

# Altech Corp.®

*Serving the Automation & Control Industry since 1984*



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# CBI Series DC-UPS Solutions

(pages 4-11)

**Altech Corp.**®

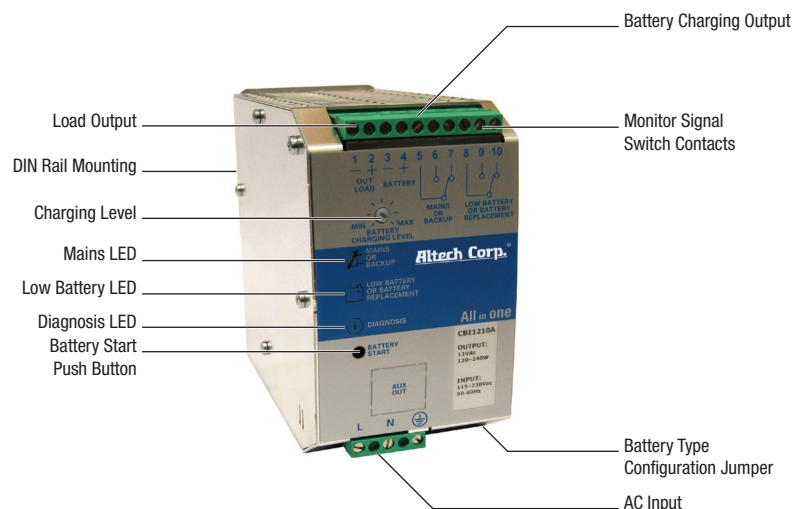
CBI All In One UPS Power Solutions combine the requirements for several applications in just one device which can be used as power supply unit, battery charger, battery care module or backup module. The available power is automatically distributed among load and battery, while supplying power to the load always is the first priority. The maximum available current of the load output is two times the value of the device's rated current.

If the device is disconnected from the main power source, the battery will supply the load until the battery voltage reaches 1.5 V per cell. This prevents the battery from deep discharge. CBI devices provide microprocessor controlled battery charging. Using algorithms, the battery's condition will be detected and based on that, an appropriate charging mode is chosen. The real-time diagnostics system will continuously monitor the charging progress and indicate possibly occurring faults such as elements in short circuit, accidental reverse polarity connection or disconnection of the battery by the battery fault LED and a flashing code of the diagnosis LED.

CBI All In One UPS Power Solutions are suitable for open/sealed lead acid-, lead gel- and optionally Ni-Cd batteries. By using the battery-select-jumper, it is possible to set predefined charging curves for those battery types. The available charging options are recovery-, boost- and trickle charge. All CB devices are built in a rugged metal case with a DIN rail mounting bracket.

## Features:

- Power supply, battery charger, battery care module and backup module in one device
- Three charging modes
- Compact, rugged metal case
- Available in 12VDC, 24VDC and 48VDC
- Suitable for most common battery types
- Adjustable charging current
- Easy battery diagnosis and fault identification either by LED or external devices connected to fault
- Status contacts
- High efficiency up to 91% through switching technology
- Several output protection features such as short circuit, overload, deep battery discharge etc.
- DIN rail mounting
- Small size
- 3 year warranty



## CB Series Battery Chargers

(pages 12-15)

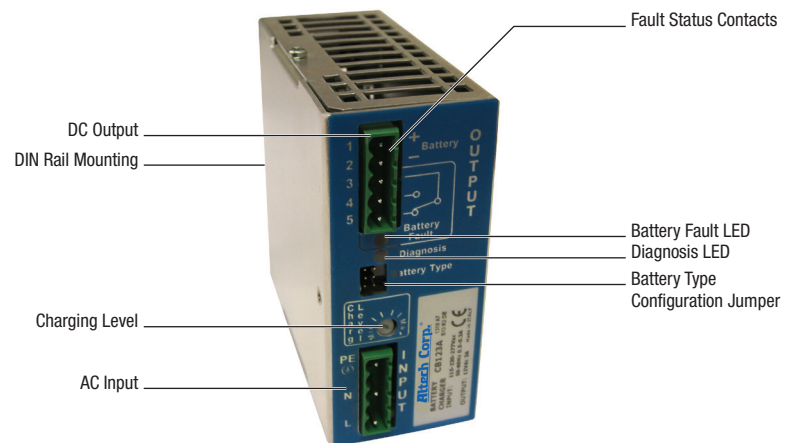
With the CB Battery Charger Line, Altech offers a highly reliable battery management solution. Operating at single phase Input Voltages of 115-230-277 VAC, the devices supply an Output of 12VDC and up to 35A or 24VDC and up to 20A.

Equipped with microcontrollers, the CB line offers fully automated multi-stage charging that will expand the battery's life significantly. Several diagnostic and monitoring features ensure easy handling and a high amount of transparency during daily operation.

Altech's CB line battery chargers are based on the switching technology which allows much higher efficiency as well as smaller and lighter devices. Additionally, several standard safety and protection features ensure safe installation and operation.

### Features:

- Fully automated charging
- Three charging modes
- Compact, rugged metal case
- Available in 12VDC and 24VDC
- Suitable for most common battery types
- Adjustable charging current
- Easy battery diagnosis and fault identification either by LED or external devices connected to fault status contacts
- High efficiency up to 91% through switching technology
- Several output protection features such as short circuit, overload, deep battery discharge etc.
- DIN rail mounting
- Small size
- 3 year warranty



### Applications for CBI & CB Series:

Acoustic Evacuations  
As Mini DC-UPS in industrial applications  
Power Supply + Back Up Module  
Audio Backup, Lighting Backup, Greenhouse Control, etc.  
Automatic Revolving Doors, Access Control, CCTV, Alarms, etc.  
Automotive Service Centers, Cars, Motorbikes, etc.  
E-Car, Off-Highway Equipment/Machinery, E-Scooter,  
Electric Vehicles (on-board chargers)  
Emergency Backup  
Fire Protection Systems, etc.  
Firing System  
Forklifts, Scissors Lifts, Pallet Trucks,  
Generator Sets (Gen set, Engine Starting, etc.)  
Golf Carts, Wheel Chairs, etc.

Industrial Water Pumping  
Light Security  
Marine Applications  
Motorway Light Message Boards  
Portable Equipment  
Power Supply Continuity  
Remote Measurement Station, etc.  
Remote measurement stations  
Security Doors For Banks  
Security Systems  
Security Vision Control  
Telecommunications  
Waterworks Control  
Wireless Control

## CBI Series DC-UPS Solutions

### Everything and more!

- More efficiency of the battery thanks to continuous control over time.
- More monitoring in main connection nodes: input, output load, battery.
- Event logging: number of battery charging cycles, charge cycles completed, aborted charge cycles, Ah charged, charging time, total number of transitions stand-by /back-up etc...
- Event Management: checking the load output, shutdown management of PCs (UPS function), RESET management of a generic equipment.
- Flexibility of use: customization of the entire charging curve of the battery, battery type setting, setting of the various time-out algorithms of charge, setting boost voltage, absorption, float, etc... configuration as DC-UPS or batteries charger, enabling power supply function .

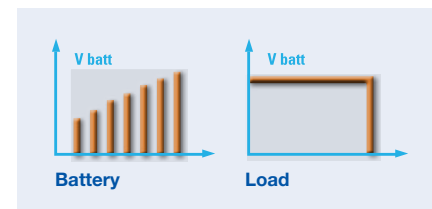
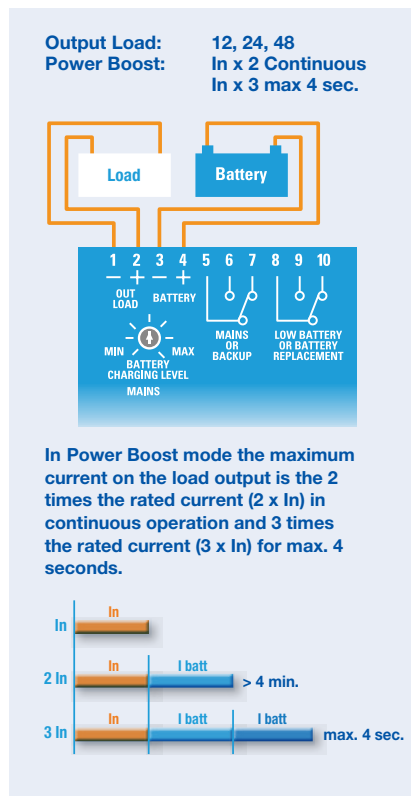
## Power continuity

### DC-UPS = Power Supply + Battery Charger + Back Up module

Double Output, Optimized Power Management. Thanks to the DC-UPS units, it will be possible to smart-manage available power. It will be automatically allocated between load and battery. Supplying power to the load is the first priority of the unit; thus it is not necessary to double the power, and also the power available for the battery will go to the load if the load requires so.

