

Main catalog

Motor protection and control
Manual motor starters, A9 ... A300 contactors and overload relays

Power and productivity
for a better world™

Motor rated operational powers and currents

The currents given below concern standard three-phase four-pole cage motors (1500 r.p.m. at 50 Hz 1800 r.p.m. at 60 Hz). These values are given for guidance and may vary according to the motor manufacturer and depending on the number of poles.

IEC	Motor nominal current: standardized values in blue colour (according to IEC 60947-4-1 Annex G)									
Motor power	220 V	230 V	240 V	380 V	400 V	415 V	440 V	500 V	660 V	690 V
kW	A	A	A	A	A	A	A	A	A	A
0.06	0.37	0.35	0.34	0.21	0.2	0.19	0.18	0.16	0.13	0.12
0.09	0.54	0.52	0.50	0.32	0.3	0.29	0.26	0.24	0.18	0.17
0.12	0.73	0.7	0.67	0.46	0.44	0.42	0.39	0.32	0.24	0.23
0.18	1	1	1	0.63	0.6	0.58	0.53	0.48	0.37	0.35
0.25	1.6	1.5	1.4	0.9	0.85	0.82	0.74	0.68	0.51	0.49
0.37	2.0	1.9	1.8	1.2	1.1	1.1	1	0.88	0.67	0.64
0.55	2.7	2.6	2.5	1.6	1.5	1.4	1.3	1.2	0.91	0.87
0.75	3.5	3.3	3.2	2.0	1.9	1.8	1.7	1.5	1.15	1.1
1.1	4.9	4.7	4.5	2.8	2.7	2.6	2.4	2.2	1.7	1.6
1.5	6.6	6.3	6	3.8	3.6	3.5	3.2	2.9	2.2	2.1
2.2	8.9	8.5	8.1	5.2	4.9	4.7	4.3	3.9	2.9	2.8
3	11.8	11.3	10.8	6.8	6.5	6.3	5.7	5.2	4	3.8
4	15.7	15	14.4	8.9	8.5	8.2	7.4	6.8	5.1	4.9
5.5	20.9	20	19.2	12.1	11.5	11.1	10.1	9.2	7	6.7
7.5	28.2	27	25.9	16.3	15.5	14.9	13.6	12.4	9.3	8.9
11	39.7	38	36.4	23.2	22	21.2	19.3	17.6	13.4	12.8
15	53.3	51	48.9	30.5	29	28	25.4	23	17.8	17
18.5	63.8	61	58.5	36.8	35	33.7	30.7	28	22	21
22	75.3	72	69	43.2	41	39.5	35.9	33	25.1	24
30	100	96	92	57.9	55	53	48.2	44	33.5	32
37	120	115	110	69	66	64	58	53	40.8	39
45	146	140	134	84	80	77	70	64	49.1	47
55	177	169	162	102	97	93	85	78	59.6	57
75	240	230	220	139	132	127	116	106	81	77
90	291	278	266	168	160	154	140	128	97	93
110	355	340	326	205	195	188	171	156	118	113
132	418	400	383	242	230	222	202	184	140	134
160	509	487	467	295	280	270	245	224	169	162
200	637	609	584	368	350	337	307	280	212	203
250	782	748	717	453	430	414	377	344	261	250
315	983	940	901	568	540	520	473	432	327	313
355	1109	1061	1017	642	610	588	535	488	370	354
400	1255	1200	1150	726	690	665	605	552	418	400
500	1545	1478	1416	895	850	819	745	680	515	493
560	1727	1652	1583	1000	950	916	832	760	576	551
630	1928	1844	1767	1116	1060	1022	929	848	643	615
710	2164	2070	1984	1253	1190	1147	1043	952	721	690
800	2446	2340	2243	1417	1346	1297	1179	1076	815	780
900	2760	2640	2530	1598	1518	1463	1330	1214	920	880
1000	3042	2910	2789	1761	1673	1613	1466	1339	1014	970

UL / CSA	Motor nominal current: standardized values (according to IEC 60947-4-1 Annex G and UL 508)				
Motor power	208 V	220-240 V	380-415 V	440-480 V	550-600 V
hp	A	A	A	A	A
1/2	2.4	2.2	1.3	1.1	0.9
3/4	3.5	3.2	1.8	1.6	1.3
1	4.6	4.2	2.3	2.1	1.7
1-1/2	6.6	6	3.3	3	2.4
2	7.5	6.8	4.3	3.4	2.7
3	10.6	9.6	6.1	4.8	3.9
5	16.7	15.2	9.7	7.6	6.1
7-1/2	24.2	22	14	11	9
10	30.8	28	18	14	11
15	46.2	42	27	21	17
20	59.4	54	34	27	22
25	74.8	68	44	34	27
30	88	80	51	40	32
40	114	104	66	52	41
50	143	130	83	65	52
60	169	154	103	77	62
75	211	192	128	96	77
100	273	248	165	124	99
125	343	312	208	156	125
150	396	360	240	180	144
200	528	480	320	240	192
250	–	604	403	302	242
300	–	722	482	361	289
350	–	828	560	414	336
400	–	954	636	477	382
450	–	1030	–	515	412
500	–	1180	786	590	472

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Motor protection and control
Manual motor starters, contactors and overload relays

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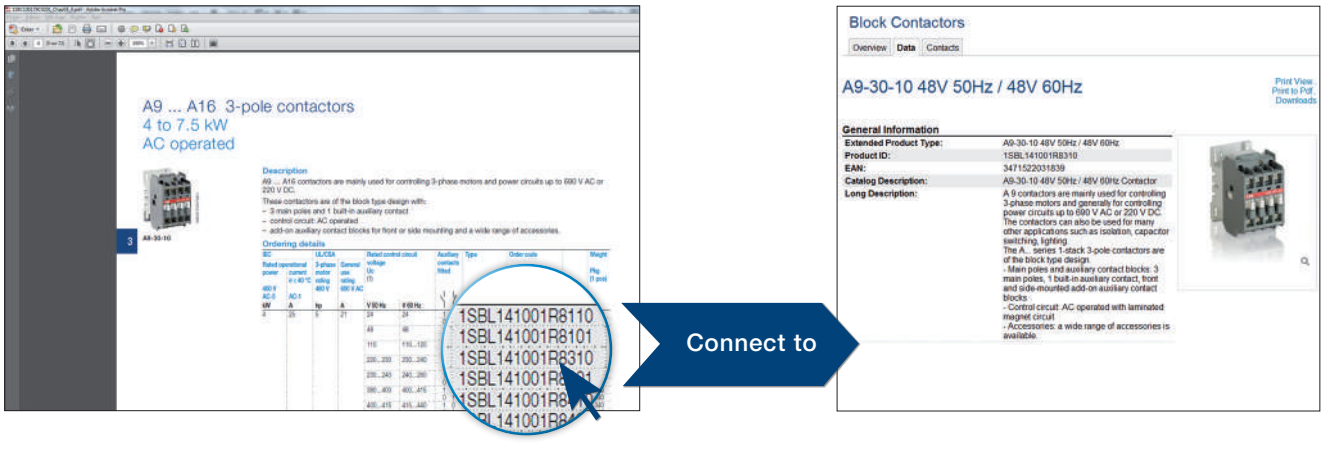
You can access to more product details, click on the order code



3-pole contactors, for motor control and power switching





IEC (1)	**AC-3 Rated operational power**	θ ≤ 55 °C, 400 V	**kW**	**4**	**5.5**	**7.5**	**11**	**15**	**18.5**
UL/CSA	**3-phase motor rating**	480 V	**hp**	**5**	**7.5**	**10**	**20**	**25**	**30**
AC Control supply		~	Type	**A9**	**A12**	**A16**	**A26**	**A30**	**A40**
IEC	**AC-3 Rated operational current**	θ ≤ 55 °C , 400 V	**A**	**9**	**12**	**17**	**26**	**32**	**37**
	AC-1 Rated operational current	θ ≤ 40 °C, 690 V	**A**	**25**	**27**	**30**	**45**	**55**	**60**
UL/CSA	**General use rating**	600 V	**A**	**21**	**25**	**30**	**40**	**50**	**60**
NEMA	**NEMA Size**			**00**	**0**	—	**1**	**1P**	—

(1) 1000 V IEC ratings available for A50 ... A300 contactors.

Main accessories

Auxiliary contact blocks	Front mounting	**CA5-10** (1 x N.O.) **CA5-01** (1 x N.C.)
	Side mounting	**CAL5-11** (1 x N.O. + 1 x N.C.)
Timers	Electronic	**TEF5-ON** **TEF5-OFF**
		TE5S (for star-delta starters - direct timing - separate mounting)
Interlocking units	Mechanical	**VM5-1**
	Mechanical / Electrical	**VE5-1**
Surge suppressors	Varistor (AC/DC)	**RV5** (24...440 V)
	RC Type (AC)	**RC5-1** (24...440 V)

Overload relays

Thermal relays



	Class 10A (Class 10A or 20 for TA80DU) (Class 30 for TA450SU)	**TA25DU-M** (0.10...32 A) **TA42DU-M** (18...42 A)

Manual motor starters



	Thermal / magnetic protection Class 10	**MS116** (0.10...32 A) Ics up to 50 kA for class 10 A **MS132** (0.10...32 A) Ics up to 100 kA **MS450** (28...50 A) Ics up to 50 kA **MS497** (22...100 A) Ics up to 100 kA
	Magnetic only types	**MO132** (0.16...32 A) Ics up to 100 kA **MO496** (32...100 A) Ics up to 100 kA **MO450** (40...50 A) Ics up to 50 kA






	22	30	37	45	55	75	90	110	140	160
	40	60	60	60	75	100	125	150	200	250
	A50	A63	A75	A95	A110	A145	A185	A210	A260	A300
	50	65	75	96	110	145	185	210	260	305
	100	115	125	145	160	250	275	350	400	500
	80	90	105	125	150	230	250	300	350	400
	2	—	3	—	—	4	—	—	5	—

		CAL18-11 (1 x N.O. + 1 x N.C.)		
			VM300H **VM300V**	
	VE5-2			
	RC5-2 (24...440 V)		**RC5-3** (250...440 V)	

	TA75DU-M (18...80 A)	**TA80DU** (29...80 A)	**TA200DU** (66...200 A)	**TA450DU** (130...310 A)
		TA110DU (66...110 A)		**TA450SU** (40...310 A)

	MS495 (45...100 A) Ics up to 50 kA	
	MO495 (63...100 A) Ics up to 50 kA	

Short-circuit protection devices

Tmax Circuit breaker and accessories



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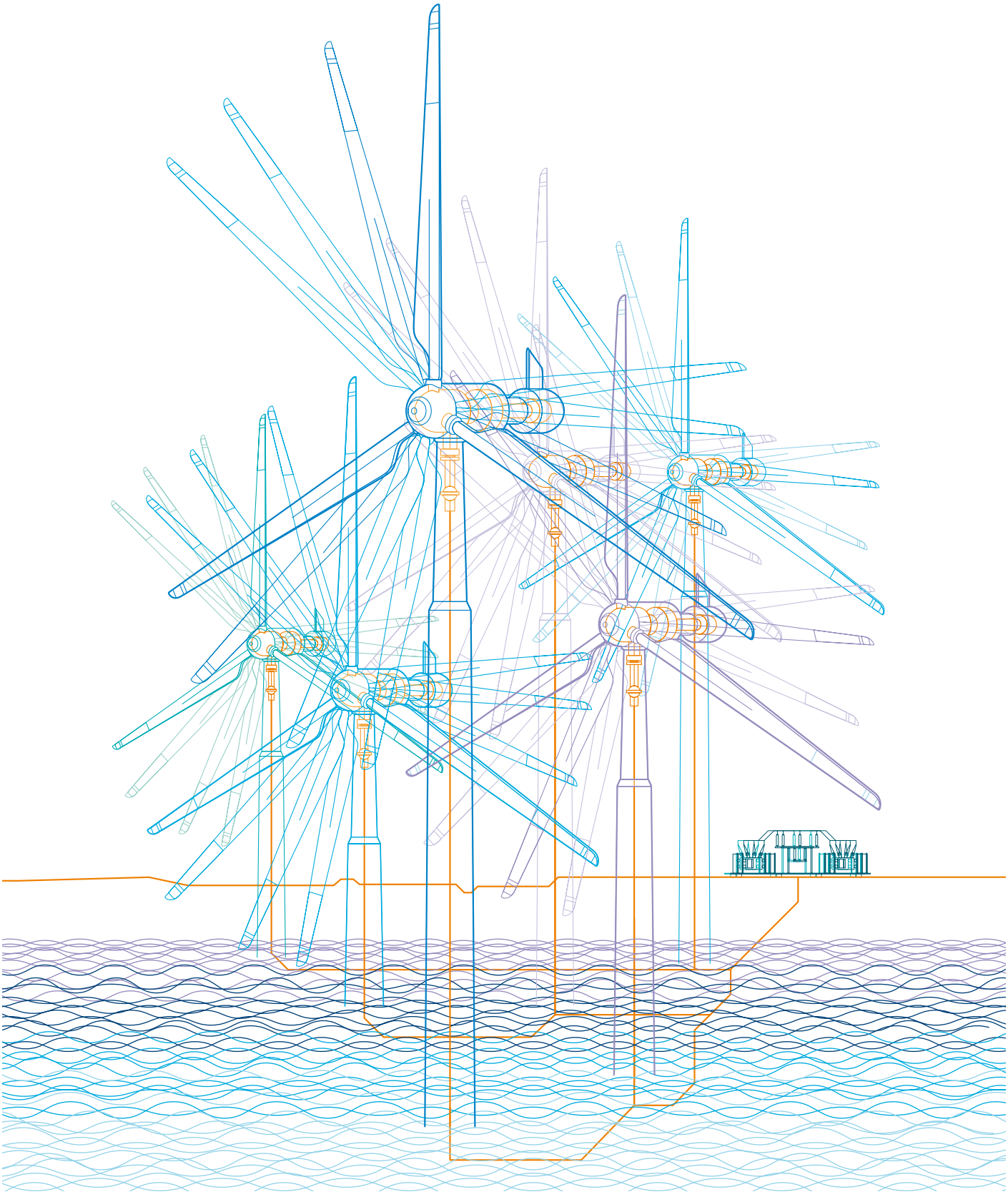

N3

4-pole contactors





IEC	**AC-1 Rated operational current**	θ ≤ 40 °C, 690 V	**A**	**25**	**30**	**45**	**70**	**100**	**125**
UL/CSA	**General use rating**	600 V	**A**	**21**	**30**	**40**	**65**	**80**	**105**
AC Control supply		~	Type	**A9**	**A16**	**A26**	**A45**	**A50**	**A75**
IEC	**AC-1 Rated operational current**	θ ≤ 40 °C	**A**	**25**	**30**	**45**	**70**	**100**	**125**
		θ ≤ 55 °C	**A**	**22**	**27**	**40**	**60**	**85**	**105**
		θ ≤ 70 °C	**A**	**18**	**23**	**32**	**50**	**70**	**85**
	With conductor cross sectional area		**mm²**	**2.5**	**4**	**6**	**25**	**35**	**50**
	Rated operational voltage Ue max.		**V**	**690**	**690**	**690**	**1000**	**1000**	**1000**

Main accessories

Auxiliary contact blocks	Front mounting	**CA5-10** (1 x N.O.) **CA5-01** (1 x N.C.)	
	Side mounting	**CAL5-11** (1 x N.O. + 1 x N.C.)	
Timers	Electronic	**TEF5-ON** **TEF5-OFF**	
		TE5S (for star-delta starters - direct timing - separate mounting)	
Interlocking units	Mechanical	**VM5-1**	
	Mechanical / Electrical	**VE5-1**	**VE5-2**
Surge suppressors	Varistor (AC / DC)	**RV5** (24...440 V)	
	RC Type (AC)	**RC5-1** (24...440 V)	**RC5-2** (24...440 V)

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3



A contactors and N contactor relays

A 3-pole contactors

Overview **3**/2

4 to 55 kW / 5 to 75 hp

A9 ... A16 AC operated **3**/4
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Main accessories **3**/8

75 to 160 kW / 100 to 250 hp

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A 4-pole contactors

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25 to 125 A AC-1

A9 ... A16 AC operated **3**/31
A26 AC operated **3**/32
A45 ... A75 AC operated **3**/33
Main accessories **3**/34
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N contactor relays

N AC operated **3**/45
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3-pole contactors, for motor control and power switching





IEC (1)	**AC-3 Rated operational power**	θ ≤ 55 °C, 400 V	**kW**	**4**	**5.5**	**7.5**	**11**	**15**	**18.5**
UL/CSA	**3-phase motor rating**	480 V	**hp**	**5**	**7.5**	**10**	**20**	**25**	**30**
AC Control supply			Type	**A9**	**A12**	**A16**	**A26**	**A30**	**A40**
IEC	**AC-3 Rated operational current**	θ ≤ 55 °C , 400 V	**A**	**9**	**12**	**17**	**26**	**32**	**37**
	AC-1 Rated operational current	θ ≤ 40 °C, 690 V	**A**	**25**	**27**	**30**	**45**	**55**	**60**
UL/CSA	**General use rating**	600 V	**A**	**21**	**25**	**30**	**40**	**50**	**60**
NEMA	**NEMA Size**			**00**	**0**	—	**1**	**1P**	—

(1) 1000 V IEC ratings available for A50 ... A300 contactors.

Main accessories

Auxiliary contact blocks	Front mounting	**CA5-10** (1 x N.O.) **CA5-01** (1 x N.C.)
	Side mounting	**CAL5-11** (1 x N.O. + 1 x N.C.)
Timers	Electronic	**TEF5-ON** **TEF5-OFF**
		TE5S (for star-delta starters - direct timing - separate mounting)
Interlocking units	Mechanical	**VM5-1**
	Mechanical / Electrical	**VE5-1**
Surge suppressors	Varistor (AC/DC)	**RV5** (24...440 V)
	RC Type (AC)	**RC5-1** (24...440 V)

Overload relays

Thermal relays



Class 10A (Class 10A or 20 for TA80DU) (Class 30 for TA450SU)	**TA25DU-M** (0.10...32 A)		**TA42DU-M** (18...42 A)

Manual motor starters



Thermal / magnetic protection Class 10	**MS116** (0.10...32 A) Ics up to 50 kA for class 10 A		**MS450** (28...50 A) Ics up to 50 kA
	MS132 (0.10...32 A) Ics up to 100 kA		
			MS497 (22...100 A) Ics up to 100 kA
Magnetic only types	**MO132** (0.16...32 A) Ics up to 100 kA		**MO496** (32...100 A) Ics up to 100 kA
			MO450 (40...50 A) Ics up to 50 kA






	22	30	37	45	55	75	90	110	140	160
	40	60	60	60	75	100	125	150	200	250
	A50	A63	A75	A95	A110	A145	A185	A210	A260	A300
	50	65	75	96	110	145	185	210	260	305
	100	115	125	145	160	250	275	350	400	500
	80	90	105	125	150	230	250	300	350	400
	2	—	3	—	—	4	—	—	5	—

		CAL18-11 (1 x N.O. + 1 x N.C.)		
			VM300H **VM300V**	
	VE5-2			
	RC5-2 (24...440 V)		**RC5-3** (250...440 V)	

	TA75DU-M (18...80 A)	**TA80DU** (29...80 A)	**TA200DU** (66...200 A)	**TA450DU** (130...310 A)
		TA110DU (66...110 A)		**TA450SU** (40...310 A)

Short-circuit protection devices

Tmax Circuit breaker and accessories



	MS495 (45...100 A) Ics up to 50 kA	
	MO495 (63...100 A) Ics up to 50 kA	

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A9 ... A16 3-pole contactors
4 to 7.5 kW
AC operated



A9-30-10

3

Description

A9 ... A16 contactors are mainly used for controlling 3-phase motors and power circuits up to 690 V AC or 220 V DC.

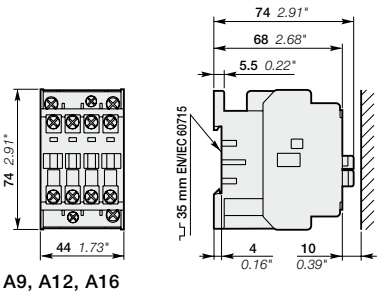
These contactors are of the block type design with:
- 3 main poles and 1 built-in auxiliary contact
- control circuit: AC operated
- add-on auxiliary contact blocks for front or side mounting and a wide range of accessories.

Ordering details

IEC		UL/CSA		Rated control circuit voltage Uc (1)		Auxiliary contacts fitted	Type	Order code		Weight
Rated operational power 400 V AC-3	current θ ≤ 40 °C AC-1	3-phase motor rating 480 V	General use rating 600 V AC							Pkg (1 pce)
kW	A	hp	A	V 50 Hz	V 60 Hz					kg
4	25	5	21	24	24	1 0	A9-30-10	1SBL141001R8110		0.340
						0 1	A9-30-01	1SBL141001R8101		0.340
				48	48	1 0	A9-30-10	1SBL141001R8310		0.340
						0 1	A9-30-01	1SBL141001R8301		0.340
				110	110...120	1 0	A9-30-10	1SBL141001R8410		0.340
						0 1	A9-30-01	1SBL141001R8401		0.340
				220...230	230...240	1 0	A9-30-10	1SBL141001R8010		0.340
						0 1	A9-30-01	1SBL141001R8001		0.340
				230...240	240...260	1 0	A9-30-10	1SBL141001R8810		0.340
						0 1	A9-30-01	1SBL141001R8801		0.340
				380...400	400...415	1 0	A9-30-10	1SBL141001R8510		0.340
						0 1	A9-30-01	1SBL141001R8501		0.340
				400...415	415...440	1 0	A9-30-10	1SBL141001R8610		0.340
						0 1	A9-30-01	1SBL141001R8601		0.340
5.5	27	7.5	25	24	24	1 0	A12-30-10	1SBL161001R8110		0.340
						0 1	A12-30-01	1SBL161001R8101		0.340
				48	48	1 0	A12-30-10	1SBL161001R8310		0.340
						0 1	A12-30-01	1SBL161001R8301		0.340
				110	110...120	1 0	A12-30-10	1SBL161001R8410		0.340
						0 1	A12-30-01	1SBL161001R8401		0.340
				220...230	230...240	1 0	A12-30-10	1SBL161001R8010		0.340
						0 1	A12-30-01	1SBL161001R8001		0.340
				230...240	240...260	1 0	A12-30-10	1SBL161001R8810		0.340
						0 1	A12-30-01	1SBL161001R8801		0.340
				380...400	400...415	1 0	A12-30-10	1SBL161001R8510		0.340
						0 1	A12-30-01	1SBL161001R8501		0.340
				400...415	415...440	1 0	A12-30-10	1SBL161001R8610		0.340
						0 1	A12-30-01	1SBL161001R8601		0.340
7.5	30	10	30	24	24	1 0	A16-30-10	1SBL181001R8110		0.340
						0 1	A16-30-01	1SBL181001R8101		0.340
				48	48	1 0	A16-30-10	1SBL181001R8310		0.340
						0 1	A16-30-01	1SBL181001R8301		0.340
				110	110...120	1 0	A16-30-10	1SBL181001R8410		0.340
						0 1	A16-30-01	1SBL181001R8401		0.340
				220...230	230...240	1 0	A16-30-10	1SBL181001R8010		0.340
						0 1	A16-30-01	1SBL181001R8001		0.340
				230...240	240...260	1 0	A16-30-10	1SBL181001R8810		0.340
						0 1	A16-30-01	1SBL181001R8801		0.340
				380...400	400...415	1 0	A16-30-10	1SBL181001R8510		0.340
						0 1	A16-30-01	1SBL181001R8501		0.340
				400...415	415...440	1 0	A16-30-10	1SBL181001R8610		0.340
						0 1	A16-30-01	1SBL181001R8601		0.340

(1) Other control voltages see voltage code table.

Main dimensions mm, *inches*



A9, A12, A16

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A26 ... A40 3-pole contactors
11 to 18.5 kW
AC operated



A26-30-10



A40-30-10

Description

A26 ... A40 contactors are mainly used for controlling 3-phase motors and power circuits up to 690 V AC or 220 V DC.

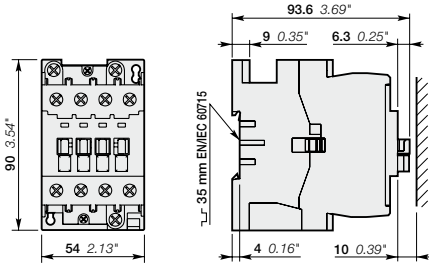
These contactors are of the block type design with:
- 3 main poles and 1 built-in auxiliary contact
- control circuit: AC operated
- add-on auxiliary contact blocks for front or side mounting and a wide range of accessories.

Ordering details

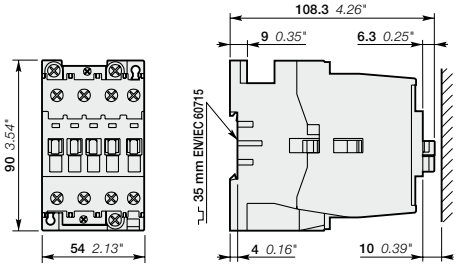
IEC		UL/CSA		Rated control circuit voltage Uc (1)		Auxiliary contacts fitted	Type	Order code	Weight
Rated operational power 400 V AC-3	current θ ≤ 40 °C AC-1	3-phase motor rating 480 V	General use rating 600 V AC						Pkg (1 pce)
kW	A	hp	A	V 50 Hz	V 60 Hz				kg
11	45	20	40	24	24	1 0	A26-30-10	1SBL241001R8110	0.600
						0 1	A26-30-01	1SBL241001R8101	0.600
				48	48	1 0	A26-30-10	1SBL241001R8310	0.600
						0 1	A26-30-01	1SBL241001R8301	0.600
				110	110...120	1 0	A26-30-10	1SBL241001R8410	0.600
						0 1	A26-30-01	1SBL241001R8401	0.600
				220...230	230...240	1 0	A26-30-10	1SBL241001R8010	0.600
						0 1	A26-30-01	1SBL241001R8001	0.600
				230...240	240...260	1 0	A26-30-10	1SBL241001R8810	0.600
						0 1	A26-30-01	1SBL241001R8801	0.600
				380...400	400...415	1 0	A26-30-10	1SBL241001R8510	0.600
						0 1	A26-30-01	1SBL241001R8501	0.600
				400...415	415...440	1 0	A26-30-10	1SBL241001R8610	0.600
						0 1	A26-30-01	1SBL241001R8601	0.600
15	55	25	50	24	24	1 0	A30-30-10	1SBL281001R8110	0.710
						0 1	A30-30-01	1SBL281001R8101	0.710
				48	48	1 0	A30-30-10	1SBL281001R8310	0.710
						0 1	A30-30-01	1SBL281001R8301	0.710
				110	110...120	1 0	A30-30-10	1SBL281001R8410	0.710
						0 1	A30-30-01	1SBL281001R8401	0.710
				220...230	230...240	1 0	A30-30-10	1SBL281001R8010	0.710
						0 1	A30-30-01	1SBL281001R8001	0.710
				230...240	240...260	1 0	A30-30-10	1SBL281001R8810	0.710
						0 1	A30-30-01	1SBL281001R8801	0.710
				380...400	400...415	1 0	A30-30-10	1SBL281001R8510	0.710
						0 1	A30-30-01	1SBL281001R8501	0.710
				400...415	415...440	1 0	A30-30-10	1SBL281001R8610	0.710
						0 1	A30-30-01	1SBL281001R8601	0.710
18.5	60	30	60	24	24	1 0	A40-30-10	1SBL321001R8110	0.710
						0 1	A40-30-01	1SBL321001R8101	0.710
				48	48	1 0	A40-30-10	1SBL321001R8310	0.710
						0 1	A40-30-01	1SBL321001R8301	0.710
				110	110...120	1 0	A40-30-10	1SBL321001R8410	0.710
						0 1	A40-30-01	1SBL321001R8401	0.710
				220...230	230...240	1 0	A40-30-10	1SBL321001R8010	0.710
						0 1	A40-30-01	1SBL321001R8001	0.710
				230...240	240...260	1 0	A40-30-10	1SBL321001R8810	0.710
						0 1	A40-30-01	1SBL321001R8801	0.710
				380...400	400...415	1 0	A40-30-10	1SBL321001R8510	0.710
						0 1	A40-30-01	1SBL321001R8501	0.710
				400...415	415...440	1 0	A40-30-10	1SBL321001R8610	0.710
						0 1	A40-30-01	1SBL321001R8601	0.710

(1) Other control voltages see voltage code table.

