

Battery Charger



“Battery Care” The New Battery Charging Philosophy



ADELSYSTEM

Integrated Electronic Solution

CB Series: Smart Battery Charger

- **Extremely Small Size**
- **Easy Installation**
- **Automatic Multi-Stage & Fast Recharge**
- **Enhanced Performance**
- **Optimized Battery Life**

NEW BATTERY CHARGING PHILOSOPHY

Main Features & Benefits

- Multi-stage, microcontroller commanded and fully automatic charging
 - **Battery life optimisation**
 - Straightforward diagnostic and monitoring of battery and device
 - **Day-to-day routines quicker, easier & safer**
 - Maximum safety and protection through standard features
 - **No risk of battery or device damage**
- Considerable cost savings over time***

Main Features & Benefits

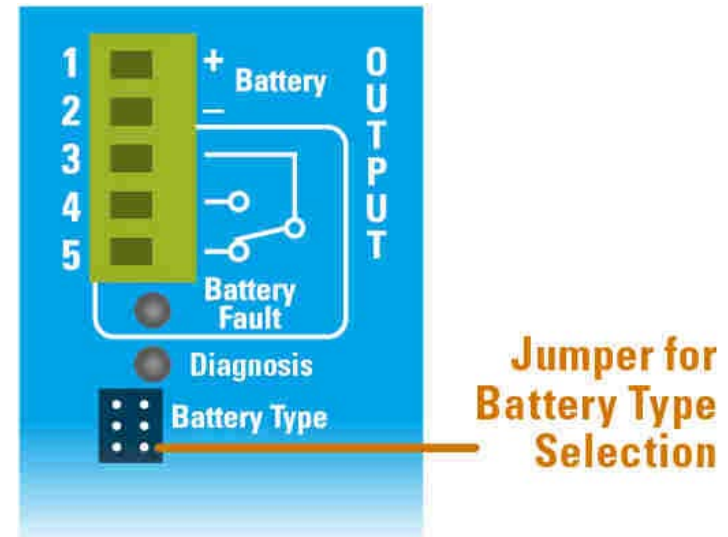
- **One device for all**
→ **Ideal for most applications and battery types**
- **Advanced stabilised switching technology**
→ **More flexible system design convenience because of reduced weight and space**
- **Most demanding norms compliance**
→ **Required safety & standard conformity**

Less device type, Less stock, More design flexibility & High reliability

Battery Type Suitability

CB devices can be set to charge, monitor and condition most common battery types.

- Open Lead Acid
Trickle 2.23V, Boost 2.40V
- Sealed Lead Acid (low)
Trickle 2.25V, Boost 2.40V
- Sealed Lead Acid (High)
Trickle 2.27V, Boost 2.40V
- Gel
Trickle 2.30V, Boost 2.40V
- Optional
Nickel-Cadmium (Ni/Cd)
Nickel-Metal Hydride (Ni-MH)



It is possible to change or add other charging curves with a portable PC.

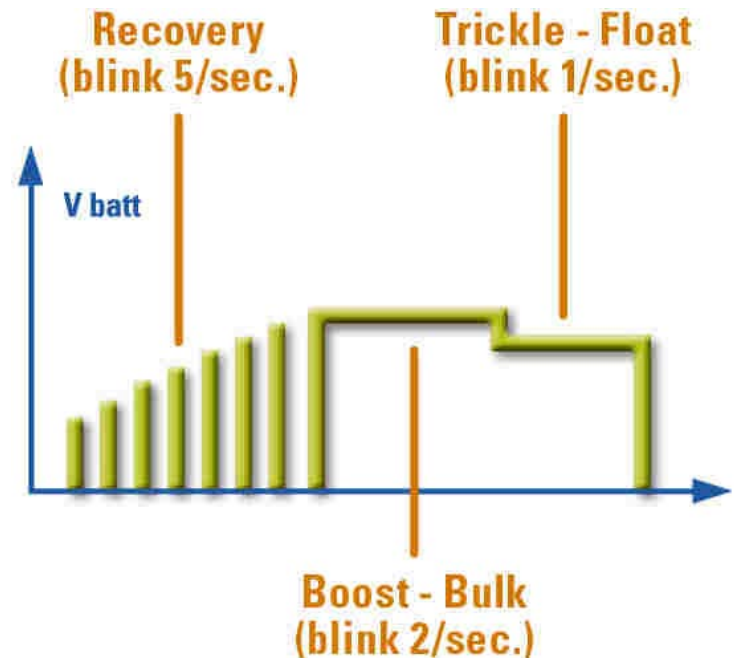
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Multi-Stage Charging

Three charging Modes

Multi-stage operation senses battery requirements and automatically switches to the appropriate charging mode.

