

Technical specifications

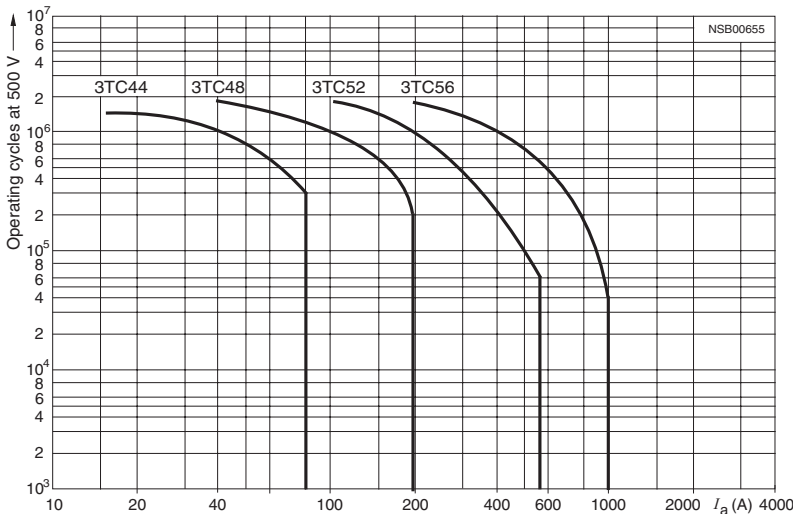
Contactors	Type	3TC4 and 3TC7	3TC5
Rated data of the auxiliary contacts			
Rated insulation voltage U_i (degree of pollution 3)	V	690	
Continuous thermal current I_{th} = Rated operational current I_e/AC-12		10	10
AC load			
Rated operational current I_e/AC-15/AC-14 for rated operational voltage \hat{U}_e			
	24 V A	10	10
	110 V A	10	10
	125 V A	10	10
	220 V A	6	6
	230 V A	5.6	5.6
	380 V A	4	4
	400 V A	3.6	3.6
	500 V A	2.5	2.5
	660 V A	2.5	2.5
	690 V A	--	--
DC load			
Rated operational current I_e/DC-12 for rated operational voltage \hat{U}_e			
	24 V A	10	10
	60 V A	10	10
	110 V A	3.2	8
	125 V A	2.5	6
	220 V A	0.9	2
	440 V A	0.33	0.6
	600 V A	0.22	0.4
Rated operational current I_e/DC-13 for rated operational voltage \hat{U}_e			
	24 V A	10	10
	60 V A	5	5
	110 V A	1.14	2.4
	125 V A	0.98	2.1
	220 V A	0.48	1.1
	440 V A	0.13	0.32
	600 V A	0.07	0.21
Contactors	Type	3TC44 ... 3TC56	
CSA and UL rated data for the auxiliary contacts			
Rated voltage	V AC, max.	600	
Switching capacity		A 600, P 600	

