

Twin Charger (7kW)

Enabling Works Requirements

Array System on Three-Phase Supply



Pod Point is not responsible for installation and/or commissioning works performed by a 3rd party

In the absence of any negligence or other breach of duty by Pod Point, Pod Point is not responsible for any injury, loss or damage caused by any works, services, products or equipment provided or performed by the customer or a third party (and not by Pod Point or a party for which it is responsible) in relation to the installation and/or commissioning of the Twin Charger.

If the installation and/or commissioning of the charger is not performed by Pod Point, it is the customer's responsibility to ensure that any third party appointed to install and/or commission the Twin Charger is appropriately qualified and does so in compliance with all applicable regulations and with reference to the guidance provided in this document (and associated documents linked within). Pod Point provides this guidance as a reference only and it is not a substitute for the appointment of competent persons to carry out installation and commissioning.



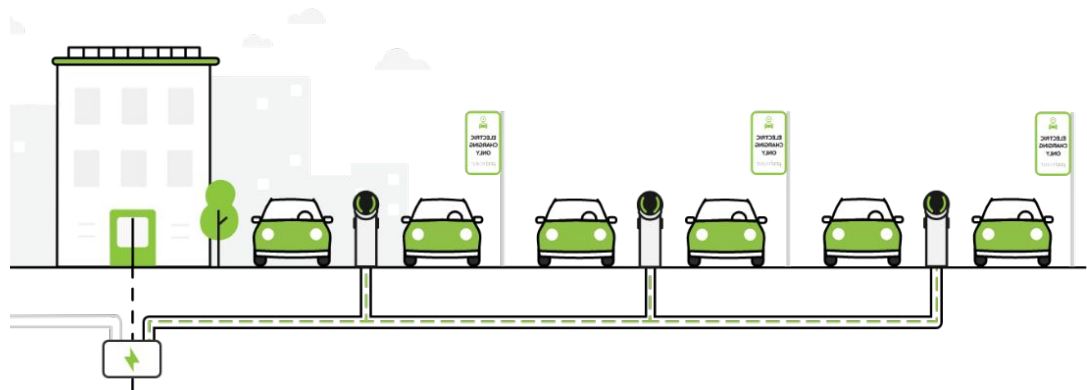
Do not open, move, modify, rewire, tamper or interfere with your Twin Charger once it has been installed.

The customer must ensure that an installed Twin Charger is not opened, moved, modified, re-wired, or otherwise tampered or interfered with, without first referring to Pod Point's latest technical guides and/or notifying Pod Point directly and complying with Pod Point's recommendations.

Please also see the charger's applicable warranty terms which may be affected by taking such action. If you have any concerns in relation to a Pod Point that has already been opened, moved, re-wired or otherwise has been tampered or interfered with, please notify Pod Point directly so that appropriate advice can be provided, noting that Pod Point assumes no responsibility for your installation by virtue of providing such advice.

In the absence of any negligence or other breach of duty by Pod Point, Pod Point is not responsible for injury, loss or damage caused by the Twin Charger being opened, moved, modified, re-wired or otherwise tampered or interfered with by the customer or a third party (and not by Pod Point or a party for which it is responsible).

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Pod Point 7kW Twin Chargers are a dual-socket electric vehicle charger with two single-phase universal sockets. These should only be installed by competent electricians, with knowledge on EV chargers. All installations must be compliant with current regulations, BS7671.

The Array charging system allows multiple chargers to manage their individual and total charging load within the limits of a fixed supply. This means sites are able to have more chargers than would normally be the case, as each socket will de-rate their charging power when necessary to prevent overloading the incoming mains feed.