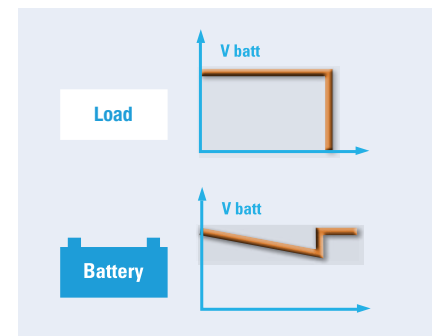
### Smart battery management

Load output will not be affected by battery conditions. The DC-UPS insures continuous power supply to the load even in conditions of completely discharged batteries. The automatic multi-stage operation optimizes and adapts to the battery status. DC-UPS can recharge deeply discharged batteries even when their voltage is close to zero, thus allowing recharge and complete recovery of flat batteries.



### Avoid deep battery discharge

In case of mains failure, the battery will supply the load until battery voltage reaches 1.5 Vpc (Volt per cell). Below this level the device automatically switches off to prevent deep discharge and battery damage.



### Time buffering

Time buffering is enabled when in back-up mode. Buffering time setting is possible by operating the rotary switch on the front panel.



### Adjustable maximum battery charging current

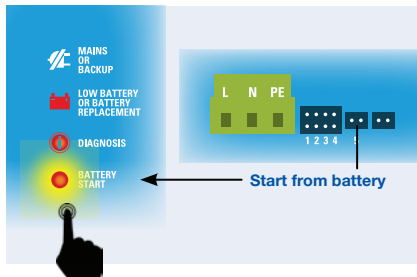
The maximum battery charging current can be set from 10% to 100% of the device rated value.



## CBI Series DC-UPS Solutions

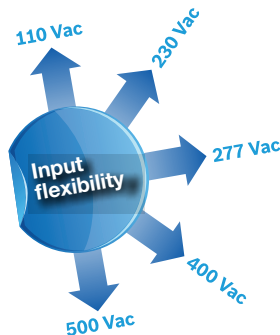
### Start from battery without main

If you want to restart the system while the mains is off, a battery restart function is available, via RTCONN cable connections, or via pushbutton in the front panel.



### Wide input voltage range

Flexibility is given also by the wide range input voltage. The range of the devices accept input voltage 120 - 230 - 277 - 400 - 500 VAC.



### One device for output 12 or 24 VDC

You can select the voltage between 12 or 24 VDC just before installing the device in your panel (available on selected products in the new Altech DC-UPS units).



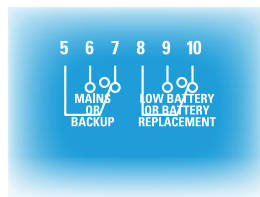
## Connection & monitoring

### Monitor signals

Clear definition of each system operation, via LED indications and Relay contact:

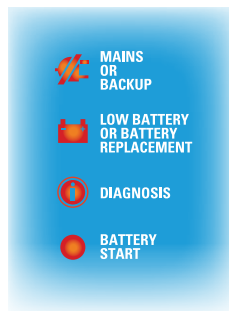
#### Contact Port signals, galvanic insulation

- Main or back-up signaling relay with voltage-free. NO-NC output terminals.
- Battery faulty signaling relay, relay with voltage-free. NO-NC output terminals.
- Flat battery signaling relay, relay with voltage-free. NO-NC output terminals.



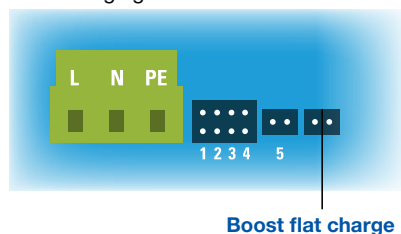
#### Display Signals by LED

- Input Main On Off
- Battery Fault
- Low battery (capacity less than 30%)
- Type of Battery charge mode
- Help through "blinking code" the diagnosis of the system



### Driver Contact

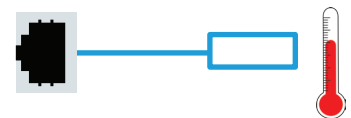
**Remote link for selection of trickle/boost charging** Via RTCONN remote connections cable it is possible to drive the devices from Boost - Bulk to Trickle - Float charge. It is also possible to permanently install a jumper for Boost - Bulk Charging.



### Accessories

All DC-UPS units can be made available with the following options by RJ45 or RJ11 connector:

Temperature sensor Probe, for ambient temperature compensation charging.



Voltage drop cable compensation.



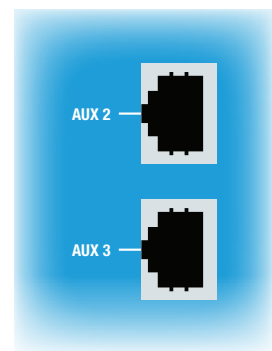
Battery Start UP cable.



### Auxiliary output "Aux 2 and "Aux 3"

MODBUS and CANBUS connection for Multimedia management, for connection to external displays and perform customized data monitoring. Connection to:

- Power View App
- Power View System
- Power Bus
- Power View Graphic
- Power View Bar Graph
- Power View Config



# CBI Series DC-UPS Solutions

These devices are completely automatic and can charge any kind of battery using factory pre-set charging curves suitable to the most common battery technologies: open lead acid, sealed lead acid, lead gel, Ni-Cd and Ni-MH. These devices are very flexible and can be customized to meet the needs of the user and the requirements of the application. After the installation, it is possible to carry out functional software updates just using any laptop computer. Doing so, your system can always be updated to changing requirements. The Battery Care concept is based on algorithms that implement rapid and automatic charging, battery charge optimization during time, flat batteries recovery and real time diagnostic during installation and operation. Battery faults such as battery sulfated, elements in short circuit, accidental reverse polarity connection can easily be detected, identified and removed. The All in one Series meet the highest standards of quality and insure high reliability, with MTBF values up to 300.000 hours.

## Battery care

### One device for all battery types

All devices are suitable to charge most batteries types thanks to user selectable charging curves. They can charge open lead acid, sealed lead acid, Gel, Ni-Cd, Ni-MH, Li Ion batteries. It is possible to change or add other charging curves connecting the device to a portable PC. Charging mode is then completely automatic.

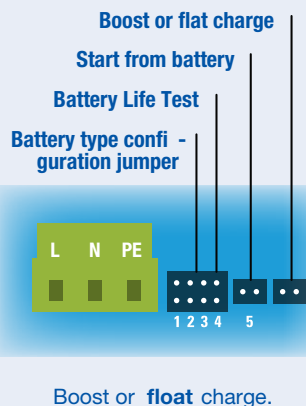
 **Open Lead Acid (factory preset):**  
Trickle 2.23 V  
Boost 2.40 V

 **Sealed Lead Acid (1):**  
Trickle 2.25 V  
Boost 2.40 V

 **AGM Sealed Lead Acid (2):**  
Trickle 2.27 V  
Boost 2.40 V

 **Gel:**  
Trickle 2.30 V  
Boost 2.40 V

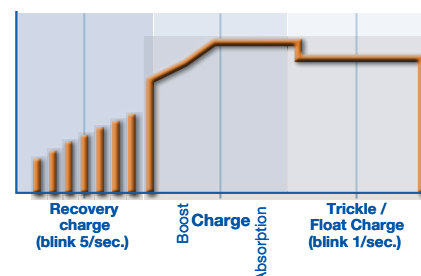
**Optional:** Ni/Cd, LI-Ion



### Multi-Stage charging - Four charging modes

Automatic multi-stage operation and real time diagnostic allows fast recharge and recovery of deeply discharged batteries, adding value and reliability to the system hosting the DC-UPS device. The type of charging is Voltages stabilized and Current stabilized IUoU. CBI battery chargers feature four charging modes, identified by a flashing code on a LED.

- Recovery (5 Blinks / sec) able to recharge batteries even when their voltage is close to zero.
- Boost - Bulk (2 Blinks / sec).
- Absorption (1 Blinks / sec).
- Trickle - Float (1 Blink / 2 sec).



### Diagnosis of battery and device

All CBI devices support the user during installation and operation. A LED flashing sequence code allows to discriminate among various possible faults.

