



**Input: Single-phase 115 ÷ 277 Vac**

**Output: Battery charging 24 Vdc; 3 A**

**Suited for the following battery types: Open Lead Acid, Sealed Lead Acid, lead Gel and Ni-Cd (option)**

**Automatic diagnostic of battery status. Charging curve IUoUo, constant voltage and current**

**Switching technology, output voltage 28.8 Vdc  
Three charging levels: Boost, Trickle, Recovery.**

**Protected against short circuit, inverted polarity, over Load.**

**Signal output (contact free) for fault battery state**

**Protection degree IP20 - DIN rail**

### Technical features

The CB series is a “Switching technology” and “Battery Care philosophy”, since years parts of the core know-how at ADEL system, led to the development of this advanced multi-stage battery charging method, completely automatic and suited to meet the most advanced requirements of battery manufacturers. 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. The Real Time Auto-diagnostic system, monitoring battery faults such as, elements in short circuit, accidental reverse polarity connection, disconnection of the battery, they can easily be detected and removed by help of Blink Code of Diagnosis Led; during the installation and after sell. Each device is suited for all battery types, by means of jumpers it is possible setting predefined curves for Open Lead Acid, Sealed Lead Acid, Gel, Ni-Cd(option). They are programmed for two charging levels, boost and trickle. A rugged casing with bracket for DIN rail mounting provides IP20 protection degree. They are extremely compact and cost-effective.

### General Data

|                                       |                             |
|---------------------------------------|-----------------------------|
| Insulation voltage (In /Out)          | <b>3000 Vac</b>             |
| Insulation voltage (In / PE)          | <b>1605 Vac</b>             |
| Insulation voltage (Out / PE)         | <b>500 Vac</b>              |
| Protection Class (EN/IEC 60529)       | <b>IP20</b>                 |
| Protection class                      | <b>I, with PE connected</b> |
| Reliability: MTBF IEC 61709           | <b>&gt; 300.000 h</b>       |
| Pollution Degree Environment          | <b>2</b>                    |
| Connection Terminal Blocks screw Type | <b>2,5mm(24–14AWG)</b>      |
| Dimensions (w-h-d)                    | <b>45x100x100 mm</b>        |
| Weight                                | <b>0.30 Kg approx</b>       |

### Climatic Data

|                                   |                        |
|-----------------------------------|------------------------|
| Ambient temperature (operation)   | <b>-25 ÷ +70°C</b>     |
| De Rating T <sup>a</sup> > 50°C   | <b>- 2.5%(In) / °C</b> |
| Ambient temperature Storage       | <b>-40 ÷ +85°C</b>     |
| Humidity at 25 °C no condensation | <b>95% to 25°C</b>     |
| Cooling                           | <b>Auto Convection</b> |

### Norms and Certifications

In Conformity to: IEC/EN 60335-2-29 Battery chargers; EN60950 / UL60950-1 and CSA C22.2 No. 60950-1-07 (Information Technology Equipment) – Safety – Part1:General Requirement. Electrical safety; EN54-4 Fire Detection and fire alarm systems; 89/336/EEC EMC Directive; 2014/35/UE (Low Voltage); DIN41773 (Charging cycle); Emission : IEC 61000-6-4; Immunity: IEC 61000-6-2. CE.

### Signal Output (free switch contact)

| Model                | CB243A     | CB243ALC  |
|----------------------|------------|-----------|
| Main or Backup Power | <b>Yes</b> | <b>No</b> |
| Low Battery          | <b>Yes</b> | <b>No</b> |
| Fault Battery        | <b>Yes</b> | <b>No</b> |

### Type of Signal Output Contact

|   |                                    |
|---|------------------------------------|
| Max. current can be switched (EN60947.4.1): | <b>Resistive load<br/>Min load</b> |
| Max. DC1: 30 Vdc 1 A; AC1: 60 Vac 1A        |                                    |
| Min. 1mA at 5 Vdc                           |                                    |

