

## Technical specifications

Contactor	Type	3TC4 and 3TC7	3TC5
<b>Rated data of the auxiliary contacts</b>			
<b>Rated insulation voltage <math>U_i</math> (degree of pollution 3)</b>	V	690	
<b>Continuous thermal current <math>I_{th} =</math> Rated operational current <math>I_e/AC-12</math></b>		10	10
<b>AC load</b>			
<b>Rated operational current <math>I_e/AC-15/AC-14</math> for rated operational voltage <math>U_e</math></b>			
	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	--	--
<b>DC load</b>			
<b>Rated operational current <math>I_e/DC-12</math> for rated operational voltage <math>U_e</math></b>			
	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
<b>Rated operational current <math>I_e/DC-13</math> for rated operational voltage <math>U_e</math></b>			
	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

Contactor	Type	3TC44 ... 3TC56
<b>CSA and UL rated data for the auxiliary contacts</b>		
Rated voltage	V AC, max.	600
Switching capacity		A 600, P 600

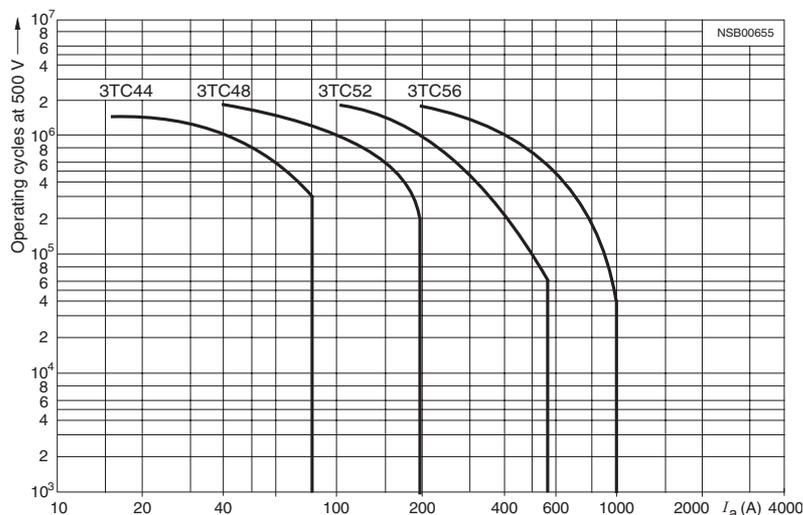
# 3RT, 3RH, 3TB, 3TC, 3TH, 3TK Contactors for Special Applications

## 3TC Contactors for Switching DC Voltage

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

Contactors Type **3TC44 ... 3TC78**

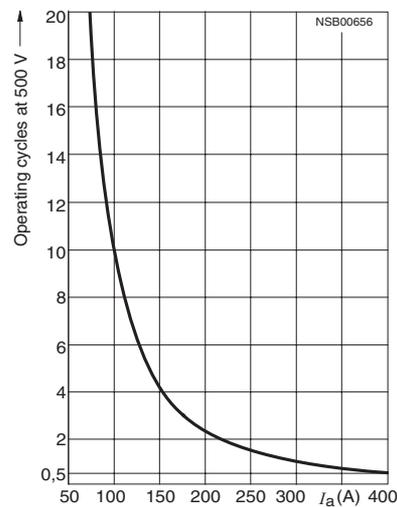
### Endurance of the main contacts



3TC44 to 3TC56 contactors

Legend for the diagrams:

$I_a$  = Breaking current



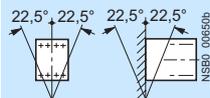
3TC74 and 3TC78 contactors

Contactors Type Size **3TC44 2** **3TC48 4** **3TC52 8** **3TC56 12**

### General data

#### Permissible mounting position

The contactors are designed for operation on a vertical mounting surface.



