

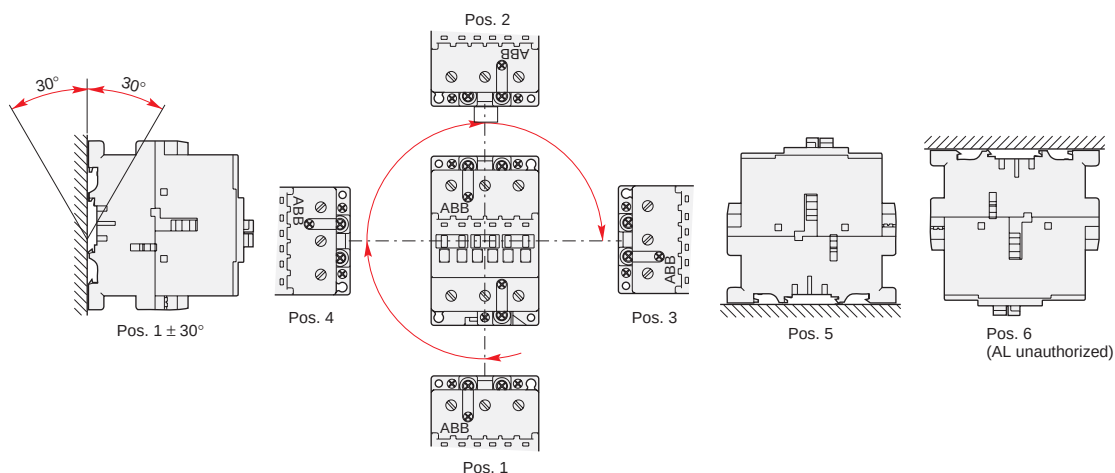
UL & CSA Technical data

A/AE9 – A/AE/AF110, AL9 – AL40

AC & DC operated

ABB contactor frame size		A/AE/AL 9	A/AE/AL 12	A/AE/AL 16	A/AE/AL 26	A/AE/AL 30	A/AE/AL 40	A/AE/AF 45	A/AE/AF 50	A/AE/AF 63	A/AE/AF 75	A/AE/AF 95	A/AE/AF 110
NEMA size		00	—	0	1	1P	—	—	2	—	3	—	—
Number of poles		3 OR 4	3	3 OR 4	3 OR 4	3	3	4	3 OR 4	3	3 OR 4	3	3
AC rating information													
NEMA cont. amp rating	thermal current	9	—	18	27	36	—	—	45	—	90	—	—
NEMA maximum H.P. ratings	1 phase												
115	VAC	1/3	—	1	2	3	—	—	3	—	—	—	—
230	VAC	1	—	2	3	5	—	—	7.5	—	—	—	—
NEMA maximum H.P. ratings	3 phase												
200	VAC	1.5	—	3	7.5	—	—	—	10	—	25	—	—
230	VAC	1.5	—	3	7.5	—	—	—	15	—	30	—	—
460/575	VAC	2	—	5	10	—	—	—	25	—	50	—	—
U.L. general purpose current	40°C	21	25	30	40	50	60	65	80	90	105	125	140
Max. 3 Ph Switching motor loads	A	9	11	17	28	34	42	—	54	65	80	95	110
U.L. maximum H.P. ratings	1 phase												
115	VAC	1/2	3/4	1.5	2	3	3	—	3	5	7.5	7.5	10
230	VAC	2	2	3	5	7.5	7.5	—	7.5	10	15	20	25
U.L. maximum H.P. ratings	3 phase												
200-208	VAC	2	3	5	7.5	10	10	—	15	20	25	30	30
220-240	VAC	2	3	5	10	10	15	—	20	25	30	30	40
440-480	VAC	5	7.5	10	20	25	30	—	40	50	60	60	75
550-600	VAC	7.5	10	15	25	30	40	—	50	60	75	75	100
U.L. maximum H.P. ratings													
120	VDC	1	1.5	2	3	3	5	—	7.5	10	10	—	—
240	VDC	2	3	3	5	7.5	10	—	15	20	25	—	—
Lighting — ballast and incandescent	600VAC	15	15	20 ①	35	50	60	65	65	85	105	120	—
Resistive heating applications	600VAC	15	15	20	35	50	60	65	65	85	105	—	—
CSA Elevator ratings													
220 – 240VAC	3 phase	—	—	5	—	—	10	—	15	—	20	20	—
440 – 480VAC	3 phase	—	—	10	—	—	20	—	30	—	30	40	—
550 – 600VAC	3 phase	—	—	10	—	—	20	—	30	—	40	50	—
230VAC	1 phase	—	—	2	—	—	5	—	7.5	—	10	10	—
Auxiliary contacts													
NEMA rating	AC	A600	A600	A600	A600	A600	A600	—	A600	A600	A600	A600	A600
AC rated voltage	VAC	600	600	600	600	600	600	—	600	600	600	600	600
AC thermal rated current	A	10	10	10	10	10	10	—	10	10	10	10	10
AC maximum volt-ampere making	VA	7200	7200	7200	7200	7200	7200	—	7200	7200	7200	7200	7200
AC maximum volt-ampere breaking	VA	720	720	720	720	720	720	—	720	720	720	720	720
NEMA rating	DC	P600	P600	P600	P600	P600	P600	—	P600	P600	P600	P600	P600
DC rated voltage	VDC	600	600	600	600	600	600	—	600	600	600	600	600
