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**THREE-POLE CONTACTORS**

- IEC Ith ratings in AC1 duty at  $\leq 40^{\circ}\text{C}$ : 16 to 1600A
- IEC Ie ratings in AC3 440V duty: 6 to 630A
- IEC Power ratings in AC3 400V duty: 2.2 to 335kW
- UL/CSA ratings: 3 to 500HP at 480V and 600V
- AC, DC and DC low-consumption coil.



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**FOUR-POLE CONTACTORS**

- IEC Ith ratings in AC1 duty at  $\leq 40^{\circ}\text{C}$ : 20 to 1600A
- IEC Power ratings in AC1 400V duty: 14 to 950kW
- UL/CSA general use: 16 to 1000A
- AC, DC and DC low-consumption coil.



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**FOUR-POLE CONTACTORS WITH 2NO+2NC MAIN POWER POLES**

- IEC Ith ratings in AC1 duty at  $\leq 40^{\circ}\text{C}$ : 20 to 60A
- UL/CSA general use: 20 to 55A
- AC, DC and DC low-consumption coil.



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**FOUR-POLE CONTACTORS WITH 4NC MAIN POWER POLES AND FOR PHOTOVOLTAIC APPLICATIONS**

- IEC Ith ratings in AC1 duty at  $\leq 40^{\circ}\text{C}$ : 25 to 40A and UL/CSA general use: 20 to 55A for 4NC types
- IEC 125A operational current in DC1 duty at  $\leq 55^{\circ}\text{C}$  with 4NO main poles in series for BFD80 types
- AC, DC and DC low-consumption coil.



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**CONTACTORS FOR POWER FACTOR CORRECTION**

- With limiting resistors included
- IEC Power ratings at 400V: 7.5 to 60kvar
- UL/CSA ratings: 9 to 65kvar at 480V; 10 to 70kvar at 600V
- AC control coil.



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**CONTROL RELAYS**

- AC, DC and DC low-consumption coil
- Screw or Faston termination
- 4, 8 or 11 auxiliary contact composition.



- Three-pole versions up to 630A in IEC AC3 duty
- Four-pole versions up to 1600A in IEC AC1 duty
- Versions for power factor correction up to 60kvar at 400VAC
- Four-pole versions with 2NO+2NC or 4NC main poles
- Low-consumption versions with DC control circuit for control relays and 9-38A contactors in IEC AC3 duty
- Versions with AC or DC control
- Extensive choice of add-on blocks and accessories
- Certified by primary international authorities.

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## BG series mini-contactors

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### Unique features

- Highly conductive auxiliary contacts with four contact points
- AC and DC versions of same size
- Quick connect - snap on accessory mounting
- Distinct contact status indication
- Up to four auxiliary contacts can be mounted
- Mechanical interlock only 5mm deep
- Positive (force) guided contacts (mechanically-linked per IEC)
- Three-pole mini-contactors, 6 to 12A IEC AC3 duty / 3 to 7.5HP 480V - 3 to 10HP 600V UL/CSA
- Four-pole mini-contactors, 20A IEC AC1 duty
- Versions with 2NO+2NC main power poles
- Highly conductive auxiliary contacts
- AC or DC auxiliary supply
- Low-consumption DC versions
- Screw, faston and rear PCB solder pin termination.

	3 poles			4 poles		
	IEC Ie (AC3)	Coil in		IEC Ith (AC1)	Coil in	
		AC	DC		AC	DC
BG06	6A	●	●	—	—	—
BG09	9A	●	●	20A	●	●
BGF09	9A	●	●	20A	●	●
BGP09	9A	●	●	20A	●	●
BG12	12A	●	●	—	—	—

## BF series contactors



### Unique features

- Highly conductive auxiliary contacts with four contact points
- Quick connect - snap on accessory mounting
- Distinct contact status indication
- Up to four auxiliary contacts can be mounted
- Mechanical interlock only 5mm deep
- Positive (force) guided contacts (mechanically-linked per IEC)
- Three-pole contactors, 9 to 110A IEC AC3 duty / 5 to 75HP 480V - 7.5 to 100HP 600V UL/CSA
- Four-pole contactors, 25 to 125A in AC1 duty
- Power factor correction contactors, 7.5 to 60kvar at 400V IEC / 9 to 65kvar at 480V UL/CSA
- Types with 2NO+2NC or 4NC main power poles
- Types for photovoltaic applications
- Highly conductive auxiliary contacts
- AC or DC auxiliary supply
- Low-consumption versions for control relays and 9-38A contactors in IEC AC3 duty.

	3 poles				4 poles			
	IEC Ie (AC3)	Coil in		DC <sup>1</sup>	IEC Ith (AC1)	Coil in		
		AC	DC		AC	DC	DC <sup>1</sup>	
BF09	9A	●	●	●	25A	●	●	●
BF12	12A	●	●	●	28A	●	—	—
BF18	18A	●	●	●	32A	●	●	●
BF25	25A	●	●	●	—	—	—	—
BF26	26A	●	●	●	45A	●	●	●
BF32	32A	●	●	●	—	—	—	—
BF38	38A	●	●	●	56A	●	●	●
BF50	50A	●	●	—	90A	●	—	—
BF65	65A	●	●	—	110A	●	●	—
BF80	80A	●	●	—	125A	●	●	—
BF95	95A	●	●	—	—	—	—	—
BF110	110A	●	●	—	—	—	—	—

<sup>1</sup> Low-consumption version.

## B series contactors



### Unique features

- 3 frame sizes offering 11 different contactors
- Coil operates indifferently on AC or DC supply voltage
- Coil with low in-rush and holding
- Coil removable without disconnecting power wiring
- Red indicator when contactor is energised
- Unique right-angle magnet design - limits contact bounce
- Safety feature prevents contactor to be energised without arc chute in place and locked
- Convertible auxiliary contact block (2NO + 1NC or 1NO + 2NC), maximum of 4 blocks per contactor for a total of 12 contacts
- Contactor terminals with bolt, washer and nut
- Simple horizontal or vertical interlock
- Positive (force) guided contacts (mechanically-linked per IEC)
- Three-pole contactors, 110 to 630A IEC AC3 duty
- Four-pole contactors, 160 to 1600A IEC AC1 duty
- 100 to 500HP 600V UL/CSA
- Screw termination.

	3 poles			4 poles		
	IEC Ie (AC3)	Coil both		IEC Ith (AC1)	Coil both	
		AC	DC		AC	DC
B115	110A	●	●	160A	●	●
B145	150A	●	●	250A	●	●
B180	185A	●	●	275A	●	●
B250	265A	●	●	350A	●	●
B310	320A	●	●	450A	●	●
B400	420A	●	●	550A	●	●
B500	520A	●	●	700A	●	●
B630	630A	●	●	800A	●	●
B630 1000	ⓘ	●	●	1000A	●	●
B1250	ⓘ	●	—	1250A	●	—
B1600	ⓘ	●	—	1600A	●	—

<sup>1</sup> For AC1 / general use duty only.

## General information - IEC contactors

Lovato Electric comprehensive line of contactors can be divided in to three basic configurations as illustrated above. Each of these have unique features but all are designed for long life and have finger-safe protection. Lovato Electric facilities, where these contactors are manufactured, work under ISO 9001 quality conditions, per IQNet certification since 1992 and constantly maintained by passing yearly quality assurance audits. The design and manufacture of the contactors and accessories have taken into consideration the most demanding requirements of international standards.

## Non-reversing and reversing IEC starters

Contactors can be combined with either manual motor starters of the SM series, providing thermal and magnetic protection up to 100A, or single or three-pole thermal bimetallic overload relays, with or without single-phase protection up to 420A, to obtain non-reversing or reversing starters. Equipment can be assembled together or independently mounted through the use of specifically designed accessories.



Non-reversing starter



Reversing starter

# THE IDEAL SOLUTION!

- **45mm WIDE CONTACTORS**  
 Ratings up to 38A - 18.5kW IEC AC3 / 30HP UL - merely 45mm wide: exceptional benefit for electric panel dimensions.

- **WIDE OPERATING RANGE**  
 BF...D contactors are equipped with a wide operating range coil and are particularly useful in applications subject to considerable voltage variations, such as in electric traction railway equipment.



- **4-TERMINAL COIL**  
 Connecting cables can be coupled to the coil both on the line and load ends of the contactor.



- **BUILT-IN SURGE SUPPRESSOR**  
 The BF00 to BF38 contactors with standard voltage DC coils include a built-in surge suppressor.

- **LOW-CONSUMPTION COILS**  
 The BF...L contactors feature a 2.4W low consumption. This characteristic widely allows their direct control by PLC outputs.

2

- **SIDE ADD-ON FOURTH POLE**

For the 45A and 56A AC1 ratings, a side-mount fourth power pole can be snapped on the three-pole contactor. This solution permits to optimise inventory.



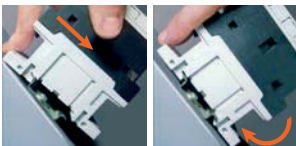
- **MECHANICAL INTERLOCK**

Smaller-size contactors, 9 to 25A in AC3, can be mechanically and electrically interlocked with larger-size contactors, 26 to 38A AC3.

The BFX50 01 mechanical interlock comprises two built-in NC auxiliary contacts to make the electrical interlock as well.



- **35mm DIN RAIL MOUNTING AND FIXING**



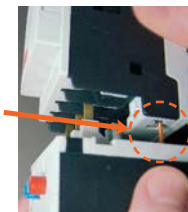
Contactors mounting on and removal from a 35mm DIN rail are tool-less operations and are done by simply applying pressure on the contactor.

- **STARTER ASSEMBLY**



The assembly and wiring of electromechanical starters is extremely fast and reliable. Versatile electrical and mechanical connecting systems provide easy and foolproof assembly of compact starters.

- **EFFORTLESS THERMAL OVERLOAD RELAY LINK**

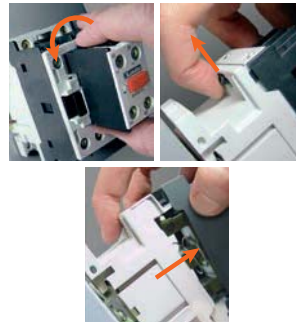


During the connection of the thermal overload relay to the contactor, its auxiliary contact is simultaneously linked to the contactor coil terminal rigid connector. The complete overload relay fixing is obtained with one single operation and without other connections.

- **TERMINAL ADAPTABILITY**

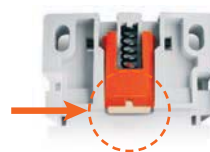
Terminals are suitable for every type of cable: flexible, rigid, according to AWG standards and interlocked with any type of cable terminal. Power pole, auxiliary and coil screws can be tightened using one single type of screwdriver.

- **SNAP-ON INSTALLATION**



Mounting and removal of the add-on auxiliary contacts and accessories, along with BF09 to BF38 AC contactor coil replacement are quick and easy operations and are done with no tools.

- **RUBBER PAD INSERT FOR NO DIN RAIL SLIDING**



A rubber insert prevents the contactors from sliding on the 35mm DIN rail even when out of tolerance or mounted vertically.

- **FRONT PROTECTION COVER FOR BREAKER - CONTACTOR CONNECTIONS**



The front cover, fixed between breaker and contactor, provide protection to the connections.

- **IP20 CONNECTION SECURITY**



The ease of terminal access and space is combined with IP20 finger safety, to prevent touching of live parts.



**BG06 A-BG12 A**

**BF09 A-BF25 A**

**BF26 A-BF38 A**

**BF50-BF110**

**B115-B180**

**B250-B400**

Three-phase motor control in AC3 duty													UL/CSA details					
Order code	IEC operating current Ith (AC1)				Maximum IEC power at ≤55°C (AC3)								Maximum UL/CSA horsepower ratings					
	≤40°C			≤55°C	le (AC3) ≤440V at ≤55°C		230V	400V	415V	440V	500V	690V	1000V	Single phase		Three phase		
AC coil [A]	[A]	[A]	[A]	[A]									120V	240V	200V	240V	480V	600V
11 BG06 01 A⓪	16	14	12	6									1/3	1	1 1/2	2	3	3
11 BG06 10 A⓪			(≤60°C)															
11 BG09 01 A⓪	20	18	15	9									1/2	1 1/2	2	3	5	5
11 BG09 10 A⓪							(≤60°C)											
11 BGF09 01 A⓪	20	18	15	9									1/2	1 1/2	2	3	5	5
11 BGF09 10 A⓪							(≤60°C)											
11 BGP09 01 A⓪	20	18	15	9									1/2	1 1/2	2	3	5	5
11 BGP09 10 A⓪							(≤60°C)											
11 BG12 01 A⓪	20	18	15	12									1/2	1 1/2	3	3	7 1/2	10
11 BG12 10 A⓪							(≤60°C)											
BF09 01 A⓪	25	20	18	9									3/4	2	3	3	5	7 1/2
BF09 10 A⓪																		
BF12 01 A⓪	28	23	20	12									1	2	5	5	7 1/2	10
BF12 10 A⓪																		
BF18 01 A⓪	32	26	23	18									1	3	5	5	10	15
BF18 10 A⓪																		
BF25 01 A⓪	32	26	23	25									2	3	7 1/2	7 1/2	15	15
BF25 10 A⓪																		
BF26 00 A⓪	45	36	32	26									2	5	7 1/2	7 1/2	15	20
BF32 00 A⓪	56	45	40	32									3	7 1/2	10	10	20	25
BF38 00 A⓪	56 (60)	45 (48)	40 (42)	38									3	7 1/2	10	15	30	30
11 BF50 00	90	80	65	50									5	10	10	15	30	40
11 BF65 00	110	90	70	65											20	25	50	60
11 BF80 00	125	100	80	80											25	30	60	75
11 BF95 00	125	100	80	95											30	30	60	75
11 BF110 00	125	100	80	110											30	40	75	100
11 B115 00	160	150	110	110											30	40	75	100
11 B145 00	250	235	190	150											50	50	100	125
11 B180 00	275	250	200	185											60	75	150	150
11 B250 00	350	300	250	265											75	100	200	250
11 B310 00	450	370	300	320											100	125	250	300
11 B400 00	550	430	360	420											125	150	350	400
11 B500 00	700	550	500	520											150	200	400	450
11 B630 00	800	640	540	630											200	250	500	500
11 B630 1000 00	1000	850	700	—	For AC1/Resistive duty only, see page 2-8.													
11 B1250 24	1250	1050	880	—	For AC1/Resistive duty only, see page 2-8.								No UL					
11 B1600 24	1600	1360	1120	—	For AC1/Resistive duty only, see page 2-8.								No UL					

- ① Complete order code with coil voltage digit or with voltage digit followed by 60 (if 60Hz). Standard voltages are as follows:  
- AC 50/60Hz: 024 / 048 / 110 / 230 / 400V  
- AC 60Hz: 024 60 / 048 60 / 120 60 / 220 60 / 230 60 / 460 60 / 575 60 (V).  
Example: 11 BG06 10 A230 for mini-contactor BG06, three poles, with one NO contact and 230VAC 50/60Hz coil.  
11 BG06 10 A460 60 for mini-contactor BG06 with one NO contact and 460VAC 60Hz coil.
- ② The coil of the contactor can be powered indifferently in AC or DC. Complete the order code only with the digit of the coil voltage. Standard voltages are:  
- AC/DC: 24 / 48 / 60 / 110-125 (indicate 110) / 220-240 (indicate 220) / 380-415 (indicate 380) / 440-480V (indicate 440).  
Example: 11 B145 00 110 for contactor B145, three poles, without auxiliary contacts and with 110-125VAC/DC coil.  
The 24VAC/DC voltage is not possible for B500-B630 1000 contactors.  
Other voltages available on request.
- ③ If predisposed for mechanical latch (G495), the order code becomes 11 B...SL.00 ②  
If already fitted with mechanical latch (G495), the order code becomes 11 B...L.00 ② ④.

- ④ Indicate rated voltage of the mechanical latch, preceded by the letter C if in DC. Available voltages are:  
- AC 50/60Hz: 48 / 110-125 indicate 110 / 220-240 indicate 220 / 380-415V indicate 380  
- DC: 48 / 110-125 indicate 110 / 220-240V indicate 220.  
Example: 11 B145L 00 110 220 for contactor B145 without auxiliary contacts, with 110-125VAC/DC coil and mechanical latch powered at 220-240VAC.
- ⑤ G495 mechanical latch cannot be mounted.
- ⑥ Complete the order code with the digit of the coil voltage. For 110-125VAC (50/60Hz) indicate 110 or 220-240VAC (50/60Hz) indicate 220.  
Example: 11 B1250 24 110 for contactor B1250, three poles, with 2NO+4NC auxiliary contacts and 110-125VAC 50/60Hz coil.
- ⑦ Maximum voltage is limited at 300V for UL. For certified type up to 600V, consult Customer Service for information; see contact details on inside front cover.
- ⑧ For voltages 024 / 230 / 400VAC 50-60Hz: 10 pieces/package.  
For all other voltages: 1 piece/package.
- ⑨ Highly conductive auxiliary contact.
- ⑩ For use at this other current value, a 16mm<sup>2</sup> cable, headed with a fork terminal, must be used.
- ⑪ No UL/CSA ratings; data given for indication and reference purposes only.
- ⑫ Definite-purpose (DP) contactors are available. Consult Customer Service for information; see contact details on inside front cover.



B500-B630



B630 1000



B1250-B1600

UL/CSA General (purpose) use	UL/CSA Fuse class	Short circuit current RMS sym. 600VAC	Type of terminal	Incorporated auxiliary contacts		Quantity per pkg	Weight
				NO	NC		
[A]	Type/[A]	[kA] UL/CSA			n°	[kg]	
16	K5/30	5	Clamp-screw	—	1Ⓢ	10	0.180
				1Ⓢ	—	10	0.180
20	K5/30	5	Clamp-screw	—	1Ⓢ	10	0.180
				1Ⓢ	—	10	0.180
20	K5/30	5	Faston	—	1Ⓢ	10	0.180
				1Ⓢ	—	10	0.180
20	K5/30	5	Rear PCB solder pin	—	1Ⓢ	10	0.197
				1Ⓢ	—	10	0.197
20	K5/30	5	Clamp-screw	—	1Ⓢ	10	0.180
				1Ⓢ	—	10	0.180
25	RK5/60	5	Clamp-screw	—	1Ⓢ	1	0.367
				1Ⓢ	—	Ⓢ	0.367
28	RK5/70	5	Clamp-screw	—	1Ⓢ	1	0.367
				1Ⓢ	—	Ⓢ	0.367
32	RK5/80	5	Clamp-screw	—	1Ⓢ	1	0.367
				1Ⓢ	—	Ⓢ	0.367
32	RK5/100	5	Clamp-screw	—	1Ⓢ	1	0.367
				1Ⓢ	—	Ⓢ	0.367
45	RK5/100	5	Clamp-screw	—	—	1	0.432
55	RK5/125	5	Clamp-screw	—	—	1	0.432
55	RK5/150	5	Clamp-screw	—	—	1	0.432
90	RK5/200	5	Lug-clampⓈ	—	—	1	1.350
110	RK5/225	10	Lug-clampⓈ	—	—	1	1.350
125	RK5/250	10	Lug-clampⓈ	—	—	1	1.360
125	RK5/250	10	Lug-clampⓈ	—	—	1	1.360
125	RK5/250	10	Lug-clampⓈ	—	—	1	1.360
160	RK5/500	5	Screw-nut	—	—	1	5.290
250	RK5/500	5	Screw-nut	—	—	1	5.400
275	RK5/500	10	Screw-nut	—	—	1	5.400
350	L/800	18	Screw-nut	—	—	1	9.575
450	L/800	18	Screw-nut	—	—	1	9.575
550	L/800	18	Screw-nut	—	—	1	9.575
700	L/1200 Ⓢ	18 Ⓢ	Screw-nut	—	—	1	18.000
800	L/1500 Ⓢ	18 Ⓢ	Screw-nut	—	—	1	18.620
1000	L/1500 Ⓢ	18 Ⓢ	Screw-nut	—	—	1	21.400
No UL	—	—	Screw-nut	2	4	1	48.000
No UL	—	—	Screw-nut	2	4	1	50.000

Ⓢ IEC/EN 60947-1 designation: Pillar terminal.

### Certifications and compliance

Certifications obtained:

Type	UL Canada USA	UL USA	CSA	EAC	CCC	Register of shipping RINA LRS	ROS
BG06 A	●			●	●		
BG09 A	●			●	●		
BG12 AⓈ	●			●	●		
BGF09 A	●			●	●		
BGP... A Ⓢ	●			●	●		
BF09 AⓈ	●		●	●	●	●	
BF12 AⓈ	●		●	●	●	●	
BF18 AⓈ	●		●	●	●	●	
BF25 A	●		●	●	●	●	
BF26 AⓈ	●		●	●	●	●	
BF32 AⓈ	●		●	●	●	●	
BF38 A	●		●	●	●	●	
BF50 Ⓢ	●		●	●	●	●	●
BF65 Ⓢ	●		●	●	●	●	●
BF80	●		●	●	●	●	●
BF95	●		●	●	●	●	●
BF110	●		●	●	●	●	●
B115		●	●	●	●	●	●
B145		●	●	●	●	●	●
B180		●	●	●	●	●	●
B250		●	●	●	●	●	●
B310		●	●	●	●	●	●
B400		●	●	●	●	●	●
B500	●			●			
B630	●			●	●		
B630 1000	●			●			
B1250				●			
B1600				●			

● Certified products.

UL - UL Listed, for USA and Canada (cULus - File E93602) for BG... BF110 types indicated, as Motor Controllers – Contactors, except for BGP09... types which are UL Recognized, for USA and Canada (UL File E93602 – Component - Products having this type of marking are intended for use as components of complete workshop-assembled equipment). BGP is UL rated up to 300V; for type with rating up to 600V, consult Customer Service for information – see contact details on inside front cover.  
UL Listed for USA only (File E93602) for B115...B400 types indicated, as Motor Controllers – Contactors.  
UL Listed for USA and Canada (cULus - File E172189) for B500... B630 1000 and B500 SL... B630 SL types as Industrial Control Switches.  
CSA - BF09...BF95 and B115...B400 contactors are also CSA certified, for Canada only (File 54332).  
In addition, BF12..., BF25..., BF38... and BF65... types are CSA certified as "Elevator Equipment" (File 54332, class 2411).  
See technical characteristics on page 2-63 for BF12-BF38 and page 2-65 for BF65.

Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-4-1, UL508, CSA C22.2 n° 14 for all types; UL 60947-1, UL 60947-4-1A, CSA C22.2 n° 60947-1, CSA C22.2 n° 60947-4-1 for B115... B630 1000 types.  
Plastic materials are compliant with standards IEC/EN 60335; for all BF09...BF38 versions only, add suffix V260 to the standard product order code.  
Example: BF09 10 A230V260 for BF09, three poles, with one NO contact and 230V 50/60Hz coil with compliant plastic materials.





B500-B630



B630 1000

UL/CSA General (purpose) use	UL/CSA Fuse class	Short circuit current RMS sym. 600VAC	Type of terminal	Incorporated auxiliary contacts		Quantity per pkg	Weight
				NO	NC		
[A]	Type/[A]	[kA] UL/CSA			n°	[kg]	
16	K5/30	5	Clamp-screw	—	1Ⓢ	10	0.214
				1Ⓢ	—	10	0.214
20	K5/30	5	Clamp-screw	—	1Ⓢ	10	0.214
				1Ⓢ	—	10	0.214
20	K5/30	5	Faston	—	1Ⓢ	10	0.210
				1Ⓢ	—	10	0.210
20	K5/30	5	Rear PCB solder pin	—	1Ⓢ	10	0.240
				1Ⓢ	—	10	0.240
20	K5/30	5	Clamp-screw	—	1Ⓢ	10	0.214
				1Ⓢ	—	10	0.214
25	RK5/60	5	Clamp-screw	—	1Ⓢ	1	0.494
				1	—	1	0.494
28	RK5/70	5	Clamp-screw	—	1Ⓢ	1	0.494
				1	—	1	0.494
32	RK5/80	5	Clamp-screw	—	1Ⓢ	1	0.494
				1	—	1	0.494
32	RK5/100	5	Clamp-screw	—	1Ⓢ	1	0.494
				1	—	1	0.494
45	RK5/100	5	Clamp-screw	—	—	1	0.559
55	RK5/125	5	Clamp-screw	—	—	1	0.559
55	RK5/150	5	Clamp-screw	—	—	1	0.559
90	RK5/200	5	Lug-clamp Ⓢ	—	—	1	1.885
110	RK5/225	5	Lug-clamp Ⓢ	—	—	1	1.885
125	RK5/250	10	Lug-clamp Ⓢ	—	—	1	1.895
125	RK5/250	10	Lug-clamp Ⓢ	—	—	1	1.895
125	RK5/250	10	Lug-clamp Ⓢ	—	—	1	1.895
160	RK5/500	10	Screw-nut	—	—	1	5.290
250	RK5/500	10	Screw-nut	—	—	1	5.400
275	RK5/500	10	Screw-nut	—	—	1	5.400
350	L/800	18	Screw-nut	—	—	1	9.635
450	L/800	18	Screw-nut	—	—	1	9.635
500	L/800	18	Screw-nut	—	—	1	9.635
700 Ⓢ	L/1200 Ⓢ	18 Ⓢ	Screw-nut	—	—	1	18.060
800 Ⓢ	L/1500 Ⓢ	18 Ⓢ	Screw-nut	—	—	1	18.620
1000 Ⓢ	L/1500 Ⓢ	18 Ⓢ	Screw-nut	—	—	1	21.400

Ⓢ IEC/EN 60947-1 designation: Pillar terminal.

### Certifications and compliance

Certifications obtained:

Type	UL Canada USA	UL USA	CSA	EAC	CCC	Register of shipping RINA	LR ORS
BG06 D	●			●	●		
BG09 D	●			●	●		
BG12 D	●			●	●		
BGF09 D	●			●	●		
BGP09 DⓈ	●			●	●		
BF09 D - BF09 L	●		●	●	●	●	
BF12 D - BF12 L	●		●	●	●	●	
BF18 D - BF18 L	●		●	●	●	●	
BF25 D - BF25 L	●		●	●	●	●	
BF26 D - BF26 L	●		●	●	●	●	
BF32 D - BF32 L	●		●	●	●	●	
BF38 D - BF38 L	●		●	●	●	●	
BF50 C	●		●	●	●		
BF65 C	●		●	●	●		
BF80 C	●		●	●	●		
BF95 C	●		●	●	●		
BF110 C	●		●	●	●		
B115		●	●	●	●	●	●
B145		●	●	●	●	●	●
B180		●	●	●	●	●	●
B250		●	●	●	●	●	●
B310		●	●	●	●	●	●
B400		●	●	●	●	●	●
B500	●			●			
B630	●			●	●		
B630 1000	●			●			

● Certified products.

- UL - UL Listed, for USA and Canada (cULus File E93602) for BG...BF110 types indicated, as Motor Controllers – Contactors, except for BGP09... types which are UL Recognized, for USA and Canada (UL File E93602 – Component). Products having this type of marking are intended for use as components of complete workshop-assembled equipment. BGP is UL rated up to 300V; for type with rating up to 600V, consult Customer Service for information – see contact details on inside front cover. UL Listed for USA only (File E93602) for B115...B400 types indicated, as Motor Controllers – Contactors. UL Listed for USA and Canada (cULus - File E172189) for B500... B630 1000 and B500 SL... B630 SL types as Industrial Control Switches.
- CSA - BF09...BF95 and B115...B400 contactors are also CSA certified, for Canada only (File 54332). In addition, BF12..., BF25..., BF38... and BF65... types are CSA certified as "Elevator Equipment" (File 54332, class 2411). See technical characteristics on page 2-63 for BF12-BF38 and page 2-65 for BF65.

Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-4-1, UL508, CSA C22.2 n° 14 for all types; UL 60947-1, UL 60947-4-1A, CSA C22.2 n° 60947-1, CSA C22.2 n° 60947-4-1 for B115... B630 1000 types.

Plastic materials are compliant with standards IEC/EN 60335; for all BF09...BF38 versions only, add suffix V260 to the standard product order code.

Example: BF09 10 D024 V260 for BF09, three poles, with one NO contact and 24VDC coil with compliant plastic materials.





BG09 T4 A



BF09 A T4A-BF18 T4 A



BF26 T4 A-BF38 T4 A



BF65 40 - BF80 40



B115 4-B180 4



B250 4-B400 4

Resistive load control

Order code	IEC operating current Ith (AC1)			Maximum IEC power at ≤40°C (AC1)							UL/CSA details
	≤40°C	≤55°C	≤70°C	230V	400V	415V	440V	500V	690V	1000V	UL/CSA General (purpose) use
AC coil	[A]	[A]	[A]	[kW]	[kW]	[kW]	[kW]	[kW]	[kW]	[kW]	[A]
11 BG09 T4 A 10	20	18	15 (≤60°C)	8	14	14	15	16	22	—	20
11 BGF09 T4 A 10	20	18	15 (≤60°C)	8	14	14	15	16	22	—	20
11 BGP09 T4 A 10	20	18	15 (≤60°C)	8	14 <sup>7</sup>	14 <sup>7</sup>	15 <sup>7</sup>	16 <sup>7</sup>	—	—	20
BF09 T4 A 10	25	20	18	9.5	16	17	18	21	27	—	25
BF12 T4 A 10	28	23	20	10	18	19	20	23	32	—	28
BF18 T4 A 10	32	26	23	12	21	22	23	26	36	—	32
BF26 T4 A 10	45	36	32	17	30	31	33	37	51	—	45
BF38 T4 A 10	56 (60 <sup>8</sup> )	45 (48 <sup>8</sup> )	40 (42 <sup>8</sup> )	21	36	38	40	45	62	—	55
11 BF50 40 10	90	80	65	34	59	64	65	74	98	—	90
11 BF65 40 10	110	90	70	41	72	78	80	95	112	—	110
11 BF80 40 10	125	100	80	47	82	90	90	108	128	—	125
11 B115 4 00 00	160	150	110	57	98	107	115	129	173	250	160
11 B145 4 00 00	250	235	190	91	150	162	180	196	270	390	250
11 B180 4 00 00	275	250	200	95	160	177	200	213	298	430	275
11 B250 4 00 00	350	300	250	124	214	234	255	282	380	560	350
11 B310 4 00 00	450	370	300	158	270	293	325	350	488	700	450
11 B400 4 00 00	550	430	360	200	345	377	400	452	598	870	550
11 B500 4 00 00	700	550	500	252	438	478	500	575	755	1100	700
11 B630 4 00 00	800	640	540	288	500	545	580	655	860	1250	800
11 B630 1000 4 00 00	1000	850	700	350	600	630	725	750	1000	1600	1000
11 B1250 4 24 00	1250	1050	880	480	830	900	905	1100	1450	2000	No UL/CSA
11 B1600 4 24 00	1600	1360	1120	550	950	1000	1160	1200	1650	2500	No UL/CSA

- 1 Complete order code with coil voltage digit or voltage digit followed by 60 if 60Hz. Standard voltages are as follows:
  - AC 50/60Hz 024 / 048 / 110 / 230 / 400V
  - AC 60Hz 024 60 / 048 60 / 120 60 / 220 60 / 230 60 / 460 60 / 575 60 (V).
 Example: 11 BG09 T4 A230 for mini-contactor BG09, four poles, with 230VAC 50/60Hz coil. 11 BG09 T4 A460 60 for mini-contactor BG09, four poles, with 460VAC 60Hz coil.
- 2 The coil of the contactor can be powered indifferently in AC or DC. Complete the order code only with the digit of the coil voltage. Standard voltages are:
  - AC/DC 24 / 48 / 60 / 110-125 (indicate 110) / 220-240 (indicate 220) / 380-415 (indicate 380) / 440-480V (indicate 440).
 Example: 11 B145 4 00 110 for contactor B145, four poles, without auxiliary contacts and with 110-125VAC/DC coil.
- The 24VAC/DC voltage is not possible for B500-B630 1000 contactors. Other voltages available on request.
- 3 If predisposed for mechanical latch (G495), the order code becomes 11 B...4SL 00 2. If already fitted with mechanical latch (G495), the order code becomes 11 B...4L 00 2 3.
- 4 Indicate rated voltage of the mechanical latch, preceded by the letter C if in DC. Standard voltages are:
  - AC 50/60Hz 48 / 110-125 indicate 110 / 220-240 indicate 220 / 380-415V indicate 380
  - DC 48 / 110-125 indicate 110 / 220-240V indicate 220.
 Example: 11 B145 4L 00 110 C220 for contactor B145, four poles, without auxiliary contacts, with 110-125VAC/DC coil and mechanical latch powered at 220-240VDC.

- 5 G495 mechanical latch cannot be mounted.
- 6 Complete the order code with the digit of the coil voltage. For 110-125VAC 50/60 Hz indicate 110 or 220-240VDC 50/60 Hz indicate 220. Example: 11 B1250 4 24 110 for contactor B1250, four poles, with 2NO+4NC auxiliary contacts and 110-125VAC/DC 50/60Hz coil.
- 7 Maximum voltage is limited at 300V for UL. For certified type up to 600V. Consult Customer Service for information; see contact details on inside front cover.
- 8 Whenever the BF26 T4 or BF38 T4 types need to be mechanically interlocked with either the BFX50 00 or BFX50 01, the add-on fourth pole of one of the contactors needs to be removed from the right side and fitted on the left side.
- 9 For use at this other current value, a 16mm<sup>2</sup> cable, headed with a fork terminal, must be used.
- 10 Definite-purpose (DP) contactors are available. Consult Customer Service for information; see contact details on inside front cover.



B500 4-B630 4



B630 1000 4



B1250-B1600 4

UL/CSA Fuse class	Short circuit current RMS sym. 600VAC	Type of terminal	Incorporated auxiliary contacts		Quantity per pkg	Weight
			NO	NC		
Type / [A]	[kA] UL/CSA				n°	[kg]
K5 / 30	5	Clamp-screw	none	none	10	0.180
K5 / 30	5	Faston	none	none	10	0.180
K5 / 30	5	Rear PCB solder pin	none	none	10	0.197
RK5 / 60	5	Clamp-screw	none	none	1	0.367
RK5 / 70	5	Clamp-screw	none	none	1	0.367
RK5 / 80	5	Clamp-screw	none	none	1	0.367
RK5 / 100	5	Clamp-screw	none	none	1	0.508
RK5 / 150	5	Clamp-screw	none	none	1	0.508
RK5 / 200	5	Lug-clamp ①	none	none	1	1.554
RK5 / 225	10	Lug-clamp ①	none	none	1	1.554
RK5 / 250	10	Lug-clamp ①	none	none	1	1.570
RK5 / 500	10	Screw-nut	none	none	1	6.220
RK5 / 500	10	Screw-nut	none	none	1	6.340
RK5 / 500	10	Screw-nut	none	none	1	6.340
L/800	18	Screw-nut	none	none	1	11.195
L/800	18	Screw-nut	none	none	1	11.195
L/800	18	Screw-nut	none	none	1	11.195
L/1200 ②	18 ②	Screw-nut	none	none	1	20.910
L/1500 ②	18 ②	Screw-nut	none	none	1	21.880
—	—	Screw-nut	2	4	1	57.500
—	—	Screw-nut	2	4	1	58.400

① IEC/EN 60947-1 designation: Pillar terminal.

② No UL/CSA ratings; data given for indication and reference purposes only.

### IEC utilisation current with poles in parallel

If the poles of the contactors are arranged in parallel, the operating current is the one indicated in the table multiplied by the **K** factor given below, which account for the unequal distribution of the current in the various poles.

To limit distribution inequality, it is advisable to use paralleling links (see pages 2-16, 2-21 and 2-26).

2 POLES in parallel: **K** = 1.6

3 POLES in parallel: **K** = 2.2

4 POLES in parallel: **K** = 2.8

### Certifications and compliance

Certifications obtained:

Type	UL Canada USA	UL USA	C S A	E A C	C C C	R I N A
BG09 T4 A	●			●	●	
BGF09 T4 A	●			●	●	
BGP09 T4 A ②	●			●	●	
BF09 T4 A	●		●	●	●	●
BF12 T4 A	●		●	●	●	●
BF18 T4 A	●		●	●	●	●
BF26 T4 A	●		●	●	●	●
BF38 T4 A	●		●	●	●	●
BF50 40	●		●	●	●	
BF65 40	●		●	●	●	
BF80 40	●		●	●	●	
B115 4		●	●	●	●	
B145 4		●	●	●	●	
B180 4		●	●	●	●	
B250 4		●	●	●	●	
B310 4		●	●	●	●	
B400 4		●	●	●	●	
B500 4	●			●		
B630 4	●			●	●	
B630 1000 4	●			●		
B1250 4				●		
B1600 4				●		

● Certified products.

UL - UL Listed, for USA and Canada (cULus File E93602) for BG...BF110 types indicated, as Motor Controllers – Contactors, except for BGP09... types which are UL Recognized, for USA and Canada (cULus File E93602 – Component). Products having this type of marking are intended for use as components of complete workshop-assembled equipment.

BGP is UL rated up to 300V; for type with rating up to 600V, consult Customer Service for information – see contact details on inside front cover.

UL Listed for USA only (File E93602) for B115...B400 types indicated, as Motor Controllers – Contactors.

UL Listed for USA and Canada (cULus - File E172189) for B500 4... B630 1000 4 and B500 4SL... B630 4SL types as Industrial Control Switches.

CSA - BF09...BF80 and B115...B400 contactors are also CSA certified, for Canada only (File 54332).

In addition, BF12..., BF25..., BF38... and BF65... types are CSA certified as "Elevator Equipment" (File 54332, class 2411). See technical characteristics on page 2-63 for BF12-BF38 and page 2-65 for BF65.

Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-4-1, UL508, CSA C22.2 n° 14 for all types; UL 60947-1, UL 60947-4-1A, CSA C22.2 n° 60947-1, CSA C22.2 n° 60947-4-1 for B115 4... B630 1000 4.

Plastic materials are compliant with standards IEC/EN 60335; for all BF09...BF38 versions only, add suffix V260 to the standard product order code.

Example: BF09 T4 A230 V260 for BF09, four poles, 230V 50/60Hz coil with compliant plastic materials).

2



BG09 T4 D



BF09 T4 D-BF18 T4 D  
BF09 T4 L-BF18 T4 L



BF26 T4 D-BF38 T4 D  
BF26 T4 L-BF38 T4 L



BF50C 40-BF80C 40



B115 4-B180 4



B250 4-B400 4

### Resistive load control

Order code DC coil	DC coil Low consumption	IEC operating current Ith (AC1)			Maximum IEC power at ≤40°C (AC1)							UL/CSA details
		≤40°C	≤55°C	≤70°C	230V	400V	415V	440V	500V	690V	1000V	UL/CSA General (purpose) use
		[A]	[A]	[A]	[kW]	[kW]	[kW]	[kW]	[kW]	[kW]	[kW]	[A]
11 BG09 T4 D ①	—	20	18	15 (≤60°C)	8	14	14	15	16	22	—	20
11 BGF09 T4 D ①	—	20	18	15 (≤60°C)	8	14	14	15	16	22	—	20
11 BGP09 T4 D ①	—	20	18	15 (≤60°C)	8	14⑥	14⑥	15⑥	16⑥	—	—	20
BF09 T4 D ②③	BF09 T4 L ②③	25	20	18	9.5	16	17	18	21	27	—	25
BF18 T4 D ②③	BF18 T4 L ②③	32	26	23	12	21	22	23	26	36	—	32
BF26 T4 D ②③	BF26 T4 L ②③	45	36	32	17	30	31	33	37	51	—	45
BF38 T4 D ②③	BF38 T4 L ②③	56 (60④)	45 (48④)	40 (42④)	21	26	38	40	45	62	—	55
11 BF65C 40 ⑤	—	110	90	70	41	72	78	80	95	112	—	110
11 BF80C 40 ⑤	—	125	100	80	47	82	90	90	108	128	—	125
11 B115 4 00 ⑥⑦	—	160	150	110	57	98	107	115	129	173	250	160
11 B145 4 00 ⑥⑦	—	250	235	190	91	150	162	180	196	270	390	250
11 B180 4 00 ⑥⑦	—	275	250	200	95	160	177	200	213	298	430	275
11 B250 4 00 ⑥⑦	—	350	300	250	124	214	234	255	282	380	560	350
11 B310 4 00 ⑥⑦	—	450	370	300	158	270	293	325	350	488	700	450
11 B400 4 00 ⑥⑦	—	550	430	360	200	345	377	400	452	598	870	550
11 B500 4 00 ⑥⑦	—	700	550	500	252	438	478	500	575	755	1100	700
11 B630 4 00 ⑥⑦	—	800	640	540	288	500	545	580	655	860	1250	800
11 B630 1000 4 00 ⑥⑦	—	1000	850	700	350	600	630	725	750	1000	1600	1000

① Complete order code with coil voltage digit.

