



AF09 ... AF38 4-pole Contactors up to 55 A

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4-pole Contactors



AC / DC control voltage

AF09	AF16	AF26	AF38
AF09-40-00	AF16-40-00	AF26-40-00	AF38-40-00
AF09-22-00	AF16-22-00	AF26-22-00	AF38-22-00

Switching of Resistive Circuits

	IEC	AC-1	Rated operational current	$\theta \leq 40^\circ\text{C}$	690 V
				$\theta \leq 60^\circ\text{C}$	690 V
				$\theta \leq 70^\circ\text{C}$	690 V
	UL/CSA	General use rating	600 V AC		
			With conductor cross-sectional area		

25 A	30 A	45 A	55 A
25 A	30 A	40 A	42 A
22 A	26 A	32 A	37 A
4 mm ²	6 mm ²	10 mm ²	16 mm ²
25 A	30 A	45 A	55 A
AWG 10	AWG 10	AWG 8	AWG 6

Main Accessories

Auxiliary contact blocks

Front mounting

Side mounting

Interlocks

Mechanical / electrical

Mechanical

1-pole **CA4-10** or **CA4-01**, **CC4-10** or **CC4-01**

4-pole **CA4**

2-pole **CAT4-11** (with coil front connection)

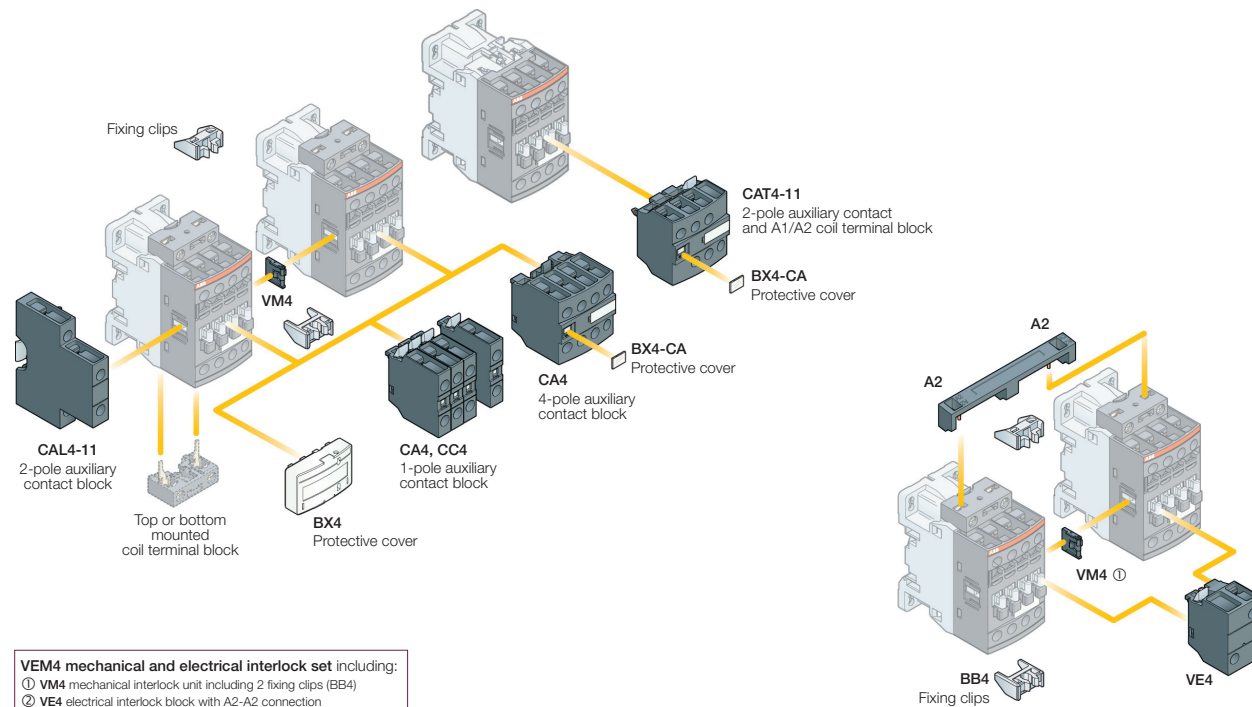
2-pole **CAL4-11**

VEM4

including VM4 mechanical interlock unit and VE4 electrical interlock block with A2-A2 connection

VM4

including 2 fixing clips



AF09 ... AF38 4-pole Contactors

AC / DC Operated - with Screw Terminals



Application
AF09 ... AF38 4-pole contactors are used for controlling power circuits up to 600 V AC and 240 V DC. They are mainly used for controlling non-inductive or slightly inductive loads (i.e. resistance furnaces...).

Description

- AF09 ... AF38 contactors include an electronic coil interface accepting a wide control voltage U_c min. ... U_c 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 (i.e. 100...250 V 50/60 Hz - DC) 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.

IEC	UL/CSA	Control voltage		Auxiliary contacts fitted	Catalog number	List price	Weight
AC-1 Rated current	General use rating	U_c min.	U_c max.				
$\theta \leq 40^\circ\text{C}$ A	600 V AC A	V 50/60 Hz	V DC	 			Pack ^(ng) 1 piece kg/lbs

4 N.O. Main Poles							
25	25	24...60	20...60	0	0	AF09-40-00-11	0.31/0.68
		48...130	48...130	0	0	AF09-40-00-12	0.27/0.60
		100...250	100...250	0	0	AF09-40-00-13	0.27/0.60
		250...500	250...500	0	0	AF09-40-00-14	0.31/0.68
30	30	24...60	20...60	0	0	AF16-40-00-11	0.31/0.68
		48...130	48...130	0	0	AF16-40-00-12	0.27/0.60
		100...250	100...250	0	0	AF16-40-00-13	0.27/0.60
		250...500	250...500	0	0	AF16-40-00-14	0.31/0.68
45	45	24...60	20...60	0	0	AF26-40-00-11	0.36/0.79
		48...130	48...130	0	0	AF26-40-00-12	0.36/0.79
		100...250	100...250	0	0	AF26-40-00-13	0.36/0.79
		250...500	250...500	0	0	AF26-40-00-14	0.40/0.88
55	55	24...60	20...60	0	0	AF38-40-00-11	0.36/0.79
		48...130	48...130	0	0	AF38-40-00-12	0.36/0.79
		100...250	100...250	0	0	AF38-40-00-13	0.36/0.79
		250...500	250...500	0	0	AF38-40-00-14	0.40/0.88

2 N.O. + 2 N.C. Main Poles							
25	25	24...60	20...60	0	0	AF09-22-00-11	0.31/0.68
		48...130	48...130	0	0	AF09-22-00-12	0.27/0.60
		100...250	100...250	0	0	AF09-22-00-13	0.27/0.60
		250...500	250...500	0	0	AF09-22-00-14	0.31/0.68
30	30	24...60	20...60	0	0	AF16-22-00-11	0.31/0.68
		48...130	48...130	0	0	AF16-22-00-12	0.27/0.60
		100...250	100...250	0	0	AF16-22-00-13	0.27/0.60
		250...500	250...500	0	0	AF16-22-00-14	0.31/0.68
45	45	24...60	20...60	0	0	AF26-22-00-11	0.36/0.79
		48...130	48...130	0	0	AF26-22-00-12	0.36/0.79
		100...250	100...250	0	0	AF26-22-00-13	0.36/0.79
		250...500	250...500	0	0	AF26-22-00-14	0.40/0.88
55	55	24...60	20...60	0	0	AF38-22-00-11	0.36/0.79
		48...130	48...130	0	0	AF38-22-00-12	0.36/0.79
		100...250	100...250	0	0	AF38-22-00-13	0.36/0.79
		250...500	250...500	0	0	AF38-22-00-14	0.40/0.88

AF09 ... AF38 4-pole Contactors - AF.Z Additional Coils

AC / DC Operated - with Screw Terminals



Application

AF09Z ... AF38Z 4-pole contactors are used for controlling power circuits up to 600 V AC and 240 V DC. They are mainly used for controlling non-inductive or slightly inductive loads (i.e. resistance furnaces...).

Description

- AF09Z ... AF38Z contactors include an electronic coil interface accepting a wide control voltage U_c min. ... U_c max and managing large control voltage variations.
- **AF.Z** contactors cover control voltages between 24...250 V 50/60 Hz or 12...250 V DC
- AF.Z contactors allow direct control by PLC-output ≥ 24 V DC 500 mA and obtain a reduced holding coil consumption.
- **AF.Z** contactors withstand short dips and voltage interruptions (SEMI F47-0706 compliance)
- AF.Z contactors have built-in surge protection and do not require additional surge suppressors.

Ordering Details

IEC	UL/CSA	Control voltage		Auxiliary contacts fitted	Catalog number	List price	Weight
AC-1 Rated current	General use rating	U_c min. ... U_c max.					Pack ^(ing)
$\theta \leq 40^\circ\text{C}$	600 V AC	V 50/60 Hz	V DC	 			1 piece
A	A						kg/lbs

4 N.O. Main Poles

25	25	-	12...20	0	0	AF09Z-40-00-20	0.31/0.68
		24...60	20...60	0	0	AF09Z-40-00-21	0.31/0.68
		48...130	48...130	0	0	AF09Z-40-00-22	0.31/0.68
		100...250	100...250	0	0	AF09Z-40-00-23	0.31/0.68
30	30	-	12...20	0	0	AF16Z-40-00-20	0.31/0.68
		24...60	20...60	0	0	AF16Z-40-00-21	0.31/0.68
		48...130	48...130	0	0	AF16Z-40-00-22	0.31/0.68
		100...250	100...250	0	0	AF16Z-40-00-23	0.31/0.68
45	45	-	12...20	0	0	AF26Z-40-00-20	0.36/0.79
		24...60	20...60	0	0	AF26Z-40-00-21	0.36/0.79
		48...130	48...130	0	0	AF26Z-40-00-22	0.36/0.79
		100...250	100...250	0	0	AF26Z-40-00-23	0.40/0.88
55	55	-	12...20	0	0	AF38Z-40-00-20	0.36/0.79
		24...60	20...60	0	0	AF38Z-40-00-21	0.36/0.79
		48...130	48...130	0	0	AF38Z-40-00-22	0.36/0.79
		100...250	100...250	0	0	AF38Z-40-00-23	0.40/0.88

2 N.O. + 2 N.C. Main Poles

25	25	-	12...20	0	0	AF09Z-22-00-20	0.31/0.68
		24...60	20...60	0	0	AF09Z-22-00-21	0.31/0.68
		48...130	48...130	0	0	AF09Z-22-00-22	0.31/0.68
		100...250	100...250	0	0	AF09Z-22-00-23	0.31/0.68
30	30	-	12...20	0	0	AF16Z-22-00-20	0.31/0.68
		24...60	20...60	0	0	AF16Z-22-00-21	0.31/0.68
		48...130	48...130	0	0	AF16Z-22-00-22	0.31/0.68
		100...250	100...250	0	0	AF16Z-22-00-23	0.31/0.68
45	45	-	12...20	0	0	AF26Z-22-00-20	0.36/0.79
		24...60	20...60	0	0	AF26Z-22-00-21	0.36/0.79
		48...130	48...130	0	0	AF26Z-22-00-22	0.36/0.79
		100...250	100...250	0	0	AF26Z-22-00-23	0.40/0.88
55	55	-	12...20	0	0	AF38Z-22-00-20	0.36/0.79
		24...60	20...60	0	0	AF38Z-22-00-21	0.36/0.79
		48...130	48...130	0	0	AF38Z-22-00-22	0.36/0.79
		100...250	100...250	0	0	AF38Z-22-00-23	0.40/0.88

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

AF09 ... AF38 4-pole Contactors

Contactor Electrical Durability and Utilization Categories

General

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

If I_c is the current to be broken by the contactor and I_e the rated operational current normally drawn by the load, then $I_c = I_e$ for category AC-1. The curve corresponding to category AC-1 represents the electrical durability variation of standard contactors in relation to the breaking current I_c .

