Dynamic Load Balancer Installation Guide

EVAB1ETP400 (Three phase balancer with 3X 400A CT)
EVAB1ESP120 (Single phase balancer with 1X 120A CT)
EVAB1D (Hub for integration into existing panel)

Contents

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Introduction

This guide is intended for use by competent electrical installers to explain basic requirements and options to be considered when installing a Sync Energy Balancer. The unit is designed for installation inside and to work with the range of ev chargers from Sync Energy.

Box contents

EVAB1ETP400

- Balancer hub in a IP20 enclosure
- 3X 400A Split core CT
- MCB and wiring terminals

EVAB1ESP120

- Balancer hub in a IP20 enclosure
- 1X 120A Split core CT
- MCB and wiring terminals

EVAB1D

- Balancer hub

Tools required

Screwdriver, suitable drill bit and fixings

Safety information

Warning: The supplied Dynamic Load Balancer is manufactured to be safe without risk provide they are installed correctly, used, and maintained in accordance with the manufacturers recommendations, which is to be installed by a competent electrical installer in accordance with national and local regulations and legislation applicable at the time of installation, e.g. BS7671:2018 amendment 2.

The Balancer is designed to be supplied with a 220-240V nominal AC supply and enclosures are suitable for internal use only.

The power for the EV chargers does not run through the hub, it is designed to be installed separately to monitor the EV circuits or the complete building supply for optimal performance.

The Dynamic Load Balancer is protected by the pre-wired MCB and can be fed directly from the main circuits.

In case of communication fault or failure all connected chargers will drop to a fail safe 6A maximum charge rate and flash purple to show the error fault.

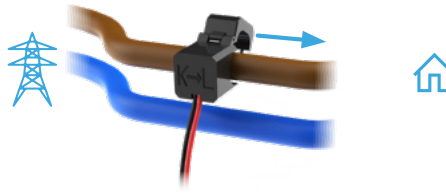
Ensure the circuit supplying EV chargers is suitable for a minimum of 6A per charge point, and the total building supply is suitable for the total charge points installed at this minimum charge rate of 6A per charger.

Installation requirements

The Balancer enclosure is suitable for internal installations only, It is recommended to be installed close to the incoming power or EV circuit that is being monitored and the CT clamp cables should not be extended beyond 50m.

CT Clamp Connection

1. Locate the main incoming power cable into the property. The CT Clamp needs to be fitted before any of the tails are split for correct measurement.



2. Open the CT Clamp and fit around the incoming Live power cable, this is typically marked brown for most installations. Ensure the Arrow is pointing into the property from the incoming fuse. K towards Source, L towards Load.

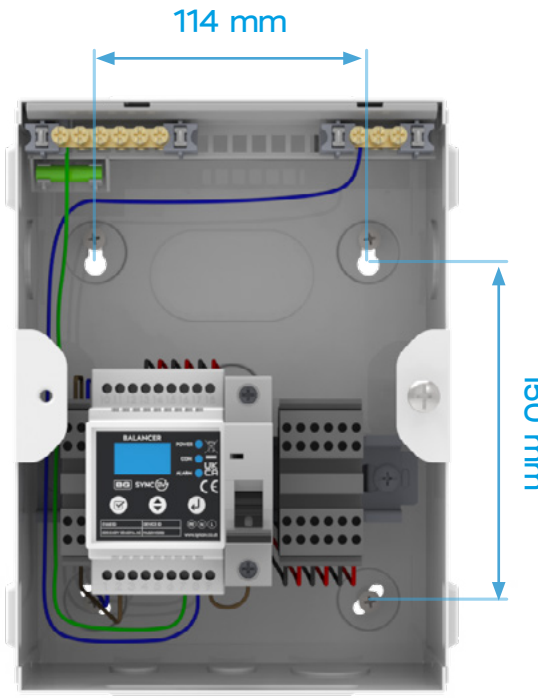
3. CT Clamp current and voltage readings can be checked via the Bluetooth EV installer App to ensure correct connection and orientation. If using an existing RS485 MOD BUS meter which is on the BG Sync EV approved list, this can be connected into the hub directly.

Electrical Installation of the Enclosure

1 Isolate the power.

2 Undo 2 lid retaining screws and remove lid, DIN rail and components can be removed if needed.

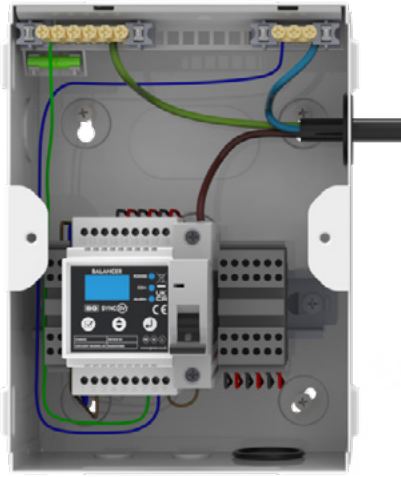
3 Drill the correct fixings to mount the enclosure.



