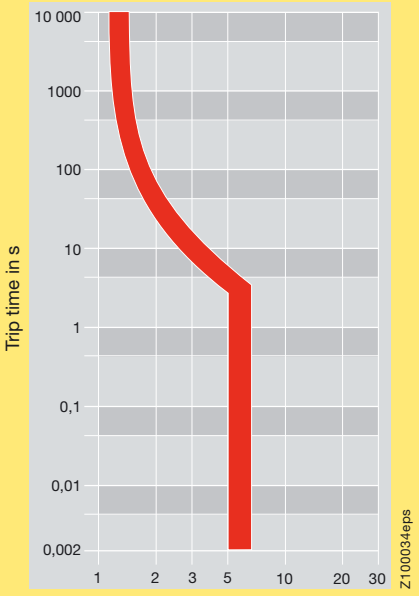
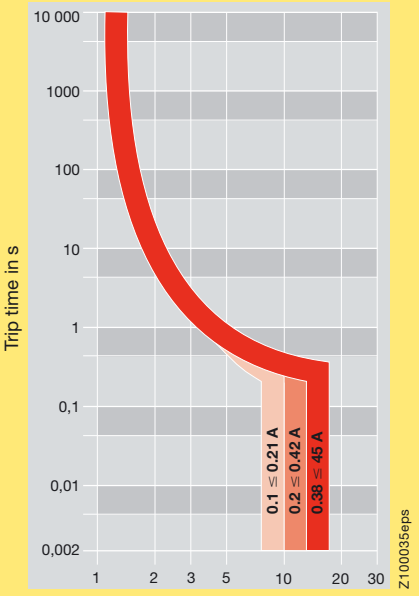
Heavy Duty Circuit Breakers S500
Application

Characteristic	DC circuit protection S500UC-B	DC circuit protection S500UC-K
	A miniature circuit breaker for circuits and electrical equipment in DC networks and DC powered vehicles.	A miniature circuit breaker for circuits and electrical equipment in DC networks and DC powered vehicles.
	Fixed rated current	Adjustable rated current
	 40042	 40041
Trip characteristic	 Trip time in s: 10 000, 1000, 100, 10, 1, 0,1, 0,01, 0,002; 1, 2, 3, 5, 10, 20, 30; Z100034eps Multiple of rated current I_n	 Trip time in s: 10 000, 1000, 100, 10, 1, 0,1, 0,01, 0,002; 1, 2, 3, 5, 10, 20, 30; 0.1 ≤ 0.21 A; 0.2 ≤ 0.42 A; 0.38 ≤ 45 A; Z100035eps Multiple of rated current I_n
Characteristic	**UC-B**	**UC-K**
Thermal trip	1.13...1.45 xI_n	1.05...1.2 xI_n
Electromagnetic trip	5...7 xI_n (DC)	< 0.21 A: 8...10 xI_n (DC) < 0.42 A: 10...12 xI_n (DC) > 0.38 A: 12...14 xI_n (DC)
Ref. calibration temperature	30° C	40 °C