The BF09-BF38D types already have a standard supplied built-in TVS (Transient Voltage Suppressor).

Standard voltages are as follows:

– DC 012 / 024 / 048 / 060 / 110 / 125 / 220VDC.

Example: 11 BG09 T4 D012 for mini-contactor BG09, four poles, with 12VDC coil.

② Low consumption version. Complete the order code with coil voltage digit.

The BF09-BF38L types already have a standard supplied built-in TVS (Transient Voltage Suppressor).

Standard voltages are as follows:

– DC 024 / 048V

Example: BF09 T4 L024 for contactor BF09, four poles, with 24VDC low-consumption coil.

③ Maximum combinations add-on blocks are page 2-19.

④ The coil of the contactor can be powered indifferently in AC or DC. Complete the order code only with the digit of the coil voltage.

Standard voltages are:

– AC/DC 24 / 48 / 60 / 110-125 indicate 110 / 220-240 indicate 220 / 380-415 indicate 380 /

440-480V indicate 440.

Example: 11 B145 00 110 for contactor B145, four poles, without auxiliary contacts and with

110-125VAC/DC coil.

The 24VAC/DC voltage is not possible for B500-B630 1000 contactors.

Other voltages available on request.

⑤ If predisposed for mechanical latch (G495), the order code becomes 11 B...4SL 00 ⑤.

If already fitted with mechanical latch (G495), the order code becomes 11 B...4L 00 ⑤ ⑥.

⑥ Indicate rated voltage of the mechanical latch, preceded by the letter C if in DC.

Standard voltages are:

– AC 50/60Hz 48 / 110-125 indicate 110 / 220-240 indicate 220 / 380-415V indicate 380

– DC 48 / 110-125 indicate 110 / 220-240V indicate 220.

Example: 11 B145L 00 110 C48 for contactor B145, four poles, without auxiliary contacts, with

110-125VAC/DC coil and mechanical latch powered at 48VDC.

⑦ G495 mechanical latch cannot be mounted.

⑧ Maximum voltage is limited at 300V for UL. For certified type up to 600V consult Customer Service for information; see contact details on inside front cover.

⑨ For use at this other current value, a 16mm<sup>2</sup> cable, headed with a fork terminal, must be used.



B500 4-B630 4



B630 1000 4

	UL/CSA Fuse class	Short circuit RMS sym. 600VAC	Type of terminal	Incorporated auxiliary contacts		Quantity per pkg	Weight
	Type / [A]	[kA] UL/CSA		NO	NC	n°	[kg]
	K5 / 30	5	Clamp-screw	—	—	10	0.220
	K5 / 30	5	Faston	—	—	10	0.220
	K5 / 30	5	Rear PCB solder pin	—	—	10	0.242
	RK5 / 60	5	Clamp-screw	—	—	1	0.498
	RK5 / 80	5	Clamp-screw	—	—	1	0.498
	RK5 / 100	5	Clamp-screw	—	—	1	0.665
	RK5 / 150	5	Clamp-screw	—	—	1	0.665
	RK5 / 225	5	Lug-clamp ①	—	—	1	2.035
	RK5 / 250	5	Lug-clamp ①	—	—	1	2.100
	RK5 / 500	10	Screw-nut	—	—	1	6.220
	RK5 / 500	10	Screw-nut	—	—	1	6.340
	RK5 / 500	10	Screw-nut	—	—	1	6.340
	L/800	18	Screw-nut	—	—	1	11.195
	L/800	18	Screw-nut	—	—	1	11.195
	L/800	18	Screw-nut	—	—	1	11.195
	L/1200 ②	18 ②	Screw-nut	—	—	1	20.910
	L/1200 ②	18 ②	Screw-nut	—	—	1	21.880
	L/1500 ②	18 ②	Screw-nut	—	—	1	25.600

② No UL/CSA ratings; data given for indication and reference purposes only.

① IEC/EN 60947-1 designation: Pillar terminal.

### IEC utilisation current with poles in parallel

If the poles of the contactors are arranged in parallel, the operating current is the one indicated in the table multiplied by the **K** factor given below, which account for the unequal distribution of the current in the various poles.

To limit distribution inequality, it is advisable to use paralleling links (see pages 2-16, 2-21 and 2-26).

2 POLES in parallel: **K** = 1.6

3 POLES in parallel: **K** = 2.2

4 POLES in parallel: **K** = 2.8

### Certifications and compliance

Certifications obtained:

Type	UL Canada USA	UL USA	CSA	EAC	CCC	RINA
BG09 T4 D	●			●	●	
BGF09 T4 D	●			●	●	
BGP09 T4 D ②	●			●	●	
BF09 T4 D - BF09 T4 L	●		●	●	●	●
BF18 T4 D - BF18 T4 L	●		●	●	●	●
BF26 T4 D - BF26 T4 L	●		●	●	●	●
BF38 T4 D - BF38 T4 L	●		●	●	●	●
BF65 C 40	●		●	●	●	
BF80 C 40	●		●	●	●	
B115 4		●	●	●	●	
B145 4		●	●	●	●	
B180 4		●	●	●	●	
B250 4		●	●	●	●	
B310 4		●	●	●	●	
B400 4		●	●	●	●	
B500 4	●			●		
B630 4	●			●	●	●
B630 1000 4	●			●		

● Certified products.

UL - UL Listed, for USA and Canada (cULus File E93602) for BG...BF110 types indicated, as Motor Controllers – Contactors, except for BGP09... types which are UL Recognized, for USA and Canada (ULus File E93602 – Component). Products having this type of marking are intended for use as components of complete workshop-assembled equipment.

BGP is UL rated up to 300V; for type with rating up to 600V, consult Customer Service for information – see contact details on inside front cover.

UL Listed for USA only (File E93602) for B115...B400 types indicated, as Motor Controllers – Contactors.

UL Listed for USA and Canada (cULus - File E172185) for B500 4... B630 1000 4 and B500 4SL... B630 4SL types as Industrial Control Switches.

CSA - BF09...BF95 and B115...B400 contactors are also CSA certified, for Canada only (File 54332).

In addition, BF12..., BF25..., BF38... and BF65... types are CSA certified as "Elevator Equipment" (File 54332, class 2411).

See technical characteristics on page 2-63 for BF12-BF38 and page 2-65 for BF65.

Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-4-1, UL508, CSA C22.2 n° 14 for all types; UL 60947-1, UL 60947-4-1A, CSA C22.2 n° 60947-1, CSA C22.2 n° 60947-4-1 for B115 4... B630 1000 4.

Plastic materials are compliant with standards IEC/EN 60335; for all BF09...BF38 versions only, add suffix V260 to the standard product order code.

Example: BF09 T4 D024 V260 for BF09, four poles, 24VDC coil with compliant plastic materials).

### Mini-contactor four power poles, 2 NO and 2 NC BG series

2



11 BG09 T2...

Order code	IEC rated conventional free air thermal current Ith			Qty per pkg	Wt [kg]
	≤40°C	≤55°C	≤60°C		
	[A]	[A]	[A]	n°	[kg]

AC COIL.

Terminals: clamp screw.

<b>11 BG09 T2 A</b> ①	20	18	15	1	0.170
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DC COIL.

Terminals: clamp screw.

<b>11 BG09 T2 D</b> ②	20	18	15	1	0.175
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**NOTE: No coil change or replacement is possible.**

#### Operational characteristics

Type	UL/CSA General use	Protection fuse		Conductor section	
		IEC gG	UL K5	[mm²]	[AWG]
BG09...T2	[A]	[A]	[A]	0.75-2.5	18-12

#### Certifications and compliance

Certifications obtained: CCC, EAC; UL Listed, for USA and Canada (cULus - File E93602), as Motor Controllers - Contactors.

Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-4-1, UL508, CSA C22.2 n° 14.

### Contactors four power poles, 2 NO and 2 NC BF series



BF09 T2...

Order code	IEC rated conventional free air thermal current Ith			Qty per pkg	Wt [kg]
	≤40°C	≤55°C	≤60°C		
	[A]	[A]	[A]	n°	[kg]

AC COIL.

Terminals: clamp screw.

<b>BF09 T2 A</b> ①	25	20	18	1	0.340
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<b>BF18 T2 A</b> ①	32	26	23	1	0.340
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<b>BF26 T2 A</b> ①	45	36	32	1	0.420
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<b>BF38 T2 A</b> ①	56 (60 <sup>⑥</sup> )	45 (48 <sup>⑥</sup> )	40 (42 <sup>⑥</sup> )	1	0.420
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DC COIL.

Terminals: clamp screw.

<b>BF18 T2 D</b> ② ③	32	26	23	1	0.470
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<b>BF26 T2 D</b> ② ③	45	36	32	1	0.540
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<b>BF38 T2 D</b> ② ③	56 (60 <sup>⑥</sup> )	45 (48 <sup>⑥</sup> )	40 (42 <sup>⑥</sup> )	1	0.540
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DC COIL. Low consumption (2.4W).

Terminals: clamp screw.

<b>BF18 T2 L</b> ④ ⑤	32	26	23	1	0.470
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<b>BF26 T2 L</b> ④ ⑤	45	36	32	1	0.540
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<b>BF38 T2 L</b> ④ ⑤	56 (60 <sup>⑥</sup> )	45 (48 <sup>⑥</sup> )	40 (42 <sup>⑥</sup> )	1	0.540
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- ① Complete with coil voltage digit if 50/60Hz or with voltage digit followed by 60 if 60Hz. Standard voltages are:  
 - AC 50/60Hz 024 / 048 / 110 / 230 / 400V  
 - AC 60Hz 024 60 / 048 60 / 120 60 / 220 60 / 230 60 / 460 60 / 575 60 (V).  
 Example: 11 BG09 T2 A230 for mini-contactor BG09 T2, 2 poles NO and 2 poles NC, with 230VAC 50/60Hz coil.  
 11 BG09 T2 A460 60 for mini-contactor BG09 T2, 2 poles NO and 2 poles NC, with 460VAC 60Hz coil.

- ② Complete with coil voltage digit.  
 The BF18-BF26-BF38 T2D types already have a standard supplied built-in TVS (Transient Voltage Suppressor).  
 Standard voltages are:  
 - DC 012 / 024 / 048 / 060 / 110 / 125 / 220V.  
 Example: 11 BG09 T2 D012 for mini-contactor BG09 T2, 2 poles NO and 2 poles NC, with 12VDC coil.

- ③ Low-consumption version.  
 Complete the order code with coil voltage digit.  
 The BF18-BF26-BF38 T2L types already have a standard supplied built-in TVS (Transient Voltage Suppressor).  
 Standard voltages are as follows:  
 - DC 024 / 048V.  
 Example: BF18 T2 L024 for contactor BF18 T2, 2 poles NO and 2 poles NC, with 24VDC low-consumption coil.

- ④ Maximum combinations of add-on blocks are given on page 2-19.  
 ⑤ For use at this other current value, a 16mm<sup>2</sup> cable, headed with a fork terminal, must be used.

#### Operational characteristics

Type	UL/CSA General use	Protection fuse		Conductor section	
		IEC gG	UL RK5	[mm²]	[AWG]
	[A]	[A]	[A]	[mm²]	[AWG]

BF09 T2	25	32	60	1-6	16-10
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BF18 T2	32	40	80	1-6	16-10
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BF26 T2	45	50	100	1.5-10	14-6
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BF38 T2	55	80	150	2.5-16	14-6
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#### Certifications and compliance

Certifications obtained: EAC, CCC, RINA; UL Listed for USA and Canada (cULus - File E93602) and CSA certified for Canada (File 54332), as Motor Controllers - Contactors.

Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-4-1, UL508, CSA C22.2 n° 14. Plastic materials are compliant with standards IEC/EN 60335; for all BF09...BF38 versions only, add suffix V260 to the standard product order code.

Example: BF09 T2 A230 V260 for BF09, 2NO+2NC main poles, 230V 50/60Hz coil with compliant plastic materials).

### Contactors four power poles, 4 NC BF series



BF18 TO...

Order code	IEC rated conventional free air thermal current I <sub>th</sub>			Qty per pkg	Wt [kg]
	≤40°C	≤55°C	≤60°C		
	[A]	[A]	[A]	n°	[kg]

AC COIL.  
Terminals: clamp screw.

<b>BF18 TO A</b>	32	26	23	1	0.340
<b>BF26 TO A</b>	45	36	32	1	0.420

DC COIL.  
Terminals: clamp screw.

<b>BF18 TO D</b>	32	26	23	1	0.470
<b>BF26 TO D</b>	45	36	32	1	0.540

DC COIL. Low consumption (2.4W).  
Terminals: clamp screw.

<b>BF18 TO L</b>	32	26	23	1	0.470
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#### Operational characteristics

Type	UL/CSA	Protection fuse		Conductor section	
	General use	IEC gG	ULRK5	[mm <sup>2</sup> ]	[AWG]
	[A]	[A]	[A]	[mm <sup>2</sup> ]	[AWG]

BF18 TO	32	40	80	1-6	16-10
BF26 TO	45	50	150	1.5-10	14-6

#### Certifications and compliance

Certifications obtained: EAC, CCC, RINA; UL Listed for USA and Canada (cULus - File E93602) and CSA certified for Canada (File 54332), as Motor Controllers - Contactors. Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-4-1, UL508, CSA C22.2 n° 14.

Plastic materials are compliant with standards IEC/EN 60335; for BF18 and BF26 versions only, add suffix V260 to the standard product order code.

Example: BF18 TO A230 V260 for BF18, four NC main poles, 230VAC 50/60Hz coil with compliant plastic materials).

NOTE: The BF18-BF26 TOD and BF18 TOL types have a standard supplied built-in TVS (Transient Voltage Suppressor).

### Contactors four NO power poles to connect in series for photovoltaic applications BF series



BFD80 40...

Order code	IEC rated operational current in DC1 ≤55°C	Qty per pkg	Wt [kg]

AC COIL.  
Terminals: lug clamp (IEC pillar terminal).

<b>11BFD80 40</b>	125	1	1.440
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DC COIL.  
Terminals: lug clamp (IEC pillar terminal).

<b>11BFD80 C 40</b>	125	1	1.910
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- ① Complete with coil voltage digit if 50/60Hz or with voltage digit followed by 60 if 60Hz. Standard voltages are:
  - AC 50/60Hz 024 / 048 / 110 / 230 / 400V
  - AC 60Hz 024 60 / 048 60 / 120 60 / 220 60 / 230 60 / 460 60 / 575 60 (V).

Example: BF18 TO A230 for contactor BF18 TO, 4 NC power poles, with 230VAC 50/60Hz.  
11 BFD80 40 024 for contactor BFD80 40, 4 NO power poles, with 24VAC 50/60Hz for photovoltaic application.

- ② Complete with coil voltage digit.  
Standard voltages are:
  - DC 012 / 024 / 048 / 060 / 110 / 125 / 220V.

Example: BF18 TO D012 for contactor BF18 TO, 4 NC power poles, with 12VDC coil.  
③ Low-consumption version.  
Complete the order code with coil voltage digit.  
Standard voltages are as follows:
 

- DC 024 / 048V.

Example: BF18 TO L024 for contactor BF18 TO, 4 NC power poles, with 24VDC low-consumption coil.

- ④ Maximum combinations of add-on blocks are given on page 2-19.
- ⑤ For use at this other current value, a 16mm<sup>2</sup> cable, headed with a fork terminal, must be used.

#### General characteristics

The contactors are specifically made with magnetic elements in the arc extinction chambers to obtain high DC load operational capabilities. They are used to disconnect and isolate the load between the photovoltaic panel and the AC/DC inverter.

For add-on contact blocks, accessories and spare parts, consider indications of the corresponding standard BF80 types (11BF80 40... and 11 BF80C 40...).

#### Italian Fire Department Directives

These directives provide for an disconnecting device for all current-carrying elements, that can be operated by remote control switch, placed in an easily reached and marked position, in order to safely isolate each part of the installation within the fire system compartment including the photovoltaic (PV) generator.

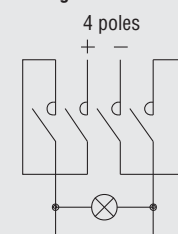
As an alternative, the PV generator must be installed, either externally of the fire system compartment or internally but in a dedicated compartment with adequate fire-resistant features. For such function, specifically designed contactors for on-load use in IEC DC1 duty up to 1000VDC are available.

#### Operational characteristics

Use in IEC DC1 duty

Type	IEC operational voltage U <sub>e</sub>			
	400V	600V	800V	1000V
BFD80...	IEC max current I <sub>e</sub> in DC1 with L/R ≤1ms with 4 poles in series			
	[A]	[A]	[A]	[A]
BFD80...	125	125	95	75

#### Wiring scheme



Compliant with standards: IEC/EN 60947-1, IEC IEC/EN 60947-4-1.

### BFK contactors (including limiting resistors)

2



BFK...

Order code	Maximum IEC operational power at ≤50°C (AC-6b) ①				NO	Qty per pkg	Wt [kg]
	240V	400V	480V	690V			
	[kvar]	[kvar]	[kvar]	[kvar]	n°		

AC COIL.							
<b>BFK09 10A</b> ②	4.5	7.5	9	10	1	10	0.413
<b>BFK12 10A</b> ②	7	12.5	14	16	1	10	0.413
<b>BFK18 10A</b> ②	9	15	17	20	1	10	0.413
<b>BFK26 00A</b> ②	11	20	22	25	-	10	0.472
<b>BFK32 00A</b> ②	14	25	27.5	30	-	10	0.472
<b>BFK38 00A</b> ②	17	30	33	36	-	10	0.472
<b>11 BF50K 00</b> ②	22	38	41	46	-	5	1.440
<b>11 BF65K 00</b> ②	26	45	50	56	-	5	1.470
<b>11 BF70K 00</b> ②	30	50	56	65	-	5	1.470
<b>11 BF80K 00</b> ②	34	60	65	70	-	5	1.470

① Consult Customer Service (see contact details on inside front cover) for the use of contactors to switch with delta/gye connection.

② One NO auxiliary contact (SPST) incorporated.

③ Complete order code with coil voltage digit or with voltage digit followed by 60 if 60Hz.

Standard voltages are:

- AC 50/60Hz 024 / 048 / 110 / 230 / 400VAC

- AC 60Hz 024 60 / 048 60 / 120 60 / 220 60 / 230 60 / 460 60 / 575 60 (V).

Example: BFK09 10 A230 for contactor BFK09 with one NO contact and 230VAC 50/60Hz coil.

BFK09 10 A460 60 for contactor BFK09 with one NO contact and 460VAC 60Hz coil.

Type	UL/CSA rated current 240-600VAC [A]	Maximum UL/CSA operational power at voltage:		
		240V [kvar]	480V [kvar]	600V [kvar]
BFK 09	12	4.5	9	10
BFK 12	18	7	14	16
BFK 18	23	9	17	20
BFK 26	30	11	22	27.5
BFK 32	36	14	27.5	32
BFK 38	43	17	33	36
BF50 K	58	22	41	46
BF65 K	68	26	50	56
BF70 K	72	30	60	65
BF80 K	78	34	65	70

### Operational characteristics

Type	IEC rated operational current ≤440V [A]	IEC - UL/CSA protection fuse gG-SC [A]
BFK09	12	16
BFK12	18	25
BFK18	23	40
BFK26	30	40
BFK32	36	63
BFK38	43	63
BF50K	58	80
BF65K	70	100
BF70K	75	125
BF80K	90	125

Ambient operating temperature: ≤50°C. For ambient temperatures higher than 50°C and up to 70°C, the maximum operating power values indicated in the table must be reduced by a percentage equal to the difference between the operating ambient temperature and 50°C. E.g.: Using a BFK26 00 contactor at the ambient temperature of 60°C, the maximum operating power (at 400V) of the contactor will be equal to 20kvar - 10% = 18kvar. Operating cycle: ≤120 cycles/h. Electrical life: ≥200,000 cycles.

### Add-on auxiliary contacts

The following contact blocks, can be fitted on the BFK contactors: BFX12..., G418..., G481..., G482... and G218.

### Certifications and compliance

Certification obtained: CCC, EAC; UL Listed for USA and Canada (cULus - File E93602), as Motor Controllers - Magnetic Capacitive Switches.

Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-4-1, UL508, CSA C22.2 n° 14. Plastic materials are compliant with standards IEC/EN 60335; for BFK versions only, add suffix V260 to the standard product order code.

Example: BF18K 10 A230 V260 for BF18K contactor having 1 NO auxiliary contact and 230VAC 50/60Hz coil with compliant plastic materials.

### Kits to assemble BFK contactors



11 G46...

Order code	For contactor	Qty per pkg	Wt [kg]
<b>11 G460</b>	BF09 10A - BF12 10A - BF18 10A - BF26 00A - BF32 00A - BF38 00A	10	0.072
<b>11 G464</b>	BF50 00 - BF65 00 - BF80 00	10	0.080

### General characteristics

To optimise contactor stock management, a kit is available to transform normal three-pole contactors into BFK types for power factor correction. The table to the left indicates which kits to purchase depending on the standard contactor in stock.

### Control relays BG00 type



11 BG00...



11 BGF00...

Order code	Configuration and number of contacts ① (SPST ea)		Quantity per package n°	Wt [kg]
	NO	NC		
AC COIL. Terminals: clamp screw.				
11 BG00 40 A①	4	0	1	0.170
11 BG00 31 A①	3	1	1	0.170
11 BG00 22 A①	2	2	1	0.170
Terminals: Faston.				
11 BGF00 40 A①	4	0	1	0.160
11 BGF00 31 A①	3	1	1	0.160
11 BGF00 22 A①	2	2	1	0.160
DC COIL. Terminals: clamp screw.				
11 BG00 40 D①	4	0	1	0.175
11 BG00 31 D①	3	1	1	0.175
11 BG00 22 D①	2	2	1	0.175
Terminals: Faston.				
11 BGF00 40 D①	4	0	1	0.165
11 BGF00 31 D①	3	1	1	0.165
11 BGF00 22 D①	2	2	1	0.165
DC COIL. Low-consumption (2.3W). Terminals: clamp screw.				
11 BG00 40 L①	4	0	1	0.175
11 BG00 31 L①	3	1	1	0.175
11 BG00 22 L①	2	2	1	0.175
Terminals: Faston.				
11 BGF00 40 L①	4	0	1	0.165
11 BGF00 31 L①	3	1	1	0.165
11 BGF00 22 L①	2	2	1	0.165

### Control relays BF00 type



BF00... A...



BF00... D...  
BF00... L...

Order code	Configuration and number of contacts ② (SPST ea)		Quantity per package n°	Wt [kg]
	NO	NC		
AC COIL. Terminals: clamp screw.				
BF00 40 A①	4	0	1	0.340
BF00 31 A①	3	1	1	0.340
BF00 22 A①	2	2	1	0.340
BF00 04 A①	0	4	1	0.340
DC COIL. Terminals: clamp screw.				
BF00 40 D②③	4	0	1	0.470
BF00 31 D②③	3	1	1	0.470
BF00 22 D②③	2	2	1	0.470
BF00 04 D②③	0	4	1	0.470
DC COIL. Low consumption (2.4W). Terminals: clamp screw.				
BF00 40 L③④	4	0	1	0.470
BF00 31 L③④	3	1	1	0.470
BF00 22 L③④	2	2	1	0.470
BF00 04 L③④	0	4	1	0.470

- ① Complete order code with coil voltage digit or with voltage digit followed by 60 if 60Hz.  
Standard voltages are:  
- AC 50/60Hz 024 / 048 / 110 / 230 / 400V  
- AC 60Hz 024 60 / 048 60 / 120 60 / 220 60 / 230 60 / 460 60 / 575 60 (V).  
Example: 11 BG00 40 A230 for control relay BG00 with four NO auxiliary contacts and 230VAC 50/60Hz coil.  
BF00 40 A460 60 for control relay BF00 with four NO auxiliary contacts and 460VAC 60Hz coil.
- ② Complete the order code with coil voltage digit.  
Standard voltages are:  
- DC 012 / 024 / 048 / 060 / 110 / 125 / 220V.  
Example: BF00 40 D012 for control relay BF00 with four NO contacts and 12VDC coil.
- ③ Low-consumption version.  
Complete the order code with coil voltage digit.  
Standard voltages are as follows:  
- DC 024 / 048V.  
Example: 11 BG00 40 L024 for control relay BG00 with four NO auxiliary contacts and 24VDC low-consumption coil.
- ④ Maximum combinations of add-on blocks are given on page 2-19.
- ⑤ All contacts are highly conductive.

#### Operational characteristics

- IEC rated insulation voltage  $U_i$ : 690V
- IEC rated conventional free air thermal current  $I_{th}$ : 10A
- UL/CSA and IEC/EN 60947-5-1 designation:
  - BG types: A600-Q600
  - BF types: A600-P600
- Low-consumption version of BG types cannot accept additional contacts.

**NOTE: No coil change or replacement is possible.**

#### Certifications and compliance

Certification obtained: CCC, EAC, UL Listed for USA and Canada (cULus - File E93602), as Motor Controllers - Auxiliary contactors for all; RINA for BF00 types. Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-5-1, UL508, CSA C22.2 n° 14. Plastic materials are compliant with standards IEC/EN 60335; for BF00 version only, add suffix V260 to the standard product order code. Example: BF00 40 A230 V260 for BF00 control relay having 4 NO auxiliary contacts and 230VAC 50/60Hz coil with compliant plastic materials.

**NOTE: The BF00...D and BF00...L types have a standard supplied built-in TVS (Transient Voltage Suppressor).**



### Add-on blocks and accessories

2



11 BGX10... (20-11-02)  
11 BGX11 11



11 BGX10... (40-31-22-13-04)  
11 BGX11 22



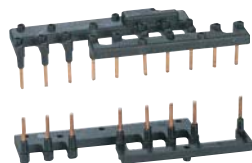
11 BGXF...



11 BGX77... -  
11 BGX78 225 -  
11 BGX79...



11 BGX50 00



11 SMX90 21  
11 SMX90 22

Order code	Characteristics ⑦	Max qty per contactor	Qty per pkg	Wt
		n°	n°	[kg]
Auxiliary contacts. Screw terminals.				
11 BGX10 02①	2NC	1	10	0.021
11 BGX10 11①	1NO + 1NC	1	10	0.021
11 BGX10 20①	2NO	1	10	0.021
11 BGX10 04②	4NC	1	10	0.028
11 BGX10 13②	1NO + 3NC	1	10	0.028
11 BGX10 22②	2NO + 2NC	1	10	0.028
11 BGX10 31②	3NO + 1NC	1	10	0.028
11 BGX10 40②	4NO	1	10	0.028
Auxiliary contacts for reversing and changeover assemblies. Screw terminals.				
11 BGX11 11③	1NO + 1NC	1	10	0.021
11 BGX11 22③	2NO + 2NC	1	10	0.028
Auxiliary contacts. Faston terminals.				
11 BGXF10 02④	2NC	1	10	0.021
11 BGXF10 11④	1NO + 1NC	1	10	0.021
11 BGXF10 20④	2NO	1	10	0.021
11 BGXF10 04⑤	4NC	1	10	0.028
11 BGXF10 13⑤	1NO + 3NC	1	10	0.028
11 BGXF10 22⑤	2NO + 2NC	1	10	0.028
11 BGXF10 31⑤	3NO + 1NC	1	10	0.028
11 BGXF10 40⑤	4NO	1	10	0.028
Mechanical interlock.				
11 BGX50 00⑥	For all BG...A and BG...D	1	10	0.008
Quick connect surge suppressors.				
11 BGX77 048	≤48VAC/DC (Varistor)	10	0.007	
11 BGX77 125	48-125VAC/DC (Varistor)	10	0.007	
11 BGX77 240	125-240VAC/DC (Varistor)	10	0.007	
11 BGX78 225	≤225VDC (Diode)	10	0.007	
11 BGX79 048	≤48VAC (Resistor-Capacitor)	10	0.007	
11 BGX79 125	48-125VAC (Resistor-Capacitor)	10	0.007	
11 BGX79 240	125-240VAC (Resistor-Capacitor)	10	0.007	
11 BGX79 415	240-415VAC (Resistor-Capacitor)	10	0.007	
Modular shroud.				
11 BGX80 00⑦	Raises protection to IEC IP40 w/consumer boards	20	0.006	
Paralleling links. Clamp-screw terminals.				
11 G323⑧	For 2 poles	10	0.009	
11 G324		10	0.009	
11 G325⑧	For 4 poles	10	0.014	
11 G326		10	0.014	
Rigid connecting kits.				
11 SMX90 21⑨	For star-delta starter composed by 3-contactor combination of BG types (line-star-delta)	10	0.040	
11 SMX90 22⑩	For reversing contactor assembly composed by mini-contactors BG	1	0.026	

- ① Cannot be used with BG...L types.
- ② Cannot be used with BG...D and BG...L types.
- ③ Suitable for left-hand mini-contactor only of BGT and BGTP reversing and BGC changeover assemblies.
- ④ The shroud can be used with BG... types with screw termination only and with no auxiliary contacts, surge suppressor or mechanical interlock mounted.  
It raises the front degree of protection of the mini-contactor when these are used in consumer switchboards.
- ⑤ Cannot be used with BGX80 00 shroud.
- ⑥ Contactors with one NC auxiliary contact, 01 type, are usually used for reversing assemblies.  
The relay cannot be directly mounted on the contactor. Use the RF38 type and the RFX38 04 independent mounting base.  
The SM1 breaker can be directly fitted using the SMX90 03 rigid connector.
- ⑦ All contacts are each SPST.

### Operational characteristics for add-on auxiliary contacts

Type		BGX10... BGX11...	BGXF10...
IEC rated conventional free air thermal current I <sub>th</sub>	A	10	10
IEC rated insulation voltage U <sub>i</sub> voltage U <sub>i</sub>	V	690	690
Terminals	Type	M3 screw	Faston 1x6.3mm 2x2.8mm
	Width	mm	6.9
Tightening torque	Nm	0.8-1	—
	Ibin	7-9	—
Conductor section maximum with 1 or 2 cables flexible without lug	mm <sup>2</sup>	2.5	2.5
	flexible with lug	mm <sup>2</sup>	2.5
	AWG	n°	14
UL/CSA and IEC/EN 60947-5-1 designation	AC	A600	A600
	DC	Q600	Q600
Mechanical life (million)	cycles	20	20

### SM1 breaker - mini-contactor connecting kits

See page 1-5.

### Positive (force) guided contacts

See page 2-57.

### Certifications and compliance

Certifications obtained:

Type	UL	cULus	EAC	CCC
BGX10...	—	●	●	●
BGX11...	—	●	●	●
BGXF10...	—	●	●	—
BGX50 00	—	●	●	—
BGX7...	—	●	●	—
BGX80 00	—	—	●	—
G32...	—	—	●	—
SMX90...	●	—	—	—

● Certified products;

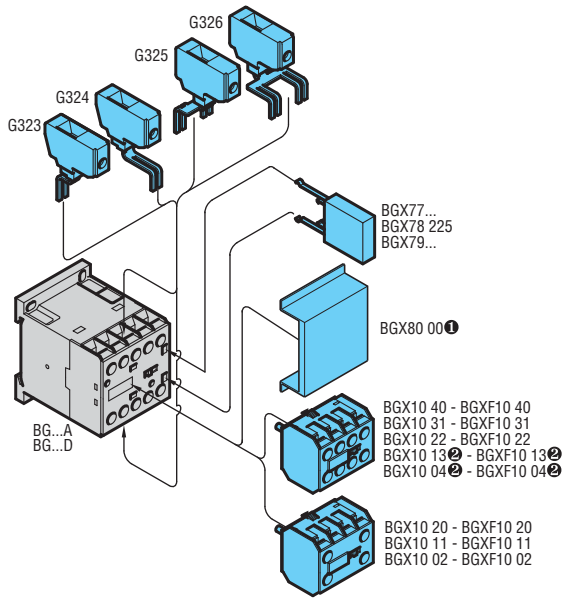
UL - UL Recognized for USA only (File E197069) as Panel and Switchboard Accessories - Component.

Products having this type of marking are intended for use as components of complete workshop-assembled equipment.

cULus - UL Listed for USA and Canada (cULus - File E93601) as Auxiliary Devices - Component.

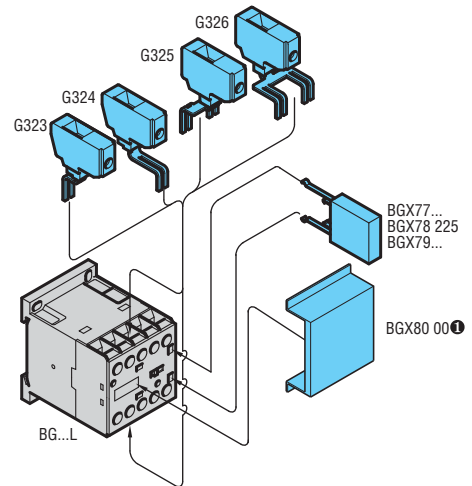
Compliant with standards: UL508, CSA C22.2 n° 14, IEC/EN 60947-1; IEC/EN 60947-5-1 for auxiliary contacts.

Combinations: Mounting position on BG...A and BG...D mini-contactors

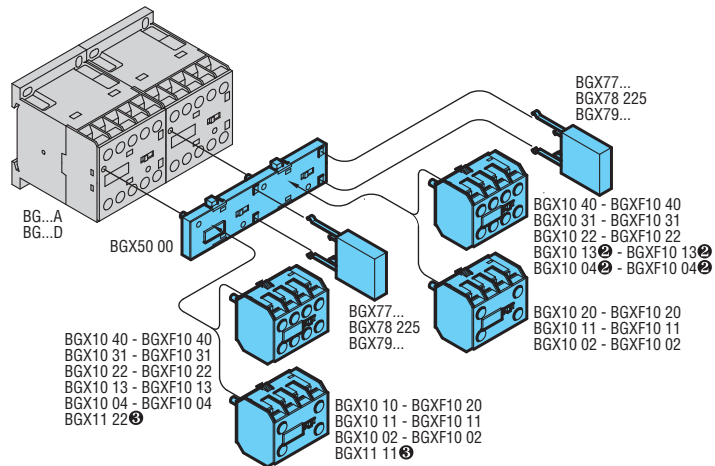


- ① Suitable for screw-termination contactors without BGX10... auxiliaries, BGX50 00 interlock or BGX7... surge suppressor.
- ② Not suitable for BG...D types.

Combinations: Mounting position on BG...L mini-contactors

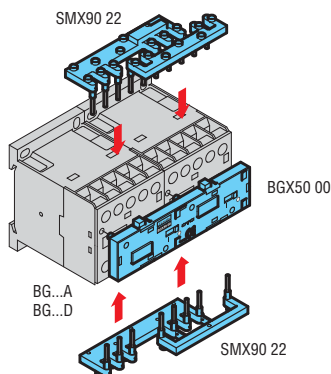


Combinations for reversing and changeover contactors assembled with BG...A and BG...D types

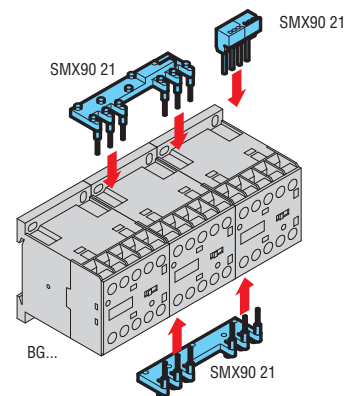


- ② Not suitable for BG...D types.
- ③ For left-hand mini-contactor of BGT, BGTP and BGC contactor assemblies only. See page 4-5.

Connections for reversing contactor assembly



Connections for star-delta assembly



### Add-on blocks

2



BFX10...



11 G484...



BFX10...



11 G418...

11 G218



11 G481...  
11 G482



11 G428...



BFX12...



11 G485...  
11 G486...  
11 G487

Order code	Characteristics <sup>7</sup>	Max qty per contactor	Qty per pkg	Wt
		n°	n°	[kg]

Auxiliary contacts with front centre mounting<sup>8</sup>.  
Screw terminals.

<b>BFX10 02</b>	2NC	1	5	0.030
<b>BFX10 11</b>	1NO + 1NC	1	5	0.030
<b>BFX10 20</b>	2NO	1	5	0.030
<b>11 G484 03</b>	3NC	1	5	0.039
<b>11 G484 12</b>	1NO + 2NC	1	5	0.039
<b>11 G484 21</b>	2NO + 1NC	1	5	0.039
<b>11 G484 30</b>	3NO	1	5	0.039
<b>BFX10 04</b>	4NC	1	5	0.048
<b>BFX10 13</b>	1NO + 3NC	1	5	0.048
<b>BFX10 22</b>	2NO + 2NC	1	5	0.048
<b>BFX10 31</b>	3NO + 1NC	1	5	0.048
<b>BFX10 40</b>	4NO	1	5	0.048
<b>BFX10 11 11</b>	1NO+1NC and 1EM+1LB (1 early make+1 late break)	1	5	0.048

**new**

Auxiliary contacts for front lateral mounting. Screw terminals<sup>9</sup>.

<b>11 G418 01</b>	1NC	2	10	0.014
<b>11 G418 01D</b>	1LB (late break)	2	10	0.014
<b>11 G418 10</b>	1NO	2	10	0.014
<b>11 G418 10A</b>	1EM (early make)	2	10	0.014

Auxiliary contacts for front lateral mounting. Faston terminals<sup>9</sup>.

<b>11 G218</b>	1NO or 1NC reversible	2	10	0.011
<b>11 G481 02</b>	2NC	2	10	0.013
<b>11 G481 11</b>	1NO + 1NC	2	10	0.013
<b>11 G481 20</b>	2NO	2	10	0.013
<b>11 G482</b>	Changeover contact	2	10	0.013

Adapter for auxiliary contact side mounting.

<b>11 G280</b>	for G218	2	10	0.008
<b>11 G419</b>	for G418	2	10	0.010
<b>11 G483</b>	for G481 and G482	2	10	0.010

Auxiliary contacts for side mounting.  
Screw terminals.

<b>BFX12 02</b>	2NC for BF00, BF09-BF38	2	5	0.044
<b>BFX12 11</b>	1NO+1NC for BF00, BF09-BF38	2	5	0.044
<b>BFX12 20</b>	2NO for BF00, BF09-BF38	2	5	0.044
<b>11 G428 01</b>	1NC	2	10	0.024
<b>11 G428 01D</b>	1LB (late break)	2	10	0.024
<b>11 G428 10</b>	1NO	2	10	0.024
<b>11 G428 10A</b>	1EM (early make)	2	10	0.024

Delayed auxiliary contacts 1NO + 1NC (pneumatic operation) on energisation for front centre mounting <sup>10</sup><sup>11</sup>.  
Screw terminals.

<b>11 G485 3</b>	3 s	1	1	0.040
<b>11 G485 6</b>	6 s	1	1	0.040
<b>11 G485 15</b>	15 s	1	5	0.040
<b>11 G485 30</b>	30 s	1	5	0.040
<b>11 G485 60</b>	60 s	1	5	0.040
<b>11 G485 120</b>	120 s	1	1	0.040

Delayed auxiliary contacts 1NO + 1NC (pneumatic operation) on de-energisation for front centre mounting <sup>10</sup><sup>11</sup>.  
Screw terminals.

<b>11 G486 3</b>	3 s	1	1	0.040
<b>11 G486 6</b>	6 s	1	1	0.040
<b>11 G486 15</b>	15 s	1	5	0.040
<b>11 G486 30</b>	30 s	1	5	0.040
<b>11 G486 60</b>	60 s	1	5	0.040
<b>11 G486 120</b>	120 s	1	1	0.040
<b>11 G487</b>	70 ms	1	1	0.040

### Operational characteristics for add-on auxiliary contacts

Type		G418 <sup>1</sup> G428 <sup>2</sup> G485 <sup>3</sup> G486 <sup>4</sup> G487 <sup>5</sup>	G484 BFX10 BFX12	G218 <sup>6</sup> G481 <sup>6</sup>	G482 <sup>6</sup>
IEC conventional free air thermal current Ith	A	10	10	10	0.1 <sup>6</sup>
IEC rated insulation voltage Ui	V	690	690	690	690
Terminals: Screw		M3.5	M3	—	—
Width	mm	7	7	—	—
Faston	mm	—	—	1x6.35 2x2.8	1x6.35 2x2.8
Tightening torque	Nm	0.8-1	0.8-1	—	—
	lbin	7-9	7-9	—	—
Conductor section maximum with 1 or 2 cables					
flexible w/o lug	mm <sup>2</sup>	2.5	2.5	—	—
flexible c/w lug	mm <sup>2</sup>	2.5	2.5	2.5	2.5
AWG	n°	14	14	14	14
Terminal protection per IEC/EN 60529		IP20 <sup>4</sup> <sup>1</sup> <sup>6</sup>	IP20	IP20 <sup>6</sup>	IP20 <sup>6</sup>
UL/CSA and IEC/EN 60947-5-1 designation	AC	A600	A600	A600	A600
	DC	P600 <sup>4</sup>	Q600	P600	P600
Mechanical life (million)	cycles	10 <sup>6</sup>	10	10	10

### SM1 breaker - contactor connecting kits

See page 1-5.