4 Drill or knock our required cable entries. Ensure correct glands or grommets are used.

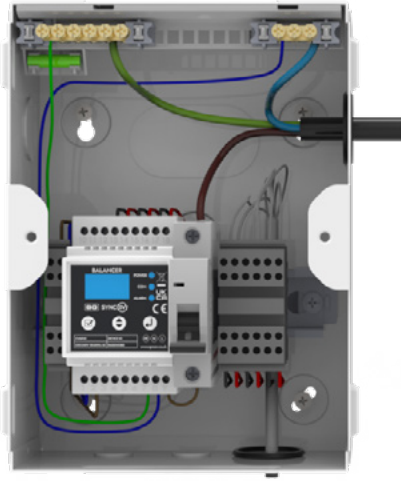
5 Mount the enclosure using suitable fixings.

6 Fit and terminate incoming power.



Live – into MCB
CPC – into Earth Rail
Neutral – into neutral rail

7 Connect CT clamps ensuring correct polarity.



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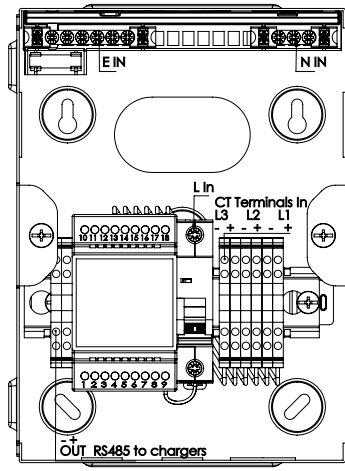
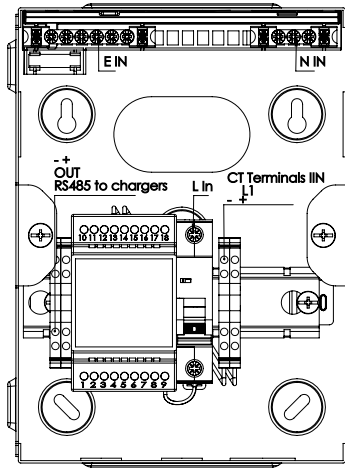
Terminate a twisted pair cable to the output terminals, these can be looped in/out of each charger or multiple connections can be terminated into the Balancer. Ensuring correct polarity into the hub and the chargers.

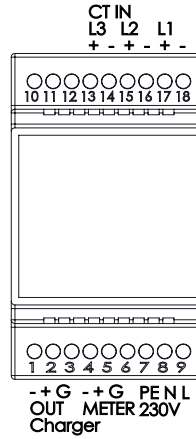
EVAB1ETP400



EVAB1ESP120



EVAB1D



9 Ensure all connections are secure then refit the lid and tighten the retaining screws.

App Commissioning

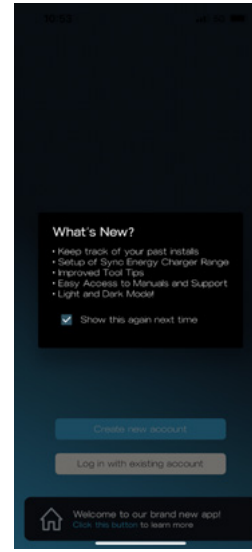
INSTALLER APP – Download the 'Sync Energy' app by clicking this link

Also available from the Installer Portal on the sync.energy website, or using the QR code opposite.

Intuitive Interface: The revamped interface is designed with the installer in mind. Everything you need is available through a new side-menu
Effortless Setup: seamlessly configure your EV Chargers and balancer devices with just a few taps. Get up and running in no time
Account Management: Create and manage your account effortlessly. Keep a history of all your installed Chargers.

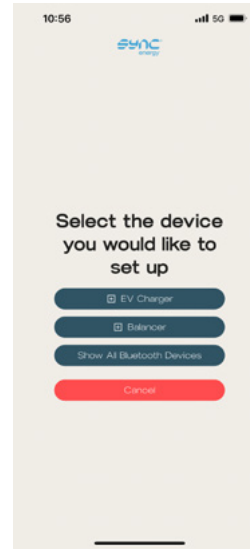
1

Open the Sync Energy Installer App, If this is the first time you will be required to create an account. This will give you a history of the chargers and balancers installed and further help options.



2

Ensure Bluetooth is activated on your device, and select set up new product. If the Balancer ID does not show up under Balancer option, go back and select show all Bluetooth devices.
If no Bluetooth devices are shown, please check Bluetooth is turned on and the permission was granted in the app.