**Error conditions, LED Fault ON and LED Diagnosis flashing with sequence of:**

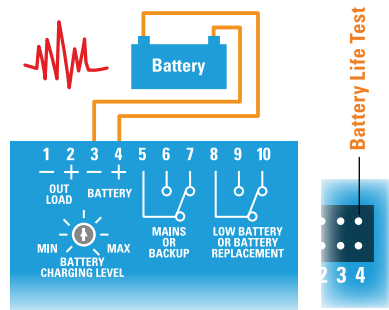
- 1 flash = Reverse polarity, wrong battery voltage
- 2 flashes = Disconnected battery
- 3 flashes = Battery element in short circuit
- 4 flashes = Overload
- 5 flashes = Battery to be replaced (Internal impedance Bad or Bad battery wire connection)



## CBI Series DC-UPS Solutions

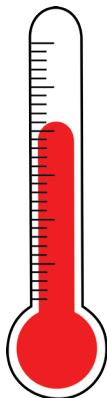
### Battery Life Test

It guarantees battery reliability in time by continuously testing the internal impedance status. It avoids any possible risk of damages and grants also a permanent, reliable and safe connection of the battery to the power supply. The system, through a battery stimulation circuit with algorithms of evaluation of the detected parameter, is able to recognize sulfated batteries or batteries with a short-circuited cell.



### Temperature Compensation

In special application like fire fighting equipment, you can recharge the battery also with the temperature compensation charging function, for the best condition of your battery in the temperature fluctuation.



## Battery care

### Diagnostic checks

#### Check for accidental disconnection of the battery cables.

DC-UPS detects accidental disconnection and immediately switches off output power.

#### Battery not connected

If the battery is not connected the battery output is disabled.

#### Test of wire connection impedance

During trickle charge the resistance on the battery connection is checked every 20 sec. This to detect if the cable connection has been properly made.

#### Battery in open circuit or sulfated

Every four hours DC-UPS tests of internal impedance, while in trickle charging mode.

#### Reverse polarity check

If the battery it is connected with inverted polarity, DC-UPS is automatically protected.

#### Test of battery voltage connections

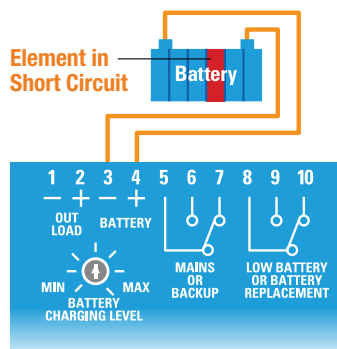
Appropriate voltage check, to prevent connection of wrong battery types.

#### End of charge check

When the battery it is completely full, the device automatically switches to trickle charging mode.

#### Check for battery cells in short circuit

Thanks to specific testing algorithms, the DC-UPS recognize batteries with cells in internal short circuit.



### Max. safety and protection

The DC-UPS series is designed to provide safe operation and long power supply and battery life. The following protections are standard features:

- Outputs protected against short circuit and overload
- Outputs in conformity to SELV and PELV conditions
- High insulation between primary and secondary
- Protection against deep battery discharge
- Protection against reverse polarity connection
- Detection of batteries with wrong rated voltage

All protections have automatic reset. No thermal fuse to be replaced.

### Robust construction and easy installation

All the units in the range have aluminum casing, DIN rail fastening clip and are light and compact. IP20 protection degree.

### Technology

The new DC-UPS range is based on two strategic know-how elements. Switching technology, we have 25 years of experience in design of advanced stabilized switching technology power supplies. A power supply/battery charger unit based on this technology is much more efficient.

Back UP Module and Battery Care units, unlike most other state-of-the-art battery chargers, the DC-UPS series is equipped with complex algorithms which controls the charging process and enable several monitoring functions. The firmware implements the extended battery care know-how, result of many years of experience in this field.

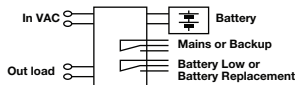
### Norms In Conformity to:

- IEC/EN 60335-2-29 Battery chargers;
- EN60950 / UL60950;
- Electrical safety EN54-4 Fire Detection and fire alarm systems;
- EMC Directive;
- DIN 41773 (Charging cycle)

# CBI Series DC-UPS

**Altech Corp.**®

## 12 VDC



**E353188**



**E353188**



**E353188**



| Model<br>Output              |                                                                   | <b>CBI123A</b><br>12VDC - 3A - 36W                                                                                                       | <b>CBI126A</b><br>12VDC - 6A - 72W | <b>CBI1210A</b><br>12VDC - 10A - 120W | <b>CBI1235A</b><br>12VDC - 35A - 420W |
|------------------------------|-------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|---------------------------------------|---------------------------------------|
| INPUT<br>DATA                | Input voltage range                                               | 90 - 305 VAC                                                                                                                             | 90 - 305 VAC                       | 90 - 305 VAC                          | 90 - 135 VAC<br>180 - 305 VAC         |
|                              | Frequency                                                         | 47 - 63 Hz ±6%                                                                                                                           | 47 - 63 Hz ±6%                     | 47 - 63 Hz ±6%                        | 47 - 63 Hz ±6%                        |
| OUTPUT<br>DATA               | Output VDC / IN                                                   | 12VDC - 3A                                                                                                                               | 12VDC - 6A                         | 12VDC - 10A                           | 12VDC - 35A                           |
|                              | Efficiency (50% of In)                                            | 90%                                                                                                                                      | 90%                                | 90%                                   | > 91%                                 |
|                              | Over load and short-circuit protection                            | ■                                                                                                                                        | ■                                  | ■                                     | ■                                     |
|                              | Overheating thermal protection                                    | ■                                                                                                                                        | ■                                  | ■                                     | ■                                     |
|                              | Reverse battery protection                                        | ■                                                                                                                                        | ■                                  | ■                                     | ■                                     |
| LOAD<br>OUTPUT               | Output voltage (at at IN) VDC                                     | 10 - 14.4VDC                                                                                                                             | 10 - 14.4VDC                       | 10 - 14.4VDC                          | 10 - 14.4VDC                          |
|                              | Nominal current IN = Iload                                        | 1.1 x In A ± 5%                                                                                                                          | 1.1 x In A ± 5%                    | 1.1 x In A ± 5%                       | 1.1 x In A ± 5%                       |
|                              | Continuous current (without battery) Iload = In                   | 3A                                                                                                                                       | 6A                                 | 10A                                   | 35A                                   |
|                              | Max current (with battery) Out: Iload = In + Ibatt                | 6A                                                                                                                                       | 12A                                | 20A                                   | 70A                                   |
|                              | Max current (main input) Out: Iload (4sec.)                       | 9A max                                                                                                                                   | 18A max                            | 30A max                               | 105A max                              |
|                              | Max current output load: (Back Up) Iload (4sec.)                  | 6A max                                                                                                                                   | 12A max                            | 20A max                               | 70A max                               |
|                              | Push button or remote input control                               | ■                                                                                                                                        | ■                                  | ■                                     | ■                                     |
|                              | Time Buffering                                                    | -                                                                                                                                        | -                                  | -                                     | ■                                     |
| BATTERY<br>CHARGER<br>OUTPUT | Boost-Bulk charge (Typ. at IN)                                    | 14.4VDC                                                                                                                                  | 14.4VDC                            | 14.4VDC                               | 14.4VDC                               |
|                              | Max. time boost-bulk charge (Typ. at IN)                          | 15h                                                                                                                                      | 15h                                | 15h                                   | 15h                                   |
|                              | Min. time boost-bulk charge (Typ. at IN)                          | 1min.                                                                                                                                    | 1min.                              | 1min.                                 | 1min.                                 |
|                              | Trickle-Float charge (Typ. at IN)                                 | 13.8VDC                                                                                                                                  | 13.8VDC                            | 13.8VDC                               | 13.8VDC                               |
|                              | Charging current Limiting IN (Iadj)                               | 20 ÷ 100 % / Ibatt                                                                                                                       | 20 ÷ 100 % / Ibatt                 | 20 ÷ 100 % / Ibatt                    | 10 ÷ 100 % / Ibatt                    |
|                              | Jumper config. type battery (NiCd optional)                       | 2.23 V/cell Open Lead, 2.25 V/cell Sealed Lead, 2.27 V/cell Sealed Lead, 2.3 V/cell gel;<br>NiCd 1.5V/cell (10 elem.) trickle (Imax 10%) |                                    |                                       |                                       |
|                              | Remote input control (AMP Type connector)                         | Boost / Trickle                                                                                                                          | Boost / Trickle                    | Boost / Trickle                       | Boost / Trickle                       |
| SIGNAL<br>OUTPUT<br>(RELAY)  | Characteristic Curve                                              | IUoU, Automatic, 4 stage                                                                                                                 |                                    |                                       |                                       |
|                              | Main or backup power                                              | ■                                                                                                                                        | ■                                  | ■                                     | ■                                     |
|                              | Low battery and fault battery                                     | ■                                                                                                                                        | ■                                  | ■                                     | ■                                     |
| AUXILIARY<br>OUTPUT*<br>FOR: | Temp. charging probe                                              | by ext. Probe                                                                                                                            | by ext. Probe                      | by ext. Probe                         | by ext. Probe                         |
|                              | UPS active                                                        | -                                                                                                                                        | -                                  | -                                     | -                                     |
|                              | Modbus - CAN Bus                                                  | -                                                                                                                                        | -                                  | -                                     | ■                                     |
| CLIMATIC<br>DATA             | Ambient temperature operation                                     | -25 ÷ +70°C                                                                                                                              | -25 ÷ +70°C                        | -25 ÷ +70°C                           | -25 ÷ +70°C                           |
|                              | De rating T <sup>a</sup> > (In) / De rating T <sup>a</sup> > (In) | > 50° -2.5%(In) / °C                                                                                                                     | > 50° -2.5%(In) / °C               | > 50° -2.5%(In) / °C                  | > 50° -2.5%(In) / °C                  |
|                              | Ambient temperature storage                                       | -40 ÷ +85°C                                                                                                                              | -40 ÷ +85°C                        | -40 ÷ +85°C                           | -40 ÷ +85°C                           |
|                              | Humidity at 25 °C                                                 | 95% to 25°C                                                                                                                              | 95% to 25°C                        | 95% to 25°C                           | 95% to 25°C                           |
|                              | Cooling                                                           | Auto Convection                                                                                                                          | Auto Convection                    | Auto Convection                       | Auto Convection                       |
| GENERAL<br>DATA              | Isolation voltage (IN / OUT)                                      | 3000VAC                                                                                                                                  | 3000VAC                            | 3000VAC                               | 3000VAC                               |
|                              | Isolation voltage (IN / PE)                                       | 1605VAC                                                                                                                                  | 1605VAC                            | 1605VAC                               | 1605VAC                               |
|                              | Isolation voltage (OUT / PE)                                      | 500VAC                                                                                                                                   | 500VAC                             | 500VAC                                | 500VAC                                |
|                              | Protection class (EN/IEC 60529)                                   | IP 20                                                                                                                                    | IP 20                              | IP 20                                 | IP 20                                 |
|                              | Reliability (MTBF IEC 61709)                                      | > 300 000 h                                                                                                                              | > 300 000 h                        | > 300 000 h                           | > 300 000 h                           |
|                              | Dimension (w-h-d)                                                 | 65x115x135                                                                                                                               | 65x115x135                         | 65x115x135                            | 150x115x135                           |
|                              | Safety standard approval                                          | CE / C-UL Recognized 60950                                                                                                               | CE / C-UL Recognized 60950         | CE / C-UL Recognized 60950            | CE                                    |
| OPTIONAL                     | Bar graph control panel                                           | ■                                                                                                                                        | ■                                  | ■                                     | ■                                     |
|                              | Graphic multifunction control panel                               | ■                                                                                                                                        | ■                                  | ■                                     | ■                                     |
|                              | System monitoring software                                        | ■                                                                                                                                        | ■                                  | ■                                     | ■                                     |
|                              | System configuration software                                     | ■                                                                                                                                        | ■                                  | ■                                     | ■                                     |
|                              | Interface module modbus 485 - Ethernet                            | ■                                                                                                                                        | ■                                  | ■                                     | ■                                     |
|                              | Interface module cloud all in one - Ethernet                      | ■                                                                                                                                        | ■                                  | ■                                     | ■                                     |
|                              | Battery temp. compensation Probe RJTemp                           | ■                                                                                                                                        | ■                                  | ■                                     | ■                                     |

