

# CB6024A Battery Charger



Input: Single-phase 100 - 240 - 277 Vac.

Output: 24 Vdc 3A.

It can run as Battery Charger or Battery Charger and Power supply Function

Suited for many 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.

5 Charging stages: Recovery, Bulk, Absorption, Float, Refresh.

Short circuit, reversed polarity and overload protection.

Signal output (Volt-Free Contact): Battery Fault, AC Fail.

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 and Power Supply function if enabled, are suitable to meet the most advanced requirements of the 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. The sturdy housing is developed for DIN rail and wall mounting applications.

### Input Data

Nominal Input Voltage	100 – 240 – 277 Vac
Input Voltage range	90 – 305 Vac
Input Voltage max. 1 min	410 Vac
Inrush Current	≤ 50 A
Frequency	47 – 63 Hz
Input Current	1.5 A (100 Vac) 0.8 A (240 Vac) 0.7 A (277 Vac)
Internal Fuse	2.5 A
External Fuse (recommended)	10 A (MCB curve C)

### Battery Charger Output

Fast/Boost Charging	28.2 V (Lead) 2.35 V/cel 29 V (Ni-Cd) 1.45 V/cel
Float Charging	26.76 (Open Lead) 2.23 V/cel 27.00 (AGM) 2.25 V/cel 27.60 (Gel) 2.30 V/cel 28.00 (Ni-Cd) 1.40 V/cel; 20 cell.
Recovery Charging	2 – 21 V
Battery types	Lead, Open Lead, AGM, Gel, Ni-Cd
Charging curve	5 stages: Recovery, Bulk, Absorption, Float, Refresh
Charging Current In (T <sup>a</sup> ≤ 40°C)	3 A
Min. time Bulk Charging (typ. At In)	2 minutes
Max. time Bulk-Absorption Charging (typ. At In)	16 hours
End of charging current (Absorption to Float)	300 mA
Refresh Battery duration	85 minutes (Fast Charge only)
Refresh Battery period	12 days (Fast Charge only)

### Battery Tester

Battery with shorted cells	Yes
Reverse polarity protection	Yes
Battery Disconnection (Protection No Spark)	Yes
Wrong Battery Voltage	Yes
End of charging control	Yes

### Power Supply (If enabled by programming function)

Output voltage (at In)	22 - 28.2 Vdc
Nominal current In = Iload	3 A ± 5% In

### Generic Output Data

Quiescent Current (Input main Voltage ON)	≤ 5 mA
Quiescent Current (Input main Voltage OFF)	0mA (Vbat < 26 V)
Power Supply function	Yes
Efficiency (50% of In)	89%
Dissipation Power load max	8 W
Ripple and Noise (20 MHz Bandwidth)	80 mV <sub>pp</sub> (max) Load >500mA

Ripple and Noise (20 MHz Bandwidth)	400 mV <sub>pp</sub> (max) Load <500mA
Short-circuit protection	Yes
Overload protection	Yes
Overheating Thermal Protection	Yes
Over Voltage Output protection	(Typ. 35 Vdc)

### Signal Output

AC Fail	Yes
Low Battery	Yes
Battery Fault	Yes
Type of Signal Output Contact	Volt-Free
Contact rating	Max. DC: 30 Vdc 1 A; AC: 60 Vac 1A

### Signal Input

Fast charge	ON/OFF Terminal Block
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### General Data

Insulation voltage (In / Out)	4000 Vac
Protection Class (IEC/EN 60529)	IP20
Protection class	II
Reliability: MTBF (IEC 61709)	> 300.000 h
Pollution Degree Environment	2
Connection Terminal Blocks screw Type	2.5 mm <sup>2</sup> (24–14AWG)
Housing material	Polycarbonate
Dimensions (w-h-d) according to DIN 43880	72x90x55 mm
Weight	0.30 Kg approx.

### Climatic Data

Ambient temperature (operation)	-25 ÷ +70°C
De-rating Tamb>40°C	-1.6 % (In) / °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 10g 6ms 3 bumps / direction
Shock IEC 60068-2-27	

### 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 Recognized – BBGQ2 Battery chargers (UL file: E353241)

### Charging

The charging type is IUoU stabilized voltage and current according to DIN41773. The battery charging status and self-diagnosis of the systems are identified by the flashing code and color of the diagnosis LED:

	State	LED Green Charging State	LED Orange Battery Fault
Charging Stages	Recovery	5 Blink/sec	
	Bulk	2 Blink/sec	
	Absorption	1 Blink/sec	
	Float	1 Blink/2 sec	
Auto Diagnosis	Reverse polarity		1Blink
	Battery not connected		2Blink
	Battery with shorted cells		3Blink

