

 120 seconds

 EN · العربية

PRACTICAL ELECTRICAL KNOWLEDGE

EV Charging

AC vs DC, the IEC 61851 modes, and the connectors behind every charge point.

Why is one charger **10×** **faster?**

Because AC charging is limited by the car's onboard converter. DC charging skips it and feeds the battery directly — that's the whole game.

DEFINITION · 1 OF 2

Mode 3

AC via a dedicated wall/box EVSE.



Type 2 connector. Power capped by the car's **onboard charger** — typically 7–22 kW.

DEFINITION · 2 OF 2

Mode 4

DC straight to the battery.



CCS2 connector. The charger does the conversion — **50–350 kW** fast charging.

RULE OF THUMB

$$\text{Time} \approx \frac{\text{kWh}}{\text{power (kW)}}$$

A 60 kWh battery on 22 kW AC is ~3 h; on 150 kW DC (10–80%) it is ~25 min. Real time tapers as the battery fills.

One car. Three speeds.

Same 60 kWh battery, three charge points. Power decides everything.

AC HOME

Type 2, 1-phase

7.4

kW

AC PUBLIC

Type 2, 3-phase

22

kW

DC FAST

CCS2

150

kW

Charge levels you can screenshot.

Typical AC/DC ratings. Confirm against site supply and the vehicle limit.

Type 2 · single-phase

7.4 kW

Type 2 · three-phase

22 kW

CCS2 · standard DC

50 kW

CCS2 · fast DC

150 kW

CCS2 · high-power (HPC)

350 kW



Sizing the cable, forgetting the supply.

A 150 kW DC charger needs the **MV/LV capacity and breaker coordination** to match. The connector is the easy part — the incomer is the project.

NEXT TIME YOU PLAN A CHARGE POINT

Confirm power and supply.

Match charger rating to the available kVA, then the connector and protection follow.

- ✓ AC mode 3 or DC mode 4
- ✓ Available kVA & transformer headroom
- ✓ Connector: Type 2 / CCS2

PRACTICAL ELECTRICAL KNOWLEDGE

Save this. Send it to a colleague.



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