# CBI Series DC-UPS

## 24 VDC

## 48 VDC



**AI**  
E353188

### CBI243A

24VDC - 3A - 72W



**AI**  
E353188

### CBI245A

24VDC - 5A - 120W



### CBI2410A

24VDC - 10A - 240W



### CBI2420A

24VDC - 20A - 500W



### CBI485A

48VDC - 5A - 240W



### CBI4810A

48VDC - 10A - 500W

90 - 305 VAC

47 - 63 Hz  $\pm 6\%$

24VDC - 3A

90%



22 - 28.8VDC

1.1 x In A  $\pm 5\%$

3A

6A

9A max

6A max



28.8VDC

15h

1min.

27.6VDC

20  $\div$  100 % / Ibatt

90 - 305 VAC

47 - 63 Hz  $\pm 6\%$

24VDC - 5A

90%



22 - 28.8VDC

1.1 x In A  $\pm 5\%$

5A

10A

15A max

10A max



28.8VDC

15h

1min.

27.6VDC

20  $\div$  100 % / Ibatt

90 - 135 VAC

180 - 305 VAC

47 - 63 Hz  $\pm 6\%$

24VDC - 10A

83%



22 - 28.8VDC

1.1 x In A  $\pm 5\%$

10A

20A

30A max

20A max

■ CBI2410A/S



28.8VDC

15h

1min.

27.6VDC

20  $\div$  100 % / Ibatt

90 - 135 VAC

180 - 305 VAC

47 - 63 Hz  $\pm 6\%$

24VDC - 20A

> 91%



22 - 28.8VDC

1.1 x In A  $\pm 5\%$

20A

40A

60A max

40A max



28.8VDC

15h

1min.

27.6VDC

10  $\div$  100 % / Ibatt

90 - 135 VAC

180 - 305 VAC

47 - 63 Hz  $\pm 6\%$

48VDC - 5A

83%



44 - 57.6VDC

1.1 x In A  $\pm 5\%$

5A

10A

15A max

10A max

■ CBI485A/S



57.6

15h

1min.

55.2VDC

20  $\div$  100 % / Ibatt

90 - 135 VAC

180 - 305 VAC

47 - 63 Hz  $\pm 6\%$

48VDC - 10A

> 91%



44 - 57.6VDC

1.1 x In A  $\pm 5\%$

10A

20A

30A max

20A max



57.6

15h

1min.

55.2VDC

10  $\div$  100 % / Ibatt

2.23 V/cell Open Lead, 2.25 V/cell Sealed Lead, 2.27 V/cell Sealed Lead, 2.3 V/cell gel;  
NiCd 1.5V/cell trickle (Imax 10%)

