					3TG10	
General data						
Mechanical endurance	Operating cycles				3 million	
Electrical endurance at I_e	Operating cycles	AC-1 AC-3			0.1 million 0.4 million	
Rated insulation voltage U_i (pollution degree 3)				V	400	
Rated impulse withstand voltage U_{imp}				kV	4	
Permissible ambient temperature			in operation[1]) when stored	°C °C	–25 to +55 –50 to +80	
Degree of protection acc. to IEC 60 947-1 and IEC 60 529 (VDE 0470 Part 1)					IP 00, coil system IP 20	
Power consumption of the coils (with coil in cold state and 1.0 x U_s)						
	AC operation 50 Hz/60 Hz			VA	4.4	
	p.f.				0.9 (hum-free)	
	DC operation			W	4	
Coil voltage tolerance					0.85 to 1.1 x U_s	
Operating times (break-time = opening time + arcing time)					AC operation	DC operation
	Closing	closing time opening time	NO NC	ms ms	10 to 50 5 to 45	11 to 50 5 to 45
	Opening	opening time closing time	NO NC	ms ms	20 to 30 20 to 30	19 to 35 21 to 39
	Arcing time			ms	10 to 15	
Shock resistance						
Rectangular pulse		AC and DC operation		*g*/ms	5.1/5 and 3.5/10	
Sine pulse		AC and DC operation		*g*/ms	7.9/5 and 5.2/10	
Operating frequency *z* in operating cycles per hour						
Rated operation		No-load op. frequency		1/h	10000	
		for AC-1		1/h	1000	
		for AC-2		1/h	500	
		for AC-3		1/h	1000	
Short-circuit protection						
Fuse links						
Utilization category gL/gG	NH DIAZED NEOZED	Type 3NA Type 5SB Type 5SE				
acc. to IEC 60 947-4-1	Type of coordination "1"			A	25	
(DIN VDE 0660Part 102)	Type of coordination "2"			A	10	
Miniature circuit-breaker	C-characteristic			A	10	
Load ratings with AC						
AC-1 utilization category, switching resistive load						
Rated operational current I_e at 55 °C to 400 V[1])						
with screw connection				A	20	
with tab connector				A	16	
Ratings U_e of three-phase loads p.f. = 1				V	400	230/220
with screw connection				kW	13	7.5
with tab connector				kW	10	6.0
Minimum conductor cross-section with I_e load				mm^2	2.5	

1) If the three main conducting paths are loaded with 20 A and I > 10 A, the permissible ambient temperature for the fourth conducting paths 40 °C.

Technical data

			3TG10								
Load ratings with AC											
AC-2 and AC-3 utilization categories											
Rated operational currents I_e up to 400 V		A	8.4								
Ratings of motors with slipring or squirrel-cage rotor at 50 Hz and 60 Hz and at 400 V		kW	4								
AC-5a utilization category (permissible supply impedance: ≥ 0.5 Ω) **Switching gas discharge lamps** per main conducting path at 50 Hz 230 V			Uncorrected				Lead-lag				
Rating per lamp		W	18	36	58		18	36	58		
Rated operational current per lamp		A	0.37	0.43	0.67		2 x 0.11	2 x 0.21	2 x 0.32		
Number of lamps		units	43	37	24		2 x 81	2 x 42	2 x 28		
Switching gas discharge lamps with correction, electronic ballast per main conducting path at 50 Hz 230 V			Parallel correction			Electr. ballast, 1 lamp			Electr. ballast, 2 lamps		
Rating per lamp		W	18	36	58	18	36	58	18	36	58
Capacitor		µF	4.5	4.5	7	6.8	6.8	10	10	10	22
Rated operational current per lamp		A	0.11	0.21	0.32	0.10	0.18	0.27	0.18	0.35	0.52
Number of lamps		units	15	15	10	39	39	26	2 x26	2 x 26	2 x1
AC-5b utilization category, switching incandescent lamps per main conducting path at 50 Hz 230 V		kW	1.6								
Load ratings with DC											
DC-1 utilization category, switching resistive load ($\frac{L}{R}$ ≤ 1 ms)											
Rated operational currents I_e	Conducting paths connected in series		1		2		3		4		
	up to 24 V	A	16		16		18		20		
	60 V	A	6		16		18		20		
	110 V	A	2		6		16		20		
	220 V/240 V	A	0.8		1.6		6		20		
DC-3 and DC-5 utilization categories, shunt and series motors ($\frac{L}{R}$ ≤ 15 ms)											
Rated operational currents I_e	Conducting paths connected in series		1		2		3		4		
	up to 24 V	A	10		16		16		18		
	60 V	A	0.5		5		16		16		
	110 V	A	0.15		0.35		10		10		
	220 V/240 V	A	–		–		1.75		2		
Conductor cross-sections for designs											
with screw connections											
Terminal screws			M3								
Finely stranded with end sleeve (DIN 46 228, style A/D/C)		mm²	2 x (0.75 to 2.5)								
Solid		mm²	2 x (1 to 2.5)								
		mm²	1 x 4								
with tab connectors											
Finely stranded	6.3 to 1	mm²	0.5 to 1								
When using push-on contact acc. to DIN 46 245/46 247	6.3 to 2.5	mm²	1 to 2.5								
CSA and UL ratings (screw connection)											
Rated insulation voltage	AC	V	600								
Conventional thermal current	Free air and enclosed	A	20								
Maximum horsepower ratings (CSA and UL-approved values)			Single-phase	3-phase							
Ratings of three-phase motors at 60 Hz	at 115 V	hp	1/2	–							
	200 V	hp	1	3							
	230 V	hp	1 1/2	3							
	460 V/575 V	hp	–	5							
	600 V	hp	–	5							
Overload relay	Type		3UA7								
	Setting range	A	6.3 to 10								

For short-circuit protection with overload relays, see Part 4.

Short-circuit protection of contactors without overload relays

Contactor	Size / Type				0 3TF40	3TF41	1 3TF42	3TF43	2 3TF44	3TF45	3 3TF46	3TF47
Main circuit												
Fuse links, utilization category gL/gG or miniature circuit-breaker with C-characteristic	NH	Type 3NA										
	DIAZED	Type 5SB										
	NEOZED	Type 5SE										
With fuse links												
– acc. to IEC 60 947-4-1 (DIN VDE 0660 Part 102)	Type of coord. "1" [1]			A	35	35	63	63	80	80	160	160
	Type of coord. "2" [1]			A	25	25	25	25	80	80	125	125
– weld-free	$I_k < 100 \times I_e$			A	–	–	16	16	25	25	50	63
	$I_k \geq 100 \times I_e$			A	10	10	16	16	25	25	63	80
With miniature circuit-breaker				A	16	25	25	35	–	–	–	–
Auxiliary circuit (short-circuit current $I_k \geq 1$ kA)												
Fuse links, utilization category gL/gG or miniature circuit-breaker with C-characteristic	NH	Type 3NA										
	DIAZED	Type 5SB										
	NEOZED	Type 5ES										
With fuse links				A	16 (6 if the auxiliary contact of the overload relay is connected in the contactor coil circuit).							
With miniature circuit-breaker				A	10 (3 if the auxiliary contact of the overload relay is connected in the contactor coil circuit).							

