



PRODUCT-DETAILS

# AF09Z-40-00-20

## AF09Z-40-00-20 12-20VDC Contactor



General Information	
Extended Product Type	AF09Z-40-00-20
Product ID	1SBL136201R2000
EAN	3471523115804
Catalog Description	AF09Z-40-00-20 12-20VDC Contactor
Long Description	<p>The AF09Z-40-00-20 is a 4 pole - 690 V IEC or 600 UL contactor with screw terminals, controlling motors up to 4 kW / 400 V AC (AC-3) and switching power circuits up to 25 A (AC-1) or 25 A UL general use. Thanks to the AF technology, the contactor has a wide control voltage range (12-20 V DC), managing large control voltage variations, reducing panel energy consumptions and ensuring distinct operations in unstable networks. Furthermore, surge protection is built-in, offering a compact solution. AF contactors have a block type design, can be easily extended with add-on auxiliary contact blocks and an additional wide range of accessories.</p>

Ordering	
Minimum Order Quantity	1 piece
Customs Tariff Number	85364900

## Popular Downloads

EPLAN Data	9AAC159656_EPLAN
Data Sheet, Technical Information	1SBC100214C0202
Instructions and Manuals	1SBC101027M6801
Instructions and Manuals (Part 2)	1SAC200017M0002
CAD Dimensional Drawing	2CDC001079B0201

## Dimensions

Product Net Width	45 mm
Product Net Depth / Length	77 mm
Product Net Height	86 mm
Product Net Weight	0.31 kg

## Technical

Number of Main Contacts NO	4
Number of Main Contacts NC	0
Number of Auxiliary Contacts NO	0
Number of Auxiliary Contacts NC	0
Number of Poles	4P
Standards	IEC/EN 60947-1, IEC/EN 60947-4-1, UL 60335-2-40 LZGH2 A2L, UL 60947-1, UL 60947-4-1, CSA C22.2 No. 60335-2-40 LZGH2 A2L, CAN/CSA C22.2 No.60947-1, CAN/CSA C22.2 No.60947-4-1
Rated Operational Voltage	Main Circuit 690 V
Rated Frequency (f)	Main Circuit 50 / 60 Hz
Conventional Free-air Thermal Current ( $I_{th}$ )	acc. to IEC 60947-4-1, Open Contactors $\Theta = 40^\circ\text{C}$ 35 A
Rated Operational Current AC-1 ( $I_e$ )	(690 V) 40 °C 25 A (690 V) 60 °C 25 A (690 V) 70 °C 22 A
Rated Operational Current AC-3 ( $I_e$ )	(415 V) 60 °C 9 A (440 V) 60 °C 9 A (500 V) 60 °C 9.5 A (690 V) 60 °C 7 A (380 / 400 V) 60 °C 9 A (220 / 230 / 240 V) 60 °C 9 A
Rated Operational Current DC-1 ( $I_e$ )	(110 V) 1-Pole, 40 °C 10 A (110 V) 1-Pole, 60 °C 10 A (110 V) 1-Pole, 70 °C 10 A (110 V) 2 Poles in Series, 40 °C 25 A (110 V) 2 Poles in Series, 60 °C 25 A (110 V) 2 Poles in Series, 70 °C 22 A (110 V) 3 Poles in Series, 40 °C 25 A (110 V) 3 Poles in Series, 60 °C 25 A (110 V) 3 Poles in Series, 70 °C 22 A (110 V) 4 Poles in Series, 40 °C 25 A (110 V) 4 Poles in Series, 60 °C 25 A (110 V) 4 Poles in Series, 70 °C 22 A (220 V) 2 Poles in Series, 40 °C 10 A

Rated Operational  
Current DC-3 (I<sub>e</sub>)