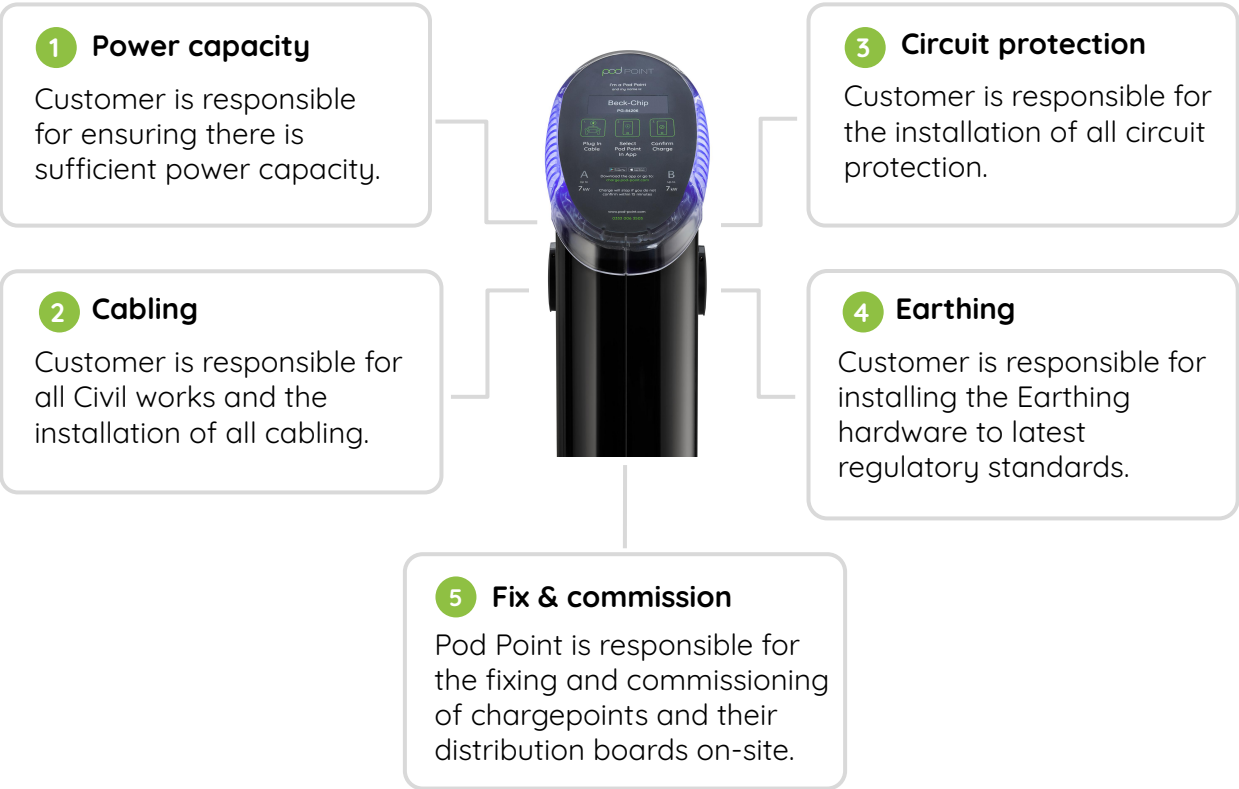
This document provides guidance on the Enabling Works Requirements in preparation for Pod Point attending to fix and commission commercial 7kW Twin Chargers externally in an Array installation to a **three-phase supply**.



Responsibilities

This guidance should be read and followed by installers undertaking the enabling works in preparation for Pod Point’s attendance. Evidence of completed enabling works must be provided to your allocated Pod Point Project Manager for review prior to requesting an installation date.

Failure to confirm that the works are fully completed may result in Pod Point’s attendance being delayed, and in some circumstances rectification works being required prior to the system being commissioned.



Related Documents

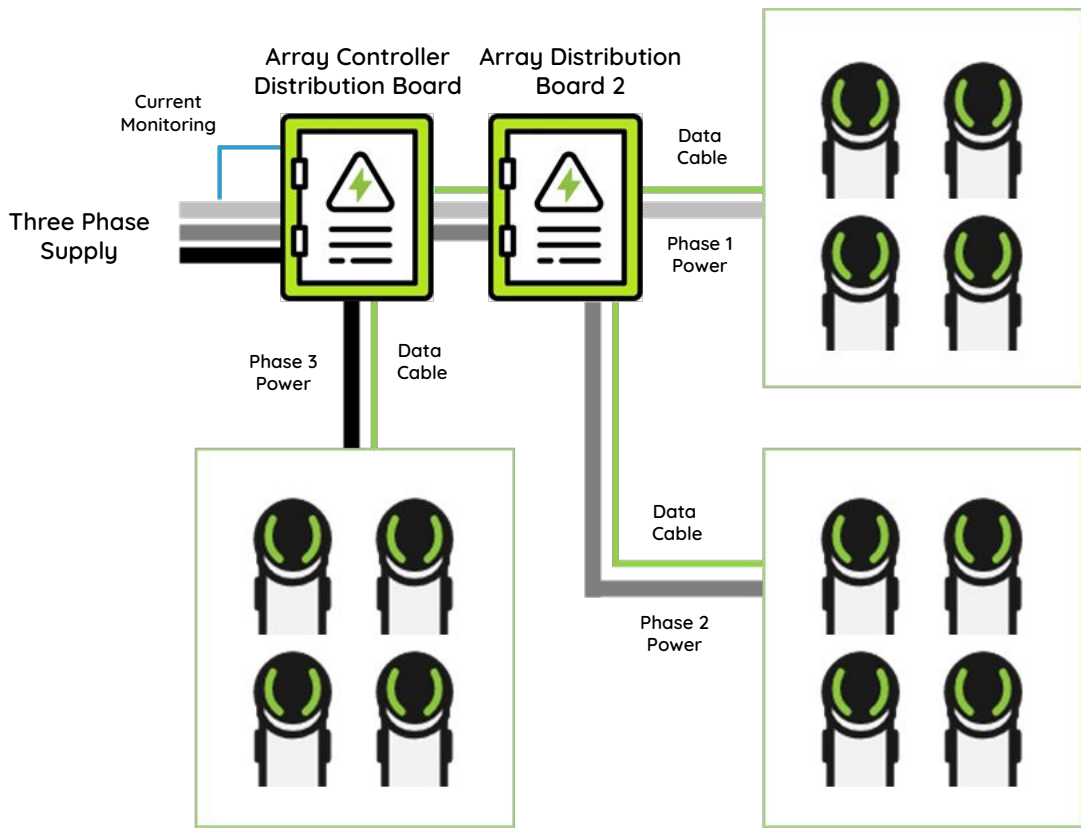
This document should be read in conjunction with the following documents:

- Pod Point Twin Charger Install Guide <https://pod-point.com/technical/installation>
- Pod Point Twin Charger Datasheet <https://pod-point.com/technical/hardware>
- Pod Point Twin Mount Guard <https://pod-point.com/technical/hardware>
- Pod Point Twin Charger User Guide <https://pod-point.com/technical/hardware>

Array System Overview

A three-phase power supply is routed through dedicated Array Controller distribution boards, to up to 12 dual-socket Twin chargers. The system splits the three-phase supply into 3 single-phase clusters, of up to 4 chargers each.

