

AF38-30-00-.. / AF38Z-30-00-.. 3-pole Contactors

AC / DC Operated - with Screw Terminals

AF38(Z) 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..(Z) contactors include an electronic coil interface providing reduced pull-in and holding consumption, particularly for AC control circuits
- Only four coils are needed to cover control voltages between 24...500 V 50/60 Hz or 20...500 V DC.

AF..(Z) offer extended operating limits and are suitable worldwide for different control voltages. e.g.: the coil 100...250 V 50/60 Hz - DC is suitable for Europe (230 V 50 Hz) and for North America (120 V 60 Hz and 208 V 60 Hz).

AF..(Z) contactors can manage large control voltage variations

- AF.Z contactors equipped with a 24...60 V 50/60 Hz - 20...60 V DC coil allow direct control by 24 V DC 500 mA PLC-output
- AF.Z contactors withstand short voltage dips and voltage sags (SEMI F47-0706 compliance)
- AF..(Z) contactors have built-in surge protection and do not require additional surge suppressors.



		18.5 kW	
		20 hp	

3D CAD outline drawings available on «Control Product 3D» portal

Ordering Details

IEC	UL/CSA	Control voltage		Main contacts	Auxiliary contacts fitted	Type	Order code	EAN	Weight
Rated power	3-phase motor rating	Uc min. ... Uc max.							
400 V									
AC-3	480 V								
kW	hp	V 50/60 Hz	V DC						Pack ^(ing)
									1 piece
									kg

3-pole Contactors

18.5	20	24...60	20...60	3 0	0 0	AF38-30-00-11	1SBL 297 001 R1100	3471523111516	0.310
		48...130	48...130	3 0	0 0	AF38-30-00-12	1SBL 297 001 R1200	3471523111523	0.310
		100...250	100...250	3 0	0 0	AF38-30-00-13	1SBL 297 001 R1300	3471523111530	0.310
		250...500	250...500	3 0	0 0	AF38-30-00-14	1SBL 297 001 R1400	3471523111547	0.350

Note: AF38-30-00-11 not suitable for a direct control by PLC-output. AF38-30-00-11 available in some countries: please consult your ABB representative.

3-pole Contactors - Low Consumption

18.5	20	-	12...20	3 0	0 0	AF38Z-30-00-20	1SBL 296 001 R2000	3471523114708	0.350
		24...60	20...60	3 0	0 0	AF38Z-30-00-21	1SBL 296 001 R2100	3471523114715	0.350
		48...130	48...130	3 0	0 0	AF38Z-30-00-22	1SBL 296 001 R2200	3471523114722	0.350
		100...250	100...250	3 0	0 0	AF38Z-30-00-23	1SBL 296 001 R2300	3471523114739	0.350

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

Certifications and Approvals

CE	cULus	CCC	GOST	C-Tick															

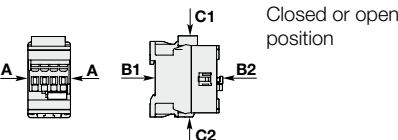
Main Pole - Utilization Characteristics according to IEC

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, $\theta \leq 40\text{ °C}$	50 A	
with conductor cross-sectional area	10 mm ²	
AC-1 Utilization category for air temperature close to contactor		
I_e / AC-1 rated operational current	$\theta \leq 40\text{ °C}$	50 A
U_e max. $\leq 690\text{ V}$, 50/60 Hz	$\theta \leq 60\text{ °C}$	42 A
	$\theta \leq 70\text{ °C}$	37 A
with conductor cross-sectional area	10 mm ²	
AC-3 Utilization category for air temperature close to contactor $\theta \leq 60\text{ °C}$ (for 1500 r.p.m., 50 Hz or 1800 r.p.m., 60 Hz, 3-phase motors)		
I_e / AC-3 max. rated operational current	220-230-240 V	40 A
	380-400 V	38 A
	415 V	38 A
	440 V	38 A
	500 V	33 A
	690 V	24 A
AC-3 rated operational power	220-230-240 V	11 kW
	380-400 V	18.5 kW
	415 V	18.5 kW
	440 V	22 kW
	500 V	22 kW
	690 V	22 kW
Rated making capacity AC-3	10 x I_e AC-3 acc. to IEC 60947-4-1	
Rated breaking capacity AC-3	8 x I_e AC-3 acc. to IEC 60947-4-1	
AC-8a Utilization category (without thermal overload relay - $U_e 400\text{ V}$ - $\theta \leq 40\text{ °C}$)		
I_e / AC-8a rated operational current	50 A	
AC-8a rated operational power	25 kW	
Short-circuit protection for contactors without thermal O/L relay - Motor protection excluded $U_e \leq 500\text{ V AC}$ - gG type fuse	63 A	
Rated short-time withstand current I_{cw} at 40 °C ambient temperature, in free air from a cold state	1 s	700 A
	10 s	350 A
	30 s	225 A
	1 min	150 A
	15 min	50 A
Maximum breaking capacity $\cos \phi = 0.45$	at 440 V	500 A
	at 690 V	200 A
Heat dissipation per pole	I_e / AC-1	2.4 W
	I_e / AC-3	1.3 W
Max. electrical switching frequency	AC-1	600 cycles/h
	AC-3	1200 cycles/h
	AC-2, AC-4	150 cycles/h