Electrical durability is expressed in millions of operating cycles.

Curve Utilization Mode

Electrical durability forecast and contactor selection for category AC-1

- Note the characteristics of the load to be controlled:
 - Operational voltage U_e
 - Current normally drawn I_e
 - Utilization category AC-1
 - Breaking current $I_c = I_e$ for AC-1
- Define the number of operating cycles N required.
- On the diagram corresponding to the operational category, select the contactor with the curve immediately above the intersection point ($I_c ; N$).

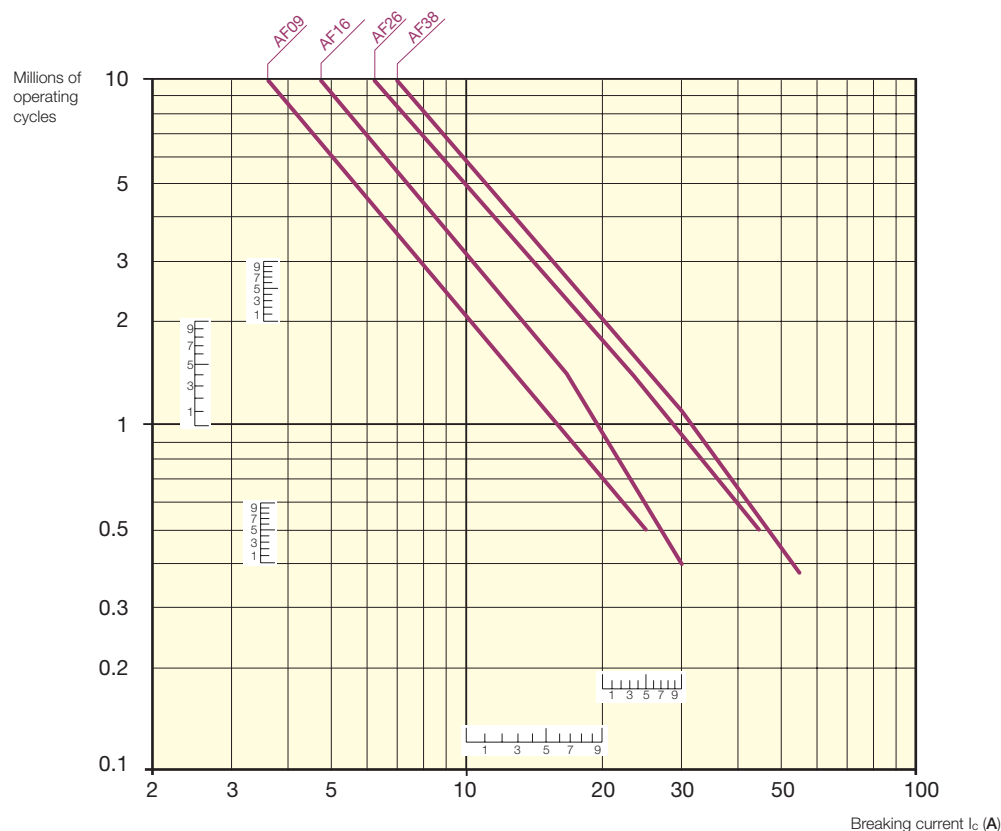
Case of uninterrupted duty

For uninterrupted duty, some verifications of preventing maintenance are necessary to check the functionality of the concerned product (consult us). The combined effect of environmental conditions and the proper temperature of the product may require some disposals. As a matter of fact, for this duty, the use duration prevails over the number of operating cycles.

Electrical Durability for AC-1 Utilization Category-U, $\leq 690V$. Ambient Temperature $\leq 60^\circ C$

Switching non-inductive or slightly inductive loads. The breaking current I_c for AC-1 is equal to the rated operational current of the load.

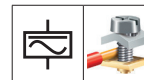
Maximum electrical switching frequency: see "Technical Data"



AF09 ... AF38 4-pole contactors AC-1 electrical durability

AF09 ... AF38 4-pole Contactors

Technical Data



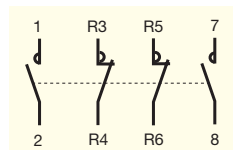
Main Pole - Utilization Characteristics according to UL / CSA

Contactors types	AF09	AF16	AF26	AF38
Standards	UL 508, CSA C22.2 N°14			
Rated operational voltage U_e max.	600 V			
UL General use rating				
600 V AC	25 A	30 A	45 A	55 A
240 V DC - 3-pole for 4 N.O. main poles	25 A	30 A	45 A	55 A
160 V DC - 2-pole for 2 N.O. / 2 N.C. main poles	20 A	20 A	45 A	55 A
Max. conductor cross-sectional area	AWG 10	AWG 10	AWG 8	AWG 6
Max. electrical switching frequency				
for general use	600 cycles/h			

Main Pole - Utilization Characteristics according to IEC

Contactors types	AF09	AF16	AF26	AF38
Standards	IEC 60947-1 / 60947-4-1 and EN 60947-1 / 60947-4-1			
Rated operational voltage U_e max.	690 V			
Rated frequency limits	25 ... 400 Hz			
Conventional free-air thermal current I_{th}				
acc. to IEC 60947-4-1, open contactors, $\leq 40^\circ\text{C}$	35 A	35 A	55 A	55 A
with conductor cross-sectional area	6 mm ²	6 mm ²	16 mm ²	16 mm ²
AC-1 Utilization category				
for air temperature close to contactor				
I_e / AC-1 rated operational current	$\theta \leq 40^\circ\text{C}$ 25 A	30 A	45 A	55 A
U_e max. ≤ 690 V, 50/60 Hz	$\theta \leq 60^\circ\text{C}$ 25 A	30 A	40 A	45 A
	$\theta \leq 70^\circ\text{C}$ 22 A	26 A	32 A	37 A
with conductor cross-sectional area	4 mm ²	6 mm ²	10 mm ²	16 mm ²
Short-circuit protection				
for contactors without thermal O/L relay - Motor protection excluded				
$U_e \leq 500$ V AC - gG type fuse	25 A	32 A	50 A	63 A
Rated short-time withstand current I_{sw}				
at 40°C ambient temperature, in free air from a cold state	1 s 300 A	300 A	450 A	450 A
	10 s 150 A	150 A	300 A	300 A
	30 s 80 A	80 A	225 A	225 A
	1 min 60 A	60 A	150 A	150 A
	15 min 35 A	35 A	55 A	55 A
Heat dissipation per pole	I_e / AC-1 0.8 W	1.2 W	1.6 W	2.3 W
Max. electrical switching frequency	AC-1 600 cycles/h			

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



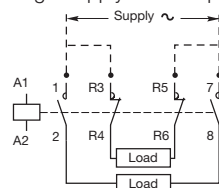
These contactors are suitable for controlling 2 separate circuits, i.e. 2 loads with 2 separate supplies, or 1 circuit comprising 2 separate loads with a single supply (see diagrams below). When the contactor operates there is no mechanical o between the N.O. poles and the N.C. poles: BREAK before MAKE.



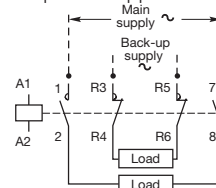
These contactors are not suitable for a reversing starter or for controlling a single load from 2 separate supplies.

Block diagrams

– Single supply and 2 separate loads



– 2 separate supplies and 2 separate loads



AF09 ... AF38 4-pole Contactors

Technical Data



General Technical Data

Contactor types	AF09	AF16	AF26	AF38
Rated insulation voltage U_i acc. to IEC 60947-4-1	690 V	600 V	6 kV	
Rated impulse withstand voltage U_{imp}				
Electromagnetic compatibility	Devices complying with IEC 60947-1 / EN 60947-1 - Environment A			
Ambient air temperature close to contactor				
Operation in free air	-40 ... +70 °C			
Storage	-60 ... +80 °C			
Climatic withstand	Category B according to IEC 60947-1 Annex Q			
Operating altitude	≤ 3000 m			
Mechanical durability				
Number of operating cycles	10 millions operating cycles			
Max. switching frequency	3600 cycles/h			
Shock withstand acc. IEC 60068-2-27 and EN 60068-2-27				
Mounting position 1				
	Shock direction	1/2 sinusoidal shock for 11 ms: no change in contact position		
	A	30 g	30 g Closed position / 25 g Open position	
	B1	25 g Closed position / 5 g Open position	25 g Closed position / 5 g Open position	
	B2	15 g	15 g Closed position / 10 g Open position	
	C1	25 g	25 g Closed position / 20 g Open position	
	C2	25 g	25 g Closed position / 20 g Open position	
Vibration withstand acc. to IEC 60068-2-6				
		5 ... 300 Hz	4 g Closed position / 2 g Open position	

Magnet System Characteristics

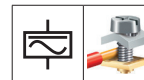
Contactor types	AF09	AF16	AF26	AF38
Coil operating limits acc. to IEC 60947-4-1				
	AC supply	at $\theta \leq 60$ °C $0.85 \times U_c$ min ... $1.1 \times U_c$ max at $\theta \leq 70$ °C $0.85 \times U_c$ min ... U_c max		
	DC supply	at $\theta \leq 60$ °C $0.85 \times U_c$ min ... $1.1 \times U_c$ max at $\theta \leq 70$ °C (AF) $0.85 \times U_c$ min ... U_c max - (AF..Z) $0.85 \times U_c$ min ... $1.1 \times U_c$ max		
AC control voltage Rated control circuit voltage U_c 50/60 Hz				
		Average pull-in value	(AF) 50 VA - (AF..Z) 16 VA	
		Average holding value	(AF) 2.2 VA / 2 W - (AF..Z) 1.7 VA / 1.5 W	
DC control voltage Rated control circuit voltage U_c Coil consumption				
		Average pull-in value	(AF) 50 W - (AF..Z) 12 ... 16 W	
		Average holding value	(AF) 2 W - (AF..Z) 1.7 W	
PLC-Output control			(AF..Z) ≥ 500 mA 24 V DC	
Drop-out voltage in % of U_c min.			≤ 60 % U_c min	
Voltage sag immunity according to SEMI F47-0706			(AF..Z) conditions of use on request	
Dips withstand (level 0% according to IEC 61000-4-11)			(AF..Z) 22 ms average for $U_c = 24 ... 250$ V 50/60Hz	
Operating time -20 °C ≤ θ ≤ +60 °C				
between coil energization and:				
	N.O. contact closing	40 ... 95 ms		
	N.C. contact opening	38 ... 90 ms		
between coil de-energization and:				
	N.O. contact opening	11 ... 95 ms		
	N.C. contact closing	13 ... 98 ms		

Mounting Characteristics

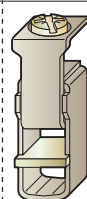
Contactor types	AF09	AF16	AF26	AF38
Mounting positions				
Mounting distances	Max. add-on N.C. auxiliary contacts: see accessory fitting details for a 4-pole contactor AF09 ... AF38			
Fixing	The contactors can be assembled side by side.			
on rail according to IEC 60715, EN 60715	35 x 7.5 mm or 35 x 15 mm			
by screws (not supplied)	2 x M4 screws placed diagonally			