### Input Data

|  |                           |
|--|---------------------------|
| Nominal Input Voltage (2 x Vac)                  | <b>115 – 230 – 277</b>    |
| Input Voltage range (Vac)                        | <b>90 – 305</b>           |
| Inrush Current (Vn and In Load) I <sup>2</sup> t | <b>≤ 7 A ≤ 5 msec.</b>    |
| Frequency  | <b>47 – 63 Hz ±6%</b>     |
| Input Current (115 – 230 Vac)                    | <b>1 – 0.7 A</b>          |
| Internal Fuse                                    | <b>4 A</b>                |
| External Fuse (recommended)                      | <b>10 A (MCB curve B)</b> |

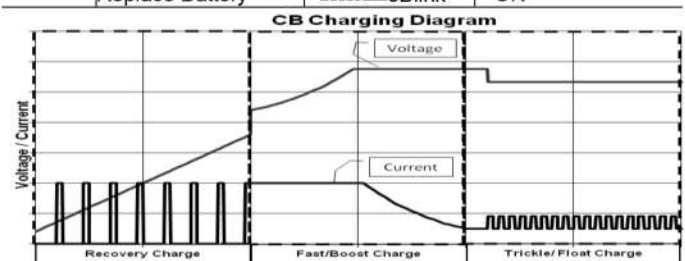
### Battery Output (Battery Care)

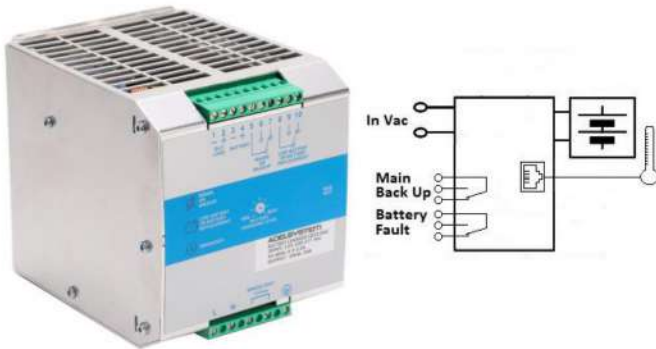
| Model   | CB243A   |
|---|--|
| Adjustable charging current I <sub>adj</sub> (% In)         | <b>20 ÷ 100</b>                                |
| Boost charge (25 °C) (typ. at In)                           | <b>28.8 Vdc</b>                                |
| Max. time Bust Charge (tpy. at In)                          | <b>15 h</b>                                    |
| Min. time Bust Charge (tpy. at In)                          | <b>70 min.</b>                                 |
| Trickle charge (25 °C) (typ. at In)                         | <b>27.5 Vdc</b>                                |
| Jumper Configuration battery type (V cell) Ni-Cd (optional) | <b>2,23;2,25;2,27;2,3; 1,41–1,5 (20 elem.)</b> |
| Recovery Charge   | <b>2 – 16 Vdc</b>                              |
| Charging. Max I <sub>batt</sub> (In)                        | <b>3 A ± 5%</b>                                |
| Efficiency (50% of In)                                      | <b>81%</b>                                     |
| Dissipation power load max (W)                              | <b>12.5</b>                                    |
| Quiescent Current   | <b>≤ 5 mA</b>                                  |
| Charging Curve automatic: IUoUo                             | <b>3 stage</b>                                 |
| Detection of element in short circuit                       | <b>Yes</b>                                     |
| Short-circuit protection)                                   | <b>Yes</b>                                     |
| Over Load protection  | <b>Yes</b>                                     |
| Over Voltage Output protection                              | <b>Yes</b>                                     |