Main dimensions mm, *inches*



A26



A30, A40

1SBC101856S0201

A50 ... A75 3-pole contactors
22 to 37 kW
AC operated



A50-30-11

Description

A50 ... A75 contactors are mainly used for controlling 3-phase motors and power circuits up to 690 V AC / 1000 V AC or 220 V DC.

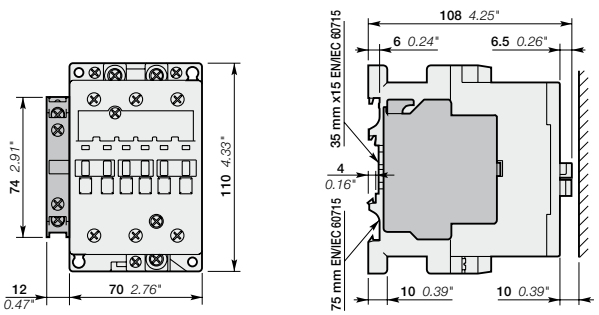
These contactors are of the block type design with:
- 3 main poles
- control circuit: AC operated
- add-on auxiliary contact blocks for front or side mounting and a wide range of accessories.

Ordering details

IEC		UL/CSA		Rated control circuit voltage Uc (1)		Auxiliary contacts fitted	Type	Order code		Weight
Rated operational power 400 V AC-3	current θ ≤ 40 °C AC-1	3-phase motor rating 480 V	General use rating 600 V AC							Pkg (1 pce)
kW	A	hp	A	V 50 Hz	V 60 Hz					kg
22	100	40	80	24	24	1 1	A50-30-11	1SBL351001R8111		1.200
				48	48	1 1	A50-30-11	1SBL351001R8311		1.200
				110	110…220	1 1	A50-30-11	1SBL351001R8411		1.200
				220…230	230…240	1 1	A50-30-11	1SBL351001R8011		1.200
				230…240	240…260	1 1	A50-30-11	1SBL351001R8811		1.200
				380…400	400…415	1 1	A50-30-11	1SBL351001R8511		1.200
				400…415	415…440	1 1	A50-30-11	1SBL351001R8611		1.200
30	115	60	90	24	24	1 1	A63-30-11	1SBL371001R8111		1.200
				48	48	1 1	A63-30-11	1SBL371001R8311		1.200
				110	110…220	1 1	A63-30-11	1SBL371001R8411		1.200
				220…230	230…240	1 1	A63-30-11	1SBL371001R8011		1.200
				230…240	240…260	1 1	A63-30-11	1SBL371001R8811		1.200
				380…400	400…415	1 1	A63-30-11	1SBL371001R8511		1.200
				400…415	415…440	1 1	A63-30-11	1SBL371001R8611		1.200
37	125	60	105	24	24	1 1	A75-30-11	1SBL411001R8111		1.200
				48	48	1 1	A75-30-11	1SBL411001R8311		1.200
				110	110…220	1 1	A75-30-11	1SBL411001R8411		1.200
				220…230	230…240	1 1	A75-30-11	1SBL411001R8011		1.200
				230…240	240…260	1 1	A75-30-11	1SBL411001R8811		1.200
				380…400	400…415	1 1	A75-30-11	1SBL411001R8511		1.200
				400…415	415…440	1 1	A75-30-11	1SBL411001R8611		1.200

(1) Other control voltages see voltage code table.

Main dimensions mm, *inches*



A50, A63, A75

1SBC101364S0201

A95 ... A110 3-pole contactors
45 to 55 kW
AC operated



A95-30-11

Description

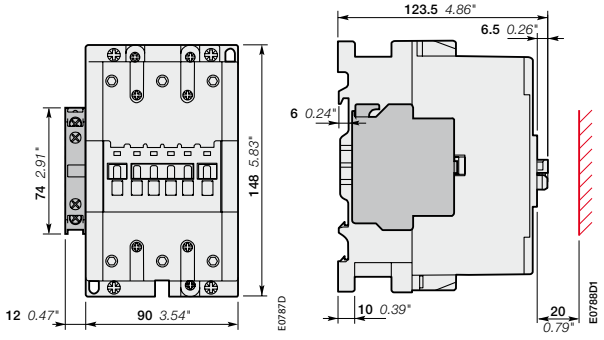
A95 ... A110 contactors are mainly used for controlling 3-phase motors and power circuits up to 690 / 1000 V AC or 220 V DC.
These contactors are of the block type design with:
- 3 main poles
- control circuit: AC operated
- add-on auxiliary contact blocks for front or side mounting and a wide range of accessories.

Ordering details

IEC		UL / CSA		Rated control circuit voltage Uc (1)		Auxiliary contacts fitted		Type	Order code		Weight
Rated operational power 400 V AC-3	current θ ≤ 40 °C AC-1	3-phase motor rating 480 V	General use rating 600 V AC								Pkg (1 pce)
kW	A	hp	A	V 50 Hz	V 60 Hz						kg
45	145	60	125	24	24	1	1	A95-30-11	1SFL431001R8111		2.040
				48	48	1	1	A95-30-11	1SFL431001R8311		2.040
				110	110...120	1	1	A95-30-11	1SFL431001R8411		2.040
				220...230	230...240	1	1	A95-30-11	1SFL431001R8011		2.040
				230...240	240...260	1	1	A95-30-11	1SFL431001R8811		2.040
				380...400	400...415	1	1	A95-30-11	1SFL431001R8511		2.040
				400...415	415...440	1	1	A95-30-11	1SFL431001R8611		2.040
55	160	75	140	24	24	1	1	A110-30-11	1SFL451001R8111		2.040
				48	48	1	1	A110-30-11	1SFL451001R8311		2.040
				110	110...120	1	1	A110-30-11	1SFL451001R8411		2.040
				220...230	230...240	1	1	A110-30-11	1SFL451001R8011		2.040
				230...240	240...260	1	1	A110-30-11	1SFL451001R8811		2.040
				380...400	400...415	1	1	A110-30-11	1SFL451001R8511		2.040
				400...415	415...440	1	1	A110-30-11	1SFL451001R8611		2.040

(1) Other control voltages see voltage code table.

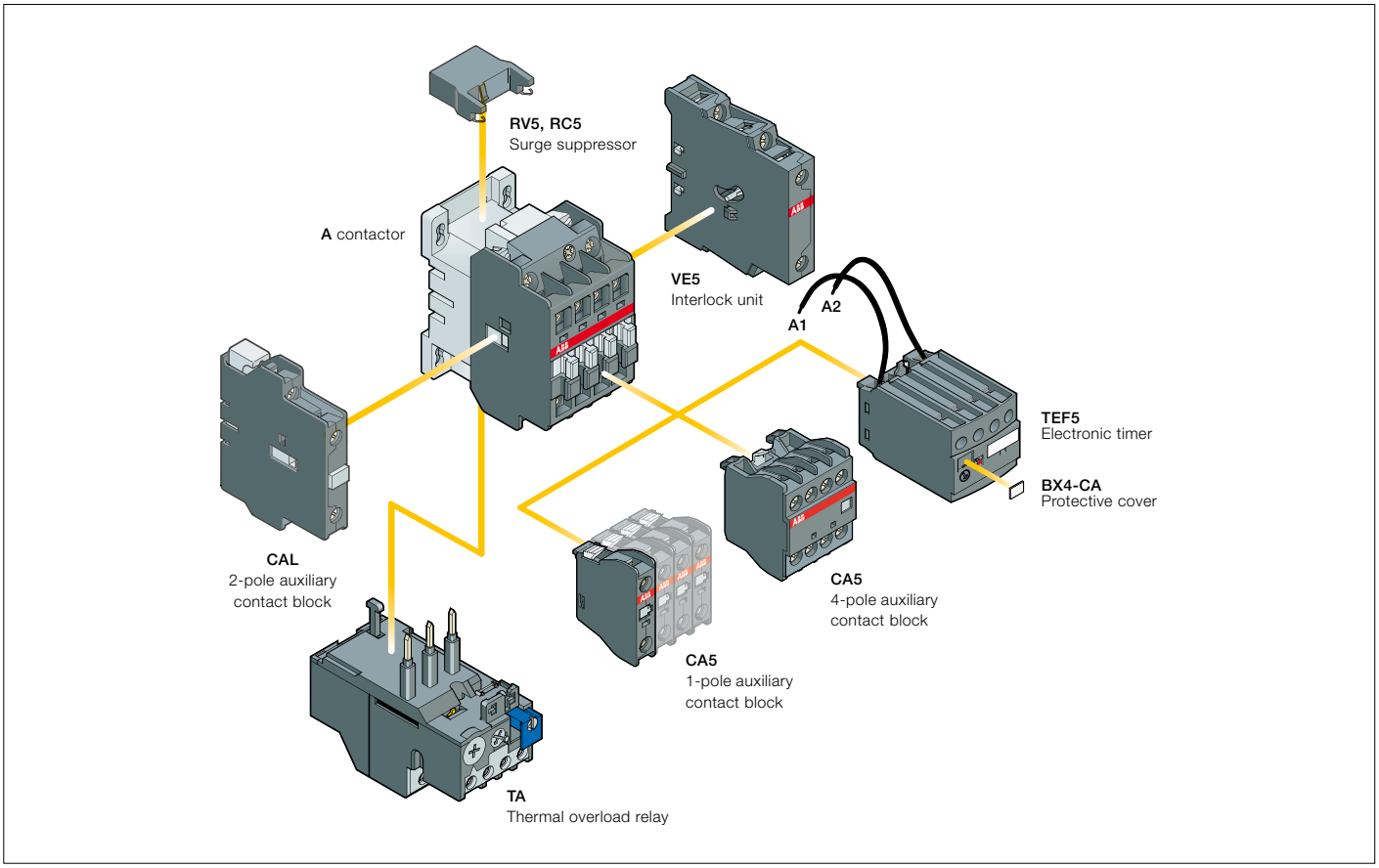
Main dimensions mm, *inches*



A95, A110

A9 ... A110 3-pole contactors
Main accessories

Contactor and main accessories (other accessories available)



Main accessory fitting details

Many configurations of accessories are possible depending on whether these are front-mounted or side-mounted.

Contactor types	Main poles	Built-in auxiliary contacts	Front-mounted accessories							Side-mounted accessories		
			Auxiliary contact blocks				Electronic timer			Auxiliary contact blocks		Interlock unit
			1-pole CA5		4-pole CA5		TEF5			2-pole CAL		VM5 or VE5
A9 ... A26	3 0 3 0	1 0 0 1 (1)	1 to 4 x CA5	or	1 x CA5 (4-pole)	or	1 x TEF5	+		1 to 2 x CAL5-11	or	1 x VM5-1 or VE5-1 +1 x CAL5-11
A30, A40	3 0 3 0	1 0 0 1 (1)	1 to 5 x CA5	or	1 x CA5 (4-pole) + 1 x 1-pole CA5	or	1 x TEF5 + 1 x CA5 (1-pole)	+		1 to 2 x CAL5-11	or	1 x VM5-1 or VE5-1 +1 x CAL5-11
A50 ... A75	3 0	1 1	1 to 6 x CA5	or	1 x CA5 (4-pole) + 2 x 1-pole CA5	or	1 x TEF5 + 2 x CA5 (1-pole)	+		1 x CAL5-11	or	1 x VE5-2
A95, A110	3 0	1 1	1 to 6 x CA5	or	1 x CA5 (4-pole) + 2 x 1-pole CA5		–	+		1 x CAL18-11	or	1 x VE5-2

(1) 2 N.C. CA5 auxiliary contacts maximum in mounting position 5.

Overload relays fitting details (2)

Contactor types	Thermal overload relays
A9 ... A26	TA25DU-M (0.1...0.32 A)
A30, A40	TA25DU-M (0.1...0.32 A) or TA42DU-M (18...42 A)
A50 ... A75	TA75DU-M (18...80 A)
A95, A110	TA80DU (29...80 A) or TA110DU (65...110 A)

The addition of a thermal overload relay on the contactor does not prevent fitting of many other accessories as shown above.
(2) Direct mounting - No kit required.

1SBC101871S0201

A9 ... A110 3-pole contactors
Main accessories


1SBC580992F0301

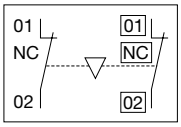
CA5-10


1SBC573752F0301

CAL5-11


1SBC572822F0301

VE5-1



VE5-1, VE5-2
Terminal marking and positioning


1SBC101396F0014

TEF5-OFF


1SBC574001F0301

RV5/50

Ordering details (1)

For contactors	Auxiliary contacts	Type	Order code	Pkg qty	Weight (1 pce) kg
Front-mounted instantaneous auxiliary contact blocks					
A9 ... A110	1 –	CA5-10	1SBN010010R1010	10	0.014
	– 1	CA5-01	1SBN010010R1001	10	0.014
A9-30-10 ... A40-30-10	2 2	CA5-22M	1SBN010040R1122	2	0.060
A9-30-01 ... A40-30-01	2 2	CA5-22U	1SBN010040R1322	2	0.060
A50 ... A110	2 2	CA5-22E	1SBN010040R1022	2	0.060
Side-mounted instantaneous auxiliary contact block					
A9 ... A75	1 1	CAL5-11	1SBN010020R1011	2	0.050
A95, A110	1 1	CAL18-11	1SFN010720R1011	2	0.050

For contactors		Auxiliary contacts	Type	Order code	Pkg qty	Weight (1 pce) kg
Interlock units						
A9 ... A40	Mechanical	– –	VM5-1	1SBN030100R1000	1	0.066
	Mechanical and electrical	– 2	VE5-1	1SBN030110R1000	1	0.076
A50 ... A110	Mechanical and electrical	– 2	VE5-2	1SBN030210R1000	1	0.146

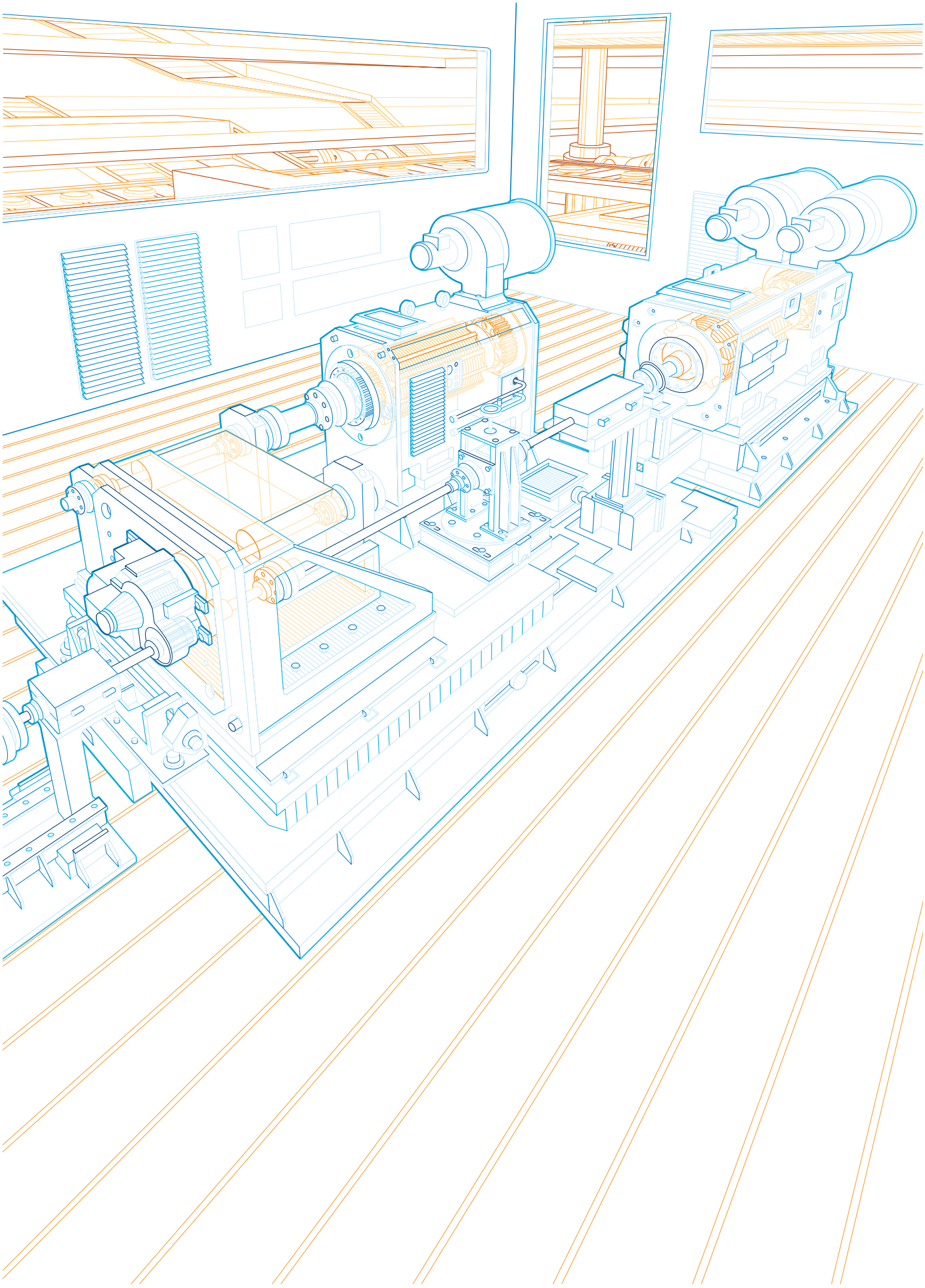
For contactors	Time delay range selected by switch	Delay type	Auxiliary contacts	Type	Order code	Pkg qty	Weight (1 pce) kg
Electronic timers							
A9 ... A75	0.1...1 s 1...10 s 10...100 s	ON-delay	1 1	TEF5-ON	1SBN020312R1000	1	0.065
		OFF-delay	1 1	TEF5-OFF	1SBN020314R1000	1	0.065

Note: Rated control circuit voltage Uc 24...240 V 50/60 Hz or DC.

For contactors	Rated control circuit voltage Uc V	AC	DC	Type	Order code	Pkg qty	Weight (1 pce) kg
Surge suppressors							
A9 ... A110	24...50	●	●	RV5/50	1SBN050010R1000	2	0.015
	50...133	●	●	RV5/133	1SBN050010R1001	2	0.015
	110...250	●	●	RV5/250	1SBN050010R1002	2	0.015
	250...440	●	●	RV5/440	1SBN050010R1003	2	0.015
A9 ... A40	24...50	●	–	RC5-1/50	1SBN050100R1000	2	0.012
	50...133	●	–	RC5-1/133	1SBN050100R1001	2	0.012
	110...250	●	–	RC5-1/250	1SBN050100R1002	2	0.012
	250...440	●	–	RC5-1/440	1SBN050100R1003	2	0.012
A50 ... A110	24...50	●	–	RC5-2/50	1SBN050200R1000	2	0.015
	50...133	●	–	RC5-2/133	1SBN050200R1001	2	0.015
	110...250	●	–	RC5-2/250	1SBN050200R1002	2	0.015
	250...440	●	–	RC5-2/440	1SBN050200R1003	2	0.015

(1) See "Main accessory fitting details" table.

1SBC101872S0201



N1

A145 ... A300 3-pole contactors
75 to 160 kW
AC operated



A185-30-11



A300-30-11

Description

A145 ... A300 contactors are mainly used for controlling 3-phase motors and power circuits up to 690 / 1000 V AC (2) or 220 V DC.

These contactors are of the block type design with:

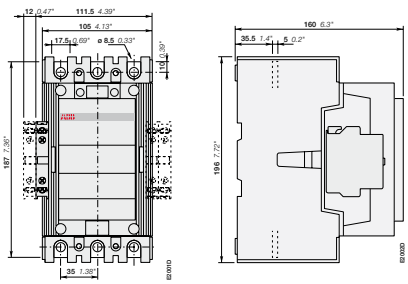
– 3 main poles
– control circuit: AC operated
– add-on auxiliary contact blocks for side mounting and a wide range of accessories.

Ordering details

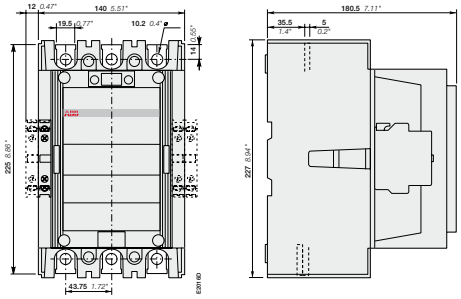
IEC		UL / CSA		Rated control circuit voltage Uc (1)		Auxiliary contacts fitted		Type	Order code		Weight
Rated operational power 400 V AC-3	current θ ≤ 40 °C 690 V AC-1	3-phase motor rating 480 V	General use rating 600 V AC								Pkg (1 pce)
kW	A	hp	A	V 50 Hz	V 60 Hz						kg
75	250	100	230	24	24	1	1	A145-30-11	1SFL471001R8111		3.500
				48	48	1	1	A145-30-11	1SFL471001R8311		3.500
				110	110...120	1	1	A145-30-11	1SFL471001R8411		3.500
				220...230	230...240	1	1	A145-30-11	1SFL471001R8011		3.500
				230...240	240...260	1	1	A145-30-11	1SFL471001R8811		3.500
				380...400	400...415	1	1	A145-30-11	1SFL471001R8511		3.500
				400...415	415...440	1	1	A145-30-11	1SFL471001R8611		3.500
90	275	125	250	24	24	1	1	A185-30-11	1SFL491001R8111		3.500
				48	48	1	1	A185-30-11	1SFL491001R8311		3.500
				110	110...120	1	1	A185-30-11	1SFL491001R8411		3.500
				220...230	230...240	1	1	A185-30-11	1SFL491001R8011		3.500
				230...240	240...260	1	1	A185-30-11	1SFL491001R8811		3.500
				380...400	400...415	1	1	A185-30-11	1SFL491001R8511		3.500
				400...415	415...440	1	1	A185-30-11	1SFL491001R8611		3.500
110	350	150	300	24	24	1	1	A210-30-11	1SFL511001R8111		6.100
				48	48	1	1	A210-30-11	1SFL511001R8311		6.100
				110	110...120	1	1	A210-30-11	1SFL511001R8411		6.100
				220...230	230...240	1	1	A210-30-11	1SFL511001R8011		6.100
				230...240	240...260	1	1	A210-30-11	1SFL511001R8811		6.100
				380...400	400...415	1	1	A210-30-11	1SFL511001R8511		6.100
				400...415	415...440	1	1	A210-30-11	1SFL511001R8611		6.100
140	400	200	350	24	24	1	1	A260-30-11	1SFL531001R8111		6.100
				48	48	1	1	A260-30-11	1SFL531001R8311		6.100
				110	110...120	1	1	A260-30-11	1SFL531001R8411		6.100
				220...230	230...240	1	1	A260-30-11	1SFL531001R8011		6.100
				230...240	240...260	1	1	A260-30-11	1SFL531001R8811		6.100
				380...400	400...415	1	1	A260-30-11	1SFL531001R8511		6.100
				400...415	415...440	1	1	A260-30-11	1SFL531001R8611		6.100
160	500	250	400	24	24	1	1	A300-30-11	1SFL551001R8111		6.100
				48	48	1	1	A300-30-11	1SFL551001R8311		6.100
				110	110...120	1	1	A300-30-11	1SFL551001R8411		6.100
				220...230	230...240	1	1	A300-30-11	1SFL551001R8011		6.100
				230...240	240...260	1	1	A300-30-11	1SFL551001R8811		6.100
				380...400	400...415	1	1	A300-30-11	1SFL551001R8511		6.100
				400...415	415...440	1	1	A300-30-11	1SFL551001R8611		6.100

(1) Other control voltages see voltage code table.
(2) 690 V AC for A210 ... A300, 1000 V AC for A145, A185.

Main dimensions mm, *inches*



A145, A185

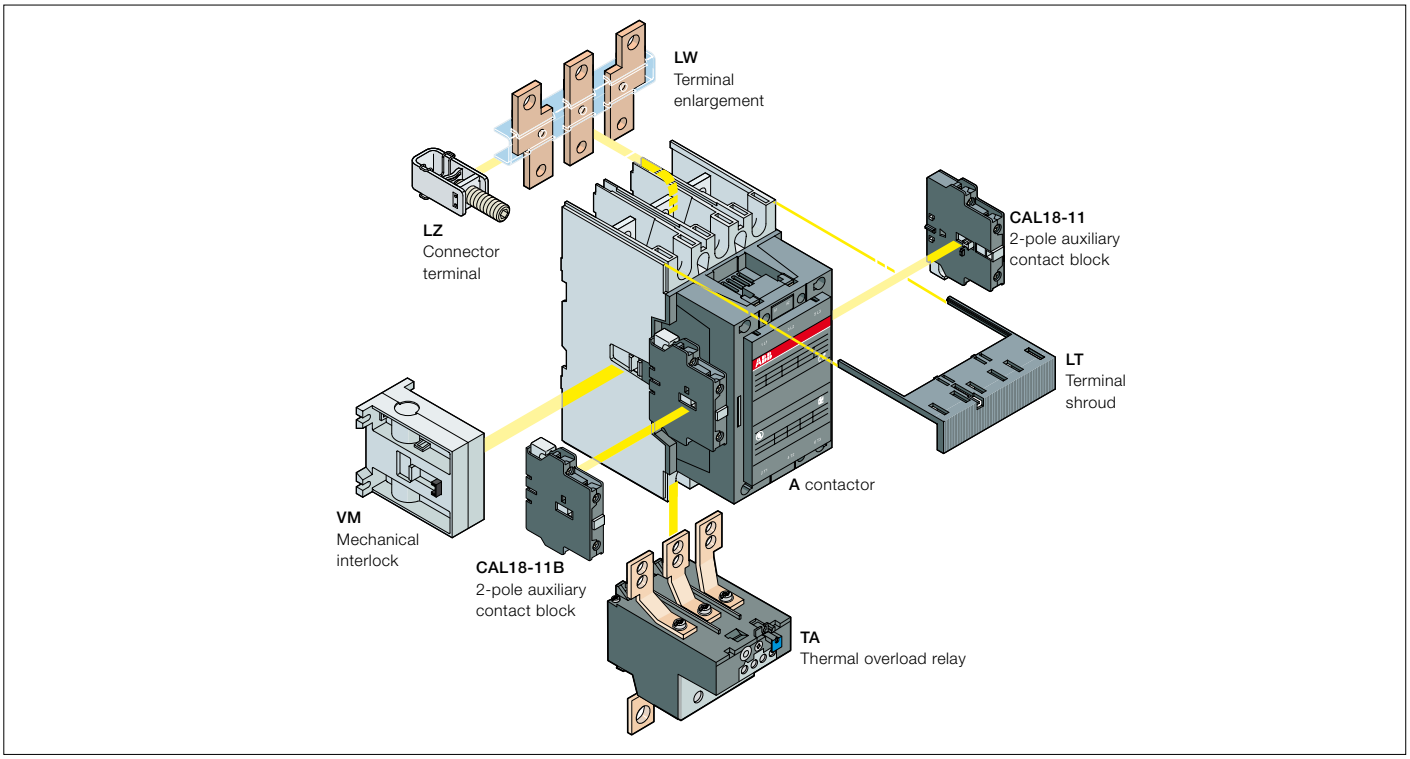


A210, A260, A300

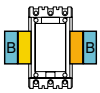
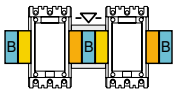
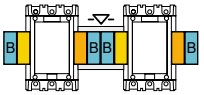
1SFC101147C0201

A145 ... A300 3-pole contactors
Main accessories

Main accessories (other accessories available)



Main accessory fitting details

Contactor types	Main poles	Available auxiliary contacts	Side-mounted accessories: Add-on auxiliary contact blocks				Mechanical interlock units	Mounting and positioning
			CAL18-11, CAL18-11B					Factory mounted auxiliary contacts Add-on CAL18-11 auxiliary contacts Add-on CAL18-11B auxiliary contacts
Contactors + auxiliary contact blocks								
A145 ... A300	3 0	1 1	1 x CAL18-11	+	2 x CAL18-11B		–	
Contactors with mechanical interlocking + auxiliary contact blocks								
A145 ... A185	3 0	1 1	2 x CAL18-11 (1)	+	3 x CAL18-11B (1)	+	VM...H (2)	
A210 ... A300	3 0	1 1	2 x CAL18-11 (1)	+	4 x CAL18-11B (1)	+	VM...H (2)	

(1) Total number of auxiliary contact blocks for the two contactors.
(2) Interlock type, according to the contactor ratings (see "Accessories").

