

COMMERCIAL & INDUSTRIAL EV CHARGING

UK Compliance Guide

A practical overview of the key electrical, installation and regulatory considerations for workplace, fleet and commercial electric vehicle charging installations.

EV charging equipment introduces a significant and often continuous electrical load. A compliant installation starts with assessment of the existing electrical infrastructure, available capacity, earthing arrangement, protective devices, cable routes and the operational requirements of the site.

01 | KEY UK REQUIREMENTS

BS 7671 - Requirements for Electrical Installations

EV charging installations must comply with the current edition of BS 7671. Section 722 contains requirements specific to supplies for electric vehicles, alongside the general requirements applying to the wider installation.

BS EN IEC 61851 & IET Code of Practice

Charging equipment should be installed to the applicable BS EN IEC 61851 requirements, manufacturer's instructions and the IET Code of Practice for Electric Vehicle Charging Equipment Installation.

Electricity at Work Regulations 1989

For workplace installations, electrical systems must be constructed, maintained and operated so as to prevent danger so far as is reasonably practicable.

Building Regulations - Part S (England)

Part S can require EV charge points or cable routes in certain new buildings and buildings undergoing major renovation. Applicability depends on the building, works and associated parking.

02 | SITE & ELECTRICAL CAPACITY ASSESSMENT

Before chargers are selected, the site's electrical capacity should be established, including the incoming supply, maximum demand, LV switchgear, distribution equipment and anticipated charging profile.

- Incoming supply and available capacity
- Existing maximum demand and load profile
- Main LV switchboard / distribution capacity
- Number, type and rating of chargers
- Simultaneous charging demand
- Future fleet growth
- Cable routes and parking layout
- Need for load management or supply reinforcement

03 | LOAD MANAGEMENT

Where the connected EV load could exceed available capacity, load management can control charger demand. Dynamic systems may adjust charging power in response to the building's real-time electrical load, helping keep the installation within supply and distribution limits.

04 | DEDICATED CIRCUITS & DISTRIBUTION

EV charging points require appropriate circuit protection and distribution. Larger workplace or fleet installations may require a dedicated EV distribution board, MCCB-protected submain, new containment and modifications to existing LV switchgear. Circuit design should consider current-carrying capacity, voltage drop, fault protection, installation method and environment.

05 | EARTHING & PEN FAULT PROTECTION

Earthing is particularly important because a person can be in contact with the vehicle while connected to the supply. For PME/TN-C-S systems, BS 7671 Section 722 must be considered. Depending on the site and charger, protection may include suitable built-in open-PEN protection or another compliant arrangement. Built-in protection should be verified from the charger's technical specification.

06 | RCD & DC RESIDUAL CURRENT PROTECTION

EV charging circuits require appropriate residual-current protection. The required arrangement depends on the charging equipment and any DC residual-current detection provided by the charger. The designer should verify exactly what protection is built in before deciding what additional upstream protection is required.

07 | SURGE PROTECTION

Surge protective device requirements should be assessed as part of the overall design, considering existing building protection, EV distribution equipment and the charger manufacturer's requirements.

08 | CHARGER LOCATION & PHYSICAL PROTECTION

Chargers should be positioned for safe use without unnecessary vehicle or pedestrian hazards. Equipment and installation methods should suit the environmental and mechanical conditions.

- IP rating and weather exposure
- Vehicle impact risk and barriers/bollards
- Cable management and trip hazards
- Accessibility and user operation
- Parking layout and charging-lead reach
- Mounting, access, lighting and signage

09 | SMART CHARGING & PUBLIC ACCESS

Charge points sold in Great Britain for private domestic or workplace use may fall within the Electric Vehicles (Smart Charge Points) Regulations 2021. Where charge points are accessible to the public, the Public Charge Point Regulations 2023 can impose additional requirements. The intended access model - workplace, fleet, visitor or public - should therefore be established at design stage.

10 | TESTING & COMMISSIONING

The completed installation should be inspected, tested and commissioned before use. Depending on the system, this can include:

- Protective conductor continuity, insulation resistance and polarity
- Earth fault loop impedance and prospective fault current
- RCD testing where applicable
- Phase sequence on three-phase installations
- Protective-device and setting verification
- Functional charger testing
- Load-management and PEN-protection verification where applicable

11 | DOCUMENTATION & HANDOVER

Appropriate documentation should be provided, including electrical certification, test results, charger commissioning information, operating instructions and load-management information where applicable. Larger projects may also benefit from EV board schedules, single-line diagrams, protective-device settings and charger identification.

12 | MAINTENANCE & ONGOING INSPECTION

EV charging equipment and its supply infrastructure should be maintained throughout its service life. Inspection can include charger enclosures, leads and connectors, protective devices, cable routes, physical protection, signs of damage or overheating and functional operation.

EV CHARGING COMPLIANCE CHECKLIST

SITE	Electrical capacity and maximum demand assessed
CHARGERS	Correct charger type and rating selected
DISTRIBUTION	Distribution equipment verified as suitable
CABLES	Circuits and submains designed for load and conditions
EARTHING	Earthing arrangement and PEN protection assessed
RCD	Residual-current / DC fault protection verified
LOAD	Load management commissioned where required
LOCATION	Environment, accessibility and impact risks considered
TESTING	Electrical and functional testing completed
DOCUMENTS	Certification and commissioning information provided
FUTURE	Expansion requirements considered

THE QUEST APPROACH

Commercial & Industrial EV Charging - Designed Around the Electrical Infrastructure

QUEST Electrical can assess the complete installation, from the incoming supply and LV distribution through to the charging points. Our scope can include workplace and fleet charging, load management, distribution boards, MCCBs, submains, containment, electrical infrastructure upgrades, testing and commissioning.

Where appropriate, EV charging can also be considered alongside commercial solar PV and energy monitoring as part of a wider site energy strategy.

QUEST ELECTRICAL | EV Charging | Load Management | LV Distribution | Submains | Solar PV | Testing & Commissioning

Important: This guide is a general overview only. Requirements vary with the charger, supply arrangement, site, access model and project scope. Final design and installation should use current legislation and standards, manufacturer information and project-specific assessment by suitably competent persons.

Reference basis checked September 2026: BS 7671 current edition; BS EN IEC 61851; IET Code of Practice for Electric Vehicle Charging Equipment Installation; Electricity at Work Regulations 1989; Building Regulations Part S in England; Electric Vehicles (Smart Charge Points) Regulations 2021; Public Charge Point Regulations 2023 where applicable.