- (220 V) 2 Poles in Series, 60 °C 10 A
- (220 V) 2 Poles in Series, 70 °C 10 A
- (220 V) 3 Poles in Series, 40 °C 25 A
- (220 V) 3 Poles in Series, 60 °C 25 A
- (220 V) 3 Poles in Series, 70 °C 22 A
- (220 V) 4 Poles in Series, 40 °C 25 A
- (220 V) 4 Poles in Series, 60 °C 25 A
- (220 V) 4 Poles in Series, 70 °C 22 A
- (440 V) 4 Poles in Series, 40 °C 10 A
- (440 V) 4 Poles in Series, 60 °C 10 A
- (440 V) 4 Poles in Series, 70 °C 10 A
- (72 V) 1-Pole, 40 °C 25 A
- (72 V) 1-Pole, 60 °C 25 A
- (72 V) 1-Pole, 70 °C 22 A
- (72 V) 2 Poles in Series, 40 °C 25 A
- (72 V) 2 Poles in Series, 60 °C 25 A
- (72 V) 2 Poles in Series, 70 °C 22 A
- (72 V) 3 Poles in Series, 40 °C 25 A
- (72 V) 3 Poles in Series, 60 °C 25 A
- (72 V) 3 Poles in Series, 70 °C 22 A
- (72 V) 4 Poles in Series, 40 °C 25 A
- (72 V) 4 Poles in Series, 60 °C 25 A
- (72 V) 4 Poles in Series, 70 °C 22 A
- (110 V) 1-Pole, 40 °C 6 A
- (110 V) 1-Pole, 60 °C 6 A
- (110 V) 1-Pole, 70 °C 6 A
- (110 V) 2 Poles in Series, 40 °C 25 A
- (110 V) 2 Poles in Series, 60 °C 25 A
- (110 V) 2 Poles in Series, 70 °C 22 A
- (110 V) 3 Poles in Series, 40 °C 25 A
- (110 V) 3 Poles in Series, 60 °C 25 A
- (110 V) 3 Poles in Series, 70 °C 22 A
- (110 V) 4 Poles in Series, 40 °C 25 A
- (110 V) 4 Poles in Series, 60 °C 25 A
- (110 V) 4 Poles in Series, 70 °C 22 A
- (220 V) 2 Poles in Series, 40 °C 6 A
- (220 V) 2 Poles in Series, 60 °C 6 A
- (220 V) 2 Poles in Series, 70 °C 6 A
- (220 V) 3 Poles in Series, 40 °C 25 A
- (220 V) 3 Poles in Series, 60 °C 25 A
- (220 V) 3 Poles in Series, 70 °C 22 A
- (220 V) 4 Poles in Series, 40 °C 25 A
- (220 V) 4 Poles in Series, 60 °C 25 A
- (220 V) 4 Poles in Series, 70 °C 22 A
- (440 V) 4 Poles in Series, 40 °C 6 A
- (440 V) 4 Poles in Series, 60 °C 6 A
- (440 V) 4 Poles in Series, 70 °C 6 A
- (72 V) 1-Pole, 40 °C 25 A
- (72 V) 1-Pole, 60 °C 25 A
- (72 V) 1-Pole, 70 °C 22 A
- (72 V) 2 Poles in Series, 40 °C 25 A
- (72 V) 2 Poles in Series, 60 °C 25 A
- (72 V) 2 Poles in Series, 70 °C 22 A
- (72 V) 3 Poles in Series, 40 °C 25 A
- (72 V) 3 Poles in Series, 60 °C 25 A
- (72 V) 3 Poles in Series, 70 °C 22 A
- (72 V) 4 Poles in Series, 40 °C 25 A
- (72 V) 4 Poles in Series, 60 °C 25 A
- (72 V) 4 Poles in Series, 70 °C 22 A

Rated Operational  
Current DC-5 (I<sub>e</sub>)

