CB60: Instruction Manual

Charge & Testing Battery Charger
Thank you for choosing one of our products for your work.
We are certain that it will give the utmost satisfaction and be a notable help on your job and application.

Product Description

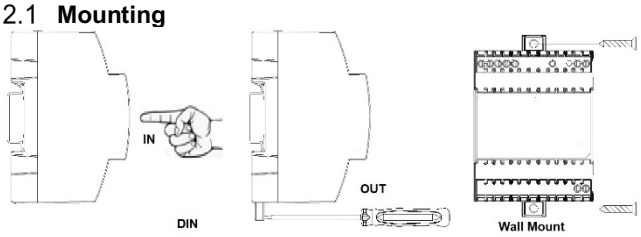
The Smart Battery Charger CB60 is available in two versions: 12V and 24V. The CB60 series is a family of battery chargers based on the "Switching technology" and "Battery Care philosophy" that have been part of Adel System's know-how for 30 years. This experience has led to the development of this advanced multi-stage, fully automatic battery charger, which is suitable for meeting the most advanced requirements of battery manufacturers. The Battery Care concept is based on algorithms that implement fast and automatic charging, optimization of battery charging during all charging stages, recovery of discharged battery, and real-time diagnostics during installation and operation. The real-time diagnostics system discreetly monitors the battery and detects its faults, such as shorted elements, accidental reverse polarity connections, battery disconnection, and incorrect voltage. Such faults are indicated by intuitive flashing of the diagnostic LED. Each device is suitable for many battery types: default curves can be set for open lead-acid, AGM, Gel and NiCd batteries. A rugged enclosure with bracket for DIN rail and wall mounting provides IP20 protection.

1 Safety and warning notes

WARNING – Explosion Hazard. Do not disconnect equipment unless power has been switched off or the area is known to be non-hazardous.
WARNING – Explosion Hazard. Substitution of components may impair suitability for Class I, Division 2.
WARNING – Switch off the system before connecting the module. Never work on the machine when it is live. The device must be installed according to EN62368-1 and UL1236. It must be possible to disconnect the device with a suitable isolating facility outside the power supply unit. Danger of fatal Injury!
WARNING – The device is equipped with an internal fuse that protects the device from an internal fault. In case of failure or damage, the device must be returned to the factory. Servicing in the field is prohibited, do not open device.

2 How to Install

2.1 Mounting



2.2 Din Rail or Panel Mounting

Fig. 1 shows a dimensional drawing of the CB60. It is possible to mount the device on Din rail or panel and fix it by 2 screws 2.9x8-16. There is no limit to the Panel thickness.

2.3 How to Supply the device

The CB60 battery chargers have a single-phase input and can operate in the range 90 to 305 VAC; therefore, they are suitable for standard 110, 230 and 277 VAC systems.

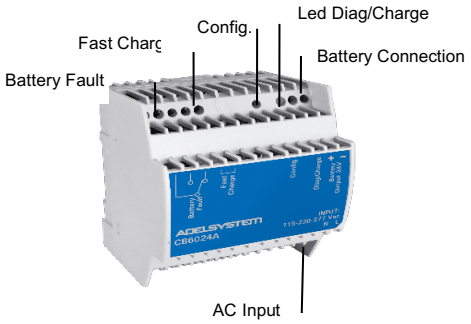


Fig. 1

2.4 Device Connection terminal and wiring

The following cable cross-sections may be used:

	Solid (mm2)	Stranded (mm2)	AWG	Torque (Nm)	Stripping Length
In:	0.2–2.5	0.2–2.5	24 – 14	0.5–0.6	7 mm
Out:	0.2–2.5	0.2–2.5	24–14	0.5–0.6	7 mm
Signal:	0.2–2.5	0.2–2.5	24–14	0.5–0.6	7 mm

Screw type terminal block, 2.5 mm^2. Wiring terminal shall be marked to indicate the proper connection for the battery charger. For supply connections use copper cables only, use wires suitable for at least 75°C.