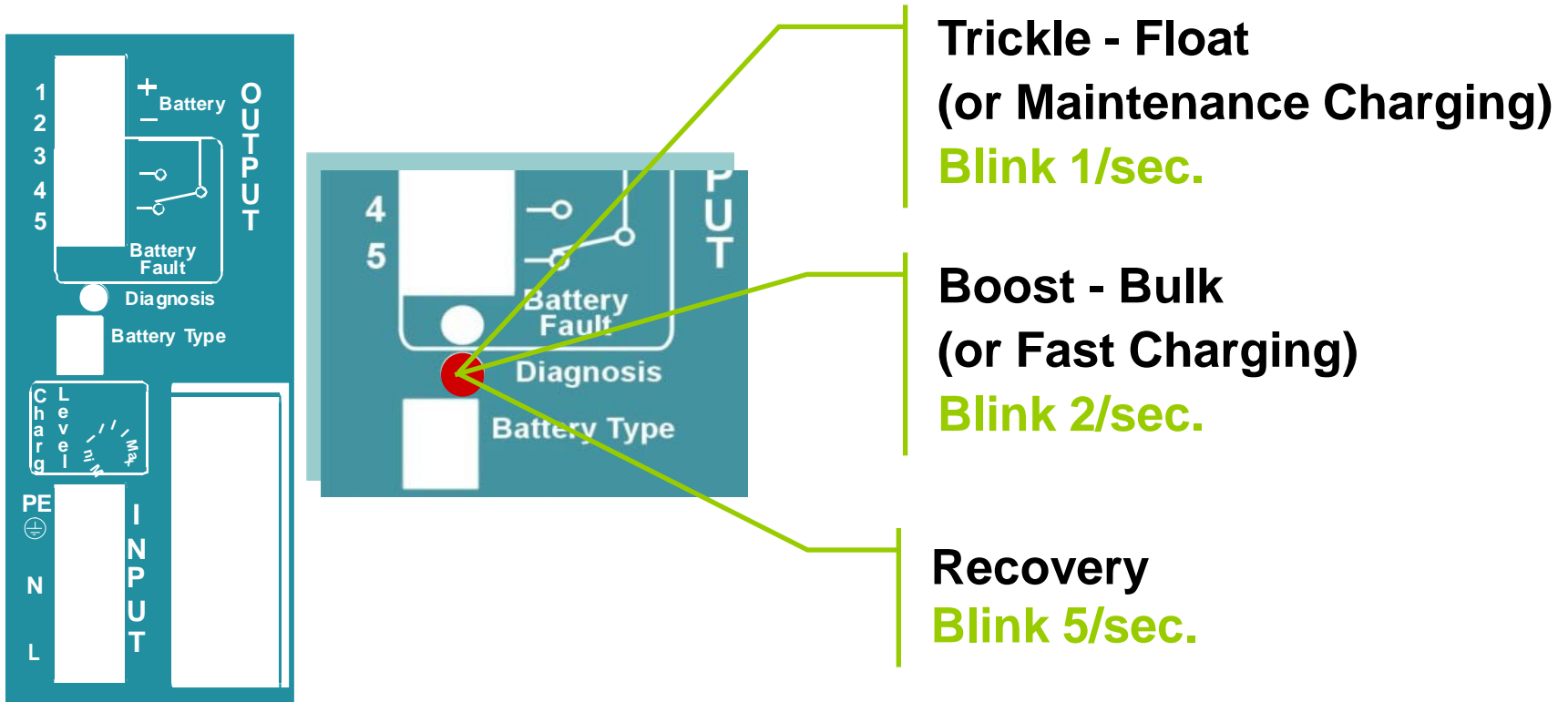
- **Recovery**
Recharge and recovery of flat batteries.
- **Boost – Bulk (or Fast Charging)**
Charge of a battery at a high Voltage and current rate for a short period.
- **Trickle – Float (or Maintenance Charging)**
Charging a battery at a similar rate as its self-discharging.



