

# CZC7 Automatic Charger

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## Operating Instruction

◇ General lead-acid battery    ◇ Free maintenance lead-acid battery



## Warning

- This equipment must be installed, maintained and repaired by a qualified professional electrician!
- Charger grounding must be reliable and strong, in order to avoid anomalies on causing harm to humans and property damage!
- The charger must be prohibited to be placed at somewhere in the water splashing, rain, the place with steam and corrosive gases !
- Make sure whether the charged battery' s specification of capacity and voltage is matched with the chargers before using; otherwise there may cause damage to the battery or even explosion!
- In the process of charging the battery can produce flammable and corrosive gas, so
  - ◇ Charging places must be ensured good ventilation!
  - ◇ Do not place flammable and explosive materials around the battery and charger!
  - ◇ Prohibit removing the plug before unclosing the charger; otherwise the resulting electric spark will cause fire or explosion!
  - ◇ Forbidden to all open flame!
  - ◇ The charger should be as far as possible from the battery or keep a distance at least 1 meter, to extend the life of the charger!
- For not following procedures or all the consequences resulting from the unauthorized technology changes, our company is not responsible for!

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## Preview

CZC7 series automatic charger is an advanced Hi-Tech product with strong functions and smart shape. It is featured with small size, light weight, easy operated, high charging efficiency and high reliability ; It combines the high frequency technology with micro-processor controlling technology in one unit to reach the best charging result for the battery, effectively to prolong the battery set' s working cycle life, all the charging process is automatically executed according to the program without the operator on duty.

### 1. Main features and applications

- Electric quantity controlling, timing controlling to ensure battery complete charging, auto-shut down after charging complete, no over-charging, no under-charging;
- High brightness LEDs indicating charger' s running state;
- Adopting IWUIa multi-stage charging style ( this charging style is applied for the general lead-acid battery charging);
- Adopting IWUUa multi-stage charging style ( this charging style is applied for the free maintenance lead-acid battery charging);
- Nixie tubes indicating battery voltage, charging current, capacity, time etc.;
- With auto-checking, time-delay start, soft-start functions;
- With the temperature compensation function for constant voltage point, floating charging point (CZC 7A adjustable charger is without this feature) ;
- With keeping charging function;
- Balanced charging to ensure the consistency of battery cell capacity;

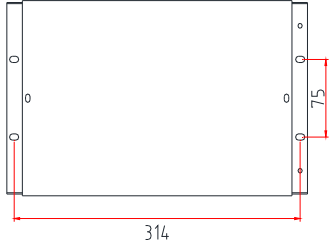
- Automatic initial charging function; (Only the general lead-acid battery charging)
- With the protection of open circuit, over load, short circuit and over temperature ;
- With the function of information enquiring, to enquire past 20 times charging record;
- Memory during power interruption and self-starting again;
- CZC7A adjustable charger can set charging voltage/current, multiple application for various specifications of battery.

It is the ideal charging equipment for electric pallet, electric mover, electric lift, electric tour car and various kinds of small size electric power driven vehicles.

## 2. Normal working condition

- (1) No higher than 2000M above sea level;
- (2) Temperature  $<+40^{\circ}\text{C}$  and  $>-10^{\circ}\text{C}$ ;
- (3) Relative humidity  $< 85\%$  (when temperature  $20^{\circ}\text{C} \pm 5^{\circ}\text{C}$ );
- (4) No conducting dust;
- (5) No explosive danger;
- (6) No corrosive gas to metal and insulation , no steam;
- (7) No hit by snow and rain;
- (8) Working site without strong vibration and shocks.
- (9) In ventilating and dry site, no high temperature, dust and corrosive gas.
- (10) To ensure the normal charger' s operating, to keep certain space around the charger and air ventilation unblocked, check if the ventilation holes are blocked.

### 3. Main tech. data (Size: W×D×H )

Type, data item	GZC7-20A/24V	Remark
Input Volt. V、Hz	1Ph.110~120V 50~60Hz	Installation size 75×314 
Input current A	6.5	
Charge. Current A	20	
Output Power KW	0.72	
Charge. Range V Ah	24V (116-160) Ah	
Size mm	190×330×100	
Net weight kg	4.5	

### 4. Charger connection

- (1) Confirm the rated input voltage is the same of the grid voltage.
- (2) Make sure that the battery must be matched with the charger' s specification.
- (3) Please, never prolong the length of the charger' s output cable (no more than 3 meters), otherwise, reduce the charging effect.
- (4) When connecting the charging cable, paying attention to the polarities of battery should

be consistent with the “+” 、 “-” of the charger’ s output polarities and having a firm connection.