### Maximum assembly combination of add-on blocks

See pages 2-22 to 2-25.

Positive (force) guided contacts see page 2-57.

### Certifications and compliance

Certifications obtained:

Type		cULus	CSA	EAC	CCC
BFX10...	—	●	—	●	●
BFX12...	—	●	—	●	—
G218	●	—	●	●	●
G418..., G428...	●	—	●	●	●
G481...	●	—	●	●	●
G482	●	—	●	●	●
G484...	●	—	●	●	●
G485...	●	—	●	●	●
G486...	●	—	●	●	●
G487...	●	—	●	●	●

● Certified products; pending for BFX10 1111

- UL Recognized for USA only (File E93601) as Auxiliary Devices - Component.

Products having this type of marking are intended for use as components of complete workshop-assembled equipment.

cULus - UL Listed for USA and Canada (cULus - File E93601) as Auxiliary Devices.

CSA - CSA certified for Canada only (File 54332) as Auxiliary Devices for motor controllers.

Add-on auxiliary contacts are compliant with the following standards: IEC/EN 60947-1, IEC/EN 60947-5-1, UL508, CSA C22.2 n° 14.

<sup>1</sup> The contacts can also be fitted on B type contactors using the adapter G358. See pages 2-26 and 2-27.

<sup>2</sup> Highly conductive contacts.

<sup>3</sup> Gold-plated contacts inside tight casing for use in pollutant environments.

The Ith value refers to 125VAC and 30VDC.

IEC IP20 protection is warranted to equipment wired with insulated Faston terminals.

<sup>4</sup> IEC IP20 protection is warranted to equipment wired with minimum 0.75mm<sup>2</sup> conductor section.

Designation in DC is Q600 for these types.

<sup>5</sup> IEC IP20 protection is warranted to equipment wired with insulated Faston terminals.

<sup>6</sup> For particularly severe ambient conditions, consult Customer Service for information; see contact details on inside front cover.

IEC IP20 protection is warranted to equipment wired with minimum 1mm<sup>2</sup> conductor section. Mechanical life is 3 million cycles.

<sup>7</sup> All contacts are each SPST except G482 which is SPDT.

### BF00 A, BF09 A-BF110, BF50C-BF110C

Maximum assembly combination for alternating-current contactors BF00 A, BF09 A-BF110  
Maximum assembly combination for direct-current contactors BF50 C-BF110 C

		Front centre mount				Front lateral mount			Side mount	
		BFX10 02	BFX10 04	G485...	G222... <sup>④</sup>	BFX50 02	G269 2	G418...	G428...	BFX12 02
		BFX10 11	BFX10 13	G486...	G272... <sup>④</sup>	BFX50 03 <sup>①</sup>		G218	G419+ G418...	BFX12 11
		BFX10 20	BFX10 22	G487				G481...	G280+ G218	BFX12 20
			BFX10 31					G482	G483+ G481...	BFX50 00 <sup>⑤</sup>
			BFX10 40					1 type only of: G318... G319 225 G322...	G483+ G482	BFX50 01 <sup>⑤</sup>
		n° of blocks 1 type only			n° of blocks	n° of blocks 1 type only		n° of blocks	n° of blocks	n° of blocks
Contactors	Control relay	BF00 A	1	1	1	1	—	1 or 2 <sup>①</sup>	1 or 2 <sup>①</sup>	1 <sup>⑤</sup>
	Three poles	BF09 A-BF25 A	1	1	1	1	—	1 or 2 <sup>①</sup>	1 or 2 <sup>①</sup>	1 <sup>⑤</sup>
		BF26 A-BF38 A	1	1	1	1	—	1 or 2 <sup>①</sup>	1 or 2 <sup>①</sup>	1 <sup>⑤</sup>
		BF50-BF110	1	1	1	1	1	1 or 2 <sup>①</sup>	2	—
		BF50 C-BF110 C	1	1	1	1	—	1 or 2	2	—
	Four poles	BF09 A-BF25 A	1	1	1	1	1	1 or 2	1 or 2	1 <sup>⑤</sup>
		BF26 A-BF38 A	1	1	1	1	1	1 <sup>①</sup>	1 or 2 <sup>①</sup>	1 <sup>⑤</sup>
		BF50-BF80	1	1	1	1	—	1 or 2	2	—
BF65 C-BF80 C		1	1	1	1	—	1 or 2	2	—	

- ① Mounting of BFX50 03 interlock is not possible when BFX10... block with 4 contacts and/or G222 latch are mounted.
- ② To fit the mechanical interlock, the add-on fourth pole needs to be mounted on the left side of the one of the contactors.
- ③ One only side-mount block can be fitted on each contactor whenever the BFX50 0... interlock is mounted.
- ④ One BFX10... or delayed G48... contact block can be mounted on the G222 or G272 mechanical latch.
- ⑤ G222 mechanical latch.
- ⑥ G272 mechanical latch.

### BF00 D, BF09 D-BF38 D, BF00 L, BF09 L-BF38 L

Maximum assembly combination for direct-current contactors BF00 D, BF09 D-BF38 D  
Maximum assembly combination for direct-current contactors BF00 L, BF09 L-BF38 L

		Front centre mount				Front lateral mount		Side mount		
		BFX10...	BFX10...	G485...	G222...	1 type only BFX50...	BFX12...	BFX12...	BFX12...	
		...02	...11	...20	...04	...13	...22	...31	...40	
				G486...						
				G487						
		n° of blocks 1 type only				n° of blocks		n° of blocks 1 type only		
Contactors	Control relay	BF00 D	1	1	1	1	1	1	1	
	Three poles	BF00 L	1	—	1	—	1	—	1	—
		BF09 D-BF25 D	1	1	1	1	1	1	1	1
		BF26 D-BF38 D	1	1	1	1	1	1	1	1
		BF09 L-BF25 L	1	—	1	—	1	—	1	—
	Four poles	BF26 L-BF38 L	1	—	1	—	1	—	1	—
		BF09 D-BF25 D	1	1	1	1	1	1	1	1
		BF26 D-BF38 D	—	1	—	—	—	—	1 <sup>⑦</sup>	1
BF09 L-BF25 L		1	—	1	—	—	—	1	—	
BF26 L-BF38 L	—	1	—	—	—	—	1 <sup>⑦</sup>	1 <sup>⑦</sup>		

- ① Mounting of BFX50 03 interlock is not possible when BFX10... block with 4 contacts and/or G222 latch are mounted.
  - ② One only side-mount block can be fitted on each contactor whenever the BFX50 0... interlock is mounted.
  - ③ One BFX10... or delayed G48... contact block can be mounted on the G222 or G272 mechanical latch.
  - ④ To fit the mechanical interlock, the add-on fourth pole needs to be mounted on the left side of the one of the contactors.
- For other assembly combination, consult Customer Service; see contact details on inside front cover.

### Add-on blocks

2



BFX42  
BFXD42



BFX50 00    BFX50 01



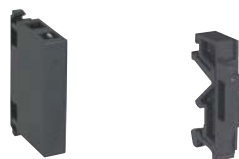
BFX50 02    BFX50 03  
11 G269 2



11 G222...  
11 G272...    11 G454  
11 G455



BFX77...  
BFX79...



11 G318...  
11 G319 225  
11 G322...    11 RE244

Order code	Characteristics	Max qty per contactor	Qty per pkg	Wt
		n°	n°	[kg]
Fourth pole.				
<b>BFX42</b>	For BF26 A-BF32 A and BF38 A	1	1	0.100
<b>BFXD42</b>	For BF26 D-BF32 D BF38 D-BF26 L-BF32 L - BF38L	1	1	0.108
Mechanical interlock.				
<b>BFX50 00</b>	Side mount for BF00, BF09-BF38	1	5	0.039
<b>BFX50 01</b>	Side mount with 2NC contacts for BF00, BF09-BF38	1	5	0.052
<b>BFX50 02</b>	Front mount, low profile for BF00, BF09-BF38	1	5	0.006
<b>BFX50 03</b>	Front mount for BF00, BF09-BF38	1	5	0.023
<b>BFX89 10</b>	Spacer for interlocking BF09-BF38 AC/DC contactors	1	10	0.017
<b>11 G269 2</b>	Front mount for BF50-BF110	1	5	0.034
Mechanical latch. Screw terminals.				
<b>11 G222</b>	For BF00, BF09-BF38	1	1	0.070
<b>11 G272</b>	For BF50-BF110	1	1	0.070
Manual closing mechanism.				
<b>11 G454</b>	For BF00, BF09-BF38	1	1	0.021
<b>11 G455</b>	For BF50-BF110	1	1	0.021
Quick connect surge suppressors for BF00A, BF09-BF38A AC contactors.				
<b>BFX77 048</b>	≤48VAC/DC (Varistor)	10	10	0.012
<b>BFX77 125</b>	48-125VAC (Varistor)	10	10	0.012
<b>BFX77 240</b>	125-240VAC (Varistor)	10	10	0.012
<b>BFX79 048</b>	≤48VAC (Resistor-Capacitor)	10	10	0.012
<b>BFX79 125</b>	48-125VAC (Resistor-Capacitor)	10	10	0.012
<b>BFX79 240</b>	125-240VAC (Resistor-Capacitor)	10	10	0.012
<b>BFX79 415</b>	240-415VAC (Resistor-Capacitor)	10	10	0.012
Surge suppressor for BF50-BF110 contactors, front mount. Faston terminals.				
<b>11 G318 48</b>	≤48VAC/DC (Varistor)	10	10	0.010
<b>11 G318 125</b>	48-125VAC/DC (Varistor)	10	10	0.010
<b>11 G318 240</b>	125-240VAC/DC (Varistor)	10	10	0.010
<b>11 G318 415</b>	240-415VAC/DC (Varistor)	10	10	0.010
<b>11 G319 225</b>	≤225VDC (Diode)	10	10	0.010
<b>11 G322 48</b>	≤48VAC (Resistor-Capacitor)	10	10	0.010
<b>11 G322 220</b>	48-240VAC (Resistor-Capacitor)	10	10	0.010
<b>11 G322 380</b>	240-415VAC (Resistor-Capacitor)	10	10	0.010
Suppressor mounting adapter for G318-G319-G322.				
<b>11 RE244</b>	For 35mm DIN rail (IEC/EN 60715)	10	10	0.004

- ① Different sized contactors can be interlocked.  
Example: BF09-BF25 with BF26-BF38.  
BFX50 01 contacts are each SPST.
- ② Replace with the digit of the voltage if 50 or 60Hz and with the letter C followed by the digit of the voltage if DC.  
Standard voltages are:  
- 50/60Hz    24 / 48 / 110-125 indicate 110 / 220-240 indicate 220 / 380-415V indicate 380.  
- DC        12 / 24 / 48 / 110-125 indicate 110 / 220-240V indicate 220.

### Operational characteristics

Type		BFX42 BFXD42	BFX50 01
IEC conventional free air thermal current Ith	A	56	10
IEC rated insulation voltage Ui	V	690	690
Terminals: Screw		M4	M3
	Width	mm	12.5    7
Tightening torque	Nm	2.5-3	0.8-1
	lbin	21.6-26.4	7-9
Conductor section Maximum with 1 or 2 cables	flexible w/o lug	mm <sup>2</sup>	16    2.5
	flexible c/w lug	mm <sup>2</sup>	16    2.5
	AWG	n°	6    14
Terminal protection per IEC/EN 60529		IP20	IP20
UL/CSA and IEC/EN 60947-5-1 designation	AC	—	A600
	DC	—	Q600
Mechanical life (million)	cycles	10	10

Type		G222	G272
Rated control circuit voltage	AC (50/60 Hz)	V	24-415    24-415
	DC	V	12-240    12-240
Power consumption with control AC		VA	40    40
		W	70    70
Minimum energising drop-out		ms	10    10
	pick-up	ms	50    100
Tightening torque	Nm	0.8-1	0.8-1
	lbin	7-9	7-9
Conductor section Maximum with 1 or 2 cables	flexible w/o lug	mm <sup>2</sup>	4    4
	flexible c/w lug	mm <sup>2</sup>	2.5    2.5
	AWG	n°	14...12    14...12

③ The condition is front IP20 protection.

### Maximum assembly combination of add-on blocks

See page 2-19, 2-22 to 2-25.

### Positive (force) guided contacts

See page 2-57 for BFX5001.

### Certifications and compliance

Certifications obtained:

Type	UL	cULus	CSA	EAC
BFX42 - BFXD42	—	●	—	●
BFX50...	—	●	—	●
BFX77...	—	●	—	●
BFX79...	—	●	—	●
G269 2	●	—	●	●
G222...	●	—	●	●
G272...	●	—	●	●

● Certified products.

UL - UL Recognized for USA only (File E93601) as Auxiliary Devices Component.  
Products having this type of marking are intended for use as components of complete workshop-assembled equipment.

cULus - UL Listed for USA and Canada (cULus - File E93602) as Magnetic motor controllers.

CSA - CSA certified for Canada only (File 54332) as Auxiliary Devices for motor controllers.

Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-5-1, UL508, CSA C22.2 n° 14.

### Accessories



BFX31...  
BFX32...



BFX 80



BFX89 01

BFX89 02



11 G265



11 BA135  
11 BA235

11 BA435

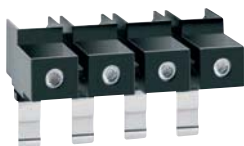


11 G231  
11 G232

11 G285



11 G271



11 G288

Order code	Characteristics	Qty per pkg	Wt [kg]
		n°	[kg]
Rigid connecting kits for three-pole reversing contactor assembly.			
<b>BFX31 01</b>	For contactors BF09 - BF25 side by side with BFX50 02 or BFX50 03 interlock	1	0.052
<b>BFX31 02</b>	For contactors BF09 - BF25 side by side with BFX50 00 or BFX50 01 interlock	1	0.054
<b>BFX32 01</b>	For contactors BF26 - BF38 side by side with BFX50... interlock	1	0.060
Rigid connecting kits for star-delta starters.			
<b>BFX31 31</b>	For contactors BF09-BF25 (line-star-delta)	1	0.058
<b>BFX32 31</b>	For contactors BF26-BF38 (line-star-delta)	1	0.064
<b>BFX32 32</b>	For contactors BF26-BF38 (line-delta) and BF09-BF25 (star)	1	0.064
Sealing cover.			
<b>BFX80</b>	For contactors BF00, BF09-BF38	10	0.001
Screw fixing adapters for contactors.			
<b>BFX89 01</b>	Universal base to screw fix BF09-BF38 contactors	5	0.016
<b>BFX89 02</b>	Screw fixing brackets for BF09-BF38 contactors	10	0.002
Power terminal shroud.			
<b>11 G265</b>	IP20 protection for 3-pole BF50 to BF110 types	10	0.015
Paralleling links.			
<b>11 BA135</b>	2 poles for BF09-BF25 types	10	0.001
<b>11 BA235</b>	2 poles for BF26-BF38 types	10	0.003
<b>11 BA435</b>	3 poles for BF50-BF110 types	10	0.030
One-pole enlarged terminals.			
<b>11 G231</b>	1-6 mm <sup>2</sup> for BF09-BF25 types	12	0.009
<b>11 G232</b>	1-16 mm <sup>2</sup> for BF26-BF38 types	12	0.014
Three-pole enlarged terminals.			
<b>11 G271</b>	1-50 mm <sup>2</sup> for BF50-BF110 types	10	0.142
Four-pole enlarged terminals.			
<b>11 G288</b>	1x50mm <sup>2</sup> for contactors BF50-BF110 types	10	0.194
Auxiliary terminal.			
<b>11 G285</b>	For BF50-BF110 types	8	0.009
Marking element for BF00, BF09-BF110 contactors.			
<b>BFX30</b>	Blank label for writing	50	0.001

① For 3-pole contactors, BF50-BF110 types only.  
N.B. Two pieces are required per contactor.

② An additional 1-50mm<sup>2</sup> conductor can be fitted in the contactor terminal.

### Operational characteristics of enlarged and auxiliary terminals

Type		G231	G232	G285	G271 G288
Tightening torque	Nm	1.5-1.8	2.5-3	0.8-1	5
	lbin	13.2-18	7-9	7.9	44.3
Tool	Type	PH1	PH2	PH1	Metric Allen 4

### Certifications and compliance

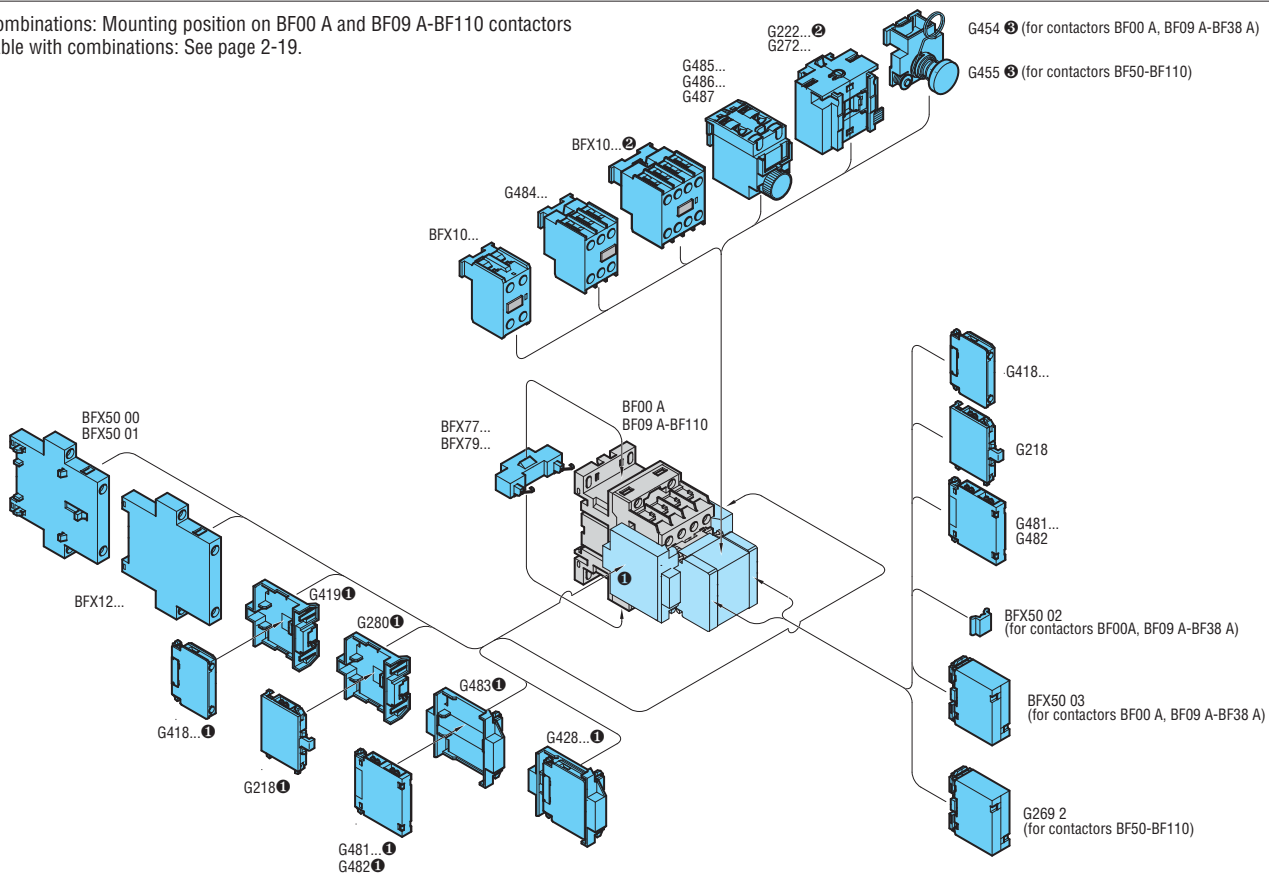
Certifications obtained: GOST for all; UL Listed, for USA and Canada (cULus - File E93602), under Magnetic Motor Controllers for BFX31 01, BFX31 02, BFX32 01, BFX31 31, BFX32 31 and BFX32 32 as rigid kits, G271 and G288 as enlarged terminal kits.

Compliant with standards: IEC/EN 60947-1, UL508, CSA C22.2 n° 14.

### Add-on blocks for AC contactors

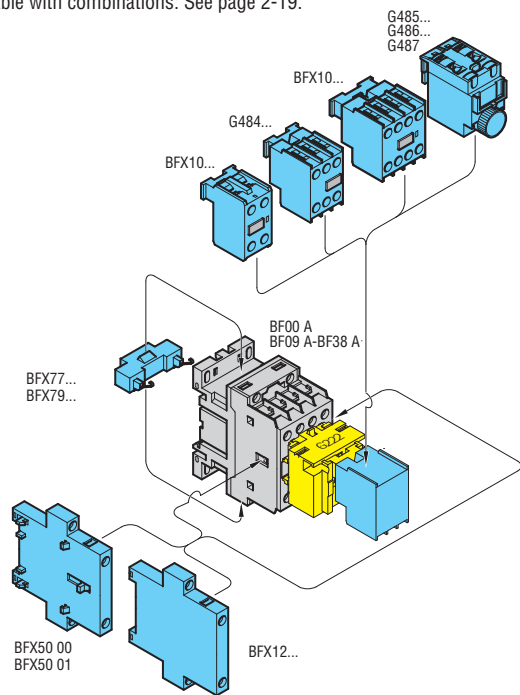
2

Combinations: Mounting position on BF00 A and BF09 A-BF110 contactors  
Table with combinations: See page 2-19.

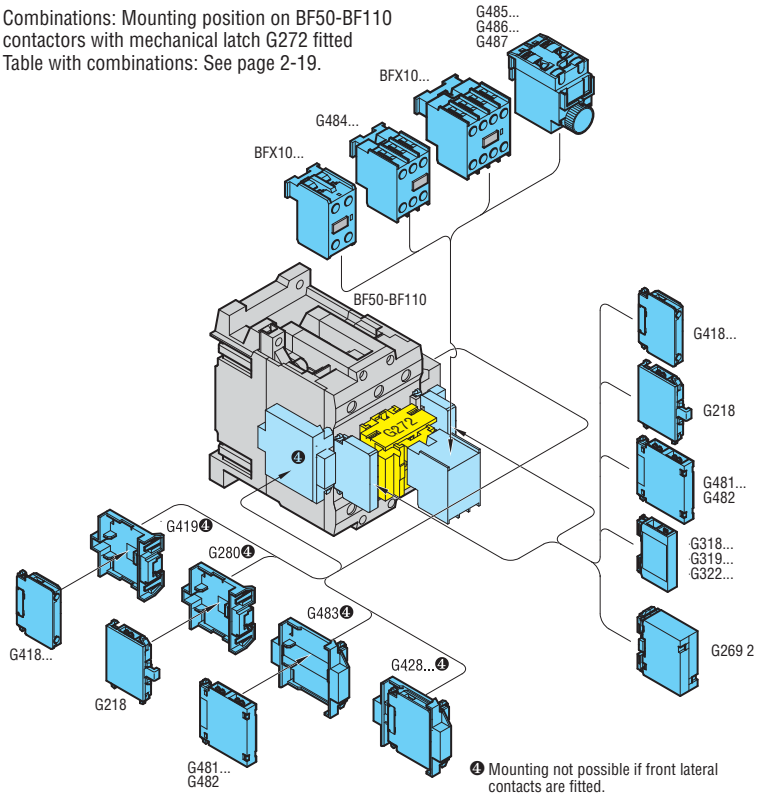


- ❶ Mounting not possible if front lateral contacts or mechanical interlock BFX50 00 or BFX50 01 are mounted.
- ❷ If the G222 latch is mounted, no front lateral contacts can be fitted on contactors BF00A and BF09A to BF38A.
- ❸ No add-on block can be mounted on front when the manual closing mechanism G454 or G455 is fitted.

Combinations: Mounting position on BF00 A and BF09 A-BF38 A contactors with mechanical latch G222 fitted  
Table with combinations: See page 2-19.



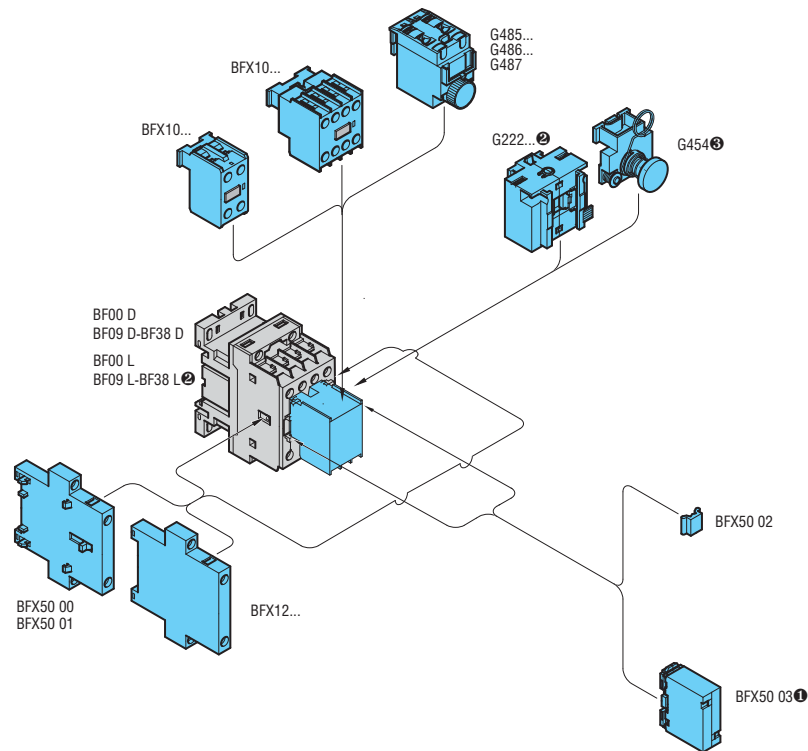
Combinations: Mounting position on BF50-BF110 contactors with mechanical latch G272 fitted  
Table with combinations: See page 2-19.



- ❹ Mounting not possible if front lateral contacts are fitted.

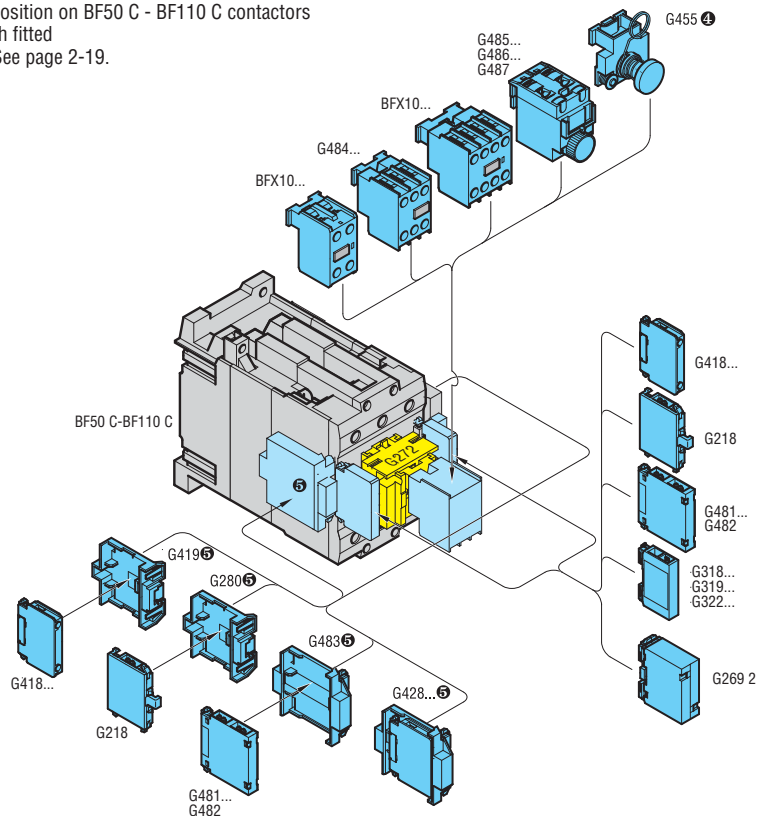
### Add-on blocks for DC and DC low consumption contactors

Combinations: Mounting position on BF00 and BF09-BF38, D and L versions  
Table with combinations: See page 2-19.



- ❶ Mounting not possible when the G222 mechanical latch is fitted.
- ❷ The G222 mechanical latch cannot be fitted on BF26 L - BF38 L four-pole types.
- ❸ No add-on block can be mounted on front when the G454 manual closing mechanism is fitted.

Combinations: Mounting position on BF50 C - BF110 C contactors with G272 mechanical latch fitted  
Table with combinations: See page 2-19.



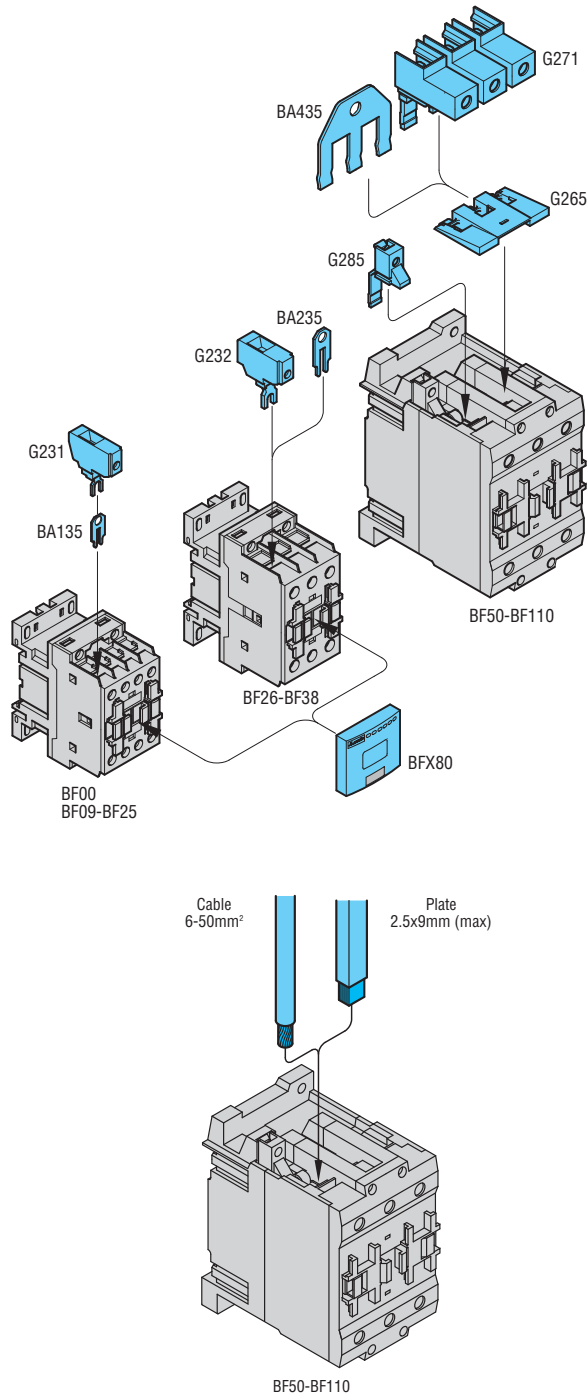
- ❹ No add-on block can be mounted on front when the G455 manual closing mechanism is fitted.
- ❺ Mounting not possible if front lateral contacts are fitted.



### Accessories for AC, DC and DC low consumption contactors

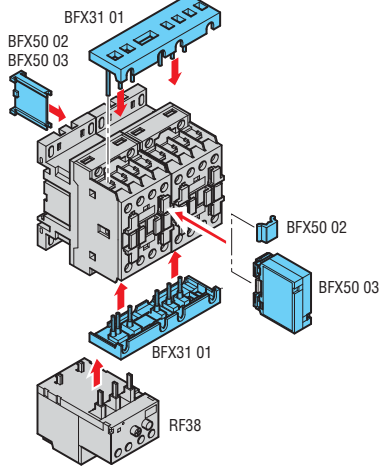
2

Combinations

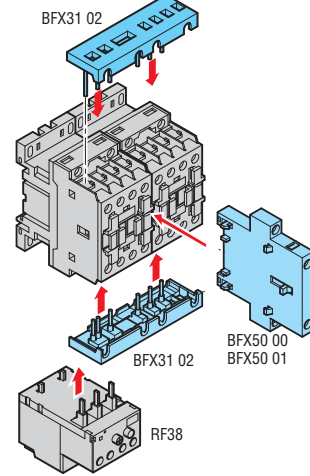


### Accessories for AC, DC and DC low consumption contactors

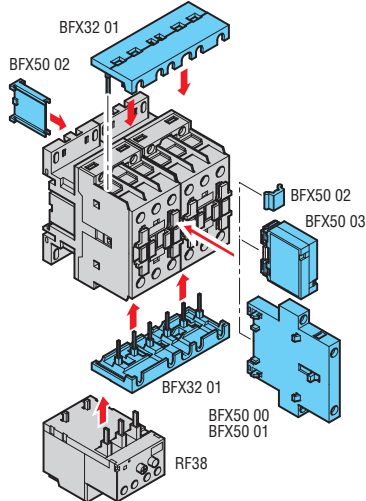
Rigid reversing contactor assembly connecting kits for BF09-BF25 contactors with BFX50 02 or BFX50 03 mechanical interlock



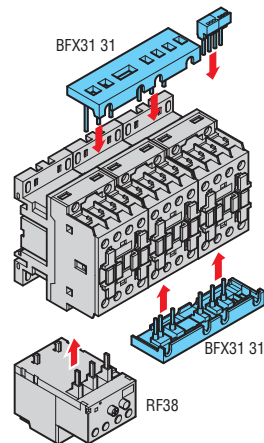
Rigid reversing contactor assembly connecting kits for BF09-BF25 contactors with BFX50 00 or BFX50 01 mechanical interlock



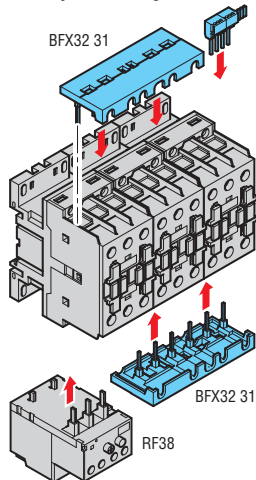
Rigid reversing contactor assembly connecting kits for BF26-BF38 contactors with BFX50 02 or BFX50 03 mechanical interlock



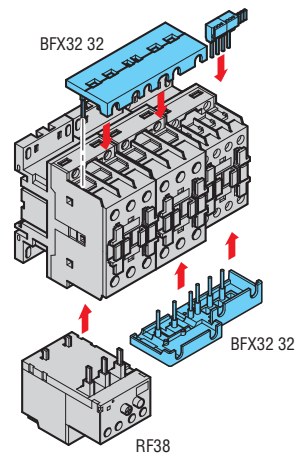
Rigid star-delta starter assembly connecting kits for BF09-BF25 contactors



Rigid star-delta starter assembly connecting kits for BF26-BF38 contactors



Rigid star-delta starter assembly connecting kits for BF26-BF38 (line-delta) and BF09-BF25 (star) contactors



### Add-on blocks

2



11 G350 - 11 G354



11 G358

Order code	Characteristics	Max qty per contactor	Qty per pkg	Wt
		n°	n°	[kg]

Faston terminals.

Auxiliary contacts for side mounting.

11 G350①	2NO+1NC or 1NO+2NC reversible (SPST ea)	4①	1	0.082
11 G354①	1NO+1NC (SPST ea)	4①	1	0.078

Contact block adapter.

11 G358	To fit auxiliary contacts BFX10, G484, G485, G486 and G487 types, on B115-B630 1000 contactors; see page 2-18.	4	5	0.050
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Mechanical interlock.

11 G355②③	Side by side	1	1	0.026
11 G356 1②④	One on top of other	1	1	0.120
11 G356 2②④	One on top of other	1	1	0.126
11 G356 3②④	One on top of other	1	1	0.132
11 G356 4②④	One on top of other	1	1	0.140
11 G356 5②④	One on top of other	1	1	0.146
11 G356 6②⑤	One on top of other	1	1	0.150

Mechanical latch.

11 G495⑥⑦⑧	For B115-B630	1	1	0.795
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### Accessories



11 G360 - 11 G361 - 11 G363



11 G527 - 11 G528 - 11 G529  
11 G530



11 G370



11 G371



11 BA126 1      11 BA126 2

3958...

Order code	Characteristics	Qty per pkg	Wt
		n°	[kg]

Power terminal protection.

11 G360⑨	For contactor B115	6	0.026
11 G361⑨	For contactors B145-B180	6	0.026
11 G363⑨	For contactors B250-B310-B400	6	0.046
11 G527	For contactor B500	1	0.238
11 G528	For contactor B500 4	1	0.265
11 G529	For contactor B630	1	0.238
11 G530	For contactor B630 4	1	0.266

3 pole star connecting bars.

11 BA1595	For B115-B145-B180	1	0.065
11 BA1721	For B250-B310-B400	1	0.140
11 BA1846	For B500-B630	1	0.341

2 pole bars for parallel arrangement.

11 BA1594	For B115-B145-B180	1	0.095
11 BA1720	For B250-B310-B400	1	0.149
11 BA1845	For B500-B630	1	0.322

Terminal adapter.

11 G370	To transform Faston terminals of auxiliary contacts and coils into screw terminals	10	0.003
11 G371	To transform both coil Faston terminals into screw terminals	5	0.022

Marking elements.

11 BA126 1	Label for alphanumeric symbols	50	0.001
11 BA126 2	Label for writing	50	0.001
3958⑩	Set of 100 alphanumeric symbols	1	0.010

### Operational characteristics of auxiliary contacts

Type	G350-G354	
IEC conventional free-air thermal current I <sub>th</sub>	A	16
IEC rated insulation voltage U <sub>i</sub>	V	690
Terminals	Faston	mm 1-6.35 2-2.8
Conductor section maximum with 1 or 2 cables	flexible c/w lug	mm <sup>2</sup> 2.5
	AWG	n° 14
UL/CSA and IEC/EN 60947-5-1 designation	AC	A600
	DC	P600
Mechanical life (million)	cycles	5

### Operational characteristics of mechanical latch

Type	G495⑥	
Rated control circuit voltage	AC (50/60Hz)	V 48-480
	DC	V 48-480
Power consumption	AC	VA 1500
	DC	W 1100
Minimum energising	drop-out	ms 40
	pick-up	ms 300
Terminals	Faston	mm 1-6.3x0.8 2-2.8x0.8

### Operational characteristics of terminal adapters

Type	G370-G371	
Tightening torque	Nm	1
	Ibin	8.9
Tool	Type	Phillips 2
Conductor section 1 or 2 cables	mm <sup>2</sup>	4
	AWG	10

### Certifications and compliance

Certifications obtained:

Type	UL	CSA	GOST	CCC
G350	●	●	●	●
G354	●	●	●	—
G355	—	●	●	—
G356 ...	—	●	●	—
G360	—	●	●	—
G361	—	●	●	—
G362	—	●	●	—
G363	—	●	●	—
G370	—	●	●	—

● Certified products.