AF09 ... AF38 4-pole Contactors

Technical Data

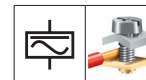


Connecting Characteristics

Contactor types	AF09	AF16	AF26	AF38
Main terminals				
	Screw terminals with cable clamp		Screw terminals with bouble connector 2x (5.5 width x 6.8 depth)	
Connecting capacity (min. ... max.)				
Main conductors (poles)				
 Rigid	solid ($\leq 4 \text{ mm}^2$)	1 x 1 ... 6 mm ²	1.5 ... 16m ²	
	stranded ($\geq 6 \text{ mm}^2$)	2 x 1 ... 6 mm ²	1.5 ... 16m ²	
 Flexible with non insulated ferrule		1 x 0.75 ... 6 mm ²	1.5 ... 16m ²	
		2 x 0.75 ... 6 mm ²	1.5 ... 16m ²	
 Flexible with insulated ferrule		1 x 0.75 ... 4 mm ²	1.5 ... 16m ²	
		2 x 0.75 ... 2.5 mm ²	1.5 ... 16m ²	
 Bars or lugs		L < 9.6 mm		
Capacity according to UL/CSA	1 or 2 x	AWG 16 ... 10	AWG 16 ... 6	
Stripping length		10 mm	12 mm	
Auxiliary conductors				
 Rigid solid		1 x 1 ... 2.5 mm ²		
		2 x 1 ... 2.5 mm ²		
 Flexible with non insulated ferrule		1 x 0.75 ... 2.5 mm ²		
		2 x 0.75 ... 2.5 mm ²		
 Flexible with insulated ferrule		1 x 0.75 ... 2.5 mm ²		
		2 x 0.75 ... 1.5 mm ²		
 Bars or lugs		L < 8 mm		
Capacity according to UL/CSA	1 or 2 x	AWG 18 ... 14		
Stripping length		10 mm		
Degree of protection				
acc. to IEC 60947-1 / EN 60947-1 and IEC 60529 / EN 60529				
Main terminals	IP20			
Coil terminals	IP20			
Screw terminals	(delivered in open position, screws of unused terminals must be tightened)			
Main terminals	M3.5		M4.5	
Coil terminals	M3.5			
Screwdriver type	Flat Ø 5.5 / Pozidriv 2			
Tightening torque				
Main pole terminals	1.5 Nm / 13 lb.in		2.5 Nm / 22 lb.in	
Coil terminals	1.2 Nm / 11 lb.in			

AF09 ... AF38 4-pole Contactors

Main Accessories



Accessory fitting details for a 4-pole contactor AF09 ... AF38

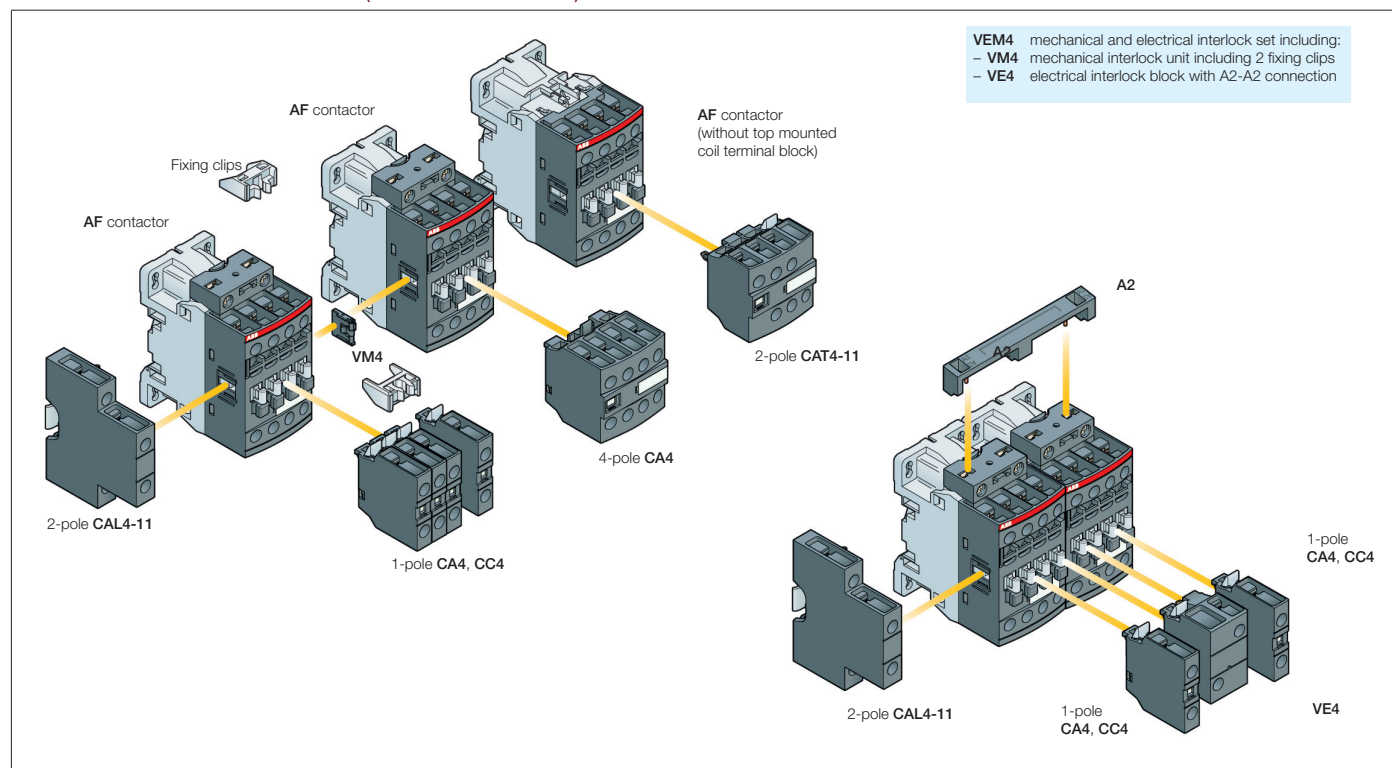
Many configurations of accessories are possible depending on whether these are front-mounted or side-mounted.

Contactor types	Main poles	Built-in auxiliary contacts	Front-mounted accessories				Side-mounted accessories	
			Auxiliary contact blocks				Auxiliary contact blocks	
			1-pole CA4				Left side	Right side
			1-pole CC4	2-pole CAT4-11	4-pole CA4	VEM4	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								
AF09 ... AF38	4	0	0	0	4 max.	or 1	+	1
AF09 ... AF38	4	0	0	0	2 max.	or 1	+	1
					3 max.	-	+	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								
AF09 ... AF16	2	2	0	0	4 max.	or 1	+	1
AF26 ... AF38	2	2	0	0	2 max.	or 1	+	1

Mounting positions



Contactors and main accessories (other accessories available)



Auxiliary Contact Blocks

Accessories for AF09 ... AF38 4-pole Contactors



CA4-10



CA4-22E



CAL4-11



CAT4-11E

Application

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

Description

Types of auxiliary contact blocks for standard industrial environments:

- CA4 1 or 4-pole block, front-mounted, instantaneous with N.O., N.C. contacts
- CC4 1-pole block, front-mounted, with N.O. leading contact or N.C. lagging contact
- CAT4 2-pole block, front-mounted, instantaneous N.O. + N.C. contacts with A1 / A2 coil terminal connection on front face
- CAL4 2-pole block instantaneous N.O. + N.C. contacts clipped onto the right and/or left side of the contactors.

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

Fitting Details - For each contactor, refer to "Accessory Fitting Details" table.

Ordering Details

For contactors	Auxiliary contacts	Catalog number	List price	Pack ^(nrg) pieces	Weight kg/lbs (1 pce)
	 				

Front-mounted instantaneous auxiliary contact blocks

AF09 ... AF38...-40-00	1	0	-	-	CA4-10	1	0.014/0.03
AF09 ... AF38...-22-00	0	1	-	-	CA4-01	1	0.014/0.03
	2	2	-	-	CA4-22E	1	0.055/0.12
	3	1	-	-	CA4-31E	1	0.055/0.12
	4	0	-	-	CA4-40E	1	0.055/0.12
AF09 ... AF38...-40-00	0	4	-	-	CA4-04E	1	0.055/0.12

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

AF09 ... AF38...-40-00	-	-	1	0	CC4-10	1	0.014/0.03
AF09 ... AF38...-22-00	-	-	0	1	CC4-01	1	0.014/0.03

Side-mounted instantaneous auxiliary contact blocks

AF09 ... AF38...-40-00	1	1	-	-	CAL4-11	1	0.040/0.09
------------------------	---	---	---	---	---------	---	------------

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

AF09 ... AF38...-40-00	1	1	-	-	CAT4-11E	1	0.040/0.09
AF09 ... AF38...-22-00							

Note: CAT4 not fittable on AF.Z contactors with DC control voltage 12...20 V DC.

Auxiliary Contact Blocks

Accessories for AF09 ... AF38 4-pole Contactors



Technical Data

Types	1-pole CA4, 1-pole CC4, 4-pole CA4, 2-pole CAT4, 2-pole CAL4
-------	--

Contact Utilization Characteristics according to IEC

Standards	IEC 60947-5-1 and EN 60947-5-1
Rated insulation voltage $U_{acc.}$ to IEC 60947-5-1	690 V
Rated impulse withstand voltage U_{imp}	6 kV
Rated operational voltage U_o max.	24 ... 690 V
Conventional thermal current I_{th} - $\theta \leq 40^\circ\text{C}$	16 A
Rated frequency limits	25 ... 400 Hz
Rated operational current I_o / AC-15	24-127 V 50/60 Hz 6 A
acc. to IEC 60947-5-1	220-240 V 50/60 Hz 4 A
	400-440 V 50/60 Hz 3 A
	500 V 50/60 Hz 2 A
	690 V 50/60 Hz 2 A
Making capacity acc. to IEC 60947-5-1	10 x I_o AC-15 acc. to IEC 60947-5-1
Breaking capacity acc. to IEC 60947-5-1	10 x I_o AC-15 acc. to IEC 60947-5-1
Rated operational current I_o / DC-13	24 V DC 6 A / 144 W
acc. to IEC 60947-5-1	48 V DC 2.8 A / 134 W
	72 V DC 1 A / 72 W
	110 V DC 0.55 A / 60 W
	125 V DC 0.55 A / 69 W
	220 V DC 0.27 A / 60 W
	250 V DC 0.27 A / 68 W
	400 V DC 0.15 A / 60 W
	500 V DC 0.13 A / 65 W
	600 V DC 0.1 A / 60 W
Short-circuit protection gG type fuse	10 A
Rated short-time withstand current I_{cw}	for 1.0 s 100 A
$\theta = 40^\circ\text{C}$	for 0.1 s 140 A
Minimum switching capacity	12 V / 3 mA
with failure rate acc. to IEC 60947-5-4	10^{-7}
Heat dissipation per pole at 6 A	0.1 W
Mechanical durability	Number of operating cycles 10 million operating cycles
	Max. switching frequency 3600 cycles/h
Max. electrical switching frequency	for AC-15 1200 cycles/h
	for DC-13 900 cycles/h

