Main catalog

AX contactor range
Control made simple
The performance you need

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: single and three phase (according to UL 60947-4-1A)								
Motor power	120 V 1-ph	200 V 1-ph	200 V 3-ph	208 V 1-ph	208 V 3-ph	220-240 V 1-ph	220-240 V 3-ph	380-415 V 3-ph	440-480 V 3-ph	550-600 V 3-ph
hp	A	A	A	A	A	A	A	A	A	A
1/10	3	–	–	–	–	1.5	–	–	–	–
1/8	3.8	–	–	–	–	1.9	–	–	–	–
1/6	4.4	2.5	–	2.4	–	2.2	–	–	–	–
1/4	5.8	3.3	–	3.2	–	2.9	–	–	–	–
1/3	7.2	4.1	–	4	–	3.6	–	–	–	–
1/2	9.8	5.6	2.5	5.4	2.4	4.9	2.2	1.3	1.1	0.9
3/4	13.8	7.9	3.7	7.6	3.5	6.9	3.2	1.8	1.6	1.3
1	16	9.2	4.8	8.8	4.6	8	4.2	2.3	2.1	1.7
1-1/2	20	11.5	6.9	11	6.6	10	6	3.3	3	2.4
2	24	13.8	7.8	13.2	7.5	12	6.8	4.3	3.4	2.7
3	34	19.6	11	18.7	10.6	17	9.6	6.1	4.8	3.9
5	56	32.2	17.5	30.8	16.7	28	15.2	9.7	7.6	6.1
7-1/2	80	46	25.3	44	24.2	40	22	14	11	9
10	100	57.5	32.2	55	30.8	50	28	18	14	11
15	135	–	48.3	–	46.2	68	42	27	21	17
20	–	–	62.1	–	59.4	88	54	34	27	22
25	–	–	78.2	–	74.8	110	68	44	34	27
30	–	–	92	–	88	136	80	51	40	32
40	–	–	120	–	114	176	104	66	52	41
50	–	–	150	–	143	216	130	83	65	52
60	–	–	177	–	169	–	154	103	77	62
75	–	–	221	–	211	–	192	128	96	77
100	–	–	285	–	273	–	248	165	124	99
125	–	–	359	–	343	–	312	208	156	125
150	–	–	414	–	396	–	360	240	180	144
200	–	–	552	–	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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AX contactor range
Control made simple - The performance you need

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AX contactors
The simplest way to get the control and performance you need

The AX contactor range offers exceptional reliability and performance in a brilliant, space-saving design. Use it for motor starting applications up to 370 A / 200 kW 400 V AC-3.

Speed-up your projects

Simpler selection process

Speed up your projects with ABB's simpler order codes, faster identification, easier connection, and a complete and flexible range of accessories.

Compliance process is faster too as AX contactors use environmentally friendly materials that comply with energy label.

Easy to install

Faster fitting by design

ABB's smart design saves time with every detail. AX contactors are smaller and easier to handle. All terminals are delivered in open position so wiring is faster.

ABB's broad range provides the best configuration for the job. Single or multiple pole blocks are no problem. Front or side mounted auxiliary contact blocks are available as well.

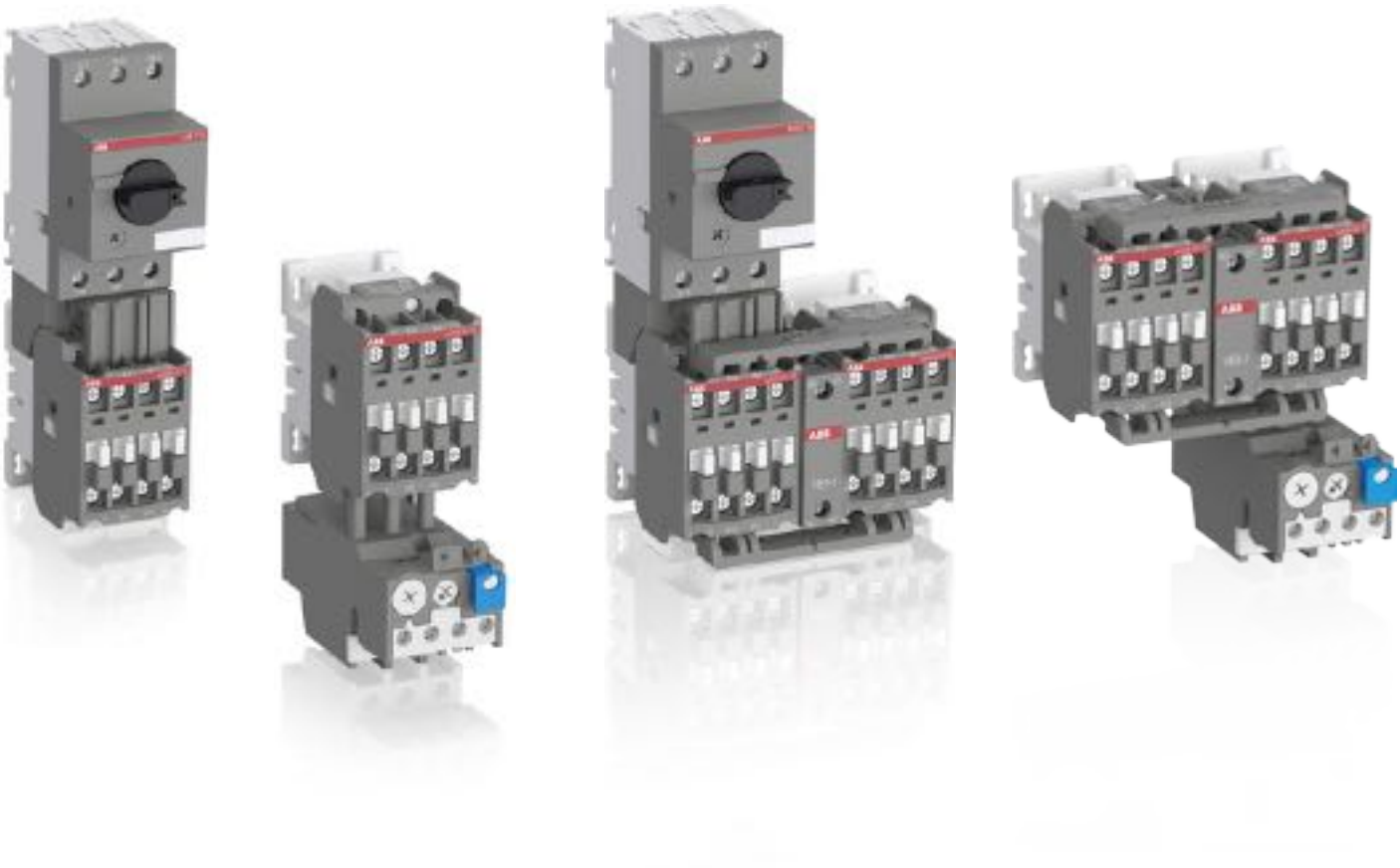
Continuous operation

Proven, secure, trusted

Trust a proven solution from a brand with 100 years of experience in contactors design and manufacture. ABB's AX range makes starting solutions that are more reliable – with type 2 coordination between contactors and short-circuit protection devices guaranteed.

ABB's mechanically linked contacts and mirror contact functions make control circuits safe and reliable.

Save time when building motor starting solution with AX contactors
Complete range compatible with ABB low voltage solutions



Tested component combinations
Using ABB's coordination tables gives users a choice of fully tested assemblies and product combinations. It's quicker and easier to build DOL starters, reversing starters or star delta starters using ABB's range of AX contactors, manual motor starters, molded case breakers, fuses and overload relays.

Create smart starters
AX contactors look more professional and, together with connection kits, they provide a better finish than cables or bus bars.

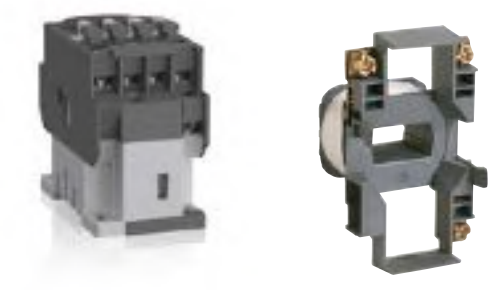
Save time
ABB starters come with connection kits to make assembly simpler and faster. The kits save time on cable preparation and eliminate fitment and wiring error risks.

AX contactors
Features and benefits

Every detail designed for you
Smart packaging design makes it simpler to identify the product you need – the product type, coil voltage, order code and bar code are all clearly displayed. The same goes when the product is unboxed. A quick glance at the front tells you what product, contactor type and coil voltage you have. Terminal markings are also plainly visible. The rated values and main approvals are ready to read on the side.

Certified, trusted contactors
ABB's AX contactors are designed in compliance with IEC 60947-4-1 and GB 14048-4 requirements. These trusted safety products have CB certification, CE marking as well as CCC and CCS approval.

Easier to connect
ABB designed its AX contactors so that all screw-heads are accessible from the front. One Pozidriv #2 screwdriver fits every contactor terminal and the complete accessory range. All main and auxiliary terminals can take one or two cables and contactors up to AX150 have three coil terminals for connection from the top or the bottom. Right out of the box, all terminals are ready in the open position for wiring.



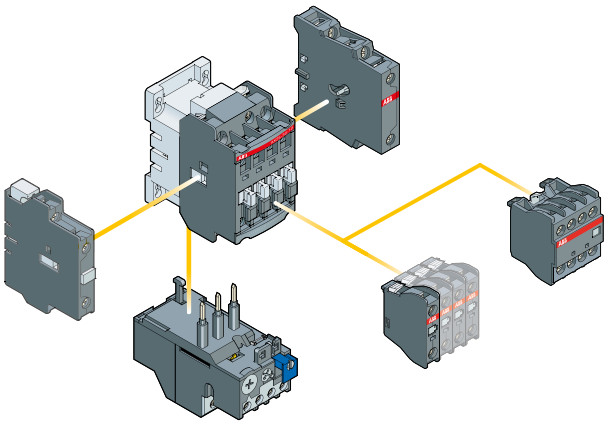
Environmentally sound
The design and production of ABB's AX contactor range follows ISO 14000 processes. The raw materials are free of red phosphorous, cadmium, mercury, brominated substances (PBB, PBPE) and other pollutants. AX contactors and main accessories also comply with the European directive ROHS 2006. The same goes for the packaging design. The box is fully recyclable and clearly marked to aid correct disposal.

ISO 14001

AX contactors
Features and benefits

1

Auxiliaries made simple, secure and flexible
Common interfaces that are clip-on and self-locking make mounting ABB contactors simpler. Its AX contactor range uses the same front-mounted auxiliary for contact blocks up to AX150 and the same side-mounted auxiliary contact blocks up to AX80. To maximize flexibility, users can front-mount any single- or four-pole auxiliary contact block. Two-pole auxiliary contact block can be side-mounted.

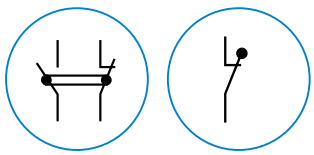


Protect control circuits and save space
ABB's AX range makes surge suppressors easy to snap on and connect. Designing contactor coils to them fit within their overall dimensions without additional space requirements. The smart design and proven technologies provide safe protection for circuits against over-voltages when the contactor opens.

Complete range of multi-function overload relays
ABB's complete range of thermal overload relays provides class 10 protection and key functions including:
- Motor protection against overload and phase failure
- Automatic and manual reset both included
- Test and stop functions

ABB's thermal overload relays are suitable for three-phase or single-phase motor applications with temperature compensation between -25 °C and +55 °C.

Safe and reliable control circuits
A white contact carrier ensures the contactor state is visible at all times, even with accessories mounted.
Built-in and add-on auxiliary contacts provide reliable low signal contacts for 12 V 3 mA. Failure rates are less than 10-6 according to IEC 60947-5-1.
Mechanically linked functions are available with 4-pole blocks CA5X. Mirror contacts are available with built-in NC contacts for AX06.
AX40 and side-mounted blocks CAL5-11X and 4-pole blocks CA5X for AX06 ... AX80.



3-pole contactors for motor control and power switching

1

IEC	**AC-3 Rated operational power**	θ ≤ 55 °C, 400 V	**kW**	**3**	**4**	**5.5**	**7.5**	**11**	**15**	**18.5**
AC Control supply			Type	**AX06**	**AX09**	**AX12**	**AX18**	**AX25**	**AX32**	**AX40**
IEC	**AC-3 Rated operational current**	θ ≤ 55 °C, 400 V	**A**	**7**	**9**	**12**	**18**	**25**	**32**	**40**
	AC-1 Rated operational current	θ ≤ 40 °C, 690 V	**A**	**20**	**22**	**25**	**27**	**32**	**55**	**60**

Main accessories

Auxiliary contact blocks	Front mounting	**CA5X-10** (1 x N.O.) **CA5X-01** (1 x N.C.) **CA5X-4 pole** (add on block with 4 contacts N.O. or N.C. combination)
	Side mounting	**CAL5X-11** (1 x N.O. + 1 x N.C.)
Timers	Electronic	**TEF5-ON** **TEF5-OFF**
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	**TA25DU-M** (0.10…32 A) (1)
			TA42DU-M (18...42 A)
Electronic relays		Class 10E, 20E, 30E	

(1) The max. AC-3 operational current is 23 A for AX25 with TA25DU-25M
(2) The max. AC-3 operational current is 74 A for AX80 with TA75DU-80M
(3) The max. AC-3 operational current is 182 A for AX205 with TA200DU-200.

Manual motor starters

	Thermal / magnetic protection Class 10	**MS116** (0.10...32 A) Ics up to 50 kA for class 10A	**MS165** (10...65 A) Ics up to 100 kA
		MS132 (0.10...32 A) Ics up to 100 kA	
			MS497 (22…100 A) Ics up to 100 kA
	Magnetic types only	**MO132** (0.16...32 A) Ics up to 100 kA	**MO165** (16…65 A) Ics up to 100 kA
			MO496 (32…100 A) Ics up to 100 kA

Accessories	For contactor mounting	**BEA16/116** (4)	**BEA25/116** (4)	
			BEA25/132 (5)	

(4) AX.. with MS116-0.16 ... MS116-16 or MS132-0.16 ... MS132-10
(5) AX25 with MS116-20 ... MS116-32 or MS132-12 ... MS132-32.




	22	30	37	45	55	75	90	110	132	160	200
	AX50	AX65	AX80	AX95	AX115	AX150	AX185	AX205	AX260	AX300	AX370
	50 100	65 115	80 125	96 145	115 160	150 190	185 250	205 275	265 400	305 500	370 600

		CAL18X-11 (1 x N.O. + 1 x N.C.)		**CAL19-11** (1 x N.O. + 1 x N.C.)
			VM300H	**VM19**
	VE5-2			
	RC5-2 (24…440 V)		**RC5-3** (250…440 V)	

	TA75DU-M (18…80 A) (2)	**TA80DU** (29…80 A)	**TA200DU** (66…200 A) (3)	
		TA110DU (66…110 A)		
		E140DU (50…140 A)	**EF205** (63…210 A)	**EF370** (115…380 A)

Short-circuit protection devices

MCCB and switch fuses

	MS495 (45…100 A) Ics up to 50 kA	
		MO495 (63…100 A) Ics up to 50 kA
	BEA75/495 For MS495	**BEA110/495** For MS495



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Manual motor starters

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Ordering details – 0.10 to 65 A – with thermal and electromagnetic protection

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MS132 manual motor starters 17
MS165 manual motor starters 18

Ordering details – 0.16 to 65 A – with electromagnetic protection

MO132 manual motor starters magnetic only 19
MO165 manual motor starters magnetic only 20

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Ordering details – 22 to 100 A – with thermal and electromagnetic protection

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Manual motor starters
Benefits

Manual motor starters (MMS) are protection devices for the main circuit. They combine motor control and protection in a single device. MMS are used mainly to switch motors manually ON/OFF and protect them and the installation fuse-less against short-circuit, overload and phase failures. Fuse-less protection with a manual motor starter saves costs, space and ensures a quick reaction under short-circuit condition, by switching off the motor within milliseconds.

Safe, compact, and cost-saving solution

Various motor protection functions in one device
- Overload
- Short-circuit
- Phase loss sensitivity

Efficient planning and installation perfectly matching the ABB contactor family, leads to high flexibility and increased exchangeability. Simple connecting links ensure the electrical and mechanical connection.

Products range for different applications available

- Short-circuit breaking capacity up to 100 kA
- Magnetic-only devices (only short-circuit protection)
- Selected types are certified according to ATEX
- Special version for transformer protection

The manual motor starter range is compatible with all major national and international standards.

Product range

Comprehensive accessory range

Manual motor starters can be equipped with busbars, auxiliary contacts, signalling contacts, undervoltage releases and shunt trips. Moreover it is possible to order IP65 (UL/CSA Type 12) door mounting kits, IP65 (UL/CSA Type 12) enclosures and shafts for doors.
MS116, MS132, MS165, MO132, MO165 and MS132-T share almost the same accessory range. Customers can optimize administration costs and inventory costs through reduced number of order codes by benefiting from a compatible range of accessories.

Manual motor starters with busbar connection

Accessory range

Door mounting kits

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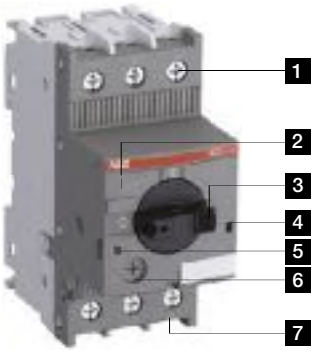
Manual motor starters
Features

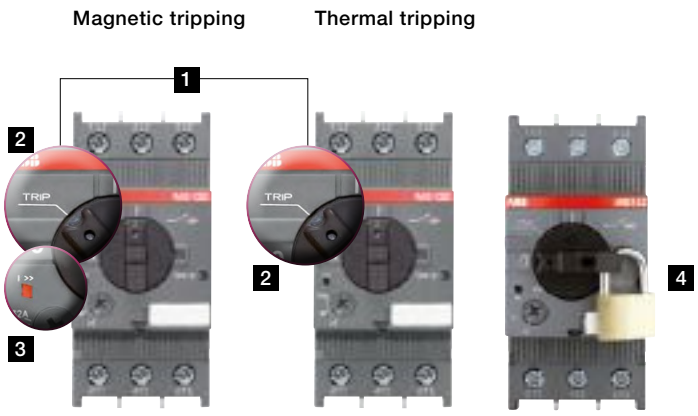
Features
- Manual control
- Disconnect function
- Handle can be locked in the off position
- Remote control via undervoltage release or shunt trip
- Trip indication
- Temperature compensation
- Adjustable current setting
- Magnetic trip indication for several types available (MS132, MS165, and MS132-T)
- One product family in 45 mm width (MS116, MS132, MO132, and MS132-T)
- Variants from 0.1 up to 100 A available
- Short-circuit service breaking capacity I_{CS} up to 100 kA

1 Terminals (1L1, 3L2, 5L3)
2 Switch position TRIP
3 Lockable handle
4 Test function
5 Status indication for short-circuit
6 Current setting range
7 Terminals 2T1, 4T2, 6T3



Features of type MS132

1 Clear trip indication
2 Handle in TRIP position
3 Optical indication for short-circuit
4 Easy locking



TRIP indication

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Manual motor starters
Overview



Type	MS116	MS132	MS165
Thermal and electromagnetic protection	Yes	Yes	Yes
Electromagnetic protection	-	-	-
Phase loss sensitivity	Yes	Yes	Yes
Switch position	ON/OFF	ON/OFF/TRIP	ON/OFF/TRIP
Magnetic trip indication	-	Yes	Yes
Lockable handle without accessories	-	Yes	Yes
Disconnecting feature	Yes	Yes	Yes
Width	45 mm	45 mm	55 mm
Rated operational current I_e	0.16 ... 32 A	0.16 ... 32 A	16 ... 65 A
Setting range	0.1 ... 32 A	0.1 ... 32 A	10 ... 65 A
Ambient air temperature	-25 ... +55 °C [1]	-25 ... +60 °C [1]	-20 ... +60 °C [1]

[1] Compensated
[2] For motor loads only up to 80 A

Accessories

Auxiliary contact		HKF1, HK1	
Signalling contact	for tripped alarm	SK1	
	for short-circuit alarm	-	CK1
Shunt trip		AA1	
Undervoltage release		UA1	

Table for short-circuit ratings for 400/415 V

	Standard range		Performance range		
	MS116		MS132, MS165		
Selection parameters					
Rated operational power	**Setting range for thermal release**	**Type**	**Short-circuit breaking capacity**	**Type**	**Short-circuit breaking capacity**
			I_{cu} / I_{cs}		I_{cu} / I_{cs}
-	0.1 ... 0.16 A	MS116-0.16	50 kA / 50 kA	MS132-0.16	100 kA / 100 kA
0.06 kW	0.16 ... 0.25 A	MS116-0.25	50 kA / 50 kA	MS132-0.25	100 kA / 100 kA
0.09 kW	0.25 ... 0.4 A	MS116-0.4	50 kA / 50 kA	MS132-0.4	100 kA / 100 kA
0.18 kW	0.4 ... 0.63 A	MS116-0.63	50 kA / 50 kA	MS132-0.63	100 kA / 100 kA
0.25 kW	0.63 ... 1.0 A	MS116-1.0	50 kA / 50 kA	MS132-1.0	100 kA / 100 kA
0.55 kW	1.0...1.6 A	MS116-1.6	50 kA / 50 kA	MS132-1.6	100 kA / 100 kA
0.75 kW	1.6...2.5 A	MS116-2.5	50 kA / 50 kA	MS132-2.5	100 kA / 100 kA
1.5 kW	2.5...4.0 A	MS116-4.0	50 kA / 50 kA	MS132-4.0	100 kA / 100 kA
2.2 kW	4.0...6.3 A	MS116-6.3	50 kA / 50 kA	MS132-6.3	100 kA / 100 kA
4.0 kW	6.3...10 A	MS116-10	50 kA / 50 kA	MS132-10	100 kA / 100 kA
5.5 kW	8...12 A	MS116-12	25 kA / 25 kA	MS132-12	100 kA / 100 kA
7.5 kW	10...16 A	MS116-16	16 kA / 16 kA	MS132-16 / MS165-16	100 kA / 100 kA
7.5 kW	14 ... 20 A			MS165-20	100 kA / 100 kA
7.5 kW	16...20 A	MS116-20	15 kA / 10 kA	MS132-20	100 kA / 100 kA
11 kW	18 ... 25 A			MS165-25	100 kA / 100 kA
11 kW	20...25 A	MS116-25	15 kA / 10 kA	MS132-25	50 kA / 50 kA
15 kW	25...32 A	MS116-32	10 kA / 10 kA	MS132-32	50 kA / 25 kA
15 kW	23 ... 32 A			MS165-32	100 kA / 100 kA
22 kW	30 ... 42 A			MS165-42	50 kA / 50 kA
22 kW	40 ... 54 A			MS165-54	50 kA / 30 kA
30 kW	52 ... 65 A			MS165-65	50 kA / 30 kA

	MO132	MO165	MS132-T
	-	-	Yes
	Yes	Yes	-
	-	-	Yes
	ON/OFF/TRIP	ON/OFF/TRIP	ON/OFF/TRIP
	-	-	Yes
	Yes	Yes	Yes
	Yes	Yes	Yes
	45 mm	55 mm	45 mm
	0.16 ... 32 A	16 ... 65 A	0.16 ... 32 A
	-	-	0.1 ... 25 A
	-25 ... +60 °C	-25 ... +60 °C	-25 ... +60 °C [1]

	HKF1, HK1	HKF1
	SK1	SK1
	-	CK1
	AA1	AA1
	UA1	UA1

	Standard range MO132		Performance range MO132, MO165			Transformer protection MS132-T	
	Type	Short-circuit breaking capacity		Type	Short-circuit breaking capacity		Type	Short-circuit breaking capacity
		I_{cu}	I_{cs}		I_{cu}	I_{cs}		I_{cu} / I_{cs}
	MO132-0.16	100 kA	100 kA	MO132-0.16	100 kA	100 kA	MS132-0.16T	100 kA
	MO132-0.25	100 kA	100 kA	MO132-0.25	100 kA	100 kA	MS132-0.25T	100 kA
	MO132-0.4	100 kA	100 kA	MO132-0.4	100 kA	100 kA	MS132-0.4T	100 kA
	MO132-0.63	100 kA	100 kA	MO132-0.63	100 kA	100 kA	MS132-0.63T	100 kA
	MO132-1.0	100 kA	100 kA	MO132-1.0	100 kA	100 kA	MS132-1.0T	100 kA
	MO132-1.6	100 kA	100 kA	MO132-1.6	100 kA	100 kA	MS132-1.6T	100 kA
	MO132-2.5	100 kA	100 kA	MO132-2.5	100 kA	100 kA	MS132-2.5T	100 kA
	MO132-4.0	100 kA	100 kA	MO132-4.0	100 kA	100 kA	MS132-4.0T	100 kA
	MO132-6.3	100 kA	100 kA	MO132-6.3	100 kA	100 kA	MS132-6.3T	100 kA
	MO132-10	100 kA	100 kA	MO132-10	100 kA	100 kA	MS132-10T	100 kA
	MO132-12	100 kA	100 kA	MO132-12	100 kA	100 kA	MS132-12T	100 kA
	MO132-16	100 kA	100 kA	MO132-16 / MO165-16	100 kA	100 kA	MS132-16T	100 kA
				MO165-20	100 kA	100 kA		
	MO132-20	100 kA	100 kA	MO132-20	100 kA	100 kA	MS132-20T	100 kA
	MO132-25	50 kA	50 kA	MO132-25 / MO165-25	50 kA / 100 kA	50 kA / 100 kA	MS132-25T	50 kA
	MO132-32	50 kA	25 kA	MO132-32	50 kA	25 kA	Transformer protection: The instantaneous short-circuit current setting is 20 times the rated operational current.	
				MO165-32	100 kA	100 kA		
				MO165-42	50 kA	50 kA		
				MO165-54	50 kA	30 kA		
				MO165-65	50 kA	30 kA		

2CDC131055C0201

MS116 manual motor starters
0.10 to 32 A – with thermal and electromagnetic protection


2CDC241010F0011

MS116-16


2CDC241001F0011

MS116-25


2CDC241013F0011

MS116-0.16-HKF1-11


2CDC241012F0011

MS116-32-HKF1-11

Description

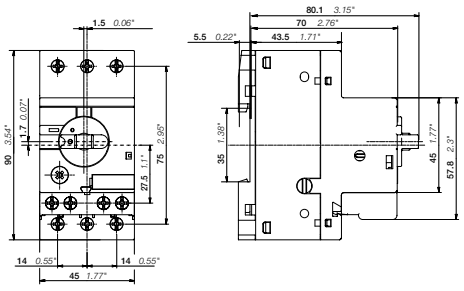
MS116 is a compact and economic range for motor protection up to 15 kW (400 V) / 32 A in width of 45 mm. Further features are the build-in disconnect function, temperature compensation, trip-free mechanism and a rotary handle with a clear switch position indication. The manual motor starter is suitable for three- and single phase applications. Auxiliary contacts, signaling contacts, undervoltage releases, shunt trips, power in-feed blocks and locking devices for protection against unauthorized changes are available as accessory. These are suitable throughout the MS116/MS132/MS165-range.

Ordering details

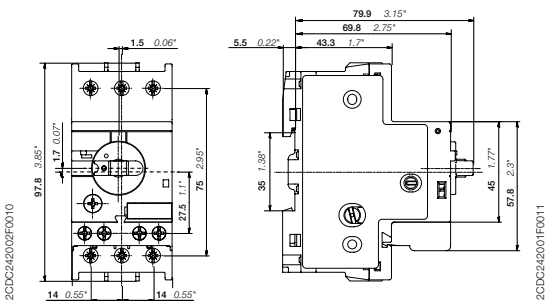
Rated operational power 400 V AC-3 kW	Setting range A	Short-circuit breaking capacity I_{cs} at 400 V AC kA	Rated instantaneous short-circuit current setting I_i A	Type	Order code		Weight (1 pce) kg
-	0.10 ... 0.16	50	2.00 [1]	MS116-0.16	1SAM250000R1001		0.225
0.06	0.16 ... 0.25	50	3.10 [1]	MS116-0.25	1SAM250000R1002		0.225
0.09	0.25 ... 0.40	50	5.00 [1]	MS116-0.4	1SAM250000R1003		0.225
0.18	0.40 ... 0.63	50	7.90 [1]	MS116-0.63	1SAM250000R1004		0.225
0.25	0.63 ... 1.00	50	12.5 [1]	MS116-1.0	1SAM250000R1005		0.225
0.55	1.00 ... 1.60	50	20.0 [1]	MS116-1.6	1SAM250000R1006		0.265
0.75	1.60 ... 2.50	50	31.3 [1]	MS116-2.5	1SAM250000R1007		0.265
1.50	2.50 ... 4.00	50	50.0	MS116-4.0	1SAM250000R1008		0.265
2.20	4.00 ... 6.30	50	78.8	MS116-6.3	1SAM250000R1009		0.265
4.00	6.30 ... 10.0	50	150	MS116-10	1SAM250000R1010		0.265
5.50	8.00 ... 12.0	25	180	MS116-12	1SAM250000R1012		0.265
7.50	10.0 ... 16.0	16	240	MS116-16	1SAM250000R1011		0.265
7.50	16.0 ... 20.0	10	300	MS116-20	1SAM250000R1013		0.310
11.0	20.0 ... 25.0	10	375	MS116-25	1SAM250000R1014		0.310
15.0	25.0 ... 32.0	10	480	MS116-32	1SAM250000R1015		0.310
-	0.10 ... 0.16	50	2.00 [1]	MS116-0.16-HKF1-11	1SAM250005R1001		0.240
0.06	0.16 ... 0.25	50	3.10 [1]	MS116-0.25-HKF1-11	1SAM250005R1002		0.240
0.09	0.25 ... 0.40	50	5.00 [1]	MS116-0.4-HKF1-11	1SAM250005R1003		0.240
0.18	0.40 ... 0.63	50	7.90 [1]	MS116-0.63-HKF1-11	1SAM250005R1004		0.240
0.25	0.63 ... 1.00	50	12.5 [1]	MS116-1.0-HKF1-11	1SAM250005R1005		0.240
0.55	1.00 ... 1.60	50	20.0 [1]	MS116-1.6-HKF1-11	1SAM250005R1006		0.280
0.75	1.60 ... 2.50	50	31.3 [1]	MS116-2.5-HKF1-11	1SAM250005R1007		0.280
1.50	2.50 ... 4.00	50	50.0	MS116-4.0-HKF1-11	1SAM250005R1008		0.280
2.20	4.00 ... 6.30	50	78.8	MS116-6.3-HKF1-11	1SAM250005R1009		0.280
4.00	6.30 ... 10.0	50	150	MS116-10.0-HKF1-11	1SAM250005R1010		0.280
5.50	8.00 ... 12.0	25	180	MS116-12.0-HKF1-11	1SAM250005R1012		0.280
7.50	10.0 ... 16.0	16	240	MS116-16.0-HKF1-11	1SAM250005R1011		0.280
7.50	16.0 ... 20.0	10	300	MS116-20-HKF1-11	1SAM250005R1013		0.326
11.0	20.0 ... 25.0	10	375	MS116-25-HKF1-11	1SAM250005R1014		0.326
15.0	25.0 ... 32.0	10	480	MS116-32-HKF1-11	1SAM250005R1015		0.326

Note: Manual motor starters should always be selected so that the actual motor current is within the setting range.
[1] The data is valid for products, produced after week 34, 2014.

Main dimensions mm, *inches*



MS116 ≤ 16 A & MS116-HKF1-11 ≤ 16 A



MS116 ≥ 20 A & MS116-HKF1-11 ≥ 20 A

2CDC131101C0201

MS132 manual motor starters
0.10 to 32 A – with thermal and electromagnetic protection


1SBC101232F0010

MS132-10


2CDC241001F0011

MS132-32


2CDC241014F0011

MS132-0.16-HKF1-11


2CDC241015F0011

MS132-32-HKF1-11

Description

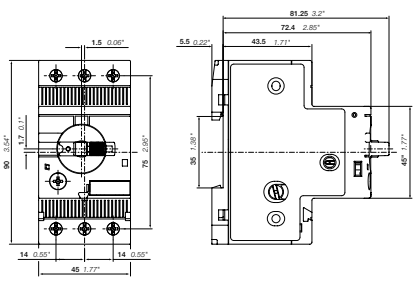
MS132 is a compact and powerful range for motor protection up to 15 kW (400 V) / 32 A in width of 45 mm. This type has also a clear and reliable indication of fault in a separate window in the event of short-circuit tripping. Further features are the build-in disconnect function, temperature compensation, trip-free mechanism and a rotary handle with a clear switch position indication. The manual motor starter is suitable for three- and single phase applications. The handle is lockable to protect against unauthorized changes. Auxiliary contacts, signaling contacts, undervoltage releases, shunt trips, power in-feed blocks are available as accessory. These are suitable throughout the MS116/MS132/MS165-range.

Ordering details

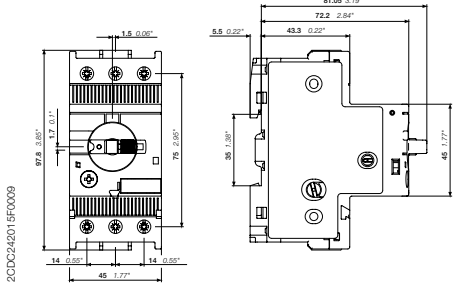
Rated operational power 400 V AC-3	Setting range	Short-circuit breaking capacity I_{cs} at 400 V AC	Rated instantaneous short-circuit current setting I_i	Type	Order code		Weight (1 pce)
kW	A	kA	A				kg
-	0.10 ... 0.16	100	2.00 [1]	MS132-0.16	1SAM350000R1001		0.215
0.06	0.16 ... 0.25	100	3.10 [1]	MS132-0.25	1SAM350000R1002		0.215
0.09	0.25 ... 0.40	100	5.00 [1]	MS132-0.4	1SAM350000R1003		0.215
0.18	0.40 ... 0.63	100	7.90 [1]	MS132-0.63	1SAM350000R1004		0.215
0.25	0.63 ... 1.00	100	12.5 [1]	MS132-1.0	1SAM350000R1005		0.215
0.55	1.00 ... 1.60	100	20.0 [1]	MS132-1.6	1SAM350000R1006		0.265
0.75	1.60 ... 2.50	100	31.3 [1]	MS132-2.5	1SAM350000R1007		0.265
1.50	2.50 ... 4.00	100	50.0	MS132-4.0	1SAM350000R1008		0.265
2.20	4.00 ... 6.30	100	78.8	MS132-6.3	1SAM350000R1009		0.265
4.00	6.30 ... 10.0	100	150	MS132-10	1SAM350000R1010		0.265
5.50	8.00 ... 12.0	100	180	MS132-12	1SAM350000R1012		0.310
7.50	10.0 ... 16.0	100	240	MS132-16	1SAM350000R1011		0.310
7.50	16.0 ... 20.0	100	300	MS132-20	1SAM350000R1013		0.310
11.0	20.0 ... 25.0	50	375	MS132-25	1SAM350000R1014		0.310
15.0	25.0 ... 32.0	25	480	MS132-32	1SAM350000R1015		0.310
-	0.10 ... 0.16	100	2.00 [1]	MS132-0.16-HKF1-11	1SAM350005R1001		0.231
0.06	0.16 ... 0.25	100	3.10 [1]	MS132-0.25-HKF1-11	1SAM350005R1002		0.231
0.09	0.25 ... 0.40	100	5.00 [1]	MS132-0.4-HKF1-11	1SAM350005R1003		0.231
0.18	0.40 ... 0.63	100	7.90 [1]	MS132-0.63-HKF1-11	1SAM350005R1004		0.231
0.25	0.63 ... 1.00	100	12.5 [1]	MS132-1.0-HKF1-11	1SAM350005R1005		0.231
0.55	1.00 ... 1.60	100	20.0 [1]	MS132-1.6-HKF1-11	1SAM350005R1006		0.281
0.75	1.60 ... 2.50	100	31.3 [1]	MS132-2.5-HKF1-11	1SAM350005R1007		0.281
1.50	2.50 ... 4.00	100	50.0	MS132-4.0-HKF1-11	1SAM350005R1008		0.281
2.20	4.00 ... 6.30	100	78.8	MS132-6.3-HKF1-11	1SAM350005R1009		0.281
4.00	6.30 ... 10.0	100	150	MS132-10.0-HKF1-11	1SAM350005R1010		0.281
5.50	8.00 ... 12.0	100	180	MS132-12.0-HKF1-11	1SAM350005R1012		0.326
7.50	10.0 ... 16.0	100	240	MS132-16.0-HKF1-11	1SAM350005R1011		0.326
7.50	16.0 ... 20.0	100	300	MS132-20-HKF1-11	1SAM350005R1013		0.326
11.0	20.0 ... 25.0	50	375	MS132-25-HKF1-11	1SAM350005R1014		0.326
15.0	25.0 ... 32.0	25	480	MS132-32-HKF1-11	1SAM350005R1015		0.326

Note: Manual motor starters should always be selected so that the actual motor current is within the setting range.
[1] The data is valid for products, produced after week 34, 2014.

Main dimensions mm, *inches*



MS132 ≤ 10 A



MS132 ≥ 12 A

2CDC242015F0009

2CDC242016F0009

2CDC131101C0201

MS165 manual motor starters
10 to 65 A – with thermal and electromagnetic protection

2CDC241004V0015

MS165-65

Description

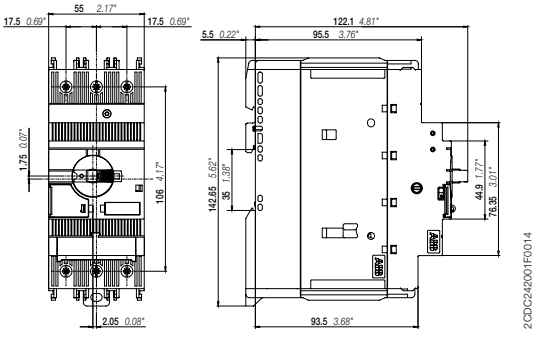
MS165 is a compact and powerful range for motor protection up to 30 kW (400 V) / 65 A in width of 55 mm. This type has also a clear and reliable indication of fault in a separate window in the event of short-circuit tripping. Further features are the build-in disconnect function, temperature compensation, trip-free mechanism and a rotary handle with a clear switch position indication. The manual motor starter is suitable for three- and single phase applications. The handle is lockable to protect against unauthorized changes. Auxiliary contacts, signaling contacts, undervoltage releases, shunt trips, power in-feed blocks are available as accessory. These are suitable throughout the MS116/MS132/MS165-range.

Ordering details

Rated operational power 400 V AC-3	Setting range	Short-circuit breaking capacity I_{cs} at 400 V AC	Rated instantaneous short-circuit current setting I_i	Type	Order code		Weight (1 pce)
kW	A	kA	A				kg
7.5	10 ... 16	100	240	MS165-16	1SAM451000R1011		0.950
7.5	14 ... 20	100	300	MS165-20	1SAM451000R1012		0.950
11	18 ... 25	100	375	MS165-25	1SAM451000R1013		0.960
15	23 ... 32	100	480	MS165-32	1SAM451000R1014		0.970
22	30 ... 42	50	630	MS165-42	1SAM451000R1015		0.970
22	40 ... 54	30	810	MS165-54	1SAM451000R1016		0.970
30	52 ... 65	30	975	MS165-65	1SAM451000R1017		0.980

Note: Manual motor starters should always be selected so that the actual motor current is within the setting range.

Main dimensions mm, *inches*



2CDC242001F0014

MS165

2CDC131101C0201

MO132 manual motor starters magnetic only
0.16 to 32 A – with electromagnetic protection


2CDC241009F0011

MO132-6.3


2CDC241008F0011

MO132-32

Description

Manual motor starters magnetic only are electromechanical protection devices for the main circuit. They are used mainly to switch motors manually ON/OFF and protect them fuse-less against short-circuit.

Fuse-less protection with a manual motor starter saves costs, space and ensures a quick reaction under short-circuit condition, by switching off the motor within milliseconds. Fuse-less starter combinations are setup together with contactors and overload relays.

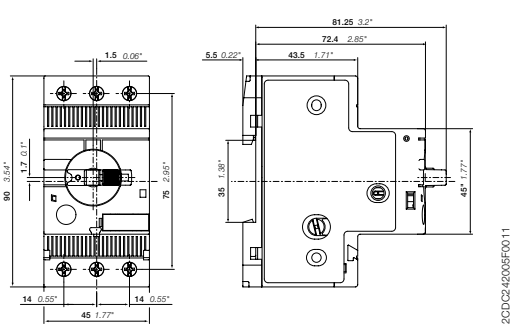
2

Ordering details

Rated operational power 400 V AC-3[1]	Rated operational current	Short-circuit breaking capacity I_{cs} at 400 V AC	Rated instantaneous short-circuit current setting I_i	Type	Order code		Weight (1 pce)
kW	A	kA	A				kg
-	0.16	100	2.00 [2]	MO132-0.16	1SAM360000R1001		0.215
0.06	0.25	100	3.10 [2]	MO132-0.25	1SAM360000R1002		0.215
0.09	0.40	100	5.00 [2]	MO132-0.4	1SAM360000R1003		0.215
0.12	0.63	100	7.90 [2]	MO132-0.63	1SAM360000R1004		0.215
0.25	1.0	100	12.5 [2]	MO132-1.0	1SAM360000R1005		0.215
0.55	1.6	100	20.0 [2]	MO132-1.6	1SAM360000R1006		0.265
0.75	2.5	100	31.3 [2]	MO132-2.5	1SAM360000R1007		0.265
1.5	4.0	100	50.0	MO132-4.0	1SAM360000R1008		0.265
2.2	6.3	100	78.8	MO132-6.3	1SAM360000R1009		0.265
4.0	10	100	125	MO132-10	1SAM360000R1010		0.265
5.5	12	100	150	MO132-12	1SAM360000R1012		0.310
7.5	16	100	200	MO132-16	1SAM360000R1011		0.310
7.5	20	100	250	MO132-20	1SAM360000R1013		0.310
11	25	50	313	MO132-25	1SAM360000R1014		0.310
15	32	25	400	MO132-32	1SAM360000R1015		0.310

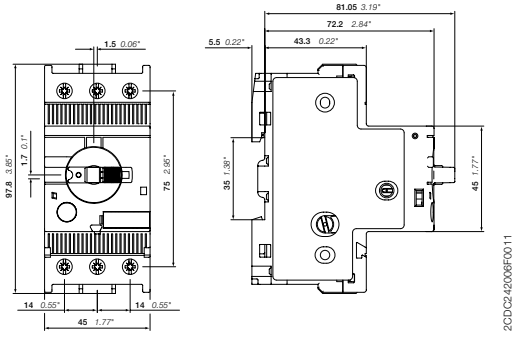
[1] For overload protection of motors, an appropriate thermal or electronic overload relay must be used
[2] The data is valid for products, produced after week 34, 2014.

Main dimensions mm, *inches*



2CDC242005F0011

MO132 ≤ 10 A



2CDC242006F0011

MO132 ≥ 12 A

2CDC131101C0201

MO165 manual motor starters magnetic only
16 to 65 A – with electromagnetic protection

2CDC241005V0015

MO165-65

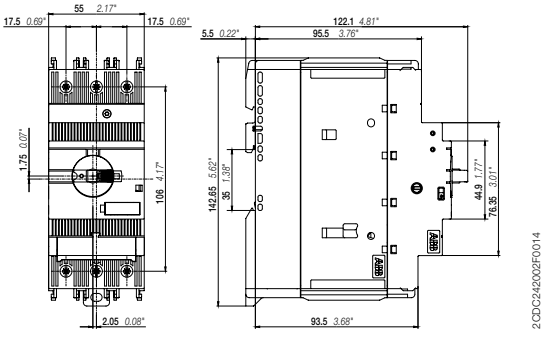
Description

Manual motor starters magnetic only are electromechanical protection devices for the main circuit. They are used mainly to switch motors manually ON/OFF and protect them fuse-less against short-circuit. Fuse-less protection with a manual motor starter saves costs, space and ensures a quick reaction under short-circuit condition, by switching off the motor within milliseconds. Fuse-less starter combinations are setup together with contactors and overload relays.

Ordering details

Rated operational power 400 V AC-3	Rated operational current	Short-circuit breaking capacity I_{cs} at 400 V AC	Rated instantaneous short-circuit current setting I_i	Type	Order code		Weight (1 pce)
kW	A	kA	A				kg
7.5	16	100	240	MO165-16	1SAM461000R1011		0.950
7.5	20	100	300	MO165-20	1SAM461000R1012		0.950
11	25	100	375	MO165-25	1SAM461000R1013		0.960
15	32	100	480	MO165-32	1SAM461000R1014		0.970
22	42	50	630	MO165-42	1SAM461000R1015		0.970
22	54	30	810	MO165-54	1SAM461000R1016		0.970
30	65	30	975	MO165-65	1SAM461000R1017		0.980

Main dimensions mm, *inches*



2CDC242002F0014

MO165

2CDC131101C0201

MS132-T circuit breakers for transformer protection
0.10 to 25 A – with thermal and electromagnetic protection


2CDC241001F0014

MS132-10T


2CDC241002F0014

MS132-25T

Description

Circuit breakers for transformer protection are electro mechanical protection devices specially designed to protect control transformers on the primary side. They allow fuse-less protection against overload and short-circuit, saving space and cost and ensuring a quick reaction under short-circuit condition by switching off the transformer within milliseconds. The short-circuit current setting is fixed to 20 times the operating current to handle the high inrush current generated by transformers. The device allows manual connection and disconnection of the transformer from the mains.

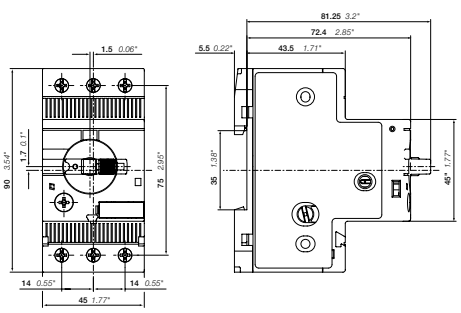
MS132-T is a 45 mm (width) compact and powerful range for transformer protection up to 12.5 kW (400 V) / 25 A. This type has also a clear and reliable indication of fault in a separate window in the event of short-circuit tripping. Further features are the build-in disconnect function, temperature compensation, trip-free mechanism and a rotary handle with a clear switch position indication. The handle is lockable to protect against unauthorized changes. Auxiliary contacts, signaling contacts, undervoltage releases, shunt trips, power in-feed blocks are available as accessory. These are suitable throughout the MS116/MS132/MS165-range. Moreover ABB offers special accessories for fast single phase setup.

