



Short form catalog

Motor protection and control

Manual motor starters, contactors and overload relays

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

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

Motor protection and control

Manual motor starters, contactors and overload relays

Overview

Manual motor starters

B mini contactors and K mini contactor relays

AS contactors and NS contactor relays

AF, A contactors and NF contactor relays

Overload relays

General technical data

Index

Marketing material

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

AF09 ... AF38 3-pole contactors
4 to 18,5 kW
AC / DC operated

Description
AF09 ... AF38 contactors are mainly used for controlling 3-phase motors and power circuits up to 690 V AC and 220 V DC. These contactors are of the block type design with 3 main poles.
= control circuit: AC or DC operated with electronic coil interface accepting a wide control voltage range (e.g. 100...250 V AC and DC), only 4 control voltage ranges covering 24...500 V 50/60 Hz and 20...500 V DC
= can manage large control voltage variations
= reduced panel energy consumption
= very distinct closing and opening
= add-on auxiliary contact blocks for front or side mounting and a wide range of accessories.

Ordering details

IEC	Rated operational power	3-phase motor rating	General use	Rated control circuit voltage	Auxiliary contacts
W	A	A	W	Uc min...Uc max	Other
AC-3	AC-3	AC-3	AC-3	AC-3	AC-3
2	25	25	25	24...60	10
				48...100	48...100
				100...250	100...250
				250...500	250...500
0.5	25	25	25	24...60	10

1SBL137001R4110
1SBL137001R4101
1SBL137001R1210
1SBL137001R1210
1SBL137001R1210
1SBL137001R1210

Connect to

Block Contactors

Overview Data Contacts

AF09-30-10-12

General Information
Extended Product Type: AF09-30-10-12
Product ID: 1SBL137001R1210
EAN: 3471523110021
Catalog Description: AF09-30-10-12 48-130V/50/60Hz-DC Contactor
Long Description: AF09 contactors are used for controlling power circuits up to 690 V AC and 220 V DC. They are mainly used for controlling 3-phase motors, non-inductive or slightly inductive loads. AF... contactors include an electronic coil interface accepting a wide control voltage Uc min...Uc max. Only four coils cover control voltages between 24...500 V 50/60 Hz or 20...500 V DC. AF contactors can manage large control voltage variations. One coil can be used for different control voltages used worldwide without any coil change. AF contactors have built-in surge protection and do not require additional surge suppressors. The AF... series 1-stack 3-pole contactors are of the block type design. - Main poles and auxiliary contact blocks: 3 main poles, 1 built-in auxiliary contact, front and side-mounted add-on auxiliary contact blocks (mechanically-linked auxiliary contacts compliant with Annex L of IEC 60947-5-1, N.C. minor contacts compliant with Annex F of IEC 60947-5-1).

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For additional information such as technical datas, dimension drawings, other products and accessories, refer to our main catalog and visit our website: www.abb.com/connecttocontrol

ABB sets a new standard in motor control and power switching

1

Featuring AF technology as standard, the latest range of ABB's contactors establishes a new industry benchmark. The electronically controlled coil offers multiple benefits over conventional alternatives, and together with ABB's wide product offering – an optimal configuration, every time.



Access Global Support

The contactor and motor protection range from ABB is compatible with all major national and international standards and is available worldwide via a global distribution network. One contactor coil now handles 100 V – 250 V, AC/DC for use in Europe or Asia as well as North America.



Optimize logistics

With its contactor and motor protection range, ABB has managed to reduce the number of contactor coils to just four. The total number of product variants has been reduced by up to 90%. This simplifies the customers' logistics and cuts administration costs.



Simplify design

By reducing contactor coil energy consumption by up to 80%, panels can be built smaller and transformers more compact. All the features of the AF technology, along with access to drawings and coordination tables online, simplifies your design and assembly process.



Secure uptime

Time to prevent stoppages caused by voltage fluctuations. The AF contactor ensures distinct operation in unstable networks and signifies a major advance in motor control and power switching. Voltage sags, dips and surges pose no threat. The AF contactor secures your uptime.



MacGregor. Keeping turnarounds brief.

Until the AF range was installed, voltage sags were affecting MacGregor's deck cranes.

Conventional contactors welded shut, leading to several stoppages a week. No longer. Known for superior quality and an ability to operate in the most hostile environments, MacGregor deck cranes enjoy a global reputation for reliability. A small but vital component, the AF contactor helps maintain this reputation.

To keep things moving, you need Control. Connect to Control.

Explore all our case studies at www.abb.com/connecttocontrol

SSAB
Making certainty
standard

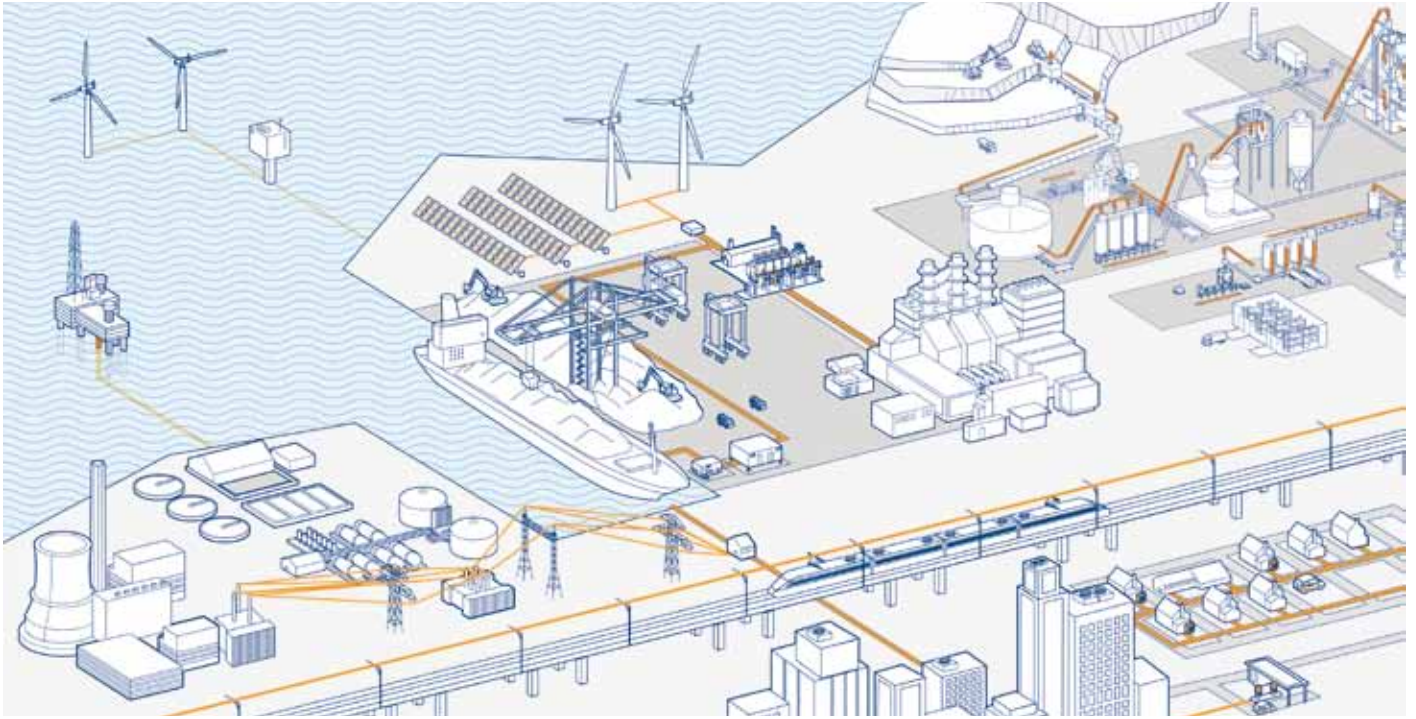
Gamesa
Taming the wind

LKAB
Providing fresh air

Contactors and motor protection

For a wide variety of segments

1



HVAC, General Machinery, Rail, Critical Power, Wind, Solar, Marine and Water & Wastewater

Contactors for any use

The AF contactor range covers small motor starting solutions from 4 kW / 5 hp up to big power switching solutions with our unique AF2650, the biggest single case block contactor in the world.

The contactor and motor protection range is part of one of the widest product offerings on the market meaning that ABB not only can provide the contactor but the full solution.

In addition to the standard product range ABB also offer products for special needs such as Bar contactors, GAF and contactors for capacitor switching.

Cooperating with customers

ABB cooperates closely with its customers to ensure that products meet requirements from their specific segments and applications. With over 100 years' experience in motor control and power switching ABB knows how to create efficient solutions for its customers.

AF technology

Benefits

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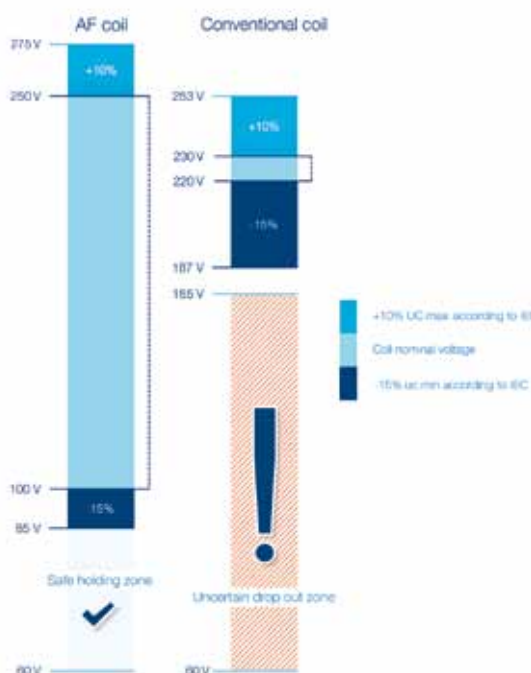


Reliable in all networks

The electronic system within the AF contactor rectifies the AC or DC control circuit voltage to a DC control voltage that is applied on the coil. The contactor is safely operated in an always optimized condition making it virtually noise free.

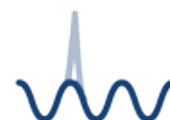
Four coils for the entire voltage range

The AF contactor features both AC and DC support. With the complete AF contactor range, functionality is improved. Still, the total number of product variants compared to a conventional range is reduced by 90 %. Only four coils are required to cover 24 V AC, 20 V DC - 500 V AC/DC.



Wide control voltage range

With conventional contactor technology, different contactors were needed for different network voltages. Thanks to the wide operating range of the AF contactor it can operate just as well in Europe as in Asia or North America. The core coil of the AF contactor range covers 100-250 V AC/DC 50/60 Hz.



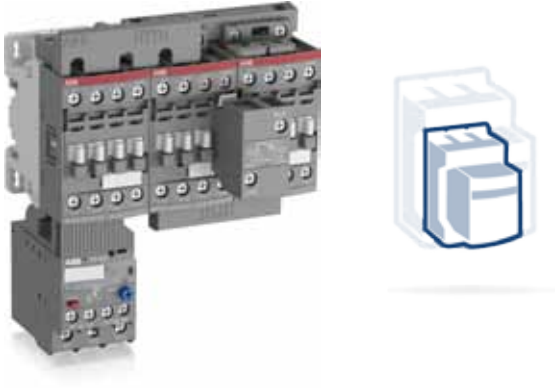
Built-in surge suppression

With conventional contactor technology it is recommended to use an external surge suppressor, an accessory that could cost as much as half the contactor itself. With the AF technology the surges are handled by the contactor itself and the surge never reaches the control circuit. Neither the surge suppressor nor the actual surge has to be considered anymore. One less product and one less complication to worry about.

Contactors and motor protection

Advanced but simple

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The AF contactor is compact

The AF contactor is compact in size and has had its width reduced by up to 30 % thanks to an 80 % reduction of the coil's energy consumption.



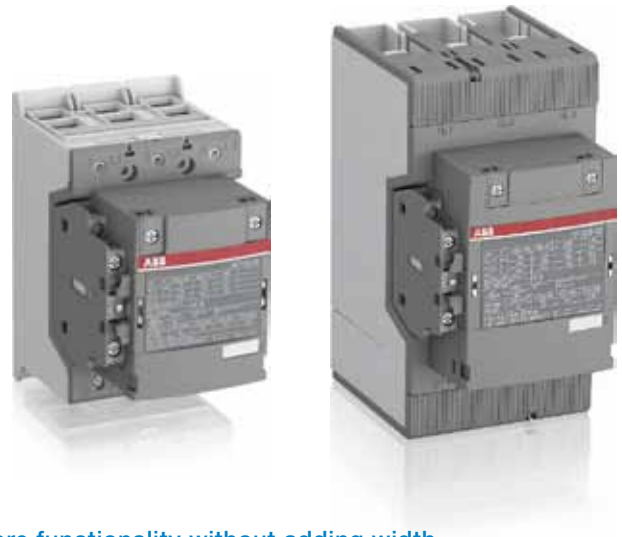
The AF contactor is flexible

AF09 ... AF370 is perfect for motor starting applications and for solutions where space is limited. Interlocked reversing pairs require no spacing between contactors meaning you can fit more functionality into cabinets or other small enclosures.



Coil terminal access in the front

The AF contactor has its coil terminals accessible from the front. The cables or bars do not have to be disconnected in order to perform voltage measurement or servicing work.



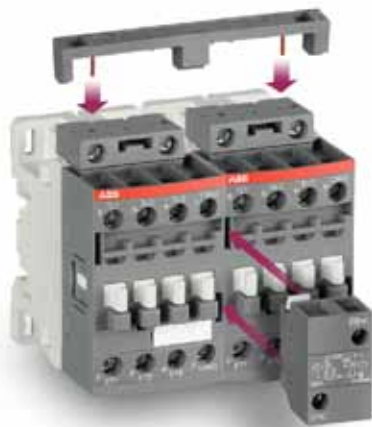
More functionality without adding width

The AF116 ... AF2650 can take up to 2 side mounted auxiliary contact blocks without adding to its width and are delivered with 1 N.O. + 1 N.C. as standard.

Contactors and motor protection

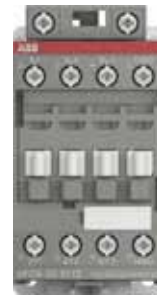
Mechanical features

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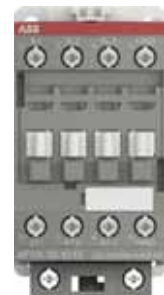


Easy-to-use accessories

Contactors up to 96 A offer free choice of coil terminal access and can take side and front mounted auxiliary contact blocks. All the accessories: Coil connection terminals, mechanical and electrical interlocks and electronic timers are easily connected through the snap-to-connect function.



Top-mounted



Bottom-mounted



Additional LDC4
coil terminal block



Front-mounted



Safe control circuit with:

- Mirror contact according to IEC 60947-4-1
- Mechanically linked contacts according to IEC 60947-5-1
- Sealable and transparent protective covers on AF09 ... AF96 and overload relays TF/EF



3-pole contactors

Mini contactors

Contactors for motor control and

1



IEC (1)	AC-3 Rated operational power	$\theta \leq 60^\circ\text{C}$ (2), 400 V	kW	4	5.5
UL/CSA	3-phase motor rating	480 V	hp	3	5
AC / DC Control supply			Type	—	—
AC Control supply			Type	B6	B7
DC Control supply			Type	BC6	BC7
IEC	AC-3 Rated operational current	$\theta \leq 60^\circ\text{C}$ (2), 400 V	A	8.5	11.5
	AC-1 Rated operational current	$\theta \leq 40^\circ\text{C}$, 690 V	A	20 (400 V)	20 (400 V)
UL/CSA	General use rating	600 V	A	12 (300 V)	16
NEMA	NEMA Size			—	—

(1) 1000 V IEC ratings available for AF146 ... AF2650 contactors.
(2) $\theta \leq 55^\circ\text{C}$ for mini contactors and AF400 ... AF2650 contactors.

Main accessories

Auxiliary contact blocks	Front mounting	CAF6
	Side mounting	CA6
Timers	Electronic	
Interlocking units (4)	Mechanical	
Connection sets	Mechanical / Electrical	
Surge suppressors	For reversing contactors	BSM6-30
	Varistor (AC/DC)	RV-BC6
	RC type (AC)	RD7
	Transil diode (DC)	

(4) See available reversing contactors VB6, VB7 and VAS09 ... VAS16.

Overload relays

Thermal relays		Class 10 (Class 10A for TF140, TA200DU)	T16 (0.10...16 A)
Electronic relays		Class 10E, 20E, 30E	E16DU (0.10...18.9 A)

Manual motor starters

	Thermal / magnetic protection Class 10	MS116 (0.10...32 A) Ics up to 50 kA for class 10A
		MS132 (0.10...32 A) Ics up to 100 kA
	Magnetic only types	MO132 (0.16...32A)
Accessories	For contactor mounting	BEA7/132

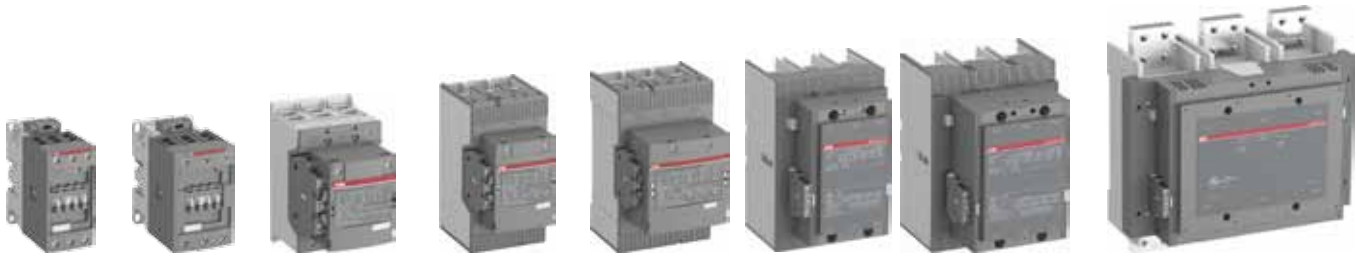
4	5.5	7.5	4	5.5	7.5	11	15	18.5
5	7.5	10	5	7.5	10	15	20	20
—	—	—	AF09	AF12	AF16	AF26	AF30	AF38
AS09	AS12	AS16	AF09	AF12	AF16	AF26	AF30	AF38
ASL09	ASL12	ASL16	AF09	AF12	AF16	AF26	AF30	AF38
9	12	15.5	9	12	18	26	32	38
22	24	24	25	28	30	45	50	50
20	20	20	25	28	30	45	50	50
00	00	0	00	0	—	1	—	—

CA3-10 (1 x N.O.)	CA4-10 (1 x N.O.)	
CA3-01 (1 x N.C.)	CA4-01 (1 x N.C.)	
	CAL4-11 (1 x N.O. + 1 x N.C.)	
TEF3-ON	TEF4-ON	
TEF3-OFF	TEF4-OFF	
VM3	VM4	
	VEM4	
BER16C-3	BER16-4	BER38-4
RV5 (24...440 V)	Built-in surge protection	
RC5-1 (24...440 V)		
RT5 (12...264 V)		

T16 (0.10...16 A)	TF42 (0.10...38 A)	
	EF19 (0.10...18.9 A)	EF19 (0.10...18.9 A) EF45 (9...45 A)

MS116 (0.10...32 A) Ics up to 50 kA for class 10 A		MS450 (28...50 A) Ics up to 50 kA
MS132 (0.10...32 A) Ics up to 100 kA		MS497 (22...100 A) Ics up to 100 kA
MO132 (0.16...32 A) Ics up to 100 kA		
BEA16-3	BEA16-4	BEA38-4

power switching



	18.5	22	30	37	45	55	75	75	90	110	132	160	200	200	250	315	400	—	475	560	—	—
	30	40	50	60	60	75	100	100	125	150	200	250	300	350	400	500	600	—	800	900	—	—
	AF40 AF52 AF65			AF80 AF96		AF116 AF140 AF146			AF190 AF205		AF265 AF305 AF370			AF400 AF460		AF580 AF750 AF1250			AF1350 AF1650 AF2050 AF2650			
	AF40 AF52 AF65			AF80 AF96		AF116 AF140 AF146			AF190 AF205		AF265 AF305 AF370			AF400 AF460		AF580 AF750 AF1250			AF1350 AF1650 AF2050 AF2650			
	AF40 AF52 AF65			AF80 AF96		AF116 AF140 AF146			AF190 AF205		AF265 AF305 AF370			AF400 AF460		AF580 AF750 AF1250			AF1350 AF1650 AF2050 AF2650			
	40	53	65	80	96	116	140	146	190	205	265	305	370	400	460	580	750	—	860	1050	—	—
	70	100	105	125	130	160	200	225	275	350	400	500	600	600	700	800	1050	1260	1350	1650	2050	2650
	60	80	90	105	115	160	200	200	250	300	350	400	520	550	650	750	900	1210	1350	1650	2100	2700
	2	—	—	3	—	—	4	—	—	—	5	—	—	—	6	—	7	—	—	8	—	—

		CAL19-11 (1 x N.O. + 1 x N.C.)					CAL18-11 (1 x N.O. + 1 x N.C.)						
VM96-4		VM19 (for same size contactors)					VM750H VM750V					VM1650H	
BER65-4		BER96-4	BER140-4		BER205-4	BER370-4		BEM460-30		BEM750-30			

	TF65 (22...67 A)	TF96 (40...96 A)	TF140DU (66...142 A) $\theta \leq 55\text{ }^{\circ}\text{C}$		TA200DU (66...200 A) $\theta \leq 55\text{ }^{\circ}\text{C}$								
	EF65 (25...70 A)	EF96 (36...100 A)	EF146 (54...150 A)		EF205 (63...210 A)	EF370 (115...380 A)	E500DU (150...500 A)	E800DU (250...800 A)		E1250DU (375...1250 A)			

Short-circuit protection devices

Tmax Circuit breaker and accessories

MS495 (45...100 A)
lcs up to 50 kA

MO496 (32...100 A)
lcs up to 100 kA

MO450 (40...50 A)
lcs up to 50 kA

MO495 (63...100 A)
lcs up to 50 kA



4-pole contactors

Mini contactors

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IEC	AC-1 Rated operational current	$\theta \leq 40\text{ }^{\circ}\text{C}$, 690 V	A	16	20
UL/CSA	General use rating	600 V	A	12 (300 V)	16
AC Control supply			Type	B6	B7
DC Control supply			Type	BC6	BC7
AC / DC Control supply			Type	—	—

Contactor relays

Mini contactor relays



IEC	AC-15 Rated operational current	400 V	A	3		
UL/CSA	Pilot duty			A600		
						
AC Control supply			Type	K6-22Z	K6-31Z	K6-40E
DC Control supply			Type	KC6-22Z	KC6-31Z	KC6-40E
AC / DC Control supply			Type	—	—	—

R contactors

DC Circuit switching



DC-1 Rated current up to 5000 A
DC-3/DC-5 Rated current up to 2000 A
1500 V with poles in series
IOR.. 63-...CC to IOR.. 5100-...CC

Specific contactors

DC Circuit switching



100 A, 440 V, DC-1
GA75, GAE75 types



275 to 2050 A, 1000 V, DC-1
GAF185 to GAF2050 types

Contactors

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25	30	45	55	70	100	125	200	250	300	350	550	800	1000
25	30	45	55	65	80	105	170	200	250	300	420	540	—
AF09	AF16	AF26	AF38	A45	A50	A75	EK110	EK150	EK175	EK210	EK370	EK550	EK1000
AF09	AF16	AF26	AF38	AE45	AE50	AE75	EK110	EK150	EK175	EK210	EK370	EK550	EK1000
AF09	AF16	AF26	AF38	AF45	AF50	AF75	—	—	—	—	—	—	—

Contactor relays

					
3			3		
A600, Q300			A600, Q600		
					
NS22E	NS31E	NS40E	NF22E	NF31E	NF40E
NSL22E	NSL31E	NSL40E	NF22E	NF31E	NF40E
—	—	—	NF22E	NF31E	NF40E

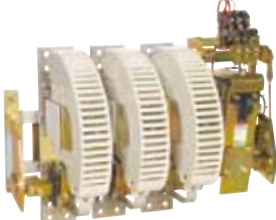
AC Circuit switching



AC-1 Rated current up to 5000 A
 AC-3 Rated power up to 1500 kW
 (1520 A - 440 V)

 IOR.. 63-...MT to IOR.. 5100-...MT

Special versions



AC/DC Coupling: LOR.. contactors
 Slip ring motor control: FOR .. contactors
 Field discharge: AM(F)-CC-JORE contactors
 AC/DC Switching (N.C./N.O. main poles):
 NOR & JOR contactors
 Latching contactors for energy saving
 and safety requirements: AMA or AME contactors

Capacitor switching



12.5 to 80 kvar
 UA16..RA to UA110..RA types
 UA16 to UA110 types



Manual motor starters

Overview	2/2
0.10 to 32 A – with thermal and electromagnetic protection	
Ics up to 50 kA	
MS116 manual motor starters	2/4
Ics up to 100 kA	
MS132 manual motor starters	2/5
0.16 to 32 A – with electromagnetic protection	
Ics up to 100 kA	
MO132 manual motor starters	2/6
Main accessories for MS116, MS132, MO132	2/7
22 to 100 A – with thermal and electromagnetic protection	
Ics up to 50 kA	
MS450, MS495, MS497 manual motor starters	2/13
32 to 100 A – with electromagnetic protection	
Ics up to 50 kA	
MO450, MO495, MO496 manual motor starters	2/14
Main accessories for MS450, MS495, MS497, MO450, MO495, MO496	2/15
General accessories	2/18

For additional information such as technical datas, dimension drawings, other products and accessories, refer to our main catalog and visit our website: www.abb.com/connecttocontrol

Manual motor starters

2



2CDC241010F0011



1SBC101232F0010

Thermal and electromagnetic protection	Type	MS116	MS132	
Electromagnetic protection	Type	-		MO132
Phase loss sensitivity		Yes	Yes	No
Switch position		ON/OFF	ON/OFF/TRIP	
Magnetic trip indication		-	Yes	
Lockable handle without accessories		-	Yes	
Disconnecting feature		Yes	Yes	
Width		45 mm	45 mm	
Rated operational current I _e		0.16...32 A	0.16...32 A	0.16...32 A
Setting range for thermal release		0.10...32 A	0.10...32 A	-
Rated operational voltage U _e		690 V AC	690 V AC / 250 V DC	
Rated frequency		50/60 Hz	DC, 50/60 Hz	
Trip class		10A	10	
Short-circuit breaking capacity I _{cs} 400 V AC		Up to 50 kA	Up to 100 kA	
Ambient air temperature open compensated		-25...+55 °C	-25...+60 °C	

Main accessories

Auxiliary contacts

Front mounting



HKF1

Side mounting



HK1

Signalling contacts

Tripped alarm



SK1

Short-circuit alarm



-

CK1

Auxiliary trip units

Shunt trip



AA1

Undervoltage release



UA1

Busbar systems

3-phase busbar



PS1

Feeder terminals



S1



2CDC241004F0009



1SBC101184F0014



2CDC241020F0011

MS450		MS495		MS497	
MO450		MO495		MO496	
Yes	No	Yes	No	Yes	No
ON/OFF/TRIP		ON/OFF/TRIP		ON/OFF/TRIP	
-		-		-	
Yes		Yes		Yes	
Yes		Yes		Yes	
55 mm		70 mm		70 mm	
40...50 A	40...50 A	63...100 A	63...100 A	32...100 A	32...100 A
28...50 A	-	45...100 A	-	22...100 A	-
690 V AC / 440 V DC		690 V AC / 440 V DC		690 V AC / 440 V DC	
DC, 50/60 Hz		DC, 50/60 Hz		DC, 50/60 Hz	
10		10		10	
Up to 50 kA		Up to 50 kA		Up to 100 kA	
-20...+60 °C		-20...+60 °C		-20...+60 °C	
HK4					
HKS4					
SK4					
SK4					
AA4					
UA4					
PS4		-			
S4		-			

2CDC131056C0201

MS116 manual motor starters

0.10 to 32 A – with thermal and electromagnetic protection

2



MS116-16



MS116-25



MS116-0.16-HKF1-11



MS116-32-HKF1-11

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. 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.

MS116 is a compact and economic range for motor protection up to 15.5 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, signalling contacts, undervoltage releases, shunt trips, three-phase bus bars, power in-feed blocks and locking devices for protection against unauthorized changes are available as accessory.

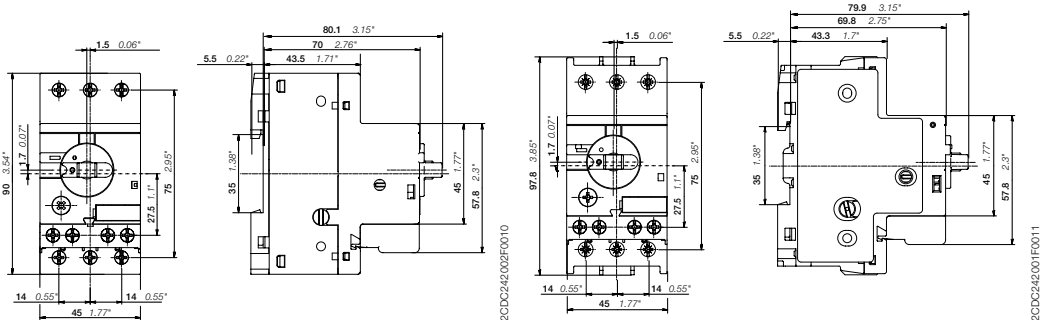
Ordering details

Rated operational power 400 V AC-3	Setting range	Short-circuit breaking capacity Ics at 400 V AC	Rated instantaneous short-circuit current setting II	Type	Order code	Weight (1 pce)
kW	A	kA	A			kg
0.03	0.10...0.16	50	1.56	MS116-0.16	1SAM250000R1001	0.225
0.06	0.16...0.25	50	2.44	MS116-0.25	1SAM250000R1002	0.225
0.09	0.25...0.40	50	3.90	MS116-0.4	1SAM250000R1003	0.225
0.12	0.40...0.63	50	6.14	MS116-0.63	1SAM250000R1004	0.225
0.25	0.63...1.00	50	11.50	MS116-1.0	1SAM250000R1005	0.225
0.55	1.00...1.60	50	18.40	MS116-1.6	1SAM250000R1006	0.265
0.75	1.60...2.50	50	28.75	MS116-2.5	1SAM250000R1007	0.265
1.5	2.50...4.00	50	50.00	MS116-4.0	1SAM250000R1008	0.265
2.2	4.00...6.30	50	78.75	MS116-6.3	1SAM250000R1009	0.265
4.0	6.30...10.0	50	150	MS116-10	1SAM250000R1010	0.265
5.5	8.00...12.0	25	180	MS116-12	1SAM250000R1012	0.265
7.5	10.0...16.0	16	240	MS116-16	1SAM250000R1011	0.265
9.0	16.0...20.0	10	300	MS116-20	1SAM250000R1013	0.310
12.5	20.0...25.0	10	375	MS116-25	1SAM250000R1014	0.310
15.5	25.0...32.0	10	480	MS116-32	1SAM250000R1015	0.310

Auxiliary contacts mounted on the front (1 N.O. + 1 N.C.)

0.03	0.10...0.16	50	1.56	MS116-0.16-HKF1-11	1SAM250005R1001	0.240
0.06	0.16...0.25	50	2.44	MS116-0.25-HKF1-11	1SAM250005R1002	0.240
0.09	0.25...0.40	50	3.90	MS116-0.4-HKF1-11	1SAM250005R1003	0.240
0.12	0.40...0.63	50	6.14	MS116-0.63-HKF1-11	1SAM250005R1004	0.240
0.25	0.63...1.00	50	11.50	MS116-1.0-HKF1-11	1SAM250005R1005	0.240
0.55	1.00...1.60	50	18.40	MS116-1.6-HKF1-11	1SAM250005R1006	0.280
0.75	1.60...2.50	50	28.75	MS116-2.5-HKF1-11	1SAM250005R1007	0.280
1.5	2.50...4.00	50	50.00	MS116-4.0-HKF1-11	1SAM250005R1008	0.280
2.2	4.00...6.30	50	78.75	MS116-6.3-HKF1-11	1SAM250005R1009	0.280
4.0	6.30...10.0	50	150	MS116-10.0-HKF1-11	1SAM250005R1010	0.280
5.5	8.00...12.0	25	180	MS116-12.0-HKF1-11	1SAM250005R1012	0.280
7.5	10.0...16.0	16	240	MS116-16.0-HKF1-11	1SAM250005R1011	0.280
9.0	16.0...20.0	10	300	MS116-20-HKF1-11	1SAM250005R1013	0.326
12.5	20.0...25.0	10	375	MS116-25-HKF1-11	1SAM250005R1014	0.326
15.5	25.0...32.0	10	480	MS116-32-HKF1-11	1SAM250005R1015	0.326

Main dimensions mm, inches



MS116 ≤ 16 A & MS116-HKF1-11 ≤ 16 A

MS116 ≥ 20 A & MS116-HKF1-11 ≥ 20 A

MS132 manual motor starters

0.10 to 32 A – with thermal and electromagnetic protection



MS132-10



MS132-32



MS132-0.16-HKF1-11



MS132-32-HKF1-11

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. 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.

MS132 is a compact and powerful range for motor protection up 15.5 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. The handle is lockable to protect against unauthorized changes. Auxiliary contacts, signalling contacts, undervoltage releases, shunt trips, three-phase bus bars, power in-feed blocks.

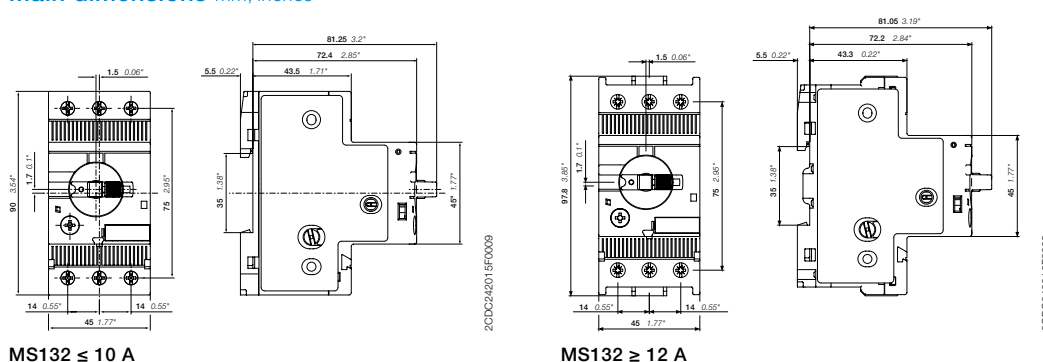
Ordering details

Rated operational power 400 V AC-3	Setting range	Short-circuit breaking capacity Ics at 400 V AC	Rated instantaneous short-circuit current setting Ii	Type	Order code	Weight (1 pce)
kW	A	kA	A			kg
0.03	0.10...0.16	100	1.56	MS132-0.16	1SAM350000R1001	0.215
0.06	0.16...0.25	100	2.44	MS132-0.25	1SAM350000R1002	0.215
0.09	0.25...0.40	100	3.90	MS132-0.4	1SAM350000R1003	0.215
0.12	0.40...0.63	100	6.14	MS132-0.63	1SAM350000R1004	0.215
0.25	0.63...1.00	100	11.50	MS132-1.0	1SAM350000R1005	0.215
0.55	1.00...1.60	100	18.40	MS132-1.6	1SAM350000R1006	0.265
0.75	1.60...2.50	100	28.75	MS132-2.5	1SAM350000R1007	0.265
1.5	2.50...4.00	100	50.00	MS132-4.0	1SAM350000R1008	0.265
2.2	4.00...6.30	100	78.75	MS132-6.3	1SAM350000R1009	0.265
4.0	6.30...10.0	100	150	MS132-10	1SAM350000R1010	0.265
5.5	8.00...12.0	100	180	MS132-12	1SAM350000R1012	0.310
7.5	10.0...16.0	100	240	MS132-16	1SAM350000R1011	0.310
9.0	16.0...20.0	100	300	MS132-20	1SAM350000R1013	0.310
12.5	20.0...25.0	50	375	MS132-25	1SAM350000R1014	0.310
15.5	25.0...32.0	25	480	MS132-32	1SAM350000R1015	0.310

Auxiliary contacts mounted on the front (1 N.O. + 1 N.C.)

Rated operational power 400 V AC-3	Setting range	Short-circuit breaking capacity Ics at 400 V AC	Rated instantaneous short-circuit current setting Ii	Type	Order code	Weight (1 pce)
kW	A	kA	A			kg
0.03	0.10...0.16	100	1.56	MS132-0.16-HKF1-11	1SAM350005R1001	0.231
0.06	0.16...0.25	100	2.44	MS132-0.25-HKF1-11	1SAM350005R1002	0.231
0.09	0.25...0.40	100	3.90	MS132-0.4-HKF1-11	1SAM350005R1003	0.231
0.12	0.40...0.63	100	6.14	MS132-0.63-HKF1-11	1SAM350005R1004	0.231
0.25	0.63...1.00	100	11.50	MS132-1.0-HKF1-11	1SAM350005R1005	0.231
0.55	1.00...1.60	100	18.40	MS132-1.6-HKF1-11	1SAM350005R1006	0.281
0.75	1.60...2.50	100	28.75	MS132-2.5-HKF1-11	1SAM350005R1007	0.281
1.5	2.50...4.00	100	50.00	MS132-4.0-HKF1-11	1SAM350005R1008	0.281
2.2	4.00...6.30	100	78.75	MS132-6.3-HKF1-11	1SAM350005R1009	0.281
4.0	6.30...10.0	100	150	MS132-10.0-HKF1-11	1SAM350005R1010	0.281
5.5	8.00...12.0	100	180	MS132-12.0-HKF1-11	1SAM350005R1012	0.326
7.5	10.0...16.0	100	240	MS132-16.0-HKF1-11	1SAM350005R1011	0.326
9.0	16.0...20.0	100	300	MS132-20-HKF1-11	1SAM350005R1013	0.326
12.5	20.0...25.0	50	375	MS132-25-HKF1-11	1SAM350005R1014	0.326
15.5	25.0...32.0	25	480	MS132-32-HKF1-11	1SAM350005R1015	0.326

Main dimensions mm, inches



MS132 ≤ 10 A

MS132 ≥ 12 A

MO132 manual motor starters magnetic only

0.16 to 32 A – with electromagnetic protection

2



MO132-6.3



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.

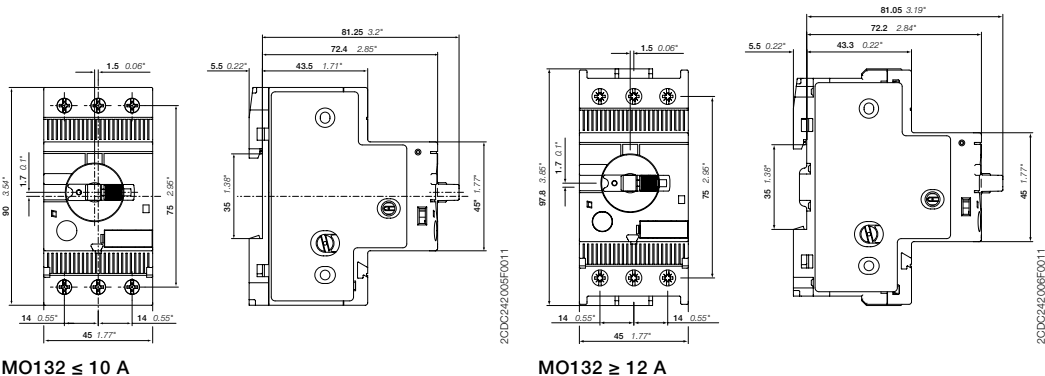
Fuse less protection with a manual motor starter saves costs, space and ensures a quick reaction under short-circuit condition, by switching off the motor within milliseconds. Fuse less starter combinations are setup together with contactors and overload relays.

Ordering details

Rated operational power 400 V AC-3 (1)	Rated operational current	Short-circuit breaking capacity Ics at 400 V AC	Rated instantaneous short-circuit current setting li	Type	Order code	Weight (1 pce)
kW	A	kA	A			kg
0.03	0.16	100	1.56	MO132-0.16	1SAM360000R1001	0.215
0.06	0.25	100	2.44	MO132-0.25	1SAM360000R1002	0.215
0.09	0.40	100	3.90	MO132-0.4	1SAM360000R1003	0.215
0.12	0.63	100	6.14	MO132-0.63	1SAM360000R1004	0.215
0.25	1.0	100	11.50	MO132-1.0	1SAM360000R1005	0.215
0.55	1.6	100	18.40	MO132-1.6	1SAM360000R1006	0.265
0.75	2.5	100	28.75	MO132-2.5	1SAM360000R1007	0.265
1.5	4.0	50	50.00	MO132-4.0	1SAM360000R1008	0.265
2.2	6.3	50	78.75	MO132-6.3	1SAM360000R1009	0.265
4.0	10	50	125.00	MO132-10	1SAM360000R1010	0.265
5.5	12	50	150.00	MO132-12	1SAM360000R1012	0.310
7.5	16	50	200.00	MO132-16	1SAM360000R1011	0.310
9.0	20	50	250.00	MO132-20	1SAM360000R1013	0.310
12.5	25	50	312.50	MO132-25	1SAM360000R1014	0.310
15.5	32	25	400.00	MO132-32	1SAM360000R1015	0.310

(1) For overload protection of motors, an appropriate thermal or electronic overload relay must be used.

