

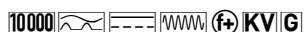


## DATA SHEET

Article number: 09144872

# residual current circuit-breaker DFS 4 063-4/0,03-B SK FANA24DC

AC/DC sensitive type B, emergency switching-off  
function, Remote actuator



### Function

Residual current circuit-breakers (RCCBs) are components for implementing protective measure "Automatic disconnection of the power supply" as per IEC 60364-4-41 or corresponding national installation regulations. Series DFS 4 devices are compact two or four-pole residual current circuit-breakers. In the standard design, they only take up four module width units of space. Although DFS 4 devices for AC and pulsating DC residual currents are actually designed for three-phase networks, they can also be used in single-phase networks. However, in addition to these, special variants are also available for single or three-phase operation in the form of the AC/DC sensitive designs (type B, type B+). In spite of the compact dimensions, 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 multi-functional switch toggle and can be provided with labels using free-of-charge software. Type B residual current circuit-breakers detect smooth DC residual currents and all other residual currents at frequencies up to 150,000 Hz. The operating voltage required for this is taken from the mains supply. Correct power supply is ensured when the voltage between the mains conductors is  $\geq 50$  V. Pulsating and AC residual currents are detected independent of the mains voltage. For residual current circuit-breakers with characteristic curve SK, the 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. Undesired trips caused by leakage currents can therefore be widely avoided. However, fire protection depending on the rated residual current of the switch (0.03 A, 0.1 A or 0.3 A) is only provided for residual currents with frequencies up to 1 kHz, 300 Hz or 100 Hz, while the devices with tripping current frequency response B+ or NK offer protection over the entire tripping frequency range up to 20 kHz or 150 kHz, respectively. DFS with emergency shut-off function ('NA' variant) make it possible to connect control elements, e.g. push-buttons for disconnecting the RCCB in emergency situations. The device is connected via the compact, factory mounted module; parallel wiring of multiple DHS is also possible. The integrated LED signals tripping by a control element as well as a possible wire breakage. In this state, reclosing of the RCCB is prevented. DFS 4 of the FANA variant combine emergency stop function and remote operation. They allow remote switching on and off.

### Features

High level of immunity against leakage and residual currents due to operational conditions from frequency 1 kHz and higher, AC/DC sensitive for residual currents with frequencies and mixed frequencies of 0 Hz (smooth direct current) up to 150 kHz, high availability even of 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", Neutral conductor position left, With EMERGENCY-OFF function for tripping or disconnection by means of control elements; monitoring of EMERGENCY-OFF function for wire breakage and signalling by LED.

### Mounting

Quick fastening to mounting rail, Any installation position desired, Supply from top

### Applications

Commercial and industrial installations with TN-S, TT and TN-C-S systems, where power electronics equipment is used without galvanic isolation from the mains. Also suitable for facilities like training rooms and classrooms. The remote actuator with EMERGENCY-OFF function enables the power supply to be restored, e.g. using key switch, without having to leave the room and/or opening the electrical distribution.

### Notes

Suitable for use in 50 Hz AC networks, RCCB for other frequencies on request, not intended for use in DC networks or on the output side of controlled electrical equipment such as frequency converters. The DFS 4 supplies an FELV voltage for the emergency stop circuit. For this reason, the emergency stop circuit must be rated for a voltage of 230 VAC. The illuminated disc can be used to lock the DFS 4, as well as to switch the remote drive on or off. The remote drive must be supplied externally with 24 VDC.

