




## Mini-contactors BG series

Planet-SWITCH

Planet-DIN

Planet-LOGIC

 **Lovato**  
electric  
100% electricity

# BG SERIES

## The new range of Lovato mini-contactors

The mini-contactors, BG series, have been developed by Lovato's extensive know-how in the design and manufacture of electromechanical equipment and are the latest generation of products with excellent operating characteristics.

Mini-contactors are mechanical switching devices used to control motors and electric loads in general, such as lighting, electromagnets, transformers, heaters and so on. A control relay is also contemplated and designed for the control, signalling, amplification and transmission of electric signals. The main feature of mini-contactors is the compact size so their main use is in applications where the electric circuit is

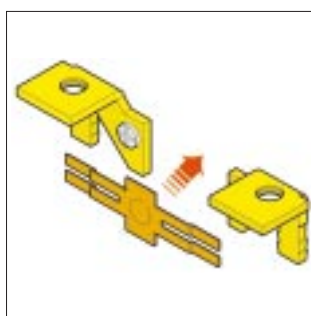
compressed because of the available space, for instance on small machine tools, air conditioning, automatic doors or gates, lighting, industrial kitchen appliances, industrial cleaning machines and so on. Use in more complex industrial circuitry is also possible for small control loads while the control relay version, in auxiliary circuits of electric switchboards.

The BG series warrants reliable

performance for both mechanical and electrical life. The auxiliary contacts with 4-contact points (H-shaped as in figure 1) ensure efficient operation also in heavy-duty applications such as in dirty ambient or with very low voltage and current conditions. The mini-contactors can be equipped with accessories or thermal overload relays as well as connected with motor protection circuit breakers. Small footprint, silent operation

and low coil consumption are a few of their main features. The status indication of the contacts is distinct and unequivocal, figure 2 below. The available accessories consent to maximum flexibility for contact configuration and time-saving assembly of automatic changeover and reversing contactor combinations.

*fig. 1*  
Auxiliary contacts with  
4-contact points (H-shaped  
high conductivity)



*fig. 2*  
Clear status indication  
of contacts





Complete range of accessories  
(add-on auxiliary contacts, noise  
filters, mechanical interlock)