Boost / Trickle

Boost / Trickle

Boost / Trickle

Boost / Trickle

Boost / Trickle

Boost / Trickle

IUoU, Automatic, 4 stage



by ext. Probe



-25  $\div$  +70°C

> 50° -2.5%(In) / °C

-40  $\div$  +85°C

95% to 25°C

Auto Convection

3000VAC

1605VAC

500VAC

IP 20

> 300 000 h

65x115x135

CE /C-UL Recognized 60950

by ext. Probe



-25  $\div$  +70°C

> 50° -2.5%(In) / °C

-40  $\div$  +85°C

95% to 25°C

Auto Convection

3000VAC

1605VAC

500VAC

IP 20

> 300 000 h

65x115x135

CE /C-UL Recognized 60950

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-40  $\div$  +85°C

95% to 25°C

Auto Convection

3000VAC

1605VAC

500Vac

IP 20

> 300 000 h

100x115x135

CE

by ext. Probe



-25  $\div$  +70°C

> 50° -2.5%(In) / °C

-40  $\div$  +85°C

95% to 25°C

Auto Convection

3000VAC

1605VAC

500VAC

IP 20

> 300 000 h

150x115x135

CE

by ext. Probe



-25  $\div$  +70°C

> 50° -2.5%(In) / °C

-40  $\div$  +85°C

95% to 25°C

Auto Convection

3000VAC

1605VAC

500VAC

IP 20

> 300 000 h

100x115x135

CE

by ext. Probe



-25  $\div$  +70°C

> 50° -2.5%(In) / °C

-40  $\div$  +85°C

95% to 25°C

Auto Convection

3000VAC

1605VAC

500VAC

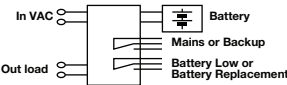
IP 20

> 300 000 h

150x115x135

CE

# CBI Series DC-UPS

|                                                                                   |                                                                   | 36/48 VDC                                                                                                                             | 12/24 VDC                                                                          | 12/24 VDCdc                                                                         |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |                                                                   |                                                      |  |  |
| Model                                                                             |                                                                   | <b>CBI2803648A</b>                                                                                                                    | <b>CBI2801224A</b>                                                                 | <b>CBI2801224B</b>                                                                  |
| Output                                                                            |                                                                   | 36/48VDC - 270W                                                                                                                       | 12/24VDC - 270W                                                                    | 12/24VDC - 270W                                                                     |
| INPUT DATA                                                                        | Input voltage range                                               | 90 - 135 VAC<br>180 - 305 VAC                                                                                                         | 90 - 135 VAC<br>180 - 305 VAC                                                      | 180 - 264 VAC<br>330 - 550 VAC                                                      |
|                                                                                   | Frequency                                                         | 47 - 63 Hz ±6%                                                                                                                        | 47 - 63 Hz ±6%                                                                     | 47 - 63 Hz ±6%                                                                      |
| OUTPUT DATA                                                                       | Output VDC / IN                                                   | 36 / 48VDC - 270 W                                                                                                                    | 12 / 24VDC - 270 W                                                                 | 12 / 24VDC - 270 W                                                                  |
|                                                                                   | Efficiency (50% of In)                                            | > 91%                                                                                                                                 | > 91%                                                                              | > 91%                                                                               |
|                                                                                   | Over load and short-circuit protection                            | ■                                                                                                                                     | ■                                                                                  | ■                                                                                   |
|                                                                                   | Overheating thermal protection                                    | ■                                                                                                                                     | ■                                                                                  | ■                                                                                   |
|                                                                                   | Reverse battery protection                                        | ■                                                                                                                                     | ■                                                                                  | ■                                                                                   |
| LOAD OUTPUT                                                                       | Output voltage (at IN) VDC                                        | 33 - 43.2VDC /<br>44 - 57.6VDC                                                                                                        | 11 - 14.4VDC /<br>22 - 28.8VDC                                                     | 11 - 14.4VDC /<br>22 - 28.8VDC                                                      |
|                                                                                   | Nominal current IN = Iload                                        | 1.1 x In A ± 5%                                                                                                                       | 1.1 x In A ± 5%                                                                    | 1.1 x In A ± 5%                                                                     |
|                                                                                   | Continuous current (without battery) Iload = In                   | 7A (36V) / 5A (48V)                                                                                                                   | 15A (12V) / 10A (24V)                                                              | 15A (12V) / 10A (24V)                                                               |
|                                                                                   | Max current (with battery) Out: Iload = In + Ibatt                | 14A (36V) / 10A (48V)                                                                                                                 | 30A (12V) / 20A (24V)                                                              | 30A (12V) / 20A (24V)                                                               |
|                                                                                   | Max current: (main input) Out: Iload (4sec.)                      | 21A (36V) / 15A (48V)                                                                                                                 | 45A (12V) / 30A (24V)                                                              | 45A (12V) / 30A (24V)                                                               |
|                                                                                   | Max current output load: (Back Up) Iload (4sec.)                  | 14A (36V) / 10A (48V)                                                                                                                 | 30A (12V) / 20A (24V)                                                              | 30A (12V) / 20A (24V)                                                               |
|                                                                                   | Push button or remote input control                               | ■                                                                                                                                     | ■                                                                                  | ■                                                                                   |
|                                                                                   | Time Buffering                                                    | ■                                                                                                                                     | ■                                                                                  | ■                                                                                   |
| BATTERY CHARGER OUTPUT                                                            | Boost-Bulk charge (Typ. at IN)                                    | 43.2VDC (36V) /<br>57.6VDC (48V)                                                                                                      | 14.4 VDC (12V) /<br>28.8VDC (24V)                                                  | 14.4 VDC (12V) /<br>28.8VDC (24V)                                                   |
|                                                                                   | Max. time boost-bulk charge (Typ. at IN)                          | 15h                                                                                                                                   | 15h                                                                                | 15h                                                                                 |
|                                                                                   | Min. time boost-bulk charge (Typ. at IN)                          | 1min.                                                                                                                                 | 1min.                                                                              | 1min.                                                                               |
|                                                                                   | Trickle-Float charge (Typ. at IN)                                 | 41.4VDC (36V) /<br>55.2VDC (48V)                                                                                                      | 13.8 VDC (12V) /<br>27.6VDC (24V)                                                  | 13.8 VDC (12V) /<br>27.6VDC (24V)                                                   |
|                                                                                   | Charging current Limiting IN (Iadj)                               | 10 ÷ 100 % / Ibatt                                                                                                                    | 10 ÷ 100 % / Ibatt                                                                 | 10 ÷ 100 % / Ibatt                                                                  |
|                                                                                   | Jumper config. type battery (NiCd optional)                       | 2.23 V/cell Open Lead, 2.25 V/cell Sealed Lead, 2.27 V/cell Sealed Lead, 2.3 V/cell gel; NiCd 1.5V/cell (20 elem.) trickle (Imax 10%) |                                                                                    |                                                                                     |
|                                                                                   | Remote input control (AMP Type connector)                         | Boost / Trickle                                                                                                                       | Boost / Trickle                                                                    | Boost / Trickle                                                                     |
|                                                                                   | Characteristic Curve                                              | IJoU, Automatic, 4 stage                                                                                                              |                                                                                    |                                                                                     |
| SIGNAL OUTPUT (RELAY)                                                             | Main or backup power                                              | ■                                                                                                                                     | ■                                                                                  | ■                                                                                   |
|                                                                                   | Low battery and fault battery                                     | ■                                                                                                                                     | ■                                                                                  | ■                                                                                   |
| AUXILIARY OUTPUT* FOR:                                                            | Temp. charging probe                                              | by ext. Probe                                                                                                                         | by ext. Probe                                                                      | by ext. Probe                                                                       |
|                                                                                   | UPS active                                                        | -                                                                                                                                     | -                                                                                  | -                                                                                   |
|                                                                                   | Modbus - CAN Bus                                                  | ■                                                                                                                                     | ■                                                                                  | ■                                                                                   |
| CLIMATIC DATA                                                                     | Ambient temperature operation                                     | -25 ÷ +70°C                                                                                                                           | -25 ÷ +70°C                                                                        | -25 ÷ +70°C                                                                         |
|                                                                                   | De rating T <sup>a</sup> > (In) / De rating T <sup>a</sup> > (In) | > 50° -2.5%(In) / °C                                                                                                                  | > 50° -2.5%(In) / °C                                                               | > 50° -2.5%(In) / °C                                                                |
|                                                                                   | Ambient temperature storage                                       | -40 ÷ +85°C                                                                                                                           | -40 ÷ +85°C                                                                        | -40 ÷ +85°C                                                                         |
|                                                                                   | Humidity at 25 °C                                                 | 95% to 25°C                                                                                                                           | 95% to 25°C                                                                        | 95% to 25°C                                                                         |
|                                                                                   | Cooling                                                           | Auto Convection                                                                                                                       | Auto Convection                                                                    | Auto Convection                                                                     |
| GENERAL DATA                                                                      | Isolation voltage (IN / OUT)                                      | 3000Vac                                                                                                                               | 3000Vac                                                                            | 3000Vac                                                                             |
|                                                                                   | Isolation voltage (IN / PE)                                       | 1605Vac                                                                                                                               | 1605VAC                                                                            | 1605VAC                                                                             |
|                                                                                   | Isolation voltage (OUT / PE)                                      | 500VAC                                                                                                                                | 500VAC                                                                             | 500VAC                                                                              |
|                                                                                   | Protection class (EN/IEC 60529)                                   | IP 20                                                                                                                                 | IP 20                                                                              | IP 20                                                                               |
|                                                                                   | Reliability (MTBF IEC 61709)                                      | > 300 000 h                                                                                                                           | > 300 000 h                                                                        | > 300 000 h                                                                         |
|                                                                                   | Dimension (w-h-d)                                                 | 115x115x135                                                                                                                           | 115x115x135                                                                        | 115x115x135                                                                         |
|                                                                                   | Safety standard approval                                          | CE                                                                                                                                    | CE                                                                                 | CE                                                                                  |
| OPTIONAL                                                                          | Bar graph control panel                                           | ■                                                                                                                                     | ■                                                                                  | ■                                                                                   |
|                                                                                   | Graphic multifunction control panel                               | ■                                                                                                                                     | ■                                                                                  | ■                                                                                   |
|                                                                                   | System monitoring software                                        | ■                                                                                                                                     | ■                                                                                  | ■                                                                                   |
|                                                                                   | System configuration software                                     | ■                                                                                                                                     | ■                                                                                  | ■                                                                                   |
|                                                                                   | Interface module modbus 485 - Ethernet                            | ■                                                                                                                                     | ■                                                                                  | ■                                                                                   |
|                                                                                   | Interface module cloud all in one - Ethernet                      | ■                                                                                                                                     | ■                                                                                  | ■                                                                                   |
|                                                                                   | Battery temp. compensation Probe RJTemp                           | ■                                                                                                                                     | ■                                                                                  | ■                                                                                   |

## Small VRLA

Compact and fully enclosed improve safety and maintenance, transmit information on the temperature and type of batteries. They save space and improve the efficiency of the DC UPS "All In One".. Size for 24 VDC: 1.2 Ah, 3 Ah, 7.2 Ah and 12 Ah.

