

Notes for Electricians: installation of a Commando Socket intended for use with the Ohme Electric Vehicle Charging Cable

This document is intended to be a quick reference guide for electricians to assist installing a socket suitable for use with the Ohme Cable. This note is only applicable for **single phase** dwellings with **PME** supply (TN-C-S).

The Ohme Cable is an Electric Vehicle (EV) charger that connects using a 32A IEC 60309 (Blue) “Commando” single phase socket.

Although Commando sockets are intended to be used with many different appliances, it is likely the customer will use it regularly for charging an EV. Specific regulations apply to the installation of EV charge points, and although these may not be mandatory for the installation of Commando Sockets, following the guidelines as set out in the IET Code of Practice for Electric Vehicle Charging Equipment (IET CoP), will improve the safety of the installation.

RCD Selection

The Ohme Cable has residual current functionality (RCD) built in:

- Type A (sinusoidal) 30mA 40ms and,
- 6mA DC
- Composite AC/DC residual currents

The Ohme Cable will disconnect power to the EV should the DC residual current rise above 6mA, and therefore it is acceptable to use a Type A RCD for the supplying circuit as it is not possible for a DC fault to “blind” an upstream Type A RCD.

Earthing

BS7671:2018 18th Edition IET Wiring Regulations now stipulate that the PME shall **not** be used for EV charge points located outdoors or where it is expected that they would be used to charge a vehicle located outdoors.

Instead the charge point should be TT, by the installation of separate earth electrodes, or a device fitted that can detect neutral failures and disconnect. It is also permitted to retain the PME connection but supplement with separate electrodes to ensure that in the event of an open-circuit PEN conductor, touch potential would not rise above 70V.

Although installation of a Commando socket may not usually require separate earthing, given the application, we recommend that BS7671:2018 is followed as though a dedicated EV chargepoint is being fitted.

Socket selection

Depending on the installation location, the Commando socket used should be interlocked, which prevents the socket contacts becoming live when a plug is not connected. There are several types which are readily commercially available. It should also have adequate IP rating for the installation location.



Figure 1 – Example interlocked 32A IEC 60309 Commando sockets

Socket Placement

The socket installation location should be decided with the customer based on a number of factors:

- Safety, convenience of use and proximity to the vehicle parking space
- Practicality of connecting to a TT earth electrode
- Mobile phone signal strength of the location (e.g. try to avoid installing in garages with metal doors)

The Ohme Cable is IP rated for outdoors use. It is splash proof and can operate down to -25°C.

Care should be taken to avoid the possibility of contact between the Commando socket earth (TT) and any exposed conductive objects connected to the PME (TN-C-S).

Adequacy of supply

The IET Code of Practice for Electric Vehicle Charging Equipment (IET CoP) provides guidance on assessing the adequacy of supply for an installation. Essentially, if the supply capacity cannot be ascertained directly, then the DNO should be contacted. Guidance is provided by the IET on assessing the existing supply in *Electrical Installation Design Guide: Calculations for Electricians and Designers*. According to the IET CoP, no diversity shall be applied for the additional EV demand.

The Ohme Cable has a maximum rating of 32A.

According to the IET CoP, “behavioural means” may be used to ensure the total household load does not exceed the supply capability by, for example, avoiding simultaneous use of high load appliances. A key feature of Ohme is to allow customers to schedule their charging sessions, allowing them to decide when best to charge. A discussion should be had with the customer to assess the practicality of this, ensure they are aware and understand the implications.

If the supply is not adequate, the customer should be advised to contact the DNO to uprate their incoming supply.

DNO Notification

Although a Commando socket is not an EV charging point in itself, it is recommended that the DNO is notified of the installation as though it was a dedicated wall-mounted 7kW charging point. This is done through the Energy Networks Association.

<http://www.energynetworks.org/electricity/futures/electric-vehicles-and-heat-pumps.html>

OLEV Grant Eligibility

Unfortunately, the Commando socket and Ohme Cable combination is not eligible for the OLEV Electric Vehicle Homecharge Scheme grant at this time.