BG SYNC EV EVAB1D Dynamic Load Balancer Installation Guide

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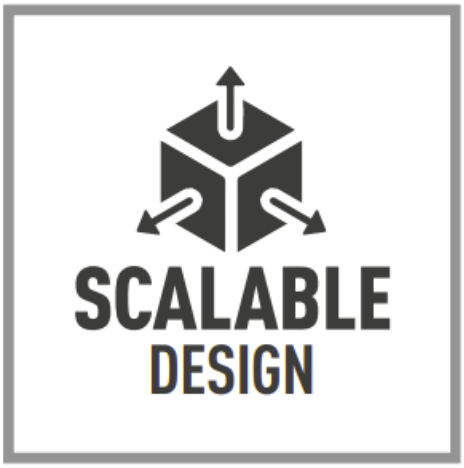
Contents

Introduction

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

Symbols



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.

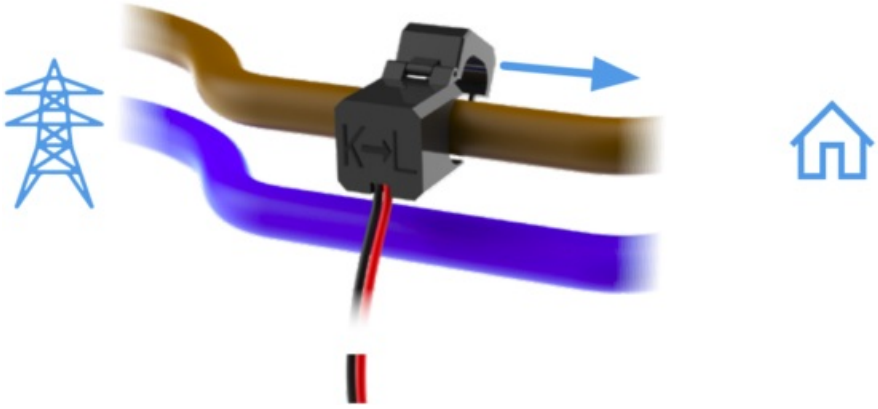
Ensure the circuit supplying EV chargers is suitable for a minimum of 6A per charge point, and the total building supply is suitable for the total charge points installed at this minimum charge rate of 6A per charger.

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

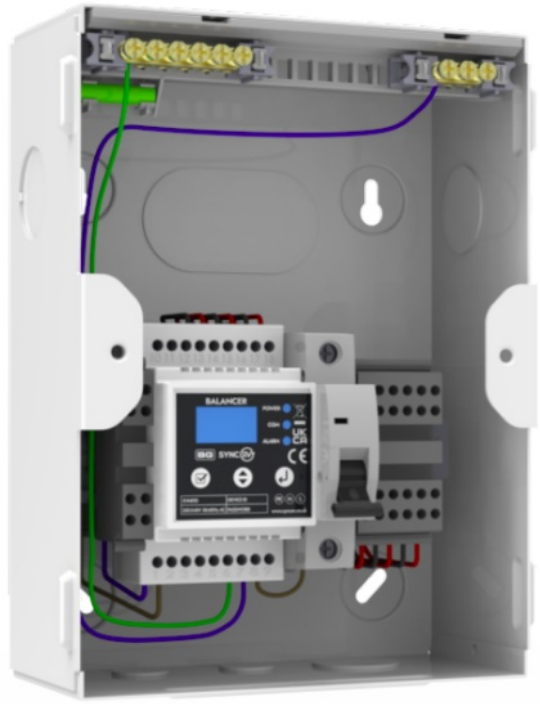
1. Locate the main incoming power cable into the property. The CT Clamp needs to be fitted before any of the tails are split for correct measurement.