3 Functionality

The CB60 battery chargers implement a multi-stage battery charging technique to ensure optimal battery performance and health. An additional feature, the power supply function, can be activated via the user interface and allows the output voltage to be available even when the battery is not connected. Otherwise, when the battery is not connected, the battery output terminals of the CB60 are devoid of voltage.
The user interface of the CB60 charger consists of a button and a multicolor LED. It shows the activity of the device and allows you to view and change the configuration of the device. By default, the CB60 is configured to operate with an open lead-acid battery and the power supply function is disabled.

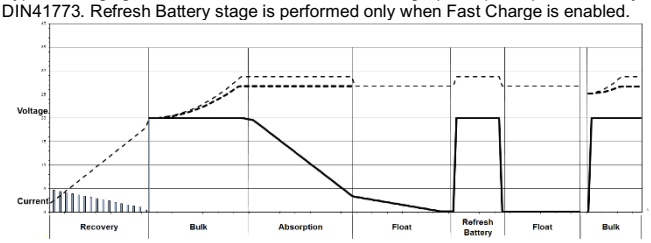
3.1 Charging

The normal indication of the user interface: when the battery is charging, the device signals the charging phase with a continuous GREEN flashing, with a frequency that depends on the charging phase in progress. Conversely, if a fault is active, the device displays a sequence of ORANGE flashes followed by a pause.

Charging State	LED: Diag/Charge	ON	OFF
Float	1 blink/2sec		
Absorption	1 blink/sec		
Bulk	2 Blinks/sec		
Recovery	5 blinks/sec		
Fast Charge			
Auto Diagnosis		**Relay Fault**	
No Alarm			
Reverse polarity	1 blink / pause		
Battery not connected	2 blinks / pause		
Battery with shorted cells	3 blinks / pause		
Input Main Off	No Blink		
Contact: Max.DC1: 30 Vdc 1A; AC1: 60 Vac 1A: Resistive load (EN 60947-4-1) Min.1mA at 5Vdc: Min. permissive load			

Table 1 – LED signaling and the corresponding device activity

Type of charging is current-limited and constant-voltage (IUoU profile) in conformity to DIN41773. Refresh Battery stage is performed only when Fast Charge is enabled.



3.2 Displaying the current device configuration

While the user interface is showing the device activity, press briefly (less than 1sec) the pushbutton to display the Battery Chemistry. The device will display the chemistry by means of a number of GREEN LED blinks followed by a pause, immediately followed by the Power Supply configuration enabling status, by means of a number of RED blinks followed by a pause, according to Table 2.
The user interface then automatically resumes the normal display of device activity. The ongoing battery charging process is not interrupted or affected in any way during the device configuration display.

Battery chemistry - Battery Charger / Power Supply feature			
	Press before Power ON Input AC/DC and maintain pressed for 5 sec.		
	(V/cell)	**Float Charge**	**Fast charge**
Open Lead	• 1 blink	• 2.23	• 2.40
AGM Lead	• 2 blinks	• 2.25	• 2.40
Gel Lead	• 3 blinks	• 2.30	• 2.40
Ni Cd	• 4 blinks	• 1.40	• 1.45
	To confirm, press for 2 sec. Blink Flashing Green as chemistry selected		
Battery Charger	**OFF**		
Battery Charger + Power Supply	**ON**		
	To conferm, press for 2 sec. Fast Flasing as a confirm:		

Table 2 – Device configuration display and program

3.3 Device configuration:

The device configuration can be changed only at the device power-on. The button must be pressed before connecting the AC mains and kept pressed for at least 5 seconds after the device power-on: the ORANGE LED must light on and then off. Release the button after the ORANGE LED has turned off; the fast flashing ORANGE LED indicates you can start changing the device configuration.
Firstly, you can choose the battery chemistry: the number of GREEN flashes corresponds to the chemistry according to Table 2. Press the button repeatedly to scroll through the chemistries to the desired one and confirm it by pressing the button for at least 2 seconds. The fast flashing GREEN LED indicates that the chemistry has been set.
Then you can enable the power supply function, using the button and the RED LED blinks according to Table 2. Press the button for at least 2 seconds to select the desired function and wait the fast flashing RED LED for confirmation.
NOTE that the entire configuration setting must be completed to be correctly saved in the device. After 60 seconds of inactivity, the configuration setting automatically stops and the device returns to its normal operation without changing its configuration.