

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

4 to 5.5 kW

AC operated



2CDC211006F0011

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VB7-30-10

Description

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

These reversing contactors are designed with:

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

Ordering details

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

VB6 mini reversing contactors

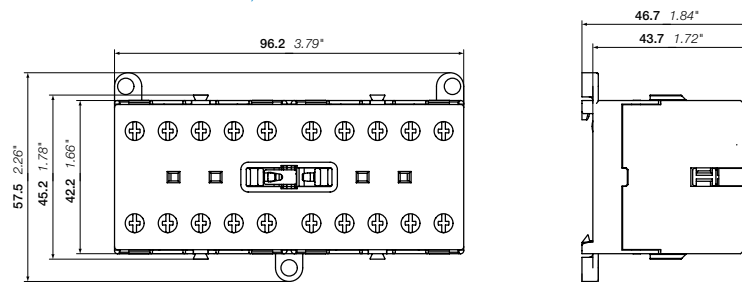
4	20	3	300 V / 12 A	24	24	1 0	0 1	VB6-30-10-01	GJL1211901R0101	5	0.355
				42	42	1 0	0 1	VB6-30-01-01	GJL1211901R0011	5	0.355
						1 0	0 1	VB6-30-10-02	GJL1211901R0102	5	0.355
						0 1	0 1	VB6-30-01-02	GJL1211901R0012	5	0.355
				48	48	1 0	0 1	VB6-30-10-03	GJL1211901R0103	5	0.355
						0 1	0 1	VB6-30-01-03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

VB7 mini reversing contactors

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

Other types on request.

Main dimensions mm, inches



VB6, VB7



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B6, B7, BC6, BC7, TBC7 3- and 4-pole mini contactors VB6, VB7, VBC6, VBC7 3- and 4-pole mini reversing contactors

Technical data

Main pole – Utilization characteristics according to IEC

Contactor types	AC operated	B6, VB6, VB6A	B7, VB7, VB7A
	DC operated	BC6, VBC6, VBC6A	BC7, TBC7, VBC7, VBC7A
Standards	IEC/EN 60947-1, IEC/EN 60947-4-1		
Rated operational voltage U_e	690 V AC		
Rated frequency (without derating)	DC or 50 / 60 Hz		
Conventional free-air thermal current I_{th} acc. to IEC 60947-4-1, open contactors, $\theta \leq 40^\circ\text{C}$, with conductor cross-sectional area	Screw terminal types: 20 A Flat pin types: 20 A Soldering pin types: 12 A		
AC-1 Utilization category for air temperature close to contactor $\theta \leq 40^\circ\text{C}$			
I_e / Rated operational current AC-1 $U_{e\max} \leq 690\text{ V}, 50/60\text{ Hz}$	220-230-240 V	Screw terminal types: 20 A Flat pin types: 20 A Soldering pin types: 12 A	
	380-400 V	Screw terminal types: 20 A Flat pin types: 20 A Soldering pin types: 12 A	
	440 V	Screw terminal types: 20 A Flat pin types: 20 A Soldering pin types: 12 A	
	500 V	12 A	
	690 V	6 A	
AC-1 Utilization category for air temperature close to contactor $\theta \leq 55^\circ\text{C}$			
I_e / Rated operational current AC-1 $U_{e\max} \leq 690\text{ V}, 50/60\text{ Hz}$	220-230-240 V	Screw terminal types: 16 A Flat pin types: 16 A Soldering pin types: 12 A	
	380-400 V	Screw terminal types: 16 A Flat pin types: 16 A Soldering pin types: 12 A	
	440 V	Screw terminal types: 16 A Flat pin types: 16 A Soldering pin types: 12 A	
	500 V	12 A	
	690 V	6 A	
AC-3 Utilization category for air temperature close to contactor $\theta \leq 55^\circ\text{C}$			
I_e / Rated operational current AC-3 	220 / 230 / 240 V	8.9 / 8.5 / 8.1 A	11.8 / 11.3 / 10.8 A
	380 / 400 V	8.9 / 8.5 A	12.1 / 11.5 A
	440 V	7.4 A	10.1 A
	500 V	6.8 A	9.2 A
	690 V	3.8 A	3.8 A
Rated operational power AC-3 1500 r.p.m. 50 Hz 1800 r.p.m. 60 Hz 3-phase motors 	220-230-240 V	2.2 kW	3 kW
	380-400 V	4 kW	5.5 kW
	440 V	4 kW	5.5 kW
	500 V	4 kW	5.5 kW
	690 V	3 kW	3 kW
DC-1 Utilization category for air temperature close to contactor $\theta \leq 55^\circ\text{C}$			
I_e / Rated operational current DC-1	110 V	-	4 A
	220 V	-	0.6 A
DC-3 Utilization category for air temperature close to contactor $\theta \leq 55^\circ\text{C}$			
I_e / Rated operational current DC-3	110 V	-	1.5 A
	220 V	-	0.25 A
DC-5 Utilization category for air temperature close to contactor $\theta \leq 55^\circ\text{C}$			
I_e / Rated operational current DC-5	110 V	-	0.4 A
	220 V	-	0.2 A
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		
Short-circuit protection device for contactors without thermal O/L relay - motor protection excluded $U_e \leq 500\text{ V AC}$ - gG type fuse	Type 1: 25 A / Type 2: 25 A		
Rated short-time withstand current I_{cw} at 40 °C ambient temperature, in free air from a cold state	10 s	64 A	96 A
Maximum breaking capacity $\cos \phi = 0.45$	at 400 V	64 A	96 A
Maximum electrical switching frequency	AC-1	300 cycles/h	
	AC-3	600 cycles/h	
	DC-1, DC-3, DC-5	600 cycles/h	