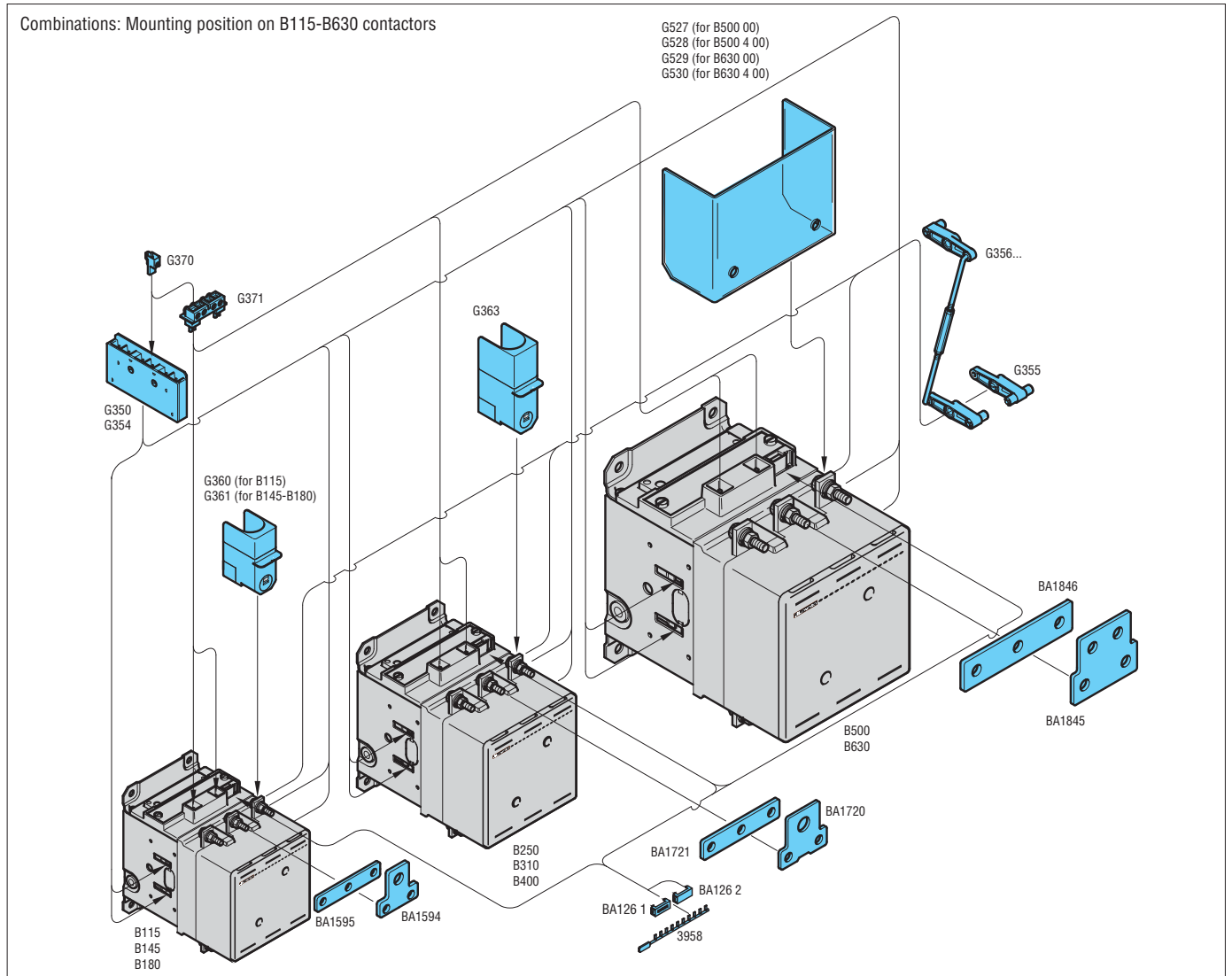
UL - UL Recognized for USA only (File E93601) as Auxiliary Devices - Component.

Products having this type of marking are intended for use as components of complete workshop-assembled equipment.

CSA - CSA certified for Canada only (File 54332) as Auxiliary Devices for motor controllers.

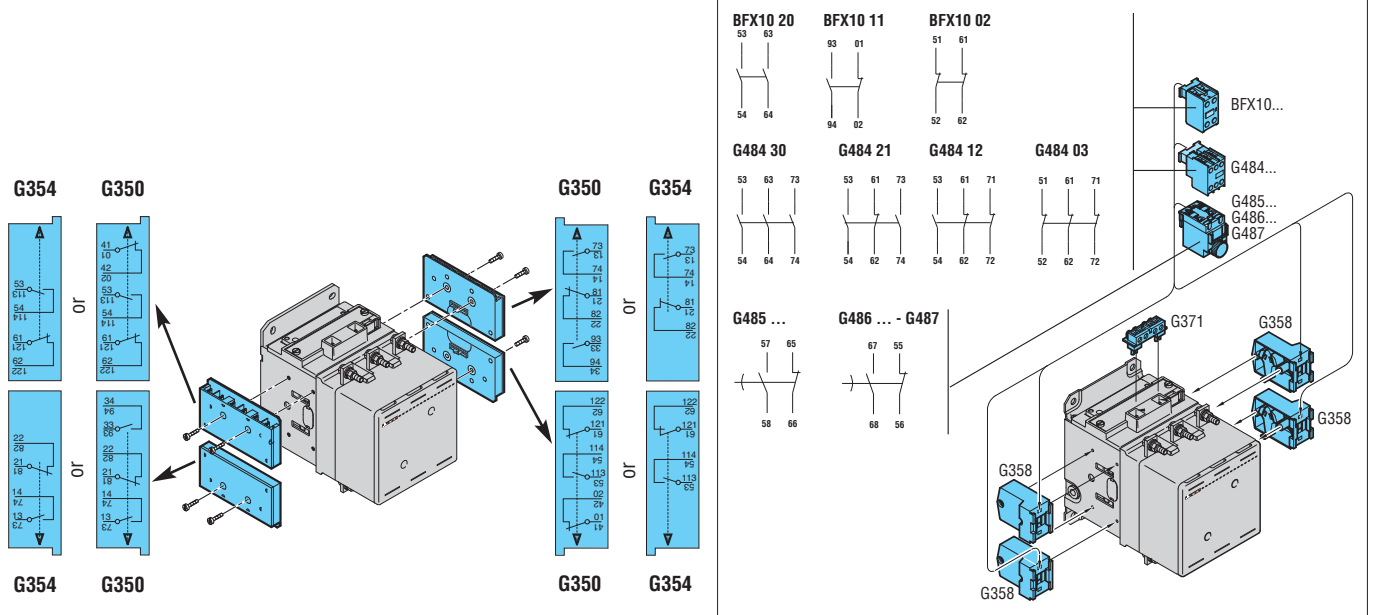
Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-4-1, UL508, CSA C22.2 n° 14; add-on auxiliary contacts also comply with IEC/EN 60947-5-1.

- ① Only one piece can be mounted on B1250 or B1600 type.
- ② Not suitable for B630 1000, B1250, B1600.
- ③ For use with three-pole B630 1000, consult Customer Service; see contact details on inside front cover.
- ④ Allowed distances see page 2-70.
- ⑤ To interlock two contactors B1250 or B1600, it is imperative to use two pieces of type G356 6, one fixed on the left side and the other on the right.
- ⑥ Replace with the digit of the voltages if 50 or 60 Hz or with the letter C followed by voltage if DC. The standard voltages are:  
— AC 50/60Hz 48 - 110/125 indicate 110 - 220/240 indicate 220 - 380/415 indicate 380  
— DC 48 - 110/125 indicate 110 - 220/240 indicate 220
- ⑦ It can be mounted only in contactors if predisposed for it.
- ⑧ Except for B310 and B310 4.
- ⑨ Provided for one pole terminal only. Example: For three-pole contactors, purchase 3 pieces for the upper terminals only or 6 pieces for all upper and lower terminals.
- ⑩ Replace with the required alphanumeric symbol; each package contains 100 pieces of the same symbol.



The add-on auxiliary contact blocks G350 and G354 can be applied to contactors B115-B630 1000 only up to a maximum of four pieces for each contactor, for a total of 12 contacts.  
The contact block G350 provides a 2NO+1NC or 1NO+2NC combination depending on its mounting position; see the drawing below. The G354 block consists of 1NO+1NC.

Contact blocks, BFX10 with 2 contacts, G484, G485, G486 and G487 types, can be mounted using the G358 adapter, refer to page 2-18 for exact types and order codes of the blocks.  
A maximum of four adapters can be possibly used per contactor and each adapter can hold one BFX10, G484, G485, G486 and G487.



### AC coils

2



BFX91A...



BFX92A...



11 BA705...

Order code	Rated frequency and voltage		Qty per pkg	Wt	
	[Hz]	[V]			n°
For contactors BF00 A-BF09 A-BF12 A-BF18 A-BF25 A					
<b>BFX91A 024</b>	50/60	24VAC	1	0.085	
<b>BFX91A 048</b>		48VAC	1	0.085	
<b>BFX91A 110</b>		110VAC	1	0.085	
<b>BFX91A 230</b>		230VAC	1	0.085	
<b>BFX91A 400</b>		400VAC	1	0.085	
<b>BFX91A 024 60</b>	60	24VAC	1	0.085	
<b>BFX91A 048 60</b>		48VAC	1	0.085	
<b>BFX91A 120 60</b>		120VAC	1	0.085	
<b>BFX91A 220 60</b>		220VAC	1	0.085	
<b>BFX91A 230 60</b>		230VAC	1	0.085	
<b>BFX91A 460 60</b>		460VAC	1	0.085	
<b>BFX91A 575 60</b>		575VAC	1	0.085	
For contactors BF26 A-BF32 A-BF38 A					
<b>BFX92A 024</b>		50/60	24VAC	1	0.088
<b>BFX92A 048</b>	48VAC		1	0.088	
<b>BFX92A 110</b>	110VAC		1	0.088	
<b>BFX92A 230</b>	230VAC		1	0.088	
<b>BFX92A 400</b>	400VAC		1	0.088	
<b>BFX92A 024 60</b>	60	24VAC	1	0.088	
<b>BFX92A 048 60</b>		48VAC	1	0.088	
<b>BFX92A 120 60</b>		120VAC	1	0.088	
<b>BFX92A 220 60</b>		220VAC	1	0.088	
<b>BFX92A 230 60</b>		230VAC	1	0.088	
<b>BFX92A 460 60</b>		460VAC	1	0.088	
<b>BFX92A 575 60</b>		575VAC	1	0.088	
For BF50-BF65-BF80-BF95-BF110 contactors.					
<b>11 BA705 024</b>		50/60	24VAC	1	0.145
<b>11 BA705 048</b>	48VAC		1	0.145	
<b>11 BA705 110</b>	110VAC		1	0.145	
<b>11 BA705 230</b>	230VAC		1	0.145	
<b>11 BA705 400</b>	400VAC		1	0.145	
<b>11 BA705 024 60</b>	60	24VAC	1	0.145	
<b>11 BA705 048 60</b>		48VAC	1	0.145	
<b>11 BA705 120 60</b>		120VAC	1	0.145	
<b>11 BA705 220 60</b>		220VAC	1	0.145	
<b>11 BA705 230 60</b>		230VAC	1	0.145	
<b>11 BA705 460 60</b>		460VAC	1	0.145	
<b>11 BA705 575 60</b>		575VAC	1	0.145	

① Four-terminal coil.

#### Operational characteristics for BFX91 A or BFX92 A coils

AC control				
Rated voltage at 50/60, 60Hz		V	12-600	
Operating voltage limits				
50/60Hz coil powered at	50Hz	pick-up	% Us	80-110
		drop-out	% Us	20-55
60Hz coil powered at	60Hz	pick-up	% Us	85-110
		drop-out	% Us	20-55
Average coil consumption at ≤20°C				
50/60Hz coil powered at	50Hz	in-rush	VA	75
		holding	VA	9
60Hz coil powered at	60Hz	in-rush	VA	70
		holding	VA	6.5
60Hz coil powered at	60Hz	in-rush	VA	75
		holding	VA	9
Dissipation	at 50Hz	W	2.5	

#### Operational characteristics for BA705 coil

AC control				
Rated voltage at 50/60, 60Hz		V	12-600	
Operating voltage limits				
50/60Hz coil powered at	50Hz	pick-up	% Us	80-110
		drop-out	% Us	20-55
60Hz coil powered at	60Hz	pick-up	% Us	85-110
		drop-out	% Us	40-55
Average coil consumption at ≤20°C				
50/60Hz coil powered at	50Hz	in-rush	VA	220
		holding	VA	18
60Hz coil powered at	60Hz	in-rush	VA	200
		holding	VA	15
60Hz coil powered at	60Hz	in-rush	VA	220
		holding	VA	18
Dissipation	at 50Hz	W	6	

#### Materials

Class F enameled copper wire.

#### Special versions

For coils with non standard voltages, consult Customer Service for information; see contact details on inside front cover.

### DC coils



11 BA911...

Order code	Rated voltage	Qty per pkg	Wt
	[V]	n°	[kg]
For BF50 C-BF110 C contactors.			
<b>11 BA911 12</b>	12VDC	1	0.380
<b>11 BA911 24</b>	24VDC	1	0.380
<b>11 BA911 48</b>	48VDC	1	0.380
<b>11 BA911 60</b>	60VDC	1	0.380
<b>11 BA911 110</b>	110VDC	1	0.380
<b>11 BA911 125</b>	125VDC	1	0.380
<b>11 BA911 220</b>	220VDC	1	0.380

**NOTE:** No coil replacement for contactors BF00 D, BF09 D-BF38 D, BF00 L, BF09 L-BF38 L, is possible.

### Operational characteristics for BA911 coil

DC control			
Rated voltage		V	12-600
Operating limits	pick-up	% Us	80-110
	drop-out	% Us	10-25
Average dissipation in-rush/holding	≤20°C	W	15

### Materials

Class F enamelled copper wire.

### Special versions

For coils with non standard voltages, consult Customer Service for information; see contact details on inside front cover.

### AC/DC coils

2



Coil



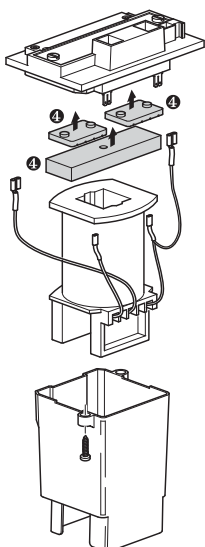
Bridge rectifier



Coil protection



Coil assembly



Order code	Rated voltage AC 50/60 Hz and DC	Qty per pkg	Wt
	[V]	n°	[kg]

Coil for B115-B145-B180 contactors.

11 BA11574 24	24VAC/DC	1	0.800
11 BA11574 48	48VAC/DC	1	0.800
11 BA11574 60	60VAC/DC	1	0.800
11 BA11574 110	110-125VAC/DC	1	0.800
11 BA11574 220	220-240VAC/DC	1	0.800
11 BA11574 380	380-415VAC/DC	1	0.800
11 BA11574 440	440-480VAC/DC	1	0.800

Coil for B250-B310-B400 contactors.

11 BA1699 24	24VAC/DC	1	1.800
11 BA1699 48	48VAC/DC	1	1.800
11 BA1699 60	60VAC/DC	1	1.800
11 BA1699 110	110-125VAC/DC	1	1.800
11 BA1699 220	220-240VAC/DC	1	1.800
11 BA1699 380	380-415VAC/DC	1	1.800
11 BA1699 440	440-480VAC/DC	1	1.800

Coil for B500-B630-B630 1000 contactors.

11 BA1800 48	48VAC/DC	1	3.400
11 BA1800 60	60VAC/DC	1	3.400
11 BA1800 110	110-125VAC/DC	1	3.400
11 BA1800 220	220-240VAC/DC	1	3.400
11 BA1800 380	380-415VAC/DC	1	3.400
11 BA1800 440	440-480VAC/DC	1	3.400

Coil for B1250-B1600 contactors.

11 BA1800 110 <sup>①</sup>	110-125VAC <sup>①</sup>	1	3.400
11 BA1800 220 <sup>①</sup>	220-240VAC <sup>①</sup>	1	3.400

Order code	For contactor	Qty per pkg	Wt
		n°	[kg]

Bridge rectifier (Faston terminals).

11 BA1575 1	B115-B145-B180	1	0.170
11 BA1700 1	B250-B310-B400	1	0.230
11 BA1799	B500-B630-B630 1000 B1250-B1600	1	0.520

Coil protection

11 BA1553	B115-B145-B180	1	0.042
11 BA1678	B250-B310-B400	1	0.079
11 BA1803	B500-B630-B630 1000 B1250-B1600	1	0.164

Coil assembly (Coil, rectifier and coil protection).

11 BA1546 <sup>②</sup>	B115-B145-B180	1	1.220
11 BA1671 <sup>②</sup>	B250-B310-B400	1	2.290
11 BA1796 <sup>③</sup>	B500-B630-B630 1000 B1250-B1600	1	4.650

① Available for AC supply only.

② Add the coil voltage digit. Standard voltages are:  
– AC/DC 24 / 48 / 60 / 110-125 indicate 110 / 220-240 indicate 220 /  
380-415 indicate 380 / 440-480V indicate 440.

Example: 11 BA1546 110 for B115-B180 contactor coil assembly suitable for 110-125VAC/DC supply.

③ Add the coil voltage digit. Standard voltages are:  
– AC/DC 48 / 60 / 110-125 indicate 110 / 220-240 indicate 220 /  
380-415 indicate 380 / 440-480V indicate 440.

Example: 11 BA1796 110 for B500-B1600 contactor coil assembly suitable for 110-125VAC/DC supply.

For B1250 and B1600, add only 110 for 110-125VAC or 220 for 220-240VAC since these are the only standard voltages available.

④ During coil replacement operations, always reinsert dampers (1 pair for B115-B180; 2 pairs for B250-B1600) and fixed magnetic core which one finds in the original coil assembly.

### Operational characteristics

AC and DC control

For contactor type		B115 - B145 - B180
Supply voltage		AC and DC
Rated control voltage	V	24-480
Operating limits	pick-up	% Us 80-110
	drop-out	% Us 20-60
Consumption	in-rush	VA/W 300
	holding	VA/W 10
Dissipation	W	10

For contactor type		B250 - B310 - B400
Supply voltage		AC and DC
Rated control voltage	V	24-480
Operating limits	pick-up	% Us 80-110
	drop-out	% Us 20-60
Consumption	in-rush	VA/W 300
	holding	VA/W 10
Dissipation	W	10

For contactor type		B500 - B630 - B630 1000
Supply voltage		AC and DC
Rated control voltage	V	48-480
Operating limits	pick-up	% Us 80-110
	drop-out	% Us 20-60
Consumption	in-rush	VA/W 400
	holding	VA/W 18
Dissipation	W	18

For contactor type		B1250 - B1600
Supply voltage		in AC only
Rated control voltage	V	110-240
Operating limits	pick-up	% Us 80-110
	drop-out	% Us 20-60
Consumption	in-rush	VA/W 800
	holding	VA/W 45
Dissipation	W	40

### Materials

Class F enamelled copper wire.

### Coil assembly

Comprises the coil, bridge rectifier, fixed core, coil protection, cross piece and fixing screws.

### Special versions

For coils with non standard voltages, consult Customer Service for information; see contact details on inside front cover.

### Main contacts for BF contactors



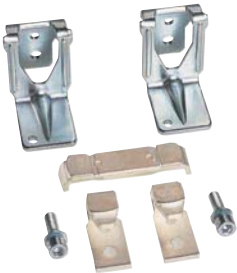
BFX99...



11 G274... - 11 G275... - 11 G276... 11 G475 - 11 G476

Order code	For contactor	Qty per pkg	Wt
		n°	[kg]
Main contacts 3 or 4 pole set complete with screws.			
<b>BFX99 026T</b>	BF26	1	0.038
<b>BFX99 026F</b>	BF26 T4	1	0.051
<b>BFX99 032T</b>	BF32	1	0.070
<b>BFX99 038T</b>	BF38	1	0.070
<b>BFX99 038F</b>	BF38 T4	1	0.093
<b>11 G274</b>	BF50	1	0.095
<b>11 G274 4</b>	BF50 40	1	0.127
<b>11 G275</b>	BF65	1	0.095
<b>11 G275 4</b>	BF65 40	1	0.127
<b>11 G276</b>	BF80	1	0.111
<b>11 G276 4</b>	BF80 40	1	0.148
<b>11 G475</b>	BF95	1	0.111
<b>11 G476</b>	BF110	1	0.111

### Main contacts and arc chutes for B contactors



11 G380... - 11 G381... - 11 G382...  
11 G383... - 11 G384... - 11 G385...  
11 G525... - 11 G526... - 11 G537...

Order code	For contactor	Qty per pkg	Wt
		n°	[kg]
Main contacts 3 or 4 pole set complete with Allen screws and key for contact replacement.			
<b>11 G380</b>	B115	1	0.440
<b>11 G380 4</b>	B115 4	1	0.580
<b>11 G381</b>	B145	1	0.440
<b>11 G381 4</b>	B145 4	1	0.580
<b>11 G382</b>	B180	1	0.440
<b>11 G382 4</b>	B180 4	1	0.580
<b>11 G383</b>	B250	1	0.770
<b>11 G383 4</b>	B250 4	1	1.030
<b>11 G385</b>	B310	1	0.770
<b>11 G385 4</b>	B310 4	1	1.030
<b>11 G384</b>	B400	1	0.770
<b>11 G384 4</b>	B400 4	1	1.030
<b>11 G525</b>	B500	1	2.520
<b>11 G525 4</b>	B500 4	1	3.360
<b>11 G526</b>	B630	1	2.660
<b>11 G526 4</b>	B630 4	1	3.550
<b>11 G537</b>	B630 1000	1	2.660
<b>11 G537 4</b>	B630 1000 4	1	3.550
<b>11 G538</b>	B1250 24	1	5,040
<b>11 G538 4</b>	B1250 4 24	1	6,720
<b>11 G539</b>	B1600 24	1	5,320
<b>11 G539 4</b>	B1600 4 24	1	7,100
Arc chutes.			
<b>11 BA1588</b>	B115-B145-B180	1	0.755
<b>11 BA1589</b>	B115 4-B145 4-B180 4	1	1.000
<b>11 BA1713</b>	B250-B310-B400	1	1.210
<b>11 BA1714</b>	B250 4-B310 4-B400 4	1	1.600
<b>11 BA1838</b>	B500-B630-B630 1000	1	1.910
<b>11 BA1839</b>	B500 4-B630 4-B630 1000 4	1	2.490



Arc chute

### Special versions

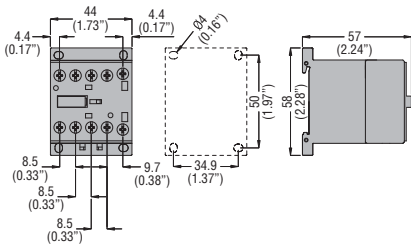
For non standard spare contact configurations, contact Customer Service; see contact details on inside front cover.

NOTE: For B1250 and B1600 contactor spares, consult Customer Service for information; see contact details on inside front cover.

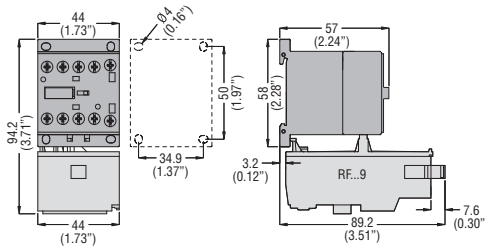


### THREE AND FOUR-POLE BG MINI-CONTACTORS AND CONTROL RELAY WITH AC OR DC COIL

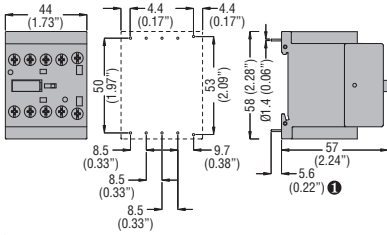
**BG...** mini-contactors or control relay



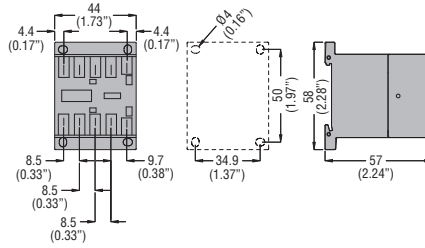
**BG...** mini-contactors with screw terminals and **RF...9** thermal relay



**BGP...**  
with rear PCB solder pins



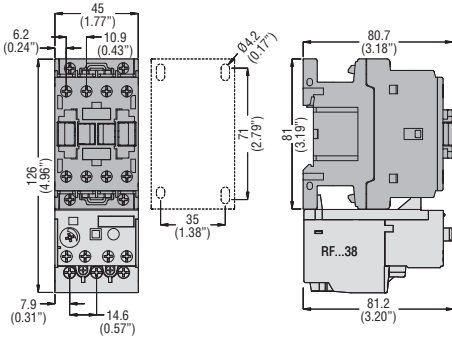
**BGF...**  
with Faston terminals



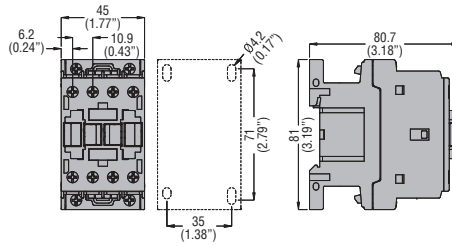
● Recommended PCB drillings 1.7-2mm.

### BF CONTACTORS WITH AC COIL

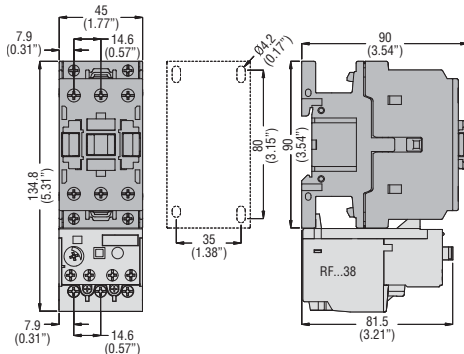
**BF09A - BF12A - BF18A - BF25A** three poles  
with **RF...38** thermal relay



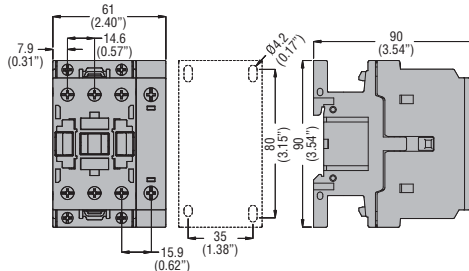
**BF00A...** control relay  
**BF09T...A - BF12T...A - BF18T...A** four poles



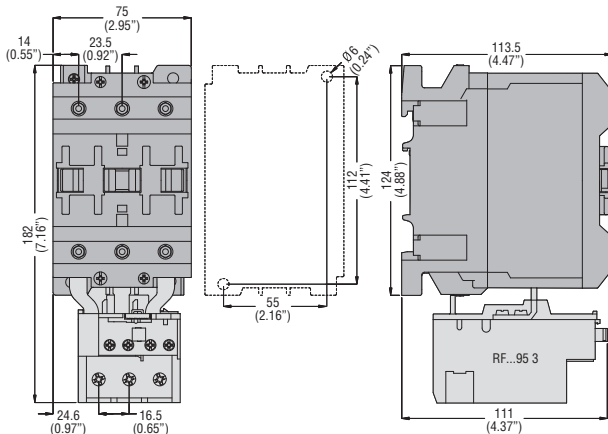
**BF26A - BF32A - BF38A** three poles  
with **RF...38** thermal relay



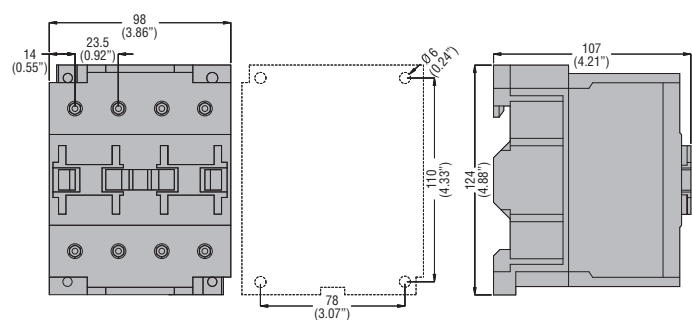
**BF26 T...A - BF38 T...A** four poles



**BF50 00 - BF65 00 - BF80 00 - BF95 00 - BF110 00** three poles  
with **RF...95 3** thermal relay

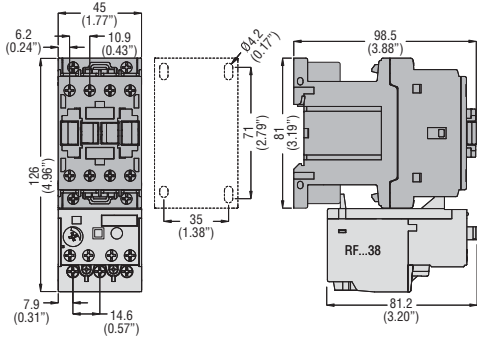


**BF50 40 - BF65 40 - BF80 40 - BDF80 40** four poles

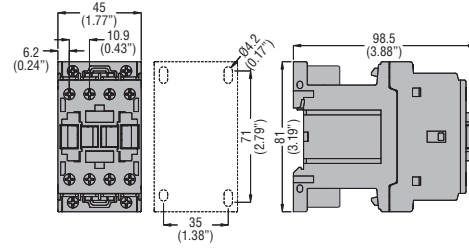


### THREE AND FOUR-POLE CONTACTORS IN DC

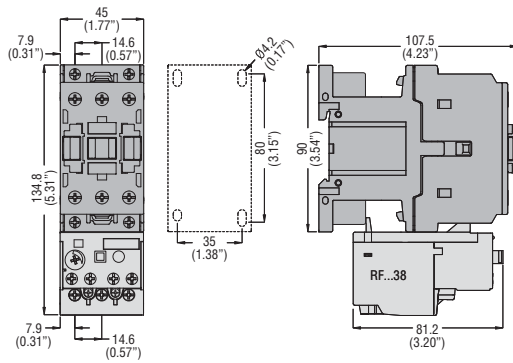
**BF09... - BF12... - BF18... - BF25...D** and **L** three poles with **RF...38** thermal relay



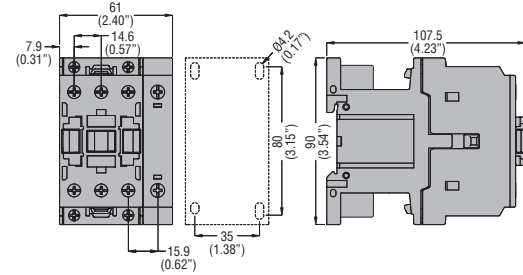
**BF00...D** and **BF00...L** control relays  
**BF09 T... - BF18 T... D** and **L** four poles



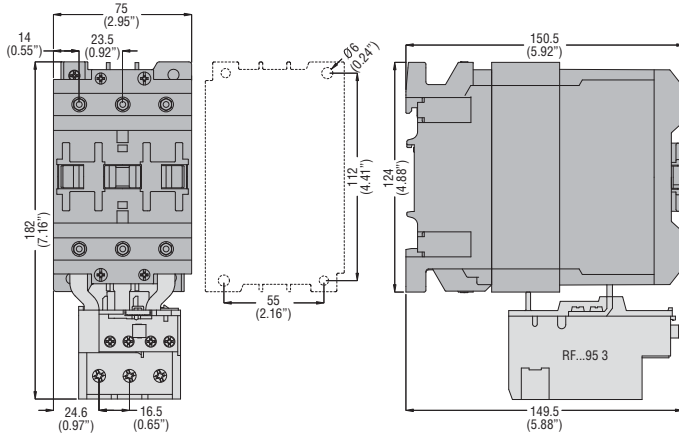
**BF26... - BF32... - BF38... D** and **L** three poles with **RF...38** thermal relay



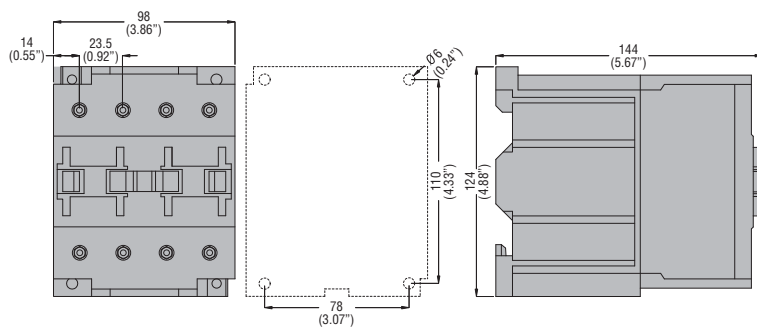
**BF26 T... - BF38 T... D** and **L** four poles



**BF50C 00 - BF65C 00 - BF80C 00 - BF95C 00 - BF110C 00** three poles with **RF...95 3** thermal relay



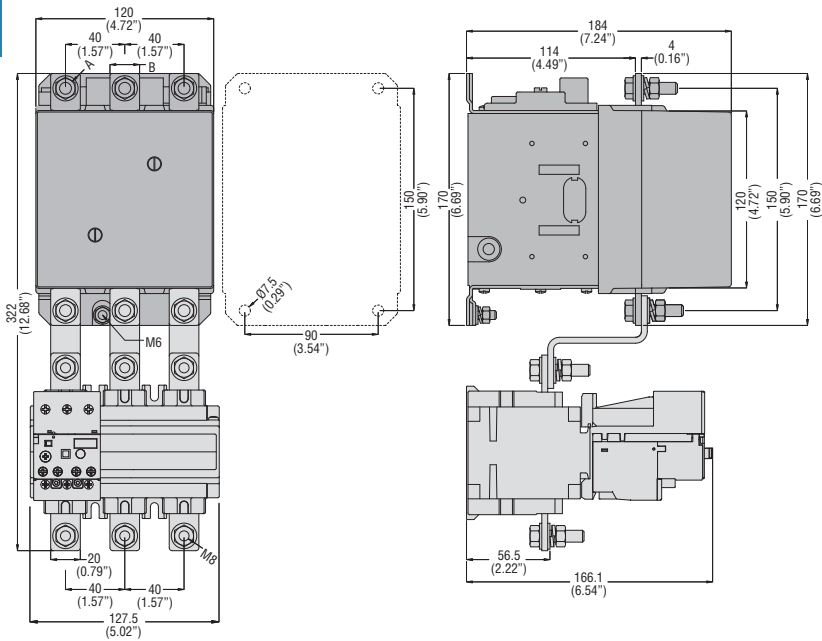
**BF65C 40 - BF80C 40 - BFD80C 40** four poles



### B CONTACTORS WITH AC/DC COIL

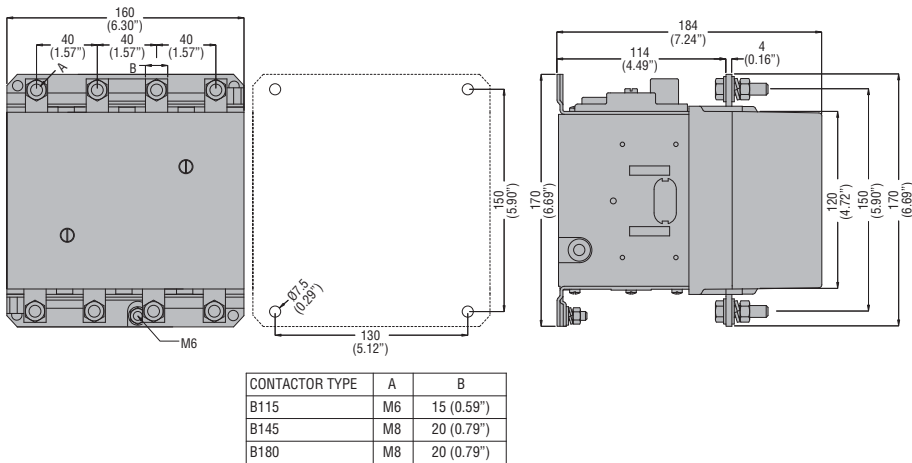
**B115 - B145 - B180** three poles  
with **RF...200** thermal relay

2



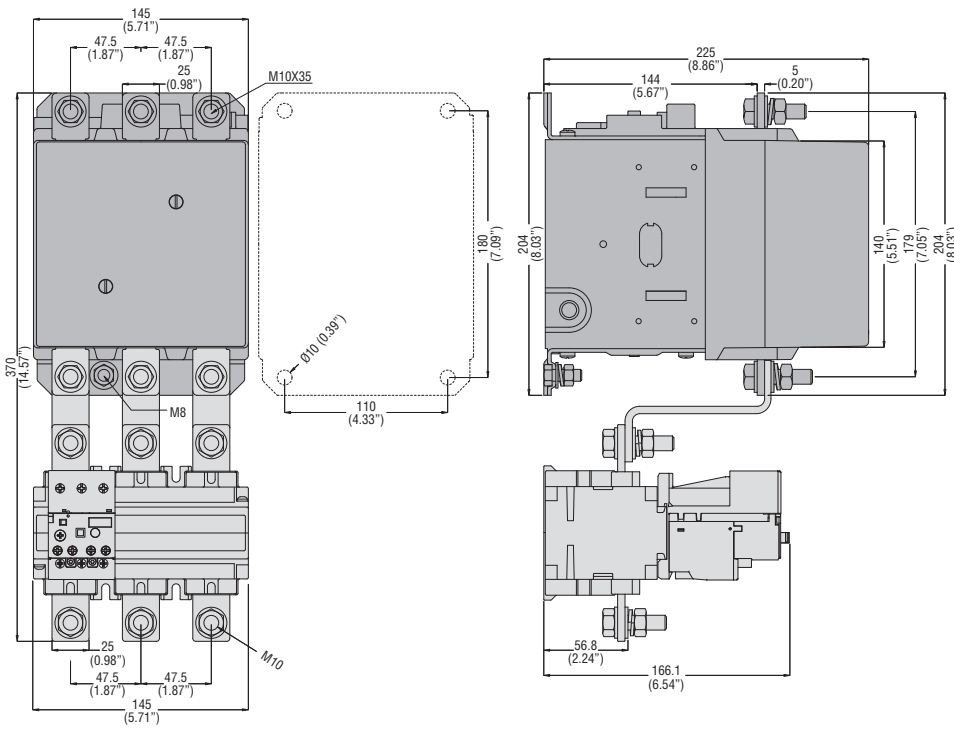
CONTACTOR TYPE	A	B
B115	M6	15 (0.59")
B145	M8	20 (0.79")
B180	M8	20 (0.79")

### **B115 4 - B145 4 - B180 4** four poles

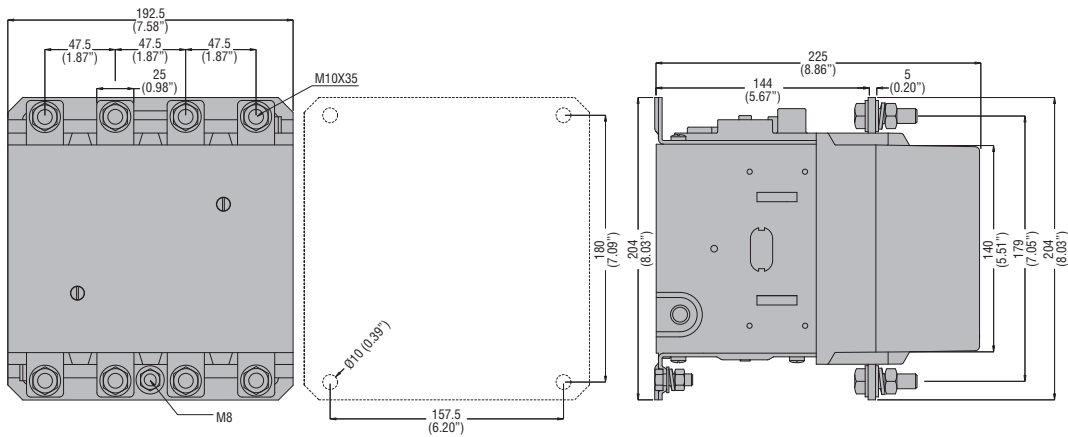


CONTACTOR TYPE	A	B
B115	M6	15 (0.59")
B145	M8	20 (0.79")
B180	M8	20 (0.79")

