

# INSTRUCTION MANUAL

-----For SHS controller, with remote meter

-----Controller: EPIPC-COM series

-----Meter: MT-2



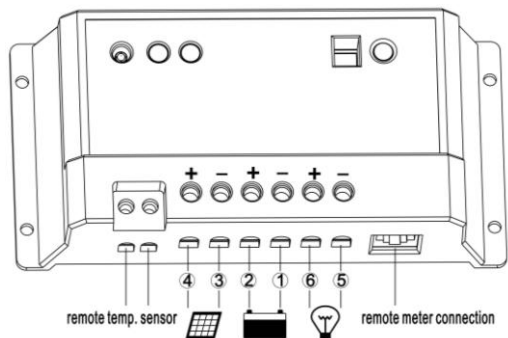
## **CHARACTERISTICS**

- LCD display: all system parameters as digital values, system status as symbols
- Intelligent software control
- PWM charging mode
- Set three different battery types
- Battery Ah setting
- Over-load, short circuit, reverse polarity protection, electronic fuse
- Temperature compensation setting
- Modify parameters using four buttons

## TECHNICAL INFORMATION

Type	EIPIC-COM(10A)	EIPIC-COM(20A)
System voltage	12V/24V AUTO WORK	
Rated charging current	10A	20A
Rated load current	10A	20A
Overload short circuit protection	1.25 X rated load current for 60 seconds or 1.5 X for 5 secs ≥3 times of rated load current	
Self consumption	≤6 mA	
Charging circuit voltage drop	≤0.26V	
Load circuit voltage drop	≤0.15V	
Work temperature	Industrial(I series): -35℃ to +55℃	
Temperature compensation	0 ~ -10mv/℃/2V adjustable Default -5mv/℃/2V	
Charging mode	Pulse Width Modulation (PWM)	
Remote meter LCD specification		
Working current	Strong backlight on < 23mA, 15 seconds Low backlight on < 20mA, 15 seconds Backlight and LED indicator off < 15mA	
Work temperature	-10℃ to +40℃	
Communication port	RJ45 (8PIN)	
Communication cable	1.5 meters with supplied cable 10 meters maximum	

## **INSTALLATION**



***Connect the individual components according to the symbols, they are solar panel, battery and load.***

***Follow the order indicated i.e. connect the battery first.***

Install the controller near the battery. The installation environment should be dry, preferably indoors. If for outdoor use, provide a waterproof and dustproof enclosure. The cable should be as short as possible and have a suitable cable diameter size to minimize loss, e.g. use 2.5 mm<sup>2</sup> at 10A; use 5 mm<sup>2</sup> at 20A.

1. Mount the controller and meter to a surface. Allow space above and below the controller for air flow. Connect the controller and meter via communication cable.
2. Connect the battery to the controller. Note the plus and minus. If connection is correct, the battery indicator will be on.

***Note : We strongly recommend connecting a fuse in series with the battery to avoid short circuit. The fuse rating should be 1.5 to 2 times controller rated current.***

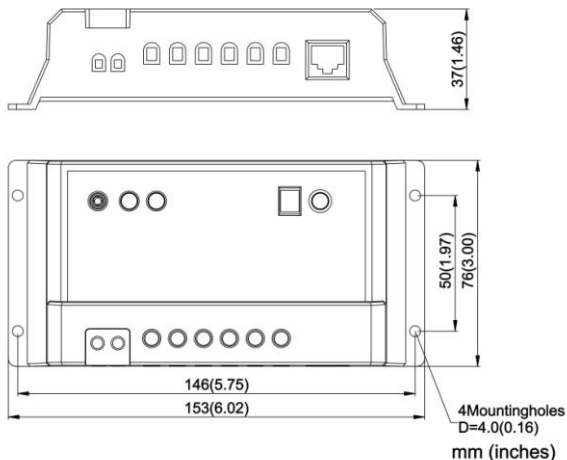
3. Connect the solar panel to the charge controller, note plus and minus. If there is sunshine, the charging indicator should be on.