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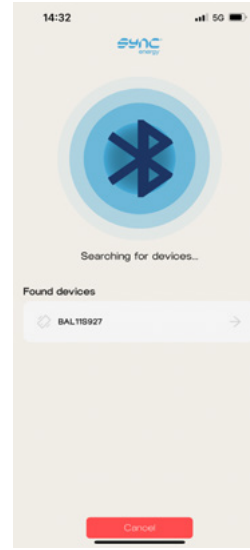
Select the correct Balancer ID that matches the Balancer ID code as shown on the products identification label.



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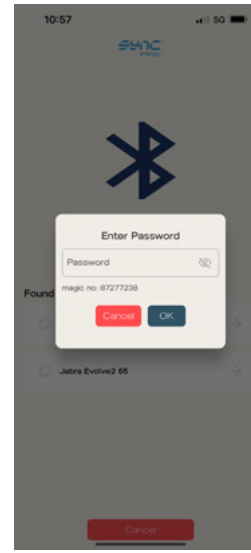
Then enter the password shown on the identification label.



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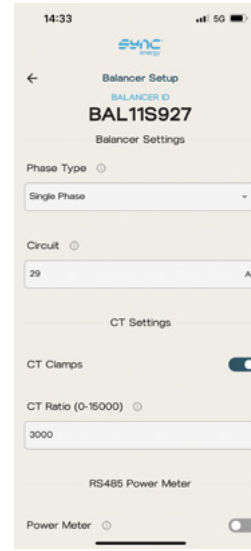
Balancer Settings:
Select the installation type from three phase or single phase, and set the maximum circuit limit



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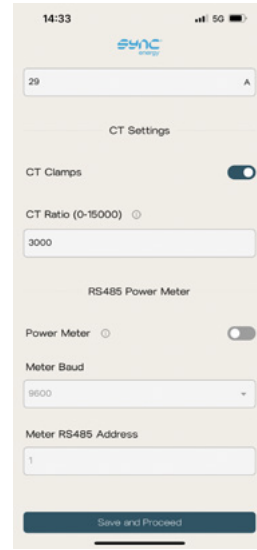
CT Settings:
If using the included CT Clamps this information does not need to be changed. If using alternative CT's then enter the CT Primary Ratio.



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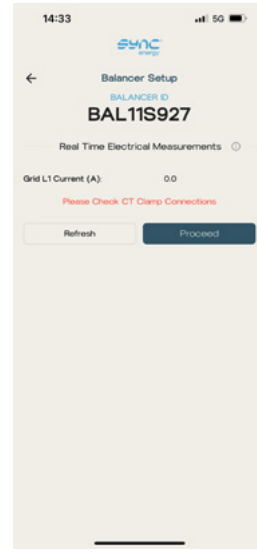
RS485 Power Meter
If using external RS485 MODBUS meter for circuit monitoring, then enable Power Meter and enter the Baud Rate and RS485 Address of the meter. For compatibility please check the datasheet or contact technical support.

Press Save and Proceed to save these settings

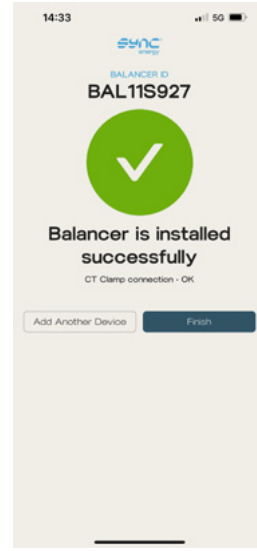
8

Check the shown electrical measurements match measures readings. This will allow checking the Load Management CT are fitted in the correct orientation and location. A negative value indicates reverse direction of power due to, e.g. solar surplus, but could also indicate that the clamp has been installed in a reversed (incorrect) orientation or polarity.



Please Note: A minimum of 3 amps is required to ensure correct CT connection, Press Refresh to retrieve the latest readings.

Press Proceed to complete installation set up

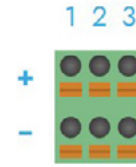


Connecting the Charger to the Balancer

The cable connecting the hub to the charger can be up to 150m from the Balancer to the last connected charger with up to 16 chargers either looped in/out or wired back to the balancer directly.
Connection point for the communication cable