For short-circuit protection of contactors with overload relays, see Part 4.
For fuseless motor feeders, see Part 5.

General data

Contactor	Size / Type				0 3TF40/3TF41	1 3TF42/ 3TF43	2 3TF44/3TF45	3 3TF46/ 3TF47
Mechanical endurance	DC operation			Oper. cycles	10 mill.	10 mill.	10 mill.	3 mill.
Rated insulation voltage U_i (pollution degree 3)				V	690	690	690	1000
Rated impulse withstand voltage U_{imp}				kV	8	8	8	8
Permissible ambient temperature	in operation			°C	–50 to +70	(for ambient temperatures > +55 °C or < –25 °C, see description)		
	when stored			°C	–55 to +80			
Degree of protection acc. to IEC 60 947-1 and IEC 60 529 (VDE 0470 Part 1)					IP 20	IP 20	IP 00	IP 00 (open), IP 40 (coil)
Coil voltage tolerance					0.7 to 1.25 x U_s			
Power consumption of the coils (with coil in cold state and 1.0 x U_s)								ON / OFF
closing = closed[3])	DC operation			W	4.6	5.2	10.3	21 / 12
Permissible residual current of the electronics (with 0 signal)	DC operation				< 10 mA x $\left(\frac{24\ V}{U_s}\right)$			–
Operating times at 0.7 to 1.25 x U_s								
Break-time = opening time + arcing time	**Oper. times** Closing	at 0.7 x U_s	clos. time	NO ms	70 to 200	82 to 172	112 to 260	90 to 200
			opng. time	NC ms	28 to 33	24 to 28	86 to 235	65 to 172
		at 1.0 x U_s	clos. time	NO ms	45 to 80	58 to 73	74 to 106	48 to 100
Arcing time: 10 ms[2])			opng. time	NC ms	30 to 34	24 to 28	58 to 98	35 to 90
		at 1.25 x U_s	clos. time	NO ms	40 to 60	42 to 58	60 to 80	40 to 76
			opng. time	NC ms	31 to 35	25 to 30	47 to 72	30 to 68
DC operation, DC solenoid system	Opening	at 0.7 to 1.25 x U_s	opng. time	NO ms	20 to 30	20 to 26	10 to 12	14 to 20
			clos. time	NC ms	22 to 32	22 to 28	12 to 18	17 to 23
Operating frequency z	DC operation							
Contactors without overload relays	No-load operating frequency			1/h	1500	1500	1500	1000
Rated operation for	AC-1			1/h	1500	1500	1200	1000
	AC-2			1/h	1000	750	750	600
Dependence of the operating frequency z' on the operational current I' and the operational voltage U':	AC-3			1/h	1000	750	750	600
	AC-4			1/h	250	250	250	200
$z' = z \cdot \frac{I_e}{I'} \cdot \left(\frac{400\ V}{U'}\right)^{1.5}$ 1/h								
Contactors with overload relays (mean value)				1/h	15	15	15	15

								1500	1500	1000	1000
								1500	1200	1000	1000
								1000	750	600	400
								1000	750	600	1000	1000
								250	250	200	400	300

								15	15	15	15

1) According to excerpt from IEC 60 947-4 -1 (DIN VDE 0660 Part 102):
Type of coordination "1":
Destruction of the contactor and the overload relay is permissible. The contactor and/or overload relay must be replaced if necessary.

Type of coordination "2":
No damage can be tolerated to the overload relay, but contact welding on the contactor is permitted if the contacts can be easily separated.

2) 3TF46/47: 10 to 15 ms.

3) Valid for 3TF40 to 3TF45.

Technical data

Contactor	Size Type			0 3TF40/3TF41	1 3TF42/3TF43	2 3TF44/3TF45	3 3TF46/3TF47
Shock resistance							
	Rectangular pulse	AC DC	*g*/ms *g*/ms	7.7/5 and 4.4/10 9.3/5 and 5.4/10	5.5/5 and 3.2/10 5.8/5 and 3.4/10	5.7/5 and 3.3/10 5.7/5 and 3.3/10	11.2/5 and 6.6/10 14.5 and 7.7/10
	Sine pulse	AC DC	*g*/ms *g*/ms	12/5 and 6.8/10 14.7/5 and 8.5/10	8.7/5 and 5.1/10 9/5 and 5.3/10	9/5 and 5.2/10 9/5 and 5.2/10	17.6/5 and 10.3/10 22/5 and 12/10

Conductor cross-sections

Contactor	Size Type		0 3TF40/3TF41	1 3TF42/3TF43
Screw connection (1 or 2 conductor connections possible)	**Main conductor:**			
	Solid	mm²	2 x (0.5 to 1); 2 x (1 to 2.5); 1 x 4	2 x (2.5 to 6)
	Finely stranded with end sleeve	mm²	2 x (0.5 to 1); 2 x (0.75 to 2.5)	2 x (0.5 to 1); 2 x (1.5 to 4)
	Pin-end connector (DIN 46 231)	mm²	1 x (1 to 2.5)	1 x (1 to 6)
	Solid or stranded	AWG	2 x (18 to 12)	2 x (14 to 10)
	Terminal screws		M 3.5	M 4
	Auxiliary conductor:			
	Solid	mm²	2 x (0.5 to 1); 2 x (1 to 2.5)	2 x (0.5 to 1); 2 x (1 to 2.5)
	Finely stranded with end sleeve	mm²	2 x (0.5 to 1); 2 x (0.75 to 2.5)	2 x (0.5 to 1); 2 x (0.75 to 2.5)
	Pin-end connector (DIN 46 231)	mm²	2 x (1 to 1.5)	2 x (1 to 1.5)
	Solid or stranded	AWG	2 x (18 to 12)	2 x (18 to 12)
Tightening torque of terminal screws	Main conductor		0.8 to 1.4 Nm (7 to 12 lb.in)	1 to 1.5 Nm (8.8 to 13 lb.in)
	Auxiliary conductor		0.8 to 1.4 Nm (7 to 12 lb.in)	0.8 to 1.4 Nm (7 to 12 lb.in)

Contactor	Size Type		2 3TF44/3TF45			
	Main conductor:		Front terminal connected	Back terminal connected	Both terminals connected Front terminal	 Back terminal
	Solid	mm²	1 to 16	1 to 16	1 to 16	1 to 16
	Finely stranded without end sleeve	mm²	2.5 to 16	1.5 to 16	2.5 to 10	1.5 to 16
	Finely stranded with end sleeve	mm²	1 to 16	1 to 16	1 to 10	1 to 16
	Stranded	mm²	2.5 to 25	1.5 to 25	2.5 to 10	1.5 to 25
	Solid or stranded	AWG	14 to 3	16 to 3	14 to 3	16 to 3
	Pin-end connector (DIN 46 231)	mm²	1 to 6	1 to 6	1 to 6	1 to 6
	Terminal screw		M 4	M 4	M 4	M 4
	Auxiliary conductor:					
	Solid	mm²	2 x (0.5 to 1); 2 x (1 to 2.5)			
	Finely stranded with end sleeve	mm²	2 x (0.5 to 1); 2 x (0.75 to 2.5)			
	Pin-end connector (DIN 46 231)	mm²	2 x (1 to 1.5)			
	Solid or stranded	AWG	2 x (18 to 12)			
Tightening torque of terminal screws	Main conductor		2.5 to 3.0 Nm (22 to 26.5 lb.in)			
	Auxiliary conductor		0.8 to 1.4 Nm (7 to 12 lb.in)			