### 24 VDC



| Model        |                                        | BAT1.2 VRLA                                      | BAT3.4 VRLA    | BAT7.2 VRLA     | BAT12 VRLA    |
|--------------|----------------------------------------|--------------------------------------------------|----------------|-----------------|---------------|
| Output       |                                        | 24V - 1.2Ah                                      | 24V - 3.2Ah    | 24V - 7.2Ah     | 24V - 12Ah    |
| INPUT DATA   | End-of-charge voltage (trickle charge) | 27.5 VDC (20°C) ; 27 VDC (30°C); 26.5 VDC (40°C) |                |                 |               |
|              | Max. permissible charging current      | 0.30 A                                           | 0.80 A         | 1.70 A          | 3 A           |
| OUTPUT DATA  | Short-circuit protection               | ■                                                | ■              | ■               | ■             |
|              | Protection fuse                        | 25 A                                             | 25 A           | 25 A            | 25 A          |
|              | Output current                         | max. 25 A                                        | max. 25 A      | max. 25 A       | max. 25 A     |
| GENERIC DATA | Mounting position                      | DIN Rail / Wall Mount                            |                |                 |               |
|              | Assembly using 4 holes                 | for hanging onto M4 screws                       |                |                 |               |
|              | Ambient temperature (operation)        | 0 ÷ +40 °C                                       | 0 ÷ +40 °C     | 0 ÷ +40 °C      | 0 ÷ +40 °C    |
|              | Ambient temperature (storage)          | -20 ÷ +50 °C                                     | -20 ÷ +50 °C   | -20 ÷ +50 °C    | -20 ÷ +50 °C  |
|              | Self-discharge rate                    | 20 °C 15% per month                              |                |                 |               |
|              | Dimension (w-h-d)                      | 62 x 175 x 120                                   | 82 x 200 x 160 | 145 x 210 x 130 | 210 x 210x210 |
|              | Weight                                 | 1.5Kg approx                                     | 3 Kg approx    | 5.5 Kg approx.  | 9 Kg          |
|              | Protection class                       | IP20                                             | IP20           | IP20            | IP20          |

## Battery Selection Chart

| BUFFERING<br>(MINUTE) TIME | Battery type | 1.2 Ah | 3.2 Ah | 7.2 Ah | 12 Ah |
|----------------------------|--------------|--------|--------|--------|-------|
|                            | Load 1.5 A   | 20     | 60     | 200    | 400   |
|                            | Load 3 A     | 8      | 30     | 120    | 240   |
|                            | Load 5 A     | 3      | 15     | 55     | 100   |
|                            | Load 7.5 A   | 2      | 10     | 30     | 60    |
|                            | Load 10 A    | -      | 7      | 20     | 45    |
|                            | Load 12 A    | -      | 3      | 12     | 30    |
|                            | Load 15 A    | -      | -      | 9      | 20    |
|                            | Load 20 A    | -      | -      | 7      | 13    |

# CB Series Battery Chargers

## One device for all battery types

Completely automatic, the battery chargers of the CB series are microprocessor controlled devices suited to charging most batteries types thanks to factory pre-set and selectable charging curves. They can charge open lead acid, sealed lead acid, Gel and Ni-Cd, Ni-MH batteries. It is possible to change or add other charging curves connecting the device to a portable PC.

### Jumper positions / VpC:

#### • Open Lead Acid:

Trickle 2.23V  
Boost 2.40V



#### • Sealed Lead Acid (1):

Trickle 2.25V  
Boost 2.40V



#### • Sealed Lead Acid (2):

Trickle 2.27  
Boost 2.40V



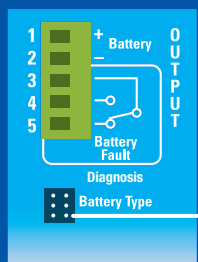
#### • Gel:

Trickle 2.30V  
Boost 2.40V



#### • Optional:

Ni/Cd

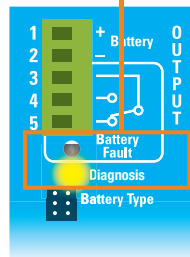
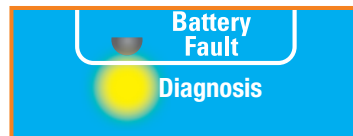
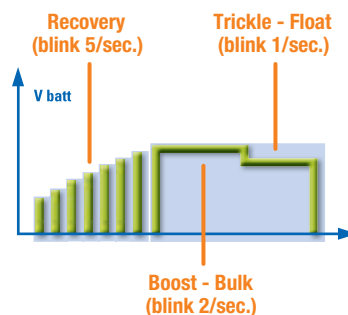


Jumper for  
Battery Type  
Selection

## Multi-Stage charging - Three charging modes

Automatic multi-stage operation and real time diagnostic allow fast recharge and recovery of deep discharged batteries, adding value and reliability to the system hosting the CB device. The type of charging it is Voltages stabilized and current stabilized IUoUo. CB battery chargers feature three charging modes, identified by a flashing code on a LED.

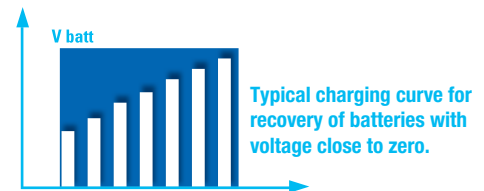
- **Boost** (Boost - Bulk) (Blink 2/sec.)
- **Trickle** (also known as float or maintenance charging) (Trickle - Float) (Blink 1/Sec.)
- **Recovery** (Recovery) (Blink 5/sec.)



**Altech Corp.**®

## Recovery charging

Automatic multi-stage operation optimizes and adapt to battery status, even when the battery voltage is very low. CB can recharge batteries even when their voltage is close to zero. It allows recharge and complete recovery of flat batteries.



## Setting of battery maximum charging current

The maximum battery charging current can be set from 20% to 100% of the device rated value. Not available on LC models.

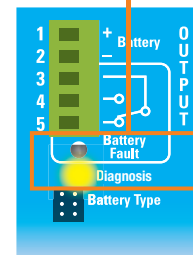
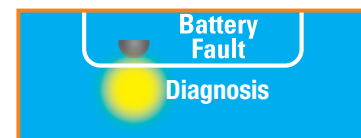


## Diagnostic of battery and device

All CB devices support the user during installation and operation. An LED flashing sequence code allows to discriminate among various possible faults.

### LED Diagnosis:

- **1 flash**  
Reverse polarity, wrong battery voltage.
- **2 flashes**  
Disconnected battery.
- **3 flashes**  
Battery element in short circuit.
- **5 flashes**  
Battery to be replaced (Internal impedance Bad or Bad battery wire connection).

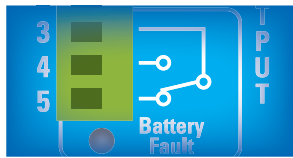


# CB Series Battery Chargers

## Monitor signals

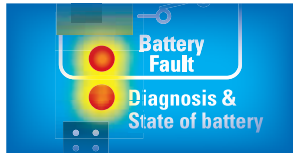
### Signal contacts

- CB chargers indicate battery status and faults also via a change-over contact with galvanic isolation.
- Battery common fault.
- Unit disconnected from mains.

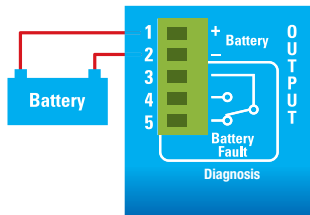


### Visual indication

- Battery common fault
- Unit disconnected from mains
- Charging mode
- CB device self-diagnostic

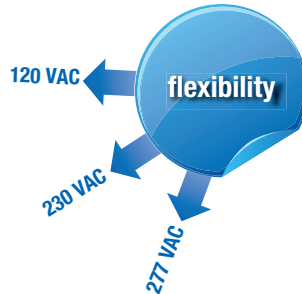


### Single output devices

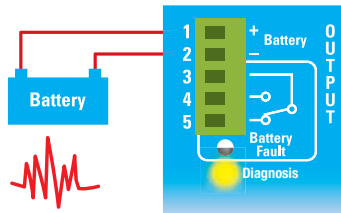


## Wide range input voltage

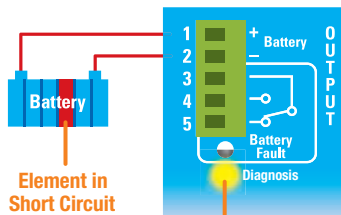
Flexibility is given also by the wide range input voltage. All the devices of the CB range accept input voltage in the range of 120 - 230 - 277 VAC. Only one device to stock!