Overload relays fitting details

Contactor types	Thermal overload relays
A145, A185	TA200DU (66...200 A) (3)
A210, A300	TA450DU (130...310 A) (3) or TA450SU (40...310 A) (4)

The addition of a thermal or electronic overload relay on the contactor does not prevent fitting of many other accessories as shown in "Main accessory fitting details" table.
(3) Direct mounting - No kit required.
(4) Mounting kit required.

1SFC101148C0201

A145 ... A300 3-pole contactors
Main accessories


1SFC101033F0201

CAL18-11


1SBC580411F0301

VM300H


1SFT98099-019C3

LT...AC


1SFT9099-125

LT...AL


1SFT98000-014

LT...AY


1SFT98000-011C3

LW


1SFT98000-012C3

LX


1SFT98099-011C1

LZ


1SBC580542F0302

LZ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Ordering details (1)

For contactors	Auxiliary contacts	Type	Order code		Pkg qty	Weight (1 pce) kg
Side-mounted instantaneous auxiliary contact blocks						
A145 ... A300	1 1	CAL18-11	1SFN010720R1011		2	0.050
	1 1	CAL18-11B	1SFN010720R3311		2	0.050
Mechanical interlock unit for two horizontal mounted contactors						
A145 ... A300		VM300H	1SFN034700R1000		1	0.150
Terminal shrouds						
A145 ... A185 with connectors		LT185-AC	1SFN124701R1000		2	0.050
A145 ... A185 with lugs		LT185-AL	1SFN124703R1000		2	0.220
A145 ... A185 with short. bar LY185 or between A145 and TA200DU or between A185 and TA200DU		LT185-AY	1SFN124704R1000		1	0.050
A210 ... A300 with connectors		LT300-AC	1SFN125101R1000		2	0.070
A210 ... A300 with lugs		LT300-AL	1SFN125103R1000		2	0.280
A210 ... A300 with short bar LY300		LT300-AY	1SFN125104R1000		1	0.075

For contactors	Dimensions hole Ø mm	bar mm	Type	Order code		Pkg qty	Weight (1 pce) kg
Terminal enlargements							
A145, A185	10.5	20 x 5	LW185	1SFN074707R1000		1	0.250
A210 ... A300	10.5	25 x 5	LW300	1SFN075107R1000		1	0.450
Terminal extension							
A145, A185	8.5	20 x 5	LX185	1SFN074710R1000		1	0.250
A210 ... A300	10.5	20 x 5	LX300	1SFN075110R1000		1	0.350

Cables	For contactors	Cable cross section mm²	Type	Order code		Pkg qty	Weight (1 pce) kg
Connector terminals							
Single Cu	A145, A185	6...185	–	1SDA023354R0001		3	0.200
	A210 ... A300	16...240	–	1SDA023368R0001		3	0.400
Single Al & Cu	A145, A185	35...95	–	1SDA023356R0001		3	0.100
	A145, A185	25...150	–	1SDA023357R0001		3	0.100
	A210 ... A300	120...240	–	1SDA023370R0001		3	0.200
Double Cu	A145, A185	2 x (50...120)	LZ185-2C/120	1SFN074709R1000		3	0.300
Double Al & Cu	A210 ... A300	2 x (95...120)	–	1SDA025766R0001		3	0.400

(1) For each contactor type, refer to "Main accessory fitting details" table.

For contactors	Rated control circuit voltage Uc V AC	Type	Order code		Pkg qty	Weight (1 pce) kg
A145 ... A300	250...440	RC5-3/440	1SFN050300R1003		2	0.028

A9 ... A30 3-pole contactors
Technical data

Main pole - Utilization characteristics according to IEC

Contactor types	AC operated	A9	A12	A16	A26	A30
Standards		IEC 60947-1 / 60947-4-1 and EN 60947-1 / 60947-4-1				
Rated operational voltage Ue max.		690 V				
Rated frequency (without derating)		50 / 60 Hz				
Conventional free-air thermal current Ith						
acc. to IEC 60947-4-1, open contactors, θ ≤ 40 °C		26 A	28 A	30 A	45 A	65 A
With conductor cross-sectional area		4 mm²	4 mm²	4 mm²	6 mm²	16 mm²
AC-1 Utilization category						
For air temperature close to contactor						
Ie / Rated operational current AC-1	**θ ≤ 40 °C**	25 A	27 A	30 A	45 A	55 A
Ue max. ≤ 690 V, 50/60 Hz	**θ ≤ 55 °C**	22 A	25 A	27 A	40 A	55 A
	θ ≤ 70 °C	18 A	20 A	23 A	32 A	39 A
With conductor cross-sectional area		2.5 mm²	4 mm²	4 mm²	6 mm²	10 mm²
AC-3 Utilization category						
For air temperature close to contactor θ ≤ 55 °C						
Ie / Max. rated operational current AC-3 (1)						
	220-230-240 V	9 A	12 A	17 A	26 A	33 A
M 3~ 3-phase motors	**380-400 V**	9 A	12 A	17 A	26 A	32 A
	415 V	9 A	12 A	17 A	26 A	32 A
	440 V	9 A	12 A	16 A	26 A	32 A
	500 V	9 A	12 A	14 A	22 A	28 A
	690 V	7 A	9 A	10 A	17 A	21 A
Rated operational power AC-3 (1)						
	220-230-240 V	2.2 kW	3 kW	4 kW	6.5 kW	9 kW
M 3~ 1500 r.p.m. 50 Hz, 1800 r.p.m. 60 Hz, 3-phase motors	**380-400 V**	4 kW	5.5 kW	7.5 kW	11 kW	15 kW
	415 V	4 kW	5.5 kW	9 kW	11 kW	15 kW
	440 V	4 kW	5.5 kW	9 kW	15 kW	18.5 kW
	500 V	5.5 kW	7.5 kW	9 kW	15 kW	18.5 kW
	690 V	5.5 kW	7.5 kW	9 kW	15 kW	18.5 kW
Rated making capacity AC-3		10 x Ie AC-3 acc. to IEC 60947-4-1				
Rated breaking capacity AC-3		8 x Ie AC-3 acc. to IEC 60947-4-1				
AC-8a Utilization category						
(without thermal overload relay - Ue 400 V 50/60 Hz - θ ≤ 40 °C)						
Ie / Rated operational current AC-8a		12 A	16 A	22 A	30 A	40 A
Rated operational power AC-8a		5.5 kW	7.5 kW	11 kW	15 kW	20 kW
Short-circuit protection device for contactors						
without thermal overload relay - Motor protection excluded (2)						
Ue ≤ 500 V AC - gG type fuse		25 A	32 A	32 A	50 A	63 A
Rated short-time withstand current Icw	**1 s**	250 A	280 A	300 A	400 A	600 A
at 40 °C ambient temperature, in free air from a cold state	**10 s**	100 A	120 A	140 A	210 A	400 A
	30 s	60 A	70 A	80 A	110 A	225 A
	1 min	50 A	55 A	60 A	90 A	150 A
	15 min	26 A	28 A	30 A	45 A	65 A
Maximum breaking capacity						
cos φ = 0.45	**at 440 V**	250 A			420 A	820 A
	at 690 V	90 A			170 A	340 A
Power dissipation per pole	**Ie / AC-1**	0.8 W	1 W	1.2 W	1.8 W	2.5 W
	Ie / AC-3	0.1 W	0.2 W	0.35 W	0.6 W	0.9 W
Max. electrical switching frequency	**AC-1**	600 cycle/h				
	AC-3	1200 cycle/h				
	AC-2, AC-4	300 cycle/h				

(1) For the corresponding kW/A or hp/A values of 1500 r.p.m, 50 Hz or 1800 r.p.m, 60 Hz, 3-phase motors, see "Motor rated operational powers and currents".
(2) For the protection of motor starters against short circuits, see "Coordination with short-circuit protection devices".

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A40 ... A110 3-pole contactors
Technical data

Main pole - Utilization characteristics according to IEC

Contactor types	AC operated	A40	A50	A63	A75	A95	A110
Standards		IEC 60947-1 / 60947-4-1 and EN 60947-1 / 60947-4-1					
Rated operational voltage Ue max.		690 V	1000 V				
Rated frequency (without derating)		50/60 Hz					
Conventional free-air thermal current Ith							
acc. to IEC 60947-4-1, open contactors, θ ≤ 40 °C		65 A	100 A	125 A	125 A	145 A	160 A
With conductor cross-sectional area		16 mm²	35 mm²	50 mm²	50 mm²	50 mm²	70 mm²
AC-1 Utilization category							
For air temperature close to contactor							
Ie / Rated operational current AC-1	**θ ≤ 40 °C**	60 A	100 A	115 A	125 A	145 A	160 A
Ue max. ≤ 690 V, 50/60 Hz	**θ ≤ 55 °C**	60 A	85 A	95 A	105 A	135 A	145 A
	θ ≤ 70 °C	42 A	70 A	80 A	85 A	115 A	130 A
With conductor cross-sectional area		16 mm²	35 mm²	50 mm²	50 mm²	50 mm²	70 mm²
AC-3 Utilization category							
For air temperature close to contactor θ ≤ 55 °C							
Ie / Max. rated operational current AC-3 (1)							
	220-230-240 V	40 A	53 A	65 A	75 A	96 A	110 A
	380-400 V	37 A	50 A	65 A	75 A	96 A	110 A
 3-phase motors	**415 V**	37 A	50 A	65 A	75 A	96 A	110 A
	440 V	37 A	45 A	65 A	70 A	93 A	100 A
	500 V	33 A	45 A	55 A	65 A	80 A	100 A
	690 V	25 A	35 A	43 A	46 A	65 A	82 A
	1000 V	–	23 A	25 A	28 A	30 A	30 A
Rated operational power AC-3 (1)							
	220-230-240 V	11 kW	15 kW	18.5 kW	22 kW	25 kW	30 kW
	380-400 V	18.5 kW	22 kW	30 kW	37 kW	45 kW	55 kW
 1500 r.p.m. 50 Hz 1800 r.p.m. 60 Hz 3-phase motors	**415 V**	18.5 kW	25 kW	37 kW	40 kW	55 kW	59 kW
	440 V	22 kW	25 kW	37 kW	40 kW	55 kW	59 kW
	500 V	22 kW	30 kW	37 kW	45 kW	55 kW	59 kW
	690 V	22 kW	30 kW	37 kW	40 kW	55 kW	75 kW
	1000 V	–	30 kW	33 kW	37 kW	40 kW	40 kW
Rated making capacity AC-3		10 x Ie AC-3 acc. to IEC 60947-4-1					
Rated breaking capacity AC-3		8 x Ie AC-3 acc. to IEC 60947-4-1					
AC-8a Utilization category							
(without thermal overload relay - Ue 400 V 50/60 Hz - θ ≤ 40 °C)							
Ie / Rated operational current AC-8a		50 A	63 A	85 A	95 A	120 A	140 A
Rated operational power AC-8a		22 kW	30 kW	45 kW	45 kW	55 kW	75 kW
Short-circuit protection device for contactors							
without thermal overload relay - Motor protection excluded (2)							
Ue ≤ 500 V AC - gG type fuse		63 A	100 A	125 A	160 A	160 A	200 A
Rated short-time withstand current Icw	**1 s**	600 A	1000 A			1320 A	
at 40 °C ambient temperature,	**10 s**	400 A	650 A			800 A	
in free air from a cold state	**30 s**	225 A	370 A			500 A	
	1 min	150 A	250 A			350 A	
	15 min	65 A	110 A	135 A	135 A	160 A	175 A
Maximum breaking capacity							
cos φ = 0.45	**at 440 V**	820 A	1300 A			1160 A	
	at 690 V	340 A	630 A			800 A	
Power dissipation per pole	**Ie / AC-1**	3 W	5 W	6.5 W	7 W	6.5 W	7.5 W
	Ie / AC-3	1.3 W	1.3 W	1.5 W	2 W	2.7 W	3.6 W
Max. electrical switching frequency	**AC-1**	600 cycles/h				300 cycles/h	
	AC-3	1200 cycles/h	600 cycles/h			300 cycles/h	
	AC-2, AC-4	300 cycles/h	150 cycles/h				

(1) For the corresponding kW/A or hp/A values of 1500 r.p.m, 50 Hz or 1800 r.p.m, 60 Hz, 3-phase motors, see "Motor rated operational powers and currents".
(2) For the protection of motor starters against short circuits, see "Coordination with short-circuit protection devices".

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A145 ... A300 3-pole contactors
Technical data

Main pole - Utilization characteristics according to IEC

Contactor types	AC operated	A145	A185	A210	A260	A300
Standards		IEC 60947-1 / 60947-4-1 and EN 60947-1 / 60947-4-1				
Rated operational voltage Ue max.		1000 V		690 V		
Rated frequency (without derating)		50/60 Hz				
Conventional free-air thermal current Ith						
acc. to IEC 60947-4-1, open contactors, θ ≤ 40 °C		250 A	275 A	350 A	400 A	500 A (4)
With conductor cross-sectional area (3)		120 mm²	150 mm²	185 mm²	240 mm²	300 mm² (4)
AC-1 Utilization category						
For air temperature close to contactor						
Ie / Rated operational current AC-1	**θ ≤ 40 °C**	250 A	275 A	350 A	400 A	500 A (4)
Ue max. ≤ 690 V, 50/60 Hz	**θ ≤ 55 °C**	230 A	250 A	300 A	350 A	400 A (4)
	θ ≤ 70 °C	180 A	180 A	240 A	290 A	325 A (4)
Ie / Rated operational current AC-1	**θ ≤ 40 °C**	180 A	200 A	–	–	–
Ue max. ≤ 1000 V, 50/60 Hz	**θ ≤ 55 °C**	180 A	200 A	–	–	–
	θ ≤ 70 °C	180 A	180 A	–	–	–
With conductor cross-sectional area		120 mm²	150 mm²	185 mm²	240 mm²	300 mm² (4)
AC-3 Utilization category						
For air temperature close to contactor θ ≤ 55 °C						
Ie / Max. rated operational current AC-3 (1)						
	220-230-240 V	145 A	185 A	210 A	260 A	305 A
	380-400 V	145 A	185 A	210 A	260 A	305 A
M 3~ 3-phase motors	**415 V**	145 A	185 A	210 A	260 A	300 A
	440 V	145 A	185 A	210 A	240 A	280 A
	500 V	145 A	170 A	210 A	240 A	280 A
	690 V	120 A	170 A	210 A	220 A	280 A
	1000 V	80 A	95 A	–	–	–
Rated operational power AC-3 (1)						
	220-230-240 V	45 kW	55 kW	59 kW	80 kW	90 kW
	380-400 V	75 kW	90 kW	110 kW	140 kW	160 kW
M 3~ 1500 r.p.m. 50 Hz, 1800 r.p.m. 60 Hz, 3-phase motors	**415 V**	75 kW	90 kW	110 kW	140 kW	160 kW
	440 V	75 kW	90 kW	110 kW	140 kW	160 kW
	500 V	90 kW	110 kW	132 kW	180 kW	200 kW
	690 V	110 kW	132 kW	160 kW	200 kW	250 kW
	1000 V	110 kW	132 kW	–	–	–
Rated making capacity AC-3		10 x Ie AC-3 acc. to IEC 60947-4-1				
Rated breaking capacity AC-3		8 x Ie AC-3 acc. to IEC 60947-4-1				
Short-circuit protection device for contactors						
without thermal overload relay - Motor protection excluded (2)						
Ue ≤ 500 V AC - gG type fuse		315 A	355 A	400 A	500 A	500 A
Rated short-time withstand current Icw	**1 s**	1800 A	2000 A	2500 A	3500 A	3500 A
at 40 °C ambient temperature,	**10 s**	1200 A	1500 A	1700 A	2400 A	2400 A
in free air from a cold state	**30 s**	800 A	1000 A	1200 A	1500 A	1500 A
	1 min	600 A	800 A	1000 A	1100 A	1100 A
	15 min	280 A	320 A	400 A	500 A	500 A
Maximum breaking capacity						
cos φ = 0.45	**at 440 V**	1500 A	2000 A	2300 A	2600 A	3000 A
(cos φ = 0.35 for Ie > 100 A)	**at 690 V**	1200 A	1600 A	2000 A	2400 A	2500 A
Power dissipation per pole	**Ie / AC-1**	13 W	16 W	18 W	25 W	32 W
	Ie / AC-3	5 W	8 W	9 W	14 W	18 W
Max. electrical switching frequency	**AC-1**	300 cycles/h		300 cycles/h		
	AC-3	300 cycles/h		300 cycles/h		
	AC-2, AC-4	150 cycles/h		150 cycles/h		

(1) For the corresponding kW/A or hp/A values of 1500 r.p.m, 50 Hz or 1800 r.p.m, 60 Hz, 3-phase motors, see "Motor rated operational powers and currents".
(2) For the protection of motor starters against short circuits, see “Coordination with short-circuit protection devices”.
(3) Conductors with preparation.
(4) Use terminal extension / enlargement pieces (LX 300 / LW 300).

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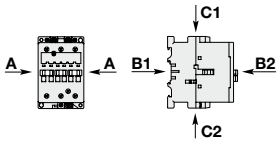
A9 ... A30 3-pole contactors
Technical data

Main pole - Utilization characteristics according to UL / NEMA / CSA

Contactor types	AC operated	A9	A12	A16	A26	A30
Standards		UL 508, CSA C22.2 N°14				
Max. operational voltage		600 V				
NEMA size		00	0	–	1	1P
NEMA continuous amp rating	Thermal current	9 A	18 A	–	27 A	36 A
NEMA maximum horse power ratings						
1-phase, 60 Hz	**115 V AC**	1/3 hp	1 hp	–	2 hp	3 hp
	230 V AC	1 hp	2 hp	–	3 hp	5 hp
NEMA maximum horse power ratings						
3-phase, 60 Hz	**200 V AC**	1-1/2 hp	3 hp	–	7-1/2 hp	–
	230 V AC	1-1/2 hp	3 hp	–	7-1/2 hp	–
	460 V AC	1-1/2 hp	5 hp	–	10 hp	–
	575 V AC	2 hp	5 hp	–	10 hp	–
UL / CSA general use rating						
600 V AC		21 A	25 A	30 A	40 A	50 A
With conductor cross-sectional area		AWG 10			AWG 8	
UL / CSA maximum 1-phase motor rating						
Full load current	**120 V AC**	9.8 A	13.8 A	16 A	28 A	34 A
	240 V AC	12 A	12 A	17 A	24 A	40 A
Horse power rating	**120 V AC**	1/2 hp	3/4 hp	1 hp	2 hp	3 hp
	240 V AC	2 hp	2 hp	3 hp	5 hp	7.5 hp
UL / CSA maximum 3-phase motor rating						
Full load current (1)	**200-208 V AC**	7.8 A	11 A	17.5 A	25.3 A	32.2 A
	220-240 V AC	6.8 A	9.6 A	15.2 A	28 A	28 A
	440-480 V AC	7.6 A	11 A	14 A	27 A	34 A
	550-600 V AC	9 A	11 A	17 A	27 A	32 A
Horse power rating (1)	**200-208 V AC**	2 hp	3 hp	5 hp	7.5 hp	10 hp
	220-240 V AC	2 hp	3 hp	5 hp	10 hp	10 hp
	440-480 V AC	5 hp	7.5 hp	10 hp	20 hp	25 hp
	550-600 V AC	7.5 hp	10 hp	15 hp	25 hp	30 hp
Short-circuit protection device for contactors						
without thermal overload relay - Motor protection excluded						
Fuse rating		35 A	35 A	60 A	90 A	150 A
Fuse type, 600 V		FRS-R				
Max. electrical switching frequency						
For general use		600 cycles/h				
For motor use		1200 cycles/h				

(1) For the corresponding kW/A or hp/A values of 1500 r.p.m, 50 Hz or 1800 r.p.m, 60 Hz, 3-phase motors, see "Motor rated operational powers and currents".

General technical data

Contactor types	AC operated	A9	A12	A16	A26	A30
Rated insulation voltage Ui						
acc. to IEC 60947-4-1		1000 V				
acc. to UL / CSA		600 V				
Rated impulse withstand voltage Uimp.		8 kV				
Ambient air temperature close to contactor						
Operation	Fitted with thermal overload relay	-25...+55 °C				
	Without thermal overload relay	-40...+70 °C				
Storage		-60...+80 °C				
Climatic withstand		acc. to IEC 60068-2-30 and 60068-2-11 - UTE C 63-100 specification II				
Maximum operating altitude (without derating)		3000 m				
Mechanical durability						
Number of operating cycles		10 millions operating cycles				
Max. switching frequency		3600 cycles/h				
Shock withstand						
acc. to IEC 60068-2-27 and EN 60068-2-27						
Mounting position 1						
	**Shock direction**	1/2 sinusoidal shock for 11 ms: no change in contact position, closed or open position				
	A	20 g				
	B1	10 g closed position / 5 g open position				
	B2	15 g				
	C1	20 g				
	C2	20 g				

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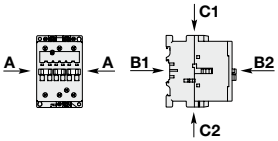
A40 ... A110 3-pole contactors
Technical data

Main pole - Utilization characteristics according to UL / NEMA / CSA

Contactor types	AC operated	A40	A50	A63	A75	A95	A110
Standards		UL 508, CSA C22.2 N°14					
Max. operational voltage		600 V					
NEMA size		–	2	–	3	–	–
NEMA continuous amp rating	Thermal current	–	45 A	–	90 A	–	–
NEMA maximum horse power ratings							
1-phase, 60 Hz	**115 V AC**	–	3 hp	–	–	–	–
	230 V AC	–	7-1/2	–	–	–	–
NEMA maximum horse power ratings							
3-phase, 60 Hz	**200 V AC**	–	10 hp	–	25 hp	–	–
	230 V AC	–	15 hp	–	30 hp	–	–
	460 V AC	–	25 hp	–	50 hp	–	–
	575 V AC	–	25 hp	–	50 hp	–	–
UL / CSA general use rating							
600 V AC		60 A	80 A	90 A	105 A	125 A	150 A
With conductor cross-sectional area		AWG 6	AWG 4	AWG 3	AWG 2	AWG 1	AWG 1/0
UL / CSA maximum 1-phase motor rating							
Full load current	**120 V AC**	34 A	34 A	56 A	80 A	80 A	100 A
	240 V AC	40 A	40 A	50 A	68 A	88 A	110 A
Horse power rating	**120 V AC**	3 hp	3 hp	5 hp	7.5 hp	7.5 hp	10 hp
	240 V AC	7.5 hp	7.5 hp	10 hp	15 hp	20 hp	25 hp
UL / CSA maximum 3-phase motor rating							
Full load current (1)	**200-208 V AC**	32.2 A	48.3 A	62.1 A	78.2 A	92 A	92 A
	220-240 V AC	42 A	54 A	68 A	80 A	80 A	104 A
	440-480 V AC	40 A	52 A	77 A	77 A	77 A	96 A
	550-600 V AC	41 A	52 A	77 A	77 A	77 A	99 A
Horse power rating (1)	**200-208 V AC**	10 hp	15 hp	20 hp	25 hp	30 hp	30 hp
	220-240 V AC	15 hp	20 hp	25 hp	30 hp	30 hp	40 hp
	440-480 V AC	30 hp	40 hp	60 hp	60 hp	60 hp	75 hp
	550-600 V AC	40 hp	50 hp	75 hp	75 hp	75 hp	100 hp
Short-circuit protection device for contactors							
without thermal overload relay - Motor protection excluded							
Fuse rating		150 A	175 A	200 A	200 A	200 A	200 A
Fuse type, 600 V		FRS-R		J			
Max. electrical switching frequency							
For general use		600 cycles/h				300 cycles/h	
For motor use		1200 cycles/h	600 cycles/h			300 cycles/h	

(1) For the corresponding kW/A or hp/A values of 1500 r.p.m, 50 Hz or 1800 r.p.m, 60 Hz, 3-phase motors, see "Motor rated operational powers and currents".

General technical data

Contactor types	AC operated	A40	A50	A63	A75	A95	A110
Rated insulation voltage Ui							
acc. to IEC 60947-4-1		1000 V					
acc. to UL / CSA		600 V					
Rated impulse withstand voltage Uimp.		8 kV					
Ambient air temperature close to contactor							
Operation	Fitted with thermal overload relay	-25...+55 °C					
	Without thermal overload relay	-40...+70 °C					
Storage		-60...+80 °C				-40...+70 °C	
Climatic withstand		acc. to IEC 60068-2-30 and 60068-2-11 UTE C 63-100 specification II				acc. to IEC 60068-2-30	
Maximum operating altitude (without derating)		3000 m					
Mechanical durability							
Number of operating cycles		10 millions operating cycles					
Max. switching frequency		3600 cycles/h					
Shock withstand							
acc. to IEC 60068-2-27 and EN 60068-2-27							
Mounting position 1							
	**Shock direction**	1/2 sinusoidal shock for 11 ms: no change in contact position, closed or open position (2)					
	A	20 g					
	B1	10 g closed position / 5 g open position					
	B2	15 g					
	C1	20 g					
	C2	20 g					

(2) These values are not valid for rail mounting with contactors A95 ... A110.