Compact design

AC and DC version  
with same overall dimensions

Low consumption  
version (1.8W)  
for DC control

Type 2 co-ordination  
with LOVATO circuit  
breakers type SM1

Long mechanical  
and electrical life

High-conductivity  
auxiliary contacts

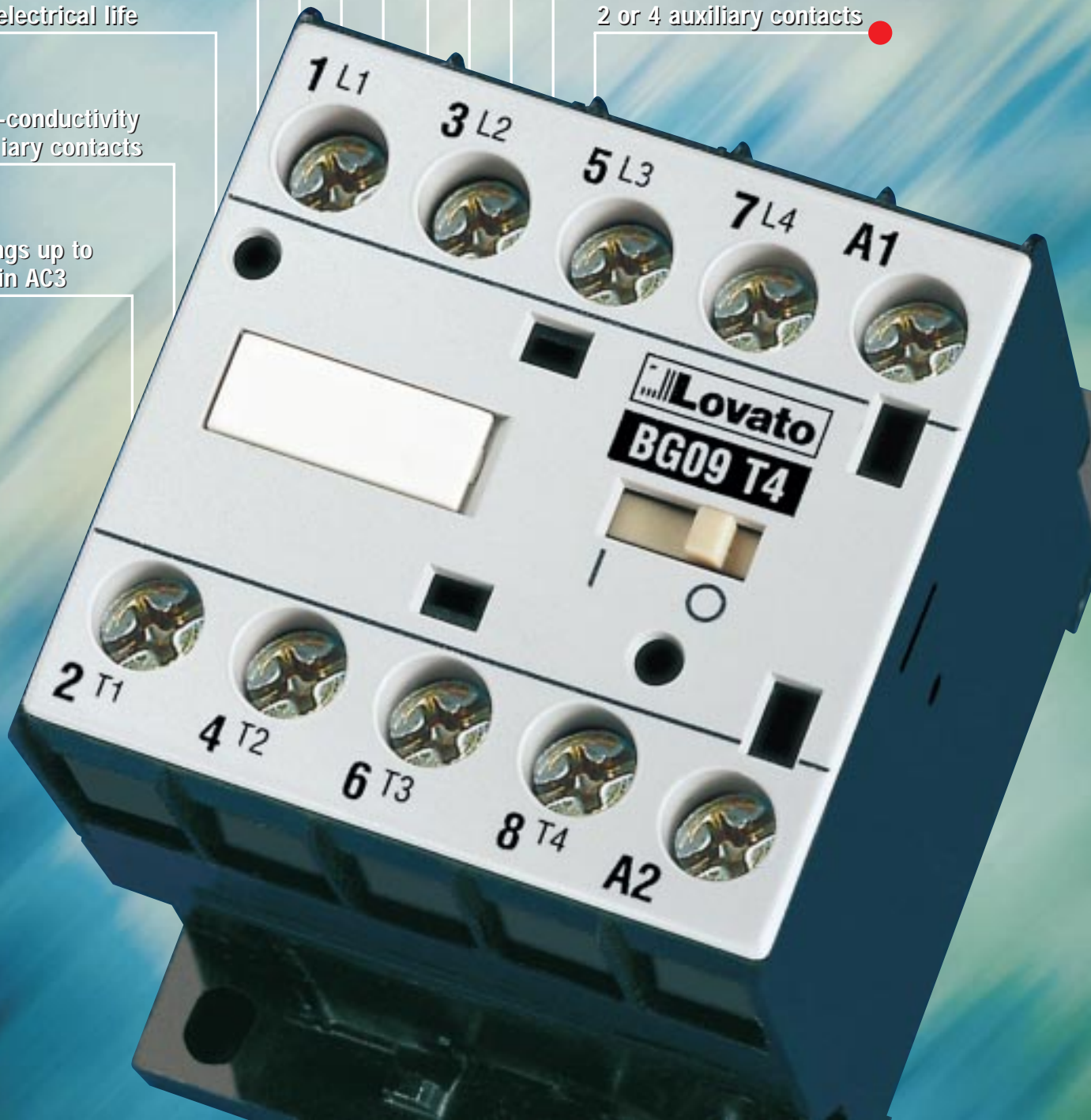
Ratings up to  
12A in AC3

Quick connect assembly  
of accessories

Distinct status  
indication of contacts

cULus approval

Add-on blocks with  
2 or 4 auxiliary contacts



# BG00

10A Ith rating

Supply:

- AC
- DC
- Low consumption DC



CONTROL RELAY

# BG...

6-9-12A AC3 ratings

Supply:

- AC
- DC
- Low consumption DC

Special pin version for printed circuits



THREE POLES

The BG mini-contactors have one frame size for both the AC and DC coil versions. Coil consumption is extremely reduced. A very low DC consumption version (1.8W) is available and expressly designed for electronic PLC interface whereas equipment control output is very limited.

AC coils are 50/60Hz standard supplied. Specific coils for 60Hz operation are available for eventual system optimising.

All BG types include the distinct status indication 0 / 1 of the contacts (open / closed) on the contactor front.

In addition, the BG mini-contactors can be combined with thermal overload relays, **RF9** type, or motor protection circuit breakers, **SM1** type.

## MINI-CONTACTOR CONTROL RELAYS

Three different contact configurations are available with AC or DC coil operation, as follows:

- **BG00 40**  
4 NO contacts
- **BG00 31**  
3 NO + 1 NC contacts
- **BG00 22**  
2 NO + 2 NC contacts

The rated thermal current Ith of the BG00 contactors is 10A.

The control relays have four-contact points (H-shaped for high conductivity) which warrant the excellent operation also with very low voltage and current values.

## POWER MINI-CONTACTORS

- **THREE POLES**
- **FOUR POLES**
- **FOUR 2NO+2NC POLES**

The coils can be supplied in AC or DC and the terminals can be screw or PCB pin type.

The new mini-contactors are available in three three-pole ratings for motor control:

- **BG06**  
6A at 400V AC3 (2.2kW)
- **BG09**  
9A at 400V AC3 (4kW)
- **BG12**  
12A at 400V AC3 (5.7kW)

Contactors are always supplied with one integrated auxiliary contact, either 1NO or 1NC (H-shaped).

The 9A rating is also available:

- With 4 NO main poles, with no integrated auxiliary contact,

especially suitable for supply line control, resistive loads and three-phase with neutral system lighting installations.

- With 2NO + 2NC main poles, with no integrated auxiliary contact, specifically indicated for emergency lighting system, line changeover in small-rated stand-by generating sets and speed change with 2-speed motors.

