

Six Points Which Have to Be Complied With When Installing a Charging Station. Make the Check.

When installing a charging station for your electric car, consideration must be given to various safety criteria. Our check-list includes all the key points you need to remember when installing your charging station.

For electricians and specialists, we have also created an [electricians' check-list](#), based on the technical requirements defined in the German standard DIN VDE 0100-722.

Two Components Needed for Installing a Charging Station:

Wählen Sie Ihr Ladestationsmodell aus der Tabelle und wir zeigen Ihnen, welchen Fehlerstromschutzschalter und Leistungsschutzschalter Sie für den Sicherungskasten benötigen.

Charging station Model	RCD	Circuit breaker
Charging station without integrated RCD or DC fault current sensor (e.g. KEBA P20, 22 kW ABL, ICU)	RCD type A EV	Characteristic C
Charging station with integrated DC fault current sensor (e.g. KEBA P30)	RCD type A	Characteristic C
Charging station with RCD type A and DC fault current sensor (e.g. ABL)	-	Characteristic C

You may also require **a separate electricity meter** if you wish to measure the charge received by the electric car and the charging station does not already have its own meter, or a **Z.E. READY certified charging station** for Renault electric cars.

If You Have Ticked all Check Boxes, You Charge Your Electric Car Safely.

1 The Charging Station Must Be Connected Via Its Own Cable.	<input type="checkbox"/>
<ul style="list-style-type: none"> ➤ No additional appliances should be connected to the cable leading from the fuse box to the charging station. Further appliances would include e.g. garage sockets, lights, washing machine. ➤ For charging stations, a simultaneity factor of 1.0 applies. The simultaneity factor takes account of the fact that not all devices within a system are operated at the same time or at full power. For charging stations, however, this is exactly what must be assumed. The connected load of the charging station must therefore be 100% respected. 	
2 The Cables Must Be Of Appropriate Dimensions For The Connected Load Required.	<input type="checkbox"/>
<ul style="list-style-type: none"> ➤ If the charging current is of 16 A or above we recommend a cable diameter of 2.5 mm² or more to avoid cables burning. In order that the vehicle can be charged with a charging power of 11-22 kW, and in three phases, a 5-conductor supply cable must be used. ➤ The inner diameter of the cable depends on factors such as cable length, potential drop, environmental temperature and type of installation. It is therefore best to get a qualified electrician to determine what diameter cable you require. ➤ We recommend preparing cables where possible for a three-phase connection, in order to be future-proof. The electric cars of the future will have higher charging powers and larger battery capacities. 	
3 The Residual Current Device (RCD) Avoids Electric Shocks and Must Be Appropriate for the Charging Power of the Electric Car.	<input type="checkbox"/>
<p>What Do I Need a Residual Current Device for?</p> <p>The residual current device (RCD) is there to avoid electric shocks. An RCD balances the electric current in the live and neutral wires to/from the appliance, in this case, the electric car. If these currents are no longer balanced, for example, if a residual current flows through the bodywork of the car or the driver to the floor, the RCD is triggered and breaks the circuit. To ensure that this is the case, where an RCD is not already integrated into the charging station, each charging station must be fitted with its own individual RCD. For protection, there is a diversity factor of 1.0, which means that each circuit must be individually protected</p>	

Which Types of Residual Current Devices Are There?

A residual current device of Type A at least is required for each charging station. The Type A RCD is a standard RCD protection switch which is carried by every electrician and which only registers particular fault currents.

Some electric cars may generate smooth DC fault currents during charging. If you cannot exclude this possibility, then an appropriate DC residual current protection must be installed. There are various options for this:

- **DC fault current sensor / DC fault current recognition:** Charging station manufacturers are increasingly building DC fault current sensors into their charging stations. This offers you protection from smooth DC residual currents. You then only need the cheaper Type A RCD mentioned above in the distribution. Charging stations with integrated fault current sensors are a little more expensive, but they then cost less to install. As a result, the total package is significantly cheaper.
- **RCD Type A EV:** A Type A EV RCD is a cheaper alternative to an RCD Type B and has been specially developed for the demands of electric mobility. It therefore also reacts to smooth DC residual currents. We strongly recommend a Type A EV RCD, if no other DC residual current protection is in place in the charging station.
- **RCD Type B:** A Type B RCD is “sensitive to all currents”, recognises all types of AC and DC residual currents and is very well-suited for charging station installation. The disadvantage: A Type B RCD is very expensive.

4 The Circuit Breaker (CB) Protects the Cable from Being Overloaded by Excessive Currents, Must it Correspond to the Charging Power of the Electric Car.

What Do I Need a Circuit Breaker for?

The circuit breaker ensures that the circuit is broken if too much electricity flows through the cable. This also ensures that damages caused to the cables as a result of heating up can be avoided. As with the RCD, an extra circuit breaker is required for the charging station circuit.

How Do I Choose the Right Circuit Breaker?

- Manufacturers of our charging stations recommend circuit breakers with the tripping characteristic C.
- The circuit breaker must be in alignment with the nominal current, in the case of the required charging power. It presents a potential safety hazard, meaning that the installation should only be carried out by a qualified electrician. They are responsible for ensuring that all existing standards and installation regulations have been observed.
- The nominal current is the current absorbed by electrical devices. The nominal current of the circuit breaker you have chosen must never fall below the reading on the charging station's label.

5 When Installing a Charging Station with a Charging Power of Over 12 kW, You or Your Electrician Must Obtain Approval from the Grid Operator.

When charging power is over 12 kW, an electric car will draw an unusually large amount of power at one time from the power grid. Therefore the grid operator should be informed, in order to avoid power outages. The approval process varies from operator to operator. Our best advice is to make a quick phone call to the grid operator and ask them to send you the necessary documents.

6 All Renault Electric Cars May Only Be Charged with Z.E. READY Certified Charging Stations (optional).

What Does Z.E. READY Mean?

Renault has set its own standards concerning the legal guidelines. All of these are set out under the 'Z.E. READY' seal of quality.

For all Renault electric cars, as well as their ZOE, the manufacturer cannot rule out the possibility of a direct current of >6 mA. For safety and guarantee reasons, Renault has therefore developed its own standard, Z.E. READY, for charging electric cars.

You can find the Z.E. READY certificate on all charging stations which follow Renault's guidelines. A trained and certified electrician will meet all the necessary technical precautions in accordance with the Z.E. READY certificate when installing a charging station.

The Following Technical Guidelines for Z.E. READY Should Be Taken into Account During Installation:

- Separate RCD-B residual current device in the charging station (or in the home installation) at each charging point
- Standardised type 2 plug and socket device in accordance with DIN EN 62196-2 VDE 0623-5-2:2014-12
- CE mark and type test under IEC 61851-1
- Elimination of overloading connected charging cables through the charging infrastructure
- Degree of protection at least IP54 incl. IPxxD
- Control of charging current in accordance with mode 3, via pilot signal under IEC 61851
- Installation by a certified electrician

All charging stations recommended by us for your Renault electric car fulfil the Z.E. READY requirements.