Contact Utilization Characteristics according to UL/CSA

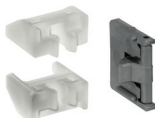
Standards	UL 508, CSA C22.2 N°14
Rated insulation voltage $U_{acc.}$	600 V
Max. rated voltage	600 V AC, 600 V DC
Pilot duty	A600, Q600
AC thermal rated current	10 A
AC maximum volt-ampere making	7200 VA
AC maximum volt-ampere breaking	720 VA
DC thermal rated current	2.5 A
DC maximum volt-ampere making-breaking	69 VA

Connecting Characteristics

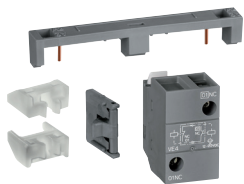
Screw terminals	(delivered in open position, screws of unused terminals must be tightened)
All terminals	M3.5
Connecting capacity (min. ... max.)	
Rigid solid	1 x 1 ... 2.5 mm ²
Flexible with non insulated ferrule	2 x 1 ... 2.5 mm ²
Flexible with non insulated ferrule	1 x 0.75 ... 2.5 mm ²
Flexible with insulated ferrule	2 x 0.75 ... 2.5 mm ²
Flexible with insulated ferrule	1 x 0.75 ... 2.5 mm ²
Flexible with insulated ferrule	2 x 0.75 ... 1.5 mm ²
Bars or lugs	L < 8 mm
Capacity acc. to UL/CSA	1 or 2 x AWG 18 ... 14
Stripping length	10 mm
Degree of protection	IP20
acc. to IEC 60947-1 / EN 60947-1 and IEC 60529 / EN 60529	
Screwdriver type	Flat Ø5.5 / Pozidriv 2
Tightening torque	1.2 Nm / 11 lb.in

Interlocks

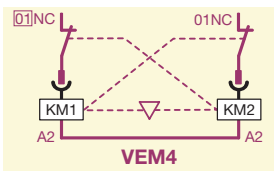
Accessories for AF09 ... AF38 4-pole Contactors



VM4



VEM4



BB4

Mechanical interlock unit

Description

VM4 mechanical interlock unit for the interlocking of two AF contactors.
When mounted between two contactors without additional width, the VM4 mechanical interlock unit prevents one of the contactors from closing as long as the other contactor is closed.
The mechanical interlock unit includes 2 fixing clips (BB4).

Ordering Details

For contactors	Catalog number	List price	Pack ^(ing) pieces	Weight kg/lbs (1 pce)
AF09 ... AF38...-40-00	VM4		10	0.005/0.011

Mechanical and electrical interlock set

Description

VEM4 mechanical and electrical interlock set for the interlocking of two AF contactors.
VEM4 set includes a mechanical interlock unit VM4 with 2 fixing clips (BB4) and a VE4 electrical interlock block with A2-A2 connection.
Fixing the electrical interlock block to the contactor front face connects the 2 built-in N.C. interlocking contacts with the two coils. VE4 block must be used with A2-A2 connection to respect the electrical connection diagram.

Ordering Details

For contactors	Auxiliary contacts	Catalog number	List price	Pack ^(ing) pieces	Weight kg/lbs (1 pce)
AF09 ... AF38...-40-00	1 1	VEM4		1	0.035/0.077

Note: VEM4 not fittable on AF..Z contactors with DC control voltage 12...20 V DC.

Fixing clips

Ordering Details

For contactors	Catalog number	List price	Pack ^(ing) pieces	Weight kg/lbs (1 pce)
AF09 ... AF38...-40-00	BB4		50	0.002/0.004

Interlocks

Accessories for AF09 ... AF38 4-pole Contactors



Technical Data

Interlock types	VM4
Mechanical durability	
Number of operating cycles	5 million operating cycles
Max. switching frequency	1800 cycles/h

Interlock types	VEM4
-----------------	------

Contact Utilization Characteristics according to IEC

Standards	IEC 60947-5-1 and EN 60947-5-1
Rated insulation voltage U_i acc. to IEC 60947-5-1	690 V
Rated impulse withstand voltage U_{imp}	6 kV
Rated control circuit voltage U_c	AC 50/60 Hz control voltage 24 ... 500 V AC
	DC control voltage 20 ... 500 V DC
Conventional thermal current I_{th} - $\theta \leq 40^\circ\text{C}$	16 A
Mechanical and electrical durability	
Number of operating cycles	5 million operating cycles
Max. mechanical switching	1800 cycles/h
Max. electrical switching frequency	1200 cycles/h

Contact Utilization Characteristics according to UL / CSA

Standards	UL 508, CSA C22.2 N°14
Max. rated voltage	500 V AC, 500 V DC

Connecting Characteristics

Screw terminals	
All terminals	M3.5
Connecting capacity (min. ... max.)	
Rigid Solid	1 x 1 ... 2.5 mm ²
Flexible with non insulated ferrule	2 x 1 ... 2.5 mm ²
Flexible with non insulated ferrule	1 x 0.75 ... 2.5 mm ²
Flexible with insulated ferrule	2 x 0.75 ... 2.5 mm ²
Flexible with insulated ferrule	1 x 0.75 ... 2.5 mm ²
Flexible with insulated ferrule	2 x 0.75 ... 1.5 mm ²
Bars or lugs	L < 8 mm
Capacity according to UL/CSA	1 or 2 x AWG 18 ... 14
Stripping length	10 mm
Degree of protection	
acc. to IEC 60947-1 / EN 60947-1 and IEC 60529 / EN 60529	IP20
Screwdriver type	Flat Ø5.5 / Pozidriv 2
Tightening torque	1.2 Nm / 11 lb.in

Other Accessories

Accessories for AF09 ... AF38 4-pole Contactors



LDC4

Additional coil terminal block

Description

Additional coil terminal block for a bottom access to the coil terminals of contactors or contactor relays.

Ordering Details

For contactors	Catalog number	List price	Pack ^(ing) pieces	Weight kg/lbs (1 pce)
AF09 ... AF38	LDC4		10	0.010/0.02



BX4



BX4-CA

Protective covers

Description

Sealable and transparent protective covers BX4 and non-removable BX4-CA to protect the devices against accidental contact.

Ordering Details

For contactors	Catalog number	List price	Pack ^(ing) pieces	Weight kg/lbs (1 pce)
All 1-stack contactors	BX4		10	0.006/0.013
For 4-pole CA4 and 2-pole CAT4 auxiliary contact blocks	BX4-CA		50	0.001/0.002



BA4

Function markers

Description

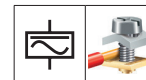
Box of 16 blank cards (16 markers by card) printable on HTP500 thermal transfer printer and AMS 500 marking table to identify your contactors, overload relays or manual motor starters.
Marker dimensions: 7 x 20 mm (.276" x .787")

Ordering Details

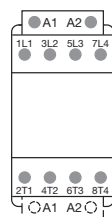
For contactors	Catalog number	List price	Pack ^(ing) pieces	Weight kg/lbs (1 pce)
Marker card	BA4		16	0.011/0.024
AMS 500 support plate for 8 BA4	SPRC 1		1	0.220/0.48
HTP500 support plate	HTP500-BA4		1	0.290/0.64

AF09 ... AF38 4-pole Contactors

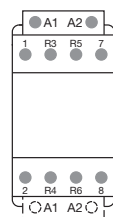
Terminal Marking and Positioning



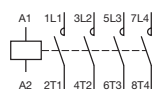
Standard devices without addition of auxiliary contacts



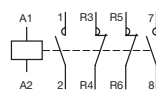
AF09 ... AF38..-40-00



AF09 ... AF38..-22-00

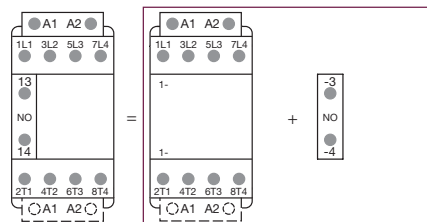


AF09 ... AF38..-40-00

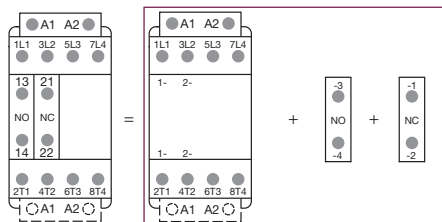


AF09 ... AF38..-22-00

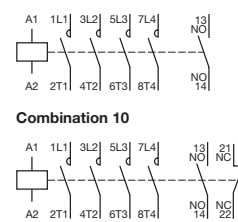
Other possible contact combinations with auxiliary contacts



Combination 10 = AF09 ... AF38..-40-00 + CA4-10

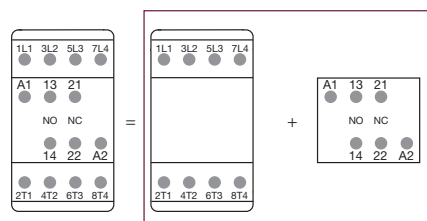


Combination 11 = AF09 ... AF38..-40-00 + CA4-10 + CA4-01

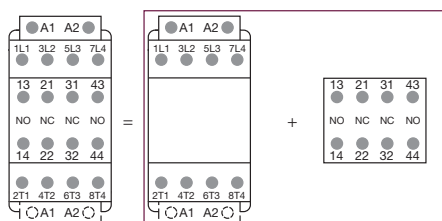


Combination 10

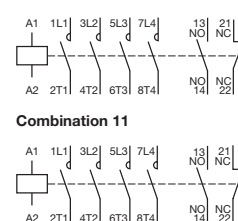
Combination 11



Combination 11 = AF09 ... AF38..-40-00 + CAT4-11E

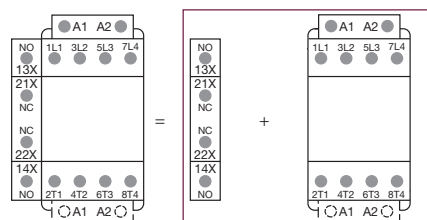


Combination 22 = AF09 ... AF38..-40-00 + CA4-22E



Combination 11

Combination 22



Combination 11 = CAL4-11 + AF09 ... AF38-40-00



Combination 11

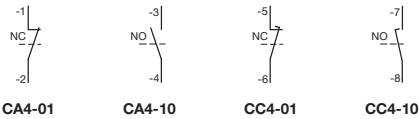
Note: Only AF.Z contactor with DC control voltage 12...20 V DC need to respect the connection polarities indicated close to the coil terminals: A1+ for the positive pole and A2- for the negative pole