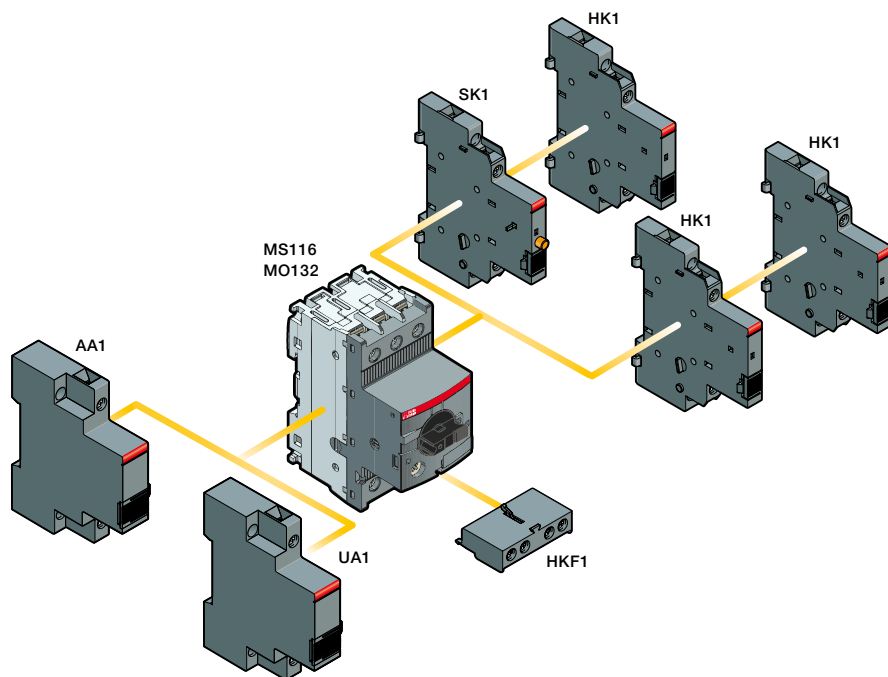
Main dimensions mm, inches



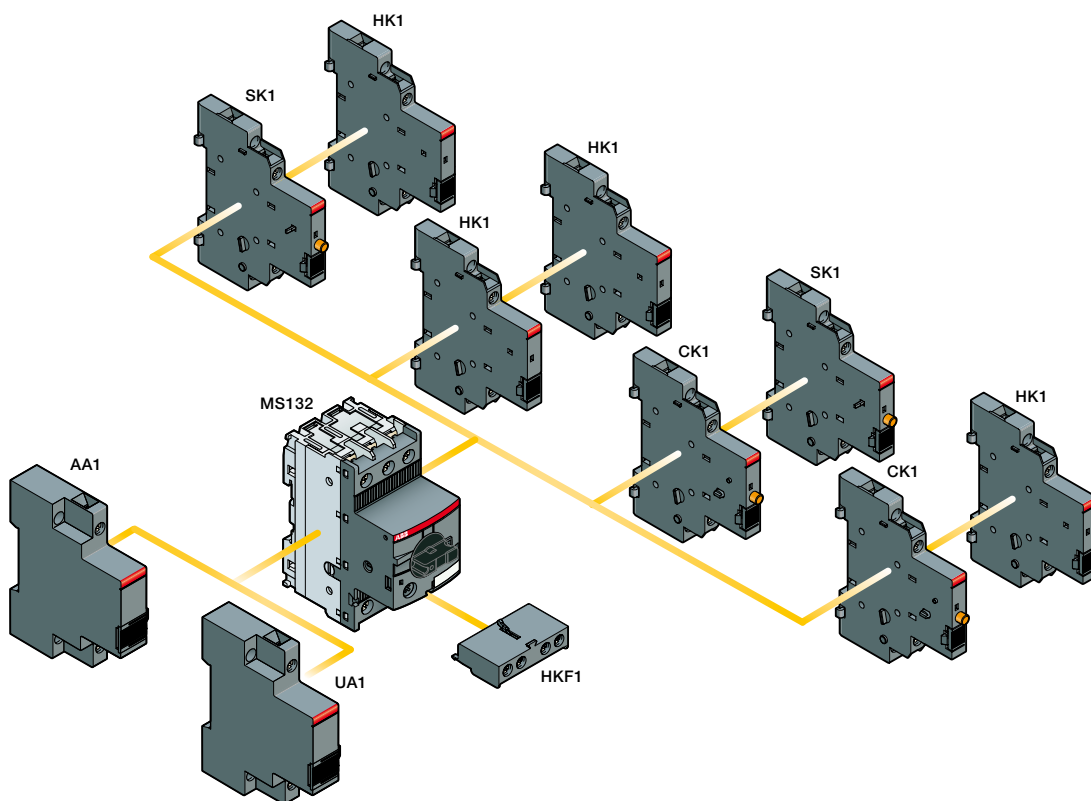
MS116, MS132, MO132 manual motor starters

Main accessories

MS116, MO132 manual motor starters with accessories



MS132 manual motor starters with accessories



MS116, MS132, MO132 manual motor starters

Main accessories

2



HKF1-11



HK1-11



SK1-11



CK1-11

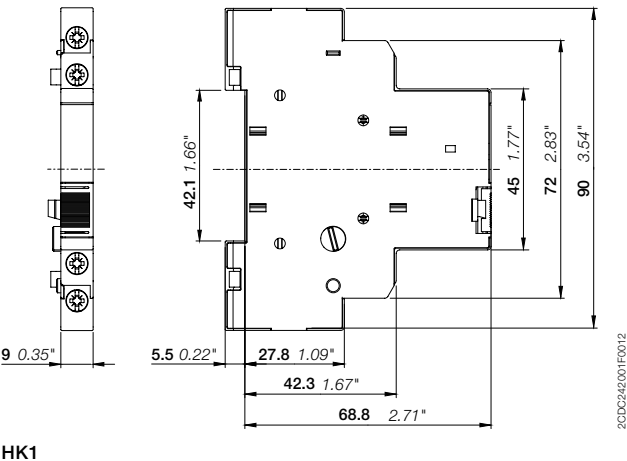
Description

Manual motor starters can be equipped with auxiliary contacts for lateral/front mounting, signalling contact for lateral mounting, undervoltage release and shunt trips. Two different signalling 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 signalling contact SK signals tripping regardless if it was caused by short-circuit or overload. The signalling contact CK signals tripping in case it was caused by short-circuit. 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.

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, MO132	1	1		HKF1-11	1SAM201901R1001	10	0.015
	2	0		HKF1-20	1SAM201901R1002	10	0.015
Auxiliary contacts – mountable on the right							
MS116, MS132, MO132	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
Signalling contacts – mountable on the right							
MS116, MS132, MO132	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	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



MS116, MS132, MO132 manual motor starters

Main accessories



AA1-24

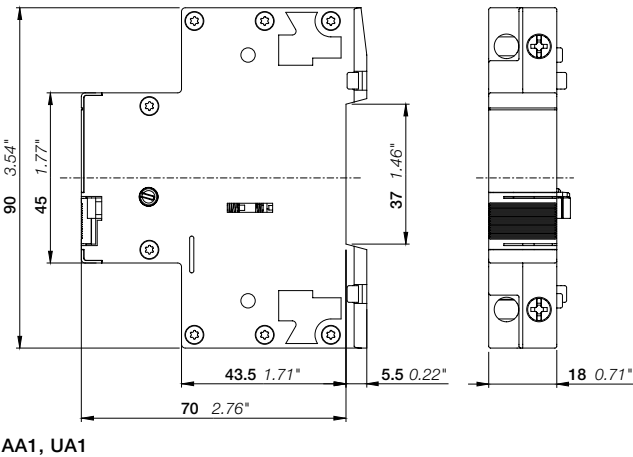


UA1-24

Ordering details

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

Main dimensions mm, inches



2CDC131056C0201

MS116, MS132, MO132 manual motor starters

Main accessories

2



IB132-Y



IB132-G



DMS132-Y



DMS132-G

Description

IB132 are IP65 enclosures for single MMS installation. Additional mounting of auxiliary and signalling contacts, shunt trips and undervoltage release is possible. The handle is lockable in OFF position. For detailed specification see installation instruction.

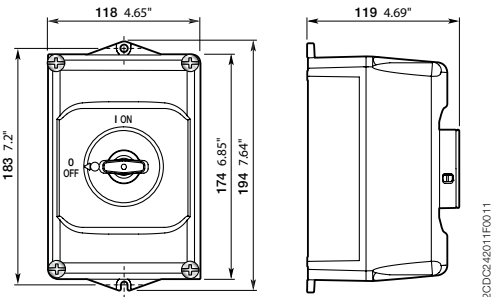
DMS132 are IP65 door mounting kits for MMS installation in any enclosure. Additional mounting of auxiliary, signalling, shunt trips and undervoltage release is possible. The handle is lockable in OFF position. For detailed specification see installation instruction.

Ordering details

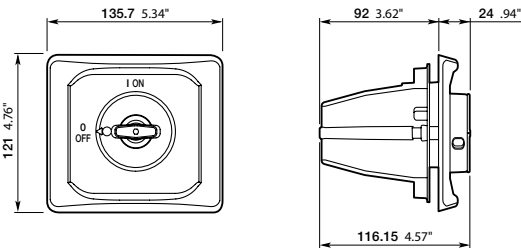
Suitable for	Description	Color	Type	Order code	Pkg qty	Weight (1 pce) kg
IP65 enclosures (UL: Type 12)						
MS116, MS132, MO132	Padlockable max. 3 padlocks with bail diameter 4...6.5 mm	Yellow/red	IB132-Y	1SAM201911R1011	1	0.370
		Grey/black	IB132-G	1SAM201911R1010	1	0.370
IP65 door mounting kits (UL: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

Main dimensions mm, inches



IB132

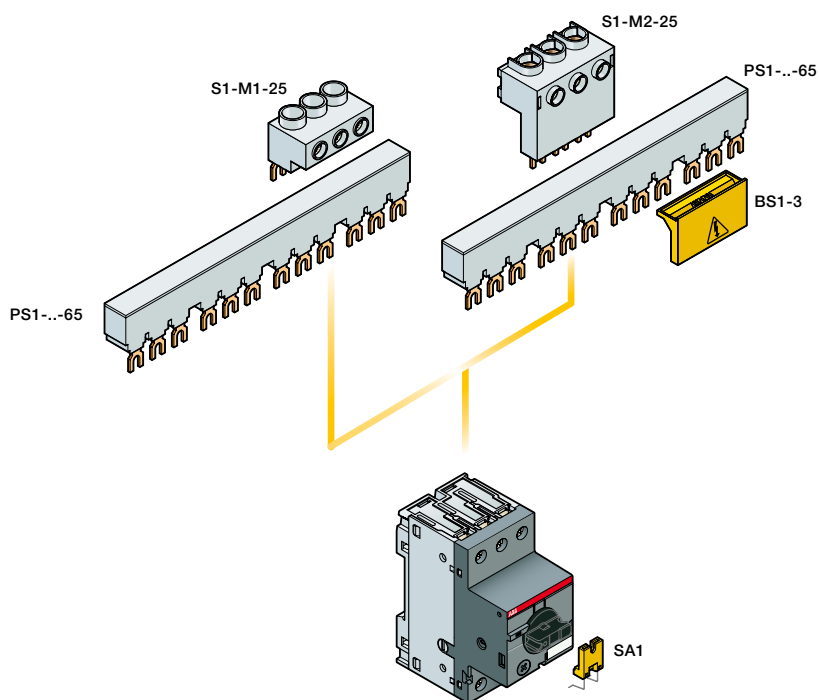


DMS132

MS116, MS132, MO132 manual motor starters

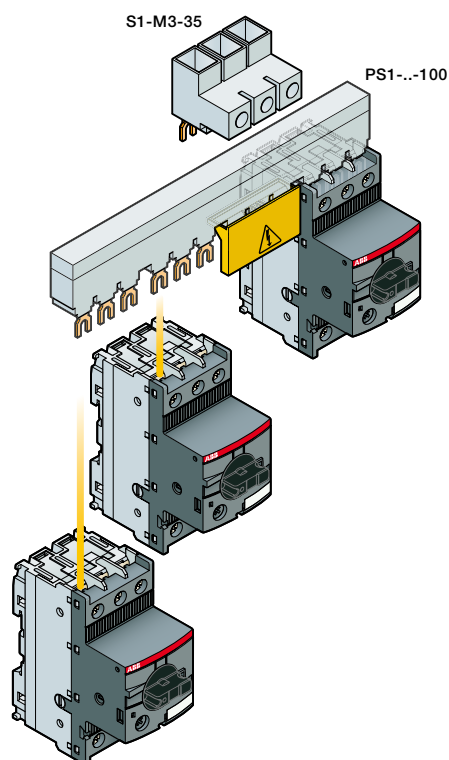
Main accessories

Manual motor starter with three-phase busbar systems



Three-phase busbar up to 65 A

2CDC242020F0013



Three-phase busbar up to 100 A

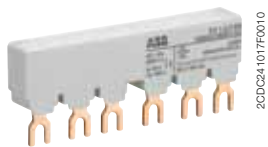
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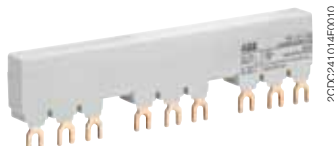
MS116, MS132, MO132 manual motor starters

Main accessories

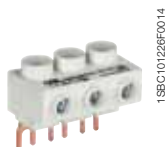
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PS1-2-0-65



PS1-3-1-100



S1-M1-25



S1-M2-25



SA1



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 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.

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 mm ²	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 type E and IEC	S1-M3-25	1SAM201907R1103	10	0.042
	100	35	UL type E 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
	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

MS450, MS495, MS497 manual motor starters

22 to 100 A – with thermal and electromagnetic protection



MS450-40



MS495-40



MS497-100

Description

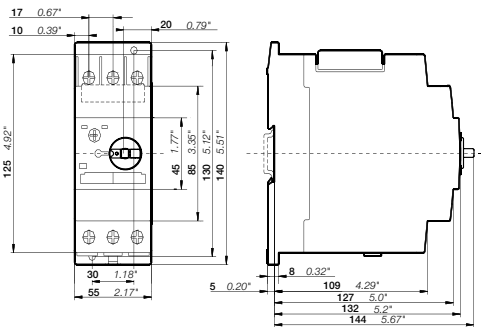
Manual motor starters (MMS) are protection devices for the main circuit. They combine motor control and protection in a single device. MMS are used mainly to switch motors manually ON/OFF and protect them and the installation fuse less against short-circuit, overload and phase failures. Fuse less protection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

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, signalling contacts, undervoltage releases, shunt trips, three-phase busbars, power in-feed blocks are available as accessory.

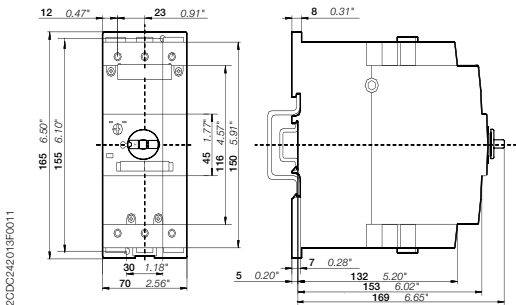
Ordering details

Rated operational power 400 V AC-3 kW	Setting range A	Short-circuit breaking capacity Ics at 400 V AC kA	Rated instantaneous short-circuit current setting li A	Type	Order code	Weight (1 pce) kg
MS450 manual motor starters						
15.8	28.0...40.0	25	520.00	MS450-40	1SAM450000R1005	1.047
22	36.0...45.0	25	585.00	MS450-45	1SAM450000R1006	1.039
22	40.0...50.0	25	650.00	MS450-50	1SAM450000R1007	1.027
MS495 manual motor starters						
30	45.0...63.0	25	819.00	MS495-63	1SAM550000R1007	2.247
37	57.0...75.0	25	975.00	MS495-75	1SAM550000R1008	2.253
45	70.0...90.0	25	1170.00	MS495-90	1SAM550000R1009	2.280
55	80.0...100.0	25	1235.00	MS495-100	1SAM550000R1010	2.295
MS497 manual motor starters						
15	22.0...32.0	50	416.00	MS497-32	1SAM580000R1004	2.222
18.5	28.0...40.0	50	520.00	MS497-40	1SAM580000R1005	2.203
22	36.0...50.0	50	650.00	MS497-50	1SAM580000R1006	2.230
30	45.0...63.0	50	819.00	MS497-63	1SAM580000R1007	2.255
37	57.0...75.0	50	975.00	MS497-75	1SAM580000R1008	2.266
45	70.0...90.0	50	1170.00	MS497-90	1SAM580000R1009	2.268
55	80.0...100.0	50	1235.00	MS497-100	1SAM580000R1010	2.275

Main dimensions mm, inches



MS450



MS495, MS497

MO450, MO495, MO496 manual motor starters magnetic only

32 to 100 A – with electromagnetic protection

2



ST02501

MO450-40



ST02601

MO495-75



2CDC241021F0011

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.

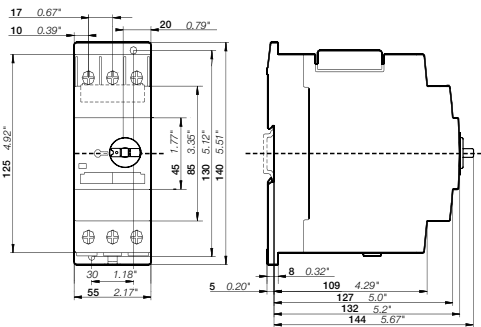
Further features are the build-in disconnect function, trip-free mechanism and a rotary handle with a clear switch position indication. The manual motor starter magnetic only is suitable for three- and single-phase applications. The handle is lockable to protect against unauthorized changes. Auxiliary contacts, signalling contacts, undervoltage releases, shunt trips, three-phase busbars, power in-feed blocks are available as accessory.

Ordering details

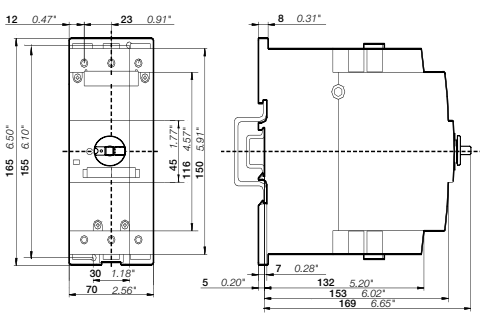
Rated operational power 400 V AC-3 (1)	Rated operational current	Short-circuit breaking capacity Ics at 400 V AC	Rated instantaneous short-circuit current setting Ii	Type	Order code	Weight (1 pce)
kW	A	kA	A			kg
MO450 manual motor starter magnetic only						
15.8	40	25	520.00	MO450-40	1SAM460000R1005	1.033
22	45	25	585.00	MO450-45	1SAM460000R1006	1.040
22	50	25	650.00	MO450-50	1SAM460000R1007	1.019
MO495 manual motor starter magnetic only						
30	63	25	819.00	MO495-63	1SAM560000R1007	2.244
37	75	25	975.00	MO495-75	1SAM560000R1008	2.247
45	90	25	1170.00	MO495-90	1SAM560000R1009	2.269
55	100	25	1235.00	MO495-100	1SAM560000R1010	2.292
MO496 manual motor starter magnetic only						
15	32	50	416.00	MO496-32	1SAM590000R1004	2.208
18.5	40	50	520.00	MO496-40	1SAM590000R1005	2.218
22	50	50	650.00	MO496-50	1SAM590000R1006	2.218
30	63	50	819.00	MO496-63	1SAM590000R1007	2.248
37	75	50	975.00	MO496-75	1SAM590000R1008	2.278
45	90	50	1170.00	MO496-90	1SAM590000R1009	2.266
55	100	50	1235.00	MO496-100	1SAM590000R1010	2.293

(1) For overload protection of motors, an appropriate thermal or electronic overload relay must be used.

Main dimensions mm, inches



MO450

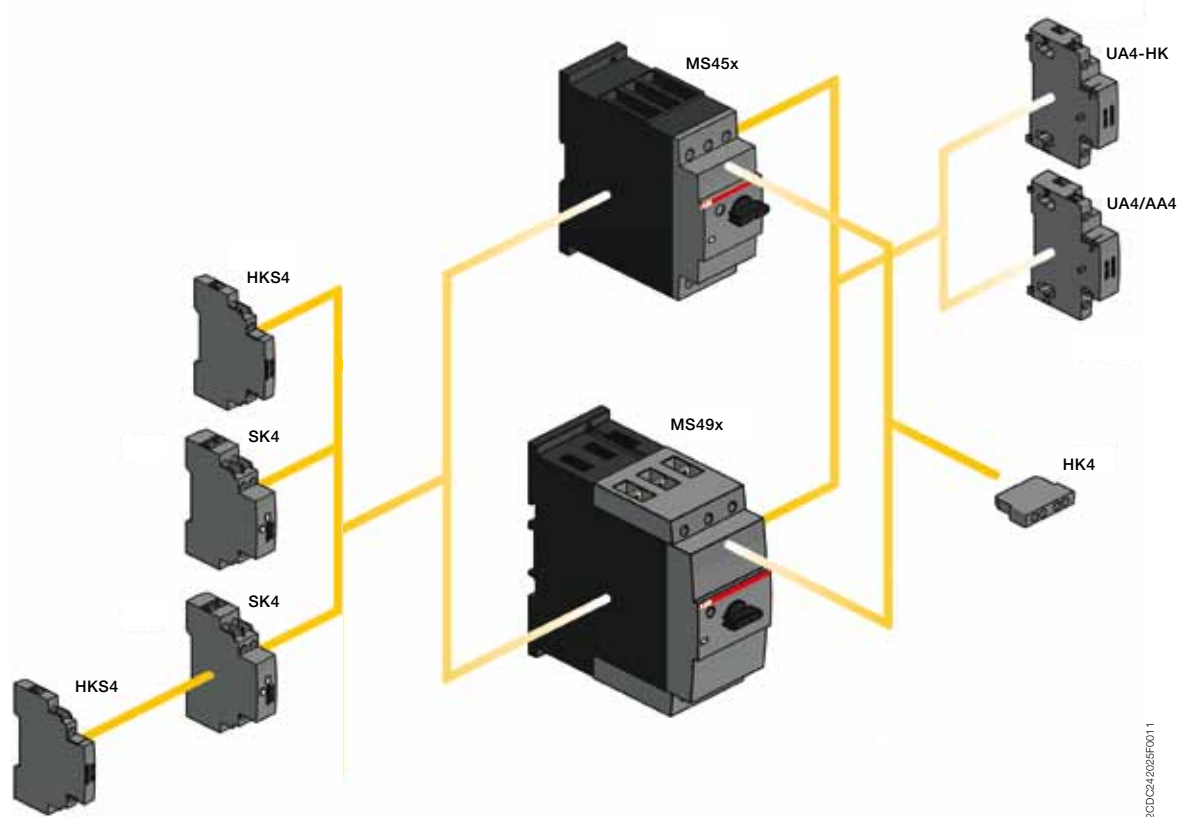


MO495, MO496

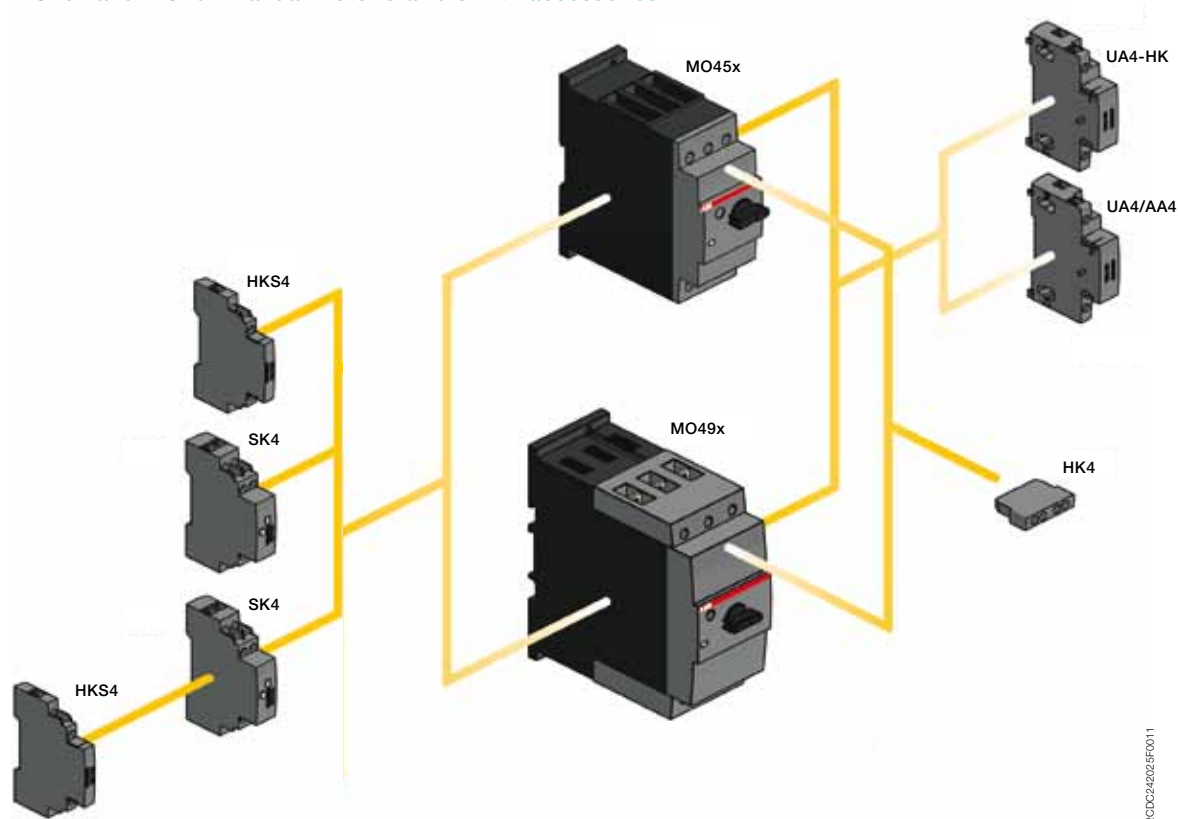
MS45x, MS49x, MO45x, MO49x manual motor starters

Main accessories

MS45x and MS49x manual motor starters with accessories



MO45x and MO49x manual motor starters with accessories



MS45x, MS49x, MO45x, MO49x manual motor starters

Main accessories



HK4-11

2CDC241026F0011

2



HKS4-20

2CDC241022F0011



SK4-11

2CDC241024F0011



AA4-24

2CDC241023F0011



UA4-110

2CDC241025F0011

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.

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

MS45x, MS49x, MO45x, MO49x	1	1	Changeover	HK4-11	1SAM401901R1001	10	0.017
				HK4-W	1SAM401901R1002	10	0.015

Auxiliary contacts – mountable on the left

MS45x, MS49x, MO45x, 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

MS45x, MS49x, MO45x, 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
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Suitable for	Rated control supply voltage	Frequency	Type	Order code	Pkg qty	Weight (1 pce)
	V	Hz				kg

Shunt trip units – mountable on the right

MS45x, MS49x, MO45x, 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

MS45x, MS49x, MO45x, 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

MS45x, MS49x, MO45x, MO49x manual motor starters

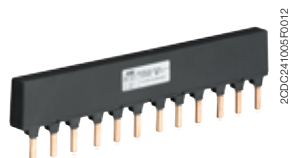
Main accessories



PS4-2-0



PS4-3-0



PS4-4-0



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 108 A are in the assortment. Between 2 and 4 manual motor starter with none or two lateral auxiliary contacts can be connected.

Ordering details

Suitable for	Rated operational current	Number of MMS	Number of lateral aux.	Type	Order code	Pkg qty	Weight (1 pce)
	A						kg

Three-phase busbars

MS450, MO450	108 A	2	0	PS4-2-0	1SAM401911R1001	5	0.134
	108 A	3	0	PS4-3-0	1SAM401911R1002	5	0.206
	108 A	4	0	PS4-4-0	1SAM401911R1003	5	0.280
	108 A	2	1	PS4-2-2	1SAM401911R1004	5	0.148
	108 A	3	1	PS4-3-2	1SAM401911R1005	5	0.250
	108 A	4	1	PS4-4-2	1SAM401911R1006	5	0.362

Suitable for	Rated operational current	Rated cross section	Mounting form	Type	Order code	Pkg qty	Weight (1 pce)
	A	mm²					kg

Three-phase feeder terminals

MS450, MO450	108 A	25	Flat	S4-M1	1SAM401911R1007	2	0.106
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Suitable for	Description	Type	Order code	Pkg qty	Weight (1 pce)
					kg
MS450, MO450	Protection cover for busbar	BS4-3	1SAM401911R1008	10	0.001
	Disconnecter module	TB450	1SAM401910R1001	1	0.315
	Terminal shroud	KA450	1SAM401908R1001	1	0.154
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
MS450, MS495, MS497, MO450, 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.

MS116, MS132, MO132, MS4xx, MO4xx manual motor starters

General accessories

2



MSHD-LB

2CDC241003F0011



MSHD-LY

2CDC241002S0011



MSMN

2CDC241004F0011



MSH-AR

2CDC241001F0012



MSAH1

2CDC241017V0013

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.

All accessories fit for 6 mm shafts with a maximum length of 180 mm. The degree of protection for handles MSHD is IP64.

Ordering details

Suitable for	Description	Shaft length mm	Color	Type	Order code	Pkg qty	Weight (1 pce) kg
Shafts							
MS116, MS132, MO132, 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: Type 1, 3R, 12)							
MS116, MS132, MO132, 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, 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
Shaft alignment ring							
MS116, MS132, MO132, 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 MSAH1 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.

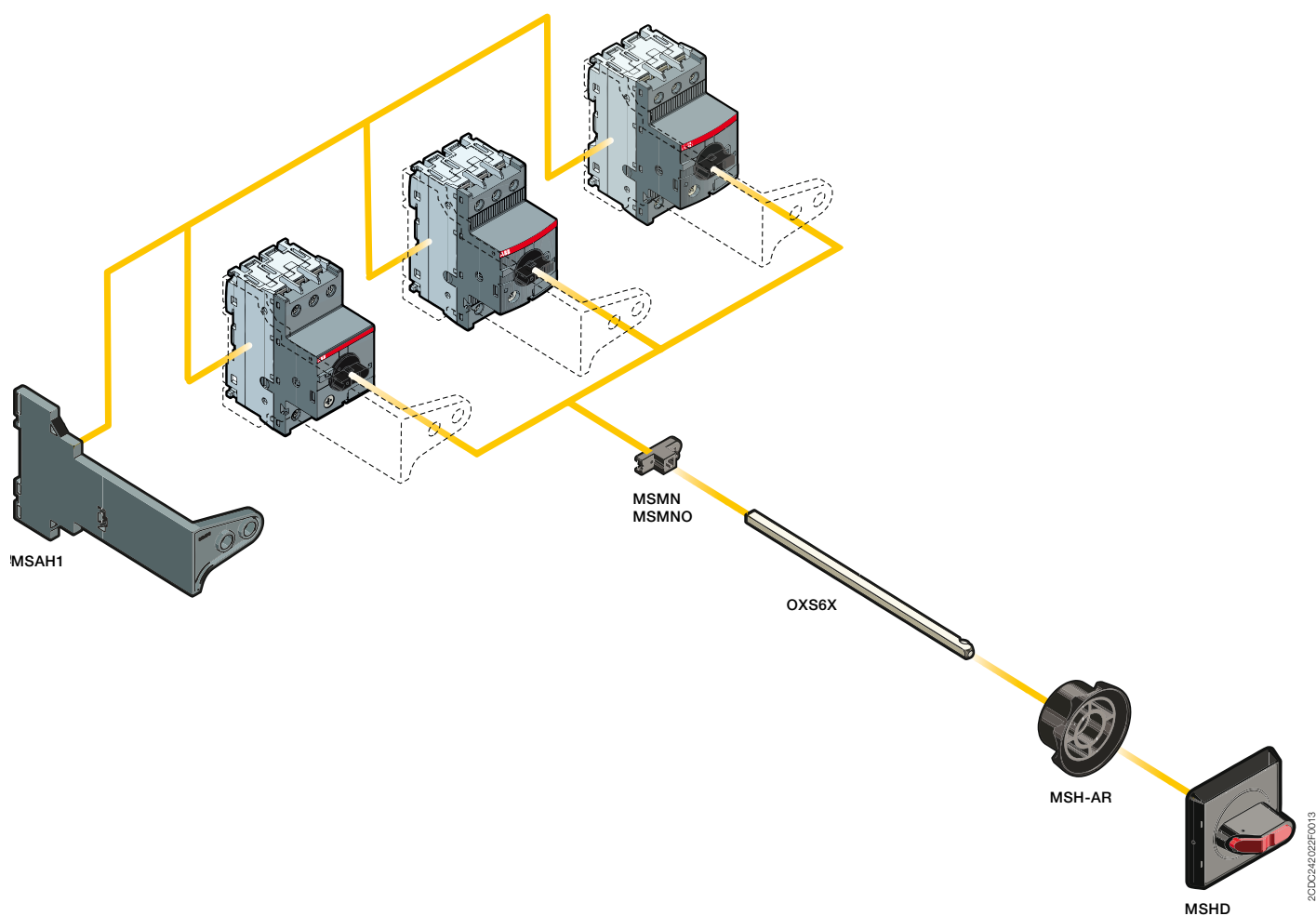
(3) Coded - Positioning of ON indication dependent from mounting orientation of the MMS.

(4) Uncoded - Positioning of ON indication independent from mounting orientation of the MMS.

MS116, MS132, MO132, MS4xx, MO4xx manual motor starters

General accessories

2



2CDC131056C0201



B mini contactors

K mini contactor relays

Overview

3/2

With screw terminals

3-pole contactors

B6, B7	AC operated	3/4
BC6, BC7, B7D	DC operated	3/5

3-pole reversing contactors

VB6, VB7	AC operated	3/6
VBC6, VBC7	DC operated	3/7

3-pole interface contactors

BC6, BC7	DC operated	3/8
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3-pole contactors - large coil voltage range

TBC7	DC operated	3/9
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4-pole contactors

B6, B7	AC operated	3/10
BC6, B7D	DC operated	3/11
TBC7	DC operated - large coil voltage range	3/12

Contactors relays

K6	AC operated	3/13
KC6	DC operated	3/14

Interface contactor relays

KC6	DC operated	3/15
TKC6	DC operated - large coil voltage range	3/16

Accessories

3/17

For additional information such as technical datas, dimension drawings, other products and accessories, refer to our main catalog and visit our website: www.abb.com/connecttocontrol

Mini contactors



				Screw terminals			
AC Control supply							
3-pole contactors		Coil consumption 3.5 W	Type	B6	B7	-	-
3-pole reversing contactors		Coil consumption 3.5 W	Type	-	-	VB6 VB6A (2)	VB7 VB7A (2)
4-pole contactors		Coil consumption 3.5 W	Type	B6	B7	-	-
DC Control supply							
3-pole contactors		Coil consumption 3.5 W	Type	BC6	BC7 B7D (1)	-	-
3-pole interface contactors		Coil consumption 1.4 ... 2.4 W	Type	BC6	BC7	-	-
3-pole reversing contactors		Coil consumption 3.5 W	Type	-	-	VBC6 VBC6A (2)	VBC7 VBC7A (2)
4-pole contactors		Coil consumption 3.5 W	Type	BC6	B7D		
Wide range types		Extended coil voltage and temperature	Type	-	TBC7		
PLC types		Coil consumption 1.7 W	Type	B6S (1)	B7S (1)		
IEC	Rated operational power AC-3	220-230-240 V	kW	2.2	3	2.2	3
		380-400 V	kW	4	5.5	4	5.5
	Rated operational current AC-1	400 V, $\theta \leq 40\text{ }^{\circ}\text{C}$	A	20	20	20	20
UL/CSA	3-phase motor rating	220-240 V AC	hp	2	3	2	3
		440-480 V AC	hp	3	5	3	5
	General use rating		A	12 (300 V)	16 (600 V)	12 (300 V)	16 (600 V)

(1) With integrated surge suppressor
(2) With safety blocking function

Main accessories

Auxiliary contact blocks	Front mounting	CAF6
	Side mounting	CA6
Connection sets	For reversing contactors	BSM6-30
Surge suppressors	Varistor (AC/DC)	RV-BC6

Overload relays

Thermal overload relays	Class 10	T16
Thermal and phase failure protection, with single setup possible		
Electronic overload relays	Class 10E, 20E, 30E	E16DU
With single setup possible		

Manual motor starters

Thermal / magnetic protection	Class 10	MS116, MS132
Magnetic only types		MO132
Connecting link to manual motor starters		BEA7/132

Contactor relays



				Screw terminals	
AC Control supply					
4-pole contactor relays		Coil consumption 3.5 W	Type	K6	
DC Control supply					
4-pole contactor relays		Coil consumption 3.5 W	Type	KC6	
4-pole interface contactor relays		Coil consumption 1.4 ... 2.4 W	Type	KC6	
Wide range types		Extended coil voltage and temperature	Type	TKC6	
IEC	Rated operational current AC-15	220-230-240 V	A	4	
		380-400 V	A	3	
	Rated operational current DC-13	24 V	A	2.5	

Main accessories

Auxiliary contact blocks	Front mounting	CAF6
	Side mounting	CA6-11K



Soldering pins				Flat pins			
B6...P	B7...P	-	-	B6...F	B7...F	-	-
-	-	VB6...P	VB7...P	-	-	VB6...F	VB7...F
-	-	VB6A...P (2)	VB7A...P (2)	-	-	VB6A...F (2)	VB7A...F (2)
BC6...P	BC7...P	-	-	BC6...F	BC7...F	-	-
BC6...P	B7D...P (1)	-	-	BC6...F	B7D...F (1)	-	-
-	BC7...P	-	-	-	BC7...F	-	-
-	-	VBC6...P	VBC7...P	-	-	VBC6...F	VBC7...F
-	-	VBC6A...P (2)	VBC7A...P (2)	-	-	VBC6A...F (2)	VBC7A...F (2)
2.2	3	2.2	3	2.2	3	2.2	3
4	5.5	4	5.5	4	5.5	4	5.5
12	12	12	12	20	20	20	20
2	3	2	3	2	3	2	3
3	5	3	5	3	5	3	5
12 (300 V)	16 (600 V)	12 (300 V)	16 (600 V)	12 (300 V)	16 (600 V)	12 (300 V)	16 (600 V)

-	-
CA6-11K-P	CA6-11K-F
-	-
-	-

-	-
-	-

MS116, MS132	MS116, MS132
MO132	MO132
-	-



Soldering pins		Flat pins	
K6...P		K6...F	
KC6...P		KC6...F	
KC6...P		KC6...F	
4		4	
3		3	
2.5		2.5	
-		-	
CA6-11K-P		CA6-11K-F	

B6, B7 3-pole mini contactors – with screw terminals

4 to 5.5 kW

AC operated



B6-30-10



B7-30-10

Description

B6, B7 3-pole mini contactors are compact control products mainly used for switching resistive or motor loads up to 690 V AC.

These contactors are designed with:

- 3 main poles and one built-in auxiliary contact
- control circuit: AC operated
 - low coil consumption (3.5 VA at pull-in and at holding).
- add-on auxiliary contact blocks for front or side mounting and a wide range of accessories
- hum-free coil
- designed for rail or wall mounting.

Ordering details

IEC		UL/CSA		Rated control circuit voltage U _c		Auxiliary contacts fitted	Type	Order code	Pkg qty	Weight (1 pce)
Rated operational power	current θ ≤ 40 °C	3-phase motor rating	General use rating	50 Hz	60 Hz					
400 V										kg
AC-3	AC-1			V AC	V AC					
kW	A	hp								

B6 mini contactors

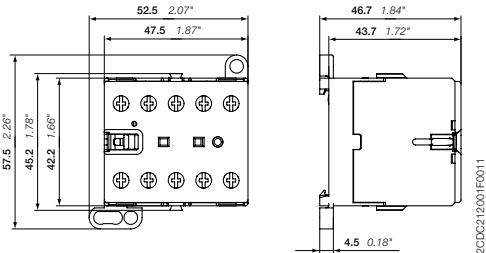
4	20	3	300 V / 12 A	24	24	1 0	B6-30-10-01	GJL1211001R0101	10	0.175
						0 1	B6-30-01-01	GJL1211001R0011	10	0.175
				42	42	1 0	B6-30-10-02	GJL1211001R0102	10	0.175
						0 1	B6-30-01-02	GJL1211001R0012	10	0.175
				48	48	1 0	B6-30-10-03	GJL1211001R0103	10	0.175
						0 1	B6-30-01-03	GJL1211001R0013	10	0.175
				110...127	110...127	1 0	B6-30-10-84	GJL1211001R8104	10	0.175
						0 1	B6-30-01-84	GJL1211001R8014	10	0.175
				220...240	220...240	1 0	B6-30-10-80	GJL1211001R8100	10	0.175
						0 1	B6-30-01-80	GJL1211001R8010	10	0.175
				380...415	380...415	1 0	B6-30-10-85	GJL1211001R8105	10	0.175
						0 1	B6-30-01-85	GJL1211001R8015	10	0.175

B7 mini contactors

5.5	20	5	600 V / 16 A	24	24	1 0	B7-30-10-01	GJL1311001R0101	10	0.175
						0 1	B7-30-01-01	GJL1311001R0011	10	0.175
				42	42	1 0	B7-30-10-02	GJL1311001R0102	10	0.175
						0 1	B7-30-01-02	GJL1311001R0012	10	0.175
				48	48	1 0	B7-30-10-03	GJL1311001R0103	10	0.175
						0 1	B7-30-01-03	GJL1311001R0013	10	0.175
				110...127	110...127	1 0	B7-30-10-84	GJL1311001R8104	10	0.175
						0 1	B7-30-01-84	GJL1311001R8014	10	0.175
				220...240	220...240	1 0	B7-30-10-80	GJL1311001R8100	10	0.175
						0 1	B7-30-01-80	GJL1311001R8010	10	0.175
				380...415	380...415	1 0	B7-30-10-85	GJL1311001R8105	10	0.175
						0 1	B7-30-01-85	GJL1311001R8015	10	0.175

Other types on request.