**B250 - B310 - B400** three poles  
with **RF...420** thermal relay

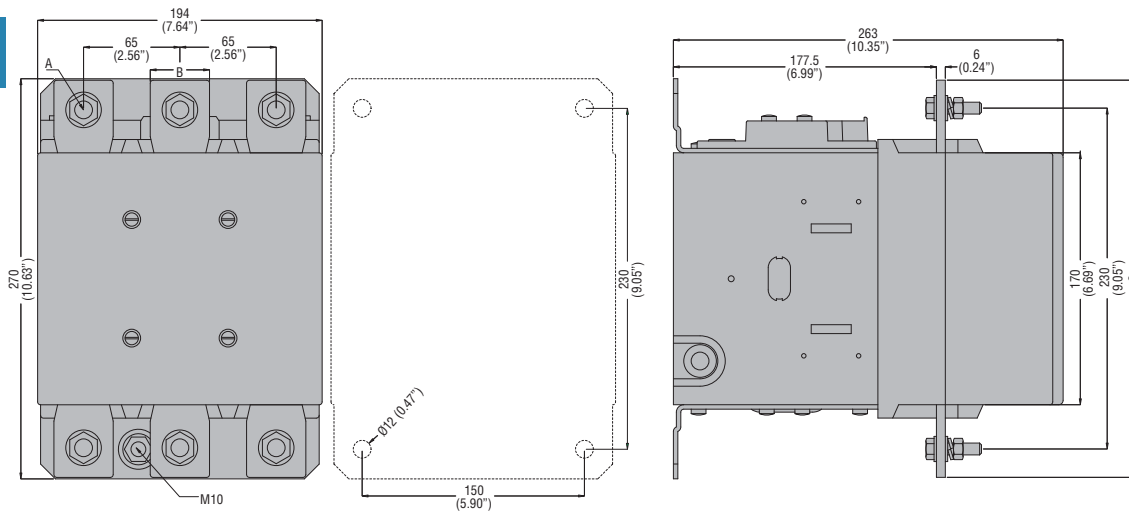


**B250 4 - B310 4 - B400 4** four poles



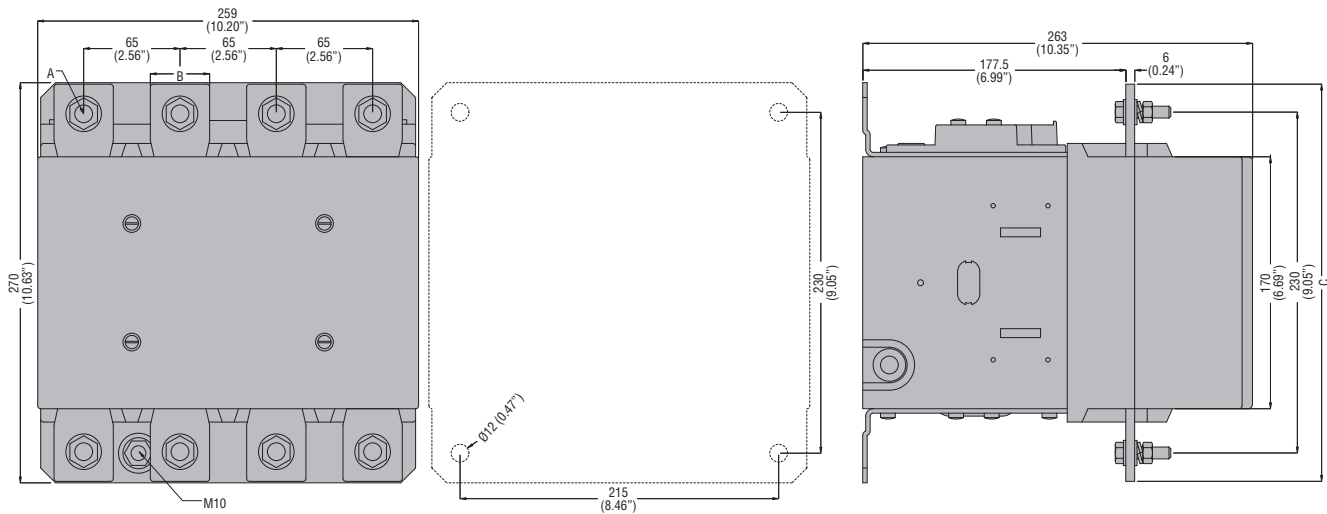
### B500 - B630 three poles

2



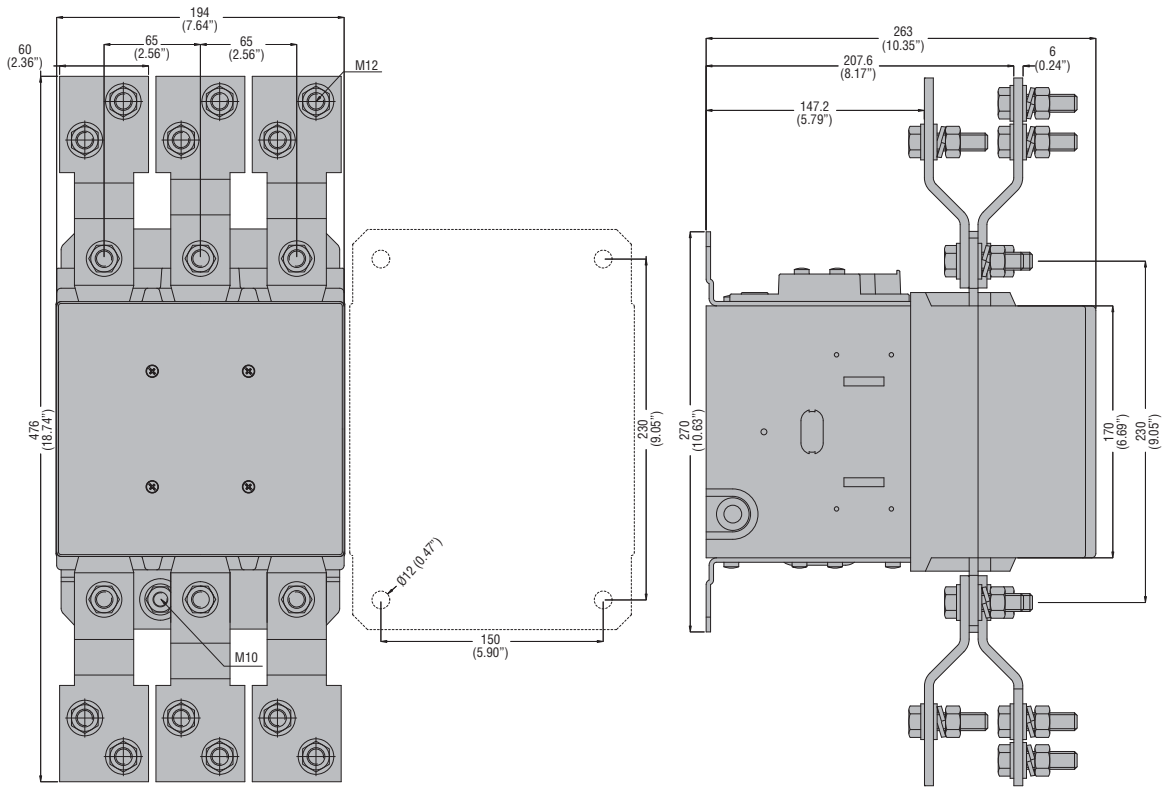
CONTACTOR TYPE	A	B	C
B500	M10	35 (1.38")	265 (10.43")
B630	M12	40 (1.57")	270 (10.63")

### B500 4 - B630 4 four poles



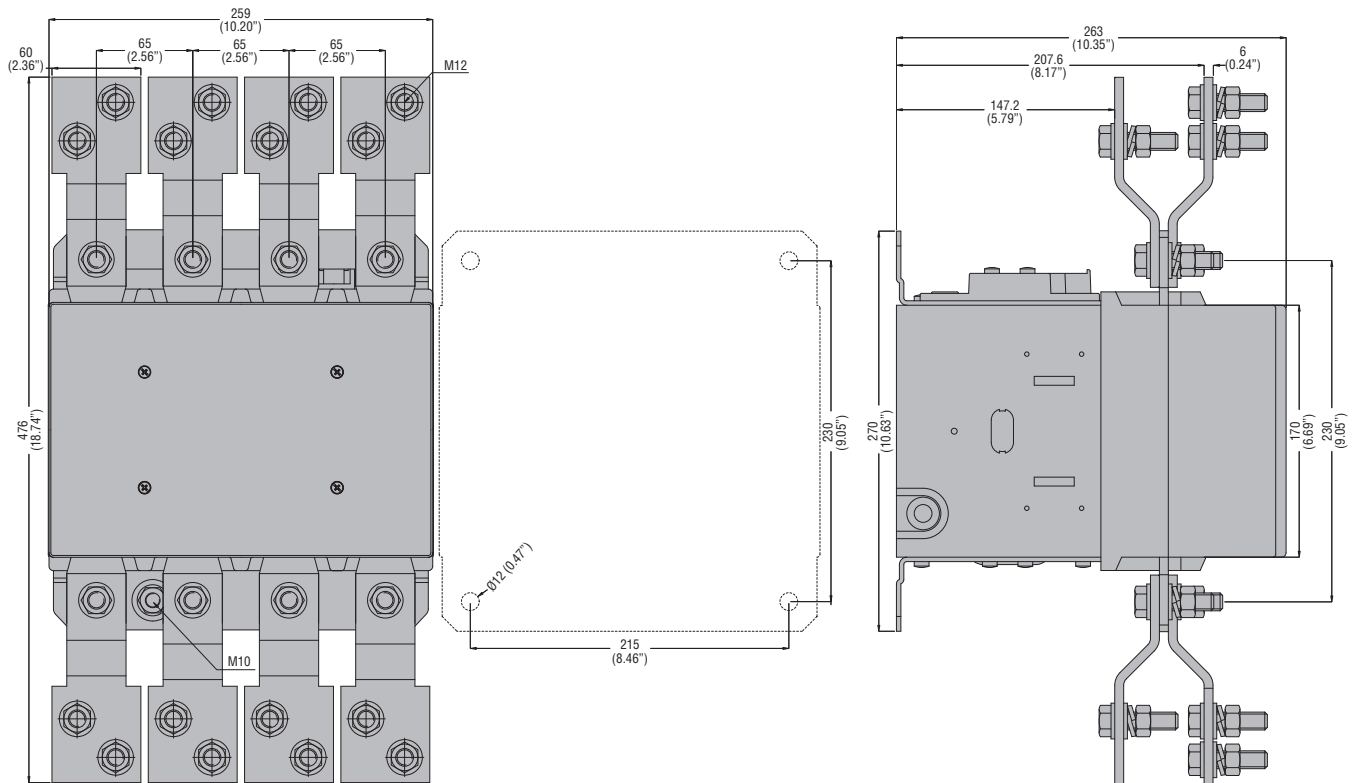
CONTACTOR TYPE	A	B	C
B500	M10	35 (1.38")	265 (10.43")
B630	M12	40 (1.57")	270 (10.63")

### B630 1000 three poles



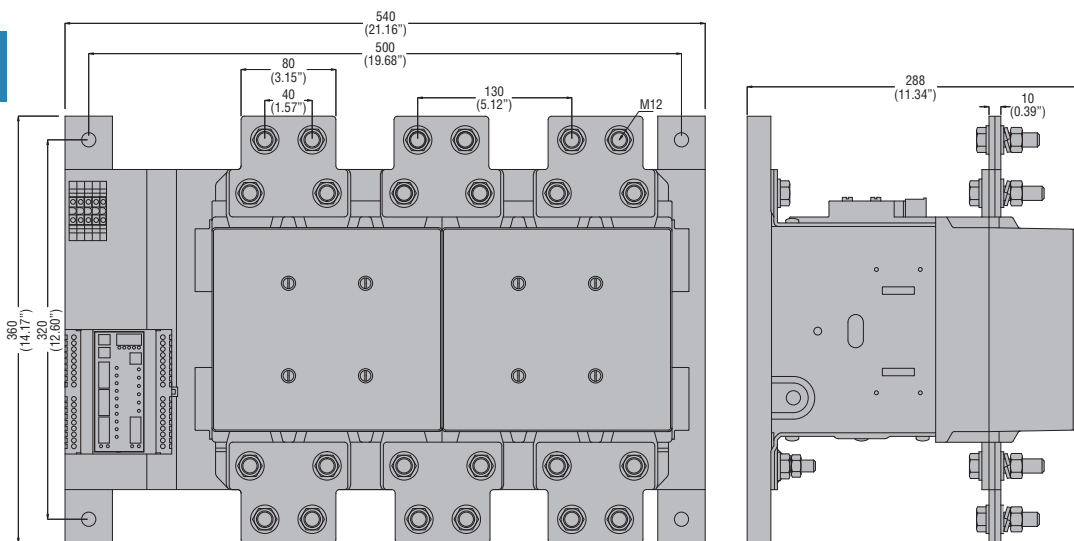
2

### B630 1000 four poles

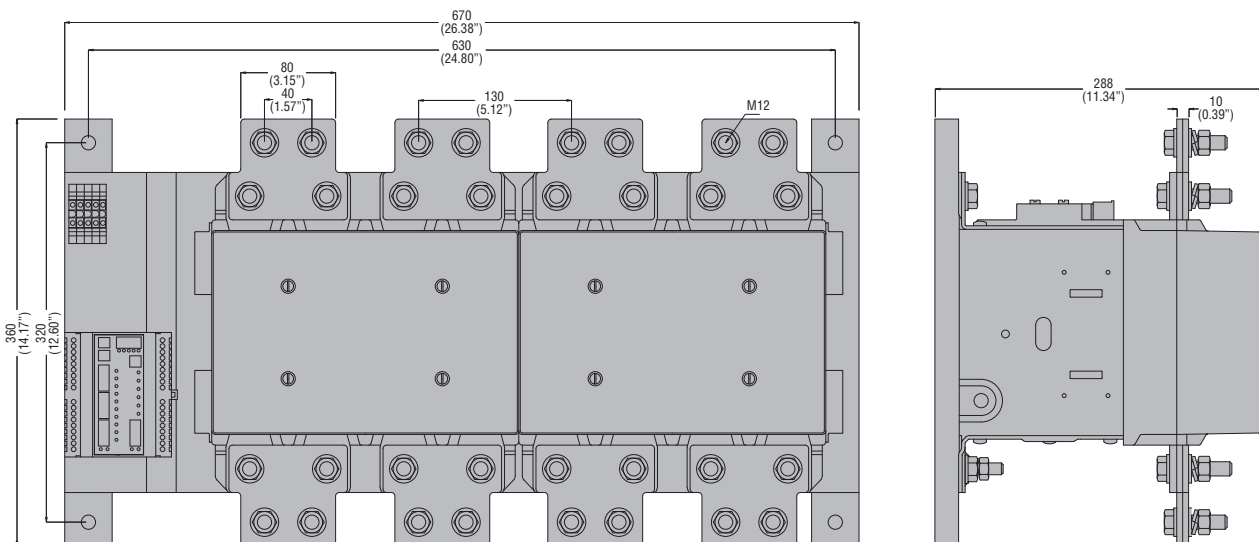


### B1250 - B1600 three poles

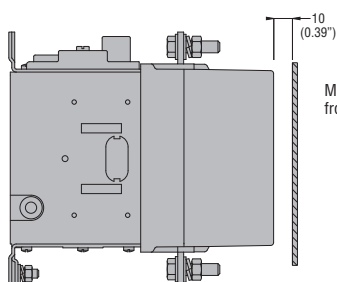
2



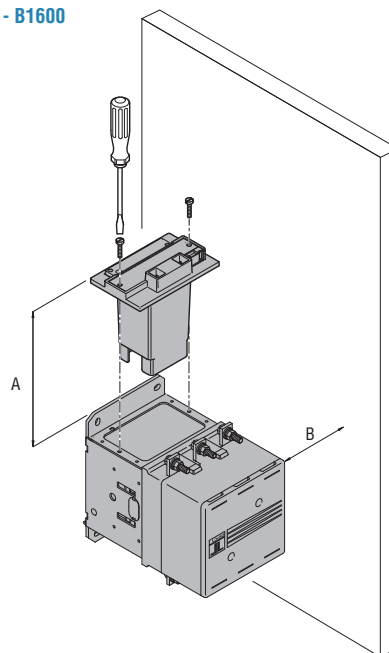
### B1250 - B1600 four poles



### B115 - B145 - B180 - B250 - B310 - B400 - B500 - B630 - B630 1000 - B1250 - B1600



Minimum safety distance from metal parts.



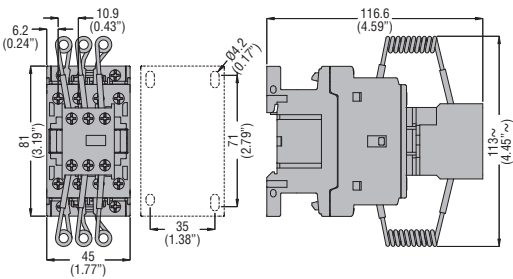
Minimum space needed to replace the coil.

	B115-B145-B180	B250-B310-B400	B500-B630 1000
A	120 (4.72")	145 (5.71")	170 (6.69")
B	100 (3.94")	110 (4.33")	160 (6.30")

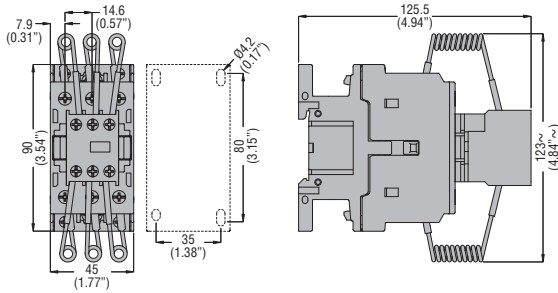
If dimension B is respected, coil replacement is possible without removing power wiring.

### CONTACTORS FOR POWER FACTOR CORRECTION

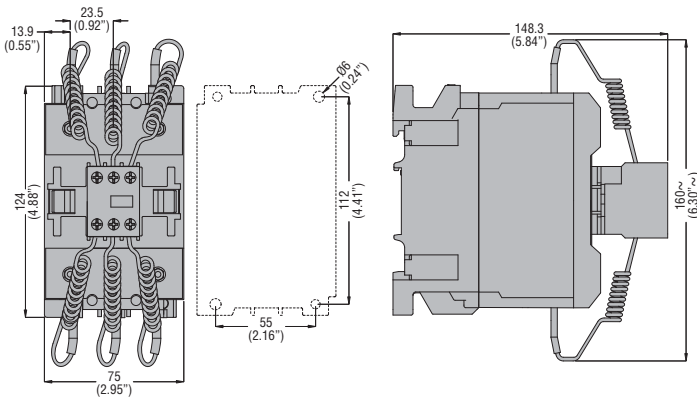
#### BFK09 10A - BFK12 10A - BFK18 10A



#### BFK26 00A - BFK32 00A - BFK38 00A

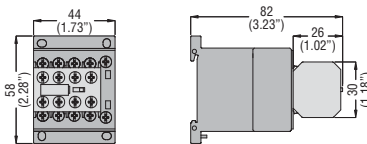


#### BF50K 00 - BF65K 00 - BF70K 00 - BF80K 00



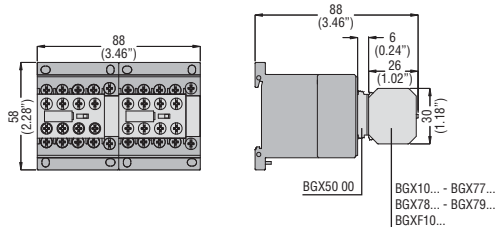
### ADD-ON BLOCKS WITH BG MINI-CONTACTORS

#### BGX10... auxiliary contacts

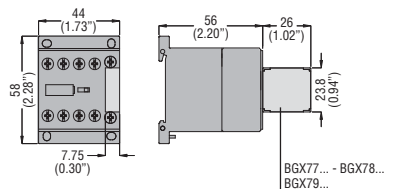


Valid for BGX11... contacts as well when mounted on left-hand contactor of BGT or BGC assembly (p. 4-5).

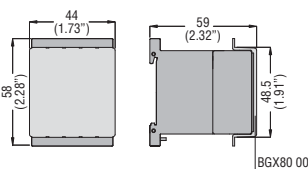
#### BGX50 00 interlock with BGX10... or BGXF... auxiliary contacts and BGX77 or BGX78 or BGX79 suppressor



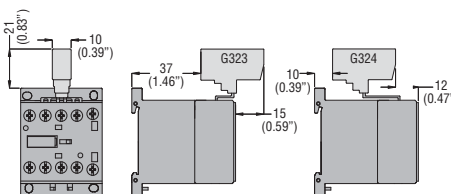
#### BGX77 or BGX78 or BGX79... suppressor only



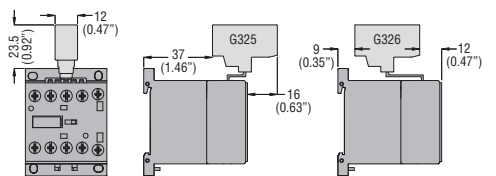
#### BGX80 00 shroud



#### Paralleling links G323 - G324



#### G325, G326

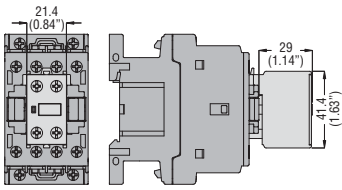




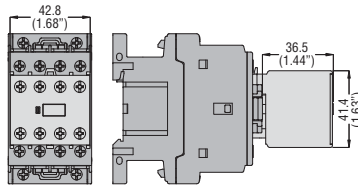
### ADD-ON BLOCKS WITH BF CONTACTORS

Auxiliary contacts **BFX10...** w/2 contacts

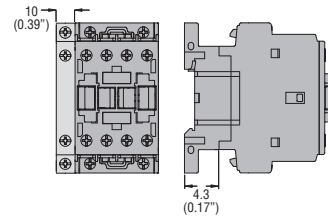
2



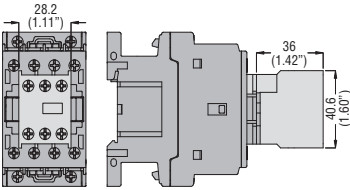
**BFX10...** w/4 contacts



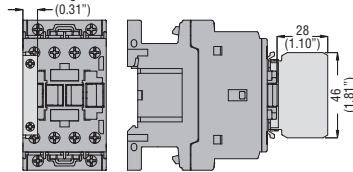
**BFX12...**



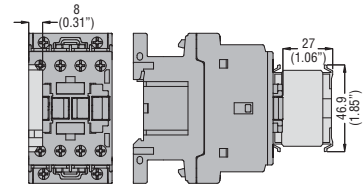
**G484...**



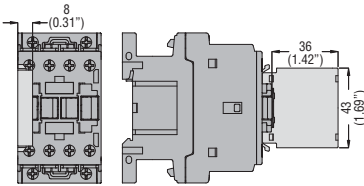
**G418...**



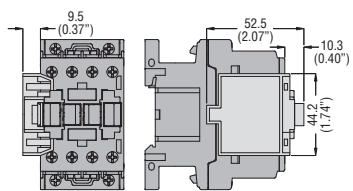
**G218**



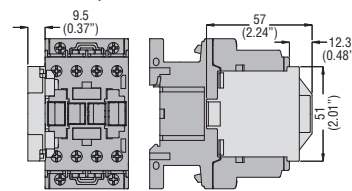
**G481..., G482**



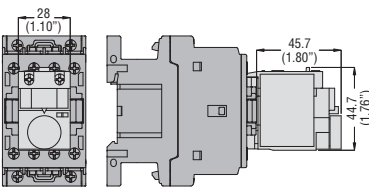
**G280** adapter with G218 contact



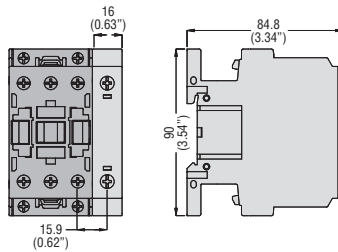
**G419** adapter c/w G418 contacts, **G428** contacts  
**G483** adapter c/w G481 or G482 contacts



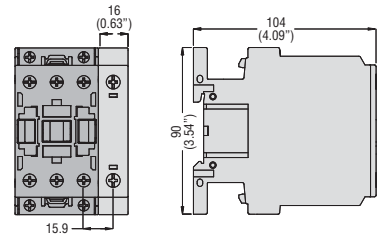
**G485..., G486..., G487**  
delayed contacts



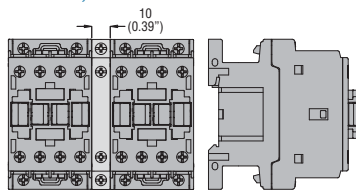
Fourth pole  
**BFX42**



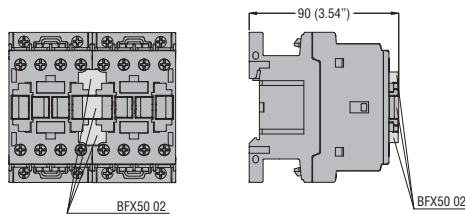
**BFXD42**



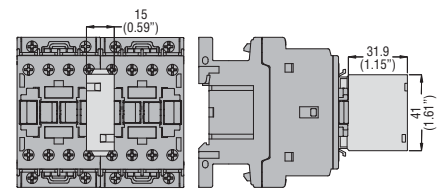
Interlocks  
**BFX50 00, BFX50 01**



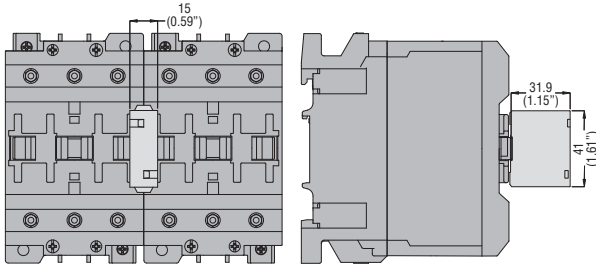
**BFX50 02**



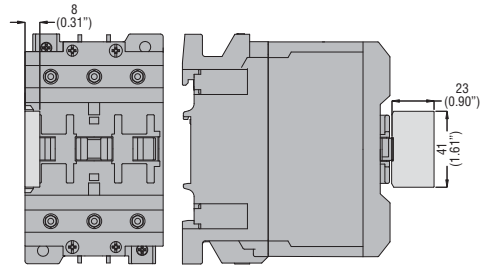
**BFX50 03**



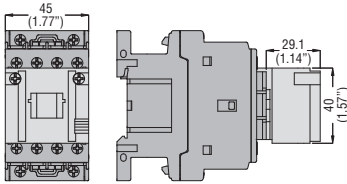
**Interlock**  
**G269 2**



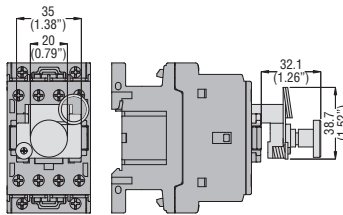
**Surge suppressors**  
**G318, G319 225, G322**



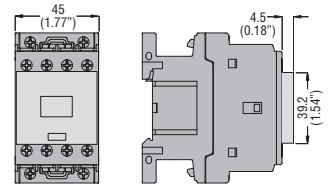
**G222, G272 latch**



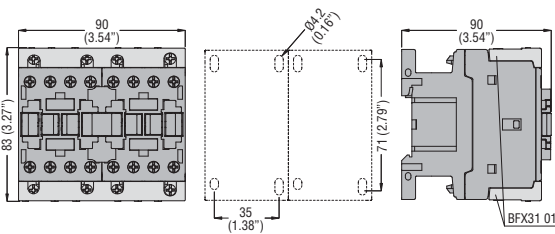
**G454, G455 manual closing**



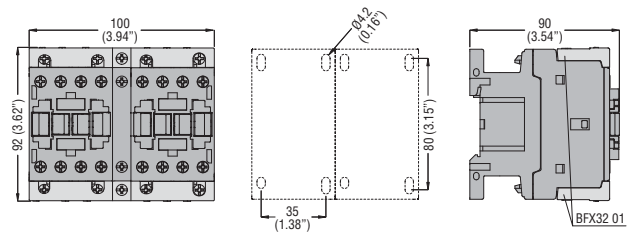
**BFX80 sealing cover**



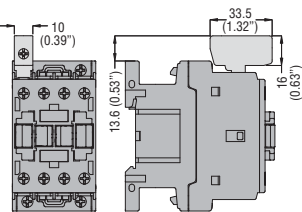
**Rigid connecting kits**  
**BFX31 01**



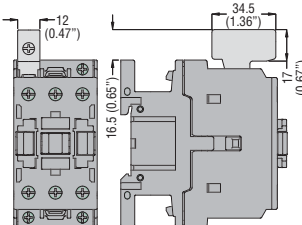
**Rigid connecting kits**  
**BFX32 01**



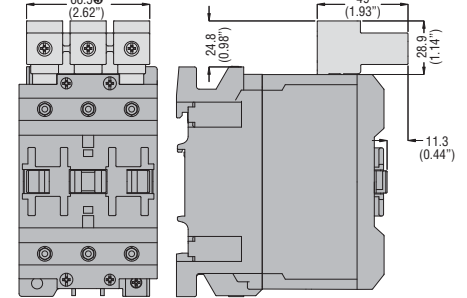
**G231 terminal**  
**1-pole**



**G232 terminal**  
**1-pole**

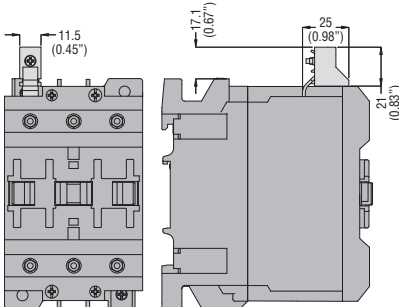


**G271, G288 terminal**  
**3 and 4-pole**

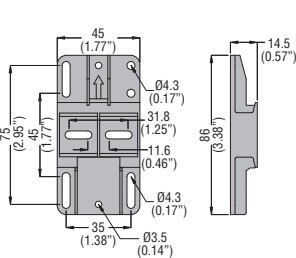


⊕ 90mm (3.54") for G288 terminal only.

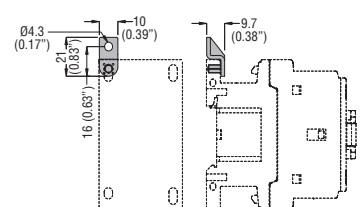
**G285 auxiliary terminal**



**BFX89 01 fixing base**



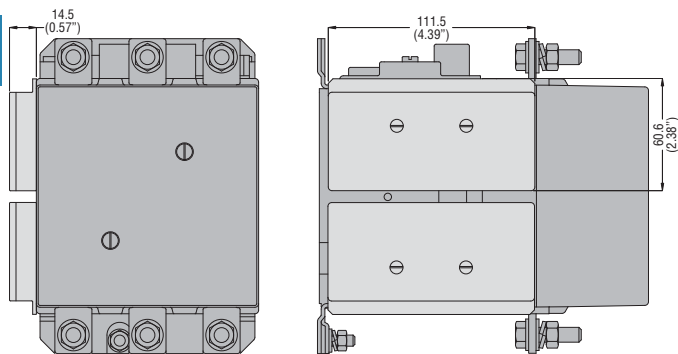
**BFX89 02 fixing bracket**



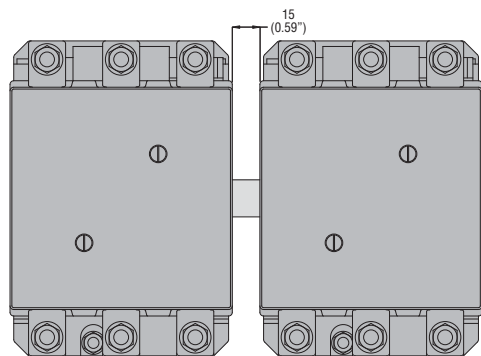
### ADD-ON BLOCKS WITH B CONTACTORS

#### G350, G354 auxiliary contacts

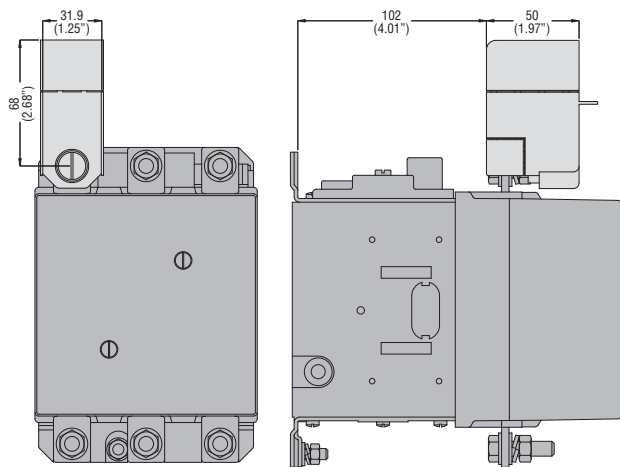
2



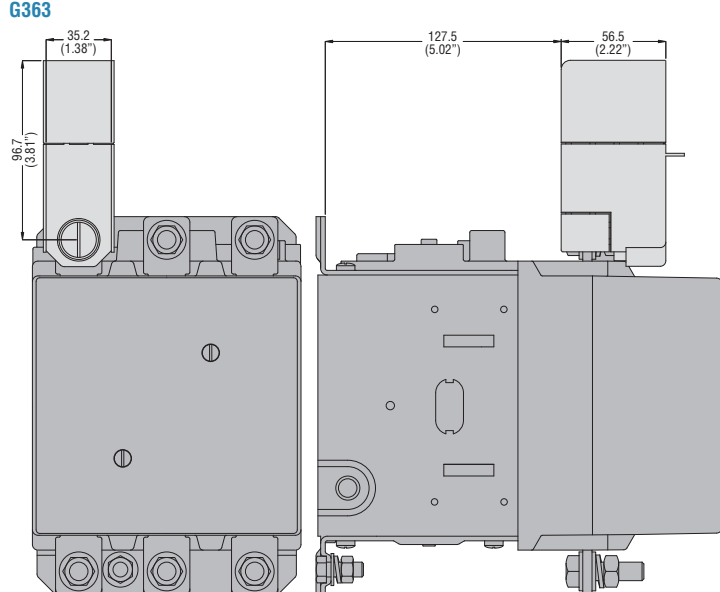
#### G356 interlocks



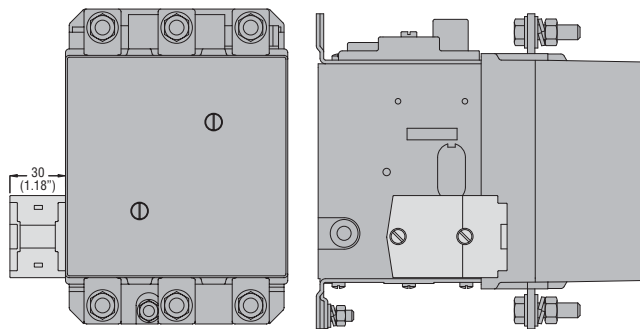
#### Terminal protection G360, G361



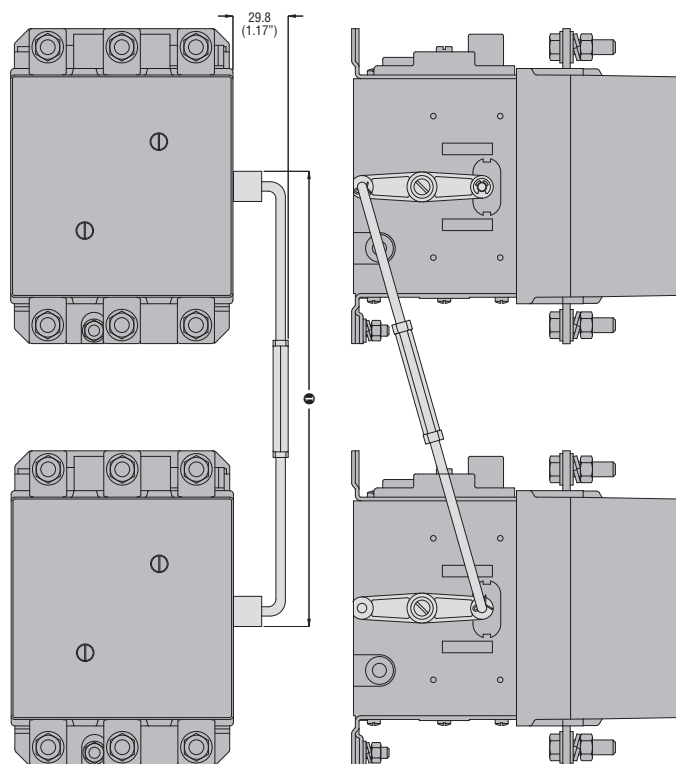
#### Terminal protection G363



#### G358 adapter

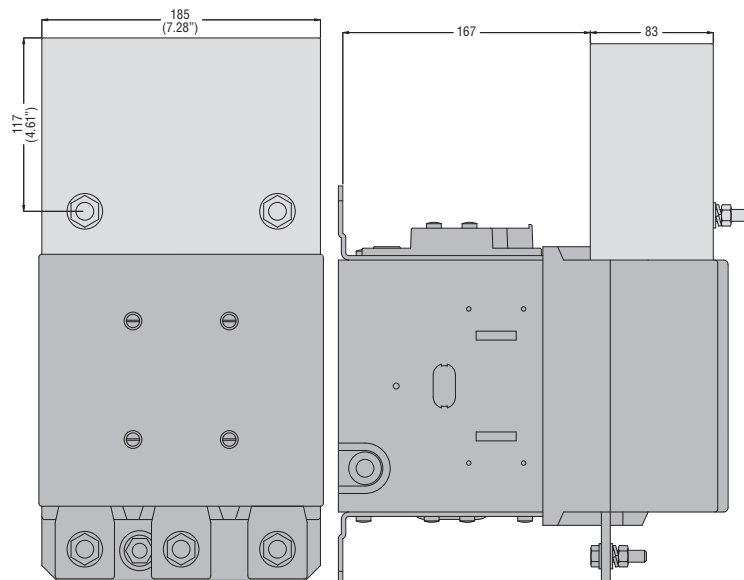


#### G356 interlocks

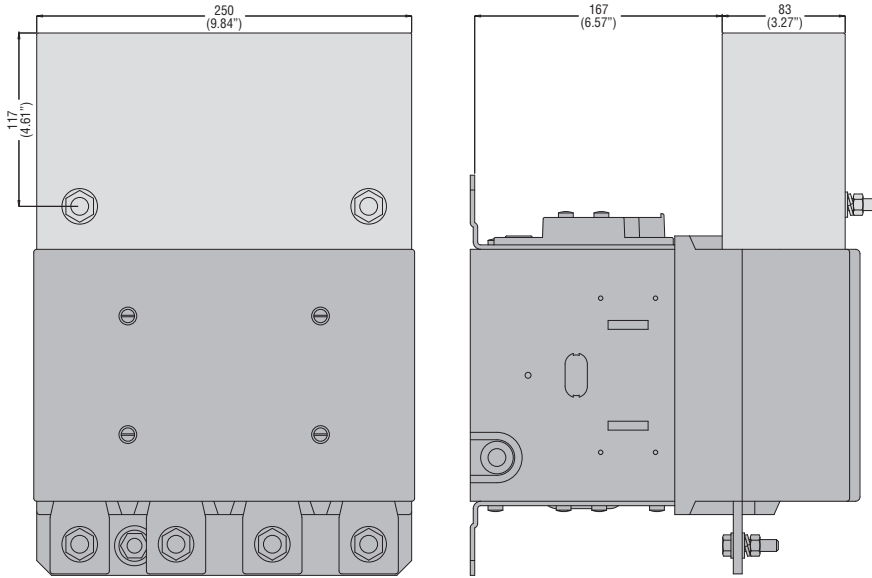


① For interaxis dimensions, refer to page 2-70.