1SBC101877S0201

A145 … A300 3-pole contactors
Technical data

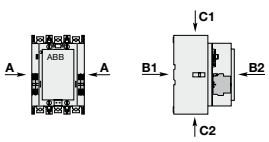
Main pole - Utilization characteristics according to UL / NEMA / CSA

Contactor types	AC operated	A145	A185	A210	A260	A300
Standards		UL 508, CSA C22.2 N°14				
Maximum operational voltage		600 V				
NEMA size		4	–	–	5	–
NEMA maximum horse power ratings						
1-phase, 60 Hz	**115 V AC**	–	–	–	–	–
	230 V AC	–	–	–	–	–
NEMA maximum horse power ratings						
3-phase, 60 Hz	**200 V AC**	40 hp			75 hp	
	230 V AC	50 hp			100 hp	
	460 V AC	100 hp			200 hp	
	575 V AC	200 hp			200 hp	
UL / CSA general use rating						
600 V AC		230 A	250 A	300 A	350 A	400 A
UL / CSA maximum 1-phase motor rating						
Full load current	**240 V AC**	–	–	–	–	–
Horse power rating	**240 V AC**	–	–	–	–	–
UL / CSA maximum 3-phase motor rating						
Full load current (1)	**200-208 V AC**	119.6 A	149.5 A	166.8 A	220.8 A	285.2 A
	220-240 V AC	130 A	145 A	192 A	248 A	248 A
	440-480 V AC	124 A	156 A	180 A	240 A	302 A
	550-600 V AC	125 A	144 A	192 A	242 A	289 A
Horse power rating (1)	**200-208 V AC**	40 hp	50 hp	60 hp	75 hp	100 hp
	220-240 V AC	50 hp	60 hp	75 hp	100 hp	100 hp
	440-480 V AC	100 hp	125 hp	150 hp	200 hp	250 hp
	550-600 V AC	125 hp	150 hp	200 hp	250 hp	300 hp
Short-circuit protection device for contactors						
without thermal overload relay - Motor protection excluded						
Fuse rating		300 A	400 A	800 A	800 A	800 A
Fuse type, 600 V		J/K5				
Maximum electrical switching frequency						
For general use		300 cycles/h				
For motor use		300 cycles/h				

(1) For the corresponding kW/A or hp/A values of 1500 r.p.m, 50 Hz or 1800 r.p.m, 60 Hz, 3-phase motors, see “Motor rated operational powers and currents”.

General technical data

Contactor types	AC operated	A145	A185	A210	A260	A300
Rated insulation voltage Ui						
acc. to IEC 60947-4-1		1000 V				
acc. to UL / CSA		600 V				
Rated impulse withstand voltage Uimp.		8 kV				
Ambient air temperature close to contactor						
Operation	Fitted with thermal overload relay	-25 to +55 °C				
Storage		-40 to +70 °C				
Climatic withstand		acc. to IEC 60068-2-30				
Maximum operating altitude (without derating)		3000 m				
Mechanical durability						
Number of operating cycles		5 millions operating cycles				
Max. switching frequency		3600 cycles/h				
Shock withstand						
acc. to IEC 60068-2-27 and EN 60068-2-27						
Mounting position 1						
	Shock direction	1/2 sinusoidal shock for 30 ms: no change in contact position, closed or open position				
	A	5 g				
	B1	5 g				
	B2	5 g				
	C1	5 g				
	C2	5 g				



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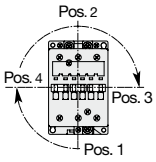
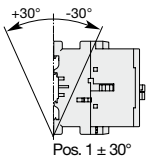
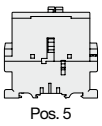
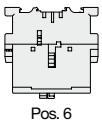
A9 ... A30 3-pole contactors
Technical data

Magnet system characteristics

Contactor types		AC operated	A9	A12	A16	A26	A30
Coil operating limits		**AC supply**	at θ ≤ 55 °C 0.85...1.1 x Uc Please also refer to "Mounting characteristics and conditions for use"				
acc. to IEC 60947-4-1							
AC control voltage 50/60 Hz							
Rated control circuit voltage Uc		**at 50 Hz**	24...690 V				
		at 60 Hz	24...690 V				
Coil consumption	**Average pull-in value**	**50 Hz**	70 VA			120 VA	
		60 Hz	80 VA			140 VA	
		50/60 Hz (1)	74 VA / 70 VA			125 VA / 120 VA	
	Average holding value	**50 Hz**	8 VA / 2 W			12 VA / 3 W	
		60 Hz	8 VA / 2 W			12 VA / 3 W	
		50/60 Hz (1)	8 VA / 2 W			12 VA / 3 W	
Drop-out voltage			approx. 40...65 % of Uc				
Operating time							
Between coil energization and:		**N.O. contact closing**	10...26 ms			8...21 ms	
		N.C. contact opening	7...21 ms			6...18 ms	
Between coil de-energization and:		**N.O. contact opening**	4...11 ms			4...11 ms	
		N.C. contact closing	9...16 ms			7...14 ms	

(1) 50/60 Hz coils: see "Coil voltage code table".

Mounting characteristics and conditions for use

Contactor types		AC operated	A9	A12	A16	A26	A30
Mounting positions			   				
			Max. N.O. or N.C. built-in and add-on N.O. or N.C. auxiliary contacts: see accessory fitting details for 3-pole contactor A9 ... A30				
Control voltage / Ambient temperature							
Mounting positions	1, 1±30°, 2, 3, 4, 5	**at θ ≤ 55 °C**	0.85...1.1 x Uc				
		at θ ≤ 70 °C	Uc				
	6	**at θ ≤ 55 °C**	0.95...1.1 x Uc				
		at θ ≤ 70 °C	Unauthorized				
Mounting distances			The contactors can be assembled side by side				
Fixing							
On rail according to IEC 60715, EN 60715			35 x 7.5 mm or 35 x 15 mm				
By screws (not supplied)			2 x M4 screws placed diagonally				

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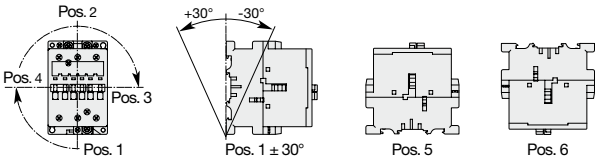
A40 ... A110 3-pole contactors
Technical data

Magnet system characteristics

Contactor types		AC operated	A40	A50	A63	A75	A95	A110
Coil operating limits		**AC supply**	At θ ≤ 55 °C 0.85...1.1 x Uc				at θ ≤ 70 °C 0.85...1.1 x Uc	
acc. to IEC 60947-4-1			Please also refer to "Mounting characteristics and conditions for use"					
AC control voltage 50/60 Hz								
Rated control circuit voltage Uc		**at 50 Hz**	24…690 V					
		at 60 Hz	24…690 V					
Coil consumption	**Average pull-in value**	**50 Hz**	120 VA	180 VA			350 VA	
		60 Hz	140 VA	210 VA			450 VA	
		50/60 Hz (1)	125 VA / 120 VA	190 VA / 180 VA			410 VA / 365 VA	
	Average holding value	**50 Hz**	12 VA / 3 W	18 VA / 5.5 W			22 VA / 6.5 W	
		60 Hz	12 VA / 3 W	18 VA / 5.5 W			26 VA / 8 W	
		50/60 Hz (1)	12 VA / 3 W	18 VA / 5.5 W			27 VA / 7.5 W	
Drop-out voltage			Approx. 40...65 % of Uc					
Operating time								
Between coil energization and:		**N.O. contact closing**	8…21 ms	8…27 ms			10…25 ms	
		N.C. contact opening	6…18 ms	7…22 ms			7…22 ms	
Between coil de-energization and:		**N.O. contact opening**	4…11 ms	4…11 ms			7…15 ms	
		N.C. contact closing	7…14 ms	7…14 ms			10…18 ms	

(1) 50/60 Hz coils: see "Coil voltage code table".

Mounting characteristics and conditions for use

Contactor types		AC operated	A40	A50	A63	A75	A95	A110
Mounting positions								
			Max. built-in and add-on N.O. or N.C. auxiliary contacts: see accessory fitting details for 3-pole contactor A40 ... A110					
Control voltage / Ambient temperature								
Mounting positions	1, 1±30°, 2, 3, 4, 5	**at θ ≤ 55 °C**	0.85...1.1 x Uc				0.85...1.1 x Uc	
		at θ ≤ 70 °C	Uc				0.85...1.1 x Uc	
	6	**at θ ≤ 55 °C**	0.95...1.1 x Uc				Unauthorized	
		at θ ≤ 70 °C	Unauthorized				Unauthorized	
Mounting distances			The contactors can be assembled side by side					
Fixing								
On rail according to IEC 60715, EN 60715			35 x 7.5 mm or 35 x 15 mm	35 x 15 mm or 75 x 25 mm			–	
By screws (not supplied)			2 x M4 screws placed diagonally	2 x M6 screws placed diagonally			2 x M6 screws placed diagonally	

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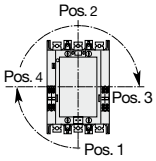
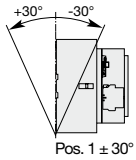
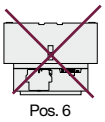
A145 … A300 3-pole contactors
Technical data

Magnet system characteristics

Contactor types			AC operated	A145	A185	A210	A260	A300
Coil operating limits			**AC supply**	At θ ≤ 70 °C 0.85...1.1 x Uc				
acc. to IEC 60947-4-1				Please also refer to "Mounting characteristics and conditions for use"				
AC control voltage	Rated control circuit voltage Uc		**at 50 Hz**	24…690 V				
			at 60 Hz	24…690 V				
	Coil consumption	**Average pull-in value**	**50 Hz**	550 VA		1350 VA		
			60 Hz	600 VA		1550 VA		
			50/60 Hz (1)	700 VA / 650 VA		1700 VA / 1550 VA		
		Average holding value	**50 Hz**	35 VA / 11 W		60 VA / 16 W		
			60 Hz	40 VA / 12 W		65 VA / 19 W		
			50/60 Hz (1)	44 VA / 13 W		80 VA / 21 W		
Drop-out voltage				Approx. 40…65 % of Uc min.				
Operating time								
Between coil energization and:		**N.O. contact closing**		13…27 ms		17…35 ms		
		N.C. contact opening		8…22 ms		12…30 ms		
Between coil de-energization and:		**N.O. contact opening**		5…10 ms		7…13 ms		
		N.C. contact closing		9…13 ms		10…16 ms		

(1) 50/60 Hz coils: see "Voltage code table".

Mounting characteristics and conditions for use

Contactor types			AC operated	A145	A185	A210	A260	A300
Mounting positions								
				Max. add-on N.O. or N.C. auxiliary contacts: see accessory fitting details for 3-pole contactor A145 ... A300				
Control voltage / Ambient temperature								
Mounting positions	1, 1±30°, 2, 3, 4, 5		**at θ ≤ 70 °C**	0.85 x Uc...1.1 x Uc				
	6			Unauthorized				
Mounting distances				The contactors can be assembled side by side				
Fixing	On rail according to IEC 60715, EN 60715			–				
	By screws (not supplied)			4 x M5				

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A9 ... A30 3-pole contactors
Technical data

Connecting characteristics

Contactor types			AC operated	A9	A12	A16	A26	A30
Main terminals				 Screw terminals with cable clamp				 Screw terminals with double connector 2 x (5.6 x 6.5 mm)
Connection capacity (min. ... max.)								
Main conductors (poles)								
Rigid	Solid (≤ 4 mm²)		**1 x**	1...4 mm²			1.5...6 mm²	2.5...16 mm²
	Stranded (≥ 6 mm²)		**2 x**	1...4 mm²			1.5...6 mm²	2.5...16 mm²
Flexible with ferrule			**1 x**	0.75...2.5 mm²			0.75...4 mm²	2.5...10 mm²
			2 x	0.75...2.5 mm²			0.75...4 mm²	2.5...10 mm²
Bars or lugs			**L <**	7.7 mm			10 mm	-
			I <	3.7 mm			4.2 mm	-
Connection capacity acc. to UL / CSA			**1 or 2 x**	AWG 18...10			AWG 12...8	AWG 8...4
Tightening torque	Recommended			1 Nm / 9 lb.in			1.7 Nm / 15 lb.in	2.3 Nm / 20 lb.in
	Max.			1.2 Nm			2.20 Nm	2.60 Nm
Auxiliary conductors (built-in auxiliary terminals + coil terminals)								
Rigid solid			**1 x**	1...4 mm²				
			2 x	1...4 mm²				
Flexible with ferrule			**1 x**	0.75...2.5 mm²				
			2 x	0.75...2.5 mm²				
Lugs			**L <**	7.7 mm			(1)	8 mm
			I <	3.7 mm			(1)	3.7 mm
Connection capacity acc. to UL / CSA			**1 or 2 x**	AWG 18...14				
Tightening torque								
Coil terminals	Recommended			1 Nm / 9 lb.in				
	Max.			1.20 Nm				
Built-in auxiliary terminals	Recommended			1 Nm / 9 lb.in			1.7 Nm / 15 lb.in	1 Nm / 9 lb.in
	Max.			1.20 Nm			2.20 Nm	1.20 Nm
Degree of protection acc. to IEC 60947-1 / EN 60947-1 and IEC 60529 / EN 60529								
Main terminals				IP20				
Coil terminals				IP20				
Built-in auxiliary terminals				IP20				
Screw terminals				Delivered in open position, screws of unused terminals must be tightened				
Main terminals				M3.5			M4	M5
		Screwdriver type		Flat Ø 5.5 / Pozidriv 2				Flat Ø 6.5 / Pozidriv 2
Coil terminals				M3.5				
		Screwdriver type		Flat Ø 5.5 / Pozidriv 2				
Built-in auxiliary terminals				M3.5			M4	M3.5
		Screwdriver type		Flat Ø 5.5 / Pozidriv 2				

(1) L ≤ 8 and I > 3.7 for coil terminals - L ≤ 10 and I > 4.2 for built-in auxiliary terminals.

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A40 ... A110 3-pole contactors
Technical data

Connecting characteristics

Contactor types			AC operated	A40	A50	A63	A75	A95	A110
Main terminals				 Screw terminals with double connector 2 x (5.6 x 6.5 mm)	 Screw terminals with single connector (13 x 10 mm)			 Screw terminals with single connector (14 x 14 mm)	
Connection capacity (min. ... max.)									
Main conductors (poles)									
Rigid	Solid (≤ 4 mm²)		**1 x**	2.5...16 mm²	6...50 mm²			10...95 mm²	
	Stranded (≥ 6 mm²)		**2 x**	2.5...16 mm²	6...25 mm²			6...35 mm²	
Flexible with ferrule			**1 x**	2.5...10 mm²	6...35 mm²			10...70 mm² (1)	
			2 x	2.5...10 mm²	6...16 mm²			6...35 mm² (1)	
Bars or lugs			**L <**	–	–			30 mm (2)	
			l <	–	–			6 mm	
Connection capacity acc. to UL / CSA			**1 or 2 x**	AWG 8...4	AWG 8...1			AWG 6...2/0	
Tightening torque	Recommended			2.30 Nm / 20 lb.in	4.00 Nm / 35 lb.in			8 Nm / 71 lb.in	
	Max.			2.60 Nm	4.50 Nm			9 Nm	
Auxiliary conductors									
(built-in auxiliary terminals + coil terminals)									
Rigid solid			**1 x**	1...4 mm²				0.75...2.5 mm²	
			2 x	1...4 mm²				0.75...2.5 mm²	
Flexible with ferrule			**1 x**	0.75...2.5 mm²	1...2.5 mm²			0.75...2.5 mm²	
			2 x	0.75...2.5 mm²					
Lugs			**L <**	8 mm					
			l <	3.7 mm					
Connection capacity acc. to UL / CSA			**1 or 2 x**	AWG 18...14					
Tightening torque									
Coil terminals	Recommended			1.00 Nm / 9 lb.in					
	Max.			1.20 Nm					
Built-in auxiliary terminals	Recommended			1.00 Nm / 9 lb.in	–			–	
	Max.			1.20 Nm	–			–	
Degree of protection									
acc. to IEC 60947-1 / EN 60947-1 and IEC 60529 / EN 60529									
Main terminals				IP20	IP10				
Coil terminals				IP20					
Built-in auxiliary terminals				IP20	–			–	
Screw terminals				Delivered in open position, screws of unused terminals must be tightened					
Main terminals				M5	M6			M8	
		Screwdriver type		Flat Ø 6.5 / Pozidriv 2				Hexagon socket (s = 4 mm)	
Coil terminals				M3.5					
		Screwdriver type		Flat Ø 5.5 / Pozidriv 2					
Built-in auxiliary terminals				M3.5	–				
		Screwdriver type		Flat Ø 5.5 / Pozidriv 2	–				

(1) A95 / A110: use flexible without ferrule.
(2) With LW110 enlargement piece, see "Accessories".

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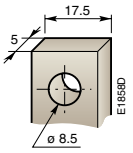
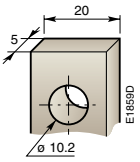
A145 … A300 3-pole contactors
Technical data

Connecting characteristics

Contactor types		AC operated	A145	A185	A210	A260	A300
Main terminals Flat type							
Connection capacity (min. ... max.)							
Main conductors (poles)							
Rigid with connector	Single for Cu cable		6…185 mm²		16…240 mm²		
	Single for Al/Cu cable		25…150 mm²		120…240 mm²		
	Double for Al/Cu cable		–		2 x 95…120 mm²		
Bars or lugs		**L ≤**	24 mm		32 mm		
		Ø >	8 mm		10 mm		
Connection capacity acc. to UL / CSA		**1 or 2 x**	6 - 250 MCM		4 - 500 MCM (1)		
Tightening torque	Recommended		18 Nm / 160 lb.in		28 Nm / 247 lb.in		
	Max.		20 Nm		30 Nm		
Auxiliary conductors (coil terminals)							
Rigid solid		**1 x**	1…4 mm²				
		2 x	1…4 mm²				
Flexible with ferrule		**1 x**	0.75…2.5 mm²				
		2 x	0.75…2.5 mm²				
Lugs		**L ≤**	8 mm				
		l >	3.7 mm				
Connection capacity acc. to UL / CSA		**1 or 2 x**	AWG 18…14				
Tightening torque	Recommended		1.00 Nm / 9 lb.in				
	Max.		1.20 Nm				
Degree of protection acc. to IEC 60947-1 / EN 60947-1 and IEC 60529 / EN 60529							
Main terminals			IP00				
Coil terminals			IP20				
Screw terminals							
Main terminals			M8		M10		
			Screws and bolts				
Coil terminals (delivered in open position)			M3.5				
		Screwdriver type	Flat Ø 5.5 mm / Pozidriv 2				

(1) With LW110 enlargement piece: see "Accessories".

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A9 ... A40 3-pole contactors
Technical data

Built-in auxiliary contacts according to IEC - Other auxiliary contacts see "Accessories"

Contactor types	AC operated	A9	A12	A16	A26	A30	A40
Rated operational voltage Ue max.		690 V					
Rated frequency (without derating)		50/60 Hz					
Conventional free air thermal current Ith - θ ≤ 40 °C		16 A					
Ie / Rated operational current AC-15							
acc. to IEC 60947-5-1	24-127 V 50/60 Hz	6 A					
	220-240 V 50/60 Hz	4 A					
	380-440 V 50/60 Hz	3 A					
	500 V 50/60 Hz	2 A					
	690 V 50/60 Hz	2 A					
Making capacity AC-15		10 x Ie AC-15 acc. to IEC 60947-5-1					
Breaking capacity AC-15		10 x Ie AC-15 acc. to IEC 60947-5-1					
Ie / Rated operational current DC-13							
acc. to IEC 60947-5-1	24 V DC	6 A / 144 W					
	48 V DC	2.8 A / 134 W					
	72 V DC	2 A / 144 W					
	110 V DC	1.1 A / 121 W					
	125 V DC	1.1 A / 138 W					
	220 V DC	0.55 A / 121 W					
	250 V DC	0.55 A / 138 W					
Short-circuit protection device gG type fuse		10 A					
Rated short-time withstand current Icw	for 1.0 s	100 A					
	for 0.1 s	140 A					
Minimum switching capacity		17 V / 5 mA					
with failure rate acc. to IEC 60947-5-4		≤ 10^{-7} for AL40 and TAL40 contactors					
Non-overlapping time between N.O. and N.C. contacts		≥ 2 ms					
Power dissipation per pole at 6 A		0.1 W					
Max. electrical switching frequency	AC-15	1200 cycles/h					
	DC-13	900 cycles/h					
Mechanically linked contacts acc. to annex L of IEC 60947-5-1		Built-in N.O. or N.C. auxiliary contacts and additional N.O. or N.C. auxiliary contacts of 4-pole CA5 are mechanically linked contacts.					
Mirror contacts acc. to annex F of IEC 60947-4-1		Built-in N.C. auxiliary contacts or additional N.C. auxiliary contacts (CA5, CAL5-11) are mirror contacts.					

Built-in auxiliary contacts according to UL / CSA

Contactor types	AC operated	A9	A12	A16	A26	A30	A40
Max. operational voltage		600 V AC, 600 V DC					
Pilot duty		A600, P300					
AC thermal rated current		10 A					
AC maximum volt-ampere making		7200 VA					
AC maximum volt-ampere breaking		720 VA					
DC thermal rated current		5 A					
DC maximum volt-ampere making-breaking		138 VA					

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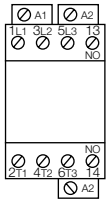
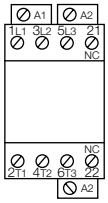
A9 ... A300 3-pole contactors
Terminal marking and positioning

A9 ... A110 contactors - AC operated

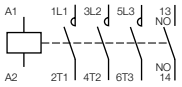
Standard devices without addition of auxiliary contacts



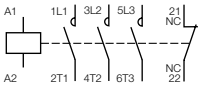
A9 ... A40-30-10



A9 ... A40-30-01

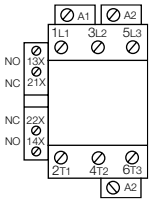


A9 ... A40-30-10

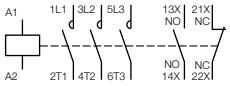


A9 ... A40-30-01

Standard devices with factory mounted auxiliary contacts

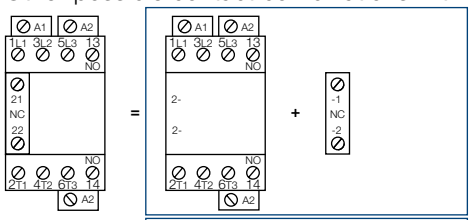


A50 ... A110-30-11

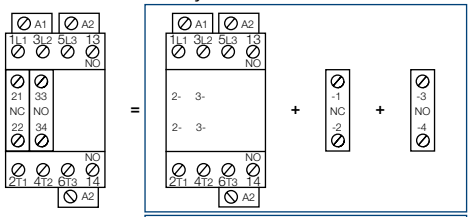


A50 ... A110-30-11

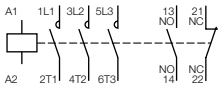
Other possible contact combinations with auxiliary contacts added by the user



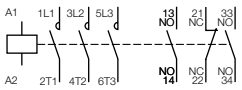
Combination 11 = A9 ... A40-30-10 + CA5-01



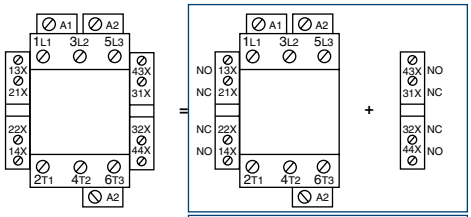
Combination 21 = A9 ... A40-30-10 + CA5-01 + CA5-10



Combination 11



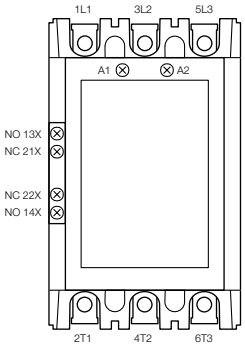
Combination 21



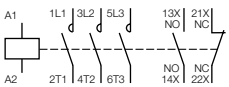
Combination 22 = A50 ... A75-30-11 + CAL5-11

A145 ... A300 contactors - AC operated

Standard devices with factory mounted auxiliary contacts



A145 ... A300-30-11



A145 ... A300-30-11

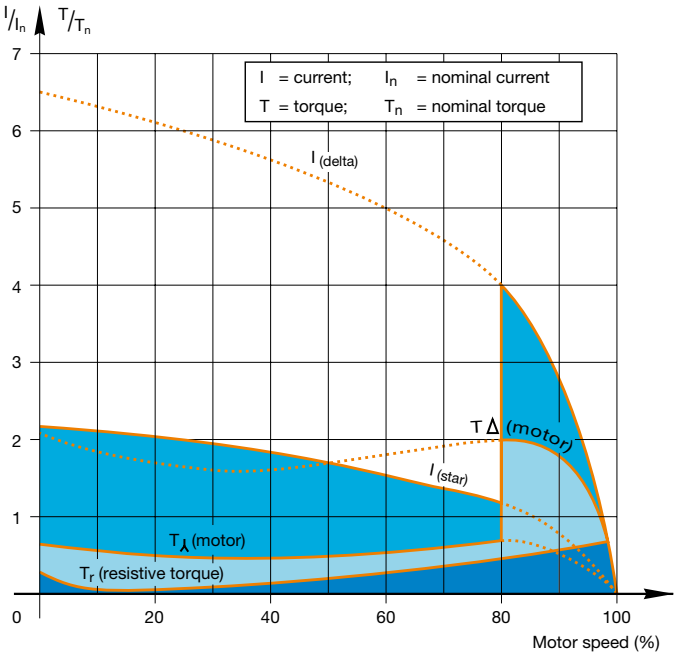
1SBC101881S0201

Star-delta starting of three-phase asynchronous motors
Contactor selection

General

Star-delta starting is the most common method to reduce the starting current of a motor. This system can be used on all the squirrel cage motors, which are normally used in delta connection.
In this type of starting, it is recommended to choose motors having high starting torque i.e. much higher than the resistive torque in order to reach sufficient high speed when the motor is connected in star.

Star-delta starting



Technical Data

When starting:
- inrush current is reduced to a third of direct starting current
- motor torque is reduced to a third or even less of direct starting torque.

Transient current is generated when switching from star to delta connection.

Utilization

During the initial starting phase ("star" connection), the resistive torque of the driven load must remain, irrespective of speed, less than the "star" motor torque until "star-delta" switching occurs.

This starting mode is therefore ideal for machines having low starting torque such as:
- pumps
- centrifugal compressors
- wood-working machines, etc.

In order to prevent a high current peak, at least 85 % of nominal speed must be reached before switching from star to delta.

Precautions

Motor nominal voltage in delta connection must be equal to that of the mains.

Example:
A motor for 400 V star-delta starting must be designed for 400 V in "delta" connection. Its usual designation is "400 V / 690 V motor". The motor must be constructed with 6 terminal windings.

Sequence

Starting is a three-stage process:

1st stage - "Star" connection

Press the "On" button on the control circuit to close the KM2 "star" contactor. The KM1 "line" contactor then closes and the motor starts. Countdown of programmed starting time (normally 6 to 10 s) then begins.

2nd stage - "Star" to "Delta" switching

When the programmed starting time is over, the KM2 "star" contactor opens.

3rd stage - "Delta" connection

A transition time (or dwelling time) of 50 ms is fixed between opening of the "star" contactor and closing of the "delta" contactor by the use of TE5S timer. This prevents short circuit between "star" and "delta".

Note: An electrical interlock between star and delta is mandatory such as VE 5 or through auxiliary contacts.
Furthermore, in open transition, the current interruption may reach up to 95 ms: it shall be checked that this duration is compatible with the application i.e. mainly if the decreasing in rotation speed is acceptable during the starting phase.

