DATA SHEET

circuit-breakers with residual current trip
DFL 8 250-4/X-B SK V500

AC/DC sensitive type B, adjustable residual current

Article number 09219774

Function

CBRs (circuit-breakers with integral residual current protection) are circuit-breakers with a magnetic and thermal overcurrent trip and a residual current trip. The circuit-breaker with residual current trip is used for overcurrent protection of equipment, cables and lines in accordance with DIN VDE 0100-430 and for protection against electrical shock by automatic switch-off of the power supply as per DIN VDE 0100-410. This series contains compact devices for rated currents up to 250 A with integrated auxiliary switch and terminals for large cable cross-sections. The devices are preferably mounted on a mounting plate. 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 ≥ 50 V. Pulsating and AC residual currents are detected independent of the mains voltage. For switches 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 frequency response NK offer protection over the entire tripping frequency range up to 20 kHz resp. 150 kHz. For switches of this variant, the residual response current can be individually set in levels for the application in question (0.3 A, 0.5 A, 1 A). The non-response lag time can also be adjusted in levels accordingly. Selective residual current circuit-breakers are therefore possible in systems with stacked distribution boards. Devices in V design are made for special voltages.

Features

adjustable rated residual current , rated currents from 100 A to 250 A, rated voltage 290 V, 500 V AC, four-pole, detection of smooth DC residual currents and AC and pulsating DC residual currents, high tolerance against fluctuations in the auxiliary voltage for the detection of type B residual currents, trips independent of mains and auxiliary voltage in the event of type A residual currents and overcurrent, high short-circuit switching capacity, terminals up to 185 mm² , thresholds adjustable for instantaneous and slow-blow overcurrent trip , high surge current strength, i.e. low tendency to faulty trips due to transient residual currents , integrated auxiliary switches

Mounting

mounting on mounting plate, any installation position , supply from below

Applications

stacked power supply systems with TN-S, TT, and TN-C-S networks with high short-circuit performance in purpose-built buildings and industrial facilities , In IT networks, the residual current trip of the CBR can be set to switch off in the event of a second earth fault. , Thanks to its AC/DC sensitive residual current trip, this AC/DC sensitive CBR is especially suitable for protecting systems with electronic equipment that is not galvanically isolated from the mains at its inputs. , use for residual current protection in TN-C networks is excluded

Accessories

housing N-7

Technical Data

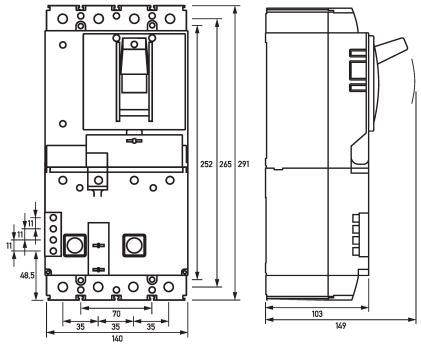
Technical Data	DFL 8 250-4/X-B SK V500
Series	DFL 8 B SK X V
Number of poles	4
Residual current type	B
Tripping characteristic curve	SK
Rated current (AC)	250 A
Rated residual current IΔn	0.3 A, 0.5 A, 1 A