B6, B7, BC6, BC7, TBC7 3- and 4-pole mini contactors VB6, VB7, VBC6, VBC7 3- and 4-pole mini reversing contactors

Technical data

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

Contactor types	AC operated	B6, VB6, VB6A	B7, VB7, VB7A
	DC operated	BC6, VBC6, VBC6A	BC7, TBC7, VBC7, VBC7A
Standards	UL 508, CSA C22.2 N°14		
Maximum operational voltage	600 V		
UL/CSA general use rating	12 A / 300 V		16 A / 600 V
UL/CSA maximum 1-phase motor rating			
Full load current	120 V AC	5.8 A	13.8 A
	240 V AC	4.9 A	10.0 A
Horse power rating	120 V AC	0.25 hp	0.75 hp
	240 V AC	0.5 hp	1.5 hp
UL/CSA maximum 3-phase motor rating			
Full load current ¹⁾	200 / 208 V AC	4.8 / 4.6 A	7.8 / 10.6 A
	220-240 V AC	6.8 A	9.6 A
	440-480 V AC	4.8 A	7.6 A
	550-600 V AC	1.7 A	6.1 A
Horse power rating ¹⁾	200 / 208 V AC	1 hp	2 / 3 hp
	220-240 V AC	2 hp	3 hp
	440-480 V AC	3 hp	5 hp
	550-600 V AC	1 hp	5 hp
Resistive Heating	300 V per pole	8 A	8 A
Incandescent Lamps	300 V per pole	6 A	6 A
Fluorescent Lamps	300 V per pole	8.4 A	8.4 A
Short-circuit protection device for contactors without thermal overload relay - motor protection excluded			
Fuse rating	600 V	40 A	
Fuse type, 600 V	600 V	Class J	
Maximum electrical switching frequency			
For resistive loads AC-1			300 cycles/h
For motor loads AC-3			600 cycles/h

¹⁾ For the corresponding kW/A or hp/A values of 1500 r.p.m, 50 Hz or 1800 r.p.m, 60 Hz, 3-phase motors, see "Motor rated operational powers and currents".

General technical data

Contactor types	AC operated	B6, VB6, VB6A	B7, VB7, VB7A
	DC operated	BC6, VBC6, VBC6A	BC7, TBC7, VBC7, VBC7A
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		
Ambient air temperature, close to contactor			
Operation	Fitted with thermal overload relay	-25 ... +55 °C	
	Without thermal overload relay	-25 ... +55 °C	
Storage	-40 ... +80 °C		
Climatic withstand	Acc. to IEC 60947-1 Annex Q		
Maximum operating altitude (without derating)	2000 m		
Mechanical durability	10 ⁷ operating cycles		
Resistance to shock	Half-sine		
acc. IEC 60068-2-27 and EN 60068-2-27	15 g / 11 ms		
acc. to IEC/EN 60947-1 Annex. Q	Category E		
Resistance to vibrations	Sinusoidal		
acc. IEC 60068-2-27 and EN 60068-2-27	5 g / 3 ... 150 Hz		
acc. to IEC/EN 60947-1 Annex. Q	Category E		