- (110 V) 1-Pole, 40 °C 4 A
- (110 V) 1-Pole, 60 °C 4 A
- (110 V) 1-Pole, 70 °C 4 A
- (110 V) 2 Poles in Series, 40 °C 10 A
- (110 V) 2 Poles in Series, 60 °C 10 A
- (110 V) 2 Poles in Series, 70 °C 10 A
- (110 V) 3 Poles in Series, 40 °C 25 A
- (110 V) 3 Poles in Series, 60 °C 25 A
- (110 V) 3 Poles in Series, 70 °C 22 A
- (110 V) 4 Poles in Series, 40 °C 25 A
- (110 V) 4 Poles in Series, 60 °C 25 A
- (110 V) 4 Poles in Series, 70 °C 22 A

	(220 V) 2 Poles in Series, 40 °C 4 A (220 V) 2 Poles in Series, 60 °C 4 A (220 V) 2 Poles in Series, 70 °C 4 A (220 V) 3 Poles in Series, 40 °C 9 A (220 V) 3 Poles in Series, 60 °C 9 A (220 V) 3 Poles in Series, 70 °C 9 A (220 V) 4 Poles in Series, 40 °C 10 A (220 V) 4 Poles in Series, 60 °C 10 A (220 V) 4 Poles in Series, 70 °C 10 A (440 V) 4 Poles in Series, 40 °C 4 A (440 V) 4 Poles in Series, 60 °C 4 A (440 V) 4 Poles in Series, 70 °C 4 A (72 V) 1-Pole, 40 °C 9 A (72 V) 1-Pole, 60 °C 9 A (72 V) 1-Pole, 70 °C 9 A (72 V) 2 Poles in Series, 40 °C 25 A (72 V) 2 Poles in Series, 60 °C 25 A (72 V) 2 Poles in Series, 70 °C 22 A (72 V) 3 Poles in Series, 40 °C 25 A (72 V) 3 Poles in Series, 60 °C 25 A (72 V) 3 Poles in Series, 70 °C 22 A (72 V) 4 Poles in Series, 40 °C 25 A (72 V) 4 Poles in Series, 60 °C 25 A (72 V) 4 Poles in Series, 70 °C 22 A
Rated Operational Power AC-3 (P <sub>e</sub> )	(400 V) 4 kW (415 V) 4 kW (440 V) 4 kW (500 V) 5.5 kW (690 V) 5.5 kW (380 / 400 V) 4 kW (220 / 230 / 240 V) 2.2 kW
Rated Short-time Withstand Current Low Voltage (I <sub>cw</sub> )	at 40 °C Ambient Temp, in Free Air, from a Cold State 10 s 150 A at 40 °C Ambient Temp, in Free Air, from a Cold State 15 min 35 A at 40 °C Ambient Temp, in Free Air, from a Cold State 1 min 60 A at 40 °C Ambient Temp, in Free Air, from a Cold State 1 s 300 A at 40 °C Ambient Temp, in Free Air, from a Cold State 30 s 80 A
Maximum Breaking Capacity	cos phi=0.45 (cos phi=0.35 for I <sub>e</sub> > 100 A) at 440 V 250 A cos phi=0.45 (cos phi=0.35 for I <sub>e</sub> > 100 A) at 690 V 106 A
Rated Insulation Voltage (U <sub>i</sub> )	acc. to IEC 60947-4-1 690 V acc. to UL/CSA 600 V
Rated Impulse Withstand Voltage (U <sub>imp</sub> )	6 kV
Maximum Electrical Switching Frequency	(AC-1) 600 cycles per hour
Maximum Mechanical Switching Frequency	3600 cycles per hour
Rated Control Circuit Voltage (U <sub>c</sub> )	DC Operation 12 ... 20 V
Power Loss	at Rated Operating Conditions AC-1 per Pole 0.8 W at Rated Operating Conditions AC-3 per Pole 0.1 W
Operate Time	Between Coil De-energization and NC Contact Closing 13 ... 98 ms Between Coil De-energization and NO Contact Opening 11 ... 95 ms Between Coil Energization and NC Contact Opening 38 ... 90 ms Between Coil Energization and NO Contact Closing 40 ... 95 ms
Mounting on DIN Rail	TH35-15 (35 x 15 mm Mounting Rail) acc. to IEC 60715 TH35-7.5 (35 x 7.5 mm Mounting Rail) acc. to IEC 60715
Mounting by Screws (not supplied)	2 x M4 Screws Placed Diagonally
Connecting Capacity Main Circuit	Flexible with Ferrule 1/2x 0.75 ... 6 mm <sup>2</sup> Flexible with Insulated Ferrule 1x 0.75 ... 4 mm <sup>2</sup> Flexible with Insulated Ferrule 2x 0.75 ... 2.5 mm <sup>2</sup> Rigid Solid 1/2x 1 ... 4 mm <sup>2</sup> Rigid Stranded 1/2x 1 ... 6 mm <sup>2</sup>
Connecting Capacity Auxiliary Circuit	Rigid Solid 1/2x 1 ... 2.5 mm <sup>2</sup> Rigid Stranded 1/2x 1 ... 2.5 mm <sup>2</sup>
Connecting Capacity	Flexible with Ferrule 1/2x 0.75 ... 2.5 mm <sup>2</sup>

