3.7 Technical specifications

3RT10 contactors for switching motors

CSA and UL rating data of the contactors

Contactor	Frame size Type			**S00 3RT10 15**	**S00 3RT10 16**	**S00 3RT10 17**	**S0 3RT10 23/24**	**S0 3RT10 25**	**S0 3RT10 26**
Rated insulation voltage			VAC	600	600	600	600	600	600
Continuous current at 40 °C	Open and enclosed		A	20	20	20	35	35	35
Maximum horsepower ratings									
(CSA and UL approved values)									
Rated power		At 200 V	hp	1½	2	3	2/3	5	7½
of three-phase induction motors		230 V	hp	2	3	3	3/3	5	7½
At 50/60 Hz		460 V	hp	3	5	7½	5/7½	10	15
		575 V	hp	5	7½	10	7½/10	15	20
Short-circuit protection			kA	5	5	5	5	5	5
(contactor or overload relay)	Fuse or circuit breaker to UL 489		A A	60 50	60 50	60 50	70 70	70 70	100 100
NEMA/EEMAC ratings	NEMA/EEMAC SIZE			–	–	0	–	–	1
Continuous current	Open		A	–	–	18	–	–	27
	Enclosed		A	–	–	18	–	–	27
Rated power		At 200 V	hp	–	–	3	–	–	7½
of three-phase induction motors		230 V	hp	–	–	3	–	–	7½
At 60 Hz		460 V	hp	–	–	5	–	–	10
		575 V	hp	–	–	5	–	–	10
Overload relay	Type			3RU11 16			3RU11 2		
	Adjustment range		A	0.11 to 12			1.8 to 25		

Contactor	Frame size Type			**S2 3RT10 34**	**S2 3RT10 35**	**S2 3RT10 36**	**S3 3RT10 44**	**S3 3RT10 45**	**S3 3RT10 46**
Rated insulation voltage			VAC	600	600	600	600	600	600
Continuous current at 40 °C	Open and enclosed		A	45	55	50	90	105	105
Maximum horsepower ratings									
(CSA and UL approved values)									
Rated power		At 200V	hp	10	10	15	20	25	30
of three-phase induction motors		230 V	hp	10	15	15	25	30	30
At 50/60 Hz		460V	hp	25	30	40	50	60	75
		575V	hp	30	40	50	60	75	100
Short-circuit protection			kA	5	5	5	10	10	10
(contactor or overload relay)	Fuse or circuit breaker to UL 489		A A	125 125	150 150	200 200	250 250	300 300	350 400
NEMA/EEMAC ratings	NEMA/EEMAC SIZE			–	–	2	–	–	3
Continuous current	Open		A	–	–	45	–	–	90
	Enclosed		A	–	–	45	–	–	90
Rated power		At 200V	hp	–	–	10	–	–	25
of three-phase induction motors		230 V	hp	–	–	15	–	–	30
At 60 Hz		460 V	hp	–	–	25	–	–	50
		575 V	hp	–	–	25	–	–	50
Overload relay	Type			3RU11 3			3RU11 4		
	Adjustment range		A	5.5 to 50			18 to 100		

CSA and UL rating data of the auxiliary contacts

Contactor	Frame size		**S00 Screw-type terminal and Cage Clamp terminal**	**S0 to S12 Screw-type terminal and Cage Clamp terminal**	**Screw-type terminal and Cage Clamp terminal**	**Screw-type terminal and Cage Clamp terminal**
			Integrated or snap-on aux. switch block	4-pole snap-on aux. switch block	1-pole snap-on aux.switch block	Laterally attachable aux. switch block
Rated voltage		VAC	600	600	600	600
Switching capacity			A 600, Q 600	A 600, Q 600	A 600, Q 600	A 300, Q 300
	Continuous current at 240 VAC	A	10	10	10	10

3RT1 contactors for switching motors

Auxiliary circuit

Rating of the auxiliary contacts in acc. with IEC 60 947-5-1/DIN EN 60 947-5-1 (VDE 0660 Part 200)
Data apply to integrated auxiliary contacts and contacts in the auxiliary switch blocks for contactors in frame sizes S00 to S12

Contactor	Frame sizes			**S00 to S12**
Rated insulation voltage U_i (pollution degree 3)			V	690
With laterally attachable auxiliary switch blocks 3RH19 21-.EA . . and 3RH19 21-.KA . .			V	Max. 500
Conventional free air thermal current I_{th} = Rated operational current I_e/AC-12			A	10
AC loading				
Rated operational current I_e/AC-15/AC-14				
With rated operational voltage U_e	24 V		A	6
	110 V		A	6
	125 V		A	6
	220 V		A	6
	230 V		A	6
	380 V		A	3
	400 V		A	3
	500 V		A	2
	660 V[2])		A	1
	690 V[2])		A	1
DC loading				
Rated operational current I_e/DC-12				
With rated operational voltage U_e	24 V		A	10
	60 V		A	6
	110 V		A	3
	125 V		A	2
	220 V		A	1
	440 V[2])		A	0.3
	600 V[2])		A	0.15
Rated operational current I_e/DC-13				
At rated operational voltage U_e	24 V		A	10[1])
	60 V		A	2
	110 V		A	1
	125 V		A	0.9
	220 V		A	0.3
	440 V		A	0.14
	600 V[2])		A	0.1
Contact reliability at 17 V, 1 mA in acc. with DIN EN 60 947-5-4				Contact fault frequency < 10^{-8} i. e. < 1 fault in 100 mill. operating cycles