These chargers communicate with the distribution boards via a data cable, allowing the the system to intelligently manage the available power across multiple chargepoints.



Visual Purposes only. Neutral and Earth wires not shown.

Number of chargers available

The following table outlines how many chargers it’s possible to install on different supply currents.

For the **best charging performance** and equally balanced system we recommended to divide the chargers into 3 equal clusters between the 3 phases.

Supply Current	No. of Chargers	Sockets Available
40A	3 (1 charger per phase)	6
60A	6 (2 chargers per phase)	12
80A	9 (3 chargers per phase)	18
100A (default)	12 (4 chargers per phase)	24

Array Controller Hardware

The Array Controller system consists of a dedicated Distribution Board that is pre-fitted with the Pod Point Array Controller electronics and RCBOS for each charging socket. Three-phase systems require a secondary Array Distribution Boards for the additional RCBOS. .

A fully-assembled Three-Phase 100A system includes:

- 1 x C100 4P MCB - upstream circuit protection.
- 3 x Pod Point Three-phase Array controllers - active load management.
- 3 x current clamps to be fitted on the phases - overall load monitoring.
- 27 x C40A 2-pole 30ma type“A” RCBOS - downstream circuit protection.



Example of an installed Array Controller and additional Distribution Board

Array Controller Location

The Array Controller system can be installed on an internal wall or external enclosure such as a Feeder Pillar.

The Array Controller must be installed in a dry area. The unit has a lockable door however it is not IP rated. If the Array Controller is to be installed in an external enclosure, the customer is responsible for ensuring the enclosure is suitably IP rated to ensure the Array Controller is not exposed to high moisture/water.

Key Considerations

The following areas need to be considered when choosing where to connect and install the Array Controller. Please inform your Pod Point project manager of the following at the earliest opportunity:

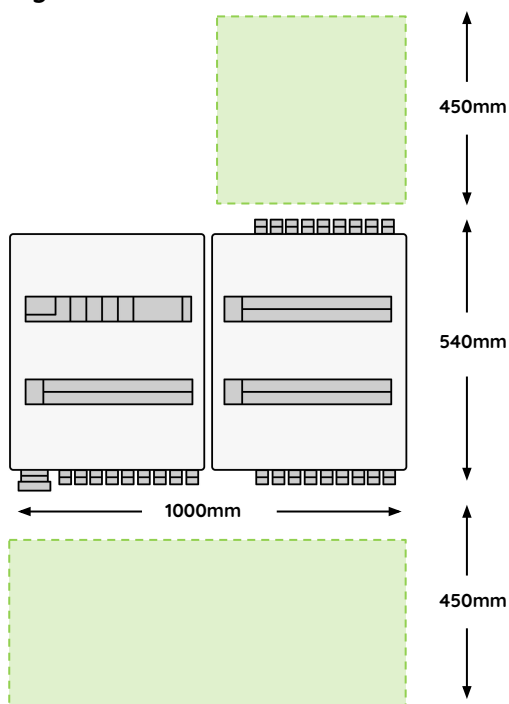
- Site drawings and plans
- Planned install location (External or Internal)
 - If external - how will the units be protected from moisture and the elements?
- Supply connection (existing or new metered supply)
- Planned Earthing system
- Available wall space and area around the unit (for wiring and installation)
- Cable lengths & sizes (from supply to Array Controller)

Array Controller Installation

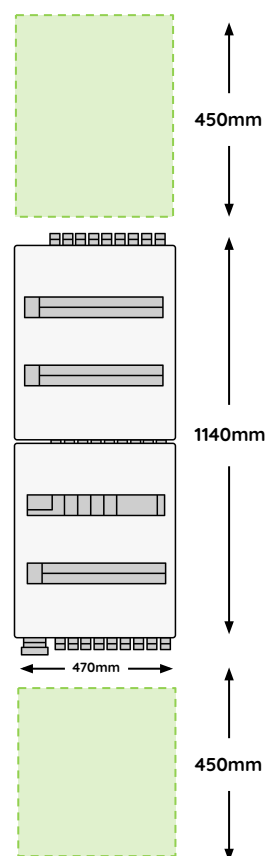
For the Array Three-Phase system to be installed appropriately with the following space requirements/details need to be considered:

- 2 x Array Controller distribution boards (H) **540mm x (W) 470mm x (D) 140mm** (per board) and minimum **60mm** space between the units.
- **450mm** clearance zone for termination of cables

Side-by-side



Vertical Stack



- Metal Trunking must be a minimum size of **150mm x 150mm** to allow the required space for cable terminations.
- Space for supply cable containment, cabling and supply single phase isolator (if required)
- Space for open PEN protection (if required).
- Any additional equipment required due to site set-up / earthing configuration / data cable clustering etc. (e.g data junction box, earth separation box).