Main dimensions mm, inches



B6, B7

BC6, BC7, B7D 3-pole mini contactors – with screw terminals

4 to 5.5 kW

DC operated



BC6-30-10

2CDC211040F0011



BC7-30-10

2CDC211030F0011

Description

BC6, BC7, B7D 3-pole mini contactors are compact control products mainly used for switching resistive or motor loads up to 690 V AC.

These contactors are designed with:

- 3 main poles and one built-in auxiliary contact
- control circuit: DC operated, low consumption (3.5 W at pull-in and at holding)
- hum-free coil
- add-on auxiliary contact blocks for front or side mounting and a wide range of accessories
- designed for rail or wall mounting.

Ordering details

IEC	UL/CSA	Rated control circuit voltage: U _c	Auxiliary contacts fitted	Type	Order code	Pkg qty	Weight (1 pce)
Rated operational power	3-phase motor rating General use rating						
400 V AC-3 kW	AC-1 A hp	V DC					kg

BC6 mini contactors

4	20	3	300 V / 12 A	12	1 0	BC6-30-10-07	GJL1213001R0107	10	0.175
					0 1	BC6-30-01-07	GJL1213001R0017	10	0.175
				24	1 0	BC6-30-10-01	GJL1213001R0101	10	0.175
					0 1	BC6-30-01-01	GJL1213001R0011	10	0.175
				48	1 0	BC6-30-10-16	GJL1213001R1106	10	0.175
					0 1	BC6-30-01-16	GJL1213001R1016	10	0.175
				60	1 0	BC6-30-10-03	GJL1213001R0103	10	0.175
					0 1	BC6-30-01-03	GJL1213001R0013	10	0.175
				110...125	1 0	BC6-30-10-04	GJL1213001R0104	10	0.175
					0 1	BC6-30-01-04	GJL1213001R0014	10	0.175
				220...240	1 0	BC6-30-10-05	GJL1213001R0105	10	0.175
					0 1	BC6-30-01-05	GJL1213001R0015	10	0.175

BC7 mini contactors

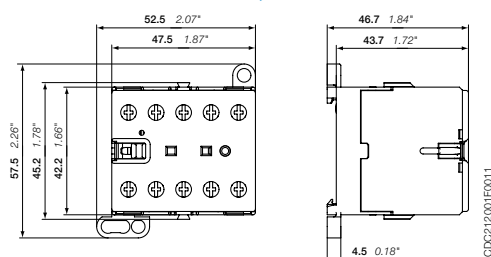
5.5	20	5	600 V / 16 A	12	1 0	BC7-30-10-07	GJL1313001R0107	10	0.175
					0 1	BC7-30-01-07	GJL1313001R0017	10	0.175
				24	1 0	BC7-30-10-01	GJL1313001R0101	10	0.175
					0 1	BC7-30-01-01	GJL1313001R0011	10	0.175
				48	1 0	BC7-30-10-16	GJL1313001R1106	10	0.175
					0 1	BC7-30-01-16	GJL1313001R1016	10	0.175
				60	1 0	BC7-30-10-03	GJL1313001R1103	10	0.175
					0 1	BC7-30-01-03	GJL1313001R0013	10	0.175
				110...125	1 0	BC7-30-10-04	GJL1313001R0104	10	0.175
					0 1	BC7-30-01-04	GJL1313001R0014	10	0.175
				220...240	1 0	BC7-30-10-05	GJL1313001R0105	10	0.175
					0 1	BC7-30-01-05	GJL1313001R0015	10	0.175

B7D mini contactors with integrated suppressor diode

5.5	20	5	600 V / 16 A	24	1 0	B7D-30-10-01	GJL1317001R0101	10	0.175
					0 1	B7D-30-01-01	GJL1317001R0011	10	0.175
				220	1 0	B7D-30-10-05	GJL1317001R0105	10	0.175
					0 1	B7D-30-01-05	GJL1317001R0015	10	0.175

Other types on request.

Main dimensions mm, inches



BC6, BC7, B7D

2CDC212001F0011

2CDC102015C0201

VB6, VB7 3-pole mini reversing contactors – with screw terminals

4 to 5.5 kW

AC operated



2CDC211008F0011

VB7-30-10

Description

VB6, VB7 3-pole compact design reversing contactors are space optimized control products mainly used for switching resistive or motor loads up to 690 V AC.

These reversing contactors are designed with:

- built-in mechanical interlock. The coils must be mutually interlocked electrically and coils must be de-energised for 50 ms at least to prevent phase to phase short circuit on the arc.
- control circuit: AC operated
 - low coil consumption (3.5 VA at pull-in and at holding).
- hum-free coil
- add-on auxiliary contact blocks for front mounting
- designed for rail or wall mounting.

Ordering details

IEC		UL/CSA		Rated control circuit voltage Uc		Auxiliary contacts fitted	Type	Order code	Pkg qty	Weight (1 pce)
Rated operational power	current $\theta \leq 40^{\circ}\text{C}$	3-phase motor rating	General use rating	50 Hz	60 Hz					
400 V	AC-3	480 V		V AC	V AC					kg
kW	A	hp								

VB6 mini reversing contactors

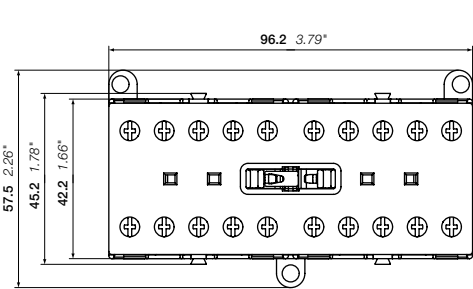
4	20	3	300 V / 12 A	24	24	1 0	VB6-30-10-01	GJL1211901R0101	5	0.355
						0 1	VB6-30-01-01	GJL1211901R0011	5	0.355
				42	42	1 0	VB6-30-10-02	GJL1211901R0102	5	0.355
						0 1	VB6-30-01-02	GJL1211901R0012	5	0.355
				48	48	1 0	VB6-30-10-03	GJL1211901R0103	5	0.355
						0 1	VB6-30-01-03	GJL1211901R0013	5	0.355
				110...127	110...127	1 0	VB6-30-10-84	GJL1211901R8104	5	0.355
						0 1	VB6-30-01-84	GJL1211901R8014	5	0.355
				220...240	220...240	1 0	VB6-30-10-80	GJL1211901R8100	5	0.355
						0 1	VB6-30-01-80	GJL1211901R8010	5	0.355
				380...415	380...415	1 0	VB6-30-10-85	GJL1211901R8105	5	0.355
						0 1	VB6-30-01-85	GJL1211901R8015	5	0.355

VB7 mini reversing contactors

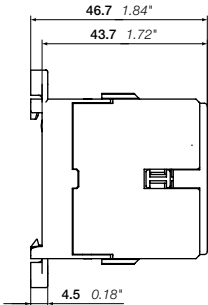
5.5	20	5	600 V / 16 A	24	24	1 0	VB7-30-10-01	GJL1311901R0101	5	0.355
						0 1	VB7-30-01-01	GJL1311901R0011	5	0.355
				42	42	1 0	VB7-30-10-02	GJL1311901R0102	5	0.355
						0 1	VB7-30-01-02	GJL1311901R0012	5	0.355
				48	48	1 0	VB7-30-10-03	GJL1311901R0103	5	0.355
						0 1	VB7-30-01-03	GJL1311901R0013	5	0.355
				110...127	110...127	1 0	VB7-30-10-84	GJL1311901R8104	5	0.355
						0 1	VB7-30-01-84	GJL1311901R8014	5	0.355
				220...240	220...240	1 0	VB7-30-10-80	GJL1311901R8100	5	0.355
						0 1	VB7-30-01-80	GJL1311901R8010	5	0.355
				380...415	380...415	1 0	VB7-30-10-85	GJL1311901R8105	5	0.355
						0 1	VB7-30-01-85	GJL1311901R8015	5	0.355

Other types on request.

Main dimensions mm, inches



VB6, VB7



2CDC211008F0011

2CDC102016C0201

VBC6, VBC7 3-pole mini reversing contactors – with screw terminals

4 to 5.5 kW

DC operated



VBC6-30-10



VBC7-30-10

Description

VBC6, VBC7 3-pole compact design reversing contactors are space optimized control products mainly used for switching resistive or motor loads up to 690 V AC.

These reversing contactors are designed with:

- built-in mechanical interlock. The coils must be mutually interlocked electrically and coils must be de-energised for 50 ms at least to prevent phase to phase short circuit on the arc.
- control circuit: DC operated
 - low coil consumption (3.5 W at pull-in and at holding).
- hum-free coil
- add-on auxiliary contact blocks for front mounting
- designed for rail or wall mounting.

Ordering details

IEC	UL/CSA	Rated control	Auxiliary	Type	Order code	Pkg	Weight
Rated operational power	3-phase motor rating	circuit voltage: Uc	contacts fitted			qty	(1 pce)
400 V AC-3 kW	AC-1 hp	V DC					kg

VBC6 mini reversing contactors

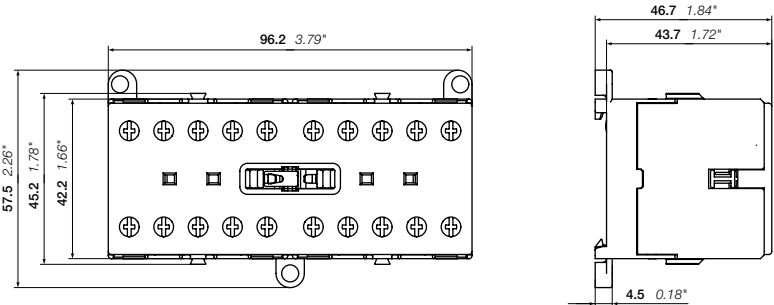
4	20	3	300 V / 12 A	12	1 0	VBC6-30-10-07	GJL1213901R0107	5	0.355
					0 1	VBC6-30-01-07	GJL1213901R0017	5	0.355
				24	1 0	VBC6-30-10-01	GJL1213901R0101	5	0.355
					0 1	VBC6-30-01-01	GJL1213901R0011	5	0.355
				48	1 0	VBC6-30-10-16	GJL1213901R1106	5	0.355
					0 1	VBC6-30-01-16	GJL1213901R1016	5	0.355
				60	1 0	VBC6-30-10-03	GJL1213901R0103	5	0.355
					0 1	VBC6-30-01-03	GJL1213901R0013	5	0.355
				110...125	1 0	VBC6-30-10-04	GJL1213901R0104	5	0.355
					0 1	VBC6-30-01-04	GJL1213901R0014	5	0.355
				220...240	1 0	VBC6-30-10-05	GJL1213901R0105	5	0.355
					0 1	VBC6-30-01-05	GJL1213901R0015	5	0.355

VBC7 mini reversing contactors

5.5	20	5	600 V / 16 A	12	1 0	VBC7-30-10-07	GJL1313901R0107	5	0.355
					0 1	VBC7-30-01-07	GJL1313901R0017	5	0.355
				24	1 0	VBC7-30-10-01	GJL1313901R0101	5	0.355
					0 1	VBC7-30-01-01	GJL1313901R0011	5	0.355
				48	1 0	VBC7-30-10-16	GJL1313901R1106	5	0.355
					0 1	VBC7-30-01-16	GJL1313901R1016	5	0.355
				60	1 0	VBC7-30-10-03	GJL1313901R0103	5	0.355
					0 1	VBC7-30-01-03	GJL1313901R0013	5	0.355
				110...125	1 0	VBC7-30-10-04	GJL1313901R0104	5	0.355
					0 1	VBC7-30-01-04	GJL1313901R0014	5	0.355
				220...240	1 0	VBC7-30-10-05	GJL1313901R0105	5	0.355
					0 1	VBC7-30-01-05	GJL1313901R0015	5	0.355

Other types on request.

Main dimensions mm, inches



VBC6, VBC7

BC6, BC7 3-pole interface mini contactors – with screw terminals

4 to 5.5 kW

DC operated



BC6-30-10



BC7-30-10

Description

BC6, BC7 3-pole interface mini contactors are compact control products mainly used for switching resistive or motor loads up to 690 V AC.

These contactors are designed with:

- 3 main poles and one built-in auxiliary contact
- control circuit: DC operated, very low coil consumption. Suitable for direct control by PLC outputs
- hum-free coil
- no auxiliary contact block permitted for mounting
- designed for rail or wall mounting.

Ordering details

IEC		UL/CSA		Rated control circuit voltage U _c	Auxiliary contacts fitted	Type	Order code	Pkg qty	Weight (1 pce)
Rated operational power	current	3-phase motor rating	General use rating						
400 V	θ ≤ 40 °C	480 V							
AC-3	AC-1			V DC					kg
kW	A	hp							

DC operation 24 V / 1.4 W

4	20	3	300 V / 12 A	24	1 0	BC6-30-10-1.4-81	GJL1213001R8101	10	0.175
					0 1	BC6-30-01-1.4-81	GJL1213001R8011	10	0.175
5.5	20	5	600 V / 16 A	24	1 0	BC7-30-10-1.4-81	GJL1313001R8101	10	0.175
					0 1	BC7-30-01-1.4-81	GJL1313001R8011	10	0.175

DC operation 17...32 V / 2.4 W

4	20	3	300 V / 12 A	17...32	1 0	BC6-30-10-2.4-51	GJL1213001R5101	10	0.175
					0 1	BC6-30-01-2.4-51	GJL1213001R5011	10	0.175
5.5	20	5	600 V / 16 A	17...32	1 0	BC7-30-10-2.4-51	GJL1313001R5101	10	0.175
					0 1	BC7-30-01-2.4-51	GJL1313001R5011	10	0.175

Connection to PLCs with integrated protective circuit

DC operation 24 V / 1.7 W

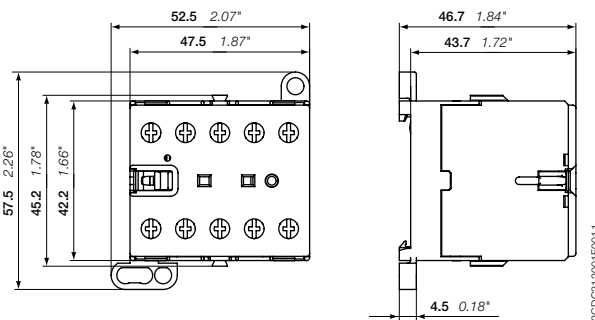
4	20	3	300 V / 12 A	24	1 0	B6S-30-10-1.7-71	GJL1213001R7101	10	0.175
					0 1	B6S-30-01-1.7-71	GJL1213001R7011	10	0.175
5.5	20	5	600 V / 16 A	24	1 0	B7S-30-10-1.7-71	GJL1313001R7101	10	0.175
					0 1	B7S-30-01-1.7-71	GJL1313001R7011	10	0.175

DC operation 17...32 V / 2.8 W

4	20	3	300 V / 12 A	17...32	1 0	B6S-30-10-2.8-72	GJL1213001R7102	10	0.175
					0 1	B6S-30-01-2.8-72	GJL1213001R7012	10	0.175
5.5	20	5	600 V / 16 A	17...32	1 0	B7S-30-10-2.8-72	GJL1313001R7102	10	0.175
					0 1	B7S-30-01-2.8-72	GJL1313001R7012	10	0.175

Other types on request.

Main dimensions mm, inches



BC6, BC7

TBC7 3-pole mini contactors – with screw terminals

4 to 5.5 kW

DC operated – large coil voltage range



Description

TBC7 3-pole mini contactors are compact control products mainly used for switching resistive or motor loads up to 690 V AC.

These contactors are designed with:

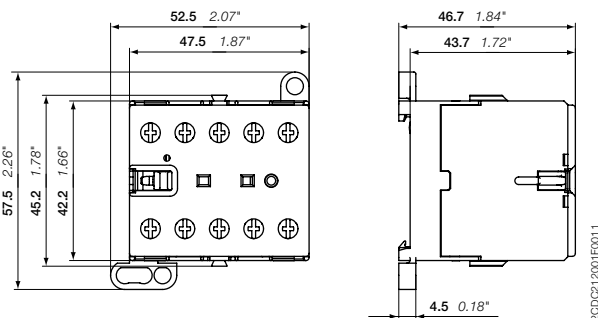
- 3 main poles and one built-in auxiliary contact
- control circuit: DC operated
 - low coil consumption (5 W at pull-in and at holding).
- hum-free coil
- expanded ambient temperature range -30...+70 °C and wide range voltage supply
- no auxiliary contact block permitted for mounting
- designed for rail or wall mounting
- material is approved for railway applications.

Ordering details

IEC	UL/CSA		Rated control circuit voltage		Auxiliary contacts	Type	Order code	Pkg qty	Weight (1 pce)
Rated operational power	Rated operational current $\theta \leq 40\text{ }^{\circ}\text{C}$	3-phase motor rating 480 V	General use rating	Uc min ... Uc max	fitted				
400 V AC-3 kW	AC-1 A	hp		V DC					kg
TBC7 mini contactors									
5.5	20	5	600 V / 16 A	17...32	1 0	TBC7-30-10-51	GJL1313061R5101	10	0.185
					0 1	TBC7-30-01-51	GJL1313061R5011	10	0.185
				50...90	1 0	TBC7-30-10-55	GJL1313061R5105	10	0.185
					0 1	TBC7-30-01-55	GJL1313061R5015	10	0.185
				77...143	1 0	TBC7-30-10-62	GJL1313061R6102	10	0.185
					0 1	TBC7-30-01-62	GJL1313061R6012	10	0.185
				140...260	1 0	TBC7-30-10-68	GJL1313061R6108	10	0.185
					0 1	TBC7-30-01-68	GJL1313061R6018	10	0.185

Other types on request.

Main dimensions mm, inches



TBC7

B6, B7 4-pole mini contactors – with screw terminals

4 to 5.5 kW

AC operated



B6-22-00

Description

B6, B7 4-pole mini contactors are compact control products mainly used for switching resistive loads up to 690 V AC.

These contactors are designed with:

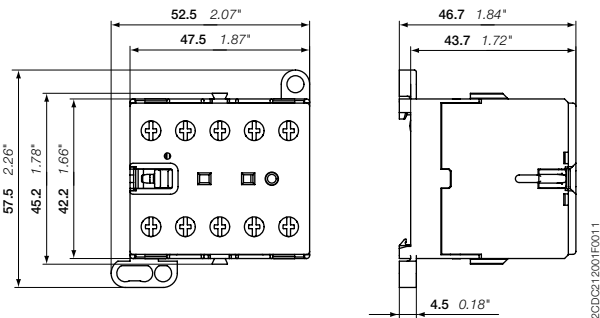
- 4 main poles
- control circuit: AC operated
 - low coil consumption (3.5 VA at pull-in and at holding).
- add-on auxiliary contact blocks for front or side mounting and a wide range of accessories
- hum-free coil
- designed for rail or wall mounting.

Ordering details

IEC	UL/CSA	Rated control circuit voltage Uc	Auxiliary contacts fitted	Type	Order code	Pkg qty	Weight (1 pce)
Rated operational current $\theta \leq 40\text{ }^{\circ}\text{C}$ AC-1 A	General use rating	50/60 HZ V AC					kg
4 N.O. main poles							
20	300 V / 12 A	24	0 0	B6-40-00-01	GJL1211201R0001	10	0.175
		42	0 0	B6-40-00-02	GJL1211201R0002	10	0.175
		48	0 0	B6-40-00-03	GJL1211201R0003	10	0.175
		110...127	0 0	B6-40-00-84	GJL1211201R8004	10	0.175
		220...240	0 0	B6-40-00-80	GJL1211201R8000	10	0.175
20	600 V / 16 A	24	0 0	B7-40-00-01	GJL1311201R0001	10	0.175
		42	0 0	B7-40-00-02	GJL1311201R0002	10	0.175
		48	0 0	B7-40-00-03	GJL1311201R0003	10	0.175
		110...127	0 0	B7-40-00-84	GJL1311201R8004	10	0.175
		220...240	0 0	B7-40-00-80	GJL1311201R8000	10	0.175
2 N.O. + 2 N.C. main poles							
20	300 V / 12 A	24	0 0	B6-22-00-01	GJL1211501R0001	10	0.175
		42	0 0	B6-22-00-02	GJL1211501R0002	10	0.175
		48	0 0	B6-22-00-03	GJL1211501R0003	10	0.175
		110...127	0 0	B6-22-00-84	GJL1211501R8004	10	0.175
		220...240	0 0	B6-22-00-80	GJL1211501R8000	10	0.175
20	600 V / 16 A	24	0 0	B7-22-00-01	GJL1311501R0001	10	0.175
		42	0 0	B7-22-00-02	GJL1311501R0002	10	0.175
		48	0 0	B7-22-00-03	GJL1311501R0003	10	0.175
		110...127	0 0	B7-22-00-84	GJL1311501R8004	10	0.175
		220...240	0 0	B7-22-00-80	GJL1311501R8000	10	0.175

Other types on request.

Main dimensions mm, inches



B6, B7

BC6, B7D 4-pole mini contactors – with screw terminals

4 to 5.5 kW

DC operated



BC6-22-00

Description

BC6, B7D 4-pole mini contactors are compact control products mainly used for switching resistive loads up to 690 V AC.

These contactors are designed with:

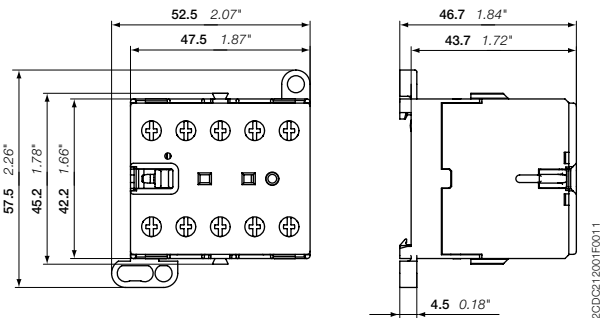
- 4 main poles
- control circuit: DC operated
 - low coil consumption (3.5 W at pull-in and at holding).
- hum-free coil
- add-on auxiliary contact blocks for front or side mounting
- designed for rail or wall mounting.

Ordering details

IEC	UL/CSA	Rated control circuit voltage: U _c	Auxiliary contacts fitted	Type	Order code		Pkg qty	Weight (1 pce)
Rated operational current θ ≤ 40 °C AC-1 A	General use rating	V DC						kg
4 N.O. main poles								
20	600 V / 16 A	24	0 0	B7D-40-00-01	GJL1317201R0001		10	0.175
		220	0 0	B7D-40-00-05	GJL1317201R0005		10	0.175
2 N.O. + 2 N.C. main poles								
20	300 V / 12 A	12	0 0	BC6-22-00-07	GJL1213501R0007		10	0.175
		24	0 0	BC6-22-00-01	GJL1213501R0001		10	0.175
		42	0 0	BC6-22-00-02	GJL1213501R0002		10	0.175
		48	0 0	BC6-22-00-16	GJL1213501R1006		10	0.175
		60	0 0	BC6-22-00-03	GJL1213501R0003		10	0.175
		110...125	0 0	BC6-22-00-04	GJL1213501R0004		10	0.175
		220...240	0 0	BC6-22-00-05	GJL1213501R0005		10	0.175

Other types on request.

Main dimensions mm, inches



BC6, B7D

TBC7 4-pole mini contactors – with screw terminals

4 to 5.5 kW

DC operated – large coil voltage range



TBC7-31-00

2CDC21102BF0011

3

Description

TBC7 4-pole mini contactors are compact control products mainly used for switching resistive or motor loads up to 690 V AC.

These contactors are designed with:

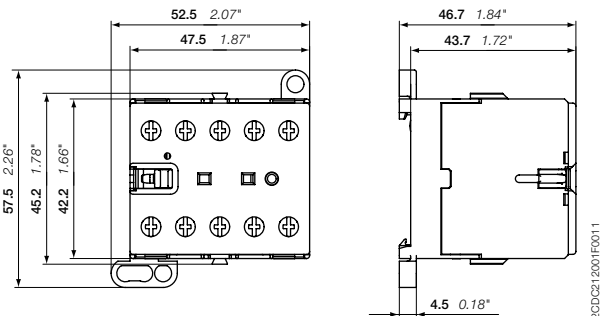
- 4 main poles
- control circuit: DC operated
 - low coil consumption (5 W at pull-in and at holding).
- hum-free coil
- expanded ambient temperature range -30...+70 °C and wide range voltage supply
- no auxiliary contact block permitted for mounting
- designed for rail or wall mounting
- material is approved for railway applications.

Ordering details

IEC	UL/CSA	Rated control circuit voltage Uc min ... Uc max	Auxiliary contacts fitted	Type	Order code	Pkg qty	Weight (1 pce)
Rated operational current $\theta \leq 40\text{ }^{\circ}\text{C}$ AC-1 A	General use rating	V DC					kg
3 N.O. + 1 N.C. main poles							
20	600 V / 16 A	50...90	0 0	TBC7-31-00-55	GJL1313461R5005	10	0.185
		77...143	0 0	TBC7-31-00-62	GJL1313461R6002	10	0.185
		140...260	0 0	TBC7-31-00-68	GJL1313461R6008	10	0.185
2 N.O. + 2 N.C. main poles							
20	600 V / 16 A	50...90	0 0	TBC7-22-00-55	GJL1313561R5005	10	0.185
		77...143	0 0	TBC7-22-00-62	GJL1313561R6002	10	0.185
		140...260	0 0	TBC7-22-00-68	GJL1313561R6008	10	0.185

Other types on request.

Main dimensions mm, inches



TBC7

2CDC211001F0011

2CDC102022C0201

K6 4-pole mini contactor relays – with screw terminals

AC operated



K6-22Z



K6-31Z

Description

K6 4-pole mini-contactor relays are space optimized control products mainly used for control functions or for small loads up to 4 A.

These contactors are designed with:

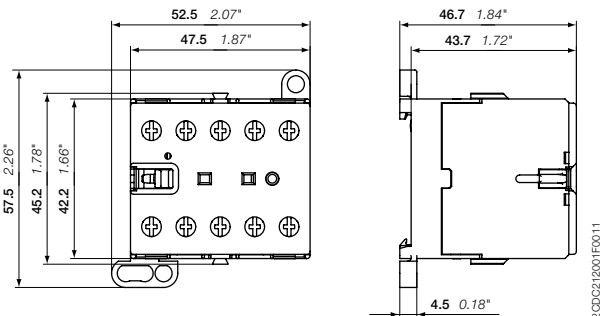
- 4-poles with various contact combinations
- control circuit: AC operated
 - low coil consumption (3.5 VA at pull-in and at holding).
- hum-free coil
- add-on auxiliary contact blocks for front or side mounting
- designed for rail or wall mounting.

Ordering details

Rated control circuit voltage U _c		Type	Order code	Pkg qty	Weight (1 pce)
50 Hz V AC	60 Hz V AC				kg
2 N.O. + 2 N.C. main poles					
24	24	K6-22Z-01	GJH1211001R0221	10	0.175
42	42	K6-22Z-02	GJH1211001R0222	10	0.175
48	48	K6-22Z-03	GJH1211001R0223	10	0.175
110...127	110...127	K6-22Z-84	GJH1211001R8224	10	0.175
220...240	220...240	K6-22Z-80	GJH1211001R8220	10	0.175
380...415	380...415	K6-22Z-85	GJH1211001R8225	10	0.175
3 N.O. + 1 N.C. main poles					
24	24	K6-31Z-01	GJH1211001R0311	10	0.175
42	42	K6-31Z-02	GJH1211001R0312	10	0.175
48	48	K6-31Z-03	GJH1211001R0313	10	0.175
110...127	110...127	K6-31Z-84	GJH1211001R8314	10	0.175
220...240	220...240	K6-31Z-80	GJH1211001R8310	10	0.175
380...415	380...415	K6-31Z-85	GJH1211001R8315	10	0.175
4 N.O. main poles					
24	24	K6-40E-01	GJH1211001R0401	10	0.175
42	42	K6-40E-02	GJH1211001R0402	10	0.175
48	48	K6-40E-03	GJH1211001R0403	10	0.175
110...127	110...127	K6-40E-84	GJH1211001R8404	10	0.175
220...240	220...240	K6-40E-80	GJH1211001R8400	10	0.175
380...415	380...415	K6-40E-85	GJH1211001R8405	10	0.175

Other types on request.

Main dimensions mm, inches



K6

KC6 4-pole mini contactor relays – with screw terminals

DC operated



KC6-22Z

2CDC211016F0011

3

Description

KC6 4-pole mini-contactor relays are space optimized control products mainly used for control functions or for small loads up to 4 A.

These contactors are designed with:

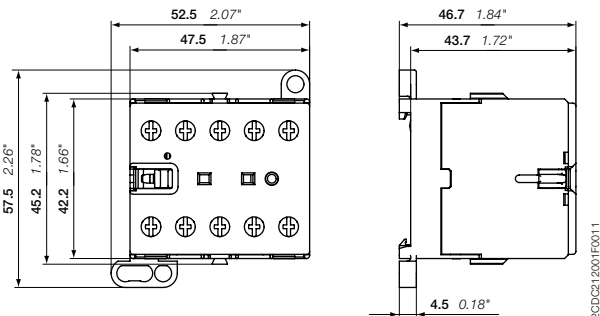
- 4-poles with various contact combinations
- control circuit: DC operated
 - low coil consumption (3.5 W at pull-in and at holding).
- hum-free coil
- add-on auxiliary contact blocks for front or side mounting
- designed for rail or wall mounting.

Ordering details

Rated control circuit voltage U _c	Type	Order code	Pkg qty	Weight (1 pce) kg
V DC				
2 N.O. + 2 N.C. main poles				
12	KC6-22Z-07	GJH1213001R0227	10	0.175
24	KC6-22Z-01	GJH1213001R0221	10	0.175
48	KC6-22Z-16	GJH1213001R1226	10	0.175
60	KC6-22Z-13	GJH1213001R1223	10	0.175
110...125	KC6-22Z-04	GJH1213001R0224	10	0.175
220...240	KC6-22Z-05	GJH1213001R0225	10	0.175
3 N.O. + 1 N.C. main poles				
12	KC6-31Z-07	GJH1213001R0317	10	0.175
24	KC6-31Z-01	GJH1213001R0311	10	0.175
48	KC6-31Z-16	GJH1213001R1316	10	0.175
60	KC6-31Z-13	GJH1213001R1313	10	0.175
110...125	KC6-31Z-04	GJH1213001R0314	10	0.175
220...240	KC6-31Z-05	GJH1213001R0315	10	0.175
4 N.O. main poles				
12	KC6-40E-07	GJH1213001R0407	10	0.175
24	KC6-40E-01	GJH1213001R0401	10	0.175
48	KC6-40E-16	GJH1213001R1406	10	0.175
60	KC6-40E-13	GJH1213001R1403	10	0.175
110...125	KC6-40E-04	GJH1213001R0404	10	0.175
220...240	KC6-40E-05	GJH1213001R0405	10	0.175

Other types on request.

Main dimensions mm, inches



KC6

2CDC211001F0011

2CDC102012C0201

KC6 4-pole interface mini contactor relays – with screw terminals DC operated



Description

KC6 4-pole interface mini-contactor relays are space optimized control products mainly used for control functions or for small loads up to 4 A.

These contactors are designed with:

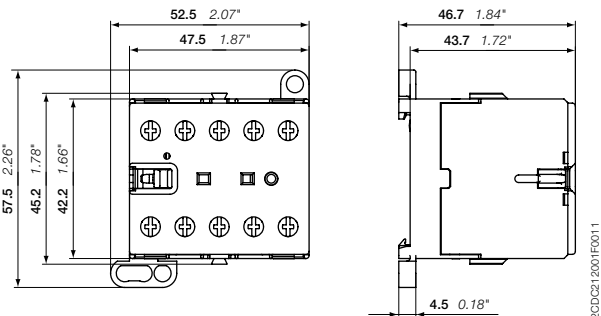
- 4-poles with various contact combinations
- control circuit: DC operated
 - low coil consumption (1.4...2.8 W at pull-in and at holding).
 - hum-free coil
- no auxiliary contact block permitted for mounting
- designed for rail or wall mounting.

Ordering details

Rated control circuit voltage U _c	Type	Order code	Pkg qty	Weight (1 pce)
V DC				kg
DC operation 24 V / 1.4 W				
24	KC6-31Z-1.4-81	GJH1213001R8311	10	0.175
24	KC6-40E-1.4-81	GJH1213001R8401	10	0.175
DC operation 17...32 V / 2.4 W				
17...32	KC6-31Z-2.4-51	GJH1213001R5311	10	0.175
17...32	KC6-40E-2.4-51	GJH1213001R5401	10	0.175
DC operation 24 V / 1.7 W				
24	K6S-22Z-1.7-71	GJH1213001R7221	10	0.175
24	K6S-31Z-1.7-71	GJH1213001R7311	10	0.175
24	K6S-40E-1.7-71	GJH1213001R7401	10	0.175
DC operation 17...32 V / 2.8 W				
17...32	K6S-22Z-2.8-72	GJH1213001R7222	10	0.175
17...32	K6S-31Z-2.8-72	GJH1213001R7312	10	0.175
17...32	K6S-40E-2.8-72	GJH1213001R7402	10	0.175

Other types on request.

Main dimensions mm, inches



KC6

TKC6 4-pole mini contactor relays – with screw terminals

DC operated – large coil voltage range



TKC6-31Z

Description

TKC6 4-pole mini contactors are space optimized control products mainly used for control functions or for small loads up to 4 A.

These contactors are designed with:

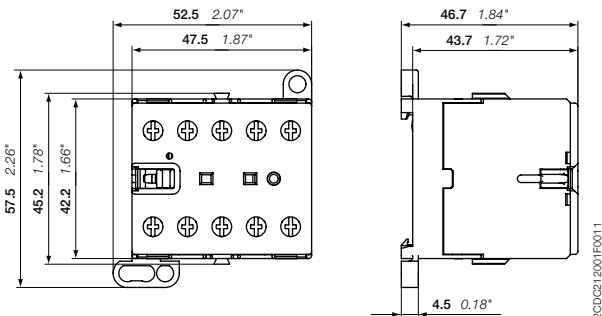
- 4-poles with various contact combinations
- control circuit: DC operated, hum free, low consumption (5 W at pull-in and at holding)
- expanded ambient temperature range -30...+70 °C and wide range voltage supply
- material is suitable for railway applications
- humfree operating DC coil
- no auxiliary contact block permitted for mounting
- designed for rail or wall mounting.

Ordering details

Rated control circuit voltage U _c min ... U _c max	Type	Order code	Pkg qty	Weight (1 pce) kg
V DC				
2 N.O. + 2 N.C. main poles				
17...32	TKC6-22Z-51	GJH1213061R5221	10	0.180
50...90	TKC6-22Z-55	GJH1213061R5225	10	0.180
77...143	TKC6-22Z-62	GJH1213061R6222	10	0.180
140...260	TKC6-22Z-68	GJH1213061R6228	10	0.180
3 N.O. + 1 N.C. main poles				
17...32	TKC6-31Z-51	GJH1213061R5311	10	0.180
50...90	TKC6-31Z-55	GJH1213061R5315	10	0.180
77...143	TKC6-31Z-62	GJH1213061R6312	10	0.180
140...260	TKC6-31Z-68	GJH1213061R6318	10	0.180
4 N.O. main poles				
17...32	TKC6-40E-51	GJH1213061R5401	10	0.180
50...90	TKC6-40E-55	GJH1213061R5405	10	0.180
77...143	TKC6-40E-62	GJH1213061R6402	10	0.180
140...260	TKC6-40E-68	GJH1213061R6408	10	0.180

Other types on request.

Main dimensions mm, inches



TKC6

B6, B7, BC6, BC7 3 and 4-pole mini contactors VB6, VB7, VBC6, VBC7 3-pole mini reversing contactors Accessories



CAF6-11N

2CDC211012S0010



RV-BC6/250

2CDC211007S0010



CA6-11E-P

2CDC211006S0010



CA6-11E

2CDC211018S0011



BSM6-30

5S127792R



T16

2CDC231012F0011

Ordering details

For contactors	Auxiliary contacts	Type	Order code	Pkg qty	Weight (1 pce)
					kg

Front-mounted instantaneous auxiliary contact blocks (not allowed for mounting on TBC, B6S, B7S, interface contactors) (1)

B6-, B7-40-00, BC6-, BC7-40-00	1 1	CAF6-11E	GJL1201330R0002	10	0.020
VB6, VB7, VBC6, VBC7, VB6A, VB7A	2 0	CAF6-20E	GJL1201330R0006	10	0.020
VBC6A, VBC7A	0 2	CAF6-02E	GJL1201330R0010	10	0.020
B6-, B7-30-10, BC6-, BC7-30-10	1 1	CAF6-11M	GJL1201330R0003	10	0.020
VB6, VB7, VBC6, VBC7, VB6A, VB7A	2 0	CAF6-20M	GJL1201330R0007	10	0.020
VBC6A, VBC7A	0 2	CAF6-02M	GJL1201330R0011	10	0.020
B6-, B7-30-01, BC6-, BC7-30-01	1 1	CAF6-11N	GJL1201330R0004	10	0.020
VB6, VB7, VBC6, VBC7, VB6A, VB7A	2 0	CAF6-20N	GJL1201330R0008	10	0.020
VBC6A, VBC7A	0 2	CAF6-02N	GJL1201330R0012	10	0.020

Side-mounted instantaneous auxiliary contact block (1)

B6-, B7-40-00, BC6-, BC7-40-00	1 1	CA6-11E	GJL1201317R0002	10	0.030
B6-, B7-30-10, BC6-, BC7-30-10	1 1	CA6-11M	GJL1201317R0003	10	0.030
B6-, B7-30-01, BC6-, BC7-30-01	1 1	CA6-11N	GJL1201317R0004	10	0.030

(1) CA6 and CAF6 must not be fitted simultaneously.

For contactors	Rated control circuit voltage U _c V DC	Connection type	Type	Order code	Pkg qty	Weight (1 pce) kg
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Surge suppressors for contactor coils

BC6, BC7	24...60	Cable lug	RV-BC6/60	GHV2501902R0002	10	0.005
		Flat pin, 2.8 mm	RV-BC6-F/60	GHV2501902R0003	10	0.005
	50...250	Cable lug	RV-BC6/250	GHV2501903R0002	10	0.005
		Flat pin, 2.8 mm	RV-BC6-F/250	GHV2501903R0003	10	0.010
	380	Cable lug	RV-BC6/380	GHV2501904R0002	10	0.005
		Flat pin, 2.8 mm	RV-BC6-F/380	GHV2501904R0003	10	0.010

Note: Mini contactors for AC operation have an integrated protective circuit.

Connecting links with manual motor starters

To connect B..VB.. mini contactor to MS116, MS132	BEA7/132	1SBN080906R1002	10	0.013
To connect B..VB.. mini contactors to MS325	BEA7/325	1SBN080906R1001	10	0.021

Connection sets for reversing contactors

VB6, VB7, VBC6, VBC7, VB6A, VB7A, VBC6A, VBC7A, cross-section 1.8 mm ²	BSM6-30	GJL1201908R0001	10	0.010
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Parallel connecting link

B6, B7, BC6, BC7	LP6	GJL1201907R0001	100	0.009
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Cover cap, transparent fitting to DIN rail design, sealable

B6, B7, BC6, BC7	LT6-B	GJL1201906R0001	10	0.015
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Overload relays fitting details (2)

Contactor types	Thermal overload relays	Electronic overload relays
B6, B7, BC6, BC7	T16 (0.10...16 A)	E16DU (0.10...18.9 A)

(2) Direct mounting - No kit required. Ordering details, see overload relays section.

K6, KC6 4-pole mini contactor relays

Accessories



CAF6-11K



CA6-11K



CA6-11K-P



LT6-B



RV-BC6/250

Ordering details

For contactors	Auxiliary contacts	Type	Order code	Pkg qty	Weight (1 pce)
					kg

Front-mounted instantaneous auxiliary contact blocks (1)

K6, KC6	1 1	CAF6-11K	GJL1201330R0001	10	0.020
	2 0	CAF6-20K	GJL1201330R0005	10	0.020
	0 2	CAF6-02K	GJL1201330R0009	10	0.020

Side-mounted instantaneous auxiliary contact block (1)

K6, KC6	1 1	CA6-11K	GJL1201317R0001	10	0.030
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(1) CA6 and CAF6 must not be fitted simultaneously.

For contactors	Rated control circuit voltage U _c V DC	Connection type	Type	Order code	Pkg qty	Weight (1 pce)
						kg

Surge suppressors for contactor coils

KC6	24...60	Cable lug	RV-BC6/60	GHV2501902R0002	10	0.005
		Flat pin, 2.8 mm	RV-BC6-F/60	GHV2501902R0003	10	0.005
	50...250	Cable lug	RV-BC6/250	GHV2501903R0002	10	0.005
		Flat pin, 2.8 mm	RV-BC6-F/250	GHV2501903R0003	10	0.010
	380	Cable lug	RV-BC6/380	GHV2501904R0002	10	0.005
		Flat pin, 2.8 mm	RV-BC6-F/380	GHV2501904R0003	10	0.010

Note: Mini contactors for AC operation have an integrated protective circuit.

Cover cap, transparent fitting to DIN rail design, sealable

K6, KC6	LT6-B	GJL1201906R0001	10	0.015
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Handwriting practice lines consisting of multiple horizontal dotted lines for tracing and writing practice.