DC thermal rated current	A	5	5	5	5	5	5	—	5	5	5	5	5
DC Maximum make-break	A	0.2	0.2	0.2	0.2	0.2	0.2	—	0.2	0.2	0.2	0.2	0.2
Approximate weight													
Contactor	lbs.	0.7	0.7	0.7	1.01	1.2	2.25	2.25	2.25	2.25	2.25	3.5	5
Starter	lbs.	1.04	1.04	1.04	1.35	1.54	3	—	3	3	3	6	7
Terminal wire range													
Number of wires per phase	AWG	18-10	18-10	18-10	12-8	8-4	8-4	8-1	8-1	8-1	8-1	6-2/0	6-2/0
		2	2	2	2	2	2	1	1	1	1	1	1
Maximum short circuit ratings													
MCCB, MCP, Amps/kA	480VAC	50/35	50/35	50/35	100/35	150/65	150/65	—	150/85	250/85	250/85	250/85	250/85
MCCB, MCP, Amps/kA	600VAC	10/35	10/35	10/35	100/35	150/25	150/25	—	—	—	—	250/35	250/35
Fuse, Amps — type/kA	600VAC	30J/200	30J/200	30J/200	60J/200	60J/200	100J/200	—	100J/200	200J/200	200J/200	200J/200	200J/200

Mounting positions

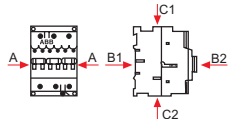


UL/CSA & IEC Technical data

A/AE9 – A/AE/AF/TAE110

Across the line
contactors

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Contactor types: A..., AE... AF..., TAE...	9	12	16	26	30	40	45	50	63	75	95	110
	-	-	-	-	-	-	45	50	63	75	95	110
Rated insulation voltage U _i according to IEC 60947-4-1	1000											
according to UL/CSA	600											
Rated impulse withstand voltage U _{imp} .	8											
Standards	Devices complying with international standards IEC 60947-1 / 60947-4-1 and European standards EN 60947-1 / 60947-4-1											
Air temperature close to contactor	see "Conditions for use" page 1.50, for control voltage limits and authorized mounting positions											
– fitted with thermal O/L relay	-25 to +55											
– without thermal O/L relay	-40 to +70 (55 max. for TAE... contactors)											
– for storage	-60 to +80											-40 to +70
Climatic withstand 30	acc. to IEC 60068-2-30 and 60068-2-11 - UTE C 63-100 specification II											acc. to IEC 68-2-
Operating altitude	m											≤ 3000
Shock withstand acc. IEC 60068-2-27 and EN 60068-2-27 Mounting position 1 (see page 1.50)	1/2 sinusoidal shock for 11 ms: no change in contact position											
	Shock direction	Making position		Breaking position								
	A	20 g		20 g								
	B1	10 g		5 g ①								
	B2	15 g ②		15 g ②								
	C1	20 g		20 g								
	C2	20 g		20 g								
												
												Not valid for DIN-rail mounting

① 3 g for AF 45-22, AE 45-22, AF 75-22 and AE 75-22.