On request
General technical data and trip characteristics: 10134/B

Heavy Duty Circuit Breakers S500
Technical Data

Motor protection S500-KM	Motor protection S500X-AG0084	CD circuit protection S500UC-B, S500UC-K	RCD protection F500-C, F500-D F500-K
3 + N[1)]	3 + N[1)]	1, 2, 3, 4	2, 3, 4
1.6...75 A -	1.6...63 A -	UC-B: 6...63 A UC-K: 0.1...45 A	F500-C, -D: 10...63 A F500-K: 0.28...45 A
-	-	-	0.01/0.03/0.3 A Short delay version: 0.03 A G Selective version: 0.3 A S
415 VAC	690 VAC	per pole 250 VDC/three poles in series max. 750 VDC + 20 %	230 VAC, 400 VAC, 500 VAC, 690 VAC
690 VAC	690 VAC	1000 VDC	690 VAC
6 kV	6 kV	6 kV	-
-	-	-	see page 16
-	-	-	as S500-C, D or K
I_{cu} I_{cs} 25 kA 12.5 kA	I_{cu} I_{cs} 50 kA 25 kA 30 kA 22 kA 15 kA 11 kA 6 kA 3 kA	- - - -	as S500-C, D or K
- - -	- - -	- - - UL1077+CSA IEC 60497-2	- - -
- - - -	- - - -	30 kA 30 kA 30 kA 30 kA 30 kA 30 kA 30 kA 30 kA	- - - -
50/60 Hz 16⅔ Hz on request	50/60 Hz 16⅔ Hz on request	-	50/60 Hz 16⅔ Hz on request 400 Hz on request
– 25 °C ... + 55 °C	– 25 °C ... + 55 °C	– 25 °C ... + 55 °C	– 25 °C ... + 40 °C
DIN 50016	DIN 50016	DIN 50016	IEC68-2-30
-	$\hat{I} < 8{,}000$ A	$\hat{I} < 3{,}500$ A	$\hat{I} < 8{,}000$ A
max. 3 ms at IK 25 kA	max. 2.5 ms at IK 30 kA	4 ms at I_K 30 kA	max. 2.5 ms at I_K 30 kA
> 20,000 switching cycles	> 20,000 switching cycles	> 20,000 switching cycles	> 10,000 switching cycles
IP20	IP20	IP20	IP20
yes	yes	yes	yes
any	any	any	any
Top/bottom	Top/bottom	Top/bottom	Top/bottom
1...25 mm²	1...25 mm²	1...25 mm²	1...25 mm²
2.5 Nm	2.5 Nm	2.5 Nm	2.5 Nm
GOST	-	electrosuisse (SEV), CCC, GOST	-
IEC 60947-2 CE compliant	IEC 60947-2 CE compliant	UL1077, IEC 60947-2 CE compliant	IEC 60947-2, Annex CE compliant

Heavy Duty Circuit Breakers S500
Technical Data
power dissipation/internal resistance per pole

Fixed version

Rated current	S500-B S500-C S500UC-B	Power loss	S500-D	Power loss	Rated current	S500-KM	Power loss
I_n (A)	R_i (Ω)	P_v (W)	R_i (Ω)	P_v (W)	I_n (A)	R_i (Ω)	P_v (W)
6	0.0550	1.98	-	-	1.6	0.018	0.05
10	0.0152	1.52	0.0200	2.00	2.5	0.018	0.11
13	0.0120	2.03	0.0100	1.69	4	0.009	0.14
16	0.0084	2.15	0.0071	1.82	6	0.009	0.32
20	0.0065	2.60	0.0050	2.00	9	0.009	0.65
25	0.0045	2.81	0.0035	2.19	20	0.0045	1.80
32	0.0035	3.58	0.0030	3.07	32	0.0018	1.84
40	0.0021	3.36	0.0019	3.04	52	0.0015	4.06
50	0.0017	4.25	0.0017	4.25	63	0.0014	5.56
63	0.0017	6.75	0.0017	6.75	75	0.0014	7.88

Rated current	F500-C	Power loss	F500-D	Power loss	Rated current	S500X-AG0084	Power loss
I_n (A)	R_i (Ω)	P_v (W)	R_i (Ω)	P_v (W)	I_n (A)	R_i (Ω)	P_v (W)
10	0.0159	1.59	-	-	1.6	0.95	2.43
13	0.0127	2.15	-	-	2.5	0.50	3.13
16	0.0091	2.33	-	-	4	0.195	3.12
20	0.0072	2.88	-	-	6	0.090	3.24
25	0.0052	3.25	0.0042	2.63	9	0.045	3.65
40	0.0028	4.48	0.0026	4.16	20	0.012	4.80
50	0.0022	5.50	-	-	32	0.0055	5.63
63	0.0022	8.73	0.0022	8.73	52	0.0017	4.60
					63	0.0017	6.75