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Charging Mode Recognition

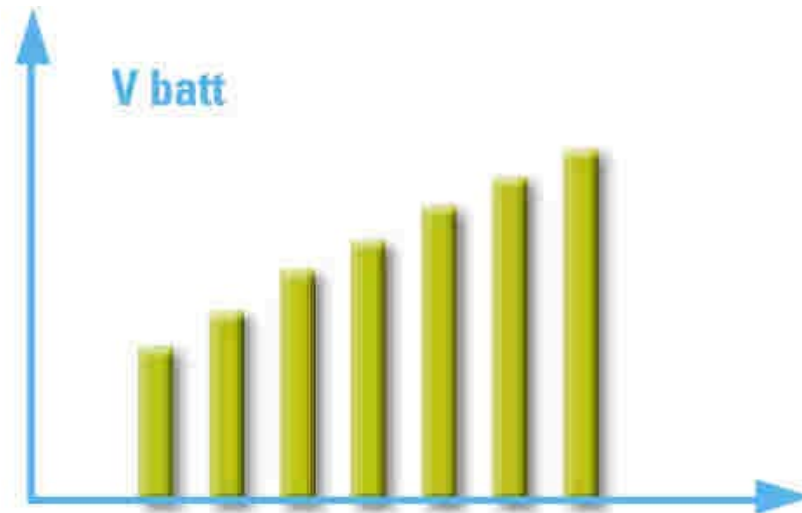
The three charging modes the CB devices features are identified by a flashing code on the 'Diagnosis' LED.



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Recovery Charging

CB devices can recharge and recover deeply discharged batteries, even when their voltage is close to zero.



Typical charging curve for recovery of batteries with voltage close to zero.

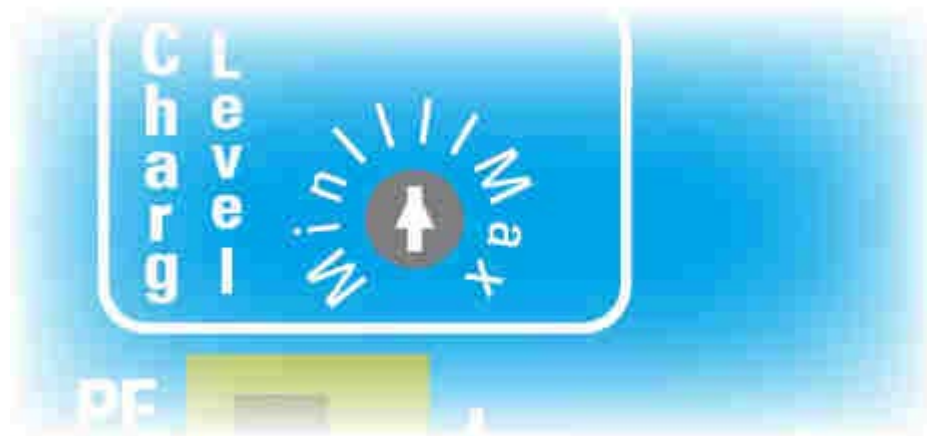
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Charging Current Setting

The charging current can be set from 20% to 100% of the device rated current value.

(Not available on LC versions)

