

# The safe way to fill up with electricity

DFS 4 EV— optimised for wall boxes and charging pedestals

- preserves the protective function of upstream residual current devices
- also reliably detects smooth DC residual currents above 6 mA
- standard-compliant all-round protection

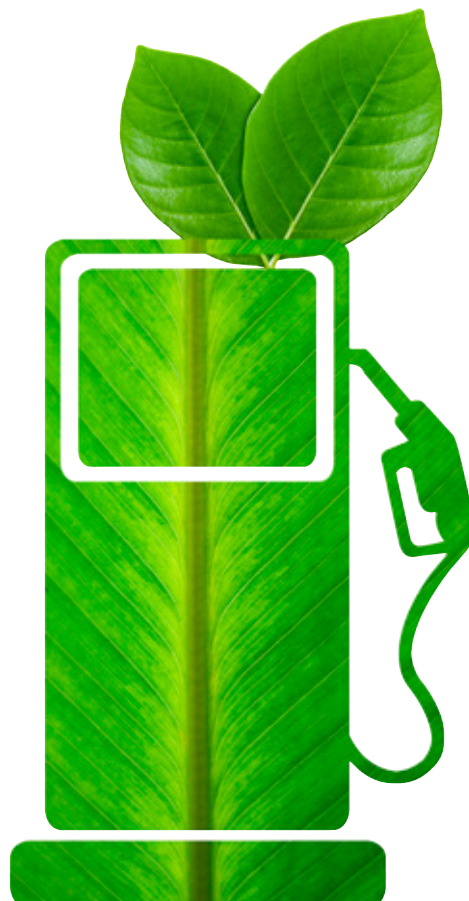


# Residual current protection for charging devices

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
*E-mobility is booming, and opening up a profitable future market for electrical specialists: the higher the number of electric cars on the roads, the greater the need for charging points. Residual current protection for charging pedestals, wall boxes and similar devices can be problematic, but Doepke's residual current circuit-breakers for electric vehicles (EV design) offer a problem-free solution.*

**Reliable protection for e-mobility** — Smooth DC residual currents greater than 6 mA can occur when electric vehicles are charged. This goes beyond the design scope of conventional Type A or Type F residual current circuit-breakers. In a worst-case scenario, these circuit-breakers may fail as a result of the pre-magnetisation of their summation current transformer, and this failure may go unnoticed. Doepke's residual current circuit-breakers (EV design) have an active additional function which reliably detects smooth DC residual currents above 6 mA. This means that they protect themselves and upstream residual current circuit-breakers against failure, as well as offering users guaranteed protection against hazardous residual currents.