Ordering details

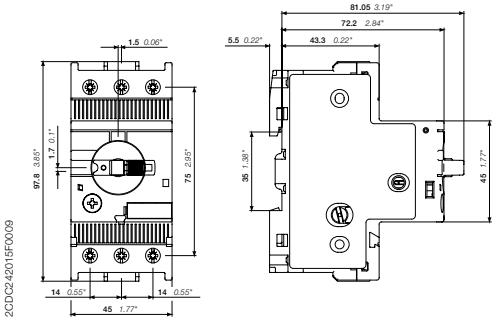
Setting range A	Short-circuit breaking capacity I_{cs} at 400 V AC kA	Rated instantaneous short-circuit current setting I_i A	Type	Order code		Weight (1 pce) kg
0.10 ... 0.16	100	3.2	MS132-0.16T	1SAM340000R1001		0.215
0.16 ... 0.25	100	5	MS132-0.25T	1SAM340000R1002		0.215
0.25 ... 0.40	100	8	MS132-0.4T	1SAM340000R1003		0.215
0.40 ... 0.63	100	12.6	MS132-0.63T	1SAM340000R1004		0.215
0.63 ... 1.00	100	20	MS132-1.0T	1SAM340000R1005		0.215
1.00 ... 1.60	100	32	MS132-1.6T	1SAM340000R1006		0.265
1.60 ... 2.50	100	50	MS132-2.5T	1SAM340000R1007		0.265
2.50 ... 4.00	100	80	MS132-4.0T	1SAM340000R1008		0.265
4.00 ... 6.30	100	126	MS132-6.3T	1SAM340000R1009		0.265
6.30 ... 10.0	100	200	MS132-10T	1SAM340000R1010		0.265
8.00 ... 12.0	100	240	MS132-12T	1SAM340000R1012		0.310
10.0 ... 16.0	100	320	MS132-16T	1SAM340000R1011		0.310
16.0 ... 20.0	100	400	MS132-20T	1SAM340000R1013		0.310
20.0 ... 25.0	50	500	MS132-25T	1SAM340000R1014		0.310

Please check for single phase equipment chapter Main accessories.

Main dimensions mm, *inches*



MS132T ≤ 10 A



MS132T ≥ 12 A

2CDC242015F0009

2CDC242016F0009

2CDC131101C0201

Technical data
MS116, MS132, MS165, MO132, MO165, MS132-T

Main circuit – Utilization characteristics according to IEC/EN

Type		MS116	MS132	MS165	MO132	MO165	MS132-T
Standards		IEC/EN 60947–2, IEC/EN 60947-4-1, IEC/EN 60947-1					
Rated operational voltage U_e		690 V AC	690 V AC / 250 V DC	690 V AC	690 V AC	690 V AC	690 V AC
Rated frequency		50/60 Hz	DC, 50/60 Hz	DC, 50/60 Hz	50/60 Hz	DC, 50/60 Hz	50/60 Hz
Trip class		10A	10	10	-	-	10
Number of poles		3					
Duty time		100 %					
Mechanical durability		100000 cycles	100000 cycles	50000 cycles	100000 cycles	50000 cycles	100000 cycles
Electrical durability	up to 16 A	100000 cycles	50000 cycles	25000 cycles	50000 cycles	25000 cycles	50000 cycles
	20 ... 65 A	50000 cycles	50000 cycles	25000 cycles	50000 cycles	25000 cycles	50000 cycles
Rated impulse withstand voltage U_{imp}		6 kV	6 kV	8 kV	6 kV	8 kV	6 kV
Rated insulation voltage U_i		690 V	690 V	1000 V	690 V	1000 V	690 V
Rated operational current I_e		See ordering details					
Rated operational current DC-5 I_e 3 conducting paths in series up to 250 V		-	See "Rated operational current I_e"	See "Rated operational current I_e"	-	See "Rated operational current I_e"	-
Rated instantaneous short-circuit current setting I_i		See ordering details					
Rated service short-circuit breaking capacity I_{cs}		See table "Short-circuit breaking capacity and back-up fuses"					
Rated ultimate short-circuit breaking capacity I_{cu}		See table "Short-circuit breaking capacity and back-up fuses"					
Rated service short-circuit breaking capacity DC I_{cs} 3 conducting paths in series up to 250 V		-	10 kA	100 kA	-	100 kA	-

Short-circuit breaking capacity and back-up fuses

I_{cs} Rated service short-circuit breaking capacity

I_{cu} Rated ultimate short-circuit breaking capacity

I_{cc} Prospective short-circuit current at installation location

Note: Maximum rated current of the back-up fuses if $I_{cc} > I_{cs}$

Type	230 V AC			400 V AC			440 V AC			500 V AC			690 V AC		
	I_{cs}	I_{cu}	gG, aM	I_{cs}	I_{cu}	gG, aM	I_{cs}	I_{cu}	gG, aM	I_{cs}	I_{cu}	gG, aM	I_{cs}	I_{cu}	gG, aM
	kA	kA	A	kA	kA	A	kA	kA	A	kA	kA	A	kA	kA	A
MS116-0.16	50	50	- [1]	50	50	- [1]	30	30	- [1]	30	30	- [1]	30	30	- [1]
MS116-0.25	50	50	- [1]	50	50	- [1]	30	30	- [1]	30	30	- [1]	30	30	- [1]
MS116-0.4	50	50	- [1]	50	50	- [1]	30	30	- [1]	30	30	- [1]	30	30	- [1]
MS116-0.63	50	50	- [1]	50	50	- [1]	30	30	- [1]	30	30	- [1]	30	30	- [1]
MS116-1.0	50	50	- [1]	50	50	- [1]	30	30	- [1]	30	30	- [1]	30	30	- [1]
MS116-1.6	50	50	- [1]	50	50	- [1]	30	30	- [1]	30	30	- [1]	30	30	- [1]
MS116-2.5	50	50	- [1]	50	50	- [1]	10	10	25 [2]	10	10	25 [2]	5	5	25 [2]
MS116-4.0	50	50	- [1]	50	50	- [1]	6	6	25 [2]	6	6	25 [2]	2	2	25 [2]
MS116-6.3	50	50	- [1]	50	50	- [1]	6	6	63 [2]	6	6	63 [2]	2	2	40 [2]
MS116-10	50	50	- [1]	50	50	- [1]	6	6	63 [2]	6	6	63 [2]	2	2	50 [2]
MS116-12	25	25	80 [2]	25	25	80 [2]	6	6	63 [2]	6	6	63 [2]	2	2	50 [2]
MS116-16	16	16	80 [2]	16	16	80 [2]	4	4	63 [2]	4	4	63 [2]	2	2	63 [2]
MS116-20	10	15	125 [2]	10	15	125 [2]	3	6	125 [2]	3	4	125 [2]	2	2	80 [2]
MS116-25	10	15	125 [2]	10	15	125 [2]	3	6	125 [2]	3	4	125 [2]	2	2	100 [2]
MS116-32	10	10	125 [2]	10	10	125 [2]	3	6	125 [2]	3	4	125 [2]	2	2	100 [2]

[1] No back-up fuse required, because short-circuit proof up to 50 kA
[2] Rated back-up fuse for short-circuit up to 50 kA

2CDC131101C0201

Technical data
MS116, MS132, MS165, MO132, MO165, MS132-T

Type	230 V AC			400 V AC			440 V AC			500 V AC			690 V AC		
	I_{cs}	I_{cu}	gG, aM	I_{cs}	I_{cu}	gG, aM	I_{cs}	I_{cu}	gG, aM	I_{cs}	I_{cu}	gG, aM	I_{cs}	I_{cu}	gG, aM
	kA	kA	A	kA	kA	A	kA	kA	A	kA	kA	A	kA	kA	A
MS132-0.16	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]
MS132-0.25	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]
MS132-0.4	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]
MS132-0.63	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]
MS132-1.0	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]
MS132-1.6	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]
MS132-2.5	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]
MS132-4.0	100	100	- [1]	100	100	- [1]	20	20	35 [2]	20	20	35 [2]	3	3	32 [2]
MS132-6.3	100	100	- [1]	100	100	- [1]	20	20	63 [2]	20	20	63 [2]	3	3	50 [2]
MS132-10	100	100	- [1]	100	100	- [1]	20	20	100 [2]	20	20	100 [2]	3	3	50 [2]
MS132-12	100	100	- [1]	100	100	- [1]	20	20	100 [2]	20	20	100 [2]	3	3	63 [2]
MS132-16	100	100	- [1]	100	100	- [1]	20	20	125 [2]	20	20	125 [2]	3	3	63 [2]
MS132-20	100	100	- [1]	100	100	- [1]	20	20	125 [2]	20	20	125 [2]	3	3	80 [2]
MS132-25	50	50	125 [2]	50	50	125 [2]	20	20	125 [2]	10	10	125 [2]	3	3	100 [2]
MS132-32	25	50	125 [2]	25	50	125 [2]	20	20	125 [2]	10	10	125 [2]	3	3	100 [2]

[1] No back-up fuse required, because short-circuit proof up to 100 kA
[2] Rated back-up fuse for short-circuit up to 100 kA

Type	230 V AC			400 V AC			440 V AC			500 V AC			690 V AC			250 V DC [3]		
	I_{cs}	I_{cu}	gG	I_{cs}	I_{cu}	gG	I_{cs}	I_{cu}	gG	I_{cs}	I_{cu}	gG	I_{cs}	I_{cu}	gG	I_{cs}	I_{cu}	gG
	kA	kA	A	kA	kA	A	kA	kA	A	kA	kA	A	kA	kA	A	kA	kA	A
MS165-16	100	100	- [1]	100	100	- [1]	75	75	125 [2]	20	20	125 [2]	8	8	63 [2]	100	100	- [1]
MS165-20	100	100	- [1]	100	100	- [1]	75	75	125 [2]	20	20	125 [2]	8	8	63 [2]	100	100	- [1]
MS165-25	100	100	- [1]	100	100	- [1]	50	50	125 [2]	20	20	125 [2]	8	8	80 [2]	100	100	- [1]
MS165-32	100	100	- [1]	100	100	- [1]	50	50	125 [2]	20	20	125 [2]	5	5	100 [2]	100	100	- [1]
MS165-42	50	50	125 [2]	50	50	125 [2]	50	50	125 [2]	20	20	125 [2]	5	5	100 [2]	100	100	- [1]
MS165-54	30	50	125 [2]	30	50	125 [2]	30	45	125 [2]	20	20	125 [2]	5	5	100 [2]	100	100	- [1]
MS165-65	30	50	125 [2]	30	50	125 [2]	30	45	125 [2]	20	20	125 [2]	5	5	100 [2]	100	100	- [1]

[1] No back-up fuse required, short-circuit proof up to 100 kA
[2] Rated back-up fuse for short-circuit up to 100 kA
[3] 3 poles in series

Type	230 V AC			400 V AC			440 V AC			500 V AC			690 V AC		
	I_{cs}	I_{cu}	gG, aM	I_{cs}	I_{cu}	gG, aM	I_{cs}	I_{cu}	gG, aM	I_{cs}	I_{cu}	gG, aM	I_{cs}	I_{cu}	gG, aM
	kA	kA	A	kA	kA	A	kA	kA	A	kA	kA	A	kA	kA	A
MO132-0.16	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]
MO132-0.25	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]
MO132-0.4	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]
MO132-0.63	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]
MO132-1.0	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]
MO132-1.6	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]
MO132-2.5	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]
MO132-4.0	100	100	- [1]	100	100	- [1]	20	20	35 [2]	20	20	35 [2]	3	3	32 [2]
MO132-6.3	100	100	- [1]	100	100	- [1]	20	20	63 [2]	20	20	63 [2]	3	3	50 [2]
MO132-10	100	100	- [1]	100	100	- [1]	20	20	100 [2]	20	20	100 [2]	3	3	50 [2]
MO132-12	100	100	- [1]	100	100	- [1]	20	20	100 [2]	20	20	100 [2]	3	3	63 [2]
MO132-16	100	100	- [1]	100	100	- [1]	20	20	125 [2]	20	20	125 [2]	3	3	63 [2]
MO132-20	100	100	- [1]	100	100	- [1]	20	20	125 [2]	20	20	125 [2]	3	3	80 [2]
MO132-25	50	50	125 [2]	50	50	125 [2]	10	10	125 [2]	10	10	125 [2]	3	3	100 [2]
MO132-32	25	50	125 [2]	25	50	125 [2]	10	10	125 [2]	10	10	125 [2]	3	3	100 [2]

[1] No back-up fuse required, because short-circuit proof up to 100 kA
[2] Rated back-up fuse for short-circuit up to 100 kA

2CDC131101C0201

Technical data
MS116, MS132, MS165, MO132, MO165, MS132-T

kA

Type	230 V AC			400 V AC			440 V AC			500 V AC			690 V AC			250 V DC [3]		
	I_{cs}	I_{cu}	gG	I_{cs}	I_{cu}	gG	I_{cs}	I_{cu}	gG	I_{cs}	I_{cu}	gG	I_{cs}	I_{cu}	gG	I_{cs}	I_{cu}	gG
	kA	kA	A	kA	kA	A	kA	kA	A	kA	kA	A	kA	kA	A	kA	kA	A
MO165-16	100	100	- [1]	100	100	- [1]	75	75	125 [2]	20	20	125 [2]	8	8	63 [2]	100	100	- [1]
MO165-20	100	100	- [1]	100	100	- [1]	75	75	125 [2]	20	20	125 [2]	8	8	63 [2]	100	100	- [1]
MO165-25	100	100	- [1]	100	100	- [1]	50	50	125 [2]	20	20	125 [2]	8	8	80 [2]	100	100	- [1]
MO165-32	100	100	- [1]	100	100	- [1]	50	50	125 [2]	20	20	125 [2]	5	5	100 [2]	100	100	- [1]
MO165-42	50	50	125 [2]	50	50	125 [2]	50	50	125 [2]	20	20	125 [2]	5	5	100 [2]	100	100	- [1]
MO165-54	30	50	125 [2]	30	50	125 [2]	30	45	125 [2]	20	20	125 [2]	5	5	100 [2]	100	100	- [1]
MO165-65	30	50	125 [2]	30	50	125 [2]	30	45	125 [2]	20	20	125 [2]	5	5	100 [2]	100	100	- [1]

[1] No back-up fuse required, short-circuit proof up to 100 kA
[2] Rated back-up fuse for short-circuit up to 100 kA
[3] 3 poles in series

Type	230 V AC			400 V AC			440 V AC			500 V AC			690 V AC		
	I_{cs}	I_{cu}	gG, aM	I_{cs}	I_{cu}	gG, aM	I_{cs}	I_{cu}	gG, aM	I_{cs}	I_{cu}	gG, aM	I_{cs}	I_{cu}	gG, aM
	kA	kA	A	kA	kA	A	kA	kA	A	kA	kA	A	kA	kA	A
MS132-0.16T	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]
MS132-0.25T	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]
MS132-0.4T	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]
MS132-0.63T	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]
MS132-1.0T	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]
MS132-1.6T	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]
MS132-2.5T	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]	100	100	- [1]
MS132-4.0T	100	100	- [1]	100	100	- [1]	30	30	35 [2]	20	20	35 [2]	3	3	32 [2]
MS132-6.3T	100	100	- [1]	100	100	- [1]	30	30	63 [2]	20	20	63 [2]	3	3	50 [2]
MS132-10T	100	100	- [1]	100	100	- [1]	30	30	100 [2]	20	20	100 [2]	3	3	50 [2]
MS132-12T	100	100	- [1]	100	100	- [1]	30	30	100 [2]	20	20	100 [2]	3	3	63 [2]
MS132-16T	100	100	- [1]	100	100	- [1]	30	30	125 [2]	20	20	125 [2]	3	3	63 [2]
MS132-20T	100	100	- [1]	100	100	- [1]	30	30	125 [2]	20	20	125 [2]	3	3	80 [2]
MS132-25T	50	50	125 [2]	50	50	125 [2]	30	30	125 [2]	10	10	125 [2]	3	3	100 [2]

[1] No back-up fuse required, short-circuit proof up to 100 kA
[2] Rated back-up fuse for short-circuit up to 100 kA

Main circuit – Utilization characteristics according to UL/CSA

Type		MS116	MS132	MS165	MO132	MO165	MS132-T
Standards		UL 60947-1, UL 60947-4-1 (UL 508), CSA C22.2 No.60947-4-1 (CSA C22.2 No.14)					-
Rated operational voltage U_e acc. to UL/CSA		600 V AC	600 V AC	1000 V AC	600 V AC	1000 V AC	-
Trip class		10A	10		-		-
Motor ratings[1]	Horsepower	See table "Motor ratings, three phase"					-
	Full Load Amps (FLA)	See table "Motor ratings, three phase"					-
	Locked Rotor Amps (LRA)	See table "Motor ratings, three phase"					-

[1] See product data sheets for UL/CSA single phase motor and general use (AC-1) ratings.

UL/CSA ratings overview

Type	MS116	MS132	MS165	MO132	MO165	MS132-T
Manual Motor Controller	x	x	x	x	x	-
Manual Motor Controller, Suitable as Motor Disconnect	x	x	x	x	x	-
Manual Motor Controller, Suitable for use in Group Installations	x	x	x	x	x	-
Manual Motor Controller, Suitable for Tap Conductor Protection in Group Installations	-	x	x	x	x	-
Manual self-protected Combination Motor Controller (Type E)	-	x	x	-	-	-

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Technical data
MS116, MS132, MS165, MO132, MO165, MS132-T

UL/CSA Motor ratings, three phase – MS116

Type	200 V AC			208 V AC			220 ... 240 V AC			440 ... 480 V AC			550 ... 600 V AC		
	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA
MS116-0.16	-	0.16	0.96	-	0.16	0.96	-	0.16	0.96	-	0.16	0.96	-	0.16	0.96
MS116-0.25	-	0.25	1.5	-	0.25	1.5	-	0.25	1.5	-	0.25	1.5	-	0.25	1.5
MS116-0.40	-	0.4	2.4	-	0.4	2.4	-	0.4	2.4	-	0.4	2.4	-	0.4	2.4
MS116-0.63	-	0.63	3.78	-	0.63	3.78	-	0.63	3.78	-	0.63	3.78	-	0.63	3.78
MS116-1.0	-	1	6	-	1	6	-	1	6	-	1	6	1/2	1	6
MS116-1.6	-	1.6	9.6	-	1.6	9.6	-	1.6	9.6	3/4	1.6	9.6	3/4	1.6	9.6
MS116-2.5	1/2	2.5	15	1/2	2.5	15	1/2	2.5	15	1	2.5	15	1 1/2	2.5	15
MS116-4.0	3/4	4	24	3/4	4	24	1	4	24	2	4	24	3	3.9	25.6
MS116-6.3	1	6.3	37.8	1	6.3	37.8	1 1/2	6.3	37.8	3	4.8	32	5	6.1	36.8
MS116-10	2	7.8	57.5	2	7.5	55	3	9.6	64	5	7.6	46	7 1/2	9	50.8
MS116-12	3	11	73.6	3	10.6	71	3	9.6	64	7 1/2	11	63.5	10	11	64.8
MS116-16	3	11	73.6	3	10.6	71	5	15.2	92	10	14	81	10	11	64.8
MS116-20	5	17.5	105.8	5	16.7	102	5	15.2	92	10	14	81	15	17	93
MS116-25	5	17.5	105.8	7 1/2	24.2	140	7 1/2	22	127	15	21	116	20	22	116
MS116-32	7 1/2	25.3	146	10	30.8	179	10	28	162	20	27	145	25	27	146

UL/CSA Motor ratings, three phase – MS132

Type	200 V AC			208 V AC			220 ... 240 V AC			440 ... 480 V AC			550 ... 600 V AC		
	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA
MS132-0.16	-	0.16	0.96	-	0.16	0.96	-	0.16	0.96	-	0.16	0.96	-	0.16	0.96
MS132-0.25	-	0.25	1.5	-	0.25	1.5	-	0.25	1.5	-	0.25	1.5	-	0.25	1.5
MS132-0.40	-	0.4	2.4	-	0.4	2.4	-	0.4	2.4	-	0.4	2.4	-	0.4	2.4
MS132-0.63	-	0.63	3.78	-	0.63	3.78	-	0.63	3.78	-	0.63	3.78	-	0.63	3.78
MS132-1.0	-	1	6	-	1	6	-	1	6	-	1	6	1/2	1	6
MS132-1.6	-	1.6	9.6	-	1.6	9.6	-	1.6	9.6	3/4	1.6	9.6	3/4	1.6	9.6
MS132-2.5	1/2	2.5	15	1/2	2.5	15	1/2	2.5	15	1	2.5	15	1-1/2	2.5	15
MS132-4.0	3/4	4	24	3/4	4	24	1	4	24	2	4	24	3	3.9	25.6
MS132-6.3	1	6.3	37.8	1	6.3	37.8	1 1/2	6.3	37.8	3	4.8	32	5	6.1	36.8
MS132-10	2	7.8	57.5	2	7.5	55	3	9.6	64	5	7.6	46	7 1/2	9	50.8
MS132-12	3	11	73.6	3	10.6	71	3	9.6	64	7 1/2	11	63.5	10	11	64.8
MS132-16	3	11	73.6	3	10.6	71	5	15.2	92	10	14	81	10	11	64.8
MS132-20	5	17.5	105.8	5	16.7	102	5	15.2	92	10	14	81	15	17	93
MS132-25	5	17.5	105.8	7 1/2	24.2	140	7 1/2	22	127	15	21	116	20	22	116
MS132-32	7 1/2	25.3	146	10	30.8	179	10	28	162	20	27	145	25	27	146

UL/CSA Motor ratings, three phase – MS165

Type	200 V AC			208 V AC			220 ... 240 V AC			440 ... 480 V AC			550 ... 600 V AC		
	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA
MS165-16	3	11	73.6	3	10.6	71	5	15.2	92	10	14	81	10	11	64.8
MS165-20	5	17.5	105.8	5	16.7	102	5	15.2	92	10	14	81	15	17	93
MS165-25	5	17.5	105.8	7 1/2	24.2	140	7 1/2	22	127	15	21	116	20	22	116
MS165-32	7 1/2	25.3	146	10	30.8	179	10	28	162	20	27	145	30	32	174
MS165-42	10	32.2	186.3	10	30.8	179	15	42	232	30	40	218	40	41	232
MS165-54	15	48.3	267	15	46.2	257	20	54	290	40	52	290	50	52	290
MS165-65	20	62.1	334	20	59.4	321	20	54	290	50	65	363	60	62	348

hp Horsepower
FLA Full Load Amps
LRA Locked Rotor Amps

Note: Manual motor starters should always be selected so that the actual motor current is within the setting range; see ordering detail pages. Horsepower (hp) ratings are for reference only.

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Technical data
MS116, MS132, MS165, MO132, MO165, MS132-T

UL/CSA Motor ratings, three phase – MO132

Type	200 V AC			208 V AC			220 ... 240 V AC			440 ... 480 V AC			550 ... 600 V AC		
	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA
MO132-0.16	-	0.16	0.96	-	0.16	0.96	-	0.16	0.96	-	0.16	0.96	-	0.16	0.96
MO132-0.25	-	0.25	1.5	-	0.25	1.5	-	0.25	1.5	-	0.25	1.5	-	0.25	1.5
MO132-0.40	-	0.4	2.4	-	0.4	2.4	-	0.4	2.4	-	0.4	2.4	-	0.4	2.4
MO132-0.63	-	0.63	3.78	-	0.63	3.78	-	0.63	3.78	-	0.63	3.78	-	0.63	3.78
MO132-1.0	-	1	6	-	1	6	-	1	6	-	1	6	1/2	1	6
MO132-1.6	-	1.6	9.6	-	1.6	9.6	-	1.6	9.6	3/4	1.6	9.6	3/4	1.6	9.6
MO132-2.5	1/2	2.5	15	1/2	2.5	15	1/2	2.5	15	1	2.5	15	1 1/2	2.5	15
MO132-4.0	3/4	4	24	3/4	4	24	1	4	24	2	4	24	3	3.9	25.6
MO132-6.3	1	6.3	37.8	1	6.3	37.8	1 1/2	6.3	37.8	3	4.8	32	5	6.1	36.8
MO132-10	2	7.8	57.5	2	7.5	55	3	9.6	64	5	7.6	46	7 1/2	9	50.8
MO132-12	3	11	73.6	3	10.6	71	3	9.6	64	7 1/2	11	63.5	10	11	64.8
MO132-16	3	11	73.6	3	10.6	71	5	15.2	92	10	14	81	10	11	64.8
MO132-20	5	17.5	105.8	5	16.7	102	5	15.2	92	10	14	81	15	17	93
MO132-25	5	17.5	105.8	7 1/2	24.2	140	7 1/2	22	127	15	21	116	20	22	116
MO132-32	7 1/2	25.3	146	10	30.8	179	10	28	162	20	27	145	25	27	146

UL/CSA Motor ratings, three phase – MO165

Type	200 V AC			208 V AC			220 ... 240 V AC			440 ... 480 V AC			550 ... 600 V AC		
	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA
MO165-16	3	11	73.6	3	10.6	71	5	15.2	92	10	14	81	10	11	64.8
MO165-20	5	17.5	105.8	5	16.7	102	5	15.2	92	10	14	81	15	17	93
MO165-25	5	17.5	105.8	7 1/2	24.2	140	7 1/2	22	127	15	21	116	20	22	116
MO165-32	7 1/2	25.3	146	10	30.8	179	10	28	162	20	27	145	30	32	174
MO165-42	10	32.2	186.3	10	30.8	179	15	42	232	30	40	218	40	41	232
MO165-54	15	48.3	267	15	46.2	257	20	54	290	40	52	290	50	52	290
MO165-65	20	62.1	334	20	59.4	321	20	54	290	50	65	363	60	62	348

UL/CSA Motor ratings, single phase – MS132-T

Type	120 V AC			220 ... 240 V AC		
	hp	FLA	LRA	hp	FLA	LRA
MS132-0.16T	-	0.16	0.96	-	0.16	0.96
MS132-0.25T	-	0.25	1.5	-	0.25	1.5
MS132-0.4T	-	0.4	2.4	-	0.4	2.4
MS132-0.63T	-	0.63	3.78	-	0.63	3.78
MS132-1.0T	-	1	6	-	1	6
MS132-1.6T	-	1.6	9.6	1/10	1.6	9.6
MS132-2.5T	-	2.5	15	1/6	2.5	15
MS132-4.0T	1/8	4	24	1/3	4	24
MS132-6.3T	1/4	6.3	37.8	1/2	6.3	37.8
MS132-10T	1/2	9.8	58.8	1-1/2	10	60
MS132-12T	1/2	9.8	58.8	2	12	72
MS132-16T	1	16	96	2	12	72
MS132-20T	1-1/2	20	120	3	17	92
MS132-25T	2	24	144	3	17	127

hp Horsepower
FLA Full Load Amps
LRA Locked Rotor Amps

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Technical data
MS116, MS132, MS165, MO132, MO165, MS132-T

UL/CSA Maximum short-circuit current ratings – MS116

Type	Manual Motor Controllers					
	Branch circuit protection, max. size per NEC/CEC[1]		for motor disconnect[2]		for group installations	
	Fuses	Circuit breaker	480 V	600 V	480 V	600 V
	A	A	kA	kA	kA	kA
MS116-0.16	100	-	30	5	30	5
MS116-0.25	100	-	30	5	30	5
MS116-0.40	100	-	30	5	30	5
MS116-0.63	100	-	30	5	30	5
MS116-1.0	100	-	30	5	30	5
MS116-1.6	100	-	30	5	30	5
MS116-2.5	100	-	30	5	30	5
MS116-4.0	100	-	18	5	18	5
MS116-6.3	100	-	18	5	18	5
MS116-10	100	-	18	5	18	5
MS116-12	100	-	18	5	18	5
MS116-16	100	-	18	5	18	5
MS116-20	100	-	18	5	18	5
MS116-25	100	-	18	5	18	5
MS116-32	100	-	18	5	18	5

[1] NEC: NFPA®70 National Electrical Code®; CEC: CSA C22.1 Canadian Electrical Code.
[2] Suitable as motor disconnect only when provide with padlock adaptor SA1 or SA3.

UL/CSA Maximum short-circuit current ratings – MS132

Type	Manual Motor Controllers								Manual self-protected Combination Motor Controllers (Type E)[2]	
	Branch circuit protection, max. size per NEC/CEC[1]		for motor disconnect		for group installations		for tap conductor protection in group installations			
	Fuses	Circuit breaker	480 V	600 V	480 V	600 V	480 V	600 V	480Y / 277 V	600Y / 347 V
	A	A	kA	kA	kA	kA	kA	kA	kA	kA
MS132-0.16	Any Listed fuses. Size per NEC/CEC	Any Listed UL489 / CSA C22.2 No.5 circuit breaker. Size per NEC/CEC	65	47	65	47	65	47	65	47
MS132-0.25			65	47	65	47	65	47	65	47
MS132-0.40			65	47	65	47	65	47	65	47
MS132-0.63			65	47	65	47	65	47	65	47
MS132-1.0			65	47	65	47	65	47	65	47
MS132-1.6			65	47	65	47	65	47	65	47
MS132-2.5			65	47	65	47	65	47	65	47
MS132-4.0			65	47	65	47	65	47	65	47
MS132-6.3			65	18	65	35	65	18	65	18
MS132-10			65	18	65	35	65	18	65	18
MS132-12			30	18	35	35	30	18	30	-
MS132-16			30	18	35	35	30	18	30	-
MS132-20			30	18	35	35	30	18	30	-
MS132-25			30	18	35	35	30	18	30	-
MS132-32			30	18	35	35	30	18	30	-

[1] NEC: NFPA®70 National Electrical Code®; CEC: CSA C22.1 Canadian Electrical Code.
[2] Requires the use of S1-M3-xx line-side terminal feeder block.

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Technical data
MS116, MS132, MS165, MO132, MO165, MS132-T

UL/CSA Maximum short-circuit current ratings – MS165

Type	Manual Motor Controllers								Manual self-protected Combination Motor Controllers (Type E)	
	Branch circuit protection, max. size per NEC/CEC[1]		for motor disconnect		for group installations		for tap conductor protection in group installations			
	Fuses	Circuit breaker	480 V	600 V	480 V	600 V	480 V	600 V	480Y / 277 V	600Y / 347 V
	A	A	kA	kA	kA	kA	kA	kA	kA	kA
MS165-16	Any Listed fuses. Size per NEC/CEC	Any Listed UL489 / CSA C22.2 No.5 circuit breaker. Size per NEC/CEC	65	30	65	30	65	30	65	30
MS165-20			65	30	65	30	65	30	65	30
MS165-25			65	30	65	30	65	30	65	30
MS165-32			65	30	65	30	65	30	65	30
MS165-42			65	30	65	30	65	30	65	-
MS165-54			65	30	65	30	65	30	65	-
MS165-65			65	30	65	30	65	30	65	-

[1] NEC: NFPA®70 National Electrical Code®; CEC: CSA C22.1 Canadian Electrical Code.

UL/CSA Maximum short-circuit current ratings – MO132

Type	Manual Motor Controllers							
	Branch circuit protection, max. size per NEC/CEC[1]		for motor disconnect		for group installations		for tap conductor protection in group installations	
	Fuses	Circuit breaker	480 V	600 V	480 V	600 V	480 V	600 V
	A	A	kA	kA	kA	kA	kA	kA
MS132-0.16	Any Listed fuses. Size per NEC/CEC	Any Listed UL489 / CSA C22.2 No.5 circuit breaker. Size per NEC/CEC	65	47	65	47	65	47
MS132-0.25			65	47	65	47	65	47
MS132-0.40			65	47	65	47	65	47
MS132-0.63			65	47	65	47	65	47
MS132-1.0			65	47	65	47	65	47
MS132-1.6			65	47	65	47	65	47
MS132-2.5			65	47	65	47	65	47
MS132-4.0			65	47	65	47	65	47
MS132-6.3			65	18	65	35	65	18
MS132-10			65	18	65	35	65	18
MS132-12			30	18	35	35	30	18
MS132-16			30	18	35	35	30	18
MS132-20			30	18	35	35	30	18
MS132-25			30	18	35	35	30	18
MS132-32			30	18	35	35	30	18

[1] NEC: NFPA®70 National Electrical Code®; CEC: CSA C22.1 Canadian Electrical Code.

UL/CSA Maximum short-circuit current ratings – MO165

Type	Manual Motor Controllers							
	Branch circuit protection, max. size per NEC/CEC[1]		for motor disconnect		for group installations		for tap conductor protection in group installations	
	Fuses	Circuit breaker	480 V	600 V	480 V	600 V	480 V	600 V
	A	A	kA	kA	kA	kA	kA	kA
MO165-16	Any Listed fuses. Size per NEC/CEC	Any Listed UL489 / CSA C22.2 No.5 circuit breaker. Size per NEC/CEC	65	30	65	30	65	30
MO165-20			65	30	65	30	65	30
MO165-25			65	30	65	30	65	30
MO165-32			65	30	65	30	65	30
MO165-42			65	30	65	30	65	30
MO165-54			65	30	65	30	65	30
MO165-65			65	30	65	30	65	30

[1] NEC: NFPA®70 National Electrical Code®; CEC: CSA C22.1 Canadian Electrical Code.

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Technical data
MS116, MS132, MS165, MO132, MO165, MS132-T

UL 508 — Manual controller for tap conductor protection and for control transformer

Type	Max. short-circuit current rating when used with upstream protection device	
	480 V	600 V
	kA	kA
MS132-0.16T	65	47
MS132-0.25T	65	47
MS132-0.4T	65	47
MS132-0.63T	65	47
MS132-1.0T	65	47
MS132-1.6T	65	47
MS132-2.5T	65	47
MS132-4.0T	65	47
MS132-6.3T	65	18
MS132-10T	65	18
MS132-12T	30	18
MS132-16T	30	18
MS132-20T	30	18
MS132-25T	30	18

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Technical data
MS116, MS132, MS165, MO132, MO165, MS132-T

General technical data

Type		MS116	MS132	MS165	MO132	MO165	MS132-T
Pollution degree		3	3	3	3	3	3
Phase loss sensitivity		Yes	Yes	Yes	No	No	Yes
Disconnect function acc. to IEC/EN 60947-2		Yes	Yes	Yes	Yes	Yes	Yes
Ambient air temperature							
Operation	Open - compensated	-25 ... +55 °C	-25 ... +60 °C	-25 ... +60 °C	-	-	-25 ... +60 °C
	Open	-25 ... +70 °C	-25 ... +70 °C	-25 ... +60 °C	-25 ... +60 °C	-25 ... +60 °C	-25 ... +70 °C
	Enclosed (IB132[1])	0 ... +40 °C	0 ... +40 °C	-	-	-	0 ... +40 °C
Storage		-50 ... +80 °C	-50 ... +80 °C	-50 ... +80 °C	-50 ... +80 °C	-50 ... +80 °C	-50 ... +80 °C
Ambient air temperature compensation		Acc. to IEC/ EN60947-4-1	Acc. to IEC/ EN60947-4-1	Acc. to IEC/ EN60947-4-1	-	-	Acc. to IEC/ EN60947-4-1
Maximum operating altitude permissible		2000 m	2000 m	2000 m	2000 m	2000 m	2000 m
Resistance to shock acc. to IEC 60068-2-27		25g / 11 ms	25g / 11 ms	25g / 11 ms	25g / 11 ms	25g / 11 ms	25g / 11 ms
Resistance to vibrations acc. to IEC 60068-2-6		5g / 3 ... 150 Hz	5g / 3 ... 150 Hz	5g / 3 ... 150 Hz	5g / 3 ... 150 Hz	5g / 3 ... 150 Hz	5g / 3 ... 150 Hz
Mounting position		Position 1-6 (optional for single mounting)	Position 1-6 (optional for single mounting)	Position 1-6 (optional for single mounting)	Position 1-6 (optional for single mounting)	Position 1-6 (optional for single mounting)	Position 1-6 (optional for single mounting)
Mounting		DIN-rail (EN 60715)	DIN-rail (EN 60715)	DIN-rail (EN 60715)	DIN-rail (EN 60715)	DIN-rail (EN 60715)	DIN-rail (EN 60715)
Group mounting		On request	On request	On request	On request	On request	-
Recommended screw for mounting plate		-	-	M4	-	M4	-
Screw torque for mounting plate		-	-	2 Nm	-	2 Nm	-
Minimum distance to other units same type	Horizontal	0 mm	0 mm	0 mm	0 mm	0 mm	0 mm
	Vertical	150 mm	150 mm	150 mm	150 mm	150 mm	150 mm
Minimum distance to electrical conductive board	Horizontal, up to 400 V	0 mm	0 mm	0 mm	0 mm	0 mm	0 mm
	Horizontal, up to 690 V	> 1.5 mm	> 1.5 mm	> 1.5 mm	> 1.5 mm	> 1.5 mm	> 1.5 mm
	Vertical	75 mm	75 mm	75 mm	75 mm	75 mm	75 mm
Degree of protection	Housing	IP20	IP20	IP20	IP20	IP20	IP20
	Main circuit terminals	IP10	IP10	IP10	IP10	IP10	IP10

[1] not suitable for MS165 and MO165

Connecting characteristics

Main circuit

Type			MS116 ≤ 16 A	MS116 ≥ 20 A
Connecting capacity				
	Rigid	**1 or 2 x**	1 ... 4 mm²	2.5 ... 6 mm²
	Flexible with ferrule	**1 or 2 x**	0.75 ... 2.5 mm²	1 ... 6 mm²
	Flexible with insulated ferrule	**1 or 2 x**	0.75 ... 2.5 mm²	1 ... 6 mm²
	Flexible	**1 or 2 x**	0.75 ... 2.5 mm²	1 ... 6 mm²
	Stranded acc. to UL/CSA	**1 or 2 x**	AWG 16-12	AWG 16-8
Stripping length			9 mm	10 mm
Tightening torque			0.8 ... 1.2 Nm / 10 ... 12 lb.in	2.0 Nm / 18 lb.in
Recommended screw driver			Pozidriv 2	Pozidriv 2

Main circuit

Type			MS132 ≤ 10 A	MS132 ≥ 12 A
Connecting capacity				
	Rigid	**1 or 2 x**	1 ... 4 mm²	1 ... 2.5 mm² 2.5 ... 6 mm²
	Flexible with ferrule	**1 or 2 x**	0.75 ... 2.5 mm²	0.75 ... 6 mm²
	Flexible with insulated ferrule	**1 or 2 x**	0.75 ... 2.5 mm²	0.75 ... 6 mm²
	Flexible	**1 or 2 x**	0.75 ... 2.5 mm²	1 ... 2.5 mm² 2.5 ... 6 mm²
	Stranded acc. to UL/CSA	**1 or 2 x**	AWG 16-12	AWG 16-8
Stripping length			9 mm	10 mm
Tightening torque			0.8 ... 1.2 Nm / 10 ... 12 lb.in	2.0 Nm / 18 lb.in
Recommended screw driver			Pozidriv 2	Pozidriv 2

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Technical data
MS116, MS132, MS165, MO132, MO165, MS132-T

Connecting characteristics

Main circuit		
Type		MS165
Connecting capacity		
Rigid	**1 or 2 x**	1 ... 50 mm²
Flexible with ferrule	**1 or 2 x**	1 ... 35 mm²
Flexible with insulated ferrule	**1 or 2 x**	1 ... 35 mm²
Flexible	**1 or 2 x**	1 ... 35 mm²
Stranded acc. to UL/CSA	**1 or 2 x**	AWG 16-0
Stripping length		16 mm
Tightening torque		4.0 Nm / 35 lb.in
Recommended screw driver		Pozidriv 2

Main circuit			
Type		MO132 ≤ 10 A	MO132 ≥ 12 A
Connecting capacity			
Rigid	**1 or 2 x**	1 ... 4 mm²	1 ... 2.5 mm² 2.5 ... 6 mm²
Flexible with ferrule	**1 or 2 x**	0.75 ... 2.5 mm²	0.75 ... 6 mm²
Flexible with insulated ferrule	**1 or 2 x**	0.75 ... 2.5 mm²	0.75 ... 6 mm²
Flexible	**1 or 2 x**	0.75 ... 2.5 mm²	1 ... 2.5 mm² 2.5 ... 6 mm²
Stranded acc. to UL/CSA	**1 or 2 x**	AWG 16-12	AWG 16-8
Stripping length		9 mm	10 mm
Tightening torque		0.8 ... 1.2 Nm / 10 ... 12 lb.in	2.0 Nm / 18 lb.in
Recommended screw driver		Pozidriv 2	Pozidriv 2

Main circuit		
Type		MO165
Connecting capacity		
Rigid	**1 or 2 x**	1 ... 50 mm²
Flexible with ferrule	**1 or 2 x**	1 ... 35 mm²
Flexible with insulated ferrule	**1 or 2 x**	1 ... 35 mm²
Flexible	**1 or 2 x**	1 ... 35 mm²
Stranded acc. to UL/CSA	**1 or 2 x**	AWG 16-0
Stripping length		16 mm
Tightening torque		4.0 Nm / 35 lb.in
Recommended screw driver		Pozidriv 2

Main circuit			
Type		MS132-T ≤ 10 A	MS132-T ≥ 12 A
Connecting capacity			
Rigid	**1 or 2 x**	1 ... 4 mm²	1/2 x 1 ... 2.5 mm² 1/2 x 2.5 ... 6 mm²
Flexible with ferrule	**1 or 2 x**	0.75 ... 2.5 mm²	1/2 x 0.75 ... 6 mm²
Flexible with insulated ferrule	**1 or 2 x**	0.75 ... 2.5 mm²	1/2 x 0.75 ... 6 mm²
Flexible	**1 or 2 x**	0.75 ... 2.5 mm²	1/2 x 1 ... 2.5 mm² 1/2 x 2.5 ... 6 mm²
Stranded acc. to UL/CSA	**1 or 2 x**	AWG 16-12	AWG 16-8
Stripping length		9 mm	10 mm
Tightening torque		0.8 ... 1.2 Nm / 10 ... 12 lb.in	2.0 Nm / 18 lb.in
Recommended screw driver		Pozidriv 2	Pozidriv 2

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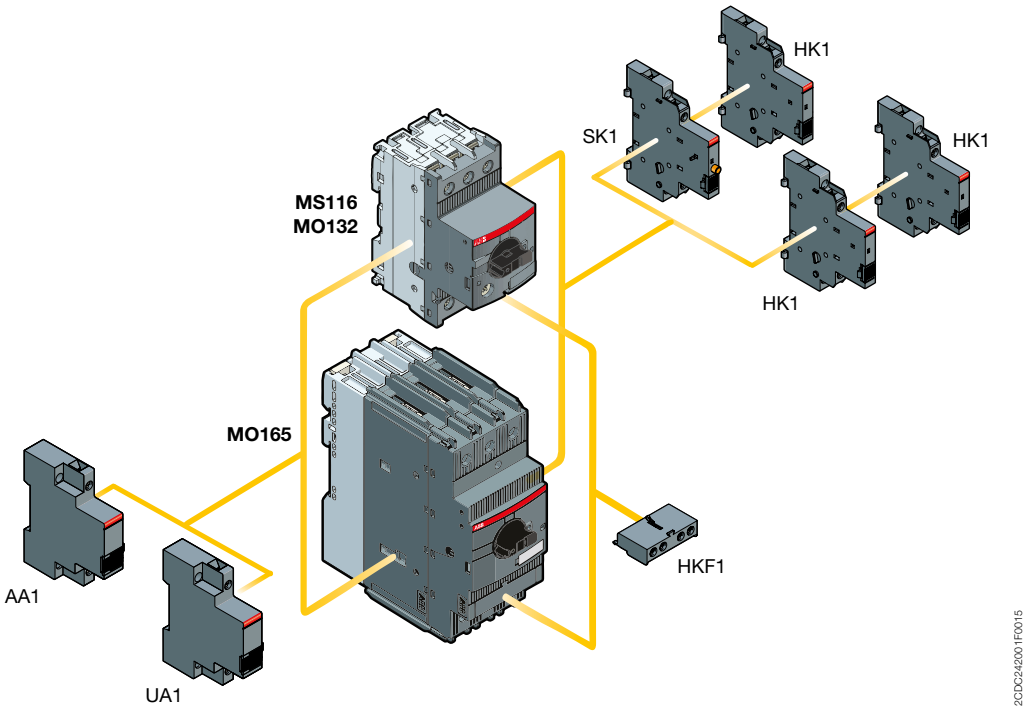
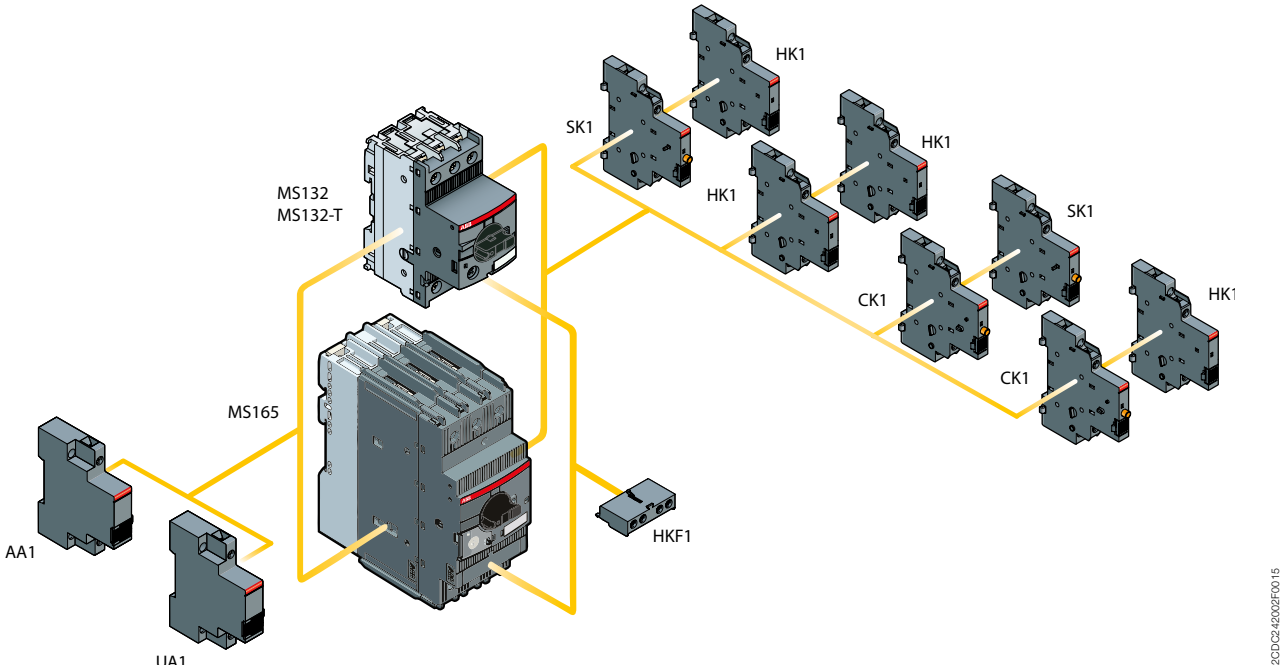
Main accessories
MS116, MS132, MS165, MO132, MO165, MS132-T

Manual motor starters with accessories (MS116, MO132, MO165)



Manual motor starters with accessories (MS132, MS165) and circuit breaker for transformer protection (MS132-T)



Main accessories
MS116, MS132, MS165, MO132, MO165, MS132-T


1SBC101208F0014

HKF1-11


1SBC101209F0014

HK1-11


1SBC101210F0014

SK1-11


1SBC101286F0014

CK1-11

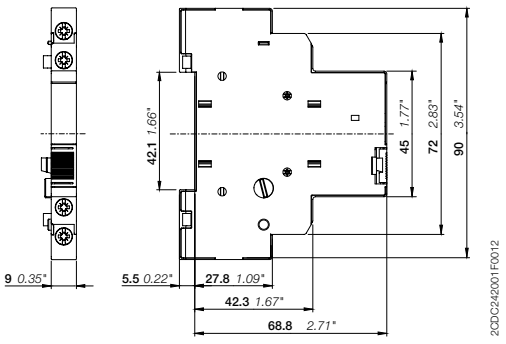
Description

MMS and MS132-T can be equipped with auxiliary contacts for lateral/front mounting, signaling contacts for lateral mounting, undervoltage releases and shunt trips. Two different signaling contacts are available. The accessories can be fitted wiring free and without tools. A variety of combinations is possible as required for the application. The auxiliary contacts change position with the main contacts. The signaling contact SK signals tripping regardless if it was caused by short-circuit or overload. The signaling contact CK signals tripping in case it was caused by short-circuit. Undervoltage releases are used for remote tripping of the manual motor starters especially for emergency stop circuits. Shunt trips release the MMS used for remote tripping. These main accessories are suitable throughout the MS116/MS132/MS165-range.