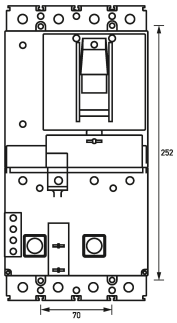
Technical Data	DFL 8 250-4/X-B SK V500
Short-time delayed	true
Selective	true
min. Operating voltage range of test circuit	50 V
max. Operating voltage range of test circuit	550 V
Minimum rated operating voltage (Type B operation)	50 V AC
Selectivity adjustable	true
Tripping frequency	0 Hz ... 150 kHz
Response delays at 2 · IΔn	Adjustment range I: 60 ms ... 120 ms, Adjustment range II: 150 ms ... 250 ms, Adjustment range III: 300 ms ... 420 ms, Adjustment range IV: 450 ms ... 600 ms
Adjustment range of overload tripping	0.8 ... 1
Adjustment range of short-circuit tripping	6 ... 10
Power dissipation Pv release	85 W
Rated operation short-circuit disconnecting capacity Ics	85 kA at Rated operation short-circuit disconnecting capacity Ics (240 V AC); 50 kA at Rated operation short-circuit disconnecting capacity Ics (400/415 V AC); 35 kA at Rated operation short-circuit disconnecting capacity Ics (440 V AC) 25 kA at Rated operation short-circuit disconnecting capacity Ics (525 V AC)
Rated short-circuit disconnecting capacity limit Icu	85 kA at Rated short-circuit disconnecting capacity limit Icu (240 V AC); 50 kA at Rated short-circuit disconnecting capacity limit Icu (400/415 V AC); 35 kA at Rated short-circuit disconnecting capacity limit Icu (440 V AC) 25 kA at Rated short-circuit disconnecting capacity limit Icu (525 V AC)
Rated short-circuit connection and disconnection capacity IΔm	85 kA at Rated short-circuit connection and disconnection capacity Idm (240 V AC); 50 kA at Rated short-circuit connection and disconnection capacity Idm (400/415 V AC); 35 kA at Rated short-circuit connection and disconnection capacity Idm (440 V AC) 25 kA at Rated short-circuit connection and disconnection capacity Idm (525 V AC)
Operating voltage (AC)	500 V (max. 550 V)
Operating frequency	50 Hz
Internal consumption	2.5 W ... 3 W
Rated insulation voltage	1000 V
	Display (status output)
Number	1
Type	operating lever (black)
	load circuit
Specification	load disconnect contact
Rated voltage (AC)	290 V, 500 V
Tolerance of rated voltage	max. 10 %
Rated current (AC)	250 A
Surge current strength	5 kA
Rated impulse withstand voltage	4 kV
Rated frequency	50 Hz
Current heat loss per current path	19.4 W
Electrical endurance AC-1	10000 Schaltspiele
Short-circuit backup-fuse SCPD	250 A
Back-up fuse type	gG
Back-up fuse (textual)	only required if the short-circuit current to be expected at the installation location exceeds the switching capacity of the circuit-breaker
Overvoltage class	III
	auxiliary switches
Specification	switching contact

Technical Data	DFL 8 250-4/X-B SK V500
Rated insulation voltage	500 V
Rated impulse withstand voltage	6 kV
Allowed utilization category	AC-15, DC-13
Rated current (AC-15)	6 A (230 V); 4 A (400 V) 2 A (500 V)
Rated current (DC-13)	3 A (24 V); 0.8 A (110 V) 0.3 A (220 V)
Rated short-circuit disconnecting capacity limit Icu	85 kA at Rated short-circuit disconnecting capacity limit Icu (240 V AC); 50 kA at Rated short-circuit disconnecting capacity limit Icu (400/415 V AC); 35 kA at Rated short-circuit disconnecting capacity limit Icu (440 V AC) 25 kA at Rated short-circuit disconnecting capacity limit Icu (525 V AC)
Rated operation short-circuit disconnecting capacity Ics	85 kA at Rated operation short-circuit disconnecting capacity Ics (240 V AC); 50 kA at Rated operation short-circuit disconnecting capacity Ics (400/415 V AC); 35 kA at Rated operation short-circuit disconnecting capacity Ics (440 V AC) 25 kA at Rated operation short-circuit disconnecting capacity Ics (525 V AC)
Rated short-circuit connection and disconnection capacity IΔm	85 kA at Rated short-circuit connection and disconnection capacity Idm (240 V AC); 50 kA at Rated short-circuit connection and disconnection capacity Idm (400/415 V AC); 35 kA at Rated short-circuit connection and disconnection capacity Idm (440 V AC) 25 kA at Rated short-circuit connection and disconnection capacity Idm (525 V AC)
	box terminal top and bottom (load circuit)
Neutral conductor position	left
Protection against direct contact	finger and back-of-hand proof
Allowed types of wires	aluminium conductor, copper conductor, solid conductor, flexible conductor, stranded conductors with ferrule
Clamping area	4 mm² ... 185 mm²
Connection C1 Maximum number of conductors per terminal	2
Cross section solid	1-wire: 4 mm² ... 16 mm²; 2-wire: 4 mm² ... 16 mm²
Cross section stranded	1-wire: 25 mm² ... 185 mm²; 2-wire: 25 mm² ... 70 mm²
Tightening torque	max. 14 Nm
	screw-type terminal left (auxiliary switches)
Protection against direct contact	finger and back-of-hand proof
Clamping area	0.75 mm² ... 2.5 mm²
Connection C2 Maximum number of conductors per terminal	2
Cross section solid	1-wire: 0.75 mm² ... 2.5 mm²; 2-wire: 0.75 mm² ... 1.5 mm²
Connecting capacity flexible	2-wire: 0.75 mm² ... 1.5 mm²
Cross section flexible with ferrule	0.75 mm² ... 2.5 mm²
Cross section stranded	1-wire: 0.75 mm² ... 2.5 mm²; 2-wire: 0.75 mm² ... 1.5 mm²
Tightening torque	max. 0.8 Nm
	General data
Operating position	90° tilted, vertical
max. Operating altitude above MSL	2000 m
Mechanical endurance	min. 2000 switching cycles
Electrical endurance	min. 2000 switching cycles
Surrounding atmosphere	normal environmental conditions
Storage temperature	-25 °C ... 70 °C
Ambient temperature	-25 °C ... 70 °C
Climate resistance	constant as per IEC 60068-2-78, cyclical as per IEC 60068-2-30
Shock resistance	20 g / 20 ms Duration
Fatigue limit	1,0 g (f = 2 - 100 Hz) (IEC 60068-2-6)
Housing type	wall-mounted housing
Installation type	Wall mounting