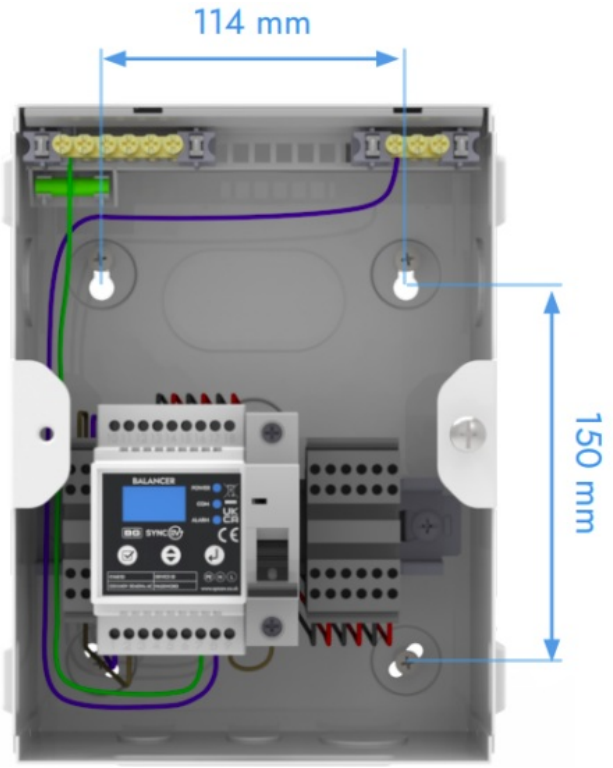
2. Open the CT Clamp and fit around the incoming Live power cable, this is typically marked brown for most installations. Ensure the Arrow is pointing into the property from the incoming fuse.
   K towards Source, L towards Load.
3. CT Clamp current and voltage readings can be checked via the Bluetooth 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

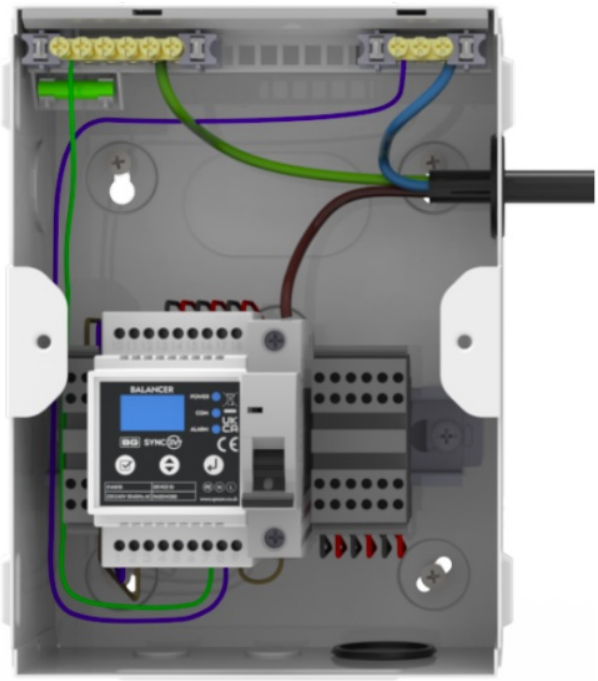
1. ⚠ Isolate the power.
2. Undo 2 lid retaining screws and remove lid, DIN rail and components can be removed if needed.



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.