Ordering details

Suitable for	Auxiliary contacts N.O.	Auxiliary contacts N.C.	Description	Type	Order code		Pkg qty	Weight (1 pce) kg
Auxiliary contacts – mountable on the front								
MS116, MS132, MS165 MO132, MO165 MS132-T	1	1		HKF1-11	1SAM201901R1001		10	0.015
	1	0		HKF1-10	1SAM201901R1003		10	0.013
	0	1		HKF1-01	1SAM201901R1004		10	0.013
	2	0		HKF1-20	1SAM201901R1002		10	0.015
Auxiliary contacts – mountable on the right								
MS116, MS132, MS165 MO132, MO165 MS132-T	1	1	max. 2 pieces	HK1-11	1SAM201902R1001		2	0.035
	2	0	max. 2 pieces	HK1-20	1SAM201902R1002		2	0.035
	0	2	max. 2 pieces	HK1-02	1SAM201902R1003		2	0.035
	2	0	with lead contacts	HK1-20L	1SAM201902R1004		2	0.035
Signaling contacts – mountable on the right								
MS116, MS132, MS165 MO132, MO165 MS132-T	1	1	for tripped alarm, max. 2 pieces	SK1-11	1SAM201903R1001		2	0.035
	2	0	for tripped alarm, max. 2 pieces	SK1-20	1SAM201903R1002		2	0.035
	0	2	for tripped alarm, max. 2 pieces	SK1-02	1SAM201903R1003		2	0.035
MS132, MS165, MS132-T	1	1	for short-circuit alarm, max. 2 pieces	CK1-11	1SAM301901R1001		2	0.035
	2	0	for short-circuit alarm, max. 2 pieces	CK1-20	1SAM301901R1002		2	0.035
	0	2	for short-circuit alarm, max. 2 pieces	CK1-02	1SAM301901R1003		2	0.035

Main dimensions mm, *inches*



HK1

2CDC131050C0201

Main accessories
MS116, MS132, MS165, MO132, MO165, MS132-T

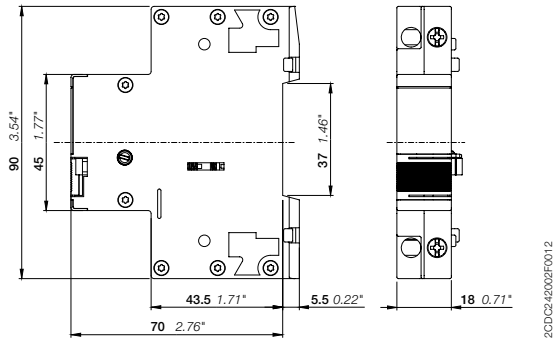
AA1-24

UA1-24

Ordering details

Suitable for	Rated control supply voltage 50 Hz V AC	Rated control supply voltage 60 Hz V AC	Type	Order code		Pkg qty	Weight (1 pce) kg
Shunt trips – mountable on the left							
MS116, MS132, MS165, MO132, MO165, MS132-T	20 ... 24	20 ... 24	AA1-24	1SAM201910R1001		1	0.100
	110	110	AA1-110	1SAM201910R1002		1	0.100
	200 ... 240	200 ... 240	AA1-230	1SAM201910R1003		1	0.100
	350 ... 415	350 ... 415	AA1-400	1SAM201910R1004		1	0.100
Undervoltage releases – mountable on the left							
MS116, MS132, MS165, MO132, MO165, MS132-T	20	24	UA1-20	1SAM201904R1010		1	0.100
	24	-	UA1-24	1SAM201904R1001		1	0.100
	48	-	UA1-48	1SAM201904R1002		1	0.100
	60	-	UA1-60	1SAM201904R1003		1	0.100
	110	120	UA1-110	1SAM201904R1004		1	0.100
	-	208	UA1-208	1SAM201904R1008		1	0.100
	230	240	UA1-230	1SAM201904R1005		1	0.100
	400	-	UA1-400	1SAM201904R1006		1	0.100
	415	480	UA1-415	1SAM201904R1007		1	0.100
	-	575	UA1-575	1SAM201904R1009		1	0.100

Main dimensions mm, *inches*



AA1, UA1

2CDC131050C0201

Main accessories
MS116, MS132, MS165, MO132, MO165, MS132-T

General technical data

Type			HK1, SK1, CK1	HKF1
Standards			IEC/EN 60947-2, IEC/EN 60947-4-1, IEC/EN 60947-1	
Rated operational voltage U_e			690 V AC / 600 DC	250 V AC / 250 V DC
Conventional free-air thermal current I_{th}			6 A	5 A
Rated frequency			50/60 Hz	
Rated impulse withstand voltage U_{imp}			6 kV	
Rated insulation voltage U_i			690 V AC	250 V AC
Pollution degree			3	
Ambient air temperature	Operation		-25 ... +70 °C	
	Storage		-50 ... +80 °C	
Resistance to shock acc. to IEC 60068-2-27			25g / 11 ms	
Resistance to vibrations acc. to IEC 60068-2-6			5g / 3 ... 150 Hz	
I_e / Rated operational current AC-15 acc. to IEC/EN 60947-5-1 for utilization category				
		24 V, 120 V	6 A	3 A
		240 V	4 A	1.5 A
		400 V	3 A	-
		440 V, 690 V	1 A	-
I_e / Rated operational current DC-13 acc. to IEC/EN 60947-5-1 for utilization category				
		24 V	2 A	1 A
		125 V	0.55 A	0.27 A
		250 V	0.27 A	0.11 A
		440 V, 600 V	0.15 A	-
Minimum switching capacity			17 V / 5 mA	
Short-circuit protective device		**N.C., 95-96**	10 A Type gG	
		N.O., 97-98	10 A Type gG	
Duty time			100 %	
Mounting			Right side of MMS / MS132-T	Front of MMS / MS132-T
Mounting positions			1-6	
Mechanical durability			50000 cycles	-
Electrical durability			50000 cycles	-

Contact utilization characteristics according to UL/CSA

	HK1, SK1, CK1	HKF1
Type		
Standards	UL 60947-1, UL 60947-4-1 (UL 508), CSA C22.2 No.60947-4-1 (CSA C22.2 No.14)	
Rated operational voltage U_e acc. to UL/CSA	600 V AC / 600 V DC	250 V AC / 250 V DC
Pilot duty	A600, Q600	B300, Q300
AC thermal rated current	10 A	5 A
AC maximum volt-ampere making	7200 VA	3600 VA
AC maximum volt-ampere breaking	720 VA	360 VA
DC thermal rated current	2.5 A	2.5 A
DC maximum volt-ampere making-breaking	69 VA	69 VA

Connecting characteristics

Auxiliary circuit

		HK1, SK1, CK1	HKF1
Type			
Connecting capacity			
Rigid	**1 or 2 x**	1 ... 1.5 mm²	1 ... 2.5 mm²
Flexible with ferrule	**1 or 2 x**	0.75 ... 1.5 mm²	
Flexible with insulated ferrule	**1 or 2 x**	0.75 ... 1.5 mm²	
Flexible	**1 or 2 x**	0.75 ... 1.5 mm²	
Stranded acc. to UL/CSA	**1 or 2 x**	AWG 16-14	
Stripping length		8 mm	
Tightening torque		0.8 ... 1.2 Nm / 7 lb.in	
Recommended screw driver		Pozidriv 2	

2CDC131050C0201

Main accessories
MS116, MS132, MS165, MO132, MO165, MS132-T

General technical data

Type			UA1	AA1
Standards			IEC/EN 60947-1, IEC/EN 60947-4-1, UL 60947-1, UL 60947-4-1 (UL 508), CSA C22.2 No.60947-4-1 (CSA C22.2 No.14)	
Rated control supply voltage			see ordering details	AA1-24: 20-24 V 50/60 Hz; 20-70 V 50/60 Hz KB = 5 s, 20-70 V DC KB = 5 s AA1-100: 110 V 50/60 Hz; 110-200 V 50/60 Hz KB = 5 s, 110-200 V DC KB = 5 s AA1-230: 200-240 V 50/60 Hz, 200-350 V 50/60 Hz KB = 5 s, 200-350 V DC KB = 5 s AA1-400: 350-415 V 50/60 Hz, 350-500 V 50/60 Hz KB = 5 s, 350-500 V DC KB = 5 s
Rated frequency			see ordering details	50/60 Hz, DC
Operating voltage	Tripping		0.35 ... 0.7 x U_s	0.7 ... 1.1 x U_s
	Coil operating voltage		0.85 ... 1.1 x U_s	-
Power consumption	Pull-in	**AC**	on request	on request
		DC	on request	on request
	Holding	**AC**	on request	-
		DC	on request	-
Rated impulse withstand voltage U_{imp}			6 kV	6 kV
Rated insulation voltage U_i			690 V	690 V
Pollution degree			3	3
Ambient air temperature	Operation		-25 .... +60 °C	-25 .... +60 °C
	Storage		-50 ...+80 °C	-50 ...+80 °C
Resistance to shock acc. to IEC 60068-2-27			25g / 11 ms	25g / 11 ms
Resistance to vibrations acc. to IEC 60068-2-6			5g / 3 ... 150 Hz	5g / 3 ... 150 Hz
Mounting			left side of MMS / MS132-T	left side of MMS / MS132-T
Mounting positions			-	-

Connecting characteristics

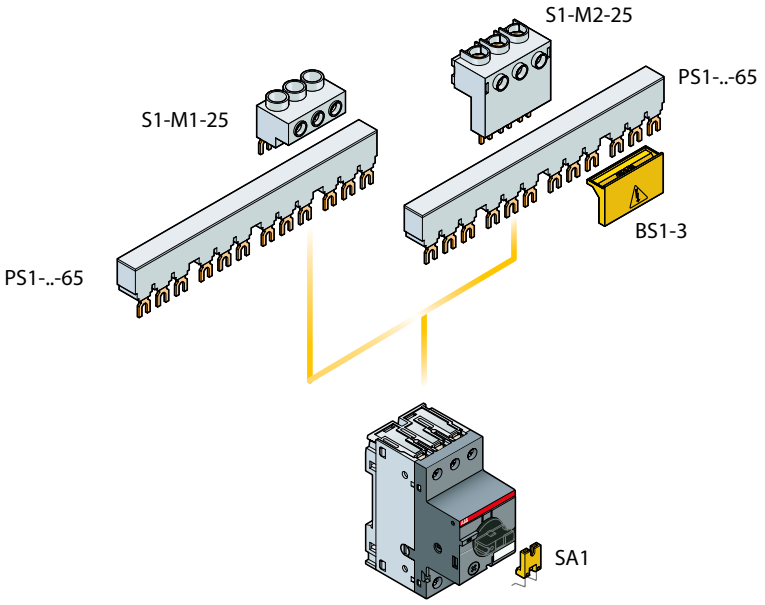
Auxiliary circuit

Type			UA1	AA1
Connecting capacity				
	Rigid	**1 or 2 x**	1 ... 4 mm²	
	Flexible with ferrule	**1 or 2 x**	0.75 ... 2.5 mm²	
	Flexible with insulated ferrule	**1 x** **2 x**	0.75 ... 2.5 mm² 0.75 ... 1.5 mm²	
	Flexible	**1 or 2 x**	0.75 ... 2.5 mm²	
	Stranded acc. to UL/CSA	**1 or 2 x**	AWG 16-12	
Stripping length			10 mm	
Tightening torque			0.8 ... 1.2 Nm / 7 lb.in	
Recommended screw driver			Pozidriv 2	

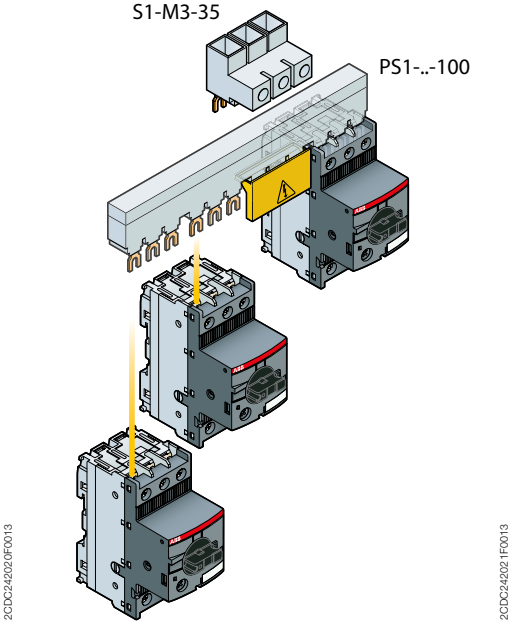
2CDC131050C0201

Main accessories
MS116, MS132, MS165, MO132, MO165

Manual motor starter with three-phase busbar systems (MS116, MS132, MO132)

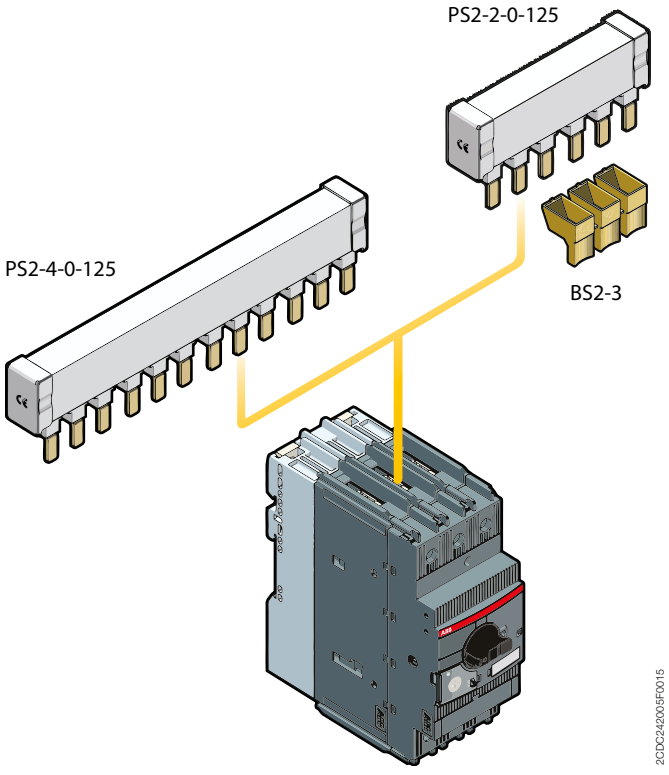


Three-phase busbar up to 65 A

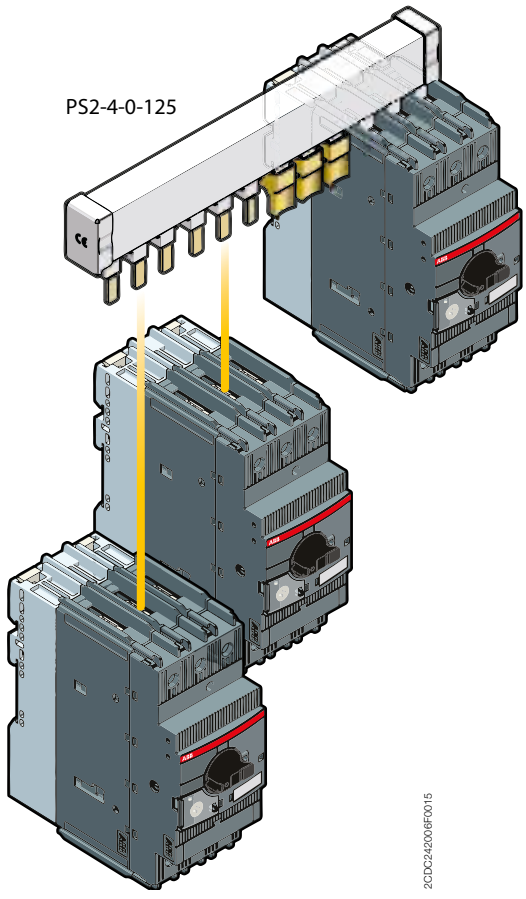


Three-phase busbar up to 100 A

Manual motor starter with three-phase busbar systems (MS165, MO165)



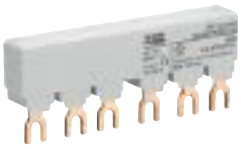
Three-phase busbar up to 125 A



Three-phase busbar up to 125 A

2CDC131050C0201

Main accessories
MS116, MS132, MO132, MS132-T



PS1-2-0-65

PS1-3-1-100

S1-M1-25

S1-M2-25

SA2

SA1

PB1-1-32

S1-PB1-25

Description

Three-phase busbars ensure a quick and safe connection and are therefore a cost effective solution. A variety of different three-phase busbars up to 100 A are in the assortment. Between 2 and 5 manual motor starters with none, one or two lateral auxiliary contacts can be connected. Different three-phase feeder terminals are available according to the application.

Phase connecting links and phase power infeed blocks are also available for single-phase applications.

Ordering details

Suitable for	Rated operational current A	Number of MMS	Number of lateral aux.	Type	Order code		Pkg qty	Weight (1 pce) kg
Three-phase busbars								
MS116, MS132, MO132	65	2	0	PS1-2-0-65	1SAM201906R1102		10	0.034
	65	3	0	PS1-3-0-65	1SAM201906R1103		10	0.055
	65	4	0	PS1-4-0-65	1SAM201906R1104		10	0.077
	65	5	0	PS1-5-0-65	1SAM201906R1105		10	0.098
	65	2	1	PS1-2-1-65	1SAM201906R1112		10	0.036
	65	3	1	PS1-3-1-65	1SAM201906R1113		10	0.060
	65	4	1	PS1-4-1-65	1SAM201906R1114		10	0.087
	65	5	1	PS1-5-1-65	1SAM201906R1115		10	0.108
	65	2	2	PS1-2-2-65	1SAM201906R1122		10	0.040
	65	3	2	PS1-3-2-65	1SAM201906R1123		10	0.067
	65	4	2	PS1-4-2-65	1SAM201906R1124		10	0.095
	65	5	2	PS1-5-2-65	1SAM201906R1125		10	0.122
MS116, MS132, MO132	100	3	0	PS1-3-0-100	1SAM201916R1103		10	0.084
	100	4	0	PS1-4-0-100	1SAM201916R1104		10	0.117
	100	5	0	PS1-5-0-100	1SAM201916R1105		10	0.154
	100	3	1	PS1-3-1-100	1SAM201916R1113		10	0.094
	100	4	1	PS1-4-1-100	1SAM201916R1114		10	0.134
	100	5	1	PS1-5-1-100	1SAM201916R1115		10	0.172
	100	3	2	PS1-3-2-100	1SAM201916R1123		10	0.105

Suitable for	Rated operational current A	Rated cross section mm²	Mounting form	Type	Order code		Pkg qty	Weight (1 pce) kg
Three-phase feeder terminals								
MS116, MS132, MO132	65	25	Flat	S1-M1-25	1SAM201907R1101		10	0.038
	65	25	High	S1-M2-25	1SAM201907R1102		10	0.051
	65	25	UL/CSA Type E/F and IEC	S1-M3-25	1SAM201907R1103		10	0.042
	100	35	UL/CSA Type E/F and IEC	S1-M3-35	1SAM201913R1103		10	0.060

Suitable for	Description	Type	Order code		Pkg qty	Weight (1 pce) kg
MS116, MS132, MO132	Protection cover for busbars	BS1-3	1SAM201908R1001		50	0.003
MS116, MS132, MO132, MS132-T	Screw fixing kit	FS116	1SAM201909R1001		1	0.020
	Padlock + two keys	SA2	GJF1101903R0002		10	0.020
MS116	Lock handle	SA1	GJF1101903R0001		10	0.003
	Lock handle box SA1/SA2	SA3	GJF1101903R0003		10	0.050
Accessories for single-phase connection (IEC only)						
MS116, MS132, MO132, MS132-T	Phase connecting link	PB1-1-32	1SAM201914R1001		1	0.009
	Phase power infeed block	S1-PB1-25	1SAM201914R1002		1	0.013

2CDC131050C0201

Main accessories
MS165, MO165

PS2-2-0-125

PS2-3-0-125

KA165

BS2-3

SA2

Description

Three-phase busbars ensure a quick and safe connection and are therefore a cost effective solution. A variety of different three-phase busbars up to 125 A are in the assortment. Between 2 and 5 manual motor starters with none, one or two lateral auxiliary contacts can be connected.

Ordering details

Suitable for	Rated operational current A	Number of MMS	Number of lateral aux.	Type	Order code		Pkg qty	Weight (1 pce) kg
Three-phase busbars								
MS165, MO165	125	2	0	PS2-2-0-125	1SAM401920R1002		10	0.100
	125	3	0	PS2-3-0-125	1SAM401920R1003		10	0.162
	125	4	0	PS2-4-0-125	1SAM401920R1004		10	0.226
	125	2	2	PS2-2-2-125	1SAM401920R1022		10	0.117
	125	3	2	PS2-3-2-125	1SAM401920R1023		10	0.197
	125	4	2	PS2-4-2-125	1SAM401920R1024		10	0.277

Other busbar types on request.

Suitable for	Description	Type	Order code		Pkg qty	Weight (1 pce) kg
MS165, MO165	Terminal shroud	KA165	1SAM401922R1001		10	0.025
	Protection cover for busbars	BS2-3	1SAM401921R1001		10	0.005
	Padlock + two keys	SA2	GJF1101903R0002		10	0.020

2CDC131050C0201

Main accessories
MS116, MS132, MS165, MO132, MO165

General technical data

Type		PS1-xxx-65	PS1-xxx-100	S1-Mx-25	S1-Mx-35
Standards		IEC/EN 60947-4-1, IEC/EN 60947-1, UL 60947-1, UL 60947-4-1 (UL 508), CSA C22.2 No.60947-4-1 (CSA C22.2 No.14)			
Rated operational voltage U_e		690 V			
Rated operational voltage U_e acc. to UL/CSA		600 V AC			
Rated operational current I_e		65 A	100 A	65 A	100 A
Rated operational current I_e acc. to UL/CSA		65 A	92 A	65 A	92 A
Rated frequency		50/60 Hz			
Rated impulse withstand voltage U_{imp}		6 kV			
Rated insulation voltage U_i		690 V AC			
Pollution degree		3			
Cross-section		10 mm²	16 mm²	25 mm²	35 mm²
Ambient air temperature	Operation	-25 ... +70 °C			
	Storage	-50 ... +80 °C			
Resistance to shock acc. to IEC 60068-2-27		25g / 11 ms			
Resistance to vibrations acc. to IEC 60068-2-6		5g / 3 ... 150 Hz			

Electrical connection

Main circuit

Type			S1-Mx-25	S1-Mx-35
Connecting capacity				
	Rigid	**1 x**	6 ... 25 mm²	10 ... 35 mm²
	Flexible with ferrule	**1 x**	6 ... 16 mm²	10 ... 35 mm²
	Flexible with insulated ferrule	**1 x**	6 ... 16 mm²	10 ... 35 mm²
	Flexible	**1 x**	6 ... 16 mm²	10 ... 35 mm²
	Stranded acc. to UL/CSA	**1 x**	AWG 10-4	AWG 8-2
Stripping length			10 mm	12 mm
Tightening torque			2.5 Nm / 22 lb.in	4.5 Nm / 40 lb.in
Recommended screw driver			Pozidriv 2	Hexagon SW4

Technical data for PS2-xxx on request.

2CDC131050C0201

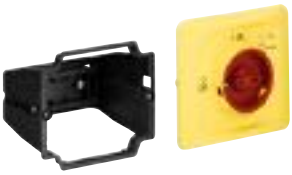
Main accessories
MS116, MS132, MO132


2CDC241004F0010

IB132-Y


2CDC241003F0010

IB132-G


2CDC241002F0010

DMS132-Y


2CDC241001F0010

DMS132-G

Description

IB132 are IP65 (UL/CSA Type 12) enclosures for single MMS installation. Additional mounting of auxiliary and signaling contacts, shunt trips and undervoltage release is possible. The handle is lockable in OFF position. For detailed specification see installation instruction.

DMS132 are IP65 (UL/CSA Type 12) door mounting kits for MMS installation in any enclosure. Additional mounting of auxiliary, signaling, shunt trips and undervoltage release is possible. The handle is lockable in OFF position. For detailed specification see installation instruction.

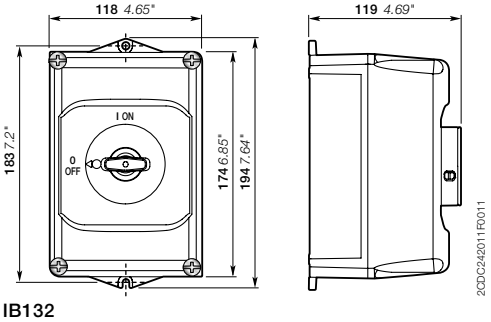
Ordering details

Suitable for	Description	Color	Type	Order code		Pkg qty	Weight (1 pce) kg
IP65 enclosures (UL/CSA Type 12)							
MS116, MS132, MO132	Padlockable max. 3 padlocks with bail diameter 4 ... 6.5 mm	Yellow/red	IB132-Y	1SAM201911R1011		1	0.370
		Grey/black	IB132-G	1SAM201911R1010		1	0.370
IP65 door mounting kits (UL/CSA Type 12)							
MS116, MS132, MO132	Padlockable max. 3 padlocks with bail diameter 4 ... 6.5 mm	Yellow/red	DMS132-Y	1SAM201912R1011		1	0.170
		Grey/black	DMS132-G	1SAM201912R1010		1	0.170

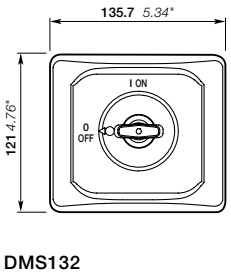
Indication I-O-T and ON-OFF-T

Please check for further equipment chapter General accessories.

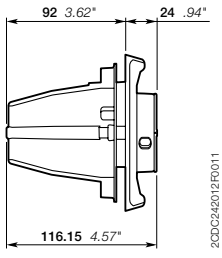
Main dimensions mm, *inches*



IB132



DMS132



2CDC131050C0201

MS495, MS497 manual motor starters
22 to 100 A – with thermal and electromagnetic protection

MS495-40

MS497-100

Description

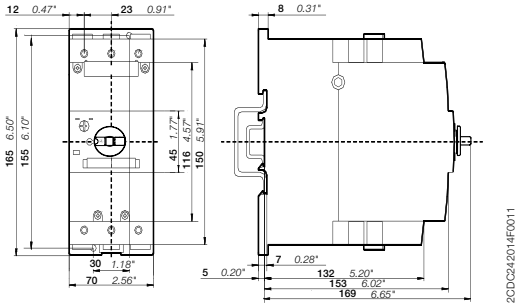
Manual motor starters (MMS) are protection devices for the main circuit. They combine motor control and protection in a single device. MMS are used mainly to switch motors manually ON/OFF and protect them and the installation fuse-less against short-circuit, overload and phase failures [1]. Fuse-less protection with a manual motor starter saves costs, space and ensures a quick reaction under short-circuit condition, by switching off the motor within milliseconds.

Ordering details

Rated operational power 400 V AC-3	Setting range	Short-circuit breaking capacity I_{cs} at 400 V AC	Rated instantaneous short-circuit current setting I_i	Type	Order code		Weight (1 pce)
kW	A	kA	A				kg
MS495 manual motor starters							
30	45. ... 63	25	819	MS495-63	1SAM550000R1007		2.247
37	57 ... 75	25	975	MS495-75	1SAM550000R1008		2.253
45	70 ... 90	25	1170	MS495-90	1SAM550000R1009		2.280
55	80 ... 100	25	1235	MS495-100	1SAM550000R1010		2.295
MS497 manual motor starters							
15	22 ... 32	50	416	MS497-32	1SAM580000R1004		2.222
18.5	28 ... 40	50	520	MS497-40	1SAM580000R1005		2.203
22	36 ... 50	50	650	MS497-50	1SAM580000R1006		2.230
30	45 ... 63	50	819	MS497-63	1SAM580000R1007		2.255
37	57 ... 75	50	975	MS497-75	1SAM580000R1008		2.266
45	70 ... 90	50	1170	MS497-90	1SAM580000R1009		2.268
55	80 ... 100	50	1235	MS497-100	1SAM580000R1010		2.275

[1] The MS49x range offers phase loss sensitivity

Main dimensions mm, *inches*



MS495, MS497

MS495, MS497 manual motor starters
Technical data

Main circuit – Utilization characteristics according to IEC/EN

Type	MS495, MS497
Standards	IEC/EN 60947–2, IEC/EN 60947-4-1, IEC/EN 60947-1
Rated operational voltage U_e	690 V AC / 450 V DC
Rated frequency	50/60 Hz
Trip class	10
Number of poles	3
Duty time	100 %
Mechanical durability	50000 cycles
Electrical durability	25000 cycles
Rated impulse withstand voltage U_{imp}	6 kV
Rated insulation voltage U_i	690 V AC
Rated operational current I_e	
Rated instantaneous short-circuit current setting I_i	
Rated service short-circuit breaking capacity I_{cs}	
Rated ultimate short-circuit breaking capacity I_{cu}	

Short-circuit breaking capacity and back-up fuses

I_{CS} Rated service short-circuit breaking capacity

I_{CU} Rated ultimate short-circuit breaking capacity

I_{CC} Prospective short-circuit current at installation location

Note: Maximum rated current of the back-up fuses if $I_{CC} > I_{CS}$

Type	240 V AC			400 V AC			440 V AC			500 V AC			690 V AC		
	I_{CS} kA	I_{CU} kA	gG, aM A	I_{CS} kA	I_{CU} kA	gG, aM A	I_{CS} kA	I_{CU} kA	gG, aM A	I_{CS} kA	I_{CU} kA	gG, aM A	I_{CS} kA	I_{CU} kA	gG, aM A
Short-circuit protection MS495															
MS495-63				25	50	160	20	50	160	6	12	160	3	6	80
MS495-75				25	50	160	20	50	160	6	8	160	3	5	100
MS495-90				25	50	160	20	50	160	6	8	160	3	5	125
MS495-100				25	50	160	20	50	160	6	8	160	3	5	125

MS495-40: No need for back-up fuse in networks with a prospective current of up to 50 kA at 400 V.
With an approbiate 125 A type gG fuse the device can be used in a network with a prospective current of up to 100 kA.
MS495-100: No need for back-up fuse in networks with a prospective current of up to 50 kA at 400 V.
With an approbiate 160 A type gG fuse the device can be used in a network with a prospective current of up to 100 kA.

Short-circuit protection MS497														
MS497-32	No back-up fuse required up to I_{CC} = 100 kA	50	100	No back-up fuse required up to I_{CC} = 100 kA	50	100	No back-up fuse required up to I_{CC} = 100 kA	11	22	100	7	12	63
MS497-40		50	100		50	100		9	18	160	6	12	80
MS497-50		50	100		50	100		7.5	15	160	5	10	100
MS497-63		50	100		50	70	200	7.5	15	160	4	7.5	100
MS497-75		50	100		50	70	200	5	10	160	3	6	125
MS497-90		50	100		50	70	200	5	10	160	3	6	160
MS497-100		50	100		50	70	200	5	10	160	3	6	160

MS497-32: No need for back-up fuse in networks with a prospective current of up to 100 kA at 440 V.
MS497-90: No need for back-up fuse in networks with a prospective current of up to 70 kA at 440 V.
With an approbiate 200 A type gG fuse the device can be used in a network with a prospective current of up to 100 kA.

2CDC131042C0201

MS495, MS497 manual motor starters
Technical data

Main circuit – Utilization characteristics according to UL/CSA

Type		MS495, MS497
Standards		UL 508, CSA 22.2 No. 14
Maximum operational voltage		600 V AC
Manual motor controller ratings		See table "UL 508 – Manual motor controller"
Trip rating		125 % FLA
Motor ratings	Horsepower	See table "Motor ratings, three-phase"
	Full Load Amps (FLA)	See table "Motor ratings, three-phase"

Motor ratings, three-phase

hp Horsepower

FLA Full Load Amps

Type	General purpose rating at max. 600 V AC	Full Load Amps	200 - 208 V AC	230 V AC	460 V AC	575 V AC
	A	FLA	hp	hp	hp	hp
MS495-63	63	63	20	25	50	60
MS495-75	75	75	25	25	60	75
MS495-90	90	90	30	30	75	100
MS495-100	100	100	40	40	75	100
MS497-32	32	32	10	10	25	30
MS497-40	40	40	15	15	30	40
MS497-50	50	50	15	20	40	50
MS497-63	63	63	20	25	50	60
MS497-75	75	75	25	25	60	75
MS497-90	90	90	30	30	75	100
MS497-100	100	100	30	40	75	100

UL 508 – Manual motor controller

Type	Circuit breaker or class R fuse per UL/NEC	Max. circuit breaker or fuse per UL/NEC	Maximum short-circuit current for motor disconnect		for group installation		for tap conductor	for protection	UL 508 Type E [1]	UL 508 Type E
	480/600 V	480/600 V	480 V	600 V	480 V	600 V	480Y/277V	600Y/347V	480Y/277V	600Y/347V
	A	A	kA	kA	kA	kA	kA	kA	kA	kA
MS495-63	250	500	65	30	65	30	65	30	65	30
MS495-75	300	500	65	30	65	30	65	30	65	30
MS495-90	350	500	65	10	65	10	65	-	65	-
MS495-100	400	500	65	10	65	10	65	-	65	-
MS497-32	120	500	65	30	65	30	65	30	65	30
MS497-40	160	500	65	30	65	30	65	30	65	30
MS497-50	200	500	65	30	65	30	65	30	65	30
MS497-63	250	500	65	30	65	30	65	30	65	30
MS497-75	300	500	65	30	65	30	65	30	65	30
MS497-90	350	500	65	10	65	10	-	-	65	-
MS497-100	400	500	65	10	65	10	-	-	65	-

[1] only with use DX495

2CDC131042C0201

MS495, MS497 manual motor starters
Technical data

General technical data

		MS495	MS497
Type			
Pollution degree		3	
Phase loss sensitivity		Yes	
Disconnect function acc. to IEC/EN 60947-2		Yes	
Ambient air temperature			
Operation	Open - compensated	-20 ... +60 °C	
	Open	-20 ... +70 °C	
	Enclosed	-20 ... +35 °C	
Storage		-50 ... +80 °C	
Ambient air temperature compensation		Acc. to IEC/EN60947-4-1	
Maximum operating altitude permissible		2000 m	
Resistance to shock acc. to IEC 60068-2-27		-	
Resistance to vibrations acc. to IEC 60068-2-6		2g / 5-150 Hz	
Mounting position		Position 1-6 (optional for single mounting)	
Mounting		DIN-rail 15 mm / 75 mm (EN 60715)	
Minimum distance to other units same type	Horizontal	0 mm	
	Vertical - up to 240 V	50 mm	
	Vertical - up to 440 V	70 mm	
	Vertical - up to 500 V	110 mm	
	Vertical - up to 690 V	150 mm	
	Vertical	-	
Minimum distance to electrical conductive board	Horizontal	-	
	Horizontal - up to 500 V	10 mm	
	Horizontal - up to 690 V	30 mm	
	Vertical - up to 240 V	50 mm	
	Vertical - up to 440 V	70 mm	
	Vertical - up to 500 V	110 mm	
	Vertical - up to 690 V	150 mm	
	Vertical	-	
Degree of protection	Housing	IP20	
	Main circuit terminals	IP00	

Connecting characteristics

Main circuit

			MS495	MS497
Type				
Connecting capacity				
	Rigid	**1 or 2 x**	2.5 ... 16 mm²	2.5 ... 16 mm²
	Flexible with ferrule	**1 x**	10 ... 70 mm²	10 ... 70 mm²
		2 x	10 ... 50 mm²	10 ... 50 mm²
	Flexible	**1 x**	10 ... 70 mm²	10 ... 70 mm²
		2 x	10 ... 50 mm²	10 ... 50 mm²
	Stranded acc. to UL/CSA	**1 x**	AWG 10-2/0	AWG 10-2/0
		2 x	AWG 10-1/0	AWG 10-1/0
	Flexible acc. to UL/CSA	**1 x**	AWG 10-2/0	AWG 10-2/0
		2 x	AWG 10-1/0	AWG 10-1/0
Stripping length			17 mm	17 mm
Tightening torque			4 - 6 Nm / 35 - 53 lb.in	4 - 6 Nm / 35 - 53 lb.in
Recommended screw driver			Hexagon 4	Hexagon 4

2CDC131042C0201

MO495, MO496 manual motor starters magnetic only
32 to 100 A – with electromagnetic protection

MO495-75

MO496-100

Description

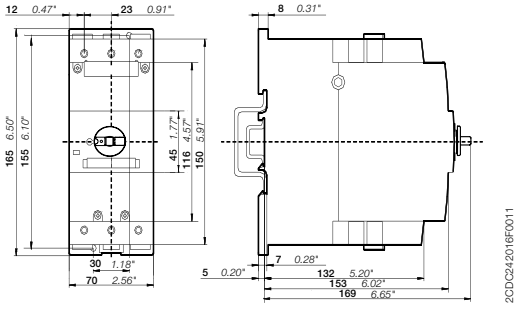
The manual motor starter magnetic only is used to manually switch on and off motors and to protect them reliably and without the need for a fuse from short-circuits.

Ordering details

Rated operational power 400 V AC-3 [1]	Rated operational current	Short-circuit breaking capacity I_{cs} at 400 V AC	Rated instantaneous short-circuit current setting I_i	Type	Order code		Weight (1 pce)
kW	A	kA	A				kg
MO495 manual motor starter magnetic only							
30	63	25	819	MO495-63	1SAM560000R1007		2.244
37	75	25	975	MO495-75	1SAM560000R1008		2.247
45	90	25	1170	MO495-90	1SAM560000R1009		2.269
55	100	25	1235	MO495-100	1SAM560000R1010		2.292
MO496 manual motor starter magnetic only							
15	32	50	416	MO496-32	1SAM590000R1004		2.208
18.5	40	50	520	MO496-40	1SAM590000R1005		2.218
22	50	50	650	MO496-50	1SAM590000R1006		2.218
30	63	50	819	MO496-63	1SAM590000R1007		2.248
37	75	50	975	MO496-75	1SAM590000R1008		2.278
45	90	50	1170	MO496-90	1SAM590000R1009		2.266
55	100	50	1235	MO496-100	1SAM590000R1010		2.293

[1] For overload protection of motors, an appropriate thermal or electronic overload relay must be used
[2] I_{cs} at 415 V AC

Main dimensions mm, *inches*



MO495, MO496

2CDC131038C0201

MO495, MO496 manual motor starters magnetic only
Technical data

Main circuit – Utilization characteristics according to IEC/EN

Type	MO495, MO496
Standards	IEC/EN 60947–2, IEC/EN 60947-4-1, IEC/EN 60947-1
Rated operational voltage U_e	690 V AC / 450 V DC
Rated frequency	50/60 Hz
Number of poles	3
Duty time	100 %
Mechanical durability	50000 cycles
Electrical durability	25000 cycles
Rated impulse withstand voltage U_{imp}	6 kV
Rated insulation voltage U_i	690 V AC
Rated operational current I_e	
Rated instantaneous short-circuit current setting I_i	
Rated service short-circuit breaking capacity I_{cs}	
Rated ultimate short-circuit breaking capacity I_{cu}	

Short-circuit breaking capacity and back-up fuses

I_{cs} Rated service short-circuit breaking capacity

I_{cu} Rated ultimate short-circuit breaking capacity

I_{cc} Prospective short-circuit current at installation location

Note: Maximum rated current of the back-up fuses if $I_{cc} > I_{cs}$

Type	240 V AC			400 V AC			440 V AC			500 V AC			690 V AC		
	I_{cs} kA	I_{cu} kA	gG, aM A	I_{cs} kA	I_{cu} kA	gG, aM A	I_{cs} kA	I_{cu} kA	gG, aM A	I_{cs} kA	I_{cu} kA	gG, aM A	I_{cs} kA	I_{cu} kA	gG, aM A
Short-circuit protection MO495															
MO495-63	No back-up fuse required up to I_{cc} = 100 kA			25	50	160	20	50	160	6	12	160	3	6	80
MO495-75				25	50	160	20	50	160	6	8	160	3	5	100
MO495-90				25	50	160	20	50	160	6	8	160	3	5	125
MO495-100				25	50	160	20	50	160	6	8	160	3	5	125

MO495-100: No need for back-up fuse in networks with a prospective current of up to 50 kA at 400 V.
With an approbiate 160 A type gG fuse the device can be used in a network with a prospective current of up to 100 kA.

Short-circuit protection MO496															
MO496-32	No back-up fuse required up to I_{cc} = 100 kA			50	100	No back-up fuse required up to I_{cc} = 100 kA	50	100	No back-up fuse required up to I_{cc} = 100 kA	11	22	100	7	12	63
MO496-40				50	100		50	100		9	18	160	6	12	80
MO496-50				50	100		50	100		7.5	15	160	5	10	100
MO496-63				50	100		50	70	200	7.5	15	160	4	7.5	100
MO496-75				50	100		50	70	200	5	10	160	3	6	125
MO496-90				50	100		50	70	200	5	10	160	3	6	160
MO496-100				50	100		50	70	200	5	10	160	3	6	160

MO496-32: No need for back-up fuse in networks with a prospective current of up to 100 kA at 440 V.
MO496-90: No need for back-up fuse in networks with a prospective current of up to 70 kA at 440 V.
With an approbiate 200 A type gG fuse the device can be used in a network with a prospective current of up to 100 kA.

2CDC131038C0201

MO495, MO496 manual motor starters magnetic only
Technical data

Main circuit – Utilization characteristics according to UL/CSA

Type		MO495, MO496
Standards		UL 508, CSA 22.2 No. 14
Maximum operational voltage		600 V AC
Manual motor controller ratings		See table "UL 508 – Manual motor controller"
Trip rating		125 % FLA
Motor ratings	Horsepower	See table "Motor ratings, three-phase"
	Full Load Amps (FLA)	See table "Motor ratings, three-phase"

Motor ratings, three-phase

hp Horsepower

FLA Full Load Amps

Type	General purpose rating at max. 600 V AC	Full Load Amps	200 - 208 V AC	230 V AC	460 V AC	575 V AC
	A	FLA	hp	hp	hp	hp
MO495-63	63	63	20	25	50	60
MO495-75	75	75	25	25	60	75
MO495-90	90	90	30	30	75	100
MO495-100	100	100	40	40	75	100
MO496-32	32	32	10	10	25	30
MO496-40	40	40	15	15	30	40
MO496-50	50	50	15	20	40	50
MO496-63	63	63	20	25	50	60
MO496-75	75	75	25	25	60	75
MO496-90	90	90	30	30	75	100
MO496-100	100	100	30	40	75	100

UL 508 – Manual motor controller

Type	Circuit breaker or class R fuse per UL/NEC	Max. circuit breaker or fuse per UL/NEC	Maximum short-circuit current			
			for motor disconnect		for group installation	
	480/600 V	480/600 V	480 V	600 V	480 V	600 V
	A	A	kA	kA	kA	kA
MO495-63	60	500	65	30	65	30
MO495-75	250	500	65	30	65	30
MO495-90	300	500	65	30	65	30
MO495-100	350	500	65	10	65	10
MO496-32	120	500	65	30	65	30
MO496-40	160	500	65	30	65	30
MO496-50	200	500	65	30	65	30
MO496-63	250	500	65	30	65	30
MO496-75	300	500	65	30	65	30
MO496-90	350	500	65	10	65	10
MO496-100	400	500	65	10	65	10

2CDC131038C0201

MO495, MO496 manual motor starters magnetic only
Technical data

General technical data

			MO495	MO496
Type				
Pollution degree			3	
Phase loss sensitivity			-	
Disconnect function acc. to IEC/EN 60947-2			Yes	
Ambient air temperature				
	Operation	Open - compensated	-20 ... +60 °C	
		Open	-20 ... +70 °C (above 60° C, current derating)	
		Enclosed	-20 ... +35 °C	
	Storage		-50 ... +80 °C	
Ambient air temperature compensation			-	
Maximum operating altitude permissible			2000 m	
Resistance to shock acc. to IEC 60068-2-27			25g / 11 ms	
Resistance to vibrations acc. to IEC 60068-2-6			-	
Mounting position			Position 1-6 (optional for single mounting)	
Mounting			DIN-rail 15 mm / 75 mm (EN 60715)	
Minimum distance to other units same type		Horizontal	0 mm	
		Vertical - up to 240 V	50 mm	
		Vertical - up to 440 V	70 mm	
		Vertical - up to 500 V	110 mm	
		Vertical - up to 690 V	150 mm	
		Vertical	-	
Minimum distance to electrical conductive board		Horizontal	-	
		Horizontal - up to 500 V	10 mm	
		Horizontal - up to 690 V	30 mm	
		Vertical - up to 240 V	50 mm	
		Vertical - up to 440 V	70 mm	
		Vertical - up to 500 V	110 mm	
		Vertical - up to 690 V	150 mm	
		Vertical	-	
Degree of protection		Housing	IP20	
		Main circuit terminals	IP20	

Connecting characteristics

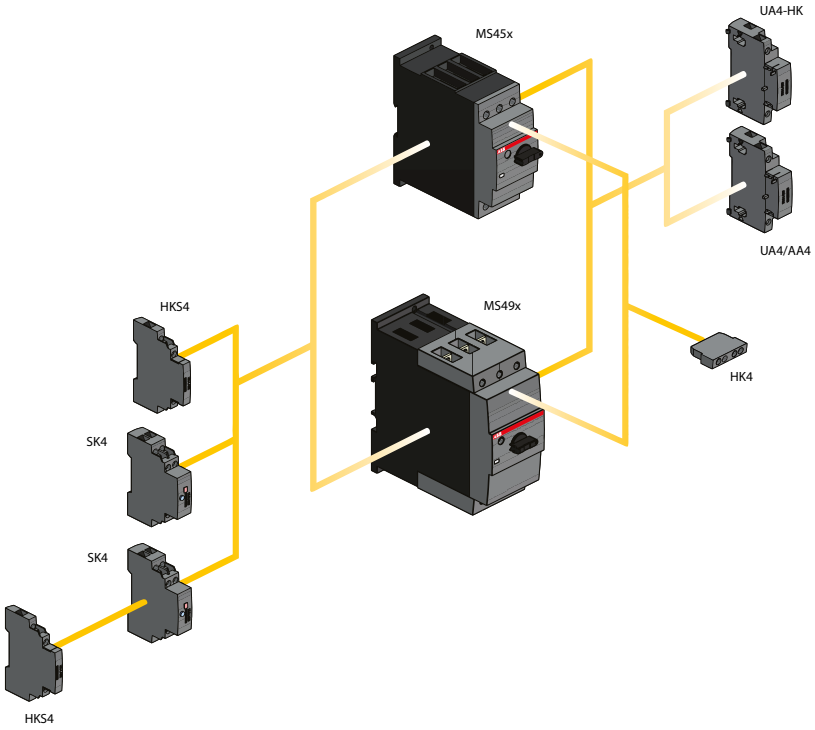
Main circuit

			MO495	MO496
Type				
Connecting capacity				
	Rigid	**1 or 2 x**	2.5 ... 16 mm²	2.5 ... 16 mm²
	Flexible with ferrule	**1 x**	10 ... 70 mm²	10 ... 70 mm²
		2 x	10 ... 50 mm²	10 ... 50 mm²
	Flexible	**1 x**	10 ... 70 mm²	10 ... 70 mm²
		2 x	10 ... 50 mm²	10 ... 50 mm²
	Stranded acc. to UL/CSA	**1 x**	AWG 10-2/0	AWG 10-2/0
		2 x	AWG 10-1/0	AWG 10-1/0
	Flexible acc. to UL/CSA	**1 x**	AWG 10-2/0	AWG 10-2/0
		2 x	AWG 10-1/0	AWG 10-1/0
Stripping length			17 mm	17 mm
Tightening torque			4 - 6 Nm / 35 - 53 lb.in	4 - 6 Nm / 35 - 53 lb.in
Recommended screw driver			Hexagon 4	Hexagon 4

2CDC131038C0201

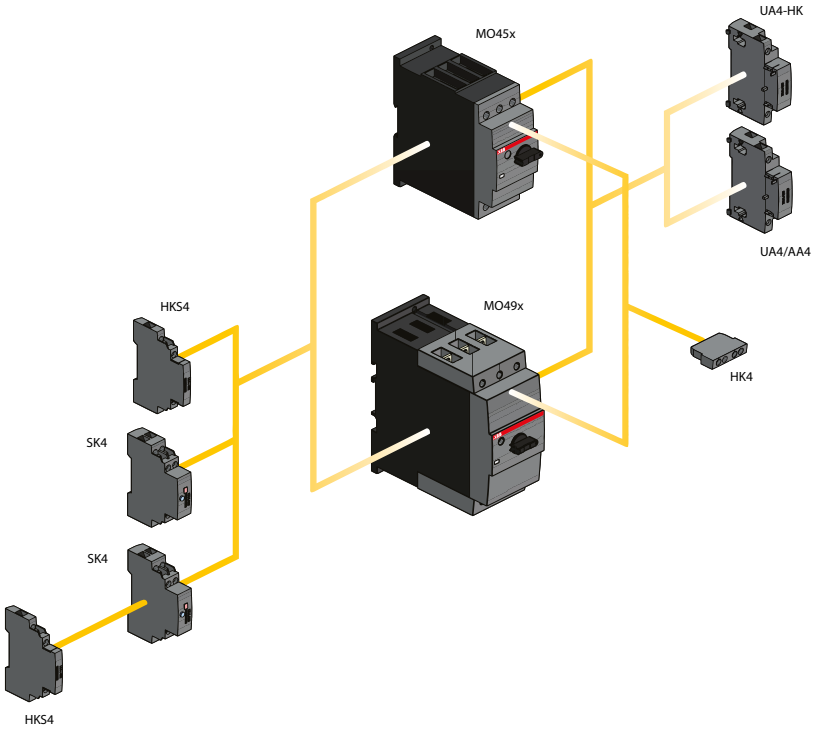
Main accessories
MS49x, MO49x manual motor starters

Manual motor starter MS49x with accessories



2CDC242025F0011

Manual motor starter MO49x with accessories



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Main accessories
MS49x, MO49x manual motor starters


2CDC241026F0011

HK4-11


2CDC241022F0011

HKS4-20


2CDC241024F0011

SK4-11


2CDC241023F0011

AA4-24


2CDC241025F0011

UA4-110


2CDC241023F0013

SA2

Description

Manual motor starters can be equipped with auxiliary contacts for lateral/front mounting, signalling contact for lateral mounting, undervoltage release and shunt trips. The accessories can be fitted wiring free and without tools. A variety of combinations is possible as required for the application. The auxiliary contacts change position with the main contacts. Undervoltage release are used for remote tripping of the manual motor starter especially for emergency stop circuits. Shunt trips release the MMS used for remote tripping.

