

# CB6024A Battery Charger



**Input:** Single-phase 100 - 240 - 277 Vac  
**Output:** 24 Vdc 3A (5A max)  
**Power Supply Function**  
 Suited for the following battery types: Open Lead Acid, Sealed Lead Acid, Lead Gel, Ni-Cd  
**Battery Care:** automatic diagnosis and battery status  
**Charging curve IUoU:** constant current and constant voltage  
**High efficiency** with quasi-resonant switching technology  
**Charging type:** Boost, Absorption, Float, Recovery.  
**Protected** against short circuit, inverted polarity, over Load.  
**Signal output (Free Switch Contact):** Fault battery state, Mains/Back-Up.  
**Protection degree** IP20  
**DIN rail or Wall Mount**

## Technical features

The CB series is a "Switching Technology" and "Battery Care Philosophy" that has been part of ADEL's core system know-how for years, leading to the development of this advanced, multi-stage, fully automatic battery charging method suitable for meeting the most advanced requirements of battery manufacturers. The Battery Care concept is based on algorithms that implement rapid and automatic charging, optimization of battery charging over time, recovery of discharged batteries, and real-time diagnostics during installation and operation. The real-time self-diagnosis system, which monitors battery faults such as shorted elements, accidental reverse polarity connections, and battery disconnections, can be easily detected and removed with the help of the flashing code of the diagnosis LED; during installation and after sale. Each device is suitable for all types of batteries. Preset curves can be set for open lead acid, sealed lead acid, gel, Ni-Cd. A sturdy housing with bracket for DIN rail and wall mounting.

## Input Data

Nominal Input Voltage	100 – 240 – 277 Vac
UL ratings	100 – 240 Vac
Input Voltage range	90 – 305 Vac
Inrush Current	≤ 50 A
Frequency	47 – 63 Hz
Input Current	1.3 A (100 Vac) 0.7 A (240 Vac) 0.65 A (277 Vac)
Internal Fuse	2.5 A
External Fuse (recommended)	10 A (MCB curve C)

## Battery Charger Output

Fast/Boost Charge	28.2 V (Lead) 29 V (Ni-Cd)
Recovery Charge	2 – 20 V
Charging Current In (T <sup>a</sup> ≤ 40°C)	3 A ± 5% (5 A max)

## Battery Tester

Battery Detection of element in short circuit	Yes
Reverse polarity protection	Yes
Battery Disconnected (Protection No Spark)	Yes
Battery Voltage Wrong	Yes
End of charge control	Yes

## Generic Output Data

Max. time Bulk-Absorption Charge (typ. At In)	16 h
Min. time Bulk Charge (typ. At In)	2 min.
Float Charge: Battery type can be configured pushing the button at switch-on. (V/cell)	2.23 V (Open Lead) 2.25 V (AGM) 2.30 V (Gel) 1.4V (Ni-Cd) "20 cell"
End of charging current to Float (Bulk & Absorption charge)	300 mA
Charging current limiting I <sub>adj</sub>	No
Quiescent Current (Input main Voltage ON)	≤ 5mA
Quiescent Current (Input main Voltage OFF)	0mA (V <sub>bat</sub> < 26.3V)
Remote Charge Input Control Fast/Boost charge	Terminal Block Contact
Power Supply function can be configured pushing the button at switch-on	Yes
Efficiency (50% of In)	89%
Dissipation Power load max (W)	9
Residual Ripple	≤ 50 mVpp
Charging Curve automatic: IUoU	4 stage
Short-circuit protection)	Yes
Over Load protection	Yes
Overheating Thermal Protection	Yes
Over Voltage Output protection	(Typ. 35Vdc)

## Connection and Monitoring

### Signal Output (free switch contact)

Main or Backup Input Power	Yes
Low Battery	Yes
Fault Battery	Yes

### Type of Signal Output Contact (free switch contact)

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

## General Data

Insulation voltage (In / Out)	4000 Vac
Protection Class (EN/IEC 60529)	IP20
Protection class	II
Reliability: MTBF IEC 61709	> 300000 h
Pollution Degree Environment	2
Connection Terminal Blocks screw Type	2.5mm (24–14AWG)
Housing material	Polycarbonate
Dimensions (w-h-d)	72x90x61 mm
Weight	0.30 Kg approx.

## Climatic Data

Ambient temperature (operation)	-25 ÷ +70°C
Ambient temperature Storage	-40 ÷ +85°C
Humidity at 25 °C no condensation	95% to 25°C
Cooling	Auto Convection
Vibration IEC60068-2-6	15-150 Hz: 1g 1 oct/min X,Y,Z axes
Shock IEC 60068-2-27	10g 6ms 3 bumps / direction

## Norms and Certifications

Conforming to Low Voltage Directive (LVD) 2014/35/UE  
 - Electrical safety: IEC/EN 62368-1  
 Conforming to Electromagnetic Compatibility (EMC) Directive 2014/30/UE  
 - Emission: IEC/EN 61000-6-3  
 - Immunity: IEC/EN 61000-6-2  
 UL 1236 Recognition Pending

## Charging

The charging type is IUoU stabilized voltage and current in accordance with DIN41773. The battery charging status and self-diagnosis of the systems are identified by a flashing code on the diagnosis LED and the battery fault LED:

	State	LED Green Charging State	LED Orange Battery Fault
Charging Type	Recovery	5 Blink/sec	
	Boost – Bulk	2 Blink/sec	
	Absorption	1 Blink/sec	
	Float	1 Blink/2 sec	
Auto Diagnosis	Reverse polarity		1Blink
	Battery No connect		2Blink
	Element in Short C.		3Blink
	Replace Battery		5Blink

