



CHARGE HUB

ELECTRIC VEHICLE CHARGING SOLUTIONS

EVBox BusinessLine Installer Guide

Nov 2023

Table of Contents

1. Introducing EVBox BusinessLine
2. Siting and AC EV Charging Station
3. Typical Commercial AC Charger Installation
4. Charge Hub – EV Charging OCPP Backend Software Management Platform

CHARGE HUB
ELECTRIC VEHICLE CHARGING SOLUTIONS





CHARGE HUB
ELECTRIC VEHICLE CHARGING SOLUTIONS

Introducing EVBox
BusinessLine
(manufactured in
The Netherlands)

EVBox BusinessLine



- Options for 1ph, 32A, 7.4kW & 3ph, 32A, 22kW. Type 2 socket
- No touch screens causing potential maintenance issues.
- Solid internal lock motor, that secures the Drivers charging cable during operation
- IP rating minimum of 54, for outdoor
- Internal Overcurrent and DC protection
- Internal accurate MID energy meter for billing.
- 4G modem and Wi-Fi, for App and Payment software communication
 - Internal e-SIM for 4G. **No additional ongoing data costs**
- OCPP 1.6 protocol compliant, payment software supported
- RFID for Card and Fob initiation
- Plinth/Pedestal/combi pole for establishing the correct height for ground mount, also wall mount option for a single socket
- Hub / Satellite control for Static Load Management control for groups of up to 20 charging stations on the same site. Adaptable to upgrade to Dynamic Load Management.
- Australian Safety CB Certified and RCM compliant
- 3+ Year Warranty

Single Socket



Double Socket



EVBOX

EVBox BusinessLine – Data Sheet



Max Charging capacity	Up to 22 kW per connector
Charge mode	Mode 3 (IEC 61851-1)
Output power	1-phase (32 A) or 3-phase (16 A or 32 A), 230V – 400V
Connectors	1 or 2 Type 2 sockets (with shutter option)
Session activation	RFID / QR code / Autostart
Maximum cluster size	10 double stations or 20 single stations (20 connectors)
Commission Process	Configurable via the EVBox Connect App
Metering	S-Bus MID certified
Enclosure ratings	IEC 60529 / IP54 / IK08
AS/NZ Certified	Yes
Safety & Compliance	CE and CB certified, RED Directive 2014/53/EU, EMC Directive 2014/30/EU, Low Voltage Directive 2014/35/EU, RoHS Directive 2011/65/EU (as amended by 2015/863/EU), EN/IEC 61851-1 (2017), EN/IEC 61851-21-2 (2018), EN/IEC 61000-32 (2014), EN/IEC 61000-3-3 (2013), EN 301 489-1 V2.2.0, EN 301 489-3 V2.1.1, EN 301 489-17 V3.2.0, EN 301 489-52 V1.1.0, EN 301 908-1 V11.1.1, EN 301 511 V12.5.1, EN 300 330 V2.1.1, EN 300 328 V2.1.1, EN 301 893 V2.1.1, EN 300 220-1 V3.1.1, EN 300 220-2 V3.1.1
Smart Charging	Adjusting max. current, charging profiles, dynamic load balancing (via MAX protocol) via Smart Charge
Dimensions (W x H x D)	600 x 255 x 205 mm (single socket) 600 x 255 x 410 mm (double socket)
Mounting	Wall or pole
Cover colours	RAL 7016 (dark grey), RAL 9016 (white), RAL5017 (blue)



CHARGE HUB
ELECTRIC VEHICLE CHARGING SOLUTIONS

Siting an EV Charging Station

Perfect EV Station Siting Considerations



Our recommended approach to finding the best place to install EV Charging Stations, is:

Dwell Time: How long can the Driver be distracted for? Are there cafes, restaurants, places of interest nearby?

The Right Size: kW output determines speed of charge. The correct kW output will depend on how long Users can charge for and available nearby electrical capacity. A 22kW AC Station require 3 phase, 32A supply each socket.

Location: Consider 4G network coverage, access to Wi-Fi, safety, lighting, cameras. Also the hassle factor – If it is too far away or a hassle to find, then you wont get the utilisation required.

- | | | | | | |
|--|--------------------------|--|--------------------------------|--|--------------------------|
| | CHARGE LEVEL | | NETWORK CONNECTION | | HOST-OPERATOR AGREEMENTS |
| | PROXIMITY TO POWER | | ACCESSIBILITY | | VISIBILITY |
| | MOUNTING APPROACH | | PROXIMITY TO TRAFFIC | | LOCATION IN LOT |
| | NUMBER OF CORD SETS | | PROXIMITY TO BUILDING ENTRANCE | | METERING |
| | PARKING SPACE DIMENSIONS | | PROXIMITY TO ELEVATOR | | LENGTH OF STAY |
| | ENVIRONMENTAL CONDITIONS | | LIGHTING | | FUTURE-PROOFING |
| | TECHNOLOGY | | SIGNAGE AND WAYFINDING | | |
| | HAZARDS | | PEDESTRIAN TRAFFIC | | |