Adjustable version

Rated current	S500-K	Power loss	S500UC-K	Power loss	Rated current	F500-K	Power loss
I_n (A)	R_i (Ω)	P_{vmax} (W)	R_i (Ω)	P_{vmax} (W)	I_n (A)	R_i (Ω)	P_v (W)
0.1 - 0.15	78	1.76	84	1.89	0.28 - 0.42	12.4	2.19
0.14 - 0.21	48	2.12	51	2.25	0.38 - 0.58	6.7	2.25
0.2 - 0.3	23.5	2.12	25.5	2.30	0.53 - 0.8	3.6	2.30
0.28 - 0.42	12.3	2.17	12.8	2.26	0.73 - 1.1	2.1	2.54
0.38 - 0.58	6.6	2.22	7.0	2.35	1 - 1.5	1.1	2.48
0.53 - 0.8	3.5	2.24	3.6	2.30	1.4 - 2.1	0.73	3.22
0.73 - 1.1	2.0	2.42	2.04	2.47	2 - 3	0.3507	3.16
1 - 1.5	1.05	2.36	1.08	2.43	2.8 - 4.2	0.1757	3.10
1.4 - 2.1	0.68	3.00	0.68	3.00	3.8 - 5.8	0.0957	3.22
2 - 3	0.35	3.15	0.35	3.15	5.3 - 8	0.0557	3.56
2.8 - 4.2	0.175	3.09	0.175	3.09	7.3 - 11	0.0357	4.32
3.8 - 5.8	0.095	3.20	0.095	3.20	10 - 15	0.0237	5.33
5.3 - 8	0.055	3.52	0.055	3.52	14 - 20	0.0127	5.08
7.3 - 11	0.035	4.24	0.035	4.24	18 - 26	0.0087	5.88
10 - 15	0.023	5.18	0.023	5.18	23 - 32	0.0062	6.35
14 - 20	0.012	4.80	0.012	4.80	29 - 37	0.0042	5.75
18 - 26	0.008	5.41	0.008	5.41	34 - 41	0.0032	5.38
23 - 32	0.0055	5.63	0.005	5.12	38 - 45	0.0024	4.86
29 - 37	0.0035	4.79	0.0035	4.79			
34 - 41	0.0025	4.20	0.0025	4.20			
38 - 45	0.0017	3.44	0.0017	3.44			

Weights

	Type		
1-pole, with/without separating neutral conductor N/ switched neutral NA	S501...	=	250 g
	S501N...	=	320 g
	S501NA...	=	460 g
2-pole, with/without separating neutral conductor N/ switched neutral NA	S502...	=	500 g
	S502N...	=	570 g
	S502NA...	=	710 g
	F502…	=	820 g
3-pole, with/without separating neutral N conductor/ switched neutral NA	S503...	=	710 g
	S503N...	=	780 g
	S503NA...	=	920 g
	F503…	=	1070 g
4-pole	S504…	=	920 g
	F504…	=	1400 g
Auxiliary contact H	S500-H…	=	60 g
Signal contact S	S500-S…	=	60 g
RCD + RCD-trip signal contact T10	F504+T10	=	1650 g
Undervoltage trip UA	S500+UA	=	160 g
Shunt trip AL	S500+AL	=	170 g

Heavy Duty Circuit Breakers S500
DC circuit protection: S500UC-B, S500UC-K

General

The S500UC Heavy Duty Circuit Breaker is intended for DC applications such as railway systems, electroplating and DC networks.
Voltages up to 250 VDC per pole can be switched with time constants of ≤ 15 ms.
Higher voltages (up to 750 VDC + 20 %) are switched by series connection (polarity-independent), see page 25.

Major features

- High rated operating voltage up to 750 VDC
- High rated breaking capacity 30 kA (250 VDC, 500 VDC, 750 VDC)
- Independent polarity connection
- Fixed and adjustable versions
- Compact dimensions, DIN cap size
- Clear contact position indication for all poles
- Wide range of accessories

Order data

DC circuit protection

Characteristic **B**

Rated Current (A)	Type **1-pole**	Module (25 mm)	Type **2-pole**	Module (25 mm)	Type **3-pole**	Module (25 mm)	Type **4-pole**	Module (25 mm)
6	**S501UC-B6**	1	**S502UC-B6**	2	**S503UC-B6**	3	**S504UC-B6**	4
10	**S501UC-B10**	1	**S502UC-B10**	2	**S503UC-B10**	3	**S504UC-B10**	4
13	**S501UC-B13**	1	**S502UC-B13**	2	**S503UC-B13**	3	**S504UC-B13**	4
16	**S501UC-B16**	1	**S502UC-B16**	2	**S503UC-B16**	3	**S504UC-B16**	4
20	**S501UC-B20**	1	**S502UC-B20**	2	**S503UC-B20**	3	**S504UC-B20**	4
25	**S501UC-B25**	1	**S502UC-B25**	2	**S503UC-B25**	3	**S504UC-B25**	4
32	**S501UC-B32**	1	**S502UC-B32**	2	**S503UC-B32**	3	**S504UC-B32**	4
40	**S501UC-B40**	1	**S502UC-B40**	2	**S503UC-B40**	3	**S504UC-B40**	4
50	**S501UC-B50**	1	**S502UC-B50**	2	**S503UC-B50**	3	**S504UC-B50**	4
63	**S501UC-B63**	1	**S502UC-B63**	2	**S503UC-B63**	3	**S504UC-B63**	4