Main Pole - Utilization Characteristics according to UL / NEMA / CSA

Standards		UL 508, CSA C22.2 N°14
Rated operational voltage Ue max.		600 V
NEMA size		-
NEMA continuous amp rating	thermal current	
NEMA maximum H.P. ratings 1-phase, 60 Hz	115 V AC	
	230 V AC	
NEMA maximum H.P. ratings 3-phase, 60 Hz	200 V AC	
	230 V AC	
	460 V AC	
	575 V AC	
UL General use rating		
600 V AC		50 A
With conductor cross-sectional area		AWG 8
80 V DC - 1-pole		50 A
With conductor cross-sectional area		AWG 8
UL maximum 1-phase motor rating		
Amp-rating	120 V AC	24 A
	240 V AC	28 A
Motor power	120 V AC	2 hp
	240 V AC	5 hp
UL maximum 3-phase motor rating		
Amp-rating	200-208 V AC	32.2 A
	220-240 V AC	28 A
	440-480 V AC	27 A
	550-600 V AC	On request
Motor power (for 1500 r.p.m., 50 Hz or 1800 r.p.m., 60 Hz 3-phase motors)	200-208 V AC	10 hp
	220-240 V AC	10 hp
	440-480 V AC	20 hp
	550-600 V AC	On request
Short-circuit protection		
for contactors without thermal O/L relay - Motor protection excluded		
Fuse rating		150 A
Fuse type, 600 V		NTD
Max. electrical switching frequency		
for general use		600 cycles/h
for motor use		1200 cycles/h

General Technical Data

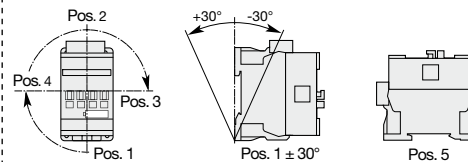
Rated insulation voltage U_i		
acc. to IEC 60947-4-1		690 V
acc. to UL / CSA		600 V
Rated impulse withstand voltage U_{imp}		6 kV
Electromagnetic compatibility		Devices complying with IEC 60947-1 / EN 60947-1 - Environment A
Ambient air temperature close to contactor		
Operation	fitted with thermal overload relay	-25 ... +60 °C
	without thermal overload relay	-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
B1		25 g Closed position / 5 g Open position
B2		15 g
C1		25 g
C2		25 g
Vibration withstand		5 ... 300 Hz
acc. to IEC 60068-2-6		4 g Closed position / 2 g Open position

Magnet System Characteristics

Coil operating limits		AC supply	at $\theta \leq 60$ °C 0.85 x U_c min ... 1.1 x U_c max
acc. to IEC 60947-4-1			at $\theta \leq 70$ °C 0.85 x U_c min ... U_c max
		DC supply	at $\theta \leq 60$ °C 0.85 x U_c min ... 1.1 x U_c max
			at $\theta \leq 70$ °C (AF) 0.85 x U_c min ... U_c max - (AF..Z) 0.85 x U_c min ... 1.1 x U_c max
AC control voltage		Rated control circuit voltage U_c	24 ... 500 V AC
50/60 Hz	Coil consumption	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	12 ... 500 V DC
	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
-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

Mounting positions



Max. N.C. built-in and add-on N.C. auxiliary contacts: see accessory fitting details for a 3-pole contactor AF09 ... AF38

Mounting distances

The contactors can be assembled side by side.

Fixing

on rail according to IEC 60715, EN 60715
by screws (not supplied)

35 x 7.5 mm or 35 x 15 mm
2 x M4 screws placed diagonally

Connecting Characteristics

Main terminals



Screw terminals with cable clamp

Connecting capacity (min. ... max.)