3RT, 3RH, 3TB, 3TC, 3TH, 3TK Contactors for Special Applications

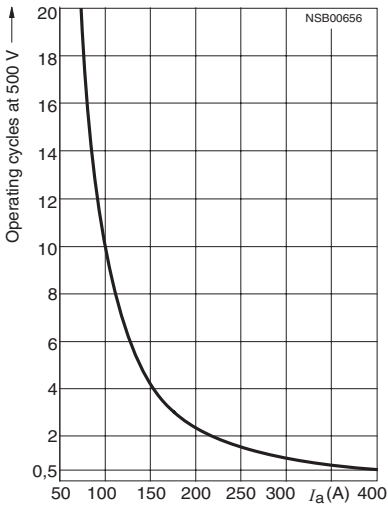
3TC Contactors for Switching DC Voltage

1- and 2-pole, 32 ... 400 A

Contactor	Type	3TC44 ... 3TC78
Endurance of the main contacts		

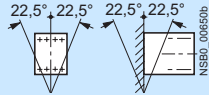


3TC44 to 3TC56 contactors



3TC74 and 3TC78 contactors

Legend for the diagrams:
 I_a = Breaking current

Contactor	Type		3TC44	3TC48	3TC52	3TC56
	Size		2	4	8	12
General data						
Permissible mounting position The contactors are designed for operation on a vertical mounting surface.						
Mechanical endurance	Operating cycles		10 million			
Electrical endurance	Operating cycles		1)			
Rated insulation voltage U_i (degree of pollution 3)	V		800		1000	
Safe isolation between the coil and the main contacts according to EN 60947-1, Appendix N	V		Up to 300		Up to 660	
Mirror contacts A mirror contact is an auxiliary NC contact that cannot be closed simultaneously with a NO main contact.			Yes. Acc. to EN 60947-4-1, Appendix F			
Permissible ambient temperature	During operation	°C	-25 ... +55			
	During storage	°C	-50 ... +80			
Degree of protection according to EN 60947-1, Appendix C			IP00/open, for AC operation, coil assembly IP40			
Shock resistance	Rectangular pulse	g/ ms	7.5/5 and 3.4/10	10/5 and 5/10	12/5 and 5.5/10	12/5 and 5.6/10
Short-circuit protection						
Main circuit						
Fuse links gL/gG	Type of coordination "1"	A	50	160	250	400
LV HRC 3NA, DIAZED 5SB, NEOZED 5SE	Type of coordination "2"	A	35	63	80	250
Auxiliary circuit (short-circuit current $I_k \geq 1\text{ kA}$)						
• Fuse links, gL/gG DIAZED 5SB, NEOZED 5SE		A	16			
• Miniature circuit breaker with C characteristic		A	10			

For the rated data of the auxiliary contacts see page 3/126.

1) See the endurance diagram above.

3RT, 3RH, 3TB, 3TC, 3TH, 3TK Contactors for Special Applications

3TC Contactors for Switching DC Voltage

1- and 2-pole, 32 ... 400 A

Contactor	Type		3TC44	3TC48	3TC52	3TC56
	Size		2	4	8	12
Control						
Magnetic coil operating range			0.8 ... 1.1 x U _s			
Power consumption of the magnetic coils (for cold coil and 1.0 x U _s)						
DC operation	• Closing = Closed	W	10	19	30	86
AC operation, 50 Hz coil	• Closing	VA/p.f.	68/0.86	300/0.5	640/0.48	1780/0.3
	• Closed	VA/p.f.	10/0.29	26/0.24	46/0.23	121/0.22
AC operation, 60 Hz coil	• Closing	VA/p.f.	95/0.79	365/0.45	730/0.38	2140/0.3
	• Closed	VA/p.f.	12/0.3	35/0.26	56/0.24	140/0.29
AC operation, 50/60 Hz coil	• Closing at 50 Hz/60 Hz	VA/p.f.	79/73/0.83/0.78	--	--	--
	• Closed at 50 Hz/60 Hz	VA/p.f.	11/9/0.28/0.27	--	--	--
Operating times (at 0.8 ... 1.1 x U _s) Total break time = OFF-delay + Arcing time			(The values apply up to and including 20 % undervoltage, 10 % overvoltage, as well as when the coil is cold and warm)			
• DC operation	Closing delay	ms	35 ... 190	90 ... 380	120 ... 400	110 ... 400
	Opening delay ¹⁾	ms	10 ... 25	17 ... 28	22 ... 35	40 ... 110
• AC operation	Closing delay	ms	10 ... 40	20 ... 50	20 ... 50	20 ... 50
	Opening delay ¹⁾	ms	5 ... 25	5 ... 30	10 ... 30	10 ... 30
• Arcing time	DC-1	ms	20			
	DC-3/DC-5	ms	30			
Main circuit						
Load rating with DC						
Utilization category DC-1, switching resistive load (L/R ≤ 1 ms)						
Rated operational currents I _e (at 55 °C)	up to U _e 750 V	A	32	75	220	400
Minimum conductor cross-section		mm ²	6	25	95	240
Rated power at U _e	at 220 V	kW	7	16.5	48	88
	440 V	kW	14	33	97	176
	600 V	kW	19.2	45	132	240
	750 V	kW	24	56	165	300
Utilization category DC-3 and DC-5 Shunt-wound and series-wound motors (L/R ≤ 15 ms)						
Rated operational currents I _e (at 55 °C)	up to 220 V	A	32	75	220	400
	440 V	A	29	75	220	400
	600 V	A	21	75	220	400
	750 V	A	7.5	75	170	400
Rated power at U _e	at 110 V	kW	2.5	6.5	20	35
	220 V	kW	5	13	41	70
	440 V	kW	9	27	82	140
	600 V	kW	9	38	110	200
	750 V	kW	4	45	110	250
Switching frequency						
Switching frequency z in operating cycles/hour						
AC/DC operation	With resistive load DC-1	h ⁻¹	1500	1000		
	For inductive load DC-3/DC-5	h ⁻¹	750	600		
Conductor cross-sections						
Screw terminals (1 or 2 conductors can be connected)						
Main conductors:						
• Solid	mm ²		2 x (2.5 ... 10)	--	--	--
• Finely stranded with end sleeve	mm ²		2 x (1.5 ... 4)	--	--	--
• Stranded with cable lug	mm ²		--	2 x 35	2 x 120	2 x 150
• Pin-end connector to DIN 46231	mm ²		2 x (1 ... 6)	--	--	--
• Busbars	mm		--	15 x 2.5	25 x 4	2 x (25 x 3)
• Terminal screw			M5	M6	M10	M10
Auxiliary conductors:						
• Solid	mm ²		2 x (1 ... 2.5)			
• Finely stranded with end sleeve	mm ²		2 x (0.75 ... 1.5)			