### Charging

Automatic multi-stage charging and real time diagnostic allow fast recharge and recovery of deep discharged batteries, adding value and reliability to the system hosting. Type of charging it is Voltages and current stabilized IUoUo. The state of charging battery and Auto-diagnosis of the systems are identified by a flashing code on a Diagnosis LED and Fault Battery LED:

|                | State               | Diagnosis LED | Battery Fault LED |
|----------------|---------------------|---------------|-------------------|
| Charging Type  | Float               | 1 Blink/sec   | OFF               |
|                | Boost               | 2 Blink/sec   | OFF               |
|                | Recovery            | 5 Blink/sec   | OFF               |
|                | Reverse polarity    | 1Blink        | ON                |
| Auto diagnosis | Battery No connect  | 2Blink        | ON                |
|                | Element in Short C. | 3Blink        | ON                |
|                | Replace Battery     | 5Blink        | ON                |





**Input: Single-phase 115 ÷ 277 Vac**

**Output: Battery charging 24 Vdc; 10 A**

**Suited for the following battery types: Open Lead Acid, Sealed Lead Acid, lead Gel and Ni-Cd (Automatic diagnostic of battery status. Charging curve IUoUo, constant voltage and current**

**Switching technology, output voltage 28.8 Vdc Three charging levels: Boost, Trickle, Recovery.**

**Protected against short circuit, inverted polarity, over Load.**

**Signal output (contact free) for fault battery state**

**Protection degree IP20 - DIN rail**

### Technical features

The CB series is a "Switching technology" and "Battery Care philosophy", since years parts of the core know-how at ADEL system, led to the development of this advanced multi-stage battery charging method, completely automatic and suited to meet the most advanced requirements of battery manufacturers. 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. The Real Time Auto-diagnostic system, monitoring battery faults such as, elements in short circuit, accidental reverse polarity connection, disconnection of the battery, they can easily be detected and removed by help of Blink Code of Diagnosis Led; during the installation and after sell. Each device is suited for all battery types, by means of jumpers it is possible setting predefined curves for Open Lead Acid, Sealed Lead Acid, Gel, Ni-Cd(option). They are programmed for two charging levels, boost and trickle. A rugged casing with bracket for DIN rail mounting provides IP20 protection degree.

### General Data

|                                       |                             |
|---------------------------------------|-----------------------------|
| Insulation voltage (In /Out)          | <b>3000 Vac</b>             |
| Insulation voltage (In / PE)          | <b>1605 Vac</b>             |
| Insulation voltage (Out / PE)         | <b>500 Vac</b>              |
| Protection Class (EN/IEC 60529)       | <b>IP20</b>                 |
| Protection class                      | <b>I, with PE connected</b> |
| Reliability: MTBF IEC 61709           | <b>&gt; 300.000 h</b>       |
| Pollution Degree Environment          | <b>2</b>                    |
| Connection Terminal Blocks screw Type | <b>2,5mm(24-14AWG)</b>      |
| Dimensions (w-h-d)                    | <b>100x115x135 mm</b>       |
| Weight                                | <b>0.85 Kg approx</b>       |

### Climatic Data

|                                   |                        |
|-----------------------------------|------------------------|
| Ambient temperature (operation)   | <b>-25 ÷ +70°C</b>     |
| De Rating T <sup>a</sup> > 50°C   | <b>- 2.5%(In) / °C</b> |
| Ambient temperature Storage       | <b>-40 ÷ +85°C</b>     |
| Humidity at 25 °C no condensation | <b>95% to 25°C</b>     |
| Cooling                           | <b>Auto Convection</b> |

### Norms and Certifications

In Conformity to: EN60950 / UL60950-1 and CSA C22.2 No. 60950-1-07 (Information Technology Equipment Safety Part1); Safety EN IEC 62368-1: 2014/AC:2015; EMC Directive 2014/35/UE and Low voltage Directive 2014/35/UE; Emission: IEC 61000-6-4; Immunity: IEC 61000-6-2. CE.

