

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

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

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

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)

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



Technical support

You can contact our technical support at:

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Now also in HD design

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