For this manual motor starter range we offer terminal shrouds, terminal insulation barriers and different lock/key solutions for customer solutions.

Ordering details

Suitable for	Auxiliary contacts N.O.	Auxiliary contacts N.C.	Description	Type	Order code		Pkg qty	Weight (1 pce) kg
Auxiliary contacts – mountable on the front								
MS49x, MO49x	1	1		HK4-11	1SAM401901R1001		10	0.017
			Changeover	HK4-W	1SAM401901R1002		10	0.015
Auxiliary contacts – mountable on the left								
MS49x, MO49x	1	1	Max. 1 piece	HKS4-11	1SAM401902R1001		2	0.045
	2	0	Max. 1 piece	HKS4-20	1SAM401902R1002		2	0.045
	0	2	Max. 1 piece	HKS4-02	1SAM401902R1003		2	0.045
Signalling contacts – mountable on the left								
MS49x, MO49x	2	2	Separate signalling acc. UL508E 1 N.O. + 1 N.C. for short circuit alarm and 1 N.O. + 1 N.C. for tripped alarm, max. 1x SK4-11 + 1 x HKS4-xx	SK4-11	1SAM401904R1001		1	0.093

Suitable for	Rated control supply voltage V	Frequency Hz	Type	Order code		Pkg qty	Weight (1 pce) kg
Shunt trip units – mountable on the right							
MS49x, MO49x	20 ... 24	50/60	AA4-24	1SAM401907R1001		1	0.135
	90 ... 110	50/60	AA4-110	1SAM401907R1002		1	0.135
	200 ... 240	50/60	AA4-230	1SAM401907R1003		1	0.128
	350 ... 415	50/60	AA4-400	1SAM401907R1004		1	0.125
Undervoltage releases – mountable on the right							
MS49x, MO49x	24	50/60	UA4-24	1SAM401905R1004		1	0.134
	110/120	50/60	UA4-110	1SAM401905R1001		1	0.134
	230/240	50/60	UA4-230	1SAM401905R1002		1	0.131
	400/440	50/60	UA4-400	1SAM401905R1003		1	0.129
	230/240	50/60	UA4-HK-230	1SAM401906R1001		1	0.140
	400/440	50/60	UA4-HK-400	1SAM401906R1002		1	0.137

Suitable for	Description	Type	Order code		Pkg qty	Weight (1 pce) kg
MS495, MS497, MO495, MO496	Terminal shroud	KA495	1SAM501901R1001		10	0.018
	Terminal shroud	KA495C [1]	1SAM501902R1001		10	0.038
	Terminal insulation barrier for UL508E	DX495	1SAM401912R1001		1	0.154
MS495, MS497, MO495, MO496	Padlock + two keys	SA2	GJF1101903R0002		10	0.020

[1] Is plugged onto the housing after removing the box terminals, if using cable lugs.

2CDC131051C0201

Main accessories
MS49x, MO49x manual motor starters

General technical data

Type		HK4-11	HK4-W	HKS4	SK4
Standards		IEC/EN 60947–1, IEC/EN 60947-5-1, UL 508, CSA22.2 No. 14			
Rated operational voltage U_e		230 V AC / 220 V DC	690 V AC / 220 V DC	690 V AC	690 V AC
Conventional free-air thermal current I_{th}		2.5 A	5 A	10 A	10 A
Rated frequency		DC, 50/60 Hz			
Rated impulse withstand voltage U_{imp}		6 kV			
Rated insulation voltage U_i		300 V	300 V	690 V	690 V
Pollution degree		3			
Ambient air temperature	Operation	-20 ... +70 °C			
	Storage	-50 ... +80 °C			
Resistance to shock acc. to IEC 60068-2-27		25g / 11 ms			
Resistance to vibrations acc. to IEC 60068-2-6		2g / 5 ... 150 Hz			
Number of poles		1 N.C. + 1 N.O.	Changeover	1 N.C. + 1 N.O. / 2 N.O. / 2 N.C.	2 N.C. + 2 N.O.
I_e / Rated operational current AC-15 acc. to IEC/EN 60947-5-1 for utilization category					
	24 V	2 A	4 A	6 A	6 A
	230 V	0.5 A	3 A	4 A	4 A
	400 V	-	1.5 A	3 A	3 A
	690 V	-	0.5 A	1 A	1 A
I_e / Rated operational current DC-13 acc. to IEC/EN 60947-5-1 for utilization category					
	24 V	1 A	1 A	2 A	2 A
	48 V	0.3 A	-	-	-
	60 V	0.15 A	-	-	-
	110 V	-	0.22 A	0.5 A	0.5 A
	230 V	-	0.1 A	0.25 A	0.25 A
Minimum switching capacity		17 V / 1 mA		-	-
Short-circuit protective device		10 A Type gG			
Duty time		100 %			
Mounting		Front of MMS	Front of MMS	Left side of MMS	Left side of MMS
Mounting positions		1-6			
Mechanical durability		100000 cycles			
Electrical durability		100000 cycles			

Type			UA4-xxx	AA4-xxx
Power consumption				
	Pull-in	**AC**	20.2/13 VA/W	20.2/13 VA/W
		DC	20 W	13 ... 80 W
	Holding	**AC**	7.2/2.4 VA/W	-
		DC	2.1 W	-
Operating voltage				
	Tripping		0.35 ... 0.7 V x U_s	0.7 ... 1.1 V x U_s
	Coil operating voltage		0.85 ... 1.1 V x U_s	-

2CDC131051C0201

Main accessories
MS49x, MO49x manual motor starters

Connecting characteristics

Auxiliary circuit

Type			HK4-11	HK4-W	HKS4	SK4
Connecting capacity						
	Rigid	**1 x**	0.5... 2.5 mm²			
		2 x	0.5 ... 1.5 mm² or 0.75 ... 2.5 mm			
	Flexible with ferrule	**1 x**	0.5 ... 2.5 mm²			
		2 x	0.5 ... 1.5 mm² or 0.75 ... 2.5 mm			
	Flexible	**1 x**	0.5 ... 2.5 mm²			
		2 x	0.5 ... 1.5 mm² or 0.75 ... 2.5 mm			
	Stranded acc. to UL/CSA	**1 or 2 x**	AWG 18-14			
	Flexible acc. to UL/CSA	**1 or 2 x**	AWG 18-14			
Stripping length			10 mm			
Tightening torque			0.8 ... 1.2 Nm / 7 ... 10.3 lb.in			
Recommended screw driver			Pozidriv 2			

2CDC131051C0201

General accessories
MS1xx, MO1xx, MS49x, MO49x


2CDC241003F0011

MSHD-LB


2CDC241002S0011

MSHD-LY


2CDC241004F0011

MSMN


2CDC241001F0012

MSH-AR


2CDC241017V0013

MSAH1

Description

With this solution of door coupling rotary mechanism it is possible to operate a manual motor starter in the back of a switch cabinet from outside. The door coupling mechanism prevents opening of the door of a switch cabinet with the manual motor starter in ON position.

The complete mechanism includes handle, shaft, driver, shaft alignment ring and shaft supporter.

Most accessories fit for 6 mm shafts with a maximum length of 180 mm. The degree of protection for handles MSHD is IP64 (UL/CSA Type 1, 3R, 12).

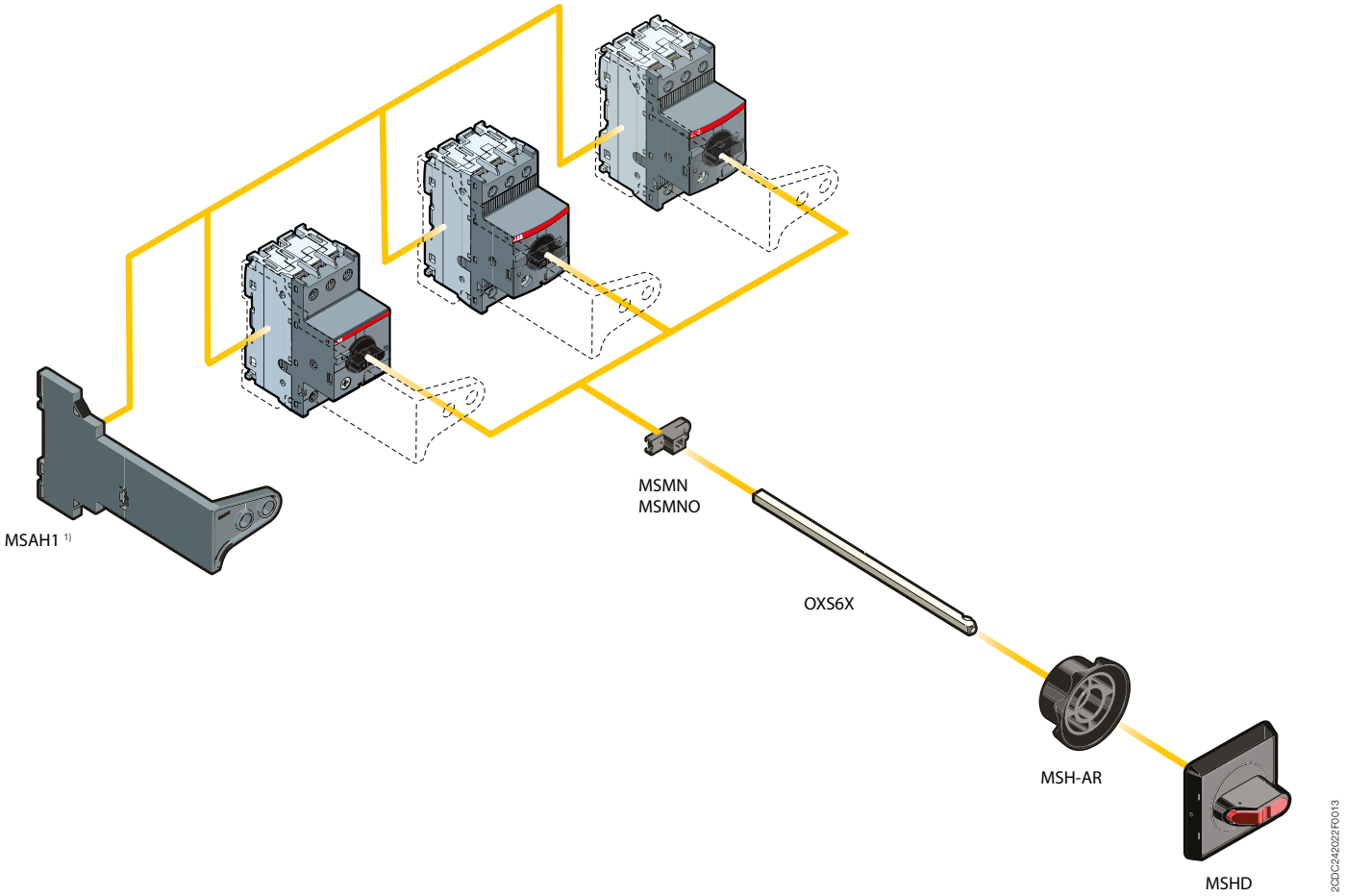
Ordering details

Suitable for	Description	Shaft length mm	Color	Type	Order code		Pkg qty	Weight (1 pce) kg
Shafts								
MS116, MS132, MO132, MS165, MO165, MS4xx, MO4xx	For MSHD handles. Shaft diameter 6 mm. Shaft extension for door coupling driver.	85		OXS6X85	1SCA101647R1001		1	0.020
		105		OXS6X105	1SCA108043R1001		1	0.020
		130		OXS6X130	1SCA101655R1001		1	0.030
		180		OXS6X180	1SCA101659R1001		1	0.040
IP64 handles (UL/CSA Type 1, 3R, 12)								
MS116, MS132, MO132, MS165, MO165, MS4xx, MO4xx	Padlockable max. 3 padlocks with bail diameter 5 ... 8 mm, door interlock in ON position defeatable, for use with 6 mm OXS6...types up to 180 mm or driver shafts MSOX.		Black	MSHD-LB [1]	1SAM201920R1001		1	0.065
			Yellow	MSHD-LY [1]	1SAM201920R1002		1	0.065
			Black	MSHD-LTB [2]	1SAM201920R1011		1	0.065
			Yellow	MSHD-LTY [2]	1SAM201920R1012		1	0.065
Driver								
MS116, MS132, MO132, MS165, MO165, MS4xx, MO4xx	Coupling driver for use with 6 mm OXS6... types up to 180 mm.			MSMN [3]	1SAM101923R0002		1	0.002
				MSMNO [4]	1SAM101923R0012		1	0.002
Shaft alignment ring								
MS116, MS132, MO132, MS165, MO165, MS4xx, MO4xx	The MSH-AR supports the long shafts for alignment to the handle inlet. It makes closing panel doors more easy. Use for OXS6X > 105 mm.			MSH-AR	1SAM201920R1000		1	0.010
Shaft supporter								
MS116, MS132, MO132	With the MSAH it is possible to support the shaft in the extension of handle (MSHD). It is mandatory for the usage of shafts >130 mm.			MSAH1	1SAM201909R1021		1	0.035

[1] Indication I-O and ON-OFF (recommended for MS116, MS4xx, MO4xx)
[2] Indication I-O and ON-OFF + Trip indication
[3] Coded - Positioning of ON indication dependent from mounting orientation of the MMS
[4] Uncoded - Positioning of ON indication independent from mounting orientation of the MMS

2CDC131053C0201

General accessories
MS1xx, MO1xx, MS49x, MO49x



1) MSAH1 fits to MS116,MS132 and MO132

AX contactors and NX contactor relays

AX 3-pole contactors

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Voltage code table 126

AX06 ... AX12 3-pole contactors
3 to 5.5 kW
AC operated

AX06 ... AX12

3

Description

AX06 ... AX12 contactors are mainly used for controlling 3-phase motors and power circuits up to 690 V AC.

These contactors are of the block type design with:

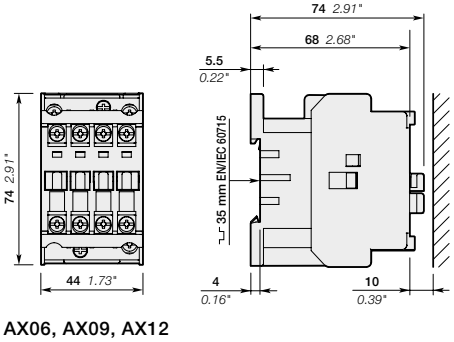
– 3 main poles and 1 built-in auxiliary contact
– control circuit: AC operated
– add-on auxiliary contact blocks for front or side mounting and a wide range of accessories.

Ordering details

IEC Rated operational power 400 V AC-3 kW	current θ ≤ 40 °C AC-1 A	Rated control circuit voltage Uc (1) V 50 Hz	V 60 Hz	Auxiliary contacts fitted	Type	Order code		Weight Pkg (1 pce) kg
3	20	24	24	1 0	AX06-30-10-81	1SBL891074R8110		0.340
				0 1	AX06-30-01-81	1SBL891074R8101		0.340
		110	110...120	1 0	AX06-30-10-84	1SBL891074R8410		0.340
				0 1	AX06-30-01-84	1SBL891074R8401		0.340
		220...230	230...240	1 0	AX06-30-10-80	1SBL891074R8010		0.340
				0 1	AX06-30-01-80	1SBL891074R8001		0.340
		230...240	240...260	1 0	AX06-30-10-88	1SBL891074R8810		0.340
				0 1	AX06-30-01-88	1SBL891074R8801		0.340
		400...415	415...440	1 0	AX06-30-10-86	1SBL891074R8610		0.340
				0 1	AX06-30-01-86	1SBL891074R8601		0.340
4	22	24	24	1 0	AX09-30-10-81	1SBL901074R8110		0.340
				0 1	AX09-30-01-81	1SBL901074R8101		0.340
		110	110...120	1 0	AX09-30-10-84	1SBL901074R8410		0.340
				0 1	AX09-30-01-84	1SBL901074R8401		0.340
		220...230	230...240	1 0	AX09-30-10-80	1SBL901074R8010		0.340
				0 1	AX09-30-01-80	1SBL901074R8001		0.340
		230...240	240...260	1 0	AX09-30-10-88	1SBL901074R8810		0.340
				0 1	AX09-30-01-88	1SBL901074R8801		0.340
		400...415	415...440	1 0	AX09-30-10-86	1SBL901074R8610		0.340
				0 1	AX09-30-01-86	1SBL901074R8601		0.340
5.5	25	24	24	1 0	AX12-30-10-81	1SBL911074R8110		0.340
				0 1	AX12-30-01-81	1SBL911074R8101		0.340
		110	110...120	1 0	AX12-30-10-84	1SBL911074R8410		0.340
				0 1	AX12-30-01-84	1SBL911074R8401		0.340
		220...230	230...240	1 0	AX12-30-10-80	1SBL911074R8010		0.340
				0 1	AX12-30-01-80	1SBL911074R8001		0.340
		230...240	240...260	1 0	AX12-30-10-88	1SBL911074R8810		0.340
				0 1	AX12-30-01-88	1SBL911074R8801		0.340
		400...415	415...440	1 0	AX12-30-10-86	1SBL911074R8610		0.340
				0 1	AX12-30-01-86	1SBL911074R8601		0.340

(1) For other voltage version see voltage code table.

Main dimensions mm, *inches*



AX06, AX09, AX12

1SBC100211S0201

AX18, AX25 3-pole contactors
7.5 to 11 kW
AC operated

AX18

Description

AX18, AX25 contactors are mainly used for controlling 3-phase motors and power circuits up to 690 V AC.

These contactors are of the block type design with:

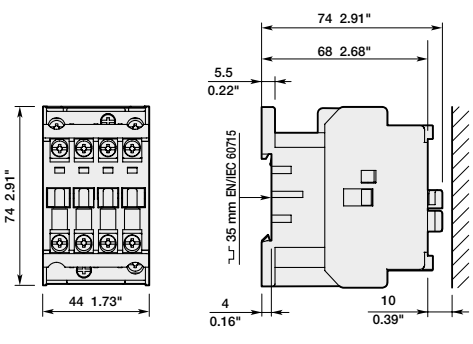
– 3 main poles and 1 built-in auxiliary contact
– control circuit: AC operated
– add-on auxiliary contact blocks for front or side mounting and a wide range of accessories.

Ordering details

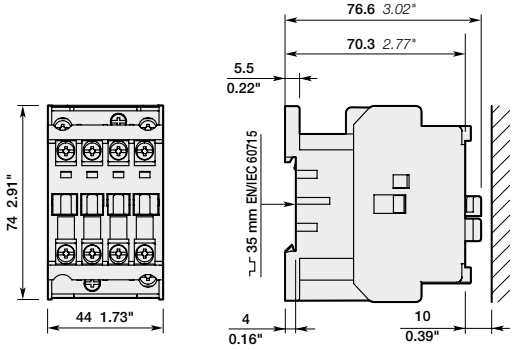
IEC Rated operational power 400 V AC-3 kW	current θ ≤ 40 °C AC-1 A	Rated control circuit voltage Uc (1) V 50 Hz	V 60 Hz	Auxiliary contacts fitted	Type	Order code	Weight Pkg (1 pce) kg
7.5	27	24	24	1 0	AX18-30-10-81	1SBL921074R8110	0.340
				0 1	AX18-30-01-81	1SBL921074R8101	0.340
		110	110...120	1 0	AX18-30-10-84	1SBL921074R8410	0.340
				0 1	AX18-30-01-84	1SBL921074R8401	0.340
		220...230	230...240	1 0	AX18-30-10-80	1SBL921074R8010	0.340
				0 1	AX18-30-01-80	1SBL921074R8001	0.340
		230...240	240...260	1 0	AX18-30-10-88	1SBL921074R8810	0.340
				0 1	AX18-30-01-88	1SBL921074R8801	0.340
		400...415	415...440	1 0	AX18-30-10-86	1SBL921074R8610	0.340
				0 1	AX18-30-01-86	1SBL921074R8601	0.340
11	32	24	24	1 0	AX25-30-10-81	1SBL931074R8110	0.340
				0 1	AX25-30-01-81	1SBL931074R8101	0.340
		110	110...120	1 0	AX25-30-10-84	1SBL931074R8410	0.340
				0 1	AX25-30-01-84	1SBL931074R8401	0.340
		220...230	230...240	1 0	AX25-30-10-80	1SBL931074R8010	0.340
				0 1	AX25-30-01-80	1SBL931074R8001	0.340
		230...240	240...260	1 0	AX25-30-10-88	1SBL931074R8810	0.340
				0 1	AX25-30-01-88	1SBL931074R8801	0.340
		400...415	415...440	1 0	AX25-30-10-86	1SBL931074R8610	0.340
				0 1	AX25-30-01-86	1SBL931074R8601	0.340

(1) For other voltage version see voltage code table.

Main dimensions mm, *inches*



AX18



AX25

1SBC100212S0201

AX32, AX40 3-pole contactors
15 to 18.5 kW
AC operated

AX32, AX40

Description

AX32, AX40 contactors are mainly used for controlling 3-phase motors and power circuits up to 690 V AC.

These contactors are of the block type design with:

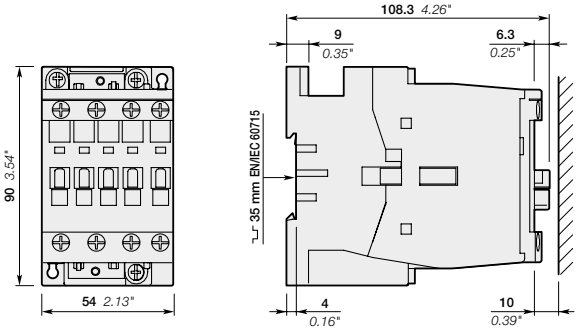
– 3 main poles and 1 built-in auxiliary contact
– control circuit: AC operated
– add-on auxiliary contact blocks for front or side mounting and a wide range of accessories.

Ordering details

IEC Rated operational power 400 V AC-3 kW	IEC Rated operational current θ ≤ 40 °C AC-1 A	Rated control circuit voltage Uc (1) V 50 Hz	Rated control circuit voltage Uc (1) V 60 Hz	Auxiliary contacts fitted	Type	Order code		Weight (1 pce) kg
15	55	24	24	1 0	AX32-30-10-81	1SBL281074R8110		0.71
				0 1	AX32-30-01-81	1SBL281074R8101		0.71
		110	110...120	1 0	AX32-30-10-84	1SBL281074R8410		0.71
				0 1	AX32-30-01-84	1SBL281074R8401		0.71
		220...230	230...240	1 0	AX32-30-10-80	1SBL281074R8010		0.71
				0 1	AX32-30-01-80	1SBL281074R8001		0.71
		230...240	240...260	1 0	AX32-30-10-88	1SBL281074R8810		0.71
				0 1	AX32-30-01-88	1SBL281074R8801		0.71
		400...415	415...440	1 0	AX32-30-10-86	1SBL281074R8610		0.71
				0 1	AX32-30-01-86	1SBL281074R8601		0.71
18.5	60	24	24	1 0	AX40-30-10-81	1SBL321074R8110		0.71
				0 1	AX40-30-01-81	1SBL321074R8101		0.71
		110	110...120	1 0	AX40-30-10-84	1SBL321074R8410		0.71
				0 1	AX40-30-01-84	1SBL321074R8401		0.71
		220...230	230...240	1 0	AX40-30-10-80	1SBL321074R8010		0.71
				0 1	AX40-30-01-80	1SBL321074R8001		0.71
		230...240	240...260	1 0	AX40-30-10-88	1SBL321074R8810		0.71
				0 1	AX40-30-01-88	1SBL321074R8801		0.71
		400...415	415...440	1 0	AX40-30-10-86	1SBL321074R8610		0.71
				0 1	AX40-30-01-86	1SBL321074R8601		0.71

(1) For other voltage version see voltage code table.

Main dimensions mm, *inches*



AX32, AX40

1SBC100232S0201

AX50 ... AX80 3-pole contactors
22 to 37 kW
AC operated

AX50 ... AX80

Description

AX50 ... AX80 contactors are mainly used for controlling 3-phase motors and power circuits up to 690 V AC.

These contactors are of the block type design with:

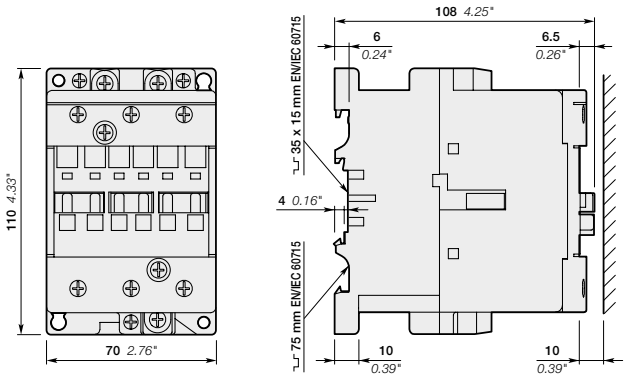
– 3 main poles
– control circuit: AC operated
– add-on auxiliary contact blocks for front or side mounting and a wide range of accessories.

Ordering details (without auxiliary block)

IEC Rated operational power 400 V AC-3 kW	current θ ≤ 40 °C AC-1 A	Rated control circuit voltage Uc (1) V 50 Hz	V 60 Hz	Auxiliary contacts fitted	Type	Order code		Weight Pkg (1 pce) kg
22	100	24	24	0 0	AX50-30-00-81	1SBL351074R8100		1.12
		110	110...120	0 0	AX50-30-00-84	1SBL351074R8400		1.12
		220...230	230...240	0 0	AX50-30-00-80	1SBL351074R8000		1.12
		230...240	240...260	0 0	AX50-30-00-88	1SBL351074R8800		1.12
		400...415	415...440	0 0	AX50-30-00-86	1SBL351074R8600		1.12
30	115	24	24	0 0	AX65-30-00-81	1SBL371074R8100		1.12
		110	110...120	0 0	AX65-30-00-84	1SBL371074R8400		1.12
		220...230	230...240	0 0	AX65-30-00-80	1SBL371074R8000		1.12
		230...240	240...260	0 0	AX65-30-00-88	1SBL371074R8800		1.12
		400...415	415...440	0 0	AX65-30-00-86	1SBL371074R8600		1.12
37	125	24	24	0 0	AX80-30-00-81	1SBL411074R8100		1.12
		110	110...120	0 0	AX80-30-00-84	1SBL411074R8400		1.12
		220...230	230...240	0 0	AX80-30-00-80	1SBL411074R8000		1.12
		230...240	240...260	0 0	AX80-30-00-88	1SBL411074R8800		1.12
		400...415	415...440	0 0	AX80-30-00-86	1SBL411074R8600		1.12

(1) For other voltage version see voltage code table.

Main dimensions mm, *inches*



AX50, AX65, AX80

AX50 ... AX80 3-pole contactors
22 to 37 kW
AC operated with 1 N.O. + 1 N.C. auxiliary contacts

AX50 ... AX80

3

Description

AX50 ... AX80 contactors are mainly used for controlling 3-phase motors and power circuits up to 690 V AC.

These contactors are of the block type design with:

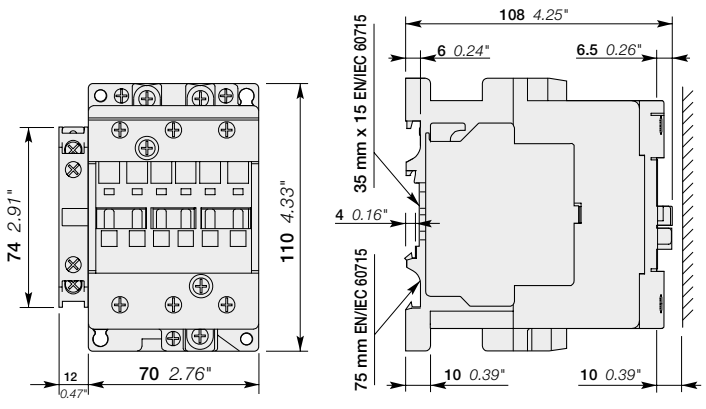
– 3 main poles and 1 side-mounted auxiliary contact block
– control circuit: AC operated
– add-on auxiliary contact blocks for front or side mounting and a wide range of accessories.

Ordering details

IEC Rated operational power 400 V AC-3 kW	current θ ≤ 40 °C AC-1 A	Rated control circuit voltage Uc (1) V 50 Hz	V 60 Hz	Auxiliary contacts fitted	Type	Order code		Weight Pkg (1 pce) kg
22	100	24	24	1 1	AX50-30-11-81	1SBL351074R8111		1.16
		110	110...120	1 1	AX50-30-11-84	1SBL351074R8411		1.16
		220...230	230...240	1 1	AX50-30-11-80	1SBL351074R8011		1.16
		230...240	240...260	1 1	AX50-30-11-88	1SBL351074R8811		1.16
		400...415	415...440	1 1	AX50-30-11-86	1SBL351074R8611		1.16
30	115	24	24	1 1	AX65-30-11-81	1SBL371074R8111		1.16
		110	110...120	1 1	AX65-30-11-84	1SBL371074R8411		1.16
		220...230	230...240	1 1	AX65-30-11-80	1SBL371074R8011		1.16
		230...240	240...260	1 1	AX65-30-11-88	1SBL371074R8811		1.16
		400...415	415...440	1 1	AX65-30-11-86	1SBL371074R8611		1.16
37	125	24	24	1 1	AX80-30-11-81	1SBL411074R8111		1.16
		110	110...120	1 1	AX80-30-11-84	1SBL411074R8411		1.16
		220...230	230...240	1 1	AX80-30-11-80	1SBL411074R8011		1.16
		230...240	240...260	1 1	AX80-30-11-88	1SBL411074R8811		1.16
		400...415	415...440	1 1	AX80-30-11-86	1SBL411074R8611		1.16

(1) For other voltage version see voltage code table.

Main dimensions mm, *inches*



AX50, AX65, AX80

1SBC100234S0201

AX95 ... AX150 3-pole contactors
45 to 75 kW
AC operated with 1 N.O. + 1 N.C. auxiliary contacts

AX95 ... AX150

Description

AX95 … AX150 contactors are mainly used for controlling 3-phase motors and power circuits up to 1 000 V AC. These contactors are of the block type design with:

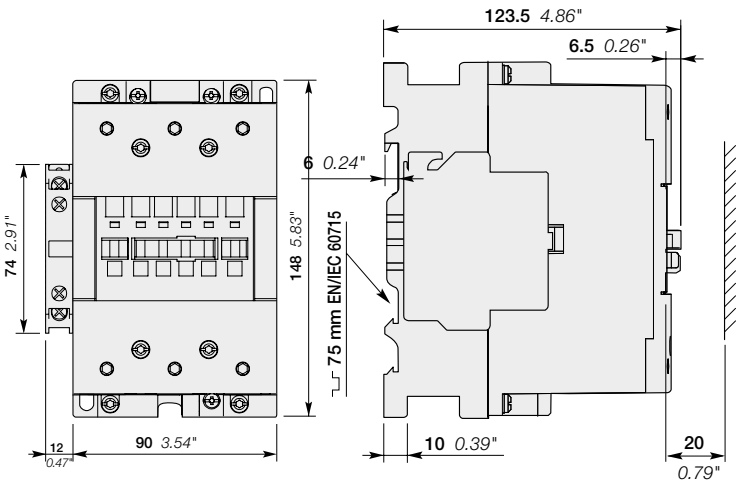
- 3 main poles and side mounted auxiliary contact block
- control circuit: AC operated
- add-on auxiliary contact blocks for front or side mounting and a wide range of accessories.

Ordering details

IEC Rated operational power 400 V AC-3 kW	current θ ≤ 40 °C AC-1 A	Rated control circuit voltage Uc (1) V 50 Hz	V 60 Hz	Auxiliary contacts fitted	Type	Order code		Weight Pkg (1 pce) kg
45	145	24	24	1 1	AX95-30-11-81	1SFL431074R8111		2.08
		110	110...120	1 1	AX95-30-11-84	1SFL431074R8411		2.08
		220...230	230...240	1 1	AX95-30-11-80	1SFL431074R8011		2.08
		230...240	240...260	1 1	AX95-30-11-88	1SFL431074R8811		2.08
		400...415	415...440	1 1	AX95-30-11-86	1SFL431074R8611		2.08
55	160	24	24	1 1	AX115-30-11-81	1SFL981074R8111		2.08
		110	110...120	1 1	AX115-30-11-84	1SFL981074R8411		2.08
		220...230	230...240	1 1	AX115-30-11-80	1SFL981074R8011		2.08
		230...240	240...260	1 1	AX115-30-11-88	1SFL981074R8811		2.08
		400...415	415...440	1 1	AX115-30-11-86	1SFL981074R8611		2.08
75	190	24	24	1 1	AX150-30-11-81	1SFL991074R8111		2.08
		110	110...120	1 1	AX150-30-11-84	1SFL991074R8411		2.08
		220...230	230...240	1 1	AX150-30-11-80	1SFL991074R8011		2.08
		230...240	240...260	1 1	AX150-30-11-88	1SFL991074R8811		2.08
		400...415	415...440	1 1	AX150-30-11-86	1SFL991074R8611		2.08

(1) For other voltage version see voltage code page.

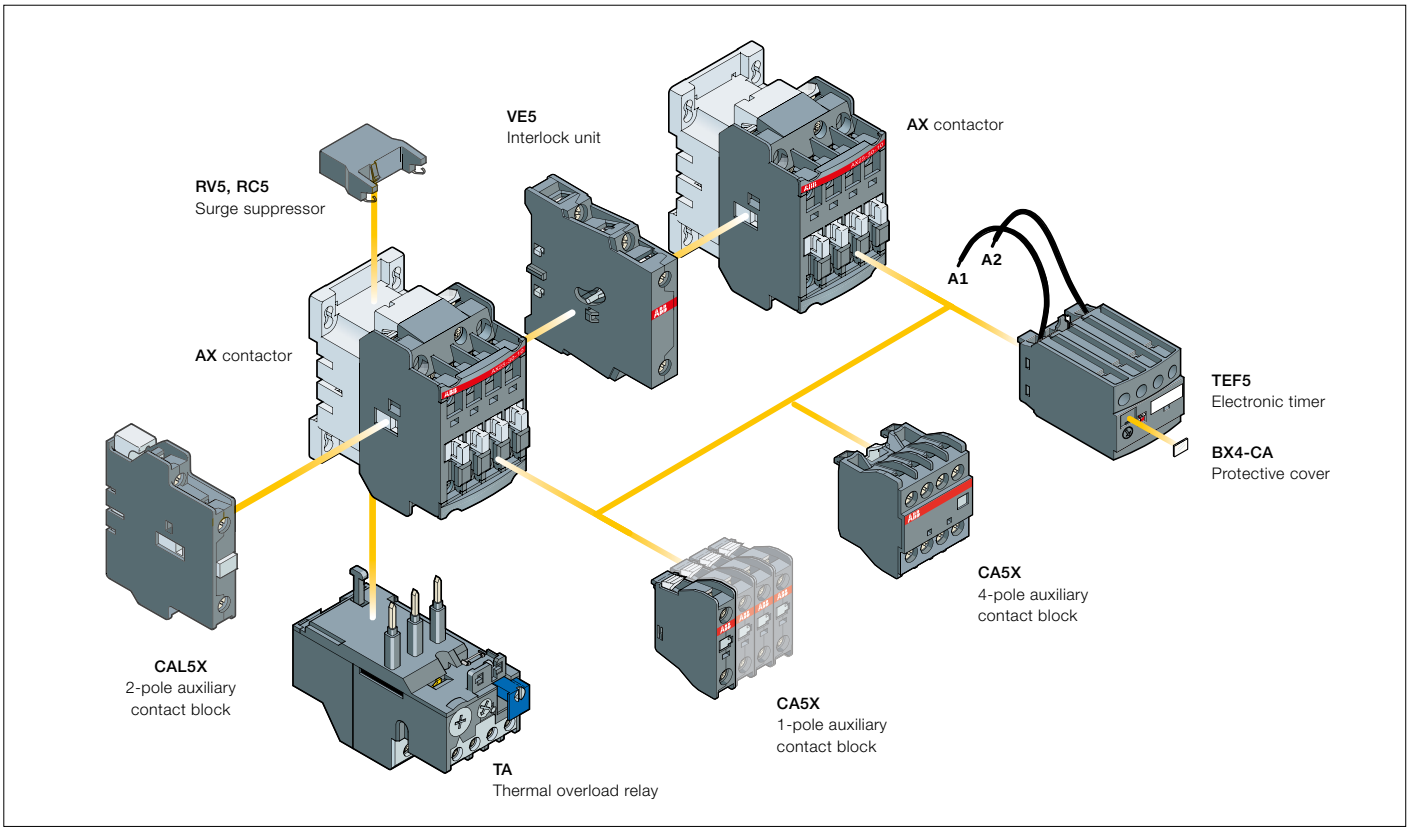
Main dimensions mm, *inches*



AX95, AX115, AX150

AX06 ... AX150 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: Auxiliary contact blocks				Electronic timer		Side-mounted accessories: Auxiliary contact blocks		Interlock unit
			1-pole CA5X		4-pole CA5X		TEF5		2-pole CAL		VM5 or VE5
AX06 ... AX25	3 0 3 0	1 0 0 1 (1)	1 to 4 x CA5X 1 to 2 x CE5 max (2)	or	1 x CA5X (4-pole)	or	1 x TEF5	+	1 to 2 x CAL5X-11	or	1 x VM5-1 or VE5-1 +1 x CAL5X-11
AX32, AX40	3 0 3 0	1 0 0 1 (1)	1 to 5 x CA5X 1 to 3 x CE5 max (3)	or	1 x CA5X (4-pole) + 1 x 1-pole CA5X or CE5 (3)	or	1 x TEF5 + 1 x CA5X (1-pole)	+	1 to 2 x CAL5X-11	or	1 x VM5-1 or VE5-1 +1 x CAL5X-11
AX50 ... AX80	3 0	0 0	1 to 6 x CA5X 1 to 5 x CE5 max (4)	or	1 x CA5X (4-pole) + 2 x 1-pole CA5X or CE5 (4)	or	1 x TEF5 + 2 x CA5X (1-pole)	+	2 x CAL5X-11	or	1 x VE5-2
AX50 ... AX80	3 0	1 1	1 to 6 x CA5X 1 to 5 x CE5 max (4)	or	1 x CA5X (4-pole) + 2 x 1-pole CA5X or CE5 (4)	or	1 x TEF5 + 2 x CA5X (1-pole)	+	1 x CAL5X-11	or	1 x VE5-2
AX95 ... AX150	3 0	1 1	1 to 6 x CA5X	or	1 x CA5X (4-pole) + 2 x 1-pole CA5X		–	+	1 x CAL18X-11	or	1 x VE5-2

(1) 2 N.C. CA5X auxiliary contacts maximum in mounting position 5. for mounting position refer technical data page.
(2) The total number of N.O. or N.C. CE5 and other N.C. CA5X is limited to 2. CE5 not allowed in mounting position 5.
(3) The total number of N.O. or N.C. CE5 and other N.C. CA5X is limited to 3. CE5 not allowed in mounting position 5.
(4) The total number of N.O. or N.C. CE5 and other N.C. CA5X is limited to 5. CE5 not allowed in mounting position 5.

Overload relays fitting details (1)

Contactor types	Thermal overload relays	Electronic overload relays
AX06 ... AX25	TA25DU-M (0.1...32 A)	–
AX32, AX40	TA25DU-M (0.1...32 A) or TA42DU-M (18...42 A)	–
AX50 ... AX80	TA75DU-M (18...80 A)	–
AX95 ... AX150	TA80DU (29...80 A) or TA110DU (66...110 A)	E140DU (50 ... 140 A)

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

1SBC100216S0201

AX06 ... AX150 3-pole contactors
Main accessories

CA5X-10

CA5X-4P

CAL5X-11

VE5-1

Ordering details (1)

For contactors	Auxiliary contacts	Type	Order code		Pkg qty	Weight (1 pce)
						kg
Front-mounted instantaneous auxiliary contact blocks						
AX06 ... AX150 and NX 4-pole	1 0	CA5X-10	1SBN019010R1010		10	0.014
	0 1	CA5X-01	1SBN019010R1001		10	0.014
AX06-30-10 ... AX40-30-10	2 2	CA5X-22M	1SBN019040R1122		2	0.060
AX50 ... AX150	2 2	CA5X-22E	1SBN019040R1022		2	0.060
Side-mounted instantaneous auxiliary contact block, 2 pole						
AX06 ... AX80 and NX - 4 pole	1 1	CAL5X-11	1SBN019020R1011		2	0.050
AX95 ... AX205 (1)	1 1	CAL18X-11	1SFN019820R1011		2	0.050

Mechanical interlock units for two horizontal mounted contactors (2)

Left side contactor	Right side contactor	Mounting						
AX06 ... AX40	AX06 ... AX40	Horizontal	–	–	VM5-1	1SBN030100R1000	1	0.066
AX95 ... AX205	AX185 ... AX205	Horizontal	–	–	VM300H	1SFN034700R1000	1	0.150

Mechanical interlock units for two vertical mounted contactors

Up contactor	Down contactor	Mounting						
AX95 ... AX150	AX150 ... AX370	Vertical	–	–	VM300V	1SFN034701R100	1	0.150

Mechanical and electrical interlock units for two horizontal mounted contactors

Left side contactor	Right side contactor	Mounting						
AX06 ... AX40	AX06 ... AX40	Horizontal	0	2	VE5-1	1SBN030110R1000	1	0.076
AX32 ... AX80	AX50 ... AX80	Horizontal	0	2	VE5-2	1SBN030210R1000	1	0.146
AX50 ... AX80	AX32 ... AX80	Horizontal	0	2	VE5-2	1SBN030210R1000	1	0.146
AX50 ... AX80	AX95 ... AX150	Horizontal	0	2	VE5-2 (3)	1SBN030210R1000	1	0.146
AX95 ... AX150	AX50 ... AX80	Horizontal	0	2	VE5-2 (3)	1SBN030210R1000	1	0.146
AX95 ... AX150	AX95 ... AX150	Horizontal	0	2	VE5-2	1SBN030210R1000	1	0.146

(1) See "Main accessory fitting details".
(2) Mechanical durability: VM5-1 = 5 millions cycles, VM300H = 1 million cycles.
(3) The combination of AX50 ... AX80 contactors interlocked with AX95…AX150 contactors cannot be mounted on symmetrical rail (75 mm, IEC/EN 60715).

AX06 ... AX150 3-pole contactors
Main accessories

TEF5-OFF

Ordering details (1)

For contactors	Time delay range selected by switch	Delay type	Auxiliary contacts	Type	Order code		Pkg qty	Weight (1 pce) kg
Electronic timers								
AX06 ... AX80 NX 4 pole	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.