# BG...T4

20A rating (AC1)

Supply:

- AC
- DC

Special pin version  
for printed circuits

# BG...T2

20A rating (AC1)

Supply:

- AC
- DC



FOUR POLES



FOUR 2NO + 2NC  
POLES

	BG00	BG06	BG09	BG12
Operating temperature	-40 ... +60°C			
Mounting position	Any, except with A1-A2 coil terminals facing downwards			
Fixing	Screw or on DIN 35mm rail (EN 50022)			
Reference standards	IEC / EN 60947-5-1	IEC / EN 60947-4-1		
Rated insulation voltage Ui	690V			
Rated impulse withstand voltage	8kV			
Operational frequency	25-400Hz			
Operational currents:				
Rated Ith	10A	16A	20A	20A
AC3 (400V)	–	6A	9A	12A
AC4 (400V)	–	3.3A	4A	4.8A
Electric life at 400V AC3 (cycles)	–	500,000	500,000	500,000
Mechanical life (million cycles)	20			
Accessible terminal width	7.5mm			
Screw	M3			
Maximum tightening torque	1Nm			
AC coil consumption in-rush / holding	30 / 4VA			
DC coil consumption in-rush / holding	3.2 / 3.2W - 2.3 / 2.3W for low-consumption versions			
Operating limits:				
AC coil	pick-up	75 - 115% Us		
	drop-oput	30 - 55% Us		
DC coil	pick-up	75 - 115% Us		
	drop-oput	10 - 20% Us		
Approvals	cULus			





Mini-contactor 11 BG12 10...

## MINI-CONTACTOR CONTROL RELAYS

Order code AC coil type	Order code DC coil type	Thermal current Ith [A]	Configuration and number of contacts		Qty per pkg n°	Wt [kg]
			NO	NC		

### Clamp-screw terminals

11 BG00 40 A ①	11 BG00 40 D ②	10	4	0	10	0.165
11 BG00 31 A ①	11 BG00 31 D ②	10	3	1	10	0.165
11 BG00 22 A ①	11 BG00 22 D ②	10	2	2	10	0.165

### Low consumption. Screw-clamp terminals (no auxiliary contacts can be mounted)

	11 BG00 40 L ③	10	4	0	10	0.165
	11 BG00 31 L ③	10	3	1	10	0.165
	11 BG00 22 L ③	10	2	2	10	0.165

## THREE-POLE MINI-CONTACTORS

Order code AC coil type	Order code DC coil type	Ith ≤40°C (A)	Ie (AC3) ≤440V ≤55°C [A]	Maximum power AC3 at ≤55°C					Integrated auxiliary contacts		Qty per pkg n°	Wt [kg]
				230V [kW]	400V [kW]	415V [kW]	440V [kW]	690V [kW]	NO	NC		

### Clamp-screw terminals

11 BG06 10 A ①	11 BG06 10 D ②	16	6	1.5	2.2	2.4	2.5	3	1	0	10	0.165
11 BG06 01 A ①	11 BG06 01 D ②	16	6	1.5	2.2	2.4	2.5	3	0	1	10	0.165
11 BG09 10 A ①	11 BG09 10 D ②	20	9	2.2	4	4.3	4.5	5	1	0	10	0.165
11 BG09 01 A ①	11 BG09 01 D ②	20	9	2.2	4	4.3	4.5	5	0	1	10	0.165
11 BG12 10 A ①	11 BG12 10 D ②	20	12	3.2	5.7	6.2	4.5	5	1	0	10	0.165
11 BG12 01 A ①	11 BG12 01 D ②	20	12	3.2	5.7	6.2	4.5	5	0	1	10	0.165

### PCB pin terminals

11 BGS09 10 A ①	11 BGS09 10 D ②	20	9	2.2	4	4.3	4.5	5	1	0	10	0.165
11 BGS09 01 A ①	11 BGS09 01 D ②	20	9	2.2	4	4.3	4.5	5	0	1	10	0.165

### Low consumption. Screw-clamp terminals (no auxiliary contacts can be mounted)

	11 BG09 10 L ③	20	9	2.2	4	4.3	4.5	5	1	0	10	0.165
	11 BG09 01 L ③	20	9	2.2	4	4.3	4.5	5	0	1	10	0.165



Thermal overload relay 11 RF9...