External Feeder Pillar Installation

In addition to these requirements, for external installations the following must also be considered if the equipment is to be installed within a feeder pillar / cubicle:

- If using existing metered supply: Ensure space requirements for sub-main cable to be run into the Feeder Pillar with provision for a suitably rated switch disconnector have been considered.
- If using a new metered supply connection: Ensure space requirements for new DNO cut-out/electricity meter/isolator to be installed inside EV feeder pillar have been considered

Feeder Pillar Dimensions

Installation Type	Feeder Pillar Height x Width (mm)
Three-Phase Array Only	Minimum ET8 (1250 x 1300)
Three-Phase Array + Open PEN device/RCD	Minimum ET9 (1515 x 1400)
Three-Phase Array + New supply connection + Open PEN device/RCD	Minimum ET13 (2000 x 2000)

Metal Trunking

- Minimum size of 150mm x 150mm galvanised steel trunking should be installed horizontally, along the bottom surface of the array distribution board(s) (depending on the orientation of installation proposed) ensuring the trunking spans the the total length of the Array Controller distribution boards for cable entry.

Earthing Systems

TN-C-S (PME)

Pod Point chargers supplied by an Array load management system **do not** offer in-built open PEN fault protection due to the system’s setup. If a building’s TN-C-S (PME) earthing system is to be used, the customer must install an appropriately rated three-phase open PEN protection device upstream of the Array Distribution equipment. Please verify that the maximum conductor size for the chosen open PEN device is suitable for the supply circuit design.

There must be electrical separation (insulation) between the supply TN-C-S (PME) earthing system connected to the open PEN protection device and any metallic trunking & the Array Distribution Board(s).

TN-S

Pod Point's Array System can only be connected to a TN-S earthing system without the use of overall Open PEN protection device or earth rod, where it can be guaranteed that this will not be converted to PME in the future. In general, this can only be achieved if the site has a dedicated, privately owned electrical substation that uses a TN-S earthing system.

If this is not possible to confirm, TN-C-S (PME) earthing system rules would apply.

TT

If you are introducing a new TT-earthing system by connecting to a locally installed earth electrode in an earth pit (**within 5m**) next to a feeder pillar or enclosure, the earth loop impedance **reading must be less than 100 Ohms**. In addition, an appropriately rated **4-pole 100mA-300mA type "B" time delayed RCD** must be fitted at the source of supply upstream of the Array System.

Earth Electrode

Earth electrode connection points must be mechanically protected by the use of an earth pit, the earth electrode must be fitted with the correct clamp that allows a lugged termination to be made.

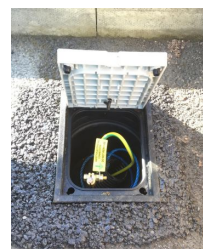
The following design rules apply:

- Earth reading must be **under 100 Ohms**.
- 16mm² sheathed green/yellow earthing cables should be connected between the earth electrode and either the feeder pillar main earthing terminal (Whole System TT earthing arrangement), or the chargepoint (local TT earthing arrangement).
- Earth cables can be run in the same duct as supply cables.
- Where a separate earth cable duct (recommended 50mm twin wall duct) is to be installed, the entirety of the run must be enclosed within a duct.
- Protection against corrosion must also be provided by using a suitable conductive grease on the electrode connection.
- If multiple earth pits/electrodes are required at source, **the earth electrodes must be linked together**.

Earthing Pit

Earthing pits should be designed and installed following the guidance in BS7671:

- The earth pit should be free draining.
- The earth cable should be ducted into the pit.
- The cable connection should be lugged and taped.
- The connection should be protected against corrosion.
- The connection should be labelled correctly.



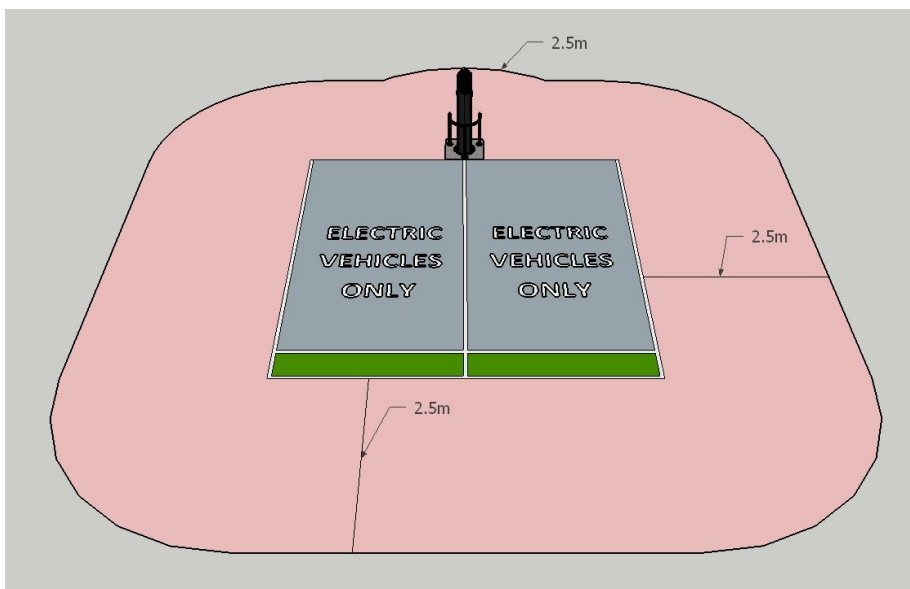
EV charger proposed location:

The optimal Twin Charger location should be between the two dedicated EV charging bays, ensuring 300mm spare space available behind the chargepoint base (away from any wall or obstacle) for final connection and to allow access for maintenance through the back door of the chargepoint.



The Twin Charger, its signage, or charging cables when in use, should not obstruct the pavement. Under no circumstances should the width of a public footway be restricted to less than 1.2m, to allow suitable access for wheelchair users.

Where possible, there should be no other electrical equipment such as lamp posts, powered bollards or gates etc within a 2.5m radius of the charger or intended bay.

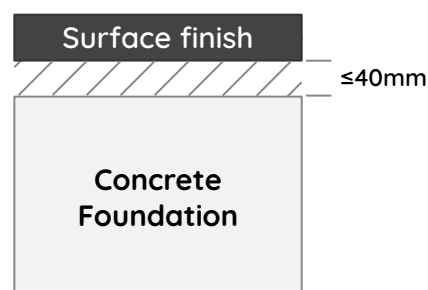


If the charger and bay cannot be distanced 2.5m from other electrical equipment, they must share an earthing system. Please refer to the Earthing section for more information. If you are unsure what does or doesn't apply for this 2.5m rule, please contact your Pod Point Project Manager.

Mounting Surface

The Twin Charger must be installed on a concrete foundation, if a finished tarmac or block paving surface is required then a concrete foundation **must** be in place directly underneath those surface finishes. The concrete foundation underneath the chosen surface must be within 40mm of the underside of the chosen surface.

All mounting surfaces **must be flush and level**.

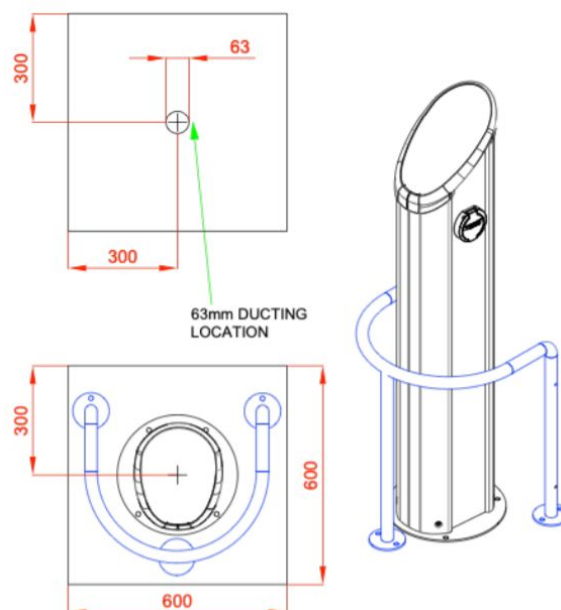


The finishing surface must be completed and surface type highlighted to the assigned Project Manager prior to Pod Point's attendance to ensure the correct fixing kit is selected.

Concrete Foundation

The concrete base should be constructed to the following specifications:

- The base should be a minimum of 600mm x 600mm x 400mm (WxLxD).
- The foundation must have a flush and levelled surface finish.
- Non reinforced concrete must be used.
- Cable ducting must run directly to the centre of the foundation.



Off-centre ducting can cause issues when positioning the charger and guard rail.

Cable Entry

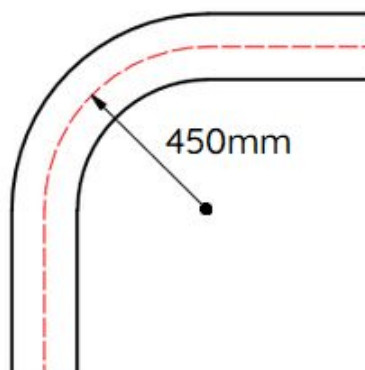
The Twin Charger Mounting plate has a central hole capable of accommodating the duct sizes mentioned below.

Pod Point require a minimum of **1.5m of spare cable** to be left coiled up above ground level to ensure successful termination.

Supply Cable Duct

When selecting the appropriate cable ducting, the following design rules apply:

- Cable Duct sizes should be calculated to a 50% fill factor and be within the tolerances listed below.
- Ducting from the supply point to the charger should be a twin wall duct for the entirety of its length. Single wall ducting is not acceptable.
- Ducting should be black in colour.
- The ducting should terminate directly to the centre of the chargepoint's concrete foundation for cable entry to the charger from below.
- The recommended minimum depth of ducting under footways is 450mm below ground level, except for carriageways where the depth should be at least 600mm.
- The recommended minimum twin wall duct outside diameter is 63mm which should be adequate for the cable size running through.
- There is a maximum duct size constraint of 110mm outside diameter to the concrete foundation.
- All ducting should have a minimum bend radius of 450mm.