B6, B7, BC6, BC7, TBC7 3- and 4-pole mini contactors

VB6, VB7, VBC6, VBC7 3- and 4-pole mini reversing contactors

Technical data

Magnet system characteristics for B6, B7 contactors

Contactor types	AC operated	B6, VB6	B7, VB7
Coil operating limits acc. to IEC 60947-4-1	AC supply	0.85 ... 1.1 x U _c	
AC control voltage			
Rated control circuit voltage U _c		See ordering tables	
Coil consumption	Average pull-in value	3.5 VA / 3.5 W	
	Average holding value	3.5 VA / 3.5 W	
Drop-out voltage		0.20 ... 0.75 % of U _c	

Magnet system characteristics for BC6, BC7 contactors

Contactor types	DC operated	BC6, VBC6	BC7, VBC7
Coil operating limits acc. to IEC 60947-4-1	DC supply	0.85 ... 1.1 x U _c	
AC control voltage			
Rated control circuit voltage U _c		See ordering tables	
Coil consumption ¹⁾	Average pull-in value	3.5 VA / 3.5 W	
	Average holding value	3.5 VA / 3.5 W	
Drop-out voltage in % of U _{cmin}		0.10 ... 0.75 x U _c	

¹⁾ Interface mini-contactors: see coil consumption on ordering details pages

Magnet system characteristics for TBC7 contactors

Contactor types	DC operated	TBC7
Coil operating limits acc. to IEC 60947-4-1	DC supply	Wide range voltage supply see ordering tables, U _{cmin} ... U _{cmax}
AC control voltage		
Rated control circuit voltage U _c		See ordering tables
Coil consumption	Average pull-in value	5 VA / 5 W
	Average holding value	5 VA / 5 W
Drop-out voltage in % of U _{cmin}		≤ 0.20 % of U _{cmin}

Mounting characteristics and conditions for use

Contactor types	AC operated	B6, VB6, VB6A	B7, VB7, VB7A
	DC operated	BC6, VBC6, VBC6A	BC7, TBC7, VBC7, VBC7A
Mounting positions	<p>Any position possible</p>		
Mounting distances	The contactors can be assembled side by side		
Fixing	<p>On rail acc. to IEC 60715, EN 60715: 35 x 7.5 mm or 35 x 15 mm</p> <p>By screws (not supplied): 2 x M4 screws placed diagonally</p>		

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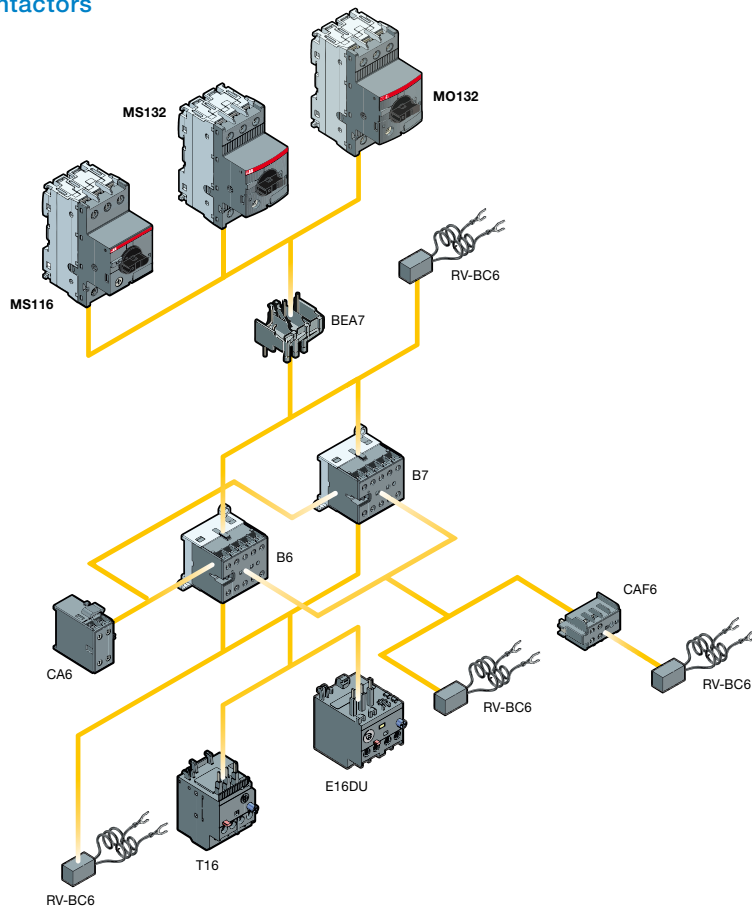
Built-in auxiliary contacts according to IEC