Contactor	Size Type		3 3TF46/3TF47	
	Main conductor: – With box terminal		Front terminal connected	Back terminal connected
	Solid	mm²	6 to 16	2.5 to 16
	Finely stranded without end sleeve	mm²	10 to 35	2.5 to 35
	Finely stranded with end sleeve	mm²	6 to 35	2.5 to 35
	Stranded	mm²	16 to 50	16 to 50
	Solid or stranded	AWG	10 to 1/0	18 to 1/0
	Terminal screw		M 6	
	Tightening torque		4 to 6 Nm (36 to 52 lb.in)	
(1 or 2 conductor connections possible)	– without box terminal			
	Finely stranded with cable lug	mm²	10 to 35[1])	
	Stranded with cable lug	mm²	10 to 50[1])	
	Solid or stranded	AWG	7 to 1/0	
	Connecting bar (max. width)	mm	12	
	Terminal screw		M 6 x 20	
	Tightening torque		4 to 6 Nm (36 to 52 lb.in)	
	Auxiliary conductor:			
	Solid	mm²	2 x (0.5 to 1); 2 x (1 to 2.5); 1 x 4	
	Finely stranded with end sleeve	mm²	2 x (0.5 to 1); 2 x (0.75 to 2.5)	
	Pin-end connector (DIN 46 231)	mm²	2 x (1 to 1.5)	
	Solid or stranded	AWG	2 x (18 to 12)	
	Tightening torque		0.8 to 1.4 Nm (7 to 12 lb.in)	

1) If the maximum conductor cross-section is connected, a terminal cover is necessary to comply with the phase clearance.

Load ratings with AC

Contactor / Size / Type			0 3TF40	0 3TF41	1 3TF42	1 3TF43	2 3TF44	2 3TF45	3 3TF46	3 3TF47
Thermal load	10 s current[1])	A	90	96	130	176	400	400	360	500
Power loss per conducting path	at I_e/AC-3	W	0.6	1.1	1.0	1.6	2.0	2.5	3.5	6.0
AC-1 utilization category, switching resistive load										
Rated operational currents I_e	at 40 °C up to 690 V	A	21		32		65		90	100
	at 55 °C up to 690 V	A	20		30		55		80	90
Ratings of	at 230 V	kW	7.5		11.4		20.9		30	34
three-phase loads	400 V	kW	13		19.7		36		52	59
p.f. = 1 (at 55 °C)	500 V	kW	17		26		47.5		67	74
	690 V	kW	22		34		62.7		91	102
Minimum conductor cross-section with I_e load	at 40 °C	mm²	4		6		16		35	35
	at 55 °C	mm²	2.5		4		16		25	35
AC-2 and AC-3 utilization categories										
Rated operational currents I_e	up to 400 V	A	9	12	16	22	32	38	45	63
	500 V	A	9	12	16	17	32	38	45	63
	690 V	A	6.6	8.8	12.2	12.2	27	27	45	63
Ratings of motors	at 230 V	kW	2.54	3.45	4.4	6.1	8.5	11	15	19
with slipring or squirrel-cage rotor	400 V	kW	4.42	6	7.7	11	15	18.5	23.7	33.2
at 50 Hz and 60 Hz	500 V	kW	5.5	7.5	10	11	21	25	30	41.4
	690 V	kW	5.5	7.5	11	11	23	23	40	57.2
AC-4 utilization category (contact endurance approx. 200 000 operating cycles at I_a = 6 x I_e)										
Rated operational currents I_e	up to 400 V	A	3.3	4.3	7.7	8.5	15.6	18.5	24	28
	690 V	A	3.3	4.3	7.7	8.5	15.6	18.5	24	28
Ratings of motors	at 230 V	kW	0.85	1.15	2	2.2	4.3	5.2	7.3	8.5
with squirrel-cage rotor at 50 Hz and 60 Hz	400 V	kW	1.48	2	3.5	4	7.5	9	12.6	14.7
Max. permissible rated operational current	500 V	kW	1.85	2.5	4.6	5.2	9.8	11.8	15.8	18.4
I_e/AC-4 ≙ I_e/AC-3 up to 500 V	690 V	kW	2.54	3.45	6	6.6	13	15.5	21.8	25.4
with reduced contact endurance and reduced operating frequency										

Load ratings with DC

Contactor / Size / Type			0 3TF40/3TF41			1 3TF42/3TF43			2 3TF44/3TF45			3 3TF46/3TF47		
DC-1 utilization category, switching resistive load (L/R ≤ 1 ms)														
Rated operational currents I_e (at 55 °C)														
Number of conducting paths connected in series			1	2	3	1	2	3	1	2	3	1	2	3
	up to 24 V	A	20	20	20	30	30	30	55	55	55	80	80	80
	60 V	A	20	20	20	20	30	30	30	55	55	30	80	80
	110 V	A	2.1	12	20	4.5	30	30	6	55	55	6	80	80
	220 V	A	0.8	1.6	20	1	5	30	1	6	45	1.2	7	80
	440 V	A	0.6	0.8	1.3	0.4	1	2.9	0.4	1.1	2.9	0.48	1.2	3
	600 V	A	0.6	0.7	1	0.25	0.8	1.4	0.25	0.7	1.4	0.35	0.8	1
DC-3 and DC-5 utilization categories, shunt and series motors (L/R ≤ 15 ms)														
Rated operational currents I_e (at 55 °C)														
Number of conducting paths connected in series			1	2	3	1	2	3	1	2	3	1	2	3
	up to 24 V	A	20	20	20	20	30	30	20	55	55	5	80	80
	60 V	A	0.5	5	20	2	30	30	2	55	55	2	80	80
	110 V	A	0.15	0.35	20	0.75	7	30	0.75	7	55	0.75	12.5	80
	220 V	A	–	–	1.75	0.2	1	3.5	0.2	1	3.5	0.2	1.1	3.5
	440 V	A	–	–	0.2	0.09	0.27	0.6	0.1	0.27	0.6	0.1	0.27	0.6
	600 V	A	–	–	0.1	0.06	0.16	0.6	0.08	0.18	0.35	0.08	0.18	0.35

1) Acc. to DIN VDE 0660 Part 102.