② 10 g for AF 45-22, AE 45-22, AF 75-22 and AE 75-22.

IEC Technical data

DC circuit switching

A/AE9 – GAE75

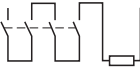
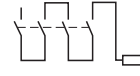
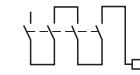
Across the line
contactors

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General

The arc switching on d.c. is more difficult than on a.c.

- For selecting a contactor it is essential to determine the current, the voltage and the L/R time constant of the controlled load.
- For information, typical time constant values are quoted hereafter: non inductive loads such as resistance furnaces ($L/R \approx 1$ ms), inductive loads such as shunt motors ($L/R \approx 2$ ms) or series motors ($L/R \approx 7.5$ ms).
- The addition of a resistor in parallel with an inductive winding helps in the elimination of the arcs.
- All the poles required for breaking must be connected in series between the load and the source polarity not linked to earth (or chassis).

a.c. operated contactors a.c. / d.c. operated (electronic coil interface) d.c. operated contactors			A9 – AE9	A12 – AE12	A16 – AE16	A26 – AE26	A30 – AE30	A40 – AE40	A45 AF45 AE45	A50 AF50 AE50	A63 AF63 AE63	A75 AF75 AE75	GA75 – GAE75
Utilization category DC-1, $L/R \leq 1$ ms													
	≤ 72 V	A	25	27	30	45	55	60	70	100	110	120	120
	110 V	A	10	15	20	–	–	–	–	–	–	–	120
	220 V	A	–	–	–	–	–	–	–	–	–	–	120
	440 V	A	–	–	–	–	–	–	–	–	–	–	100
	600 V	A	–	–	–	–	–	–	–	–	–	–	75
	≤ 72 V	A	25	27	30	45	55	60	70	100	110	120	–
	110 V	A	25	27	30	45	55	60	70	100	110	120	–
	220 V	A	10	15	20	–	–	–	–	–	–	–	–
	≤ 72 V	A	25	27	30	45	55	60	70	100	110	120	–
	110 V	A	25	27	30	45	55	60	70	100	110	120	–
	220 V	A	25	27	30	45	55	60	70	100	110	120	–
	≤ 72 V	A	25	27	30	45	–	–	70	100	–	120	–
	110 V	A	25	27	30	45	–	–	70	100	–	120	–
	220 V	A	25	27	30	45	–	–	70	100	–	120	–
	440 V	A	10	15	20	–	–	–	–	–	–	–	–
Utilization category DC-3, $L/R \leq 2$ ms													
	≤ 72 V	A	25	27	30	45	55	60	70	100	110	120	120
	110 V	A	6	7	8	–	–	–	–	–	–	–	120
	220 V	A	–	–	–	–	–	–	–	–	–	–	100
	440 V	A	–	–	–	–	–	–	–	–	–	–	85
	≤ 72 V	A	25	27	30	45	55	60	70	100	110	120	–
	110 V	A	25	27	30	45	55	60	70	100	110	120	–
	220 V	A	6	7	8	–	–	–	–	–	–	–	–
	≤ 72 V	A	25	27	30	45	55	60	70	100	110	120	–
	110 V	A	25	27	30	45	55	60	70	100	110	120	–
	220 V	A	25	27	30	45	55	60	70	100	110	120	–
	≤ 72 V	A	25	27	30	45	–	–	70	100	–	120	–
	110 V	A	25	27	30	45	–	–	70	100	–	120	–
	220 V	A	25	27	30	45	–	–	70	100	–	120	–
	440 V	A	6	7	8	–	–	–	–	–	–	–	–
Utilization category DC-5, $L/R \leq 7.5$ ms													
	≤ 72 V	A	9	12	16	25	30	40	50	50	63	75	85
	110 V	A	4	4	4	–	–	–	–	–	–	–	85
	220 V	A	–	–	–	–	–	–	–	–	–	–	85
	440 V	A	–	–	–	–	–	–	–	–	–	–	35
	≤ 72 V	A	25	27	30	45	55	60	70	100	110	120	–
	110 V	A	10	15	20	30	45	50	70	80	90	100	–
	220 V	A	4	4	4	–	–	–	–	–	–	–	–
	≤ 72 V	A	25	27	30	45	55	60	70	100	110	120	–
	110 V	A	25	27	30	45	55	60	70	100	110	120	–
	220 V	A	9	12	16	25	30	40	50	50	63	75	–
	≤ 72 V	A	25	27	30	45	–	–	70	100	–	120	–
	110 V	A	25	27	30	45	–	–	70	100	–	120	–
	220 V	A	10	15	20	30	–	–	70	70	–	100	–
	440 V	A	4	4	4	–	–	–	–	–	–	–	–