Perfect EV Station Siting Considerations

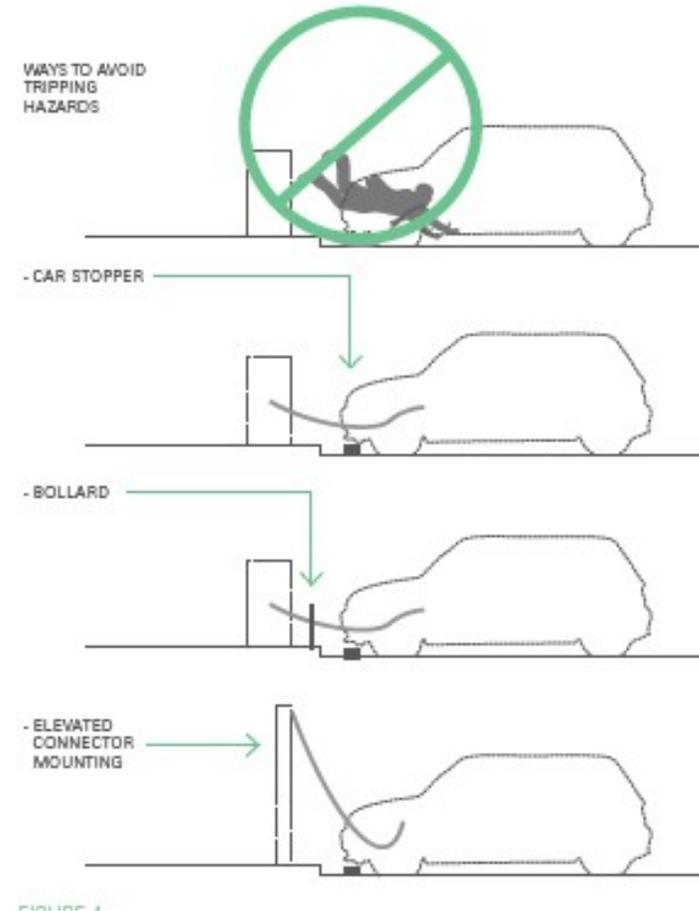


The BusinessLine can either be mounted on a wall or combi pole/ pedestal. The main considerations as to which method to use should come down to:

Electrical Infrastructure: The distance from and cable route for cabling to the EV Stations. Through a block wall, or along a cable tray will be a lot easier (and cheaper) than digging up foot paths etc. Combi poles may be installed by lifting tiles.

Parking Access: Consider that some EV have their charging port at the back of the vehicle, and some at the front. Consider whether an EV could front or rear park. From Sockets, EV's will bring their own charging cable. This is normally approx. 5m long.

Strike Zone: How easy is it for a vehicle to hit the EV Station? Wall mounted units should be out of harms way. However combi / pedestal versions may be hit if the vehicle doesn't see it or drives too far. Consider positioning first, then wheel stops and bollards.



Fire Safety & Building Code



To support safer EV charging, the ABCB recommends:

 <p>Master isolation Provide a master isolation switch with signage at fire indicator panel/Fire Detection Indicator Control Equipment (FDICIE) or building entrance.</p>	 <p>RCM Tick compliance Use chargers that have the Regulatory Compliance Mark (RCM).</p>	 <p>Emergency services information pack (ESIP) ESIPs developed for each site and provided for first responders.</p>
 <p>Break glass fire alarm Provide additional break glass unit (BGU).</p>	 <p>Placarding site Provide placarding/signage to identify each EV charge points.</p>	 <p>Collision protection Provide vehicle impact bollards or stops.</p>
 <p>Block plans Block plans should be updated for existing sites and implemented for new builds to clearly show the location of charging hubs and master isolation.</p>	 <p>AS/NZS 3000 App P compliance Mode 3 and 4 chargers should only be installed by a qualified person and in accordance with AS/NZS 3000 Appendix P.</p>	 <p>Proximity to evacuation routes and flammable risks Carefully assess proximity to avoid blocking evacuation routes or placing chargers too close to other flammable risks.</p>
 <p>Regular maintenance Ensure the owner of the charging unit understands and meets their maintenance obligations.</p>	 <p>Complex buildings Complex buildings and higher-risk environments should seek comprehensive, specialist fire safety assessment and advice.</p>	 <p>Directional signage Directional signage to be provided – to the charging units and to the emergency exits.</p>
 <p>Smart charging Where possible, prioritise the use of 'Smart charging' to enable remote monitoring and access to disconnect power supply to a connected EV. This gives emergency responders another potential method of shutdown from unit to EV. Encourage operators to monitor for faults and provide early intervention when detected.</p>	 <p>Placarding at site entrance Sites with 5 or more Mode 3 or 4 chargers to install ground level or other appropriate level placards to indicate which entrance is most closely located to EV charging hub.</p>	 <p>Pre-incident plans (PIP) Where 5 or more charging installers are provided, then building owners should invite local fire crews to attend a site familiarisation visit in order to develop a pre-incident plan (PIP).</p>

There is a **0.0012%** chance of a passenger EV battery catching fire.