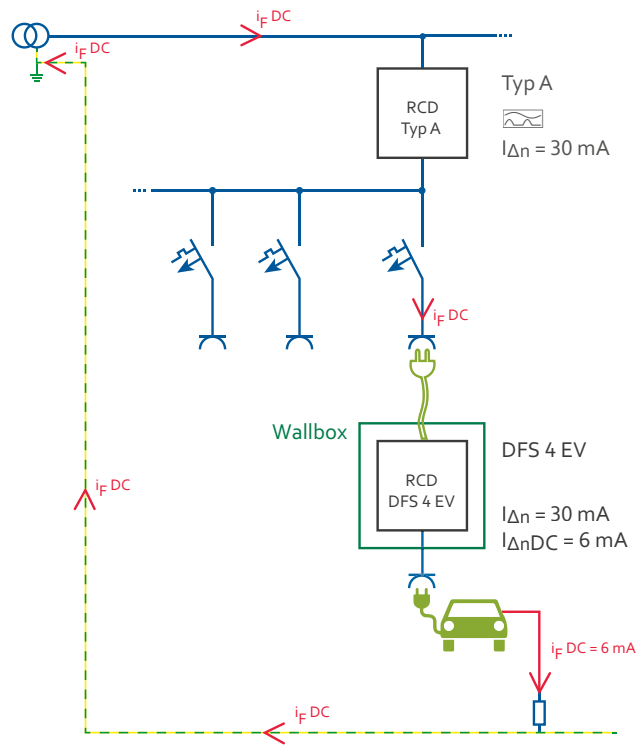
**Choice**

Doepke's residual current circuit-breakers (EV design) are available in Type A and Type F versions. The DFS 4 A EV detects sinusoidal AC and pulsating DC residual currents, regardless of the mains voltage. The DFS 4 F EV also detects residual currents with mixed frequencies. Electronic wiring and power electronics are required in electric vehicles for charging purposes. In the event of a fault, these can give rise to smooth DC residual currents and residual currents with mixed frequencies. The DFS 4 F EV is also short-time delayed and has increased surge current strength. This significantly reduces the risk of faulty tripping.

	DFS 4 A EV 	DFS 4 F EV  
detection of pulsating and AC residual currents, not dependent on auxiliary voltage.	✓	✓
active additional function for tripping in the event of smooth DC residual currents $\geq 6$ mA	✓	✓
maintains the protective function of upstream residual current operated protective devices	✓	✓
two-terminal design	✓	✓
four-terminal design	✓	✓
rated current up to 80 A	✓	✓
No other components required per charge plug socket for residual current protection	✓	✓
sensitive to mixed frequencies		✓
short-time delayed, increased surge current strength and lightning-resistant		✓



## TN-System

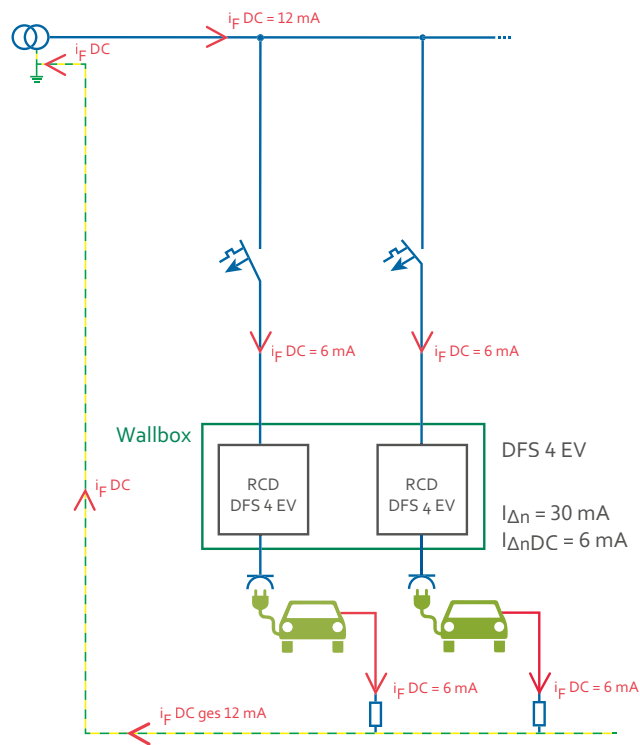


- Case 1** — The charging device is operated at an existing socket protected with a Type A residual current circuit-breaker. The standard requires protection against smooth DC residual currents above 6 mA. This protection is guaranteed by DFS 4 EV.





