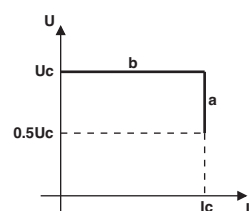


## Automatic battery chargers

### For not sealed lead-acid batteries



BCF...



a - constant current charge  
b - constant voltage charge

Order code	Rated output current	Rated output voltage DC	Qty per pkg	Wt
	[A]	[V]	n°	[kg]
1 charging level.				
BCF 0250 12	2.5	12	1	0.332
BCF 0450 12	4.5		1	0.332
BCF 0125 24	1.25	24	1	0.332
BCF 0250 24	2.5		1	0.332

#### Alarms

	GREEN LED	RED LED	RELAY
Correct output voltage	ON	OFF	ON
Polarity inverted	—	ON	—
Short circuit	OFF	OFF	OFF
Overload	OFF	OFF	OFF

Type	Maximum power consumption	dissipation	Mains fuse
	[VA]	[W]	[A]
BCF 0250 12	96	40	2
BCF 0450 12	181	76	2
BCF 0125 24	96	39	2
BCF 0250 24	181	72	2

#### General characteristics

- Switching technology
- Modular housing, DIN rail mounting
- Wide auxiliary supply range.
- Protections:
  - Mains input fuse
  - Battery output fuse
  - Electronic lock in case of short circuit on battery terminals, battery polarity inversion, low voltage across battery poles (<0.5 Ue)
  - Relay alarm output.

#### LED indications:

- Correct output voltage
- Battery polarity inverted.

#### Operational characteristics

- Auxiliary supply voltage: 100...240VAC (±10%) 50/60Hz (±5%)
- Charging cycle: in accordance with DIN 41773 standards
- Current limitation
- IEC degree of protection: IP20
- Fixed clamping screw terminal block with captive screws.

#### Alarm output circuit

- Type of output: 3A 250VAC relay (AC1).

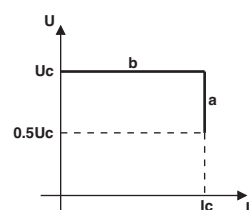
#### Certifications and compliance

Certifications obtained: cURus and GOST.  
Compliant with standards: IEC/EN 60950-1, IEC/EN 61000-6-2, IEC/EN 61000-6-3.

### For sealed and not sealed lead-acid batteries



BCG...



a - constant current charge  
b - constant voltage charge

Order code	Rated output current	Rated output voltage DC	Qty per pkg	Wt
	[A]	[V]	n°	[kg]
1 charging level.				
BCG 06 12	6	12	1	0.532
BCG 12 12	12		1	0.710
BCG 05 24	5	24	1	0.532
BCG 10 24	10		1	0.710
Accessories.				
BCG X00	Adapter for DIN rail vertical mount		1	0.022

#### Alarms

	POWER ON	REV	RELAY/ALARM LED
Correct output voltage	ON	OFF	ON
Polarity inverted	—	ON	—
Short circuit	OFF	OFF	OFF
Overload	OFF	OFF	OFF

Type	Maximum power consumption	dissipation	Mains fuse (Type T)
	[VA]	[W]	[A]
BCG 06 12	97	14	8
BCG 12 12	195	31	16
BCG 05 24	158	20	6.3
BCG 10 24	311	36	12

#### General characteristics

- Switching technology
- Screw fixing or DIN rail mounting
- Two charging voltages selectable by DIP-switch
- Wide auxiliary supply range
- Boost signal controlled by external contact
- Protection for short-circuit, overload and battery polarity inverted
- Charging current limiting trimmer resistor
- Alarm relay output with changeover contact.

#### Protections:

- Input fuse at AC side
- Output protection to save the battery (in case of battery charger malfunction)
- Short circuit at output side (hiccup mode)
- Reverse polarity
- Automatic reset when the anomaly is removed.

#### LED indications:

- Power ON
- Charging operation (I>20% I<sub>c</sub>)
- Overload or short circuit
- Battery polarity inverted.

#### Operational characteristics

- Auxiliary supply voltage: 110...240VAC (90...264VAC)
- Charging voltage selectable between two values by dip-switch:
  - Not sealed Lead-Acid batteries
  - Sealed Lead-Acid batteries
- Maximum charging current setting by external trimmer:
  - 20...100% of rated current
- Changeover output for alarming:
  - 30VDC 5A
  - Active if alarms are not present
- Charging working cycle constant current / constant voltage in accordance with DIN 41773 standards
- IEC degree of protection: IP20.

#### Alarm output circuit

- Type of output: 5A 30VDC relay (AC1).