IEC Technical data

DC circuit switching

A/AF/AE95 – AF750

Technical Data

- The tables indicate for the standard contactors the I_e max. operating currents depending on: the utilization category (i.e. L/R) DC-1, DC-3, DC-5 as defined in the IEC 60947-4-1 publication, the operating voltage U_e and the pole coupling details. See page 1.81.
Ampere values quoted in the tables below are valid for a -25 ... +70 °C temperature close to the contactors, as long as the AC-1 Ampere values (see pages 1.45 - 146) for the corresponding ambient temperature are not exceeded.
- Max. switching frequency: 300 ops/h.
- For switching higher d.c. ratings, we recommend the use of bar mounted contactors, R series (63 ... 2000 A).

The selection table for AE 50 ... AE 110 contactors can be used for the TAE 50 ... TAE 110 types.

a.c. operated contactors a.c. / d.c. operated (electronic coil interface) d.c. operated contactors			A95 AF95 AE95	A110 AF110 AE110	A145 AF145 -	A185 AF185 -	A210 AF210 -	A260 AF260 -	A300 AF300 -	- AF400 -	- AF460 -	- AF580 -	- AF750 -
Utilization category DC-1, L/R ≤ 1 ms													
	≤110 V	A	-	-	-	-	-	-	-	600	700	800	1050
	≤110 V	A	145	160	250	275	350	400	450	600	700	800	1050
	220 V	A	-	-	-	-	-	-	-	600	700	800	1050
	≤110 V	A	145	160	250	275	350	400	450	600	700	800	1050
	220 V	A	145	160	250	275	350	400	450	600	700	800	1050
	440 V	A	-	-	-	-	-	-	-	600	700	800	1050
	600 V	A	-	-	-	-	-	-	-	600	700	800	1050
Utilization category DC-3, L/R ≤ 2.5 ms													
	≤110 V	A	-	-	-	-	-	-	-	600	700	800	1050
	≤110 V	A	145	160	250	275	350	400	450	600	700	800	1050
	220 V	A	-	-	-	-	-	-	-	600	700	800	1050
	≤110 V	A	145	160	250	275	350	400	450	600	700	800	1050
	220 V	A	145	160	250	275	350	400	450	600	700	800	1050
	440 V	A	-	-	-	-	-	-	-	600	700	800	1050
	600 V	A	-	-	-	-	-	-	-	600	700	800	1050
Utilization category DC-5, L/R ≤ 15 ms													
	≤110 V	A	-	-	-	-	-	-	-	600	700	800	1050
	≤110 V	A	145	160	250	275	350	400	450	600	700	800	1050
	220 V	A	-	-	-	-	-	-	-	600	700	800	1050
	≤110 V	A	145	160	250	275	350	400	450	600	700	800	1050
	220 V	A	145	160	250	275	350	400	450	600	700	800	1050
	440 V	A	-	-	-	-	-	-	-	600	700	800	1050
	600 V	A	-	-	-	-	-	-	-	600	700	800	1050

IEC Technical data

A/AE9 — A/AE/AF/TAE110

Across the line
contactors

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Main Pole - Utilization Characteristics