WB75-A

Mechanical latching units

For contactors	Rated control circuit voltage Uc		Type	Order code		Pkg qty	Weight (1 pce) kg
	50Hz	60 Hz					
AX06...AX80	24	24...28	WB75-A	FPTN372726R1001		1	0.120
	220...230	220...255	WB75-A	FPTN372726R1006		1	0.120

RV5/50

Surge suppressors

For contactors	Rated control circuit voltage Uc V AC	Type	Order code		Pkg qty	Weight (1 pce) kg
AX06 ... AX150	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
AX06 ... AX40	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
AX50 ... AX150	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

BEA

Connecting links with manual motor starters

For contactors	MMS type	Type	Order code		Pkg qty	Weight (1 pce) kg
AX06 ... AX18	MS116-0.16 ... MS116-16 / MS132-0.16 ... MS132-10	BEA16/116	1SBN081406R1000		10	0.020
AX25	MS116-0.16 ... MS116-16 / MS132-0.16 ... MS132-10	BEA25/116	1SBN089306T1000		10	0.020
AX25	MS116-20 ... MS116-32 / MS132-12 ... MS132-32	BEA25/132	1SBN089306T1001		10	0.020
AX50 ... AX80	MS495	BEA75/495	1SBN084106R1000		1	0.120
AX95 ... AX150	MS495	BEA110/495	1SBN084506R1000		1	0.124

(1) See "Main accessory fitting details".

1SBC100218S0201

AX185, AX205 3-pole contactors
90 to 110 kW
AC operated with 1 N.O. + 1 N.C. auxiliary contacts

AX185, AX205

Description

AX185, AX205 contactors are mainly used for controlling 3-phase motors and power circuits up to 1 000 V AC.

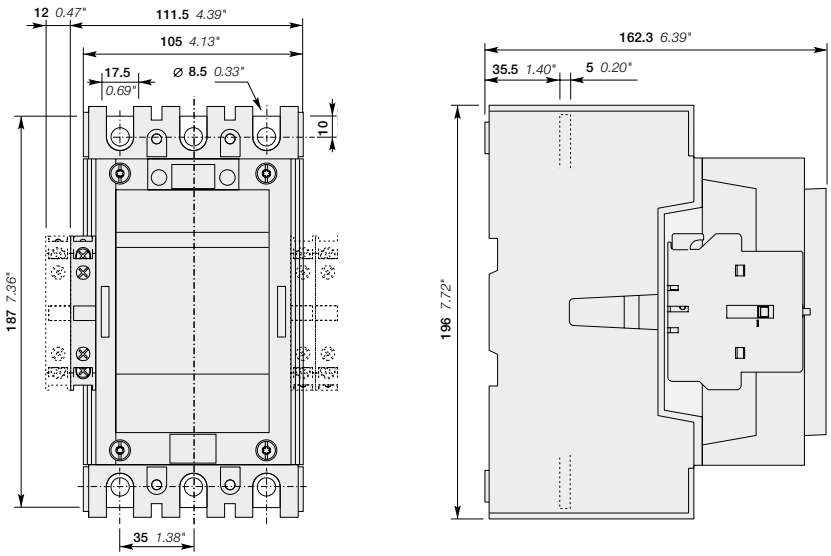
These contactors are of the block type design with:
- 3 main poles and side mounted auxiliary contact block
- control circuit: AC operated
- add-on auxiliary contact blocks for side mounting and a wide range of accessories.

Ordering details

IEC Rated operational power 400 V AC-3 kW	current θ ≤ 40 °C AC-1 A	Rated control circuit voltage Uc (1) V 50 Hz	V 60 Hz	Auxiliary contacts fitted	Type	Order code		Weight Pkg (1 pce) kg
90	250	24	24	1 1	AX185-30-11-81	1SFL491074R8111		3.80
		110	110...120	1 1	AX185-30-11-84	1SFL491074R8411		3.80
		220...230	230...240	1 1	AX185-30-11-80	1SFL491074R8011		3.80
		230...240	240...260	1 1	AX185-30-11-88	1SFL491074R8811		3.80
		400...415	415...440	1 1	AX185-30-11-86	1SFL491074R8611		3.80
110	275	24	24	1 1	AX205-30-11-81	1SFL501074R8111		3.80
		110	110...120	1 1	AX205-30-11-84	1SFL501074R8411		3.80
		220...230	230...240	1 1	AX205-30-11-80	1SFL501074R8011		3.80
		230...240	240...260	1 1	AX205-30-11-88	1SFL501074R8811		3.80
		400...415	415...440	1 1	AX205-30-11-86	1SFL501074R8611		3.80

(1) For other voltage version see voltage code table.

Main dimensions mm, *inches*



AX185, AX205

1SFC101308C0201

AX260 ... AX370 3-pole contactors
132 to 200 kW
AC operated with 1 N.O. + 1 N.C. auxiliary contacts

AX06022

AX260 ... AX370

Description

AX260 … AX370 contactors are mainly used for controlling 3-phase motors and power circuits up to 1 000 V AC.

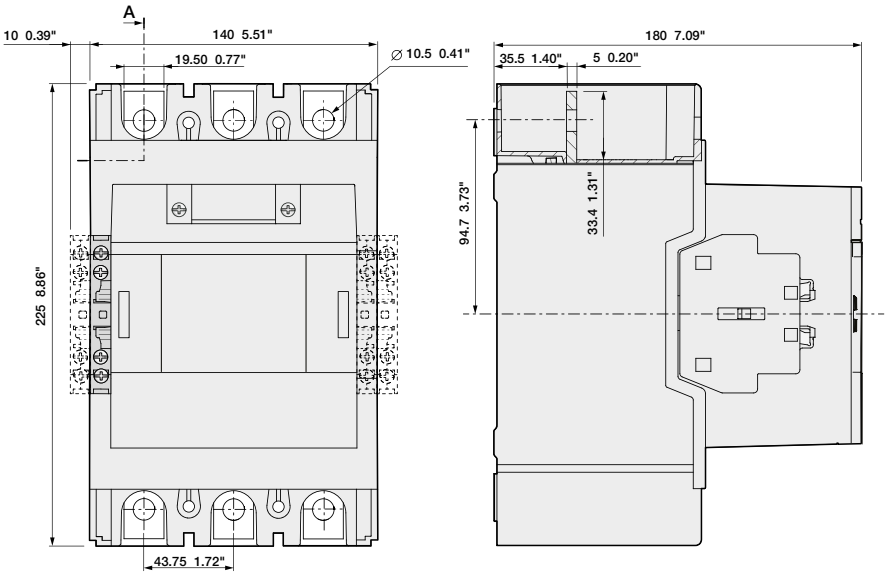
These contactors are of the block type design with:
- 3 main poles and side mounted auxiliary contact block
- control circuit: AC operated
- add-on auxiliary contact blocks for side mounting and a wide range of accessories.

Ordering details

IEC Rated operational power 400 V AC-3	current θ ≤ 40 °C AC-1	Rated control circuit voltage Uc (1)		Auxiliary contacts fitted		Type	Order code		Weight Pkg (1 pce)
kW	A	V 50 Hz	V 60 Hz						kg
132	400	24	24	1	1	AX260-30-11-81	1SFL547074R8111		5.4
		110	110...120	1	1	AX260-30-11-84	1SFL547074R8411		5.4
		220...230	230...240	1	1	AX260-30-11-80	1SFL547074R8011		5.4
		230...240	240...260	1	1	AX260-30-11-88	1SFL547074R8811		5.4
		400...415	415...440	1	1	AX260-30-11-86	1SFL547074R8611		5.4
160	500	24	24	1	1	AX300-30-11-81	1SFL587074R8111		5.4
		110	110...120	1	1	AX300-30-11-84	1SFL587074R8411		5.4
		220...230	230...240	1	1	AX300-30-11-80	1SFL587074R8011		5.4
		230...240	240...260	1	1	AX300-30-11-88	1SFL587074R8811		5.4
		400...415	415...440	1	1	AX300-30-11-86	1SFL587074R8611		5.4
200	600	24	24	1	1	AX370-30-11-81	1SFL607074R8111		5.4
		110	110...120	1	1	AX370-30-11-84	1SFL607074R8411		5.4
		220...230	230...240	1	1	AX370-30-11-80	1SFL607074R8011		5.4
		230...240	240...260	1	1	AX370-30-11-88	1SFL607074R8811		5.4
		400...415	415...440	1	1	AX370-30-11-86	1SFL607074R8611		5.4

(1) For other voltage version see voltage code table

Main dimensions mm, *inches*



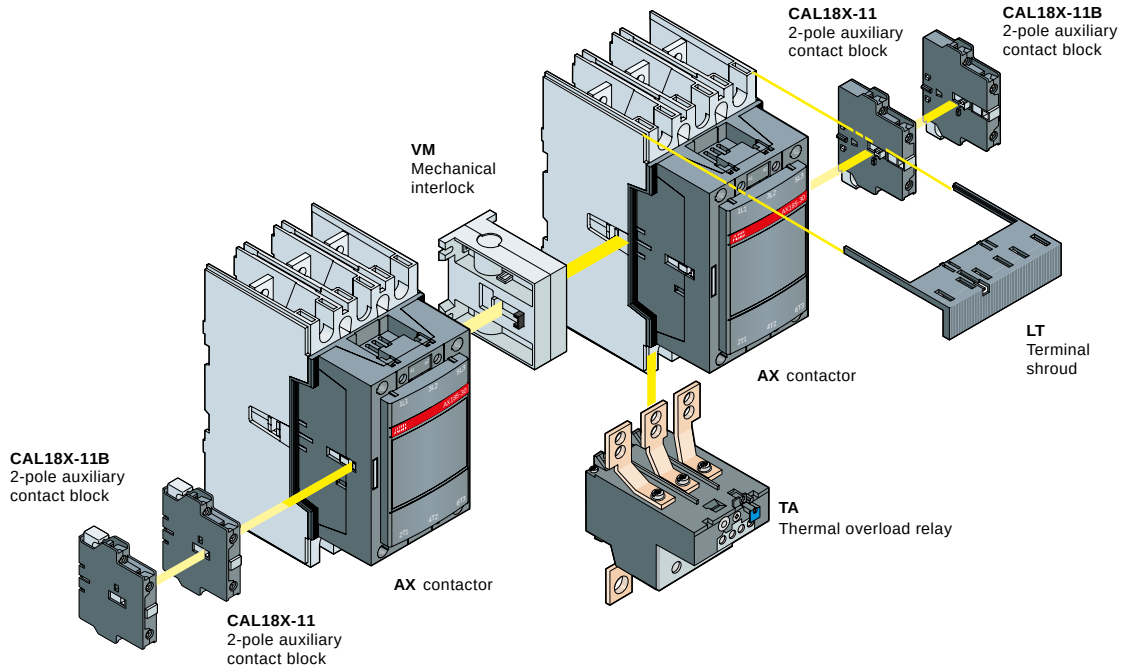
AX260, AX300, AX370

1SFC101309C0201

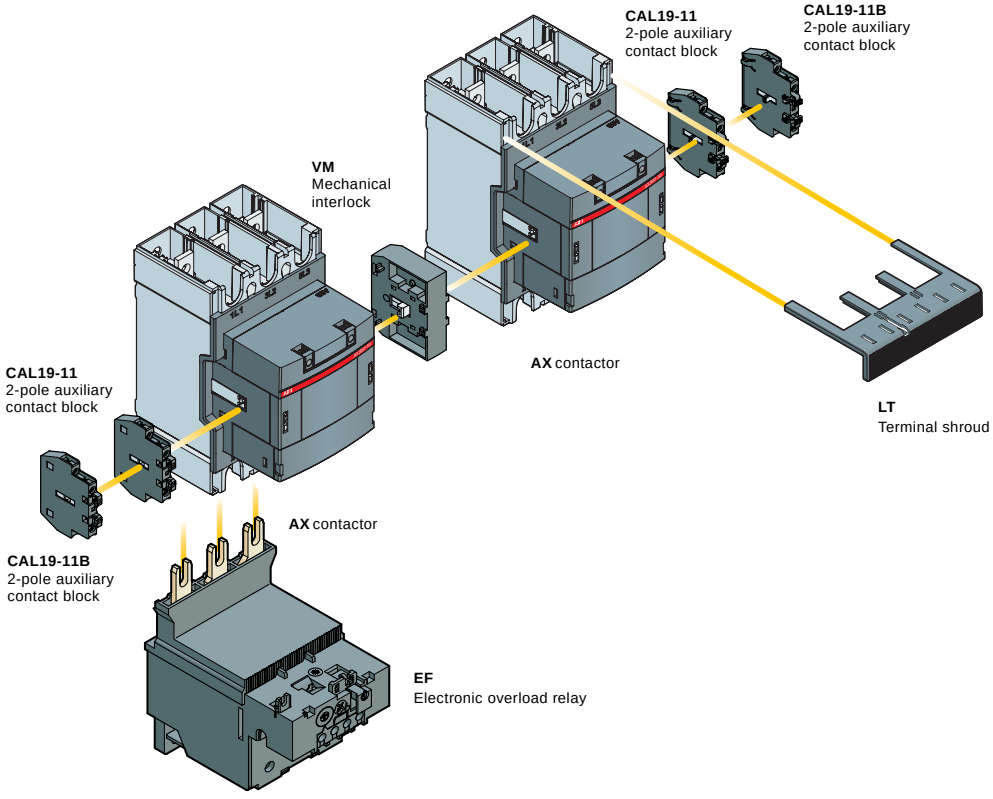
AX185 ... AX370 3-pole contactors
Main accessories

Main accessories (other accessories available)

AX185, AX205



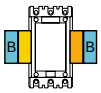
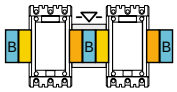
AX260 ... AX370



1SFC101310C0201

AX185 ... AX370 3-pole contactors
Main accessories

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
			CAL18X-11, CAL18X-11B, CAL19-11, CAL19-11B					Factory mounted auxiliary contacts Add-on CAL18-11 auxiliary contacts Add-on CAL18-11B auxiliary contacts
Contactors + auxiliary contact blocks								
AX185 ... AX205	3 0	1 1	1 x CAL18X-11	+	2 x CAL18X-11B		–	
AX260 ... AX370	3 0	1 1	1 x CAL19-11	+	2 x CAL19-11B		–	
Contactors with mechanical interlocking + auxiliary contact blocks								
AX185 ... AX205	3 0	1 1	2 x CAL18-11 (1)	+	2 x CAL18-11B (1)	+	VM...H (2)	
AX260 ... AX370	3 0	1 1	–	+	2 x CAL19-11B	+	VM... (2)	

(1) Total number of auxiliary contact blocks for the two contactors.

(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 (1)

Contactor types	Thermal overload relays	Electronic overload relays
AX185, AX205	TA200DU (66 ... 200 A)	EF205 (63 ... 210 A)
AX260 ... AX370	-	EF370 (115 ... 380 A)

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

1SFC101311C0201

AX185 ... AX370 3-pole contactors
Main accessories


1SFC101003F0201

CAL18X-11


1SBC580411F0301

VM300H


1SFT980099-019C3

LT...AC


1SFT90099-125

LT...AL


1SFT980000-012C3

LX


1SFT980000-011C3

LW

Ordering details (1)

For contactors	Auxiliary contacts	Type	Order code		Pkg qty	Weight (1 pce) kg
Side-mounted instantaneous auxiliary contact blocks						
AX185 ... AX205	1 1	CAL18X-11	1SFN019820R1011		2	0.050
	1 1	CAL18X-11B	1SFN019820R3311		2	0.050
AX260 ... AX370	1 1	CAL19-11	1SFN010820R1011		2	0.040
	1 1	CAL19-11B	1SFN010820R3311		2	0.040

Mechanical interlock unit for two horizontal mounted contactors

Left side contactor	Right side contactor	Mounting						
AX95 ... AX205	AX185 ... AX205	Horizontal	-	-	VM300H	1SFN034700R1000	1	0.150
AX260 ... AX370	AX260 ... AX370	Horizontal	-	-	VM19	1SFN030300R1000	1	0.054
AX185 ... AX205	AX260 ... AX370	Horizontal	-	-	VM205/260	1SFN035003R1000	1	0.075
AX260 ... AX370	AX185 ... AX205	Horizontal	-	-	VM205/260	1SFN035003R1000	1	0.075
AX260 ... AX370	AF400 ... AF460	Horizontal	–	–	VM370/400	1SFN035403R1000	1	0.239
AF400 ... AF460	AX260 ... AX370	Horizontal	–	–	VM370/400	1SFN035403R1000	1	0.239

Mechanical interlock units for two vertical mounted contactors

Up contactor	Down contactor	Mounting						
AX95 ... AX150	AX150 ... AX205	Vertical	-	-	VM300V	1SFN034701R1000	1	0.150

Terminal shrouds

AX185 ... AX205 with connectors	LT185-AC	1SFN124701R1000		2	0.050
AX185 ... AX205 with lugs	LT185-AL	1SFN124703R1000		2	0.220
AX185 ... AX205 with shorting bar or between contactor and TOL/EOL in DOL starters	LT185-AY	1SFN124704R1000		2	0.050
AX260 ... AX370, with cable clamps	LT370-30C	1SFN125401R1000		2	0.035
AX260 ... AX370, with compression lugs	LT370-30L	1SFN125403R1000		2	0.280
AX260 ... AX370, with shorting bar or between contactor and TOL/EOL in DOL starters	LT370-30Y	1SFN125404R1000		1	0.075

For contactors	Dimensions hole Ø mm	bar mm	Type	Order code		Pkg qty	Weight (1 pce) kg
Terminal extension							
AX185 ... AX205	10.5	20 x 5	LX185	1SFN074710R1000		1	0.250
AX260 ... AX370	10.5	25 x 5	LX370	1SFN075410R1000		1	0.234
Terminal enlargements							
AX185 ... AX205	8.5	20 x 5	LW185	1SFN074707R1000		1	0.250
AX260 ... AX370	10.5	20 x 5	LW370	1SFN075407R1000		1	0.340

Surge suppressor

For contactors	Rated control circuit voltage Uc V AC	Type	Order code		Pkg qty	Weight (1 pce) kg
AX185 ... AX205	250...440	RC5-3/440	1SFN050300R1003		2	0.028

(1) See "Main accessory fitting details".

1SFC101312C0201

AX06 ... AX40 3-pole contactors
Technical data

Main pole - Utilization characteristics according to IEC

Contactor types	AC operated	AX06	AX09	AX12	AX18	AX25	AX32	AX40
Standards		IEC 60947-1 / 60947-4-1 and EN 60947-1 / 60947-4-1						
Rated operational voltage Ue max.		690 V						
Rated frequency limits		25...400 Hz						
Rated frequency (without derating)		50 / 60 Hz						
Conventional free-air thermal current Ith								
acc. to IEC 60947-4-1, open contactors, θ ≤ 40 °C		22 A	24 A	26 A	28 A	32 A	65 A	65 A
With conductor cross-sectional area		4 mm²	4 mm²	4 mm²	4 mm²	6 mm²	16 mm²	16 mm²
AC-1 Utilization category								
For air temperature close to contactor								
Ie / Rated operational current AC-1	**θ ≤ 40 °C**	20 A	22 A	25 A	27 A	32 A	55 A	60 A
Ue max. ≤ 690 V, 50/60 Hz	**θ ≤ 55 °C**	20 A	22 A	22 A	25 A	27 A	55 A	60 A
	θ ≤ 70 °C	16 A	18 A	18 A	20 A	23 A	39 A	42 A
With conductor cross-sectional area		2.5 mm²	2.5 mm²	2.5 mm²	4 mm²	6 mm²	10 mm²	16 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	7 A	9 A	12 A	18 A	25 A	32 A	40 A
M 3~ 3-phase motors	**380-400 V**	7 A	9 A	12 A	18 A	25 A	32 A	40 A
	415 V	7 A	9 A	12 A	18 A	25 A	32 A	40 A
	440 V	7 A	9 A	9 A	12 A	16 A	32 A	37 A
	500 V	6 A	9 A	9 A	12 A	14 A	28 A	33 A
	690 V	5 A	7 A	7 A	9 A	10 A	21 A	25 A
Rated operational power AC-3 (1)								
	220-230-240 V	1.5 kW	2.2 kW	3 kW	4 kW	6.5 kW	9 kW	11 kW
M 3~ 1500 r.p.m. 50 Hz, 1800 r.p.m. 60 Hz, 3-phase motors	**380-400 V**	3 kW	4 kW	5.5 kW	7.5 kW	11 kW	15 kW	18.5 kW
	415 V	3 kW	4 kW	5.5 kW	9 kW	11 kW	15 kW	18.5 kW
	440 V	3 kW	4 kW	4 kW	5.5 kW	9 kW	18.5 kW	22 kW
	500 V	3.5 kW	5.5 kW	5.5 kW	7.5 kW	9 kW	18.5 kW	22 kW
	690 V	4 kW	5.5 kW	5.5 kW	7.5 kW	9 kW	18.5 kW	22 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		9 A	12 A	16 A	22 A	30 A	40 A	50 A
Rated operational power AC-8a		4 kW	5.5 kW	7.5 kW	11 kW	15 kW	20 kW	25 kW
Short-circuit protection device for contactors								
without thermal overload relay - Motor protection excluded (2)								
Ue ≤ 500 V AC - gG type fuse		25 A	25 A	25 A	32 A	32 A	63 A	63 A
Rated short-time withstand current Icw	**1 s**	220 A	250 A	280 A	300 A	300 A	600 A	600 A
at 40 °C ambient temperature,	**10 s**	80 A	100 A	120 A	145 A	200 A	400 A	400 A
in free air from a cold state	**30 s**	50 A	60 A	70 A	80 A	105 A	225 A	225 A
	1 min	45 A	50 A	55 A	60 A	85 A	150 A	150 A
	15 min	22 A	26 A	26 A	28 A	32 A	65 A	65 A
Maximum breaking capacity								
cos φ = 0.45	**at 440 V**	250 A	250 A	250 A	250 A	250 A	820 A	820 A
	at 690 V	90 A	90 A	90 A	90 A	90 A	340 A	340 A
Power dissipation per pole	**Ie / AC-1**	0.8 W	0.8 W	0.8 W	1 W	1.2 W	2.5 W	3 W
	Ie / AC-3	0.1 W	0.1 W	0.1 W	0.2 W	0.35 W	0.9 W	1.3 W
Max. electrical switching frequency	**AC-1**	600 cycle/h						
	AC-3	1200 cycle/h						
Mechanical durability								
Number of operating cycles		10 millions operating cycles						
Max. switching frequency		3600 cycles/h						

(1) For the corresponding kW/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".

1SBC100008S0201

AX50 ... AX150 3-pole contactors
Technical data

Main pole - Utilization characteristics according to IEC

Contactor types	AC operated	AX50	AX65	AX80	AX95	AX115	AX150
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 limits		25 ... 400 Hz					
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	125 A	125 A	145 A	160 A	190 A
With conductor cross-sectional area		35 mm²	50 mm²	50 mm²	50 mm²	70 mm²	95 mm²
AC-1 Utilization category							
For air temperature close to contactor							
Ie / Rated operational current AC-1	**θ ≤ 40 °C**	100 A	115 A	125 A	145 A	160 A	190 A
Ue max. ≤ 690 V, 50/60 Hz	**θ ≤ 55 °C**	85 A	95 A	105 A	135 A	145 A	145 A
	θ ≤ 70 °C	70 A	80 A	85 A	115 A	130 A	130 A
With conductor cross-sectional area		35 mm²	50 mm²	50 mm²	50 mm²	70 mm²	95 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	53 A	65 A	80 A	96 A	115 A	150 A
	380-400 V	50 A	65 A	80 A	96 A	115 A	150 A
 3-phase motors	**415 V**	50 A	65 A	80 A	96 A	115 A	150 A
	440 V	45 A	65 A	70 A	93 A	100 A	100 A
	500 V	45 A	55 A	65 A	80 A	100 A	100 A
	690 V	35 A	43 A	46 A	65 A	82 A	82 A
Rated operational power AC-3 (1)							
	220-230-240 V	15 kW	18.5 kW	22 kW	25 kW	30 kW	45 kW
	380-400 V	22 kW	30 kW	37 kW	45 kW	55 kW	75 kW
 1500 r.p.m. 50 Hz 1800 r.p.m. 60 Hz 3-phase motors	**415 V**	25 kW	37 kW	40 kW	55 kW	59 kW	75 kW
	440 V	25 kW	37 kW	40 kW	55 kW	59 kW	59 kW
	500 V	30 kW	37 kW	45 kW	55 kW	59 kW	59 kW
	690 V	30 kW	37 kW	40 kW	55 kW	75 kW	75 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		63 A	85 A	95 A	120 A	140 A	-
Rated operational power AC-8a		30 kW	45 kW	50 kW	59 kW	75 kW	-
Short-circuit protection device for contactors							
without thermal overload relay - Motor protection excluded (2)							
Ue ≤ 500 V AC - gG type fuse		100 A	125 A	160 A	160 A	200 A	315 A
Rated short-time withstand current Icw	**1 s**	1000 A	1000 A	1000 A	1320 A	1320 A	1320 A
at 40 °C ambient temperature,	**10 s**	650 A	650 A	650 A	800 A	800 A	800 A
in free air from a cold state	**30 s**	370 A	370 A	370 A	500 A	500 A	500 A
	1 min	250 A	250 A	250 A	350 A	350 A	350 A
	15 min	110 A	135 A	135 A	160 A	160 A	175 A
Maximum breaking capacity							
cos Ø = 0.45	**at 440 V**	1300 A	1300 A	1300 A	1160 A	1160 A	1160 A
	at 690 V	630 A	630 A	630 A	800 A	800 A	800 A
Power dissipation per pole	**Ie / AC-1**	5 W	6.5 W	7 W	6.5 W	7.5 W	10.5 W
	Ie / AC-3	1.3 W	1.5 W	2.3 W	2.7 W	3.9 W	6.5 W
Max. electrical switching frequency	**AC-1**	600 cycle/h			300 cycles/h		
	AC-3	600 cycle/h			300 cycles/h		
Mechanical durability							
Number of operating cycles		10 millions operating cycles					
Max. switching frequency		3600 cycles/h					

(1) For the corresponding kW/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".

1SBC100219S0201

AX185 ... AX370 3-pole contactors
Technical data

Main pole - Utilization characteristics according to IEC

Contactor types	AC operated	AX185	AX205	AX260	AX300	AX370
Standards		IEC 60947-1 / 60947-4-1 / EN 60947-1 / 60947-4-1				
Rated operational voltage Ue max.		1000 V				
Rated frequency limits		25 ... 400 Hz				
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	400 A	500 A	600 A
With conductor cross-sectional area		120 mm²	150 mm²	240 mm² (1)	300 mm²	2X185 mm² (2)
AC-1 Utilization category						
For air temperature close to contactor						
Ie / Rated operational current AC-1	**θ ≤ 40 °C**	250 A	275 A	400 A	500 A	600 A
Ue max. ≤ 690 V, 50/60 Hz	**θ ≤ 55 °C**	230 A	250 A	350 A	400 A	500 A
	θ ≤ 70 °C	180 A	180 A	290 A	325 A	400 A
With conductor cross-sectional area		120 mm²	150 mm²	240 mm² (1)	300 mm²	2X185 mm² (2)
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	185 A	205 A	265 A	305 A	370 A
M 3~ 3-phase motors	**380-400 V**	185 A	205 A	265 A	305 A	370 A
	415 V	185 A	205 A	265 A	305 A	370 A
	440 V	145 A	185 A	265 A	305 A	370 A
	500 V	145 A	170 A	250 A	290 A	315 A
	690 V	120 A	170 A	250 A	290 A	315 A
Rated operational power AC-3 (1)						
	220-230-240 V	55 kW	59 kW	75 kW	90 kW	110 kW
M 3~ 1500 r.p.m. 50 Hz, 1800 r.p.m. 60 Hz, 3-phase motors	**380-400 V**	90 kW	110 kW	132 kW	160 kW	200 kW
	415 V	90 kW	110 kW	132 kW	160 kW	200 kW
	440 V	75 kW	90 kW	160 kW	160 kW	200 kW
	500 V	90 kW	110 kW	160 kW	200 kW	250 kW
	690 V	110 kW	132 kW	200 kW	250 kW	315 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		-	-	-	-	-
Rated operational power AC-8a		-	-	-	-	-
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	500 A	500 A	630 A
Rated short-time withstand current Icw	**1 s**	1800 A	2000 A	2650 A	3050 A	3700 A
at 40 °C ambient temperature, in free air from a cold state	**10 s**	1200 A	1500 A	2120 A	2440 A	2960 A
	30 s	800 A	1000 A	1224 A	1409 A	1709 A
	1 min	600 A	800 A	865 A	996 A	1208 A
	15 min	280 A	320 A	400 A	500 A	600 A
Maximum breaking capacity						
cos Ø = 0.45	**at 440 V**	1500 A	2000 A	3800 A	4600 A	5000 A
	at 690 V	1200 A	1600 A	3300 A	3800 A	4000 A
Power dissipation per pole	**Ie / AC-1**	16 W	17 W	32 W	50 W	72 W
	Ie / AC-3	8 W	10 W	14 W	19 W	27 W
Max. electrical switching frequency	**AC-1**	300 cycles/h				
	AC-3	300 cycles/h				
Mechanical durability						
Number of operating cycles		5 millions operating cycles				
Max. switching frequency		3600 cycles/h		300 cycles/h		

(1) For currents above 275 A use terminal enlargements or terminal extensions
(2) For currents above 450 A use terminal enlargements or terminal extensions

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AX06 ... AX40 3-pole contactors
Technical data

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

Contactor types	AC operated	AX06	AX09	AX12	AX18	AX25	AX32	AX40
Standards		UL 60947-4-1, CSA C22.2 NO. 60947-4-1-07						
Maximum operational voltage		600 V						
UL / CSA general use rating								
600 V AC		20 A	21 A	25 A	30 A	30 A	50 A	60 A
With conductor cross-sectional area		AWG 12	AWG 10	AWG 10	AWG 10	AWG 10	AWG 8	AWG 6
UL / CSA maximum 1-phase motor rating								
Full load current	**120 V AC**	7.2 A	9.8 A	13.8 A	16 A	24 A	34 A	34 A
	240 V AC	6.9 A	10 A	12 A	17 A	17 A	40 A	40 A
Horse power rating	**120 V AC**	1/3 hp	1/2 hp	3/4 hp	1 hp	2 hp	3 hp	3 hp
	240 V AC	3/4 hp	1.5 hp	2 hp	3 hp	3 hp	7.5 hp	7.5 hp
UL / CSA maximum 3-phase motor rating								
Full load current (1)	**200-208 V AC**	6.9 A	7.8 A	11 A	17.5 A	25.3 A	32.2 A	32.2 A
	220-240 V AC	6.8 A	6.8 A	9.6 A	15.2 A	22 A	28 A	42 A
	440-480 V AC	4.8 A	7.6 A	11 A	14 A	21 A	34 A	40 A
	550-600 V AC	6.1 A	9 A	11 A	17 A	17 A	32 A	41 A
Horse power rating (1)	**200-208 V AC**	1.5 hp	2 hp	3 hp	5 hp	7.5 hp	10 hp	10 hp
	220-240 V AC	2 hp	2 hp	3 hp	5 hp	7.5 hp	10 hp	15 hp
	440-480 V AC	3 hp	5 hp	7.5 hp	10 hp	15 hp	25 hp	30 hp
	550-600 V AC	5 hp	7.5 hp	10 hp	15 hp	15 hp	30 hp	40 hp
Short-circuit protection device for contactors								
without thermal overload relay - Motor protection excluded								
High fault current		100 kA	100 kA	100 kA	100 kA	100 kA	100 kA	100 kA
Fuse rating		30 A	30 A	30 A	30 A	45 A	200 A	200 A
Fuse type, 600 V		J	J	J	J	J	J	J
Maximum 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".

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AX50 ... AX80 3-pole contactors
Technical data

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

Contactor types	AC operated	AX50	AX65	AX80
Standards		UL 60947-4-1, CSA C22.2 NO. 60947-4-1-07		
Maximum operational voltage		600 V		
UL / CSA general use rating				
600 V AC		80 A	90 A	105 A
With conductor cross-sectional area		AWG 4	AWG 3	AWG 2
UL / CSA maximum 1-phase motor rating				
Full load current	**120 V AC**	34 A	56 A	80 A
	240 V AC	50 A	50 A	68 A
Horse power rating	**120 V AC**	3 hp	5 hp	7-1/2 hp
	240 V AC	10 hp	10 hp	15 hp
UL / CSA maximum 3-phase motor rating				
Full load current (1)	**200-208 V AC**	48.3 A	62.1 A	78.2 A
	220-240 V AC	54 A	68 A	80 A
	440-480 V AC	52 A	77 A	77 A
	550-600 V AC	52 A	77 A	77 A
Horse power rating (1)	**200-208 V AC**	15 hp	20 hp	25 hp
	220-240 V AC	20 hp	25 hp	30 hp
	440-480 V AC	40 hp	60 hp	60 hp
	550-600 V AC	50 hp	75 hp	75 hp
Short-circuit protection device for contactors				
without thermal overload relay - Motor protection excluded				
High fault current		100 kA	100 kA	100 kA
Fuse rating		100 A	200 A	200 A
Fuse type, 600 V		J	J	J
Maximum electrical switching frequency				
For general use		600 cycles/h		
For motor use		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".

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AX95 … AX370 3-pole contactors
Technical data

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

Contactor types	AC operated	AX95	AX115	AX150	AX185	AX205	AX260	AX300	AX370
Standards		UL 508, CSA C22.2 N°14, UL 60947-1 / 60947-4-1A and CSA 60947-1 / 60947-4-1A							
Maximum operational voltage		600 V							
UL / CSA general use rating									
600 V AC		150	150	170	250	260	350	400	520
With conductor cross-sectional area		AWG 1	AWG 1/0	AWG 2/0	MCM 250	MCM 300	MCM 500	2// AWG 3/0	2//MCM 300
UL / CSA maximum 3-phase motor rating									
Full load current (1)	**200-208 V AC**	92 A	92 A	120 A	150 A	169 A	221 A	285 A	359 A
	220-240 V AC	80 A	104 A	130 A	145 A	192 A	248 A	312 A	360 A
	440-480 V AC	77 A	96 A	124 A	156 A	180 A	240 A	302 A	361 A
	550-600 V AC	77 A	99 A	125 A	144 A	192 A	242 A	298 A	336 A
Horse power rating (1)	**200-208 V AC**	30 hp	30 hp	40 hp	50 hp	60 hp	75 hp	100 hp	125 hp
	220-240 V AC	30 hp	40 hp	50 hp	60 hp	75 hp	100 hp	125 hp	150 hp
	440-480 V AC	60 hp	75 hp	100 hp	125 hp	150 hp	200 hp	250 hp	300 hp
	550-600 V AC	75 hp	100 hp	125 hp	150 hp	200 hp	250 hp	300 hp	350 hp
Short-circuit protection device for contactors									
without thermal overload relay - Motor protection excluded									
High fault current		100 kA	100 kA	100 kA	100 kA	100 kA	100 kA	100 kA	100 kA
Fuse rating		200 A	200 A	(2)	400 A	400 A	500 A	600 A	800 A
Fuse type, 600 V		J	J	(2)	J	J	J	J	J
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".
(2) In preparation.

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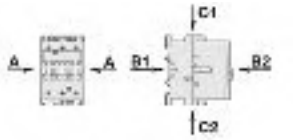
AX06 ... AX40 3-pole contactors
Technical data

General technical data

Contactor types		AC operated	AX06	AX09	AX12	AX18	AX25	AX32	AX40
Rated insulation voltage Ui									
acc. to IS / IEC 60947-4-1			690 V						
acc. to UL / CSA			600 V						
Rated impulse withstand voltage Uimp.			6 kV						
Ambient air temperature close to contactor									
Operation	Fitted with thermal overload relay		-25...+55 °C (1)						
	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						
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						

(1) The max. operational current is 23 A for AX25 with TA25DU-25M.

Magnet system characteristics

Contactor types			AC operated	AX06	AX09	AX12	AX18	AX25	AX32	AX40
Coil operating limits			**AC supply**	at θ ≤ 55 °C 0.85...1.1 x Uc						
acc. to IS / 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...440 V						
			at 60 Hz	24...440 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...15 ms					4...11 ms	
			N.C. contact closing	9...20 ms					7...14 ms	

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

Mounting characteristics and conditions for use

Contactor types			AC operated	AX06	AX09	AX12	AX18	AX25	AX32	AX40
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 AX06 ... AX80						
Control voltage / Ambient temperature										
Mounting positions	1, 1±30°, 2, 3, 4, 5		**at θ ≤ 55 °C**	0.85...1.1 x Uc						
			at 55 °C < θ ≤ 70 °C	Uc						
	6		**at θ ≤ 55 °C**	0.95...1.1 x Uc						
			at θ > 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						

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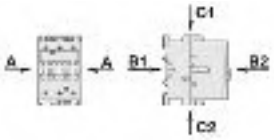
AX50 ... AX150 3-pole contactors
Technical data

General technical data

Contactor types	AC operated	AX50	AX65	AX80	AX95	AX115	AX150
Rated insulation voltage Ui							
acc. to IEC 60947-4-1		690 V			1000 V		
acc. to UL / CSA		600 V			–		
Rated impulse withstand voltage Uimp.		6 kV			8 kV		
Ambient air temperature close to contactor							
Operation – Fitted with thermal overload relay		-25...+55 °C (1)					
Operation – Without thermal overload relay		-40...+70 °C					
Storage		-60...+80 °C			-40 to +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					
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					

(1) The max. operational current is 74A for AX80 with TA75DU-80M.
(2) These values are not valid for rail mounting with contactors AX95 ... AX150.

Magnet system characteristics

Contactor types		AC operated	AX50	AX65	AX80	AX95	AX115	AX150
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...440 V					
		at 60 Hz	24...440 V					
Coil consumption	**Average pull-in value**	**50 Hz**	180 VA			350 VA		
		60 Hz	210 VA			450 VA		
		50/60 Hz (1)	190 VA / 180 VA			410 VA / 365 VA		
	Average holding value	**50 Hz**	18 VA / 5.5 W			22 VA / 6.5 W		
		60 Hz	18 VA / 5.5 W			26 VA / 8 W		
		50/60 Hz (1)	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…27 ms			10…25 ms		
		N.C. contact opening	7…22 ms			7…22 ms		
Between coil de-energization and:		**N.O. contact opening**	4…11 ms			7…15 ms		
		N.C. contact closing	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	AX50	AX65	AX80	AX95	AX115	AX150
Mounting positions								
			Add on max. N.O. or N.C. auxiliary contacts: see accessory fitting details for 3-pole contactor AX50 ... AX150					
Control voltage / Ambient temperature								
Mounting positions	1, 1±30°, 2, 3, 4, 5	**at θ ≤ 55 °C**	0.85...1.1 x Uc					
		at 55 °C≤ θ ≤ 70 °C	Uc			0.85...1.1 x Uc		
	6	**at θ ≤ 55 °C**	0.95...1.1 x Uc					
		at θ ≤ 55 °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			2 x M6 screws placed diagonally		

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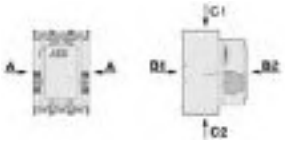
AX185 ... AX370 3-pole contactors
Technical data

General technical data

Contactor types	AC operated	AX185	AX205	AX260	AX300	AX370
Rated insulation voltage Ui						
acc. to IEC 60947-4-1		1000 V				
Rated impulse withstand voltage Uimp.		8 kV				
Ambient air temperature close to contactor						
Operation — Fitted with thermal overload relay		-25...+55 °C (1)				
Operation — Without thermal overload relay		-40...+70 °C				
Storage		-40 to +70 °C				
Climatic withstand		Category B according to IEC60947-1 / EN 60947-1 Annex Q				
Maximum operating altitude (without derating)		3000 m				
Shock withstand		1/2 sinusoidal shock for 11 ms: no change in contact position, closed or open position (2)		1/2 sinusoidal shock for 30 ms		
acc. to IEC 60068-2-27 and EN 60068-2-27						
Mounting position 1						
	**Shock direction**					
	A	5 g		20 g		
	B1	5 g		15 g closed position / 3 g open position		
	B2	5 g		15 g closed position / 3 g open position		
	C1	5 g		20 g		
	C2	5 g		20 g		

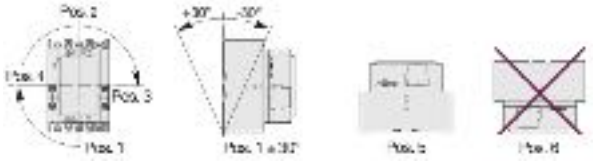
(1) The max. operational current is 182A for AX205 with TA200DU-200
(2) These values are not valid for rail mounting with contactors AX95 ... AX150.

Magnet system characteristics

Contactor types			AC operated	AX185	AX205	AX260	AX300	AX370
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 max		
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...440 V				
			at 60 Hz	24...440 V				
Coil consumption	**Average pull-in value**		**50 Hz**	550 VA		-		
			60 Hz	600 VA		-		
			50/60 Hz (1)	700 VA / 650 VA		475 VA		
	Average holding value		**50 Hz**	35 VA / 11 W		-		
			60 Hz	40 VA / 12 W		-		
			50/60 Hz (1)	44 VA / 13 W		17.5 VA		
Drop-out voltage				approx. 40...65 % of Uc		55% of Uc min.		
Operating time								
Between coil energization and:		**N.O. contact closing**		13...27 ms		30...60 ms		
		N.C. contact opening		8...22 ms		-		
Between coil de-energization and:		**N.O. contact opening**		5...10 ms		45...80 ms		
		N.C. contact closing		9...13 ms		-		

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

Mounting characteristics and conditions for use

Contactor types			AC operated	AX185	AX205	AX260	AX300	AX370
Mounting positions								
				Max. add-on N.O. or N.C. auxiliary contacts: see accessory fitting details for 3-pole contactor AX185 ... AX370				
Control voltage / Ambient temperature								
Mounting positions	1, 1±30°, 2, 3, 4, 5		**at θ ≤ 55 °C**	0.85...1.1 x Uc				
			at 55 °C≤ θ ≤ 70 °C	0.85...1.1 x Uc				
	6		**at θ ≤ 55 °C**	Unauthorized				
			at θ ≤ 55 °C	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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AX06 ... AX40 3-pole contactors
Technical data

Connecting characteristics

Contactor types	AC operated	AX06	AX09	AX12	AX18	AX25	AX32	AX40
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...6 mm²	2.5...16 mm²	
Stranded (≥ 6 mm²)	**2 x**	1...4 mm²				1...6 mm²	2.5...16 mm²	
Flexible with non insulated ferrule	**1 x**	0.75...2.5 mm²				0.75...6 mm²	2.5...10 mm²	
	2 x	0.75...2.5 mm²				0.75...6 mm²	2.5...10 mm²	
Flexible with insulated ferrule	**1 x**	-				0.75...4 mm²	2.5...10 mm²	
	2 x	-				0.75...2.5 mm²	2.5...10 mm²	
Bars or lugs	**L <**	7.7 mm				9.6 mm	-	
	I >	3.7 mm				3.7 mm	-	
Connection capacity acc. to UL/CSA	**1 or 2 x**	AWG 18...10				AWG 16...10	AWG 8...4	
Stripping length		10 mm					14 mm	
Tightening torque		1 Nm / 9 lb.in				1.5 Nm / 13 lb.in	2.3 Nm / 20 lb.in	
Auxiliary conductors (built-in auxiliary terminals + coil terminals)								
Rigid solid	**1 x**	1...4 mm²						
	2 x	1...4 mm²						
Flexible with non insulated 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						
Stripping length		10 mm						
Tightening torque								
Coil terminals		1 Nm / 9 lb.in						
Built-in auxiliary terminals		1 Nm / 9 lb.in						
Degree of protection acc. to IEC 60947-1 / EN 60947-1 and IEC 60529								
Main terminals		IP20 (only front side)						
Coil terminals		IP20					IP20	
Built-in auxiliary terminals		IP20 (only front side)					IP20	
Screw terminals		Delivered in open position, screws of unused terminals must be tightened						
Main terminals		M3.5					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						
Screwdriver type		Flat Ø 5.5 / Pozidriv 2						

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AX50 ... AX150 3-pole contactors
Technical data

Connecting characteristics

Contactor types			AC operated	AX50	AX65	AX80	AX95	AX115	AX150
Main terminals				 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**	6...50 mm²			10...95 mm²		
		Stranded (≥ 6 mm²)	**2 x**	6...25 mm²			6...35 mm²		
	Flexible with ferrule		**1 x**	6...35 mm²			10...70 mm² (1)		
			2 x	6...16 mm²			6...35 mm² (1)		
	Flexible with insulated ferrule		**1 x**	6...35 mm²			10...70 mm² (1)		
			2 x	6...16 mm²			6...35 mm² (1)		
	Bars or lugs		**L <**	-			30 mm (2)		
			I >	-			6 mm		
Connection capacity acc. to UL / CSA				AWG 18 ... 14			AWG 6 ... 2/0		
Stripping length				16 mm			9 mm		
Tightening torque		Recommended		4.00 Nm / 35 lb.in			8 Nm / 71 lb.in		
		Max.		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**	1...2.5 mm²			0.75...2.5 mm²		
			2 x	0.75...2.5 mm²					
	Lugs		**L <**	8 mm2					
			I >	3.7 mm2					
Connection capacity acc. to UL / CSA			**1 or 2x**	AWG 18 ... 14			AWG 18 ... 14		
Stripping length									
Coil terminals				9 mm			9 mm		
Built-in auxiliary terminals				10 mm					
Tightening torque									
Coil terminals		Recommended		1 Nm / 9 lb.in					
		Max.		1.2 Nm					
Built-in auxiliary terminals		Recommended		-					
		Max.		-					
Degree of protection									
acc. to IEC 60947-1 / EN 60947-1 and IEC 60529									
Main terminals				IP 10					
Coil terminals				IP20					
Built-in auxiliary terminals				-					
Screw terminals				Delivered in open position, screws of unused terminals must be tightened					
Main terminals				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				-					
			Screwdriver type	-					

(1) AX95 -AX150: use flexible without ferrule.
(2) With LW110 enlargement piece, see "Accessories".

