

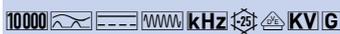
UK Technical Data 09

DFS 4 *-2/***-B NK 230V 50Hz**

AC/DC sensitive type B, fire protection < 300 mA < 150 kHz



symbolic image



Function

Residual current circuit-breakers (RCCBs) for implementing the protective measure "Automatic disconnection of the power supply" as per BS 7671 - 411. Series DFS 4 devices are two-pole residual current circuit-breakers for single-phase networks. In the standard design, they take up four module-width units of space. A number of different tripping currents and characteristics are available at rated currents, depending on the design, up to 125 A. They also have large two-tier terminals for large conductor cross-sections, a practical multifunctional switch toggle. DFS 2 and DFS 4 Type B devices detect smooth DC residual currents as well as all other type B residual currents as per IEC 60755 / EN 62423. The operating voltage required for Type B residual current detection ≥ 50 V, is taken from the mains supply (voltage between the mains conductors). Type A residual currents are detected regardless of the mains voltage. Type BSK and BNK detect residual currents over a wide frequency range, providing an improved level of protection when compared to the design standards for type B devices. The characteristic curve SK (frequency response of the tripping current) is designed so that residual currents with high frequencies, such as in the clock frequency range for frequency converters, as opposed to the rated frequency are detected with significantly reduced sensitivity i.e. undesired trips caused by high frequency leakage currents. The SK characteristic depending on the rated residual current (0.03 A, 0.1 A or 0.3 A) provides fire protection for frequencies up to 1 kHz, 300 Hz or 100 Hz. For fire protection at higher frequencies (based on the leakage currents generated by the load), use the NK characteristic < 150 kHz < 0.3 A. Note B+ is designed for use installations covered by VDE wiring regulations i.e. it only provides fire protection up to 20 kHz, with an increased tripping current of 420 mA. Devices in the standard design DFS4 2 pole, are intended for monitoring circuits with a rated voltage of 230 V and a rated frequency of 50 Hz.

Features

High immunity against transient leakage and residual currents, meets the requirements of design regulations VDE 0664-10, VDE 0664-40, ÖVE/ÖNORM E 8601. AC/DC sensitive for residual currents with frequencies and mixed frequencies of 0 Hz (smooth direct current) up to 150 kHz. Electromagnetic compatibility in accordance with VDE 0664-30 and VDE 0839-6-2 (interference resistance for industrial applications), high availability even for voltage-independent detection of smooth DC residual current and AC residual current with frequencies not equal to 50/60 Hz thanks to full functional compatibility with mains voltages from at least 50 V AC on any two active conductors. Mains-voltage-independent tripping when type A residual currents occur. Compact design for all rated currents, high short-circuit resistance, double-sided two-tier terminals for large conductor cross-section and busbar, switch position indicator, viewing window for labels, multifunction switch toggle with three positions: "on", "off" and "tripped", also available in the "HD" design.

Mounting

Quick fastening to mounting rail, any installation position, supply preferably from above

Applications

Installations with TT, TN-S and TN-C-S systems, with low levels of leakage current >50Hz < 150 kHz see Technical Data Sheet 15, where power electronics equipment is used without galvanic isolation from the mains e.g. frequency converters, SM power supplies, high-frequency converters, photo-voltaic installations and UPS equipment with frequency converters without transformers, Also ideal for heat pumps, photo-voltaic systems, EV charging in new buildings - Refer to BS 7671 - 531.3.3 Types of RCD, 532.2 and 419.1. Not suitable for use in TN-C systems.

Notes

Suitable for use in 50 Hz AC networks, RCCBs for other frequencies available upon request. Not designed for use in direct current networks or on the output side of controlled electrical equipment such as frequency converters.