Main pole utilization characteristics		Utilization characteristics												
Contactor types:	A..., AE..., AF..., TAE...	9	12	16	26	30	40	45	50	63	75	95	110	
		-	-	-	-	-	-	45	50	63	75	95	110	
Rated operational voltage U _e max.	V	690						1000 (690 for AF... contactors)						
Rated frequency limits	Hz	25-400												
Conventional free-air thermal current I _{th} acc. to IEC 60947-4-1, open contactors $\varnothing \leq 40\text{ }^{\circ}\text{C}$														
	A	26	28	30	45	65	65	100	100	125	125	145	160	
with conductor cross-sectional area	mm ²	4	4	6	16	16	35	35	50	50	50	70		
Rated operational current I _e / AC-1 for air temperature close to contactor														
U _e max. 690 V	$\varnothing \leq 40\text{ }^{\circ}\text{C}$	A	25	27	30	45	55	60	70	100	115	125	145	160
	$\varnothing \leq 55\text{ }^{\circ}\text{C}$	A	22	25	27	40	55	60	60	85	95	105	135	145
	$\varnothing \leq 70\text{ }^{\circ}\text{C}$ ③	A	18	20	23	32	39	42	50	70	80	85	115	130
with conductor cross-sectional area	mm ²	2.5	4	4	6	10	16	25	35	50	50	50	70	
Utilization categorie AC-3 for air temperature close to contactor $\leq 55\text{ }^{\circ}\text{C}$														
Rated operational current I _e AC-3 ①														
3-phase motors	220-230-240 V	A	9	12	17	26	33	40	40	53	65	75	96	110
	380-400 V	A	9	12	17	26	32	37	37	50	65	75	96	110
	415 V	A	9	12	17	26	32	37	37	50	65	72	96	110
	440 V	A	9	12	16	26	32	37	37	45	65	70	93	100
	500 V	A	9	12	14	22	28	33	33	45	55	65	80	100
	690 V	A	7	9	10	17	21	25	25	35	43	46	65	82
	1000 V	A	-	-	-	-	-	-	-	23 ②	25 ②	28 ②	30 ②	30 ②
Rated operational power AC-3 ①														
1500 r.p.m. 50 Hz 1800 r.p.m. 60 Hz 3-phase motors	220-230-240 V	kW	2.2	3	4	6.5	9	11	11	15	18.5	22	25	30
	380-400 V	kW	4	5.5	7.5	11	15	18.5	18.5	22	30	37	45	55
	415 V	kW	4	5.5	9	11	15	18.5	18.5	25	37	40	55	59
	440 V	kW	4	5.5	9	15	18.5	22	22	25	37	40	55	59
	500 V	kW	5.5	7.5	9	15	18.5	22	22	30	37	45	55	59
	690 V	kW	5.5	7.5	9	15	18.5	22	22	30	37	40	55	75
	1000 V	kW	-	-	-	-	-	-	-	30 ②	33 ②	37 ②	40 ②	40 ②
Rated making capacity AC-3 according to IEC 60947-4-1														
10 x I _e AC-3														
Rated breaking capacity AC-3 according to IEC 60947-4-1														
8 x I _e AC-3														
Short-circuit protection for contactors without thermal O/L relay - Motor protection excluded														
U _e $\leq$ 500 V a.c. - gG type fuse	A	25	32	32	50	63		80	100	125	160	160	200	
Rated short-time withstand current I _{cw} at 40 °C ambient temp., in free air, from a cold state														
1 s	A	250	280	300	400	600		1000				1320	1320	
10 s	A	100	120	140	210	400		650				800	800	
30 s	A	60	70	80	110	225		370				500	500	
1 min	A	50	55	60	90	150		250				350	350	
15 min	A	26	28	30	45	65		110	110	135	135	160	175	
Maximum breaking capacity cos $\varnothing$ = 0.45 (cos $\varnothing$ = 0.35 for I _e > 100 A)														
at 440 V	A	250			420	820		900	1300			1160		
at 690 V	A	90			170	340		490	630			800		
Heat dissipation per pole	I _e / AC-1 W	0.8	1	1.2	1.8	2.5	3	2.5	5	6.5	7	6.5	7.5	
	I _e / AC-3 W	0.1	0.2	0.35	0.6	0.9	1.3	0.65	1.3	1.5	2	2.7	3.6	
Max. electrical switching frequency														
- for AC-1	cycles/h	600						600	(300 for AF..., AE... TAE...)			300		
- for AC-3	cycles/h	1200	(600 for AE...)					600	(300 for AF..., AE... TAE...)			300		
- for AC-2, AC-4	cycles/h	300						150				150		
Electrical durability														
see pages 1.70 - 1.73														
Mechanical durability														
- millions of operating cycles		10 (5 for AE... and TAE... contactors)												
- max. mechanical switching frequency	cycles/h	3600 (300 for AF... contactors)												

① For the corresponding hp/A values of 1500 r.p.m., 50Hz, 3-phase motors, see page 1.76.