1SBC101882S0201

Star-delta starting of three-phase asynchronous motors
Contactor selection

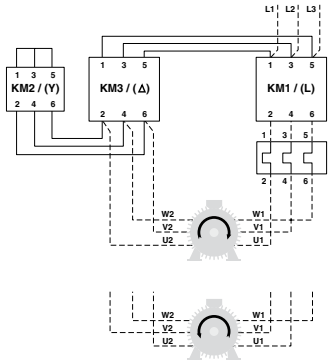
Rated operational power (1)					Max. starting time from a cold state (2)	Line contactor KM1	Delta contactor KM3	Star contactor KM2	Overload relay (3)	Timer
230 V AC-3 kW	400 V AC-3 kW	415 V AC-3 kW	500 V AC-3 kW	690 V AC-3 kW	seconds	Type	Type	Type	Type	Type
4	7.5	7.5	5.5	5.5	15	A9	A9	A9	TA25DU-M	TE5S
5.5	11	11	7.5	7.5	15	A12	A12	A9	TA25DU-M	TE5S
9	15	15	15	11	15	A16	A16	A12	TA25DU-M	TE5S
12.5	22	22	22	15	15	A26	A26	A16	TA25DU-M	TE5S
15	25	25	25	18.5	15	A30	A30	A26	TA25DU-M	TE5S
18.5	37	37	37	37	30	A40	A40	A26	TA42DU-M	TE5S
25	45	45	45	45	30	A50	A50	A30	TA75DU-M	TE5S
30	55	55	63	59	30	A63	A63	A40	TA75DU-M	TE5S
37	63	70	75	63	30	A75	A75	A50	TA75DU-M	TE5S
45	75	75	90	90	20	A95	A95	A75	TA110DU	TE5S
55	90	100	110	132	20	A110	A110	A95	TA110DU	TE5S
75	132	132	160	160	20	A145	A145	A110	TA200DU	TE5S
90	160	160	200	250	20	A185	A185	A145	TA200DU	TE5S
110	200	200	250	315	20	A210	A210	A185	TA450DU	TE5S
140	220	250	295	355	20	A260	A260	A210	TA450DU	TE5S
160	250	250	355	450	20	A300	A300	A260	TA450DU	TE5S

Notes:
(1) Ambient temperature ≤ 55 °C for A9 ... A300
(2) Usual time value = 6...10 s.
(3) The setting current value is: nominal motor current x 0.58.

For motors above 670 kW / 400 V, it is recommended to use Closed Transition Star-Delta starting. Contact your ABB Office for selection.

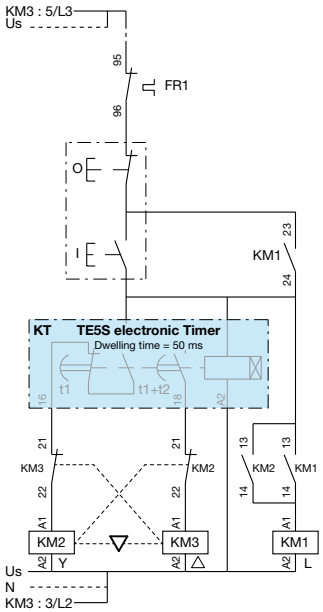
Power circuit diagram

A9 ... A300 contactors



Control circuit diagrams - Remote control

A9 ... A300 contactors



1SBC101883S0201

4-pole contactors





IEC	**AC-1 Rated operational current**	θ ≤ 40 °C, 690 V	**A**	**25**	**30**	**45**	**70**	**100**	**125**
UL/CSA	**General use rating**	600 V	**A**	**21**	**30**	**40**	**65**	**80**	**105**
AC Control supply		~	Type	**A9**	**A16**	**A26**	**A45**	**A50**	**A75**
IEC	**AC-1 Rated operational current**	θ ≤ 40 °C	**A**	**25**	**30**	**45**	**70**	**100**	**125**
		θ ≤ 55 °C	**A**	**22**	**27**	**40**	**60**	**85**	**105**
		θ ≤ 70 °C	**A**	**18**	**23**	**32**	**50**	**70**	**85**
	With conductor cross sectional area		**mm²**	**2.5**	**4**	**6**	**25**	**35**	**50**
	Rated operational voltage Ue max.		**V**	**690**	**690**	**690**	**1000**	**1000**	**1000**

Main accessories

Auxiliary contact blocks	Front mounting	**CA5-10** (1 x N.O.) **CA5-01** (1 x N.C.)	
	Side mounting	**CAL5-11** (1 x N.O. + 1 x N.C.)	
Timers	Electronic	**TEF5-ON** **TEF5-OFF**	
		TE5S (for star-delta starters - direct timing - separate mounting)	
Interlocking units	Mechanical	**VM5-1**	
	Mechanical / Electrical	**VE5-1**	**VE5-2**
Surge suppressors	Varistor (AC / DC)	**RV5** (24...440 V)	
	RC Type (AC)	**RC5-1** (24...440 V)	**RC5-2** (24...440 V)

1SBC101884S0201

A9 ... A16 4-pole contactors
25 to 30 A AC-1
AC operated



A9-40-00

Description

A9 ... A16 4-pole contactors are mainly used for controlling non-inductive or slightly inductive loads (i.e. resistance furnaces...) and generally for controlling power circuits up to 690 V AC and 440 V DC.

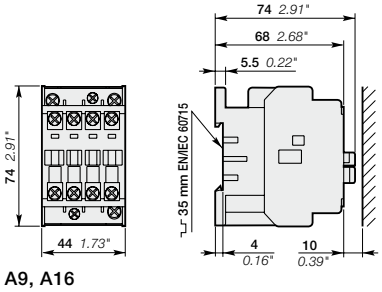
These contactors are of the block type design with:
- 4 main poles
- control circuit: AC operated
- add-on auxiliary contact blocks for front or side mounting and a wide range of accessories.

Ordering details

IEC Rated operational current θ ≤ 40 °C AC-1	UL/CSA General use rating 600 V AC	Rated control circuit voltage Uc (1)		Auxiliary contacts fitted	Type	Order code		Weight Pkg (1 pce)
A	A	V 50 Hz	V 60 Hz					kg
4 N.O. main poles								
25	21	24	24	0 0	A9-40-00	1SBL141201R8100		0.340
		48	48	0 0	A9-40-00	1SBL141201R8300		0.340
		110	110...120	0 0	A9-40-00	1SBL141201R8400		0.340
		220...230	230...240	0 0	A9-40-00	1SBL141201R8000		0.340
		230...240	240...260	0 0	A9-40-00	1SBL141201R8800		0.340
		380...400	400...415	0 0	A9-40-00	1SBL141201R8500		0.340
		400...415	415...440	0 0	A9-40-00	1SBL141201R8600		0.340
30	30	24	24	0 0	A16-40-00	1SBL181201R8100		0.340
		48	48	0 0	A16-40-00	1SBL181201R8300		0.340
		110	110...120	0 0	A16-40-00	1SBL181201R8400		0.340
		220...230	230...240	0 0	A16-40-00	1SBL181201R8000		0.340
		230...240	240...260	0 0	A16-40-00	1SBL181201R8800		0.340
		380...400	400...415	0 0	A16-40-00	1SBL181201R8500		0.340
		400...415	415...440	0 0	A16-40-00	1SBL181201R8600		0.340
2 N.O. + 2 N.C. main poles (2)								
25	21	24	24	0 0	A9-22-00	1SBL141501R8100		0.340
		48	48	0 0	A9-22-00	1SBL141501R8300		0.340
		110	110...120	0 0	A9-22-00	1SBL141501R8400		0.340
		220...230	230...240	0 0	A9-22-00	1SBL141501R8000		0.340
		230...240	240...260	0 0	A9-22-00	1SBL141501R8800		0.340
		380...400	400...415	0 0	A9-22-00	1SBL141501R8500		0.340
		400...415	415...440	0 0	A9-22-00	1SBL141501R8600		0.340
30	30	24	24	0 0	A16-22-00	1SBL181501R8100		0.340
		48	48	0 0	A16-22-00	1SBL181501R8300		0.340
		110	110...120	0 0	A16-22-00	1SBL181501R8400		0.340
		220...230	230...240	0 0	A16-22-00	1SBL181501R8000		0.340
		230...240	240...260	0 0	A16-22-00	1SBL181501R8800		0.340
		380...400	400...415	0 0	A16-22-00	1SBL181501R8500		0.340
		400...415	415...440	0 0	A16-22-00	1SBL181501R8600		0.340

(1) Other control voltages see voltage code table.
(2) These contactors are not suitable for a reversing starter or star-delta starter or for controlling a single load from 2 separate supplies. Please see technical data.

Main dimensions mm, *inches*



A9, A16

1SBC101857S0201

A26 4-pole contactors
45 A AC-1
AC operated



A26-40-00

3

Description

A26 4-pole contactors are mainly used for controlling non-inductive or slightly inductive loads (i.e. resistance furnaces...) and generally for controlling power circuits up to 690 V AC and 220 V DC.

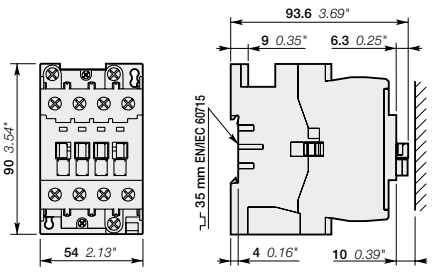
These contactors are of the block type design with:
- 4 main poles
- control circuit: AC operated
- add-on auxiliary contact blocks for front or side mounting and a wide range of accessories.

Ordering details

IEC Rated operational current θ ≤ 40 °C AC-1	UL/CSA General use rating 600 V AC	Rated control circuit voltage Uc (1)		Auxiliary contacts fitted	Type	Order code		Weight Pkg (1 pce)
A	A	V 50 Hz	V 60 Hz					kg
4 N.O. main poles								
45	40	24	24	0 0	A26-40-00	1SBL241201R8100		0.610
		48	48	0 0	A26-40-00	1SBL241201R8300		0.610
		110	110...120	0 0	A26-40-00	1SBL241201R8400		0.610
		220...230	230...240	0 0	A26-40-00	1SBL241201R8000		0.610
		230...240	240...260	0 0	A26-40-00	1SBL241201R8800		0.610
		380...400	400...415	0 0	A26-40-00	1SBL241201R8500		0.610
		400...415	415...440	0 0	A26-40-00	1SBL241201R8600		0.610
2 N.O. + 2 N.C. main poles (2)								
45	40	24	24	0 0	A26-22-00	1SBL241501R8100		0.610
		48	48	0 0	A26-22-00	1SBL241501R8300		0.610
		110	110...120	0 0	A26-22-00	1SBL241501R8400		0.610
		220...230	230...240	0 0	A26-22-00	1SBL241501R8000		0.610
		230...240	240...260	0 0	A26-22-00	1SBL241501R8800		0.610
		380...400	400...415	0 0	A26-22-00	1SBL241501R8500		0.610
		400...415	415...440	0 0	A26-22-00	1SBL241501R8600		0.610

(1) Other control voltages see voltage code table.
(2) These contactors are not suitable for a reversing starter or star-delta starter or for controlling a single load from 2 separate supplies. Please see technical data.

Main dimensions mm, *inches*



A26

1SBC101863S0201

A45 ... A75 4-pole contactors
70 to 125 A AC-1
AC operated



A45-40-00

Description

A45 ... A75 4-pole contactors are mainly used for controlling non-inductive or slightly inductive loads (i.e. resistance furnaces...) and generally for controlling power circuits up to 690 V AC and 220 V DC.

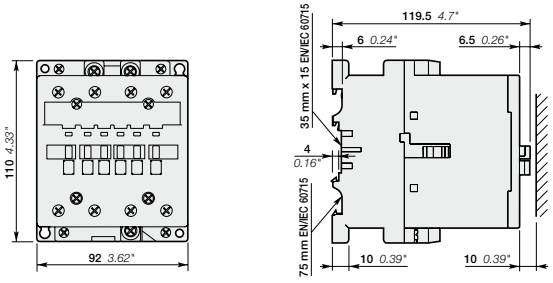
These contactors are of the block type design with:
- 4 main poles
- control circuit: AC operated
- add-on auxiliary contact blocks for front or side mounting and a wide range of accessories.

Ordering details

IEC Rated operational current θ ≤ 40 °C AC-1 A	UL/CSA General use rating 600 V AC A	Rated control circuit voltage Uc (1) V 50 Hz	 V 60 Hz	Auxiliary contacts fitted		Type	Order code		Weight Pkg (1 pce) kg
4 N.O. main poles									
70	65	24	24	0	0	A45-40-00	1SBL331201R8100		1.390
		48	48	0	0	A45-40-00	1SBL331201R8300		1.390
		110	110...120	0	0	A45-40-00	1SBL331201R8400		1.390
		220...230	230...240	0	0	A45-40-00	1SBL331201R8000		1.390
		230...240	240...260	0	0	A45-40-00	1SBL331201R8800		1.390
		380...400	400...415	0	0	A45-40-00	1SBL331201R8500		1.390
		400...415	415...440	0	0	A45-40-00	1SBL331201R8600		1.390
100	80	24	24	0	0	A50-40-00	1SBL351201R8100		1.390
		48	48	0	0	A50-40-00	1SBL351201R8300		1.390
		110	110...120	0	0	A50-40-00	1SBL351201R8400		1.390
		220...230	230...240	0	0	A50-40-00	1SBL351201R8000		1.390
		230...240	240...260	0	0	A50-40-00	1SBL351201R8800		1.390
		380...400	400...415	0	0	A50-40-00	1SBL351201R8500		1.390
		400...415	415...440	0	0	A50-40-00	1SBL351201R8600		1.390
125	105	24	24	0	0	A75-40-00	1SBL411201R8100		1.390
		48	48	0	0	A75-40-00	1SBL411201R8300		1.390
		110	110...120	0	0	A75-40-00	1SBL411201R8400		1.390
		220...230	230...240	0	0	A75-40-00	1SBL411201R8000		1.390
		230...240	240...260	0	0	A75-40-00	1SBL411201R8800		1.390
		380...400	400...415	0	0	A75-40-00	1SBL411201R8500		1.390
		400...415	415...440	0	0	A75-40-00	1SBL411201R8600		1.390
2 N.O. + 2 N.C. main poles (2)									
70	65	24	24	0	0	A45-22-00	1SBL331501R8100		1.400
		48	48	0	0	A45-22-00	1SBL331501R8300		1.400
		110	110...120	0	0	A45-22-00	1SBL331501R8400		1.400
		220...230	230...240	0	0	A45-22-00	1SBL331501R8000		1.400
		230...240	240...260	0	0	A45-22-00	1SBL331501R8800		1.400
		380...400	400...415	0	0	A45-22-00	1SBL331501R8500		1.400
		400...415	415...440	0	0	A45-22-00	1SBL331501R8600		1.400
125	105	24	24	0	0	A75-22-00	1SBL411501R8100		1.400
		48	48	0	0	A75-22-00	1SBL411501R8300		1.400
		110	110...120	0	0	A75-22-00	1SBL411501R8400		1.400
		220...230	230...240	0	0	A75-22-00	1SBL411501R8000		1.400
		230...240	240...260	0	0	A75-22-00	1SBL411501R8800		1.400
		380...400	400...415	0	0	A75-22-00	1SBL411501R8500		1.400
		400...415	415...440	0	0	A75-22-00	1SBL411501R8600		1.400

(1) Other control voltages see voltage code table.
(2) These contactors are not suitable for a reversing starter or star-delta starter or for controlling a single load from 2 separate supplies. Please see technical data.

Main dimensions mm, *inches*

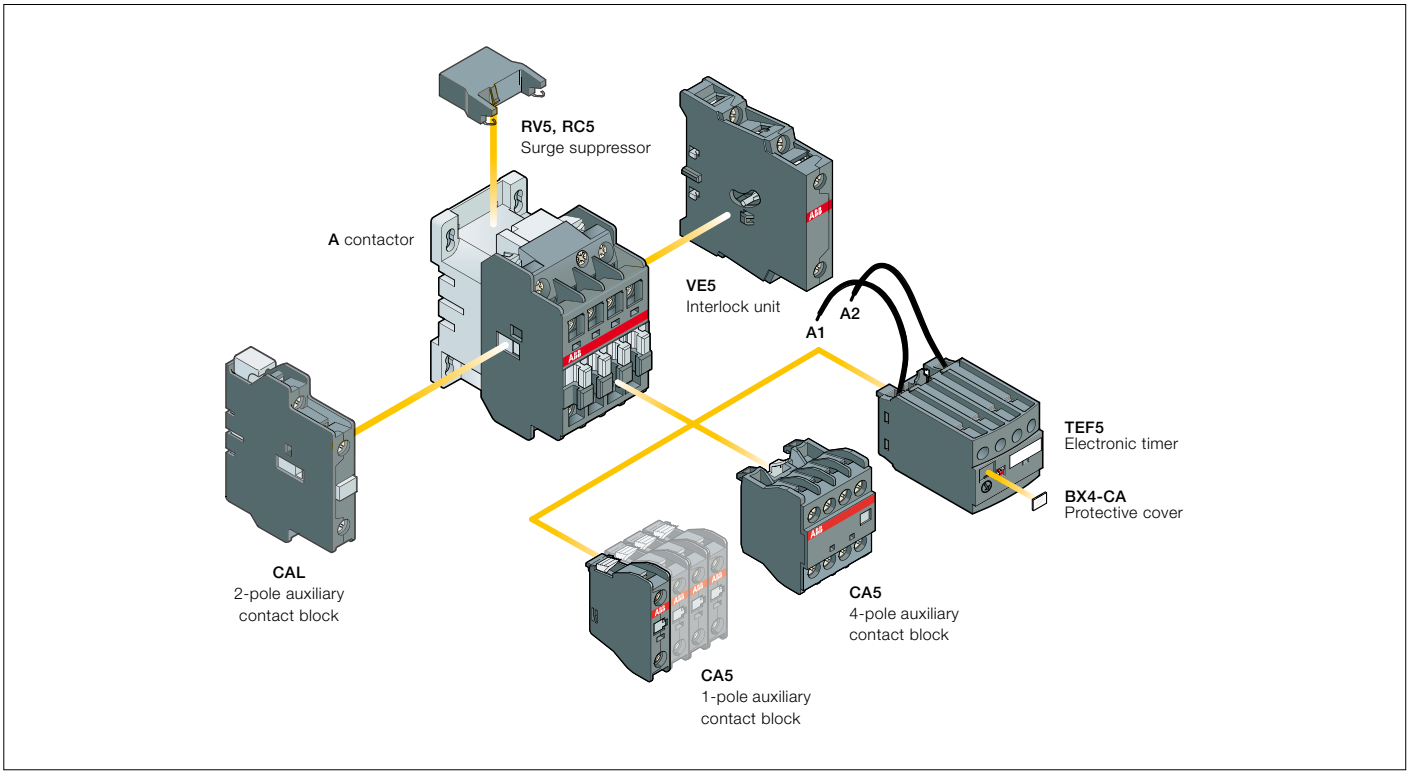


A45, A50, A75

1SBC101377S0201

A9 … A75 4-pole contactors
Main accessories

Contactor and main accessories (other accessories available)



Main accessory fitting details

Many configurations of accessories are possible depending on whether these are front-mounted or side-mounted.

Contactor types	Main poles	Built-in auxiliary contacts	Front-mounted accessories							Side-mounted accessories		
			Auxiliary contact blocks					Electronic timer		Auxiliary contact blocks		Interlock unit
			1-pole CA5		4-pole CA5			TEF5		2-pole CAL5-11		VM5 or VE5
A9, A16	4 0	0 0	1 to 4 x CA5	or	1 x CA5 (4-pole)	or	1 x TEF5	+		1 to 2 x CAL5-11	or	1 x VM5-1 or VE5-1 + 1 x CAL5-11
	2 2	0 0 (1)	1 to 4 x CA5	or	1 x CA5 (4-pole)	or	1 x TEF5	+		1 to 2 x CAL5-11		–
A26	4 0	0 0	1 to 4 x CA5	or	1 x CA5 (4-pole)	or	1 x TEF5	+		1 to 2 x CAL5-11	or	1 x VM5-1 or VE5-1 + 1 x CAL5-11
	2 2	0 0 (1)	1 to 4 x CA5	or	1 x CA5 (4-pole)	or	1 x TEF5	+		1 to 2 x CAL5-11		–
A45 … A75	4 0	0 0	1 to 6 x CA5	or	1 x CA5 (4-pole) + 2 x 1-pole CA5	or	1 x TEF5 + 2 x CA5 (1-pole)	+		1 to 2 x CAL5-11	or	1 x VE5-2 + 1 x CAL5-11
	2 2	0 0 (2)	1 to 6 x CA5	or	1 x CA5 (4-pole) + 2 x 1-pole CA5	or	1 x TEF5 + 2 x CA5 (1-pole)	+		1 to 2 x CAL5-11		–

(1) 2 N.C. CA5 auxiliary contacts maximum in mounting position 5.
(2) 2 N.C. CA5 auxiliary contacts maximum.

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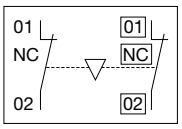
A9 … A75 4-pole contactors
Main accessories


1SBC580992F0301

CA5-10


1SBC573752F0301

CAL5-11



VE5-2
Terminal marking and positioning


1SBC101396F0014

TEF5-OFF


1SBC574001F0301

RV5/50

Ordering details (1)

For contactors		Auxiliary contacts	Type	Order code		Pkg qty	Weight (1 pce) kg
Front-mounted instantaneous auxiliary contact blocks							
A9 ... A75		1 –	CA5-10	1SBN010010R1010		10	0.014
		– 1	CA5-01	1SBN010010R1001		10	0.014
A9 ... A75		2 2	CA5-22E	1SBN010040R1022		2	0.060
Side-mounted instantaneous auxiliary contact block							
A9 ... A75		1 1	CAL5-11	1SBN010020R1011		2	0.050
Interlock units							
A9 ... A26	Mechanical	– –	VM5-1	1SBN030100R1000		1	0.066
	Mechanical and electrical	– 2	VE5-1	1SBN030110R1000		1	0.076
A45 ... A75	Mechanical and electrical	– 2	VE5-2	1SBN030210R1000		1	0.146

For contactors	Time delay range selected by switch	Delay type	Auxiliary contacts	Type	Order code		Pkg qty	Weight (1 pce) kg
Electronic timers								
A9 ... A75	0.1...1 s 1...10 s 10...100 s	ON-delay	1 1	TEF5-ON	1SBN020312R1000		1	0.065
		OFF-delay	1 1	TEF5-OFF	1SBN020314R1000		1	0.065

Note: Rated control circuit voltage Uc 24...240 V 50/60 Hz or DC.

For contactors	Rated control circuit voltage Uc V	AC	DC	Type	Order code		Pkg qty	Weight (1 pce) kg
Surge suppressors								
A9 ... A75	24...50	●	●	RV5/50	1SBN050010R1000		2	0.015
	50...133	●	●	RV5/133	1SBN050010R1001		2	0.015
	110...250	●	●	RV5/250	1SBN050010R1002		2	0.015
	250...440	●	●	RV5/440	1SBN050010R1003		2	0.015
A9 ... A26	24...50	●	–	RC5-1/50	1SBN050100R1000		2	0.012
	50...133	●	–	RC5-1/133	1SBN050100R1001		2	0.012
	110...250	●	–	RC5-1/250	1SBN050100R1002		2	0.012
	250...440	●	–	RC5-1/440	1SBN050100R1003		2	0.012
A45 ... A75	24...50	●	–	RC5-2/50	1SBN050200R1000		2	0.015
	50...133	●	–	RC5-2/133	1SBN050200R1001		2	0.015
	110...250	●	–	RC5-2/250	1SBN050200R1002		2	0.015
	250...440	●	–	RC5-2/440	1SBN050200R1003		2	0.015

(1) See "Main accessory fitting details" table.

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A9 ... A26 4-pole contactors
Technical data

Main pole - Utilization characteristics according to IEC

Contactor types	AC operated	A9	A16	A26
Standards		IEC 60947-1 / 60947-4-1 and EN 60947-1 / 60947-4-1		
Rated operational voltage Ue max.		690 V		
Rated frequency (without derating)		50 / 60 Hz		
Conventional free-air thermal current Ith				
acc. to IEC 60947-4-1, open contactors, θ ≤ 40 °C		26 A	30 A	45 A
With conductor cross-sectional area		4 mm²	4 mm²	6 mm²
AC-1 Utilization category				
For air temperature close to contactor				
Ie / Rated operational current AC-1	**θ ≤ 40 °C**	25 A	30 A	45 A
Ue max. ≤ 690 V, 50/60 Hz	**θ ≤ 55 °C**	22 A	27 A	40 A
	θ ≤ 70 °C	18 A	23 A	32 A
With conductor cross-sectional area		2.5 mm²	4 mm²	6 mm²
AC-3 Utilization category				
For air temperature close to contactor θ ≤ 55 °C				
Ie / Max. rated operational current AC-3 (1)				
	220-230-240 V	9 A	17 A	26 A
	380-400 V	9 A	17 A	26 A
 3-phase motors	**415 V**	9 A	17 A	26 A
	440 V	9 A	16 A	26 A
	500 V	9 A	14 A	22 A
	690 V	7 A	10 A	17 A
Rated operational power AC-3 (1)				
	220-230-240 V	2.2 kW	4 kW	6.5 kW
	380-400 V	4 kW	7.5 kW	11 kW
 1500 r.p.m. 50 Hz 1800 r.p.m. 60 Hz 3-phase motors	**415 V**	4 kW	9 kW	11 kW
	440 V	4 kW	9 kW	15 kW
	500 V	5.5 kW	9 kW	15 kW
	690 V	5.5 kW	9 kW	15 kW
Rated making capacity AC-3		10 x Ie AC-3 acc. to IEC 60947-4-1		
Rated breaking capacity AC-3		8 x Ie AC-3 acc. to IEC 60947-4-1		
Short-circuit protection device for contactors				
without thermal overload relay - Motor protection excluded				
Ue ≤ 500 V AC - gG type fuse		25 A	32 A	50 A
Rated short-time withstand current Icw	**1 s**	250 A	300 A	400 A
at 40 °C ambient temperature,	**10 s**	100 A	140 A	210 A
in free air from a cold state	**30 s**	60 A	80 A	110 A
	1 min	50 A	60 A	90 A
	15 min	26 A	30 A	45 A
Power dissipation per pole	**Ie / AC-1**	0.8 W	1.2 W	1.8 W
	Ie / AC-3	0.1 W	0.35 W	0.6 W
Max. electrical switching frequency	**AC-1**	600 cycle/h		
	AC-3	1200 cycle/h		

(1) For the corresponding kW/A or hp/A values of 1500 r.p.m, 50 Hz or 1800 r.p.m, 60 Hz, 3-phase motors, see "Motor rated operational powers and currents".

Main pole - Utilization characteristics according to UL / CSA

Contactor types	AC operated	A9	A16	A26
Standards		UL 508, CSA C22.2 N°14		
Max. operational voltage		600 V		
UL / CSA general use rating				
600 V AC		21 A	30 A	40 A
With conductor cross-sectional area		AWG 10		AWG 8
Max. electrical switching frequency				
For general use		600 cycles/h		

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A45 ... A75 4-pole contactors
Technical data

Main pole - Utilization characteristics according to IEC

Contactor types	AC operated	A45	A50	A75
Standards		IEC 60947-1 / 60947-4-1 and EN 60947-1 / 60947-4-1		
Rated operational voltage Ue max.		1000 V		
Rated frequency (without derating)		50 / 60 Hz		
Conventional free-air thermal current Ith				
acc. to IEC 60947-4-1, open contactors, θ ≤ 40 °C		100 A	100 A	125 A
With conductor cross-sectional area		35 mm²	35 mm²	50 mm²
AC-1 Utilization category				
For air temperature close to contactor				
Ie / Rated operational current AC-1	**θ ≤ 40 °C**	70 A	100 A	125 A
Ue max. ≤ 690 V, 50/60 Hz	**θ ≤ 55 °C**	60 A	85 A	105 A
	θ ≤ 70 °C	50 A	70 A	85 A
With conductor cross-sectional area		25 mm²	35 mm²	50 mm²
AC-3 Utilization category				
For air temperature close to contactor θ ≤ 55 °C				
Ie / Max. rated operational current AC-3 (1)				
	220-230-240 V	40 A	53 A	75 A
	380-400 V	37 A	50 A	75 A
 3-phase motors	**415 V**	37 A	50 A	75 A
	440 V	37 A	45 A	70 A
	500 V	33 A	45 A	65 A
	690 V	25 A	35 A	46 A
	1000 V	–	23 A	28 A
Rated operational power AC-3 (1)				
	220-230-240 V	11 kW	15 kW	22 kW
	380-400 V	18.5 kW	22 kW	37 kW
 1500 r.p.m. 50 Hz 1800 r.p.m. 60 Hz 3-phase motors	**415 V**	18.5 kW	25 kW	40 kW
	440 V	22 kW	25 kW	40 kW
	500 V	22 kW	30 kW	45 kW
	690 V	22 kW	30 kW	40 kW
	1000 V	–	30 kW	37 kW
Rated making capacity AC-3		10 x Ie AC-3 acc. to IEC 60947-4-1		
Rated breaking capacity AC-3		8 x Ie AC-3 acc. to IEC 60947-4-1		
Short-circuit protection device for contactors				
without thermal overload relay - Motor protection excluded				
Ue ≤ 500 V AC - gG type fuse		80 A	100 A	160 A
Rated short-time withstand current Icw	**1 s**	1000 A		
at 40 °C ambient temperature,	**10 s**	650 A		
in free air from a cold state	**30 s**	370 A		
	1 min	250 A		
	15 min	110 A	110 A	135 A
Power dissipation per pole	**Ie / AC-1**	2.5 W	5 W	7 W
	Ie / AC-3	0.65 W	1.3 W	2 W
Max. electrical switching frequency	**AC-1**	600 cycles/h		
	AC-3	600 cycles/h		

(1) For the corresponding kW/A or hp/A values of 1500 r.p.m, 50 Hz or 1800 r.p.m, 60 Hz, 3-phase motors, see "Motor rated operational powers and currents".