Add-on Auxiliary Contacts

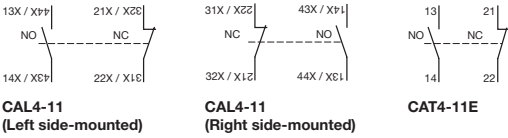
Terminal Marking and Positioning



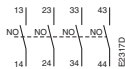
1-pole auxiliary contacts



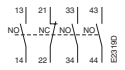
2-pole auxiliary contacts



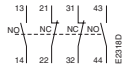
4-pole auxiliary contacts



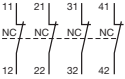
CA4-40E



CA4-31E



CA4-22E



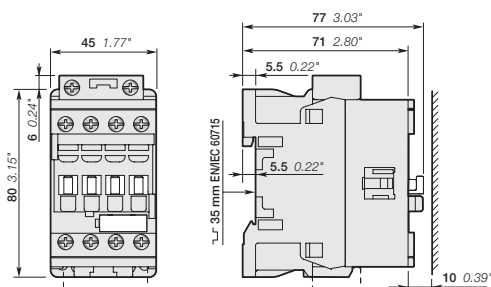
CA4-04E

AF09 ... AF38 4-pole Contactors

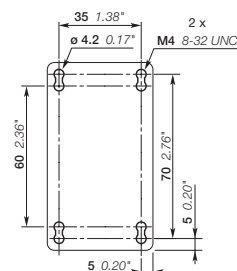
AC / DC Operated - with Screw Terminals



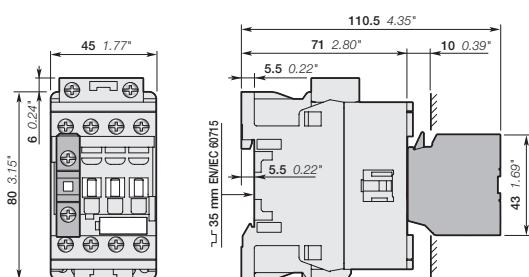
Dimensions mm, inches



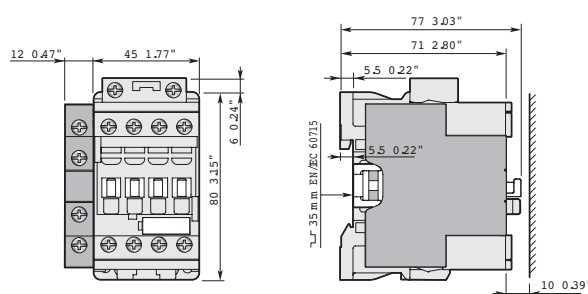
AF09, AF16



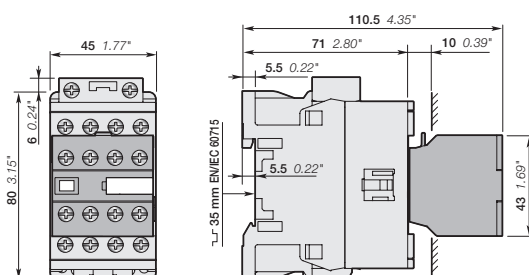
AF09, AF16



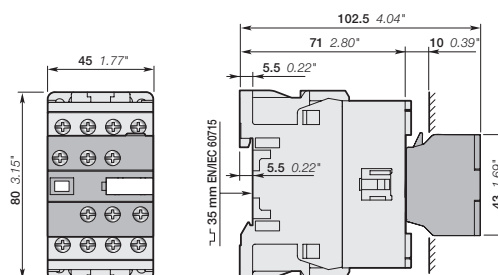
AF09, AF16
+ CA4, CC4 1-pole auxiliary contact block



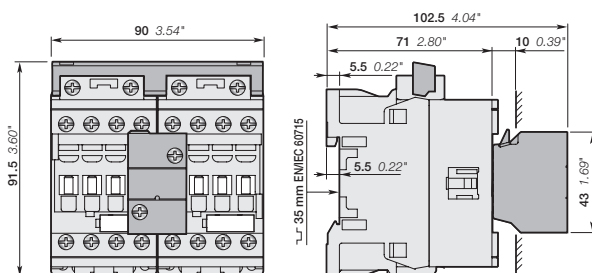
AF09, AF16
+ CAL4-11 2-pole auxiliary contact block



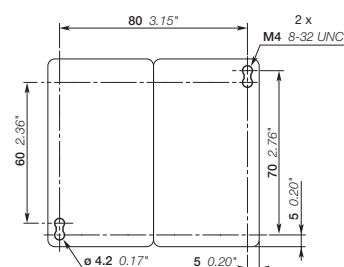
AF09, AF16
+ CA4 4-pole auxiliary contact block



AF09, AF16
+ CAT4 2-pole auxiliary contact and coil terminal block



AF09..-40-00, AF16..-40-00
+ VEM4 mechanical and electrical interlock set



AF09..-40-00, AF16..-40-00
+ VEM4 mechanical and electrical interlock set

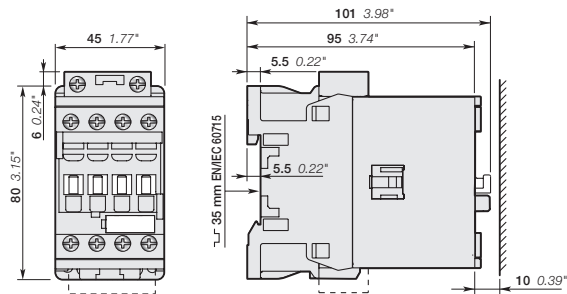
Note: contactor lateral distance to grounded component 2 mm 0.08" min.

AF26, AF38 4-pole Contactors

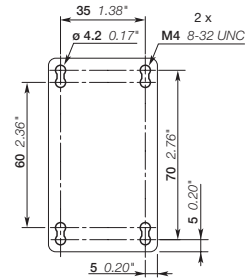
AC / DC Operated - with Screw Terminals



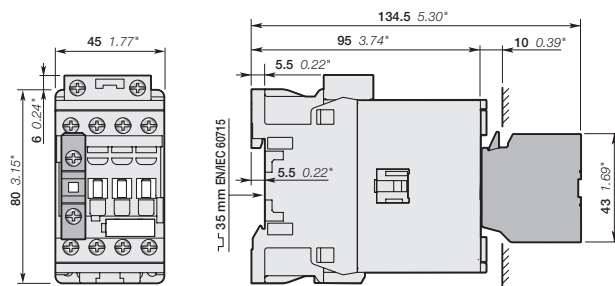
Dimensions mm, inches



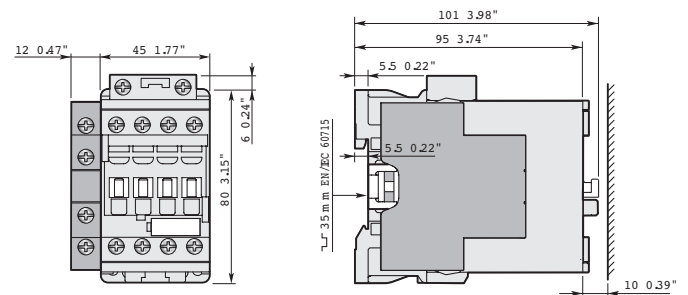
AF26, AF38



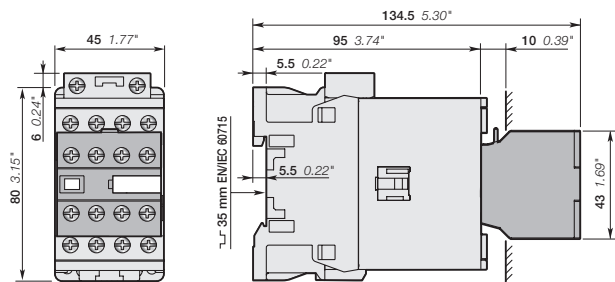
AF26, AF38



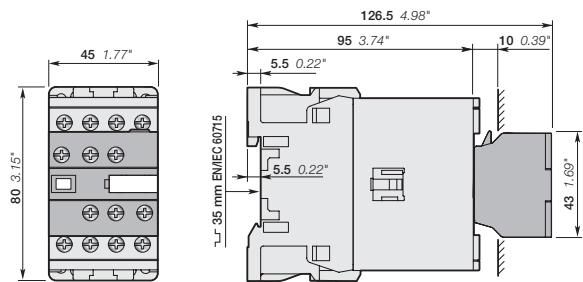
AF26, AF38
+ CA4, CC4 1-pole auxiliary contact block



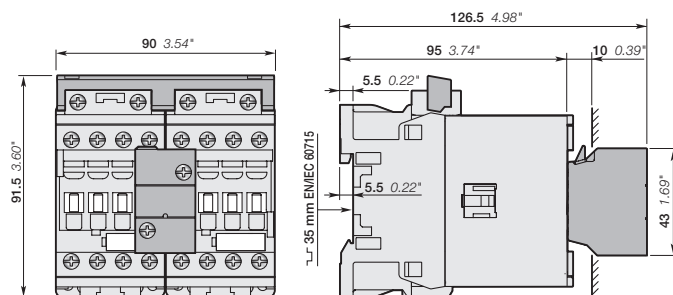
AF26, AF38
+ CAL4-11 2-pole auxiliary contact block



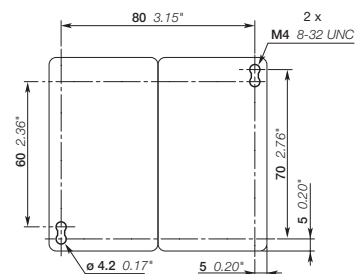
AF26, AF38
+ CA4 4-pole auxiliary contact block



AF26, AF38
+ CAT4 2-pole auxiliary contact and coil terminal block



AF26..-40-00, AF38..-40-00
+ VEM4 mechanical and electrical interlock set



AF26..-40-00, AF38..-40-00
+ VEM4 mechanical and electrical interlock set

Note: contactor lateral distance to grounded component 2 mm 0.08" min.

NF Control Relays



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Dimensions.....	1/76

Control Relays



⚡ AC / DC control voltage

NF22E	NF31E	NF40E
2 N.O. + 2 N.C.	3 N.O. + 1 N.C.	4 N.O.

NF44E	NF53E	NF62E	NF71E	NF80E
4 N.O. + 4 N.C.	5 N.O. + 3 N.C.	6 N.O. + 2 N.C.	7 N.O. + 1 N.C.	8 N.O.

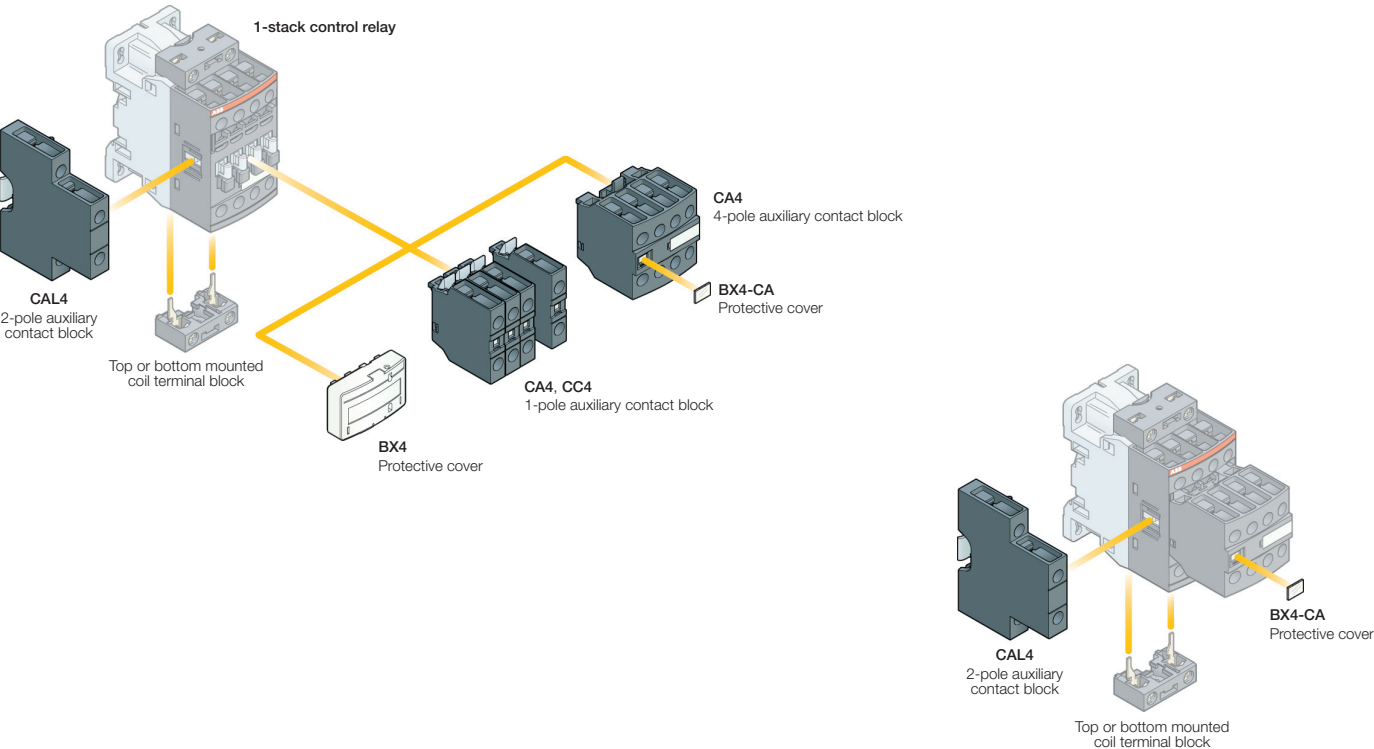
Control Circuit Switching

Rated operational current		
IEC	AC-15	240 V
		400 V
		690 V
	DC-13	24 V
		400 V
UL/CSA	Pilot Duty	