However, until recently, Building Certifiers have been a little standoffish about certifying Buildings that contain Electric Vehicles and Charging Stations, as there was no clear guidance to support them.

The ABCB (Australia Building Certifier Board), together with EV Firesafe released this guide in mid 2023. The key elements to consider in an installation of an EV Charging Station are:

1. Master isolation point for all of the EV Stations on site – i.e., EV Switchboard. Clearly indication.
2. Installation of Smart EV Stations, with backend remote monitoring and load management.
3. Entry/reception signage to indicate where EV Charging points are located on site. In case of Fire personnel attendance.
4. EV Charger and installation regulation compliance.
5. Collision protection installed, if required.

EV Charge Port Location



Charge port locations

Are you getting ready to install a power point or charging unit in your garage or carport, in preparation for getting an EV?

Or are you planning to offer public charging, and want to know how to arrange your site?

Here is where the charge ports are located on vehicles currently (or soon to be) available in Australia.

Notes about specific cars:

- The Audi e-Tron and Porsche Taycan have AC charging ports on both sides of the car, but DC only on one side
- The Mitsubishi i-MiEV and Lexus UX300e have their AC and DC charging ports on opposite sides
- The MG ZS EV port location moved very slightly for their 2022 model

General information:

- This diagram does not include vehicles outside of cars (e.g. motorbikes, vans or trucks) and includes only selected PHEVs.
- These port locations are for Australian vehicles. Port location may vary in other countries



Current as of March 2022 – Created by Charles Gregory



CHARGE HUB
ELECTRIC VEHICLE CHARGING SOLUTIONS

Typical Commercial AC Charger Installation

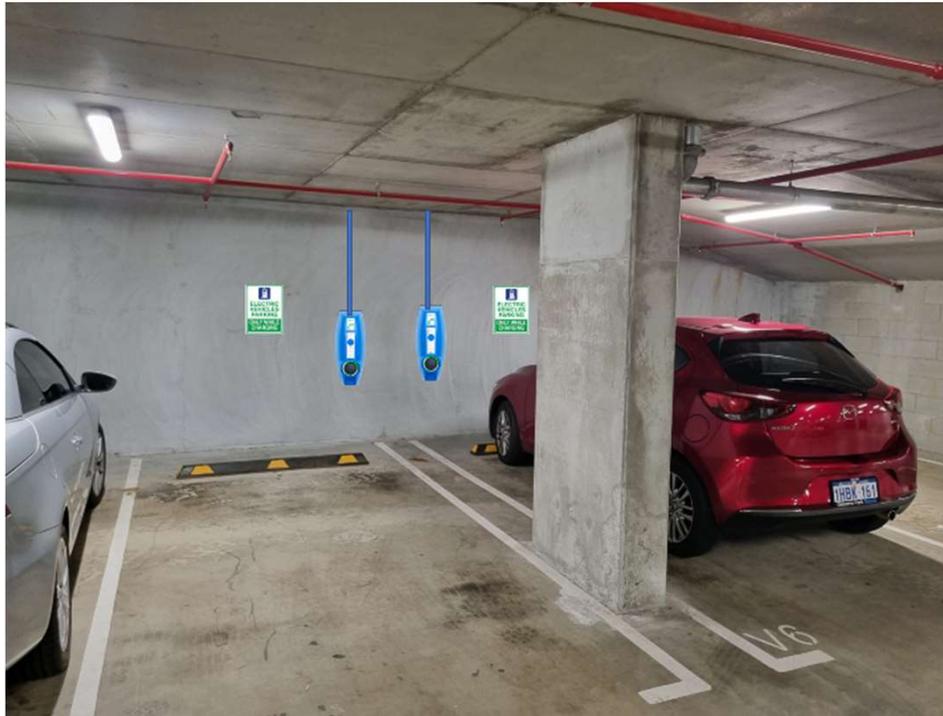
Information required from each site



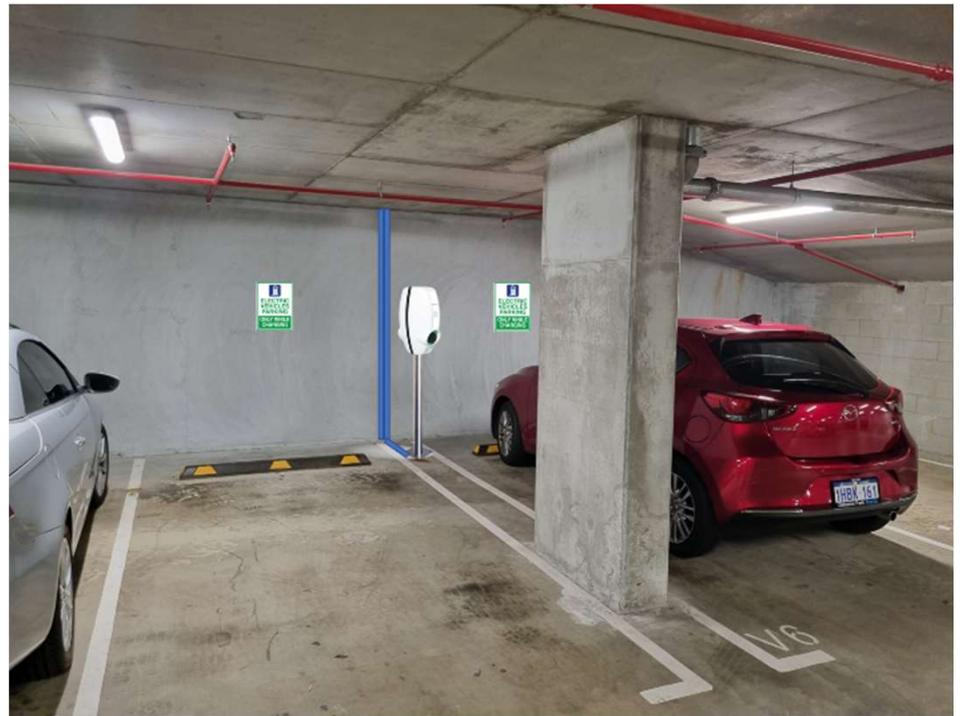
(Give the following to your Electrician) Electrical Capacity and Requirements:

- Each EV Charging Station requires 32 Amps per phase each – for single phase 7.4kW or three phase 22kW.
- A Maximum Demand calculation is not required, as the Stations output can be managed through load management.
- Each individual circuit must be protected by a Residual Current Device (RCD) Type A, with interruption of all live (active and neutral conductions). Note that the EVBox BusinessLine comes with a RCBO inside of it, mounted to the internal DIN rail. This should be removed and relocated back to the Switchboard. Requiring a 4 x DIN wide space in the Switchboard. Note that because of the disconnecting Neutral, they won't be able to fit onto a Chassis Switchboard. You will therefore need to install a Main Switch at the Switchboard, with a sub main to a new sub board, containing the RCBOs for the installed EV Stations.
- EV Charging circuits are usually run from a Common Building supply. The Station themselves have a kWh meter inside of them, for us to record and bill electricity consumption from.
- The cabling from the Switchboard to the EV Charging Station should be three phase 6mm for under a 40m run, and 10mm for longer. Ideally, consider installing a cable tray system if installing multiple Stations.
- It is good practice to install an isolator switch beside/near the Station – for fire safety requirements.
- The ideal location for an EV Station is a spot that is convenient for the Drivers, close to the Switchboard and has good 4G.
- Note that there are the two options of:
 - **Wall Mounting:** For single outlets on a solid wall. These also come with a mounting box, for ease of weatherproof conduit entry and rear Station wiring.
 - **Combipole (Pedestal):** For Double (back-to-back) outlets from the ground. Either a conduit directly out of the ground, or conduit across the ground, through a bottom entry and up the pole. With Double Stations, for Driver impact – are bollards or wheel stops also required?