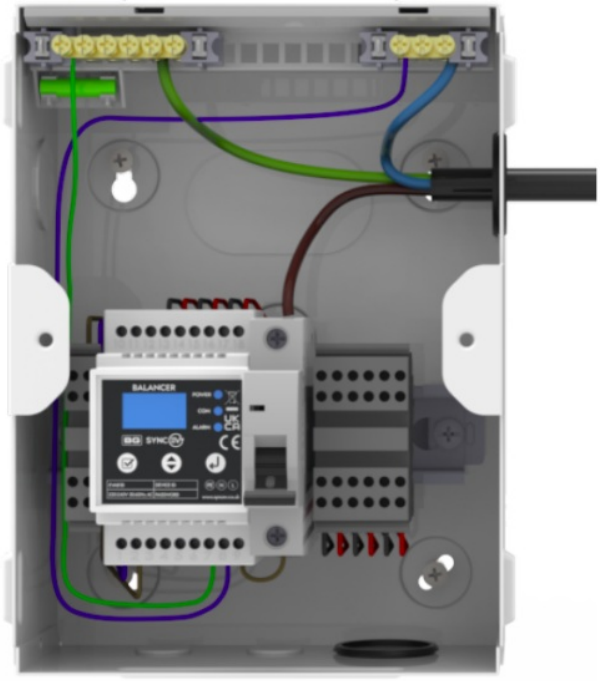


   Live – into MCB

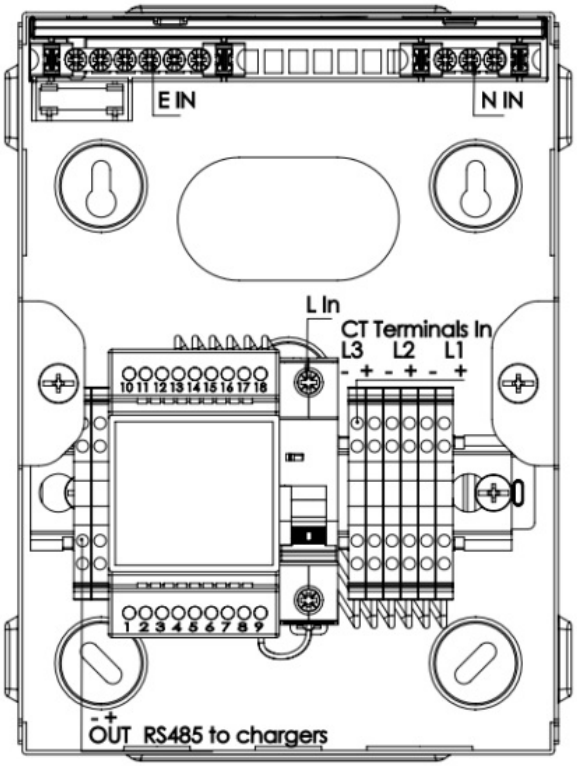
   CPC – into Earth Rail

   Neutral – into neutral rail

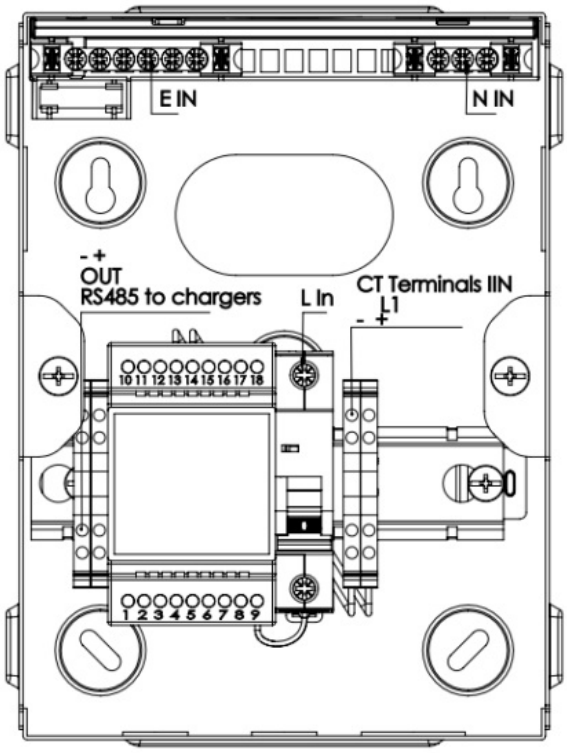
7. Connect CT clamps ensuring correct polarity.



8. Terminate a twisted pair cable to the output terminals, these can be lopped 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.