Control Circuit	Flexible with Insulated Ferrule 1x 0.75 ... 2.5 mm <sup>2</sup> Flexible with Insulated Ferrule 2x 0.75 ... 1.5 mm <sup>2</sup> Rigid Solid 1/2x 1 ... 2.5 mm <sup>2</sup> Rigid Stranded 1/2x 1 ... 2.5 mm <sup>2</sup>
Wire Stripping Length	Control Circuit 10 mm Main Circuit 10 mm
Degree of Protection	acc. to IEC 60529, IEC 60947-1, EN 60529 Coil Terminals IP20 acc. to IEC 60529, IEC 60947-1, EN 60529 Main Terminals IP20
Tightening Torque	Control Circuit 1.2 N·m Main Circuit 1.5 N·m
Terminal Type	Screw Terminals
Product Name	Block Contactor

## Technical UL/CSA

Maximum Operating Voltage UL/CSA	Main Circuit 600 V
General Use Rating UL/CSA	(600 V AC) 25 A
Connecting Capacity Main Circuit UL/CSA	Rigid Solid 1/2x 16-10 AWG Rigid Stranded 1/2x 16-10 AWG
Connecting Capacity Auxiliary Circuit UL/CSA	Rigid Solid 1/2x 18-14 AWG Rigid Stranded 1/2x 18-14 AWG
Connecting Capacity Control Circuit UL/CSA	Rigid Solid 1/2x 18-14 AWG Rigid Stranded 1/2x 18-14 AWG
Tightening Torque UL/CSA	Control Circuit 11 in·lb Main Circuit 13 in·lb

## Environmental

Ambient Air Temperature	Close to Contactor for Storage -60 ... +80 °C Near Contactor for Operation in Free Air -40 ... 70 °C
Climatic Withstand	Category B according to IEC 60947-1 Annex Q
Maximum Operating Altitude Permissible	Without Derating 3000 m
Resistance to Shock acc. to IEC 60068-2-27	Closed, Shock Direction: B1 25 g Open, Shock Direction: B1 5 g Shock Direction: A 30 g Shock Direction: B2 15 g Shock Direction: C1 25 g Shock Direction: C2 25 g
Resistance to Vibrations	4g Closed Position & 2g Open position 5 ... 300 Hz
Pollution Degree	3

## Material Compliance

Conflict Minerals Reporting Template (CMRT)	9AKK108467A5658
REACH Declaration	2CMT2021-006202
RoHS Declaration	2CMT2021-006277
RoHS Information	Following EU Directive 2011/65/EU and Amendment 2015/863 July 22, 2019
Toxic Substances Control Act - TSCA	2CMT2023-006525
WEEE B2C / B2B	Business To Business
WEEE Category	5. Small Equipment (No External Dimension More Than 50 cm)