Single vs Double Station option

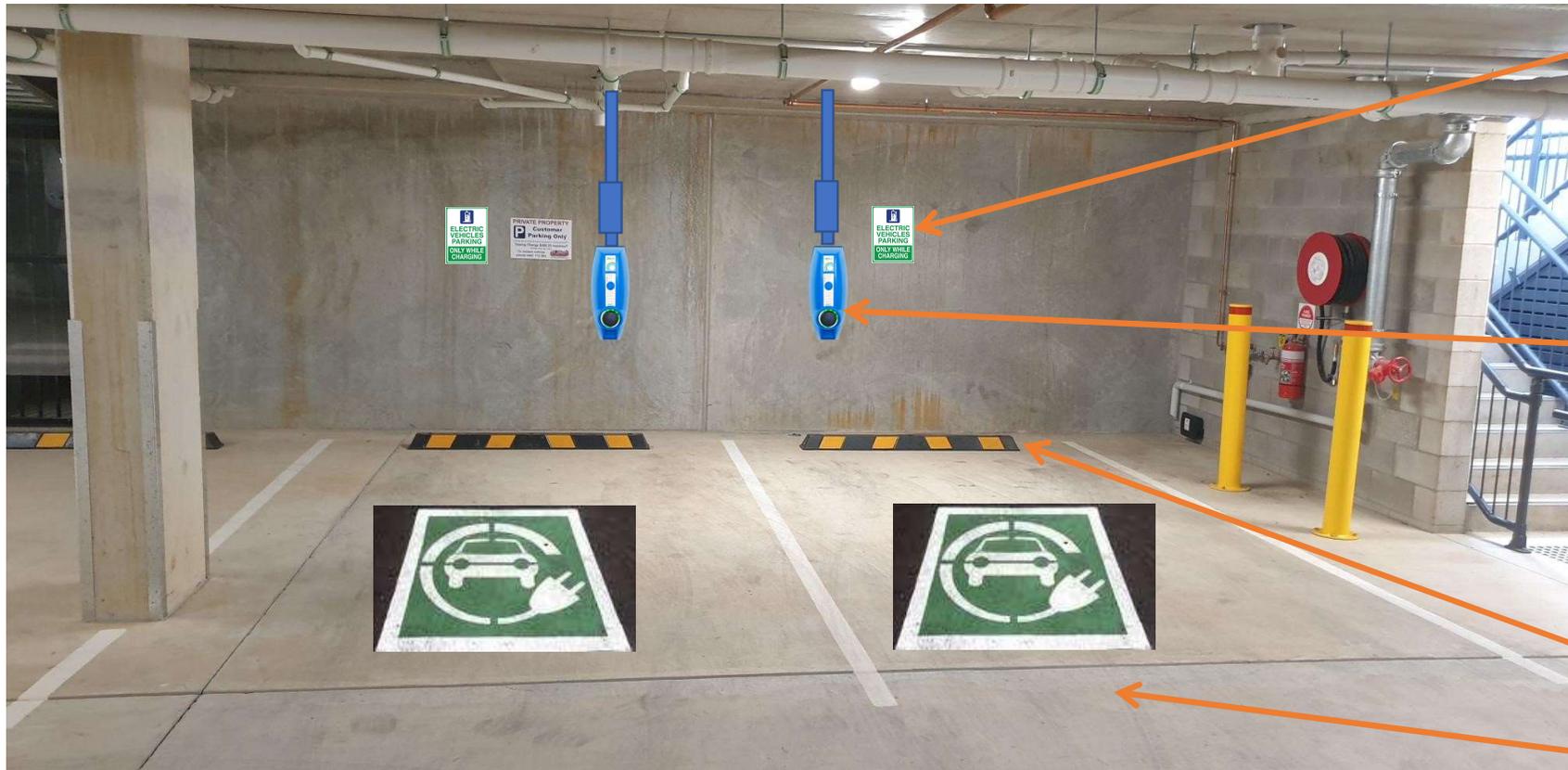


Single: EVBox BusinessLine, 2 x Station with 2 x Outlet



Double: EVBox BusinessLine, 1 x Station with 2 x Outlet

Typical Site Set Up



Optional – Wall EV Parking Sign

Electrical Installation

Type 2 Socket EV Charger

Connected to Payment Platform – Charge Hub

Wheel Stops and Bollards

Optional - Painted EV Parking Sign

Notes: Example shows 2 x single 22kW BusinessLine EV Chargers mounted on a solid concrete wall with wall mounting boxes.

Mounting options – Wall Mount Box



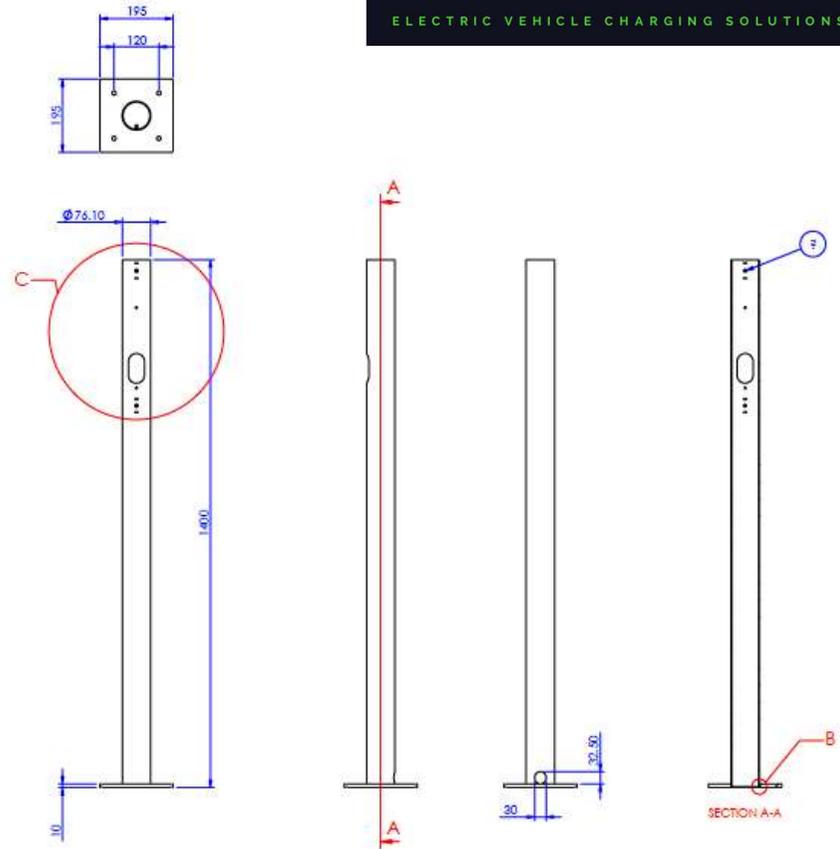
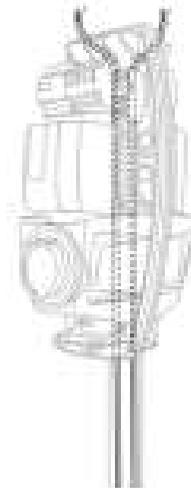
Powder coated aluminium box, for solid and block wall mounting of EVBox BusinessLine single. Features:

- 600mm H x 120mm W x 50mm D
- Middle bolt for holding the weight of the BusinessLine on the wall, whilst the unit is secured with the two bolts at top and single bolt at the bottom.
- Can hold 70kg
- Cable entry via rear wall, or via 25mm and 2mm conduit entry on either left of right-hand side.
- Edges are flanged and flat for a weather strip, if required.
- Unit to be mounted 1200mm from the ground to the bottom of the box.