Main conductors (poles)

	Rigid	solid ($\leq 4 \text{ mm}^2$)	1 x	2.5 ... 10 mm ²
		stranded ($\geq 6 \text{ mm}^2$)	2 x	2.5 ... 10 mm ²
	Flexible with non insulated ferrule		1 x	1.5 ... 10 mm ²
	Flexible with insulated ferrule		2 x	1.5 ... 10 mm ²
			1 x	1.5 ... 10 mm ²
			2 x	1.5 ... 4 mm ²
	Bars or lugs		L <	12.5 mm

Capacity according to UL/CSA 1 or 2 x AWG 14 ... 8

Stripping length 14 mm

Auxiliary conductors

(built-in auxiliary terminals + coil terminals)

	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
	Flexible with insulated ferrule		2 x	0.75 ... 2.5 mm ²
			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

Built-in auxiliary terminals

Screw terminals

(delivered in open position, screws of unused terminals must be tightened)

Main terminals M4

Coil terminals M3.5

Built-in auxiliary terminals

Screwdriver type

Flat Ø 5.5 / Pozidriv 2

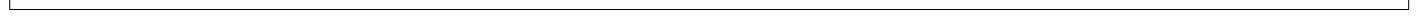
Tightening torque

Main pole terminals 2.5 Nm / 22 lb.in

Coil terminals 1.2 Nm / 11 lb.in

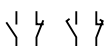
Built-in auxiliary terminals

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



Main Accessories

Ordering Details

Description		Auxiliary contacts 	Type	Order code	EAN	Pack ^(ing) piece	Weight kg (1 pce)
Additional auxiliary contact blocks	Front-mounted instantaneous auxiliary contact blocks	0 1 - -	CA4-01	1SBN 010 110 R1001	3471523130029	1	0.014
		1 0 - -	CA4-10	1SBN 010 110 R1010	3471523130005	1	0.014
		0 1 - -	CA4-01-T	1SBN 010 110 T1001	3471523130395	10	0.014
		1 0 - -	CA4-10-T	1SBN 010 110 T1010	3471523130371	10	0.014
	Front-mounted auxiliary contact blocks with N.O. leading contact and N.C. lagging contact	- - 0 1	CC4-01	1SBN 010 111 R1001	3471523130432	1	0.014
		- - 1 0	CC4-10	1SBN 010 111 R1010	3471523130425	1	0.014
	Side-mounted instantaneous auxiliary contact blocks	1 1 - -	CAL4-11	1SBN 010 120 R1011	3471523130043	1	0.040
		1 1 - -	CAL4-11-T	1SBN 010 120 T1011	3471523130418	10	0.040
	Front-mounted instantaneous auxiliary contact blocks	0 4 - -	CA4-04E	1SBN 010 140 R1004	3471523130159	1	0.055
		2 2 - -	CA4-22E	1SBN 010 140 R1022	3471523130128	1	0.055
		3 1 - -	CA4-31E	1SBN 010 140 R1031	3471523130135	1	0.055
		4 0 - -	CA4-40E	1SBN 010 140 R1040	3471523130142	1	0.055
	Front-mounted instantaneous auxiliary contact and A1/A2 coil terminal blocks	1 1 - -	CAT4-11E	1SBN 010 151 R1011	3471523130067	1	0.040
Interlocks	Mechanical interlock unit		VM4	1SBN 030 105 T1000	3471523130609	10	0.005
	Mechanical and electrical interlock set	1 1 - -	VEM4	1SBN 030 111 R1000	3471523130616	1	0.035
	Fixing clips		BB4	1SBN 110 120 W1000	3471523130722	50	0.002
Connection accessories for starting	Connecting links with manual motor starters		BEA26-4	1SBN 082 306 T1000	3471523130746	10	0.025
			BEA38-4	1SBN 082 306 T2000	3471523130753	10	0.030
	Connection sets for reversing contactors		BER38-4	1SBN 082 311 R1000	3471523130784	1	0.100
Additional coil terminal block	Additional coil terminal block		LDC4	1SBN 070 156 T1000	3471523130678	10	0.010
Protective covers	Protective covers		BX4	1SBN 110 108 T1000	3471523130708	10	0.006
			BX4-CA	1SBN 110 109 W1000	3471523130715	50	0.001
Function markers	Function markers		BA4	1SNA 235 156 R2700	3472592351568	16	0.011
			HTP500-BA4	1SNA 235 712 R2400	3472592357126	1	0.220
			SPRC 1	1SNA 360 010 R1500	3472593600108	1	0.290

Note:

- CAT4: not fittable on AF..Z contactors with DC control voltage 12...20VDC.

- VM4: includes 2 fixing clips (BB4) to maintain together both contactors.

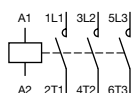
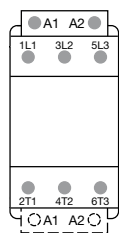
- VEM4: includes a VM4 mechanical interlock unit with 2 fixing clips (BB4), a VE4 electrical interlock block and A2-A2 connection.

VE4 block must be used with its A2-A2 connection to respect the electrical connection diagram.