## THERMAL OVERLOAD RELAYS

Order code	Adjustment range [A]	Fuses aM [A]	gG [A]	Qty per pkg n°	Wt [kg]
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### Phase-failure sensitive thermal overload relays Manual resetting

11 RF9 015	0.09 - 0.15	0.25	–	1	0.123
11 RF9 023	0.14 - 0.23	0.5	–	1	0.123
11 RF9 033	0.2 - 0.33	0.5	1	1	0.123
11 RF9 05	0.3 - 0.5	1	2	1	0.123
11 RF9 075	0.45 - 0.75	1	2	1	0.123
11 RF9 1	0.6 - 1	2	4	5	0.123
11 RF9 1V5	0.9 - 1.5	2	4	5	0.123
11 RF9 2V3	1.4 - 2.3	4	6	5	0.123
11 RF9 33	2 - 3.3	4	10	5	0.123
11 RF9 5	3 - 5	6	16	5	0.123
11 RF9 75	4.5 - 7.5	8	20	5	0.123
11 RF9 10	6 - 10	10	32	5	0.123
11 RF9 15	9 - 15	16	40	5	0.123

## FOUR-POLE MINI-CONTACTORS

Order code AC coil type	Order code DC coil type	Operational current (AC1)			Maximum power AC1 ≤40°C					Qty per pkg n°	Wt [kg]
		≤40°C [A]	≤55°C [A]	≤70°C [A]	230V [kW]	400V [kW]	415V [kW]	500V [kW]	690V [kW]		

### Clamp-screw terminals

11 BG09 T4 A ①	11 BG09 T4 D ②	20	18	15	8	14	14	16	22	10	0.165
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### PCB pin terminals

11 BGS09 T4 A ①	11 BGS09 T4 D ②	20	18	15	8	14	14	16	22	10	0.165
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## FOUR-POLE 2NO+2NC MINI-CONTACTORS

Order code AC coil type	Order code DC coil type	Rated current		Qty per pkg n°	WT [kg]
		AC1 [A]	AC3 [A]		