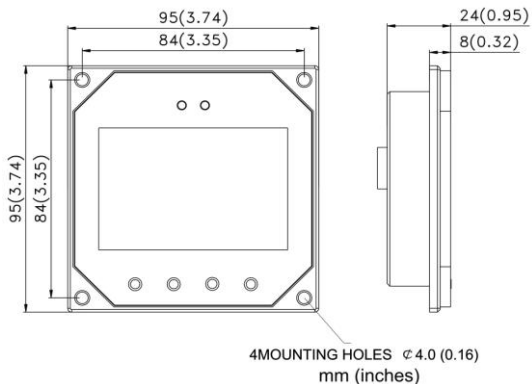
***Note: the voltage generated by the solar panel in sunlight could be dangerous.***

4. Connect the load to the charge controller (note plus and minus). Press ON/OFF button to ensure that load operates.
5. Unit has a built in temperature sensor, which measures ambient temperature. Battery regulation is adjusted accordingly.
6. An optional Remote Temperature Sensor (RTS) is available to monitor battery temperature and adjust charging parameters.

***Note: where is no RTS, the controller uses the local temperature sensor. When the RTS is connected the controller will automatically switch to RTS.***

## **MECHANICAL DRAWING**

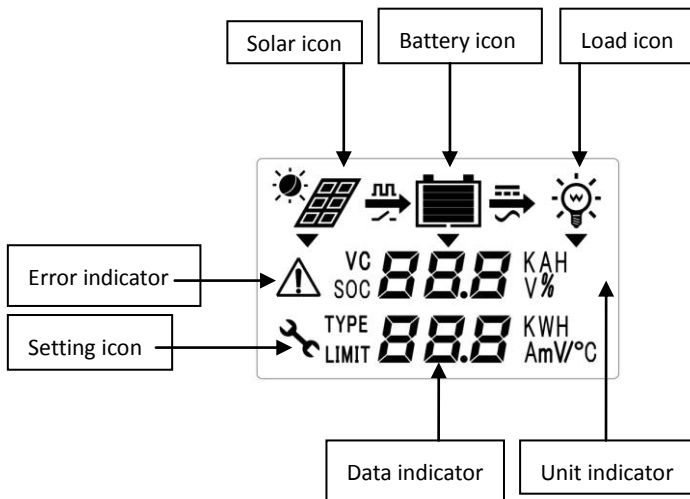




## **CONTAINS**

Wall mounting board, can be mounted in or on the wall. With 1.5 meter cable

## **REMOTE METER DISPLAY**





The two LED indicators above the LCD show that battery is charging, and a red indicates error conditions.

The LCD has three different brightness levels. After any button is pressed the display will be in high brightness and backlight. After 15 seconds the display will switch to a lower brightness, and after an additional 15 the backlight turns off.

The LCD has a backlight feature for easy reading in low light levels. To save power, the backlight automatically turns off after 15 seconds.

## **REMOTE METER OPERATION INSTRUCTION**

The button switches from left to right (K1 to K4) are: Set, Left , Right  and ON/OFF/ESC

### **1. The meter display in sequential order:**

Solar panel voltage and charging current, then Battery voltage and charging current minus load current, then Load voltage and Load current, then Battery capacity in AH and battery temp., then battery capacity percentage and temp. compensation, then battery capacity in AH and battery type, then charge accumulation in AH and charge accumulation in WH then discharge accumulation in AH and discharge accumulation in WH. Use K2, K3, or Left, right button for repeating any data set. The following picture shows what the data looks like.