4 A
3 A
2 A
6 A / 144 W
0.15 A / 60 W
A600, Q600

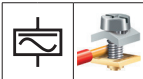
Main Accessories

Auxiliary contact blocks	Front mounting	1-pole CA4-10 or CA4-01, CC4-10 or CC4-01	
		4-pole CA4	
	Side mounting		2-pole CAL4



NF Control Relays

AC / DC Operated - with Screw Terminals



Application

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

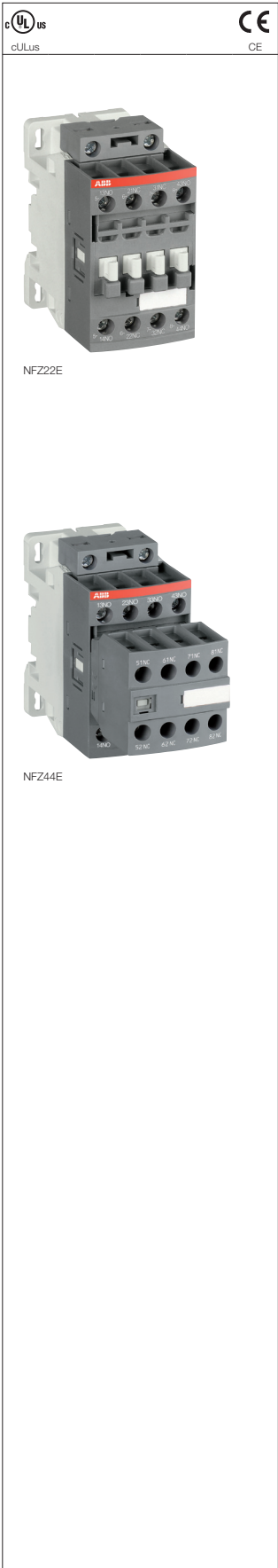
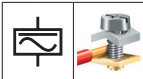
Description

- NF control relays include an electronic coil interface accepting a wide control voltage U_c min. ... U_c max. Only four coils cover control voltages between 24...500 V 50/60 Hz or 20...500 V DC
- NF control relays can manage large control voltage variations. One coil (i.e. 100...250 V 50/60 Hz - DC) can be used for different control voltages used worldwide without any coil change
- NF control relays have built-in surge protection and do not require additional surge suppressors
- The control relays have mechanically-linked auxiliary contacts compliant with Annex L of IEC 60947-5-1 and include the "Mechanically Linked" symbol on their side
- 8-pole control relays are mounted with a non-removable auxiliary contact block (2nd stack).

Ordering Details

Number of contacts		Control voltage Range U_c min. ... U_c max.	Catalog number	List price	Weight Pack ^(ing) 1 piece kg/lbs
1 st stack	2 nd stack				
		V 50/60 Hz	V DC		
		24...60	20...60	NF22E-11	0.31/0.68
		48...130	48...130	NF22E-12	0.27/0.60
		100...250	100...250	NF22E-13	0.27/0.60
		250...500	250...500	NF22E-14	0.31/0.68
		24...60	20...60	NF31E-11	0.31/0.68
		48...130	48...130	NF31E-12	0.27/0.60
		100...250	100...250	NF31E-13	0.27/0.60
		250...500	250...500	NF31E-14	0.31/0.68
		24...60	20...60	NF40E-11	0.31/0.68
		48...130	48...130	NF40E-12	0.27/0.60
		100...250	100...250	NF40E-13	0.27/0.60
		250...500	250...500	NF40E-14	0.31/0.68
		24...60	20...60	NF44E-11	0.36/0.79
		48...130	48...130	NF44E-12	0.32/0.70
		100...250	100...250	NF44E-13	0.32/0.70
		250...500	250...500	NF44E-14	0.36/0.79
		24...60	20...60	NF53E-11	0.36/0.79
		48...130	48...130	NF53E-12	0.32/0.70
		100...250	100...250	NF53E-13	0.32/0.70
		250...500	250...500	NF53E-14	0.36/0.79
		24...60	20...60	NF62E-11	0.36/0.79
		48...130	48...130	NF62E-12	0.32/0.70
		100...250	100...250	NF62E-13	0.32/0.70
		250...500	250...500	NF62E-14	0.36/0.79
		24...60	20...60	NF71E-11	0.36/0.79
		48...130	48...130	NF71E-12	0.32/0.70
		100...250	100...250	NF71E-13	0.32/0.70
		250...500	250...500	NF71E-14	0.36/0.79
		24...60	20...60	NF80E-11	0.36/0.79
		48...130	48...130	NF80E-12	0.32/0.70
		100...250	100...250	NF80E-13	0.32/0.70
		250...500	250...500	NF80E-14	0.36/0.79

NF Control Relays - NFZ Additional Coils
AC / DC Operated - with Screw Terminals



Application

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

Description

- NFZ control relays include an electronic coil interface accepting a wide control voltage U_c min. ... U_c max. and managing large control voltage variations.
- NFZ control relays cover control voltages between 24...250 V 50/60 Hz or 12...250 V DC
- NFZ control relays allow direct control by PLC-output ≥ 24 V DC 500 mA and obtain a reduced holding coil consumption.
- NFZ control relays withstand short dips and voltage interruptions (SEMI F47-0706 compliance)
- NFZ control relays have built-in surge protection and do not require additional surge suppressors
- The control relays have mechanically-linked auxiliary contacts compliant with Annex L of IEC 60947-5-1 and include the "Mechanically Linked" symbol on their side
- 8-pole control relays are mounted with a non-removable auxiliary contact block (2nd stack).

Ordering Details

Number of contacts		Control voltage Range U_c min. ... U_c max.	Catalog number	List price	Weight Pack ^(ing) 1 piece kg/lbs
1 st stack	2 nd stack				
		V 50/60 Hz	V DC		
		-	12...20	NFZ22E-20	0.31/0.68
		24...60	20...60	NFZ22E-21	0.31/0.68
		48...130	48...130	NFZ22E-22	0.31/0.68
		100...250	100...250	NFZ22E-23	0.31/0.68
		-	12...20	NFZ31E-20	0.31/0.68
		24...60	20...60	NFZ31E-21	0.31/0.68
		48...130	48...130	NFZ31E-22	0.31/0.68
		100...250	100...250	NFZ31E-23	0.31/0.68
		-	12...20	NFZ40E-20	0.31/0.68
		24...60	20...60	NFZ40E-21	0.31/0.68
		48...130	48...130	NFZ40E-22	0.31/0.68
		100...250	100...250	NFZ40E-23	0.31/0.68
		-	12...20	NFZ44E-20	0.36/0.79
		24...60	20...60	NFZ44E-21	0.36/0.79
		48...130	48...130	NFZ44E-22	0.36/0.79
		100...250	100...250	NFZ44E-23	0.36/0.79
		-	12...20	NFZ53E-20	0.36/0.79
		24...60	20...60	NFZ53E-21	0.36/0.79
		48...130	48...130	NFZ53E-22	0.36/0.79
		100...250	100...250	NFZ53E-23	0.36/0.79
		-	12...20	NFZ62E-20	0.36/0.79
		24...60	20...60	NFZ62E-21	0.36/0.79
		48...130	48...130	NFZ62E-22	0.36/0.79
		100...250	100...250	NFZ62E-23	0.36/0.79
		-	12...20	NFZ71E-20	0.36/0.79
		24...60	20...60	NFZ71E-21	0.36/0.79
		48...130	48...130	NFZ71E-22	0.36/0.79
		100...250	100...250	NFZ71E-23	0.36/0.79
		-	12...20	NFZ80E-20	0.36/0.79
		24...60	20...60	NFZ80E-21	0.36/0.79
		48...130	48...130	NFZ80E-22	0.36/0.79
		100...250	100...250	NFZ80E-23	0.36/0.79

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

NF Control Relays

Technical Data



Main Pole - Utilization Characteristics according to UL / CSA

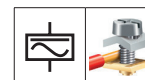
Contactor relay types	NF
Standards	UL 508, CSA C22.2 N°14
Rated insulation voltage U	600 V
Max. rated voltage	600 V AC, 600 V DC
Pilot duty	A600, Q600
AC thermal rated current	10 A
AC maximum volt-ampere making	7200 VA
AC maximum volt-ampere breaking	720 VA
DC thermal rated current	2.5 A
DC maximum volt-ampere making-breaking	69 VA

Contact Utilization Characteristics according to IEC

Contactor relay types	NF
Standards	IEC 60947-1 / 60947-5-1 and EN 60947-1 / 60947-5-1
Rated operational voltage U _o max.	690 V
Conventional free-air thermal current I _{th} θ ≤ 40 °C	16 A
Rated frequency limits	25 ... 400 Hz
Rated operational current I _o / AC-15	
acc. to IEC 60947-5-1	
24-127 V 50/60 Hz	6 A
220-240 V 50/60 Hz	4 A
400-440 V 50/60 Hz	3 A
500 V 50/60 Hz	2 A
690 V 50/60 Hz	2 A
Making capacity AC-15	10 x I _o AC-15 acc. to IEC 60947-5-1
Breaking capacity AC-15	10 x I _o AC-15 acc. to IEC 60947-5-1
Rated operational current I _o / DC-13	
acc. to IEC 60947-5-1	
24 V DC	6 A / 144 W
48 V DC	2.8 A / 134 W
72 V DC	1 A / 72 W
110 V DC	0.55 A / 60 W
125 V DC	0.55 A / 69 W
220 V DC	0.27 A / 60 W
250 V DC	0.27 A / 68 W
400 V DC	0.15 A / 60 W
500 V DC	0.13 A / 65 W
600 V DC	0.1 A / 60 W
Short-circuit protection J type fuse	10 A
Rated short-time withstand current I _w	
for 1.0 s	100 A
for 0.1 s	140 A
Minimum switching capacity	12 V / 3 mA
with failure rate acc. to IEC 60947-5-4	10 ⁻⁷
Non-overlapping time between N.O. and N.C. contacts	≥ 2 ms
Heat dissipation per pole at 6 A	0.1 W
Max. electrical switching frequency	
AC-15	1200 cycles/h
DC-13	900 cycles/h