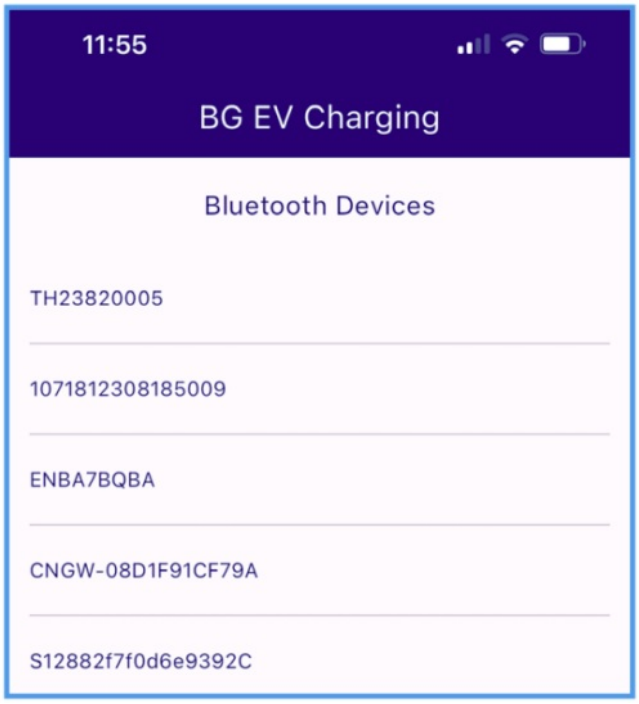
App Commissioning

INSTALLER APP – **Download the ‘BG Sync EV Installer’ app by clicking this link**

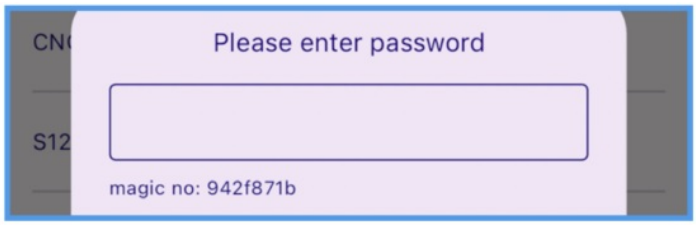
Also available from the Installer Portal on the

syncev.co.uk website, or using the QR code opposite.

1. Ensure Bluetooth is active on your device. Open the BG EV Charging App and select the Balancer ID Code as shown on the identification label.



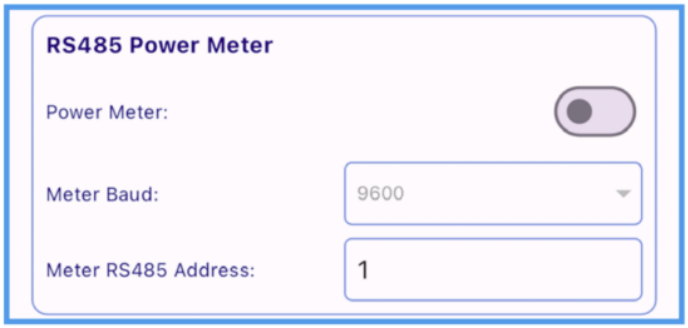
2. Then Enter the password shown on the identification label



3. Balancer settings – Select the installation type from three phase or single phase, and set the maximum circuit limit

4. CT Settings – if using the included CT clamps this should not need changing, if using alternative CT then enter the CT primary ratio.

5. RS485 Power Meter – if using an 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 Next to save these settings.

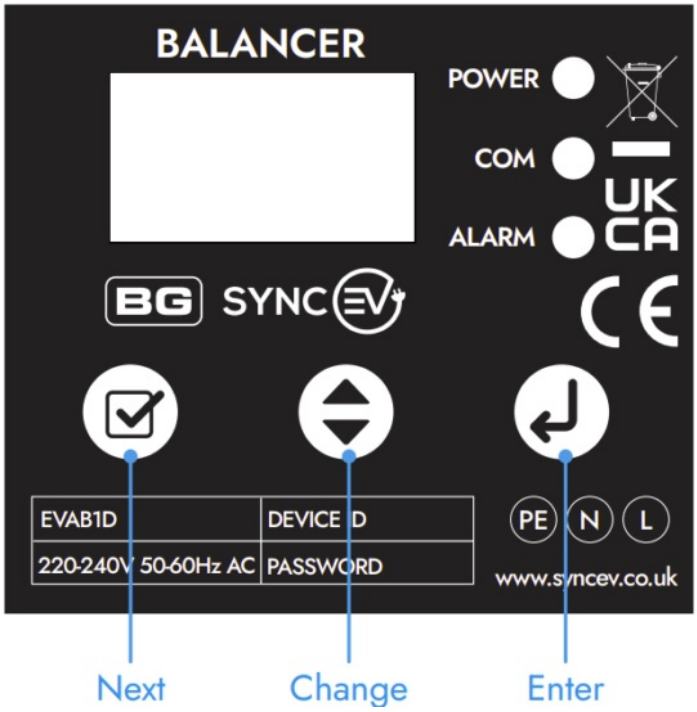
6. Check the shown electrical measurements match measured readings, This will allow checking the Load Management CT is fitted in the correct orientation and location.
   A negative value indicates reverse direction of power due to, e.g. solar surplus, but could also indicate that the clamp has been installed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