#### Certifications and compliance

Certifications: cULus (pending)  
Compliant with standards: IEC/EN 60950-1, IEC/EN 61000-6-2, IEC/EN 61000-6-3.

## For lead-acid batteries



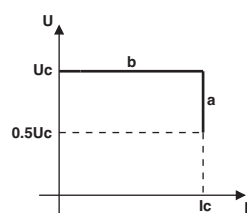
31 BCE 0312  
31 BCE 2V524



31 BCE 0612  
31 BCE 0524



31 BCE 1212  
31 BCE 1024



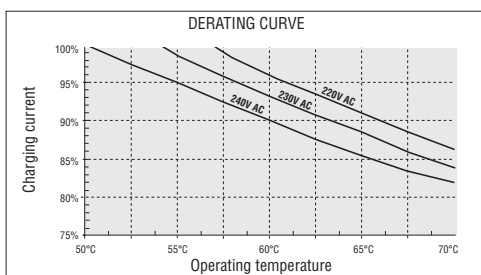
a - constant current charge  
b - constant voltage charge

Order code	Rated output current [A]	Rated output voltage DC [V]	Qty per pkg n°	Wt [kg]
1 charging level.				
31 BCE 0312	3	12	1	1.984
31 BCE 0612	6		1	4.832
31 BCE 1212	12		1	8.690
31 BCE 2V524	2,5	24	1	1.992
31 BCE 0524	5		1	4.960
31 BCE 1024	10		1	9.560

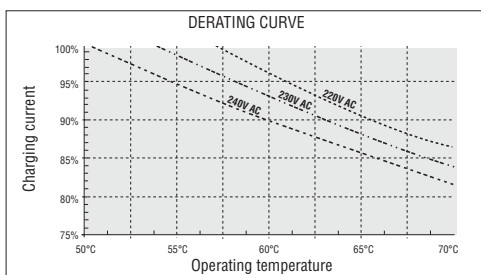
Type	Maximum power consumption [VA]	dissipation [W]	Mains fuse [A]	Output fuse [A]
BCE 0312	117	24	—	6.3
BCE 0612	222	46	4	12.5
BCE 1212	400	73	6.3	25
BCE 2V524	166	26	—	6.3
BCE 0524	317	40	4	12.5
BCE 1024	610	66	6.3	25

### DERATING CURVES

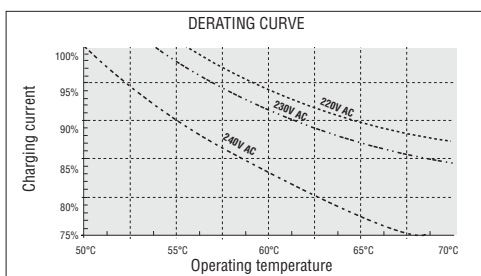
BCE 2V5 - BCE 03



BCE 05 - BCE 06



BCE 10 - BCE 12



### General characteristics

- Linear technology
- Screw fixing mounting.
- Protections:
  - Mains input fuse (except for BCE 2V5 and BCE 03)
  - Battery output fuse
  - Electronic lock in case of short circuit on battery terminals, battery polarity inversion, low voltage across battery poles ( $<0.5 U_e$ ) and disconnected battery
- Alarm output:
  - Negative static, NPN transistor for BCE 2V5 and BCE 03
  - Relay for BCE 05, BCE 06, BCE 10 and BCE 12.
- LED indications:
  - Power ON
  - Charge ( $I > 20\% I_c$ )
  - Alarm for protection tripping.

### Operational characteristics

- Auxiliary supply voltage: 220...240VAC ( $\pm 10\%$ ), 50/60Hz ( $\pm 5\%$ )
- Charging current: 30-100%  $I_e$  adjustable
- Charging cycle: in accordance with DIN 41773 standards
- Current limitation
- IEC degree of protection: IP00
- Clamping screw terminal block with captive screws:
  - Removable for BCE 03 and BCE 2V5
  - Fixed for BCE 05, BCE 06, BCE 10 and BCE 12.

### Alarms

#### BCE 2V524 - BCE 0312

These types have a static alarm output for the control of a relay or indicator, maximum 300mA duty.

If it is connected to a relay, this must be normally energised in absence of alarm. In alarm conditions with ALARM LED switched on, or in absence of supply, the relay de-energises.

#### BCE 0524 - BCE 0612 - BCE 1024 - BCE 1212

These types have a normally energised relay alarm output.

In alarm conditions with ALARM LED switched on, or in absence of supply, the relay de-energises.

Possible causes of alarm include:

- Low battery voltage
- Battery fuse blown
- Battery not connected
- Battery polarity inverted.

