

Public EV Charging Points – Installation Guide

Produced By:



Battery Vehicle Society
The UK's longest running Electric Vehicle Society
www.BatteryVehicleSociety.org.uk

EV Network
The UK directory of EV charge points
www.EV-Network.org.uk



This guide, to assist businesses and electricians, was prepared by a working party set-up by the Battery Vehicle Society (BVS). The group included representatives of Local Community Transport, the EV Network, chartered engineers and officers of the BVS.

Introduction

The sections that follow indicate how to create a low-cost charging facility for electric vehicles (EVs) belonging to the public and/or employees. The facility is suitable for locations where vehicles will remain for one or more hours, such as office buildings and shopping centres. It will not provide fast-charging of vehicles, since this is considerably more costly and supports relatively few vehicles. The resulting low-cost charging points will be compatible with the widest range of existing and future EVs.

Collecting Payments

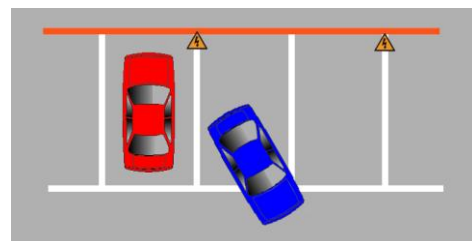
Commercial charging posts with payment facilities are available, but cost thousands of pounds each. The described facility can be installed at a fraction of the price but has no means of metering electricity use. Considering the low cost of the electricity consumed, many organisations decide that the publicity available from offering free re-charging facilities is more valuable than the revenue from taking payment; hence there is little justification for the extra expenditure on complex charging point installations and their maintenance (metering and payment systems). A typical electric car might consume 2kWh (about 20p) for a one hour charge and 10kWh (10 units, about £1) for a full charge, depending on electricity tariff and time of day.

Location of the Charging Bays

Normally the cheapest location for a charge point is on a wall immediately behind the proposed parking bays, close to an existing electrical supply. The outside wall of a car park office, Shopmobility office, or other staffed area, is ideal. Further, given that there may be only a handful of EV charge points in a large car park, it is useful if the location is easily described, such as "by the exit barrier". It is recommended that bays are provided in pairs, as the cost to provide two is little more than the cost to provide one.

Layout of the Charging Bays

The recommended layout for a charging bay is with the electrical connection point (charging point) at a rear corner of the bay, mounted on a wall or post. Mounting on an existing wall is generally cheapest. Where pairs of adjacent charging bays are provided, then a single electrical connection unit can be mounted at the common rear corner, providing charging facilities for two bays at the same labour cost as for a single bay.



Type of Electrical Connector

While most vehicles can be plugged in to a 13 Amp socket, these sockets are not recommended for new installations. Instead, the IEC 60309-2 single-phase, 230 Volt, 16 Amp socket, commonly referred to as “Commando”, BS4343 or CEE17 should be used. The splash-proof IP44 is adequate; the water-proof IP67 affords greater protection. These connectors are already widely used in outdoor locations such as caravan parks and marinas, since they are more robust than a domestic plug and are designed for outdoor use. They are available from a wide range of manufacturers and suppliers.



Location of Electrical Connector

As previously discussed, the ideal location for the electrical connection is at the rear corner of the parking bay/space to be used for electric vehicles. This reduces the trip hazard of trailing wires.

The connectors should be mounted approximately one metre from the ground, for ease of use.

Units containing more than one connector are available, allowing a wall-mounted system to serve two adjacent parking spaces, or a post-mounted unit to serve up to four adjacent spaces at their common corner.



Electrical Safety

All electrical sockets provided for electric vehicles should be provided with a Residual Current Device (RCD) which automatically turns off the power if a problem develops. Protecting each individual socket is essential in order to prevent a fault on one vehicle disabling charging on another. Maximum protection is obtained by protecting the circuit at the distribution board, as well as protecting individual outlets. EVs will draw a relatively high current so the complete circuit should be designed assuming that a full 16 Amps may be drawn from each outlet simultaneously.

Lines and Signs



Your electric vehicle charging bays will require lines, signs and enforcement (akin to a disabled parking bay) to ensure that only electric vehicles use them.

For ease of enforcement, positioning the electric vehicle bays near to the disabled bays may be desirable.

Suitable signage is available from the EV Network (<http://www.EV-Network.org.uk>)

Registration

Finally, once your charging facilities are available, please register them on the EV Network (<http://www.ev-network.org.uk/register>) so that your visitors will know where to find them. Registration is free and can help develop additional sales, as electric vehicle users are drawn to your business looking for places to charge their vehicles. While their vehicles are charging, electric vehicle users may wish to have a meal, do some shopping, etc, before continuing their journey.

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