

COMMERCIAL & INDUSTRIAL EV CHARGING

Technical Data Sheet | Electrical Infrastructure & Charging Systems

Typical technical parameters and design considerations for workplace, fleet and commercial EV charging installations. Final equipment, ratings and protection arrangements are project-specific.

CHARGING EQUIPMENT

PARAMETER	TYPICAL REQUIREMENT / CONSIDERATION
AC charging	Typically 7 kW single-phase or 11-22 kW three-phase, subject to vehicle and site capability.
DC charging	Higher-power charging where shorter dwell times are required; significantly greater supply capacity may be needed.
Supply	Typically 230 V single-phase or 400 V three-phase AC for AC EVSE; verify selected equipment.
Charging mode	Equipment and connection arrangement selected to suit vehicle, site and operational requirements.
Vehicle limitation	Actual charge rate can be limited by the vehicle onboard charger, battery condition and control strategy.
Communications	Ethernet, Wi-Fi or cellular connectivity may be required for monitoring, access control and back-office functions.

SITE CAPACITY & LOAD MANAGEMENT

PARAMETER	TYPICAL REQUIREMENT / CONSIDERATION
Maximum demand	Existing site demand and available electrical headroom assessed before charger quantity/power is finalised.
Load profile	Half-hourly data or temporary power logging can be used to establish actual site demand.
Dynamic load management	Charger output can be varied against real-time building load to remain within a defined site limit.
CT monitoring	CTs may monitor the main incomer, EV submain or other selected loads for load management and metering.
Future expansion	Distribution capacity, spare ways, containment and load-management capability can be planned for additional chargers.
DNO	Supply reinforcement or DNO engagement may be required where existing capacity is insufficient.

DISTRIBUTION & PROTECTION

PARAMETER	TYPICAL REQUIREMENT / CONSIDERATION
EV distribution	Dedicated EV DB/section board may be supplied from the main LV switchboard via an MCCB-protected submain.
Cable design	Based on design current, installation method, correction factors, voltage drop, fault protection and route length.
Fault level	Prospective fault current and protective-device breaking capacity verified at the relevant distribution point.
RCD protection	Selected to suit BS 7671 requirements, charger characteristics and manufacturer instructions.
DC residual current	Built-in DC detection/protection must be verified from the specific EVSE specification before upstream protection is selected.
PME / open PEN	Where relevant, a compliant protective arrangement is required; built-in charger functionality must be confirmed.
Surge protection	SPD provision and coordination assessed for the overall installation and selected EV equipment.
Earthing	Earthing arrangement assessed for the site, charger location and applicable EV charging requirements.

INSTALLATION, METERING & COMMISSIONING

PARAMETER	TYPICAL REQUIREMENT / CONSIDERATION
Physical installation	Wall, pedestal or other mounting; outdoor IP rating, impact risk, bollards, cable management and accessibility considered.
Containment	Tray, ladder, trunking, ducting or underground routes selected to suit cable size, environment and site layout.
Metering	Charger, submain or CT-based metering can provide EV energy use, utilisation and demand data.
Solar integration	Charging controls can be coordinated with on-site solar PV where system capability and operating profile permit.
Testing	Continuity, insulation resistance, polarity, loop impedance, fault current, RCD and phase sequence as applicable.
Functional checks	Charger operation, communications, metering, load management and protective functions verified as applicable.
Handover	Electrical certification, test results, commissioning data, operating information and board schedules provided as required.

REFERENCE FRAMEWORK

BS 7671 - including Section 722 | BS EN IEC 61851 - EV conductive charging systems | IET Code of Practice for Electric Vehicle Charging Equipment Installation | applicable UK smart/public charging requirements.

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

Note: This is a general technical data sheet, not a manufacturer product specification. Charger ratings, cable sizes, protective devices, RCD/PEN arrangements, fault ratings and load-management settings must be established from project-specific site data, calculations, current requirements and the selected manufacturer's technical information.