## Diagnostic checks



- **Check for accidental disconnection of the battery cables.** If happen the devices switch off immediately the output power.
- **Battery not connected.** If the battery it is not connected no output power.
- **Test of quality wire connections.** During trickle charge the quality (resistance) on the battery connection is checked every 20 sec. This to detect if the cable connection has been properly made.
- **Test of battery voltage connections.** Appropriate voltage check, to prevent connection of wrong battery types.
- **End of charging check.** When the battery it is completely full, the device automatically switch in trickle charging mode.
- **Reverse polarity check.** If the battery it is connected with inverted polarity, the devices are automatically protected.



Test and Diagnosis  
of the battery

- **Check for elements in short circuit.** Thanks to specific algorithms of evaluation, the CBs recognize batteries with element in short circuit.

## Technology

The CB series is a new range of battery chargers based on two strategic know-how elements.

### Switching technology

We have over 25 year experience in design of advanced stabilized switching technology power supplies. A battery charger based on this technology is much more efficient and much smaller and lighter than traditional linear technology battery chargers.

### Micro-processor and Battery Care

Unlike most other state-of-the-art battery chargers, the CB series is equipped with a micro-processor which controls the charging process and enables several monitoring functions. The firmware implements the extended battery care know-how, result of many years of experience in this field.

## Maximum safety and protection

The CB series is designed to provide safe operation and long battery life. The following protections are standard features:

- Output protected against short circuit and overload
- Protection against deep battery discharge
- Protection against reverse polarity connection
- High insulation between primary and secondary
- Detection of batteries with wrong rated voltage
- Protection against the effect of parallel connection with other power sources, e.g. gensets.

All protections have automatic reset. No thermal fuse to be replaced.

# CB Series Battery Chargers

## 12 VDC



**CB123A**



**CB126A**



**CB1210A**



**CB1235A**

|                                   |                                            | <b>CB123A</b>                                                                           | <b>CB126A</b>   | <b>CB1210A</b>  | <b>CB1235A</b>       |
|-----------------------------------|--------------------------------------------|-----------------------------------------------------------------------------------------|-----------------|-----------------|----------------------|
|                                   | Input (Volt) VAC                           | 115-230-277                                                                             | 115-230-277     | 115-230-277     | 115-230-277          |
|                                   | Output (VDC - A - W)                       | 12 - 3 - 36                                                                             | 12 - 6 - 72     | 12 - 10 - 120   | 12 - 35 - 420        |
|                                   | Model                                      | <b>CB123A</b>                                                                           | <b>CB126A</b>   | <b>CB1210A</b>  | <b>CB1235A</b>       |
| <b>INPUT DATA 2xVAC</b>           | Input Voltage Range VAC                    | 90 - 264                                                                                | 90 - 264        | 90 - 264        | 90 - 135 / 180 - 264 |
|                                   | Inrush Current (Vn and In Load) I2t (msec) | ≤ 11 A ≤ 5                                                                              | ≤ 11 A ≤ 5      | ≤ 16 A ≤ 5      | ≤ 35 A ≤ 5           |
|                                   | Frequency                                  | 47 - 63 Hz ± 6%                                                                         | 47 - 63 Hz ± 6% | 47 - 63 Hz ± 6% | 47 - 63 Hz ± 6%      |
|                                   | Input Current (115 - 230 VAC)              | 0,5 - 0.3 A                                                                             | 1 - 0.7 A       | 2.4 - 1.2 A     | 8 - 4.2 A            |
|                                   | Internal Fuse                              | 4 A                                                                                     | 4 A             | 4 A             | 10 A                 |
|                                   | External Fuse (recommended)                | 10 A                                                                                    | 10 A            | 10 A            | 16 A                 |
| <b>OUTPUTS DATA</b>               | Output VDC / IN                            | 12 VDC 3 A                                                                              | 12 VDC 6 A      | 12 VDC 10 A     | 12 VDC 35 A          |
|                                   | Minimum load                               |                                                                                         |                 |                 |                      |
|                                   | Efficiency (50% of IN)                     | > 81%                                                                                   | > 81%           | > 89%           | > 91%                |
|                                   | Short-circuit protection                   | ✓                                                                                       | ✓               | ✓               | ✓                    |
|                                   | Over Load protection                       | ✓                                                                                       | ✓               | ✓               | ✓                    |
|                                   | Over Voltage Out protection                | ✓                                                                                       | ✓               | ✓               | ✓                    |
|                                   | Reverse battery protection                 | ✓                                                                                       | ✓               | ✓               | ✓                    |
| <b>BATTERY CHARGER OUTPUT</b>     | Boost - Bulk charge (Typ. at IN)           | 14.4 VDC                                                                                | 14.4 VDC        | 14.4 VDC        | 14.4 VDC             |
|                                   | Max.Time Boost-Bulk charge (Typ. at IN)    | 15 h                                                                                    | 15 h            | 15 h            | 15 h                 |
|                                   | Min.Time Boost-Bulk charge (Typ. at IN)    | 70 min.                                                                                 | 70 min.         | 1 min.          | 1 min.               |
|                                   | Trickle-Float charge (Typ. at IN)          | 13.75 VDC                                                                               | 13.75 VDC       | 13.75 VDC       | 13.75 VDC            |
|                                   | Recovery Charge                            | 2 - 7 VDC                                                                               | 2 - 7 VDC       | 2 - 9 VDC       | 2 - 9 VDC            |
|                                   | Charging max Ibatt                         | 3 A ± 5%                                                                                | 6 A ± 5%        | 10 A ± 5%       | 35 A ± 5%            |
|                                   | Charging current Limiting IN (Iadj)        | ✓                                                                                       | ✓               | ✓               | ✓                    |
|                                   | Jumper Config. Type Battery                | 2.23 V/cell Open Lead, 2.25 V/cell Sealed Lead, 2.27 V/cell Sealed Lead, 2.3 V/cell gel |                 |                 |                      |
|                                   | Quiescent Current                          | ≤ 5 mA                                                                                  | ≤ 5 mA          | ≤ 5 mA          | ≤ 5 mA               |
|                                   | Characteristic Curve                       | IUoUo, Automatic 3 stage                                                                |                 |                 |                      |
| <b>SIGNAL OUTPUT (RELAY)</b>      | Main or Backup Power                       | ✗                                                                                       | ✗               | ✓               | ✓                    |
|                                   | Low Battery and Fault Battery              | ✗                                                                                       | ✗               | ✓               | ✓                    |
|                                   | Main or Backup - Fault Battery             | ✓                                                                                       | ✓               | ✗               | ✗                    |
| <b>AUXILIARY RJ45 OUTPUT FOR:</b> | Temp. Charging probe                       | ✗                                                                                       | ✗               | ✓               | ✓                    |
|                                   | Voltage drop compensation                  | ✗                                                                                       | ✗               | ✓               | ✓                    |
|                                   | Remote monitoring display                  | ✗                                                                                       | ✗               | ✓               | ✓                    |
| <b>CLIMATIC DATA</b>              | Ambient Temperature (operation)            | -25 - +70 °C                                                                            | -25 - +70 °C    | -25 - +70 °C    | -25 - +70 °C         |
|                                   | De rating T° > . (In)                      | > 50° 2.5%                                                                              | > 40° 2.5%      | > 50° 2.5%      | > 50° 2.5%           |
|                                   | Automatic De rating                        | ✗                                                                                       | ✓ > 40 °C       | ✗               | ✗                    |
|                                   | Ambient Temperature Storage                | -40 - +85 °C                                                                            | -40 - +85 °C    | -40 - +85 °C    | -40 - +85 °C         |
|                                   | Humidity at 25 °C, no condensation         | 95% to 25 °C                                                                            | 95% to 25 °C    | 95% to 25 °C    | 95% to 25 °C         |
|                                   | Cooling                                    | Auto Convection                                                                         | Auto Convection | Auto Convection | Auto Convection      |
| <b>GENERAL DATA</b>               | Insulation Voltage (IN/OUT)                | 3000 VAC                                                                                | 3000 VAC        | 3000 VAC        | 3000 VAC             |
|                                   | Insulation Voltage (IN/PE)                 | 1605 VAC                                                                                | 1605 VAC        | 1605 VAC        | 1605 VAC             |
|                                   | Insulation Voltage (OUT/PE)                | 500 VAC                                                                                 | 500 VAC         | 500 VAC         | 500 VAC              |
|                                   | Protection Class (EN/IEC 60529)            | IP 20                                                                                   | IP 20           | IP 20           | IP 20                |
|                                   | Reliability: MTBF IEC 61709                | > 300 000 h                                                                             | > 300 000 h     | > 300 000 h     | > 300 000 h          |
|                                   | Pollution Degree Environment               | 2                                                                                       | 2               | 2               | 2                    |
|                                   | Connection Terminal Blocks Screw Type      | 2,5 mm                                                                                  | 2,5 mm          | 2,5 mm          | 4 mm                 |
|                                   | Protection class (with PE connected)       | I                                                                                       | I               | I               | I                    |
|                                   | Dimension (w-h-d)                          | 45x100x100                                                                              | 45x100x100      | 65x115x135      | 150x115x135          |
|                                   | Weight                                     | 0.30 kg approx                                                                          | 0.30 kg approx  | 0.65 kg approx  | 1.5 kg approx        |

