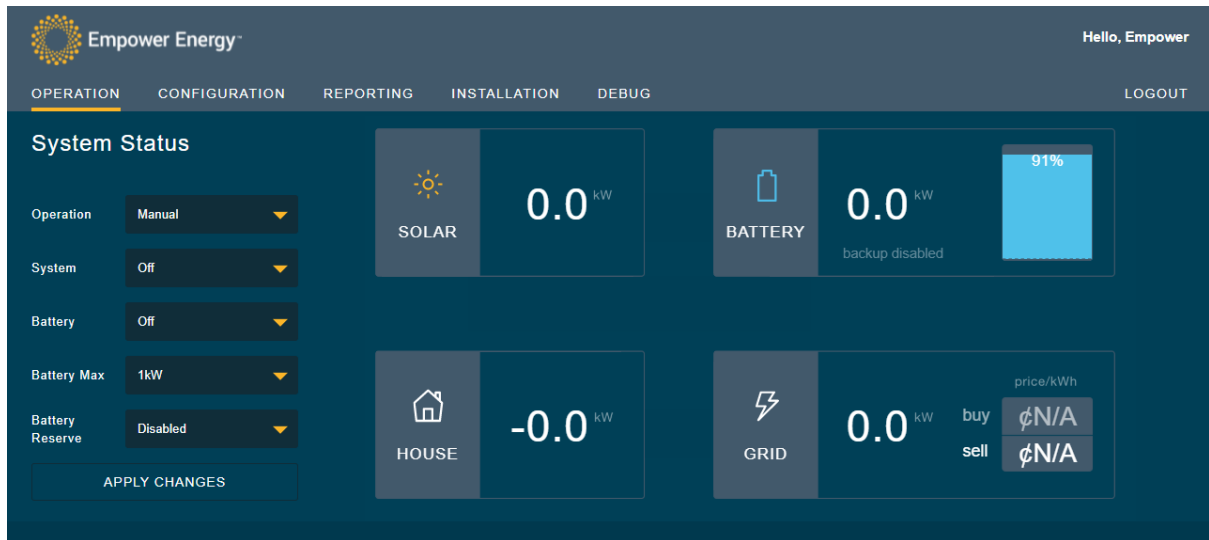
9.3.6 Read-only inverter settings

Once set, the country grid code, protection settings, power quality response modes, region settings, firmware version and other installer settings can be viewed in a read only format by logging in as username: admin, password: admin and navigating to the reporting tab.

10 Maintenance

10.1 Turning off the Unit

Set the System to 'OFF' and Battery to 'OFF' and click 'Apply Changes'. This will power down the inverter and the charger but the system will remain powered on and communicating.



10.2 User Maintenance

1. **The user is not allowed to remove any covers on the Elektrobank 14, only a trained professional is permitted to do this**
2. The Elektrobank 14 does not require scheduled maintenance and only requires an external debris and salt clean, recommended every 6 months by the user.
3. Check for signs of ingress by insects, animals, plants or water/dust. Check for any signs of corrosion. Call your service technician if you see any signs.
4. Then, with a dry cloth or soft brush, clean the whole product. Make sure all debris is cleared.

10.3 Trained Service Professional Maintenance

Scheduled maintenance by a service professional is not required.

If maintenance is required, always ensure the unit is completely de-powered and isolated before opening the main door and before removing the internal escutcheon panel.

1. Ensure grid voltage is isolated with an external locked off circuit breaker or isolator switch.
2. Ensure backup voltage is isolated with a locked off circuit breaker or isolator switch.
3. Ensure PV connectors are disconnected, or PV isolators are OFF and locked.
4. Open the main door
5. Ensure battery Circuit breaker, grid and backup circuit breakers are all in the OFF position.
6. Ensure there is no LED light on the front of the unit

7. Wait for 15 minutes for DC capacitors to decay
8. Remove the bottom escutcheon panel and using a multimeter check all terminals are not live.
9. Never remove the top escutcheon panel.

If it is suspected that the external fan, heat exchanger or heatsink is blocked then a gentle water flow (~1L/min) can be initiated from the ventilation holes in the back of the unit (ensure the front door is fully closed before doing this). After 2L of water have been put through, stop the water flow, open the main door and check no water ingress in the base of the enclosure. Continue the cleaning process until the water runs out clear.