Technical data

CSA and UL ratings

Contactor	Size / Type			0 3TF40	3TF41	1 3TF42	3TF43	2 3TF44	3TF45	3 3TF46	3TF47
Rated insulation voltage			AC V	600		600		600		600	
Conventional thermal current		Free air and enclosed	A	10	20	25	30	42	45	80	
Maximum horsepower ratings (CSA and UL-approved values)											
Ratings of three-phase motors at 60 Hz		at 200 V	hp	3	3	5	7.5	10	10	15	20
		230 V	hp	3	3	5	7.5	10	15	20	25
		460 V	hp	5	7.5	10	15	25	25	40	50
		575 V	hp	7.5	10	15	20	25	25	50	60
NEMA/EEMAC ratings NEMA/EEMAC SIZE				00	–	0	–	1	–	2	–
Conventional thermal current		Free air	A	10	–	20	–	30	–	50	–
		Enclosed	A	9	–	18	–	27	–	45	–
Ratings of three-phase motors at 60 Hz		at 200 V	hp	1.5	–	3	–	7.5	–	10	–
		230 V	hp	1.5	–	3	–	7.5	–	15	–
		460 V	hp	2	–	5	–	10	–	25	–
		575 V	hp	2	–	5	–	10	–	25	–
Overload relay		Type		3UA50		3UA52		3UA55		3UA58	3UA58
		Setting range	A	0.1 to 14.5		0.1 to 25		1 to 45		10 to 57	57 to 70

Short-circuit protection of contactors without overload relays

Contactor	Size / Type			6 3TF50	6 3TF51	8 3TF52	8 3TF53	10 3TF54	10 3TF55	12 3TF56	12 3TF57	14 3TF68	14 3TF69
Main circuit													
Fuse links, utilization category gL/gG or miniature circuit-breaker with C-characteristic	NH	Type 3NA											
	DIAZED	Type 5SB											
	NEOZED	Type 5SE											
With fuse links													
– acc. to IEC 60 947-4-1 (DIN VDE 0660 Part 102)	Type of coordination "1"[1])		A	400	400	400	400	500	500	800	800	1000	1250
	Type of coordination "2"[1])		A	240	250	250	250	400	400	500	500	500	630
– weld-free	I_k < 100 x I_e		A	160	160	160	160	200	200	315	315	400[2])	500[2])
	I_k ≥ 100 x I_e		A	200	200	315	315	500	500	630	630	–	–

Auxiliary circuit
(short-circuit current I_k ≥ 1 kA)

Fuse links, utilization category gL/gG or miniature circuit-breaker with C-characteristic	NH	Type 3NA		
	DIAZED	Type 5SB		
	NEOZED	Type 5SE		
With fuse links			A	16
			A	6 if the auxiliary contact of the overload relay is connected in the contactor coil circuit.
With miniature circuit-breaker			A	10
			A	3 if the auxiliary contact of the overload relay is connected in the contactor coil circuit.

For short-circuit protection of contactors with overload relays, see Part 4.
For fuseless motor feeders, see Part 5.

General data

Contactor	Size / Type			6 3TF50/3TF51			8 3TF52/3TF53		
Mechanical endurance Operating cycles	AC operation			10 million			10 million		5 million
	DC operation			3 million			3 million		(50/60 Hz coil)
Rated insulation voltage U_i (pollution degree 3)			V	1000					
Rated impulse withstand voltage U_{imp}			kV	8					
Permissible ambient temperature		in operation	°C	–25 to +55					
		when stored	°C	–55 to +80					
Degree of protection acc. to IEC 60 947-1 and IEC 60 529 (VDE 0470 Part 1)				IP 00/open type, coil system IP 40			IP 00/open type, coil system IP 30		
Power consumption of the coils (with coil in cold state and 1.0 x U_s)				**Standard design**					
AC operation			Hz	50	60	50/60	50	60	50/60
	closing		VA	550	680	660/575	910	1090	1080/990
	p.f.			0.45	0.4	0.45/0.4	0.38	0.31	0.36/0.31
	closed		VA	39	48	56/36	58	70	80/59
	p.f.			0.24	0.25	0.24/0.25	0.26	0.28	0.27/0.32
				For USA and Canada					
			Hz	50	60	–	50	60	–
	closing		VA	550	570		1015	1005	
	p.f.			0.45	0.4		0.38	0.31	
	closed		VA	39	35		71	62	
	p.f.			0.24	0.25		0.26	0.28	
DC economy circuit	closing[2])		W	500			876[3])		
	closed		W	2.7			11[3])		
Coil voltage tolerance[4])				0.8 to 1.1 x U_s					

1) According to excerpt from IEC 60 947-4 -1 (DIN VDE 0660 Part 102):
Type of coordination "1":
Destruction of the contactor and the overload relay is permissible. The contactor and/or overload relay must be replaced if necessary.

Type of coordination "2":
No damage can be tolerated to the overload relay, but contact welding on the contactor is permitted if the contacts can be easily separated.

2) At DC 24 V; deviations up to ± 10 % are possible with other voltages.

3) Reversing contactor supplied.

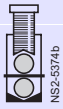
4) 50/60 Hz coil:
voltage tolerance at 60 Hz: 0.85 to 1.1 x U_s.

Technical data

Contactor	Size / Type			6 3TF50		3TF51		8 3TF52		3TF53	
Operating frequency *z* in operating cycles per hour	Operation			AC	DC	AC	DC	AC	DC	AC	DC
Contactors without overload relays	No-load operating frequency		1/h	5000	1000	5000	1000	5000	1000	5000	1000
Dependence of the operating frequency *z'* on the operational current *I'* and the operational voltage *U'*: $z' = z \cdot \frac{I_e}{I'} \cdot \left(\frac{400\ V}{U'}\right)^{1.5}$ 1/h	AC-1		1/h	800	800	800	800	800	800	750	750
	AC-2		1/h	400	400	300	300	300	300	250	250
	AC-3		1/h	1000	1000	750	750	700	700	500	500
	AC-4		1/h	300	300	200	200	200	200	130	130
Contactors with overload relays (mean value)			1/h	15		15		15		15	
Operating times at 0.8 to 1.1 x U_s Break-time = opening time + arcing time				(The values apply with the coil in the cold state and at operating temperature)							
AC operation[1])	closing time		ms	20 to 50		20 to 50		20 to 50		20 to 50	
	opening time		ms	8 to 30		8 to 30		10 to 30		10 to 30	
DC economy circuit	closing time		ms	25 to 40		25 to 40		25 to 70		25 to 70	
	opening time		ms	170 to 210		170 to 210		10 to 20		10 to 20	
Arcing time			ms	10 to 15		10 to 15		10 to 15		10 to 15	
Operating times at 1.0 x U_s											
AC operation[1])	closing time		ms	22 to 37		22 to 37		25 to 40		25 to 40	
	opening time		ms	8 to 30		8 to 30		10 to 30		10 to 30	
DC economy circuit	closing time		ms	28 to 32		28 to 32		32 to 45		32 to 45	
	opening time		ms	185 to 195		185 to 195		10 to 20		10 to 20	
Shock resistance											
	rectangular pulse	AC	*g*/ms	9.3/5 and 5.2/10		9.3/5 and 5.2/10		10.3/5 and 5.75/10		10.3/5 and 5.75/10	
		DC	*g*/ms	9/5 and 5/10		9/5 and 5/10		10.05/5 and 5.6/10		10.05/5 and 5.6/10	
	sine pulse	AC	*g*/ms	14.6/5 and 8.2/10		14.6/5 and 8.2/10		16.1/5 and 9/10		16.1/5 and 9/10	
		DC	*g*/ms	14/5 and 7.9/10		14/5 and 7.9/10		15.8/5 and 8.8/10		15.8/5 and 8.8/10	