# CB Series Battery Chargers

## 24 VDC



UL  
E353188



UL  
E353241

### CB243A

### CB245A

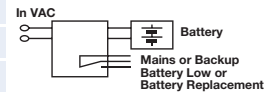
### CB2410A

### CB2420A

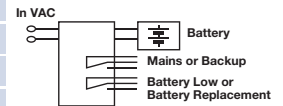
### CB12245A

|                      |                                                                                         |                           |                      |                      |
|----------------------|-----------------------------------------------------------------------------------------|---------------------------|----------------------|----------------------|
| 115-230-277          | 115-230-277                                                                             | 115-230-277               | 115-230-277          | 115-230-277          |
| 24 - 3 - 72          | 24 - 5 - 120                                                                            | 24 - 10 - 240             | 24 - 20 - 500        | 12/24 - 6/5 - 120    |
| CB243A               | CB245A                                                                                  | CB2410AC                  | CB2420A              | CB12245A             |
| 90 - 264             | 90 - 264                                                                                | 90 - 135 / 180 - 264      | 90 - 135 / 180 - 264 | 90-305               |
| $\leq 7 A \leq 5$    | $\leq 16 A \leq 5$                                                                      | $\leq 16 A \leq 5$        | $\leq 35 A \leq 5$   | $< -16A; 5ms$        |
| 47 - 63 Hz $\pm 6\%$ | 47 - 63 Hz $\pm 6\%$                                                                    | 47 - 63 Hz $\pm 6\%$      | 47 - 63 Hz $\pm 6\%$ | 47-63 Hz $\pm 6\%$   |
| 1 - 0.7 A            | 2.4 - 1.2 A                                                                             | 3.3 - 2.2 A               | 8 - 4.2 A            | 2.4-1.2-1.0 A        |
| 4 A                  | 4 A                                                                                     | 6.3 A                     | 10 A                 | 4A                   |
| 10 A                 | 10 A                                                                                    | 16 A                      | 16 A                 | 10A (MCB – curve B)  |
| 24 VDC 3 A           | 24 VDC 5 A                                                                              | 24 VDC 10 A               | 24 VDC 20 A          | 12VDC -6A / 24VDC-5A |
| > 81%                | > 89%                                                                                   |                           |                      | 90%                  |
| ✓                    | ✓                                                                                       | ✓                         | ✓                    | ✓                    |
| ✓                    | ✓                                                                                       | ✓                         | ✓                    | ✓                    |
| ✓                    | ✓                                                                                       | ✓                         | ✓                    | ✓                    |
| ✓                    | ✓                                                                                       | ✓                         | ✓                    | ✓                    |
| 28.8 VDC             | 28.8 VDC                                                                                | 28.8 VDC                  | 28.8 VDC             | 14.4VDC / 28.8VDC    |
| 15 h                 | 15 h                                                                                    | 15 h                      | 15 h                 | 15 h                 |
| 70 min.              | 1 min.                                                                                  | 1 min.                    | 1 min.               | 4 min.               |
| 27.5 VDC             | 27.5 VDC                                                                                | 27.5 VDC                  | 27.5 VDC             | 13.75 VDC / 27.5 VDC |
| 2 - 16 VDC           | 2 - 18 VDC                                                                              | 2 - 18 VDC                | 2 - 18 VDC           | 2-7 / 2-16 VDC       |
| 3 A $\pm 5\%$        | 5 A $\pm 5\%$                                                                           | 10 A $\pm 5\%$            | 20 A $\pm 5\%$       | 6A / 5A $\pm 5\%$    |
| ✓                    | ✓                                                                                       | ✓                         | ✓                    | ✓                    |
|                      | 2.23 V/cell Open Lead, 2.25 V/cell Sealed Lead, 2.27 V/cell Sealed Lead, 2.3 V/cell gel |                           |                      |                      |
| $\leq 5 mA$          | $\leq 5 mA$                                                                             | $\leq 5 mA$               | $\leq 5 mA$          | $\leq 5 mA$          |
|                      |                                                                                         | IUoUo, Automatic, 3 stage |                      |                      |
| ✗                    | ✓                                                                                       | ✓                         | ✓                    | ✗                    |
| ✗                    | ✓                                                                                       | ✓                         | ✓                    | ✗                    |
| ✓                    | ✗                                                                                       | ✗                         | ✗                    | ✓                    |
| ✗                    | ✓                                                                                       | ✓                         | ✓                    | ✗                    |
| ✗                    | ✓                                                                                       | ✓                         | ✓                    | ✗                    |
| ✗                    | ✓                                                                                       | ✓                         | ✓                    | ✗                    |
| -25 - +70 °C         | -25 - +70 °C                                                                            | -25 - +70 °C              | -25 - +70 °C         | -25 - +70 °C         |
| > 50° 2.5%           | > 50° 2.5%                                                                              | > 50° 2.5%                | > 50° 2.5%           | > 40° 2.5%           |
| ✗                    | ✗                                                                                       | ✗                         | ✗                    | ✓ > 40 °C            |
| -40 - +85 °C         | -40 - +85 °C                                                                            | -40 - +85 °C              | -40 - +85 °C         | -40 - +85 °C         |
| 95% to 25 °C         | 95% to 25 °C                                                                            | 95% to 25 °C              | 95% to 25 °C         | 95% to 25 °C         |
| Auto Convection      | Auto Convection                                                                         | Auto Convection           | Auto Convection      | Auto Convection      |
| 3000 VAC             | 3000 VAC                                                                                | 3000 VAC                  | 3000 VAC             | 3000 VAC             |
| 1605 VAC             | 1605 VAC                                                                                | 1605 VAC                  | 1605 VAC             | 1605 VAC             |
| 500 VAC              | 500 VAC                                                                                 | 500 VAC                   | 500 VAC              | 500 VAC              |
| IP 20                | IP 20                                                                                   | IP 20                     | IP 20                | IP 20                |
| > 300 000 h          | > 300 000 h                                                                             | > 300 000 h               | > 300 000 h          | > 300 000 h          |
| 2                    | 2                                                                                       | 2                         | 2                    | 2                    |
| 2,5 mm               | 2,5 mm                                                                                  | 2,5 mm                    | 4 mm                 | 2,5 mm               |
| I                    | I                                                                                       | I                         | I                    | I                    |
| 45x100x100           | 65x115x135                                                                              | 100x115x135               | 150x115x135          | 45x105x100           |
| 0.30 kg approx       | 0.65 kg approx                                                                          | 0.85 kg approx            | 1.55 kg approx       | 0.35 kg approx       |

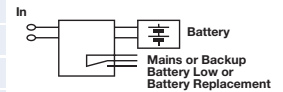
## Connection Diagram



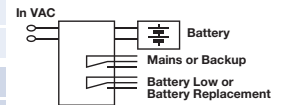
CB123A, CB1210A



CB1235A



CB243A,



CB245A, CB2410A, CB2420A

Optional for Auxiliary Output (RJ 45 connection) Temp. Charging probe: Temperature Sensor for battery 2 m length; Safety Standard Approval: CE.

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Fuses

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Rectangular  
Connectors



Pin & Sleeve  
Devices



Receptacles

### Foot Switches



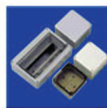
Foot  
Switches

### Sensors



Inductive  
Proximity  
Sensors

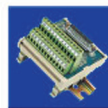
### Enclosures



Industrial  
Enclosures



DIN  
Enclosures



Interface  
Modules

### Modules & Relays



Safety  
Relays



Slimline  
Relays

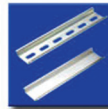
### Power Supplies



Power  
Supplies



22 & 30 mm  
Push Buttons



DIN Rail

### Wire & Cable Management



Liquid Tight  
Strain Reliefs/  
Corrugated  
Tubes



Wire  
Duct

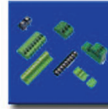
### Terminal Blocks



Din Rail  
Terminal  
Blocks



Panel Mount  
Terminal  
Blocks



Printed Circuit  
Board Terminal  
Blocks



Eurostrips®

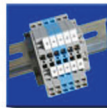


Distribution  
Blocks

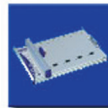
### Miscellaneous



Ferrules



Custom  
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Smart  
Relay



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