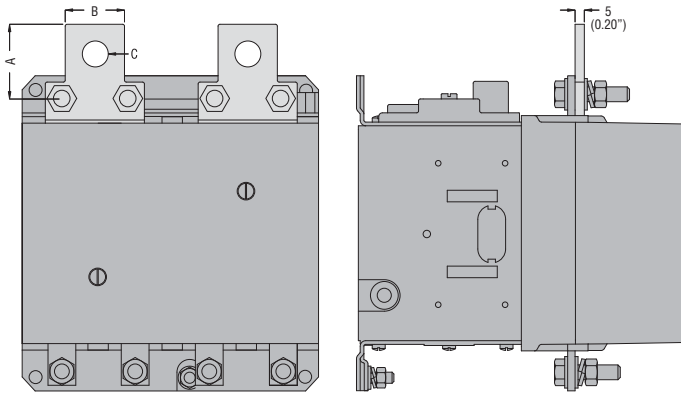
#### G527, G529



### G528, G530 terminal protection

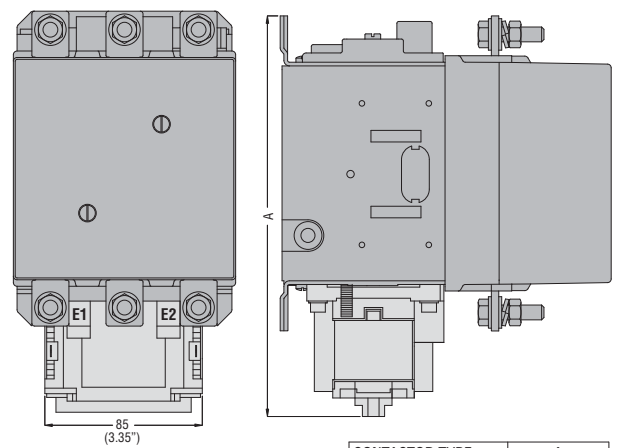


### BA1594, BA1720 2-pole bar



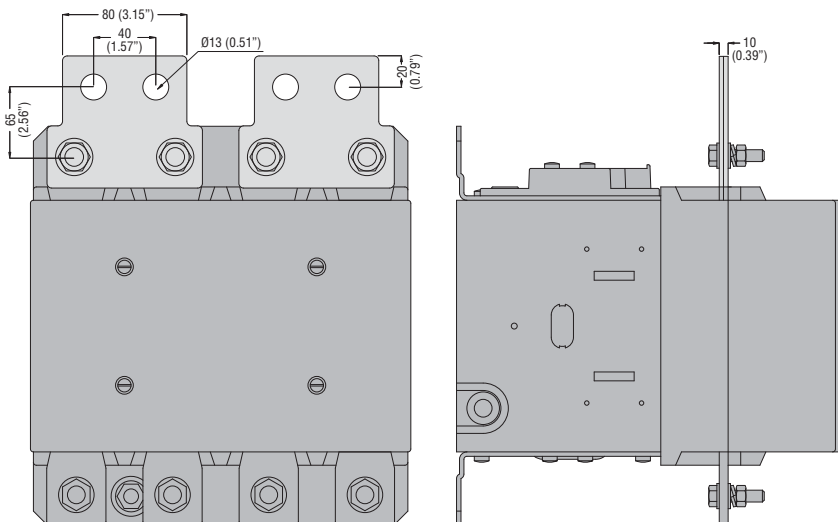
PARALLEL POLE BAR	A	B	C
BA1594	45 (1.77")	32 (1.26")	Ø14 (0.55")
BA1720	53 (2.09")	50 (1.97")	Ø18 (0.71")

### G495 latch



CONTACTOR TYPE	A
B115 - B145 - B180	221 (8.70")
B250 - B400	255 (8.86")
B500 - B630	300 (11.81")

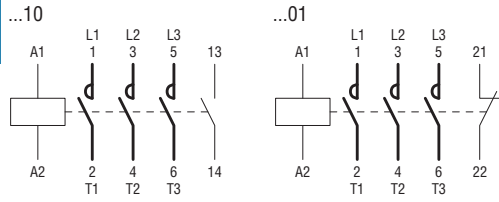
### BA1845 2-pole bar



2

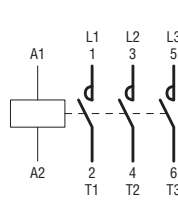
### THREE-POLE CONTACTORS IN AC

**BG06 A - BG09 A - BGF09 A - BGP09 A - BG12 A**  
**BF09 A - BF12 A - BF18 A - BF25 A**

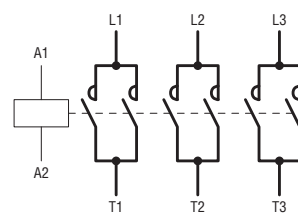


### BF26 A - BF32 A - BF38 A

**BF50 - BF110**  
**B115 - B630 1000**



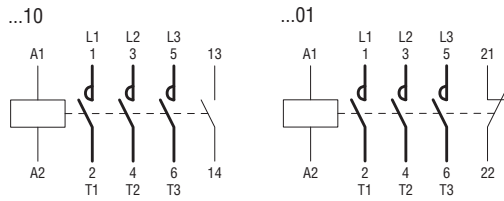
### B1250 24 - B1600 24...



① The input electronic circuit of the contactor coil is designed and tested according to IEEEC 62.41 standards and can withstand a 10kV impulse voltage (1.2/50µs) with 50 Joule energy. The use of an auxiliary reduced voltage transformer is recommended for higher values.

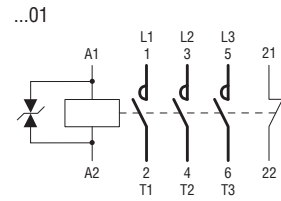
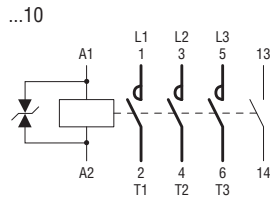
### THREE-POLE CONTACTORS IN DC

**BG06 D - BG09 D - BGF09 D - BGP09 D - BG12 D**  
**BG06 L - BG09 L - BGF09 L - BGP09 L - BG12 L**



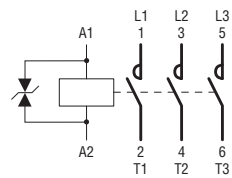
### BF09 D - BF12 D - BF18 D - BF25 D

**BF09 L - BF12 L - BF18 L - BF25 L**

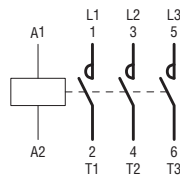


### BF26 D - BF32 D - BF38 D

**BF26 L - BF32 L - BF38 L**

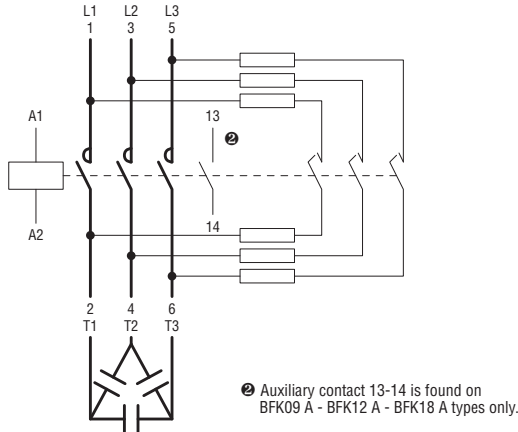


### BF50C - BF110C



### CONTACTORS FOR POWER FACTOR CORRECTION

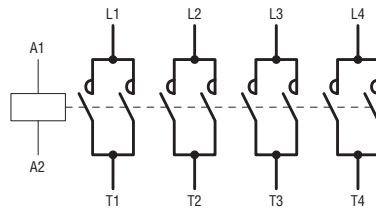
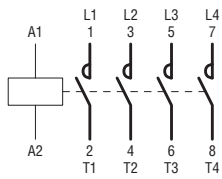
**BFK09 A - BFK12 A - BFK18 A**  
**BFK26 A - BFK32 A - BFK38 A - BF50K - BF65K - BF70K - BF80K**



⊗ Auxiliary contact 13-14 is found on BFK09 A - BFK12 A - BFK18 A types only.

FOUR-POLE CONTACTORS IN AC  
**BG09 T4 A - BGF09 T4 A - BGP09 T4 A**  
**BF09 T4 A - BF38 T4 A**  
**BF50 40 - BF65 40 - BF80 40 - BFD80 40**  
**B115 4 - B630 1000 4**

**B1250 4 - B1600 4**

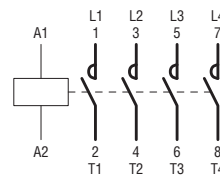
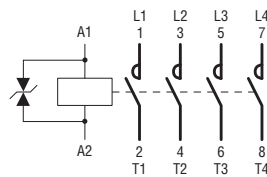
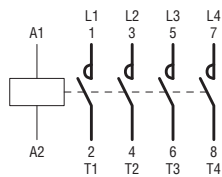


① The input electronic circuit of the contactor coil is designed and tested according to IEEEC 62.41 standards and can withstand a 10kV impulse voltage (1.2/50µs) with 50 Joule energy.  
 The use of an auxiliary reduced voltage transformer is recommended for higher values.

FOUR-POLE CONTACTORS IN DC  
**BG09 T4 D - BGF09 T4 D - BGP09 T4 D**

**BF09 T4 D - BF38 T4 D**  
**BF09 T4 L - BF38 T4 L**

**BF65C 40 - BF80C 40 - BFD80C 40**



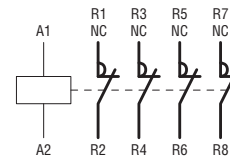
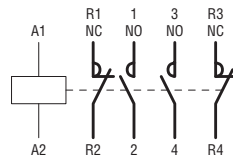
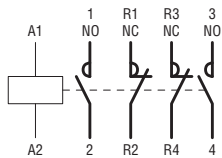
FOUR-POLE CONTACTORS IN AC WITH 2NO+2NC MAIN POLES

**BG09 T2 A**

**BF09 T2 A - BF18 T2 A - BF26 T2 A - BF38 T2 A**

WITH 4NC MAIN POLES

**BF18 T0 A - BF26 T0 A**



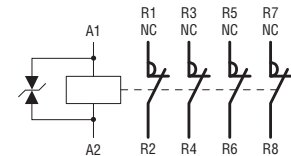
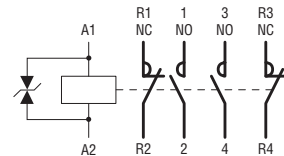
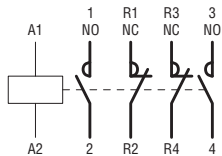
FOUR-POLE CONTACTORS IN DC WITH 2NO+2NC MAIN POLES

**BG09 T2 D**

**BF18 T2 D - BF26 T2 D - BF38 T2 D**  
**BF18 T2 L - BF26 T2 L - BF38 T2 L**

WITH 4NC MAIN POLES

**BF18 T0 D - BF26 T0 D**  
**BF18 T0 L**



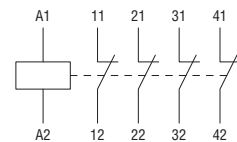
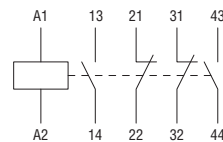
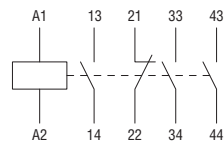
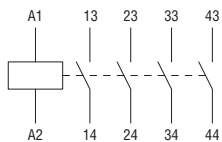
CONTROL RELAYS IN AC

**BG00 40 A - BGF00 40 A**  
**BF00 40 A**

**BG00 31 A - BGF00 31 A**  
**BF00 31 A**

**BG00 22 A - BGF00 22 A**  
**BF00 22 A**

**BF00 04 A**



CONTROL RELAYS IN DC

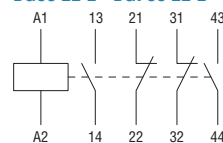
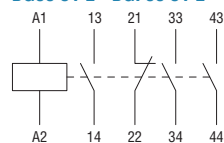
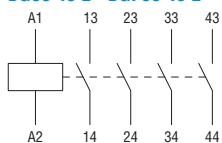
**BG00 40 D - BGF00 40 D**  
**BG00 40 L - BGF00 40 L**

**BG00 31 D - BGF00 31 D**  
**BG00 31 L - BGF00 31 L**

**BG00 22 D - BGF00 22 D**  
**BG00 22 L - BGF00 22 L**

**BF00 04 D**

**BF00 04 L**

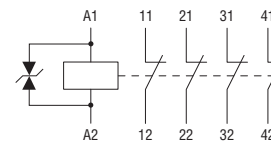
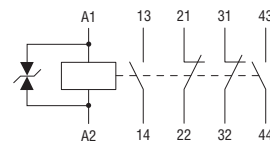
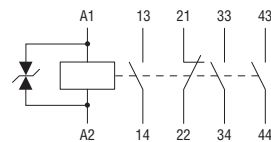
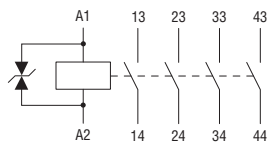


**BF00 40 D**  
**BF00 40 L**

**BF00 31 D**  
**BF00 31 L**

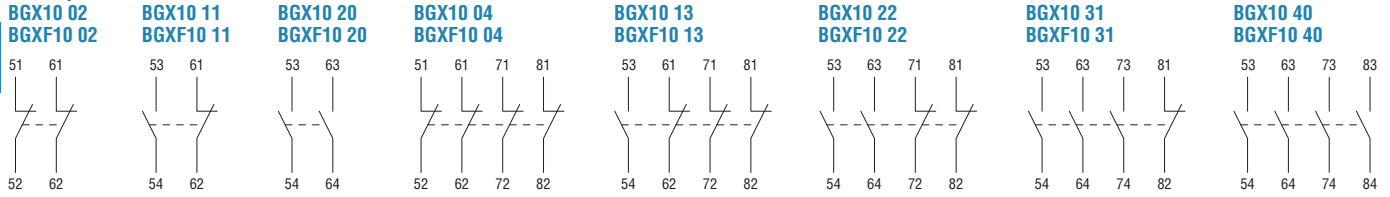
**BF00 22 D**  
**BF00 22 L**

**BF00 04 D**  
**BF00 04 L**

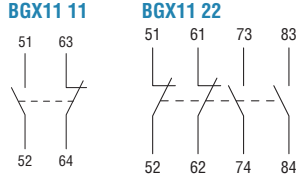


### ADD-ON BLOCKS FOR BG MINI-CONTACTORS

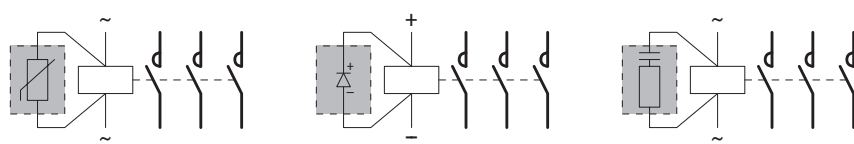
#### Auxiliary contacts



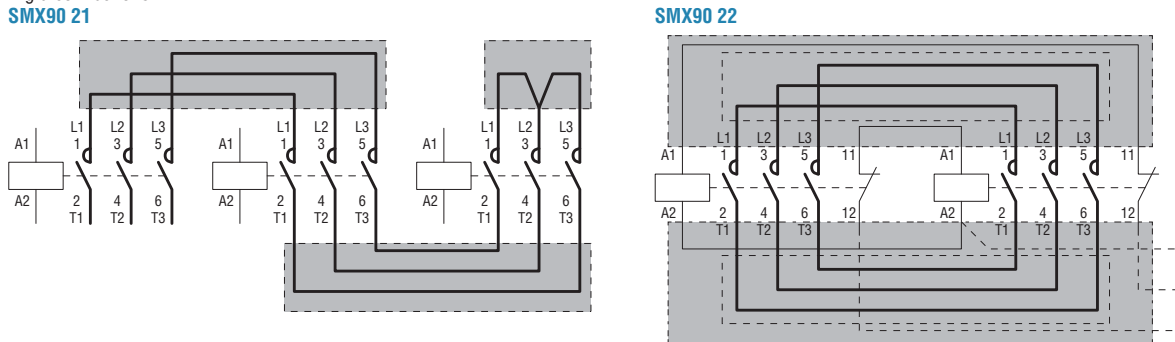
#### Special auxiliary contacts



#### Surge suppressor

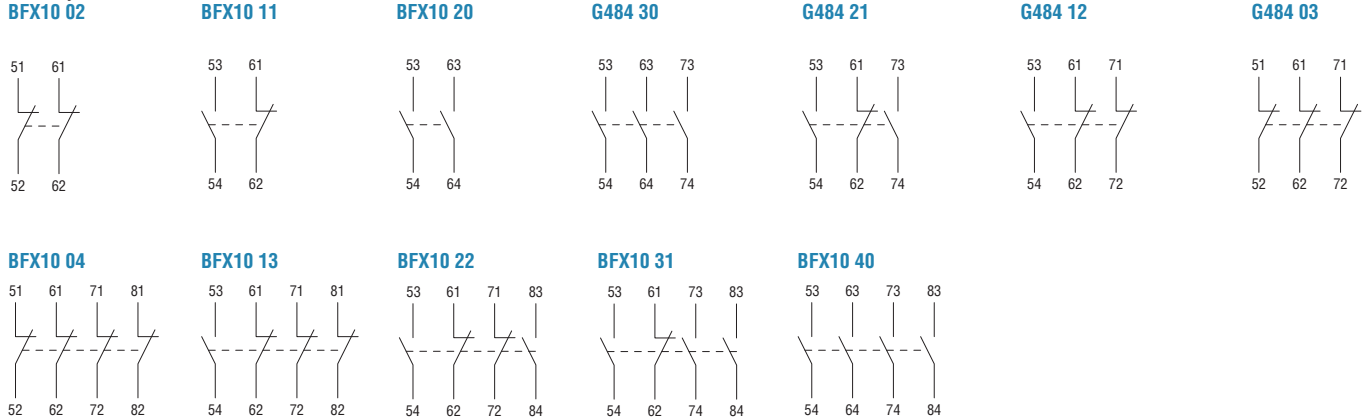


#### Rigid connections

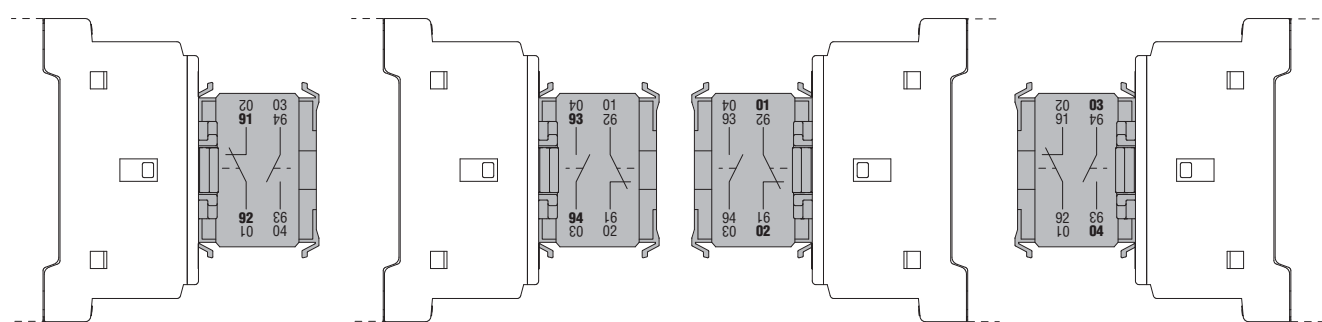


### ADD-ON BLOCKS FOR BF CONTACTORS

#### Auxiliary contacts



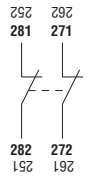
#### Auxiliary contact



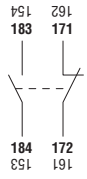
The termination of the G218 auxiliary contact has more than one numbering due to the fact that the block can assume various mounting positions. See the numbering in boldface for a correct interpretation.

### Auxiliary contacts

**BFX12 02**



**BFX12 11**



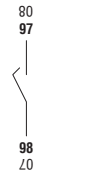
**BFX12 20**



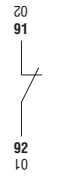
**G418 10**  
**G428 10**



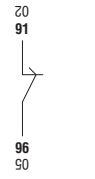
**G418 10A**  
**G428 10A**



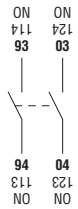
**G418 01**  
**G428 01**



**G418 01D**  
**G428 01D**



**G481 20**



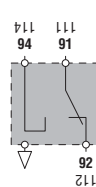
**G481 11**



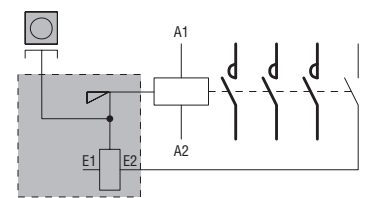
**G481 02**



**G482**



Mechanical latch  
**G222... - G272...**

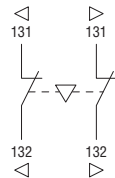


The termination of the BFX12... / G418... / G481... / G482 auxiliary contacts has more than one numbering due to the fact that the block can assume various mounting positions. See the numbering in boldface when the block is mounted on the left side of the contactor.

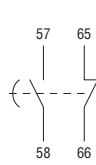
Add-on pole  
**BFX42**  
**BFXD42**



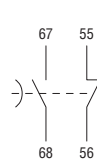
Interlock c/w contacts  
**BFX50 01**



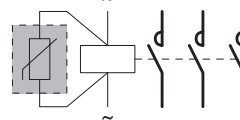
Delayed auxiliary contacts  
**G485...**



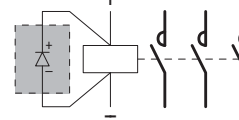
**G486... - G487**



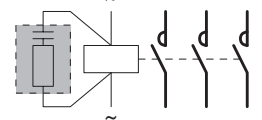
Surge suppressor  
**G318... - BFX77...**



**G319 225**

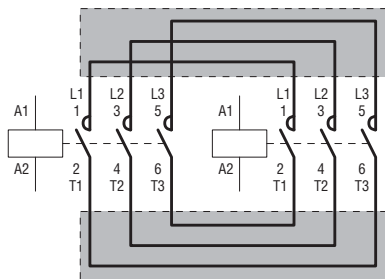


**G322... - BFX79...**

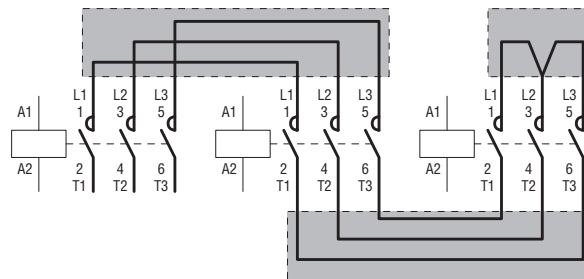


### Rigid connecting kits

**BFX31 01 - BFX31 02 - BFX32 01**



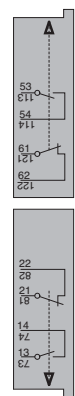
**BFX31 31 - BFX32 31 - BFX32 32**



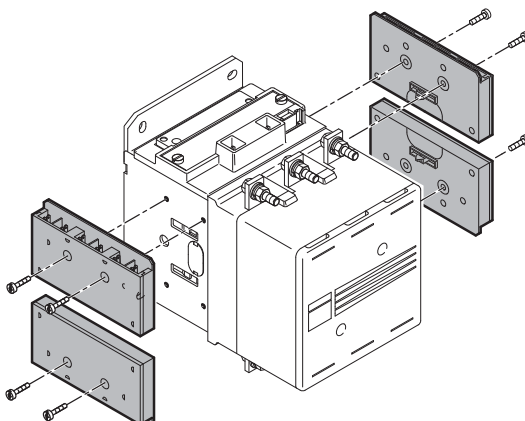
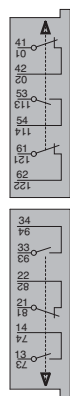
### ADD-ON BLOCKS FOR B CONTACTORS

**G350 - G354** auxiliary contacts

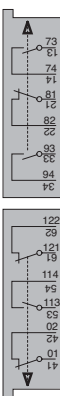
**G354**



**G350**



**G350**



**G354**



**G354**

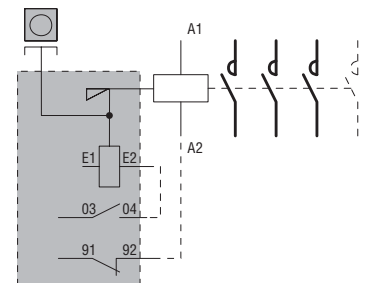
**G350**

**G350**

**G354**

### Mechanical latch

**G495**





### MOUNTING POSITION OF CONTACTORS

#### ON VERTICAL PLANE

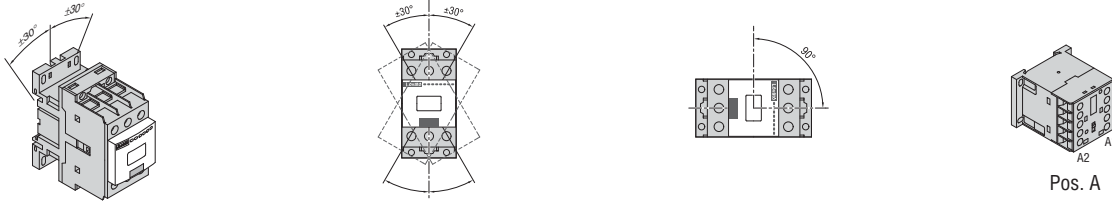
The performances given in this catalogue have been established with contactors mounted on a vertical plane with line terminals facing upwards and load terminals facing downwards.

All contactors can be mounted with a  $\pm 30^\circ$  inclination to the vertical axis of the contactor without any derating.

For BF series contactors, this inclination can reach  $\pm 90^\circ$ , that is with the terminals are facing towards left and right.

For BG mini-contactors:

- Position A, with coil terminals A1-A2 facing downwards, is not recommended.
- The position with coil terminals A1-A2 facing upwards is not recommended for mini-contactors with NC contacts.

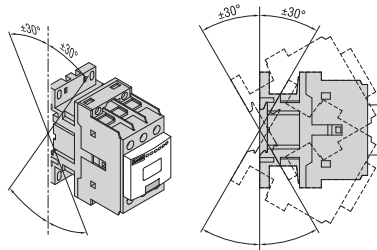


#### ON VERTICAL PLANE WITH 30° INCLINATION

All contactors can be mounted on a plane which varies in respect to the vertical up to  $\pm 30^\circ$  angle.

On the average, a 5% increase of the minimum pick-up voltage in  $-30^\circ$  position can be noted.

This inclination is greater than the one prescribed by main naval registers.



#### ON HORIZONTAL PLANE (FOR BF SERIES CONTACTORS)

Considerable performance variations can be noted.

It is necessary to check the two possible mounting positions:

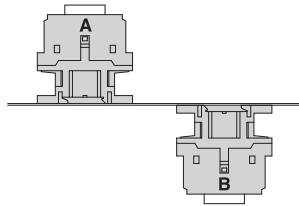
- when the contactor is energised, the movable equipment moves upwards.
- when the contactor is energised, the movable equipment moves downwards.

In the first case, it is difficult to close the contactor while in the second, to open it.

The variables which could influence the contactor performance, in addition to the two mounting positions, are:

- type of contactor
- type of control
- contact configuration
- number and type of add-on blocks
- permissible tolerance of auxiliary voltage variation
- ambient temperature.

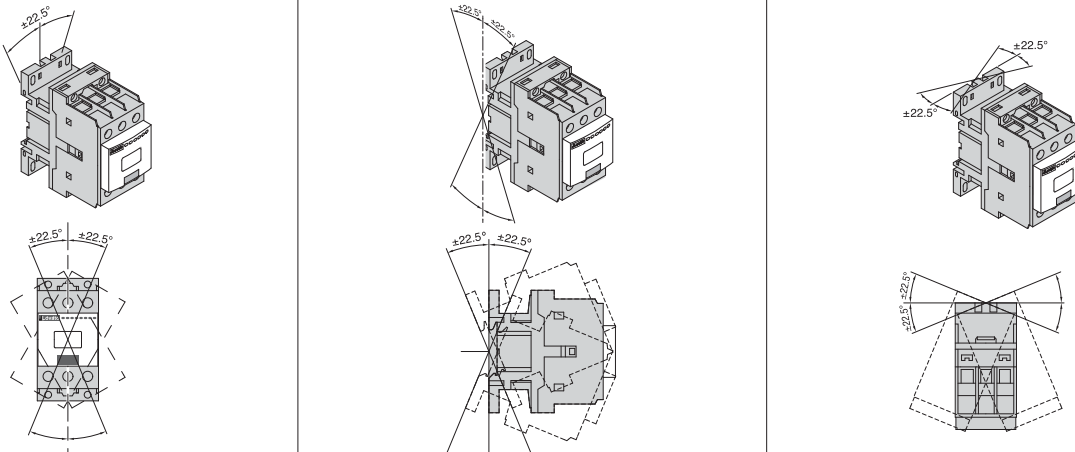
NOTE: Position B is not recommendable.



Customer Service can provide further information concerning operational performance of contactors mounted on a horizontal plane; see contact details on inside front cover.

#### DYNAMIC TYPE TESTS

Our contactors have sustained dynamic testing, with contactor mounting position rotated  $\pm 22.5^\circ$  in respect to the three orthogonal axes.



### IEC UTILISATION CATEGORY AC3

#### POLE CHARACTERISTICS

Squirrel-cage induction motors; breaking at rated motor current.

MAXIMUM IEC OPERATIONAL POWER at ambient temperature  $\leq 55^{\circ}\text{C}$ .

### UL/CSA DUTY FOR AC MOTOR SWITCHING

#### MAGNETIC MOTOR CONTROLLERS

Three-phase AC induction motors; breaking at rated motor current.

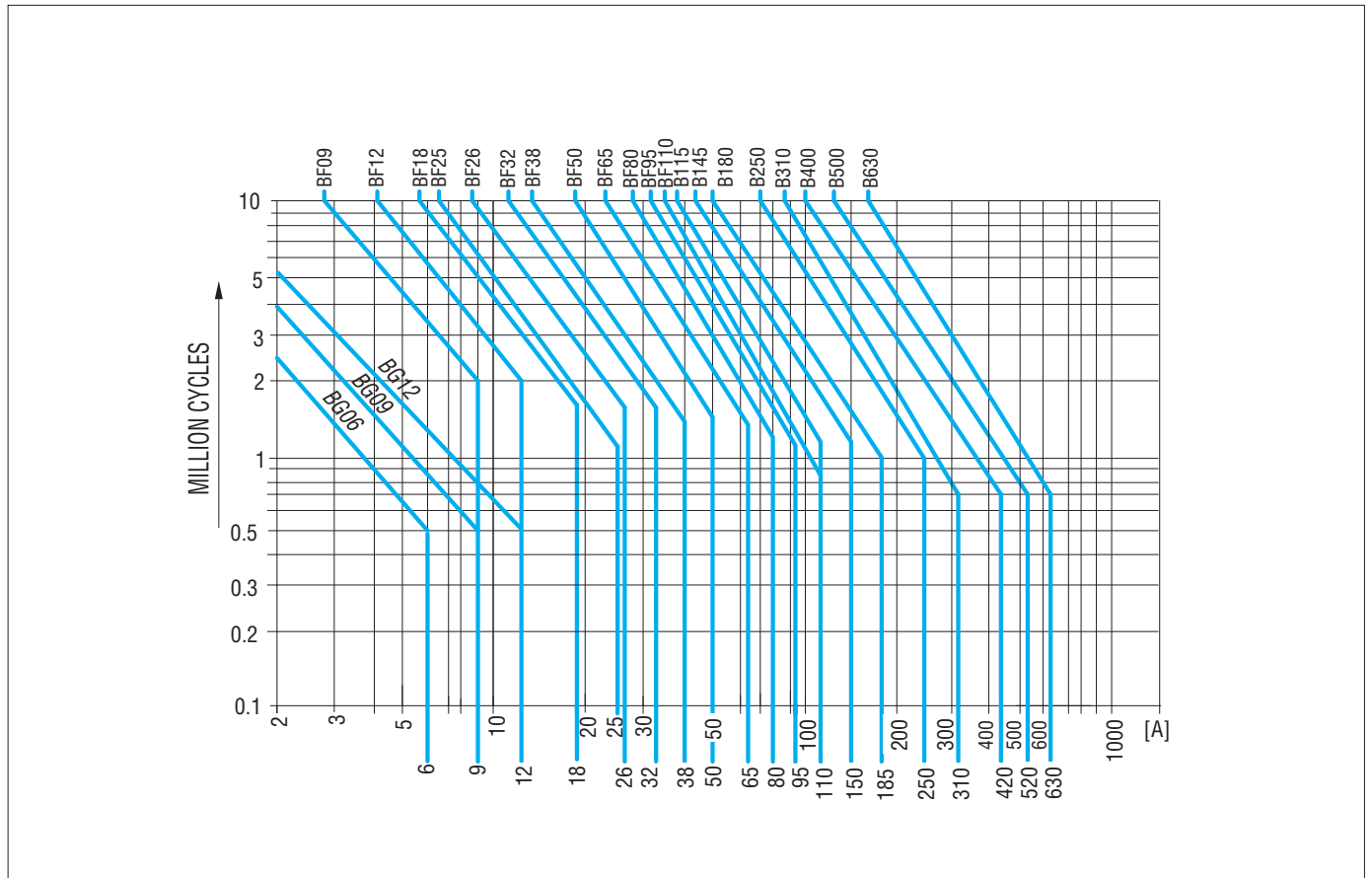
UL/CSA RATINGS at ambient temperature  $\leq 55^{\circ}\text{C}$

Contactor type	IEC operational current (I <sub>e</sub> $\leq$ 440V) [A]	IEC operational power							Maximum horsepower ratings (60Hz)			
		220/230V [kW]	380/400V [kW]	415V [kW]	440V [kW]	500V [kW]	660/690V [kW]	1000V [kW]	Three phase 200-208V [HP]	240V [HP]	480V [HP]	600V [HP]
<b>BG06</b>	6	1.5	2.2	2.4	2.5	3	3	-	1½	2	3	3
<b>BG09</b>	9	2.2	4.0	4.3	4.5	5	5	-	2	3	5	5
<b>BG12</b>	12	3.2	5.7	6.2	5.5	5	5	-	3	3	7½	10
<b>BF09</b>	9	2.2	4.2	4.5	4.8	5.5	7.5	-	3	3	5	7 ½
<b>BF12</b>	12	3.2	5.7	6.2	6.2	7.5	10	-	5	5	7½	10
<b>BF18</b>	18	4	7.5	9	9	10	10	-	5	5	10	15
<b>BF25</b>	25	7.0	12.5	13.4	13.4	15	18	-	7½	7½	15	15
<b>BF26</b>	26	7.3	13	14	14	15.6	18.5	-	7½	7½	15	20
<b>BF32</b>	32	8.8	16	17	17	20	22	-	10	10	20	25
<b>BF38</b>	38	11	18.5	18.5	18.5	20	22	-	10	15	30	30
<b>BF50</b>	50	14.3	25	27.2	27.2	33.2	43.5	25	10	15	30	40
<b>BF65</b>	65	18.5	33	36	36	45.3	59.7	30	20	25	50	60
<b>BF80</b>	80	23	41	46	46	56	74	37	25	30	60	75
<b>BF95</b>	95	27.6	50	55	55	56	74	45	30	30	60	75
<b>BF110</b>	110	33	61	66	70	59	80	45	30	40	75	100
<b>B115</b>	110	33	61	66	70	80	100	63	30	40	75	100
<b>B145</b>	150	46	80	88	93	100	120	75	50	50	100	125
<b>B180</b>	185	57	100	108	115	123	144	103	60	75	150	150
<b>B250</b>	265	83	140	155	164	176	212	156	75	100	200	250
<b>B310</b>	320	100	170	188	200	213	256	180	100	125	250	300
<b>B400</b>	420	130	225	247	263	271	352	208	125	150	350	400
<b>B500</b>	520	156	290	306	328	367	416	312	150 ①	200 ①	400 ①	450 ①
<b>B630</b>	630	198	335	368	368	368	440	368	200 ①	250 ①	500 ①	500 ①

① No UL/CSA ratings; data given for indication and reference purposes only.

### ELECTRICAL IEC LIFE FOR MOTOR CONTROL AC3 $\leq 440\text{V}$

Electrical life of contactors



### IEC DC UTILISATION CATEGORY POLE CHARACTERISTICS

#### MAXIMUM OPERATIONAL CURRENT

2

IEC Voltage U <sub>e</sub>	Contactor Type	IEC Maximum current I <sub>e</sub> [A] in categories: DC1 with L/R ≤ 1ms and poles in series				DC3 - DC5 with L/R ≤ 15ms and poles in series			
		1	2	3	4	1	2	3	4
≤ 24V	<b>BG06</b>	9	12	14	-	6	7	9	-
	<b>BG09</b>	12	15	16	16	7	8	10	10
	<b>BG12</b>	12	15	16	-	7	8	10	-
	<b>BF09</b>	15	18	20	20	10	13	15	15
	<b>BF12</b>	17	20	22	20	12	15	18	15
	<b>BF18</b>	17	20	22	22	12	15	18	18
	<b>BF25</b>	20	23	23	-	15	18	22	-
	<b>BF26</b>	25	28	28	28	18	20	25	30
	<b>BF32</b>	30	32	32	-	20	25	30	-
	<b>BF38</b>	35	36	36	36	24	28	32	32
	<b>BF50</b>	45	60	60	60	30	35	50	55
	<b>BF65</b>	50	70	70	70	35	45	55	60
	<b>BF80</b>	70	100	100	100	40	60	80	90
48V	<b>BF95</b>	70	100	100	-	40	60	80	-
	<b>BF110</b>	70	100	100	-	40	60	80	-
	<b>BG06</b>	8	11	14	-	5	7	9	-
	<b>BG09</b>	10	14	16	16	6	8	10	10
	<b>BG12</b>	10	14	16	-	6	8	10	-
	<b>BF09</b>	13	18	20	20	9	11	15	15
	<b>BF12</b>	15	20	22	20	11	13	18	15
	<b>BF18</b>	15	20	22	22	11	13	18	18
	<b>BF25</b>	18	23	23	-	13	18	22	-
	<b>BF26</b>	21	28	28	28	15	20	25	30
	<b>BF32</b>	26	32	32	-	17	22	28	-
	<b>BF38</b>	30	34	34	34	20	25	28	28
	<b>BF50</b>	40	60	60	60	25	35	50	55
<b>BF65</b>	50	70	70	70	25	40	50	60	
<b>BF80</b>	60	100	100	100	30	50	70	90	
<b>BF95</b>	60	100	100	-	30	55	75	-	
<b>BF110</b>	60	100	100	-	30	55	75	-	
75V	<b>BG06</b>	4	7	8	-	2	4	5	-
	<b>BG09</b>	4	9	10	10	2	5	6	6
	<b>BG12</b>	4	9	10	-	2	5	6	-
	<b>BF09</b>	12	17	20	20	8	10	13	15
	<b>BF12</b>	13	18	20	20	10	12	15	15
	<b>BF18</b>	15	20	20	20	11	13	16	16
	<b>BF25</b>	18	23	23	-	13	16	18	-
	<b>BF26</b>	18	25	25	25	13	18	20	25
	<b>BF32</b>	22	28	32	-	15	20	28	-
	<b>BF38</b>	23	29	33	33	17	22	28	28
	<b>BF50</b>	40	60	60	60	22	30	45	55
	<b>BF65</b>	50	70	70	70	25	40	50	60
	<b>BF80</b>	60	100	100	100	30	50	70	90
<b>BF95</b>	60	100	100	-	30	50	70	-	
<b>BF110</b>	60	100	100	-	30	50	70	-	

**POLE CHARACTERISTICS**
**MAXIMUM OPERATIONAL CURRENT**

IEC Voltage U <sub>e</sub>	Contactor Type	IEC Maximum current I <sub>e</sub> [A] in categories: DC1 with L/R ≤ 1ms and poles in series				DC3 - DC5 with L/R ≤ 15ms and poles in series			
		1	2	3	4	1	2	3	4
110V	<b>BG06</b>	3	6	8	-	1	3	4	-
	<b>BG09</b>	3	8	10	10	1	4	5	5
	<b>BG12</b>	3	8	10	-	1	4	5	-
	<b>BF09</b>	6	12	15	16	2	7	11	12
	<b>BF12</b>	6	13	16	16	2	8	12	16
	<b>BF18</b>	6	13	16	18	2	8	12	13
	<b>BF25</b>	6	16	18	-	2	10	15	-
	<b>BF26</b>	6	22	24	24	2	13	18	20
	<b>BF32</b>	8	25	27	-	2.5	15	20	-
	<b>BF38</b>	8	32	34	34	2.5	18	23	23
	<b>BF50</b>	8	50	55	60	3	25	30	45
	<b>BF65</b>	8	60	60	70	3	30	35	50
	<b>BF80</b>	8	80	85	100	3	40	60	75
	<b>BF95</b>	8	80	85	-	3	40	60	-
<b>BF110</b>	8	80	85	-	3	40	60	-	
160V	<b>BG06</b>	-	4	6	-	-	2	3	-
	<b>BG09</b>	-	4	8	8	-	3	4	4
	<b>BG12</b>	-	4	8	-	-	3	4	-
220V	<b>BG06</b>	-	-	1	-	-	-	0.5	-
	<b>BG09</b>	-	-	2	2	-	-	0.8	0.8
	<b>BG12</b>	-	-	2	-	-	-	0.8	-
	<b>BF09</b>	4	8	10	12	0.75	1.5	5	7
	<b>BF12</b>	4	8	11	12	0.75	1.5	6	7
	<b>BF18</b>	4	8	11	13	0.75	1.5	6	8
	<b>BF25</b>	4	8	12	-	0.75	1.5	8	-
	<b>BF26</b>	5	12	14	14	0.75	1.5	10	15
	<b>BF32</b>	5	14	16	-	1	3	12	-
	<b>BF38</b>	5	20	26	26	1	4	15	15
	<b>BF50</b>	6	36	45	50	1	5	20	25
	<b>BF65</b>	6	36	50	60	1	5	25	30
	<b>BF80</b>	6	40	55	70	1	7	35	40
	<b>BF95</b>	6	40	55	-	1	7	35	-
<b>BF110</b>	6	40	55	-	1	7	35	-	
300V	<b>BF09</b>	-	-	-	10	-	-	-	5
	<b>BF18</b>	-	-	-	11	-	-	-	5
	<b>BF26</b>	-	-	-	16	-	-	-	10
	<b>BF38</b>	-	-	-	25	-	-	-	12
	<b>BF65</b>	-	-	-	60	-	-	-	25
	<b>BF80</b>	-	-	-	70	-	-	-	35

### IEC DC UTILISATION CATEGORY POLE CHARACTERISTICS

#### MAXIMUM OPERATIONAL CURRENT

2

IEC Voltage Ue	Contactor Type	IEC Maximum current Ie [A] in categories: DC1 with L/R ≤ 1ms and poles in series				DC3 - DC5 with L/R ≤ 15ms and poles in series			
		1	2	3	4	1	2	3	4
75V	<b>B115</b>	160	160	160	160	140	140	140	140
	<b>B145</b>	220	220	220	220	160	160	160	160
	<b>B180</b>	260	260	260	260	180	180	180	180
	<b>B250</b>	350	350	350	350	280	280	280	280
	<b>B310</b>	375	375	375	375	310	310	310	310
	<b>B400</b>	400	400	400	400	350	350	350	350
	<b>B500</b>	650	650	650	650	550	550	550	550
	<b>B630</b>	800	800	800	800	800	800	800	800
110V	<b>B115</b>	100	130	130	130	70	100	120	120
	<b>B145</b>	110	150	150	150	80	120	140	140
	<b>B180</b>	120	170	170	170	90	140	160	160
	<b>B250</b>	160	300	300	300	150	250	280	280
	<b>B310</b>	195	350	350	350	170	290	310	310
	<b>B400</b>	250	400	400	400	200	350	350	350
	<b>B500</b>	320	550	600	600	320	550	550	550
	<b>B630</b>	460	800	800	800	460	800	800	800
220V	<b>B115</b>	-	100	130	130	-	80	100	120
	<b>B145</b>	-	130	150	150	-	90	120	140
	<b>B180</b>	-	150	170	170	-	100	140	160
	<b>B250</b>	-	250	300	300	-	200	250	280
	<b>B310</b>	-	300	350	350	-	230	290	310
	<b>B400</b>	-	350	400	400	-	280	350	350
	<b>B500</b>	-	450	600	600	-	450	550	550
	<b>B630</b>	-	700	800	800	-	700	800	800
330V	<b>B115</b>	-	-	100	130	-	-	80	120
	<b>B145</b>	-	-	130	150	-	-	90	140
	<b>B180</b>	-	-	150	170	-	-	100	160
	<b>B250</b>	-	-	250	300	-	-	200	280
	<b>B310</b>	-	-	300	350	-	-	230	310
	<b>B400</b>	-	-	350	400	-	-	280	350
	<b>B500</b>	-	-	450	600	-	-	450	550
	<b>B630</b>	-	-	700	750	-	-	650	700
460V	<b>B115</b>	-	-	-	100	-	-	-	80
	<b>B145</b>	-	-	-	130	-	-	-	90
	<b>B180</b>	-	-	-	150	-	-	-	100
	<b>B250</b>	-	-	-	250	-	-	-	200
	<b>B310</b>	-	-	-	300	-	-	-	230
	<b>B400</b>	-	-	-	350	-	-	-	280
	<b>B500</b>	-	-	-	450	-	-	-	450
	<b>B630</b>	-	-	-	700	-	-	-	700

### IEC UTILISATION CATEGORIES DC1, DC3 AND DC5.

#### POLE CHARACTERISTICS

##### CHOICE CRITERIA

The elements to be considered for the contactor choice are:

- Rated operational current Ie
- Rated operational voltage Ue
- Utilisation category and L/R time constant
- Eventual verification of electrical life.

