

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

## 4 to 5.5 kW

### AC operated



2CDC21001R0010

B6-30-10

3



2CDC21014R0011

B7-30-10

#### Description

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

These contactors are designed with:

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

#### Ordering details

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

#### B6 mini contactors

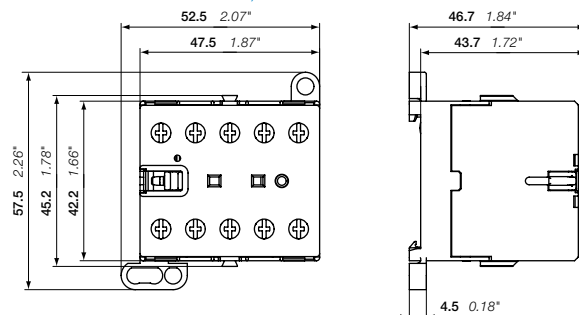
4	20	3	300 V / 12 A	24	24	1 0	B6-30-10-01	GJL1211001R0101	10	0.175
					42	0 1	B6-30-01-01	GJL1211001R0011	10	0.175
				48	42	1 0	B6-30-10-02	GJL1211001R0102	10	0.175
					48	0 1	B6-30-01-02	GJL1211001R0012	10	0.175
				110 ... 127	48	1 0	B6-30-10-03	GJL1211001R0103	10	0.175
					110 ... 127	0 1	B6-30-01-03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

#### B7 mini contactors

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

Other types on request.

#### Main dimensions mm, inches





B6, B7

# 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 <sup>1)</sup>	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 <sup>1)</sup>	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		

<sup>1)</sup> 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 <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		
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 <sup>7</sup> 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 <sub>c</sub>	
AC control voltage			
Rated control circuit voltage U <sub>c</sub>		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 <sub>c</sub>	

### 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 <sub>c</sub>	
AC control voltage			
Rated control circuit voltage U <sub>c</sub>		See ordering tables	
Coil consumption <sup>1)</sup>	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 <sub>cmin</sub>		0.10 ... 0.75 x U <sub>c</sub>	

<sup>1)</sup> 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 <sub>cmin</sub> ... U <sub>cmax</sub>
AC control voltage		
Rated control circuit voltage U <sub>c</sub>		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 <sub>cmin</sub>		≤ 0.20 % of U <sub>cmin</sub>

### 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>		

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

## Technical data

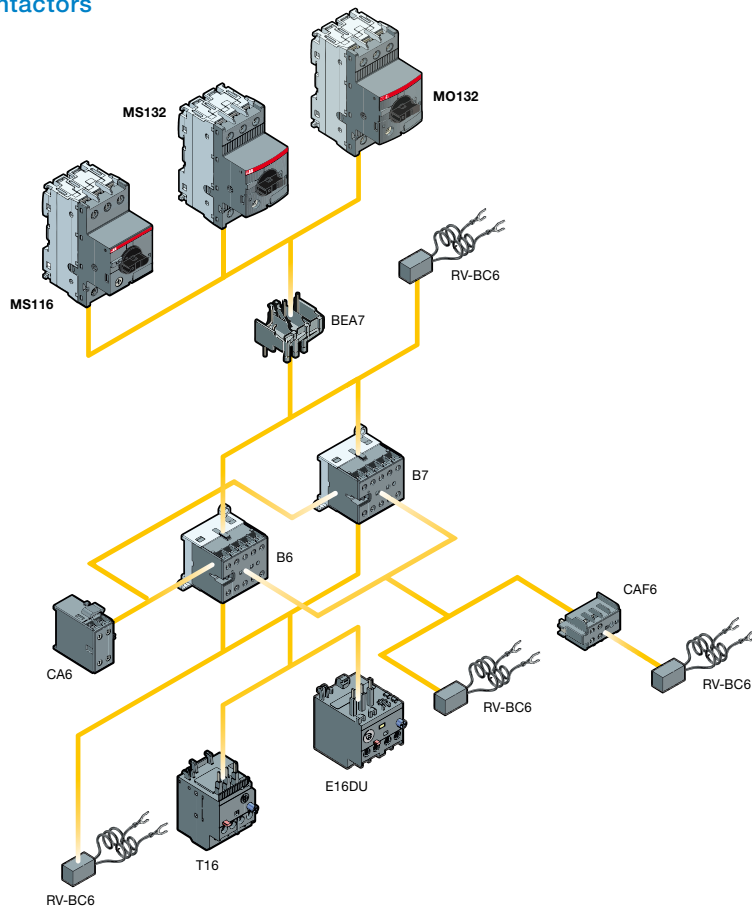
### Built-in auxiliary contacts according to IEC

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 <sup>1)</sup>	 <p>Screw terminals with cable clamp</p>		
<b>Connection capacity</b>			
<b>Main conductors (poles)</b>			
 Rigid: solid	1 or 2 x	1 ... 4 mm <sup>2</sup>	
 Flexible without ferrule	1 or 2 x	1 ... 2.5 mm <sup>2</sup>	
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	
<b>Connection capacity – auxiliary conductors</b> (built-in auxiliary terminals + coil terminals)			
 Rigid: solid	1 or 2 x	1 ... 4 mm <sup>2</sup>	
 Flexible without ferrule	1 or 2 x	1 ... 2.5 mm <sup>2</sup>	
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	
<b>Degree of protection</b> acc. to IEC 60947-1 / EN 60947-1 and IEC 60529 / EN 60529			
Main terminals		IP20	
Coil terminals		IP20	
Built-in auxiliary terminals		IP20	
<b>Screw terminals</b> (Delivered in open position, screws of unused terminals must be tightened)			
All terminals		M3	
<b>Screwdriver type</b>		Flat Ø 5.5 mm / Pozidriv 1	

<sup>1)</sup> 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