### Signal Output (free switch N°2 contact)

|                      |            |
|----------------------|------------|
| Main or Backup Power | <b>Yes</b> |
| Low Battery          | <b>Yes</b> |
| Fault Battery        | <b>Yes</b> |

### Type of Signal Output Contact

|   |                       |
|---|-----------------------|
| Max. current can be switched (EN60947.4.1): |                       |
| Max. DC1: 30 Vdc 1 A; AC1: 60 Vac 1A        | <b>Resistive load</b> |
| Min. 1mA at 5 Vdc                           | <b>Min. load</b>      |

### Input Data

|  |                             |
|--|-----------------------------|
| Nominal Input Voltage (2 x Vac)                  | <b>115 / 230 – 277</b>      |
| Input Voltage range (Vac)                        | <b>90 – 135 / 180 - 305</b> |
| Inrush Current (Vn and In Load) I <sup>2</sup> t | <b>≤ 16 A ≤ 5 msec.</b>     |
| Frequency  | <b>47 – 63 Hz ±6%</b>       |
| Input Current (115 – 230 Vac)                    | <b>3.3 – 2.2 A</b>          |
| Internal Fuse                                    | <b>6.3 A</b>                |
| External Fuse (recommended)                      | <b>16 A (MCB curve B)</b>   |

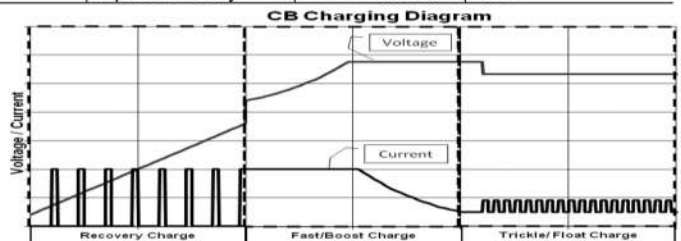
### Battery Output (Battery Care)

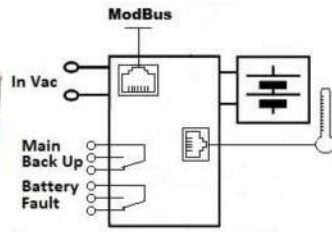
|   |  |
|---|--|
| Boost charge (25 °C) (Typ. at In)                           | <b>28.8 Vdc</b>                                |
| Max. time Bust Charge (tpy. At In)                          | <b>15 h</b>                                    |
| Min. time Bust Charge (tpy. At In)                          | <b>1 min.</b>                                  |
| Trickle charge (25 °C) (Typ. at In)                         | <b>27.5 Vdc</b>                                |
| Jumper Configuration battery type (V cell) Ni-Cd (optional) | <b>2,23;2,25;2,27;2,3; 1,41-1,5 (20 elem.)</b> |
| Recovery Charge   | <b>2 – 18 Vdc</b>                              |
| Charging. Max I <sub>batt</sub> (In)                        | <b>10 A ± 5%</b>                               |
| Efficiency (50% of In)                                      | <b>88%</b>                                     |
| Dissipation power load max (W)                              | <b>38</b>                                      |
| Charging current limiting I <sub>adj</sub>                  | <b>20 ÷ 100 % / I<sub>n</sub></b>              |
| Quiescent Current   | <b>≤ 5 mA</b>                                  |
| Charging Curve automatic: IUoUo                             | <b>3 stage</b>                                 |
| Detection of element in short circuit                       | <b>Yes</b>                                     |
| Short-circuit protection)                                   | <b>Yes</b>                                     |
| Over Load protection  | <b>Yes</b>                                     |
| Over Voltage Output protection                              | <b>Yes</b>                                     |

### Charging

Type of charging it is Voltages and Current stabilized IUoU DIN41773 Charging cycle. Automatic multi-stage charging and real time diagnostic allow fast recharge and recovery of deep discharged batteries, adding value and reliability to the system hosting. Type of charging it is Voltages and current stabilized IUoUo. The state of charging battery and Auto-diagnosis of the systems are identified by a flashing code on a Diagnosis LED and Fault Battery LED:

|                | State               | Diagnosis LED | Battery Fault LED |
|----------------|---------------------|---------------|-------------------|
| Charging Type  | Float               | 1 Blink/sec   | OFF               |
|                | Boost               | 2 Blink/sec   | OFF               |
|                | Recovery            | 5 Blink/sec   | OFF               |
| Auto diagnosis | Reverse polarity    | 1Blink        | ON                |
|                | Battery No connect  | 2Blink        | ON                |
|                | Element in Short C. | 3Blink        | ON                |
|                | Replace Battery     | 5Blink        | ON                |