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

Terminal Marking and Positioning

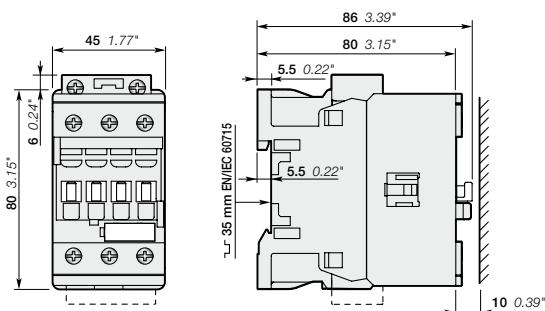
Standard devices without addition of auxiliary contacts



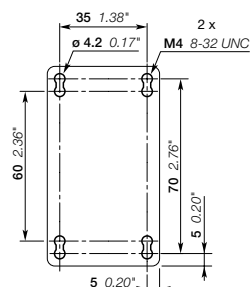
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AF38-30-00-.. / AF38Z-30-00-..

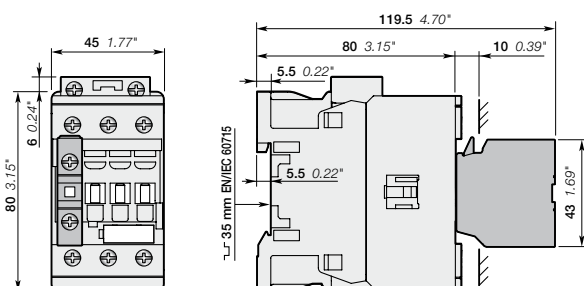
Dimensions mm, inches



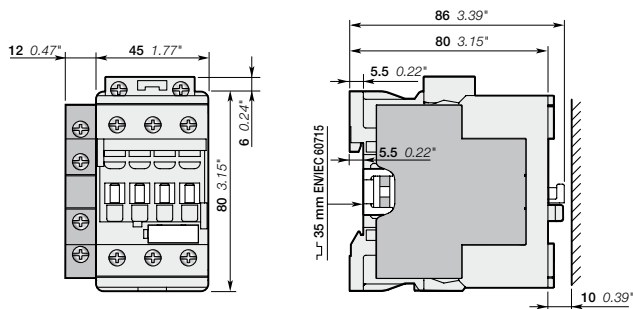
AF38



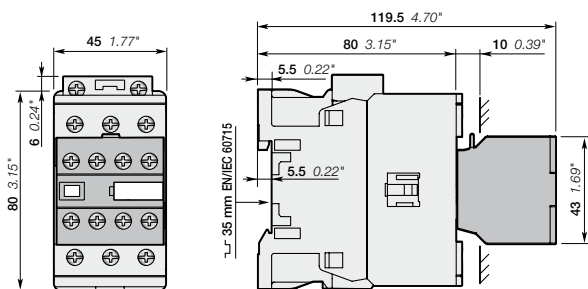
AF38



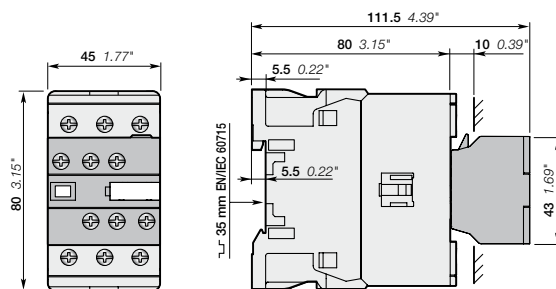
AF38
+ CA4, CC4 1-pole auxiliary contact block



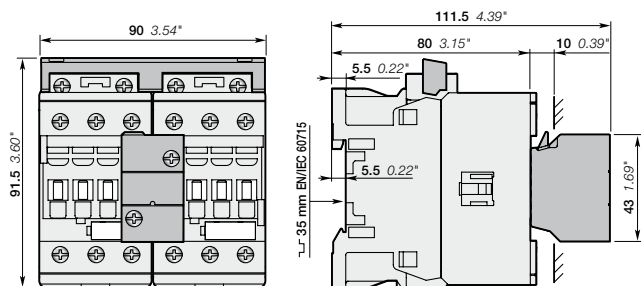
AF38
+ CAL4-11 2-pole auxiliary contact block



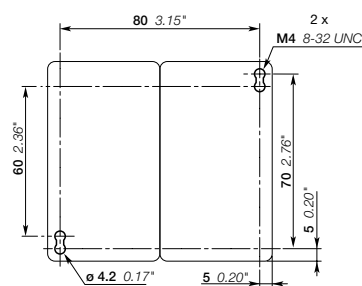
AF38
+ CA4 4-pole auxiliary contact block



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



AF38
+ VEM4 mechanical and electrical interlock set



AF38
+ VEM4 mechanical and electrical interlock set

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

Contact us

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**You can find the address of your local sales organisation
on the ABB home page**

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