NF Control Relays

Technical Data



General Technical Data

Control relay types	NF
Rated insulation voltage U_i acc. to IEC 60947-5-1	690 V
acc. to UL / CSA	600 V
Rated impulse withstand voltage U_{imp}	6 kV
Electromagnetic compatibility	Devices complying with IEC 60947-1 / EN 60947-1 - Environment A
Ambient air temperature close to contactor	
Operation in free air	-40 ... +70 °C
Storage	-60 ... +80 °C
Climatic withstand	Category B according to IEC 60947-1 Annex Q
Operating altitude	≤ 3000 m
Mechanical durability	
Number of operating cycles	20 million operating cycles
Max. switching frequency	7200 cycles/h
Shock withstand acc. IEC 60068-2-27 and EN 60068-2-27	
Mounting position 1	
Shock direction	1/2 sinusoidal shock for 11 ms: no change in contact position
A	30 g
B1	25 g Closed position / 5 g Open position
B2	15 g
C1	25 g
C2	25 g
Vibration withstand acc. to IEC 60068-2-6	
	5 ... 300 Hz
	4 g Closed position / 2 g Open position

Magnet System Characteristics

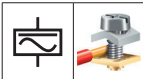
Control relay types	NF
Coil operating limits acc. to IEC 60947-5-1	
	AC supply
	at $\theta \leq 60^\circ\text{C}$ $0.85 \times U_c \text{ min} \dots 1.1 \times U_c \text{ max}$
	at $\theta \leq 70^\circ\text{C}$ $0.85 \times U_c \text{ min} \dots U_c \text{ max}$
	DC supply
	at $\theta \leq 60^\circ\text{C}$ $0.85 \times U_c \text{ min} \dots 1.1 \times U_c \text{ max}$
	at $\theta \leq 70^\circ\text{C}$ (NF) $0.85 \times U_c \text{ min} \dots U_c \text{ max}$ - (NFZ) $0.85 \times U_c \text{ min} \dots 1.1 \times U_c \text{ max}$
AC control voltage Rated control circuit voltage U_c	24 ... 500 V AC
50/60 Hz	
	Average pull-in value (NF) 50 VA - (NFZ) 16 VA
	Average holding value (NF) 2.2 VA / 2 W - (NFZ) 1.7 VA / 1.5 W
DC control voltage Rated control circuit voltage U_c	12 ... 500 V DC
	Average pull-in value (NF) 50 W - (NFZ) 12 ... 16 W
	Average holding value (NF) 2 W - (NFZ) 1.7 W
PLC-Output control	(NFZ) $\geq 500 \text{ mA}$ 24 V DC
Drop-out voltage in % of U_c min.	≤ 60 % $U_c \text{ min}$
Voltage sag immunity according to SEMI F47-0706	(NFZ) conditions of use on request
Dips withstand (level 0% according to IEC 61000-4-11)	(NFZ) 22 ms average for $U_c = 24 \dots 250 \text{ V}$ 50/60Hz
-20 °C ≤ θ ≤ +60 °C	
Operating time	
between coil energization and:	
	N.O. contact closing 40 ... 95 ms
	N.C. contact opening 38 ... 90 ms
between coil de-energization and:	
	N.O. contact opening 11 ... 95 ms
	N.C. contact closing 13 ... 98 ms

Mounting Characteristics

Control relay types	NF
Mounting positions	
Mounting distances	
Fixing	
on rail according to IEC 60715, EN 60715	35 x 7.5 mm or 35 x 15 mm
by screws (not supplied)	2 x M4 screws placed diagonally
	Max. add-on N.C. auxiliary contacts: see accessory fitting details for a NF control relay
	The control relays can be assembled side by side.

NF Control Relays

Technical Data

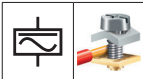


Connecting Characteristics

Contactor relay types		NF
Main terminals		
		Screw terminals with cable clamp
Connecting capacity (min. ... max.)		
Pole and coil terminals		
 Rigid	1 x	1 ... 2.5 mm ²
 Flexible with non insulated ferrule	2 x	1 ... 2.5 mm ²
 Flexible with non insulated ferrule	1 x	0.75 ... 2.5 mm ²
 Flexible with insulated ferrule	2 x	0.75 ... 2.5 mm ²
 Flexible with insulated ferrule	1 x	0.75 ... 2.5 mm ²
 Flexible with insulated ferrule	2 x	0.75 ... 1.5 mm ²
 Bars or lugs	L <	8 mm
Capacity according to UL/CSA		1 or 2 x AWG 18 ... 14
Stripping length		10 mm
Degree of protection		
acc. to IEC 60947-1 / EN 60947-1 and IEC 60529 / EN 60529		IP20
All terminals		(delivered in open position, screws of unused terminals must be tightened)
Screw terminals		
All terminals		M3.5
Screwdriver type		
		Flat Ø5.5 / Pozidriv 2
Tightening torque		
Pole terminals		1.2 Nm / 11 lb.in
Coil terminals		1.2 Nm / 11 lb.in

NF Control Relays

Main Accessories



Accessory fitting details for a NF control relay

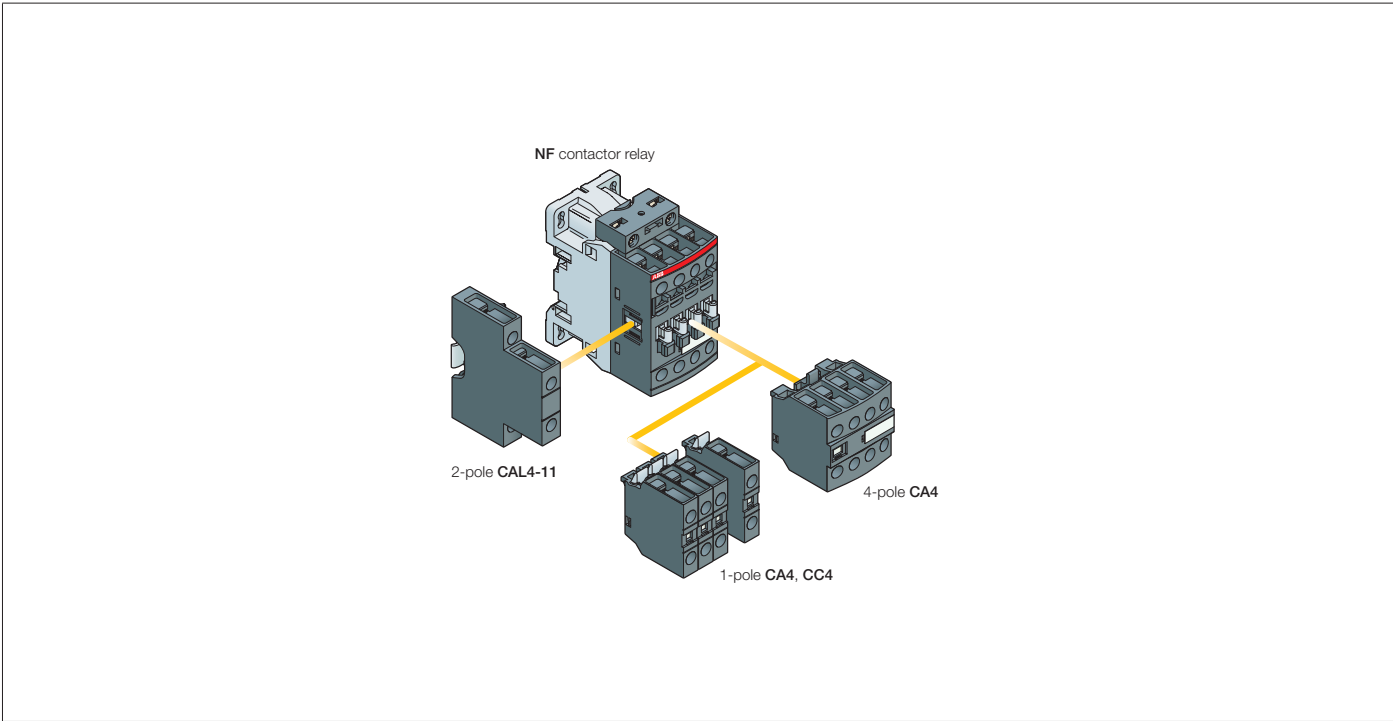
Many configurations of accessories are possible depending on whether these are front-mounted or side-mounted.

Control relay types	Main poles	Front-mounted accessories			Side-mounted accessories		
		Auxiliary contact blocks			Auxiliary contact blocks		
		1-pole CA4			Left side		Right side
		1-pole CC4	4-pole CA4		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		+	1	-
NF..	3 1 E	2 max.	-		+	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		+	1	-
		2 max.	-		+	1	+ 1
NF..	4 4 E						
NF..	5 3 E						
NF..	6 2 E						
NF..	7 1 E						
NF..	8 0 E						

Mounting positions



Control relays and main accessories (other accessories available)



Auxiliary Contact Blocks

Accessories for NF Control Relays



CA4-10



CA4-22N



CAL4-11

Application

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

Description

Types of auxiliary contact blocks for standard industrial environments:

- CA4 1 or 4-pole block, front-mounted, instantaneous with N.O., N.C. contacts.
- CC4 1-pole block, front-mounted, with N.O. leading contact or N.C. lagging contact.
- CAL4 2-pole block instantaneous N.O. + N.C. contacts clipped onto the right and/or left side of the relays.

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

Fitting Details - For each control relay type, refer to "Accessory Fitting Details" table.

Ordering Details

For contactor relays	Auxiliary contacts	Catalog number	List price	Pack ^(mg) pieces	Weight kg/lbs (1 pce)
	 				

Front-mounted instantaneous auxiliary contact blocks

4-pole NF	1	0	-	-	CA4-10	1	0.014/0.03
	0	1	-	-	CA4-01	1	0.014/0.03
	4	0	-	-	CA4-40N	1	0.055/0.12
	3	1	-	-	CA4-31N	1	0.055/0.12
	2	2	-	-	CA4-22N	1	0.055/0.12
	1	3	-	-	CA4-13N	1	0.055/0.12
NF..40E	0	4	-	-	CA4-04N	1	0.055/0.12

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

4-pole NF	-	-	1	0	CC4-10	1	0.014/0.03
	-	-	0	1	CC4-01	1	0.014/0.03

Side-mounted instantaneous auxiliary contact blocks

NF	1	1	-	-	CAL4-11	1	0.04/0.09
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Auxiliary Contact Blocks

Accessories for NF Control Relays



Contact Utilization Characteristics according to UL/CSA

Standards	UL 508, CSA C22.2 N°14
Rated insulation voltage U_i	600 V
Max. rated voltage	600 V AC, 600 V DC
Pilot duty	A600, Q600
AC thermal rated current	10 A
AC maximum volt-ampere making	7200 VA
AC maximum volt-ampere breaking	720 VA
DC thermal rated current	2.5 A
DC maximum volt-ampere making-breaking	69 VA

Technical Data

Types	1-pole CA4, 1-pole CC4, 4-pole CA4, 2-pole CAL4
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Contact Utilization Characteristics according to IEC