Technical Data	DFL 8 250-4/X-B SK V500
Protection class	IP20 (installed: IP40)
sealable	true
Width	140 mm
Height	291 mm
Depth	103 mm
Installation depth	149 mm
Weight	5.9 kg
Design requirements/Standards	DIN IEC 60755, EN 60947-2, EN 60947-2 Annex B, VDE 0660-101
Degree of pollution	3

Dimensions

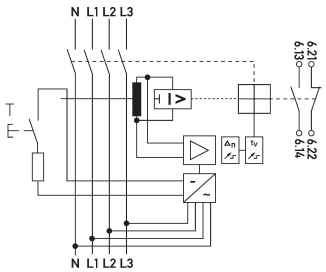




Dimensional drawing Group view

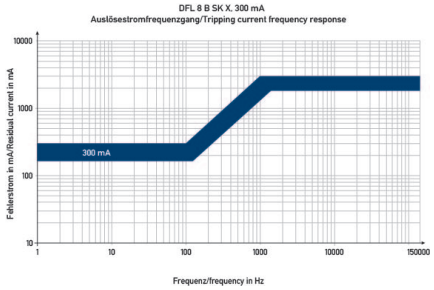
Dimensional drawing Drilling template

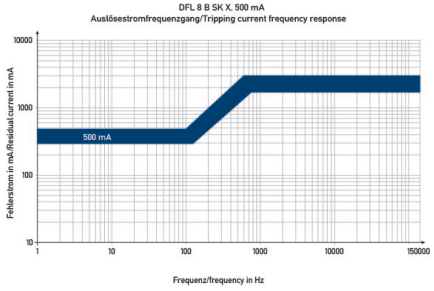
Wiring example

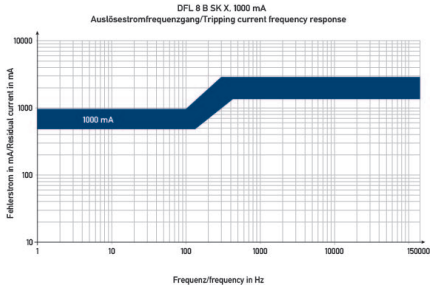


Wiring diagram

Diagrams







Characteristic B SK X 300 mA

Characteristic B SK X 500 mA

Characteristic B SK X 1000 mA