Accessories

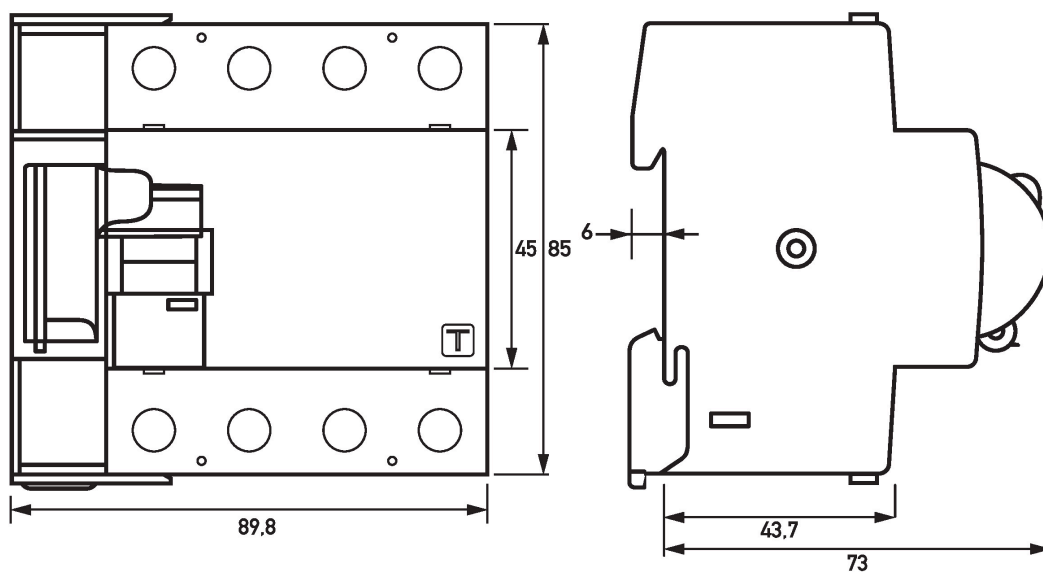
terminal caps KA, information stickers HAS, restart locks DFS WES, software DBS

Technical Data

Series	DFS 4 B SK FANA
Number of poles	4
Residual current type	B
Tripping characteristic curve	SK
Rated current (AC)	63 A
Rated residual current I $\Delta$ n	0.03 A
Short-time delayed	true
Selective	false
min. Operating voltage range of test circuit	250 V
max. Operating voltage range of test circuit	440 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	1 · I $\Delta$ n: $\leq$ 300 ms; 5 · I $\Delta$ n: $\leq$ 40 ms
Internal consumption	max. 2.2 W
<b>Auxiliary device (Emergency shut-off device)</b>	
Additional device AE1 operating voltage	50 V ... 440 V (AC)
Auxiliary device AE1 Voltage of the monitoring circuit	12 V (DC)
Auxiliary device AE1 Voltage of the monitoring circuit	max. 1 mA (DC)
max. Auxiliary device AE1 Cable length of the monitoring circuit	500 m
<b>Auxiliary device (Remote actuator)</b>	
Auxiliary device AE2 version	Motor drive
Additional device AE2 operating voltage	24 V (21.6 V ... 26.4 V) (DC)
max. Additional device AE2 current consumption	2 A
<b>Control input (remote actuator)</b>	
Rated voltage (DC)	24 V (21.6 V ... 26.4 V)
Bounce time of push buttons	10 ms
min. Pulse duration control input	60 ms
<b>load circuit</b>	
Specification	load disconnect contact
min. Contact opening	4 mm
Rated voltage (AC)	230 V, 400 V
Rated current (AC)	63 A
Rated short-circuit current	10 kA
Surge current strength	3 kA
max. Total rated switching capacity	630 A
Rated insulation voltage	400 V
Rated impulse withstand voltage	4 kV
Rated frequency	50 Hz
Current heat loss per current path	3.1 W
Thermal Backup-fuse OCPD	63 A
Short-circuit backup-fuse SCPD	100 A
Back-up fuse type	gG
I <sup>2</sup> t strength	48 kA <sup>2</sup> s
Dynamic current strength I <sub>p</sub>	6 kA
<b>Remote actuator feedback output</b>	
Specification	semiconductor
Rated voltage (DC)	24 V (21.6 V ... 26.4 V)
Rated current (DC)	max. 0.2 A
Rated power	max. 4.8 VA
<b>Screw-type terminal top and bottom (load circuit)</b>	
Neutral conductor position	left
Protection against direct contact	DGUV V3, VDE 0660-514, finger and back-of-hand proof
Connection C1 Maximum number of conductors per terminal	2 (conductors of same type and cross-section)
Cross section solid	1-wire: 1.5 mm <sup>2</sup> ... 50 mm <sup>2</sup> ; 2-wire: 1.5 mm <sup>2</sup> ... 16 mm <sup>2</sup>
Connecting capacity flexible	1-wire: 1.5 mm <sup>2</sup> ... 50 mm <sup>2</sup> ; 2-wire: 1.5 mm <sup>2</sup> ... 16 mm <sup>2</sup>
Cross section stranded	1-wire: 1.5 mm <sup>2</sup> ... 50 mm <sup>2</sup> ; 2-wire: 1.5 mm <sup>2</sup> ... 16 mm <sup>2</sup>
Cross section AWG, solid	15 ... 1