② AF... contactors excluded

③ Unauthorized for TAE... contactors.

IEC Technical data

AE9 — AE110

TAE45 — TAE110

Across the line
1

Magnet System Characteristics for AE... Contactors

Contactor types:	AE...		9	12	16	26	30	40	45	50	63	75	95	110
Rated control circuit voltage U _c	V d.c.		12 ... 250											
Coil operating limits according to IEC 60947-4-1			Ø ≤ 55 °C 0.85 ... 1.1 x U _c										Ø ≤ 70 °C	
Drop-out voltage in % of U _c			roughly 10 ... 30 %						roughly 15 ... 40 %					
Coil consumption - Average values														
– pull-in value	W		90			110			200				400	
– holding value	W		2			2.5			4				2.4	
Coil time constant														
– open	L/R	ms	2			3			3				6	
– closed	L/R	ms	9			16			15				30 ... 40	
Operating time														
between coil energization and:														
– N.O. contact closing		ms	10 ... 16			13 ... 21			13 ... 30			15 ... 25		
– N.C. contact opening		ms	8 ... 12			11 ... 16			10 ... 27			12 ... 22		
between coil de-energization and														
– N.O. contact opening		ms	5 ... 14 ①			6 ... 12 ①			5 ... 15 ①			15 ... 20 ①		
– N.C. contact closing		ms	11 ... 17 ①			8 ... 16 ①			8 ... 18 ①			18 ... 23 ①		

Magnet System Characteristics for TAE... Contactors

Contactor types:	TAE...	-	-	-	-	-	-	45	50	-	75	95	110
Rated control circuit voltage U_c	V d.c.	17 ... 264											
Coil operating limits according to IEC 60947-4-1		$\varnothing \leq 55^\circ\text{C}$ $U_c \text{ min. ... } U_c \text{ max.}$											
Drop-out voltage in % of $U_c \text{ max.}$		roughly 20 ... 35 %											
Coil consumption values for $U_c \text{ min. ... } U_c \text{ max.}$													
– pull-in value	W							120 ... 250				300 ... 1000	
– holding value	W							1.7 ... 6.5				2 ... 7	
Coil time constant													
– open	L/R ms							3				6	
– closed	L/R ms							15				40	
Operating time between coil energization and:													
– N.O. contact closing	ms							13 ... 30				15 ... 25	
– N.C. contact opening	ms							10 ... 27				12 ... 22	
Operating time between coil de-energization and:													
– N.O. contact opening	ms							5 ... 15 ②				15 ... 20 ②	
– N.C. contact closing	ms							8 ... 18 ②				18 ... 23 ②	

① The use of surge suppressors increases the opening time on a scale of 1.1 to 1.5 for a varistor suppressor and on a scale of 4 to 8 for a diode suppressor. AE 9 ... AE 40 contactors and $U_c \geq 110 \text{ V}$: table values for contactors with RV 5 surge suppressor (factory mounted).

② The use of surge suppressors increases the opening time on a scale of 1.1 to 1.5 for a varistor suppressor and on a scale of 4 to 8 for a diode suppressor.

IEC Technical data

A/AE9 — AF/TAE110

Across the line
contactors

1

Mounting characteristics

Contactor types:	A..., AE... AF..., TAE...	9	12	16	26	30	40	45	50	63	75	95	110
		–	–	–	–	–	–	45	50	63	75	95	110
Mounting positions		see "Conditions for use"											
Mounting distances		The contactors can be assembled side by side											
Mounting													
on DIN rail		35 x 7.5 mm						35 x 15 mm					
according to IEC 715 and EN 50022 / EN 50023		35 x 15 mm						75 x 25 mm			75 x 25 mm		
by screws (not supplied)		2 x M4						2 x M6					

Conditions for Use

Sustainable utilization conditions for contactors involving at the same time the Mounting position, Ambient temperature and Control voltage operating limits are summarized in the table below.