##### OPERATING CONDITIONS

Indicated current is valid for:

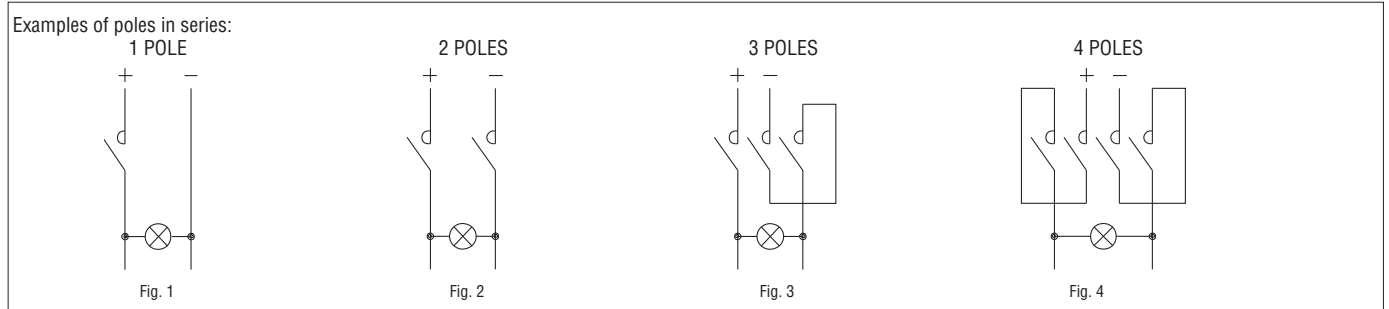
- Ambient temperature  $\leq 55^{\circ}\text{C}$
- Operating cycles: up to 120 cy/h with 60% on-load factor  
up to 250 cy/h with 30% on-load factor.

#### POLES IN SERIES

It is important to use contactors with the indicated number of poles in series depending on operating voltage.

The poles in series can be connected to one single polarity or divided between the two polarities of the circuit indifferently.

NOTE: For voltages lower than 30V, the diagrams given in figures 3 and 4 are not recommendable since voltage drops can take place. In these cases, it is better to use poles in parallel considering the notes given in the following section.



#### POLES IN PARALLEL

It is possible to increase the electrical life by placing poles in series when using voltages which require 1 or 2 poles in parallel.

Poles in parallel do not increase the maximum operational current given in the previous pages; that is, if one pole has a maximum operational current in DC5 of 8A, two poles in parallel, it will always be 8A.

With poles in parallel, it is possible to increase the rated contact capacity (Ith) only if the contactor opens and closes in no-load conditions or when used as resistance shunts.

In this case, the contact capacity can be increased.

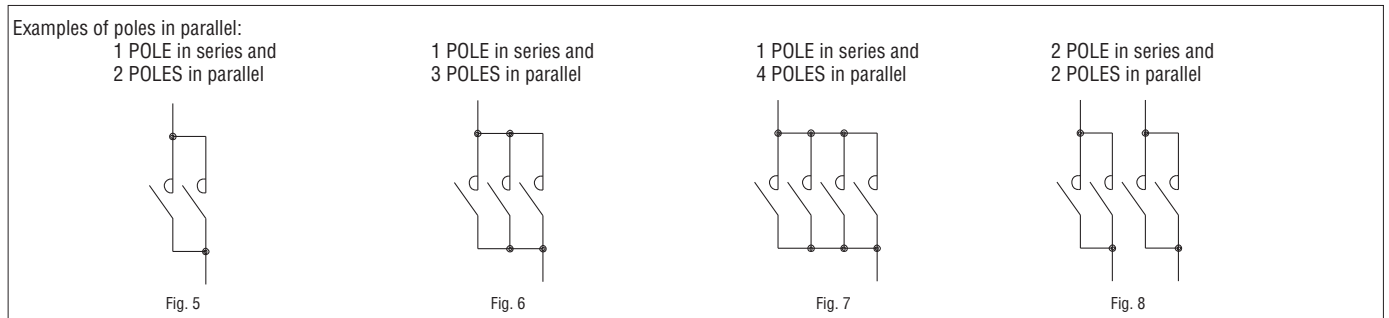
The value can be obtained by multiplying the rated current of one pole by the K factor given below; e.g.: if one pole carries 10A, three poles in parallel can carry  $10 \times 2.2 = 22\text{A}$ .

Therefore, the operating current is the one indicated in the tables, multiplied by the K factor given below which takes into consideration the unequal current division on the various poles.

2 POLES in parallel K = 1.6

3 POLES in parallel K = 2.2

4 POLES in parallel K = 2.8



#### MAXIMUM OPERATIONAL CURRENT

See tables on pages 2-50 to 2-52.

#### OTHER CONDITIONS

For different operating conditions or voltage not included among those indicated in the tables, on pages 2-50 to 2-52, consult Customer Service; see contact details on inside front cover.

### IEC SELECTION GUIDE FOR LIGHTING CIRCUIT SWITCHING

#### GENERAL INFORMATION

The elements which are to be considered for the contactor choice are:

- Type of lamp
- Power factor (cosφ)
- With or without power factor correction
- Value of current when switching on and in running conditions.

Depending on the number and type of lamps, it is also important to bear in mind the main discriminating characteristics given below for the contactor choice:

- Incandescent lamps → contactor making capacity
- Lamps not corrected → rated contactor current in AC1
- Lamps corrected → rated contactor current in AC3

The table below summarises the major characteristics depending on the more commonly used type of lamps:

Type of lamps	Switching on Multiple of In <sup>①</sup>	cosφ	Switching off Multiple of In <sup>①</sup>	cosφ
Incandescent	15	1	1	1
Mixed light	1.3	1	1	1
Fluorescent	1.15 - 1.3	0.2	1	0.3 - 0.5 (not corrected) 1 (corrected)
High-pressure mercury vapour	1.5 - 1.75	0.2	1	0.45 - 0.7 (not corrected)
High-pressure sodium vapour	1.3 - 1.5	0.2	1	0.3 - 0.5 (not corrected)
Low-pressure sodium vapour	1	0.2 - 0.5	1	0.2 - 0.5 (not corrected)
Metal halide	1.7 - 2.1	0.2	1	0.4 - 0.5 (not corrected)

Lamp features	Lamp power [W]	Rated current [A]	Capacitor capacity [μF]	Maximum number [n] of lamps for each contactor pole <sup>②</sup>												
				BG06 BG09	BF09 BF12	BF25	BF26	BF32	BF38	BF50	BF65	BF80 BF95	BF110	B115	B145	B180
INCANDESCENT 220/240V 50/60Hz	60	0.27	-	30	48	92	118	129	203	240	296	370	425	462		
	100	0.45	-	18	28	55	71	77	122	144	177	222	255	277		
	200	0.91	-	8	14	27	35	38	60	71	87	109	126	137		
	300	1.4	-	5	9	17	22	25	39	46	57	71	82	89		
	500	2.3	-	3	5	10	13	15	23	28	34	43	50	54		
	1000	4.6	-	1	2	5	6	7	11	14	17	21	25	27		
MIXED LIGHT 220/240V 50/60Hz	100	0.45	-	20	33	57	77	88	122	144	177	244	311	377		
	160	0.72	-	12	20	36	48	55	76	90	111	152	194	236		
	250	1.13	-	8	13	23	30	35	48	57	70	97	123	150		
	500	2.3	-	4	6	11	15	17	23	28	34	47	60	73		
ELECTRONIC BALLAST FLUORESCENT 220/240V 50/60Hz	Single mounting	16 / 18	0.1	(6.8) <sup>③</sup>	48	80	160	220	220	400	450	500	750	1050	1200	
		32 / 36	0.18	(6.8) <sup>③</sup>	27	44	88	122	122	222	250	277	416	583	666	
		50 / 58	0.27	(10) <sup>③</sup>	17	29	59	82	82	148	166	185	277	388	444	
	Dual mounting	2x16 / 18	0.18	(10) <sup>③</sup>	26	44	88	122	122	222	250	277	416	583	666	
		2x32 / 36	0.35	(10) <sup>③</sup>	13	22	45	62	62	114	128	142	214	300	342	
		2x50 / 58	0.52	(22) <sup>③</sup>	9	15	30	42	42	76	86	96	144	201	230	
STANDARD FLUORESCENT 220/240V 50/60Hz	Not corrected Single mounting	15	0.35	-	25	42	74	100	114	157	185	228	314	400	485	
		20	0.37	-	24	40	70	94	108	148	175	216	297	378	459	
		40	0.44	-	20	34	59	79	90	125	147	181	250	318	386	
		65	0.7	-	12	21	37	50	57	78	92	114	157	200	242	
		115	1.5	-	6	10	17	23	26	36	43	53	73	93	113	
		140	1.5	-	6	10	17	23	26	36	43	53	73	93	113	
	Corrected Single mounting	15	0.11	4.5	24	40	62	94	94	200	200	200	533	533	533	
		20	0.16	4.5	24	40	62	94	94	200	200	200	533	533	533	
		40	0.24	4.5	24	40	62	94	94	200	200	200	458	500	520	
		65	0.4	7	15	25	40	50	57	125	128	128	275	300	312	
		115	0.7	18	6	10	15	23	23	50	50	50	133	133	133	
		140	0.7	18	6	10	15	23	23	50	50	50	133	133	133	
		DUO circuit (lead-lag)	2 x 20	0.26 <sup>④</sup>	-	54	57	100	153	153	211	250	307	423	538	653
			2 x 40	0.46 <sup>④</sup>	-	19	32	56	86	86	119	141	173	239	304	369
2 x 65	0.7 <sup>④</sup>		-	12	21	37	57	57	78	92	114	157	200	242		
2 x 115	1.3 <sup>④</sup>		-	6	11	20	30	30	42	50	61	84	107	130		
2 x 140	1.5 <sup>④</sup>		-	6	10	17	26	26	36	43	53	73	93	113		

<sup>①</sup> In = Rated lamp current.

<sup>②</sup> For 220/240V circuits, either single-phase (between phase and neutral) or 2-wire (between phase and phase), the maximum number of lamps is as per the table.

For three-phase circuits with neutral 380/415V or 220/240V, the maximum number of lamps controlled by the same contactor is n • 3.

For three-phase 380/415V circuits without neutral, the maximum number of lamps controlled by the same contactor is n • √3.

Electrical life is 100,000 cycles up to 55°C.

<sup>③</sup> Incorporated capacitor.

<sup>④</sup> Total.

Lamp features		Lamp power [W]	Rated current [A]	Capacitor capacity [μF]	Maximum number [n] of lamps for each contactor pole <sup>①</sup>											
					BG06	BF09	BF26			BF80			B145	B196		
					BG09	BF12	BF18	BF25	BF32	BF38	BF50	BF65	BF110	BF95	B115	B122
HIGH-PRESSURE MERCURY VAPOUR 220/240V 50/60Hz	Not corrected	50	0.61	-	10	16	26	36	44	65	73	82	122	172	196	
		80	0.8	-	7	12	20	27	33	50	56	62	93	131	150	
		125	1.2	-	5	8	13	18	22	33	37	41	62	87	100	
		250	2.2	-	3	4	7	10	12	18	20	22	34	47	54	
		400	3.4	-	2	3	5	6	7	11	13	14	22	30	35	
		700	5.5	-	-	1	3	4	4	7	8	9	13	19	21	
		1000	8	-	-	1	2	2	3	5	5	6	9	13	15	
	Corrected	50	0.29	7	15	25	40	60	60	128	128	128	258	342	342	
		80	0.42	8	13	22	35	52	53	95	107	112	178	250	285	
		125	0.7	10	8	14	22	31	35	57	64	71	107	150	171	
		250	1.3	18	4	7	12	16	19	30	34	38	57	80	92	
		400	2.1	25	2	4	7	10	11	19	21	23	35	50	57	
		700	3.6	40	-	2	4	6	6	11	12	13	20	29	33	
		1000	5.3	60	-	1	3	4	4	7	8	9	14	19	22	
380/415V 50/60Hz	Not corrected	2000	8	-	-	1	2	2	3	3	4	5	8	9		
	Corrected	2000	5.5	35	-	1	2	2	4	5	5	8	11	13		
HIGH-PRESSURE SODIUM VAPOUR 220/240V 50/60Hz	Not corrected	150	1.8	-	3	5	8	12	15	22	25	27	41	58	66	
		250	3	-	2	3	5	7	9	13	15	16	25	35	40	
		400	4.7	-	1	2	3	4	5	8	9	10	15	22	25	
		600	7.1	-	-	1	2	3	3	5	6	6	10	15	16	
	Corrected	150	0.83	20	-	9	14	19	21	45	45	45	90	120	120	
		250	1.5	36	-	5	7	10	11	25	25	25	50	66	66	
		400	2.4	48	-	3	5	6	7	16	18	18	31	43	50	
		600	3.5	68	-	2	3	4	4	10	12	12	20	28	34	
		1000	6.3	120	-	1	1	2	2	6	7	7	11	16	19	
		-	-	-	-	-	-	-	-	-	-	-	-	-	-	
LOW-PRESSURE SODIUM VAPOUR 220/240V 50/60Hz	Not corrected	35	1.5	-	4	6	10	14	18	26	30	33	50	70	80	
		55	1.5	-	4	6	10	14	18	26	30	33	50	70	80	
		90	2.4	-	3	4	6	9	11	16	18	20	31	43	50	
		135	3.1	-	2	3	5	7	8	12	14	16	24	33	38	
		150	3.2	-	2	3	5	6	8	12	14	15	23	32	37	
	Corrected	35	0.31	20	-	6	10	14	18	45	45	45	120	120	120	
		55	0.42	20	-	6	10	14	18	45	45	45	120	120	120	
		90	0.63	30	-	4	6	9	11	30	30	30	80	80	80	
		135	0.94	40	-	3	5	7	8	22	22	22	60	60	60	
		150	1	40	-	3	5	6	8	22	22	22	60	60	60	
METAL HALIDE 220/240V 50/60Hz	Not corrected	35	0.3	-	-	28	50	66	80	100	150	167	250	330	400	
		70	0.5	-	-	16	28	40	50	60	90	100	150	200	240	
		150	1	-	-	8	14	20	25	30	45	50	75	100	120	
		250	3	-	-	3	5	7	9	13	15	16	25	35	40	
		400	3.5	-	-	2	4	6	7	11	12	14	21	30	34	
		1000	10	-	-	1	1	2	2	4	4	5	7	10	12	
		2000	17	-	-	-	-	1	1	2	2	2	4	6	7	
	Corrected	35	0.17	6	-	33	60	65	65	200	240	260	400	420	440	
		70	0.28	12	-	20	36	40	40	120	145	155	240	255	265	
		150	0.6	20	-	9	17	18	18	56	68	74	112	118	120	
380/415V 50/60Hz	Not corrected	250	1.5	32	-	5	7	8	10	26	28	28	46	50	53	
		400	2	35	-	4	5	6	7	20	22	25	35	37	40	
		1000	5.8	95	-	1	1	2	2	6	7	8	12	12	13	
		2000	11.5	148	-	-	-	1	1	3	3	4	6	6	6	
		3500	18	-	-	-	-	-	-	1	1	1	2	3	4	
	Corrected	2000	6.6	60	-	-	1	1	1	3	3	4	6	7	7	
		3500	11.6	100	-	-	-	-	-	2	2	2	3	3	4	

① For 220/240V circuits, either single-phase (between phase and neutral) or 2-wire (between phase and phase), the maximum number of lamps is as per the table.  
 For three-phase circuits with neutral 380/415V or 220/240V, the maximum number of lamps controlled by the same contactor is  $n \cdot 3$ .  
 For three-phase 380/415V circuits without neutral, the maximum number of lamps controlled by the same contactor is  $n \cdot \sqrt{3}$ .  
 Electrical life is 100,000 cycles up to 55°C.



### CONTACTORS FOR LIGHTING APPLICATIONS FOR NORTH AMERICA

In general, the North American market refers to lighting contactor ratings in Amperes, without distinction between incandescent or ballast type of load. Incandescent lamps with tungsten filament have very low Ohmic resistance when cold. As a result, the closing current is very high but also very short. On the other

hand, discharge lamps with ballast have highly inductive closing current and its duration depends on the type of lamp. Thus, ratings are selected for mixed lamp loads which consider the higher incandescent in-rush given below.

2

Lamp features		Maximum current [A] per contactor pole																
		BG09	BG12	BF09A	BF12A	BF18A	BF25A	BF26A	BF32A	BF38A	BF50	BF65	BF80	BF95	BF110	B115	B145	B180
INCANDESCENT																		
120-240VAC 50/60Hz		8.1	15	17	20	27	35	36	42	60	80	90	105	120	130	145	180	
MIXED LIGHT																		
120-240VAC 50/60Hz		9.2	15	17	20	26	30	35	40	55	65	80	85	90	110	140	170	
ELECTRONIC BALLAST FLUORESCENT																		
120-240VAC 50/60Hz		Single mounting	5	8	10	12	16	18	22	25	40	45	50	60	70	75	105	120
		Double mounting	5	8	10	12	16	18	22	25	40	45	50	60	70	75	105	120
STANDARD FLUORESCENT																		
120-240VAC 50/60Hz		Not corrected, single mounting	9	15	17	20	26	30	35	40	55	65	80	85	90	110	140	170
		Corrected, single mounting	6	10	12	14	16	23	23	25	50	50	55	55	60	110	120	125
		DUO circuit (lead-lag) ❶	14	15	18	20	26	40	42	45	55	65	80	95	90	110	140	170
HIGH-PRESSURE MERCURY VAPOUR																		
120-240VAC 50/60Hz		Not corrected	6.8	10	12	15	17	22	25	27	40	45	50	55	60	75	105	120
		Corrected	5.6	10	12	14	16	22	24	25	40	45	50	55	60	75	105	120
380-415VAC 50/60Hz		Not corrected	-	-	-	-	8	12	16	16	24	24	32	32	35	40	65	75
		Corrected	-	-	-	-	5.5	10	12	12	22	28	28	30	30	44	60	72
HIGH-PRESSURE SODIUM VAPOUR																		
120-240VAC 50/60Hz		Not corrected	6	9.4	11	13	15	22	25	27	40	45	50	53	55	75	110	120
		Corrected	-	7.5	9	10	12	15	16	17	38	44	44	46	48	72	103	120
LOW-PRESSURE SODIUM VAPOUR																		
120-240VAC 50/60Hz		Not corrected	7.2	9	10	13	15	20	22	27	40	45	50	53	55	75	105	120
		Corrected	-	3.5	3.5	5	5	6	8	10	20	23	23	25	25	70	72	75
METAL HALIDE																		
120-240VAC 50/60Hz		Not corrected	-	9	10	10	15	17	21	27	40	45	50	53	55	75	105	120
		Corrected	-	8	8	10	11	12	14	15	40	44	50	53	55	70	75	80
380-415VAC 50/60Hz		Not corrected	-	-	-	-	-	8	10	11	21	21	30	33	35	40	60	70
		Corrected	-	-	-	-	5	6	7	7	23	25	25	25	25	40	43	45

❶ Duo mounting or circuit, with power factor improvement, is obtained by matching an inductive circuit to a capacitive circuit.

### POSITIVE (FORCE) GUIDED CONTACTS

Positive (force) guided contacts are a requirement in safety circuits to correctly monitor the status of normally open power contacts. Guided contacts imply that Normally Open (NO) and Normally Closed (NC) operate together reciprocally but can never be simultaneously closed, even in the case NO contacts weld. Due to ever-growing importance of safety in all aspects of electrotechnology, a few years ago, IEC/EN authorities introduced in product standards, details to define the terminology, requirements, tests, specifics and symbology of auxiliary contacts with these characteristics as follows:

#### - IEC/EN 60947-4-1 Annex F

##### Applied to contactors with built-in and add-on auxiliary contacts

This standard includes details about "Requirements for auxiliary contact linked with power contact" and has designated them as "mirror contacts". It is applied to auxiliary contacts mechanically linked with power contacts of a contactor. A contactor can have more than one mirror contact. A mirror contact is defined to be a normally-closed auxiliary contact which cannot

be in closed position simultaneously with a normally-open power contact. For this purpose and to satisfy standard requirements, particular constructional details, such as minimum gap tolerance through which the mobile contact travels are necessary and the points of actuation are closer to the actual contact position. All this guarantees an appropriate clearance between NO and NC contacts in case of failure or malfunction. In the past, mirror contacts were called positively-guided contacts, forced contacts, linked contacts or positively-driven contacts.

A typical application of this type of contact is in control circuits of equipment and machinery where it is important to have a highly reliable monitoring of the contactor status. Besides, it is recommended to include an automatic control of redundancy (self-checking function) for the circuit of contacts to guarantee the utmost safety to the installation.

The symbol of this type of contact is given after the table and identifies mirror contacts, marked directly on the contactor itself or included in the relative documentation for types with built-in auxiliary contact.

The following table gives the types of contactors and relative connectable auxiliary contacts that have been tested and certified as "mirror contacts".

Type of contactor	Type of auxiliary contacts										
	Built-in	BGX10 02 - BGX1011 BGX1004	BFX1002 - BFX1011 - BFX1004 - BFX1013 - BFX10222 BFX1031	G484 03 - G48412 - G48421	G218	G218 + G280	G48102 - G48111 - G481	G481 ... (3 types) +G483	BFX1201 - BFX1211	BFX50 01	G350 - G354
BG0601 A/D/F	●	●	-	-	-	-	-	-	-	-	-
BG0610 A/D/L	-	●	-	-	-	-	-	-	-	-	-
BG0901 A/D/L	●	●	-	-	-	-	-	-	-	-	-
BG0910 A/D/L	-	●	-	-	-	-	-	-	-	-	-
BG09 T4 A/D	-	●	-	-	-	-	-	-	-	-	-
BG1201 A/D/L	●	●	-	-	-	-	-	-	-	-	-
BG1210 A/D/L	-	●	-	-	-	-	-	-	-	-	-
BF0901 A/D/L	●	-	●	●	●	●	●	●	●	●	-
BF0910 A/D/L	-	-	●	●	●	●	●	●	●	●	-
BF09 T4 A/D/L	-	-	●	●	●	●	●	●	●	●	-
BF1201 A/D/L	●	-	●	●	●	●	●	●	●	●	-
BF1210 A/D/L	-	-	●	●	●	●	●	●	●	●	-
BF12 T4 A	-	-	●	●	●	●	●	●	●	●	-
BF1801 A/D/L	●	-	●	●	●	●	●	●	●	●	-
BF1810 A/D/L	-	-	●	●	●	●	●	●	●	●	-
BF18T4 A/D/L	-	-	●	●	●	●	●	●	●	●	-
BF2501 A/D/L	●	-	●	●	●	●	●	●	●	●	-
BF2510 A/D/L	-	-	●	●	●	●	●	●	●	●	-
BF2600 A/D/L	-	-	●	●	●	●	●	●	●	●	-

Type of contactor	Type of auxiliary contacts										
	Built-in	BGX10 02 - BGX1011 BGX1004	BFX1002 - BFX1011 - BFX1004 - BFX1013 - BFX10222 BFX1031	G484 03 - G48412 - G48421	G218	G218 + G280	G48102 - G48111 - G481	G481 ... (3 types) +G483	BFX1201 - BFX1211	BFX50 01	G350 - G354
BF26T4 A/D/L	-	-	●	●	●	●	●	●	●	-	-
BF3200 A/D/L	-	-	●	●	●	●	●	●	●	-	-
BF3800 A/D/L	-	-	●	●	●	●	●	●	●	-	-
BF38T4 A/D/L	-	-	●	●	●	●	●	●	●	-	-
BF5000 AC/DC	-	-	●	●	-	-	-	-	-	-	-
BF5040 AC	-	-	●	●	-	-	-	-	-	-	-
BF6500 AC/DC	-	-	●	●	-	-	-	-	-	-	-
BF6540 AC/DC	-	-	●	●	-	-	-	-	-	-	-
BF8000 AC/DC	-	-	●	●	-	-	-	-	-	-	-
BF8040 AC/DC	-	-	●	●	-	-	-	-	-	-	-
BF9500 AC/DC	-	-	●	●	-	-	-	-	-	-	-
BF1000 AC/DC	-	-	●	●	-	-	-	-	-	-	-
B11500 - B18000	-	-	-	-	-	-	-	-	-	-	●
B115400 - B180400	-	-	-	-	-	-	-	-	-	-	●
B25000 - B40000	-	-	-	-	-	-	-	-	-	-	●
B250400 - B400400	-	-	-	-	-	-	-	-	-	-	●
B50000 - B630 1000	-	-	-	-	-	-	-	-	-	-	●
B500400 - B6301000 4	-	-	-	-	-	-	-	-	-	-	●

#### - IEC/EN 60947-5-1 Annex L

##### Applied to auxiliary contact elements

These elements are designated to be "mechanically linked" and can be included in devices for control circuits where the actuation force is provided internally, for instance control relays (LOVATO Electric BG00 and BF00).

Though linkage between the auxiliary and main contacts is in no way considered by this other standard, this does not prevent a given auxiliary contact to comply with and satisfy both requirements for "mirror contact" described above and for "mechanically linked contact" given below.

Moreover, it is also very important to be aware of the fact that control circuit devices actuated externally (e.g. push buttons or limit switches) do not have mechanically linked contact elements. Such devices, in safety applications, generally have contacts with direct opening action.

In the past, mechanically linked contact elements have been referred to as forced contacts, positively activated contacts or linked contacts.

Details about "Special requirements for mechanically linked contact elements" are defined by the standard as:

Mechanically linked contacts elements are combinations of n Make contact element(s) and m Break contact element(s) designed in such a way that they cannot be in closed position simultaneously. This signifies that:

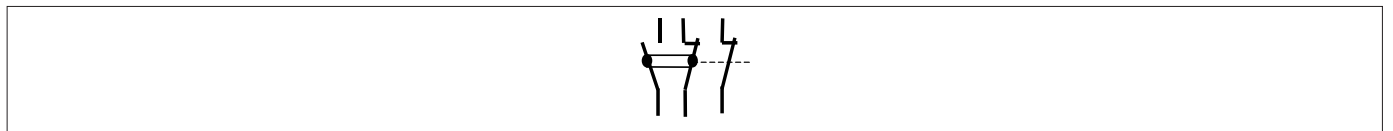
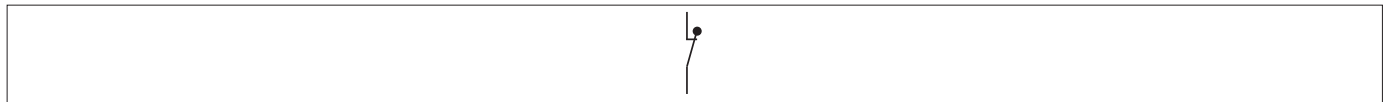
- "While any of the n Make contact element(s) is closed, none of the m Break contact element(s) shall be closed."
- "While any of the m Break contact element(s) is closed, none of the n Make contact element(s) shall be closed."

A control circuit device can have more than one group of mechanically-linked contact elements.

A typical application of mechanically linked contact elements is self-monitoring in machine control circuits.

This type is characteristic and standard supplied in several types of LOVATO Electric control relays and auxiliary contact blocks which have at least one NO and one NC contacts.

The symbol for mechanical linkage is identified in the circuit diagrams by a double parallel line connecting a filled circle on each of the mechanically linked contacts as illustrated below:



Consult Customer Service for information; see contact details on inside front cover.

### POWER FACTOR CORRECTION CAPACITORS

#### CHOICE CRITERIA

The contactor during the closing transition is influenced by electrical currents having high frequencies and high amplitudes. The frequencies of these currents range between 1 and 10kHz; the amplitudes must have values lower than the maximum permissible current peak of the contactor to be used.

#### AMBIENT OPERATING CONDITIONS

Ambient temperature:  $\leq 50^\circ\text{C}$ .  
 For temperatures higher than  $50^\circ\text{C}$  up to  $70^\circ\text{C}$ , stated maximum operational power ratings are to be reduced by a percentage equal to the difference between the ambient temperature and  $50^\circ\text{C}$ .  
 Operating cycle:  $\leq 120$  cy/h  
 Electrical life:  $\geq 100,000$  cycles.

#### SELECTION GUIDE

Contactor	IEC rated current	Maximum permissible peak current	IEC maximum operational voltage	Fuse gG	IEC maximum operational power at voltages:			
					220V 230V 240V	380V 400V	415V 440V	500V 660/690V
Type	[A]	[A]	[V]	[A]	[kvar]	[kvar]	[kvar]	[kvar]
<b>BF09 A</b>	12	500	690	16	4.5	7.5	9	10
<b>BF12 A</b>	16	550	690	25	6	11	12	14
<b>BF18 A</b>	22	1000	690	32	9	15	16	18
<b>BF25 A</b>	22	1000	690	32	9	15	16	18
<b>BF26 A</b>	30	1400	690	40	11	20	22	22
<b>BF32 A</b>	38	1700	690	50	14	25	27	30
<b>BF38 A</b>	42	1900	690	63	16	28	30	34
<b>BF50</b>	60	2500	1000	80	23	40	44	50
<b>BF65</b>	70	2700	1000	100	26	45	50	56
<b>BF80</b>	90	3000	1000	125	34	60	65	70
<b>BF95</b>	90	3000	1000	125	34	60	65	70
<b>BF110</b>	90	3000	1000	125	34	60	65	70
<b>B115</b>	130	3200	1000	200	50	87	93	115
<b>B145</b>	150	3400	1000	200	57	100	108	130
<b>B180</b>	170	3600	1000	250	65	112	122	150
<b>B250</b>	240	5100	1000	315	91	158	172	210
<b>B310</b>	265	5900	1000	315	105	184	200	245
<b>B400</b>	320	7500	1000	400	122	211	230	280
<b>B500</b>	500	9000	1000	630	190	330	360	430
<b>B630</b>	610	11000	1000	800	230	400	432	520

The use of contactors with the above operational powers is allowable only when the peak current, in the installation point of the power factor correction board, is lower than the values stated in the table.

If this condition is not verified, it is necessary to use limiting inductances or specific contactors stated on page 2-14. Consult Customer Service (see contact details on inside front cover) to obtain detailed information on the correct use of contactors without limiting inductances.

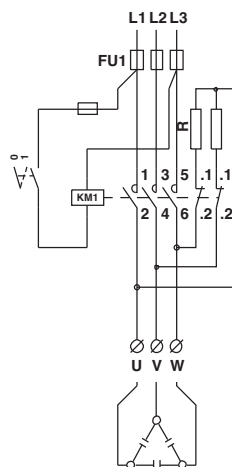
#### LIMITING INDUCTANCES

The use of limiting inductances is imperative when the system inductances (line transformer and cables), upstream of the power factor correction panel, are not able to maintain the maximum connecting current within the limit value of the contactor used.

#### FAST DISCHARGE RESISTANCES OF CAPACITORS

The use of the contactor, according to the wiring diagram given, allows the fast discharge of the capacitors as well as the instantaneous disconnection of the capacitors from the mains when the coil is de-energised.

The resistances, indicated in the following table, guarantee the discharge within a maximum time of 2 seconds.



Capacitor power [kvar]	Voltage 220-230V		Voltage 380-500V	
	[ $\Omega$ ]	[W]	[ $\Omega$ ]	[W]
2.5-5	3900	12	8200	12
10-15	1800	25	4300	25
20-50	1000	50	2200	50

### SPECIAL CONTACTORS FOR POWER FACTOR CORRECTION CAPACITORS

#### GENERAL CHARACTERISTICS

These contactors are equipped with early-make contacts. This special type of contact has the purpose of connecting for a very brief interval, 2-3ms, during the contactor closing, resistors which limit the connecting current of the capacitors. These resistors are then excluded when the closing operation is complete and the current capacity is conveyed to the main contacts. With this type of circuit, it is possible to obtain minor wear of all the components of the system especially fuses and capacitors ensuring a longer life and better reliability. The contactors are particularly suitable for use in automatic power factor correction panels since there is no need of limiting inductances and a source of heat has been eliminated. In this way, these modular electric switchboards can be more compact.

The BFK version, figure 1, is designed for three-phase switching. The peculiarity of this type is in the contacts, suitable to connect limiting resistors, which close only for the time needed to limit any in-rush current peak and then reopen to avoid eventual flow of residual currents through the resistors.

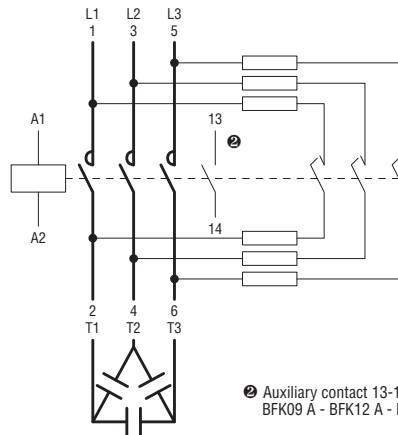
#### AMBIENT OPERATING CONDITIONS

Ambient temperature:  $\leq 50\text{ }^{\circ}\text{C}$

For ambient temperature higher than  $50\text{ }^{\circ}\text{C}$  up to  $70\text{ }^{\circ}\text{C}$ , maximum operational power ratings, indicated in the table, are to be reduced by a percentage equal to the difference between the ambient temperature and  $50\text{ }^{\circ}\text{C}$ .

Operating cycles:  $\leq 120\text{ cy/h}$ .

Electrical life:  $\geq 200,000\text{ cycles}$ .



#### CHOICE OF CONTACTORS TYPE BFK/BF...K ACCORDING TO IEC

Contactor	Built-in auxiliary contacts NO	IEC rated operational current $\leq 440\text{V}$	IEC fuse gG [A]	Maximum IEC power at $\leq 50\text{ }^{\circ}\text{C}$ (AC6b) ①			
				220V [kvar]	230V [kvar]	240V [kvar]	380V [kvar]
<b>BFK09 A</b>	1	12	16	4.5	7.5	9	10
<b>BFK12 A</b>	1	18	25	7	12.5	14	16
<b>BFK18 A</b>	1	23	40	9	15	17	20
<b>BFK26 A</b>	—	30	40	11	20	22	25
<b>BFK32 A</b>	—	36	63	14	25	27.5	30
<b>BFK38 A</b>	—	43	63	17	30	33	36
<b>BF50 K</b>	—	58	80	22	38	41	46
<b>BF65 K</b>	—	70	100	26	45	50	56
<b>BF70 K</b>	—	75	125	30	50	56	65
<b>BF80 K</b>	—	90	125	34	60	65	70

NOTE: See page 2-12 for order codes.

① Consult Customer Service (see contact details on inside front cover) for the use of contactors to switch within delta connection.

#### CHOICE OF CONTACTORS TYPE BFK/BF...K ACCORDING TO cULus LISTING

Contactor	Built-in auxiliary contacts NO (SPST)	UL/CSA rated current $\leq 440\text{V}$	UL/CSA protection fuse SC/gG [A]	Maximum UL/CSA operational power at voltage:		
				240V [kvar]	480V [kvar]	600V [kvar]
<b>BFK 09</b>	1	12	16	4.5	9	10
<b>BFK 12</b>	1	18	25	7	14	16
<b>BFK 18</b>	1	23	40	9	17	20
<b>BFK 26</b>	—	30	40	11	22	27.5
<b>BFK 32</b>	—	36	63	14	27.5	32
<b>BFK 38</b>	—	43	63	17	33	36
<b>BF50 K</b>	—	58	80	22	41	46
<b>BF65 K</b>	—	68	100	26	50	56
<b>BF70 K</b>	—	72	125	30	60	65
<b>BF80 K</b>	—	78	125	34	65	70

NOTE: See page 2-14 for order codes.

① Consult Customer Service (see contact details on inside front cover) for information about the use of contactors to switch within delta/gye connection.

### IEC OPERATIONAL CHARACTERISTICS BG00 AND BF00

TYPE		BG00	BF00 A	BF00 D	BF00 L
<b>POLE CONTACT CHARACTERISTICS</b>					
Poles ③	n°	4			
Conventional free air thermal current I <sub>th</sub> (≤40°C)	A	10			
Rated insulation voltage U <sub>i</sub>	V	690			
Frequency limit	Hz	25-400 ①			
UL/CSA and IEC/EN 60947-5-1 designation	AC	A600			
	DC	Q600			P600
Terminals	A	7.5			8.3
	B	4			3.5
	Screw	M3			M3.5
	Phillips	2			2
	Quick-connect	Faston	1x6.35mm - 2x2.8mm		—
Tightening torque for contact terminals min-max	Nm	0.8...1			1.5...1.8
	lbft	0.59-0...74			1.03...1.33
Tightening torque for coil terminals min-max	Nm	0.8...1			
	lbft	0.59...0.74			
	Phillips	2			
Conductor section connectable with 1 or 2 wires min...max	AWG stranded	n°	18...12	16...10	
	Flexible w/o lug	mm²	0.75...2.5	1...6	
	Flexible c/w boot-lace ferrule	mm²	2x1.5 or 1x2.5	1...4	
	Flexible c/w spade lug	mm²	2x1.5 or 1x2.5	1...4	
Terminal protection according to IEC/EN 60529		IP20②			
<b>AMBIENT CONDITIONS</b>					
Operating temperature	°C	-40...+60			-50...+70
Storage temperature	°C	-55...+70			-60...+80
Maximum altitude	m	3000			
Operation position	Normal	On vertical plane			
	Allowable	±30°			
Fixing		Screw or 35mm DIN rail (IEC/EN 60715)			

① Derating for use at 61-400 Hz. Consult Customer Service for information; see contact details on inside front cover.