Please Note: A minimum of 3 amps is required to ensure CT connection.

Press Finish to exit the set up screens.

Via screen commissioning

The Balancer can also be set up via the screen and on device buttons.



- Change and Next cycle through the screens
- Change is used to adjust the flashing value, and next to cycle through each value to change
- Hold Enter button to edit settings for each screen, then repress Enter to save changes
- Set CT clamp or Meter and correct CT ratio or Meter information
- Set single or three phase
- Set the Max Circuit current limit

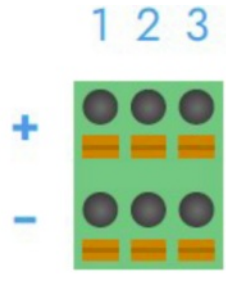
Connecting the Charger to the Balancer

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

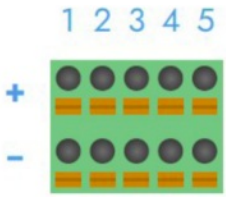
7 kW Charger

	1	2	3
+	485A		CT+
–	485B		CT–



22 kW Charger

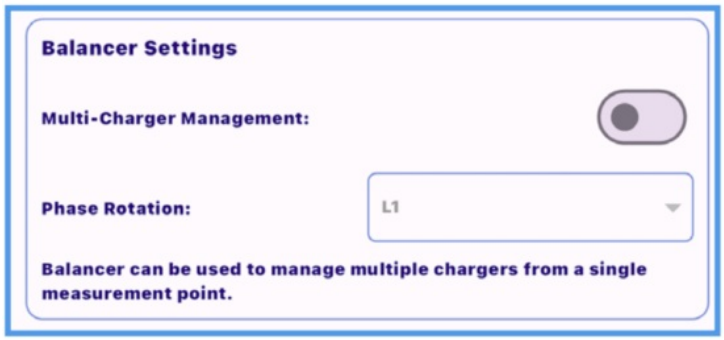
	1	2	3	4	5
+	485A	PV	CT PH1+	CT PH2+	CT PH3+
–	485B	PV	CT PH1-	CT PH2-	CT PH3-



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

1. Select Configuration settings.

2. Press Next to move to Load management settings.
3. Enable Multi-charger Management and select correct phase rotation for the charger.



4. 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.syncev.co.uk

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 BG Sync EV’s discretion) replacements will be supplied or (at BG SyncEV’s discretion) a credit note will be issued. This guarantee is subject to BG Sync EV’s conditions of sale and in particular to the following conditions being met:

1. Notification of any defect is given to BG Sync EV as soon as reasonably practicable after becoming apparent, and the products then returned to BG Sync EV.
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 BG SyncEV’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 BG SyncEV.
5. The defect has not arisen from an item manufactured or supplied by a person other than BG SyncEV.
6. 3 year warranty as standard, optional product registration can be completed on the BG Sync EV website.

Follow this link to visit our Warranty web-page

Symbols

Technical data

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

Technical support

Contact BG Sync EV technical support at:
support@syncev.co.uk

or via the website at **www.syncev.co.uk**

BG Sync EV is a trading name of Luceco PLC.
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(EU) Luceco SE – C/ Bobinadora 1-5, 08302 MA taro, Spain

Documents / Resources

	**BG SYNC EV EVAB1D Dynamic Load Balancer** [pdf] Installation Guide EVAB1D, EVAB1D Dynamic Load Balancer, Dynamic Load Balancer, Load Balancer, Balancer

References

- Sync Energy - Homepage
- Sync Energy - Homepage
- User Manual