

Guidelines for the selection of residual current circuit-breakers

Start

Basic circuits for electronic operating equipment in accordance with DIN VDE 0100 530 Annex A?

- AC full bridge circuit
- AC star circuit
- Full bridge circuit between external conductors
- Single-phase detection with smoothing

Systems with multiphase supplied frequency converters:

- Examples:
- Pumping, air conditioning and ventilation systems
 - Escalators and elevator systems
 - Medical devices
 - Solar power plants
 - Welding plants

YES

NO

Will the circuit-breaker be used as a charging device for electric vehicles in road transport?

YES

NO

Does the vehicle manufacturer or the client request AC-DC sensitive residual current circuit-breakers?

NO

YES

Will the breaker be used for a plant where fire is a potential hazard?

- Examples:
- Agriculture
 - Biogas systems
 - Paint shops
 - Carpentry workshops
 - Fuel tank systems
 - Warehouses

YES

NO

Is the aim to achieve reasonable protection against electrically ignited fires beyond compliance with standards?

- Example:
- Residual or leakage currents > 20 kHz

NO

YES

Will the electrical system be operated at an installation with a protective device which is unknown or unsuitable for the required residual current protection?

- Examples:
- Connected to an unknown power socket
 - Temporary connection to an existing classic installation

NO

YES

Will the electrical system be operated at an installation with a protective device which is unknown or unsuitable for the required residual current protection?

- Examples:
- Connected to an unknown power socket
 - Temporary connection to an existing classic installation

NO

YES

Installations with single-phase supplied frequency converters?

- Examples:
- Washing machines
 - Pumps
 - Hammer drills

YES

NO

Could residual currents with mixed frequencies occur?

- Examples:
- Charging points for Pedelec (Schuko socket)
 - Charging points for other small electric vehicles

NO

YES

Increased availability required?

- Examples:
- High storm frequency
 - Unstable grid
 - Grid malfunctions
 - Equipment with pulsing interference currents

NO

YES

A
DFS 2/4 A

AC and pulsating current sensitive type A residual current circuit-breaker for classic electrical installations

A KV
DFS 2/4 A KV

AC and pulsating current sensitive type A residual current circuit-breaker for classic electrical installations with increased availability due to the short-time delayed and lightning-resistant design

F
DFS 2/4 F

Mixed frequency-sensitive residual current circuit-breaker type F for modern electrical installations with increased availability due to the short-time delayed and lightning-resistant design

A EV
DFS 4 A EV

AC and pulsating current sensitive type A residual current circuit-breaker for electromobility and additional protection against DC residual currents from 6 mA even against functional impairments of upstream RCDs

F EV
DFS 4 F EV

Mixed frequency sensitive type F residual current circuit-breaker for electromobility with increased availability (lightning-resistant and short-time delayed) and additional protection against DC residual currents from 6 mA even against functional impairments of upstream RCDs

B SK
DFS 2/4 B SK

AC-DC sensitive type B residual current circuit-breaker for electrical installations with frequency converters, with the highest availability and a consistently defined tripping threshold even with high residual current frequencies of up to 150 kHz

B SK MI
DFS 4 B SK MI

AC-DC sensitive type B residual current circuit-breaker for mobile electrical installations with frequency converters, with the highest availability and a defined tripping threshold even with high residual current frequencies of up to 150 kHz, as well as additional protection against DC residual currents from 6 mA and against functional impairments of upstream RCDs

B+
DFS 2/4 B+

AC-DC sensitive type B residual current circuit-breaker for electrical installations with frequency converters in facilities at risk of fire; compliant with normative minimum protection (420 mA / up to 20 kHz)

B+ MI
DFS 4 B+ MI

AC-DC sensitive type B residual current circuit-breaker for mobile electrical installations with frequency converters in facilities at risk of fire; compliant with normative minimum protection as well as additional protection against DC residual currents from 6 mA and against functional impairments of upstream RCDs

B NK
DFS 2/4 B NK

AC-DC sensitive type B residual current circuit-breaker for electrical installations with frequency converters in facilities at risk of fire, with high availability and optimal protection beyond normative requirements (300 mA / up to 150 kHz)



Technical support

You can contact our technical support at:

+49 4931 1806-888 or support@doepke.de

Doepke Schaltgeräte GmbH
Stellmacherstraße 11
26506 Norden

info@doepke.de

+49 (0) 49 31 18 06-0

+49 (0) 49 31 18 06-101

www.doepke.de

Now also in HD design

Almost all devices are also available for harsh environments in HD design and with the neutral conductor connection positioned on the right.

Note:
The rated residual current has not been included in this diagram – it must be selected in accordance with the intended type of protection.