**Input: Single-phase 115 ÷ 277 Vac**

**Output: Battery charging 24 Vdc; 25 A**

**Suited for the following battery types: Open Lead Acid, Sealed Lead Acid, lead Gel, Ni-Cd and Li-Ion**

**Automatic diagnostic of battery status. Charging curve IUoU, constant voltage and current**

**Switching technology, output voltage 28.8 Vdc Five charging levels: Recovery, Bulk, Absorption, Boost, Float**

**Protected against short circuit, inverted polarity, over Load.**

**Signal output (contact free) for fault battery state**

**ModBus (RTU) connection**

**Protection degree IP20 - DIN rail**

### Technical features

The CB series is a "Switching technology" and "Battery Care philosophy", since years parts of the core know-how at ADEL system, led to the development of this advanced multi-stage battery charging method, completely automatic and suited to meet the most advanced requirements of battery manufacturers. 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. The Real Time Auto-diagnostic system, monitoring battery faults such as, elements in short circuit, accidental reverse polarity connection, disconnection of the battery, they can easily be detected and removed by help of Blink Code of Diagnosis Led; during the installation and after sell. Each device is suited for all battery types, by means of jumpers it is possible setting predefined curves for Open Lead Acid, Sealed Lead Acid, Gel, Ni-Cd and Li-Ion. They are programmed for two charging levels, boost and float. A rugged casing with bracket for DIN rail mounting provides IP20 protection degree.

### Norms and Certifications

In Conformity to: EN60950 / UL60950-1 and CSA C22.2 No. 60950-1-07 (Information Technology Equipment Safety Part1); Safety EN IEC 62368-1: 2014/AC:2015; EMC Directive 2014/35/UE and Low voltage Directive 2014/35/UE; Emission: IEC 61000-6-4; Immunity: IEC 61000-6-2. CE.

### General Data

|   |                             |
|---|-----------------------------|
| Insulation voltage (In /Out)                  | <b>3000 Vac</b>             |
| Insulation voltage (In / PE)                  | <b>1605 Vac</b>             |
| Insulation voltage (Out / PE)                 | <b>500 Vac</b>              |
| Protection Class (EN/IEC 60529)               | <b>IP20</b>                 |
| Protection class                              | <b>I, with PE connected</b> |
| Reliability: MTBF IEC 61709                   | <b>&gt; 300.000 h</b>       |
| Pollution Degree Environment                  | <b>2</b>                    |
| Connection Terminal Blocks screw Type Signal: | <b>2.5mm(24-14AWG)</b>      |
| Connection Terminal Blocks screw Type         | <b>4 mm (30-10 AWG)</b>     |
| Protection class (PE Connected)               | <b>I, with PE</b>           |
| Dimensions (w-h-d)                            | <b>150x115x135 mm</b>       |
| Weight  | <b>1.5 Kg approx</b>        |

### Climatic Data

|   |                            |
|---|----------------------------|
| Ambient temperature (operation)               | <b>-25 ÷ +70°C</b>         |
| De Rating T <sup>a</sup> > 50°C               | <b>- 2.5%(In) / °C</b>     |
| Ambient temperature Storage                   | <b>-40 ÷ +85°C</b>         |
| Humidity at 25 °C no condensation             | <b>95% to 25°C</b>         |
| Altitude: 0 to 2 000m - 0 to 6 560ft          | <b>No restrictions</b>     |
| Altitude: 2 000 to 6 000m - 6 560 to 20 000ft | <b>De-rating 5°C/1000m</b> |
| Cooling                                       | <b>Auto Convection</b>     |