AS 3-pole contactors and NS contactor relays with screw terminals

3-pole contactors		
AS09 ... AS16	AC operated	4/4
ASL09 ... ASL16	DC operated	4/5
AS09 ... AS16	AC operated - 2-stack	4/6
ASL09 ... ASL16	DC operated - 2-stack	4/7
Main accessories		4/8

Contactor relays		
NS	AC operated	4/10
NSL	DC operated	4/11
Main accessories		4/12

For additional information such as technical datas, dimension drawings, other products and accessories, refer to our main catalog and visit our website: www.abb.com/connecttocontrol

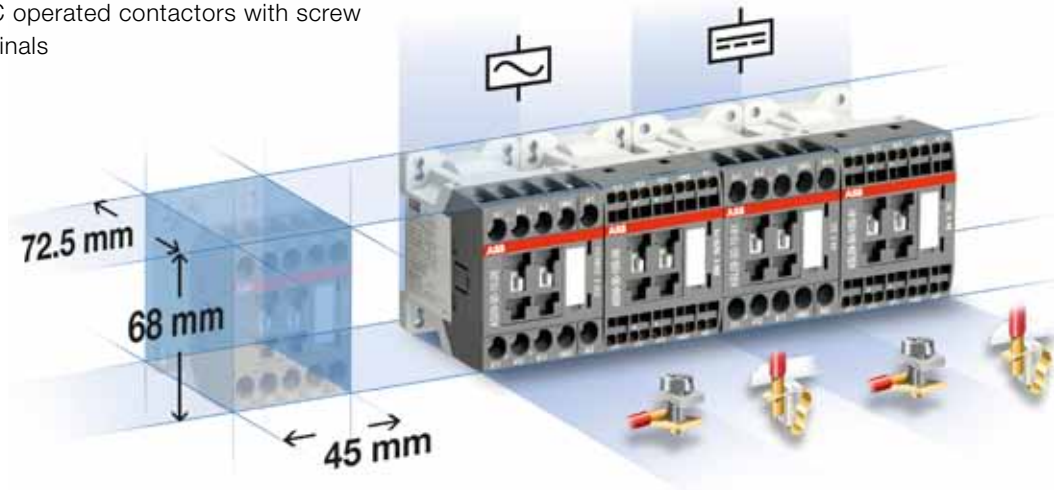
Compact

Optimize your equipment dimensions!

One frame size for contactors up to 7.5 kW - 400 V

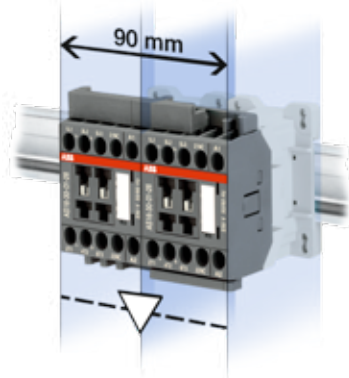
Same dimensions

for AC and DC operated contactors with screw or spring terminals



Reversing contactors

including mechanical and electrical interlocking without additional width



Direct control by PLC

removing any use of interface relay and reducing panel power consumption



Side clipped-on surge suppressors

integrated into overall contactor dimensions allowing free access to coil terminals



Multiple packaging available for all products



Simple

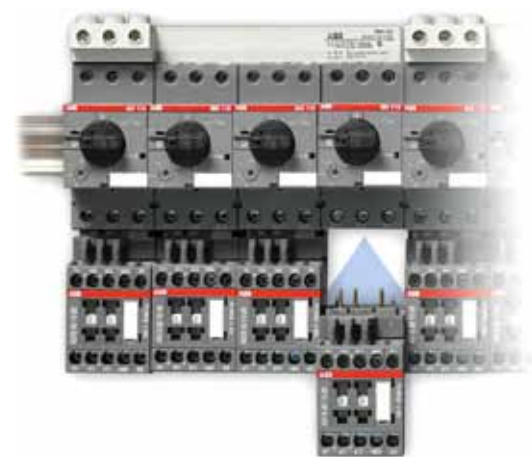
Choose reliable and time-saving solutions

Select compact starters:

- Direct-on-line and reversing starters up to 7.5 kW – 400 V
- Star-delta starters up to 11 KW – 400 V.

Protect your motors against short-circuits and overloads

- Type 1 or type 2 coordination guaranteed between contactors and short-circuit protection devices (manual motor starters or fuses)



Time/cost saving solutions with

- Connection sets for reversing and star-delta starter
- Easy, fast and secure assembly, fitting and wiring of components
- Direct 35 mm rail mounting: no additional mounting plate required
- Easy installation and dismantling of contactors: no unwiring of manual motor starters.



Compliant to International standards Complies with RoHS European directives



Make your control circuits safe



High reliability
for low signals



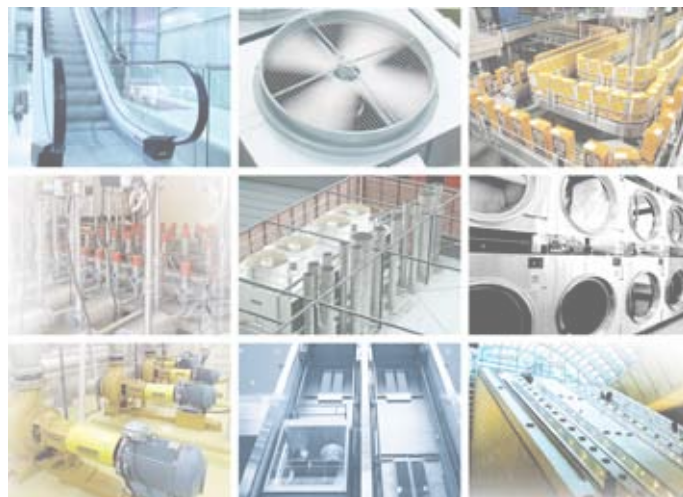
Mechanically linked
contacts according to
IEC 60947-5-1
Annex L 3.0



Mirror contact
according to
IEC 60947-4-1
Annex F 2.1

Time and space-saving solutions, suitable for your applications

- Escalators
- Elevators
- Conveyors
- Compressors
- Door control
- Hvac
- Pumps
- Washing machines...



19BC10127/50201

AS09 ... AS16 3-pole contactors

4 to 7.5 kW

AC operated



AS09-30-10

Description

AS09 ... AS16 contactors are mainly used for controlling 3-phase motors and power circuits up to 690 V AC and 220 V DC.

These contactors are of the block type design with:

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

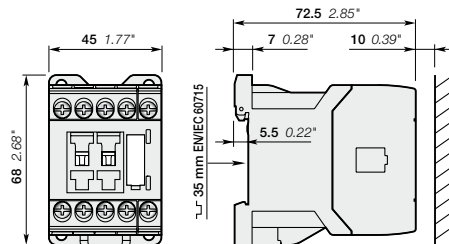
Ordering details

IEC Rated operational power 400 V AC-3 kW	Rated operational current $\theta \leq 40\text{ }^{\circ}\text{C}$ AC-1 A	UL/CSA 3-phase motor rating 480 V hp	General use rating 600 V AC A	Rated control circuit voltage Uc (1)		Auxiliary contacts fitted 1 0 0 1	Type	Order code	Weight Pkg (1 pce) kg
				V 50 Hz	V 60 Hz				
4	22	5	20	24	24	1 0	AS09-30-10-20	1SBL101001R2010	0.220
						0 1	AS09-30-01-20	1SBL101001R2001	0.220
				-	120	1 0	AS09-30-10-16	1SBL101001R1610	0.220
						0 1	AS09-30-01-16	1SBL101001R1601	0.220
				230	230	1 0	AS09-30-10-26	1SBL101001R2610	0.220
						0 1	AS09-30-01-26	1SBL101001R2601	0.220
				400	400	1 0	AS09-30-10-28	1SBL101001R2810	0.220
						0 1	AS09-30-01-28	1SBL101001R2801	0.220
				24	24	1 0	AS12-30-10-20	1SBL111001R2010	0.220
						0 1	AS12-30-01-20	1SBL111001R2001	0.220
5.5	24	7.5	20	-	120	1 0	AS12-30-10-16	1SBL111001R1610	0.220
						0 1	AS12-30-01-16	1SBL111001R1601	0.220
				230	230	1 0	AS12-30-10-26	1SBL111001R2610	0.220
						0 1	AS12-30-01-26	1SBL111001R2601	0.220
				400	400	1 0	AS12-30-10-28	1SBL111001R2810	0.220
						0 1	AS12-30-01-28	1SBL111001R2801	0.220
				24	24	1 0	AS16-30-10-20	1SBL121001R2010	0.220
						0 1	AS16-30-01-20	1SBL121001R2001	0.220
				-	120	1 0	AS16-30-10-16	1SBL121001R1610	0.220
						0 1	AS16-30-01-16	1SBL121001R1601	0.220
7.5	24	10	20	230	230	1 0	AS16-30-10-26	1SBL121001R2610	0.220
						0 1	AS16-30-01-26	1SBL121001R2601	0.220
				400	400	1 0	AS16-30-10-28	1SBL121001R2810	0.220
						0 1	AS16-30-01-28	1SBL121001R2801	0.220

Note: for multiple packaging, please contact your ABB local sales organization.

(1) Other control voltages see voltage code table.

Main dimensions mm, inches



AS09, AS12, AS16

ASL09 ... ASL16 3-pole contactors

4 to 7.5 kW

DC operated



ASL09-30-10

Description

ASL09 ... ASL16 contactors are mainly used for controlling 3-phase motors and power circuits up to 690 V AC and 220 V DC.

These contactors are of the block type design with:

- 3 main poles and 1 built-in auxiliary contact
- control circuit: low consumption (3 W at pull-in and holding) DC operated with solid core magnet. Suitable for direct control by PLC outputs (the polarity on the coil terminals A1+ and A2- must be respected)
- add-on auxiliary contact blocks for front mounting and a comprehensive range of accessories.

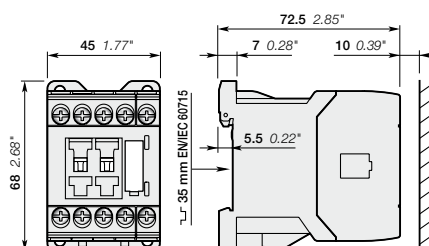
Ordering details

IEC		UL/CSA		Rated control circuit voltage Uc	Auxiliary contacts fitted	Type	Order code	Weight
Rated operational power	Rated operational current $\theta \leq 40^\circ\text{C}$	3-phase motor rating 480 V	General use rating 600 V AC	(1)				
400 V AC-3 kW	AC-1 A	hp	A	V DC	 			Pkg (1 pce) kg
4	22	5	20	24	1 0	ASL09-30-10-81	1SBL103001R8110	0.280
					0 1	ASL09-30-01-81	1SBL103001R8101	0.280
				48	1 0	ASL09-30-10-83	1SBL103001R8310	0.280
					0 1	ASL09-30-01-83	1SBL103001R8301	0.280
				110	1 0	ASL09-30-10-86	1SBL103001R8610	0.280
					0 1	ASL09-30-01-86	1SBL103001R8601	0.280
				220	1 0	ASL09-30-10-88	1SBL103001R8810	0.280
					0 1	ASL09-30-01-88	1SBL103001R8801	0.280
5.5	24	7.5	20	24	1 0	ASL12-30-10-81	1SBL113001R8110	0.280
					0 1	ASL12-30-01-81	1SBL113001R8101	0.280
				48	1 0	ASL12-30-10-83	1SBL113001R8310	0.280
					0 1	ASL12-30-01-83	1SBL113001R8301	0.280
				110	1 0	ASL12-30-10-86	1SBL113001R8610	0.280
					0 1	ASL12-30-01-86	1SBL113001R8601	0.280
				220	1 0	ASL12-30-10-88	1SBL113001R8810	0.280
					0 1	ASL12-30-01-88	1SBL113001R8801	0.280
7.5	24	10	20	24	1 0	ASL16-30-10-81	1SBL123001R8110	0.280
					0 1	ASL16-30-01-81	1SBL123001R8101	0.280
				48	1 0	ASL16-30-10-83	1SBL123001R8310	0.280
					0 1	ASL16-30-01-83	1SBL123001R8301	0.280
				110	1 0	ASL16-30-10-86	1SBL123001R8610	0.280
					0 1	ASL16-30-01-86	1SBL123001R8601	0.280
				220	1 0	ASL16-30-10-88	1SBL123001R8810	0.280
					0 1	ASL16-30-01-88	1SBL123001R8801	0.280

Note: for multiple packaging, please contact your ABB local sales organization.

(1) Other control voltages see voltage code table.

Main dimensions mm, inches



ASL09, ASL12, ASL16

AS09 ... AS16 2-stack 3-pole contactors

4 to 7.5 kW

AC operated



AS09-30-32

Description

AS09 ... AS16 contactors are mainly used for controlling 3-phase motors and power circuits up to 690 V AC and 220 V DC.

These contactors are of the block type design with:

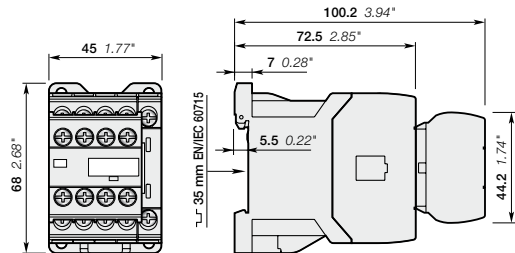
- 1st stack with 3 main poles and 1 N.O. built-in auxiliary contact
- 2nd stack with permanently fixed 2 N.O. + 2 N.C. auxiliary contact block. The auxiliary contact elements are mechanically linked (side-marked symbol) and the N.C. auxiliary contacts are mirror contacts
- control circuit: AC operated
- a comprehensive range of accessories.

Ordering details

IEC		UL/CSA		Rated control circuit		Auxiliary contacts fitted		Type	Order code		Weight
Rated power	operational current θ ≤ 40 °C	3-phase motor rating 480 V	General use rating 600 V AC	voltage Uc (1)							Pkg (1 pce)
400 V AC-3 kW	AC-1 A	hp	A	V 50 Hz	V 60 Hz						kg
4	22	5	20	24	24	3	2	AS09-30-32-20	1SBL101001R2032		0.260
				-	120	3	2	AS09-30-32-16	1SBL101001R1632		0.260
				230	230	3	2	AS09-30-32-26	1SBL101001R2632		0.260
				400	400	3	2	AS09-30-32-28	1SBL101001R2832		0.260
5.5	24	7.5	20	24	24	3	2	AS12-30-32-20	1SBL111001R2032		0.260
				-	120	3	2	AS12-30-32-16	1SBL111001R1632		0.260
				230	230	3	2	AS12-30-32-26	1SBL111001R2632		0.260
				400	400	3	2	AS12-30-32-28	1SBL111001R2832		0.260
7.5	24	10	20	24	24	3	2	AS16-30-32-20	1SBL121001R2032		0.260
				-	120	3	2	AS16-30-32-16	1SBL121001R1632		0.260
				230	230	3	2	AS16-30-32-26	1SBL121001R2632		0.260
				400	400	3	2	AS16-30-32-28	1SBL121001R2832		0.260

Note: for multiple packaging, please contact your ABB local sales organization.
 (1) Other control voltages see voltage code table.

Main dimensions mm, inches



AS09, AS12, AS16

ASL09 ... ASL16 2-stack 3-pole contactors

4 to 7.5 kW

DC operated



ASL09-30-32

Description

ASL09 ... ASL16 contactors are mainly used for controlling 3-phase motors and power circuits up to 690 V AC and 220 V DC.

These contactors are of the block type design with:

- 1st stack with 3 main poles and 1 N.O. built-in auxiliary contact
- 2nd stack with permanently fixed 2 N.O. + 2 N.C. auxiliary contact block. The auxiliary contact elements are mechanically linked (side-marked symbol) and the N.C. auxiliary contacts are mirror contacts
- control circuit: low consumption (3 W at pull-in and holding) DC operated with solid core magnet. Suitable for direct control by PLC outputs (the polarity on the coil terminals A1+ and A2- must be respected)
- a comprehensive range of accessories.

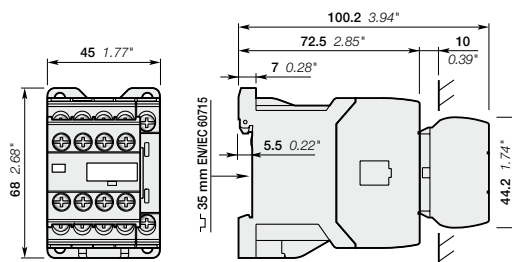
Ordering details

IEC Rated power 400 V AC-3 kW	operational current $\theta \leq 40^\circ\text{C}$ AC-1 A	UL/CSA 3-phase motor rating 480 V hp	General use rating 600 V AC A	Rated control circuit voltage U_c (1) V DC	Auxiliary contacts fitted I L	Type	Order code	Weight Pkg (1 pce) kg
4	22	5	20	24	3 2	ASL09-30-32-81	1SBL103001R8132	0.320
				48	3 2	ASL09-30-32-83	1SBL103001R8332	0.320
				110	3 2	ASL09-30-32-86	1SBL103001R8632	0.320
				220	3 2	ASL09-30-32-88	1SBL103001R8832	0.320
5.5	24	7.5	20	24	3 2	ASL12-30-32-81	1SBL113001R8132	0.320
				48	3 2	ASL12-30-32-83	1SBL113001R8332	0.320
				110	3 2	ASL12-30-32-86	1SBL113001R8632	0.320
				220	3 2	ASL12-30-32-88	1SBL113001R8832	0.320
7.5	24	10	20	24	3 2	ASL16-30-32-81	1SBL123001R8132	0.320
				48	3 2	ASL16-30-32-83	1SBL123001R8332	0.320
				110	3 2	ASL16-30-32-86	1SBL123001R8632	0.320
				220	3 2	ASL16-30-32-88	1SBL123001R8832	0.320

Note: for multiple packaging, please contact your ABB local sales organization.

(1) Other control voltages see voltage code table.

Main dimensions mm, inches

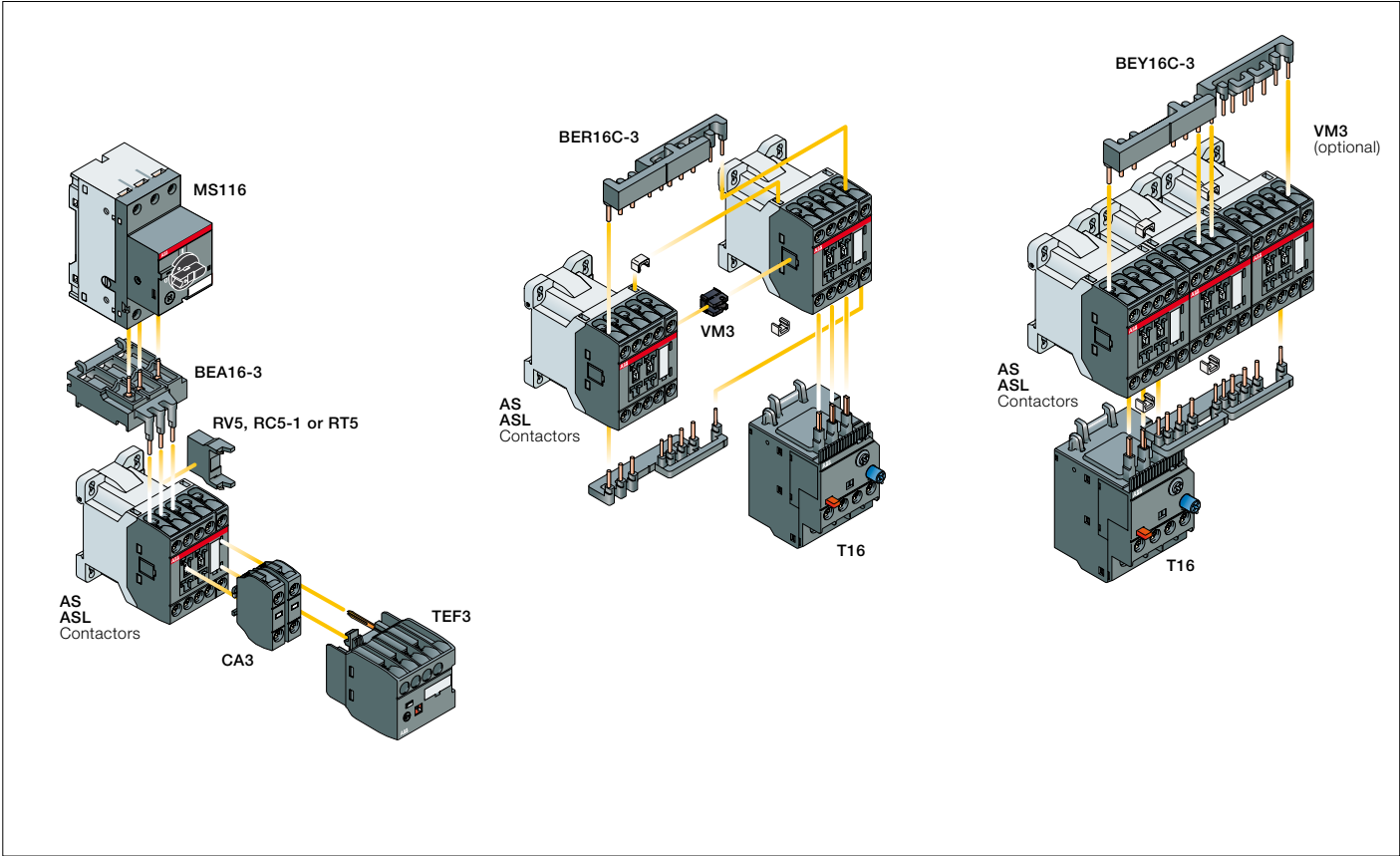


ASL09, ASL12, ASL16

AS09 ... AS16 and ASL09 ... ASL16 3-pole contactors

Main accessories

Contactor and main accessories (other accessories available)



Main accessory fitting details

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

Contactor types	Main poles	Built-in auxiliary contacts	Front-mounted accessories			Side-mounted accessories	
			Auxiliary contact blocks	Electronic timer	Mechanical interlock unit (between 2 contactors)	Surge suppressors	
			1-pole CA3	TEF3	VM3		
AS09 ... AS16	3 0	1 0	2 max.	or 1	+ 1	+	RV5 or RC5-1
AS09 ... AS16	3 0	0 1	–	–	1	+	RV5 or RC5-1
ASL09 ... ASL16	3 0	1 0	2 max.	or 1	+ 1	+	RV5 or RT5
ASL09 ... ASL16	3 0	0 1	–	–	1	+	RV5 or RT5
ASL09 ... ASL16	3 0	3 2	–	–	1	+	RV5 or RT5

Overload relays fitting details (1)

Contactor types	Thermal overload relays
AS09 ... AS16	T16 (0.10...16 A)
ASL09 ... ASL16	

The addition of an overload relay on the contactor does not prevent fitting of many other accessories as shown above.

(1) Direct mounting - No kit required.

AS09 ... AS16 and ASL09 ... ASL16 3-pole contactors

Main accessories



CA3-10



TEF3-ON



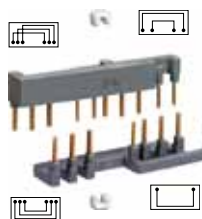
VM3



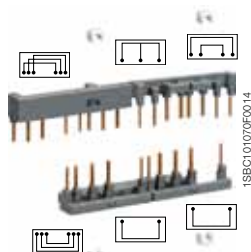
RV5



BEA16-3



BER16C-3



BEY16C-3

Front-mounted instantaneous auxiliary contact blocks

For contactors	Auxiliary contacts	Type	Order code	Pkg qty	Weight (1 pce)
AS09 ... AS16	1 0	CA3-10	1SBN011010T1010	10	0.011
ASL09 ... ASL16	0 1	CA3-01	1SBN011010T1001	10	0.011

Front-mounted electronic timer

For contactors	Rated control circuit voltage - U _c	Type	Order code	Pkg qty	Weight (1 pce)
	V				kg
ON-delay					
AS09 ... AS16, ASL09 ... ASL16	24...240 V AC/DC	TEF3-ON	1SBN021012R1000	1	0.065
OFF-delay					
AS09 ... AS16, ASL09 ... ASL16	24...240 V AC/DC	TEF3-OFF	1SBN021014R1000	1	0.065

Mechanical interlock unit

For contactors	Type	Order code	Pkg qty	Weight (1 pce)
AS09 ... AS16, ASL09 ... ASL16	VM3	1SBN031005T1000	10	0.002

Surge suppressors

For contactors	Rated control circuit voltage - U _c	Type	Order code	Pkg qty	Weight (1 pce)
	V				kg
AS09 ... AS16, ASL09 ... ASL16	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
AS09 ... AS16	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
ASL09 ... ASL16	12...32	RT5/32	1SBN050020R1000	2	0.015
	25...65	RT5/65	1SBN050020R1001	2	0.015
	50...90	RT5/90	1SBN050020R1002	2	0.015
	77...150	RT5/150	1SBN050020R1003	2	0.015
	150...264	RT5/264	1SBN050020R1004	2	0.015

Connecting links with manual motor starters

For contactors	Manual motor starter	Type	Order code	Pkg qty	Weight (1 pce)
AS09 ... AS16	MS116-0.16 ... MS116-16	BEA16-3	1SBN081006T1000	10	0.019
ASL09 ... ASL16	MS132-0.16 ... MS132-16				

Connection sets for reversing contactors

For contactors	Mechanical interlock unit	Type	Order code	Pkg qty	Weight (1 pce)
AS09 ... AS16, ASL09 ... ASL16	with or without VM3	BER16C-3	1SBN081012R1000	1	0.035

Note: BER16C-3 connection set includes two BB3 fixing clips, and an electrical interlocking when fitted on contactors with built-in N.C. auxiliary contacts. BER16C-3 can be used with or without VM3 mechanical interlock unit.

Connection sets for star-delta starting

For contactors	Mech. interlock unit between Star & Delta contactors	Type	Order code	Pkg qty	Weight (1 pce)
AS09 ... AS12, ASL09 ... ASL12	with or without VM3	BEY16C-3	1SBN081018R2000	1	0.041

Note: BEY16C-3 connection set includes two BB3 fixing clips, and an electrical interlocking when fitted on Star and Delta contactors with built-in N.C. auxiliary contacts. BEY16C-3 can be used with or without VM3 mechanical interlock unit.

NS contactor relays

AC operated



NS22E

4

Description

NS contactor relays are used for switching auxiliary and control circuits. These contactor relays are designed with:

- 4 poles or 8 poles. Contactor relays have mechanically linked auxiliary contact elements (side-marked symbol)
- control circuit: AC operated
- add-on auxiliary contact blocks for front mounting and a comprehensive range of accessories.

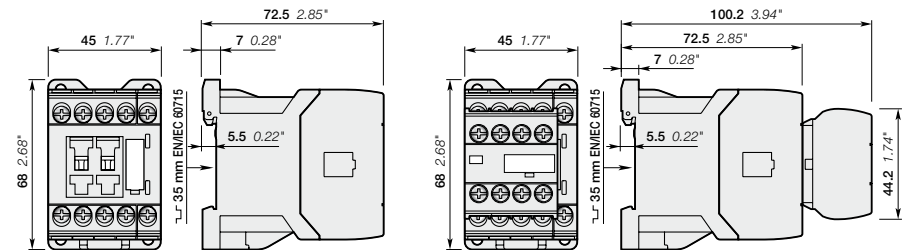
Ordering details

Number of contacts		Rated control circuit voltage Uc (1)	Type	Order code	Weight	
1st stack	2nd stack					
						V 50 Hz
		24	24	NS22E-20	1SBH101001R2022	0.220
		-	120	NS22E-16	1SBH101001R1622	0.220
		230	230	NS22E-26	1SBH101001R2622	0.220
		400	400	NS22E-28	1SBH101001R2822	0.220
		24	24	NS31E-20	1SBH101001R2031	0.220
		-	120	NS31E-16	1SBH101001R1631	0.220
		230	230	NS31E-26	1SBH101001R2631	0.220
		400	400	NS31E-28	1SBH101001R2831	0.220
		24	24	NS40E-20	1SBH101001R2040	0.220
		-	120	NS40E-16	1SBH101001R1640	0.220
		230	230	NS40E-26	1SBH101001R2640	0.220
		400	400	NS40E-28	1SBH101001R2840	0.220
		24	24	NS44E-20	1SBH101001R2044	0.260
		-	120	NS44E-16	1SBH101001R1644	0.260
		230	230	NS44E-26	1SBH101001R2644	0.260
		400	400	NS44E-28	1SBH101001R2844	0.260
		24	24	NS53E-20	1SBH101001R2053	0.260
		-	120	NS53E-16	1SBH101001R1653	0.260
		230	230	NS53E-26	1SBH101001R2653	0.260
		400	400	NS53E-28	1SBH101001R2853	0.260
		24	24	NS62E-20	1SBH101001R2062	0.260
		-	120	NS62E-16	1SBH101001R1662	0.260
		230	230	NS62E-26	1SBH101001R2662	0.260
		400	400	NS62E-28	1SBH101001R2862	0.260
		24	24	NS71E-20	1SBH101001R2071	0.260
		-	120	NS71E-16	1SBH101001R1671	0.260
		230	230	NS71E-26	1SBH101001R2671	0.260
		400	400	NS71E-28	1SBH101001R2871	0.260
		24	24	NS80E-20	1SBH101001R2080	0.260
		-	120	NS80E-16	1SBH101001R1680	0.260
		230	230	NS80E-26	1SBH101001R2680	0.260
		400	400	NS80E-28	1SBH101001R2880	0.260

Note: for multiple packaging, please contact your ABB local sales organization.

(1) Other control voltages see voltage code table.

Main dimensions mm, inches



NS22E, NS31E, NS40E

NS44E, NS53E, NS62E, NS71E, NS80E

1SBC10101475S0201

NSL contactor relays

DC operated



NSL22E

Description

NSL contactor relays are used for switching auxiliary and control circuits. These contactor relays are designed with:

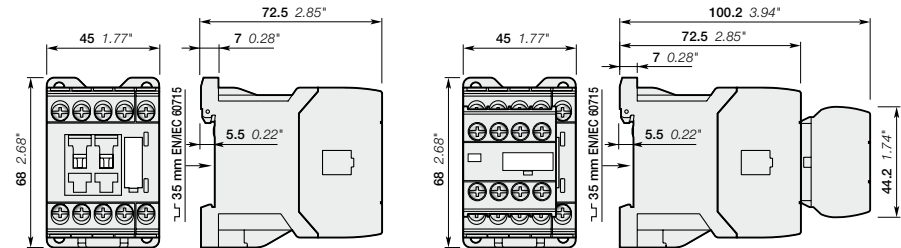
- 4 poles or 8 poles. Contactor relays have mechanically linked auxiliary contact elements (side-marked symbol)
- control circuit: low coil consumption (3 W at pull-in and holding) DC operated with solid core magnet. Suitable for direct control by PLC outputs (the polarity on the coil terminals A1+ and A2- must be respected)
- add-on auxiliary contact blocks for front mounting and a comprehensive range of accessories.

Ordering details

Number of contacts		Rated control circuit voltage	Type	Order code	Weight
1st stack	2nd stack				
		Uc (1) V DC			Pkg (1 pce) kg
		24	NSL22E-81	1SBH103001R8122	0.280
		48	NSL22E-83	1SBH103001R8322	0.280
		110	NSL22E-86	1SBH103001R8622	0.280
		220	NSL22E-88	1SBH103001R8822	0.280
		24	NSL31E-81	1SBH103001R8131	0.280
		48	NSL31E-83	1SBH103001R8331	0.280
		110	NSL31E-86	1SBH103001R8631	0.280
		220	NSL31E-88	1SBH103001R8831	0.280
		24	NSL40E-81	1SBH103001R8140	0.280
		48	NSL40E-83	1SBH103001R8340	0.280
		110	NSL40E-86	1SBH103001R8640	0.280
		220	NSL40E-88	1SBH103001R8840	0.280
		24	NSL44E-81	1SBH103001R8144	0.320
		48	NSL44E-83	1SBH103001R8344	0.320
		110	NSL44E-86	1SBH103001R8644	0.320
		220	NSL44E-88	1SBH103001R8844	0.320
		24	NSL53E-81	1SBH103001R8153	0.320
		48	NSL53E-83	1SBH103001R8353	0.320
		110	NSL53E-86	1SBH103001R8653	0.320
		220	NSL53E-88	1SBH103001R8853	0.320
		24	NSL62E-81	1SBH103001R8162	0.320
		48	NSL62E-83	1SBH103001R8362	0.320
		110	NSL62E-86	1SBH103001R8662	0.320
		220	NSL62E-88	1SBH103001R8862	0.320
		24	NSL71E-81	1SBH103001R8171	0.320
		48	NSL71E-83	1SBH103001R8371	0.320
		110	NSL71E-86	1SBH103001R8671	0.320
		220	NSL71E-88	1SBH103001R8871	0.320
		24	NSL80E-81	1SBH103001R8180	0.320
		48	NSL80E-83	1SBH103001R8380	0.320
		110	NSL80E-86	1SBH103001R8680	0.320
		220	NSL80E-88	1SBH103001R8880	0.320

Note: for multiple packaging, please contact your ABB local sales organization.
 (1) Other control voltages see voltage code table.

Main dimensions mm, inches



NSL22E, NSL31E, NSL40E

NSL44E, NSL53E, NSL62E, NSL71E, NSL80E

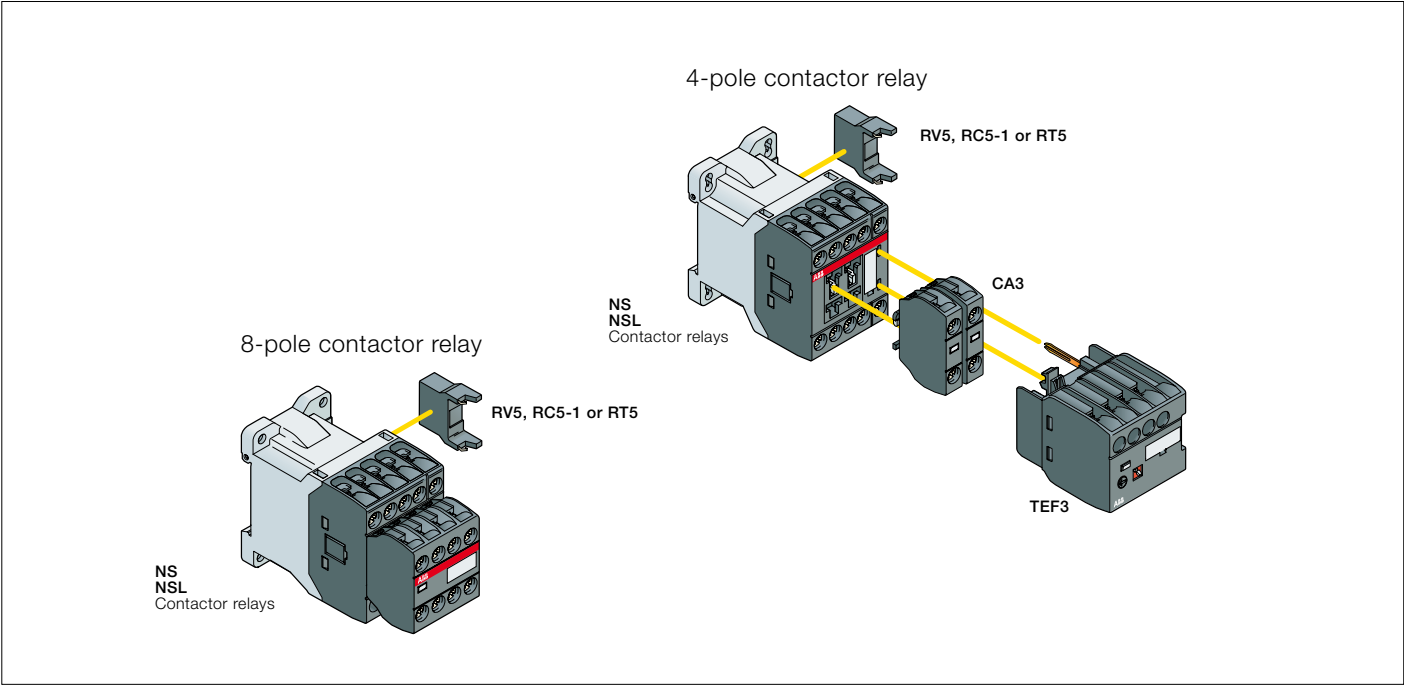
1SBC101479S0201

NS and NSL contactor relays

Main accessories

4

Contactor relays and main accessories (other accessories available)



Main accessory fitting details

Contactor types	Main poles		Front-mounted accessories		Side-mounted accessories	
			Auxiliary contact blocks	Electronic timer	Surge suppressors	
			1-pole CA3	TEF3		
NS..	2	2 E	2 max.	or 1	+	RV5 or RC5-1
NS..	3	1 E				
NS..	4	0 E				
NS..	4	4 E				RV5 or RC5-1
NS..	5	3 E				
NS..	6	2 E				
NS..	7	1 E				
NS..	8	0 E				
NSL..	2	2 E	2 max.	or 1	+	RV5 or RT5
NSL..	3	1 E				
NSL..	4	0 E				
NSL..	4	4 E				RV5 or RT5
NSL..	5	3 E				
NSL..	6	2 E				
NSL..	7	1 E				
NSL..	8	0 E				

NS and NSL contactor relays

Main accessories



CA3-10

1SBC101038F0014



TEF3-ON

1SBC101337F0014



RV5

1SBC57401F0301

Front-mounted instantaneous auxiliary contact blocks

For contactor relays	Auxiliary contacts	Type	Order code	Pkg qty	Weight (1 pce)
	 				kg
NS, NSL	1 0	CA3-10	1SBN011010T1010	10	0.011
	0 1	CA3-01	1SBN011010T1001	10	0.011

Front-mounted electronic timer

For contactors	Rated control circuit voltage - U _c V	Type	Order code	Pkg qty	Weight (1 pce) kg
ON-delay					
NS, NSL	24...240 V AC/DC	TEF3-ON	1SBN021012R1000	1	0.065
OFF-delay					
NS, NSL	24...240 V AC/DC	TEF3-OFF	1SBN021014R1000	1	0.065

Surge suppressors

For contactor relays	Rated control circuit voltage - U _c			Type	Order code	Pkg qty	Weight (1 pce) kg
	V	AC	DC				
NS, NSL	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
NS	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
NSL	12...32	–	●	RT5/32	1SBN050020R1000	2	0.015
	25...65	–	●	RT5/65	1SBN050020R1001	2	0.015
	50...90	–	●	RT5/90	1SBN050020R1002	2	0.015
	77...150	–	●	RT5/150	1SBN050020R1003	2	0.015
	150...264	–	●	RT5/264	1SBN050020R1004	2	0.015

Voltage code table

The below tables indicate the available coil voltages and corresponding digits for order codes. When placing an order, please give either type or order code. Select a standard contactor from ordering detail pages. Change the **coil voltage code** in the type or in the order code according to the table below. Example: for contactor AS09-30-10 and coil 42 V 50/60 Hz, type is AS09-30-10-**21** and order code is 1SBL101001R**21**10.

3-pole contactors

4

Type

AS16 - 30 - 10 - 26

Auxiliary contacts

N.O. N.C.

N.O. N.C.

Main contacts

AS

ASL

Contactor type

AC operated

DC operated

Order code

1SBL121001R 26 10

AC coil code

50 Hz 60 Hz

20 24 V 24 V

21 42 V 42 V

22 48 V 48 V

23 110 V 110 V

24 115 V 115 V

16 - 120 V

25 220 V 220 V

26 230 V 230 V

27 240 V 240 V

17 - 277 V

13 380 V -

28 400 V 400 V

29 415 V 415 V

DC coil code

80 12 V

81 24 V

83 48 V

84 60 V

86 110 V

87 125 V

88 220 V

89 240 V

3-pole reversing contactors

Type

VAS12 S EM - 26 M

Surge suppressor

VAS

VASL

Contactor type

AC operated

DC operated

Order code

1SBK113800M 26 00

AC coil code

50 Hz 60 Hz

20 24 V 24 V

21 42 V 42 V

22 48 V 48 V

23 110 V 110 V

24 115 V 115 V

16 - 120 V

25 220 V 220 V

26 230 V 230 V

27 240 V 240 V

17 - 277 V

13 380 V -

28 400 V 400 V

29 415 V 415 V

DC coil code

80 12 V (1)

81 24 V

83 48 V

84 60 V

86 110 V

87 125 V

88 220 V

89 240 V

(1) Not for VASL...SEM

Contactor relays

Type

NS 40 E - 26

N.O. N.C.

Number contacts

NS

NSL

Contactor type

AC operated

DC operated

Order code

1SBH101001R 26 40

AC coil code

50 Hz 60 Hz

20 24 V 24 V

21 42 V 42 V

22 48 V 48 V

23 110 V 110 V

24 115 V 115 V

16 - 120 V

25 220 V 220 V

26 230 V 230 V

27 240 V 240 V

17 - 277 V

13 380 V -

28 400 V 400 V

29 415 V 415 V

DC coil code

80 12 V

81 24 V

83 48 V

84 60 V

86 110 V

87 125 V

88 220 V

89 240 V

Handwriting practice lines consisting of multiple sets of three horizontal dotted lines.