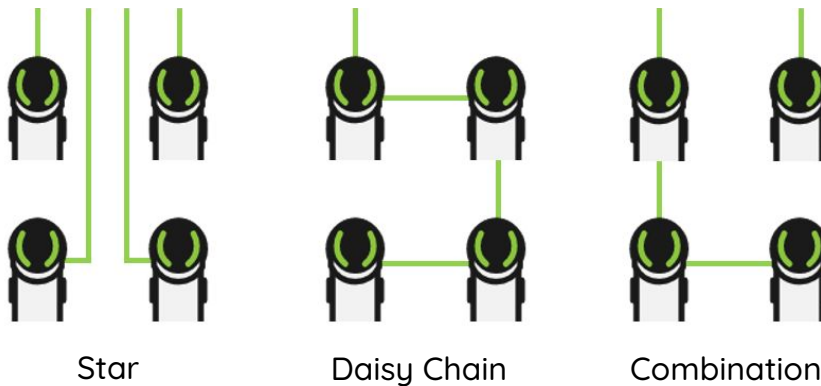


Data Cable Configuration

The Array Distribution Board's firmware communicates with the chargers via a data cable. Data cable connections can be made in one of 3 ways:

- **Star** - one data cable provided from the Array distribution to each charger.
- **Daisy Chain** - one cable is provided from the Array distribution board to the 1st charger which then links to the remaining
- **Combination** - A mix of the two methods above.

The site layout and data cable configuration needs to be shared with Pod Point prior to attending site.



Warning! The above configurations only apply to data cables and not power supply cables.

Data Cables Specification

When selecting the appropriate cable ducting, the following design rules apply:

- 4-core Screened duct grade data cable required with min. 400V rated insulation
- Below 60m total length - data cable should be 7-2-4C Defence Standard 61-12 part4
- Over 60m total length - data cable should be 16-2-4C Defence Standard 61-12 part5
- For Data Cable lengths over 40m, a maximum of 2 chargers can be connected using the Daisy Chain method.
- It is recommended to install separate power and data cable ducting until the last local inspection chamber near Twin chargers, from where the cables to run together in one duct to unit location.
- Power and data cables can be ran together in the same cable containment if providing the above specification cable is used.
- A minimum of 1.5m of spare cable is to be left coiled up above ground level at each Twin charger location and at the array distribution board.

Power Capacity

Pod Point Twin Charger Array Systems come in 40A, 60A, 80A and 100A configurations depending on the available power supply capacity.

It is the customer’s responsibility to ensure that there is constant dedicated capacity on the metered supply for the proposed Array System with no diversity applied to the system. (Reference regulation BS7671 - section 722.311)

Assessment of available power capacity should be undertaken by a qualified electrician and evidence should be provided to Pod Point.

Circuit Protection

Circuit protection must be installed in alignment with current BS7671 regulations. Under Pod Point’s Fix & Commission installation terms, Pod Point require overcurrent circuit protection to be installed at the source of supply dependent on supply current as defined below:

Supply Current	Overcurrent Protection Rating
40A	40A Three Phase
60A	63A Three Phase
80A	80A Three Phase
100A (default)	100A Three Phase

Acceptable types of overcurrent protection are as follows - fused isolator, MCB & MCCB.

RCD Protection

Where a TT earthing system has been used to supply the Array Distribution Board, an appropriately rated **4-pole 100mA-300mA type “B” time delayed RCD protection** will be required at the source of supply to the Array System.

Surge Protection

It is the customer’s responsibility to consider appropriate surge protection for the Array Controller Distribution Circuit and determine whether a Surge Protection Device (SPD) should be installed. Pod Point recommends that an appropriately rated Surge Protection Device is installed at the source of supply.

Earth leakage protection

Within the Array Controller Distribution Board, each outgoing circuit has a 30mA type “A” RCBO (earth leakage protection) device built in.

Additional RCD’s will be required within the supply circuit if the Array System is installed using a TT earthing system.

Electrical Supply Cable to the Array Distribution Boards

Below is a table outlining the required supply cable setup for the Array Controller Distribution Boards.. All conductors should be identified by standard colours where possible.

Cable Type
1 x 3 core SWA Cable (L+N+E)

Cable sizes to be calculated based on cable length and reference method for either a 40A, 60A, 80A or 100A supply depending on designated supply to the Array System.

Note: Maximum cable size of 35mm²

Electrical Supply Cable from the Array Distribution Boards to the Twin Chargers

Below is a table outlining the required supply cable setup for the Array Controller Distribution Boards.. All conductors should be identified by standard colours where possible.

Option 1 (preferred)	Option 2
1 x 5 core SWA Cable (L1+N1+L2+N2+E)	2 x 3 core SWA Cable (L+N+E)

Cable sizes to be calculated based on cable length and reference method for a 40A supply.

Note: Minimum cable size of 6mm². Maximum cable size of 25mm².