### Input Data

|  |                             |
|--|-----------------------------|
| Nominal Input Voltage (2 x Vac)                  | <b>115 – 230 – 277</b>      |
| Input Voltage range (Vac)                        | <b>90 – 135 / 180 – 305</b> |
| Inrush Current (Vn and In Load) I <sup>2</sup> t | <b>≤ 35 A ≤ 5 msec.</b>     |
| Frequency  | <b>47 – 63 Hz ±6%</b>       |
| Input Current (115 – 230 Vac)                    | <b>9 – 4.5 A</b>            |
| Internal Fuse                                    | <b>10 A</b>                 |
| External Fuse (recommended)                      | <b>16 A (MCB curve B)</b>   |

### Battery Output (Battery Care)

|  |  |
|--|--|
| Boost-Fast charge Jumper Configuration 25°C (V/cell) | <b>Lead Acid: 2.4; NiCd:1.51; Li-ion: 3.65</b>         |
| Float Charge Jumper Configuration 25°C (V/cell):     | <b>Lead Acid: 2.23; 2.25; 2.3NiCd:1,4 Li-ion: 3.45</b> |

|  |                                   |
|--|-----------------------------------|
| Max. time Boost Charge (tpy. At In)        | <b>15 h</b>                       |
| Min. time Boost Charge (tpy. At In)        | <b>1 min.</b>                     |
| Recovery Charge                            | <b>2 – 16 Vdc</b>                 |
| Charging. Max I <sub>batt</sub> (In)       | <b>25 A ± 5%</b>                  |
| Efficiency (50% of In)                     | <b>91%</b>                        |
| Charging current limiting I <sub>adj</sub> | <b>10 ÷ 100 % / I<sub>n</sub></b> |
| Quiescent Current                          | <b>≤ 100 mA</b>                   |
| Charging Curve automatic: IUoU             | <b>5 stage</b>                    |
| Detection of element in short circuit      | <b>Yes</b>                        |
| Sulfated battery check                     | <b>Yes by Jumper</b>              |
| Short-circuit protection)                  | <b>Yes</b>                        |
| Over Load protection                       | <b>Yes</b>                        |
| Over Voltage Output protection             | <b>Yes</b>                        |
| Power Supply Mode                          | <b>Yes</b>                        |
| Remote Input Control (RTCONN cable)        | <b>Boost / Float</b>              |

### Type of Signal Output Contact

Dry Contact. Current can be switched (EN60947.4.1): Max: DC1: 30 Vdc 1 A; AC1: 60 Vac 1A (Resistive load ) Min: 1mA at 5 Vdc (Min permissive load)

|                            |          |           |           |
|----------------------------|----------|-----------|-----------|
| Fault System / Low Battery | <b>C</b> | <b>NC</b> | <b>NO</b> |
| Main or Back Up            | <b>C</b> | <b>NC</b> | <b>NO</b> |

### Signal Input / Output (RJ45)

|   |                           |
|---|---------------------------|
| Temp. Comp. Battery (with external probe) | <b>RJTemp(cable) Aux1</b> |
| Remote monitoring data:                   | <b>RJ45: Aux 2</b>        |
| Protocol:                                 | <b>ModBusRTU (RS485)</b>  |

### Charging

Type of charging it is Voltages and Current stabilized IUoU DIN41773 Charging cycle. Automatic multi-stage charging and real time diagnostic allow fast recharge and recovery of deep discharged batteries, adding value and reliability to the system hosting. Type of charging it is Voltages and current stabilized IUoU. The state of charging battery and Auto-diagnosis of the systems are identified by a flashing code on a Diagnosis LED and Fault Battery LED:

|                | State               | Diagnosis LED | Battery Fault LED |
|----------------|---------------------|---------------|-------------------|
| Charging Type  | Float               | 1 Blink/2 sec | OFF               |
|                | Absorption          | 1 Blink/sec   | OFF               |
|                | Boost               | 2 Blink/sec   | OFF               |
|                | Recovery            | 5 Blink/sec   | OFF               |
| Auto diagnosis | Reverse polarity    | 1Blink        | ON                |
|                | Battery No connect  | 2Blink        | ON                |
|                | Element in Short C. | 3Blink        | ON                |
|                | Replace Battery     | 5Blink        | ON                |