Main pole - Utilization characteristics according to UL / CSA

Contactor types	AC operated	A45	A50	A75
Standards		UL 508, CSA C22.2 N°14		
Max. operational voltage		600 V		
UL / CSA general use rating				
600 V AC		65 A	80 A	105 A
With conductor cross-sectional area		AWG 6	AWG 4	AWG 2
Max. electrical switching frequency				
For general use		600 cycles/h		

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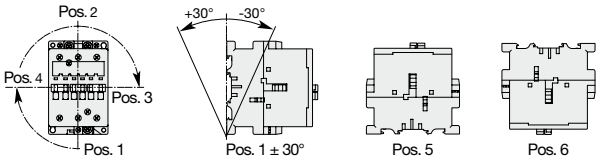
A9 ... A26 4-pole contactors
Technical data

Magnet system characteristics

Contactor types		AC operated	A9	A16	A26
Coil operating limits		**AC supply**	at θ ≤ 55 °C 0.85...1.1 x Uc Please also refer to "Mounting characteristics and conditions for use"		
acc. to IEC 60947-4-1					
AC control voltage 50/60 Hz					
Rated control circuit voltage Uc		**at 50 Hz**	24...690 V		
		at 60 Hz	24...690 V		
Coil consumption	**Average pull-in value**	**50 Hz**	70 VA		120 VA
		60 Hz	80 VA		140 VA
		50/60 Hz (1)	74 VA / 70 VA		125 VA / 120 VA
	Average holding value	**50 Hz**	8 VA / 2 W		12 VA / 3 W
		60 Hz	8 VA / 2 W		12 VA / 3 W
		50/60 Hz (1)	8 VA / 2 W		12 VA / 3 W
Drop-out voltage			approx. 40...65 % of Uc		
Operating time					
Between coil energization and:		**N.O. contact closing**	10...26 ms		8...21 ms
		N.C. contact opening	7...21 ms		6...18 ms
Between coil de-energization and:		**N.O. contact opening**	4...11 ms		4...11 ms
		N.C. contact closing	9...16 ms		7...14 ms

(1) 50/60 Hz coils: see "Coil voltage code table".

Mounting characteristics and conditions for use

Contactor types		AC operated	A9	A16	A26
Mounting positions					
			Max. N.O. or N.C. built-in and add-on N.O. or N.C. auxiliary contacts: see accessory fitting details for 4-pole contactor A9 ... A26		
Control voltage / Ambient temperature					
Mounting positions	1, 1±30°, 2, 3, 4, 5	**at θ ≤ 55 °C**	0.85...1.1 x Uc		
		at θ ≤ 70 °C	Uc		
	6	**at θ ≤ 55 °C**	0.95...1.1 x Uc		
		at θ ≤ 70 °C	unauthorized		
Mounting distances			The contactors can be assembled side by side		
Fixing					
On rail according to IEC 60715, EN 60715			35 x 7.5 mm or 35 x 15 mm		
By screws (not supplied)			2 x M4 screws placed diagonally		

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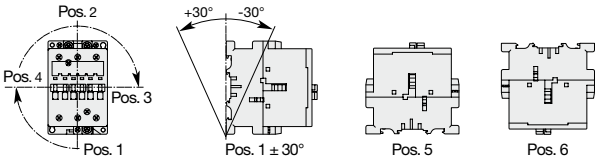
A45 ... A75 4-pole contactors
Technical data

Magnet system characteristics

Contactor types		AC operated	A45	A50	A75
Coil operating limits		**AC supply**	At θ ≤ 55 °C 0.85...1.1 x Uc		
acc. to IEC 60947-4-1			Please also refer to "Mounting characteristics and conditions for use"		
AC control voltage					
Rated control circuit voltage Uc		**at 50 Hz**	24…690 V		
		at 60 Hz	24…690 V		
Coil consumption	**Average pull-in value**	**50 Hz**	180 VA		
		60 Hz	210 VA		
		50/60 Hz (1)	190 VA / 180 VA		
	Average holding value	**50 Hz**	18 VA / 5.5 W		
		60 Hz	18 VA / 5.5 W		
		50/60 Hz (1)	18 VA / 5.5 W		
Drop-out voltage			approx. 40...65 % of Uc		
Operating time					
Between coil energization and:		**N.O. contact closing**	8…27 ms		
		N.C. contact opening	7…22 ms		
Between coil de-energization and:		**N.O. contact opening**	4…11 ms		
		N.C. contact closing	7…14 ms		

(1) 50/60 Hz coils: see "Coil voltage code table".

Mounting characteristics and conditions for use

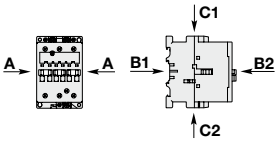
Contactor types		AC operated	A45	A50	A75
Mounting positions					
			Pos. 5 unauthorized for A45-22-00, A75-22-00		
			Max. add-on N.O. or N.C. auxiliary contacts: see accessory fitting details for 4-pole contactor A45 ... A75		
Control voltage / Ambient temperature					
Mounting positions (1)	1, 1±30°, 2, 3, 4, 5	**at θ ≤ 55 °C**	0.85…1.1 x Uc		
		at θ ≤ 70 °C	Uc		
	6	**at θ ≤ 55 °C**	0.95…1.1 x Uc		
		at θ ≤ 70 °C	Unauthorized		
Mounting distances			The contactors can be assembled side by side		
Fixing					
On rail according to IEC 60715, EN 60715			35 x 15 mm or 75 x 25 mm		
By screws (not supplied)			2 x M6 screws placed diagonally		

(1) For 60 Hz coil voltage: (only for devices fitted with CA 5-.. and CAL 5-11 auxiliary contacts).
– A45-40-00, A50-40-00 and A75-40-00 contactors.
Mounting positions 1 to 5 and ambient temperature ≤ 55 °C: tolerance reduced to 0.9...1.1 Uc (instead of 0.85...1.1 Uc) for coil voltage codes 70 to 79 and 80 to 89.
– A45-22-00 and A75-22-00 contactors.
Mounting positions 1 to 4 and ambient temperature ≤ 55 °C: tolerance reduced to 0.9...1.1 Uc (instead of 0.85...1.1 Uc) for coil voltage codes 70 to 79 and 80 to 89.
For mounting position 6 or ambient temperature of 55 to 70 °C the information given on this page remains applicable.

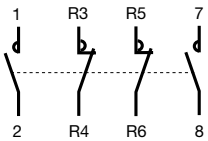
1SBC101550S0201 - Rev. B

A9 ... A26 4-pole contactors
Technical data

General technical data

Contactor types	AC operated	A9	A16	A26
Rated insulation voltage Ui				
acc. to IEC 60947-4-1		1000 V		
acc. to UL / CSA		600 V		
Rated impulse withstand voltage Uimp.		8 kV		
Ambient air temperature close to contactor				
Operation in free air		-40...+70 °C		
Storage		-60...+80 °C		
Climatic withstand		acc. to IEC 60068-2-30 and 60068-2-11 - UTE C 63-100 specification II		
Maximum operating altitude (without derating)		3000 m		
Mechanical durability				
Number of operating cycles		10 millions operating cycles		
Max. switching frequency		3600 cycles/h		
Shock withstand				
acc. to IEC 60068-2-27 and EN 60068-2-27				
Mounting position 1				
	**Shock direction**	1/2 sinusoidal shock for 11 ms: no change in contact position, closed or open position		
	A	20 g		
	B1	10 g closed position / 5 g open position		
	B2	15 g		
	C1	20 g		
	C2	20 g		

Remark for 4-pole contactors fitted with 2 N.O. + 2 N.C. main poles

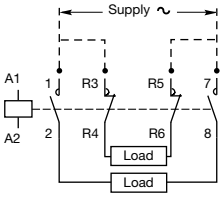


These contactors are suitable for controlling 2 separate circuits, i.e. 2 loads with 2 separate supplies, or 1 circuit comprising 2 separate loads with a single supply (see diagrams below). When the contactor operates there is no mechanical overlapping between the N.O. poles and the N.C. poles: BREAK before MAKE.

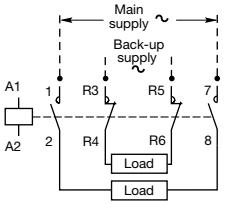
These contactors are not suitable for a reversing starter or for controlling a single load from 2 separate supplies.

Block diagrams

– Single supply and 2 separate loads



– 2 separate supplies and 2 separate loads



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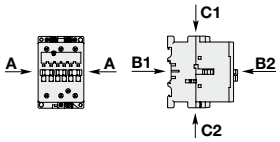
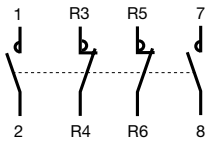
A45 ... A75 4-pole contactors
Technical data

General technical data

Contactor types	AC operated	A45	A50	A75
Rated insulation voltage Ui				
acc. to IEC 60947-4-1		1000 V		
acc. to UL / CSA		600 V		
Rated impulse withstand voltage Uimp.		8 kV		
Ambient air temperature close to contactor				
Operation in free air		-40...+70 °C		
Storage		-60...+80 °C		
Climatic withstand		acc. to IEC 60068-2-30 and 60068-2-11 - UTE C 63-100 specification II		
Maximum operating altitude (without derating)		3000 m		
Mechanical durability				
Number of operating cycles		10 millions operating cycles		
Max. switching frequency		3600 cycles/h		
Shock withstand				
acc. to IEC 60068-2-27 and EN 60068-2-27				
Mounting position 1				
	**Shock direction**	1/2 sinusoidal shock for 11 ms: no change in contact position, closed or open position		
	A	20 g		
	B1	10 g closed position / 5 g open position		
	B2	15 g		
	C1	20 g		
	C2	20 g		

Remark for 4-pole contactors fitted with 2 N.O. + 2 N.C. main poles

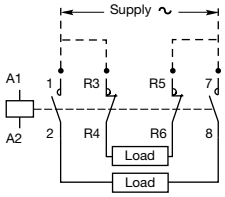


These contactors are suitable for controlling 2 separate circuits, i.e. 2 loads with 2 separate supplies, or 1 circuit comprising 2 separate loads with a single supply (see diagrams below). When the contactor operates there is no mechanical overlapping between the N.O. poles and the N.C. poles: BREAK before MAKE.

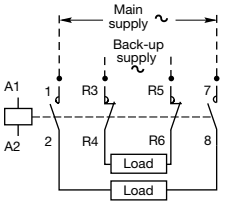
These contactors are not suitable for a reversing starter or for controlling a single load from 2 separate supplies.

Block diagrams

– Single supply and 2 separate loads



– 2 separate supplies and 2 separate loads



1SBC101886S0201

A9 ... A26 4-pole contactors
Technical data

Connecting characteristics

Contactor types			AC operated	A9	A16	A26
Main terminals				 Screw terminals with cable clamp		
Connection capacity (min. ... max.)						
Main conductors (poles)						
Rigid	Solid (≤ 4 mm²)		**1 x**	1...4 mm²		1.5...6 mm²
	Stranded (≥ 6 mm²)		**2 x**	1...4 mm²		1.5...6 mm²
Flexible with ferrule			**1 x**	0.75...2.5 mm²		0.75...4 mm²
			2 x	0.75...2.5 mm²		0.75...4 mm²
Bars or lugs			**L <**	7.7 mm		10 mm
			I <	3.7 mm		4.2 mm
Connection capacity acc. to UL / CSA			**1 or 2 x**	AWG 18...10		AWG 12...8
Tightening torque	Recommended			1 Nm / 9 lb.in		1.7 Nm / 15 lb.in
	Max.			1.2 Nm		2.2 Nm
Auxiliary conductors (coil terminals)						
Rigid solid			**1 x**	1...4 mm²		
			2 x	1...4 mm²		
Flexible with ferrule			**1 x**	0.75...2.5 mm²		
			2 x	0.75...2.5 mm²		
Lugs			**L <**	7.7 mm		(1)
			I <	3.7 mm		(1)
Connection capacity acc. to UL / CSA			**1 or 2 x**	AWG 18...14		
Tightening torque	Recommended			1 Nm / 9 lb.in		
	Max.			1.2 Nm		
Degree of protection acc. to IEC 60947-1 / EN 60947-1 and IEC 60529 / EN 60529						
Main terminals				IP20		
Coil terminals				IP20		
Screw terminals				Delivered in open position, screws of unused terminals must be tightened		
Main terminals				M3.5		M4
		Screwdriver type		Flat Ø 5.5 / Pozidriv 2		
Coil terminals				M3.5		
		Screwdriver type		Flat Ø 5.5 / Pozidriv 2		

(1) L ≤ 8 and I > 3.7 for coil terminals - L ≤ 10 and I > 4.2 for built-in auxiliary terminals.

1SBC101867S0201

A45 ... A75 4-pole contactors
Technical data

Connecting characteristics

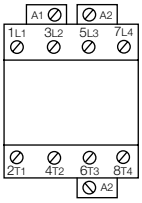
Contactor types			AC operated	A45	A50	A75
Main terminals				 Screw terminals with single connector (13 x 10 mm)		
Connection capacity (min. ... max.)						
Main conductors (poles)						
Rigid	Solid (≤ 4 mm²)		**1 x**	6...50 mm²		
	Stranded (≥ 6 mm²)		**2 x**	6...25 mm²		
Flexible with ferrule			**1 x**	6...35 mm²		
			2 x	6...16 mm²		
Bars or lugs			**L <**	–		
			I <	–		
Connection capacity acc. to UL / CSA			**1 or 2 x**	AWG 8...1		
Tightening torque	Recommended			4.00 Nm / 35 lb.in		
	Max.			4.50 Nm		
Auxiliary conductors (coil terminals)						
Rigid solid			**1 x**	1...4 mm²		
			2 x	1...4 mm²		
Flexible with ferrule			**1 x**	1...2.5 mm²		
			2 x	0.75...2.5 mm²		
Lugs			**L <**	8 mm		
			I <	3.7 mm		
Connection capacity acc. to UL / CSA			**1 or 2 x**	AWG 18...14		
Tightening torque	Recommended			1.00 Nm / 9 lb.in		
	Max.			1.20 Nm		
Degree of protection acc. to IEC 60947-1 / EN 60947-1 and IEC 60529 / EN 60529						
Main terminals				IP10		
Coil terminals				IP20		
Screw terminals				Delivered in open position, screws of unused terminals must be tightened		
Main terminals				M6		
		Screwdriver type		Flat Ø 6.5 / Pozidriv 2		
Coil terminals				M3.5		
		Screwdriver type		Flat Ø 5.5 / Pozidriv 2		

1SBC101887S0201

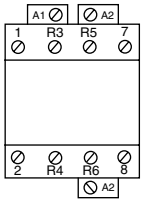
A9 ... A75 4-pole contactors
Terminal marking and positioning

A9 ... A75 contactors - AC operated

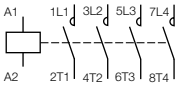
Standard devices without addition of auxiliary contacts



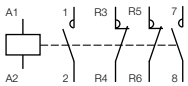
A9 ... A75-40-00



A9 ... A75-22-00



A9 ... A75-40-00



A9 ... A75-22-00

1SBC101888S0201

N 4-pole contactor relays
AC operated



N40E

Description

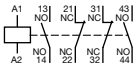
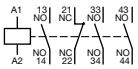
N contactor relays are used for switching auxiliary circuits and control circuits.

These contactor relays are of the block type design with:

– 4 poles. Contactor relays have mechanically linked auxiliary contact elements
– control circuit: AC operated
– add-on auxiliary contact blocks for front or side mounting and a wide range of accessories.

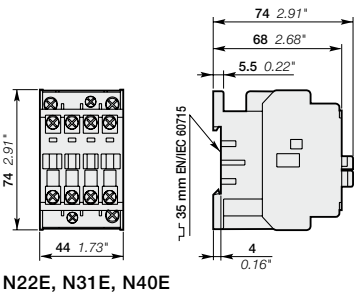
3

Ordering details

Number of contacts	Rated control circuit voltage Uc (1) V 50 Hz	V 60 Hz	Type	Order code		Weight Pkg (1 pce) kg
	24	24	N22E	1SBH141001R8122		0.340
	48	48	N22E	1SBH141001R8322		0.340
	110	110...120	N22E	1SBH141001R8422		0.340
	220...230	230...240	N22E	1SBH141001R8022		0.340
	230...240	240...260	N22E	1SBH141001R8822		0.340
	380...400	400...415	N22E	1SBH141001R8522		0.340
	400...415	415...440	N22E	1SBH141001R8622		0.340
	24	24	N31E	1SBH141001R8131		0.340
	48	48	N31E	1SBH141001R8331		0.340
	110	110...120	N31E	1SBH141001R8431		0.340
	220...230	230...240	N31E	1SBH141001R8031		0.340
	230...240	240...260	N31E	1SBH141001R8831		0.340
	380...400	400...415	N31E	1SBH141001R8531		0.340
	400...415	415...440	N31E	1SBH141001R8631		0.340
	24	24	N40E	1SBH141001R8140		0.340
	48	48	N40E	1SBH141001R8340		0.340
	110	110...120	N40E	1SBH141001R8440		0.340
	220...230	230...240	N40E	1SBH141001R8040		0.340
	230...240	240...260	N40E	1SBH141001R8840		0.340
	380...400	400...415	N40E	1SBH141001R8540		0.340
	400...415	415...440	N40E	1SBH141001R8640		0.340

(1) Other control voltages see voltage code table.

Main dimensions mm, *inches*

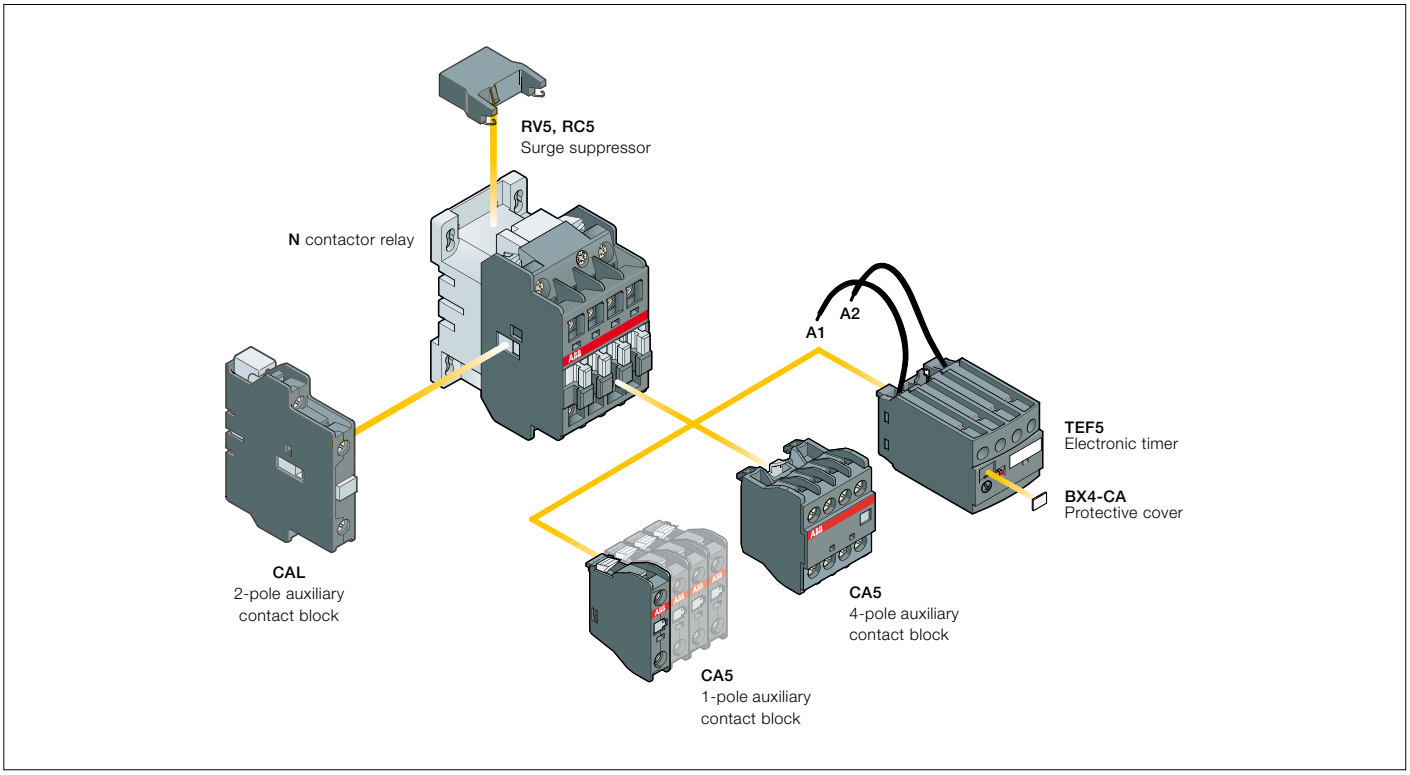


N22E, N31E, N40E

1SBC101858S0201

N 4-pole contactor relays
Main accessories

Contactor and main accessories (other accessories available)



Main accessory fitting details

Many configurations of accessories are possible depending on whether these are front-mounted or side-mounted.

Contactor types	Main poles	Front-mounted accessories						Side-mounted accessories	
		Auxiliary contact blocks				Electronic timer		Auxiliary contact blocks	
		1-pole CA5		4-pole CA5		TEF5		2-pole CAL5-11	
N	2 2 E (1) 3 1 E (1) 4 0 E	1 to 4 x CA5	or	1 x CA5 (4-pole)	or	1 x TEF5	+	1 to 2 x CAL5-11	

(1) 2 N.C. front mounted auxiliary contacts maximum in mounting position 5.

1SBC101889S0201

N 4-pole contactor relays
Main accessories


1SBC580992F0301

CA5-10


1SBC573752F0301

CAL5-11


1SBC101396F0014

TEF5-OFF


1SBC574001F0301

RV5/50

Ordering details (1)

For contactors	Auxiliary contacts	Type	Order code		Pkg qty	Weight (1 pce) kg
Front-mounted instantaneous auxiliary contact blocks						
4-pole N	1 –	CA5-10	1SBN010010R1010		10	0.014
	– 1	CA5-01	1SBN010010R1001		10	0.014
	2 2	CA5-22N	1SBN010040R1222		2	0.060
Side-mounted instantaneous auxiliary contact block						
N	1 1	CAL5-11	1SBN010020R1011		2	0.050

For contactors	Time delay range selected by switch	Delay type	Auxiliary contacts	Type	Order code		Pkg qty	Weight (1 pce) kg
Electronic timers								
4-pole N	0.1...1 s 1...10 s 10...100 s	ON-delay	1 1	TEF5-ON	1SBN020312R1000		1	0.065
		OFF-delay	1 1	TEF5-OFF	1SBN020314R1000		1	0.065

Note: Rated control circuit voltage Uc 24...240 V 50/60 Hz or DC.

For contactors	Rated control circuit voltage Uc V	AC	DC	Type	Order code		Pkg qty	Weight (1 pce) kg
Surge suppressors								
N	24...50	●	●	RV5/50	1SBN050010R1000		2	0.015
	50...133	●	●	RV5/133	1SBN050010R1001		2	0.015
	110...250	●	●	RV5/250	1SBN050010R1002		2	0.015
	250...440	●	●	RV5/440	1SBN050010R1003		2	0.015
N	24...50	●	–	RC5-1/50	1SBN050100R1000		2	0.012
	50...133	●	–	RC5-1/133	1SBN050100R1001		2	0.012
	110...250	●	–	RC5-1/250	1SBN050100R1002		2	0.012
	250...440	●	–	RC5-1/440	1SBN050100R1003		2	0.012

(1) See "Main accessory fitting details" table.

N contactor relays
Technical data

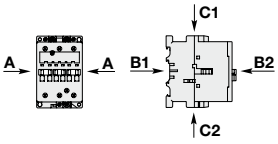
Contact utilization characteristics according to IEC

Contactor relay types	AC operated	N
Standards		IEC 60947-1 / 60947-5-1 and EN 60947-1 / 60947-5-1
Rated operational voltage Ue max.		690 V
Rated frequency (without derating)		50 / 60 Hz
Conventional free-air thermal current Ith $\theta \leq 40$ °C		16 A
Ie / Rated operational current AC-15		
acc. to IEC 60947-5-1	24-127 V 50/60 Hz	6 A
	230-240 V 50/60 Hz	4 A
	400-415 V 50/60 Hz	3 A
	500 V 50/60 Hz	2 A
	690 V 50/60 Hz	2 A
Rated making capacity AC-15		10 x Ie AC-15 acc. to IEC 60947-5-1
Rated breaking capacity AC-15		10 x Ie AC-15 acc. to IEC 60947-5-1
Ie / Rated operational current DC-13		
acc. to IEC 60947-5-1	24 V DC	6 A / 144 W
	48 V DC	2.8 A / 134 W
	72 V DC	1 A / 72 W
	110 V DC	0.55 A / 60 W
	125 V DC	0.55 A / 69 W
	220 V DC	0.30 A / 66 W
	250 V DC	0.30 A / 75 W
Short-circuit protection device for contactors		
Ue ≤ 500 V AC - gG type fuse		10 A
Rated short-time withstand current Icw		
at 40 °C ambient temperature, in free air from a cold state	for 1.0 s	100 A
	for 0.1 s	140 A
Minimum switching capacity		17 V / 5 mA
with failure rate acc. to IEC 60947-5-4		10^{-6}
Non-overlapping time between N.O. and N.C. contacts		≥ 2 ms
Power dissipation per pole at 6 A		0.1 W
Max. electrical switching frequency	AC-15	1200 cycles/h

Contact utilization characteristics according to UL / CSA

Contactor relay types	AC operated	N
Standards		UL 508, CSA C22.2 N°14
Max. operational voltage		600 V AC
Pilot duty		A600, Q300

General technical data

Contactor relay types	AC operated	N
Rated insulation voltage Ui		
acc. to IEC 60947-5-1		690 V
acc. to UL / CSA		600 V
Rated impulse withstand voltage Uimp.		8 kV
Ambient air temperature		
Operation in free air		-40...+70 °C
Storage		-60...+80 °C
Climatic withstand		acc. to IEC 60068-2-30 and 60068-2-11 - UTE C 63-100 specification II
Maximum operating altitude (without derating)		3000 m
Mechanical durability		
Number of operating cycles		≥ 20 millions operating cycles
Max. switching frequency		6000 cycles/h
Shock withstand		
acc. to IEC 60068-2-27 and EN 60068-2-27		
Mounting position 1		
	Shock direction	1/2 sinusoidal shock for 11 ms: no change in contact position, closed or open position
	A	20 g
	B1	5 g
	B2	15 g
	C1	20 g
	C2	20 g

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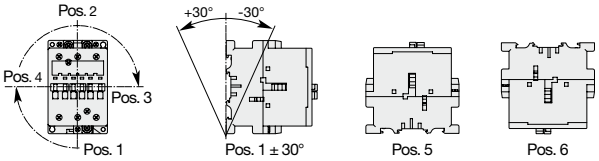
N contactor relays
Technical data

Magnet system characteristics

Contactor relay types		**AC operated**	**N**
Coil operating limits		**AC supply**	at θ ≤ 55 °C 0.85...1.1 x Uc
acc. to IEC 60947-4-1			Please also refer to "Mounting characteristics and conditions for use"
AC control voltage 50/60 Hz			
Rated control circuit voltage Uc		**at 50 Hz**	24...690 V
		at 60 Hz	24...690 V
Coil consumption	**Average pull-in value**	**50 Hz**	70 VA
		60 Hz	80 VA
		50/60 Hz (1)	74 VA / 70 VA
	Average holding value	**50 Hz**	8 VA / 2 W
		60 Hz	8 VA / 2 W
		50/60 Hz (1)	8 VA / 2 W
Drop-out voltage			approx. 40...65 % of Uc
Operating time			
Between coil energization and:		**N.O. contact closing**	10...26 ms
		N.C. contact opening	7...21 ms
Between coil de-energization and:		**N.O. contact opening**	4...11 ms
		N.C. contact closing	9...16 ms

(1) 50/60 Hz coils: see "Coil voltage code table".