20% - 100%
of rated value



3A → 0.6A.....3A

5A → 1A.....5A

6A → 1.2A.....6A

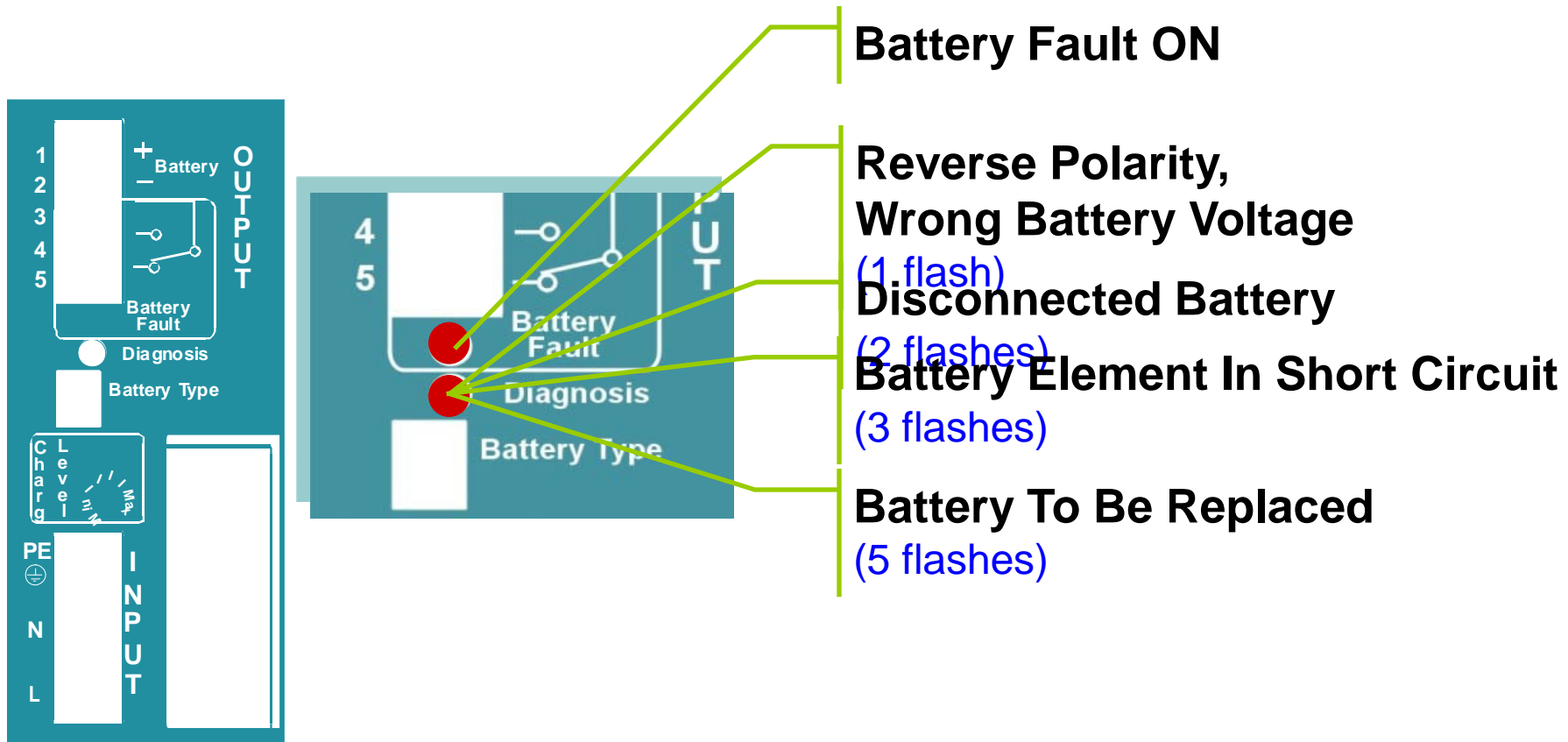
10A → 2A.....10A

20A → 4A.....20A

35A → 7A.....35A

Battery Fault Discrimination

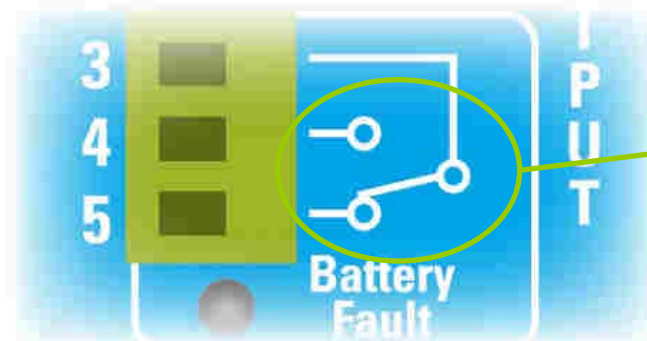
With 'Battery Fault' LED on, 'Diagnosis' LED flashing codes allow easy fault identification.