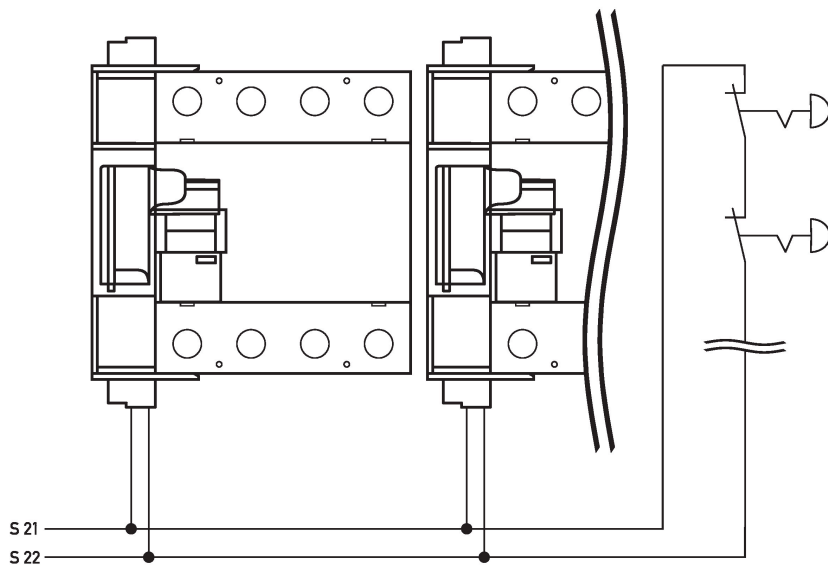
Cross section AWG, stranded	15 ... 1
Cross section AWG, flexible	15 ... 1
Cross section AWG, flexible with ferrule	15 ... 1
Tightening torque	2.5 Nm ... 3 Nm
	<b>Screw-type terminal (Emergency shut-off device, Remote actuator)</b>
Clamping area	0.3 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Cross section AWG, solid	22 ... 16
Cross section AWG, stranded	22 ... 16
Cross section AWG, flexible with ferrule	22 ... 16
Tightening torque	max. 0.25 Nm
	<b>General data</b>
Operating position	optional
max. operating altitude above MSL	2000 m
mechanical endurance	min. 5000 cycles
electrical endurance	min. 2000 cycles
Surrounding atmosphere	normal environmental conditions
Storage temperature	-40 °C ... 70 °C
Ambient temperature	-5 °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	distribution board housing
Installation type	Mounting rail (35 mm)
Housing material	thermoplastic
Protection class	IP20 (installed: IP40)
sealable	true
Width	89.8 mm
Height	85 mm
Depth	75 mm
Installation depth	69 mm
Module widths	5
Weight	0.593 kg
Design requirements/Standards	VDE 0664-10, VDE 0664-40, ÖVE/ÖNORM E 8601
Degree of pollution	2

Dimensions

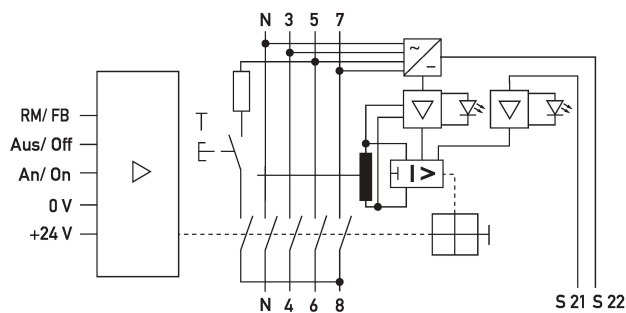


Dimensional drawing DFS 4 B SK FANA, 4-pole (Group view)

Wiring example



Wiring diagram DFS 4 B SK FANA, 4-pole



Wiring diagram additional file

Diagrams