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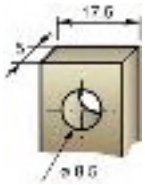
AX185 ... AX205 3-pole contactors
Technical data

Connecting characteristics

Contactor types		AC operated	AX185	AX205
Main terminals				
Flat type				
Connection capacity (min. ... max.)				
Main conductors (poles)				
Rigid with connector	Single for Cu cable		6…185 mm²	
	Single for Al/Cu cable		25…150 mm²	
	Double for Al/Cu cable		-	
Bars or lugs		**L <**	24 mm	
		Ø >	8 mm	
Connection capacity acc. to UL / CSA			6 … 250 MCM	
Stripping length			9 mm	
Tightening torque	Recommended		18 Nm / 160 lb.in	
	Max.		20 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 <**	8 mm2	
		I >	3.7 mm2	
Connection capacity acc. to UL / CSA		**1 or 2x**	AWG 18 ... 14	
Stripping length			9 mm	
Tightening torque				
Coil terminals	Recommended		1 Nm / 9 lb.in	
	Max.		1.2 Nm	
Degree of protection				
acc. to IEC 60947-1 / EN 60947-1 and IEC 60529				
Main terminals			IP00	
Coil terminals			IP20	
Screw terminals				
Main terminals			M8	
			Screw and bolts	
Coil terminals (delivered in open position)			M3.5	
		Screwdriver type	Flat Ø 5.5 / Pozidriv 2	

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AX260 ... AX370 3-pole contactors
Technical data

Connecting characteristics

Contactor types			AC operated	AX260	AX300	AX370
Main terminals						
Flat type						
Connection capacity (min. ... max.)						
Main conductors (poles)						
	Rigid with connector	Cu cable Stranded	**1 x**	16...300 mm²		
		Clamp type		1SDA055016R1		
		Tightening torque		25 Nm		
		Cu cable Stranded	**2 x**	70...185 mm²		
		Clamp type		1SCA022194R0890 (OZXB4)		
		Tightening torque		22 Nm		
		Al cable Stranded	**1 x**	185...240 mm²		
		Clamp type		1SDA055020R1		
		Tightening torque		43 Nm		
		Cu cable Flexible	**1 x**	16...240 mm²		
		Clamp type		1SDA055016R1		
		Tightening torque		25 Nm		
		Cu cable Flexible	**2 x**	70...185 mm²		
		Clamp type		1SCA022194R0890 (OZXB4)		
		Tightening torque		22 Nm		
	Bars or lugs	Double for Al/Cu cable		70...185 mm²		
		W <		32 mm (1.260 in)		
		Ø >		10 mm (0.394 in)		
		Socket type		LL...included		
		Tightening torque		28 Nm / 248 lb.in		
	Connection capacity acc. to UL / CSA		**1 x**	4 ... 400 MCM		
	Tightening torque			42 Nm / 372 lb.in		
	Auxiliary conductors					
	(Coil terminals)					
	Rigid /Stranded		**1 x**	1...4 mm2		
			2 x	1...4 mm2		
	Flexible		**1 x**	0.75...2.5 mm2		
			2 x	0.75...2.5 mm2		
	Flexible with non insulated		**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...2.5 mm2		
	Lugs		**L <**	8 mm		
			I >	3.5 mm		
	Connection capacity acc. to UL / CSA		**1 or 2x**	AWG 18 ... 14		
	Stripping length			9 mm		
	Tightening torque			1.00 Nm / 9 lb.in		
Degree of protection						
acc. to IEC 60947-1 / EN 60947-1 and IEC 60529						
	Main terminals			IP00		
	Coil terminals			IP20		
Screw terminals						
	Main terminals			M10		
			Screwdriver type	Screws and bolts		
	Coil terminals (delivered in open position)			M3.5		
			Screwdriver type	Flat Ø 5.5 mm / Pozidriv 2		

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AX06 ... AX40 3-pole contactors
Technical data

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

Contactor types	AC operated	AX06	AX09	AX12	AX18	AX25	AX32	AX40
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		12 V / 3 mA						
with failure rate acc. to IEC 60947-5-4								
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		Built-in N.O. or N.C. auxiliary contacts and additional N.O. or N.C. auxiliary contacts of 4-pole CA5X are mechanically linked contacts.						
acc. to annex L of IEC 60947-5-1								
Mirror contacts		Built-in N.C. auxiliary contacts or additional N.C. auxiliary contacts (CA5X, CAL5X-11) are mirror contacts.						
acc. to annex F of IEC 60947-4-1								

Built-in auxiliary contacts according to UL / CSA

Contactor types	AC operated	AX06	AX09	AX12	AX18	AX25	AX32	AX40
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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3-pole contactors
Electrical durability and utilization categories

General

Utilization categories determine the current making and breaking conditions relating to the characteristics of the loads to be controlled by the contactors. International standard IEC 60947-4-1 and European standard EN 60947-4-1 are the standards to be referred to.

If Ic is the current to be broken by the contactor and Ie the rated operational current normally drawn by the load, then:

– Categories AC-1 and AC-3: Ic = Ie
– Category AC-2: Ic = 2.5 x Ie
– Category AC-4: Ic = 6 x Ie

Generally speaking Ic = m x Ie where m is a multiple of the load operational current.

On next pages, the curves corresponding to categories AC-1, AC-3 and AC-4 represent the electrical durability variation of standard contactors in relation to the breaking current Ic.

Electrical durability is expressed in millions of operating cycles.

Curve utilization mode

Electrical durability forecast and contactor selection for categories AC-1, AC-2, AC-3 or AC-4

- Note the characteristics of the load to be controlled:
– Operational voltage ..... Ue
– Current normally drawn ..... Ie (Ue / Ie / kW relation for motors, see "Motor rated operational powers and currents").
– Utilization category ..... AC-1, AC-2, AC-3 or AC-4
– Breaking current ..... Ic = Ie for AC-1 and for AC-3 ; Ic = 2.5 x Ie for AC-2 ; Ic = 6 x Ie for AC-4
- Define the number of operating cycles N required.
- On the diagram corresponding to the operational category, select the contactor with the curve immediately above the intersection point (Ic ; N).

Electrical durability forecast and contactor selection for mixed duty motor control: AC-3 (Ic = Ie) type switching off while "motor running" and, occasionally, AC-4 (Ic = 6 x Ie) type switching off while "motor accelerating"

- Note the characteristics of the motor to be controlled:
– Operational voltage ..... Ue
– Current normally drawn while "motor running" ..... Ie (Ue / Ie / kW relation for motors, see "Motor rated operational powers and currents")
– Breaking current for AC-3 ..... Ic = Ie
– Breaking current for AC-4 while "motor accelerating" ..... Ic = 6 x Ie
– Percentage of AC-4 operating cycles ..... K (on the basis of the total number of operating cycles)
- Define the total number of operating cycles N required.
- Note the smallest contactor rating compatible for AC-3 (Ue / Ie) on Main pole utilization characteristic table (see “Technical data”).
- For the selected contactor make a note of the following in relation to the voltage using diagram AC-3 in next pages:
– The number of operating cycles A for Ic = Ie (AC-3)
– The number of operating cycles B for Ic = 6 x Ie (AC-4)
- Calculate the estimated number of cycles N’ (N’ is always below A)

$$N' = \frac{A}{1 + 0.01\ K\ (A/B - 1)}$$

- If N' is too low in relation to the target N, calculate the estimated number of cycles for a higher contactor rating.

Case of uninterrupted duty

For uninterrupted duty, some verifications of preventing maintenance are necessary to check the functionality of the concerned product (consult us).

The combined effect of environmental conditions and the proper temperature of the product may require some disposals. As a matter of fact, for this duty, the use duration prevails over the number of operating cycles.

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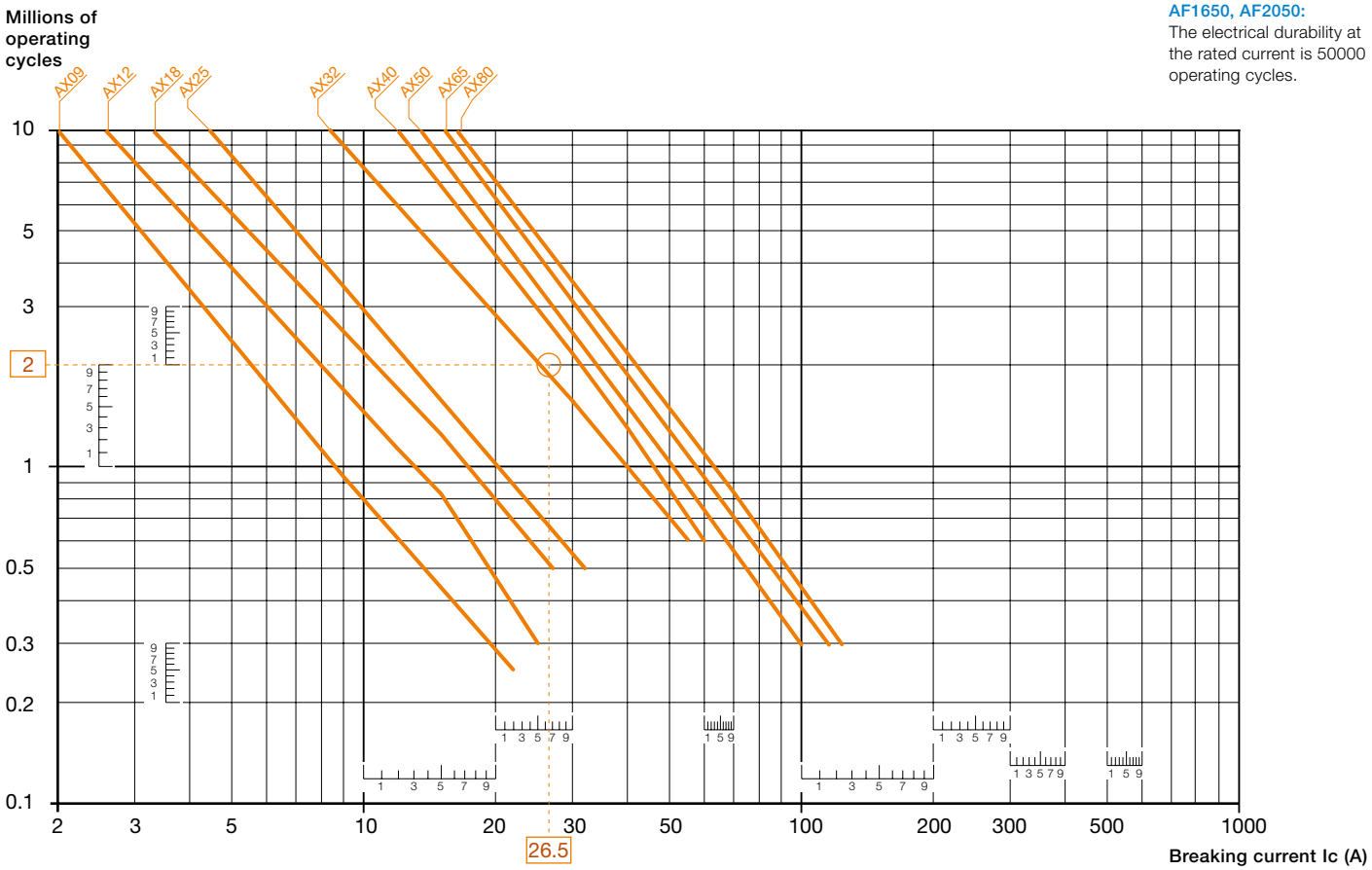
3-pole contactors
Electrical durability

Electrical durability for AC-1 utilization category - Ue ≤ 690 V

Switching non-inductive or slightly inductive loads. The breaking current Ic for AC-1 is equal to the rated operational current of the load.
Ambient temperature and maximum electrical switching frequency: see "Technical data".

AF1250, AF1350, AF1650, AF2050:
The electrical durability at the rated current is 50000 operating cycles.



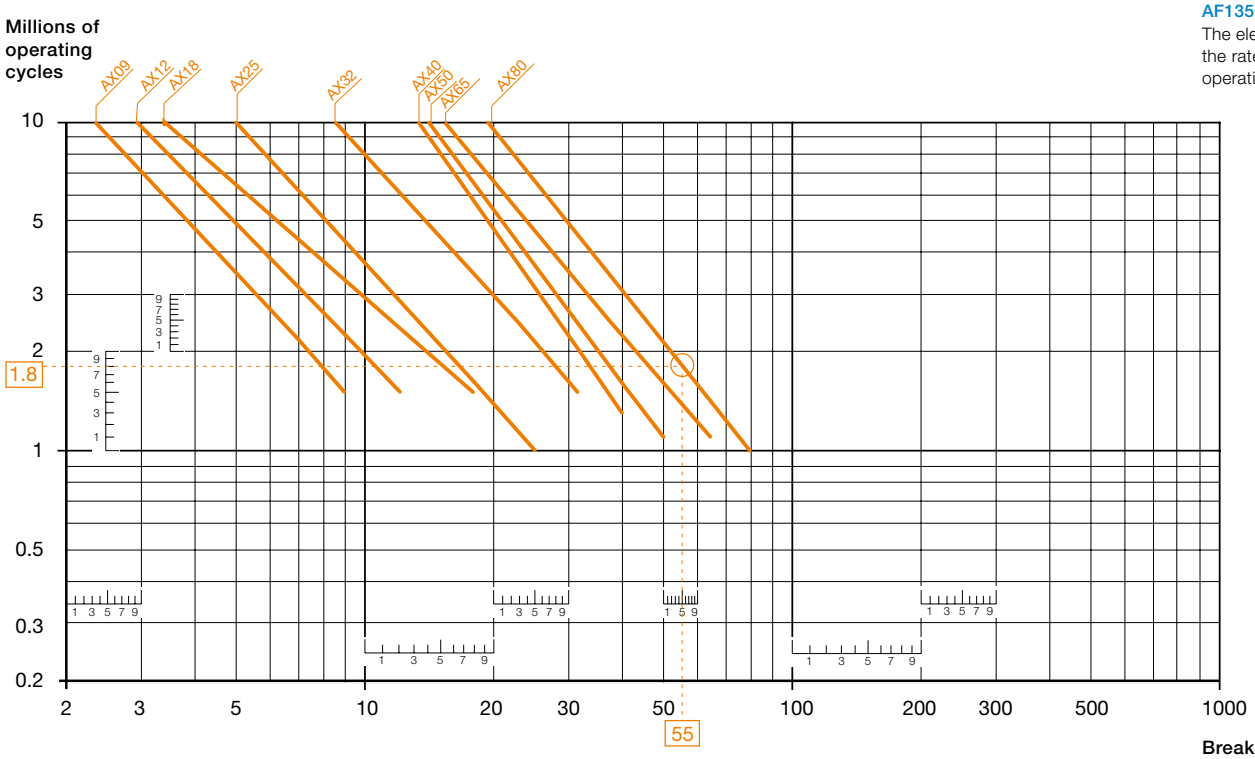
Example:
Ic / AC-1 = 26.5 A – Electrical durability required = 2 millions operating cycles.
Using the AC-1 curves above select the AX32 contactor at intersection "○" (26.5 A / 2 millions operating cycles).

3-pole contactors
Electrical durability

Electrical durability for AC-3 utilization category - Ue ≤ 440 V.

Switching cage motors: starting and switching off running motors. The breaking current Ic for AC-3 is equal to the rated operational current Ie (Ie = motor full load current).
Ambient temperature and maximum electrical switching frequency: see "Technical data".

AF1350, AF1650:
The electrical durability at the rated current is 50000 operating cycles.



Example:
Motor power 30 kW for AC-3 - Ue = 400 V and Ie = 55 A utilization – Electrical durability required = 1.8 million operating cycles.
For AC-3: Ic = Ie. Select the AX80 contactor at intersection "○" (55 A / 1.8 million operating cycles) on the curves (AC-3 - Ue ≤ 440 V).

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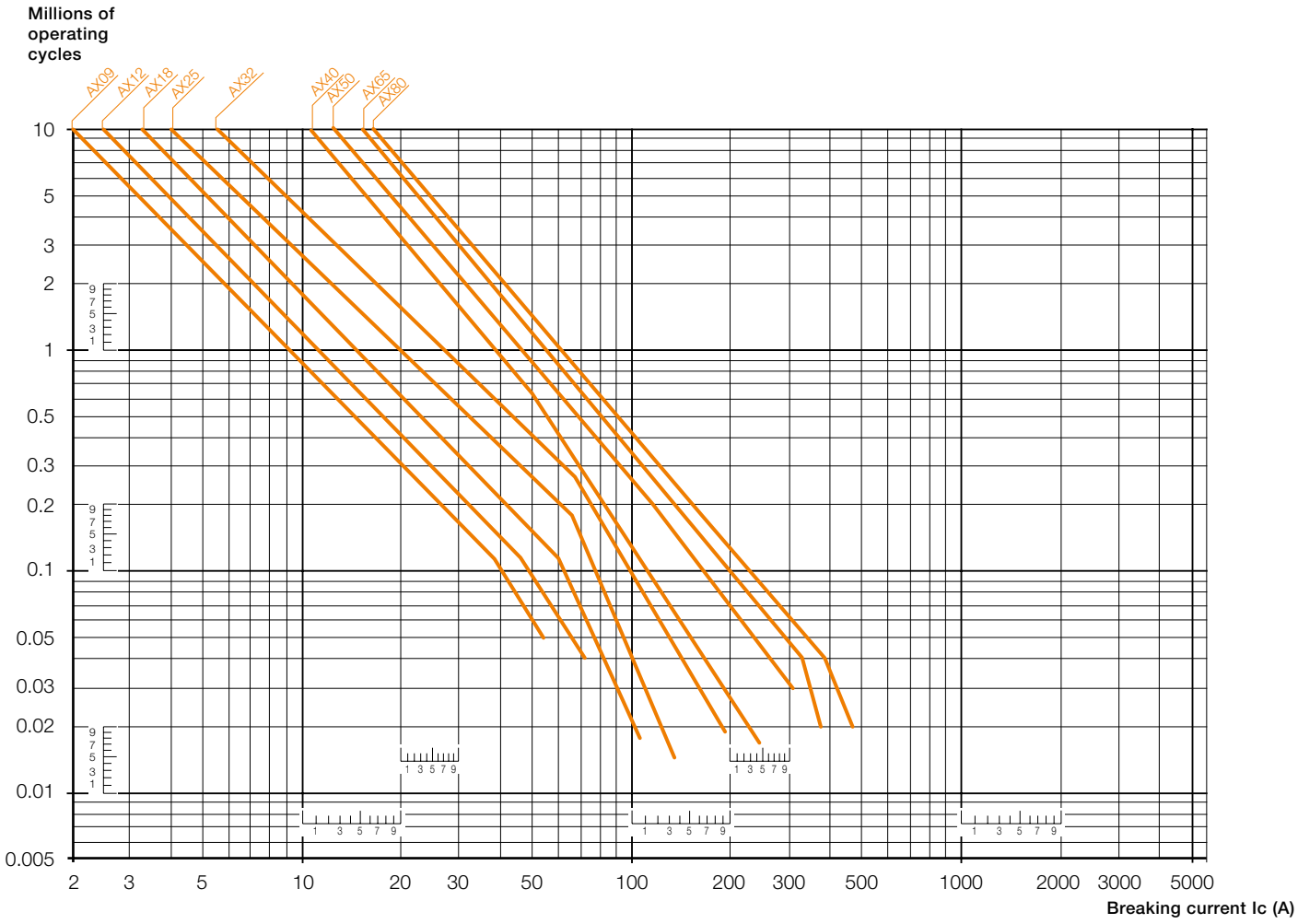
3-pole contactors
Electrical durability

Electrical durability for AC-4 utilization category - Ue ≤ 440 V
Ambient temperature ≤ 55 °C

Switching cage motors: starting, reverse operation and step-by-step operation. The breaking current Ic is equal to 6 x Ie for AC-4, keeping in mind that Ie is the motor rated operational current (Ie = motor full-load current).
Maximum electrical switching frequency: see "Technical data".



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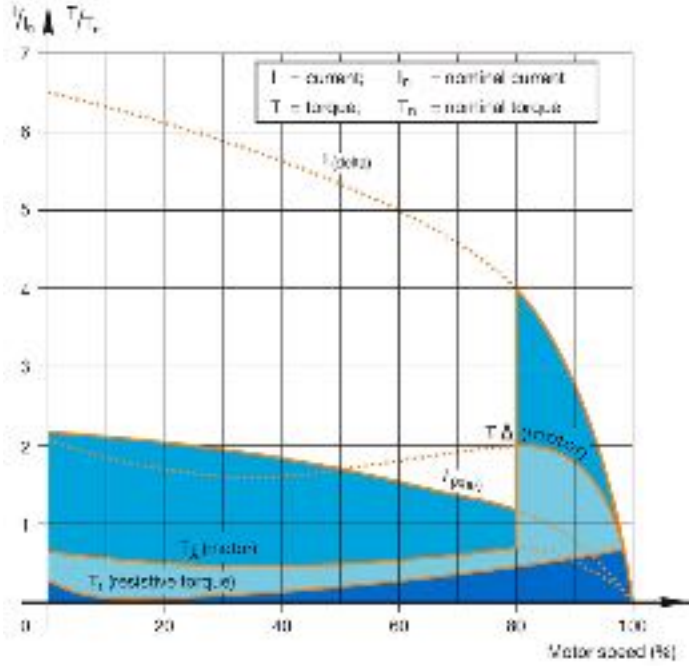
Star-delta starting of three-phase asynchronous motors
Contactor selection

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 415 V star-delta starting must be designed for 415 V in "delta" connection. Its usual designation is "415 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 16 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

For AX06 ... AX205, 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 CT-SDS timer. This prevents short circuit between "star" and "delta".
For AX260 ... AX370, an on-delay timer without dwelling time (CT-ERS.21S) is enough to countdown the programmed starting time (6 to 10s) during "Star connection". The use of a star-delta timer including dwelling time is not permitted.

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.

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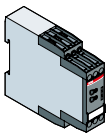
Star-delta starting of three-phase asynchronous motors
Contactor selection

Rated operational power - AC-3									Max. starting time from cold state (1) seconds	Line contactor	Delta contactor	Star contactor	Overload relay (2)	Timer
220-230 V kW	240 V kW	380 V kW	400 V kW	415 V kW	440 V kW	500 V kW	660 V kW	690 V kW						
3	3	5.5	5.5	5.5	5.5	5.5	5.5	5.5	15	AX06	AX06	AX06	TA25DU M	CT-SDS.22S
4	4	5.5	7.5	7.5	7.5	9	9	9	15	AX09	AX09	AX06	TA25DU M	CT-SDS.22S
5.5	5.5	9	9	9	9	9	9	9	15	AX12	AX12	AX06	TA25DU M	CT-SDS.22S
7.5	9	15	15	15	11	11	11	11	15	AX18	AX18	AX12	TA25DU M	CT-SDS.22S
11	11	22	22	22	15	15	15	15	15	AX25	AX25	AX18	TA25DU M	CT-SDS.22S
15	15	25	30	30	30	30	30	30	15	AX32	AX32	AX25	TA42DU M	CT-SDS.22S
18.5	22	37	37	37	37	37	37	37	30	AX40	AX40	AX32	TA42DU M	CT-SDS.22S
25	30	45	45	45	45	55	55	55	30	AX50	AX50	AX32	TA75DU M	CT-SDS.22S
30	37	55	55	55	55	55	55	55	30	AX65	AX65	AX40	TA75DU M	CT-SDS.22S
37	45	55	75	75	75	75	75	75	30	AX80	AX80	AX50	TA75DU M	CT-SDS.22S
45	55	75	90	90	90	90	90	90	20	AX95	AX95	AX65	TA110DU	CT-SDS.22S
55	55	90	110	110	110	110	132	132	20	AX115	AX115	AX80	TA110DU / E140DU	CT-SDS.22S
75	75	132	132	132	110	110	132	132	20	AX150	AX150	AX95	TA110DU / E140DU	CT-SDS.22S
90	90	160	160	160	160	160	160	200	20	AX185	AX185	AX115	TA200DU	CT-SDS.22S
110	110	160	200	200	200	200	250	250	20	AX205	AX205	AX185	TA200DU / EF 205	CT-SDS.22S
132	132	250	250	250	250	315	400	400	20	AX260	AX260	AX205	EF370	CT-ERS.21S
160	160	250	250	315	315	355	400	500	20	AX300	AX300	AX205	EF370	CT-ERS.21S
200	200	355	355	355	400	355	500	500	20	AX370	AX370	AX260	EF370	CT-ERS.21S

(1) Usual time value = 6...16 s.
(2) The setting current value is : nominal motor current x 0.58



CT-SDS...

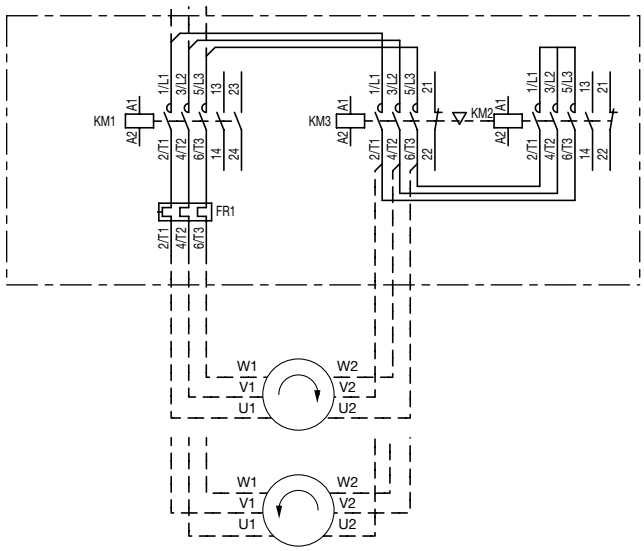
Ordering details - Electronic timer

Timing function	Time ranges	Ouput	Rated control supply voltage	Type	Order code		Pkg qty	Weight (1 pce) kg
Star-delta change-over (3)	7 (0.05 s - 10 min)	2 n/o contacts, 3 LEDs	28-48 V DC 24-240 V AC	CT-SDS.22S	1SVR730210R3300		1	0.114
			380-440 V AC	CT-SDS.23S	1SVR730211R2300		1	0.118
ON-delay (4)	10 (0.05 s - 300h)	2 c/o SPDT contacts	24-240 V AC/DC	CT-ERS.21S	1SVR730100R0300		1	0.152

(3) 50 ms transition time
(4) No transition time

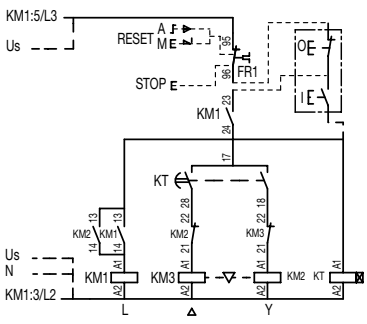
Power circuit diagram

AX06 ... AX370 contactors

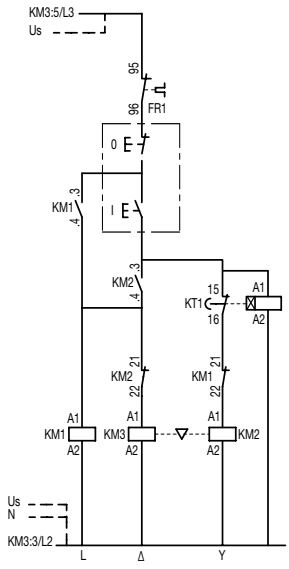


Control circuit diagrams - Remote control

AX06 ... AX205 contactors



AX260 ... AX370 contactors

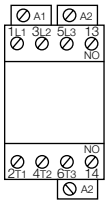


1SBC100224S0201

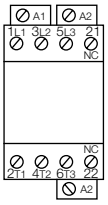
AX06 ... AX370 3-pole contactors
Terminal marking and positioning

AX06 ... AX150 contactors - AC operated

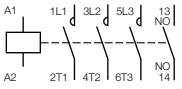
Standard devices without addition of auxiliary contacts



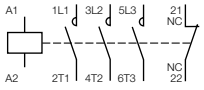
AX06 ... AX40-30-10



AX06 ... AX40-30-01

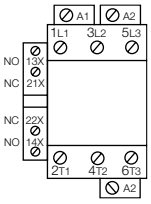


AX06 ... AX40-30-10

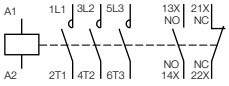


AX06 ... AX40-30-01

Standard devices with factory mounted auxiliary contacts

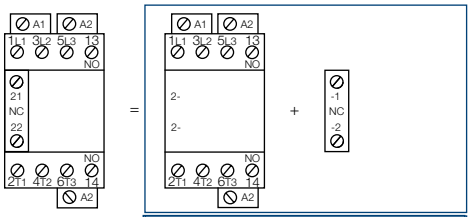


AX50 ... AX150-30-11

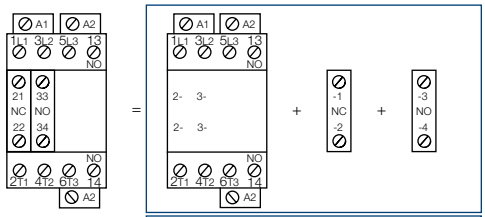


AX50 ... AX150-30-11

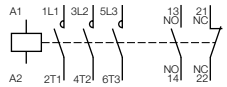
Other possible contact combinations with auxiliary contacts added by the user



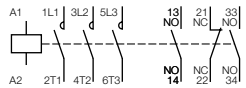
Combination 11 = AX06 ... AX40-30-10 + CA5X-01



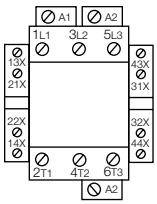
Combination 21 = AX06 ... AX40-30-10 + CA5X-01 + CA5X-10



Combination 11



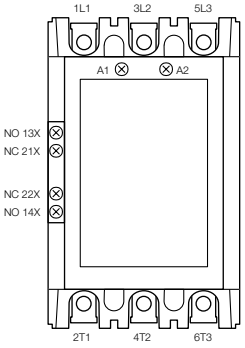
Combination 21



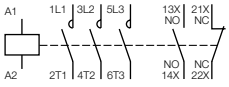
Combination 22 = AX50 ... AX80-30-11 + CAL5X-11

AX185 ... AX370 contactors - AC operated

Standard devices with factory mounted auxiliary contacts



AX185 ... AX370-30-11



AX185 ... AX370-30-11

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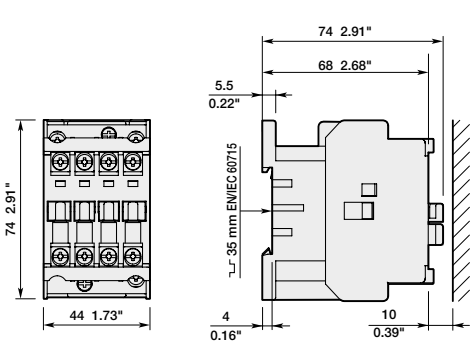
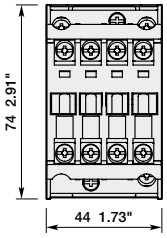
AX06 ... AX40 3-pole contactors
Dimensions

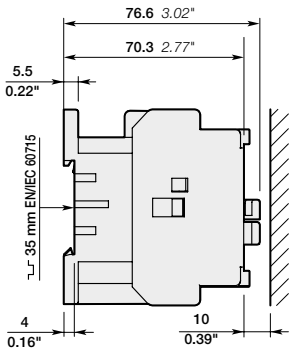
Main dimensions mm, *inches*

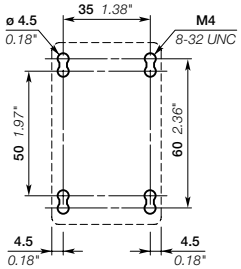


AX06, AX09, AX12, AX18, NX

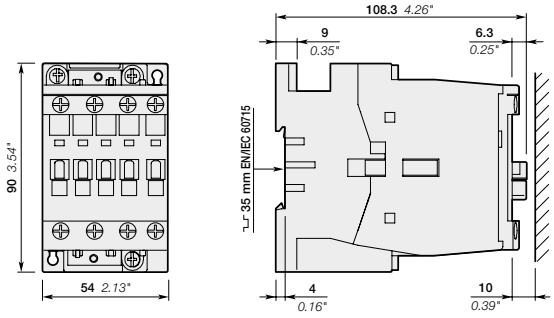


AX25

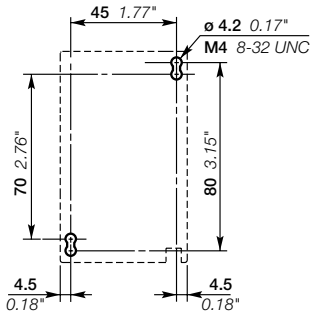




AX06, AX09, AX12, AX18, AX25, NX



AX32, AX40

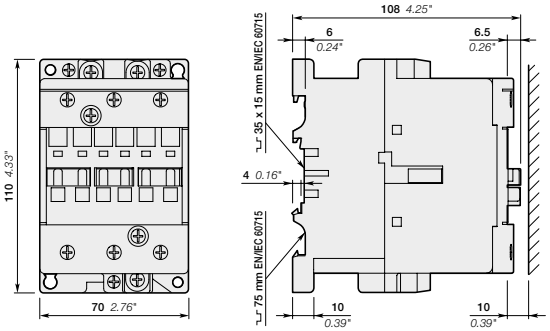


AX32, AX40

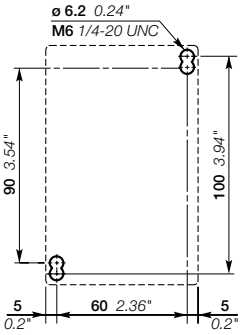
1SBC100222S0201

AX50 ... AX150 3-pole contactors
Dimensions

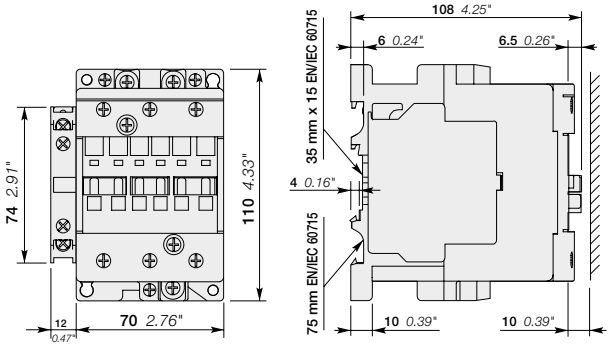
Main dimensions mm, *inches*



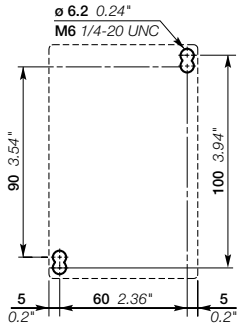
AX50, AX65, AX80



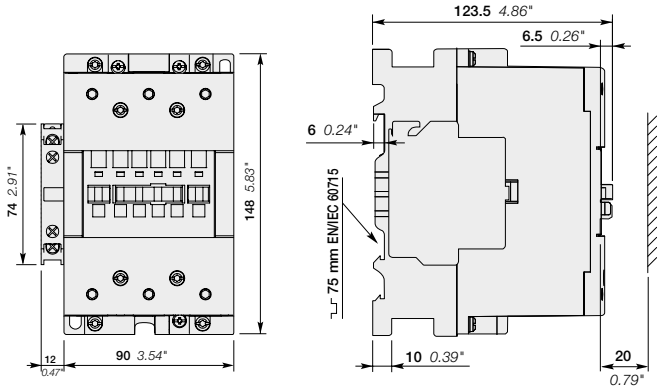
AX50, AX65, AX80



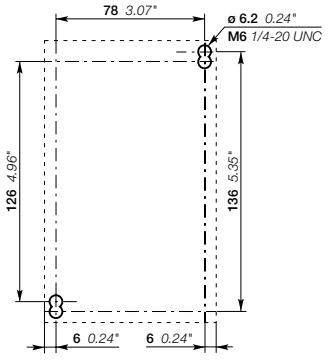
AX50, AX65, AX80 + CAL5X-11



AX50, AX65, AX80 + CAL5X-11



AX95, AX115, AX150 + CAL18X-11

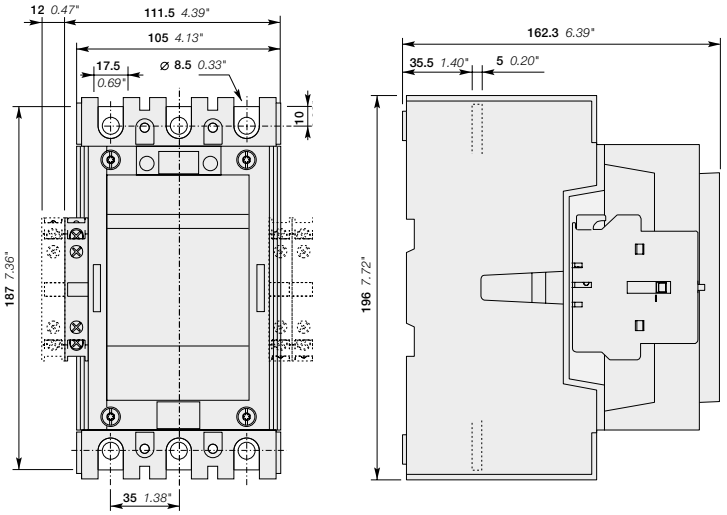


AX95, AX115, AX150 + CAL18X-11

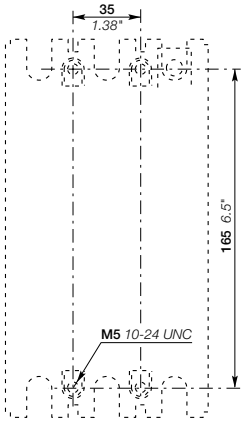
1SBC100222S0201

AX185 ... AX370 3-pole contactors
Dimensions

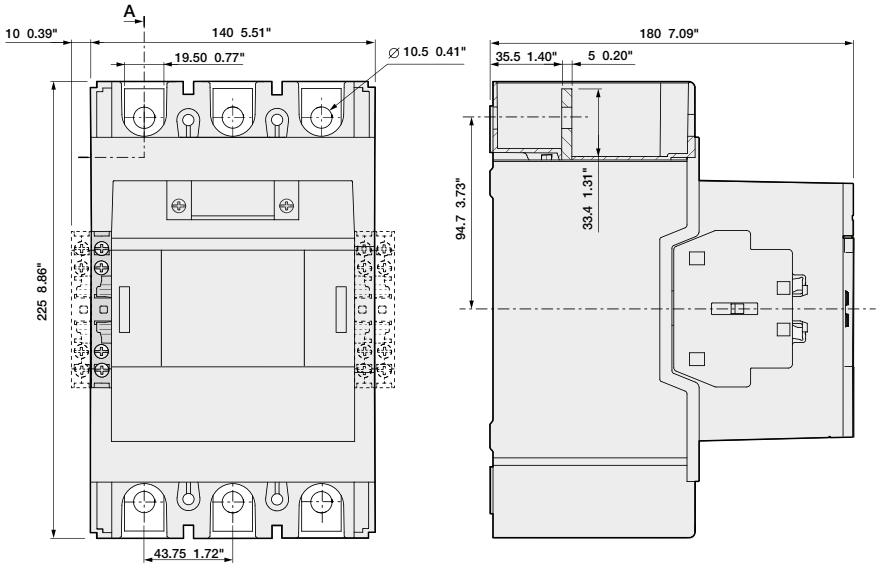
Main dimensions mm, *inches*



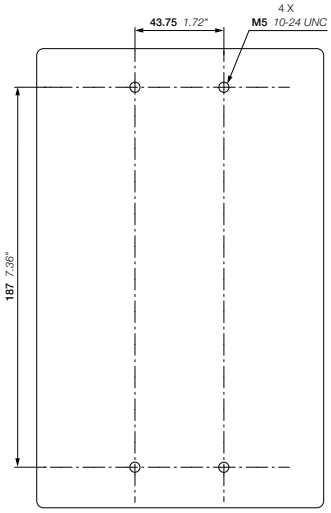
AX185, AX205 + CAL18X-11



AX185, AX205 + CAL18X-11



AX260, AX300, AX370 + CAL19



NX contactor relays

NX contactor relays

Ordering details

AC operated 98

Main accessories 99

Technical data 100

Terminal marking and positioning 102

NX contactor relays
AC operated

NX40E

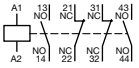
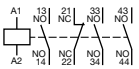
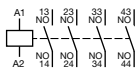
Description

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

These contactor relays are of the block type design with:

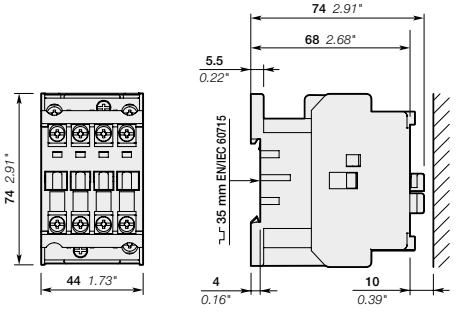
– 4 poles. Contactor relays have mechanically linked auxiliary contact elements
– control circuit: AC operated
– add-on auxiliary contact blocks for front or side mounting and a wide range of accessories.

Ordering details

Number of contacts	Rated control circuit voltage Uc (1)		Type	Order code		Weight Pkg (1 pce)
	V 50 Hz	V 60 Hz				kg
	24	24	NX22E-81	1SBH901074R8122		0.326
	110	110...120	NX22E-84	1SBH901074R8422		0.326
	220...230	230...240	NX22E-80	1SBH901074R8022		0.326
	230...240	240...260	NX22E-88	1SBH901074R8822		0.326
	400...415	415...440	NX22E-86	1SBH901074R8622		0.326
	24	24	NX31E-81	1SBH901074R8131		0.326
	110	110...120	NX31E-84	1SBH901074R8431		0.326
	220...230	230...240	NX31E-80	1SBH901074R8031		0.326
	230...240	240...260	NX31E-88	1SBH901074R8831		0.326
	400...415	415...440	NX31E-86	1SBH901074R8631		0.326
	24	24	NX40E-81	1SBH901074R8140		0.326
	110	110...120	NX40E-84	1SBH901074R8440		0.326
	220...230	230...240	NX40E-80	1SBH901074R8040		0.326
	230...240	240...260	NX40E-88	1SBH901074R8840		0.326
	400...415	415...440	NX40E-86	1SBH901074R8640		0.326

(1) Other control voltages see voltage code table.

Main dimensions mm, *inches*

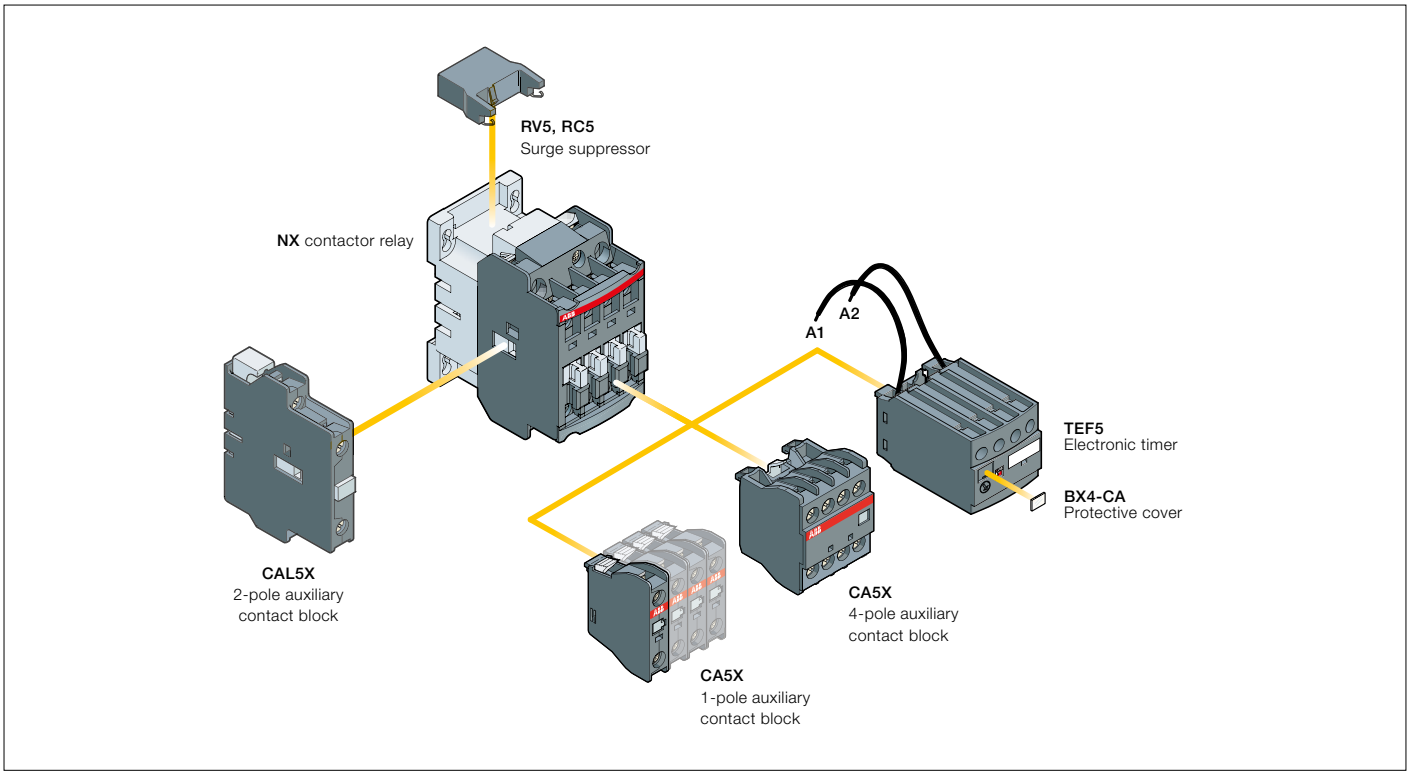


NX22E, NX31E, NX40E

1SBC100020S0201 - Rev. B

NX contactor relays
Main accessories

Contactor relay 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 CA5X		4-pole CA5X		TEF5		2-pole CAL5X-11
NX	2 2 E (1)	1 to 4 x CA5X (or 1 x CE5) (2)	or	1 x CA5X (4-pole)	or	1 x TEF5	+	1 to 2 x CAL5X-11
	3 1 E (1) 4 0 E	1 to 4 x CA5X (1 to 2 x CE5 max) (3)	or	1 x CA5X (4-pole)	or	1 x TEF5	+	1 to 2 x CAL5X-11

(1) 2 N.C. front mounted auxiliary contacts maximum in mounting position 5.
(2) CE5 auxiliary contacts not allowed in mounting position 5.
(3) The total number of N.O. or N.C. CE5 and other N.C. CA5X auxiliary contacts is limited to 2.

