

# CH1812 & CH1824

## *Automatic Battery Charger User's Guide*



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ISO 9001  
**ETC**

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## SECTION 1 : SPECIFICATION

### Power Input

Voltage 110 / 220 Vac +/- 10% 1 phase  
Select with jumper  
Frequency 50 / 60 Hz +/- 5%

### Equalize Charge DC Output

CH1812 (12V) Voltage 14.5 Vdc  
CH1812 (24V) Voltage 28.8 Vdc

### Float Charge DC Output

CH1812 (12V) Voltage 13.8 Vdc  
CH1812 (24V) Voltage 27.6 Vdc

### Rated Output Current

0.5 – 20.0 Adc

### DC Voltage Regulation

Less than +/- 1%

### Equalize Charge Voltage Adjustment

CH1812 (12V) Range 13.5 – 16.0 Vdc  
CH1824 (24V) Range 27.0 – 31.0 Vdc

### Float Mode Voltage Adjustable Range

CH1812 (12V) Range 13.0 – 14.5 Vdc  
CH1824 (24V) Range 25.8 – 28.0 Vdc

### Equalize Charging Time

6, 12, 24 Hours setting

## SECTION 2 : GENERAL DESCRIPTION

These units are works by a full wave accurate controlled thyristor and inductive filters and smoothing capacitors to reduce the ripple amplitude of output. Thyristor regulation ensures low power dissipation and generously specified components provide for high operation efficiency.

## SECTION 3 : FEATURE

- 3.1 Charges batteries with constant voltage and current.
- 3.2 Charge voltage / output current limit are adjustable.
- 3.3 Float / Equalize charge mode are available.
- 3.4 6 / 12 / 24 hr timer selection for Equalized charge mode.
- 3.5 Main input and DC output are fused by separated 1 pole MCCB on front panel.

### Charge Mode

Equalize & Float

### Efficiency

greater than 80% @ Full Load

### Ripple Effect

+/- 3%

### Protection

Voltage Regulation, Current Limit  
Short Circuit Protection  
Spike protection  
Reverse polarity connection of battery  
Semiconductor type regulation

### Environment

Operating Temperature -20 to +60 °C  
Storage Temperature -20 to +40 °C  
Relative Humidity Max. 90%

### Dimensions

315.0 (L) x 255.0 (W) x 230.0 (H) mm

### Weight

CH1812 15.6 Kg +/- 2%  
CH1824 21.0 Kg +/- 2%

- 3.6 Protection against shorted circuit and reverse polarity connection of battery.
- 3.7 Low ripple voltage (below +/- 1%).
- 3.8 High power efficiency (over 80%).
- 3.9 Separated analogue voltmeter and ammeter indication the charging voltage and current.

## SECTION 4 : ELECTRICAL CHARACTERISTICS

- 4.1 Input Voltage : 1 phase 110V/220V +/- 10% 50/60 Hz optional.
- 4.2 Output voltage for Equalize Charging :  
For 12V system 13.5 – 16.0 Vdc adjustable.  
For 24V system 27.0 – 31.0 Vdc adjustable.
- 4.3 Output voltage for Float Charging :  
For 12V system 13.0 – 14.5 Vdc adjustable.  
For 24V system 25.8 – 28.0 Vdc adjustable.

- 4.4 Output current : 0 – 20 Adc adjustable.
- 4.5 Output Voltage Regulation : +/- 1%.
- 4.6 Power Efficiency : > 80% on full load.
- 4.7 Charge Mode : Float / Equalize available.
- 4.8 Protection :
  - Output current limited.
  - MCCB tripped in case of over current of main input.
  - MCCB tripped in case of reverse polarity connection of battery.

## SECTION 5 : INSTALLATION PLACE

- 5.1 Avoid humid places.
- 5.2 Avoid environment of corrosive gas.
- 5.3 Do not expose it to direct sun radiation or close a heating source.
- 5.4 Install it in a place that is easily accessible, adequate ventilation and without vibrations.
- 5.5 Batteries generate explosive hydrogen gas, even during normal operation.
- 5.6 People may injure by battery parts flying in an explosion.
- 5.7 They can explode under normal operating conditions.
- 5.8 Avoid Flames and Sparks Near Battery.

## SECTION 6 : WIRING AND ADJUSTMENT

- 6.1 Ensure the output of the battery charger is accords with the voltage of battery.
- 6.2 Ensure the wiring of the battery charger is accords with main input voltage.
  - 6.2.1 Main Voltage is 110 Vac. (Figure 2)
    - Main power feed in 1 and 2.
    - Connect 3 and 4 with jumper wire.
    - Connect 5 and 6 with jumper wire.
  - 6.2.2 Main Voltage is 220 Vac.
    - Main power feed in 1 and 2.
    - Connect 4 and 5 with jumper wire.
    - Terminal 3 and 6 are null.
  - 6.2.3 Connect main power.
    - Turn power MCCB on.
    - The power pilot LED and float charge LED should illuminated.