AF, A contactors and NF contactor relays

AF 3-pole contactors - Overview 5/2

4 to 45 kW / 5 to 60 hp

AF09 ... AF38	AC / DC operated	5/4
AF09Z ... AF38Z	AC / DC operated - low consumption	5/5
AF40 ... AF96	AC / DC operated	5/6
Main accessories		5/8

55 to 200 kW / 75 to 300 hp

AF116 ... AF146	AC / DC operated	5/10
AF190 ... AF370	AC / DC operated	5/11
Main accessories		5/12

200 to 560 kW / 350 to 900 hp

AF400 ... AF750	AC / DC operated with 1 N.O. + 1 N.C.	5/14
AF1250 ... AF2650	AC / DC operated with 1 N.O. + 1 N.C.	5/15
Main accessories		5/16

AF, A 4-pole contactors - Overview 5/18

25 to 55 A AC-1

AF09 ... AF38	AC / DC operated	5/20
AF09Z ... AF38Z	AC / DC operated - low consumption	5/21
Main accessories		5/22

70 to 125 A AC-1

A45 ... A75	AC operated	5/25
AE45 ... AE75	DC operated	5/26
AF45 ... AF75	AC / DC operated	5/27
Main accessories		5/28

NF 4-pole contactor relays

NF	AC / DC operated	5/30
NFZ	AC / DC operated - low consumption	5/31
Main accessories		5/32

Voltage code table 5/34

For additional information such as technical datas, dimension drawings, other products and accessories, refer to our main catalog and visit our website: www.abb.com/connecttocontrol

3-pole contactors, for motor control and power switching

5



AC / DC Control supply				Type
IEC	AC-3	Rated operational power	220 - 230 - 240 V	kW
		$\theta \leq 60\text{ }^{\circ}\text{C}$ for AF09 ... AF370	380 - 400 V	kW
		$\theta \leq 55\text{ }^{\circ}\text{C}$ for AF400 ... AF2650	415 V	kW
			440 V	kW
			500 V	kW
			690 V	kW
			1000 V	kW
	AC-1	Rated operational current	380 - 400 V	A
			$\theta \leq 40\text{ }^{\circ}\text{C}$, 690 V	A

AF09	AF12	AF16	AF26	AF30	AF38	AF40	AF52	AF65	AF80	AF96
2.2	3	4	6.5	9	11	11	15	18.5	22	25
4	5.5	7.5	11	15	18.5	18.5	22	30	37	45
4	5.5	9	11	15	18.5	22	30	37	45	55
4	5.5	9	15	18.5	22	22	30	37	45	55
5.5	7.5	9	15	18.5	22	22	30	37	45	55
5.5	7.5	9	15	18.5	22	22	30	37	45	55
—	—	—	—	—	—	—	—	—	—	—
9	12	18	26	32	38	40	53	65	80	96
25	28	30	45	50	50	70	100	105	125	130

UL / CSA	1-phase motor rating	120 V	hp
		240 V	hp
	3-phase motor rating	200 - 208 V	hp
		220 - 240 V	hp
		440 - 480 V	hp
		550 - 600 V	hp
NEMA	General use rating	600 V	A
	NEMA Size		

0.75	1	1.5	2	2	2	3	3	5	7.5	7.5
1.5	2	3	3	5	5	7.5	10	15	15	20
2	3	5	7.5	10	10	10	15	20	25	30
2	3	5	7.5	10	10	15	20	25	30	30
5	7.5	10	15	20	20	30	40	50	60	60
7.5	10	15	20	25	25	40	50	60	75	75
25	28	30	45	50	50	60	80	90	105	115
00	0	—	1	—	—	2	—	—	3	—

Main accessories

Auxiliary contact blocks	Front mounting
	Side mounting
Timers	Electronic
Interlocking units	Mechanical
	Mechanical / Electrical
Connection sets	For reversing contactors
Surge suppressors	

CA4-10 (1 x N.O.)			
CA4-01 (1 x N.C.)			
CAL4-11 (1 x N.O. + 1 x N.C.)			
TEF4-ON			
TEF4-OFF			
VM4		VM96-4	
VEM4			
BER16-4	BER38-4	BER65-4	BER96-4
Built-in surge protection			

Overload relays

Thermal relays		Class 10 (Class 10A for TF140, TA200DU)
Electronic relays		Class 10E, 20E, 30E

TF42 (0.10...38 A)	TF65 (22...67 A)	TF96 (40...96 A)
EF19 (0.10...18.9 A)	EF19 (0.10...18.9 A) EF45 (9...45 A)	EF65 (25...70 A) EF96 (36...100 A)

Manual motor starters

	Thermal / magnetic protection Class 10
	Magnetic only types
Accessories	
For contactor mounting	

MS116 (0.10...32 A) Ics up to 50 kA for class 10 A	MS450 (28...50 A) Ics up to 50 kA	
	MS495 (45...100 A) Ics up to 50 kA	
MS132 (0.10...32 A) Ics up to 100 kA	MS497 (22...100 A) Ics up to 100 kA	
MO132 (0.16...32 A) Ics up to 100 kA	MO496 (32...100 A) Ics up to 100 kA	
	MO450 (40...50 A) Ics up to 50 kA	MO495 (63...100 A) Ics up to 50 kA
BEA16-4	BEA38-4	



	AF116	AF140	AF146	AF190	AF205	AF265	AF305	AF370	AF400	AF460	AF580	AF750	AF1250	AF1350	AF1650	AF2050	AF2650
	30	37	45	55	55	75	90	110	110	132	160	220	—	257	315	—	—
	55	75	75	90	110	132	160	200	200	250	315	400	—	475	560	—	—
	55	75	75	90	110	132	160	200	220	250	355	425	—	500	600	—	—
	75	90	90	110	132	160	160	200	220	250	355	450	—	560	670	—	—
	75	90	90	110	132	160	200	250	250	315	400	520	—	560	700	—	—
	55	75	90	132	160	200	250	315	315	355	500	600	—	750	900	—	—
	—	—	75	110	132	132	132	132	220	280	355	400	—	—	—	—	—
	116	140	146	190	205	265	305	370	400	460	580	750	—	860	1050	—	—
	160	200	225	275	350	400	500	600	600	700	800	1050	1260	1350	1650	2050	2650

5

—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
30	40	40	50	60	75	100	125	125	150	150	200	250	—	—	—	—	—
40	50	50	60	75	100	125	150	150	200	250	300	—	—	400	450	—	—
75	100	100	125	150	200	250	300	350	400	500	600	—	—	800	900	—	—
100	125	125	150	200	250	300	350	400	500	600	700	—	—	1000	1150	—	—
160	200	200	250	300	350	400	520	550	650	750	900	1210	—	1350	1650	2100	2700
—	4	—	—	—	5	—	—	—	6	—	7	—	—	—	8	—	—

CAL19-11 (1 x N.O. + 1 x N.C.)					CAL18-11 (1 x N.O. + 1 x N.C.)				
VM19 (for same size contactors)					VM750H VM750V			VM1650H	
BER140-4		BER205-4		BER370-4		BEM460-30		BEM750-30	

TF140DU (66...142 A) $\theta \leq 55^\circ\text{C}$		TA200DU (66...200 A) $\theta \leq 55^\circ\text{C}$															
EF146 (54...150 A)		EF205 (63...210 A)		EF370 (115...380 A)		E500DU (150...500 A)		E800DU (250...800 A)				E1250DU (375...1250 A)					

Short-circuit protection devices

Tmax Circuit breaker and accessories



AF09 ... AF38 3-pole contactors

4 to 18.5 kW

AC / DC operated



AF09-30-10



AF26-30-00

Description

- AF09 ... AF38 contactors are mainly used for controlling 3-phase motors and power circuits up to 690 V AC and 220 V DC. These contactors are of the block type design with 3 main poles.
- control circuit: AC or DC operated with electronic coil interface accepting a wide control voltage range (e.g. 100...250 V AC and DC), only 4 control voltage ranges covering 24...500V 50/60 Hz and 20...500 V DC
 - can manage large control voltage variations
 - reduced panel energy consumption
 - very distinct closing and opening.
- built-in surge suppression
- add-on auxiliary contact blocks for front or side mounting and a wide range of accessories.

Ordering details

IEC		UL/CSA		Rated control circuit voltage		Auxiliary contacts fitted	Type (1)	Order code	Weight
Rated operational power	current $\theta \leq 40^\circ\text{C}$	3-phase motor rating 480 V	General use rating 600 V AC	Uc min. ... Uc max.					Pkg (1 pce)
400 V AC-3	AC-1			V 50/60 Hz	V DC				kg
4	25	5	25	24...60	-	(2) 1 0 0 1	AF09-30-10-41	1SBL137001R4110	0.270
				48...130	48...130	1 0 0 1	AF09-30-10-12	1SBL137001R1210	0.270
				100...250	100...250	1 0 0 1	AF09-30-10-13	1SBL137001R1310	0.270
				250...500	250...500	1 0 0 1	AF09-30-10-14	1SBL137001R1410	0.310
						0 1	AF09-30-01-14	1SBL137001R1401	0.310
5.5	28	7.5	28	24...60	-	(2) 1 0 0 1	AF12-30-10-41	1SBL157001R4110	0.270
				48...130	48...130	1 0 0 1	AF12-30-10-12	1SBL157001R1210	0.270
				100...250	100...250	1 0 0 1	AF12-30-10-13	1SBL157001R1310	0.270
				250...500	250...500	1 0 0 1	AF12-30-10-14	1SBL157001R1410	0.310
						0 1	AF12-30-01-14	1SBL157001R1401	0.310
7.5	30	10	30	24...60	-	(2) 1 0 0 1	AF16-30-10-41	1SBL177001R4110	0.270
				48...130	48...130	1 0 0 1	AF16-30-10-12	1SBL177001R1210	0.270
				100...250	100...250	1 0 0 1	AF16-30-10-13	1SBL177001R1310	0.270
				250...500	250...500	1 0 0 1	AF16-30-10-14	1SBL177001R1410	0.310
						0 1	AF16-30-01-14	1SBL177001R1401	0.310
11	45	15	45	24...60	-	(2) 0 0 0 0	AF26-30-00-41	1SBL237001R4100	0.310
				48...130	48...130	0 0 0 0	AF26-30-00-12	1SBL237001R1200	0.310
				100...250	100...250	0 0 0 0	AF26-30-00-13	1SBL237001R1300	0.310
				250...500	250...500	0 0 0 0	AF26-30-00-14	1SBL237001R1400	0.350
15	50	20	50	24...60	-	(2) 0 0 0 0	AF30-30-00-41	1SBL277001R4100	0.310
				48...130	48...130	0 0 0 0	AF30-30-00-12	1SBL277001R1200	0.310
				100...250	100...250	0 0 0 0	AF30-30-00-13	1SBL277001R1300	0.310
				250...500	250...500	0 0 0 0	AF30-30-00-14	1SBL277001R1400	0.350
18.5	50	20	50	24...60	-	(2) 0 0 0 0	AF38-30-00-41	1SBL297001R4100	0.310
				48...130	48...130	0 0 0 0	AF38-30-00-12	1SBL297001R1200	0.310
				100...250	100...250	0 0 0 0	AF38-30-00-13	1SBL297001R1300	0.310
				250...500	250...500	0 0 0 0	AF38-30-00-14	1SBL297001R1400	0.350

(1) For other auxiliary contacts arrangements, please contact your ABB local sales organization.

(2) For 24...60 V 50/60 Hz - 20...60 V DC, use AF...-30-...-11 (see voltage code table).

AF...-30-...-11 not suitable for direct control by PLC-output.

Main dimensions mm, inches

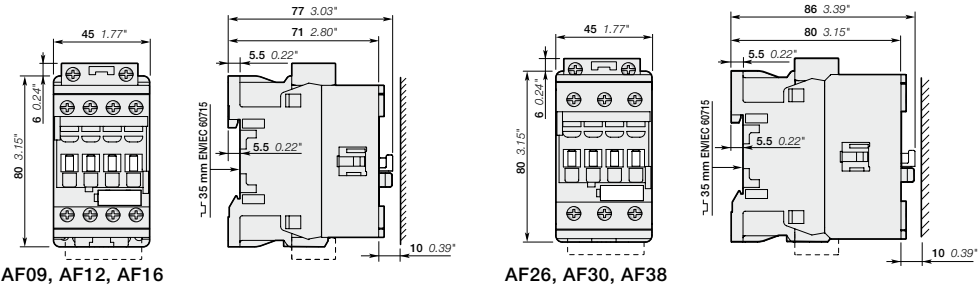




ABB | 5/5

SBC101014V0014

AF40 ... AF96 contactors are mainly used for controlling 3-phase motors and power circuits up to 690 V AC and 220 V DC. These contactors are of the block type design with 3 main poles.

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SBC:101016M0014

IEC		UL / CSA		Rated control circuit voltage Uc min. ... Uc max.		Auxiliary contacts fitted	Type (1)	Order code	Weight
Rated operational power	Rated current $\theta \leq 40^\circ\text{C}$	3-phase motor rating 480 V	General use rating 600 V AC						Pkg (1 pce)
400 V AC-3 kW	AC-1 A	hp	A	V 50/60 Hz	V DC				kg
18.5	70	30	60	24...60	-	0 0	AF40-30-00-41	1SBL347001R4100	0.970
				24...60	20...60 (2)	0 0	AF40-30-00-11	1SBL347001R1100	0.970
				48...130	48...130	0 0	AF40-30-00-12	1SBL347001R1200	0.970
				100...250	100...250	0 0	AF40-30-00-13	1SBL347001R1300	0.950
				250...500	250...500	0 0	AF40-30-00-14	1SBL347001R1400	0.950
22	100	40	80	24...60	-	0 0	AF52-30-00-41	1SBL367001R4100	0.970
				24...60	20...60 (2)	0 0	AF52-30-00-11	1SBL367001R1100	0.970
				48...130	48...130	0 0	AF52-30-00-12	1SBL367001R1200	0.970
				100...250	100...250	0 0	AF52-30-00-13	1SBL367001R1300	0.950
				250...500	250...500	0 0	AF52-30-00-14	1SBL367001R1400	0.950
30	105	50	90	24...60	-	0 0	AF65-30-00-41	1SBL387001R4100	0.970
				24...60	20...60 (2)	0 0	AF65-30-00-11	1SBL387001R1100	0.970
				48...130	48...130	0 0	AF65-30-00-12	1SBL387001R1200	0.970
				100...250	100...250	0 0	AF65-30-00-13	1SBL387001R1300	0.950
				250...500	250...500	0 0	AF65-30-00-14	1SBL387001R1400	0.950
37	125	60	105	24...60	-	0 0	AF80-30-00-41	1SBL397001R4100	1.220
				24...60	20...60 (2)	0 0	AF80-30-00-11	1SBL397001R1100	1.220
				48...130	48...130	0 0	AF80-30-00-12	1SBL397001R1200	1.220
				100...250	100...250	0 0	AF80-30-00-13	1SBL397001R1300	1.170
				250...500	250...500	0 0	AF80-30-00-14	1SBL397001R1400	1.170
45	130	60	115	24...60	-	0 0	AF96-30-00-41	1SBL407001R4100	1.220
				24...60	20...60 (2)	0 0	AF96-30-00-11	1SBL407001R1100	1.220
				48...130	48...130	0 0	AF96-30-00-12	1SBL407001R1200	1.220
				100...250	100...250	0 0	AF96-30-00-13	1SBL407001R1300	1.170
				250...500	250...500	0 0	AF96-30-00-14	1SBL407001R1400	1.170

(2) AF.-30-...-11 not suitable for direct control by PLC-output.

Technical drawing of the ENEC 6015 terminal block, showing front and side views with dimensions in inches and millimeters.

Front View Dimensions:

- Overall Width: 70 2.76"
- Overall Height: 119.5 4.70"
- Top Mounting Hole Spacing: 6 0.24"

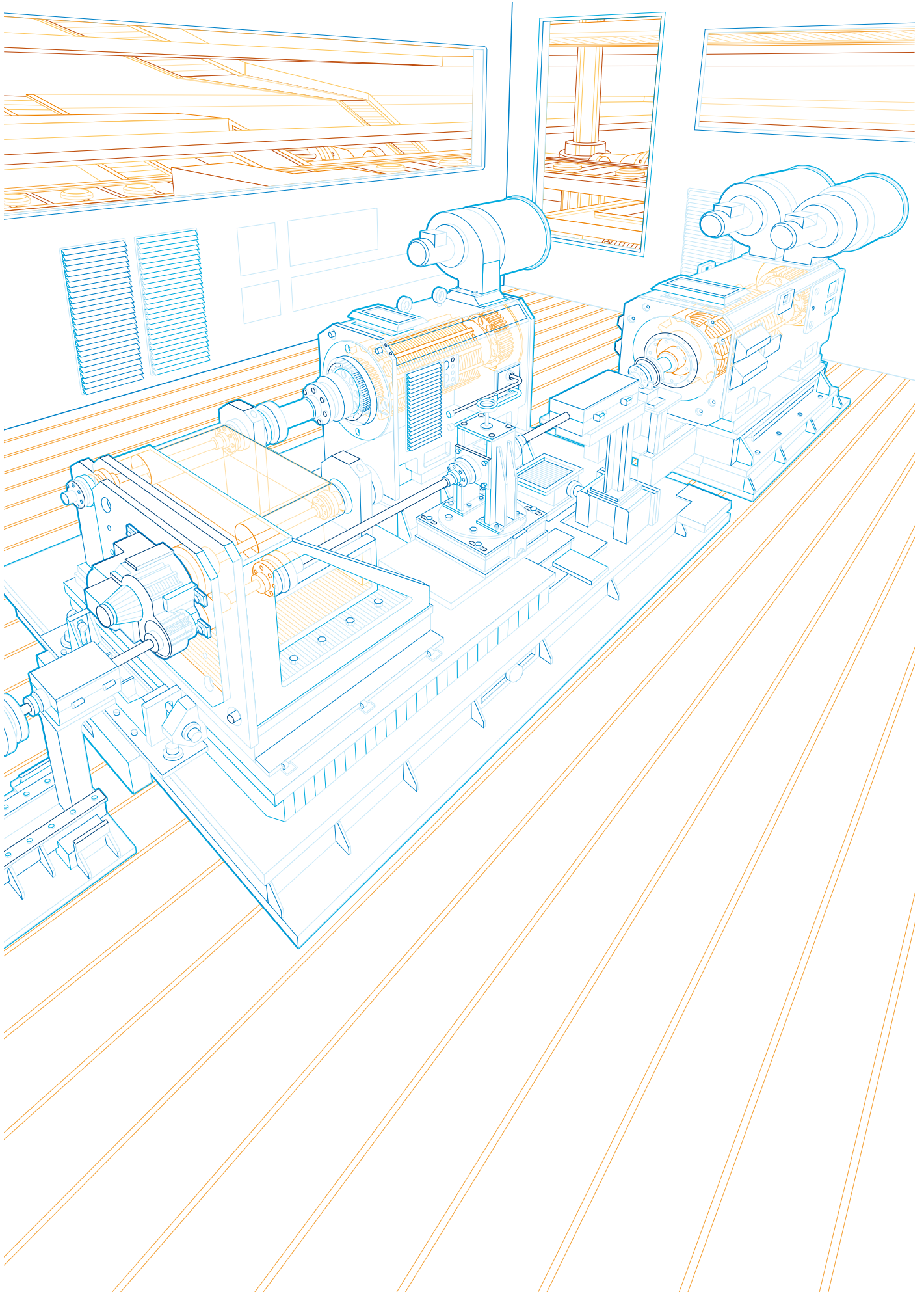
Side View Dimensions:

- Overall Depth: 116 4.57"
- Top Flange Thickness: 7 0.28"
- Terminal Block Depth: 5.5 0.22"
- Terminal Block Width: 35 x 15 mm ENEC 6015

Additional Information:

- Material: 10 0.39" (likely indicating a 10mm thick material or a specific material grade).

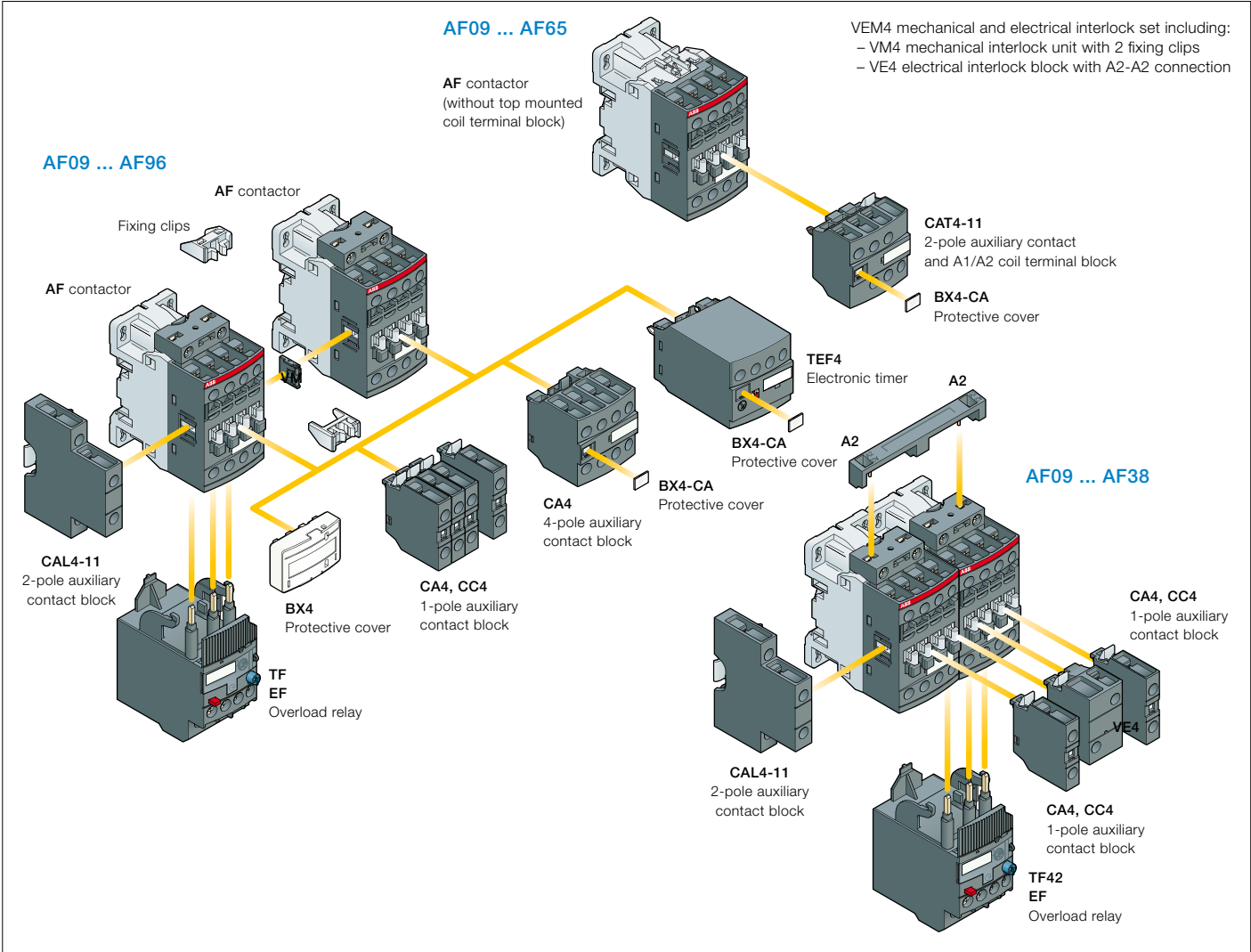
ISBC101740S0201 - Rev. A



AF09 ... AF96 3-pole contactors

Main accessories

Contactor and main accessories (other accessories available)



Main accessory fitting details

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

Contactor types	Main poles	Built-in auxiliary contacts	Front-mounted accessories					Side-mounted accessories		
			Auxiliary contact blocks				Electronic timer	Electrical and mechanical interlock set (between 2 contactors)		Auxiliary contact blocks
			1-pole CA4	1-pole CC4	2-pole CAT4-11	4-pole CA4	TEF4	VEM4		Left side 2-pole CAL4-11
Max. N.C. built-in and add-on N.C. auxiliary contacts: 4 N.C. max. on positions 1, 2, 3, 4 and 3 N.C. max. on positions 1 ±30°, 5										
AF09 ... AF16	3	0	0	1	4 max.	or 1	or 1	or 1	–	+ 1
AF09 ... AF16	3	0	1	0	2 max.	or 1	–	or 1	–	+ 1
AF26 ... AF38	3	0	0	0	3 max.	–	–	–	+ 1	or 1
AF40 ... AF65	3	0	0	0	4 max.	or 1	or 1	or 1	–	+ 1
AF80, AF96	3	0	0	0	4 max.	–	or 1	or 1	–	+ 1

Overload relays fitting details (1)

Contactor types	Thermal overload relays	Electronic overload relays
AF09 ... AF38	TF42 (0.10...38 A)	EF19 (0.10...19 A)
AF26 ... AF38	TF42 (0.10...38 A)	EF45 (9...45 A)
AF40 ... AF65	TF65 (22...67 A)	EF65 (25...70 A)
AF80, AF96	TF96 (40...96 A)	EF96 (36...100 A)

The addition of an overload relay on the contactor does not prevent fitting of many other accessories as shown above.

(1) Direct mounting - No kit required.

AF09 ... AF96 3-pole contactors

Main accessories



CA4-10



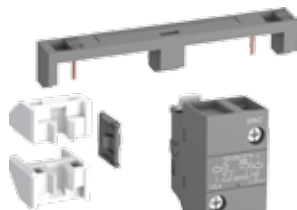
CAL4-11



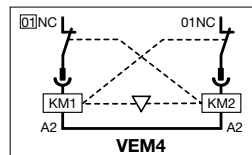
CA4-22E



CAT4-11E



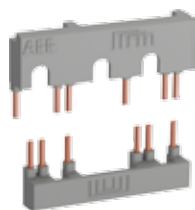
VEM4



TEF4-ON



BEA16-4



BER16-4

Ordering details (1)

For contactors	Auxiliary contacts	Type	Order code	Pkg qty	Weight (1 pce)
					kg

Front-mounted instantaneous auxiliary contact blocks

AF09 ... AF96	1 0	- -	CA4-10	1SBN010110R1010	1	0.014
	1 0	- -	CA4-10-T	1SBN010110T1010	10	0.014
	0 1	- -	CA4-01	1SBN010110R1001	1	0.014
	0 1	- -	CA4-01-T	1SBN010110T1001	10	0.014
AF09 ... AF16...-30-10	2 2	- -	CA4-22M	1SBN010140R1122	1	0.055
AF26 ... AF96...-30-00	2 2	- -	CA4-22E	1SBN010140R1022	1	0.055
AF09 ... AF16...-30-01	2 2	- -	CA4-22U	1SBN010140R1322	1	0.055

Front-mounted auxiliary contact blocks with N.O. leading contact and N.C. lagging contact

AF09 ... AF96	- -	1 0	CC4-10	1SBN010111R1010	1	0.014
	- -	0 1	CC4-01	1SBN010111R1001	1	0.014

Side-mounted instantaneous auxiliary contact blocks

AF09 ... AF96	1 1	- -	CAL4-11	1SBN010120R1011	1	0.040
	1 1	- -	CAL4-11-T	1SBN010120T1011	10	0.040

Front-mounted instantaneous auxiliary contact and A1/A2 coil terminal blocks

AF09 ... AF16...-30-10	1 1	- -	CAT4-11M	1SBN010151R1111	1	0.040
AF26 ... AF65...-30-00	1 1	- -	CAT4-11E	1SBN010151R1011	1	0.040
AF09 ... AF16...-30-01	1 1	- -	CAT4-11U	1SBN010151R1311	1	0.040

Note: CAT4 not suitable for AF...Z contactors with DC control voltage 12...20 V DC.

Mechanical interlock unit

AF09 ... AF38			VM4	1SBN030105T1000	10	0.005
AF40 ... AF96			VM96-4	1SBN033405T1000	10	0.006

Note: VM4 and VM96-4 include 2 fixing clips (BB4) to maintain together both contactors.

Mechanical and electrical interlock set

AF09 ... AF16	0 2	- -	VEM4	1SBN030111R1000	1	0.035
AF26 ... AF38						

Note: - VEM4 includes a VM4 mechanical interlock unit with 2 fixing clips (BB4), a VE4 electrical interlock block. VE4 block must be used with A2-A2 connection to respect the electrical connection diagram.
- VEM4 not suitable for AF...Z contactors with DC control voltage 12...20 V DC.

For contactors	Time delay range selected by switch	Delay type	Auxiliary contacts	Type	Order code	Pkg qty	Weight (1 pce)
							kg

Electronic timers

AF09 ... AF96	0.1...1 s	ON-delay	1 1	TEF4-ON	1SBN020112R1000	1	0.065
	1...10 s 10...100 s	OFF-delay	1 1	TEF4-OFF	1SBN020114R1000	1	0.065

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

Connecting links with manual motor starters

AF09 ... AF16	with	MS116-0.16 ... MS116-25, MS132-0.16 ... MS132-25	BEA16-4	1SBN081306T1000	10	0.025
AF26 ... AF38	with	MS116-0.16 ... MS116-16, MS132-0.16 ... MS132-10	BEA26-4	1SBN082306T1000	10	0.025
	with	MS116-20 ... MS116-32, MS132-12 ... MS132-32	BEA38-4	1SBN082306T2000	10	0.030

Connection sets for reversing contactors

AF09 ... AF16		BER16-4	1SBN081311R1000	1	0.045
AF26 ... AF38		BER38-4	1SBN082311R1000	1	0.100
AF40 ... AF65		BER65-4	1SBN083411R1000	1	0.175
AF80 ... AF96		BER96-4	1SBN083911R1000	1	0.250

Connection sets for star-delta starting

AF09 ... AF16	With or without VM4	BEY16-4	1SBN081313R2000	1	0.050
AF26 ... AF38	With or without VM4	BEY38-4	1SBN082713R2000	1	0.110
AF40 ... AF65	With or without VM96-4	BEY65-4	1SBN083413R2000	1	0.200
AF80 ... AF96	With or without VM96-4	BEY96-4	1SBN083913R2000	1	0.250

(1) For more information, refer to main catalog "Accessories" section.

AF116 ... AF146 3-pole contactors

55 to 75 kW

AC / DC operated with 1 N.O. + 1 N.C. auxiliary contacts



AF146-30-11



AF146-30-11B

Description

- AF116 ... AF140 contactors are mainly used for controlling 3-phase motors and power circuits up to 690 V AC, AF146 up to 1000 V AC. These contactors are of the block type design with 3 main poles.
- control circuit: AC or DC operated with electronic coil interface accepting a wide control voltage range (e.g. 100...250 V AC and DC), only 3 coils to cover control voltages between 24...250 V 50/60 Hz and 20...250 V DC
 - can manage large control voltage variations
 - reduced panel energy consumption
 - very distinct closing and opening
 - can withstand short voltage dips and voltage sags (SEMI F47 conditions of use on request).
 - built-in surge suppression
 - add-on auxiliary contact blocks for side mounting and a wide range of accessories.

Ordering details

IEC		UL / CSA		Rated control circuit voltage		Auxiliary contacts fitted	Type (1)	Order code	Weight
Rated operational power	current $\theta \leq 40^\circ\text{C}$	3-phase motor rating	General use rating	Uc min. ... Uc max.					Pkg (1 pce)
400 V	AC-3	480 V	600 V AC	V 50/60 Hz	V DC				kg
kW	A	hp	A						

For connection with built-in cable clamps

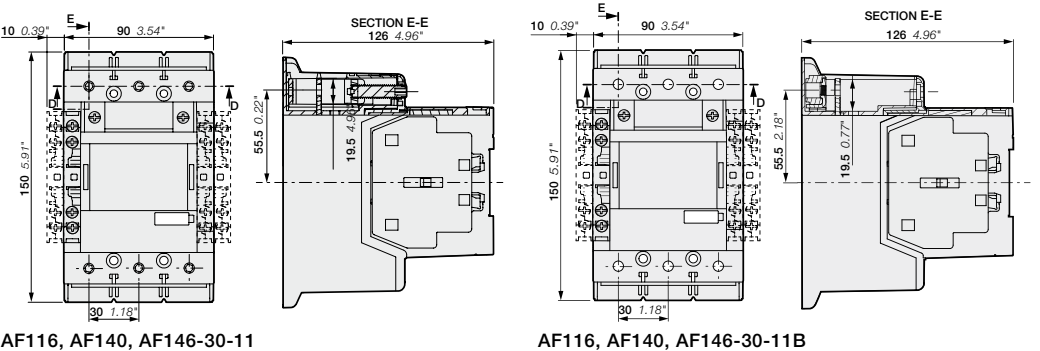
55	160	75	160	24...60	20...60	1 1	AF116-30-11-11	1SFL427001R1111	1.750
				48...130	48...130	1 1	AF116-30-11-12	1SFL427001R1211	1.750
				100...250	100...250	1 1	AF116-30-11-13	1SFL427001R1311	1.750
				250...500	250...500	1 1	AF116-30-11-14	1SFL427001R1411	1.750
75	200	100	200	24...60	20...60	1 1	AF140-30-11-11	1SFL447001R1111	1.750
				48...130	48...130	1 1	AF140-30-11-12	1SFL447001R1211	1.750
				100...250	100...250	1 1	AF140-30-11-13	1SFL447001R1311	1.750
				250...500	250...500	1 1	AF140-30-11-14	1SFL447001R1411	1.750
75	225	100	200	24...60	20...60	1 1	AF146-30-11-11	1SFL467001R1111	1.750
				48...130	48...130	1 1	AF146-30-11-12	1SFL467001R1211	1.750
				100...250	100...250	1 1	AF146-30-11-13	1SFL467001R1311	1.750
				250...500	250...500	1 1	AF146-30-11-14	1SFL467001R1411	1.750

With bar connections

55	160	75	160	24...60	20...60	1 1	AF116-30-11B-11	1SFL427002R1111	1.500
				48...130	48...130	1 1	AF116-30-11B-12	1SFL427002R1211	1.500
				100...250	100...250	1 1	AF116-30-11B-13	1SFL427002R1311	1.500
				250...500	250...500	1 1	AF116-30-11B-14	1SFL427002R1411	1.500
75	200	100	200	24...60	20...60	1 1	AF140-30-11B-11	1SFL447002R1111	1.500
				48...130	48...130	1 1	AF140-30-11B-12	1SFL447002R1211	1.500
				100...250	100...250	1 1	AF140-30-11B-13	1SFL447002R1311	1.500
				250...500	250...500	1 1	AF140-30-11B-14	1SFL447002R1411	1.500
75	225	100	200	24...60	20...60	1 1	AF146-30-11B-11	1SFL467002R1111	1.500
				48...130	48...130	1 1	AF146-30-11B-12	1SFL467002R1211	1.500
				100...250	100...250	1 1	AF146-30-11B-13	1SFL467002R1311	1.500
				250...500	250...500	1 1	AF146-30-11B-14	1SFL467002R1411	1.500

(1) For other auxiliary contacts arrangements, please contact your ABB local sales organization.

Main dimensions mm, inches



AF190 ... AF370 3-pole contactors

90 to 200 kW

AC / DC operated with 1 N.O. + 1 N.C. auxiliary contacts



AF205-30-11



AF370-30-11

Description

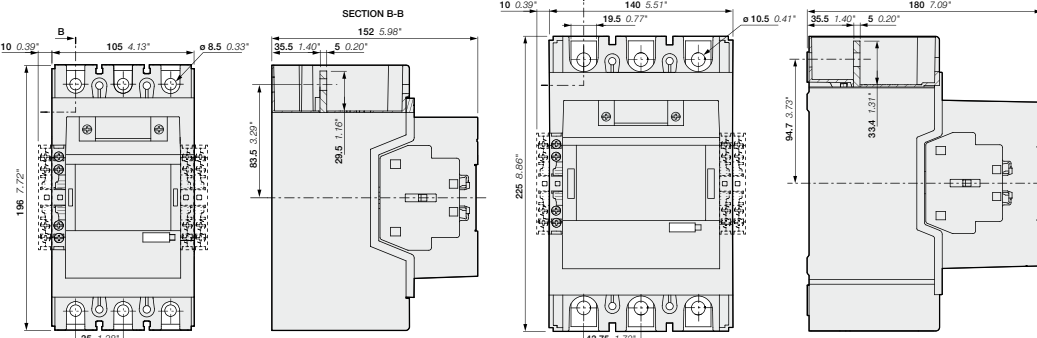
- AF190 ... AF370 contactors are mainly used for controlling 3-phase motors and power circuits up to 1000 V AC. These contactors are of the block type design with 3 main poles.
- control circuit: AC or DC operated with electronic coil interface accepting a wide control voltage range (e.g. 100...250 V AC and DC), only 3 coils to cover control voltages between 24...250 V 50/60 Hz and 20...250 V DC
 - can manage large control voltage variations
 - reduced panel energy consumption
 - very distinct closing and opening
 - can withstand short voltage dips and voltage sags (SEMI F47 conditions of use on request).
 - built-in surge suppression
 - add-on auxiliary contact blocks for side mounting and a wide range of accessories.

Ordering details

IEC		UL / CSA		Rated control circuit voltage		Auxiliary contacts fitted	Type (1)	Order code	Weight
Rated operational power	current $\theta \leq 40^\circ\text{C}$	3-phase motor rating 480 V	General use rating 600 V AC	Uc min. ... Uc max.					Pkg (1 pce)
400 V AC-3	AC-1			V 50/60 Hz	V DC				kg
90	275	125	250	24...60	20...60	1 1	AF190-30-11-11	1SFL487002R1111	3.000
				48...130	48...130	1 1	AF190-30-11-12	1SFL487002R1211	3.000
				100...250	100...250	1 1	AF190-30-11-13	1SFL487002R1311	3.000
				250...500	250...500	1 1	AF190-30-11-14	1SFL487002R1411	3.000
110	350	150	300	24...60	20...60	1 1	AF205-30-11-11	1SFL527002R1111	3.000
				48...130	48...130	1 1	AF205-30-11-12	1SFL527002R1211	3.000
				100...250	100...250	1 1	AF205-30-11-13	1SFL527002R1311	3.000
				250...500	250...500	1 1	AF205-30-11-14	1SFL527002R1411	3.000
140	400	200	350	24...60	20...60	1 1	AF265-30-11-11	1SFL547002R1111	4.640
				48...130	48...130	1 1	AF265-30-11-12	1SFL547002R1211	4.640
				100...250	100...250	1 1	AF265-30-11-13	1SFL547002R1311	4.640
				250...500	250...500	1 1	AF265-30-11-14	1SFL547002R1411	4.640
160	500	250	400	24...60	20...60	1 1	AF305-30-11-11	1SFL587002R1111	4.640
				48...130	48...130	1 1	AF305-30-11-12	1SFL587002R1211	4.640
				100...250	100...250	1 1	AF305-30-11-13	1SFL587002R1311	4.640
				250...500	250...500	1 1	AF305-30-11-14	1SFL587002R1411	4.640
200	600	300	520	24...60	20...60	1 1	AF370-30-11-11	1SFL607002R1111	4.640
				48...130	48...130	1 1	AF370-30-11-12	1SFL607002R1211	4.640
				100...250	100...250	1 1	AF370-30-11-13	1SFL607002R1311	4.640
				250...500	250...500	1 1	AF370-30-11-14	1SFL607002R1411	4.640

(1) For other auxiliary contacts arrangements, please contact your ABB local sales organization.

Main dimensions mm, inches



AF190, AF205

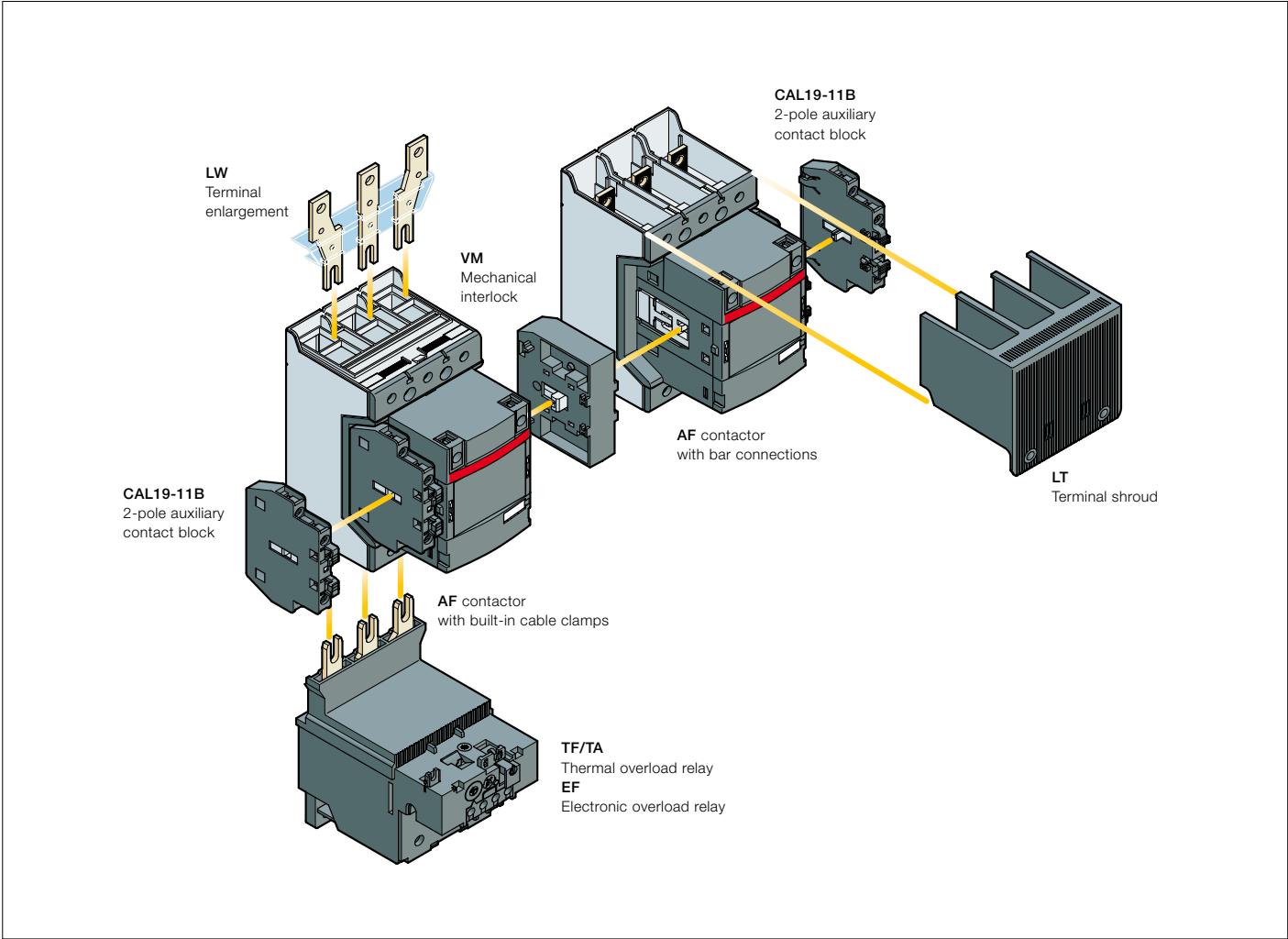
AF265, AF305, AF370

1SFC101091C0201 - Rev. C

AF116 ... AF370 3-pole contactors with 1 N.O. + 1 N.C. auxiliary contacts

Main accessories

Main accessories (other accessories available)



Main accessory fitting details

Contactor types	Main poles	Available auxiliary contacts	Side-mounted accessories		
			Auxiliary contact blocks		Mechanical interlock units (between two contactors)
			CAL19-11	CAL19-11B	
AF116 ... AF370	3	0 1 1	1 x CAL19-11	+ 2 x CAL19-11B	–
AF116 ... AF370	3	0 1 1	–	+ 2 x CAL19-11B (1)	+ VM... (2)

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

(2) Interlock type, according to the contactor ratings (see "Accessories").