Characteristic **K**

Range of adjustment (A)	Type **1-pole**	Module (25 mm)	Type **2-pole**	Module (25 mm)	Type **3-pole**	Module (25 mm)	Type **4-pole**	Module (25 mm)
0.1 - 0.15	**S501UC-K0.15**	1	**S502UC-K0.15**	2	**S503UC-K0.15**	3	**S504UC-K0.15**	4
0.14 - 0.21	**S501UC-K0.21**	1	**S502UC-K0.21**	2	**S503UC-K0.21**	3	**S504UC-K0.21**	4
0.2 - 0.3	**S501UC-K0.3**	1	**S502UC-K0.3**	2	**S503UC-K0.3**	3	**S504UC-K0.3**	4
0.28 - 0.42	**S501UC-K0.42**	1	**S502UC-K0.42**	2	**S503UC-K0.42**	3	**S504UC-K0.42**	4
0.38 - 0.58	**S501UC-K0.58**	1	**S502UC-K0.58**	2	**S503UC-K0.58**	3	**S504UC-K0.58**	4
0.53 - 0.8	**S501UC-K0.8**	1	**S502UC-K0.8**	2	**S503UC-K0.8**	3	**S504UC-K0.8**	4
0.73 - 1.1	**S501UC-K1.1**	1	**S502UC-K1.1**	2	**S503UC-K1.1**	3	**S504UC-K1.1**	4
1 - 1.5	**S501UC-K1.5**	1	**S502UC-K1.5**	2	**S503UC-K1.5**	3	**S504UC-K1.5**	4
1.4 - 2.1	**S501UC-K2.1**	1	**S502UC-K2.1**	2	**S503UC-K2.1**	3	**S504UC-K2.1**	4
2 - 3	**S501UC-K3**	1	**S502UC-K3**	2	**S503UC-K3**	3	**S504UC-K3**	4
2.8 - 4.2	**S501UC-K4.2**	1	**S502UC-K4.2**	2	**S503UC-K4.2**	3	**S504UC-K4.2**	4
3.8 - 5.8	**S501UC-K5.8**	1	**S502UC-K5.8**	2	**S503UC-K5.8**	3	**S504UC-K5.8**	4
5.3 - 8	**S501UC-K8**	1	**S502UC-K8**	2	**S503UC-K8**	3	**S504UC-K8**	4
7.3 - 11	**S501UC-K11**	1	**S502UC-K11**	2	**S503UC-K11**	3	**S504UC-K11**	4
10 - 15	**S501UC-K15**	1	**S502UC-K15**	2	**S503UC-K15**	3	**S504UC-K15**	4
14 - 20	**S501UC-K20**	1	**S502UC-K20**	2	**S503UC-K20**	3	**S504UC-K20**	4
18 - 26	**S501UC-K26**	1	**S502UC-K26**	2	**S503UC-K26**	3	**S504UC-K26**	4
23 - 32	**S501UC-K32**	1	**S502UC-K32**	2	**S503UC-K32**	3	**S504UC-K32**	4
29 - 37	**S501UC-K37**	1	**S502UC-K37**	2	**S503UC-K37**	3	**S504UC-K37**	4
34 - 41	**S501UC-K41**	1	**S502UC-K41**	2	**S503UC-K41**	3	**S504UC-K41**	4
38 - 45	**S501UC-K45**	1	**S502UC-K45**	2	**S503UC-K45**	3	**S504UC-K45**	4

Module ≙ width of a single pole device

On request
*Delivery lead time