

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 provide IP20 protection degree. They are extremely compact and cost-effective.

General Data

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

Climatic Data

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

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	CB123A	CB123ALC
Main or Backup Power	Yes	No
Low Battery	Yes	No
Fault Battery	Yes	No

Type of Signal Output Contact

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

Input: Single-phase 115 ÷ 277 Vac

Output: Battery charging 12 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 14.4 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

Input Data

Nominal Input Voltage (2 x Vac)	115 – 230 – 277
Input Voltage range (Vac)	90 – 305
Inrush Current (Vn and In Load) I ² t	≤ 11 A ≤ 5 msec.
Frequency	47 – 63 Hz ±6%
Input Current (115 – 230 Vac)	0.5 – 0.3 A
Internal Fuse	4 A
External Fuse (recommended)	10 A (MCB curve B)

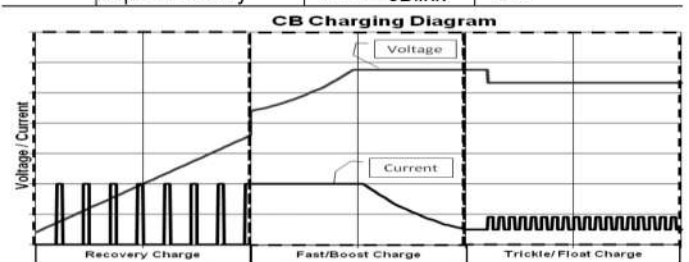
Battery Output (Battery Care)

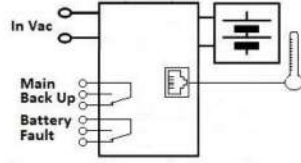
Model	CB123A
Adjustable charging current I _{adj} (% In)	20 ÷ 100
Boost charge (25 °C) (typ. at In)	14.4 Vdc
Max. time Bust Charge (tpy. at In)	15 h
Min. time Bust Charge (tpy. at In)	70 min.
Trickle charge (25 °C) (typ. at In)	13.75 Vdc
Jumper Configuration battery type (V cell) Ni-Cd (optional)	2,23;2,25;2,27;2,3; 1,41–1,5 (20 elem.)
Recovery Charge	2 – 7 Vdc
Charging. Max I _{batt} (In)	3 A ± 5%
Efficiency (50% - In)	81%
Dissipation power load max (W)	10.3
Quiescent Current	≤ 5 mA
Charging Curve automatic: IUoUo	3 stage
Detection of element in short circuit	Yes
Short-circuit protection)	Yes
Over Load protection	Yes
Over Voltage Output protection	Yes

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
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 12 Vdc; 10 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 14.4 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

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General Data

Insulation voltage (In /Out)	3000 Vac
Insulation voltage (In / PE)	1605 Vac
Insulation voltage (Out / PE)	500 Vac
Protection Class (EN/IEC 60529)	IP20
Protection class	I, with PE connected
Reliability: MTBF IEC 61709	> 300.000 h
Pollution Degree Environment	2
Connection Terminal Blocks screw Type	2,5mm(24-14AWG)
Dimensions (w-h-d)	65x115x135 mm
Weight	0.65 Kg approx

Climatic Data

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

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	Yes
Low Battery	Yes
Fault Battery	Yes

Type of Signal Output Contact

Max. 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. load

Input Data

Nominal Input Voltage (2 x Vac)	115 – 230 – 277
Input Voltage range (Vac)	90 – 305
Inrush Current (Vn and In Load) I ² t	≤ 16 A ≤ 5 msec.
Frequency	47 – 63 Hz ±6%
Input Current (115 – 230 Vac)	2.4 – 1.2 A
Internal Fuse	4 A
External Fuse (recommended)	10 A (MCB curve B)

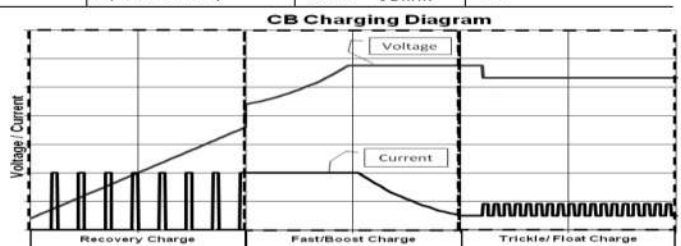
Battery Output (Battery Care)

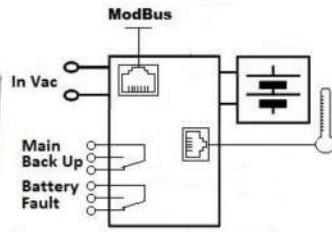
Boost charge (25 °C) (Typ. at In)	14.4 Vdc
Max. time Bust Charge (tpy. At In)	15 h
Min. time Bust Charge (tpy. At In)	1 min.
Trickle charge (25 °C) (Typ. at In)	13.75 Vdc
Jumper Configuration battery type (V cell) Ni-Cd (optional)	2,23;2,25;2,27;2,3; 1,41-1,5 (20 elem.)
Recovery Charge	2 – 9 Vdc
Charging. Max I _{batt} (In)	10 A ± 5%
Efficiency (50% of In)	89%
Dissipation power load max (W)	17
Charging current limiting I _{adj}	20 ÷ 100 % / I _n
Quiescent Current	≤ 5 mA
Charging Curve automatic: IUoUo	3 stage
Detection of element in short circuit	Yes
Short-circuit protection)	Yes
Over Load protection	Yes
Over Voltage Output protection	Yes

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 12 Vdc; 35 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 14.4 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

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General Data

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

Climatic Data

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

Norms and Certifications

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Signal Output (free switch N°2 contact)

Main or Backup Power	Yes
Low Battery	Yes
Fault Battery	Yes

Type of Signal Output Contact

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

Input Data

Nominal Input Voltage (2 x Vac)	115 / 230 – 277
Input Voltage range (Vac)	90 – 135 / 180 – 305
Inrush Current (Vn and In Load) I ² t	≤ 35 A ≤ 5 msec.
Frequency	47 – 63 Hz ±6%
Input Current (115 – 230 Vac)	8 – 4.2 A
Internal Fuse	10 A
External Fuse (recommended)	16 A (MCB curve B)

Battery Output (Battery Care)

Boost charge (25 °C) (Typ. at In)	14.4 Vdc
Max. time Bust Charge (tpy. At In)	15 h
Min. time Bust Charge (tpy. At In)	1 min.
Trickle charge (25 °C) (Typ. at In)	13.75 Vdc
Jumper Configuration battery type (V cell) Ni-Cd (optional)	2,23;2,25;2,27;2,3; 1,41–1,5 (20 elem.)
Recovery Charge	2 – 9 Vdc
Charging. Max I _{batt} (In)	35 A ± 5%
Efficiency (50% of In)	91%
Charging current limiting I _{adj}	20 ÷ 100 % / I_n
Quiescent Current	≤ 5 mA
Charging Curve automatic: IUoUo	3 stage
Detection of element in short circuit	Yes
Short-circuit protection)	Yes
Over Load protection	Yes
Over Voltage Output protection	Yes
Power Supply Mode	Yes

Charging

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Charging	Float	1 Blink/sec	OFF
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	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