A separate dedicated Circuit Protective Conductor (earth) is acceptable for both cases, but must be sized in accordance with total prospective fault current i.e. for a **1 x 3 core SWA cable**, we will accept **1 x 2 core + earth**.

Cable Sizing

The customer is responsible for producing their own cable calculations in alignment with the latest version of the IET wiring regulations (BS7671).

When sizing your cabling please consider:

- Cable routes where multiple cables are sharing a duct as this could affect current carrying capacity.
- For any installation where a greater cable size is required after cable calculations are completed, the customer is advised to consult with the assigned project manager.
- All power cables must include a CPC (dedicated protective earthing conductor). SWA armouring will not be accepted as a means of adequate CPC.
- Maximum earth fault loop impedance (Zs) values of overcurrent protective devices.

 All installed cables, for all applications, **must have 1.5m** excess allowed for termination

Communication with Smart Reporting system

Pod Point commercial chargepoints are required to communicate with the Smart Reporting system at all times, through an available 3G or accessible Wi-Fi signal to reach the charger's location. Chargepoints that do not communicate cannot be warranted.



External with 3G/4G signal

Where chargepoints are installed outdoors with available 3G signal, Pod Point will supply a suitable amount of chargers to the site with inbuilt 3G routers.

Up to 3 Twin Chargers can connect to the same 3G router providing they are in adjacent parking bays and the signal is not interfered with by any obstructions such as concrete pillars.

Pod Point should be consulted if one router is to be used for multiple chargers to connect to.

External with Wi-Fi signal

Customers should provide an external accessible Wi-Fi communication signal to reach each chargepoint. Passwords must be shared with the Pod Point Project Manager and Pod Point must be informed of password changes to avoid drop-out in service.

You can find our Wi-Fi connection guide here:

<https://pod-point.com/technical/installation>

The following requirements must be met if using a Wi-Fi connection setup.

- 2.4Ghz frequency
- **Not** a public network requiring login/email confirmation
- **Not** a network with a regularly changing password,
- **Not** a network with additional security features,
- The name of the Wi-Fi profile (SSID) should be **less than** 10 characters.

The customer is to confirm the proposed chargepoint(s) location(s) and accessible signal availability (3G/4G or Wi-Fi signal) to the appointed project manager. The customer must take responsibility for any cost and revisits related to signal coverage issues.

Enabling Works Completion Evidence

The customer must provide evidence of the completed enabling works prior to Pod Point allocating any labour resources or install dates being provided.

Please inform your Pod Point Project Manager if there are any reasons as to why you may be unable to provide the evidence of completed enabling works upfront and - due to strict handover dates or site requirements - need to set a date for Pod Point to attend.

We may be able to provide you with a preliminary installation date, but be aware that we still require all evidence to be submitted no later than 14 working days prior to the preliminary date given. If the site's readiness cannot be verified within this time, then any allocated labour resources will be automatically reassigned.

To reduce any potential delays on-site, your allocated Pod Point Project Manager will review the **Photographs and Electrical Installation Certificate (EIC)** sent to them to confirm that the enabling works have been completed to specification.

If needed, they will advise on any required rectifications or amendments and assist as much as possible to get the site ready for the engineer(s) to attend.

Electrical Installation Certificate (EIC)

The customer is to provide an EIC for the installed supply circuits containing all supply details and test results which will verify that the installed circuits are safe to connect to. In order to satisfy live testing requirements, temporary termination of the newly installed circuit may be required.

This can be achieved by means of using a suitable weatherproof enclosure as seen in the image below. Failure to provide an EIC prior to Pod Point's installation visit could result in delay of install.



Photographs

All photos sent must be clear (high resolution) and include close ups of equipment and wide shots of areas. Blurry pictures will not be accepted as Pod Point must be able to identify the specific equipment installed. Please check the Examples of Acceptable Enabling Works (pg. 20) for example of photographs required:

Installation Hardware

- ☐ Close up of upstream circuit protective device installed (fuses/switchfuse/MCCB/MCB/SPD).
- ☐ Wide angle of prepared Array Controller Distribution Boards location free from materials with proposed internal wall or external feeder pillar ready:
 - ☐ Suitable metal trunking mounted in position (slotted out if possible).
 - ☐ Open PEN device
 - ☐ If TT earthing system: type “B” time delayed RCD (at supply source) and earthing rod installed.
 - ☐ If TN-C-S (PME) or TN-S earthing system: No additional photos required.
 - ☐ Sub-main cable glanded into trunking or terminated into local isolator with spare cable left coiled up and terminated into adaptable box.
- ☐ Cable management system installed towards chargepoints (trunking, tray work).

Chargepoint locations

- ☐ Concrete foundations with centrally located ducting with finishing surface completed.
- ☐ Min. 1.5m spare cable left coiled up above finishing ground surface and terminated into an adaptable box.
- ☐ Wide angle of proposed EV charging bays shown.

The checklist below can be used to ensure all Installation and Evidence activities have been completed prior to Pod Point attending site for final installation and commissioning.