- Voltmeter should appear default value 13.8V (at 12V system) or 27.8V (at 24V system).

- 6.3 If procedure 6.2 is performed normal turn power MCCB off.

Connect the output of this unit to the post of battery carefully.

### CAUTION

**Terminal lug must properly and securely crimp onto wires.**

**Because of the high current being carried by these lugs.**

**An inadequate or improper crimp will eventually lead to overheating of the joint.**

Failure will soon follow, often with severe damage spreading beyond the immediate crimp joint.

- 6.4 Turn power MCCB on again. Adjust 10 to expected value.

### NOTE

**The value must refer to the battery user's guide.**

**Over charge current will cause batteries damaged and this is helpless to shorten charge time.**

- 6.5 Factory default setting voltage are.
  - CH1812 Equalize charge mode is 14.5 Vdc. Float charge mode is 13.8 Vdc.
  - CH1824 Equalize charge mode is 28.8 Vdc. Float charge mode is 27.8 Vdc.
  - Unless the target battery is very old do not change the default value.

- 6.6 Charge current is limited in the preset value anytime in spite of the target batteries was fully discharged.

The value will decrease accompanies the battery is charged. The value approach to zero represent the battery is nearly saturation.

- 6.7 Float charge mode is effective at initial power on.
  - In case of the battery is extremely discharged or repeat charge is needed press button 6 the equalize charge mode is effective.
  - Equalize charge mode will continue to 6/12/24 hours and back to float charge mode automatically to prevent battery overcharged. Factory default time is 6 hours. (Figure 1)
  - Turn the power MCCB off is able to break equalize charge mode.

6.8 The timer of equalize charge mode is able to be changed.

Remove the metal cover of this enclosure and jump the wire proper position can change the timer.

6.9 When measuring the output voltage in an open circuit, user need to parallel a 4.7 – 10K ohms (1W) resistor.

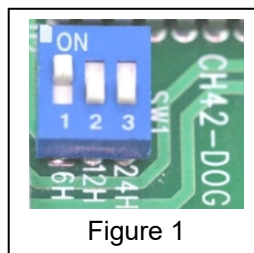


Figure 1

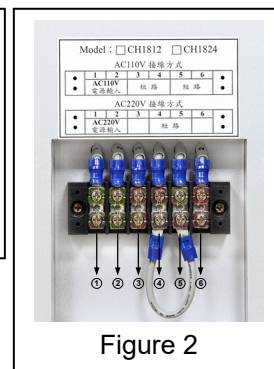
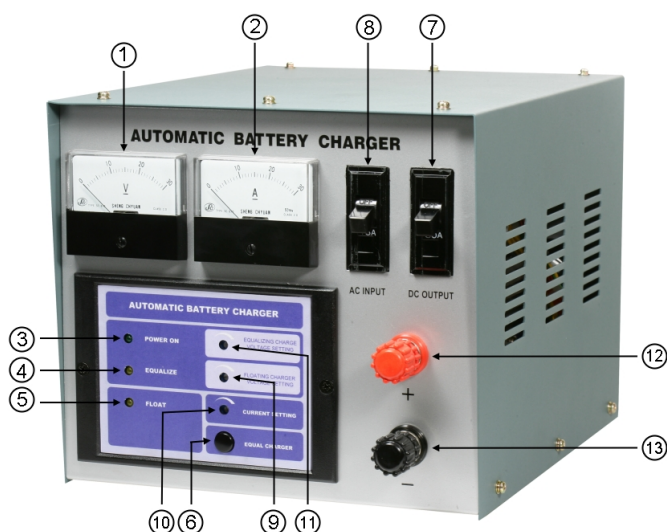


Figure 2

## SECTION 7 : TROUBLESHOOTING



- (1) DC Voltmeter for output.
- (2) DC Ammeter for output.
- (3) Power LED.
- (4) Equalize mode LED.
- (5) Float mode LED.
- (6) Equalize mode setting button.
- (7) Output MCCB.
- (8) Main power MCCB.
- (9) Adjust VR for float charge mode voltage.
- (10) Adjust VR for output current limit.
- (11) Adjust VR for equalize charge mode voltage.
- (12) Positive out terminal (red).
- (13) Negative out terminal (black).

## SECTION 8 : TROUBLESHOOTING

SYMPTOM	POSSIBLE CAUSES
No output voltage	1. Check the voltage of the main AC source.
	2. Check whether main MCCB is tripped.
	3. Check whether the output terminal is feed to battery properly.
	4. Check whether output is shorted.
	5. Check whether reverse battery polarity is connected.
No charge current or the current is unable battery properly	1. Check whether the battery is saturated.
	2. Check whether the output terminals are feed to battery properly.
	3. Check whether the battery charger is accordant with target battery.
	4. Check whether if battery is decayed.
	5. Check whether the output MCCB is tripped.

- ✘ If these steps above could not make the charger working still, Please contact with KUTAI.
- ✘ Appearance and specifications of products are subject to change for improvement without prior notice.