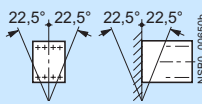
For the rated data of the auxiliary contacts see page 3/126.

¹⁾ The opening delay times can increase if the contactor coils are damped against voltage peaks. Only 3TC44 contactors are allowed to be fitted with diodes.

3RT, 3RH, 3TB, 3TC, 3TH, 3TK Contactors for Special Applications

3TC Contactors for Switching DC Voltage

1- and 2-pole, 32 ... 400 A

Contactor	Type	3TC74 1-pole contactors	3TC78 2-pole contactors
General data			
Permissible mounting positions The contactors are designed for operation on a vertical mounting surface.			
Mechanical endurance	Operating cycles	30 million	
Electrical endurance	Operating cycles	1)	
Rated insulation voltage U_i (degree of pollution 3)	V	1500	
Rated impulse withstand voltage U_{imp}	kV	8	
Safe isolation between the coil and the main contacts according to EN 60947-1, Appendix N	V	630	
Permissible ambient temperature	°C	-25 ... +55	
Degree of protection according to EN 60947-1 Appendix C		IP00/open	
Short-circuit protection			
Main circuit			
Fuse links, gL/gG	Type of coordination "1"	A	630
LV HRC 3NA	Type of coordination "2":	A	500
Auxiliary circuit short-circuit current $I_k \geq 1$ kA			
• Fuse links, gL/gG operational class DIAZED Type 5SB, NEOZED Type 5SE	A	16	
• Miniature circuit breaker with C characteristic	A	10	
Control			
Magnetic coil operating range			
DC operation	24 V > 24 V	0.8 ... 1.2 x U_s 0.7 ... 1.2 x U_s	
AC operation	24 V > 24 V	0.7 ... 1.15 x U_s 0.7 ... 1.2 x U_s	
Power consumption of the magnetic coils (when coil is cold and 1.0 x U_s)			
DC operation	Closing = Closed	W	46
AC operation, 50 Hz	Closing, Closed	VA	80/0.95
Operating times (Total break time = Opening delay + Arcing time)		(The values apply up to and including 15 % undervoltage, 10 % overvoltage, as well as when the coil is cold and warm)	
• AC and DC operation	Closing delay	ms	60 ... 100
	Opening delay	ms	20 ... 35
• Arcing time at 0.06 ... 4 x I_e		ms	40 ... 70
Main circuit			
Load rating with DC			
Utilization category DC-1, switching resistive load ($L/R \leq 1$ ms)			
Rated operational current I_e /DC-1 (at 55 °C)	A	500	500
Minimum conductor cross-section	mm ²	2 x 150	2 x 150
Rated power at			
	220 V kW	110	110
	440 V kW	220	220
	600 V kW	300	300
	750 V kW	375	375
	1200 V kW	--	600
	1500 V kW	--	750
Critical currents, without arc extinction			
	440 V A	≤ 7	--
	600 V A	≤ 13	--
	750 V A	≤ 15	--
	≤ 800 V A	--	≤ 7
	1200 V A	--	≤ 13
	1500 V A	--	≤ 15
Utilization categories DC-3 and DC-5, switching DC motors		2)	
Permissible rated current for regenerative braking at 110 ... 600 V	A	400	

Switching frequency

Switching frequency z in operating cycles/hour			
AC/DC operation	With resistive load DC-1	h ⁻¹	750
	For inductive load DC-3/DC-5	h ⁻¹	500

Conductor cross-section

Screw terminals			
Main conductors:			
• Stranded with cable lug	mm ²	2 x ... 150	
• Busbars	mm	2 x (30 x 4)	
Auxiliary conductors:			
• Solid	mm ²	1 ... 2.5	
• Finely stranded with end sleeve	mm ²	0.75 ... 1.5	

For the rated data of the auxiliary contacts see page 3/126.

2) See selection table in Catalog LV 1.

1) See page 3/127.