Conductor cross-sections

Contactor	Size / Type		6 3TF50			
Screw connection (1 or 2 conductor connections possible)	**Main conductor:**		Front terminal connected	Back terminal connected	Both terminals connected Front terminal	Back terminal
	– With box terminal					
	Solid	mm²	–	–	–	–
	Finely stranded without end sleeve	mm²	25 to 50	25 to 50	25 to 50	25 to 50
	Finely stranded with end sleeve	mm²	25 to 50	25 to 50	25 to 50	25 to 50
	Stranded	mm²	25 to 70	25 to 70	25 to 70	25 to 70
	Solid or stranded	AWG	3 to 2/0	3 to 2/0	3 to 2/0	3 to 2/0
	Terminal screw		M 10 (hexagon socket, A/F4)			
	Tightening torque		6 to 8 Nm (52 to 70 lb.in)			
	– Without box terminal					
	Finely stranded with cable lug	mm²	16 to 70			
	Stranded with cable lug	mm²	25 to 70			
	Solid or stranded	AWG	3 to 2/0			
	Connecting bar (max. width)	mm	15			
	Terminal screw		M 6 x 20			
	Tightening torque		6 to 8 Nm (52 to 70 lb.in)			
	Auxiliary conductor:					
	Solid	mm²	2 x (0.5 to 1); 2 x (1 to 2.5); 1 x 4			
	Finely stranded with end sleeve	mm²	2 x (0.5 to 1); 2 x (0.75 to 2.5)			
	Pin-end connector (DIN 46 231)	mm²	2 x (1 to 1.5)			
	Solid or stranded	AWG	2 x (18 to 12)			
	Tightening torque		0.8 to 1.4 Nm (7 to 12 lb.in)			



1) The opening times of the NO contacts and the closing times of the NC contacts increase if the contactor coils are protected against voltage peaks (varistor +2 ms to 5 ms).

Contactor	Size Type		6 3TF51	8 3TF52	8 3TF53
Screw connections: (1 or 2 conductor connections poss.)	**Main conductor:** – without box terminal Finely stranded with cable lug	mm²	35 to 95	35 to 95	50 to 240[1])
	Stranded with cable lug	mm²	50 to 120	50 to 120	70 to 240[1])
	Solid or stranded	AWG	1/0 to 250 MCM	1/0 to 250 MCM	2/0 to 500 MCM
	Connecting bar (max. width)	mm	20	20	25
	Terminal screw		M 8 x 25	M 8 x 25	M 10 x 30
	Tightening torque		10 to 14 Nm (89 to 124 lb.in)	10 to 14 Nm (89 to 124 lb.in)	14 to 24 Nm (124 to 210 lb.in)
	– with box terminal[5]) Connection for laminated copper bar				
	Width	mm	9 to 18	9 to 18	15 to 24
	Max. thickness	mm	1 x 20 or 2 x 8	1 x 20 or 2 x 8	1 x 26 or 2 x 11
	Terminal screw, hexagon socket	mm	5	5	6
	Tightening torque		12 to 14 Nm (106 to 124 lb.in)	12 to 14 Nm (106 to 124 lb.in)	25 to 40 Nm (221 to 354 lb.in)
	Auxiliary conductor: Solid	mm²	2 x (0.5 to 1); 2 x (1 to 2.5)	2 x (0.5 to 1); 2 x (1 to 2.5)	2 x (0.5 to 1); 2 x (1 to 2.5)
	Finely stranded with end sleeve	mm²	2 x (0.5 to 1); 2 x (0.75 to 2.5)	2 x (0.5 to 1); 2 x (0.75 to 2.5)	2 x (0.5 to 1); 2 x (0.75 to 2.5)
	Pin-end connector (DIN 46 231)	mm²	2 x (1 to 1.5)	2 x (1 to 1.5)	2 x (1 to 1.5)
	Solid or stranded	AWG	2 x (18 to 12)	2 x (18 to 12)	2 x (18 to 12)
	Tightening torque		0.8 to 1.4 Nm (7 to 12 lb.in)	0.8 to 1.4 Nm (7 to 12 lb.in)	0.8 to 1.4 Nm (7 to 12 lb.in)

General data

Contactor	Size Type		10 3TF54	3TF55	12 3TF56		12 3TF57	
Mechanical endurance operating cycles	AC operation DC operation		10 mill.; 5 mill. (50/60 Hz coil) 3 million		10 mill.; 5 mill. (50/60 Hz coil) 3 million		10 million 3 million	
Rated insulation voltage U_i (pollution degree 3)		V	1000		1000		1000	
Rated impulse withstand voltage U_{imp}		kV	8		8		8	
Permissible ambient temperature	in operation when stored	°C °C	–25 to +55 –55 to +80		–25 to +55 –55 to +80		–25 to +55 –55 to +80	
Degree of protection acc. to IEC 60 947-1 and IEC 60 529 (VDE 0470 Part 1)			IP 00/open type, coil system IP 30					
Power consumption of the coils (with coil in cold state and 1.0 x U_s)			**Standard design**					
AC operation		Hz	50	60 50/60	50	60 50/60	50/60	Rated value of the control supply voltage: lower upper
	closing	VA	1430	1710 1780/1500	2450	2960 3050/2600	1136	1900
	p.f.		0.34	0.26 0.32/0.25	0.21	0.18 0.23/0.18	1	1
	closed	VA	84	105 122/86	115	146 165/119	16	45
	p.f.		0.24	0.27 0.23/0.29	0.33	0.33 0.29/0.35	0.34	0.15
			For USA and Canada					
		Hz	50	60 –	50	60 –	50	60
	closing	VA	1690	1590	2450	2760	–	–
	p.f.		0.34	0.26	0.21	0.18	–	–
	closed	VA	101	94	115	132	–	–
	p.f.		0.24	0.27	0.33	0.33	–	–
DC economy circuit	closing[2])	W	1216[3])		1306[3])		1110[3])	
	closed	W	13.3[3])		14[3])		24[3])	
Coil voltage tolerance[4])			0.8 to 1.1 x U_s					
Operating frequency z	Operation		AC DC	AC DC	AC DC		AC DC	
Contactors without overload relays	No-load operat. freq.	1/h	3000 1000	3000 1000	3000 1000		2000 1000	
Dependence of the operating frequency z' on the operational current I' and the operational voltage U':	for AC-1	1/h	800 800	750 750	700 700		500 500	
	for AC-2	1/h	300 300	250 250	200 200		170 170	
	for AC-3	1/h	700 700	500 500	500 500		420 420	
	for AC-4	1/h	200 200	130 130	150 150		150 150	
$z' = z \cdot \frac{I_e}{I'} \cdot \left(\frac{400\ V}{U'}\right)^{1.5}$ 1/h.								
Contactors with overload relays (mean value)		1/h	15	15	15		15	

1) If the maximum conductor cross-section is connected, a terminal cover is necessary to comply with the phase clearance.