1SBC100021S0201 - Rev. A

NX contactor relays
Technical data

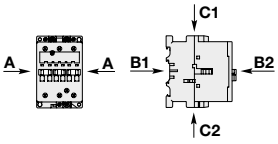
Contact utilization characteristics according to IEC

Contactor relay types	AC operated	NX
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 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
	220-230 V 50/60 Hz	4 A
	380-415 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	NX
Standards		UL 508, CSA C22.2 N°14-05
Max. operational voltage		600 V AC
Pilot duty		A600, Q300

General technical data

Contactor relay types	AC operated	NX
Rated insulation voltage Ui		
acc. to IEC 60947-5-1		690 V
acc. to UL / CSA		600 V
Rated impulse withstand voltage Uimp.		6 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

1SBC100022S0201

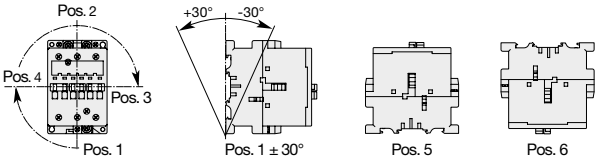
NX contactor relays
Technical data

Magnet system characteristics

Contactor relay types		**AC operated**	**NX**
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...440 V
		at 60 Hz	24...440 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**	**NX**
Mounting positions			
			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
		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

Connecting characteristics

Contactor relay types		**AC operated**	**NX**
Main terminals			 Screw terminals with cable clamp
Connection capacity (min. ... max.)			
Main conductors (poles + coil terminals)			
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
		l <	3.7 mm
	Coil terminals	**L <**	8 mm
		l <	3.7 mm
Connection capacity acc. to UL / CSA		**1 or 2 x**	AWG 18...14
Stripping length			10 mm
Tightening torque			1 Nm / 9 lb.in
Degree of protection			
acc. to IEC 60947-1 and IEC 60529			
All terminals			IP20 (only front side)
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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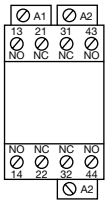
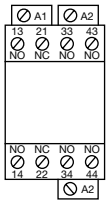
NX contactor relays
Terminal marking and positioning

NX contactor relays - AC operated

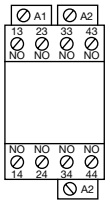
Standard devices without addition of auxiliary contacts



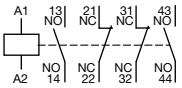
NX22E



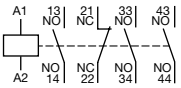
NX31E



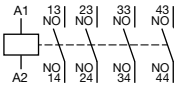
NX40E



NX22E

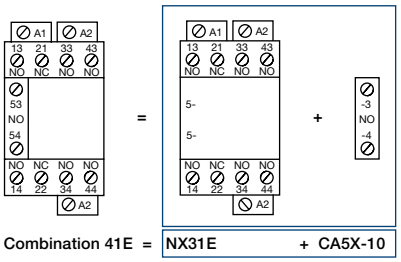


NX31E

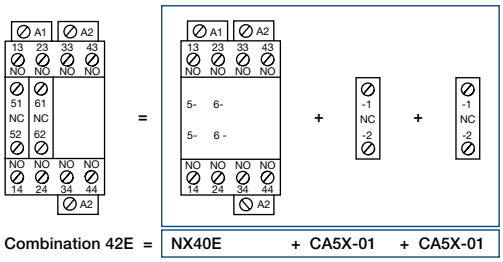


NX40E

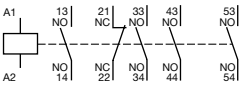
Other possible contact combinations with auxiliary contacts added by the user



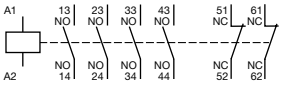
Combination 41E = NX31E + CA5X-10



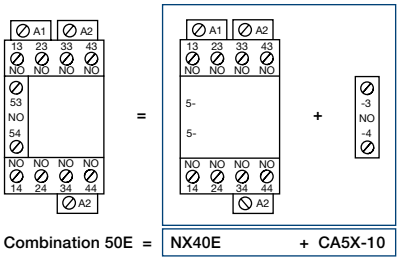
Combination 42E = NX40E + CA5X-01 + CA5X-01



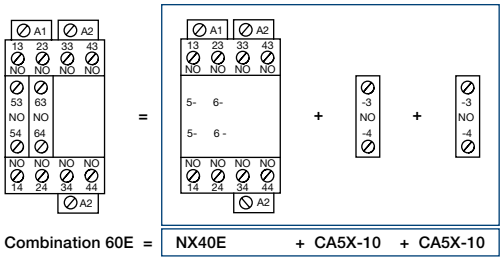
Combination 41E



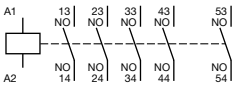
Combination 42E



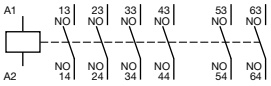
Combination 50E = NX40E + CA5X-10



Combination 60E = NX40E + CA5X-10 + CA5X-10



Combination 50E



Combination 60E

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Accessories for AX06 ... AX370 3-pole contactors and NX contactor relays

Auxiliary contact blocks
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Technical data 105
Terminal marking and positioning 108

Electronic timers
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Mechanical and electrical interlock units
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Technical data 113

Interface relays
Ordedring details 114
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Mechanical latching units
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Surge suppressors for contactor coils
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Function markers - Terminals for control lead connections 121

Terminal shrouds - Terminal enlargements and extension 122

Terminal connecting strips and shorting bars 123

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Voltage code table 126

Auxiliary contact blocks

CA5X-10

CA5X-4P

CAL5X-11

CAL18X-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:

– CA5X 1 or 4-pole block, instantaneous with N.O., N.C. contacts.

Select the 4-pole auxiliary contact blocks CA5X-..E, CA5X-..M, CA5X-..U, CA5X-..N , 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 CAL..-11B is a second block for mounting in addition to a first CAL..-11 block, right- and/or left-hand of the AX185 ... AX370 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							
AX06 ... AX150 and NX 4-pole	1	0	CA5X-10	1SBN019010R1010		10	0.014
	0	1	CA5X-01	1SBN019010R1001		10	0.014
AX50 ... AX150	2	2	CA5X-22E	1SBN019040R1022		2	0.060
	3	1	CA5X-31E	1SBN019040R1031		2	0.060
	4	0	CA5X-40E	1SBN019040R1040		2	0.060
	0	4	CA5X-04E	1SBN019040R1004		2	0.060
AX06 ... AX40-30-10	2	2	CA5X-22M	1SBN019040R1122		2	0.060
	3	1	CA5X-31M	1SBN019040R1131		2	0.060
	1	3	CA5X-13M	1SBN019040R1113		2	0.060
	0	4	CA5X-04M	1SBN019040R1104		2	0.060
AX06 ... AX40-30-01	2	2	CA5X-22U	1SBN019040R1322		2	0.060
	3	1	CA5X-31U	1SBN019040R1331		2	0.060
	4	0	CA5X-40U	1SBN019040R1340		2	0.060
	0	4	CA5X-04U	1SBN019040R1304		2	0.060
NX 4-pole	2	2	CA5X-22N	1SBN019040R1222		2	0.060
	3	1	CA5X-31N	1SBN019040R1231		2	0.060
	0	4	CA5X-04N	1SBN019040R1204		2	0.060
	4	0	CA5X-40N	1SBN019040R1240		2	0.060
	1	3	CA5X-13N	1SBN019040R1213		2	0.060
Side-mounted instantaneous auxiliary contact block, 2 pole							
AX06 ... AX80 and NX - 4 pole	1	1	CAL5X-11	1SBN019020R1011		2	0.050
AX95 ... AX205	1	1	CAL18X-11	1SFN019820R1011		2	0.050
AX185 ... AX205	1	1	CAL18X-11	1SFN019820R1011		2	0.050
	1	1	CAL18X-11B	1SFN019820R3311		2	0.050
AX260 ... AX370	1	1	CAL19-11	1SFN010820R1011		2	0.040
	1	1	CAL19-11B	1SFN010820R3311		2	0.040

(1) For each contactor or contactor relay, refer to "Accessories fitting details" table.

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Auxiliary contact blocks
Technical data

Contact utilization characteristics according to IEC

Types		Front mounted 1-pole CA5X, 4-pole CA5X	Side mounted CAL5X-11	CAL18X-11, CAL18X-11B	CAL19-11, CAL19-11B
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			3 A / 72 W
	48 V DC	2.8 A / 134 W			1.5 A / 72 W
	72 V DC	1 A / 72 W			1 A / 72 W
	110 V DC	0.55 A / 60 W			0.55 A / 60 W
	125 V DC	0.55 A / 69 W			0.55 A / 69 W
	220 V DC	0.3 A / 66 W			0.3 A / 69 W
	250 V DC	0.3 A / 75 W			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					
AX06 ... AX80 contactors		12 V / 3 mA		–	–
with failure rate acc. to IEC 60947-5-4		≤ 10-6		–	–
AX95 ... AX150 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	–
AX185 ... AX205 contactors		–	–	24 V / 50 mA (0.5 million of operating cycles)	–
with failure rate acc. to IEC 60947-5-4		–	–	≤ 10-6	–
AX260 ... AX370 contactors		–	–	–	24 V / 50 mA
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 (AX06 ... AX80) 3 millions (AX95 ... AX150)	10 millions	5 millions (AX95 ... AX205)	5 millions
Max. switching frequency		3600 cycles/h			300 cycles/h
Max. electrical switching frequency	**AC-15**	1200 cycles/h			300 cycles/h
	DC-13	900 cycles/h			300 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 taed 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	
	l >	3.7 mm	3.7 mm	
Tightening torque		1 Nm / 9 lb.in		
Connection capacity acc. to UL / CSA	**1 or 2 x**	AWG 18...14		–
Stripping length		1-pole: 11 mm	10 mm	–
		4-pole: 10 mm		
Degree of protection acc. to IEC 60947-1 / EN 60947-1 and IEC 60529 / EN 60529	**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		

1SBC100226S0201

Auxiliary contact blocks
for severe industrial environments

CE5-01W

3

Description

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

Types of auxiliary contact blocks for front mounting:

– 1-pole block, instantaneous with N.O. contact or N.C. contact, designed in 2 protection versions:
– CE5-..D with built-in microswitch IP40, degree of protection (IP20 on terminals)
– CE5-..W with built-in microswitch IP67, degree of protection (IP20 on terminals).

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

Ordering details (1)

For contactors	Auxiliary contacts				Type	Order code		Pkg qty	Weight (1 pce)
									kg
Front-mounting instantaneous auxiliary contact blocks, 1-pole									
AX06 ... AX80, NX	1	–	–	–	CE5-10D0.1	1SBN010015R1010		1	0.020
	–	1	–	–	CE5-01D0.1	1SBN010015R1001		1	0.020
	1	–	–	–	CE5-10D2	1SBN010017R1010		1	0.020
	–	1	–	–	CE5-01D2	1SBN010017R1001		1	0.020
	1	–	–	–	CE5-10W0.1	1SBN010016R1010		1	0.020
	–	1	–	–	CE5-01W0.1	1SBN010016R1001		1	0.020
	1	–	–	–	CE5-10W2	1SBN010018R1010		1	0.020
	–	1	–	–	CE5-01W2	1SBN010018R1001		1	0.020

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

1SBC100227S0201

Auxiliary contact blocks
Technical data

Contact utilization characteristics according to IEC

Types			Front-mounted	
			1-pole CE5-..0.1	1-pole CE5-..2
Standards			IEC 60947-5-1 and EN 60947-5-1	
Rated insulation voltage Ui				
acc. to IEC 60947-5-1			250 V	
Rated operational voltage Ue max.			125 V	250 V
Conventional thermal current Ith - θ ≤ 40 °C			0.1 A	2 A
Ie / Rated operational current			**AC-14**	**AC-15**
acc. to IEC 60947-5-1		**24-127 V 50/60 Hz**	0.1 A	2 A
		220-240 V 50/60 Hz	–	2 A
Making capacity acc. to IEC 60947-5-1			6 x Ie AC-14	10 x Ie AC-15
Breaking capacity acc. to IEC 60947-5-1			6 x Ie AC-14	10 x Ie AC-15
Ie / Rated operational current DC-12				
acc. to IEC 60947-5-1		**24 V DC**	0.1 A	2 A
		48 V DC	0.1 A	1 A
		72 V DC	0.1 A	0.3 A
		110 V DC	0.1 A	0.2 A
		125 V DC	–	0.2 A
		220 V DC	–	0.1 A
Short-circuit protection device			0.1 A (FF type fuses) (1)	10 A (FF type fuses) (1)
Minimum switching capacity				
AX06 ... AX80, NX contactors			3 V / 1 mA	17 V / 1 mA
With failure rate acc. to IEC 60947-5-4			–	≤ 10-7
Mechanical durability	Number of operating cycles		5 millions for CE5-..D0.1	5 millions for CE5-..D2
			2.5 millions for CE5-..W0.1	2.5 millions for CE5-..W2
	Max. switching frequency		3600 cycles/h	
Electrical durability	Number of operating cycles		2.5 millions for CE5-..D0.1	1 million for CE5-..D2
			0.7 millions for CE5-..W0.1	0.3 millions for CE5-..W2
	Max. switching frequency	**AC-14**	1200 cycles/h	
		AC-15	1200 cycles/h	
		DC-12	900 cycles/h	

Contact utilization characteristics according to UL / CSA

Standards		UL 508, CSA C22.2 N°14	
Max. operational voltage		125 V AC / 110 V DC	250 V AC / 220 V DC
Pilot duty			
AC thermal rated current		0.1 A	2 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
		l >	3.7 mm
Connection capacity acc. to UL / CSA		**1 or 2 x**	AWG 18...14
Tightening torque			1 Nm
Degree of protection		**Terminals**	IP20
acc. to IEC 60947-1 / EN 60947-1 and IEC 60529 / EN 60529		**Microswitches**	IP40 for CE5-..D0.1 / IP40 for CE5-..D2
			IP67 for CE5-..W0.1 / IP67 for CE5-..W2
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

(1) or HRC fuses for very fast action (6.3 x 32 mm size).

Add-on auxiliary contacts
Terminal marking and positioning

1-pole auxiliary contacts

CA5X-01

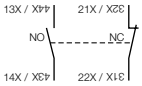
CA5X-10

CE5-01

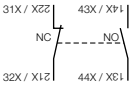
CE5-10

3

2-pole auxiliary contacts

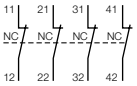


CAL5X-11, CAL18X-11
(L. h. s. mounted)

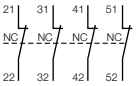


CAL5X-11, CAL18X-11
(R. h. s. mounted)

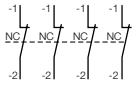
4-pole auxiliary contacts



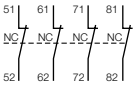
CA5X-04E



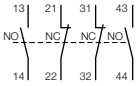
CA5X-04M



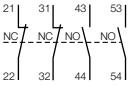
CA5X-04U



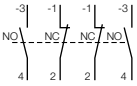
CA5X-04N



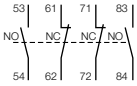
CA5X-22E



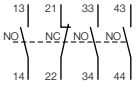
CA5X-22M



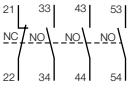
CA5X-22U



CA5X-22N



CA5X-31E



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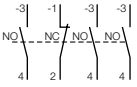

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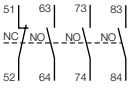

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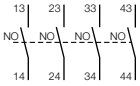

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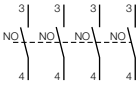

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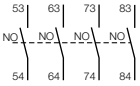

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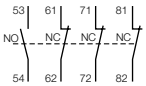

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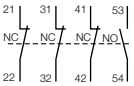


CA5X-13M

1SBC100213S0201

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 AX contactors or NX 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.

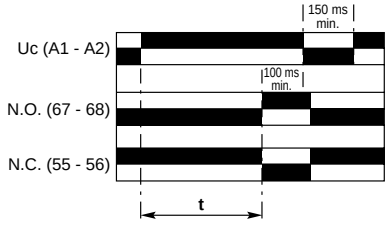
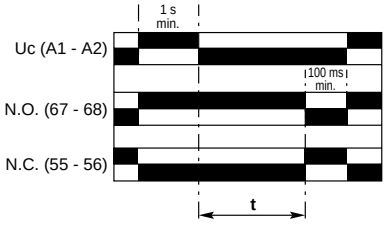
Ordering details

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
AX06 ... AX80 NX 4-pole	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

1SBC100027S0201

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	

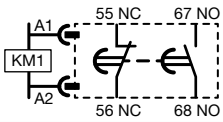
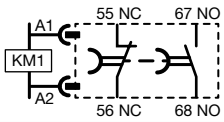
1SBC101674S0201 - Rev. A

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		 

1SBC101674S0201 - Rev. A

Mechanical and electrical interlock units

VM300H

3

Mechanical interlock units

Description

The VM mechanical interlock units are designed for the interlocking of two AX contactors.
When mounted between two contactors, the VM mechanical interlock unit prevents one of the contactors from closing as long as the other contactor is closed.

Ordering details

Left side contactor	Right side contactor	Mounting	Auxiliary contacts	Type	Order code		Pkg qty	Weight (1 pce) kg
Mechanical interlock units for two horizontal mounted contactors (1)								
AX06 ... AX40	AX06 ... AX40	Horizontal	– –	VM5-1	1SBN030100R1000		1	0.066
AX95 ... AX205	AX185 ... AX205	Horizontal	– –	VM300H	1SFN034700R1000		1	0.150
AX260 ... AX370	AX260 ... AX370	Horizontal	– –	VM19	1SFN030300R1000		1	0.054
AX185 ... AX205	AX260 ... AX370	Horizontal	– –	VM205/260	1SFN035003R1000		1	0.075
AX260 ... AX370	AX185 ... AX205	Horizontal	– –	VM205/260	1SFN035003R1000		1	0.075
AX260 ... AX370	AF400 ... AF460	Horizontal	– –	VM370/400	1SFN035403R1000		1	0.239
AF400 ... AF460	AX260 ... AX370	Horizontal	– –	VM370/400	1SFN035403R1000		1	0.239
Mechanical interlock units for two vertical mounted contactors								
Up contactor	Down contactor	Mounting						
AX95 ... AX150	AX150 ... AX205	Vertical	– –	VM300V	1SFN034701R1000		1	0.150

VE5-1

Mechanical and electrical interlock sets

Description

The VM mechanical interlock units are designed for the interlocking of two AX contactors.
When mounted between two contactors, the VM mechanical interlock unit prevents one of the contactors from closing as long as the other contactor is closed.
The VE units include 2 N.C. contacts for electrical interlocking function.

Ordering details

Left side contactor	Right side contactor	Mounting	Auxiliary contacts	Type	Order code		Pkg qty	Weight (1 pce) kg
Mechanical interlock units for two horizontal mounted contactors								
AX06 ... AX40	AX06 ... AX40	Horizontal	– 2	VE5-1	1SBN030110R1000		1	0.076
AX32 ... AX80	AX50 ... AX80	Horizontal	– 2	VE5-2	1SBN030210R1000		1	0.146
AX50 ... AX80	AX32 ... AX80	Horizontal	– 2	VE5-2	1SBN030210R1000		1	0.146
AX50 ... AX80	AX95 ... AX150	Horizontal	– 2	VE5-2 (2)	1SBN030210R1000		1	0.146
AX95 ... AX150	AX50 ... AX80	Horizontal	– 2	VE5-2 (2)	1SBN030210R1000		1	0.146
AX95 ... AX150	AX95 ... AX150	Horizontal	– 2	VE5-2	1SBN030210R1000		1	0.146

(1) Mechanical durability: VM5-1 = 5 millions cycles, VM300H = 1 million cycles.
VM19 = 0,5 million cycles, VM205/260 = 1 million cycles, VM300V = 1 million cycles.
(2) The combination of AX50 ... AX80 contactors interlocked with AX95 ... AX150 contactors cannot be mounted on symmetrical rail (75 mm, IEC/EN 60715).

1SBC100229S0201

Mechanical and electrical interlock units
Technical data

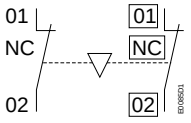
Contact utilization characteristics according to IEC

Types		VE5-1	VE5-2
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.

1SBC100028S0201

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 AX50, AX65 and AX80 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.

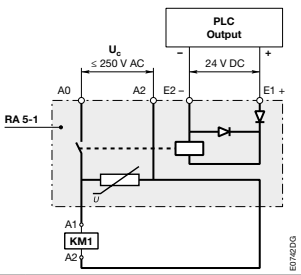
Ordering details

For contactors	Coil voltages V 50/60 Hz	Rated control circuit voltage Uc V DC	Type	Order code		Pkg qty	Weight (1 pce) kg
AX50 ... AX80	24...250	24	RA5-1	1SBN060300R1000		1	0.050
			RA5-1	1SBN060300T1000		10	0.050

1SBC100230S0201 - Rev. B

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
		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			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
Connection			



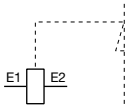
The "E1+" and "E2-" input terminals must be connected, according to their polarity, to the PLC output.
The RA5-1 is equipped with two terminal pads for connection to the A1 and the A2 terminals of the contactor coil.
This coil is supplied between the A0 and the A2 terminals of the RA 5-1.
Mounting: terminals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

1SBC100245S0201

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 without supply voltage 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 CA5X 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
AX06 ... AX80	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

1SBC100032S0201

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
		l >	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

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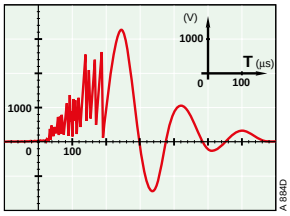
Surge suppressors for contactor coils



3

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:

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

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: 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 V AC	Type	Order code		Pkg qty	Weight (1 pce) kg
AX06 ... AX150	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
AX06 ... AX40	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
AX50 ... AX150	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
AX185 ... AX205	250...440	RC5-3/440	1SFN050300R1003		2	0.028

1SBC100247S0201

Surge suppressors for contactor coils

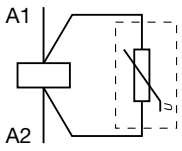
Technical data

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
Residual overvoltage (clipping voltage)	132 V AC	270 V AC	480 V AC	825 V AC
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.			

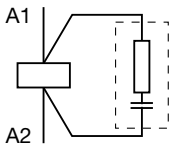
(1) Uvdr = Varistor operating voltage (voltage dependent resistor), tolerance ±10 %.

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

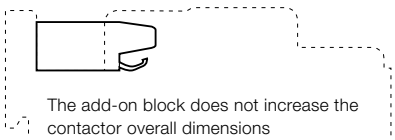


Varistor



RC type

Dimensions



RV5, RC5

1SBC100244S0201

Additional terminal blocks


1SBC580742F0301

LD75


1SBC580723F0301

LD110

Description

The LD terminal block is designed to increase the connecting capacity of the contactor on which it is fitted and for preparation of the wiring before final connection on the contactor.

The LD blocks are 3-pole terminal blocks with tunnel terminals. The available range can be used on AX50 to AX150 contactors.

The LD75 and LD110 terminal blocks are fixed in the 3 independent slots located above the built-in connectors.

Ordering details

For contactors	Type	Order code		Pkg qty	Weight (1 pce) kg
AX50 ... AX80	LD75	1SBN073508R1000		1	0.115
AX95 ... AX150	LD110 (1)	1SFN074308R1000		1	0.150

(1) up to 160 A AC-1.

Technical data

Types			LD75	LD110
Rated insulation voltage Ui				
acc. to IEC 60947-4-1				
acc. to UL / CSA				
Main terminals			 Screw terminals with single connector 10 x 11 mm	 Screw terminals with single connector 12 x 12 mm
Connection capacity (min. ... max.)				
Rigid	Solid (≤ 4 mm²)	**1 x**	6...50 mm²	10...70 mm²
	Stranded (≥ 6 mm²)	**2 x**	6...25 mm²	10...35 mm²
Flexible with ferrule		**1 x**	6...35 mm²	10...50 mm²
		2 x	6...16 mm²	10...25 mm²
Bars			10 mm	12 mm
Tightening torque			4 Nm	6 Nm
Degree of protection acc. to IEC 60947-1 / EN 60947-1 and IEC 60529 / EN 60529				
Screw terminals			M6	M8
		Screwdriver type	Pozidriv 2	Hexagon socket (s = 4 mm)

Note: The utilization of LD additional terminal blocks keeps the possibility to connect the following cables directly in the contactor main terminals but the BED and BEM connecting sets can no longer be used.

	LD75	LD110
Possible cross section of rigid cable in the contactor terminals	50 mm²	95 mm²

1SBC100246S0201

Function markers
Terminals for control lead connections

BA5-50

Function markers AX06 ... AX205

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
AX06 ... AX205 and accessories	BA5-50	1SBN110000R1000		1	0.017

BA4

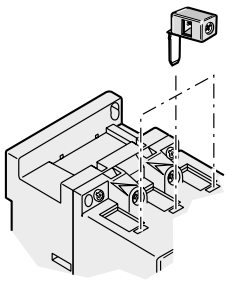
Function markers AX260 ... AX370

Description

Box of 16 blank cards (16 markers by card) printable on HTP500 thermal transfer printer and AMS 500 marking table to identify your contactors, overload relays or manual motor starters.
Marker dimensions: 7 x 20 mm (*.276" x .787"*).

AX260 ... AX370 contactors, EF electronic overload relays and MS116, MS132, M165 manual motor starters	BA4	1SNA235156R2700		16	0.011
AMS 500 support plate for 8 BA4	SPRC 1	1SNA360010R1500		1	0.220
HTP500 support plate	HTP500-BA4	1SNA235712R2400		1	0.290

LK75-F



LK positioning

Terminals for control lead connections

Description

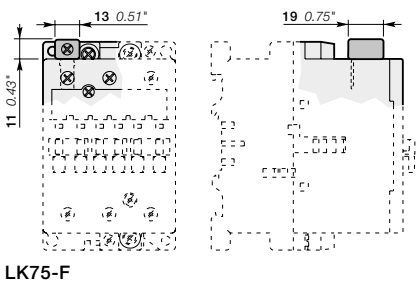
Terminals designed to connect the control conductors to the main poles of the AX50 ... AX80 contactors.
Accessories clipped into the slots placed above each power terminal connector.
The LK75 are fitted with a pin designed to hold them in place until the connector has been fully clamped with its power cable.

- Degree of protection IP20
- Connecting terminal delivered in open position: cable clamp and M3.5 (+,-) pozidriv 2 screw.
- Cable cross-sectional area:
  - 1 or 2 rigid conductors .....1...4 mm²
  - 1 or 2 flexible conductors with cable end .....0.75...2.5 mm²
- Tightening torque for the LK screw:
  - recommended.....1.00 Nm
  - maxi.....1.20 Nm

Ordering details

For contactors	Type	Order code		Pkg qty	Weight (1 pce) kg
AX50 ... AX80	LK75-F	1SBN073552R1002		2	0.006

Main dimensions mm, *inches*



LK75-F

Terminal shrouds
Terminal enlargements and extension

LT ... AC

LT ... AL

Terminal shrouds

Description

Main terminal protection for AX185 ... AF370 contactors.
The auxiliary contact blocks and coils are designed to provide an IP 20 degree of protection.
The main terminals, equipped with compression lugs or cable clamps, 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
AX185 ... AX205 with connectors	LT185-AC	1SFN124701R1000		2	0.050
AX185 ... AX205 with lugs	LT185-AL	1SFN124703R1000		2	0.220
AX185 ... AX205 with shorting bar or between contactor and TOL/EOL in DOL starters	LT185-AY	1SFN124704R1000		2	0.050
AX260 ... AX370, with cable clamps	LT370-30C	1SFN125401R1000		2	0.035
AX260 ... AX370, with compression lugs	LT370-30L	1SFN125403R1000		2	0.280
AX260 ... AX370, with shorting bar or between contactor and TOL/EOL in DOL starters	LT370-30Y	1SFN125404R1000		1	0.075

LT ... AY

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	Dimension hole Ø mm	Bar mm	Type	Order code		Pkg qty	Weight (1 pce) kg
AX185 ... AX205	10.5	20 x 5	LW185	1SFN074707R1000		1	0.250
AX260 ... AX370	10.5	20 x 5	LW370	1SFN075407R1000		1	0.340

LW

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	Dimension hole Ø mm	Bar mm	Type	Order code		Pkg qty	Weight (1 pce) kg
AX185 ... AX205	8.5	17.5 x 5	LX185	1SFN074710R1000		1	0.250
AX260 ... AX370	10.5	20 x 5	LX370	1SFN075410R1000		1	0.234

LX

1SFC101318C0201

Terminal connecting strips and shorting bars

LP185

LY185

Description

Parallel and series connection of 3-pole contactors:

– To obtain a star point (3 parallel-connected poles): LY allows 3 phases to be short-circuited.
– To connect poles in parallel and thus increase the AC load passing through the flow path made up of the parallel-connected poles: LP (2 poles); LY (3 poles).
– For the maximum permissible current values with parallel-connected poles see "Parallel connection of main poles".

The relevant cable cross-sectional area may limit the maximum permissible current. Consult information in table below.

– To connect poles in series and thus increase the DC load controlled by the poles: LP.

Types	for connection of "n" poles	with terminal	insulated
LP	n = 2	no	yes
LY	n = 3	no	yes

Ordering details

For contactors	max. nominal continuous current with "n" poles		Type	Order code		Pkg qty	Weight (1 pce)
	A	mm²					kg
AX06	28	6	LP16	FPEP407000R0001		10	0.002
AX09	30	6					
AX12	32	6					
AX18	34	6					
NX	-	6					
AX185, AX205	300	-	LP185	1SFN074712R1000		2	0.300
AX260, AX300, AX370	475	-	LP300	1SFN075112R1000		2	0.400
AX06	30	6	LY16	FPEP407002R0001		10	0.005
AX09	33	6					
AX12	36	6					
AX18	39	6					
AX185, AX205	400	-	LY185	1SFN074703R1000		1	0.200
AX260, AX300, AX370	670	-	LY300	1SFN075103R1000		1	0.300

1SBC100237S0201

Connection accessories for starting solutions

BEA

BEA 300

Connection links between contactors and manual motor starters

Description

The BEA connecting links are used to connect a contactor to associated manual motor starters. These are then used together as DOL or reversing starters in type 1 or type 2 coordination, complying with IEC 60947-4-1 and EN 60947-4-1.

The BEA insulated 3-pole connecting link (touch safe) ensures the electrical linking between the contactor and the corresponding manual motor starter.

Ordering details

For contactors	Manual motor starter	Type	Order code		Pkg qty	Weight (1 pce) kg
AX06 ... AX18	MS116-0.16 ... MS116-16 MS132-0.16 ... MS132-10	BEA16/116	1SBN081406R1000		10	0.020
AX25	MS116-0.16 ... MS116-16 / MS132-0.16 ... MS132-10	BEA25/116	1SBN089306T1000		10	0.020
AX25	MS116-20 ... MS116-32 / MS132-12 ... MS132-32	BEA25/132	1SBN089306T1001		10	0.020
AX50 ... AX80	MS495	BEA75/495	1SBN084106R1000		1	0.120
AX95 ... AX150	MS495	BEA110/495	1SBN084506R1000		1	0.124

Connection bars between contactors and MCCB

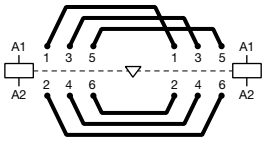
Description

Connection between contactors/starters and moulded case circuit breakers.

These connection sets are solid copper bars.

Ordering details

For contactors	MCCB	Type	Order code		Pkg qty	Weight (1 pce) kg
AX185, AX205	T3	BEA185/T3	1SFN084706R1003		1	0.150
AX260, AX300, AX370	T5	BEA370/T5	1SFN085406R1000		1	0.350



BEM ... connections

Connection sets for reversing contactors

Description

Connections between the main poles of two 3-pole contactors mounted side by side as reversing contactors with mechanical or electrical interlock.

The sets are made up of three upstream connections and three downstream connections.

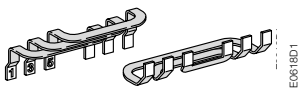
– BER16V … BER40V: Insulated, stranded, rigid copper wires
– BEM75-30 ... BEM185-30 and BER370-4: Insulated, solid copper bars

On the AX contactors, the power supply by bars or cables equipped with lugs is directly connected to the terminal pads of the main poles. For flange connectors, LX terminal extension pieces should be used.

Ordering details

For contactors	Type	Order code		Pkg qty	Weight (1 pce) kg
AX06 ... AX18	BER16V	1SBN081411R1000		1	0.045
AX32, AX40	BER40V	1SBN082411R1000		1	0.085
AX50 ... AX80	BEM75-30	1SBN083501R1000		1	0.243
AX95 ... AX150	BEM110-30 (1)	1SFN084301R1000		1	0.450
AX185, AX205	BEM185-30	1SFN084701R1000		1	0.900
AX260 ... AX370	BER370-4	1SFN085411R1000		1	2.140

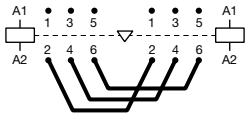
(1) up to 160 A AC-1



BEM 75-30

1SBC100239S0201

Phase to phase connections
Connection sets for star-delta starters



BEP, BES

Phase to phase connections

Description

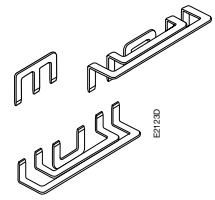
Connections between the main poles of two 3-pole contactors horizontal mounted.

This set is made up of three downstream or upstream connections.

Ordering details

For contactors	Type	Order code		Pkg qty	Weight (1 pce) kg
AX50 ... AX80	BES75-30	1SBN083504R1000		1	0.130
AX95 ... AX150	BES110 (1)	1SFN084304R1000		1	0.250
AX185, AX205	BES185	1SFN084704R1000		1	0.500
AX260 ... AX370	BEP370-30	1SFN085414R1000		1	0.926

(1) up to 160 A AC-1.



BED 110

Connections sets for star-delta starters

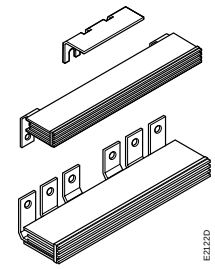
Description

Connections between the main poles of a star-delta starter.

These sets are made up of:

– Three line contactor / delta contactor connections, upstream side
– Three connections for star and delta contactors, downstream side
– The necessary elements to create the star point upstream of the star contactor.
– Insulated, solid copper bars.

BED are designed for both star and delta contactors with or without mechanical interlock unit.



BED 185

Ordering details

For line and delta contactors	For star contactors	Interlock unit between delta and star contactors	Type	Order code		Pkg qty	Weight (1 pce) kg
AX150	AX95	VE5-2	BED110 (1)	1SFN084503R1000		1	0.500
AX185	AX115	VM300H	BED145A	1SFN084703R1000		1	1.300
AX205	AX150	VM300H	BED185	1SFN084903R1000		1	1.100
AX370	AX260	VM19	BEY370-4	1SFN085813R1000		1	2.020

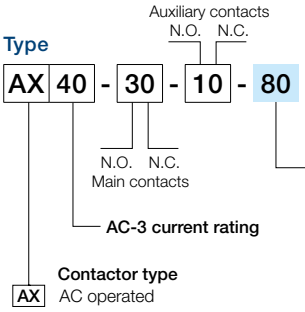
(1) up to 160 A AC-1.

1SBC100240S0201

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 AX40-30-10 and coil 80 V 50/60 Hz, the order code is 1SBL321074R**80**10.

AX contactors

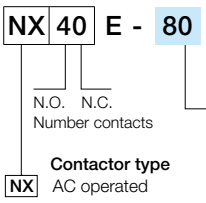


Order code: 1SBL321074R 80 10

AC coil code	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
51	415 V	480 V

Codes in bold for dual frequency coils.

NX contactor relays



Order code: 1SBH901074R 80 40

AC coil code	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
51	415 V	480 V

Codes in bold for dual frequency coils.

1SBC100034S0201 - Rev. A

1SBC100034S0201 - Rev. A

2CDC106101C0201

Overload relays

Overview 130

Thermal overload relays

TA25DU-M / TA42DU-M / TA75DU-M (0.10 ... 80 A)
Ordering details 131
Technical data 132
Accessories 135

TA80DU / TA110DU / TA200DU (29 ... 200 A)
Ordering details 136
Technical data 137
Dimensions 140

Electronic overload relays

E140DU (50 ... 140 A)
Ordering details 142
Technical data 143
Accessories 146

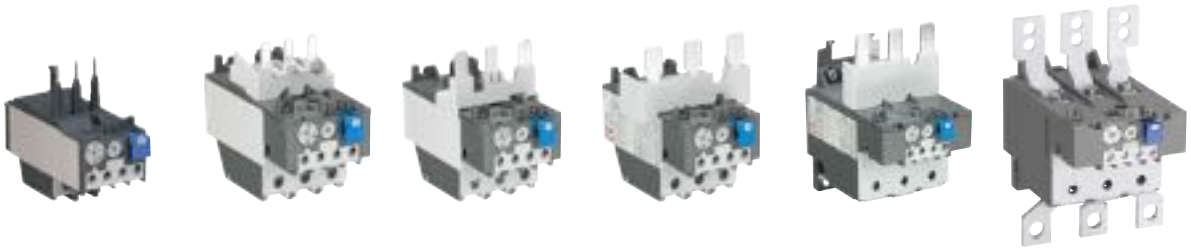
EF205, EF370 (63 ... 380 A)
Ordering details 147
Technical data 148
Dimensions 151

2CDC106101C0201

2CDC106102C0201

Overload relays

Thermal overload relay



Type	TA25DU-M	TA42DU-M	TA75DU-M	TA80DU	TA110DU	TA200DU
Current range	0.10 ... 32 A	18 ... 42 A	18 ... 80 A	29 ... 80 A	66 ... 110 A	66 ... 200 A
Trip class	10A	10A	10A	10A	10A	10A
Single mounting kit	DB25	DB80	DB80	DB80	DB200	DB200
For contactors	AX09 ... AX40	AX32 ... AX40	AX50 ... AX80	AX95 ... AX150	AX95 ... AX150	AX185 ... AX205

Electronic overload relay

Type	E140DU	EF205	EF370
Current range	50 ... 140 A	63 ... 210 A	115 ... 380 A
Trip class	10E, 20E, 30E selectable		
Single mounting kit	DB140E	-	-
For contactors	AX95 ... AX150	AX185 ... AX205	AX260 ... AX370

2CDC106102C0201

Thermal overload relays TA25DU-M / TA42DU-M / TA75DU-M
0.10 to 80 A


2CDC231019F0013

TA25DU-M


2CDC231020F0013

TA42DU-M


2CDC231022F0013

TA75DU-M

4

Description

The TA25DU-M / TA42DU-M and TA75DU-M thermal overload relays are economic electromechanical protection devices for the main circuit. They offer reliable protection for motors in the event of overload or phase failure. The devices have trip class 10A.

The thermal overload relays are three pole relays with bimetal tripping elements. The motor current flows through the bimetal tripping elements and heats them directly and indirectly. In case of an overload (over current), the bimetal elements bent as a result of the heating. This leads to a release of the relay and a change of the contacts switching position (95-96 / 97-98).

- Manual or automatic reset selectable
- Phase loss sensitive acc. to IEC/EN 60947-4-1
- Two electrically isolated auxiliary contacts – 1 N.O. + 1 N.C.
- TEST and STOP function – Trip indication on the front
- Temperature compensation
- Suitable for three- and single-phase applications

Ordering details

Setting range A	Short-circuit protective device	Trip class	Type	Order code	Weight (1 pce) kg
TA25DU-M					
0.10 ... 0.16	0.50 A, Fuse type F	10A	TA25DU-0.16M	1SAZ211201R2005	0.150
0.16 ... 0.25	0.63 A, Fuse type F	10A	TA25DU-0.25M	1SAZ211201R2009	0.150
0.25 ... 0.40	1.25 A, Fuse type F	10A	TA25DU-0.4M	1SAZ211201R2013	0.150
0.40 ... 0.63	2 A, Fuse type gG / -	10A	TA25DU-0.63M	1SAZ211201R2017	0.150
0.63 ... 1.00	4 A, Fuse type gG / 2 A aM	10A	TA25DU-1.0M	1SAZ211201R2021	0.150
1.00 ... 1.40	6 A, Fuse type gG / 2 A aM	10A	TA25DU-1.4M	1SAZ211201R2023	0.150
1.30 ... 1.80	6 A, Fuse type gG / 4 A aM	10A	TA25DU-1.8M	1SAZ211201R2025	0.150
1.70 ... 2.40	6 A, Fuse type gG / 4 A aM	10A	TA25DU-2.4M	1SAZ211201R2028	0.150
2.20 ... 3.10	10 A, Fuse type gG / 6 A aM	10A	TA25DU-3.1M	1SAZ211201R2031	0.150
2.80 ... 4.00	10 A, Fuse type gG / 6 A aM	10A	TA25DU-4.0M	1SAZ211201R2033	0.150
3.50 ... 5.00	16 A, Fuse type gG / 10 A aM	10A	TA25DU-5.0M	1SAZ211201R2035	0.150
4.50 ... 6.50	20 A, Fuse type gG / 16 A aM	10A	TA25DU-6.5M	1SAZ211201R2038	0.150
6.00 ... 8.50	20 A, Fuse type gG / 20 A aM	10A	TA25DU-8.5M	1SAZ211201R2040	0.150
7.50 ... 11.00	35 A, Fuse type gG / 25 A aM	10A	TA25DU-11M	1SAZ211201R2043	0.150
10.00 ... 14.00	35 A, Fuse type gG / 25 A aM	10A	TA25DU-14M	1SAZ211201R2045	0.150
13.00 ... 19.00	50 A, Fuse type gG / 35 A aM	10A	TA25DU-19M	1SAZ211201R2047	0.170
18.00 ... 25.00	63 A, Fuse type gG / 50 A aM	10A	TA25DU-25M	1SAZ211201R2051	0.170
24.00 ... 32.00	80 A, Fuse type gG / 63 A aM	10A	TA25DU-32M	1SAZ211201R2053	0.200
TA42DU-M					
18 ... 25	63 A, Fuse type gG / 50 A aM	10A	TA42DU-25M	1SAZ311201R2001	0.335
22 ... 32	80 A, Fuse type gG / 63 A aM	10A	TA42DU-32M	1SAZ311201R2002	0.335
29 ... 42	100 A, Fuse type gG / 80 A aM	10A	TA42DU-42M	1SAZ311201R2003	0.335
TA75DU-M					
18 ... 25	63 A, Fuse type gG / 50 A aM	10A	TA75DU-25M	1SAZ321201R2001	0.335
22 ... 32	80 A, Fuse type gG / 63 A aM	10A	TA75DU-32M	1SAZ321201R2002	0.335
29 ... 42	100 A, Fuse type gG / 80 A aM	10A	TA75DU-42M	1SAZ321201R2003	0.335
36 ... 52	125 A, Fuse type gG / 100 A aM	10A	TA75DU-52M	1SAZ321201R2004	0.335
45 ... 63	160 A, Fuse type gG / 125 A aM	10A	TA75DU-63M	1SAZ321201R2005	0.335
60 ... 80	200 A, Fuse type gG / 160 A aM	10A	TA75DU-80M	1SAZ321201R2006	0.370

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Thermal overload relays TA25DU-M / TA42DU-M / TA75DU-M
Technical data

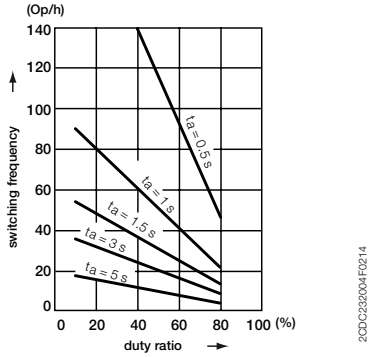
Main circuit – Utilization characteristics according to IEC/EN

Type	TA25DU-M	TA42DU-M	TA75DU-M
Standards	IEC/EN 60947–4–1, IEC/EN 60947-5-1, IEC/EN 60947-1		
Rated operational voltage U_e	690 V AC		
Rated frequency	DC, 50/60 Hz		
Frequency range	0 ... 400 Hz		
Trip class	10A		
Number of poles	3		
Duty time	100 %		
Operating frequency without early tripping	Up to 15 operations/h, see "Technical diagram – Intermittent periodic duty"		
Rated impulse withstand voltage U_{imp}	6 kV		
Rated insulation voltage U_i	690 V AC		

Auxiliary circuit according to IEC/EN

Type		TA25DU-M	TA42DU-M	TA75DU-M
Rated operational voltage U_e		500 V AC, 440 V DC		
Conventional free air thermal current I_{th}	**N.C., 95-96**	10 A		
	N.O., 97-98	6 A		
Rated frequency		DC, 50/60 Hz		
Number of poles		1 N.O. + 1 N.C.		
I_e / Rated operational current AC-15 acc. to IEC/EN 60947-5-1 for utilization category				
110-120 V	**N.C., 95-96**	3.00 A		
	N.O., 97-98	1.50 A		
220-230-240 V	**N.C., 95-96**	3.00 A		
	N.O., 97-98	1.50 A		
440 V	**N.C., 95-96**	1.00 A		
	N.O., 97-98	1.00 A		
480-500 V	**N.C., 95-96**	1.00 A		
	N.O., 97-98	1.00 A		
I_e / Rated operational current DC-13 acc. to IEC/EN 60947-5-1 for utilization category				
24 V	**N.C., 95-96**	1.25 A		
	N.O., 97-98	1.25 A		
60 V	**N.C., 95-96**	0.25 A		
	N.O., 97-98	0.25 A		
110-120-125 V	**N.C., 95-96**	0.25 A		
	N.O., 97-98	0.25 A		
250 V	**N.C., 95-96**	0.12 A		
	N.O., 97-98	0.04 A		
Minimum switching capacity		17 V / 3 mA		
Short-circuit protective device	**N.C., 95-96**	10 A, Fuse type gG		
	N.O., 97-98	6 A, Fuse type gG		
Rated impulse withstand voltage U_{imp}		6 kV		
Rated insulation voltage U_i		690 V		

Technical diagram – Intermittent periodic duty



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t_a: Motor starting time - TA25DU-M, TA42DU-M, TA75DU-M

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Thermal overload relays TA25DU-M / TA42DU-M / TA75DU-M
Technical data

Main circuit – Utilization characteristics according to UL/CSA

Type	TA25DU-M / TA42DU-M / TA75DU-M
Standards	UL 508, CSA 22.2 No. 14
Maximum operational voltage	600 V AC
Trip rating	125 % of FLA
Full load amps (FLA)	See table "Full load amps and short-circuit protective device"
Short-circuit rating RMS symmetrical	See table "Full load amps and short-circuit protective device"
Short-circuit protective device	See table "Full load amps and short-circuit protective device"

Auxiliary circuit according to UL/CSA

Type		TA25DU-M / TA42DU-M / TA75DU-M
Contact rating	N.C., 95-96	B600
	N.O., 97-98	C600
Conventional free-air thermal current		5 A

Full load amps and short-circuit protective device

Type	Full load amps (FLA)	Short-circuit protective device			
		480 / 600 V AC		480 / 600 V AC	
		Short circuit rating RMS symmetrical	Fuse K5 / RK5	Short circuit rating RMS symmetrical	Fuse J
TA25DU-0.16M	0.16 A	5000 A	1 A	50000 A	30 A
TA25DU-0.25M	0.25 A	5000 A	1 A	50000 A	30 A
TA25DU-0.4M	0.40 A	5000 A	3 A	50000 A	30 A
TA25DU-0.63M	0.63 A	5000 A	3 A	50000 A	30 A
TA25DU-1.0M	1.0 A	5000 A	6 A	50000 A	30 A
TA25DU-1.4M	1.4 A	5000 A	6 A	50000 A	30 A
TA25DU-1.8M	1.8 A	5000 A	6 A	50000 A	30 A
TA25DU-2.4M	2.4 A	5000 A	10 A	50000 A	30 A
TA25DU-3.1M	3.1 A	5000 A	10 A	50000 A	30 A
TA25DU-4.0M	4.0 A	5000 A	15 A	50000 A	30 A
TA25DU-5.0M	5.0 A	5000 A	20 A	50000 A	30 A
TA25DU-6.5M	6.5 A	5000 A	25 A	50000 A	30 A
TA25DU-8.5M	8.5 A	5000 A	35 A	50000 A	30 A
TA25DU-11M	11 A	5000 A	45 A	50000 A	35 A
TA25DU-14M	14 A	5000 A	60 A	50000 A	60 A
TA25DU-19M	19 A	5000 A	60 A	50000 A	60 A
TA25DU-25M	25 A	5000 A	70 A	50000 A	100 A
TA25DU-32M	32 A	5000 A	100 A	50000 A	100 A
TA42DU-25M	25 A	5000 A	80 A	50000 A	100 A
TA42DU-32M	32 A	5000 A	100 A	50000 A	100 A
TA42DU-42M	42 A	5000 A	150 A	50000 A	200 A
TA75DU-25M	25 A	5000 A	80 A	50000 A	100 A
TA75DU-32M	32 A	5000 A	100 A	50000 A	100 A
TA75DU-42M	42 A	5000 A	150 A	50000 A	200 A
TA75DU-52M	52 A	5000 A	175 A	50000 A	200 A
TA75DU-63M	63 A	10000 A	200 A	50000 A	200 A
TA75DU-80M	80 A	10000 A	250 A	50000 A	200 A

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Thermal overload relays TA25DU-M / TA42DU-M / TA75DU-M
Technical data

General technical data

Type			TA25DU-M	TA42DU-M	TA75DU-M
Pollution degree			3		
Phase loss sensitive			Yes		
Ambient air temperature					
	Operation	Open - compensated	-25 ... +55 °C		
		Open	-25 ... +55 °C		
	Storage		-40 ... +70 °C		
Ambient air temperature compensation			Acc. to IEC/EN60947-4-1		
Maximum operating altitude permissible			2000 m		
Resistance to shock acc. to IEC 60068-2-27			12g / 15 ms		
Mounting position			Position 1-6		
Mounting			Mount on the contactor and tighten the screws of the main circuit terminals or with single mounting kit on DIN rail (35 mm)		
Degree of protection		Housing	IP20		
		Main circuit terminals	IP10		

Electrical connection

Main circuit

Type			TA25DU-M (0.16 ... 11 A)	TA25DU-M (14 ... 25 A)	TA25DU-M (32 A)
Connecting capacity					
	Rigid	1 x	0.75 ... 4 mm²	1.5 ... 6 mm²	1.5 ... 10 mm²
		2 x	0.75 ... 4 mm²	1.5 ... 6 mm²	-
	Flexible with ferrule	1 x or 2 x	0.75 ... 4 mm²	1.5 ... 4 mm²	1.5 ... 6 mm²
	Flexible	1 x or 2 x	0.75 ... 4 mm²	1.5 ... 4 mm²	1.5 ... 6 mm²
	Stranded acc. to UL/CSA	1 x or 2 x	AWG 16-8	AWG 16-8	AWG 10-8
	Flexible acc. to UL/CSA	1 x or 2 x	AWG 16-8	AWG 16-8	AWG 10-8
Stripping length			12 mm	12 mm	15 mm
Tightening torque			1.5 ... 1.9 Nm / 12 in·lb	1.5 ... 1.9 Nm / 12 in·lb	2.5 ... 3.2 Nm / 20 in·lb
Recommended screw driver			M4 (Pozidriv 2)	M4 (Pozidriv 2)	M5 (Pozidriv 2)

Main circuit

Type			TA42DU-M	TA75DU-M
Connecting capacity				
	Rigid	1 x	2.5 ... 25 mm²	
		2 x	2.5 ... 16 mm²	
	Flexible with ferrule	1 x	2.5 ... 25 mm²	
		2 x	2.5 ... 10 mm²	
	Stranded acc. to UL/CSA	1 x or 2 x	AWG 8-1	
	Flexible acc. to UL/CSA	1 x or 2 x	AWG 8-1	
Stripping length			14 mm	
Tightening torque			4.5 Nm / 40 in·lb	
Recommended screw driver			M6 (Pozidriv 2)	

Auxiliary circuit

Type			TA25DU-M	TA42DU-M	TA75DU-M
Connecting capacity					
	Rigid	1 x or 2 x	0.75 ... 4 mm²		
	Flexible	1 x or 2 x	0.75 ... 2.5 mm²		
	Stranded acc. to UL/CSA	1 x or 2 x	AWG 18-14		
	Flexible acc. to UL/CSA	1 x or 2 x	AWG 18-14		
Stripping length			9 mm		
Tightening torque			1 ... 1.3 Nm / 12 in·lb		
Recommended screw driver			M3.5 (Pozidriv 2)		

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Thermal overload relays TA25DU-M / TA42DU-M / TA75DU-M
Accessories


SST01494

DX25


2CDC231017F0006

DB25/25A


SST20591

DR25-A-220/380

1SFC151402F0001

KPR-101L


2CDC231007F0010

DB80

Description
The single mounting kits offer the possibility to mount the overload relays separately from the contactor.
DR25-A coil for remote reset of TA25DU-M.