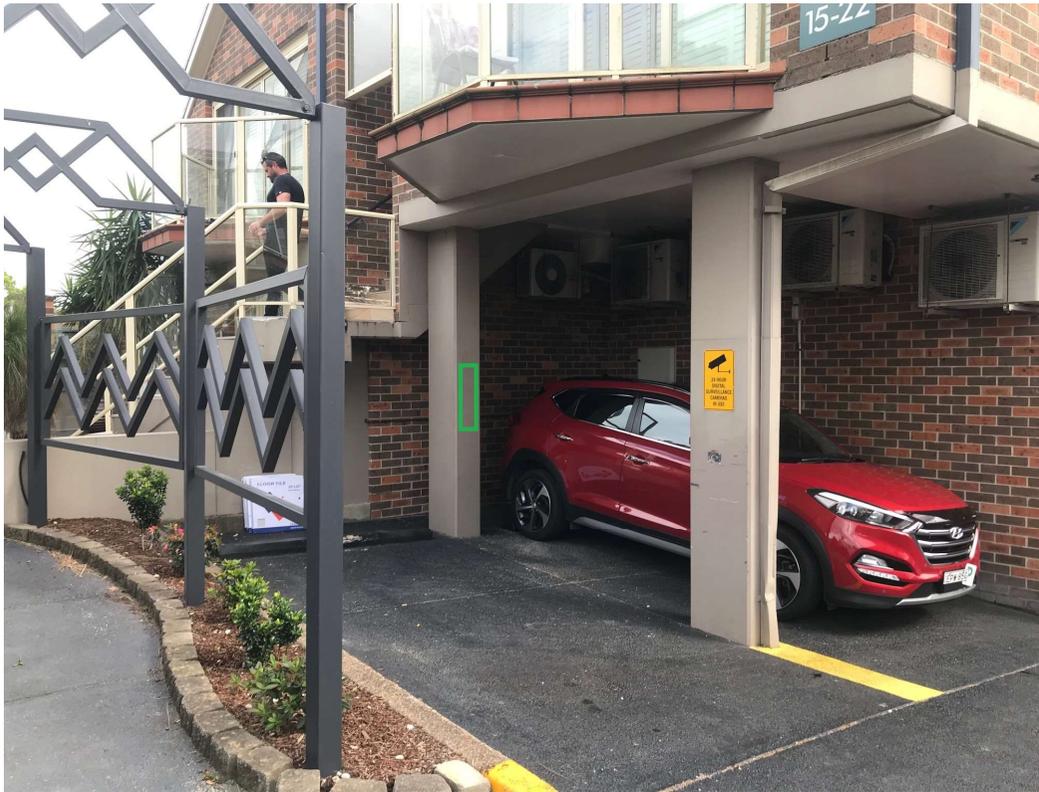
Note: Open part of box the wall. Edges for weather strip, if required.

Mounting options – Combi Pole



Double Unit Combi pole: The Double BusinessLine is effectively two singles back-to-back, mounted over top of a combipole (steel pole). Cable entry comes from directly underneath, or via a conduit entry hole in the base. The base plate is 195mm square. 1400mm High.

Example Motel Applications



4G or Wi-Fi Reception



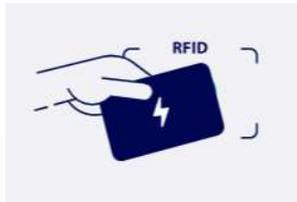
For a Driver to engage an EV Station, they will need two levels of access:

1. The EV Station to be connected to the internet. For remote monitoring, authentication checking, and billing.

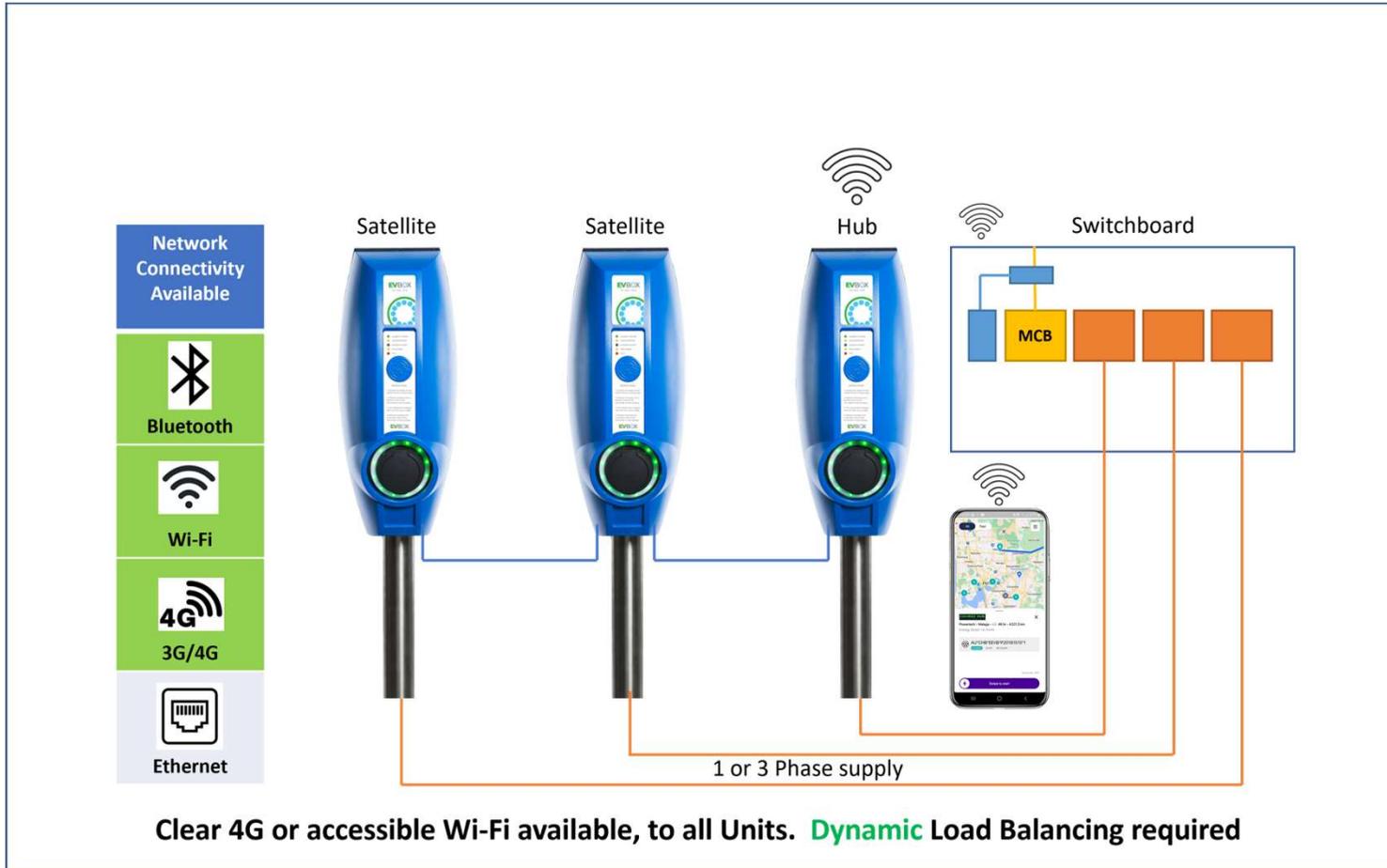
- EVBox BusinessLine requires:

- **4G** - The unit comes with a built-in modem and SIM, with free data for the life of the unit. To check the 4G reception at the proposed location of the station, then we recommend to download the 'Network Cell Lite' App to measure the signal. The signal is strong enough if the indicator is in the orange zone.
- **Wi-Fi** – As a backup, the BusinessLine can connect to an available Wi-Fi network. It is preferred to use 4G, and to not set the station up to connect to both. Just ensure that the Wi-fi doesn't regularly ask for the password to be re-entered or has a time limit.

2. The Driver has two ways to engage the Station, either with an RFID Card or via the Charge Hub App. If via the App, then the Driver will need access to a 4G reception and/or open Wi-Fi. If the Stations are located in a basement, then you will need to install a Teltonika router to set up a Wi-Fi that they can access.



Load Management



Load Management:

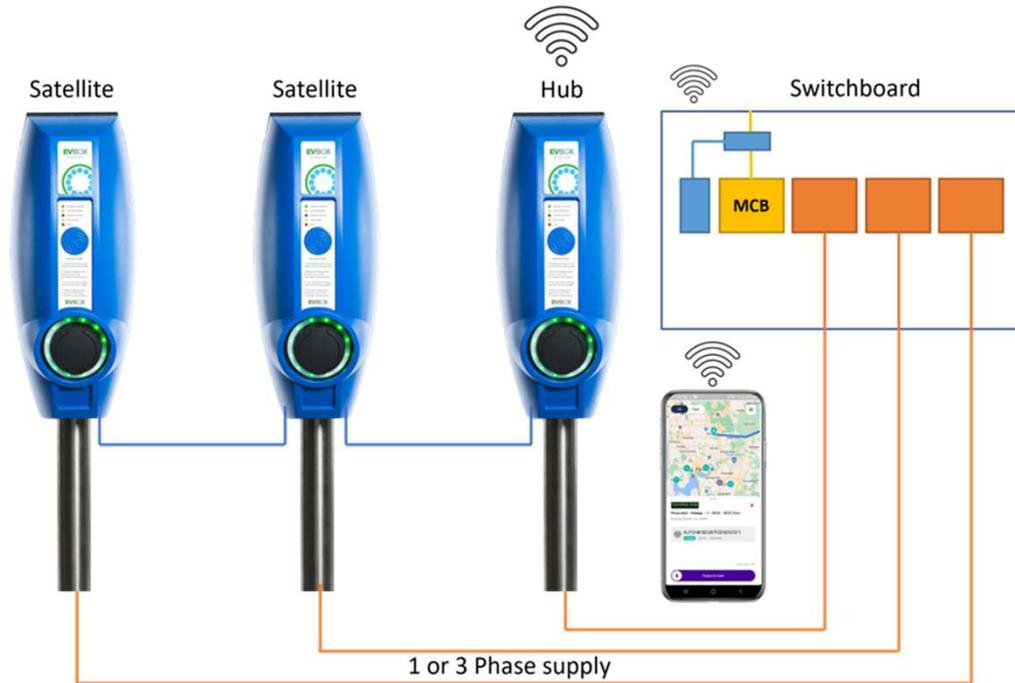
The two options for load management are:

Static: A 'fixed' load limit can be configured into the Hub unit – i.e., 6 x Double Sockets installed, 6 x 32A output = 192A. Only 120A available, set as fixed Static limit. The Hub unit will ensure that all Stations connected to it, as a Group, stay below 120A.

Dynamic: A Dynamic (moving) load limit measures and works with the available electrical capacity in the building to ramp EV Charging up and down accordingly. See next page.

A CAT6 cable is required between each Station.

Dynamic Load Management



Dynamic Load Management works by measuring the incoming main supply and EV (or non-EV) load. An algorithm calculates the available capacity and communicates this to the backend software, or directly to the Stations. AC EV Stations can be ramped up and down between 6A and 32A.

To set up Dynamic Load Management:

We offer two levels of Dynamic Load Management:

EVBox Smart Charging:

For EVBox BusinessLine stations set up in a Hub/Satellite configuration, then we would install the Smappee Infinity device for dynamic load management. For this, allow for:

Power Box, Genius, CT Hub, CTs (100A standard, let us know if you need higher). Internet connection required at the Switchboard. CAT6 run from the switchboard to the Hub station.

Charge Hub Flex:

If you site is more complex, i.e. multiple switchboards, different OEM stations, AC and DC, priority charging, then you need to install the Charge Hub Flex DTM and Controller.

Electrical 'Wiring Rules' Requirements

AS/NZS 3000:2018 – Electrical Installations “Wiring Rules” – Additional Protection by RCDs – starting Page 119

- An EV socket/outlet must have an RCD with 30mA protection, installed in the switchboard.

AS/NZS 3000:2018 – Electrical Installations “Wiring Rules” - Appendix P: Page 568

- Mode 3: Permanently connected to AC Mains utilizing dedicated EV Supply Equipment, with a Control Pilot function.
- Dedicated Circuit: Each Charger outlet must be its own dedicated circuit.
- RCD Protection: IEC 62955 - Socket Outlet or Vehicle Connector complying with IEC 62196, must have either A, RCD Type B, or B, RCD Type A and appropriate equipment that ensures disconnection of the supply in case of DC fault current above 6mA.
- Overcurrent Protection: Each Charger should be supplied individually by an overcurrent protective device complying with AS/NZS 60898, AS/NZS 61009 or AS/NZS 60947 series.
- General: Each connecting point should be provided with one socket outlet or vehicle connector complying with either IEC 62196-1 or IEC 62196-3.
- Minimum Height: 800mm from ground.

Good Practice: Clause 2.3.2.2.1

- Isolating Switch: With a minimum current rating 32A, shall be provided for the final sub circuit adjacent to the charging facility.

P1.3 - Testing:

- OEM specific and RCD Testing once per year



CHARGE HUB
ELECTRIC VEHICLE CHARGING SOLUTIONS

Charge Hub – Charging Backend Management Platform



Charge Hub Backend Setup

Australia/New Zealand owned and operated. Partnered with European EV Network software specialists. Able to connect to and manage all OCPP compliant charging stations.

Connecting to the EVBox BusinessLine Station/s:

Connection to the EVBox BusinessLine Station is as simple:

1. Scan the QR Code to download and open the EVBox Connect App
2. Connect with the Station (via Bluetooth)
3. Enter the Security Number, Enter. Go to the Installer Mode section, by entering the Security Code again
4. Go to 'Charging Platform Management' section. Look for and select 'Charge Hub'. Save.
5. Reboot the Station. Done
6. Once we see the Station connected on the Charge Hub platform, we will then complete the set up, make it available to use, and promote the Station on Plugshare (if required).



Charge Hub Annual License Plans:

- Public Access - \$280 per socket per annum
- Semi-Private Access - \$180 per socket per annum
- *Note - Discount may apply for multiple units*

Charge Hub Annual License Plan features:

- 24/7 1300/0800 Driver Support
- Remote monitoring and diagnostics
- Charge Station Operator Access Portal

CHARGE HUB

ELECTRIC VEHICLE CHARGING SOLUTIONS

24/7 Sales & Support:

Aus: 1300 98 67 67

NZ: 0800 608 138

sales@chargehub.au

support@chargeub.solutions

www.chargehub.solutions