### Alarm output circuit

#### BCE 2V524 - BCE 0312

- Type of output:
  - Negative static; NPN transistor
  - Maximum voltage applicable to load: +V battery terminal
  - Maximum output current: 300mA
  - Maximum overload current for 1 second: 2A
  - Dynamic over-voltage protection with inductive load.

#### BCE 0524 - BCE 0612 - BCE 1024 - BCE 1212

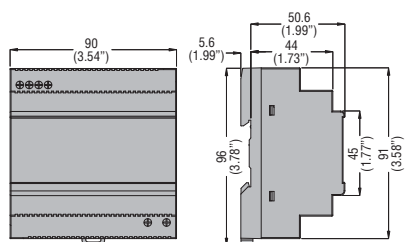
- Type of output:
  - Relay: 1 changeover contact (SPDT)
  - Rated voltage: 250VAC
  - Maximum admissible voltage: 440VAC
  - IEC rated capacity in AC1 duty: 5A 250VAC  $I_{th}$
  - IEC rated capacity in DC13 or DC14 duty: 5A 30VDC
  - Electrical life:  $>10^5$  cycles
  - Mechanical life:  $>30 \times 10^5$  cycles.

❶ The output is not overload or short-circuit protected. It is however capable of switching on a 3W filament bulb.

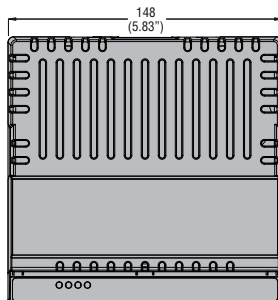
### Certifications and compliance

Certifications obtained: GOST.  
Compliant with standards: IEC/EN 60335-2-29.

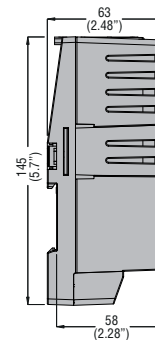
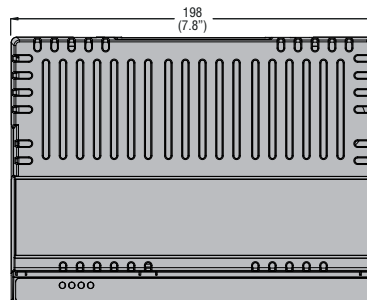
### BCF...