Ordering details

For thermal overload relays	Description	Type	Order code	Weight (1 pce) kg
Terminal block and mounting kits				
TA25DU-0.16M; ... 25M / DB25/25 A	Terminal block 10 mm²	DX25	1SAZ201307R0002	0.030
TA25DU-0.16M ... 25M	Single mounting kit	DB25/25A	1SAZ201108R0001	0.055
TA25DU-32M	Single mounting kit	DB25/32A	1SAZ201108R0002	0.080
TA42DU-M / TA75DU-M	Single mounting kit	DB80	1SAZ301110R0001	0.155
Remote reset coil				
TA25DU-M	24/48 V, 50/60 Hz	DR25-A-24	1SAZ201504R0001	0.050
TA25DU-M	110 V, 50/60 Hz	DR25-A-110	1SAZ201504R0003	0.050
TA25DU-M	220/380 V, 50/60 Hz	DR25-A-220/380	1SAZ201504R0005	0.050
TA25DU-M	500 V, 50/60 Hz	DR25-A-500	1SAZ201504R0006	0.050
Reset push button				
TA25DU-M / TA42DU -M / TA75DU -M	Reset push button*	KPR-101L	1SFA616162R1014	0.027

* The remote reset coil is to be connected to auxiliary contact 97-98 of TA25DU-M.
The coil is not suitable for continuous operation. Impulse duration: maximum 0.2 seconds.

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Thermal overload relays TA80DU / TA110DU / TA200DU
29 to 200 A


2CDC231008F0011

TA80DU


2CDC231016F0013

TA200DU


2CDC231007S0010

DB80


1SFC151402F0001

KPR-101L

Description

The TA80DU thermal overload relays are economic electromechanical protection devices for the main circuit. They offer reliable protection for motors in the event of overload or phase failure. The devices have trip class 10A.

The thermal overload relays are three pole relays with bimetal tripping elements. The motor current flows through the bimetal tripping elements and heats them directly and indirectly. In case of an overload (over current), the bimetal elements bent as a result of the heating. This leads to a release of the relay and a change of the contacts switching position (95-96 / 97-98).

- Manual or automatic reset selectable
- Phase loss sensitive acc. to IEC/EN 60947-4-1
- Two electrically isolated auxiliary contacts – 1 N.O. + 1 N.C.
- TEST and STOP function – Trip indication on the front
- Temperature compensation
- Suitable for three- and single-phase applications

Ordering details

Setting range A	Short-circuit protective device	Trip class	Type	Order code	Weight (1 pce) kg
TA80DU					
29 ... 42	100 A, Fuse type gG / 80 A aM	10A	TA80DU-42	1SAZ331201R1003	0.360
36 ... 52	125 A, Fuse type gG / 100 A aM	10A	TA80DU-52	1SAZ331201R1004	0.365
45 ... 63	160 A, Fuse type gG / 125 A aM	10A	TA80DU-63	1SAZ331201R1005	0.365
60 ... 80	200 A, Fuse type gG / 160 A aM	10A	TA80DU-80	1SAZ331201R1006	0.375
TA110DU					
66 ... 90	200 A, Fuse type gG / 160 A aM	10A	TA110DU-90	1SAZ411201R1001	0.750
80 ... 110	224 A, Fuse type gG / 200 A aM	10A	TA110DU-110	1SAZ411201R1002	0.755
TA200DU					
66 ... 90	200 A, Fuse type gG / 125 A aM	10A	TA200DU-90	1SAZ421201R1001	0.755
80 ... 110	224 A, Fuse type gG / 160 A aM	10A	TA200DU-110	1SAZ421201R1002	0.760
100 ... 135	224 A, Fuse type gG / 200 A aM	10A	TA200DU-135	1SAZ421201R1003	0.760
110 ... 150	250 A, Fuse type gG / 200 A aM	10A	TA200DU-150	1SAZ421201R1004	0.760
130 ... 175	315 A, Fuse type gG / 250 A aM	10A	TA200DU-175	1SAZ421201R1005	0.770
150 ... 200	315 A, Fuse type gG / 250 A aM	10A	TA200DU-200	1SAZ421201R1006	0.785

Ordering details accessories

For thermal overload relays	Description	Type	Order code	Weight (1 pce) kg
TA80DU	Single mounting kit	DB80	1SAZ301110R0001	0.155
TA200DU	Terminal shroud	LT200/A	1SAZ401901R1001	0.090
TA110DU / TA200DU	Single mounting kit	DB200	1SAZ401110R0001	0.225
TA80DU / TA110DU / TA200DU	Reset push button	KPR-101L	1SFA616162R1014	0.027

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Thermal overload relays TA80DU / TA110DU / TA200DU
Technical data

Main circuit – Utilization characteristics according to IEC/EN

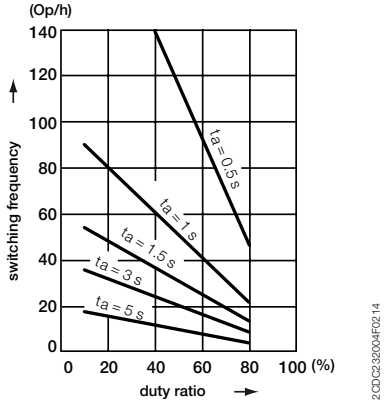
Type	TA80DU	TA110DU	TA200DU
Standards	IEC 60947-1 / 60947-4-1 and EN 60947-1 / 60947-4-1		
Rated operational voltage U_e	690 V AC		
Rated frequency	DC, 50/60 Hz		
Frequency range	0 ... 400 Hz		
Trip class	10A		
Number of poles	3		
Duty time	100 %		
Operating frequency without early tripping	Up to 15 operations/h, see "Technical diagram – Intermittent periodic duty"		
Rated impulse withstand voltage U_{imp}	6 kV		
Rated insulation voltage U_i	690 V AC		

4

Auxiliary circuit according to IEC/EN

Type		TA80DU	TA110DU	TA200DU
Rated operational voltage U_e		500 V AC, 440 V DC		
Conventional free air thermal current I_{th}	**N.C., 95-96**	10 A		
	N.O., 97-98	6 A		
Rated frequency		DC, 50/60 Hz		
Number of poles		1 N.O. + 1 N.C.		
I_e / Rated operational current AC-15 acc. to IEC/EN 60947-5-1 for utilization category				
110-120 V	**N.C., 95-96**	3.00 A		
	N.O., 97-98	1.50 A		
220-230-240 V	**N.C., 95-96**	3.00 A		
	N.O., 97-98	1.50 A		
440 V	**N.C., 95-96**	1.00 A		
	N.O., 97-98	1.00 A		
480-500 V	**N.C., 95-96**	1.00 A		
	N.O., 97-98	1.00 A		
I_e / Rated operational current DC-13 acc. to IEC/EN 60947-5-1 for utilization category				
24 V	**N.C., 95-96**	1.25 A		
	N.O., 97-98	1.25 A		
60 V	**N.C., 95-96**	0.25 A		
	N.O., 97-98	0.25 A		
110-120-125 V	**N.C., 95-96**	0.25 A		
	N.O., 97-98	0.25 A		
250 V	**N.C., 95-96**	0.12 A		
	N.O., 97-98	0.04 A		
Minimum switching capacity		17 V / 3 mA		
Short-circuit protective device	**N.C., 95-96**	10 A, Fuse type gG		
	N.O., 97-98	6 A, Fuse type gG		
Rated impulse withstand voltage U_{imp}		6 kV		
Rated insulation voltage U_i		690 V		

Technical diagram – Intermittent periodic duty



t_a: Motor starting time - TA80DU, TA110DU, TA200DU

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Thermal overload relays TA80DU / TA110DU / TA200DU
Technical data

Main circuit – Utilization characteristics according to UL/CSA

Type	TA80DU	TA110DU	TA200DU
Standards	UL 508, CSA 22.2 No. 14		
Maximum operational voltage	600 V AC		
Trip rating	125 % of FLA		
Full load amps (FLA)	See table "Full load amps and short-circuit protective device"		
Short-circuit rating RMS symmetrical	See table "Full load amps and short-circuit protective device"		
Short-circuit protective device	See table "Full load amps and short-circuit protective device"		

Auxiliary circuit according to UL/CSA

Type		TA80DU / TA110DU / TA200DU
Contact rating	N.C., 95-96	B600
	N.O., 97-98	C600
Conventional free-air thermal current		5 A

Full load amps and short-circuit protective device

Type	Full load amps (FLA)	Short-circuit protective device			
		480 / 600 V AC		480 / 600 V AC	
		Short circuit rating RMS symmetrical	Fuse K5 / RK5	Short circuit rating RMS symmetrical	Fuse J
TA80DU-42	42 A	5000 A	150 A	50000 A	200 A
TA80DU-52	52 A	5000 A	175 A	50000 A	200 A
TA80DU-63	63 A	10000 A	200 A	50000 A	200 A
TA80DU-80	80 A	10000 A	250 A	50000 A	200 A
TA110DU-90	90 A	10000 A	250 A	65000 A	200 A
TA110DU-110	110 A	10000 A	250 A	65000 A	200 A
TA200DU-90	90 A	10000 A	250 A	100000 A	250 A
TA200DU-110	110 A	10000 A	250 A	100000 A	250 A
TA200DU-135	135 A	10000 A	300 A	100000 A	250 A
TA200DU-150	150 A	10000 A	300 A	100000 A	250 A
TA200DU-175	175 A	10000 A	300 A	100000 A	300 A
TA200DU-200	200 A	10000 A	400 A	100000 A	400 A

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Thermal overload relays TA80DU / TA110DU / TA200DU
Technical data

General technical data

			TA80DU	TA110DU	TA200DU
Type					
Pollution degree			3		
Phase loss sensitive			Yes		
Ambient air temperature					
Operation		**Open - compensated**	-25 ... +55 °C		
		Open	-25 ... +55 °C		
Storage			-40 ... +70 °C		
Ambient air temperature compensation			Acc. to IEC/EN60947-4-1		
Maximum operating altitude permissible			2000 m		
Resistance to shock acc. to IEC 60068-2-27			12g / 15 ms		
Mounting position			Position 1-6		
Mounting			Mount on the contactor and tighten the screws of the main circuit terminals or with single mounting kit		
Degree of protection		**Housing**	IP20		
		Main circuit terminals	IP10		

Electrical connection

Main circuit

Type			TA80DU	TA110DU	TA200DU
Connecting capacity					
	Rigid	**1 x**	2.5 ... 25 mm²	16 ... 35 mm²	25 ... 120 mm²
		2 x	2.5 ... 16 mm²	-	-
	Flexible with ferrule	**1 x**	2.5 ... 25 mm²	16 ... 35 mm²	25 ... 120 mm²
		2 x	2.5 ... 10 mm²	-	-
	Lugs		-	-	L > 10 mm
	Stranded acc. to UL/CSA	**1 x or 2 x**	AWG 8-1	AWG 6-2/0	AWG 4-0000
	Flexible acc. to UL/CSA	**1 x or 2 x**	AWG 8-1	AWG 6-2/0	AWG 4-0000
Stripping length			14 mm	25 mm	-
Tightening torque			4.5 Nm / 40 lb.in	7.2 ... 9.6 Nm	25 Nm / 220 lb.in
Recommended screw driver			M6 (Pozidriv 2)	M8 (Hexagon 4)	Open Bars

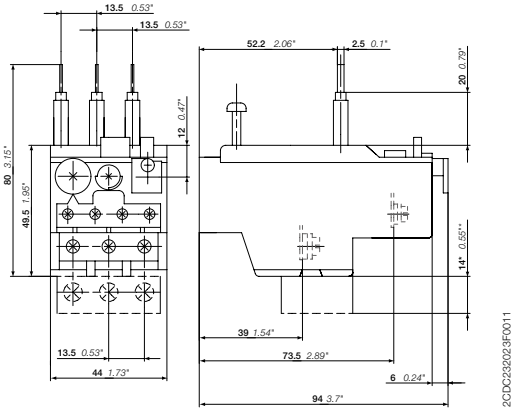
Auxiliary circuit

Type			TA80DU	TA110DU	TA200DU
Connecting capacity					
	Rigid	**1 x or 2 x**	0.75 ... 4 mm²		
	Flexible with ferrule	**1 x or 2 x**	0.75 ... 2.5 mm²		
	Flexible	**1 x or 2 x**	0.75 ... 2.5 mm²		
	Stranded acc. to UL/CSA	**1 x or 2 x**	AWG 18-14		
	Flexible acc. to UL/CSA	**1 x or 2 x**	AWG 18-14		
Stripping length			9 mm		
Tightening torque			1 ... 1.3 Nm / 12 lb.in		
Recommended screw driver			M3.5 (Pozidriv 2)		

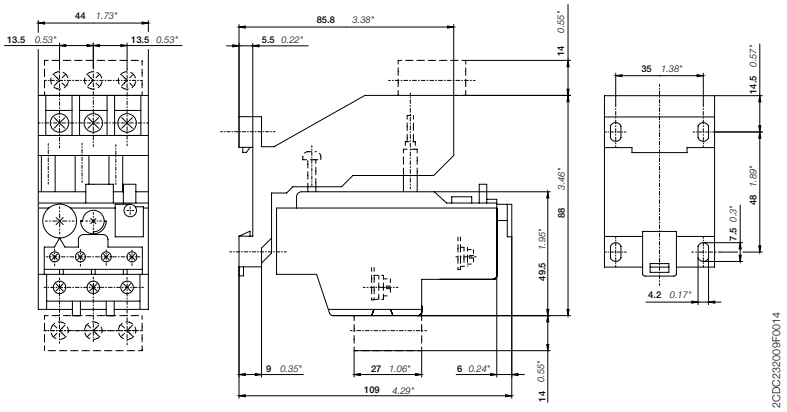
2CDC106103C0201

Thermal overload relays TA25DU-M / TA42DU-M / TA75DU-M
Dimensions

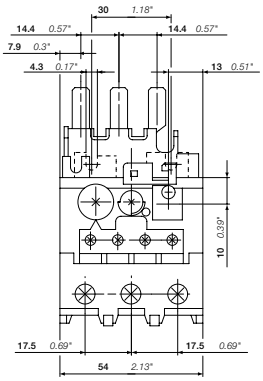
Main dimensions mm, inches

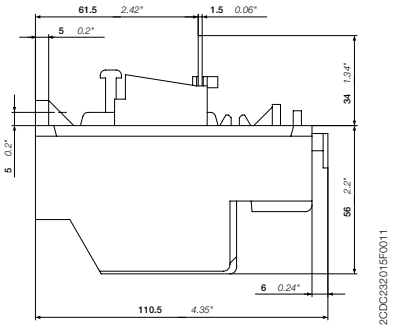


TA25DU-M + DX25

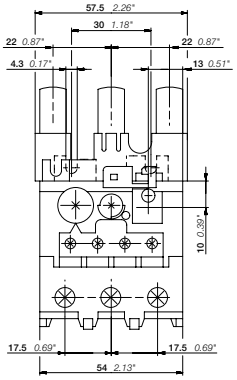


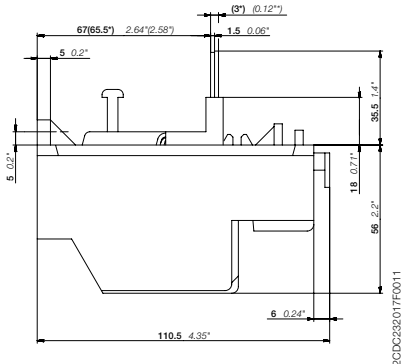
TA25DU-M + DB25 + DX25



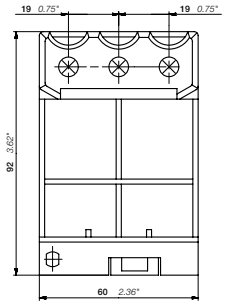


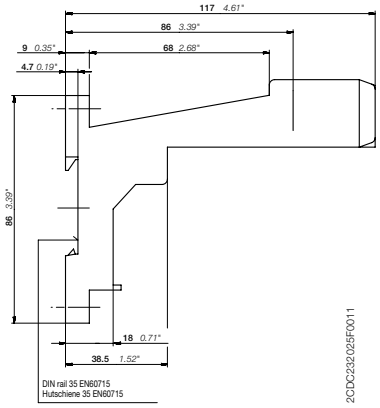
TA42DU-M





TA75DU-M





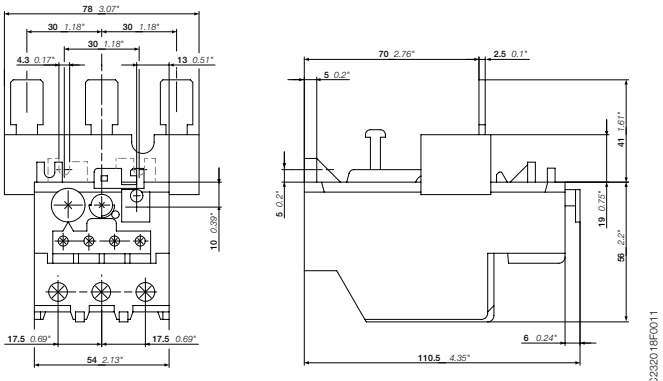
TA75DU-M + DB80
TA42DU-M + DB80

4

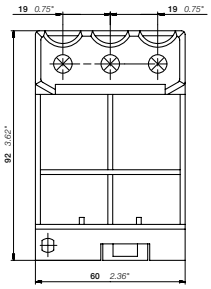
2CDC106100C0201

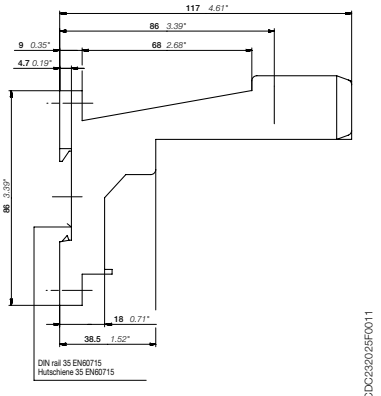
Thermal overload relays TA80DU / TA110DU / TA200DU
Dimensions

Main dimensions mm, inches

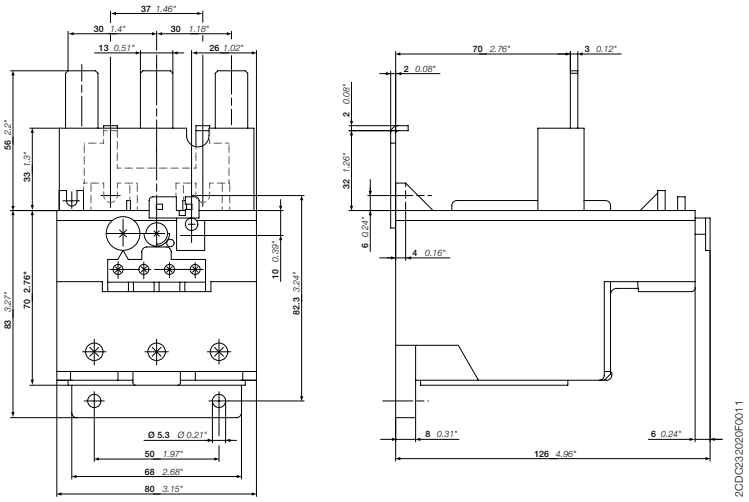


TA80DU

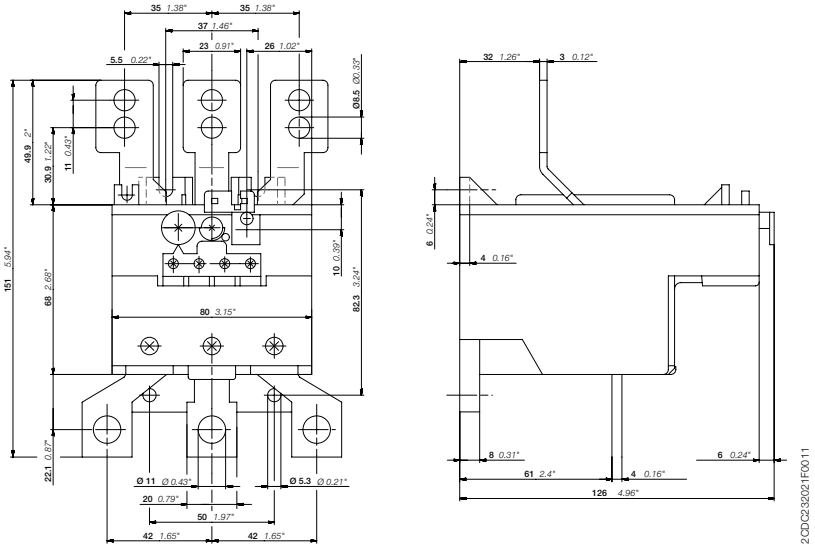




TA80DU + DB80



TA110DU



TA200DU

2CDC106105C0201

Electronic overload relay E140DU
50 to 140 A

E140DU

Description
The E140DU are self-supplied electronic overload relays, which means no extra external supply is needed. It offers reliable protection for motors in the event of overload or phase failure. Easy to use like a thermal overload relay and compatible with standard motor applications, the electronic overload relay is convincing, above all, due to its wide setting range, high accuracy, high operational temperature range and the possibility to select a trip class (10E, 20E, 30E). Further features are the temperature compensation, trip contact (N.C.), signal contact (N.O.), automatic or manual reset selectable, trip-free mechanism, STOP and TEST function and a trip indication. The overload relays are connected directly to the contactors. Single mounting kits are available as accessory.

Ordering details

Setting range A	Short-circuit protective device	Trip class	Type	Order code	Weight (1 pce) kg
50.0 ... 140.0 A	400 A	10E, 20E, 30E	E140DU-140	1SAX321001R1101	0.915

Electronic overload relay E140DU
Technical data

Main circuit – Utilization characteristics according to IEC/EN

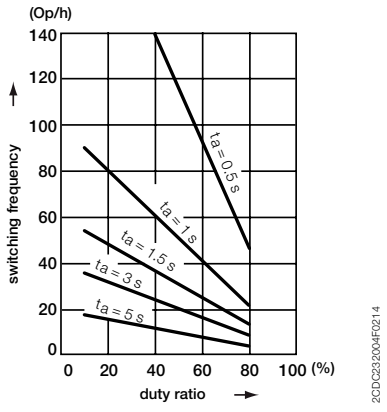
Type	E140DU
Standards	IEC 60947-1 / 60947-4-1 / 60947-5-1 and EN 60947-1 / 60947-4-1 / 60947-5-1
Rated operational voltage U_e	1000 V AC
Rated frequency	50/60 Hz
Trip class	10E, 20E, 30E, selectable
Number of poles	3
Duty time	100 %
Operating frequency without early tripping	Up to 15 operations/h, see "Technical diagram – Intermittent periodic duty"
Rated impulse withstand voltage U_{imp}	6 kV
Rated insulation voltage U_i	1000 V AC

4

Auxiliary circuit according to IEC/EN

Type		E140DU
Rated operational voltage U_e		600 V AC / DC
Conventional free air thermal current I_{th}		6 A
Rated frequency		DC, 50/60 Hz
Number of poles		1 N.C. + 1 N.O.
I_e / Rated operational current AC-15 acc. to IEC/EN 60947-5-1 for utilization category		
110-120 V	**50/60 Hz**	3.00 A
220-230-240 V	**50/60 Hz**	3.00 A
440 V	**50/60 Hz**	1.10 A
480-500 V	**50/60 Hz**	0.72 A
I_e / Rated operational current DC-13 acc. to IEC/EN 60947-5-1 for utilization category		
24 V		1.50 A
60 V		0.55 A
110-120-125 V		0.55 A
250 V		0.27 A
Minimum switching capacity		12 V / 3 mA
Short-circuit protective device		6 A, Fuse type gG
Rated impulse withstand voltage U_{imp}		6 kV
Rated insulation voltage U_i		690 V

Technical diagram – Intermittent periodic duty



t_a: Motor starting time - TA80DU, TA110DU, TA200DU

2CDC107054C0201

Electronic overload relay E140DU
Technical data

Main circuit – Utilization characteristics according to UL/CSA

Type	E140DU
Standards	UL 508, CSA 22.2 No. 14
Maximum operational voltage	600 V AC
Trip rating	125 % of FLA
Full load amps (FLA)	See table "Full load amps and short-circuit protective device"
Short-circuit rating RMS symmetrical	See table "Full load amps and short-circuit protective device"
Short-circuit protective device	See table "Full load amps and short-circuit protective device"

Auxiliary circuit according to UL/CSA

Type		E140DU
Contact rating	N.C., 95-96	B600, Q300
	N.O., 97-98	B600, Q300
Conventional free-air thermal current		5 A

Full load amps and short-circuit protective device

Type	Full load amps (FLA)	Short-circuit protective device			
		480 / 600 V AC		480 / 600 V AC	
		Short circuit rating RMS symmetrical	Fuse K5 / RK5	Short circuit rating RMS symmetrical	Fuse J
E140DU-140	140 A	10000 A	400 A	18000 A	400 A

2CDC107054C0201

Electronic overload relay E140DU
Technical data

General technical data

Type			**E140DU**
Pollution degree			3
Phase loss sensitive			Yes
Ambient air temperature			
	Operation	Open - compensated	-25 ... +70 °C
	Storage		-50 ... +85 °C
Ambient air temperature compensation			Continuous
Maximum operating altitude permissible			2000 m
Resistance to shock acc. to IEC 60068-2-27			15 g / 11 ms
Resistance to vibrations acc. to IEC 60068-2-6			5 g / 3 ... 150 Hz
Mounting position			Position 1-6
Mounting			Mount on the contactor and tighten the screws of the main circuit terminals or with single mounting kit
Degree of protection			IP20

Electrical connection

Main circuit

Type			**E140DU**
Connecting capacity			
	Rigid	**1 x**	6 ... 95 mm²
		2 x	6 ... 35 mm²
	Flexible	**1 x**	6 ... 70 mm²
		2 x	6 ... 35 mm²
	Stranded acc. to UL/CSA	**1 x or 2 x**	AWG 8-0
	Flexible acc. to UL/CSA	**1 x or 2 x**	AWG 8-0
Stripping length			-
Tightening torque			6 - 6.5 Nm / 53 lb.in
Recommended screw driver			M8 (Hexagon 4)

Auxiliary circuit

Type			**E140DU**
Connecting capacity			
	Rigid	**1 x or 2 x**	1 ... 4 mm²
	Flexible with ferrule	**1 x or 2 x**	0.75 ... 2.5 mm²
	Flexible with insulated ferrule	**1 x or 2 x**	0.75 ... 2.5 mm²
	Flexible	**1 x or 2 x**	0.75 ... 2.5 mm²
	Stranded acc. to UL/CSA	**1 x or 2 x**	AWG 16-10
	Flexible acc. to UL/CSA	**1 x or 2 x**	AWG 16-10
Stripping length			9 mm
Tightening torque			0.8 ... 1.2 Nm / 7 lb.in
Recommended screw driver			M3.5 (Pozidriv 2)

2CDC107054C0201

Electronic overload relay E140DU
Accessories

2CDC231006S0010

DB140E

Description
Single mounting kits are available as accessory for E140DU. The single mounting kits offer the possibility to mount the overload relay separately from the contactor.

Ordering details

For thermal overload relays	Description	Type	Order code	Weight (1 pce) kg
E140DU	Single mounting kit	DB140E	1SAX301110R1002	0.145

EF205, EF370 electronic overload relays
63 to 380 A

2CDC231010V0012

EF205-210

2CDC231013V0012

EF370-380

1SFC151224F0002

KPR-101L

Description

The EF205 and EF370 are self-supplied electronic overload relays, which means no extra external supply is needed. It offers reliable protection for motors in the event of overload or phase failure. Easy to use like a thermal overload relay and compatible with standard motor applications, the electronic overload relay is convincing, above all, due to its wide setting range, high accuracy, high operational temperature range and the possibility to select a trip class (10E, 20E, 30E). Further features are the temperature compensation, trip contact (N.C.), signal contact (N.O.), automatic or manual reset selectable, trip-free mechanism, STOP and TEST function and a trip indication. The overload relays are connected directly to the contactors. The EF205 and EF370 have ATEX certification [1].

Ordering details

Setting range A	Short-circuit protective device	Trip class	Type	Order code		Weight (1 pc) kg
63 ... 210	1250 A, fuse type gG	10E, 20E, 30E	EF205-210	1SAX531001R1101		1.210
115 ... 380	1600 A, fuse type gG	10E, 20E, 30E	EF370-380	1SAX611001R1101		1.430

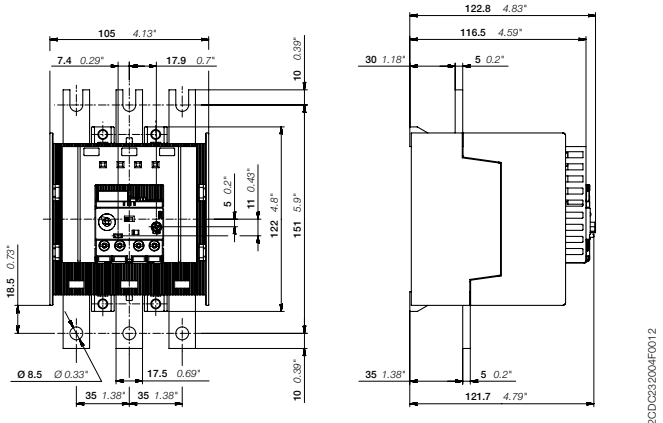
[1] ATEX is valid for products, produced from week 42, 2014.

Ordering details accessories

Suitable for	Description	Type	Order code		Weight (1 pc) kg
EF205, EF370	Reset push button [2]	KPR-101L	1SFA616162R1014		0.027
EF205	Terminal shroud	LT200E	1SAX501904R0001		0.085
EF370	Terminal shroud	LT320E	1SAX601904R0001		0.105

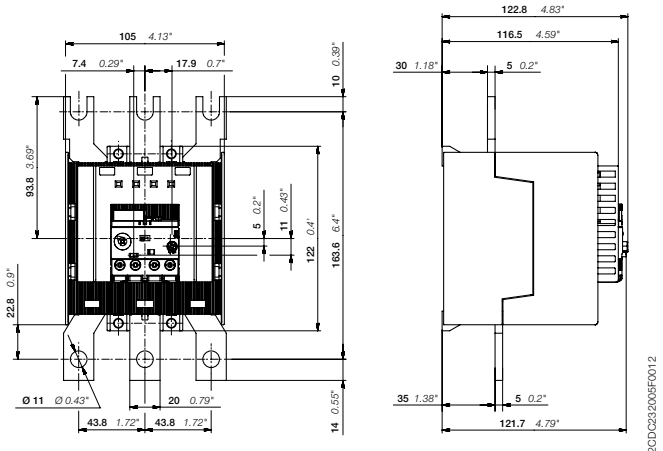
[2] Note: for more information see catalog 1SFC151005C0201 - rev. B

Main dimensions mm, *inches*



2CDC232004F0012

EF205-210



2CDC232005F0012

EF370-380

2CDC107040C0201

EF205, EF370 electronic overload relays – 63 to 380 A
Technical data

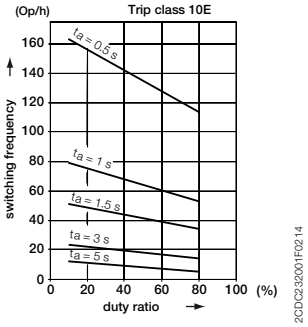
Main circuit – Utilization characteristics according to IEC/EN

Type	EF205, EF370
Standards	IEC/EN 60947-1, IEC/EN 60947-4-1, IEC/EN 60947-5-1
Rated operational voltage U_e	1000 V AC
Rated frequency	50/60 Hz – not suitable for DC applications
Trip class	10E, 20E, 30E, selectable
Number of poles	3
Duty time	100 %
Operating frequency without early tripping	Up to 15 operations/h, see "Technical diagram – Intermittent periodic duty"
Rated impulse withstand voltage U_{imp}	8 kV
Rated insulation voltage U_i	1000 V

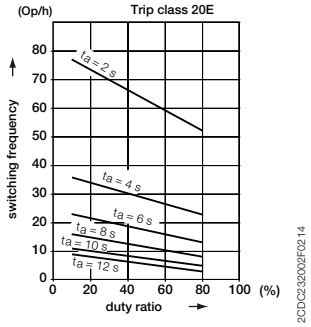
Auxiliary circuit according to IEC/EN

Type		EF205, EF370
Rated operational voltage U_e		600 V AC / DC
Conventional free air thermal current I_{th}		6 A
Rated frequency		DC, 50/60 Hz
Number of poles		1 N.C. + 1 N.O.
I_e / Rated operational current AC-15 acc. to IEC/EN 60947-5-1 for utilization category		
110-120 V	**50/60 Hz**	3.00 A
220-230-240 V	**50/60 Hz**	3.00 A
400 V	**50/60 Hz**	1.10 A
480-500 V	**50/60 Hz**	0.75 A
I_e / Rated operational current DC-13 acc. to IEC/EN 60947-5-1 for utilization category		
24 V		1.50 A
60 V		0.55 A
110-120-125 V		0.55 A
250 V		0.27 A
Minimum switching capacity		12 V / 3 mA
Short-circuit protective device		6 A, fuse type gG
Rated impulse withstand voltage U_{imp}		6 kV
Rated insulation voltage U_i		690 V

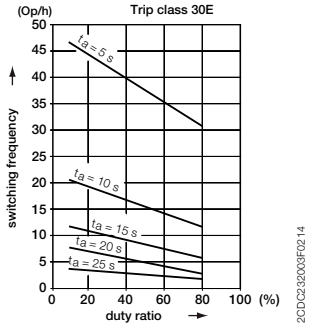
Technical diagram – Intermittent periodic duty



Trip class 10E



Trip class 20E



Trip class 30E

EF205, EF370 electronic overload relays – 63 to 380 A
Technical data

Main circuit – Utilization characteristics according to UL/CSA

Type	EF205, EF370
Standards	UL 508, CSA 22.2 No. 14, UL 60947-4-1A
Maximum operational voltage	600 V AC
Trip rating	125 % of FLA
Full load amps (FLA)	See table "Full load amps and short-circuit protective device"
Short-circuit rating RMS symmetrical	See table "Full load amps and short-circuit protective device"
Short-circuit protective device	See table "Full load amps and short-circuit protective device"

Auxiliary circuit according to UL/CSA

Type		EF205, EF370
Contact rating	N.C., 95-96	B600, Q600
	N.O., 97-98	B600, Q600
Conventional thermal current		6 A

Full load amps and short-circuit protective device

Type	Full load amps (FLA)	Short-circuit protective device					
		480 V AC		600 V AC			
		SCCR	Fuse type	SCCR	Fuse type	SCCR	Fuse type
EF205-210	210 A	10 kA	400 A, R5/RK5	10kA	400 A, R5/RK5	100 kA	400 A, J
EF370-380	380 A	18 kA	800 A, L/T	18kA	800 A, L/T	-	-

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EF205, EF370 electronic overload relays – 63 to 380 A
Technical data

General data

			EF205	EF370
Type				
Pollution degree			3	
Phase loss sensitive			Yes	
Ambient air temperature				
	Operation	Open - compensated	-25 ... +70 °C	
	Storage		-50 ... +85 °C	
Ambient air temperature compensation			Acc. to IEC/EN 60947-4-1	
Maximum operating altitude permissible			2000 m	
Resistance to shock acc. to IEC 60068-2-27			25g / 11 ms	
Resistance to vibrations acc. to IEC 60068-2-6			5g / 3 ... 150 Hz	
Mounting position			Position 1-6	
Mounting			Mount on the contactor and tighten the screws of the main circuit terminals	
Degree of protection	Housing		IP20	
	Main circuit terminals		IP20	

Electrical connection

Main circuit

			EF205	EF370
Type				
Connecting capacity				
	Rigid	**1 x**	16 ... 185 mm²	50 ... 240 mm²
		2 x	16 ... 120 mm²	50 ... 150 mm²
	Flexible	**1 x**	16 ... 185 mm²	50 ... 240 mm²
		2 x	16 ... 120 mm²	50 ... 150 mm²
	Lugs	**L ≤**	24 mm	32 mm
	Bars	**Ø >**	8 mm	10 mm
	Stranded acc. to UL/CSA	**1 x**	AWG 6-0000	AWG 1-500 kcmil
		2 x	AWG 6-0000	AWG 1-500 kcmil
	Flexible acc. to UL/CSA	**1 x**	AWG 6-0000	AWG 1-500 kcmil
		2 x	AWG 6-0000	AWG 1-500 kcmil
Stripping length			-	-
Tightening torque			18 Nm / 160 lb.in	28 Nm / 247 lb.in
Recommended screw driver			M8	M10

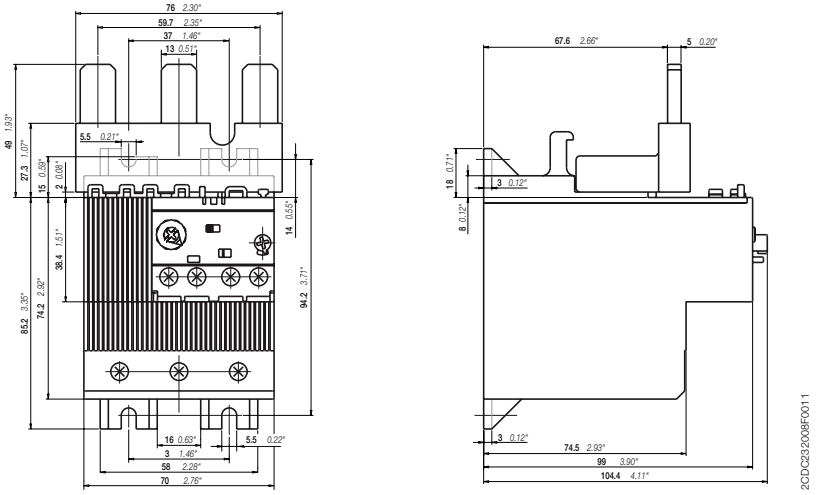
Auxiliary circuit

			EF205, EF370
Type			
Connecting capacity			
	Rigid	**1 or 2 x**	1 ... 4 mm²
	Flexible with ferrule	**1 or 2 x**	0.75 ... 2.5 mm²
	Flexible with insulated ferrule	**1 or 2 x**	0.75 ... 2.5 mm²
	Flexible	**1 or 2 x**	0.75 ... 2.5 mm²
	Stranded acc. to UL/CSA	**1 or 2 x**	AWG 18-10
	Flexible acc. to UL/CSA	**1 or 2 x**	AWG 18-10
Stripping length			9 mm
Tightening torque			0.8 ... 1.2 Nm / 7 ... 11 lb.in
Recommended screw driver			M3.5 (Pozidriv 2)

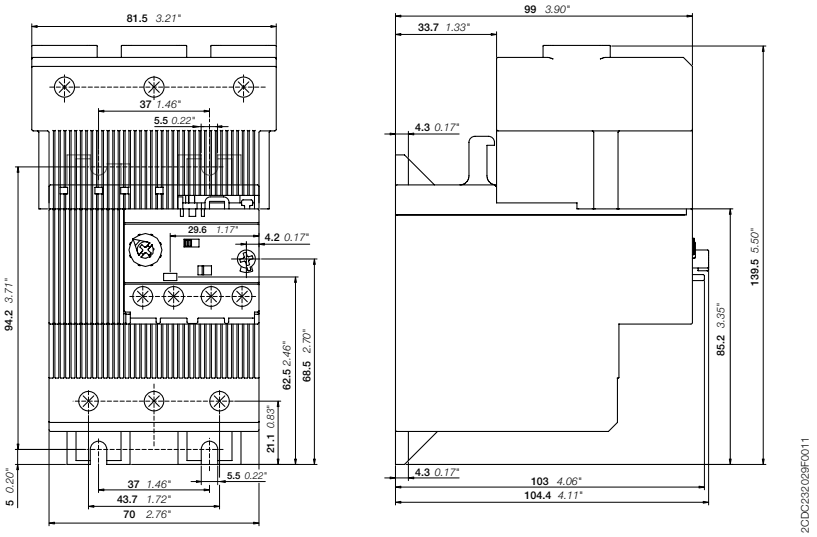
2CDC107040C0201

Electronic overload relay E140DU
Dimensions

Main dimensions mm, inches



E140DU

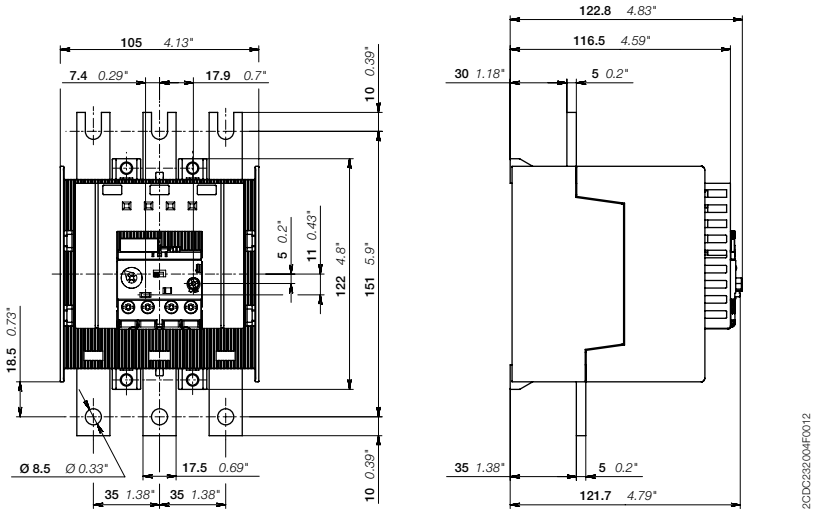


E140DU + DB140E

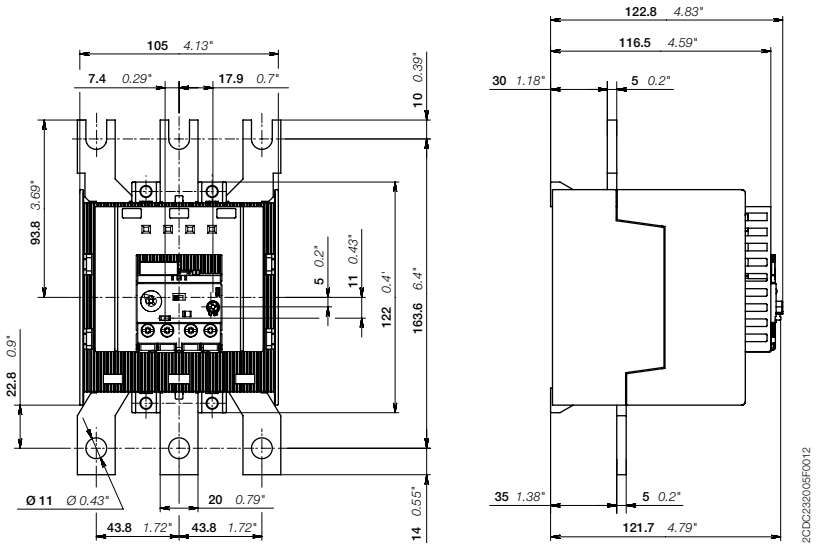
2CDC107056C0201

Electronic overload relays EF205, EF370
Dimensions

Main dimensions mm, inches



EF205



EF370