Contactor types	AC operated	B6, VB6, VB6A	B7, VB7, VB7A
	DC operated	BC6, VBC6, VBC6A	BC7, TBC7, VBC7, VBC7A
Standards	IEC/EN 60947-1, IEC/EN 60947-4-1		
Rated operational voltage U_e max	690 V		
Rated frequency (without derating)	DC or 50 / 60 Hz		
Conventional free-air thermal current I_m , $\theta \leq 40$ °C	6 A		
I_o / Rated operational current AC-15 acc. to IEC 60947-5-1	24 V 50/60 Hz	4 A	
	110-120 V 50/60 Hz	4 A	
	220-230-240 V 50/60 Hz	4 A	
	380-400 V 50/60 Hz	3 A	
	440 V 50/60 Hz	3 A	
I_o / Rated operational current DC-13 acc. to IEC 60947-5-1	24 V DC	2.5 A	
	110 V DC	0.7 A	
	220 - 240 V DC	0.4 A	
	Short-circuit protection device	6 A, Type gG	
Minimum switching capacity with failure rate acc. to IEC 60947-5-4	17 V / 5 mA		
Maximum electrical switching frequency	AC-15	600 cycles/h	
	DC-13	600 cycles/h	

Built-in auxiliary contacts according to UL/CSA

Contactor types	AC operated	B6, VB6, VB6A	B7, VB7, VB7A
	DC operated	BC6, VBC6, VBC6A	BC7, TBC7, VBC7, VBC7A
Max. operational voltage	600 V AC		
Pilot duty	A600		
AC thermal rated current	5 A		

Accessories for mini contactors








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B6, B7, BC6, BC7, TBC7 3- and 4-pole mini contactors VB6, VB7, VBC6, VBC7 3- and 4-pole mini reversing contactors

Technical data

Connection characteristics

Contactor types	AC operated	B6, VB6, VB6A	B7, VB7, VB7A
	DC operated	BC6, VBC6, VBC6A	BC7, TBC7, VBC7, VBC7A
Main terminals ¹⁾	 <p>Screw terminals with cable clamp</p>		
Connection capacity			
Main conductors (poles)			
 Rigid: solid	1 or 2 x	1 ... 4 mm ²	
 Flexible without ferrule	1 or 2 x	1 ... 2.5 mm ²	
Connection capacity acc. to UL/CSA	1 or 2 x	AWG 22 ... 10	
Stripping length		9 mm	
Tightening torques		0.8 ... 1.1 Nm / 7 lb.in	
Connection capacity – auxiliary conductors (built-in auxiliary terminals + coil terminals)			
 Rigid: solid	1 or 2 x	1 ... 4 mm ²	
 Flexible without ferrule	1 or 2 x	1 ... 2.5 mm ²	
Connection capacity acc. to UL/CSA	1 or 2 x	AWG 22 ... 10	
Stripping length		9 mm	
Tightening torques		0.8 ... 1.1 Nm / 7 lb.in	
Coil terminals		0.8 ... 1.1 Nm / 7 lb.in	
Built-in auxiliary terminals		0.8 ... 1.1 Nm / 7 lb.in	
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		IP20	
Screw terminals (Delivered in open position, screws of unused terminals must be tightened)			
All terminals		M3	
Screwdriver type		Flat Ø 5.5 mm / Pozidriv 1	

¹⁾ Soldering pin connection acc. to DIN 40801: 0.8 x 1 mm / 0.8 x 2.54 mm
Flat pin connection acc. to DIN 46248: 1 x 6.3 mm / 1 x 2.8 mm