11 Electrical Ratings

PV Input	
Type of Voltage	DC, OVC II
Vmax PV	430V
Max PV Continuous/Short Circuit Current	15A
PV MPPT Starting Voltage	150V (then works down to 100V for hysteresis)
PV MPPT Operating Range	100V – 430V
PV Power	4kW per MPPT (8kW total)
Max inverter back feed current to the array	7mA
PV Safety	PV is non-isolated, floating voltage at grid potential, external isolation device required
AC Input / Output Ratings (Grid port)	
Type of Voltage	AC, OVC III, Only connected to TN system where Neutral should always be connected to earth at the single point earth connection in the property.
Frequency	50Hz
Voltage (nominal)	230V
Maximum Input/Output Current	41.7Arms / 21.7Arms
Inrush Current	~50Arms for 100ms (excluding any backup loads)
No. of Phases	1
Maximum Active/Apparent Power Input	9.6kW / 9.6kVA
Maximum Active/Apparent Power Output	5kW / 5kVA
Power Factor	+/- 0.8
Maximum Overcurrent Protection	40A rms
Maximum Fault Current	90A rms
Standby Power	Approx. 16W
AC Output Ratings (Backup Port)	
Type of Voltage	AC, OVC III, Neutral is internally connected to Grid port so has continuity to earth at the single point earth connection in the property
Frequency	50Hz
Voltage (nominal)	230V
Maximum Continuous Current	15Arms
Rated short time withstand current (Icw)	6kA
Active/Apparent Power Continuous	3.5kW/3.5kVA
Active/Apparent Power Overload	4.6kW / 4.6kVA for 1 hour
Maximum/Inrush Current	30Apeak for 1s
Power Factor	+/-0.6
Number of Phases	1
Maximum Output Overcurrent Protection	40A rms
Maximum Output Fault Current	90A rms
Battery	
Voltage (nominal)	154V, OVC II
Voltage (range)	120-175V
Maximum Continuous Current Charge & Discharge	32A
Maximum Continuous Power Charge & Discharge	5kW
Battery Type	Lithium Iron Phosphate
Battery Capacity	15.4kWh maximum, 13.9kWh useable (at 90% Depth of Discharge)
Battery Short Circuit Current	~3000A
System	
Communications	WiFi, Ethernet, 3G/4G, RS485 to front of house meter
Residual Current Monitoring	Integral for grid port (backup port requires Type A RCD)
Inverter Topology	Non-isolated
Inverter type	Multiple mode inverter with Grid interactive and standalone modes
Protective Class	I
Active Anti-Islanding Method	Frequency Instability
Supporting Demand Response Modes	DRM0
Certification Marks	AS4777.2:2015, IEC62109-1, IEC62109-2, AS62040.1, AS61000.6.3:2012, IEC 62619
Mechanical & Environmental	
Ambient Operating Temperature Range	-20 to 50° C for outdoor unconditioned without solar effects (power auto-derates above 40° C and below 4° C)
Recommended Operating Temperature	10 to 30° C
Ingress Protection (IP) rating	IP 66
Dimensions	1200mm / 900mm / 225mm
Weight	180kg
Environmental/Wet Location Category	Outdoor / Wet
Pollution Degree	PDII
Operating Relative Humidity	Up to 100%, condensing
Maximum Altitude	2000m

12 Appendix A – Meter programming

12.1 Programming the ADL400 meter

The meter will come pre-programmed and the installer should not need to change anything. This section was included in case some of the settings are incorrect.

The minimal connection for programming is a 230v connection between UA and UN on the top panel.

To change a setting, press \leftarrow until a digit starts to flash.

To change that digit, use the ∇ button.

To move to the next digit, use the \triangle button

1. Hold \leftarrow for 3 seconds
2. Enter the password 0001 and press \leftarrow
3. Change the Address to 001
4. Change the Ct to 30
5. Verify the following:
 - a. Baud 9.6
 - b. Par None
6. Then hold \leftarrow for 3 seconds
7. Change Save? To Yes, and press \leftarrow