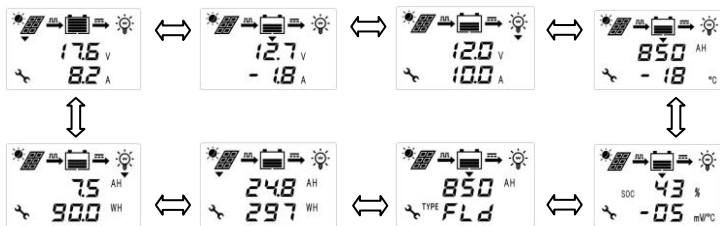


is the “setting” icon. It shows when setting status, and disappears when reading status.

## 2. Data setting operation:

Reading status, press K1/SET to “setting” status, press K2, K3 to modify data. K1 : return to reading status and save data. K4 : return to reading status without saving data. Battery voltage and current can't be set.

Operation shows as following picture.



## 3. Data setting instruction

**Battery capacity:** Battery capacity can be set from 10AH to 900AH, the default value is 200AH. The value should be near or equal to the real capacity. While display shows battery capacity and temp., press K1 into “setting” mode, modify the data through K2, K3. Battery capacity will go up/down 10AH, press K1 for saving data and return to the reading status, or press K4 for return without saving.

**Battery temp. compensation:** Temp. compensation data modify ranges from 0 to 10mV/Cell/°C, while the data is 0, there is no temp. compensation function. While displaying battery capacity percentage and temp. compensation, press K1 to go to “setting” mode, modify the data through K2, K3. The temp. compensation will be up/down 1 mV/Cell/°C.

**Battery type:** battery type has three options: SEL-sealed battery, GEL-gel battery, FLD- flooded battery. While displaying battery capacity and battery type, press K1 to go into “setting” mode, choosing

suitable battery type through K2, K3.

#### **4. Other operation:**

Delete accumulate data: While displaying charging discharging accumulation, press K1/SET, and then press K4/ESC, the data will be deleted; otherwise press K1/SET again without pressing K4/ESC, it will exit deleting operation and the data will remain. The controller will delete the data automatically while accumulation is over 999. 24-hour data will begin to be accumulated at the moment when solar panel voltage is over 8V for the first time.

### **OTHER INSTRUCTION**

**Error icon instruction:** red flashing on error status. Please check the load connection, press K4 for delete error icon.

1. When load current 1.25 times rated current and less than 1.5 times rated current, load will be turned off automatically after 60 seconds.
2. When load current over 1.5 times rated current but less than short circuit, load will go off automatically after 5 seconds.
3. When the load current exceeds 3 times rated current, the short circuit protection turns off the load.

#### **LED indicator:**

Green on when solar panel is charging battery. Off indicates no charging. Red on when there is error. Off in normal status.

#### **Telecommunication port:**

The Telecommunication port connects the remote display to the controller. If there is no communication, but the remote is receiving power, it will display all the graphical symbols. If a key is pressed and the graphic symbols remain, there is no communications. The display will resume normal operation when there is communication.



If the display data is bad check the following:

1. Is the controller operational? If normal charge and discharge is working the problem is in the display / cable.
2. Check for correct cable and check connection.
3. Check for strong interference near cable.
4. A cable that is too long could also cause problems.

**Battery capacity strip flash:**

Each strip represents 20% of battery capacity.

Note: the calculation is based on fully charged battery voltage as 100%, and over discharge as 0%. The calculation is based on battery voltage, not the actual battery capacity.

**Data updating:**

Serial communication occurs every 10 seconds between control module and display module, so the data update takes 10-20 seconds.

**Battery Charging AH:**

Battery Charging AH value is the total running time of charging current. The computer accumulates this data for each minute of operation. The data is not accurate while the charge current is below 0.1A.

**Battery Discharging AH:**

Battery discharging AH value is the total running time of load current. The computer accumulates this data for each minute of operation. The data is not accurate while the discharge current is below 0.1A.

**Charging accumulation WH:**

Charging accumulation is the product of battery voltage, charging current and time, displayed in Watt hours.

**Discharging accumulation WH:**

Discharging accumulation is the product of battery voltage, discharge current and time, displayed in Watt hours.