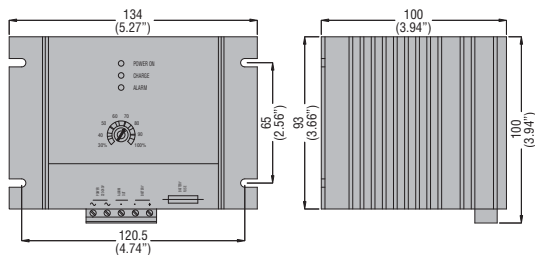
### BCG 06 12 - BCG 05 24



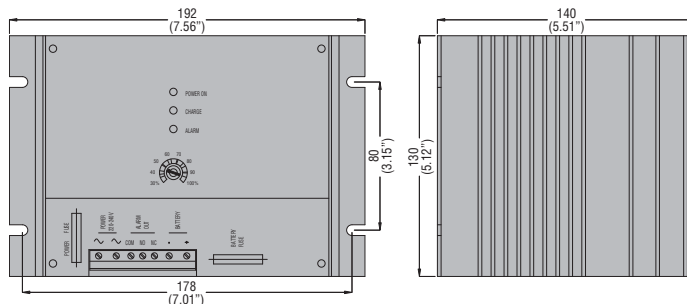
### BCG 12 12 - BCG 10 24



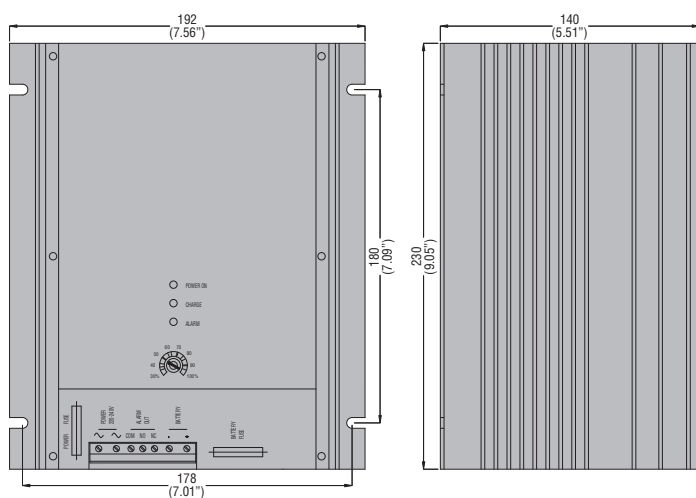
### BCE 0312 - BCE 2V524



### BCE 0612 - BCE 0524

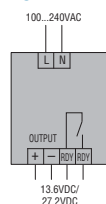


### BCE 1212 - BCE 1024

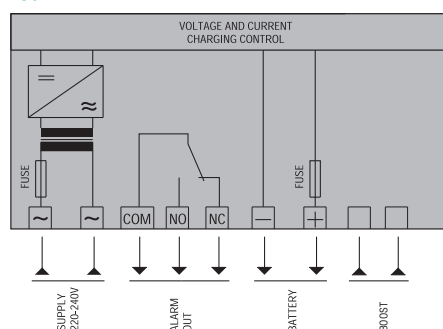


## Wiring diagrams

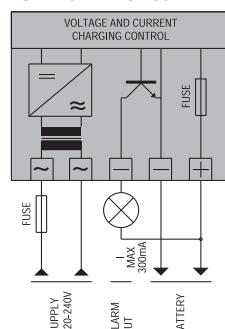
### BCF...



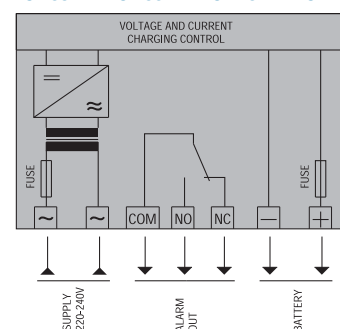
### BCG...



### BCE 2V5... - BCE 03...



### BCE 05... - BCE 06... - BCE 10... - BCE 12...



TYPE	BCG...	BCF...	BCE...
Description	Single phase automatic battery charger 1 charging level for sealed and not sealed lead-acid batteries	Single phase automatic battery charger 1 charging level for not sealed lead-acid batteries	
Supply voltage	110...240VAC -20...+10% 50/60Hz	100...240VAC ±10% 50/60Hz	220...240VAC ±10% 50/60Hz
Rated output voltage $U_e$	12-24VDC		
Rated charging current $I_e$	6-12A (12VDC) 5-10A (24VDC)	2.5-4.5A (12VDC) 1.25-2.5A (24VDC)	3-6-12A (12VDC) 2.5-5-10A (24VDC)
CHARGING CYCLE			
Reference standards	DIN 41773		
Diagram	<p>a - constant current charge b - constant voltage charge</p>		
End charge voltage $U_c$	12V battery: 13.8 or 13.5 (default) 24V battery: 27.0 or 26.7 (default)	12V battery: 13.6VDC (2.27V/cell) 24V battery: 27.2VDC (2.27V/cell)	12V battery: 13.8VDC (2.3V/cell) 24V battery: 27.6VDC (2.3V/cell)
Charge current $I_c$	Adjustable 20% to 100% $I_e$ (using potentiometer)	Fixed	Adjustable 30% to 100% $I_e$ (using potentiometer)
Current limit	Yes		
Boost	+4.4% $U_c$	—	—
PROTECTIONS			
	<ul style="list-style-type: none"> <li>– Mains supply fuse</li> <li>– Charging inhibition due to: <ul style="list-style-type: none"> <li>• short circuit at battery terminals</li> <li>• battery polarity inverted</li> <li>• low voltage at battery poles (&lt;0.5 <math>U_e</math>)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>– Mains supply fuse</li> <li>– Charging inhibition due to: <ul style="list-style-type: none"> <li>• short circuit at battery terminals</li> <li>• battery polarity inverted</li> <li>• low voltage at battery poles (&lt;0.5 <math>U_e</math>)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>– Mains supply fuse (5, 6, 10, 12A types only)</li> <li>– Battery output fuse</li> <li>– Charging inhibition due to: <ul style="list-style-type: none"> <li>• short circuit at battery terminals</li> <li>• battery polarity inverted</li> <li>• low voltage at battery poles (&lt;0.5 <math>U_e</math>)</li> <li>• disconnected battery</li> </ul> </li> </ul>
ALARM OUTPUT CIRCUIT			
Type of output	1 relay 5A 30VDC	1 relay 3A 250VAC (AC1)	Static (NPN transistor) ❶; relay with 1 c/o contact (SPDT), 5A 250VAC ❷
AMBIENT CONDITIONS			
Operating temperature	-30...+55°C (+55...70°C with derating -1,5% $I_n$ / °C)	-40...+51°C	-10...+50°C
Storage temperature	-30...+80°C	-40...+85°C	-30...+80°C
HOUSING			
Version	—	Modular	Open frame
Degree of protection	IP20	IP20	IP00
Cooling	Natural		
Connections	Fixed terminals	Fixed terminals	Removable/plug-in terminals❶ Fixed terminals❷

❶ For 2.5A and 3A types only.  
❷ For 5, 6, 10 and 12A types only.



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