Contactors	Mounting position	Ambient temperature	Control voltage
A 9 ... A 110, AE 9 ... AE 110	1, 1 ± 30°, 2, 3, 4, 5	≤ 55 °C	0.85 ... 1.1 x U _c
		55 ... 70 °C	U _c
	6	≤ 55 °C	0.95 ... 1.1 x U _c
AF 45 ... AF 110	1, 1 ± 30°, 2, 3, 4, 5	≤ 70 °C	0.85 U _c min. ... 1.1 x U _c max.
	6 unauthorized	—	—
		> 55 °C unauthorized	—
TAE 45 ... TAE 110	1, 1 ± 30°, 2, 3, 4, 5	≤ 55 °C	U _c min. ... U _c max.
	6 unauthorized	—	—
		> 55 °C unauthorized	—

Notes for 4-pole contactors

Whatever the coil voltage: Pos. 5 unauthorized for A 45-22-00, AE 45-22-00, A 75-22-00, AE 75-22-00 contactors.

For 60 Hz coil voltage: (only for devices fitted with CA 5-.. and CAL 5-11 auxiliary contacts or TP timer)

– A 45-40-00, A 50-40-00 and A 75-40-00 contactors

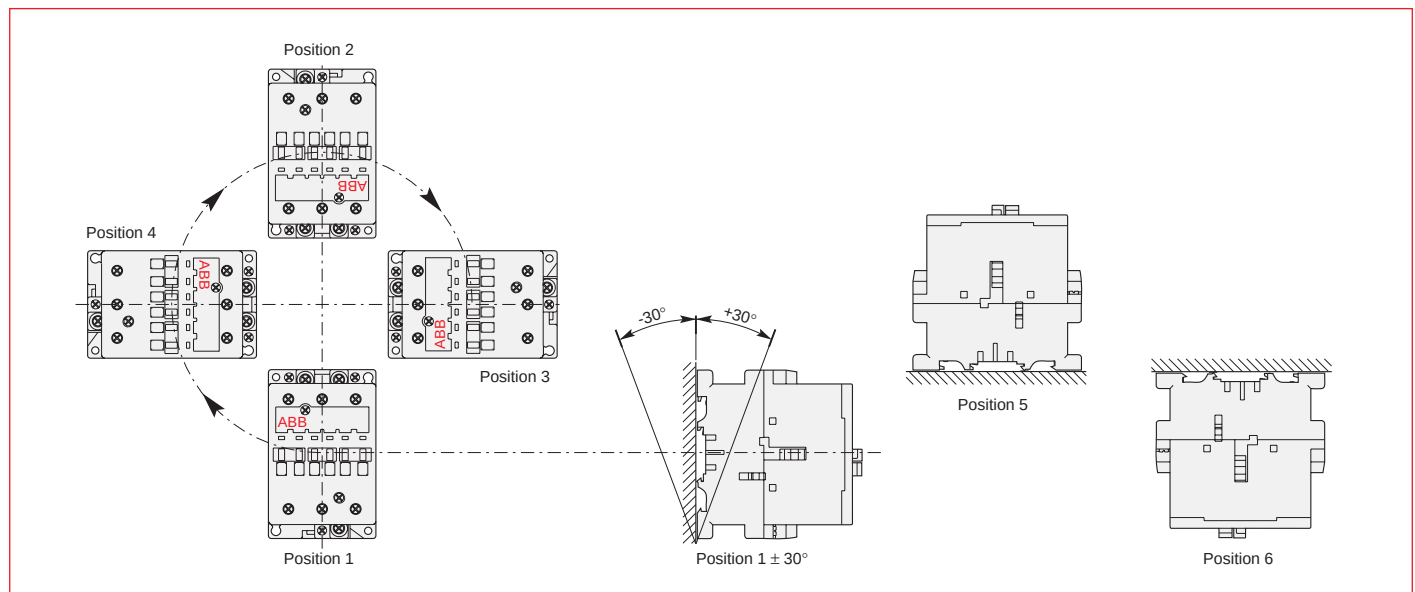
Mounting positions 1 to 5 and ambient temperature ≤ 55 °C: tolerance reduced to 0.9 ... 1.1 U_c (instead of 0.85 ... 1.1 U_c) for coil voltage codes 7 □ and 8 □.