## ABB EcoSolutions

ABB EcoSolutions	Yes
ABB Site Meeting Group	No non-hazardous waste is sent to a landfill
Waste To Landfill Target	
End Of Life Disassembling Instructions	1SBC101080M6801
Environmental Product Declaration - EPD	1SBD250584E3000
Improved Energy Efficiency for Customers	Product Efficiency - Product considered more energy-efficient compared to similar product on market or older products from the same line
Recyclability Rate of the Product acc. to EN45555	Design for Closing Resource Loops - Standard EN45555 - 92.7 %

## Certificates and Declarations

A2L Certificate – UL	9AKK108469A4875 9AKK108469A4879
ABS Certificate	ABS_20-2060694-PDA
BV Certificate	BV_2634H24898C1
CB Certificate	CB_SE-117714
CCC Certificate	CCC_2024010304656669
CQC Certificate	CQC2010010304445624 CQC2020010304298240
Declaration of Conformity - CCC	2020980304001253 2020980304001082
Declaration of Conformity - CE	1SBD250001U1000
Declaration of Conformity - UKCA	1SBD250032U1000
DNV Certificate	DNV_TAE00001AF-4
KC Certificate	KC_HW02016-15007C
LR Certificate	LRS_LR23403517TA-02
RINA Certificate	RINA_ELE142224XG
RMRS Certificate	RMRS_1802705280
UL Certificate	UL-US-L319322-13-72119002-5 UL-CA-L319322-43-72119002-6
UL Listing Card	UL_E319322

## Container Information

Package Level 1 Units	box 1 piece
Package Level 1 Width	87 mm
Package Level 1 Depth / Length	79 mm
Package Level 1 Height	47 mm
Package Level 1 Gross Weight	0.31 kg
Package Level 1 EAN	3471523115804

## External Classifications and Standards

Object Classification Code	Q
ETIM 7	EC000066 - Power contactor, AC switching

ETIM 8	EC000066 - Power contactor, AC switching
ETIM 9	EC000066 - Power contactor, AC switching
eClass	V11.0 : 27371003
UNSPSC	39121529
IDEA Granular Category Code (IGCC)	4758 >> Iec Contactors
E-Number (Finland)	3706332