2) At DC 24 V; deviations up to ± 10 % are possible with other voltages.

3) Reversing contactor supplied.

4) 50/60 Hz coil:
voltage tolerance at 60 Hz: 0.85 to 1.1 x U_s.

5) See accessories on page 3/109.

Technical data

Contactor	Size Type			10 3TF54/3TF55	12 3TF56	12 3TF57
Operating times at 0.8 to 1.1 x U_s Break-time = opening time + arcing time				(The values apply with the coil in the cold state and at operating temperature)		
AC operation[1]	closing time opening time		ms ms	20 to 50 10 to 30	17 to 65 8 to 20	40 to 110 70 to 110
DC economy circuit	closing time opening time		ms ms	30 to 65 10 to 20	35 to 75 10 to 20	37 to 100 15 to 25
Arcing time			ms	10 to 15	10 to 15	15 to 25
Operating times at 1.0 x U_s						
AC operation[1]	closing time opening time		ms ms	25 to 40 10 to 30	25 to 40 8 to 30	46 to 70 80 to 100
DC economy circuit	closing time opening time		ms ms	36 to 45 10 to 20	40 to 55 10 to 20	44 to 60 12 to 15
Minimum command duration for closing **Minimum interval time** between two ON commands			ms ms	– –	– –	110 110
Shock resistance	rectangular pulse	AC DC	g/ms g/ms	9.9/5 and 5.5/10 9.6/5 and 5.3/10	8.8/5 and 4.9/10 8.6/5 and 4.8/10	8.8/5 and 4.9/10 8.4/5 and 4.7/10
	sine pulse	AC DC	g/ms g/ms	15.6/5 and 8.6/10 15.1/5 and 8.3/10	13.8/5 and 7.7/10 13.5/5 and 7.6/10	13.8/5 and 7.7/10 on request

Conductor cross-sections

Screw connection (1 or 2 conductor connections possible)	**Main conductor:**				
	– Without box terminal				
	Finely stranded with cable lug	mm²	50 to 240[2])	50 to 240[2])	50 to 240[2])
	Stranded with cable lug	mm²	70 to 240[2])	70 to 240[2])	70 to 240[2])
	Solid or stranded	AWG	2/0 to 500 MCM	2/0 to 500 MCM	2/0 to 500 MCM
	Connecting bar (max. width)	mm	25	25	30
	Terminal screw		M 10 x 30	M 10 x 30	M 10 x 30
	Tightening torque		14 to 24 Nm (124 to 210 lb.in)	14 to 24 Nm (124 to 210 lb.in)	14 to 24 Nm (124 to 210 lb.in)
	– With box terminal[5])				
	Connection for laminated copper bars				
	Width	mm	15 to 24	15 to 24	15 to 25
	Max. thickness	mm	1 x 26 or 2 x 11	1 x 26 or 2 x 11	1 x 26 or 2 x 11
	Terminal screw, hexagon socket	mm	6	6	6
	Tightening torque		25 to 40 Nm (221 to 354 lb.in)	25 to 40 Nm (221 to 354 lb.in)	25 to 40 Nm (221 to 354 lb.in)
	Auxiliary conductor:				
	Solid	mm²	2 x (0.5 to 1); 2 x (1 to 2.5)		
	Finely stranded with end sleeve	mm²	2 x (0.5 to 1); 2 x (0.75 to 2.5)		
	Pin-end connector (DIN 46 231)	mm²	2 x (1 to 1.5)		
	Solid or stranded	AWG	2 x (18 to 12)		
	Tightening torque		0.8 to 1.4 Nm (7 to 12 lb.in)		

General data

Contactor	Size Type			14 3TF68	14 3TF69
Mechanical endurance	Operating cycles			5 million	5 million
Rated insulation voltage U_i (pollution degree 3)			V	1000	1000
Rated impulse withstand voltage U_{imp}			kV	8	8
Permissible ambient temperature		in operation when stored	°C °C	–25 to +55 –55 to +80	–25 to +55 –55 to +80
Degree of protection acc. to IEC 60 947-1 and IEC 60 529 (VDE 0470 Part 1)				IP 00/open type, coil system IP 40	IP 00/open type, coil system IP 40
Power consumption of the coils (with coil in cold state and 1.0 x U_s)					
AC operation			Hz	50/60 Rated value of the control supply voltage: lower upper	50/60 Rated value of the control supply voltage: lower upper
	closing		VA	1200 1850	600 950
	p.f.			1 1	0.98 0.98
	closed		VA	13.5 49	12.9 30.6
	p.f.			0.47 0.15	0.43 0.31
DC economy circuit	closing[3])		W	1010[4])	960[4])
	closed		W	28[4])	20.6[4])

1) The opening times of the NO contacts and the closing times of the NC contacts increase if the contactor coils are protected against voltage peaks (varistor +2 ms to 5 ms).

2) If the maximum conductor cross-section is connected, a terminal cover is necessary to comply with the phase clearance.

3) At DC 24 V; deviations up to ± 10 % are possible with other voltages.

4) Reversing contactor supplied.

5) See accessories on page 3/109.

Contactor	Size Type			14 3TF68	14 3TF69
Coil voltage tolerance				0.8 to 1.1 x U_s	0.8 to 1.1 x U_s
Operating frequency *z*				Operation: AC DC	Operation: AC DC
Contactors without overload relays	No-load operating frequency		1/h	2000 1000	1000 1000
Dependence of the operating frequency z' on the operational current I' and the operational voltage U': $z' = z \cdot \frac{I_e}{I'} \cdot \left(\frac{400\ V}{U'}\right)^{1.5}$ 1/h.	for AC-1 for AC-2 for AC-3 for AC-4		1/h 1/h 1/h 1/h	700 700 200 200 500 500 150 150	700 700 200 200 500 500 150 150
Contactors with overload relays (mean value)			1/h	15	15
Operating times at 0.8 to 1.1 x U_s Break-time = opening time + arcing time				(The values apply with the coil in the cold state and at operating temperature)	
AC operation	closing time opening time		ms ms	70 to 120 (22 to 65)[1] 70 to 100	80 to 120 70 to 80
DC economy circuit	closing time opening time		ms ms	76 to 110 50	86 to 280 19 to 25
Arcing time			ms	10 to 15	10
Operating times at 1.0 x U_s					
AC operation	closing time opening time		ms ms	80 to 100 (30 to 45)[1] 70 to 100	85 to 100 70
DC economy circuit	closing time opening time		ms ms	80 to 90 50	90 to 125 19 to 25
Minimum command duration for closing		standard shortened operat. time	ms ms	120 90	120 –
Minimum interval time between two ON commands			ms	100	300
Shock resistance	rectangular pulse	AC DC	*g*/ms *g*/ms	8.1/5 and 4.7/10 9/5 and 5.7/10	9.5/5 and 5.7/10 8.6/5 and 5.1/10
	sine pulse	AC DC	*g*/ms *g*/ms	12.8/5 and 7.4/10 14.4/5 and 9.1/10	13.5/5 and 7.8/10 13.5/5 and 7.8/10