Overload relays fitting details (1)

Contactor types	Thermal overload relays	Electronic overload relays
AF116 ... AF140	TF140DU (66...142 A)	EF146 (54...150 A)
AF146	–	EF146 (54...150 A)
AF190, AF205	TA200DU (66...200 A)	EF205 (63...210 A)
AF265 ... AF370	–	EF370 (115...380 A)

The addition of a thermal or electronic overload relay on the contactor does not prevent fitting of many other accessories as shown in "Main accessory fitting details" table.

(1) Direct mounting - No kit required.

AF116 ... AF370 3-pole contactors with 1 N.O. + 1 N.C. auxiliary contacts Main accessories



1SFC101071V0001

CAL19-11



1SFC101035V0001

VM19



1SFC101041V0001

LT370-30C



1SFC101049V0001

LX140

Ordering details (1)

For contactors	Auxiliary contacts	Type	Order code	Pkg qty	Weight (1 pce)
	 				kg

Side-mounted instantaneous auxiliary contact blocks

AF116 ... AF370	1	1	CAL19-11	1SFN010820R1011	2	0.050
	1	1	CAL19-11B	1SFN010820R3311	2	0.050

Mechanical interlock unit

AF116 ... AF370	VM19	1SFN030300R1000	1	0.054
AF116 ... AF146 and AF190, AF205	VM140/190	1SFN034403R1000	1	0.088
AF190, AF205 and AF265 ... AF370	VM205/265	1SFN035203R1000	1	0.090

Terminal shrouds

AF116 ... AF146, with compression lugs	LT140-30L	1SFN124203R1000	2	0.070
AF190, AF205, with cable clamps	LT205-30C	1SFN124801R1000	2	0.050
AF190, AF205, with compression lugs	LT205-30L	1SFN124803R1000	2	0.220
AF190, AF205, with shorting bar or between contactor and TOL/EOL in DOL-starters	LT205-30Y	1SFN124804R1000	1	0.050
AF265 ... AF370, with cable clamps	LT370-30C	1SFN125401R1000	2	0.035
AF265 ... AF370, with compression lugs	LT370-30L	1SFN125403R1000	2	0.280
AF265 ... AF370, with shorting bar or between contactor and TOL/EOL in DOL-starters	LT370-30Y	1SFN125404R1000	1	0.075
AF265 ... AF370, for use with extending cable clamps, ATK300/2 and OZXB4	LT370-30D	1SFN125406R1000	1	0.150

For contactors	Dimensions	Type	Order code	Pkg qty	Weight (1 pce)
	hole Ø mm	bar mm			kg

Terminal enlargements

AF116...AF146	6.5	13 x 3	LW140	1SFN074207R1000	1	0.115
AF190...AF205	10.5	17.5 x 5	LW205	1SFN074807R1000	1	0.260
AF265...AF370	10.5	20 x 5	LW370	1SFN075407R1000	1	0.340

Terminal extension

AF116...AF146	6.5	13 x 3	LX140	1SFN074210R1000	1	0.072
AF190...AF250	8.5	17.5 x 5	LX205	1SFN074810R1000	1	0.180
AF265...AF370	10.5	20 x 5	LX370	1SFN075410R1000	1	0.234

(1) For more information, refer to main catalog "Accessories" section.

AF400 ... AF750 3-pole contactors

200 to 400 kW

AC / DC operated with 1 N.O. + 1 N.C. auxiliary contacts



AF460-30-11



AF750-30-11

Description

- AF400 ... AF750 contactors are mainly used for controlling 3-phase motors and power circuits up to 1000 V AC or 600 V DC (2). These contactors are of the block type design with 3 main poles.
- control circuit: AC or DC operated with electronic coil interface accepting a wide control voltage range (e.g. 100...250 V AC and DC), only 4 coils to cover control voltages between 48...500 V 50/60 Hz and 24...500 V DC
 - can manage large control voltage variations
 - reduced panel energy consumption
 - very distinct closing and opening
 - can withstand short voltage dips and voltages sags (SEMI F47 conditions of use on request).
 - built-in surge suppression
 - add-on auxiliary contact blocks for side mounting and a wide range of accessories.

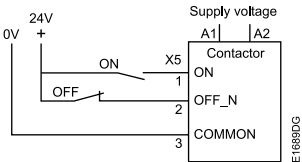
Ordering details

IEC		UL/CSA		Rated control circuit voltage Uc min. ... Uc max.		Auxiliary contacts fitted	Type	Order code	Weight Pkg (1 pce)
Rated operational power	current $\theta \leq 40^{\circ}\text{C}$	3-phase motor rating	General use rating	V 50/60 Hz	V DC				
400 V AC-3 kW	690 V AC-1 A	hp	A						kg
200	600	350	550	-	24...60	1 1	AF400-30-11	1SFL577001R6811 (1)	12.000
				48...130	48...130	1 1	AF400-30-11	1SFL577001R6911	12.000
				100...250	100...250	1 1	AF400-30-11	1SFL577001R7011	12.000
				250...500	250...500	1 1	AF400-30-11	1SFL577001R7111	12.000
250	700	400	650	-	24...60	1 1	AF460-30-11	1SFL597001R6811 (1)	12.000
				48...130	48...130	1 1	AF460-30-11	1SFL597001R6911	12.000
				100...250	100...250	1 1	AF460-30-11	1SFL597001R7011	12.000
				250...500	250...500	1 1	AF460-30-11	1SFL597001R7111	12.000
315	800	500	750	-	24...60	1 1	AF580-30-11	1SFL617001R6811 (1)	15.000
				48...130	48...130	1 1	AF580-30-11	1SFL617001R6911	15.000
				100...250	100...250	1 1	AF580-30-11	1SFL617001R7011	15.000
				250...500	250...500	1 1	AF580-30-11	1SFL617001R7111	15.000
400	1050	600	900	-	24...60	1 1	AF750-30-11	1SFL637001R6811 (1)	15.000
				48...130	48...130	1 1	AF750-30-11	1SFL637001R6911	15.000
				100...250	100...250	1 1	AF750-30-11	1SFL637001R7011	15.000
				250...500	250...500	1 1	AF750-30-11	1SFL637001R7111	15.000

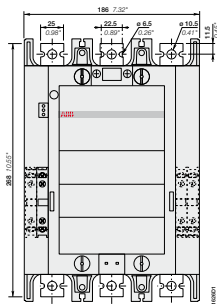
(1) The connection polarities indicated close to the coil terminals must be respected: A1 for the positive pole and A2 for the negative pole.
(2) Up to 850 V DC for AF580, AF750.

AF400 ... AF750 are equipped with low voltage inputs for control, for example by a PLC.

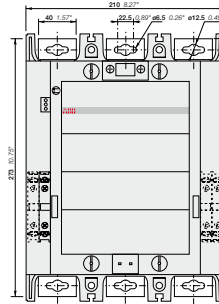
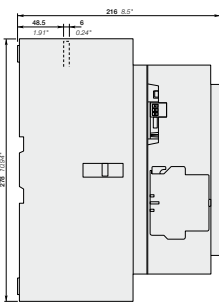
Control inputs



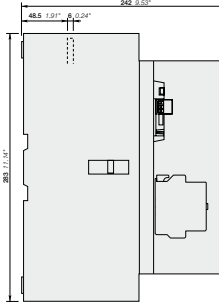
Main dimensions mm, inches



AF400, AF460



AF580, AF750



AF1250 ... AF2650 3-pole contactors

475 to 560 kW and 1260 to 2650 A AC-1

AC / DC operated with 1 N.O. + 1 N.C. auxiliary contacts



AF1250-30-11



AF2650-30-11

Description

AF1250 ... AF2050 contactors are mainly used for controlling power circuits up to 1000 V AC or 850 V DC, AF2650 for controlling power up to 1000 V AC. These contactors are of the block type design with 3 main poles.

- control circuit: AC or DC operated with electronic coil interface accepting a wide control voltage range (e.g. 100...250 V AC and DC)
- only 4 coils for AF1250 to cover control voltages between 48...500 V 50/60 Hz and 24...500 V DC
- only 1 coil for AF1350 ... AF2650 to cover control voltages between 100...250 V 50/60 Hz and 100...250 V DC
- can manage large control voltage variations
- reduced panel energy consumption
- very distinct closing and opening
- can withstand short voltage dips and voltages sags (SEMI F47 conditions of use on request).
- built-in surge suppression
- add-on auxiliary contact blocks for side mounting and a wide range of accessories.

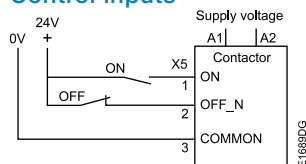
Ordering details

IEC		UL/CSA		Rated control circuit		Auxiliary contacts fitted	Type	Order code	Weight	
Rated operational power	Rated current θ ≤ 40 °C	3-phase motor rating	General use rating	Uc (1)						Pkg (1 pce)
400 V AC-3	690 V AC-1	480 V	600 V AC						kg	
kW	A	hp	A	V 50/60 Hz	V DC					
-	1260	-	1210	-	24...60	1	1	AF1250-30-11	1SFL647001R6811 (1)	16.000
				48...130	48...130	1	1	AF1250-30-11	1SFL647001R6911	16.000
				100...250	100...250	1	1	AF1250-30-11	1SFL647001R7011	16.000
				250...500	250...500	1	1	AF1250-30-11	1SFL647001R7111	16.000
475	1350	800	1350	100...250	100...250	1	1	AF1350-30-11	1SFL657001R7011	34.000
560	1650	900	1650	100...250	100...250	1	1	AF1650-30-11	1SFL677001R7011	35.000
-	2050	-	2100	100...250	100...250	1	1	AF2050-30-11	1SFL707001R7011	35.000
-	2650	-	2700	100...250	100...250	1	1	AF2650-30-11	1SFL667001R7011	45.000

(1) The connection polarities indicated close to the coil terminals must be respected: A1 for the positive pole and A2 for the negative pole.
 (2) AF2650: Maximum operational voltage = 1000 V according to UL / CSA.

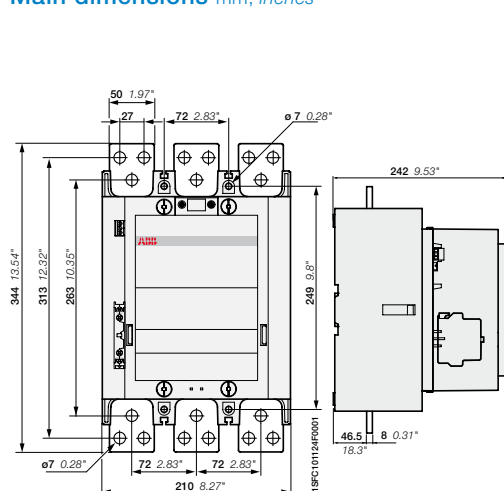
AF1250 ... AF2650 are equipped with low voltage inputs for control, for example by a PLC

Control inputs

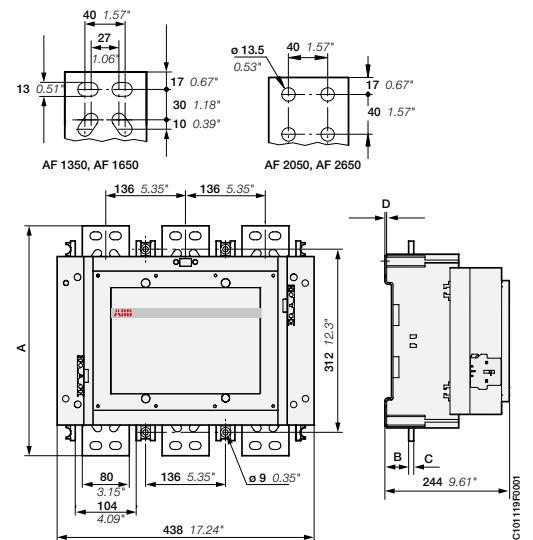


	AF1350, AF1650, AF2050	AF2650
A	392 mm / 15.43"	422 mm / 16.61"
B	47 mm / 1.85"	53.5 mm / 2.11"
C	10 mm / 0.39"	25 mm / 0.98"
D	3 mm / 0.12"	-

Main dimensions mm, inches



AF1250

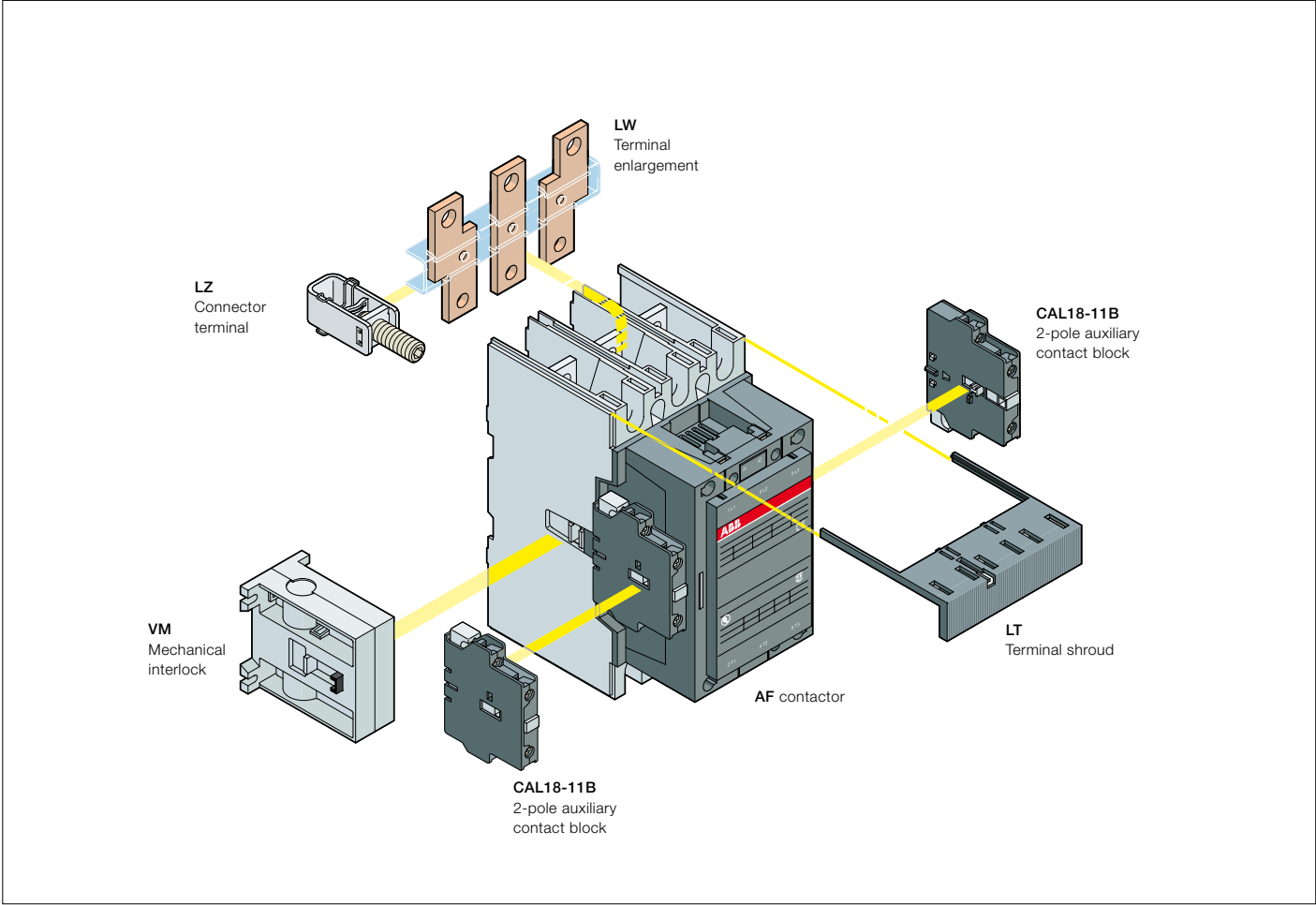


AF1350, AF1650, AF2050, AF2650

AF400 ... AF2650 3-pole contactors with 1 N.O. + 1 N.C. auxiliary contacts

Main accessories

Main accessories (other accessories available)



Main accessory fitting details

Contactor types	Main poles	Available auxiliary contacts	Side-mounted accessories		
			Auxiliary contact blocks		Mechanical interlock units
			CAL18-11	CAL18-11B (3)	(between two contactors)

Contactor types

Contactor types	Main poles	Available auxiliary contacts	Auxiliary contact blocks
AF400 ... AF2650	3	0 1 1	1 x CAL18-11 + 2 x CAL18-11B -

Contactor types with mechanical interlocking

Contactor types	Main poles	Available auxiliary contacts	Auxiliary contact blocks	Mechanical interlock units
AF400 ... AF2650	3	0 1 1	2 x CAL18-11 (1) + 4 x CAL18-11B (1)	+ VM...H (2)

(1) Total number of auxiliary contact blocks for the two contactors. (2) Interlock type, according to the contactor ratings (see "Accessories").
(3) The CAL18-11 auxiliary contact blocks can replace the CAL18-11 and CAL18-11B. Though, no auxiliary contact block can be mounted outside the CAL18-11.

Overload relays fitting details

Contactor types	Thermal overload relays	Electronic overload relays
AF400, AF460	-	E500DU (150...500 A) (4)
AF580, AF750	-	E800DU (250...800 A) (4)
AF1350, AF1650	-	E1250DU (375...1250 A) (4)

The addition of a thermal or electronic overload relay on the contactor does not prevent fitting of many other accessories as shown in "Main accessory fitting details" table.
(4) Mounting kit required (see "Motor protection").

AF400 ... AF2650 3-pole contactors with 1 N.O. + 1 N.C. auxiliary contacts Main accessories



CAL18-11



VM750H



LT460-AC

Ordering details (1)

For contactors	Auxiliary contacts	Type	Order code	Pkg qty	Weight (1 pce)
	 				kg

Side-mounted instantaneous auxiliary contact blocks

AF400 ... AF2650	1	1	CAL18-11	1SFN010720R1011	2	0.050
	1	1	CAL18-11B	1SFN010720R3311	2	0.050

Mechanical interlock unit

AF400 ... AF1250	VM750H	1SFN035700R1000	1	0.200
AF1350 ... AF2650	VM1650H	1SFN036503R1000	1	6.000

Terminal shrouds

AF400, AF460 with connectors	LT460-AC	1SFN125701R1000	2	0.100
AF400, AF460 with lugs	LT460-AL	1SFN125703R1000	2	0.800
AF580 ... AF750 with connectors	LT750-AC	1SFN126101R1000	2	0.120
AF580 ... AF750 with lugs	LT750-AL	1SFN126103R1000	2	0.825

For contactors	Dimensions	Type	Order code	Pkg qty	Weight (1 pce)
	hole Ø mm	bar mm			kg

Terminal enlargements

AF400, AF460	10.5	25 x 5	LW460	1SFN075707R1000	1	0.730
AF580, AF750	13	40 x 6	LW750	1SFN076107R1000	1	1.230
AF1250	13	50 x 10	LW1250	1SFN076407R1000	1	2.000

Terminal extension

AF400, AF460	10.5	25 x 5	LX460	1SFN075710R1000	1	0.500
AF580, AF750	13	40 x 6	LX750	1SFN076110R1000	1	0.850

(1) For more information, refer to main catalog "Accessories" section.

4-pole contactors



IEC	AC-1 Rated operational current	$\theta \leq 40\text{ }^{\circ}\text{C}$, 690 V	A
UL/CSA	General use rating	600 V	A

AC Control supply		Type
-------------------	--	------

DC Control supply		Type
-------------------	--	------

AC / DC Control supply		Type
------------------------	--	------

IEC	AC-1 Rated operational current	$\theta \leq 40\text{ }^{\circ}\text{C}$	A
		$\theta \leq 55\text{ }^{\circ}\text{C}$ (1)	A
		$\theta \leq 70\text{ }^{\circ}\text{C}$	A
With conductor cross sectional area			mm ²
Rated operational voltage U _e max.			V
UL/CSA	General use rating	600 V	A

(1) $\theta \leq 60\text{ }^{\circ}\text{C}$ for AF09 ... AF38 contactors

25	30	45	55	70	100	125
25	30	45	55	65	80	105
AF09	AF16	AF26	AF38	A45	A50	A75
AF09	AF16	AF26	AF38	AE45	AE50	AE75
AF09	AF16	AF26	AF38	AF45	AF50	AF75
25	30	45	55	70	100	125
25	30	40	45	60	85	105
22	26	32	37	50	70	85
4	6	10	16	25	35	50
690	690	690	690	690	690	690
25	30	45	55	65	80	105

Main accessories

Auxiliary contact blocks	Front mounting
	Side mounting
Timers	Electronic
Interlocking units	Mechanical
	Mechanical / Electrical
Surge suppressors	Varistor (AC / DC)
	RC Type (AC)
	Transil diode (DC)

CA4-10 (1 x N.O.), CA4-01 (1 x N.C.)	CA5-10 (1 x N.O.), CA5-01 (1 x N.C.)
CAL4-11 (1 x N.O. + 1 x N.C.)	CAL5-11 (1 x N.O. + 1 x N.C.)
TEF4-ON	TEF5-ON
TEF4-OFF	TEF5-OFF
VM4	
VEM4	VE5-2
Built-in surge protection	RV5 (24...440 V)
	RC5-2 (24...440 V)
	RT5 (12...264 V)



	200	250	300	350	550	800	1000
	170	200	250	300	420	540	—
	EK110	EK150	EK175	EK210	EK370	EK550	EK1000
	EK110	EK150	EK175	EK210	EK370	EK550	EK1000
	—	—	—	—	—	—	—
	200	250	300	350	550	800	1000
	180	230	270	310	470	650	800
	155	200	215	250	400	575	720
	95	150	185	240	2 x 185	2 x 240	2 x 300
	1000	1000	1000	1000	1000	1000	1000
	170	200	250	300	420	540	—

	CAL16-11 (1 x N.O. + 1 x N.C.)	
	VH145	VH300
	RC-EH300	RC-EH800

AF09 ... AF38 4-pole contactors

25 to 55 A AC-1

AC / DC operated



AF09-40-00



AF26-40-00

Description

AF09 ... AF38 4-pole contactors are mainly used for controlling non-inductive or slightly inductive loads (i.e. resistance furnaces...) and generally for controlling power circuits up to 690 V AC and 440 V DC. These contactors are of the block type design with 4 main poles.

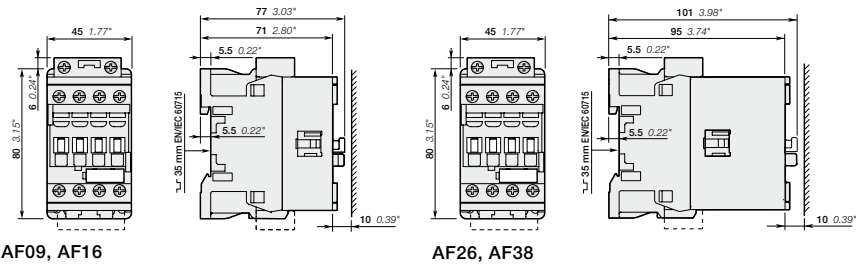
- control circuit: AC or DC operated with electronic coil interface accepting a wide control voltage range (e.g. 100...250 V AC and DC), only 4 control voltage ranges covering 24...500 V 50/60 Hz and 20...500 V DC
- can manage large control voltage variations
- reduced panel energy consumption
- very distinct closing and opening.
- built-in surge suppression
- add-on auxiliary contact blocks for front or side mounting and a wide range of accessories.

Ordering details

IEC	UL/CSA	Rated control circuit voltage Uc min. ... Uc max.		Auxiliary contacts fitted		Type	Order code	Weight
Rated operational current θ ≤ 40 °C AC-1	General use rating 600 V AC							Pkg (1 pce)
A	A	V 50/60 Hz	V DC					kg
4 N.O. main poles								
25	25	24...60	-	(1)	0 0	AF09-40-00-41	1SBL137201R4100	0.270
		48...130	48...130	0 0	AF09-40-00-12	1SBL137201R1200	0.270	
		100...250	100...250	0 0	AF09-40-00-13	1SBL137201R1300	0.270	
		250...500	250...500	0 0	AF09-40-00-14	1SBL137201R1400	0.310	
30	30	24...60	-	(1)	0 0	AF16-40-00-41	1SBL177201R4100	0.270
		48...130	48...130	0 0	AF16-40-00-12	1SBL177201R1200	0.270	
		100...250	100...250	0 0	AF16-40-00-13	1SBL177201R1300	0.270	
		250...500	250...500	0 0	AF16-40-00-14	1SBL177201R1400	0.310	
45	45	24...60	-	(1)	0 0	AF26-40-00-41	1SBL237201R4100	0.360
		48...130	48...130	0 0	AF26-40-00-12	1SBL237201R1200	0.360	
		100...250	100...250	0 0	AF26-40-00-13	1SBL237201R1300	0.360	
		250...500	250...500	0 0	AF26-40-00-14	1SBL237201R1400	0.400	
55	55	24...60	-	(1)	0 0	AF38-40-00-41	1SBL297201R4100	0.360
		48...130	48...130	0 0	AF38-40-00-12	1SBL297201R1200	0.360	
		100...250	100...250	0 0	AF38-40-00-13	1SBL297201R1300	0.360	
		250...500	250...500	0 0	AF38-40-00-14	1SBL297201R1400	0.400	
2 N.O. + 2 N.C. main poles								
25	25	24...60	-	(1)	0 0	AF09-22-00-41	1SBL137501R4100	0.270
		48...130	48...130	0 0	AF09-22-00-12	1SBL137501R1200	0.270	
		100...250	100...250	0 0	AF09-22-00-13	1SBL137501R1300	0.270	
		250...500	250...500	0 0	AF09-22-00-14	1SBL137501R1400	0.310	
30	30	24...60	-	(1)	0 0	AF16-22-00-41	1SBL177501R4100	0.270
		48...130	48...130	0 0	AF16-22-00-12	1SBL177501R1200	0.270	
		100...250	100...250	0 0	AF16-22-00-13	1SBL177501R1300	0.270	
		250...500	250...500	0 0	AF16-22-00-14	1SBL177501R1400	0.310	
45	45	24...60	-	(1)	0 0	AF26-22-00-41	1SBL237501R4100	0.360
		48...130	48...130	0 0	AF26-22-00-12	1SBL237501R1200	0.360	
		100...250	100...250	0 0	AF26-22-00-13	1SBL237501R1300	0.360	
		250...500	250...500	0 0	AF26-22-00-14	1SBL237501R1400	0.400	
55	55	24...60	-	(1)	0 0	AF38-22-00-41	1SBL297501R4100	0.360
		48...130	48...130	0 0	AF38-22-00-12	1SBL297501R1200	0.360	
		100...250	100...250	0 0	AF38-22-00-13	1SBL297501R1300	0.360	
		250...500	250...500	0 0	AF38-22-00-14	1SBL297501R1400	0.400	

(1) For 24...60 V 50/60 Hz - 20...60 V DC, use AF.-.-.-11 (see voltage code table).
AF.-.-.-11 not suitable for direct control by PLC-output.

Main dimensions mm, inches



AF09Z ... AF38Z 4-pole contactors

25 to 55 A AC-1

AC / DC operated - low consumption



AF09Z-40-00



AF26Z-40-00

Description

AF09Z ... AF38Z 4-pole contactors are mainly used for controlling non-inductive or slightly inductive loads (i.e. resistance furnaces...) and generally for controlling power circuits up to 690 V AC and 440 V DC. These contactors are of the block type design with 4 main poles.

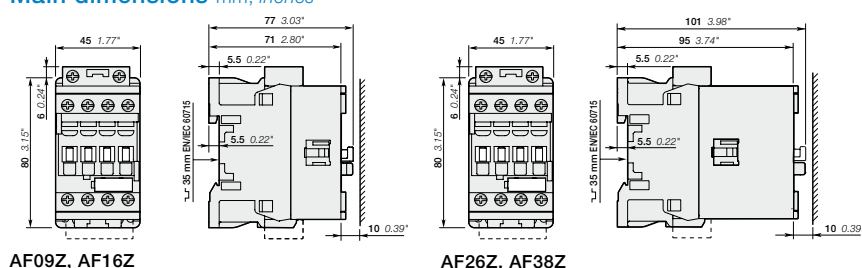
- control circuit: AC or DC operated with electronic coil interface accepting a wide control voltage range (e.g. 100...250 V AC and DC), only 4 control voltage ranges covering 24...250 V 50/60 Hz and 12...250 V DC
- can manage large control voltage variations
- allow direct control by PLC-output ≥ 24 V DC 500 mA
- reduced panel energy consumption
- very distinct closing and opening
- can withstand short voltage dips and voltage sags (SEMI F47-0706 conditions of use on request).
- built-in surge suppression
- add-on auxiliary contact blocks for front or side mounting and a wide range of accessories.

Ordering details

IEC	UL/CSA	Rated control circuit voltage Uc min. ... Uc max.		Auxiliary contacts fitted		Type	Order code		Weight
Rated operational current θ ≤ 40 °C AC-1	General use rating 600 V AC								Pkg (1 pce)
A	A	V 50/60 Hz	V DC						kg
4 N.O. main poles									
25	25	-	12...20	0	0	AF09Z-40-00-20	1SBL136201R2000		0.310
		24...60	20...60	0	0	AF09Z-40-00-21	1SBL136201R2100		0.310
		48...130	48...130	0	0	AF09Z-40-00-22	1SBL136201R2200		0.310
		100...250	100...250	0	0	AF09Z-40-00-23	1SBL136201R2300		0.310
30	30	-	12...20	0	0	AF16Z-40-00-20	1SBL176201R2000		0.310
		24...60	20...60	0	0	AF16Z-40-00-21	1SBL176201R2100		0.310
		48...130	48...130	0	0	AF16Z-40-00-22	1SBL176201R2200		0.310
		100...250	100...250	0	0	AF16Z-40-00-23	1SBL176201R2300		0.310
45	45	-	12...20	0	0	AF26Z-40-00-20	1SBL236201R2000		0.400
		24...60	20...60	0	0	AF26Z-40-00-21	1SBL236201R2100		0.400
		48...130	48...130	0	0	AF26Z-40-00-22	1SBL236201R2200		0.400
		100...250	100...250	0	0	AF26Z-40-00-23	1SBL236201R2300		0.400
55	55	-	12...20	0	0	AF38Z-40-00-20	1SBL296201R2000		0.400
		24...60	20...60	0	0	AF38Z-40-00-21	1SBL296201R2100		0.400
		48...130	48...130	0	0	AF38Z-40-00-22	1SBL296201R2200		0.400
		100...250	100...250	0	0	AF38Z-40-00-23	1SBL296201R2300		0.400
2 N.O. + 2 N.C. main poles									
25	25	-	12...20	0	0	AF09Z-22-00-20	1SBL136501R2000		0.310
		24...60	20...60	0	0	AF09Z-22-00-21	1SBL136501R2100		0.310
		48...130	48...130	0	0	AF09Z-22-00-22	1SBL136501R2200		0.310
		100...250	100...250	0	0	AF09Z-22-00-23	1SBL136501R2300		0.310
30	30	-	12...20	0	0	AF16Z-22-00-20	1SBL176501R2000		0.310
		24...60	20...60	0	0	AF16Z-22-00-21	1SBL176501R2100		0.310
		48...130	48...130	0	0	AF16Z-22-00-22	1SBL176501R2200		0.310
		100...250	100...250	0	0	AF16Z-22-00-23	1SBL176501R2300		0.310
45	45	-	12...20	0	0	AF26Z-22-00-20	1SBL236501R2000		0.400
		24...60	20...60	0	0	AF26Z-22-00-21	1SBL236501R2100		0.400
		48...130	48...130	0	0	AF26Z-22-00-22	1SBL236501R2200		0.400
		100...250	100...250	0	0	AF26Z-22-00-23	1SBL236501R2300		0.400
55	55	-	12...20	0	0	AF38Z-22-00-20	1SBL296501R2000		0.400
		24...60	20...60	0	0	AF38Z-22-00-21	1SBL296501R2100		0.400
		48...130	48...130	0	0	AF38Z-22-00-22	1SBL296501R2200		0.400
		100...250	100...250	0	0	AF38Z-22-00-23	1SBL296501R2300		0.400

Note: Only AF..Z contactors with DC control voltage 12...20 V DC need to respect the connection polarities indicated close to the coil terminals: A1+ for the positive pole and A2- for the negative pole.

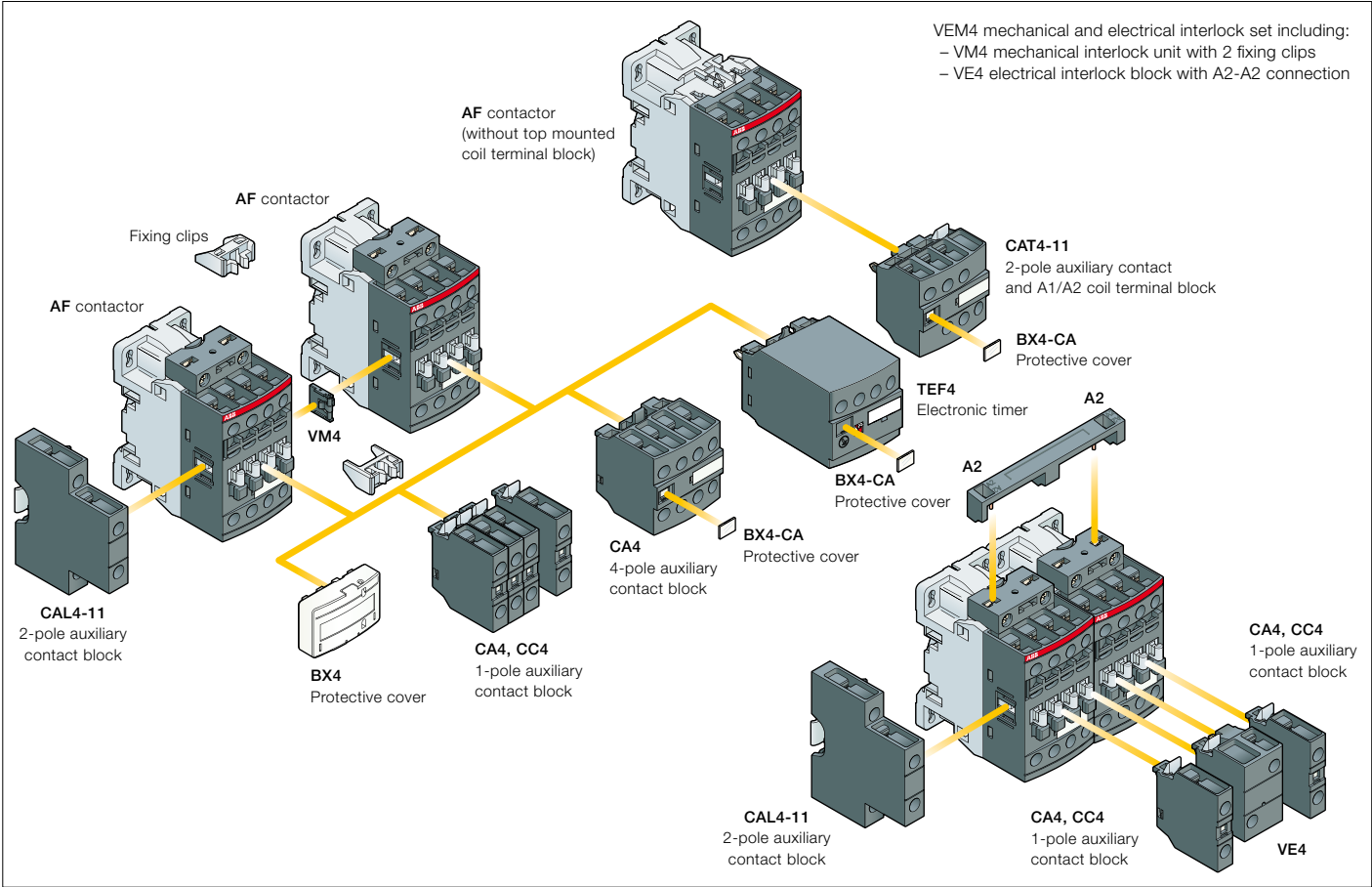
Main dimensions mm, inches



AF09 ... AF38 4-pole contactors

Main accessories

Contactor and main accessories (other accessories available)



Main accessory fitting details

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

Contactor types	Main poles	Built-in auxiliary contacts	Front-mounted accessories						Side-mounted accessories			
			Auxiliary contact blocks			Electronic timer	Electrical and mechanical interlock set (between 2 contactors)	Auxiliary contact blocks				
			1-pole CA4 1-pole CC4	2-pole CAT4-11	4-pole CA4			Left side 2-pole CAL4-11	Right side			
	 	 	Max. add-on N.C. auxiliary contacts: 4 N.C. max. on positions 1, 2, 3, 4 and 3 N.C. max. on positions 1 ±30°, 5									
AF09 ... AF16	4	0	0	0	4 max.	or 1	or 1	or 1	–	+	1	–
					2 max.	or 1	–	or 1	–	+	1	+ 1
					3 max.	–	–	–	+ 1	+	1	or 1
					Max. add-on N.C. auxiliary contacts: 3 N.C. max. on positions 1, 2, 3, 4 and 2 N.C. max. on positions 1 ±30°, 5							
AF26 ... AF38	4	0	0	0	4 max.	or 1	or 1	or 1	–	+	1	–
					2 max.	or 1	–	or 1	–	+	1	+ 1
					3 max.	–	–	–	+ 1	+	1	or 1
AF09 ... AF16	2	2	0	0	4 max.	or 1	or 1	or 1	–	+	1	–
AF26 ... AF38	2	2	0	0	2 max.	or 1	–	or 1	–	+	1	+ 1

AF09 ... AF38 4-pole contactors

Main accessories



CA4-10



CAL4-11



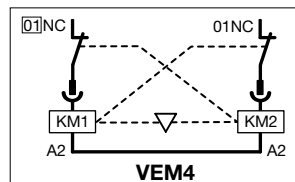
CA4-22E



CAT4-11E



VEM4



TEF4-ON

Ordering details (1)

For contactors	Auxiliary contacts	Type	Order code	Pkg qty	Weight (1 pce)
	 				kg

Front-mounted instantaneous auxiliary contact blocks

AF09 ... AF38...-40-00	1 0	- -	CA4-10	1SBN010110R1010	1	0.014
AF09 ... AF38...-22-00	1 0	- -	CA4-10-T	1SBN010110T1010	10	0.014
	0 1	- -	CA4-01	1SBN010110R1001	1	0.014
	0 1	- -	CA4-01-T	1SBN010110T1001	10	0.014
	2 2	- -	CA4-22E	1SBN010140R1022	1	0.055
	3 1	- -	CA4-31E	1SBN010140R1031	1	0.055
	4 0	- -	CA4-40E	1SBN010140R1040	1	0.055
AF09 ... AF16...-40-00	0 4	- -	CA4-04E	1SBN010140R1004	1	0.055

Front-mounted auxiliary contact blocks with N.O. leading contact and N.C. lagging contact

AF09 ... AF38...-40-00	- -	1 0	CC4-10	1SBN010111R1010	1	0.014
AF09 ... AF38...-22-00	- -	0 1	CC4-01	1SBN010111R1001	1	0.014

Side-mounted instantaneous auxiliary contact blocks

AF09 ... AF38...-40-00	1 1	- -	CAL4-11	1SBN010120R1011	1	0.040
AF09 ... AF38...-22-00	1 1	- -	CAL4-11-T	1SBN010120T1011	10	0.040

Front-mounted instantaneous auxiliary contact and A1/A2 coil terminal blocks

AF09 ... AF38...-40-00	1 1	- -	CAT4-11E	1SBN010151R1011	1	0.040
AF09 ... AF38...-22-00						

Note: CAT4 not suitable for AF..Z contactors with DC control voltage 12...20 V DC.

Mechanical interlock unit

AF09 ... AF38...-40-00			VM4	1SBN030105T1000	10	0.005
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Note: VM4 includes 2 fixing clips (BB4) to maintain together both contactors.

Mechanical and electrical interlock set

AF09, AF16...-40-00	0 2	- -	VEM4	1SBN030111R1000	1	0.035
AF26, AF38...-40-00						

Note: – VEM4 includes a VM4 mechanical interlock unit with 2 fixing clips (BB4), a VE4 electrical interlock block. VE4 block must be used with A2-A2 connection to respect the electrical connection diagram.
– VEM4 not suitable for AF..Z contactors with DC control voltage 12...20 V DC.