Mounting characteristics and conditions for use

Contactor relay types		**AC operated**	**N**
Mounting positions			
			Max. N.O. or N.C. built-in and add-on N.O. or N.C. auxiliary contacts: see accessory fitting details for contactor relays
Control voltage / Ambient temperature			
Mounting positions	1, 1±30°, 2, 3, 4, 5	**at θ ≤ 55 °C**	0.85...1.1 x Uc
		at θ ≤ 70 °C	Uc
	6	**at θ ≤ 55 °C**	0.95...1.1 x Uc
		> 55 °C	unauthorized
Mounting distances			The contactors can be assembled side by side
Fixing			
On rail according to IEC 60715, EN 60715			35 x 7.5 mm or 35 x 15 mm
By screws (not supplied)			2 x M4 screws placed diagonally

Connecting characteristics

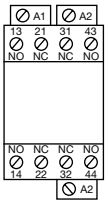
Contactor relay types		**AC operated**	**N**
Main terminals			
			Screw terminals with cable clamp
Connection capacity (min. ... max.)			
Main conductors (poles)			
Rigid		**1 x**	1...4 mm²
		2 x	1...4 mm²
Flexible with ferrule		**1 x**	0.75...2.5 mm²
		2 x	0.75...2.5 mm²
Bars or lugs	Pole terminals	**L <**	7.7 mm
		I <	3.7 mm
	Coil terminals	**L <**	8 mm
		I <	3.7 mm
Connection capacity acc. to UL / CSA		**1 or 2 x**	AWG 18...14
Tightening torque	Recommended		1 Nm / 9 lb.in
	Max.		1.20 Nm
Degree of protection			
acc. to IEC 60947-1 / EN 60947-1 and IEC 60529 / EN 60529			
All terminals			IP20
Screw terminals			Delivered in open position, screws of unused terminals must be tightened
All terminals			M3.5
		Screwdriver type	Flat Ø 5.5 / Pozidriv 2

1SBC101869S0201

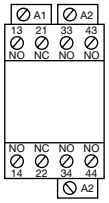
N 4-pole contactor relays
Terminal marking and positioning

N contactor relays - AC operated

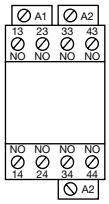
Standard devices without addition of auxiliary contacts



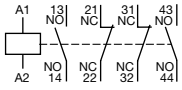
N22E



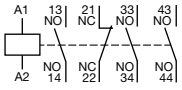
N31E



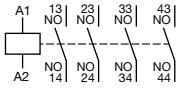
N40E



N22E

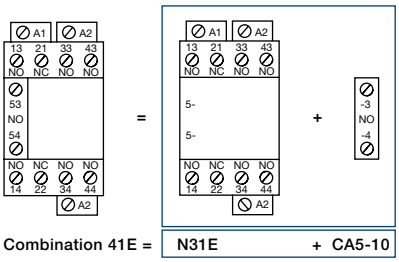


N31E

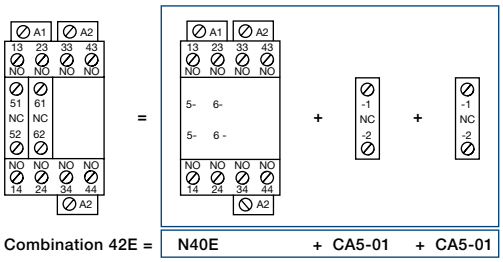


N40E

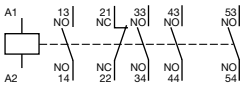
Other possible contact combinations with auxiliary contacts added by the user



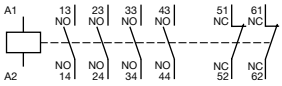
Combination 41E = N31E + CA5-10



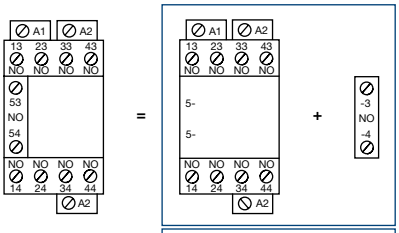
Combination 42E = N40E + CA5-01 + CA5-01



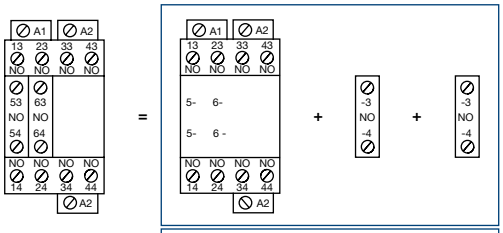
Combination 41E



Combination 42E



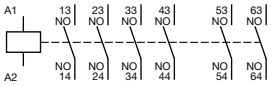
Combination 50E = N40E + CA5-10



Combination 60E = N40E + CA5-10 + CA5-10



Combination 50E



Combination 60E

1SBC101870S0201

Notes

Auxiliary contact blocks



CA5-10

3



CA5-40E



CAL5-11



CAL18-11

Description

The auxiliary contact blocks are used for the operation of auxiliary circuits and control circuits for standard industrial environments.

Types of auxiliary contact blocks for front mounting:

– CA5 1 or 4-pole block, instantaneous with N.O., N.C. contacts

– CC5 1-pole block, with N.O. leading contact or N.C. lagging contact.

Select the 4-pole auxiliary contact blocks CA5 type, according to the contactor type for compliance with the standard requirements (see "Terminal marking and positioning").

Types of auxiliary contact blocks for side mounting:

– CAL 2-pole block instantaneous N.O. + N.C. contacts.

For clipping onto the right- and/or left-hand side of the contactors.

The CAL18-11B is a second block for mounting in addition to a first CAL18-11 block, right- and/or left-hand of the A145 ... A300 contactors.

The auxiliary contact blocks are equipped with screw type connecting terminals delivered open, protected against accidental direct contact and bear the corresponding function marking.

Ordering details (1)

For contactors	Auxiliary contacts				Type	Order code		Pkg qty	Weight (1 pce) kg
Front-mounted instantaneous auxiliary contact blocks, 1-pole									
A9 ... A110 N 4-pole	1	0	–	–	CA5-10	1SBN010010R1010		10	0.014
	0	1	–	–	CA5-01	1SBN010010R1001		10	0.014
	–	–	1	0	CC5-10	1SBN010011R1010		10	0.014
	–	–	0	1	CC5-01	1SBN010011R1001		10	0.014
Front-mounted instantaneous auxiliary contact blocks, 4-pole									
A9 ... A26-40-00 A9 ... A26-22-00 A45 ... A110	2	2	–	–	CA5-22E	1SBN010040R1022		2	0.060
	3	1	–	–	CA5-31E	1SBN010040R1031		2	0.060
	4	0	–	–	CA5-40E	1SBN010040R1040		2	0.060
	0	4	–	–	CA5-04E	1SBN010040R1004		2	0.060
	1	1	1	1	CA5-11/11E	1SBN010040R1018		2	0.060
A9 ... A40-30-10	2	2	–	–	CA5-22M	1SBN010040R1122		2	0.060
	3	1	–	–	CA5-31M	1SBN010040R1131		2	0.060
	1	3	–	–	CA5-13M	1SBN010040R1113		2	0.060
	0	4	–	–	CA5-04M	1SBN010040R1104		2	0.060
	1	1	1	1	CA5-11/11M	1SBN010040R1118		2	0.060
A9 ... A40-30-01	2	2	–	–	CA5-22U	1SBN010040R1322		2	0.060
	3	1	–	–	CA5-31U	1SBN010040R1331		2	0.060
	4	0	–	–	CA5-40U	1SBN010040R1340		2	0.060
	0	4	–	–	CA5-04U	1SBN010040R1304		2	0.060
N 4-pole	2	2	–	–	CA5-22N	1SBN010040R1222		2	0.060
	3	1	–	–	CA5-31N	1SBN010040R1231		2	0.060
	1	3	–	–	CA5-13N	1SBN010040R1213		2	0.060
	0	4	–	–	CA5-04N	1SBN010040R1204		2	0.060
	4	0	–	–	CA5-40N	1SBN010040R1240		2	0.060
Side-mounted instantaneous auxiliary contact blocks, 2-pole									
A9 ... A75 N	1	1	–	–	CAL5-11	1SBN010020R1011		2	0.050
A9 ... A16 N	–	–	1	1	CCL5-11	1SBN011421R1008		2	0.050
A95 ... A300	1	1	–	–	CAL18-11	1SFN010720R1011		2	0.050
A145 ... A300 (2)	1	1	–	–	CAL18-11B	1SFN010720R3311		2	0.050

(1) For each contactor type, refer to "Accessory fitting details" table.
(2) 2 blocks CAL18-11 + 2 blocks CAL18-11B.

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Auxiliary contact blocks

Technical data

Types	Front mounted 1-pole **CA5**, 1-pole **CC5**, 4-pole **CA5**	Side mounted **CAL5-11, CCL5-11**	**CAL18-11, CAL18-11B**

Contact utilization characteristics according to IEC

Standards		IEC 60947-5-1 and EN 60947-5-1		
Rated insulation voltage Ui				
acc. to IEC 60947-5-1		690 V		
Rated operational voltage Ue max.		24...690 V AC		
Conventional thermal current Ith - θ ≤ 40 °C		16 A		
Ie / Rated operational current AC-15				
acc. to IEC 60947-5-1	**24-127 V 50/60 Hz**	6 A		
	220-240 V 50/60 Hz	4 A		
	380-440 V 50/60 Hz	3 A		
	500-690 V 50/60 Hz	2 A		
Making capacity		10 x Ie AC-15 acc. to IEC 60947-5-1		
Breaking capacity		10 x Ie AC-15 acc. to IEC 60947-5-1		
Ie / Rated operational current DC-13				
acc. to IEC 60947-5-1	**24 V DC**	6 A / 144 W		
	48 V DC	2.8 A / 134 W		
	72 V DC	1 A / 72 W		
	110 V DC	0.55 A / 60 W		
	125 V DC	0.55 A / 69 W		
	220 V DC	0.3 A / 66 W		
	250 V DC	0.3 A / 75 W		
Short-circuit protection device gG type fuse		10 A		
Rated short-time withstand current Icw	**for 1.0 s**	100 A		
θ = 40 °C	**for 0.1 s**	140 A		
Minimum switching capacity				
A40 ... A75 contactors		17 V / 1 mA		–
with failure rate acc. to IEC 60947-5-4		≤ 10^{-7}		–
A95 ... A110 contactors		24 V / 50 mA	–	24 V / 50 mA (0.5 million of operating cycles)
with failure rate acc. to IEC 60947-5-4		–	–	≤ 10-6
Power dissipation per pole at 6 A		0.1 W		0.15 W
Mechanical durability				
Number of operating cycles		10 millions (A9 ... A75) 3 millions (A95 ... A110)	10 millions	5 millions (A95 ... A185) 3 millions (A210 ... A300)
Max. switching frequency		3600 cycles/h		
Electrical durability				
Number of operating cycles		see "Electrical durability" curves		
Max. switching frequency	**AC-15**	1200 cycles/h		
	DC-13	900 cycles/h		

Contact utilization characteristics according to UL / CSA

Standards	UL 508, CSA C22.2 N°14
Max. operational voltage	600 V AC, 250 V DC
Pilot duty	A600, Q300
AC thermal rated current	10 A

Connecting characteristics

Connection capacity (min. ... max.)				
Rigid solid	**1 x**	1...4 mm²		
	2 x	1...4 mm²		
Flexible with ferrule	**1 x**	0.75...2.5 mm²		
	2 x	0.75...2.5 mm²		
Lugs	**L ≤**	7.7 mm	8 mm	
	I >	3.7 mm	3.7 mm	
Connection capacity acc. to UL / CSA	**1 or 2 x**	AWG 18...14		
Tightening torque		1 Nm / 9 lb.in		
Degree of protection	**Terminals**	IP20		
acc. to IEC 60947-1 / EN 60947-1 and IEC 60529 / EN 60529				
Screw terminals		Delivered in open position, screws of unused terminals must be tightened		
All terminals		M3.5		
Screwdriver type		Flat Ø 5.5 / Pozidriv 2		

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Add-on auxiliary contacts
Terminal marking and positioning

1-pole auxiliary contacts



CA5-01



CA5-10

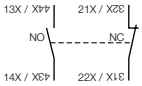


CC5-01

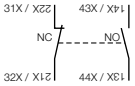


CC5-10

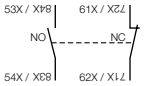
2-pole auxiliary contacts



CAL5-11, CAL18-11
(L. h. s. mounted)



CAL5-11, CAL18-11
(R. h. s. mounted)



CAL18-11B
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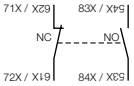
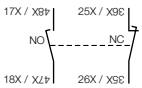
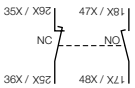


CAL18-11B
(R. h. s. mounted)

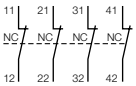


CCL5-11
(L. h. s. mounted)



CCL5-11
(R. h. s. mounted)

4-pole auxiliary contacts



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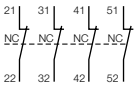

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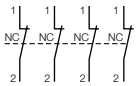

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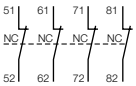

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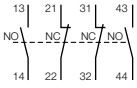

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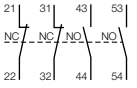

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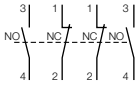

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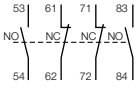

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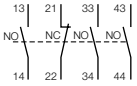

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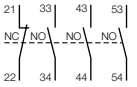

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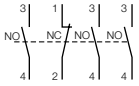

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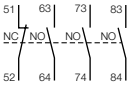

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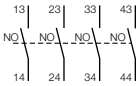
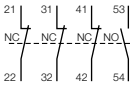
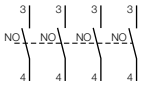


CA5-40E



CA5-13M



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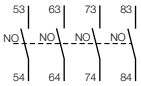

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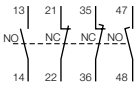
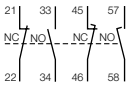
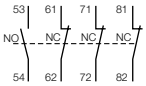


CA5-11/11E



CA5-11/11M



CA5-13N

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Electronic timers



TEF5-OFF

Description

TEF5 frontal electronic timers are used for realizing timing function and are available in ON-delay and OFF-delay versions.

Compact solution in cabinet compared to separate timers

TEF5 electronic timers are front-mounted and locked on A contactors or N contactor relays.
A mechanical indicator allows to show the state of the contactor.

TEF5 electronic timers are supplied by direct wiring to the coil terminals A1 - A2 of the contactor or contactor relay. A varistor is integrated on the timer to offer a built-in protection against surges in the contactor coil.

Available for a wide control voltage range 24...240 V AC / DC

TEF5-ON or TEF5-OFF allow time-delayed functions up to 100 s in 3 distinct time ranges, independently of the control system. The time delay ranges are selected by a switch and the time delay can be adjusted by means of a rotary switch. The timing function is activated by closing or opening the device on which the timer is mounted. The OFF-delay version operates without additional control supply.

Ordering details

For contactors, contactor relays	Time delay range selected by switch	Delay type	Rated control circuit voltage Uc V 50/60 Hz or DC	Auxiliary contacts	Type	Order code		Weight Pkg (1 pce) kg
A9 ... A75 N	0.1...1 s 1...10 s 10...100 s	ON-delay	24...240	1 1	TEF5-ON	1SBN020312R1000		0.065
		OFF-delay	24...240	1 1	TEF5-OFF	1SBN020314R1000		0.065

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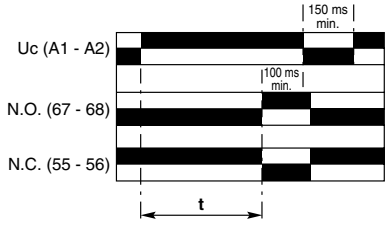
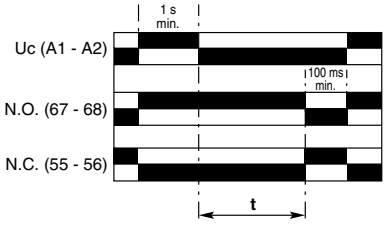
Electronic timers
Technical data

Contact utilization characteristics according to IEC

Types			TEF5-ON	TEF5-OFF
Standards			IEC 60947-5-1 and EN 60947-5-1	
Rated insulation voltage Ui				
acc. to IEC 60947-5-1			400 V	
Rated impulse withstand voltage Uimp			4 kV	
Rated operational voltage Ue max.			240 V	
Rated frequency (without derating)			50 / 60 Hz	
Conventional thermal current Ith - θ ≤ 40 °C			5 A	
Ie / Rated operational current AC-15				
acc. to IEC 60947-5-1		**24-127 V 50/60 Hz**	3 A	
		220-240 V 50/60 Hz	1.5 A	
Making capacity			10 x Ie AC-15 acc. to IEC 60947-5-1	
Breaking capacity			10 x Ie AC-15 acc. to IEC 60947-5-1	
Ie / Rated operational current DC-13				
acc. to IEC 60947-5-1		**24 V DC**	1 A / 24 W	
Short-circuit protection device gG type fuse			6 A	
Rated short-time withstand current Icw		**for 1.0 s**	8 A	
θ = 40 °C		**for 0.1 s**	8 A	
Minimum switching capacity			12 V / 3 mA	
with failure rate acc. to IEC 60947-5-4		**24 V DC**	10^{-7}	
Power dissipation per pole at 3 A			0.1 W	
Function diagram			ON-delay	OFF-delay
				
			Bistable relay inside. Before use, once apply Uc then switch it off in order to initialize position of the contacts.	
Control circuit voltage				
AC control voltage	Rated control circuit voltage Uc		24...240 V AC	
50/60 Hz	Average consumption		1.5 mA RMS	1 mA RMS
DC control voltage	Rated control circuit voltage Uc		24...240 V DC	
	Average consumption		1.5 mA	1 mA
Rated frequency limits			50 / 60 Hz	
Supply voltage range			0.85...1.1 x Uc (at θ ≤ 70 °C)	
Overvoltage protection			Varistor included	
Time delay range (t) selected by switch		**0.1...1 s**		
		1...10 s		
		10...100 s		
On-load reiteration accuracy under constant conditions			≤ 1 %	
Minimum ON period			0.1 s	1 s
Recovery time			0.15 s	0.1 s
Ambient air temperature	Operation		-25 °C ... +70 °C	
	Storage		-40 °C ... +80 °C	
Climatic withstand			Category B according to IEC 60947-1 Annex Q	
Maximum operating altitude			2000 m	
Mounting positions			Acc. to mounting positions permitted on contactors or contactor relays	
Shock withstand			1/2 sinusoidal shock for 11 ms: no change in contact position	
acc. to IEC 60068-2-27 and EN 60068-2-27			Same as contactor or contactor relay	
(Mounting position 1)				
Mechanical durability				
	Number of operating cycles		5 millions operating cycles	
	Max. switching frequency		3600 cycles/h	1800 cycles/h
Max. electrical switching frequency				
		AC-15	1200 cycles/h	
		DC-13	900 cycles/h	

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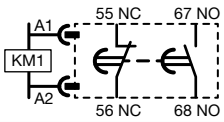
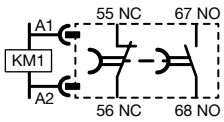
Electronic timers
Technical data

Contact utilization characteristics according to UL / CSA

Types		TEF5-ON	TEF5-OFF
Standards		UL 508, CSA C22.2 N°14	
Rated insulation voltage Ui			
acc. to UL / CSA		300 V	
Max. operational voltage		240 V	
Pilot duty		B300, R300	
AC thermal rated current		5 A	
AC maximum volt-ampere making		3600 VA	
AC maximum volt-ampere breaking		360 VA	
DC thermal rated current		1 A	
DC maximum volt-ampere making-breaking		28 VA	

Connecting characteristics

Connection capacity (min. ... max.)		
Rigid solid	**1 x**	1...2.5 mm²
	2 x	1...2.5 mm²
Flexible with non insulated ferrule	**1 x**	0.75...2.5 mm²
	2 x	0.75...2.5 mm²
Flexible with insulated ferrule	**1 x**	0.75...2.5 mm²
	2 x	0.75...1.5 mm²
Lugs	**L ≤**	8 mm
	I >	3.7 mm
Connection capacity acc. to UL / CSA	**1 or 2 x**	AWG 18...14
Stripping length		10 mm
Tightening torque		1 N.m / 9 lb.in
Degree of protection acc. to IEC 60947-1 / EN 60947-1 and IEC 60529 / EN 60529		IP20
Screw terminals		Delivered in open position, screws of unused terminals should be tightened
All terminals		M3.5
Screwdriver type		Flat Ø 5.5 / Pozidriv 2
Terminal Marking		 

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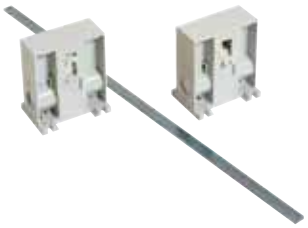
Mechanical and electrical interlock units



VM300H



VM300V



VE5-1

Description

When mounted between two contactors, the mechanical interlock unit prevents one of the contactors from closing as long as the other contactor is closed.

– VM interlock units for mechanical interlocking of two horizontal or vertical mounted AC or DC operated contactors
– VE interlock units for mechanical and electrical interlocking of two horizontal mounted AC or DC operated contactors.

Ordering details (1)

Left side contactor	Right side contactor	Mounting	Type	Order code		Pkg qty	Weight (1 pce) kg
Mechanical interlock units for two horizontal mounted contactors (2)							
A9 ... A40	A9 ... A40	Rail mounting or mounting plate to be ordered separately (3)	VM5-1	1SBN030100R1000		1	0.066
A9 ... A40	A45 ... A110	See table below with VE5 type	–	–		–	–
A45 ... A75	A45 ... A110		–	–		–	–
A95 ... A185	A45 ... A110		–	–		–	–
A95 ... A185	A145 ... A300	Additional plate (not supplied)	VM300H	1SFN034700R1000		1	0.150
A210 ... A300	A145 ... A300		VM300H	1SFN034700R1000		1	0.150

Up contactor	Down contactor	Mounting	Type	Order code		Pkg qty	Weight (1 pce) kg
Mechanical interlock units for two vertical mounted contactors (4)							
A95 ... A185	A145 ... A300	Additional plate (not supplied)	VM300V	1SFN034701R1000		1	0.150
A210 ... A300	A145 ... A300		VM300V	1SFN034701R1000		1	0.150

Left side contactor	Right side contactor	Mounting	Type	Order code		Pkg qty	Weight (1 pce) kg
Mechanical and electrical interlock units for two horizontal mounted contactors							
A9 ... A40	A9 ... A40	Rail mounting or mounting plate to be ordered separately (3)	VE5-1	1SBN030110R1000		1	0.076
A30 ... A75	A45 ... A75		VE5-2	1SBN030210R1000		1	0.146
A45 ... A75	A30 ... A75		VE5-2	1SBN030210R1000		1	0.146
A45 ... A75	A95 ... A110	Additional plate (not supplied)	VE5-2 (5)	1SBN030210R1000		1	0.146
A95 ... A110	A45 ... A75		VE5-2 (5)	1SBN030210R1000		1	0.146
A95 ... A110	A95 ... A110		VE5-2	1SBN030210R1000		1	0.146

(1) For each contactor type, refer to "Accessory fitting details".
(2) Mechanical durability: VM5-1 = 5 millions cycles, VM300H = 1 million cycles.
(3) Rail mounting for: 2 x A9 ... A40 contactors only
2 x A30, A40 contactors + MMS.
PM26-23 mounting plate for: 2 x A9 ... A26 contactors + MMS.
(4) Mechanical durability: VM300V = 1 million cycles.
(5) The combination of A45 ... A75 contactors interlocked with A95, A110 contactors cannot be mounted on symmetrical rail (75 mm, IEC/EN 60715).

1SBC101895S0201

Mechanical and electrical interlock units

Technical data

Types	VE5-1	VE5-2

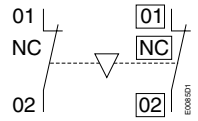
Contact utilization characteristics according to IEC

Standards		IEC 60947-5-1 and EN 60947-5-1
Rated insulation voltage Ui		
acc. to IEC 60947-5-1		690 V
Rated operational voltage Ue max.		24...690 V
Conventional thermal current Ith - θ ≤ 40 °C		16 A
Ie / Rated operational current AC-15		
acc. to IEC 60947-5-1	**24-127 V 50/60 Hz**	6 A
	220-240 V 50/60 Hz	4 A
	380-440 V 50/60 Hz	3 A
	500-690 V 50/60 Hz	2 A
Making capacity		10 x Ie AC-15 acc. to IEC 60947-5-1
Breaking capacity		10 x Ie AC-15 acc. to IEC 60947-5-1
Ie / Rated operational current DC-13		
acc. to IEC 60947-5-1	**24 V DC**	6 A
	48 V DC	2.8 A
	72 V DC	1 A
	125 V DC	0.55 A
	250 V DC	0.3 A
Short-circuit protection device - gG type fuse		10 A
Rated short-time withstand current Icw	**for 1.0 s**	100 A
θ = 40 °C	**for 0.1 s**	140 A
Power dissipation per pole at 6 A		0.15 W
Mechanical durability		
Number of operating cycles		5 millions operating cycles
Max. switching frequency		600 cycles/h

Utilization characteristics according to UL / CSA

Standards	UL 508, CSA C22.2 N°14
Max. operational voltage	600 V

Connecting characteristics

Connection capacity (min. ... max.)			
Rigid solid		**1 x**	1...4 mm²
		2 x	1...4 mm²
Flexible with ferrule		**1 x**	0.75...2.5 mm²
		2 x	0.75...2.5 mm²
Lugs		**L <**	8 mm
		l >	3.5 mm
Tightening torque	Recommended		1 Nm
	Max.		1.2 Nm
Degree of protection acc. to IEC 60947-1 / EN 60947-1 and IEC 60529 / EN 60529			IP20
Screw terminals			Delivered in open position, screws of unused terminals must be tightened
All terminals			M3.5
Screwdriver type			Flat Ø 5.5 / Pozidriv 2
Terminal marking			

Technical note: when, during switching, the arc time is estimated to more than 40 ms, the closing signal of one of the two contactors must be delayed with respect to the opening signal of the other contactor in order to prevent a short-circuit.
Use a TEF5 or TE5S electronic timer according to application use with time lapse for A contators.