<b>Mechanical endurance</b>	Operating cycles		10 million			
<b>Electrical endurance</b>	Operating cycles		1) 1)			
<b>Rated insulation voltage <math>U_i</math></b> (degree of pollution 3)	V		800		1000	
<b>Safe isolation</b> between the coil and the main contacts according to EN 60947-1, Appendix N	V		Up to 300		Up to 660	
<b>Mirror contacts</b> 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			
<b>Permissible ambient temperature</b>	During operation	°C	-25 ... +55			
	During storage	°C	-50 ... +80			
<b>Degree of protection</b> according to EN 60947-1, Appendix C			IP00/open, for AC operation, coil assembly IP40			
<b>Shock resistance</b>	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 Size		3TC44 2	3TC48 4	3TC52 8	3TC56 12
<b>Control</b>						
<b>Magnetic coil operating range</b>			0.8 ... 1.1 x $U_g$			
<b>Power consumption of the magnetic coils</b> (for cold coil and 1.0 x $U_g$ )						
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	--	--	--
<b>Operating times</b> (at 0.8 ... 1.1 x $U_g$ ) 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 <sup>1)</sup>	ms	10 ... 25	17 ... 28	22 ... 35	40 ... 110
• AC operation	Closing delay	ms	10 ... 40	20 ... 50	20 ... 50	20 ... 50
	Opening delay <sup>1)</sup>	ms	5 ... 25	5 ... 30	10 ... 30	10 ... 30
• Arcing time	DC-1	ms	20			
	DC-3/DC-5	ms	30			
<b>Main circuit</b>						
<b>Load rating with DC</b>						
<b>Utilization category DC-1, switching resistive load</b> ( $L/R \leq 1$ ms)						
Rated operational currents $I_b$ (at 55 °C)	up to $U_b$ 750 V	A	32	75	220	400
Minimum conductor cross-section		mm <sup>2</sup>	6	25	95	240
Rated power at $U_b$	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
<b>Utilization category DC-3 and DC-5</b> <b>Shunt-wound and series-wound motors</b> ( $L/R \leq 15$ ms)						
Rated operational currents $I_b$ (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 $U_b$	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
<b>Switching frequency</b>						
<b>Switching frequency z</b> in operating cycles/hour						
AC/DC operation	With resistive load DC-1	h <sup>-1</sup>	1500	1000		
	For inductive load DC-3/DC-5	h <sup>-1</sup>	750	600		
<b>Conductor cross-sections</b>						
<b>Screw terminals</b> (1 or 2 conductors can be connected)						
<b>Main conductors:</b>						
• Solid		mm <sup>2</sup>	2 x (2.5 ... 10)	--	--	--
• Finely stranded with end sleeve		mm <sup>2</sup>	2 x (1.5 ... 4)	--	--	--
• Stranded with cable lug		mm <sup>2</sup>	--	2 x 35	2 x 120	2 x 150
• Pin-end connector to DIN 46231		mm <sup>2</sup>	2 x (1 ... 6)	--	--	--
• Busbars		mm	--	15 x 2.5	25 x 4	2 x (25 x 3)
• Terminal screw			M5	M6	M10	M10
<b>Auxiliary conductors:</b>						
• Solid		mm <sup>2</sup>	2 x (1 ... 2.5)			
• Finely stranded with end sleeve		mm <sup>2</sup>	2 x (0.75 ... 1.5)			

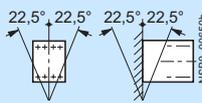
For the rated data of the auxiliary contacts see page 3/126.

<sup>1)</sup> 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	
<b>General data</b>					
<b>Permissible mounting positions</b> The contactors are designed for operation on a vertical mounting surface.					
<b>Mechanical endurance</b>	Operating cycles	30 million			
<b>Electrical endurance</b>	Operating cycles	1)			
<b>Rated insulation voltage <math>U_i</math></b> (degree of pollution 3)	V	1500			
<b>Rated impulse withstand voltage <math>U_{imp}</math></b>	kV	8			
<b>Safe isolation</b> between the coil and the main contacts according to EN 60947-1, Appendix N	V	630			
<b>Permissible ambient temperature</b>	°C	-25 ... +55			
<b>Degree of protection</b> according to EN 60947-1 Appendix C		IP00/open			
<b>Short-circuit protection</b>					
<b>Main circuit</b>					
Fuse links, gL/gG	Type of coordination "1"	A	630		
LV HRC 3NA	Type of coordination "2":	A	500		
<b>Auxiliary circuit</b> 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		
<b>Control</b>					
<b>Magnetic coil operating range</b>					
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 $U_s$			
<b>Power consumption of the magnetic coils</b> (when coil is cold and 1.0 x $U_s$ )					
DC operation	Closing = Closed	W	46	92	
AC operation, 50 Hz	Closing, Closed	VA	80/0.95	160/0.95	
<b>Operating times</b> (Total break time = Opening delay + Arcing time)					
• 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		
<b>Main circuit</b>					
<b>Load rating with DC</b>					
<b>Utilization category DC-1, switching resistive load (<math>L/R \leq 1</math> ms)</b>					
Rated operational current $I_e/DC-1$ (at 55 °C)	A	500	500		
Minimum conductor cross-section	mm <sup>2</sup>	2 x 150	2 x 150		
Rated power at	220 V kW 440 V kW 600 V kW 750 V kW 1200 V kW 1500 V kW	110 220 300 375 -- --	110 220 300 375 600 750		
Critical currents, without arc extinction	440 V A 600 V A 750 V A ≤ 800 V A 1200 V A 1500 V A	≤ 7 ≤ 13 ≤ 15 -- -- --	-- -- -- ≤ 7 ≤ 13 ≤ 15		
<b>Utilization categories DC-3 and DC-5, switching DC motors</b>					
<b>Permissible rated current for regenerative braking</b> at 110 ... 600 V	A	400			
<b>Switching frequency</b>					
<b>Switching frequency z</b> in operating cycles/hour					
AC/DC operation	With resistive load DC-1 For inductive load DC-3/DC-5	h <sup>-1</sup> h <sup>-1</sup>	750 500	1000 500	
<b>Conductor cross-section</b>					
<b>Screw terminals</b>					
<b>Main conductors:</b>					
• Stranded with cable lug		mm <sup>2</sup>	2 x ... 150		
• Busbars		mm	2 x (30 x 4)		
<b>Auxiliary conductors:</b>					
• Solid		mm <sup>2</sup>	1 ... 2.5		
• Finely stranded with end sleeve		mm <sup>2</sup>	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.