Accessories

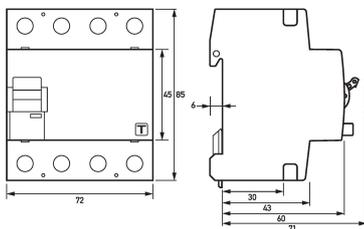
Automatic re-closing devices DFA, Clamp covers KA, Auxiliary Switches

Technical Data

Technical Data	DFS 4 ***-2/***-B NK
Series	DFS 4 B NK
Number of poles	2
Residual current type	B
Tripping characteristic curve	NK
Rated current (AC)	Refer to the individual product reference, data sheet available on request
Rated residual current I Δ n	Refer to the individual product reference, data sheet available on request
Short-time delayed	true
Selective	false
min. Operating voltage range of test circuit	150 V
max. Operating voltage range of test circuit	250 V
Minimum rated operating voltage (Type A/AC operation)	0 V AC
Minimum rated operating voltage (Type B operation)	50 V AC
Non-trip time	10 ms
Tripping frequency	0 Hz ... 150 kHz
Maximum disconnection times	Refer to the individual product reference, data sheet available on request
Internal consumption	Refer to the individual product reference, data sheet available on request
	Load circuit
Specification	Load switch contact
min. Contact opening	4 mm
Rated voltage (AC)	230 V
Rated current (AC)	Refer to the individual product reference, data sheet available on request
Rated short-circuit current	10 kA
Surge current strength	3 kA
max. total rated switching capacity	Refer to the individual product reference, data sheet available on request
Rated insulation voltage	400 V
Rated impulse withstand voltage	4 kV
Rated frequency	50 Hz
Current heat loss per current path	Refer to the individual product reference, data sheet available on request
thermal Backup-fuse OCPD	Refer to the individual product reference, data sheet available on request
short-circuit backup-fuse SCPD	Refer to the individual product reference, data sheet available on request
Back-up fuse type	gG
	Screw-type terminal top and bottom (Load circuit)
Neutral conductor position	right
Protection against direct contact	DGUV V3, VDE 0660-514, finger-safe and safe for back-of-hand
Connection C1 Maximum number of conductors per terminal	2 (conductors of same type and cross-section)
Cross section solid	1-wire: 1.5 mm ² ... 50 mm ² ; 2-wire: 1.5 mm ² ... 16 mm ²
Connecting capacity flexible	1-wire: 1.5 mm ² ... 50 mm ² ; 2-wire: 1.5 mm ² ... 16 mm ²
Cross section stranded	1-wire: 1.5 mm ² ... 50 mm ² ; 2-wire: 1.5 mm ² ... 16 mm ²
Tightening torque	2.5 Nm ... 3 Nm
	General data
Operating position	any

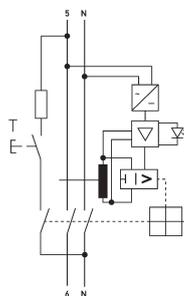
Technical Data	DFS 4 ***-2/***-B NK
max. Operating altitude above MSL	2000 m
Mechanical endurance	min. 5000 cycles
Electrical endurance	min. 2000 cycles
Surrounding atmosphere	normal environmental conditions
Storage temperature	-35 °C ... 75 °C
Ambient temperature	-25 °C ... 40 °C
Climate resistance	according to IEC 60068-2-30: humid heat / cyclic (25 °C / 55 °C; 93 % / 97 % RH)
Shock resistance	20 g / 20 ms Duration
Fatigue limit	> 5 g (f ≤ 80 Hz, duration > 30 min.)
Housing type	Distributor housing
Mounting type	Mounting rail (35 mm)
Housing material	Thermoplastic resin
Protection class	IP20 (installed: IP40)
sealable	true
Width	72 mm
Height	85 mm
Depth	75 mm
Installation depth	69 mm
Width (modules)	4
Design requirements/Standards	VDE 0664-10, VDE 0664-40, VDE 0664-400, ÖVE/ÖNORM E 8601, EN61008-1, EN 62423
Certifications	VDE
Degree of pollution according to EN 60664	2

Dimensions



Dimensional drawing Group view

Wiring example



Wiring diagram

Tripping characteristics