1SBC101896S0201

Electronic timer for star-delta starters



TE5S...

Description

When used in star-delta starters, the TE5S lags the star connection and provides a lapse of 50 ms before the switch over to delta connection.

According to the type of device chosen, the electronic circuit has a 24 V AC / DC, 110 to 120 V AC, 220 to 240 V AC or 380 to 440 V AC supply. An output relay with reversing contact ensures high current switching. A two-position switch allows selection of one of the two time delay ranges: 0.8 to 8 s or 6 to 60 s. The 0.1 to 1.0 graduated button allows an initial setting without steps within the previously selected range which can then be adjusted using a chronometer.

Note: We recommend that you allow for temperature drift for the final adjustment of the time delay setting. Drift: -0.2 % per °C.

For example, a setting made at 20 °C will yield a time delay shorter by 7 % at 55 °C in a cubicle (-0.2 % per °C i.e. -0.2 x 35 = -7 %).

Regardless of these settings the TE5S provides a fixed "lapse" of 50 ms between the opening of contact 15-16 and the closing of contact 15-18. This time delay prevents from arc short-circuit during star to delta switching.

Operation

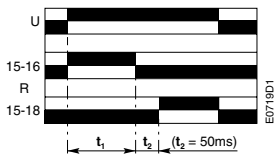
On energization, the green U indicator light (voltage applied) comes on. Contact 15-16 then immediately moves to the closed position.

Count-down of the programmed time immediately commences. When the time delay has elapsed, contact 15-16 opens and at the same time the 50 ms lapse, t2, begins after which contact 15-18 moves to the closed position. The yellow R indicator light comes on.

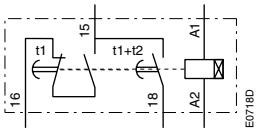
On de-energization, the U and R indicator lights go out and, after the 250 ms resetting time, the device is ready for a new cycle.

Mounting

On 35 x 7.5 mm or 35 x 15 mm mounting rail according to IEC/EN 60715.



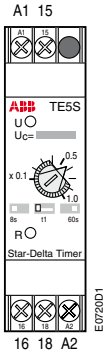
Chart



Equivalent diagram

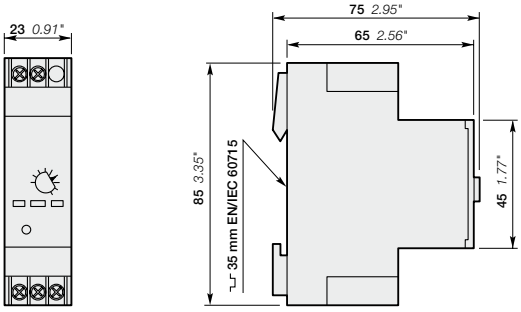
Ordering details

For contactors	Rated control circuit voltage Uc		Type	Order code		Pkg qty	Weight (1 pce)
	V 50/60 Hz	V DC					kg
A9 ... A300	24	24	TE5S-24	1SBN020010R1001		1	0.080
	110...120	–	TE5S-120	1SBN020010R1002		1	0.080
	220...240	–	TE5S-240	1SBN020010R1003		1	0.080
	380...440	–	TE5S-440	1SBN020010R1004		1	0.080



Front face

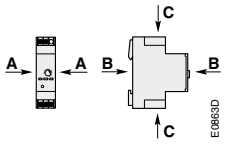
Main dimensions mm, *inches*



1SBC101523S0201

Electronic timer for star-delta starters

Technical data

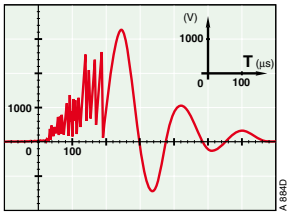
Types			TE5S-24	TE5S-120	TE5S-240	TE5S-440
Utilization characteristics according to IEC						
Standards			IEC 60947-5-1 and EN 60947-5-1			
Rated insulation voltage Ui						
acc. to IEC 60947-5-1			440 V			
Rated operational voltage Ue max.			24 V DC			–
			24…240 V AC			440 V AC
Conventional free air thermal current Ith			10 A			
Ie / Rated operational current AC-15						
acc. to IEC 60947-5-1		**24-120 V 50/60 Hz**	5 A			–
		220-240 V 50/60 Hz	4 A			–
		380-440 V 50/60 Hz	–			3 A
Ie / Rated operational current DC-13						
acc. to IEC 60947-5-1		**24 V DC**	4 A			–
Short-circuit protection device - gG type fuse			10 A			
Control circuit voltage						
AC control voltage	Rated supply voltage Uc		24 V AC	110…120 V AC	220…240 V AC	380…440 V AC
50/60 Hz	Average consumption		1.5 VA	3.5 VA	6.5 VA	12.5 VA
DC control voltage	Rated supply voltage Uc		24 V DC	–	–	–
	Average consumption		0.7 W	–	–	–
Rated frequency limits			48…63 Hz			
Supply voltage range			0.85…1.1 x Uc			
Overvoltage protection			Built-in varistor			
Load factor			100 %			
Time delay range (t1) selected by switch			0.8…8 s and 6…60 s			
Temperature drift			-0.2 % per °C			
Mechanical setting accuracy			±15 % of the setting range			
On-load reiteration accuracy under constant conditions			±2 % after 1 million operating cycles			
Minimum time lapse (t2)			50 ms			
Minimum time lapse after 1 million of operating cycles			40 ms			
Resetting time (max.)			250 ms			
Front panel display		**green indicator light**	Energization			
		yellow indicator light	Output relay activated			
Ambient air temperature						
Operation			-25…+60 °C			
Storage			-40…+85 °C			
Shock withstand						
acc. to IEC 60068-2-27 and EN 6006-2-27						
		**Shock direction**				
		A	20 g / 11 ms			
		B	15 g / 11 ms			
		C	20 g / 11 ms			
Vibration withstand			10 to 300 Hz in the 3 directions			
acc. to IEC 60068-2-6 and EN 60068-2-6			3 g			
Mechanical durability			5 millions operating cycles			
Electrical durability			1 million operating cycles			
On-load maximum switching frequency			720 cycles/h			600 cycles/h
Fixing						
On rail according to IEC 60715, EN 60715			35 x 7.5 mm or 35 x 15 mm			

Connecting characteristics

Connection capacity (min. ... max.)			
Rigid solid		**1 x**	1...2.5 mm²
		2 x	1...2.5 mm²
Flexible with ferrule		**1 x**	0.75...2.5 mm²
		2 x	0.75...2.5 mm²
Tightening torque	Recommended		0.6 Nm
	Max.		0.8 Nm
Degree of protection			
acc. to IEC 60947-1 / EN 60947-1 and IEC 60529 / EN 60529			IP20
Screw terminals			Delivered in open position, screws of unused terminals must be tightened
All terminals			M2.5
Screwdriver type			Flat Ø 4 / Pozidriv 1

1SBC101326S0201 - Rev. A

Surge suppressors for contactor coils



Description

The operation of inductive circuits causes overvoltages, in particular on opening of the contactor coil.

The electromagnetic energy stored in the coil during contactor closing is restored on opening in the form of surges, the slope and amplitude of which may rise to several kilovolts. A number of drawbacks are observed ranging from interference on the electronic devices to breakdown of insulators and even destruction of certain sensitive components.
The graph opposite reproduces the oscillogram showing voltage discharges at the terminals of a 42 V / 50 Hz coil without peak clipping. The coil was switched by 8 series-connected poles of a contactor relay.

Following a burst of discharges with a very steep slope a damped oscillation emerges with a peak value of 3500 V.

Overvoltage Factor
The overvoltage factor k is defined as the ratio of the maximum overvoltage peak value Ûs to the peak value Ûc of the coil rated control voltage Uc:

$$k = \frac{\hat{U}s\ max.}{\hat{U}c} \qquad \text{in DC: } k = \frac{\hat{U}s\ max.}{Uc} \qquad \text{or in AC: } k = \frac{\hat{U}s\ max.}{Uc\sqrt{2}}$$

For example the following is obtained for the above graph: $k = \frac{3500}{42\ \sqrt{2}} \approx 60$

To reduce the harmful effects of these overvoltages, ABB has developed a range of surge suppressors designed to reduce the k factor defined above and to limit or even completely eliminate the high pre-damping voltage frequencies.

Each case is different, but the technical data tolerances and the generous sizing of parts have enabled us to reduce the number of variants.

We have chosen the following solutions: transil diodes, varistors and RC blocks.

Note: A varistor is a resistor whose value decreases to a very large extent when a certain voltage is applied at its terminals.


1SBC574001F0301

RV5/50


1SBC573891F0301

RC5-1/50

Ordering details

For contactors	Rated control circuit voltage Uc			Type	Order code		Pkg qty	Weight (1 pce)
	V	AC	DC					kg
A9 ... A110	24...50	●	●	RV5/50	1SBN050010R1000		2	0.015
	50...133	●	●	RV5/133	1SBN050010R1001		2	0.015
	110...250	●	●	RV5/250	1SBN050010R1002		2	0.015
	250...440	●	●	RV5/440	1SBN050010R1003		2	0.015
A9 ... A40	24...50	●	–	RC5-1/50	1SBN050100R1000		2	0.012
	50...133	●	–	RC5-1/133	1SBN050100R1001		2	0.012
	110...250	●	–	RC5-1/250	1SBN050100R1002		2	0.012
	250...440	●	–	RC5-1/440	1SBN050100R1003		2	0.012
A45 ... A110	24...50	●	–	RC5-2/50	1SBN050200R1000		2	0.015
	50...133	●	–	RC5-2/133	1SBN050200R1001		2	0.015
	110...250	●	–	RC5-2/250	1SBN050200R1002		2	0.015
	250...440	●	–	RC5-2/440	1SBN050200R1003		2	0.015
A145 ... A300	250...440	●	–	RC5-3/440	1SFN050300R1003		2	0.028

1SBC101899S0201

Surge suppressors for contactor coils

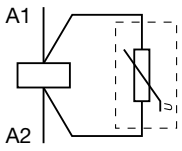
Technical data

Varistor	RV5/50	RV5/133	RV5/250	RV5/440
Rated control circuit voltage Uc	24...50 V AC	50...133 V AC	110...250 V AC	250...440 V AC
	24...50 V DC	50...133 V DC	110...250 V DC	250...440 V DC
Residual overvoltage (clipping voltage)	132 V AC	270 V AC	480 V AC	825 V AC
	132 V DC	270 V DC	480 V DC	825 V DC
Opening time growth factor	1.1...1.5			
Operating temperature	-20...+70 °C			
Connection to the coil terminals (parallel mounting)	Clip-on for both fixing and connection.			
Fixing	Clipped onto the top part of the contactor base without change in contactor overall dimensions.			
Advantages	High energy absorption: good damping - Unpolarized system.			
Drawback	Clipping as from Uvdr (1), thus voltage front up to this point.			

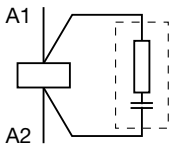
(1) Uvdr = Varistor operating voltage (voltage dependent resistor), tolerance ±10 %.

RC type	RC5-1/50	RC5-1/133	RC5-1/250	RC5-1/440
	RC5-2/50	RC5-2/133	RC5-2/250	RC5-2/440
	–	–	–	RC5-3/440
Rated control circuit voltage Uc	24...50 V AC	50...133 V AC	110...250 V AC	250...440 V AC
Residual overvoltage (clipping voltage)	2 to 3 x Uc max.			
Opening time growth factor	1.2...1.3			
Operating temperature	-20...+70 °C			
Connection to the coil terminals (parallel mounting)	Clip-on for both fixing and connection.			
Fixing	Clipped onto the top part of the contactor base without change in contactor overall dimensions.			
Advantages	Very fast clipping - Attenuation of steep fronts and thus of high frequencies. No operating delays.			

Wiring diagrams

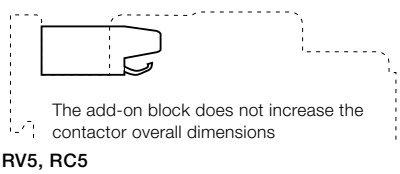


Varistor



RC type

Dimensions



RV5, RC5

1SBC101900S0201

Interface relays



RA5-1

3

Description

RA5-1 interface relay is designed to receive 24 V DC signals delivered by PLC's or other sources with a low output power and to restore them with sufficient power to operate the coils of the relevant A9 ... A110 contactors.

RA5-1 interface relay is made up of a miniature electromechanical relay equipped with a N.O. contact and with a low consumption 24 V DC coil.

The interface relay coil is controlled by the PLC while the N.O. contact ensures switching of the power contactor.

Coil switching gives rise to overvoltages which have adverse effects on the electronic devices, insulators and, more generally, on component lifetime. The RA5-1 is equipped with surge suppressors:

– on the 24 V DC relay coil via a diode,
– on the power contactor coil via a varistor.

Furthermore, the RA5-1 is protected against relay pole reversal by a diode inserted between the E1 and E2 input terminals.

Ordering details

For contactors	Coil voltages V 50/60 Hz	Rated control circuit voltage Uc V DC	Type	Order code		Pkg qty	Weight (1 pce) kg
A9 ... A110	24...250	24	RA5-1	1SBN060300R1000		1	0.050
			RA5-1	1SBN060300T1000		10	0.050

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Interface relays

Technical data

Type	RA5-1

Utilization characteristics according to IEC

Standards		IEC 60255-5
Rated insulation voltage Ui acc. to IEC 60947-4-1		250 V AC
Ambient air temperature		
In free air operation	**at Uc = 24 V DC (between E1 and E2)**	-25…+70 °C
	from 0.85 to 1.1 x Uc	-25…+55 °C
Storage		-40…+70 °C
Climatic withstand		Complies with that of associated contactors
Maximum operating altitude		3000 m
Mounting positions		No limitation
Fixing		Using the contactor A1 and A2 teminal connecting parts

Connecting characteristics

Connection capacity (min. ... max.)			
Rigid solid		**1 x**	1…4 mm²
		2 x	1…4 mm²
Flexible with ferrule		**1 x**	0.75…2.5 mm²
		2 x	0.75…2.5 mm²
Lugs		**L <**	8 mm
		I >	3.5 mm
Tightening torque	Recommended		1 Nm
	Max.		1.2 Nm
Degree of protection acc. to IEC 60947-1 / EN 60947-1 and IEC 60529 / EN 60529			Protection against direct contact in acc. with EN 50274 RA5-1 wired and mounted on the associated contactor
Screw terminals			Delivered in open position, screws of unused terminals must be tightened
All terminals			M3.5
Screwdriver type			Flat Ø 5.5 / Pozidriv 2

Working data

Surge suppression		
For contactor coil		Varistor
For interface relay coil		Diode
Protection against polarity reversal between terminals E1 and E2		Diode
Interface relay operating time		Closing and drop-out ≤ 10 ms
Total operating time, interface relay + contactor		
Between energization and:	**N.O. contact closing**	20…37 ms
	N.C. contact opening	17…32 ms
Between de-energization and:	**N.O. contact opening**	17…25 ms
	N.C. contact closing	20…28 ms

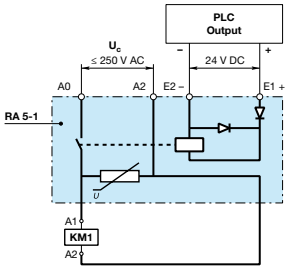
Electrical input data

Control voltage (E1 and E2 terminals) **Uc**		
Rated value		24 V DC
Max. range at ambient temperature 20 °C		19…30 V DC
Max. consumption for Uc = 24 V DC, θ = 20 °C		0.3 W
"0" status (relay open)	**for Uc**	≤ 2.4 V DC
	for Ic	< 1 mA
"1" status (relay closed)	**for Uc**	≥ 19 V DC
Max. short supply interruption immunity time		2 ms

Electrical output data

Switching voltage (A0 and A2 terminals)	≤ 250 V AC
Electrical durability	
Number of operating cycles	2 millions (600 cycles/h) on A9 … A75 contactors or N contactor relays
	0.5 million (600 cycles/h) on A95 and A110 contactors

Connection



The "E1+" and "E2-" input terminals must be connected, according to their polarity, to the PLC output.
The RA5-1 is equipped with two terminal pads for connection to the A1 and the A2 terminals of the contactor coil.
This coil is supplied between the A0 and the A2 terminals of the RA 5-1.
Mounting: terminals pads clamped inside the contactor coil terminals.

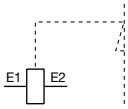
1SBC101902S0201

Mechanical latching units



WB75-A

3



Terminal marking

Description

For converting standard contactors into latched contactors.

The WB75-A block contains a mechanical latching device with electromagnetic impulse unlatching (AC or DC) or manual unlatching.

Captive screw type connecting terminals, built-in cable clamps, M3.5 (+,-) pozidriv 2 screw with screwdriver guidance; delivered untightened and protected against accidental direct contact.

Operation

After closing, the contactor continues to be held in the closed position by the latching mechanism should the supply voltage fail at the contactor coil terminals.

Contactor opening can be controlled:

– electrically by an impulse (AC or DC) on the WB75-A block coil.
(the coil is not designed to be permanently energized)
– manually by pressing the pushbutton on the front face of the WB75-A block.

Mounting

The WB75-A block is clipped onto the front face of the 1-stack contactor where it takes up two slots. The two other slots may accept CA5... single pole auxiliary contacts (1 block on each side of the mechanical latch).

Ordering details

For contactors	Rated control circuit voltage Uc		Type	Order code		Pkg qty	Weight (1 pce)
	V 50 Hz or DC	V 60 Hz					kg
A9 ... A75	24	24...28	WB75-A	FPTN372726R1001		1	0.120
	42	42...48	WB75-A	FPTN372726R1002		1	0.120
	48	48...55	WB75-A	FPTN372726R1003		1	0.120
	110	110...127	WB75-A	FPTN372726R1004		1	0.120
	220...230	220...255	WB75-A	FPTN372726R1006		1	0.120
	230...240	230...277	WB75-A	FPTN372726R1005		1	0.120
	380...415	380...440	WB75-A	FPTN372726R1007		1	0.120
	415...440	440...480	WB75-A	FPTN372726R1008		1	0.120

1SBC101903S0201

Mechanical latching units

Technical data

Type	WB75-A

Utilization characteristics according to IEC

Rated insulation voltage Ui acc. to IEC 60947-1		690 V
Max. electrical impulse time		
On AC coil (with load factor 5 %)		20 s
On DC coil (with load factor 3 %)		8 s
Min. electrical impulse time		
For latching (energizing of the contactor coil)	**AC**	50 ms
For pull-out (energizing of the WB block coil)	**AC**	30 ms
Coil operating limits	**AC or DC supply**	0.85…1.1 x Uc
AC control voltage 50/60 Hz		
Rated control circuit voltage Uc		24…480 V AC
Coil consumption	**Average pull-in value**	90 VA
	Average holding value	60 VA
DC control voltage		
Rated control circuit voltage Uc		24…440 V DC
Coil consumption	**Average pull-in value**	110 W
	Average holding value	110 W
Operating time		
On contactor closing (latching) Between coil energization and:		
	N.O. contact closing	No difference with the operation of a contactor without mechanical latching unit
	N.C. contact opening	No difference with the operation of a contactor without mechanical latching unit
On contactor opening (unlatching) Between WB coil energization and:		
	N.O. contact opening	5…25 ms
	N.C. contact closing	7…28 ms
Mechanical durability		
	Number of operating cycles	1 million operating cycles
Max. switching frequency		3600 cycles/h with on-load factor of 8 %

Connecting characteristics

Connection capacity (min. ... max.)			
Rigid solid		**1 x**	1...4 mm²
		2 x	1...4 mm²
Flexible with ferrule		**1 x**	0.75...2.5 mm²
		2 x	0.75...2.5 mm²
Lugs		**L <**	8 mm
		I >	3.5 mm
Tightening torque	Recommended		1 Nm
	Max.		1.2 Nm
Screw terminals			Delivered in open position, screws of unused terminals must be tightened
All terminals			M3.5
Screwdriver type			Flat Ø 5.5 / Pozidriv 2

1SBC101333S0201 - Rev. A

Function markers
Impulse contact blocks



BA5-50

BA5-50 function markers

Description

Set of 50 function markers designed to be clipped onto the front face of devices. Details can be added to these markers using a ball point pen, indelible felt-tip pen or pentel white.

Self-adhesive labels (not supplied) can also be added to them.

Marker dimensions: 7 x 19 mm (0.276" x 0.748").

Ordering details

For contactors	Type	Order code		Pkg qty	Weight (1 pce) kg
Contactors, thermal overload relays and accessories	BA5-50	1SBN110000R1000		1	0.017



CB5

CB5 impulse contact blocks

Description

Impulse contact blocks are designed for use in enclosures, in association with an adjustable mechanical pushbutton. Two types are available:

– CB5-10: N.O. contact with a black actuator ("ON" function)
– CB5-01: N.C. contact with a light grey actuator ("OFF" function).

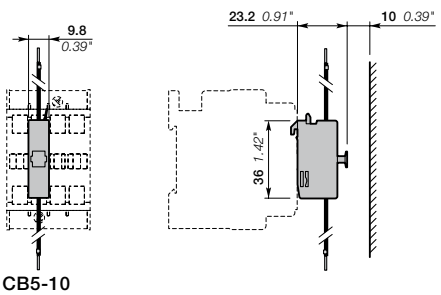
These blocks are equipped with 2 connecting leads 0.5 mm² with end, approximately 18 cm long.

Mounting: Clipped onto the front face of the contactors.

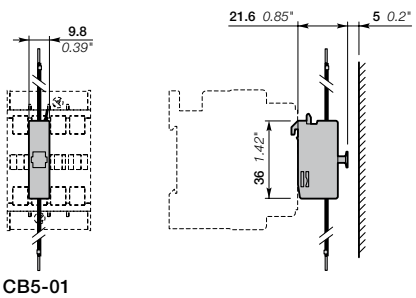
Ordering details

For contactors	Contacts		Type	Order code		Pkg qty	Weight (1 pce) kg
A9 ... A110	1	–	CB5-10	1SBN010013R1010		1	0.012
	–	1	CB5-01	1SBN010013R1001		1	0.012

Main dimensions mm, *inches*



CB5-10



CB5-01

1SBC101898S0201

Terminal shrouds, terminal enlargements, terminal extensions Connector terminals


1SFT98099-019C3

LT...-AC


1SFT98099-125

LT...-AL


1SFT98000-014

LT...-AY


1SFT98000-011C3

LW...


1SFT98000-012C3

LX...


1SFT98099-00211C1

LZ...


1SFT98099-095C2

LZ...


1SBC580542R0302

LZ...

Terminal shrouds

Description

Main terminal protection for A145 ... A300 contactors.

The auxiliary contact blocks and coils are designed to provide an IP20 degree of protection.

The main terminals, equipped with lugs or connectors, can be protected against accidental direct contact after wiring (EN 50274) by the addition of terminal shrouds (see table below).

Ordering details

For contactors	Type	Order code	Pkg qty	Weight (1 pce) kg
A145 ... A185 with connectors	LT185-AC	1SFN124701R1000	2	0.050
A145 ... A185 with lugs	LT185-AL	1SFN124703R1000	2	0.220
A145 ... A185 with short. bar LY185 or between A145 and TA200DU or between A185 and TA200DU	LT185-AY	1SFN124704R1000	1	0.050
A210 ... A300 with connectors	LT300-AC	1SFN125101R1000	2	0.070
A210 ... A300 with lugs	LT300-AL	1SFN125103R1000	2	0.280
A210 ... A300 with short. bar LY300	LT300-AY	1SFN125104R1000	1	0.075

LW... Terminal enlargements

Description

Enlargement pieces designed to increase the width of the contactor terminal pads in order to allow larger connections to be mounted.

Sets containing 3 tin plated copper bars fixed by an isolating spacer.

Ordering details

For contactors	Dimensions hole Ø mm	Dimensions bar mm	Type	Order code	Pkg qty	Weight (1 pce) kg
A95, A110	6.5	15 x 3	LW110	1SFN074307R1000	1	0.100
A145, A185	10.5	20 x 5	LW185	1SFN074707R1000	1	0.250
A210 ... A300	10.5	25 x 5	LW300	1SFN075107R1000	1	0.450

LX... Terminal extension

Description

Extension pieces designed to extend the main terminals of contactors for combined mounting of contactors and connection sets.

Sets containing 3 tin plated copper bars fixed by an isolating spacer.

Ordering details

For contactors	Dimensions hole Ø mm	Dimensions bar mm	Type	Order code	Pkg qty	Weight (1 pce) kg
A145, A185	8.5	20 x 5	LX185	1SFN074710R1000	1	0.250
A210 ... A300	10.5	20 x 5	LX300	1SFN075110R1000	1	0.350

Connector terminals

Description

Connection of copper and aluminium cables to the terminal pads of the poles of A contactors.

Ordering details

Cables	For contactors	Cable cross section mm²	Type	Order code	Pkg qty	Weight (1 pce) kg
Single Cu	A145, A185	6...185	–	1SDA023354R0001	3	0.200
	A210 ... A300	16...240	–	1SDA023368R0001	3	0.400
Single Al & Cu	A145, A185	35...95	–	1SDA023356R0001	3	0.100
	A145, A185	25...150	–	1SDA023357R0001	3	0.100
	A210 ... A300	120...240	–	1SDA023370R0001	3	0.200
Double Cu	A145, A185	2 x (50...120)	LZ185-2C/120	1SFN074709R1000	3	0.300
Double Al & Cu	A210 ... A300	2 x (95...120)	–	1SDA025766R0001	3	0.400

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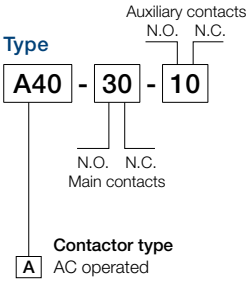
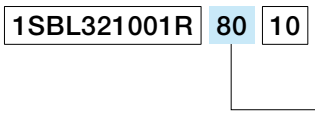
Voltage code table

The below tables indicate the available coil voltages and corresponding digits for order codes. When placing an order, please give the order code. Select a standard contactor from ordering detail pages. Change the **coil voltage code** in the order code according to the table below. Example: for contactor A50-30-00 and coil 48 V 50/60 Hz, the order code is 1SBL351001R**83**00.

A contactors



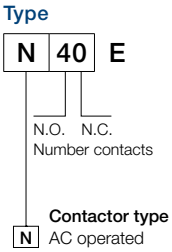


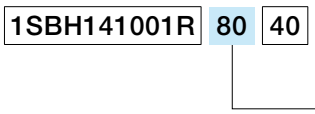
AC coil code
Contactors: A

	50 Hz	60 Hz
81	**24 V**	**24 V**
82	**42 V**	**42 V**
83	**48 V**	**48 V**
84	**110 V**	**110**...120 V
36	190 V	220 V
80	220...**230 V**	**230**...240 V
88	230...**240 V**	**240**...260 V
85	380...**400 V**	**400**...415 V
86	400...**415 V**	**415**...440 V

Codes in bold for dual frequency coils.

N contactor relays





AC coil code
Contactors: A

	50 Hz	60 Hz
81	**24 V**	**24 V**
82	**42 V**	**42 V**
83	**48 V**	**48 V**
84	**110 V**	**110**...120 V
36	190 V	220 V
80	220...**230 V**	**230**...240 V
88	230...**240 V**	**240**...260 V
85	380...**400 V**	**400**...415 V
86	400...**415 V**	**415**...440 V

Codes in bold for dual frequency coils.

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