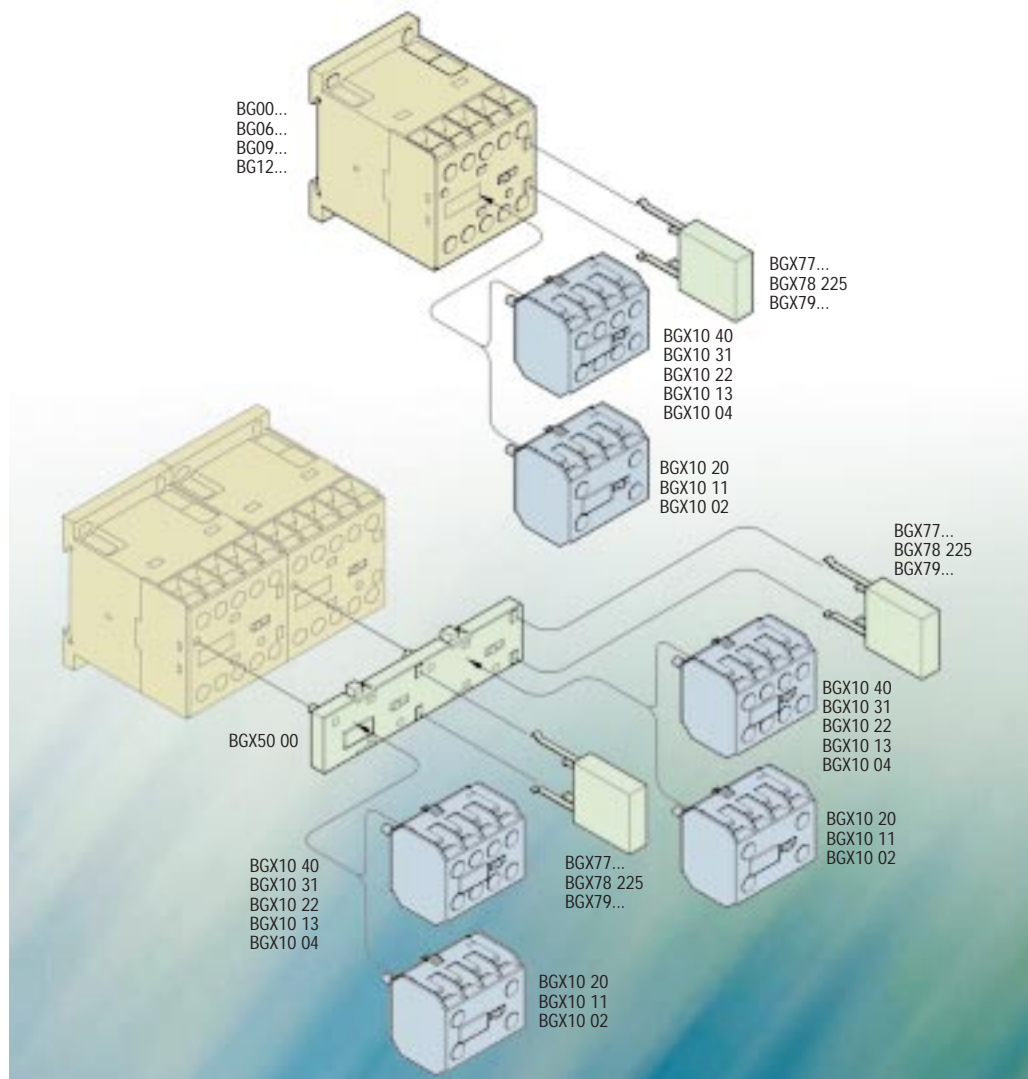
### Clamp-screw terminals

11 BG09 T2 A ①	11 BG09 T2 D ②	20	9	1	0.165
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① Complete order code with coil voltage value.  
Add 60 if 60Hz frequency is required.  
Standard voltage values are:  
50/60Hz 024-048-110-220-230-240-380-400-415V  
60Hz 024-048-110-120-220-230V

② Complete order code with coil voltage value.  
Standard voltage values are:  
DC 012-024-048-060-110-125-220V

③ Complete order code with coil voltage value.  
Standard voltage values are:  
DC 024-048V.



The **accessories** of the BG series are the following:

- Front-mount auxiliary contacts; 2 or 4 contact configuration
- Quick-connect noise filters; varistor, diode or resistor-condenser version
- Mechanical interlock

The add-on auxiliary contacts with four-contact point H-shaped high-conductivity feature, snap on the contactor front and are available in eight configurations to satisfy the most assorted requirements of circuit installations.

The noise filters are very useful to protect electric and electronic circuits from disturbances caused by over-voltages of coil operation. They are quick connect and mounted on the contactor front.

The mechanical interlock is again mounted on the contactor front but increasing its depth by a mere 6mm only.

Auxiliary contacts, noise filters and the mechanical interlock can all be mounted simultaneously with no difficulty or limitation.



Auxiliary contacts  
11 BGX10 (20-11-02)



Auxiliary contacts  
11 BGX10 (40-31-22-13-04)



Mechanical interlock 11 BGX50 00



Noise filters  
11 BGX77...  
11 BGX78 225  
11 BGX79...

## ADD-ON BLOCKS AND ACCESSORIES

Order code	Characteristics	Qty per pkg n°	Weight [kg]
<b>Auxiliary contacts with screw terminals</b>			
11 BGX10 20	2NO	10	0.02
11 BGX10 11	1NO + 1NC	10	0.02
11 BGX10 02	2NC	10	0.02
11 BGX10 40	4NO	10	0.03
11 BGX10 31	3NO + 1NC	10	0.03
11 BGX10 22	2NO + 2NC	10	0.03
11 BGX10 13	1NO + 3NC	10	0.03
11 BGX10 04	4NC	10	0.03
<b>Mechanical interlock</b>			
11 BGX50 00	—	10	0.008
<b>Quick-connect noise filters</b>			
11 BGX77 048	≤48VAC/DC Varistor	10	0.007
11 BGX77 125	≤125VAC/DC Varistor	10	0.007
11 BGX77 240	≤240VAC/DC Varistor	10	0.007
11 BGX78 225	≤225VDC Diode	10	0.007
11 BGX79 048	≤48VAC Resistor-Condenser	10	0.007
11 BGX79 125	≤125VAC Resistor-Condenser	10	0.007
11 BGX79 240	≤240VAC Resistor-Condenser	10	0.007
11 BGX79 415	≤415VAC Resistor-Condenser	10	0.007



2000



Motor protection  
circuit breakers SM series



Switch disconnectors GS series



Position and safety switches  
RS and T series



48x48mm time relays



Digital multimeters DML series



Miniature soft starters  
ADXM series

### Planet-SWITCH

- Motor protection circuit breakers
- Switch disconnectors
- Contactors
- Motor protection relays
- Control and signalling units
- Position and safety switches
- Rotary cam switches
- Electromechanical starters

### Planet-DIN

- Modular contactors
- Time relays
- Protection relays
- Level controls
- Earth leakage relays

### Planet-LOGIC

- Digital metering instruments
- Soft starters
- AC motor drives
- Automatic power factor regulators
- Automatic battery chargers
- Programmable controllers

The products described in this documentation are subject to be revised or improved at any moment. Catalogue descriptions and details do not have any contractual value. The products should be installed and used by qualified personnel and in compliance with the regulations in force for electrical systems in order to avoid damages and safety hazards.

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