Conductor cross-sections

Screw connection (1 or 2 conductor connections possible)	**Main conductor:** – without box terminal				
	Finely stranded with cable lug		mm²	50 to 240	50 to 240
	Stranded with cable lug		mm²	70 to 240	50 to 240
	Solid or stranded		AWG	2/0 to 500 MCM	2/0 to 500 MCM
	Connecting bar (max. width)		mm	max. 50	max. 60 ($U_e \leq$ 690 V) 50 ($U_e >$ 690 V)
	Terminal screw			M 10 x 30	M 12 x 40
	Tightening torque			14 to 24 Nm (124 to 210 lb.in)	20 to 35 Nm (177 to 310 lb.in)
	– with box terminal[2]) Connection for laminated copper bars				
	Width		mm	15 to 25	15 to 38
	Max. thickness		mm	1 x 26 or 2 x 11	1 x 46 or 2 x 18
	Terminal screw, hexagon socket		mm	6	8
	Tightening torque			25 to 40 Nm (221 to 354 lb.in)	35 to 50 Nm (266 to 443 lb.in)
	Auxiliary conductor:				
	Solid		mm²	2 x (0.5 to 1); 2 x (1 to 2.5)	2 x (0.5 to 1); 2 x (1 to 2.5)
	Finely stranded with end sleeve		mm²	2 x (0.5 to 1); 2 x (0.75 to 2.5)	2 x (0.5 to 1); 2 x (0.75 to 2.5)
	Pin-end connector (DIN 46 231)		mm²	2 x (1 to 1.5)	2 x (1 to 1.5)
	Solid or stranded		AWG	2 x (18 to 12)	2 x (18 to 12)
	Tightening torque			0.8 to 1.4 Nm (7 to 12 lb.in)	0.8 to 1.4 Nm (7 to 12 lb.in)

1) The values in brackets apply to contactors with shortened operating times.

2) See accessories on page 3/109.

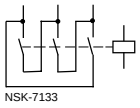
Technical data

Load ratings with AC

Contactor	Size / Type			6 3TF50	6 3TF51	8 3TF52	8 3TF53
AC-1 utilization category, switching resistive load							
Rated operational currents I_e	at 40 °C up to 690 V	A		170	170	230	240
	at 55 °C up to 690 V	A		160	160	210	220
	at 55 °C up to 1000 V	A		80	80	100	100
Ratings of three-phase loads with p.f. = 1 at 55 °C	at 230 V	kW		61	61	76	80
	400 V	kW		105	105	132	138
	500 V	kW		138	138	173	181
	690 V	kW		183	183	228	240
	1000 V	kW		139	139	173	173
Minimum conductor cross-sections with I_e load	at 40 °C	mm²		70	70	120	120
	at 55 °C	mm²		70	70	95	120
AC-2 and AC-3 utilization categories							
Rated operational currents I_e	up to 500 V	A		110	140	170	205
	690 V	A		110	110	170	170
	1000 V	A		46	46	68	68
Ratings of motors with slipring or squirrel-cage rotor at 50 Hz and 60 Hz	at 230 V	kW		37	45	56	66
	400 V	kW		61	75	95	115
	500 V	kW		76.3	98	118	145
	690 V	kW		105	105	163	163
	1000 V	kW		65	65	90	90
AC-4 utilization category (contact endurance approx. 200 000 operating cycles at I_a = 6 x I_e)							
Rated operational currents I_e	up to 690 V	A		54	68	75	96
	1000 V	A		34	34	42	42
Ratings of motors with squirrel-cage rotor at 50 Hz and 60 Hz	at 230 V	kW		16.3	21	23	30
	400 V	kW		28.4	36	40	52
Max. permissible rated operational current I_e/AC-4 ≙ I_e/AC-3 up to 500 V with reduced contact endurance and reduced operating frequency	500 V	kW		35.5	46	50	65
	690 V	kW		49	63	69	90
	1000 V	kW		45	45	55	55

Contactor	Size / Type			10 3TF54	10 3TF55	12 3TF56	12 3TF57	14 3TF68	14 3TF69
AC-1 utilization category, switching resistive load									
Rated operational currents I_e	at 40 °C up to 690 V	A		325	325	425	600	700	910
	at 55 °C up to 690 V	A		300	300	400	550	630	850
	at 55 °C up to 1000 V	A		150	150	200	200	450	800
Ratings of three-phase loads with p.f. = 1 at 55 °C	at 230 V	kW		114	114	152	219	240	323
	400 V	kW		195	195	262	381	415	558
	500 V	kW		260	260	345	476	545	735
	690 V	kW		340	340	457	657	720	970
	1000 V	kW		260	260	346	346	780	1385
Minimum conductor cross-sections with I_e load	at 40 °C	mm²		185	185	2 x 150	2 x 185	2 x 240	I_e ≥ 800 A: 2 x 60 x 5
	at 55 °C	mm²		185	185	240	2 x 185	2 x 185	I_e < 800 A: 2 x 240
AC-2 and AC-3 utilization categories									
Rated operational currents I_e	up to 500 V	A		250	300	400	475	630	820
	690 V	A		250	250	400	400	630	820
	1000 V	A		95	95	180	180	435	580
Ratings of motors with slipring or squirrel-cage rotor at 50 Hz and 60 Hz	at 230 V	kW		82	96	131	151	200	260
	400 V	kW		142	168	227	263	347	450
	500 V	kW		178	210	284	329	434	600
	690 V	kW		245	245	392	392	600	800
	1000 V	kW		132	132	250	250	600	800
AC-4 utilization category (contact endurance approx. 200 000 operating cycles at I_a = 6 x I_e)									
Rated operational currents I_e	up to 690 V	A		110	125	150	150	300	360
	1000 V	A		57	57	80	80	210	250
Ratings of motors with squirrel-cage rotor at 50 Hz and 60 Hz	at 230 V	kW		35	40	49	49	97	110
	400 V	kW		61	69	85	85	168	160
Max. permissible rated operational current I_e/AC-4 ≙ I_e/AC-3 up to 500 V with reduced contact endurance and reduced operating frequency	500 V	kW		76	86	107	107	210	250
	690 V	kW		105	119	147	147	278	335
	1000 V	kW		75	75	110	110	290	350