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Change-Over Contacts

CB smart chargers indicate battery status and faults also via change-over contacts with galvanic isolation.
(Not available on LC versions)



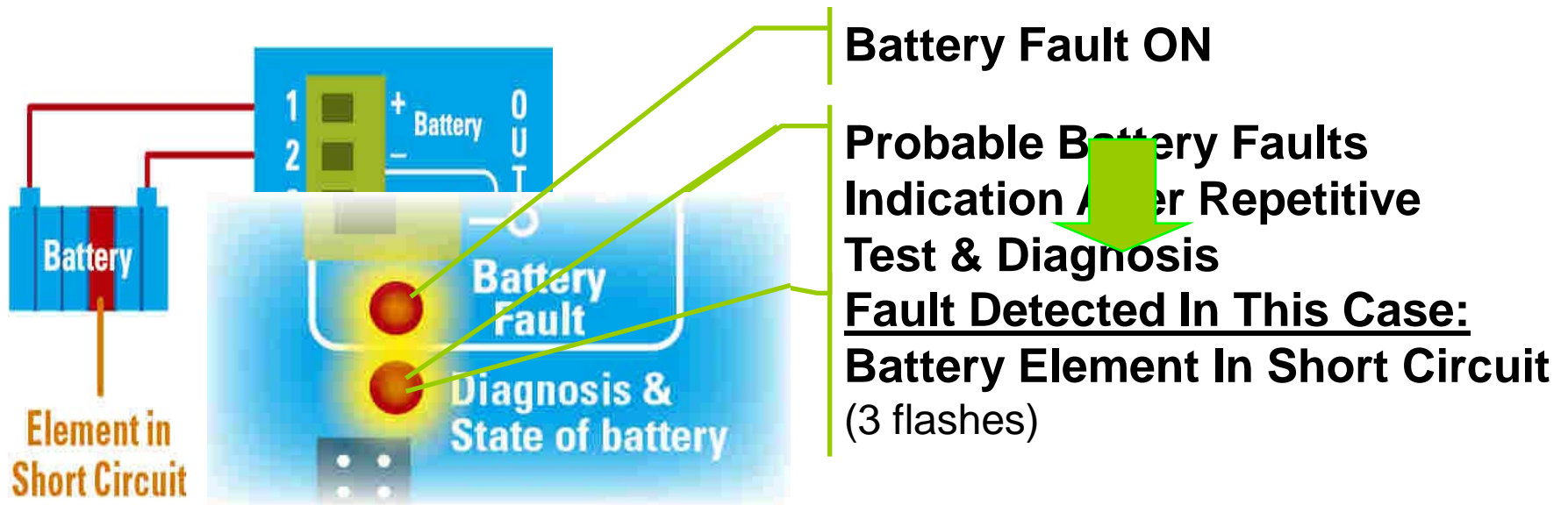
Alarm Relay 1:
Battery Status & Fault
Change-Over Contact
NO-NC Output

Alarm Relay 1	Battery Low or Battery Replacement
Alarm Relay 2 (only in some size)	Mains or Backup

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Diagnostic Checks

As well as providing high efficiency: charge status and battery life test diagnostics ensure risk-free operation.



Battery Fault ON

Probable Battery Faults
Indication After Repetitive
Test & Diagnosis

Fault Detected In This Case:
Battery Element In Short Circuit
(3 flashes)

With a pulse sent to the battery by a specific circuitry and by evaluating algorithmically the received signal, it is possible to discriminate battery faults such as cells in short circuit, wire disconnection, etc....

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Technology

The ADELsystem CB series of smart battery chargers are based on two core know-how elements.

- **Switching Technology**

A battery charger based on this technology is much more efficient and much smaller & lighter than traditional linear technology battery chargers.

- **Microcontroller and “Battery Care”**

The CB series is equipped with a microcontroller which controls the charging process, monitors & conditions various types of batteries in order to maintain optimum performance at all times.

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Maximum Safety & Protection

As well as battery life optimisation, the CB series is designed to provide maximum safety and protection during installation and operation.