② IP20 protection warranted by wired equipment; minimum 0.75mm² conductor section for BG00 or 1mm² for BF00.

③ NO and NC auxiliary contacts are highly conductive; all SPST.

### ELECTRICAL RATINGS BASED ON IEC/EN 60947-5-1 UTILIZATION CATEGORIES AND UL508/CSA C22.2 n°14

IEC/EN designation	IEC/EN utilization category	Conventional enclosed thermal current I <sub>the</sub>	Rated operational current I <sub>e</sub> [A] at rated operational voltage U <sub>e</sub>												VA rating	
UL designation	—	Thermal continuous test current	Maximum Amperes (AC) 60Hz												Maximum VA	
Alternating current	[A]		120VAC		240VAC		380VAC		480VAC		600VAC		Make	Break		
A600	AC-15	10	60	6	30	3	19	1.9	15	1.5	12	1.2	7200	720		
Direct current			Maximum Amperes (DC) Make or Break													
P600	DC-13	5	1.1	0.55	0.2 ④		0.31 ④	0.27 ④	0.2				300V or less ⑤	138	138	
Q600	DC-13	2.5	0.55	0.27	0.1 ④		0.15 ④	0.13 ④	0.1				69	69		

④ Value at 301V is valid for UL/CSA up to 600VDC; the others are valid for IEC/EN.

⑤ Voltage valid for UL/CSA only.

TYPE				BG00	BF00 A	BF00 D	BF00 L	
<b>AC CONTROL</b>								
Rated control voltage at 50/60Hz or 60Hz		V		12-575	12-600	—	—	
Operating voltage limits								
50/60Hz coil powered at	50Hz	pick-up	% Us	75-115	80-110	—	—	
		drop-out	% Us	20-55	20-55	—	—	
	60Hz	pick-up	% Us	75-115	80-110	—	—	
		drop-out	% Us	20-55	20-55	—	—	
60Hz coil powered at	60Hz	pick-up	% Us	75-115	80-110	—	—	
		drop-out	% Us	20-55	20-55	—	—	
Average coil consumption at $\leq 20^{\circ}\text{C}$								
50/60Hz coil powered at	50Hz	in-rush	VA	30	75	—	—	
		holding	VA	4	9	—	—	
	60Hz	in-rush	VA	25	70	—	—	
		holding	VA	3	6,5	—	—	
60Hz coil powered at	60Hz	in-rush	VA	30	75	—	—	
		holding	VA	4	8	—	—	
Dissipation at holding $\leq 20^{\circ}\text{C}$		50Hz	W	0.95	2.5	—	—	
<b>DC CONTROL</b>								
Rated control voltage		V		6-250	—	6-415	6-415	
Operating voltage limits		pick-up	% Us	75-115	—	70-125	80-110	
		drop-out	% Us	10-20	—	10-40	10-40	
Average consumption at $\leq 20^{\circ}\text{C}$ (in-rush/holding)		W		3.2 <sup>①</sup>	—	5.4	2.4	
<b>OPERATING TIMES</b>								
Average time for $U_s$ control in		AC	closing NO	ms	12-21	8-24	—	—
			opening NO	ms	9-18	10-20	—	—
			closing NC	ms	17-26	17-30	—	—
			opening NC	ms	7-17	7-18	—	—
		DC	closing NO	ms	18-25	—	54-66	75-91
			opening NO	ms	2-3	—	14-17	15-19
			closing NC	ms	3-5	—	24-30 <sup>②</sup>	24-30 <sup>③</sup>
			opening NC	ms	11-17	—	47-57 <sup>②</sup>	67-81 <sup>③</sup>
<b>LIFE</b>								
Mechanical		AC control	cycles	20 million				
		DC control	cycles	20 million				
<b>MAXIMUM OPERATING RATE</b>								
Mechanical operations			cycles/h	3600				

① 2.3W for low-consumption BG00...L version.

② NC closing time for BF00 04D is 23-29ms while NC opening time is 40-49 ms.

③ NC closing time for BF00 04L is 25-31ms while NC opening time is 56-68 ms.

### IEC OPERATIONAL CHARACTERISTICS BG06, BG09 AND BG12

TYPE		BG06	BG09	BG12	
<b>POLE CHARACTERISTICS</b>					
Power poles	n°	3	3-4	3	
Rated insulation voltage $U_i$	V	690	690 ①	690	
Rated impulse withstand voltage $U_{imp}$	kV	6	6	6	
Operational frequency	Hz	25-400 ②	25-400 ②	25-400 ②	
Operational current Conventional free air thermal $I_{th}$ ( $\leq 40^\circ\text{C}$ )	A	16	20	20	
	AC3 ( $\leq 440\text{V}$ $\leq 55^\circ\text{C}$ )	A	6	9	12
	AC4 (400V) ③	A	3.3	4.0	4.8
Short-time allowable current for 10s (IEC/EN 60947-1)	A	96	96	96	
Maximum fuse size Type 1 or 2	gG	A	16	20	
	aM	A	6	10	16
Making capacity (RMS value)	A	92	92	120	
Breaking capacity at voltage	$\leq 440\text{V}$	A	72	72	96
	500V	A	72	72	72
	690V	A	72	72	72
Consumption per pole and resistance (average values)	mΩ	10	10	10	
	$I_{th}$	W	2.6	4	4
	AC3	W	0.36	0.81	1.44
Terminals	A	7.5	7.5	7.5	
	B	4	4	4	
	screw	M3	M3	M3	
	Phillips	2	2	2	
	Quick-connect	Faston	—	1x6.35mm or 2x2.8mm	—
	Solder	—	—	PCB solder pin ④	—
Tightening torque for pole and coil terminals min-max	Nm	0.8...1	0.8...1	0.8...1	
	lbft	0.59...0.74	0.59...0.74	0.59...0.74	
	Phillips	2	2	2	
Conductor section connectable with 1 or 2 wires min...max	AWG stranded	n°	18...12		
	Flexible w/o lug	mm <sup>2</sup>	0.75...2.5		
	Flexible c/w boot-lace ferrule	mm <sup>2</sup>	2x1.5 or 1x2.5		
	Flexible c/w spade lug	mm <sup>2</sup>	2x1.5 or 1x2.5		
Terminal protection to IEC/EN 60529			IP20 ⑤		
<b>AUXILIARY CONTACT CHARACTERISTICS</b>					
Type of contact	n°	1-NO or NC based on configuration ⑥ (SPST)			
Thermal current $I_{th}$	A	10			
UL/CSA and IEC/EN 60947-5-1 designation	AC	A600			
	DC	Q600			
<b>AMBIENT CONDITIONS</b>					
Operating temperature	°C	-40...+60			
Storage temperature	°C	-55...+70			
Maximum altitude	m	3000			
Operating position	Normal	On vertical plane			
	Allowable	± 30°			
Fixing		Screw or 35mm DIN rail (IEC/EN 60715)			

① Rated voltage  $U_i$  for BGP... types is 500V and 300V only for UL ratings.

② Derating for use at 61-400Hz. Consult Customer Service for information; see contact details on inside front cover.

③ Current values guarantee an electrical life of about 50,000 cycles.

④ Dimensions and drilling distances are given on page 2-32.

⑤ IP20 protection warranted by wired equipment; minimum 0.75mm<sup>2</sup> conductor section.

⑥ NO or NC auxiliary is highly conductive.

Other characteristics are the same as the mechanical characteristics of the poles.

TYPE				BG06	BG09	BG12
<b>AC CONTROL</b>						
Rated voltage at 50/60Hz, 60Hz		V		12-575		
Operating voltage limits						
50/60Hz coil powered at	50Hz	pick-up	% Us	75-115		
		drop-out	% Us	20-55		
	60Hz	pick-up	% Us	75-115		
		drop-out	% Us	20-55		
60Hz coil powered at	60Hz	pick-up	% Us	75-115		
		drop-out	% Us	20-55		
Average coil consumption at $\leq 20^{\circ}\text{C}$						
50/60Hz coil powered at	50Hz	in-rush	VA	30		
		holding	VA	4		
	60Hz	in-rush	VA	25		
		holding	VA	3		
60Hz coil powered at	60Hz	in-rush	VA	30		
		holding	VA	4		
Dissipation at $\leq 20^{\circ}\text{C}$	at 50Hz		W	0.95		
<b>DC CONTROL</b>						
Rated control voltage		V		6-250		
Operating voltage limits	pick-up		% Us	75-115		
	drop-out		% Us	10-25		
Average consumption at $\leq 20^{\circ}\text{C}$ (in rush-holding)		W		3.2	3.2 <sup>①</sup>	3.2
<b>OPERATING TIMES</b>						
Average time for Us control in		AC	closing NO	ms	12-21	
			opening NO	ms	9-18	
			closing NC	ms	17-26	
			opening NC	ms	7-17	
		DC	closing NO	ms	18-25	
			opening NO	ms	2-3	
			closing NC	ms	3-5	
			opening NC	ms	11-17	
<b>LIFE</b>						
Mechanical	AC control		cycles	20 million		
	DC control		cycles	20 million		
Electrical (Ie at 400V AC3)		cycles		500,000		
<b>MAXIMUM OPERATING RATE</b>						
Mechanical operations		cy/h		3600		

① 2.3W for low-consumption type BG09...L.

### ELECTRICAL RATINGS BASED ON IEC/EN 60947-5-1 UTILIZATION CATEGORIES AND UL508/CSA C22.2 n°14

IEC/EN designation	IEC/EN utilization category	Conventional enclosed thermal current Ithe	Rated operational current Ie [A] at rated operational voltage Ue										VA rating	
UL designation	—	Thermal continuous test current	Maximum Amperes (AC) 60Hz										Maximum VA	
Alternating current			120VAC	240VAC		380VAC		480VAC		600VAC		Make	Break	
A600	AC-15	10	60	6	30	3	19	1.9	15	1.5	12	1.2	7200	720
Direct current			Maximum Amperes (DC) Make or Break										300V or less ②	
			125VDC	250VDC	301VDC	400VDC	500VDC	600VDC						
Q600	DC-13	2.5	0.55	0.27	0.1 ③	0.15 ③	0.13 ③	0.1			69	69		

② Value at 301V is valid for UL/CSA up to 600VDC; the others are valid for IEC/EN.

③ Voltage valid for UL/CSA only.



### IEC OPERATIONAL CHARACTERISTICS BF09-BF38

TYPE		BF09	BF12	BF18	BF25	BF26	BF32	BF38	
<b>POLE CHARACTERISTICS</b>									
Power poles	n°	3-4	3-4	3-4	3	3-4	3	3-4	
Rated insulation voltage Ui	V	690							
Rated impulse withstand voltage Uimp	kV	6							
Operational frequency	Hz	25-400 <sup>①</sup>							
Operational current	Conventional free air thermal Ith (≤40°C)	A	25	28	32	32	45	56	56(60 <sup>⑤</sup> )
	AC3 (≤440V ≤55°C)	A	9	12	18	25	26	32	38
	AC4 (400V) <sup>②</sup>	A	4.9	7.9	8.5	10	11.5	13.5	15.5
Short-time allowable current for 10s (IEC/EN 60947-1)	A	110	110	130	160	200	320	320	
Max fuse size	gG	A	25	32	32	50	50	63	63
	aM	A	10	12	20	25	32	32	40
Making capacity (RMS value)	A	90	120	180	250	260	320	380	
Breaking capacity at voltage	≤440V	A	72	96	144	200	208	256	304
	500V	A	72	96	120	184	184	240	240
	690V	A	71	94	94	102	168	192	192
Consumption and resistance per pole (average values)		mΩ	2.5	2.5	2.5	2.5	2.0	2.0	2.0
	Ith	W	1.6	2.0	2.6	2.6	4.0	6.0	6.0
	AC3	W	0.2	0.4	0.8	1.6	1.4	2.0	2.9
Terminals	Type	Clamp-screw							
	A	9.5	9.5	9.5	9.5	13	13	13	
	B	4.5	4.5	4.5	4.5	5.5	5.5	5.5	
	Screw	M3.5	M3.5	M3.5	M3.5	M4	M4	M4	
	Phillips	2	2	2	2	2	2	2	
Tightening torque for pole terminal min-max	Nm	1.5...1.8	1.5...1.8	1.5...1.8	1.5...1.8	2.5...3	2.5...3	2.5...3	
	lbf·ft	1.1...1.5	1.1...1.5	1.1...1.5	1.1...1.5	1.8...2.2	1.8...2.2	1.8...2.2	
Tightening torque for coil terminals min-max	Nm	0.8-1	0.8-1	0.8-1	0.8-1	0.8-1	0.8-1	0.8-1	
	lbf·ft	0.59-0.74	0.59-0.74	0.59-0.74	0.59-0.74	0.59-0.74	0.59-0.74	0.59-0.74	
	Phillips	2	2	2	2	2	2	2	
Conductor section connectable with 1 or 2 wires min...max	AWG stranded	n°	16...10	16...10	16...10	16...10	14...6	14...6	14...6
	Flexible w/o lug	mm <sup>2</sup>	1...6	1...6	1...6	1...6	2.5...16	2.5...16	2.5...16
	Flexible c/w insulated boot-lace ferrule	mm <sup>2</sup>	1-4	1-4	1-4	1-4	1-10	1-10	1-10
	Flexible c/w insulated spade lug	mm <sup>2</sup>	1-4	1-4	1-4	1-4	1-10	1-10	1-10
Power terminal protection according to IEC/EN 60529		IP20 <sup>③</sup>	IP20 <sup>③</sup>	IP20 <sup>③</sup>	IP20 <sup>③</sup>	IP20 <sup>④</sup>	IP20 <sup>④</sup>	IP20 <sup>④</sup>	



### AUXILIARY CONTACT CHARACTERISTICS

Type of contact	n°	1-NO or NC based on configuration <sup>⑥</sup> (SPST)						—
Thermal current Ith	A	10						—
UL/GSA and IEC/EN 60947-5-1 designation	AC	A600						—
	DC	Q600						—

### AMBIENT CONDITIONS

Operating temperature	°C	-50...+70						
Storage temperature	°C	-60...+80						
Maximum altitude	m	3000						
Operating position	Normal	On vertical plane						
	Allowable	± 30°						
Fixing		Screw or 35mm DIN rail (IEC/EN 60715)						

<sup>①</sup> Derating for use at 61-400Hz. Consult Customer Service for information; see contact details on inside front cover.

<sup>②</sup> Current values guarantee an electrical life of about 200,000 cycles.

<sup>③</sup> IP20 protection warranted by wired equipment; minimum 1mm<sup>2</sup> conductor section.

<sup>④</sup> IP20 protection on front.

<sup>⑤</sup> For this other current value, use 16mm<sup>2</sup> wire with spade cable terminal.

<sup>⑥</sup> NO or NC auxiliary is highly conductive. Other characteristics are the same as the mechanical characteristics of the poles.

ELEVATOR EQUIPMENT - Magnetic Motor Controllers per CSA certification File 54332 - Class 2411-03, to requirements of B44.1-04/SME A17.5-2004. Contactors, three or four poles, open type, operating coil 600VAC or less, 380VDC or less.

Type	Maximum horsepower ratings						CSA General use [A]
	Single phase 120V		Three phase 200-208V				
	240V	240V	240V	480V	600V	600V	
BF12	1/2 [HP]	1 1/2 [HP]	3 [HP]	3 [HP]	7 1/2 [HP]	7 1/2 [HP]	28
BF25	1 1/2 [HP]	3 [HP]	5 [HP]	7 1/2 [HP]	15 [HP]	15 [HP]	32
BF38	3 [HP]	5 [HP]	10 [HP]	10 [HP]	20 [HP]	20 [HP]	55

TYPE	BF09	BF12	BF18	BF25	BF26	BF32	BF38
<b>AC CONTROL</b>							
Rated voltage at 50/60Hz, 60Hz	V			12-600			
<b>Operating voltage limits</b>							
50/60Hz coil powered at	50Hz	pick-up	% Us	80-110			
		drop-out	% Us	20-55			
	60Hz	pick-up	% Us	85-110			
		drop-out	% Us	20-55			
60Hz coil powered at	60Hz	pick-up	% Us	80-110			
		drop-out	% Us	20-55			
<b>Average coil consumption at ≤20°C</b>							
50/60Hz coil powered at	50Hz	in-rush	VA	75			
		holding	VA	9			
	60Hz	in-rush	VA	70			
		holding	VA	6.5			
60Hz coil powered at 60Hz	60Hz	in-rush	VA	75			
		holding	VA	9			
Dissipation at holding ≤20°C	50Hz	W	2.5				

<b>DC CONTROL - normal and low consumption</b>								
Rated control voltage	V			6-415				
<b>Operating limits</b>								
pick-up	three-pole BF...D	from	% Us	70				
		to	% Us	125				
	four-pole BF...D	from	%Us	70		80		
		to	%Us	125		125		
	three and four pole BF...L	from	% Us	80				
		to	% Us	110				
drop-out	for all versions	from	%Us	10				
		to	%Us	40				
Average coil consumption ≤20°C (in rush-holding)	BF...D	W	5.4					
	BF...L	W	2.4					

<b>OPERATING TIMES</b>									
Average time for Us control in	AC	closing NO	ms	8-24				8-24	
		opening NO	ms	10-20				10-20	
		closing NC	ms	14-28 <sup>①</sup>				9-20 <sup>②</sup>	
		opening NC	ms	7-18 <sup>①</sup>				9-17 <sup>②</sup>	
	DC BF...D types	closing NO	ms	54-66				53-65	
		opening NO	ms	14-17				14-18	
		closing NC	ms	24-30 <sup>③</sup>				23-28	
		opening NC	ms	47-57 <sup>③</sup>				46-56	
	DC BF...L types	closing NO	ms	75-91				76-92	
		opening NO	ms	15-19				16-20	
		closing NC	ms	24-30 <sup>④</sup>				25-31	
		opening NC	ms	67-81 <sup>④</sup>				63-77	

<b>LIFE</b>									
Mechanical (million)	AC control	cycles	20	20	20	20	20	20	20
	DC control	cycles	20	20	20	20	20	20	20
Electrical (Ie at 400VAC3) (million)		cycles	2.0	2.0	1.6	1.2	1.6	1.6	1.4

<b>MAXIMUM OPERATING RATE</b>									
Mechanical operations	cy/h		3600						

- ① NC closing time for BF...TOA types is 9-25ms while NC opening time is 9-15ms.
- ② NC closing time for BF...TOA types is 11-29ms while NC opening time is 6-14ms.
- ③ NC closing time for BF...TOD types is 23-29ms while NC opening time is 40-49ms.
- ④ NC closing time for BF...TOL types is 25-31ms while NC opening time is 56-68ms.

**ELECTRICAL RATINGS BASED ON IEC/EN 60947-5-1 UTILIZATION CATEGORIES AND UL508/CSA C22.2 n°14**

IEC/EN designation	IEC/EN utilization category	Conventional enclosed thermal current Ithe	Rated operational current Ie [A] at rated operational voltage Ue										VA rating		
UL designation	—	Thermal continuous test current	Maximum Amperes (AC) 60Hz										Maximum VA		
			120VAC		240VAC		380VAC		480VAC		600VAC				
Alternating current			[A]	Make	Break	Make	Break	Make	Break	Make	Break	Make	Break	Make	Break
A600	AC-15	10	60	6	30	3	19	1.9	15	1.5	12	1.2	7200	720	
Direct current				Maximum Amperes (DC) Make or Break											
				125VDC	250VDC	301VDC	400VDC	500VDC	600VDC						
Q600	DC-13	2.5	0.55	0.27	0.1 <sup>⑤</sup>	0.15 <sup>⑥</sup>	0.13 <sup>⑥</sup>	0.1					69	69	

- ⑤ Value at 301V is valid for UL/CSA up to 600VDC; the others are valid for IEC/EN.
- ⑥ Voltage valid for UL/CSA only.

### IEC OPERATIONAL CHARACTERISTICS BF50-BF110

TYPE		BF50	BF65 <sup>①</sup>	BF80	BF95	BF110	
<b>POLE CHARACTERISTICS</b>							
Power poles	n°	3-4	3-4	3-4	3	3	
Rated insulation voltage U <sub>i</sub>	V	1000					
Rated impulse withstand voltage U <sub>imp</sub>	kV	8					
Operational frequency	Hz	25-400 <sup>②</sup>					
Operational current	Conventional free air thermal I <sub>th</sub> (≤40°C)	A	90	110	125	125	125
	AC3 (≤440V ≤55°C)	A	50	65	80	95	110
	AC4 (400V) <sup>③</sup>	A	28	31	38	43	43
Short-time allowable current for 10s (IEC/EN 60947-1)	A	390	390	480	760	880	
Maximum fuse size	gG	A	100	125	160	160	160
	aM	A	50	80	80	100	125
Making capacity (RMS value)	A	800	1090	1200	1200	1200	
Breaking capacity at voltage	≤440V	A	800	1090	1200	1200	1200
	500V	A	660	830	1050	1050	1050
	690V	A	500	630	800	800	800
Consumption and resistance per pole (average values)		mΩ	0.8	0.8	0.6	0.6	0.6
	I <sub>th</sub>	W	6.5	9.7	9.4	9.4	9.4
	AC3	W	2.0	3.4	3.8	5.4	7.3
Terminals	Type	Lug clamp <sup>④</sup>					
	A	12.3	12.3	12.3	12.3	12.3	
	B	12	12	12	12	12	
	Screw	M6	M6	M6	M6	M6	
	Metric Allen	4	4	4	4	4	
Tightening torque for pole terminal min-max	Nm	4...5					
	lbft	2.95...3.69					
Tightening torque for coil terminals min-max	Nm	0.8...1					
	lbft	0.59...0.74					
	Phillips	1					
Conductor section connectable with 1 or 2 wires min...max	AWG	N°	14...2/0				
	Flexible w/o lug	mm <sup>2</sup>	4...50	4...50	6...50	6...50	6...50
	Flexible c/w lug	mm <sup>2</sup>	4...50	4...50	6...50	6...50	6...50
Power terminal protection according to IEC/EN 60529		IP20 <sup>⑤</sup>					
<b>AMBIENT CONDITIONS</b>							
Operating temperature	°C	-50...+70					
Storage temperature	°C	-60...+80					
Maximum altitude	m	3000					
Operating position	Normal	On vertical plane					
	Allowable	± 30°					
Fixing		Screw or DIN rail 35mm <sup>⑥</sup> and 75mm (IEC/EN 60715)					

<sup>②</sup> Derating for use at 61-400 Hz. Consult Customer Service for information; see contact details on inside front cover.

<sup>③</sup> Current values guarantee an electrical life of about 200,000 cycles.

<sup>④</sup> IEC/EN 60947-1 designation: Pillar terminal.

In addition to the main terminal which has dimensions as mentioned above, there is a second terminal entry 12.3x3.8mm (0.5x0.15in) for flexible busbars.

<sup>⑤</sup> IP20 protection warranted to three-pole contactors only by mounting the G265 protection.

<sup>⑥</sup> Only three-pole versions can be mounted on 35mm DIN rail.

<sup>①</sup> ELEVATOR EQUIPMENT - Magnetic Motor Controllers per CSA certification File 54332 - Class 2411-03, to requirements of B44.1-04/SME A17.5-2004. Contactors, three or four poles, open type, operating coil 600VAC or less, 380VDC or less.

Type	Maximum horsepower ratings						CSA General use [A]
	Single phase		Three phase			600V	
	120V	240V	200-208V	240V	480V		
BF65	[HP]	[HP]	[HP]	[HP]	[HP]	[HP]	[A]
	3	10	15	15	40	50	110

TYPE			BF50	BF65	BF80	BF95	BF110
<b>AC CONTROL</b>							
Rated voltage at 50/60Hz, 60Hz		V	12-600				
Operating voltage limits							
50/60Hz coil powered at	50Hz	pick-up	% Us	80-110			
		drop-out	% Us	20-55			
	60Hz	pick-up	% Us	85-110			
		drop-out	% Us	40-55			
60Hz coil powered at	60Hz	pick-up	% Us	80-110			
		drop-out	% Us	20-55			
Average coil consumption at $\leq 20^{\circ}\text{C}$							
50/60Hz coil powered at	50Hz	in-rush	VA	220			
		holding	VA	18			
	60Hz	in-rush	VA	200			
		holding	VA	15			
60Hz coil powered at	60Hz	in-rush	VA	220			
		holding	VA	18			
Dissipation at $\leq 20^{\circ}\text{C}$	50Hz		W	6			
<b>DC CONTROL</b>							
Rated voltage		V	12-600				
Operating voltage limits	pick-up	% Us	80-110				
	drop-up	% Us	10-25				
Average consumption $\leq 20^{\circ}\text{C}$ (in rush-holding)			W	15			
<b>OPERATING TIMES</b>							
Average time for Us control in	AC	closing NO	ms	13-28			
		opening NO	ms	6-19			
	DC	closing NO	ms	60-90			
		opening NO	ms	7-12			
<b>LIFE</b>							
Mechanical (million)	AC control	cycles	15	15	15	15	15
	DC control	cycles	15	15	15	15	15
Electrical (Ie at 400V in AC3) (million)		cycles	1.5	1.4	1.3	1.2	0.8
<b>MAXIMUM OPERATING RATE</b>							
Mechanical operations			cy/h	3600			

### IEC OPERATIONAL CHARACTERISTICS B115-B1600

TYPE		B115	B145	B180	B250	B310	B400	B500	B630	B630 1000	B1250	B1600		
<b>POLE CHARACTERISTICS</b>														
Power poles	n°	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4		
Rated insulation voltage $U_i$	V	1000												
Rated impulse withstand voltage $U_{imp}$	kV	8												
Operational frequency	Hz	25-400 <sup>①</sup>												
Operational current	Conventional free air thermal $I_{th}$ ( $\leq 40^\circ\text{C}$ )	A	160	250	275	350	450	550	700	800	1000	1250	1600	
	AC3 ( $\leq 440\text{V}$ $\leq 55^\circ\text{C}$ )	A	110	150	185	265	320	420	520	630	–	–	–	
	AC4 (400V) <sup>②</sup>	A	47	57	65	92	110	133	175	210	–	–	–	
Short-time allowable current for 10s (IEC/EN 60947-1)	A	1100	1300	1500	2200	2900	3600	4050	5040	5600	6500	8300		
Maximum fuse size	gG	A	200	250	315	400	500	630	800	1000	1000	1250	1600	
	aM	A	125	160	200	250	400	400	500	630	–	–	–	
Making capacity (RMS value)	A	1100	1500	1850	2750	3150	4200	5000	6300	6300	6300	6300		
Breaking capacity at voltage	$\leq 440\text{V}$	A	1300	1500	1850	2500	3000	4000	5000	6300	6300	6300	6300	
	500V	A	1100	1400	1600	2250	2700	3400	4500	5600	5600	5600	5600	
	690V	A	880	1200	1480	2200	2520	3360	4000	5000	5000	5000	5000	
	1000V	A	600	800	1000	1500	1700	2300	2700	3400	3400	3400	3400	
Consumption and resistance per pole (average values)		m $\Omega$	0.30	0.30	0.30	0.20	0.20	0.20	0.14	0.14	0.14	0.07	0.07	
	$I_{th}$	W	7.7	14.5	20.3	24.5	40.5	52.0	68.6	90	140	110	180	
	AC3	W	4.0	6.8	9.7	12.5	20	32	35.0	56	–	–	–	
Terminals		A mm	15 (0.6")	20 (0.8")	20 (0.8")	25 (1")	25 (1")	25 (1")	35 (1.4")	40 (1.6")	60 (2.4")	80 (3.1")	80 (3.1")	
		B mm	4 (0.16")	4 (0.16")	4 (0.16")	5 (0.2")	5 (0.2")	5 (0.2")	6 (0.23")	6 (0.23")	6 (0.23")	10 (0.39")	10 (0.39")	
		Screw + hex nut	M6	M8	M8	M10	M10	M10	M10	M12	M12	2-M12	2-M12	2-M12
		⌀ mm	10 (0.39")	13 (0.51")	13 (0.51")	17 (0.67")	17 (0.67")	17 (0.67")	17 (0.67")	19 (0.75")	19 (0.75")	19 (0.75")	19 (0.75")	19 (0.75")
	Quick-connect (coil)	Faston	1x6.35mm (0.25") or 2x2.8mm (0.11")											
	Coil with G371 <sup>④</sup>	Phillips	2 (Ø7mm/0.3in)											
Pole tightening torque	Nm	10	18	18	35	35	35	35	55	55	55	55		
	lbft	7.4	13.3	13.3	25.8	25.8	25.8	25.8	40.6	40.6	40.6	40.6		
Coil tightening torque with G371 <sup>④</sup> fitted	Nm	1												
	lbft	0.74												
Maximum conductor section	1 or 2 bars	mm	20x3 (0.2x0.12")	25x3 (1x0.12")	25x3 (1x0.12")	30x4 (1.2x0.16")	30x5 (1.2x0.2")	30x5 (1.2x0.2")	50x5 (2x0.2")	60x5 (2.4x0.2")	60x5 (2.4x0.2")	100x5 (4x0.2")	100x5 (4x0.2")	
	N° 1 wire with lug	mm <sup>2</sup>	70	120	150	240	–	–	–	–	–	–	–	
	N° 2 wire with lug	mm <sup>2</sup>	–	–	–	–	150	150	240	240	–	–	–	
<b>AMBIENT CONDITIONS</b>														
Operating temperature	°C	-50...+70												
Storage temperature	°C	-60...+80												
Maximum altitude	m	3000												
Operating position	Normal	On vertical plane												
	Allowable	$\pm 30^\circ$												
Fixing		Screw												

① Derating for use at 61-400 Hz. Consult Customer Service for information; see contact details on inside front cover.

② Current values guarantee an electrical life of about 200,000 cycles.

③ Spanner/wrench size.

④ G371: Adapter to transform coil faston terminals into screw type.

TYPE			B115	B145	B180	B250	B310	B400	B500	B630	B630 1000	B1250	B1600
<b>AC CONTROL</b>													
Supply voltage		The electromagnet can operate either in AC or DC										AC only	
Rated control voltage	V		24-480	24-480	24-480	24-480	24-480	24-480	48-480	48-480	48-480	110-240	110-240
Operating voltage limits	pick-up	% Us	80-110	80-110	80-110	80-110	80-110	80-110	80-110	80-110	80-110	80-110	80-110
	drop-out	% Us	20-60	20-60	20-60	20-60	20-60	20-60	20-60	20-60	20-60	20-60	20-60
Consumption at $\leq 20^{\circ}\text{C}$	in-rush	VA/W	300	300	300	300	300	300	400	400	400	800	800
	holding	VA/W	10	10	10	10	10	10	18	18	18	45	45
Dissipation at $\leq 20^{\circ}\text{C}$	W		10	10	10	10	10	10	18	18	18	40	40
<b>OPERATING TIMES</b>													
Making	ms		60-100	60-100	60-100	80-120	80-120	80-120	110-180	110-180	110-180	120-210	300-450
Breaking	ms		25-60	25-60	25-60	30-75	30-75	30-75	60-100	60-100	60-110	70-130	70-130
<b>Life</b>													
Mechanical (million)	AC/DC	cycles	10	10	10	10	10	10	5	5	5	5	5
Electrical (million) (Ie at 400V in AC3)		cycles	1.1	1.1	1	1	0.7	0.7	0.7	0.7	–	–	–
<b>MAXIMUM OPERATING RATE</b>													
Mechanical operations	cy/h		2400	2400	2400	2400	2400	2400	1200	1200	1200	1200	1200
<b>PARTICULAR CHARACTERISTICS</b>													
Indicator			For contactor open or closed status										
Safety feature			Closing operations are prevented without arc chutes										

#### CONTROL CIRCUIT UTILISATION

The input electronic circuit of the contactor coil B115-B1600 is designed and tested according to IEEEC 62.41 and can withstand a 10 kV impulse voltage (1.2/50 $\mu$ s) with 50 Joule energy.

For higher values, the use of an auxiliary step-down voltage transformer is recommended.

#### CONTACTORS WITH MECHANICAL LATCH

Technical data of mechanical latch G495 type is stated on page 2-26.

Contactors B115-B630 type, can have mechanical latch included or can be predisposed, to be completed with mechanical latch.

See pages 2-4 and 2-6 (3-pole version) or 2-8 and 2-10 (4-pole version).

**MECHANICAL INTERLOCK BETWEEN CONTACTORS SIDE BY SIDE B115-B630**  
 The G356 type in Fig. 1, can interlock contactors of the same size or of a different one (e.g.: B115 interlocked to B630).

This interlock cannot be used with B1250 or B1600 contactor.  
 Consult Customer Service (see contact details on inside front cover) to interlock B630 1000 three-pole contactors.

2

**MECHANICAL INTERLOCK BETWEEN CONTACTORS ONE ON TOP OF THE OTHER B115-B630**  
 It is G356... type, in Fig. 2 to 4, which is provided in six types to allow different fixing interaxis of contactors.  
 Contactors of the same size can be interlocked as well as different sizes.

The tables below indicate the interaxis which can be obtained with the various interlock types; with terminal protections (INTERAXIS A) and without terminal protection (INTERAXIS B).

**INTERAXIS A [mm] - For contactors with terminal protection**

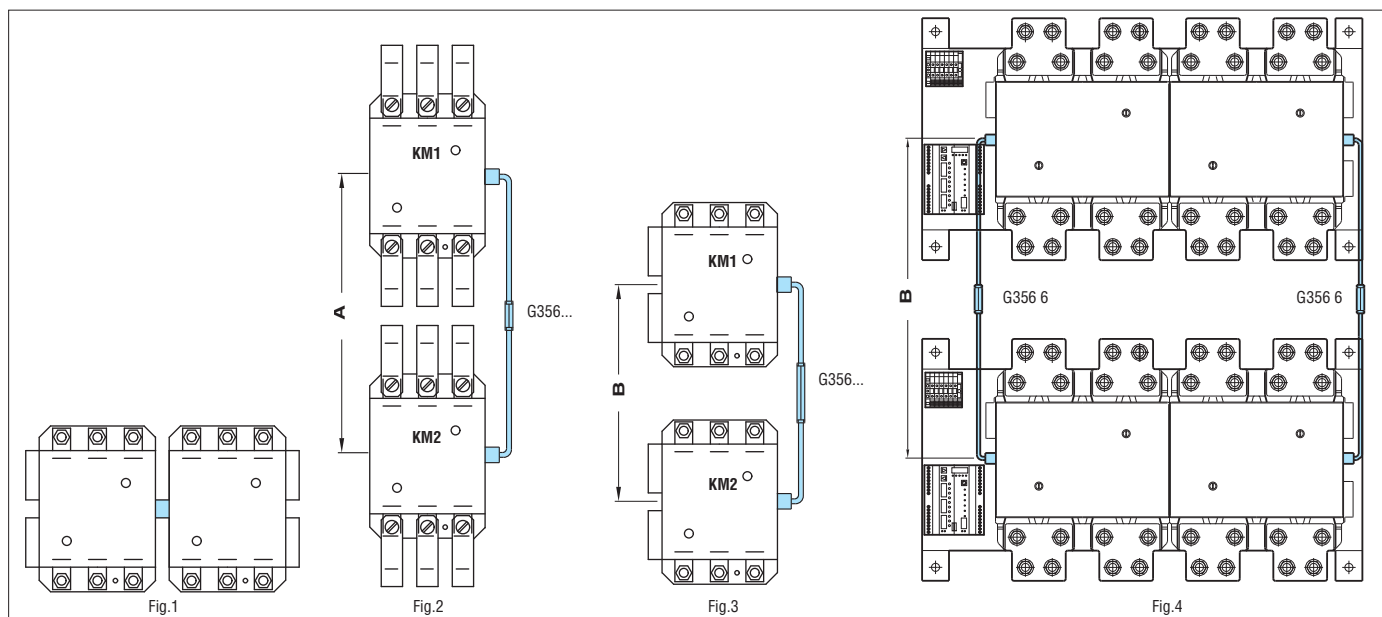
KM1	B115-B145-B180			B250-B310-B400			B500-B630		
	B115 B145 B180	B250 B310 B400	B500 B630	B115 B145 B180	B250 B310 B400	B500 B630	B115 B145 B180	B250 B310 B400	B500 B630
G356 1	—	—	—	—	—	—	—	—	—
G356 2	286-305 (11.26-12)	—	—	—	—	—	—	—	—
G356 3	305-345 (12-13.6)	330-345 (13-13.6)	—	330-345 (13-13.6)	—	—	—	—	—
G356 4	345-385 (13.6-15.15)	345-385 (13.6-15.15)	375-385 (14.8-15.15)	345-385 (13.6-15.15)	372-385 (14.8-15.15)	—	375-385 (14.8-15.15)	—	—
G356 5	390-425 (15.35-16.75)	390-425 (15.35-16.75)	390-425 (15.35-16.75)	390-425 (15.35-16.75)	390-425 (15.35-16.75)	420-425 (16.5-16.75)	390-425 (15.35-16.75)	420-425 (15.35-16.75)	—
G356 6	470-500 (18.5-19.7)	470-500 (18.5-19.7)	470-500 (18.5-19.7)	470-500 (18.5-19.7)	470-500 (18.5-19.7)	470-500 (18.5-19.7)	470-500 (18.5-19.7)	470-500 (18.5-19.7)	470-500 (18.5-19.7)

**INTERAXIS B [mm] - For contactors without terminal protection**

KM1	B115-B145-B180			B250-B310-B400			B500-B630		
	B115 B145 B180	B250 B310 B400	B500 B630	B115 B145 B180	B250 B310 B400	B500 B630	B115 B145 B180	B250 B310 B400	B500 B630
G356 1	225-265 (8.85-10.4)	—	—	—	—	—	—	—	—
G356 2	265-305 (10.4-12)	265-305 (10.4-12)	—	265-305 (10.4-12)	265-305 (10.4-12)	—	—	—	—
G356 3	305-345 (12-13.6)	305-345 (12-13.6)	305-345 (12-13.6)	305-345 (12-13.6)	305-345 (12-13.6)	305-345 (12-13.6)	305-345 (12-13.6)	305-345 (12-13.6)	—
G356 4	345-385 (13.6-15.15)	345-385 (13.6-15.15)	345-385 (13.6-15.15)	345-385 (13.6-15.15)	345-385 (13.6-15.15)	345-385 (13.6-15.15)	345-385 (13.6-15.15)	345-385 (13.6-15.15)	345-385 (13.6-15.15)
G356 5	390-425 (15.35-16.75)	390-425 (15.35-16.75)	390-425 (15.35-16.75)	390-425 (15.35-16.75)	390-425 (15.35-16.75)	390-425 (15.35-16.75)	390-425 (15.35-16.75)	390-425 (15.35-16.75)	390-425 (15.35-16.75)
G356 6	470-500 (18.5-19.7)	470-500 (18.5-19.7)	470-500 (18.5-19.7)	470-500 (18.5-19.7)	470-500 (18.5-19.7)	470-500 (18.5-19.7)	470-500 (18.5-19.7)	470-500 (18.5-19.7)	470-500 (18.5-19.7)

To interlock two contactors B630 1000, use type G356 6 only.  
 To interlock two contactors B1250 or B1600, it is imperative to use two pieces of type G356 6, one fixed on the left side and the other on the right; refer to Fig. 4.

Interaxis B is 470-500mm (18.5-19.7") for B630 1000, B1250 or B1600.  
 The B1250 or B1600 cannot be interlocked with the other types of the B series.



### CONTACT BLOCKS APPLIABLE TO CONTACTORS WITH MECHANICAL INTERLOCK

Auxiliary contact blocks G350 or G354 can be mounted according to the combinations below when the mechanical interlock is used (see parts in blue in Figure 1) or the G358 adapter with the auxiliary blocks as per the combinations given in Figure 2.

Technical characteristics are given on page 2-26.