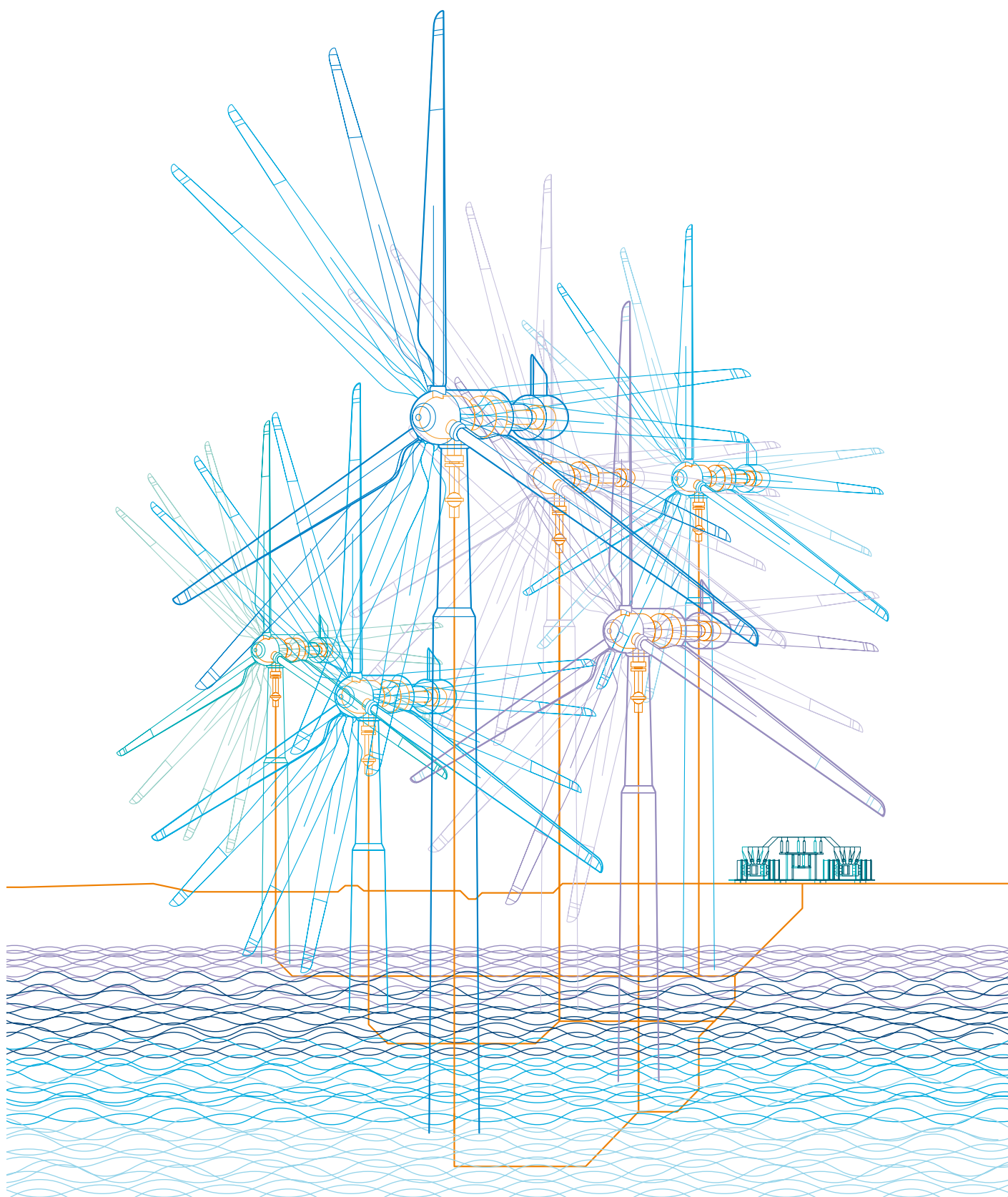
For contactors	Time delay range selected by switch	Delay type	Auxiliary contacts	Type	Order code	Pkg qty	Weight (1 pce)
			 				kg

Electronic timers

AF09 ... AF38	0.1...1 s	ON-delay	1 1	TEF4-ON	1SBN020112R1000	1	0.065
	1...10 s						
	10...100 s	OFF-delay	1 1	TEF4-OFF	1SBN020114R1000	1	0.065

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

(1) For more information, refer to main catalog "Accessories" section.



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



A45-40-00

Description

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

These contactors are of the block type design with:

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

Ordering details

IEC	UL/CSA	Rated control circuit voltage Uc		Auxiliary contacts fitted	Type	Order code	Weight
Rated operational current $\theta \leq 40\text{ }^{\circ}\text{C}$ AC-1	General use rating 600 V AC						Pkg (1 pce)
A	A	V 50 Hz	V 60 Hz	 			kg

4 N.O. main poles

70	65	24	24	0	0	A45-40-00	1SBL331201R8100	1.390
		48	48	0	0	A45-40-00	1SBL331201R8300	1.390
		110	110...120	0	0	A45-40-00	1SBL331201R8400	1.390
		220...230	230...240	0	0	A45-40-00	1SBL331201R8000	1.390
		230...240	240...260	0	0	A45-40-00	1SBL331201R8800	1.390
		380...400	400...415	0	0	A45-40-00	1SBL331201R8500	1.390
		400...415	415...440	0	0	A45-40-00	1SBL331201R8600	1.390
100	80	24	24	0	0	A50-40-00	1SBL351201R8100	1.390
		48	48	0	0	A50-40-00	1SBL351201R8300	1.390
		110	110...120	0	0	A50-40-00	1SBL351201R8400	1.390
		220...230	230...240	0	0	A50-40-00	1SBL351201R8000	1.390
		230...240	240...260	0	0	A50-40-00	1SBL351201R8800	1.390
		380...400	400...415	0	0	A50-40-00	1SBL351201R8500	1.390
		400...415	415...440	0	0	A50-40-00	1SBL351201R8600	1.390
125	105	24	24	0	0	A75-40-00	1SBL411201R8100	1.390
		48	48	0	0	A75-40-00	1SBL411201R8300	1.390
		110	110...120	0	0	A75-40-00	1SBL411201R8400	1.390
		220...230	230...240	0	0	A75-40-00	1SBL411201R8000	1.390
		230...240	240...260	0	0	A75-40-00	1SBL411201R8800	1.390
		380...400	400...415	0	0	A75-40-00	1SBL411201R8500	1.390
		400...415	415...440	0	0	A75-40-00	1SBL411201R8600	1.390

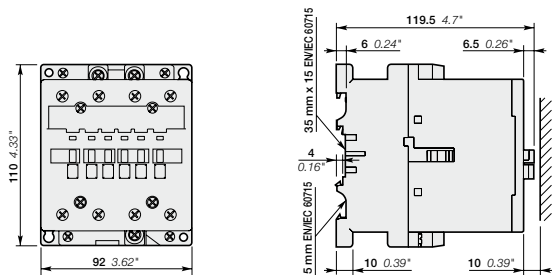
2 N.O. + 2 N.C. main poles (2)

70	65	24	24	0	0	A45-22-00	1SBL331501R8100	1.400
		48	48	0	0	A45-22-00	1SBL331501R8300	1.400
		110	110...120	0	0	A45-22-00	1SBL331501R8400	1.400
		220...230	230...240	0	0	A45-22-00	1SBL331501R8000	1.400
		230...240	240...260	0	0	A45-22-00	1SBL331501R8800	1.400
		380...400	400...415	0	0	A45-22-00	1SBL331501R8500	1.400
		400...415	415...440	0	0	A45-22-00	1SBL331501R8600	1.400
125	105	24	24	0	0	A75-22-00	1SBL411501R8100	1.400
		48	48	0	0	A75-22-00	1SBL411501R8300	1.400
		110	110...120	0	0	A75-22-00	1SBL411501R8400	1.400
		220...230	230...240	0	0	A75-22-00	1SBL411501R8000	1.400
		230...240	240...260	0	0	A75-22-00	1SBL411501R8800	1.400
		380...400	400...415	0	0	A75-22-00	1SBL411501R8500	1.400
		400...415	415...440	0	0	A75-22-00	1SBL411501R8600	1.400

(1) Other control voltages see voltage code table.

(2) These contactors are not suitable for a reversing starter or star-delta starter or for controlling a single load from 2 separate supplies. Please see technical data.

Main dimensions mm, inches



A45, A50, A75

AE45 ... AE75 4-pole contactors
70 to 125 A AC-1
DC operated



AE50-40-00

1SBC35619 1PFO303

Description

AE45 ... AE75 4-pole contactors are mainly used for controlling non-inductive or slightly inductive loads (i.e. resistance furnaces...) and generally for controlling power circuits up to 690 V AC and 220 V DC.

These contactors are of the block type design with:

- 4 main poles
- control circuit: DC operated with double winding coil (and factory-mounted lagging contact for "holding" winding insertion)
- add-on auxiliary contact blocks for front or side mounting and a wide range of accessories.

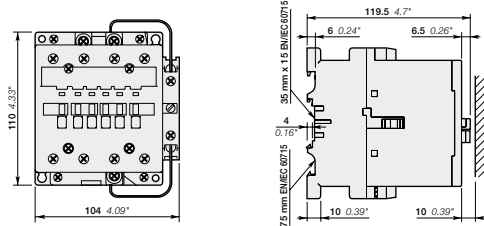
Ordering details

IEC	UL/CSA	Rated control circuit voltage Uc (1)	Auxiliary contacts fitted	Type	Order code	Weight		
Rated operational current θ ≤ 40 °C AC-1	General use rating 600 V AC					Pkg (1 pce)		
A	A	V DC				kg		
4 N.O. main poles								
70	65	12	0 0	AE45-40-00	1SBL339201R8000	1.430		
		24	0 0	AE45-40-00	1SBL339201R8100	1.430		
		48	0 0	AE45-40-00	1SBL339201R8300	1.430		
		60	0 0	AE45-40-00	1SBL339201R8400	1.430		
		110	0 0	AE45-40-00	1SBL339201R8600	1.430		
		125	0 0	AE45-40-00	1SBL339201R8700	1.430		
		220	0 0	AE45-40-00	1SBL339201R8800	1.430		
100	80	240	0 0	AE45-40-00	1SBL339201R8900	1.430		
		12	0 0	AE50-40-00	1SBL359201R8000	1.430		
		24	0 0	AE50-40-00	1SBL359201R8100	1.430		
		48	0 0	AE50-40-00	1SBL359201R8300	1.430		
		60	0 0	AE50-40-00	1SBL359201R8400	1.430		
		110	0 0	AE50-40-00	1SBL359201R8600	1.430		
		125	0 0	AE50-40-00	1SBL359201R8700	1.430		
125	105	220	0 0	AE50-40-00	1SBL359201R8800	1.430		
		240	0 0	AE50-40-00	1SBL359201R8900	1.430		
		12	0 0	AE75-40-00	1SBL419201R8000	1.430		
		24	0 0	AE75-40-00	1SBL419201R8100	1.430		
		48	0 0	AE75-40-00	1SBL419201R8300	1.430		
		60	0 0	AE75-40-00	1SBL419201R8400	1.430		
		110	0 0	AE75-40-00	1SBL419201R8600	1.430		
125	105	125	0 0	AE75-40-00	1SBL419201R8700	1.430		
		220	0 0	AE75-40-00	1SBL419201R8800	1.430		
		240	0 0	AE75-40-00	1SBL419201R8900	1.430		
		2 N.O. + 2 N.C. main poles (2)						
		70	65	12	0 0	AE45-22-00	1SBL339501R8000	1.440
				24	0 0	AE45-22-00	1SBL339501R8100	1.440
				48	0 0	AE45-22-00	1SBL339501R8300	1.440
60	0 0			AE45-22-00	1SBL339501R8400	1.440		
110	0 0			AE45-22-00	1SBL339501R8600	1.440		
125	0 0			AE45-22-00	1SBL339501R8700	1.440		
220	0 0			AE45-22-00	1SBL339501R8800	1.440		
125	105	240	0 0	AE45-22-00	1SBL339501R8900	1.440		
		12	0 0	AE75-22-00	1SBL419501R8000	1.440		
		24	0 0	AE75-22-00	1SBL419501R8100	1.440		
		48	0 0	AE75-22-00	1SBL419501R8300	1.440		
		60	0 0	AE75-22-00	1SBL419501R8400	1.440		
		110	0 0	AE75-22-00	1SBL419501R8600	1.440		
		125	0 0	AE75-22-00	1SBL419501R8700	1.440		
220	0 0	AE75-22-00	1SBL419501R8800	1.440				
					240	0 0	AE75-22-00	1SBL419501R8900

(1) Other control voltages see voltage code table.

(2) These contactors are not suitable for a reversing starter or star-delta starter or for controlling a single load from 2 separate supplies. Please see technical data.

Main dimensions mm, inches



AE45, AE50, AE75

1SBC101378S0201

AF45 ... AF75 4-pole contactors

70 to 125 A AC-1

AC / DC operated



AF45-40-00

Description

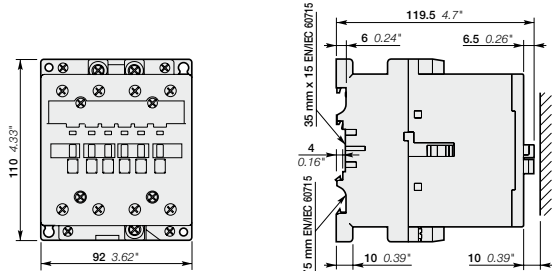
- AF45 ... AF75 4-pole contactors are mainly used for controlling non-inductive or slightly inductive loads (i.e. resistance furnaces...) and generally for controlling power circuits up to 690 V AC and 220 V DC.
- These contactors are of the block type design with:
- 4 main poles
 - control circuit: AC or DC operated with electronic coil interface accepting a wide control voltage range (e.g. 100...250 V AC and DC)
 - can manage large control voltage variations
 - only 3 coils to cover control voltages between 48...250 V 50/60 Hz and 20...250 V DC
 - reduced panel energy consumption
 - very distinct closing and opening
 - can withstand short voltage dips and voltage sags (SEMI F47 conditions of use on request).
 - built-in surge suppression
 - add-on auxiliary contact blocks for front or side mounting and a wide range of accessories.

Ordering details

IEC	UL/CSA	Rated control circuit voltage Uc min. ... Uc max.		Auxiliary contacts fitted	Type	Order code		Weight
Rated operational current θ ≤ 40 °C AC-1	General use rating 600 V AC							Pkg (1 pce)
A	A	V 50/60 Hz	V DC					kg
4 N.O. main poles								
70	65	-	20...60	0 0	AF45-40-00	1SBL337201R7200 (1)		1.420
		48...130	48...130	0 0	AF45-40-00	1SBL337201R6900		1.420
		100...250	100...250	0 0	AF45-40-00	1SBL337201R7000		1.420
100	80	-	20...60	0 0	AF50-40-00	1SBL357201R7200 (1)		1.420
		48...130	48...130	0 0	AF50-40-00	1SBL357201R6900		1.420
		100...250	100...250	0 0	AF50-40-00	1SBL357201R7000		1.420
125	105	-	20...60	0 0	AF75-40-00	1SBL417201R7200 (1)		1.420
		48...130	48...130	0 0	AF75-40-00	1SBL417201R6900		1.420
		100...250	100...250	0 0	AF75-40-00	1SBL417201R7000		1.420
2 N.O. + 2 N.C. main poles (2)								
70	65	-	20...60	0 0	AF45-22-00	1SBL337501R7200 (1)		1.420
		48...130	48...130	0 0	AF45-22-00	1SBL337501R6900		1.420
		100...250	100...250	0 0	AF45-22-00	1SBL337501R7000		1.420
125	105	-	20...60	0 0	AF75-22-00	1SBL417501R7200 (1)		1.420
		48...130	48...130	0 0	AF75-22-00	1SBL417501R6900		1.420
		100...250	100...250	0 0	AF75-22-00	1SBL417501R7000		1.420

(1) The connection polarities indicated close to the coil terminals must be respected: A1 for the positive pole and A2 for the negative pole.
(2) These contactors are not suitable for a reversing starter or star-delta starter or for controlling a single load from 2 separate supplies.
Please see technical data.

Main dimensions mm, inches

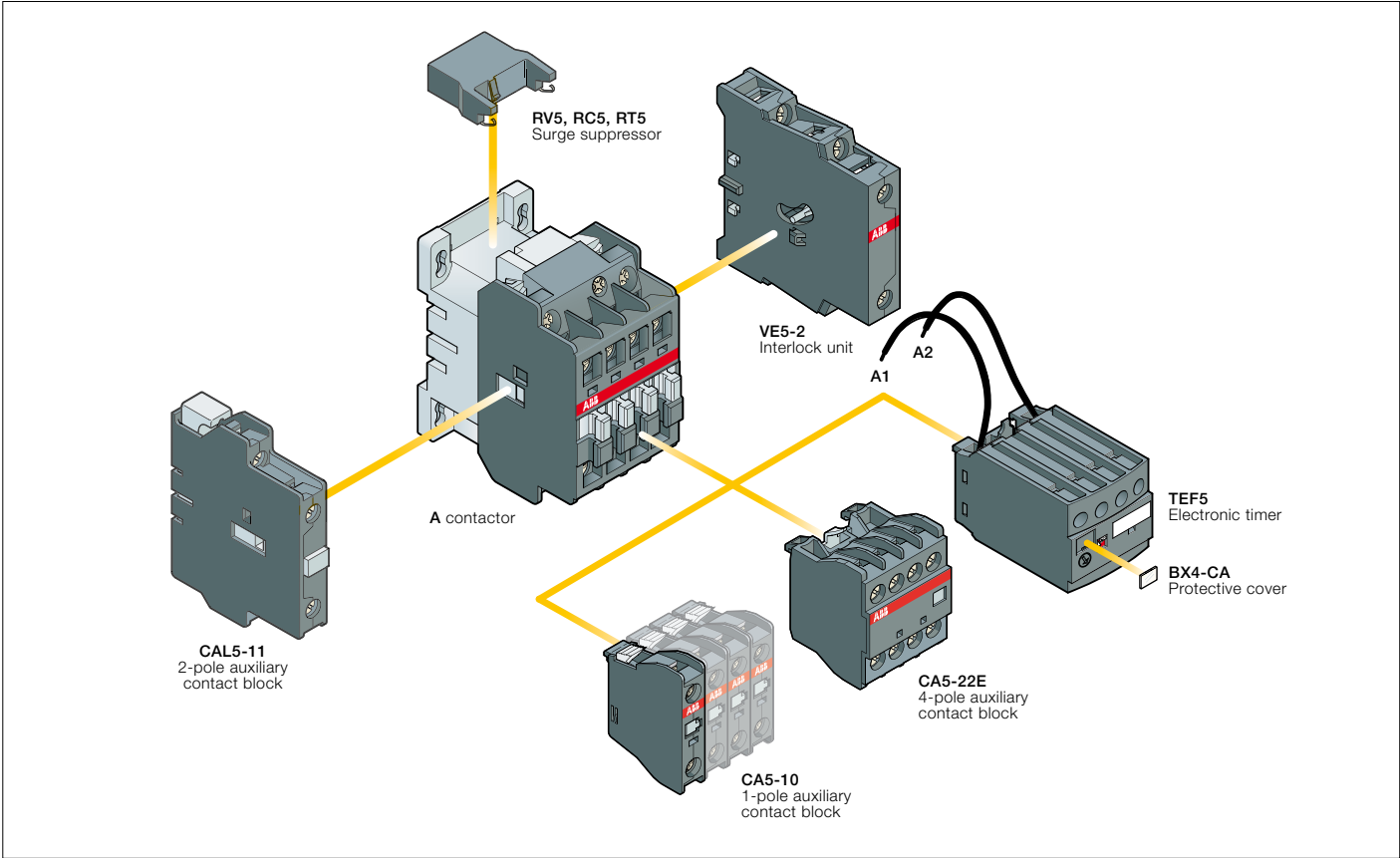


AF45, AF50, AF75

A45 ... A75, AE and AF45 ... AF75 4-pole contactors

Main accessories

Contactor and main accessories (other accessories available)



Main accessory fitting details

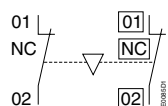
Many configurations of accessories are possible depending on whether these are front-mounted or side-mounted.

Contactor types	Main poles	Available auxiliary contacts	Front-mounted accessories				Side-mounted accessories	
			Auxiliary contact blocks		Electronic timer		Auxiliary contact blocks	Interlock unit
			1-pole CA5	4-pole CA5	TEF5		2-pole CAL5-11	VE5
A45, A50, A75	4	0 0 0	1 to 6 x CA5	or 1 x CA5 (4-pole) + 2 x 1-pole CA5	or 1 x TEF5 + 2 x CA5 (1-pole)	+	1 to 2 x CAL5-11	or 1 x VE5-2 + 1 x CAL5-11
	2	2 0 0 (1)	1 to 6 x CA5	or 1 x CA5 (4-pole) + 2 x 1-pole CA5	or 1 x TEF5 + 2 x CA5 (1-pole)	+	1 to 2 x CAL5-11	–
AE45, AE50, AE75	4	0 0 0	1 to 6 x CA5	or 1 x CA5 (4-pole) + 2 x 1-pole CA5	or 1 x TEF5 + 2 x CA5 (1-pole)	+	1 x CAL5-11	or 1 x VE5-2
	2	2 0 0 (1)	1 to 6 x CA5	or 1 x CA5 (4-pole) + 2 x 1-pole CA5	or 1 x TEF5 + 2 x CA5 (1-pole)	+	1 x CAL5-11	–
AF45, AF50, AF75	4	0 0 0	1 to 6 x CA5	or 1 x CA5 (4-pole) + 2 x 1-pole CA5	or 1 x TEF5 + 2 x CA5 (1-pole)	+	1 to 2 x CAL5-11	or 1 x VE5-2 + 1 x CAL5-11
	2	2 0 0 (1)	1 to 6 x CA5	or 1 x CA5 (4-pole) + 2 x 1-pole CA5	or 1 x TEF5 + 2 x CA5 (1-pole)	+	1 to 2 x CAL5-11	–

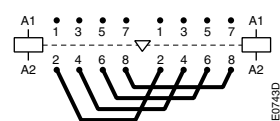
(1) 2 x N.C. CA5 auxiliary contacts maximum.

A45 ... A75, AE and AF50 ... AF75 4-pole contactors

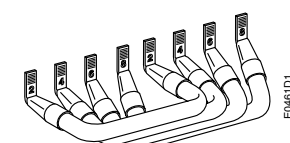
Main accessories



VE5-2
Terminal marking and positioning



BES
Changeover connections



BES75-40

Ordering details (1)

For contactors	Auxiliary contacts	Type	Order code	Pkg qty	Weight (1 pce)
					kg

Front-mounted instantaneous auxiliary contact blocks

A45, A50, A75	1 -	CA5-10	1SBN010010R1010	10	0.014
AE45, AE50, AE75	- 1	CA5-01	1SBN010010R1001	10	0.014
AF45, AF50, AF75					
A45, A50, A75	2 2	CA5-22E	1SBN010040R1022	2	0.060
AE45, AE50, AE75					
AF45, AF50, AF75					

Side-mounted instantaneous auxiliary contact blocks

A45, A50, A75	1 1	CAL5-11	1SBN010020R1011	2	0.050
AE45, AE50, AE75					
AF45, AF50, AF75					

Interlock unit

A45, A50, A75-40-00	Mechanical and electrical	- 2	VE5-2	1SBN030210R1000	1	0.146
AE45, AE50, AE75-40-00						
AF45, AF50, AF75-40-00						

For contactors	Time delay range selected by switch	Delay type	Auxiliary contacts	Type	Order code	Pkg qty	Weight (1 pce)
							kg

Electronic timers

A45, A50, A75	0.1...1 s	ON-delay	1 1	TEF5-ON	1SBN020312R1000	1	0.065
AE45, AE50, AE75	1...10 s	OFF-delay	1 1	TEF5-OFF	1SBN020314R1000	1	0.065
AF45, AF50, AF75	10...100 s						

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

For contactors	Rated control circuit voltage U_c	Type	Order code	Pkg qty	Weight (1 pce)
	V	AC DC			kg

Surge suppressors

A45, A50, A75	24...50	● ●	RV5/50	1SBN050010R1000	2	0.015
AE45, AE50, AE75	50...133	● ●	RV5/133	1SBN050010R1001	2	0.015
	110...250	● ●	RV5/250	1SBN050010R1002	2	0.015
	250...440	● ●	RV5/440	1SBN050010R1003	2	0.015
A45, A50, A75	24...50	● -	RC5-2/50	1SBN050200R1000	2	0.015
	50...133	● -	RC5-2/133	1SBN050200R1001	2	0.015
	110...250	● -	RC5-2/250	1SBN050200R1002	2	0.015
	250...440	● -	RC5-2/440	1SBN050200R1003	2	0.015
AE45, AE50, AE75	12...32	- ●	RT5/32	1SBN050020R1000	2	0.015
	25...65	- ●	RT5/65	1SBN050020R1001	2	0.015
	50...90	- ●	RT5/90	1SBN050020R1002	2	0.015
	77...150	- ●	RT5/150	1SBN050020R1003	2	0.015
	150...264	- ●	RT5/264	1SBN050020R1004	2	0.015

Connection sets for 4-pole changeover contactors

A45, A50, A75-40-00	BES75-40	1SBN083302R1000	1	0.400
AE45, AE50, AE75-40-00				
AF45, AF50, AF75-40-00				

(1) For more information, refer to main catalog "Accessories" section.

NF 4-pole contactor relays

AC / DC operated



NF22E

Description

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

These contactor relays are of the block type design with:

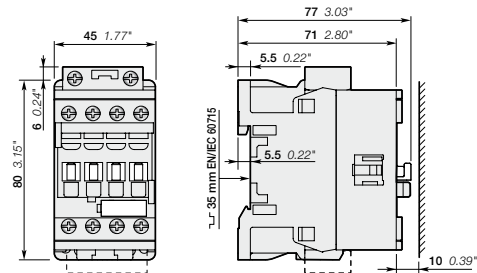
- 4 poles. Contactor relays have mechanically linked auxiliary contact elements (side-marked symbol)
- control circuit: AC or DC operated with electronic coil interface accepting a wide control voltage range (e.g. 100...250 V AC and DC)
 - can manage large control voltage variations
 - only 4 control voltage ranges covering 24...500 V 50/60 Hz and 20...500 V DC
 - reduced panel energy consumption
 - very distinct closing and opening.
- built-in surge suppression
- 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		Type	Order code	Weight
	Uc min. ... Uc max.				Pkg (1 pce)
	V 50/60 Hz	V DC			kg
	24...60	-	(1) NF22E-41	1SBH137001R4122	0.270
	48...130	48...130	NF22E-12	1SBH137001R1222	0.270
	100...250	100...250	NF22E-13	1SBH137001R1322	0.270
	250...500	250...500	NF22E-14	1SBH137001R1422	0.310
	24...60	-	(1) NF31E-41	1SBH137001R4131	0.270
	48...130	48...130	NF31E-12	1SBH137001R1231	0.270
	100...250	100...250	NF31E-13	1SBH137001R1331	0.270
	250...500	250...500	NF31E-14	1SBH137001R1431	0.310
	24...60	-	(1) NF40E-41	1SBH137001R4140	0.270
	48...130	48...130	NF40E-12	1SBH137001R1240	0.270
	100...250	100...250	NF40E-13	1SBH137001R1340	0.270
	250...500	250...500	NF40E-14	1SBH137001R1440	0.310

(1) For 24...60 V 50/60 Hz - 20...60 V DC, use NF..E-11 (see voltage code table).
 NF..E-11 not suitable for direct control by PLC-output.

Main dimensions mm, inches



NF22E, NF31E, NF40E

NFZ 4-pole contactor relays

AC / DC operated - low consumption



NFZ22E

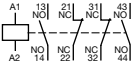
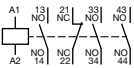
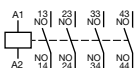
Description

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

These contactor relays are of the block type design with:

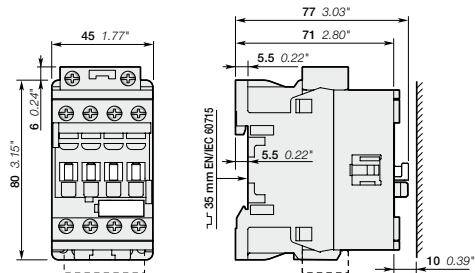
- 4 poles. Contactor relays have mechanically linked auxiliary contact elements (side-marked symbol)
- control circuit: AC or DC operated with electronic coil interface accepting a wide control voltage range (e.g. 100...250 V AC and DC)
 - can manage large control voltage variations
 - only 4 control voltage ranges covering 24...250 V 50/60 Hz and 12...250 V DC
 - allow direct control by PLC-output ≥ 24 V DC 500 mA
 - reduced panel energy consumption
 - very distinct closing and opening
 - can withstand short voltage dips and voltage sags (SEMI F47-0706 conditions of use on request).
- built-in surge suppression
- 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 min. ... Uc max.		Type	Order code	Weight Pkg (1 pce) kg
	V 50/60 Hz	V DC			
	-	12...20	NFZ22E-20	1SBH136001R2022	0.310
	24...60	20...60	NFZ22E-21	1SBH136001R2122	0.310
	48...130	48...130	NFZ22E-22	1SBH136001R2222	0.310
	100...250	100...250	NFZ22E-23	1SBH136001R2322	0.310
	-	12...20	NFZ31E-20	1SBH136001R2031	0.310
	24...60	20...60	NFZ31E-21	1SBH136001R2131	0.310
	48...130	48...130	NFZ31E-22	1SBH136001R2231	0.310
	100...250	100...250	NFZ31E-23	1SBH136001R2331	0.310
	-	12...20	NFZ40E-20	1SBH136001R2040	0.310
	24...60	20...60	NFZ40E-21	1SBH136001R2140	0.310
	48...130	48...130	NFZ40E-22	1SBH136001R2240	0.310
	100...250	100...250	NFZ40E-23	1SBH136001R2340	0.310

Note: Only NFZ contactor relays with DC control voltage 12...20 V DC need to respect the connection polarities indicated close to the coil terminals: A1+ for the positive pole and A2- for the negative pole.

Main dimensions mm, inches

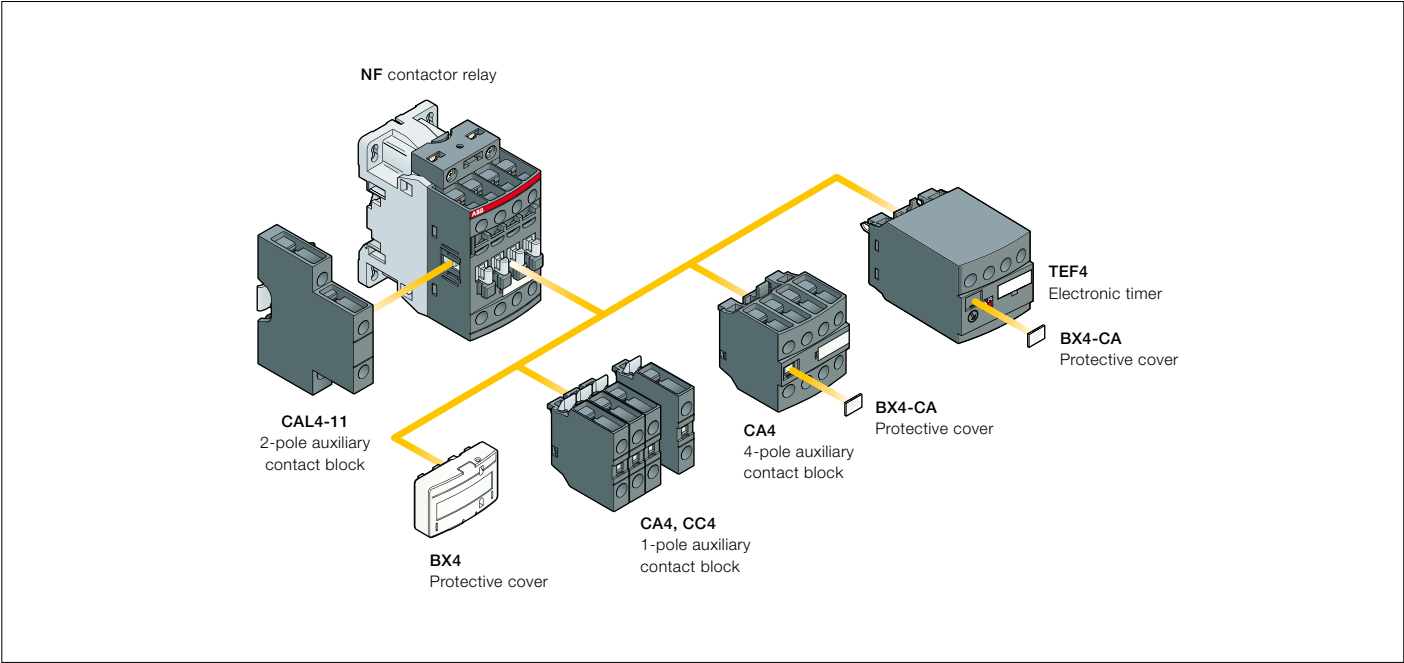


NFZ22E, NFZ31E, NFZ40E

NF 4-pole contactor relays

Main accessories

Contactor relays 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 relay types	Main poles	Front-mounted accessories				Side-mounted accessories			
		Auxiliary contact blocks		Electronic timer		Auxiliary contact blocks			
		1-pole CA4	1-pole CC4	4-pole CA4	TEF4	Left side	Right side		
						2-pole CAL4-11			
Max. add-on N.C. auxiliary contacts: 3 N.C. max. on positions 1, 2, 3, 4 and 2 N.C. max. on positions 1 ±30°, 5									
NF	2 2 E	4 max.	or 1	or 1	+	1		–	
	3 1 E	2 max.	–	or 1	+	1	+	1	
Max. add-on N.C. auxiliary contacts: 4 N.C. max. on positions 1, 2, 3, 4 and 3 N.C. max. on positions 1 ±30°, 5									
NF	4 0 E	4 max.	or 1	or 1	+	1		–	
		2 max.	–	or 1	+	1	+	1	

NF 4-pole contactor relays

Main accessories



CA4-10



CA4-22N



CAL4-11



TEF4-ON



LDC4



BX4



BX4-CA

Ordering details (1)

For contactor relays	Auxiliary contacts	Type	Order code		Pkg qty	Weight (1 pce)
	 					kg

Front-mounted instantaneous auxiliary contact blocks

4-pole NF	1 0	- -	CA4-10	1SBN010110R1010	1	0.014
	1 0	- -	CA4-10-T	1SBN010110T1010	10	0.014
	0 1	- -	CA4-01	1SBN010110R1001	1	0.014
	0 1	- -	CA4-01-T	1SBN010110T1001	10	0.014
	4 0	- -	CA4-40N	1SBN010140R1240	1	0.055
	3 1	- -	CA4-31N	1SBN010140R1231	1	0.055
	2 2	- -	CA4-22N	1SBN010140R1222	1	0.055
	1 3	- -	CA4-13N	1SBN010140R1213	1	0.055
NF..40E	0 4	- -	CA4-04N	1SBN010140R1204	1	0.055

Front-mounted auxiliary contact blocks with N.O. leading contact and N.C. lagging contact

4-pole NF	- -	1 0	CC4-10	1SBN010111R1010	1	0.014
	- -	0 1	CC4-01	1SBN010111R1001	1	0.014

Side-mounted instantaneous auxiliary contact blocks

NF	1 1	- -	CAL4-11	1SBN010120R1011	1	0.040
	1 1	- -	CAL4-11-T	1SBN010120T1011	10	0.040

For contactors	Time delay range selected by switch	Delay type	Auxiliary contacts	Type	Order code	Pkg qty	Weight (1 pce)
							kg

Electronic timers

NF	0.1...1 s	ON-delay	1 1	TEF4-ON	1SBN020112R1000	1	0.065
	1...10 s 10...100 s	OFF-delay	1 1	TEF4-OFF	1SBN020114R1000	1	0.065

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

Additional coil terminal block

NF	LDC4	1SBN070156T1000	10	0.010
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Protective covers

All 1-stack contactor relays	BX4	1SBN110108T1000	10	0.006
4-pole CA4 auxiliary contact blocks and TEF4 electronic timer	BX4-CA	1SBN110109W1000	50	0.001

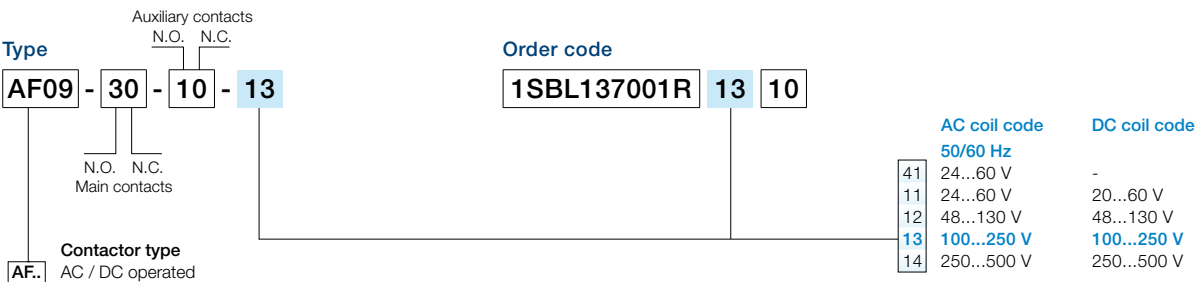
(1) For more information, refer to main catalog "Accessories" section.

Voltage code table

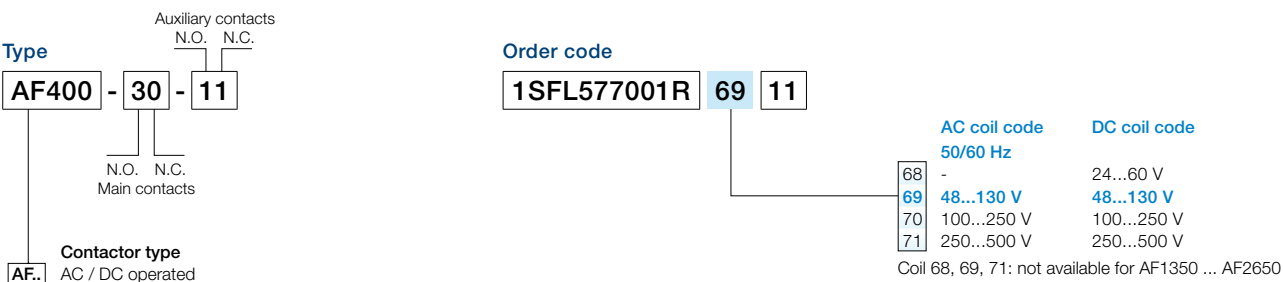
The below tables indicate the available coil voltages and corresponding digits for order codes. When placing an order, please give the order code. Select a standard contactor from ordering detail pages. Change the **coil voltage code** in the order code according to the table below. Example: for contactor AF400-30-11 and coil 100...250 V 50/60 Hz, the order code is 1SFL577001R**70**11.

AF09 ... AF370 3-pole contactors

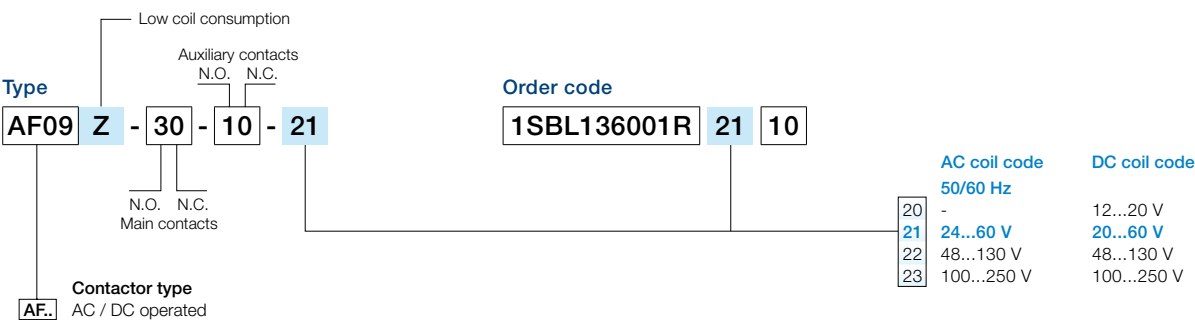
AF09 ... AF38 4-pole contactors



AF400 ... AF2650 3-pole contactors



AF09 ... AF38 3- and 4-pole contactors - low consumption

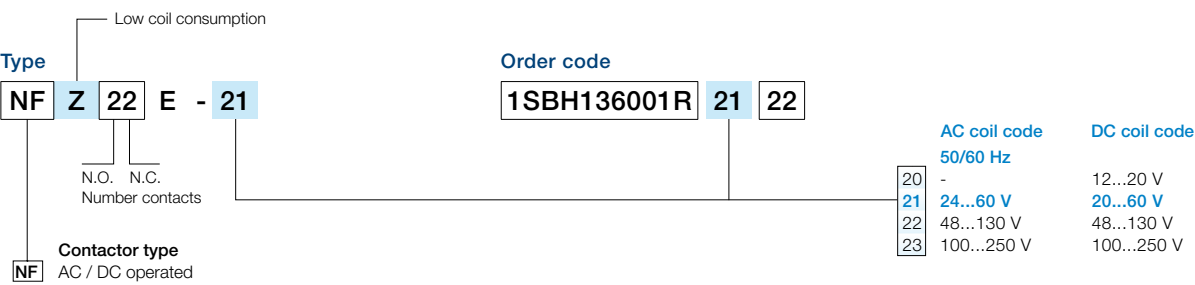


Voltage code table

NF contactor relays



NF contactor relays - low consumption



Handwriting practice lines consisting of multiple horizontal dotted lines for tracing and writing practice.