## 5. Indicator lamp description

- The red green lamp is flashing in turn---- The initialized state
- The red lamp is flashing----Fault or the battery disconnected
- The red lamp is lighting----- Constant current stage and W stage
- The red green lamp is flashing at the same time---- Constant voltage stage
- The red green lamp is lighting ---- Small constant current stage or Float charging stage
- The green lamp is lighting----The charging is Completed
- The green lamp is flashing---- Equalizing charging or keep charging

## 6. Operating instruction

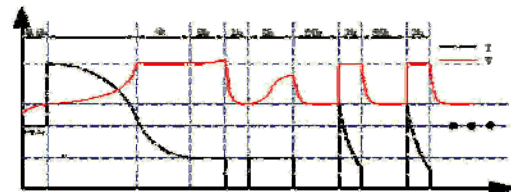
### ✧ Normal charging

- 1) The charger is connected to power supply, if the battery has been connected correctly, after 10 second time delay, the charger will go on charging as per the normal process; if the battery has not been connected, the charger is on the waiting state; the red lamp is flashing;
- 2) When the green lamp is lighting, the charger auto-shuts down and the battery is ready for application.
- 3) After battery completely charged, if the battery and power supply are still connected to the charger, then after 24 hours, the charger will go on keeping charging automatically.

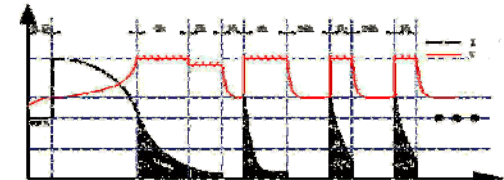
### ✧ Equalizing charging:

When the non-equal charging records reach 20 times (not including equal charging), there will be one occasional equal charging.

### 7. Brief of charging curve.



General lead-acid battery charging curve



Free maintenance lead-acid battery charging curve

The whole charging process:

a. Constant current stage: Due to long period uncharged or the rather weather cold, reducing the battery's adopting ability, using 50% rated current for pre-charging with the good function of activating and pre-heating;

B. W stage: When the battery's voltage rises to rated voltage, entering into W stage, it is in line with battery's charging natural adopting rate curve and the current reduces gradually with the voltage rising;

C. Constant voltage stage: When the battery voltage rises to 1.2~1.25 times of rated voltage, entering into constant voltage charging, the battery voltage does not rise and the charging current reduces gradually. the constant voltage point will be compensated with the



temperature up or down;

d、 For the general and free maintained lead-acid battery, they have different features , at the fourth charging stage, they will be respectively charged with small constant current charging mode or float charging mode.

Small constant current stage (for charging general lead-acid battery):When charging current reduces to 25% of rated current or duration of 4 hours constant voltage charging, the charger will auto-transfer to small constant current stage, entering into small constant current charging stage, battery' s voltage rises slightly; after 2 hours duration of small constant current charging, the charger auto-shuts down.

Float charging stage (For free maintained lead-acid battery):When the current reduces to 10% of rated current or after 4 hour duration of constant voltage charging, the charger will auto-transfer to float charging stage, after 2 hour duration of float charging, the charger auto-shuts down.

Note: The constant voltage point and float voltage are auto-compensated with the temperature' s up and down, as compensated with the rate of 3-4mV/°C for cell voltage.

E、 Charging completed shutting down: At this time the battery is completely charged, it is ready for application.

F、 Equalizing charging:

When the charger is in line with the condition of opportunity equal charging or manual equal charging, and after the charger is completed charging and auto-shuts down, if the battery and power source is kept in connection, then 1 hour later, the charger will auto-make one time equal charging.

g、 Keeping stage:

After the end of equal-charging, for each 24 hour interval, the charger takes keeping charging to makeup the lost capacity of the battery because of the self-discharging due to long time storing.

## 8. Inspection and maintenance

- Maintenance must be done by electricians !

	Fault	Cause and Removing
1	Lamp not light	◆ Input power disconnected - connect the power
2	Long time waiting state	◆ The battery disconnected - connect the battery correctly
3	Fan does not run	<ul style="list-style-type: none"> <li>◆ Fan damaged - replace it</li> <li>◆ Output cable oxidized or bad contacting - check replace or fix again</li> <li>◆ Over-temperature inside the cabinet - the environment temperature is too high, heat-dissipating no good. After reducing the temperature, the charger recovers charging automatically</li> <li>◆ Thermistor or mainboard damaged - replace it</li> </ul>
4	Shutting down in the mid-way, The red lamp is flashing	<ul style="list-style-type: none"> <li>◆ The battery is damaged or not matched— replace the battery.</li> <li>◆ Overloading of output current, the fault in the control circuit or short circuiting of output —check the output circuit, replace the PCB.</li> </ul>