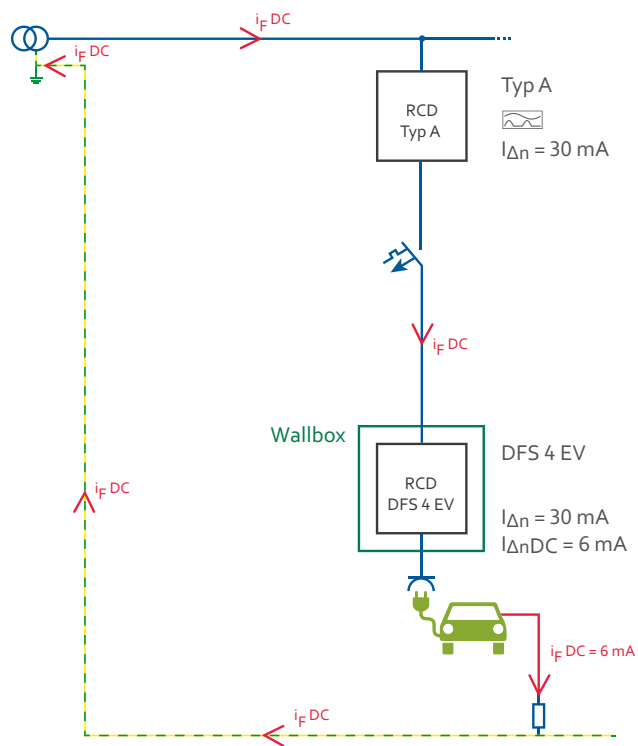
## TN-System



**Case 2** — The charging device has a fixed connection. In this case the installation of a DFS 4 EV is sufficient. It ensures complete protection against residual currents. There is no need for an upstream residual current circuit-breaker.



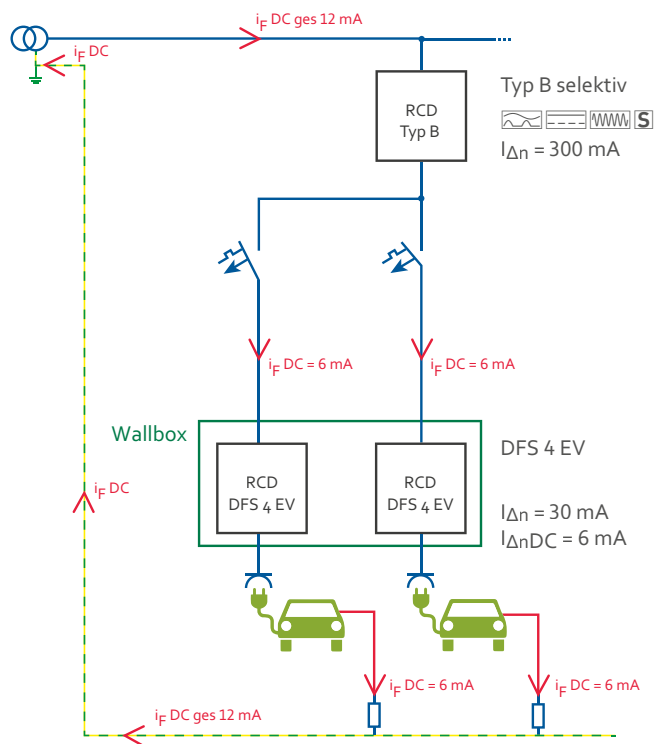
# TT-System



**Case 3** — Switch-off times are subject to stricter rules in this instance. Charging devices with a fixed connection therefore require an upstream residual current circuit-breaker. The downstream DFS 4 EV guarantees the protective function of upstream residual current circuit-breakers even in the event of smooth DC residual currents above 6 mA.



# TT-System



**Case 4** — If several charging devices are placed downstream of a residual current circuit-breaker, the latter must be AC-DC sensitive as the smooth DC residual currents can add up. The EV design provides each charge plug socket with its own residual current circuit-breaker.

**Complete solution for charging points** — Play it safe with Doepke's residual current circuit-breakers (EV design): the DFS 4 EV devices provide a comprehensive guarantee of the required protection for charging points. Their active additional function means that they offer reliable protection for users and installations, even in the event of smooth DC residual currents above 6 mA. As an easy-to-install complete solution, they obviate the need for additional residual current operated protective devices.

**Accessories** — The remote actuators DFA 3 are the ideal add-on for our residual current circuit-breakers (EV design), particularly when dealing with remote charging points. The device (which is only one module width wide) can be used to switch the residual current circuit-breakers on and off remotely. The current status of the installation (on/off) can also be transmitted via a semiconductor switch. Where permitted and required, automatic reclosing is also possible after the residual current circuit-breaker has tripped.





We are partner

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