Overload relays

Thermal overload relays

T16	0.10...16 A	6/4
TF42	0.10...38 A	6/5
TF65	22...67 A	6/6
TF96	40...96 A	6/7
TF140DU	66...142 A	6/8
TA200DU	66...200 A	6/9

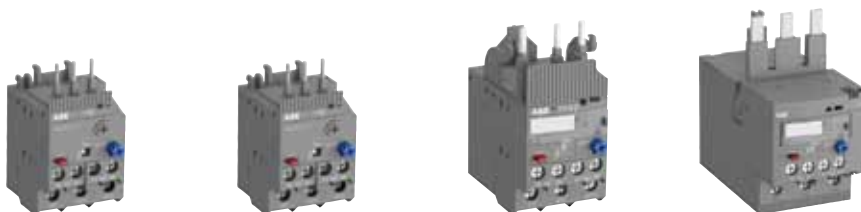
Electronic overload relays

E16DU	0.10...18.9 A	6/10
EF19, EF45	0.10...45 A	6/11
EF65, EF96, EF146	25...150 A	6/12
EF205, EF370	63...380 A	6/13
E500DU, E800DU, E1250DU	150...1250 A	6/14

For additional information such as technical datas, dimension drawings, other products and accessories, refer to our main catalog and visit our website: www.abb.com/connecttocontrol

Thermal and electronic overload relays

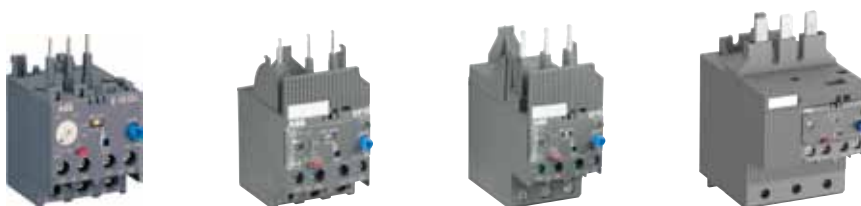
Thermal overload relays



IEC: rated operational power AC-3	400 V	0.03...4.0 kW	0.03...4.0 kW	4.0...18.5 kW	18.5...30 kW	
UL/CSA: 3-phase hp-ratings	480 V	1/2...5 hp	1/2...10 hp	5...20 hp	30...60 hp	
Fitting to contactors		B6, B7	AS09 ... AS16	AF09 ... AF38	AF40, AF52, AF65	
Type		T16	T16	TF42	TF65	
Current range		0.10...16 A	0.10...16 A	0.10...38 A	22...67 A	
Trip class		10	10	10	10	
Single mounting kit		DB16	DB16	DB42	-	

6

Electronic overload relays with integrated CT



IEC: rated operational power AC-3	400 V	0.03...4.0 kW	4...7.5 kW	4.0...18.5 kW	18.5...30 kW	
UL/CSA: 3-phase hp-ratings	480 V	1...5 hp	5...10 hp	5...20 hp	30...60 hp	
Fitting to contactors		B6, B7	AF09 ... AF38	AF26 ... AF38	AF40, AF52, AF65	
Type		E16DU	EF19	EF45	EF65	
Current range		0.10...18.9 A	0.10...18.9 A	9...45 A	25...70 A	
Trip class			10E, 20E, 30E selectable			
Single mounting kit		DB16E	DB19EF	-	-	

Electronic overload relays with external separate CT



IEC: rated operational power AC-3	400 V	200...250 kW	315...400 kW	
UL/CSA: 3-phase hp-ratings	480 V	350...400 hp	500...600 hp	
Fitting to contactors		AF400, AF460	AF580, AF750	
Type		E500DU	E800DU	
Current range		150...500 A	250...800 A	
Trip class			10E, 20E, 30E selectable	



37...45 kW	55...75 kW	90...110 kW
60 hp	75...100 hp	125...150 hp
AF80, AF96	AF116, AF140	AF190, AF205
TF96	TF140DU	TA200DU
40...96 A	66...142 A	66...200 A
10	10A	10A
-	-	DB200



37...45 kW	55...75 kW	90...110 kW	132...200 kW
60 hp	75...100 hp	125...150 hp	200...350 hp
AF80, AF96	AF116, AF140, AF146	AF190, AF205	AF265, AF305, AF370
EF96	EF146	EF205	EF370
36...100 A	54...150 A	63...210 A	115...380 A
10E, 20E, 30E selectable			
-	-	-	-



475...560 kW
800...900 hp
AF1350, AF1650
E1250DU
375...1250 A
10E, 20E, 30E selectable

T16 thermal overload relays

0.10...16.0 A



T16

2CDC231009F0013



T16 + DB16

2CDC231025F0013



KPR-101L

1SFC151402F0001



DB16

2CDC231009F0011

Description

The T16 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 10.

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
- TEST and STOP function – Trip indication on the front
- Temperature compensation
- Suitable for three- and single-phase applications.

Ordering details

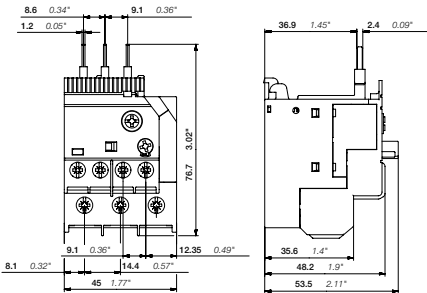
Setting range	Short-circuit protective device	Trip class	Type	Order code	Weight (1 pce) kg
A					
0.10...0.13	0.5 A, Fuse type T	10	T16-0.13	1SAZ711201R1005	0.100
0.13...0.17	1.0 A, Fuse type T	10	T16-0.17	1SAZ711201R1008	0.100
0.17...0.23	1.0 A, Fuse type T	10	T16-0.23	1SAZ711201R1009	0.100
0.23...0.31	1.0 A, Fuse type T	10	T16-0.31	1SAZ711201R1013	0.100
0.31...0.41	2.0 A, Fuse type gG	10	T16-0.41	1SAZ711201R1014	0.100
0.41...0.55	2.0 A, Fuse type gG	10	T16-0.55	1SAZ711201R1017	0.100
0.55...0.74	4.0 A, Fuse type gG	10	T16-0.74	1SAZ711201R1021	0.100
0.74...1.00	6.0 A, Fuse type gG	10	T16-1.0	1SAZ711201R1023	0.100
1.00...1.30	6.0 A, Fuse type gG	10	T16-1.3	1SAZ711201R1025	0.100
1.30...1.70	10.0 A, Fuse type gG	10	T16-1.7	1SAZ711201R1028	0.100
1.70...2.30	10.0 A, Fuse type gG	10	T16-2.3	1SAZ711201R1031	0.100
2.30...3.10	10.0 A, Fuse type gG	10	T16-3.1	1SAZ711201R1033	0.100
3.10...4.20	20.0 A, Fuse type gG	10	T16-4.2	1SAZ711201R1035	0.100
4.20...5.70	20.0 A, Fuse type gG	10	T16-5.7	1SAZ711201R1038	0.100
5.70...7.60	35.0 A, Fuse type gG	10	T16-7.6	1SAZ711201R1040	0.100
7.60...10.0	35.0 A, Fuse type gG	10	T16-10	1SAZ711201R1043	0.104
10.0...13.0	40.0 A, Fuse type gG	10	T16-13	1SAZ711201R1045	0.104
13.0...16.0	40.0 A, Fuse type gG	10	T16-16	1SAZ711201R1047	0.104

Accessories

For thermal overload relays	Description	Type	Order code	Weight (1 pce) kg
A				
T16	Single mounting kit	DB16	1SAZ701901R0001	0.032
T16	Reset push button (1)	KPR-101L	1SFA616162R1014	0.027

(1) Note: for more information see catalogue 1SFC151004C0201.

Main dimensions mm, inches



T16

2CDC232008F0008

TF42 thermal overload relays

0.10...38.0 A



TF42

2CDC231006F0013



DB42

2CDC231001F0011



TF42 + DB42

2CDC231026F0013



KPR-101L

1SFC151402F0001

Description

The TF42 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 10.

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
- TEST and STOP function – Trip indication on the front
- Temperature compensation
- Suitable for three- and single-phase applications.

Ordering details

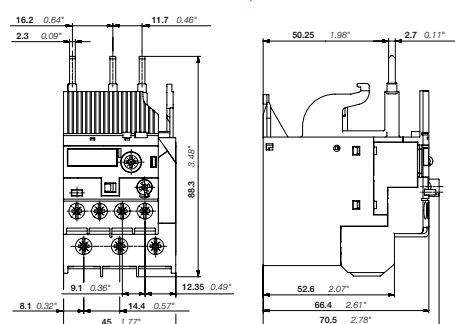
Setting range	Short-circuit protective device	Trip class	Type	Order code	Weight (1 pce) kg
A					
0.10...0.13	0.5 A, Fuse type T	10	TF42-0.13	1SAZ721201R1005	0.130
0.13...0.17	1.0 A, Fuse type T	10	TF42-0.17	1SAZ721201R1008	0.130
0.17...0.23	1.0 A, Fuse type T	10	TF42-0.23	1SAZ721201R1009	0.130
0.23...0.31	1.0 A, Fuse type T	10	TF42-0.31	1SAZ721201R1013	0.130
0.31...0.41	2.0 A, Fuse type gG	10	TF42-0.41	1SAZ721201R1014	0.130
0.41...0.55	2.0 A, Fuse type gG	10	TF42-0.55	1SAZ721201R1017	0.130
0.55...0.74	4.0 A, Fuse type gG	10	TF42-0.74	1SAZ721201R1021	0.130
0.74...1.00	6.0 A, Fuse type gG	10	TF42-1.0	1SAZ721201R1023	0.130
1.00...1.30	6.0 A, Fuse type gG	10	TF42-1.3	1SAZ721201R1025	0.130
1.30...1.70	10.0 A, Fuse type gG	10	TF42-1.7	1SAZ721201R1028	0.130
1.70...2.30	10.0 A, Fuse type gG	10	TF42-2.3	1SAZ721201R1031	0.130
2.30...3.10	10.0 A, Fuse type gG	10	TF42-3.1	1SAZ721201R1033	0.130
3.10...4.20	20.0 A, Fuse type gG	10	TF42-4.2	1SAZ721201R1035	0.130
4.20...5.70	20.0 A, Fuse type gG	10	TF42-5.7	1SAZ721201R1038	0.130
5.70...7.60	35.0 A, Fuse type gG	10	TF42-7.6	1SAZ721201R1040	0.130
7.60...10.0	35.0 A, Fuse type gG	10	TF42-10	1SAZ721201R1043	0.130
10.0...13.0	40.0 A, Fuse type gG	10	TF42-13	1SAZ721201R1045	0.130
13.0...16.0	40.0 A, Fuse type gG	10	TF42-16	1SAZ721201R1047	0.130
16.0...20.0	63.0 A, Fuse type gG	10	TF42-20	1SAZ721201R1049	0.145
20.0...24.0	63.0 A, Fuse type gG	10	TF42-24	1SAZ721201R1051	0.145
24.0...29.0	63.0 A, Fuse type gG	10	TF42-29	1SAZ721201R1052	0.145
29.0...35.0	80.0 A, Fuse type gG	10	TF42-35	1SAZ721201R1053	0.145
35.0...38.0/40.0	80.0 A, Fuse type gG	10	TF42-38	1SAZ721201R1055	0.145

Accessories

For thermal overload relays	Description	Type	Order code	Weight (1 pce) kg
A				
TF42	Single mounting kit	DB42	1SAZ701902R0001	0.087
TF42	Reset push button (1)	KPR-101L	1SFA616162R1014	0.027

(1) Note: for more information see catalogue 1SFC151004C0201.

Main dimensions mm, inches



TF42

2CDC231006F0009

2CDC106071C0201

TF65 thermal overload relays

22.0...67.0 A



2CDC231004F0013

TF65



1SFC151402F0001

KPR-101L

Description

The TF65 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 10.

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
- TEST and STOP function – Trip indication on the front
- Temperature compensation
- Suitable for three- and single-phase applications.

Ordering details

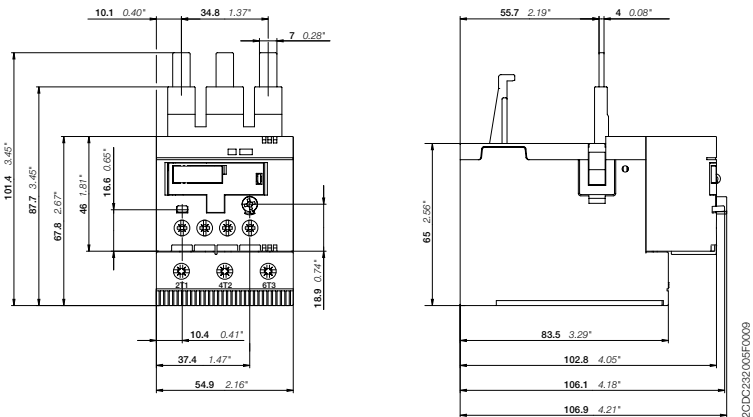
Setting range	Short-circuit protective device	Trip class	Type	Order code	Weight (1 pce) kg
A					
22.0...28.0	80 A, gG Type Fuses	10	TF65-28	1SAZ811201R1001	0.456
25.0...33.0	80 A, gG Type Fuses	10	TF65-33	1SAZ811201R1002	0.456
30.0...40.0	100 A, gG Type Fuses	10	TF65-40	1SAZ811201R1003	0.456
36.0...47.0	125 A, gG Type Fuses	10	TF65-47	1SAZ811201R1004	0.456
44.0...53.0	125 A, gG Type Fuses	10	TF65-53	1SAZ811201R1005	0.456
50.0...60.0	125 A, gG Type Fuses	10	TF65-60	1SAZ811201R1006	0.466
57.0...67.0	160 A, gG Type Fuses	10	TF65-67	1SAZ811201R1007	0.466

Accessories

For thermal overload relays	Description	Type	Order code	Weight (1 pce) kg
A				
TF65	Reset push button (1)	KPR-101L	1SFA616162R1014	0.027

(1) Note: for more information see catalogue 1SFC151004C0201.

Main dimensions mm, inches



TF65

TF96 thermal overload relays

40.0...96.0 A



TF96

2CDC23100BF0013



KPR-101L

1SFC151402F0001

Description

The TF96 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 10.

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
- TEST and STOP function – Trip indication on the front
- Temperature compensation
- Suitable for three- and single-phase applications.

Ordering details

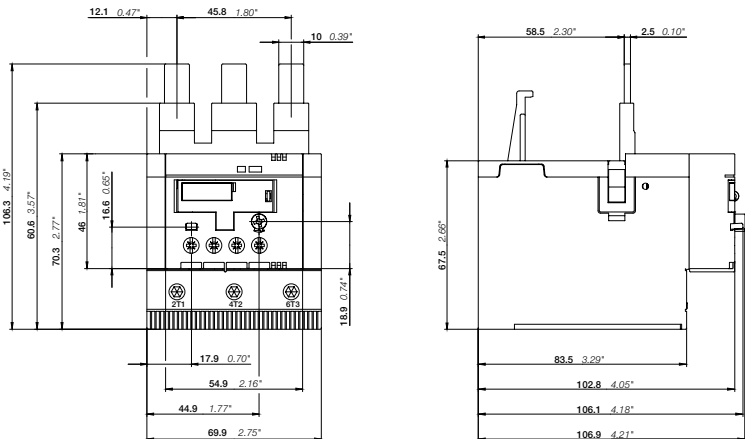
Setting range	Short-circuit protective device	Trip class	Type	Order code	Weight (1 pce) kg
A					
40.0...51.0	125 A, gG Type Fuses	10	TF96-51	1SAZ911201R1001	0.620
48.0...60.0	160 A, gG Type Fuses	10	TF96-60	1SAZ911201R1002	0.620
57.0...68.0	160 A, gG Type Fuses	10	TF96-68	1SAZ911201R1003	0.620
65.0...78.0	200 A, gG Type Fuses	10	TF96-78	1SAZ911201R1004	0.620
75.0...87.0	200 A, gG Type Fuses	10	TF96-87	1SAZ911201R1005	0.620
84.0...96.0	250 A, gG Type Fuses	10	TF96-96	1SAZ911201R1006	0.630

Accessories

For thermal overload relays	Description	Type	Order code	Weight (1 pce) kg
A				
TF96	Reset push button (1)	KPR-101L	1SFA616162R1014	0.027

(1) Note: for more information see catalogue 1SFC151004C0201.

Main dimensions mm, inches



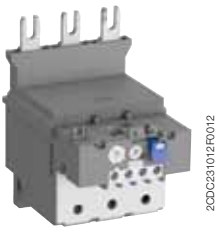
TF96

2CDC23100BF0009

2CDC106071C0201

TF140DU thermal overload relays

66...142 A



TF140DU



KPR-101L

Description

The TF140DU 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
- TEST and STOP function – Trip indication on the front
- Temperature compensation
- Suitable for three- and single-phase applications.

Ordering details

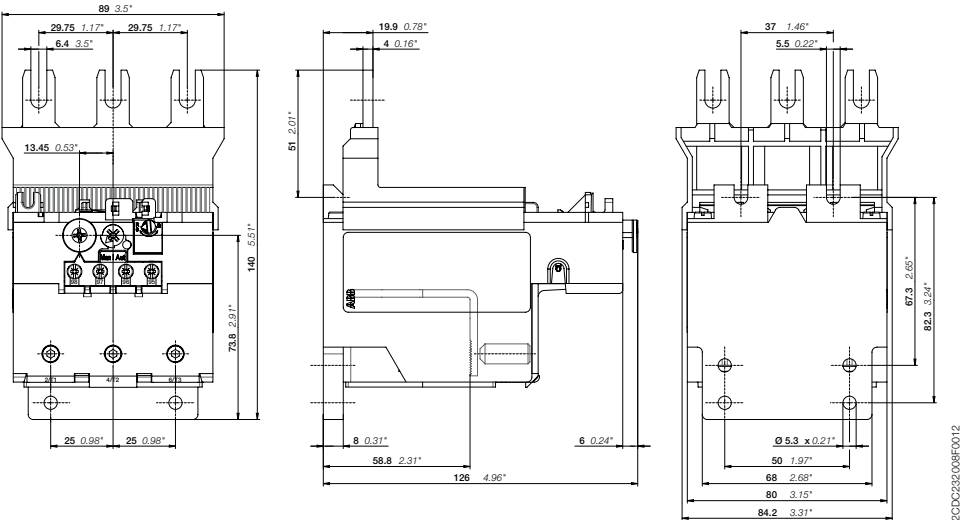
Setting range	Short-circuit protective device	Trip class	Type	Order code	Weight (1 pce) kg
A					
66...90	200 A, Fuse type gG	10A	TF140DU-90	1SAZ431201R1001	0.820
80...110	224 A, Fuse type gG	10A	TF140DU-110	1SAZ431201R1002	0.820
100...135	224 A, Fuse type gG	10A	TF140DU-135	1SAZ431201R1003	0.820
110...142	250 A, Fuse type gG	10A	TF140DU-142	1SAZ431201R1004	0.820

Accessories

For thermal overload relays	Description	Type	Order code	Weight (1 pce) kg
A				
TF140DU	Reset push button (1)	KPR-101L	1SFA616162R1014	0.027

(1) Note: for more information see catalogue 1SFC151004C0201.

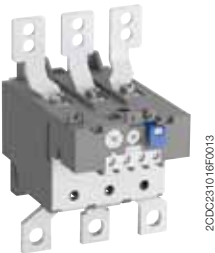
Main dimensions mm, inches



TF140DU

TA200DU thermal overload relays

66...200 A



TA200DU



KPR-101L

Description

The TA200DU 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
- TEST and STOP function – Trip indication on the front
- Temperature compensation
- Suitable for three- and single-phase applications.

Ordering details

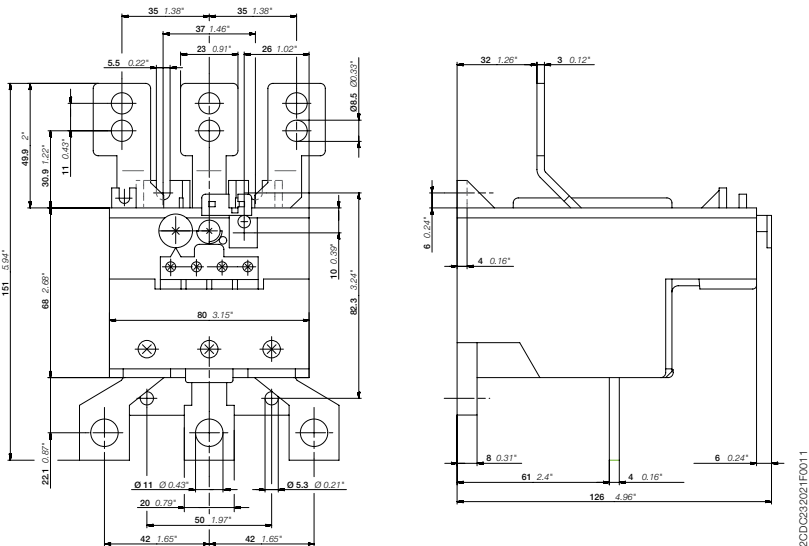
Setting range	Short-circuit protective device	Trip class	Type	Order code	Weight (1 pce) kg
A					
66...90	200 A, Fuse type gG / 125 A aM	10A	TA200DU-90	1SAZ421201R1001	0.755
80...110	224 A, Fuse type gG / 160 A aM	10A	TA200DU-110	1SAZ421201R1002	0.760
100...135	224 A, Fuse type gG / 200 A aM	10A	TA200DU-135	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

Accessories

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

(1) Note: for more information see catalogue 1SFC151004C0201.

Main dimensions mm, inches



TA200DU

E16DU, electronic overload relays
0.10 to 18.9 A



E16DU-1.0



DB16E



KPR-101L

Description

The E16DU up to 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.

Ordering details

Setting range	Short-circuit protective device	Trip class	Type	Order code	Weight (1 pce)
A					kg

E16DU electronic overload relays

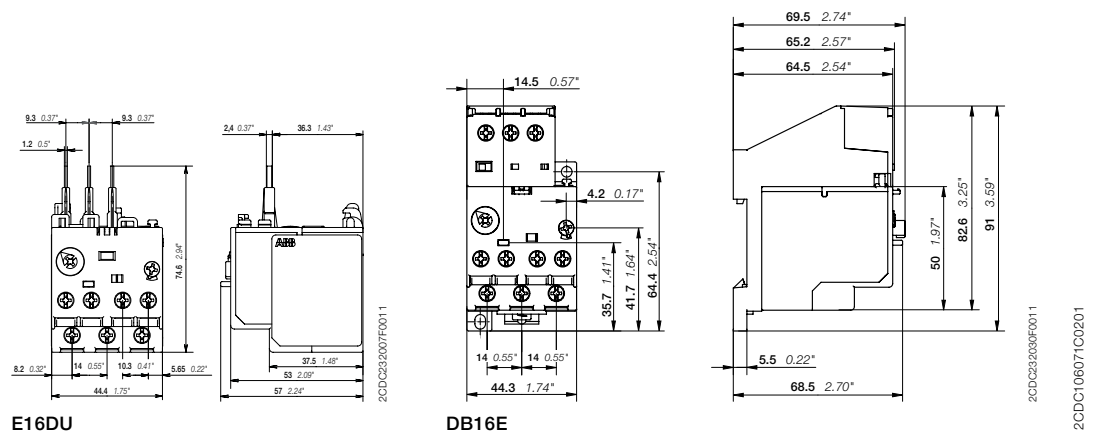
0.10...0.32	1 A, Fuse type gG	10E, 20E, 30E	E16DU-0.32	1SAX111001R1101	0.150
0.30...1.00	4 A, Fuse type gG	10E, 20E, 30E	E16DU-1.0	1SAX111001R1102	0.150
0.80...2.70	10 A, Fuse type gG	10E, 20E, 30E	E16DU-2.7	1SAX111001R1103	0.150
1.90...6.30	20 A, Fuse type gG	10E, 20E, 30E	E16DU-6.3	1SAX111001R1104	0.150
5.70...18.9	50 A, Fuse type gG	10E, 20E, 30E	E16DU-18.9	1SAX111001R1105	0.150

Accessories

For thermal overload relays	Description	Type	Order code	Weight (1 pce) kg
A E16DU	Single mounting kit	DB16E	1SAX101110R0001	0.035
E16DU, E45DU, E80DU, E140DU	Reset push button (1)	KPR-101L	1SFA616162R1014	0.027

(1) Note: for more information see catalogue 1SFC151004C0201.

Main dimensions mm, inches



EF19, EF45 electronic overload relays

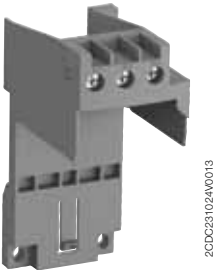
0.10 to 45.0 A



EF19-18.9



EF45-30



DB19EF



KPR-101L

Description

The EF19 and EF45 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.

Ordering details

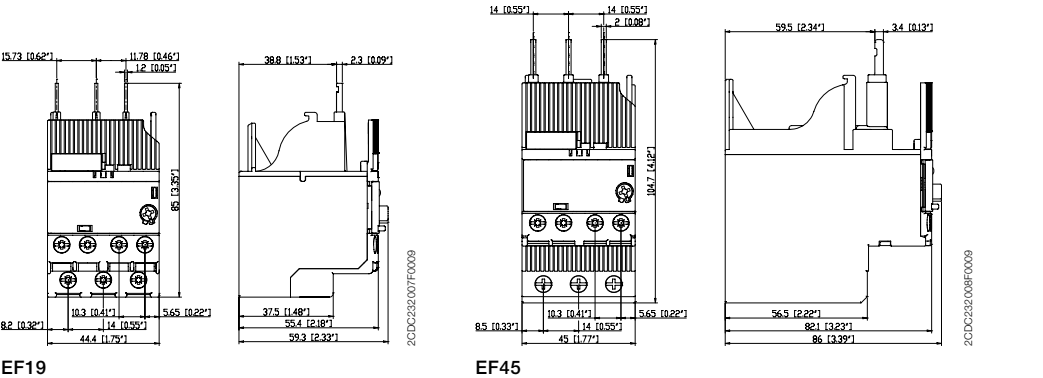
Setting range	Short-circuit protective device	Trip class	Type	Order code	Weight (1 pce) kg
A					
EF19 electronic overload relays					
0.10...0.32	1 A, Fuse type gG	10E, 20E, 30E	EF19-0.32	1SAX121001R1101	0.158
0.30...1.00	4 A, Fuse type gG	10E, 20E, 30E	EF19-1.0	1SAX121001R1102	0.158
0.80...2.70	10 A, Fuse type gG	10E, 20E, 30E	EF19-2.7	1SAX121001R1103	0.158
1.90...6.30	20 A, Fuse type gG	10E, 20E, 30E	EF19-6.3	1SAX121001R1104	0.158
5.70...18.9	50 A, Fuse type gG	10E, 20E, 30E	EF19-18.9	1SAX121001R1105	0.158
EF45 electronic overload relays					
9.00...30.0	160 A, Fuse type gG	10E, 20E, 30E	EF45-30	1SAX221001R1101	0.362
15.0...45.0	160 A, Fuse type gG	10E, 20E, 30E	EF45-45	1SAX221001R1102	0.362

Accessories

For thermal overload relays	Description	Type	Order code	Weight (1 pce) kg
A				
EF19	Single mounting kit	DB19EF	1SAX101910R1001	0.042
EF19, EF45	Reset push button (1)	KPR-101L	1SFA616162R1014	0.019

(1) Note: for more information see catalogue 1SFC151004C0201.

Main dimensions mm, inches



EF65, EF96, EF146 electronic overload relays
25 to 150 A



EF65-70



EF96-100



EF146-150



KPR-101L

Description

The EF65, EF96 and EF146 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.

Ordering details

Setting range	Short-circuit protective device	Trip class	Type	Order code	Weight (1 pce)
A					kg
25...70	160 A, Fuse typ gG	10E, 20E, 30E	EF65-70	1SAX331001R1101	0.790
36...100	200 A, Fuse typ gG	10E, 20E, 30E	EF96-100	1SAX341001R1101	0.780
54...150	315 A, Fuse typ gG	10E, 20E, 30E	EF146-150	1SAX351001R1101	0.890

Accessories

For thermal overload relays	Description	Type	Order code	Weight (1 pce) kg
A				
EF65, EF96, EF146	Reset push button (1)	KPR-101L	1SFA616162R1014	0.027

(1) Note: for more information see catalogue 1SFC151004C0201.

Main dimensions mm, inches



EF65-70



EF96-100



EF146-150



EF205, EF370 electronic overload relays

63 to 380 A



EF205-210



EF370-380



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.

Ordering details

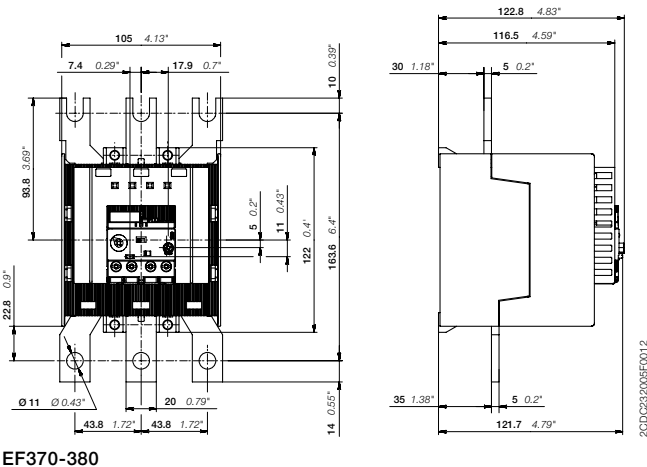
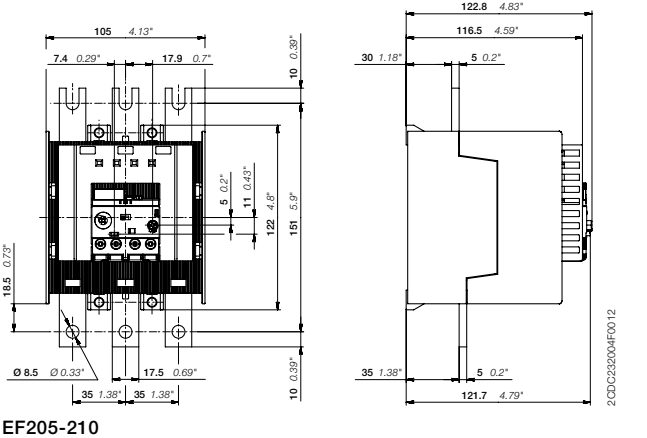
Setting range	Short-circuit protective device	Trip class	Type	Order code	Weight (1 pce) kg
A					
63...210	1250 A, Fuse type gG	10E, 20E, 30E	EF205-210	1SAX531001R1101	1.210
115...380	1600 A, Fuse type gG	10E, 20E, 30E	EF370-380	1SAX611001R1101	1.430

Accessories

For thermal overload relays	Description	Type	Order code	Weight (1 pce) kg
A				
EF205, EF370	Reset push button (1)	KPR-101L	1SFA616162R1014	0.027

(1) Note: for more information see catalogue 1SFC151004C0201.

Main dimensions mm, inches



E500DU, E800DU, E1250DU electronic overload relays

150 to 1250 A



2CDC231030F0008

E500DU-500



2CDC231030F0008

E800DU-800



1SFC101025F0201

E1250DU-1250



1SFC151402F0001

KPR-101L

Description

The E500DU up to E1250DU 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. Busbar kits are available as accessory for contactor mounting.

Ordering details

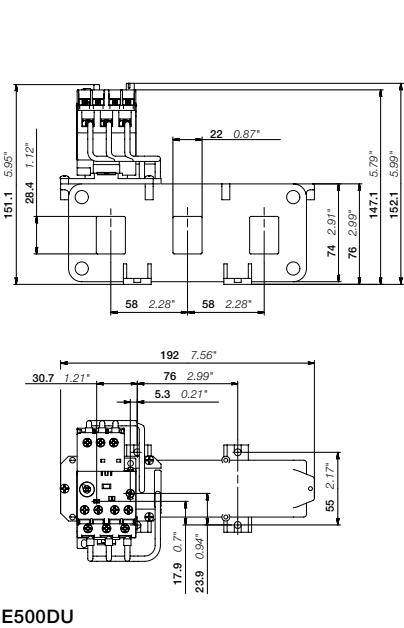
Setting range	Short-circuit protective device	Trip class	Type	Order code	Weight (1 pce) kg
A					
E500DU electronic overload relay					
150...500	1000 A	10E, 20E, 30E	E500DU-500	1SAX711001R1101	1.170
E800DU electronic overload relay					
250...800	1250 A	10E, 20E, 30E	E800DU-800	1SAX811001R1101	3.905
E1250DU electronic overload relay					
375...1250	-	10E, 20E, 30E	E1250DU-1250	1SFA739001R1000	12.181

Accessories

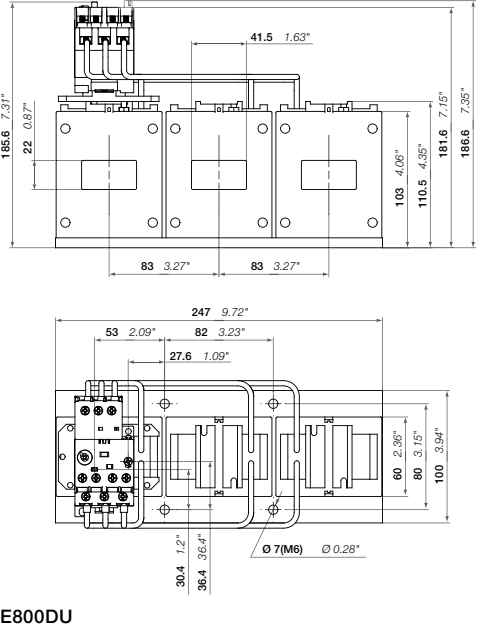
For electronic overload relays	Description	Type	Order code	Weight (1 pce) kg
E500DU	LT500E Terminal shroud for E500DU	LT500E	1SAX701904R0001	0.360
E800DU	LT320E Terminal shroud for E320DU	LT800E	1SAX601904R0001	0.105
E500DU, E800DU	Reset push button (1)	KPR-101L	1SFA616162R1014	0.027

(1) Note: for more information see catalogue 1SFC151004C0201.

Main dimensions mm, inches



E500DU



E800DU

Notes

6

2CDC106071C0201

Coordination with short-circuit protection devices

In compliance with standards IEC 60947-4-1 and EN 60947-4-1, we define for the contactors and starters the type, rating and characteristics of the short-circuit protection devices SCPD which allow selective protection against overloads and ensure protection against short circuits.

Basic functions

Any starter is designed to:

- start motors,
- ensure continuous functioning of motors,
- disconnect motors from the supply line,
- guarantee protection of motors against overloads.

The starter is typically made up of a switching device (contactor) and an overload protection device (thermal overload relay or electronic overload relay).

These two devices **MUST** be coordinated with equipment capable of providing protection against short circuit (SCPD: short circuit protective device): typically a circuit breaker with magnetic release only or a switch fuse. These are not necessarily part of the starter.

Applicable standards

IEC 60947-4-1 (EN 60947-4-1) precisely defines the different points to be considered in order to carry out correct coordination.

Complete coordination for a combination includes the following points:

- Selectivity test between the overload relay and the short-circuit protection device SCPD.
- Short-circuit condition tests:
 - at prospective "r" currents - These currents depend on the rated operational current of the starter (**I_e** AC-3) and are given by the standard (Table 13). For example:
 - r = 1kA for **I_e** AC-3 < 16 A
 - r = 3 kA for 16 A < **I_e** AC-3 < 63 A
 - r = 5 kA for 63 A < **I_e** AC-3 < 125 A etc.
 - at the rated conditional short-circuit current "**I_q**" - This is the maximum prospective current that the combination can withstand, for example 50 kA.

Types of coordination

IEC 60947-4-1 (EN 60947-4-1) defines two types of coordination according to the expected level of service continuity. Acceptable extreme damage for the switchgear is divided into two types.

Type 1: In short-circuit conditions, the contactor or starter does not endanger persons or installations and will not be able to then operate without being repaired or having parts replaced.

Type 2: In short-circuit conditions, the contactor or starter does not endanger persons or installations and will be able to operate afterwards. The risk of contacts light welding is acceptable. In this case, the manufacturer must stipulate the measures to be taken with respect to maintenance of the equipment.

The complete ABB offer

ABB has acquired years of experience with respect to problems of coordination and is able to make a complete offer based on tests performed in its qualified laboratories. This offer includes 400 V, 500 V, 690 V networks.

A complete data base of coordination tables, according to IEC 60947-4-1 (EN 60947-4-1), is available on the ABB Website.

In the coordination tables the following short-circuit protection devices are recommended:

- Moulded case circuit-breakers (MCCBs)
- Miniature circuit-breakers (MCBs)
- Switch-disconnector-fuses (aM, gG and BS)
- Manual Motor Starters (MMS).

General remarks applicable to all tables

- Each table is defined for a maximum ambient temperature of 40 °C. For higher temperatures, apply a derating factor according to the following rules:
 - Fuses: factor of 0.8 applied to **I_n** for an ambient temperature of 70 °C
 - MCCBs and MCBs: factor of 0.8 applied to **I_n** for an ambient temperature of 60 °C
 - The starter derating factor depends on the operating conditions of thermal overload relays:
 - Factor of 0.9 applied to **I_n** for an ambient temperature of 70 °C.
- Each table is defined for motor currents: 3-phase motors, 4-pole
- **Normal starting** means a starting time < 2 s. - **Difficult starting** means an accelerating time 10 s < **t_s** < 30 s
- **Tripping classes** of thermal overload relays according to IEC 60947-4-1 (EN 60947-4-1): 10A and 10
- **Tripping classes** of electronic overload relays according to IEC 60947-4-1 (EN 60947-4-1): 10E, 20E, 30E selectable
- In the tables with MCCBs, these are fitted with the magnetic relay alone. Setting is always carried out at > 12.3 **I_e** AC-3 so that the transient current peak occurring during starting does not lead to tripping.

Coordination with short-circuit protection devices

A complete data base of coordination tables, according to **IEC 60947-4-1** (EN 60947-4-1) **or UL 508 / UL 60947-4-1**, is available on the ABB Website: see below.

Selection

Simple or multiple selections all from the same screen.

ABB Power and productivity for a better world™

Coordination tables for motor protection

Selected Optimized Coordination

⇒ Selection

Clear selection

Protection Device	Rated Voltage [V]	Short Circuit Current [kA]	Starter Type	Coordination type	Motor Rated Power [kW] [HP]
ACS	240	42	UL	UL Type A	0.06
Fuses	480	58	DOL-NS	IEC Type 1	0.05
MCB	215	58	DOL-HD	IEC Type 2	0.05
VCCB	415	58	SD-NS	UL Component	0.12
SMDS	480	58	SD-NS-L	UL Type A	0.18
	480	70	SD-NS-HD	UL Type B	0.25
	500	75	UL	UL Type C	0.37
	525	98		UL Type D	0.5
	600	98		UL Type E	0.75
	690	138		UL Type F	1
	208	208			1.1

Result 6 seconds (0,17 seconds)

Enable Smart Circuit Search ☒ | Number of Records to show: 20

Results

- Search results displayed at the bottom of the selection page.
- Only the most appropriate solutions to your application, will be displayed at the bottom of the page.
"Enable Smart Current Search" function featured for the short-circuit current where "near to" selected values also are included in the result.
- Possible to print the page to a pdf file or from your printer.
- "Clear selection" function to deselect all selected.

Fuses, 400 V, 80 kA, DOL-NS, Coordination type IEC Type 2									
Motor		Fuses IEC		Contactor	Overload Relay				
Rated Power	Rated Current	Rating	Rating		Current setting range	Max allowed load current			
[kW]	[A]	Switch-Fuse Type	Type and Size	Type	[A]		[A]	Table	
0.27	1.1 0.332D	2	OFAM 80kM A3	E18DQ2 7.10 ⁻¹	0.30 - 2.70		1.4	349	
0.27	1.1 0.332D	2	OFAM 80kM A3	TA2SDU 1.4	1.00 - 1.40		1.4	349	
0.37	1.1 0.332D	2	OFAM 80kM A3	JMC22/100 13 ⁻¹	0.24 - 83.80		1.4	349	
0.37	1.1 0.332D	4	OFAA 10H A3	JMC22/100 13 ⁻¹	0.29 - 83.60		1.3	349	
0.37	1.1 0.332D	4	OFAA 10H A3	E18DQ2 7.10 ⁻¹	0.30 - 2.70		1.3	349	
0.37	1.1 0.332D	4	OFAA 10H A3	TA2SDU 1.4	1.00 - 1.40		1.4	349	

Fuses, 400 V, 80 kA, DOL-NS, Coordination type IEC Type 2, Overload Relay TOL									
Motor		Fuses IEC		Contactor	Overload Relay				
Rated Power	Rated Current	Rating	Rating		Current setting range	Max allowed load current			
[kW]	[A]	Switch-Fuse Type	Type and Size	Type	[A]		[A]	Table	
0.25	6.85 0.932D	2	OFAF 90kM AF39	TF43 1.6	0.74 - 1.00		1	349	
0.12	6.48 0.932D	2	OFAF 90kH AF39	TF43 0.65	0.42 - 0.55		0.55	349	

Access

To find the coordination tables for motor protection, please see:

www.abb.com/lowvoltage then go to the right menu: "Support", select: "**Online Product Selection Tools**" then select "**Coordination Tables for motor protection**"

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