## Accessories

Identifier	Description	Type	Quantity	Unit Of Measure
1SBN112303T1000	BP38-4 Mounting Piece	BP38-4	1	piece
1SBN113403T1000	BP65-4 Mounting Piece	BP65-4	1	piece
1SBN113903T1000	BP96-4 Mounting Piece	BP96-4	1	piece
1SBN110108T1000	BX4 Protective Cover	BX4	1	piece
1SBN110109W1000	BX4-CA Protective Cover	BX4-CA	1	piece
1SBN010110R1001	CA4-01 Auxiliary Contact Block	CA4-01	1	piece
1SBN010160R1001	CA4-01K Auxiliary Contact Block	CA4-01K	1	piece
1SBN010110T1001	CA4-01-T Auxiliary Contact Block	CA4-01-T	1	piece
1SBN010140R1004	CA4-04E Auxiliary Contact Block	CA4-04E	1	piece
1SBN010110R1010	CA4-10 Auxiliary Contact Block	CA4-10	1	piece
1SBN010160R1010	CA4-10K Auxiliary Contact Block	CA4-10K	1	piece
1SBN010110T1010	CA4-10-T Auxiliary Contact Block	CA4-10-T	1	piece
1SBN010140R1022	CA4-22E Auxiliary Contact Block	CA4-22E	1	piece
1SBN010146R1022	CA4-22EK Auxiliary Contact Block	CA4-22EK	1	piece
1SBN010140R1031	CA4-31E Auxiliary Contact Block	CA4-31E	1	piece
1SBN010146R1031	CA4-31EK Auxiliary Contact Block	CA4-31EK	1	piece
1SBN010140R1040	CA4-40E Auxiliary Contact Block	CA4-40E	1	piece
1SBN010146R1040	CA4-40EK Auxiliary Contact Block	CA4-40EK	1	piece
1SBN010120R1011	CAL4-11 Auxiliary Contact Block	CAL4-11	1	piece
1SBN010134R1011	CAL4-11K Auxiliary Contact Block	CAL4-11K	1	piece
1SBN010120T1011	CAL4-11-T Auxiliary Contact Block	CAL4-11-T	1	piece
1SBN010151R1011	CAT4-11E Auxiliary Contact / Coil Terminal Block	CAT4-11E	1	piece
1SBN010111R1001	CC4-01 Lagging Auxiliary Contact Block	CC4-01	1	piece
1SBN010111R1010	CC4-10 Leading Auxiliary Contact Block	CC4-10	1	piece
1SBN010015R1001	CE5-01D0.1 Auxiliary Contact Block	CE5-01D0.1	1	piece
1SBN010017R1001	CE5-01D2 Auxiliary Contact Block	CE5-01D2	1	piece
1SBN010016R1001	CE5-01W0.1 Auxiliary Contact Block	CE5-01W0.1	1	piece
1SBN010018R1001	CE5-01W2 Auxiliary Contact Block	CE5-01W2	1	piece
1SBN010015R1010	CE5-10D0.1 Auxiliary Contact Block	CE5-10D0.1	1	piece
1SBN010017R1010	CE5-10D2 Auxiliary Contact Block	CE5-10D2	1	piece
1SBN010016R1010	CE5-10W0.1 Auxiliary Contact Block	CE5-10W0.1	1	piece
1SBN010018R1010	CE5-10W2 Auxiliary Contact Block	CE5-10W2	1	piece
1SBN073452R2000	LK96-4F Terminals for Control Lead Connections	LK96-4F	1	piece
1SBN070156T1000	LDC4 Additional Coil Terminal Block	LDC4	1	piece
1SBN070159T1000	LDC4K Additional Coil Terminal Block	LDC4K	1	piece
1SBN071305R1000	LF16-4 Connecting Strip	LF16-4	1	piece
1SBN071306R1000	LG16-4 Connecting Strip	LG16-4	1	piece
1SBN123402R1000	LT52-40 Terminal Shroud	LT52-40	1	piece
1SBN123902R1000	LT80-40 Terminal Shroud	LT80-40	1	piece
1SBN071303T1000	LY16-4 Connecting Strip	LY16-4	1	piece

1SBN060100R1000	RA4 Interface Relay	RA4	1	piece
1SBN020114R1000	TEF4-OFF Frontal Electronic Timer	TEF4-OFF	1	piece
1SBN020112R1000	TEF4-ON Frontal Electronic Timer	TEF4-ON	1	piece
1SBN020115R1000	TEF4S-OFF Frontal Electronic Timer	TEF4S-OFF	1	piece
1SBN020113R1000	TEF4S-ON Frontal Electronic Timer	TEF4S-ON	1	piece
1SBN040100R1010	WA4-10 24VDC Mechanical Latching Unit	WA4-10	1	piece
1SBN040100R1011	WA4-11 24-60V50/60HZ-DC Mechanical Latching Unit	WA4-11	1	piece
1SBN040100R1012	WA4-12 48-130V50/60HZ-DC Mechanical Latching Unit	WA4-12	1	piece
1SBN040100R1013	WA4-13 100-250V50/60HZ-DC Mechanical Latching Unit	WA4-13	1	piece
1SBN040100R1014	WA4-14 250-500V50/60HZ-DC Mechanical Latching Unit	WA4-14	1	piece
1SBN040200R1011	WA4-96-11 24-60V50/60HZ-DC Mechanical Latching Unit	WA4-96-11	1	piece
1SBN040200R1012	WA4-96-12 48-130V50/60HZ-DC Mechanical Latching Unit	WA4-96-12	1	piece
1SBN040200R1013	WA4-96-13 100-250V50/60HZ-DC Mechanical Latching Unit	WA4-96-13	1	piece
1SBN040200R1014	WA4-96-14 250-500V50/60HZ-DC Mechanical Latching Unit	WA4-96-14	1	piece

## Categories

Low Voltage Products and Systems → Control Products → Contactors → Block Contactors → AF Contactors → AF09