Main 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.**

Norms & Certifications

The CB series complies with the most demanding current norms and standards.

CB devices are conforming with:

- **IEC/EN 60335-2-29 Battery Chargers**
- **EN60950 / UL1950 Electrical safety**
- **89/336/EEC EMC Directive**
- **2006/95/EC (Low Voltage)**
- **DIN41773 (Charging cycle)**
- **Emission: IEC 61000-6-4**
- **Immunity: IEC 61000-6-2**



Casing & Installation

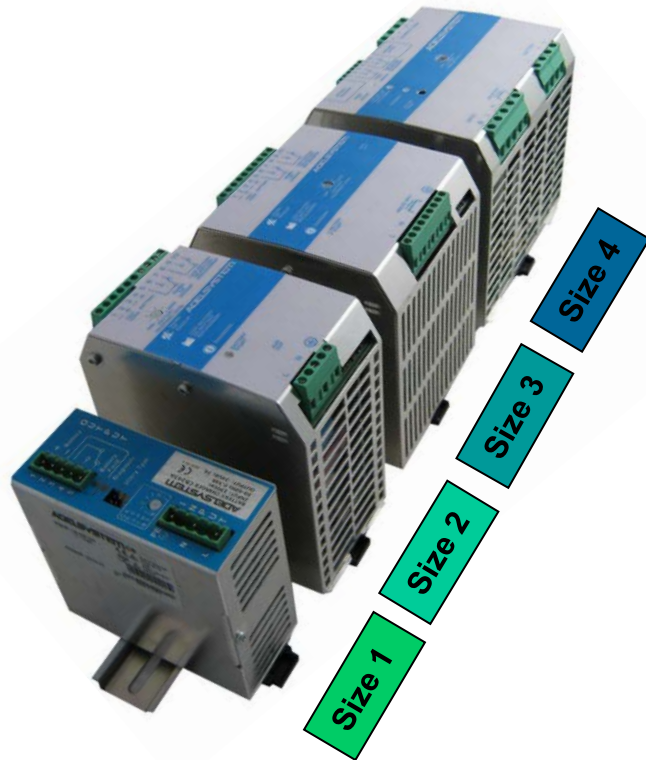
All the units in the CB range have aluminum casings, a DIN rail fastening clip and IP20 protection degree.

CB devices are extremely lightweight and compact compare to traditional linear battery chargers.



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Available Models



Input: 115 - 230Vac

Output: 12Vdc

- Size 1 • CB123A & *CB123ALC
- Size 1 • CB126A (Automatic De rating)
- Size 2 • CB1210A
- Size 4 • CB1235A

Output: 24Vdc

- Size 1 • CB243A & *CB243ALC
- Size 1 • CB245C (Automatic De rating)
- Size 2 • CB245A
- Size 3 • CB2410AC & CB2410ACF (PFC)
- Size 4 • CB2420A

Output: 36Vdc

- Size 1 • CB363A (Automatic De rating)

*Alarm Relay & Charging Current Limiting
Not Available (LC Versions)

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Auto. De rating

- **Automatic De rating**

De rating is the operation of a device at less than its rated maximum power in order to maintain the maximum power rating.

By limiting the output current, it is possible to control the amount of power dissipated above the limit ambient temperature operation, this to avoid any device damages and maintaining the reliability of the system.

It is ideal to provide an efficient and economical solution for climatic control.

Applications

- **Generator Sets**
Gen set, Engine Starting, etc.
- **Marine**
- **Industrial**
Water Pumping, Fire Protection Systems, etc.
- **Portable Equipment**
Remote Measurement Station, etc.
- **Security Systems**
Automatic Revolving Doors, Access Control, CCTV, Alarms, etc.
- **Emergency Backup**
Audio Backup, Lighting Backup, Greenhouse Control, etc.
- **Telecommunication**
Telecom Tower, Base Transceiver Station (BTS), etc.
- **Automotive Service Centres**
Cars, Motorbikes, etc.
- **Electric Vehicles (on-board chargers)**
E-Car, Off-Highway Equipment/Machinery, E-Scooter, Forklifts, Scissors Lifts, Pallet Trucks, Golf Carts, Wheel Chairs, etc.
- **Power Supply Continuity**



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