Installation

- ☐ Ensure sufficient dedicated capacity for the proposed chargepoint(s) with no diversity applied to the EVCP.
- ☐ Correct circuit protection installed (functionality verified).
- ☐ Sufficient cable clearance has been included for Array Controller Board installation.
- ☐ Sufficient weather protection has been provisioned for the Array Controller Board.
- ☐ Earthing hardware installed (if required):
 - ☐ If TN-C-S(PME) or TN-S earthing: No additional earthing hardware required,
 - ☐ If TT earthing system: type "B" time delayed RCD (at supply source) and earthing rod installed.
- ☐ All civil works completed with sufficient sized ducting to the centre of the suitable, levelled concrete base (600mm x 600mm x 400mm).
- ☐ Correct sized cabling installed (verified with cable calculation), connected at the supply end.
- ☐ Min. 1.5m cable left coiled up above finished surface at proposed charger location and terminated into an adaptable box.

Confirmation and Evidence

- ☐ Share a site plan/drawings with chargepoint locations and confirm the power and data cable configuration.
- ☐ Confirm planned earthing arrangement and complete assessment for any exposed earthed metal structure within touch distance (2.5m) from proposed EV charger(s) and the boundaries of the dedicated EV charging bays.
- ☐ Confirm chargepoint locations has accessible signal availability (3G/4G or Wi-Fi signal).
- ☐ Provide an Electrical Installation Certificate for all the installed circuits.
- ☐ Provide photographic evidence of installed circuit protections, cabling, proposed chargepoint base locations with cabling in place.
- ☐ Confirm to the appointed Pod Point Project Manager that the above responsibilities have been completed in full prior to requesting Pod Point's attendance to fix and commission the the Array System and Twin Chargers

Key Pod Point Responsibilities

- Pod Point to notify the customer of the proposed shutdown time for the relevant distribution board (if required).
- Pod Point to install the Array Distribution Boards and Twin Chargers using surface mount plate between the relevant car parking bays with guard rail protection.
- Pod Point to use the existing cables to connect the Array Boards and Twin Chargers.
- Pod Point to use the existing circuit breaker.
- Pod Point to complete functional testing.
- Pod Point to commission chargepoint.
- Pod Point to complete Minor Works Certificate.
- Pod Point to conduct site handover.

Contact Us

Please contact the project manager assigned to your order with any questions. If you are unclear who your Pod Point Project Manager is please email us quoting the Pod Point quotation number (found in the top left of your Pod Point Quote).

Enquiries@pod-point.com

www.pod-point.com

Company details

Pod Point Limited, Registered in England, no: 6851754

Registered Office

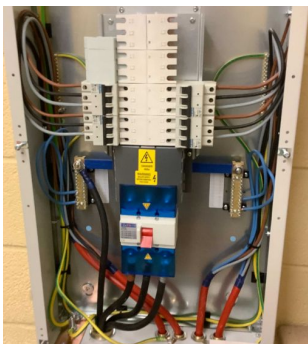
Ground Floor,
Discovery House,
28-42 Banner St,
London
EC1Y 8QE

Circuit protection:

Supply MCCB



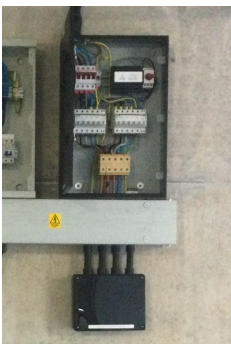
Supply MCB



Isolator



MATT:E + ESB



Array TP location enabling works:



Installed Array TP system:

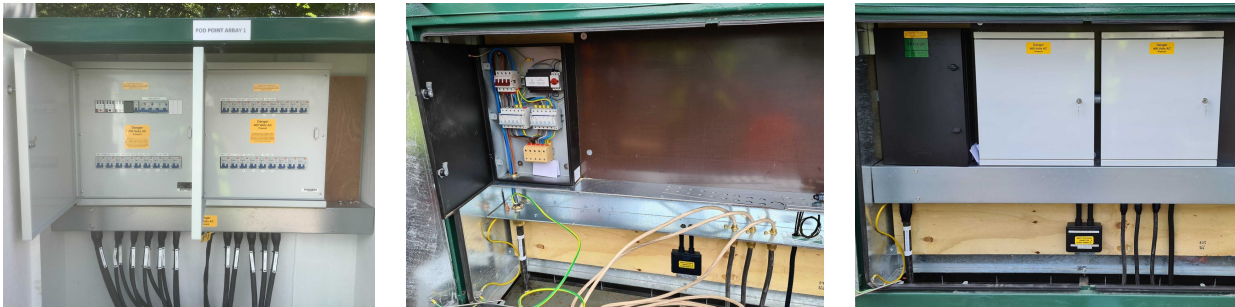


External Array TP location in Feeder Pillar:

Existing Metered Supply Connection enabling works & installed system:

TN-S system (min. ET8)

TN-C-S(PME) - MATT:E device with ESB (min. ET9)



TT-system - type”B” time delayed RCD protection + Earth rod (min. ET9)



New Metered Supply Connection (min. ET13):

TT-system - RCD protection + Earth rod

TN-C-S(PME) - MATT:E with ESB



Charging unit location:



Installed Twin charging units:



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