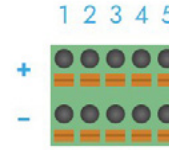
7kW Charger

	1	2	3
+	485A		CT+
–	485B		CT–



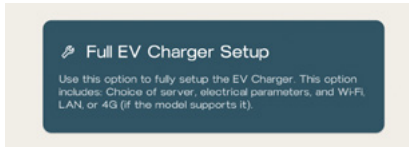
22kW Charger

	1	2	3	4	5
+	485A	PV	CT PH1+	CT PH2+	CT PH3+
–	485B	PV	CT PH1-	CT PH2-	CT PH3-



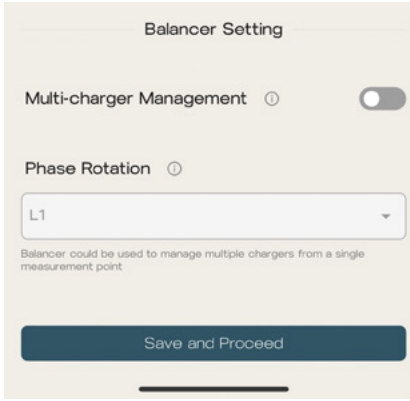
The connected EV Chargers need to have balancer multi-charger management enabled. Connect to each charger via the BG SyncEV Charger Set up App.

1 **Select Configuration settings.**



Press Next to move to Load management settings.

2 Enable Multi-charger Management and select correct phase rotation for the charger.



3 Press Next to save settings, The Charger will check it has correct connections and alert if any communication faults, please allow up to 10 seconds for the hub and charger to confirm connection.

If the Charger looses communication to the hub, it will flash Purple to show the fault but still allowing charging at a safe fall back level of 6A per charger.

Troubleshooting

For further information, or to refer to our FAQs, please visit our website: www.sync.energy

The screen on the Hub will state if any connection issues, Ensure hub is reading CT clamp values correctly and the offered power to the chargers.

The status of the EV charger can be identified by referencing the colour shown on the LED indicator:

- **Flashing Purple** – Communication issue to Balancer hub – Check connections are correct polarity into the hub and the chargers
- **Solid Blue** – Standby – Charger has power and is connected to the network. Or, if in 'plug and charge' mode is not connected to the network, is ready to charge
- **Flashing BLUE** – Charger is connected but not charging, awaiting confirmation of charge in APP or scheduled start time
- **Solid Dark Green** – Charger is active and Charging
- **Solid Yellow** – Charger is offline from network, check local network is active and Wi-Fi is working on the 2.4Ghz band
- **Flashing Red** – Indicates the charger is in fault mode and has stopped charging for users safety

Potential causes:

Internal RCD has tripped
Vehicle fault
Under or over suitable charging voltage

Remove connection to the vehicle and reset power to the EV charger.

Technical information

Environmental Protection

This symbol is known as the "Crossed-out Wheelie Bin Symbol". When this symbol is marked on a product or battery, it means that it should not be disposed of with your general household waste. Some chemicals contained within electrical/electronic products or batteries can be harmful to health and the environment. Only dispose of electrical/electronic/battery items in separate collection schemes, which cater for the recovery and recycling of materials contained within. Your co-operation is vital to ensure the success of these schemes and for the protection of the environment.

Guarantee

BG Sync EV products are guaranteed against faulty materials and workmanship for a period of 3 years from date of delivery: products will be repaired or (at Sync Energy's discretion) replacements will be supplied or (at Sync Energy's discretion) a credit note will be issued.
This guarantee is subject to Sync Energy's conditions of sale and in particular to the following conditions being met:

1. Notification of any defect is given to Sync Energy as soon as reasonably practicable after becoming apparent, and the products then returned to Sync Energy.

2. The products have only been operated under normal operating conditions and have only been subject to normal use.

3. No work (other than normal and proper maintenance) has been carried out to the products without Sync Energy's prior written consent.

4. The products have been assembled, or incorporated into other goods, by a qualified and recognised electrician and only in accordance with any instructions issued by Sync Energy.

5. The defect has not arisen from an item manufactured or supplied by a person other than Sync Energy.

6. 3 year warranty as standard, optional product registration can be completed on the Sync Energy website.

Follow this link to visit our Warranty web-page

Technical data

CODES:	**EVAB1ETP400** (Balancer and enclosure, for three phase installations, supplied with CT clamps for up to 400A) **EVAB1ESP120** (Balancer and enclosure, for single phase installations, supplied with CT clamps for up to 120A) **EVAB1D** (Balancer hub, for integration into existing panel boards)
ACCURACY:	2% CT CLAMP ACCURACY, SUPPORT FOR CONNECTION TO EXTERNAL RS485 MODBUS METER
ELECTRICAL CLASS:	CLASS 1
OVERLOAD AND FAULT PROTECTION:	INTEGRATED 6A MCB FOR SHORT CIRCUIT AND OVER CURRENT PROTECTION OF THE HUB
IP RATING:	IP20
CONNECTION PROTOCOL:	RS485
WARRANTY:	3 YEARS

Technical support

Need help with the app?

Contact Monta customer support through the app or via the website Monta.com

Need help with the charge-point?

Contact Sync Energy technical support at:
support@sync.energy
or via the website at www.sync.energy

Sync Energy (previously BG SyncEV) is a trading name of Luceco PLC

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