– A 45-22-00 and A 75-22-00 contactors

Mounting positions 1 to 4 (pos. 5 unauthorized) and ambient temperature ≤ 55 °C: tolerance reduced to 0.9 ... 1.1 U_c (instead of 0.85 ... 1.1 U_c) for coil voltage codes 7 □ and 8 □.

For mounting position 6 or ambient temperature of 55 to 70 °C the information given on this page remains applicable.

Mounting Positions (see the above table for authorized positions)

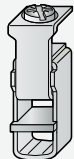
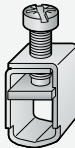
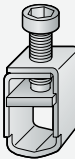


IEC Technical data

A/AE9 — AF/TAE110

Across the line
1

Connecting Characteristics

Contactor types: A..., AE... AF..., TAE...	9	12	16	26	30	40	45	50	63	75	95	110
	–	–	–	–	–	–	45	50	63	75	95	110
Main terminals												
	with cable clamp		with double connector 2 x (5.6 x 6.5 mm)		with single connector (13 x 10 mm)		with single connector (14 x 14 mm)					
Connecting capacity (min. ... max.)												
Main conductors (poles)												
Rigid: solid (≤ 4 mm²)			1 ... 4		1.5 ... 6 2.5 ... 16		6 ... 50		10 ... 95			
stranded (≥ 6 mm²)			1 ... 4		1.5 ... 6 2.5 ... 16		6 ... 16		6 ... 35			
Rigid with connector												
single for Cu cable			–		–		–		–		–	
single for Al/Cu cable			–		–		–		–		–	
double for Al/Cu cable			–		–		–		–		–	
Flexible with cable end			0.75 ... 2.5		0.75 ... 4 2.5 ... 10		6 ... 35		10 ... 70			
			0.75 ... 2.5		0.75 ... 4 2.5 ... 10		6 ... 25		6 ... 35			
Bars or lugs			8		10		–		–		30 ②	
			3.7		4.2		–		–		6	
Auxiliary conductors (built-in auxiliary terminals + coil terminals)												
Rigid solid			1 ... 4								0.75 ... 2.5	
			1 ... 4								0.75 ... 2.5	
Flexible with cable end			0.75 ... 2.5				1 ... 2.5				0.75 ... 2.5	
			0.75 ... 2.5									
Lugs			8		① 8							
			3.7		① 3.7							
Degree of protection acc. to IEC 60947-1 / EN 60947-1 and IEC 60529 / EN 60529	Protection against direct contact acc. to VDE 0106 - Part. 100											
– Main terminals	IP 20						IP 10					
– Coil terminals	IP 20											
– Built-in auxiliary terminals	IP 20						– – – – – –					
Screw terminals	(delivered in open position, screws of unused terminals must be tightened)											
Main terminals	(+, -) pozidriv 2 screws										hexagon socket	
	M3.5		M4		M5		M6				M8 (s = 4 mm)	
Coil terminals	M3.5 (+, -) pozidriv 2 screws with cable clamp											
Built-in auxiliary terminals	(+, -) pozidriv 2 screws with cable clamp										– –	
	M3.5		M4		M5		– –		– –		– –	
Tightening torque												
Main pole terminals												
– recommended	Nm / lb.in		1.00 / 9		1.7 / 15 2.30 / 20		4.00 / 35		6.00 / 53			
– max.	Nm		1.20		2.20 2.60		4.50		6.50			
Coil terminals												
– recommended	Nm / lb.in		1.00 / 9									
– max.	Nm		1.20									
Built-in auxiliary terminals												
– recommended	Nm / lb.in		1.00 / 9		1.7 / 15 1.00 / 9		– –		– –		– –	
– max.	Nm		1.20		2.20 1.20		– –		– –		– –	
Terminal marking and positioning	see pages 1.34											

① $L \leq 8$ and $l > 3.7$ for coil terminal - $L \leq 10$ and $l > 4.2$ for built-in auxiliary terminals.
② With LW 110 enlargement piece. See page 1.31.