Standards	IEC 60947-5-1 and EN 60947-5-1
Rated insulation voltage U_i acc. to IEC 60947-5-1	690 V
Rated impulse withstand voltage U_{imp}	6 kV
Rated operational voltage U_o max.	24 ... 690 V
Conventional thermal current I_{th} - $\theta \leq 40^\circ\text{C}$	16 A
Rated frequency limits	25 ... 400 Hz
Rated operational current I_o / AC-15	24-127 V 50/60 Hz 6 A
acc. to IEC 60947-5-1	220-240 V 50/60 Hz 4 A
	400-440 V 50/60 Hz 3 A
	500 V 50/60 Hz 2 A
	690 V 50/60 Hz 2 A
Making capacity acc. to IEC 60947-5-1	10 x I_o AC-15 acc. to IEC 60947-5-1
Breaking capacity acc. to IEC 60947-5-1	10 x I_o AC-15 acc. to IEC 60947-5-1
Rated operational current I_o / DC-13	24 V DC 6 A / 144 W
acc. to IEC 60947-5-1	48 V DC 2.8 A / 134 W
	72 V DC 1 A / 72 W
	110 V DC 0.55 A / 60 W
	125 V DC 0.55 A / 69 W
	220 V DC 0.27 A / 60 W
	250 V DC 0.27 A / 68 W
	400 V DC 0.15 A / 60 W
	500 V DC 0.13 A / 65 W
	600 V DC 0.1 A / 60 W
Short-circuit protection gG type fuse	10 A
Rated short-time withstand current I_{cw}	for 1.0 s 100 A
$\theta = 40^\circ\text{C}$	for 0.1 s 140 A
Minimum switching capacity	12 V / 3 mA
with failure rate acc. to IEC 60947-5-4	10^{-7}
Heat dissipation per pole at 6 A	0.1 W
Mechanical durability	Number of operating cycles 10 million operating cycles
	Max. switching frequency 3600 cycles/h
Max. electrical switching frequency	for AC-15 1200 cycles/h
	for DC-13 900 cycles/h

Connecting Characteristics

Screw terminals	(delivered in open position, screws of unused terminals must be tightened)
All terminals	M3.5
Connecting capacity (min. ... max.)	
Rigid solid	1 x 1 ... 2.5 mm ²
Flexible with non insulated ferrule	2 x 1 ... 2.5 mm ²
Flexible with insulated ferrule	1 x 0.75 ... 2.5 mm ²
Flexible with insulated ferrule	2 x 0.75 ... 2.5 mm ²
Flexible with insulated ferrule	1 x 0.75 ... 2.5 mm ²
Flexible with insulated ferrule	2 x 0.75 ... 1.5 mm ²
Bars or lugs	L < 8 mm
Capacity acc. to UL/CSA	1 or 2 x AWG 18 ... 14
Stripping length	10 mm
Degree of protection	
acc. to IEC 60947-1 / EN 60947-1 and IEC 60529 / EN 60529	IP20
Screwdriver type	Flat Ø5.5 / Pozidriv 2
Tightening torque	1.2 Nm / 11 lb.in

Other Accessories

Accessories for NF Control Relays



LDC4

Additional coil terminal block

Description

Additional coil terminal block for a bottom access to the coil terminals of contactors or control relays.

Ordering Details

For control relays	Catalog number	List price	Pack ^(ing) pieces	Weight kg/lb (1 pce)
NF	LDC4		10	0.011/0.02



BX4



BX4-CA

Protective covers

Description

Sealable and transparent protective covers BX4 and non-removable BX4-CA to protect the devices against accidental contact.

Ordering Details

For control relays	Catalog number	List price	Pack ^(ing) pieces	Weight kg/lb (1 pce)
All 1-stack contactor relays	BX4		10	0.006/0.013
For 4-pole CA4 auxiliary contact blocks	BX4-CA		50	0.001/0.002



BA4

Function markers

Description

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

Ordering Details

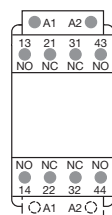
For control relays	Catalog number	List price	Pack ^(ing) pieces	Weight kg/lb (1 pce)
Marker card	BA4		16	0.011/0.02
AMS 500 support plate for 8 BA4	SPRC 1		1	0.290/0.64
HTP500 support plate	HTP500-BA4		1	0.220/0.48

NF Control Relays

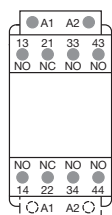
Terminal Marking and Positioning



Standard devices without addition of auxiliary contacts



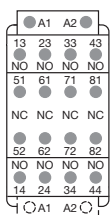
NF.22E



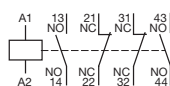
NF.31E



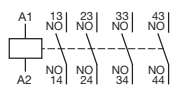
NF.40E



NF.44E



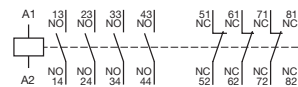
NF.22E



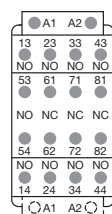
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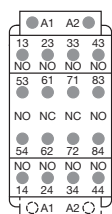
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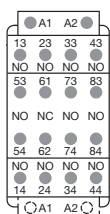
NF.44E



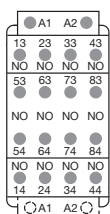
NF.53E



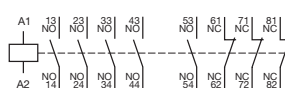
NF.62E



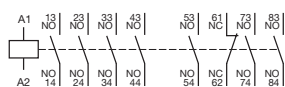
NF.71E



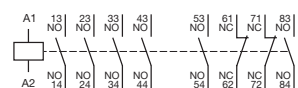
NF.80E



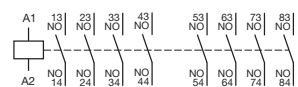
NF.53E



NF.71E

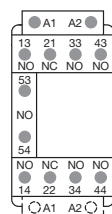


NF.62E

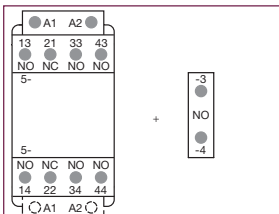


NF.80E

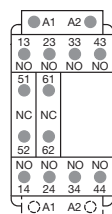
Other possible contact combinations with auxiliary contacts



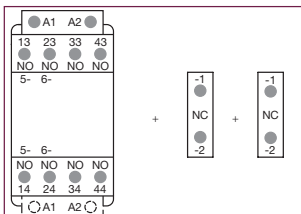
Combination 41 =



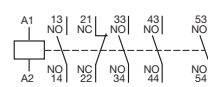
NF.31E + CA4-10



Combination 42 =



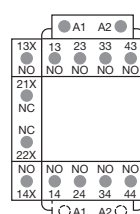
NF.40E + CA4-01+CA4-01



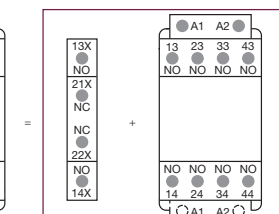
Combination 41 E



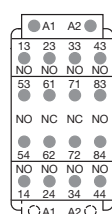
Combination 42 E



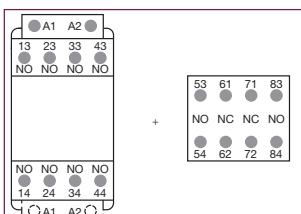
Combination 51 =



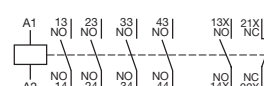
CAL4-11 + NF.40E



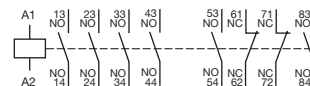
Combination 62 =



NF.40E + CA4-22N



Combination 51 E



Combination 62 E

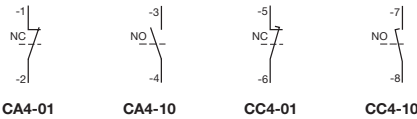
Note: Only NFZ contactor relays with DC control voltage 12...20 V DC need to respect the connection polarities indicated close to the coil terminals: A1+ for the positive pole and A2- for the negative pole.

Add-on Auxiliary Contacts

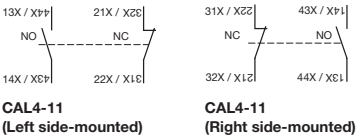
Terminal Marking and Positioning



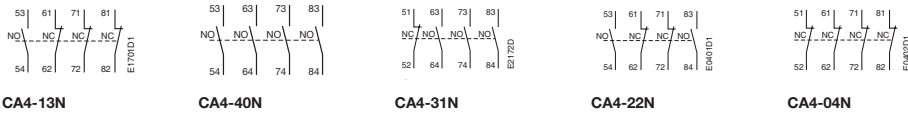
1-pole auxiliary contacts



2-pole auxiliary contacts



4-pole auxiliary contacts

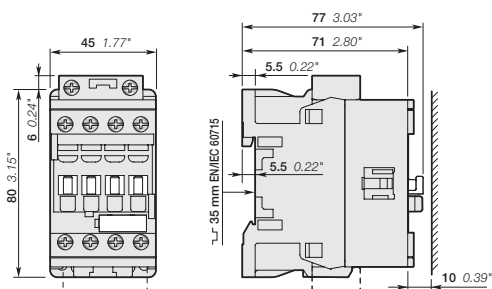


NF Control Relays

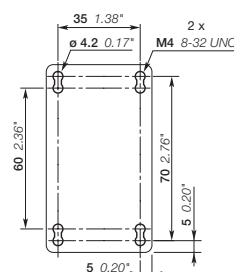
AC / DC Operated - with Screw Terminals



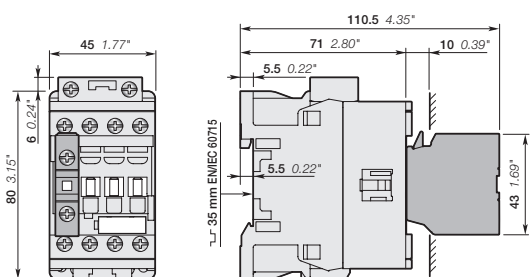
Dimensions mm, inches



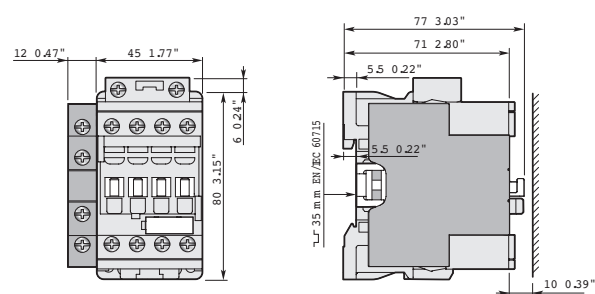
NF.22E, NF.31E, NF.40E



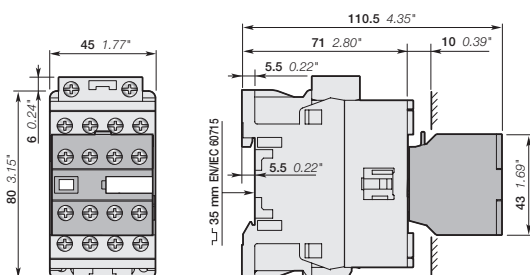
NF



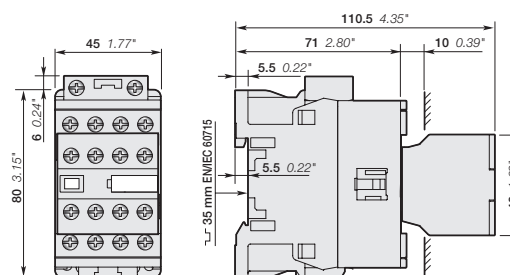
NF.22E, NF.31E, NF.40E
+ CA4, CC4 1-pole auxiliary contact block



NF.22E, NF.31E, NF.40E
+ CAL4-11 2-pole auxiliary contact block



4-pole auxiliary contact block



NF.44E, NF.53E, NF.62E, NF.71E, NF.80E

Note: contactor relay lateral distance to grounded component 2 mm min.