1) DC-13: attachable auxiliary switch blocks for frame size S00: 6 A

2) With laterally attachable auxiliary switch blocks: switching capacity only up to 500 V

Contactor	Frame size Type			**S00 3RT1. 1.**
Rated insulation voltage U_i (pollution degree 3)			V	690
Rated impulse strength U_{imp}			kV	6
Protective separation between the coil and main contacts (in acc. with DIN VDE 0106 Part 101 and A1 [Draft 2/89])			V	400
Permissible ambient temperature		For operation	°C	–25 to +60
		During storage	°C	–55 to +80
Degree of protection in acc. with IEC 60 947-1 and DIN 40 050				IP 20, actuating system IP 40
Shock resistance	Rectangular impulse	AC operation	*g*/ms	7/5 and 4.2/10
		DC operation	*g*/ms	7/5 and 4.2/10
	Sine pulse	AC operation	*g*/ms	9.8/5 and 5.9/10
		DC operation	*g*/ms	9.8/5 and 5.9/10

Short-circuit protection for contactors without overload relay			Short-circuit protection for contactors with overload relay, see Part 4. Short-circuit protection for fuseless load feeders, see Part 5.
Main circuit			
Fuse-links, performance class gL/gG			
NH type 3NA, DIAZED type 5SB, NEOZED type 5SE			
– In acc. with IEC 60 947-4/DIN EN 60 947-4 (VDE 0660 Part 102)	Coordination type "1" [1])	A	35
	Coordination type "2" [1])	A	20
	Unwelded [2])	A	10
Or miniature circuit breaker (up to 230 V) with C characteristic		A	10

(Short-circuit current 1 kA, coordination type 1)

3RT1 contactors for switching motors

Contactor	Frame size Type		**S00** **3 RT1.1.**
Auxiliary circuit			
Fuse-links, performance class gL/gG		A	10
DIAZED type 5SB, NEOZED type 5SE (unwelded fuse at $I_k \geq 1$ kA)			
Or miniature circuit breaker (up to 230 V) with C characteristic (short-circuit current $I_k < 400$ A)		A	6
1) Corresponds to section from IEC 60 947-4 (VDE 0660 Part 102): Coordination type "1": The destruction of the contactor and the overload relay is permissible. The contactor and/or overload relay must be replaced, if necessary.			Coordination type "2" The overload relay must not be damaged. Contact welding on the contactor is permissible, if it can be easily separated again from the contactor.
2) Test conditions in acc. with IEC 60 947-4-1			

Contactor	Frame size Type		**S00** **3 RT1.1.**
Drive			
Operating range of the magnet coils	AC		At 50 Hz: 0.8 to 1.1 x U_S At 60 Hz: 0.85 to 1.1 x U_S
	DC		At +50 °C: 0.8 to 1.1 x U_S At +60 °C: 0.85 to 1.1 x U_S

Power input of the magnet coils (cold coil and at 1.0 x U_S)			**Standard version**	**For USA and Canada**	
AC operation		Hz	50/60	50	60
	Making capacity	VA	27/24.3	26.4	31.7
	cos φ		0.8/0.75	0.81	0.77
	Holding power	VA	4.4/3.4	4.7	5.1
	cos φ		0.27/0.27	0.26	0.27
DC operation	Making capacity = holding power	W	3.3		

Contactor	Frame size Type			**S00** **3RT10 15**	**S00** **3RT10 16**	**S00** **3RT10**
Main circuit						
Current carrying capacity with alternating current						
Utilization category AC-1, switching of resistive loads						
Rated operational currents I_e	At 40 °C up to 690 V		A	18	22	22
	At 60 °C up to 690 V		A	16	20	20
Rated power of three-phase loads[3] cos φ = 0.95 (at 60 °C)	At 230 V		kW	6.3	7.5	7.5
	400 V		kW	11	13	13
	500 V		kW	13.8	17	17
	690 V		kW	19	22	22
Minimum conductor cross-section loaded with I_e	At 40 °C		mm^2	2.5	2.5	2.5
	60 °C		mm^2	2.5	2.5	2.5

3) Resistance-heated industrial furnaces and electric heating appliances, etc. (increased current consumption at startup of heating taken into account).

Contactor	Frame size Type			**S00** **3RT10 15**	**S00** **3RT10 16**	**S00** **3RT10 17**
Main circuit						
Current carrying capacity with alternating current						
Utilization categories AC-2 and AC-3						
Rated operational currents I_e	To 400 V		A	7	9	12
	500 V		A	5	6.5	9
	690 V		A	4	5.2	6.3
Rated power of motors with slipring or squirrel-cage rotor at 50 Hz and 60 Hz						
		230 V	kW	2.2	3	3
		400 V	kW	3	4	5.5
		500 V	W	3.5	4.5	5.5
		690 V	kW	4	5.5	5.5
Thermal stress	10-s current[1])		A	56	72	96
Power loss per conducting path	At I_e/AC-3		W	0.42	0.7	1.24