Load ratings with AC

Contactor / Size / Type			6 3TF50	6 3TF51	8 3TF52	8 3TF53	10 3TF54	10 3TF55	12 3TF56	12 3TF57	14 3TF68	14 3TF69
AC-6a utilization category, switching three-phase transformers with inrush		n	30 20		30 20		30 20		30 20	30 20	30 20	30 20
Rated operational currents I_e	up to 400 V	A	81 110		112 169		180 250		225 337	270 405	342 513	450 675
Ratings of three-phase transformers	at 230 V	kVA	30.8 41.8		42.5 64		68 95		86 128	103 154	130 195	171 256
with an inrush of n = 30 or 20.	400 V	kVA	53 73		74 112		119 165		148 223	178 267	226 338	297 445
The ratings must be recalculated	500 V	kVA	70 95		97 146		156 216		195 291	233 350	296 444	389 584
for other inrush factors x:	690 V	kVA	92 125		128 193		205 285		257 385	308 457	390 586	514 771
$P_x = P_{n30} \cdot \frac{30}{x}$	1000 V	kVA	80 80		117 117		164 164		311 311	311 311	592 752	778 1003
AC-6b utilization category, switching low-inductance (low-loss, metallized-dielectric) three-phase capacitors												
Rated operational currents I_e	up to 400 V	A	86.6		144.3		216.5		288.7		433	
Ratings of single capacitors at 50 Hz, 60 Hz	at 230 V	kvar	35		58		87		115		175	
	400 V	kvar	60		100		150		200		300	
	500 V	kvar	80		130		190		265		400	
	690 V	kvar	60		100		150		200		300	
Ratings of capacitor banks (minimum inductance between parallel capacitors 6 µH) at 50 Hz, 60 Hz	at 230 V	kvar	30		40		66		85		145	
	400 V	kvar	50		70		115		150		250	
	500 V	kvar	66		90		145		195		333	
	690 V	kvar	50		70		115		150		250	
Used as stator contactors (up to 690 V) (AC-2 utilization category) Stator currents I_{es}												
Relative ON period[1] with intermittent duty	10 %	A	260 (290)[3]		357 (381)[3]	357 (389)[3]	525 (544)[3]		726	726 (998)[3]	1144	1544
	20 %	A	246		323	339	462		617	800	970	1307
	40 %	A	195		256	268	367		490	670	768	1039
	60 %	A	174		229	240	327		436	600	690	925
	80 %	A	160		210	220	300		400	550	630	850
Used as rotor contactors Rotor currents I_{er}[4]												
Relative ON period[1] with intermittent duty	5 %	A	450		625	625	930		1240	1705	1900	2500
	10 %	A	450		604	625	864		1152	1578	1814	2440
	20 %	A	389		510	535	729		972	1336	1530	2065
	40 %	A	309		405	425	579		772	1061	1216	1640
	60 %	A	275		361	378	516		688	946	1083	1462
	80 %	A	253		332	348	474		632	869	995	1343
 NSK-7133	Uninterrupted duty	A	253		332	348	474		632	869	995	1343
Locked rotor voltages U_{er}	Starting	V	2000		2000	2000	2000		2000	2000	2000	2000
	Variable speed	V	1000		1000	1000	1000		1000	1000	1000	1000
	Plugging	V	1000		1000	1000	1000		1000	1000	1000	1000
Thermal load	10 s current[2]	A	880	1140	1360	1640	2500	2500	3400	4200	5040	7000
Power loss per conducting path at I_e/AC-3		W	10		14	20	16	23	40	40	45	70

1) Relative ON period in % = $\frac{\text{ON period}}{\text{Cycle time}}$ x 100, cycle times up to 10 min.
Max. operating frequency z = 50 1/h; with higher operating frequencies z the following equation must be used for the calculation: $I_{off} \sim 1/z$.

2) Acc. to DIN VDE 0660, Part 102.

3) The values in brackets apply up to 400 V.

4) Conductor currents in the supply lead to the contactor.

Technical data

Load ratings with DC

Contactor	Size / Type		6 3TF50/3TF51			8 3TF52/3TF53			10 3TF54/3TF55			12 3TF56/3TF57			14 3TF68/3TF69
DC-1 utilization category, switching resistive load (L/R ≤ 1 ms)															
Rated operational currents I_e (at 55 °C)															
Number of conducting paths connected in series			1	2	3	1	2	3	1	2	3	1	2	3	
	24 V	A	160	160	160	200	200	200	300	300	300	400	400	400	–
	60 V	A	160	160	160	200	200	200	300	300	300	330	400	400	–
	110 V	A	18	160	160	18	200	200	33	300	300	33	400	400	–
	220 V	A	3.4	20	160	3.4	20	200	3.8	300	300	3.8	400	400	–
	440 V	A	0.8	3.2	1.4	0.8	3.2	11.5	0.9	4	11	0.9	4	11	–
	600 V	A	0.5	1.6	0.75	0.5	1.6	4	0.6	2	5.2	0.6	2	5.2	–
DC-3 and DC-5 utilization categories, shunt and series motors (L/R ≤ 15 ms)															
Rated operational currents I_e (at 55 °C)															
Number of conducting paths connected in series			1	2	3	1	2	3	1	2	3	1	2	3	
	24 V	A	160	160	160	200	200	200	300	300	300	400	400	400	–
	60 V	A	7.5	160	160	7.5	200	200	11	300	300	11	400	400	–
	110 V	A	2.5	160	160	2.5	200	200	3	300	300	3	400	400	–
	220 V	A	0.6	2.5	160	0.6	2.5	200	0.6	2.5	300	0.6	2.5	400	–
	440 V	A	0.17	0.65	11.5	0.17	0.65	1.4	0.18	0.65	1.4	0.18	0.65	1.4	–
	600 V	A	0.12	0.37	4	0.12	0.37	0.75	0.125	0.37	0.75	0.125	0.37	0.75	–

cULus and UL ratings

Contactor	Size / Type			6 3TF50	3TF51	8 3TF52	3TF53	10 3TF54	3TF55	12 3TF56	3TF57	14 3TF68	3TF69
Rated insulation voltage			AC V	600	600	600	600	600	600	600	600	600	600
Conventional thermal current	Free air and enclosed		A	150	150	200	210	260	300	400	520	630	820
Maximum horsepower ratings (cULus and UL-approved values)													
Ratings of three-phase motors at 60 Hz		at 200 V	hp	40	50	50	60	75	100	125	150	231	290
		230 V	hp	50	60	60	75	100	125	150	200	266	341
		460 V	hp	100	100	125	150	200	250	300	400	530	695
		575 V	hp	125	150	150	200	250	300	400	500	664	869
NEMA/EEMAC ratings		SIZE		–	–	4	–	–	–	5	–	6	7
Conventional thermal current		Free air	A	–	–	150	–	–	–	300	–	600	820
		Enclosed	A	–	–	135	–	–	–	270	–	540	810
Ratings of three-phase motors at 60 Hz		at 200 V	hp	–	–	40	–	–	–	75	–	150	–
		230 V	hp	–	–	50	–	–	–	100	–	200	300
		460 V	hp	–	–	100	–	–	–	200	–	400	600
		575 V	hp	–	–	100	–	–	–	200	–	400	600
Overload relay		Type		3UA60		3UA62		3UA66	3UA66	3UA66	on	3UA68	3RB12
		Setting range	A	110 up to 135		135 up to 160		160 up to 250	200 up to 320	250 up to 400	request	400 up to 630	200 up to 820

For short-circuit protection with overload relays, see Part 4.