

AN ISO 9001-2008 CERTIFIED COMPANY

McUH2 MICROCONTROLLER BASED ALL IN ONE MULTIPURPOSE Solar Charge Controller

A compact 16 bit Microcontroller based all in one solar charge controller with all possible options. Best suited for solar home lighting systems. Modular construction for ease of integration in any housing.

Can work in normal mode or in dusk to dawn mode by selector switch.

Two independent outputs. One with plain dc from battery. Another output in PWM format to dim the lighting LED load in steps from 0 to 100 percent dimming.

Plug-in arrangement for connecting to our mobile charger kit, if needed.

Electronic overload/short circuit protection with automatic reset after every five seconds. Visual indicator of overload.

Battery voltage indicator 4-level graph to show battery low, normal, healthy and full.

Positive indicator of charging.

Optional temperature compensation for charging the battery.

Factory flashed software options for Li_Ion, LiFePO4 or SMF Lead Acid batteries.

All standard protections against deep discharge and over charge of battery. Full protections against reverse panel connection and reverse current flow from battery to panel during night.

Salient Specifications: (For Lead Acid Nominal 12V Battery)

SYSTEM:	12V Nominal
CAPACITY:	Panel 50 Wp Max, Load 3Amax
REGULATION:	LOW LOSS, SHUNT TYPE
OVD:	Output Voltage Drop < 400 mV at 3A load
IVD:	Input Voltage Drop < 360mV at 3 A charge
LVD:	Low Voltage Disconnect, 11V
HVD:	High Voltage Disconnect, 14.2 V
LVR:	Low Voltage Reconnect, 12.3 V
HVR:	High Voltage Reconnect, 14.15V
(Battery Charging is PWM type by default)	
HVP:	Battery high voltage protection. If battery voltage goes dangerously high or no battery connection. Load is disconnected, charging control disabled

PROTECTIONS: Electronic overload protection at 3A. Auto reset after 5 sec.

APPLICATION:	Small solar home lighting
AMBIENCE:	Operating Temp 0 to 50 Deg C, 80% RH
DIMENSIONS:	Main Controller 80x80 mm Display 80x24 mm

PLEASE NOTE ABOVE SPECS RELATE TO LEAD ACID BATTERY. THE VALUES WILL BE SUITABLY CHANGED IF BATTERY USED IS LITHIUM ION, LITHIUM IRON PHOSPHATE ETC.

Indicators and Controls: (For Lead Acid Nominal 12V Battery)

CHARGING: **Green LED**. Turns on when panel voltage is more than battery voltage to indicate positive charging. It starts flickering when battery is charged and goes in PWM mode of absorption.

OVERLOAD: **Red LED**. Turns on when load exceeds 3A. Both outputs disconnected. Checks overload condition again after 5 sec. Outputs available if overload is gone. LED turns off.

BATTERY STATUS: 4 LED graph.

1. **RED** is on if bat is less than or just equal to LVD. (BAT LOW)
2. **RED** turns on and off if bat is between LVD and LVR. (BAT RESERVE)
3. **AMBER** turns on and **RED** turns off when bat is above LVR (BAT NORMAL)
4. First **GREEN** turns on when bat is above healthy level (BAT HEALTHY)
5. Second **GREEN** turns on when bat is fully charged (BAT FULL)
6. Alternates Red and Amber when battery > 15V . Load is disconnected. Charging is disabled.

NORMAL/D2D selector switch: When in NORMAL mode, both outputs provide the battery voltage during day and night. When in D2D mode, outputs are available only during night.

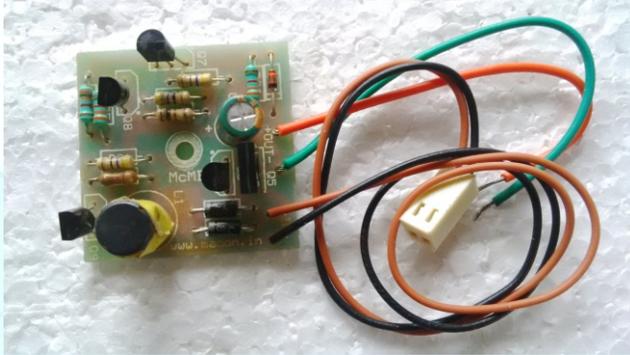
-8-WAY TERMINALS: On board connector marked PV+, PV-, BT+, BT-, DM+, DM-, LD+ and LD- to make connections to respective inputs and outputs.

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OPERATING INSTRUCTIONS: McUH2



IMPORTANT: READ THESE INSTRUCTIONS BEFORE USE.



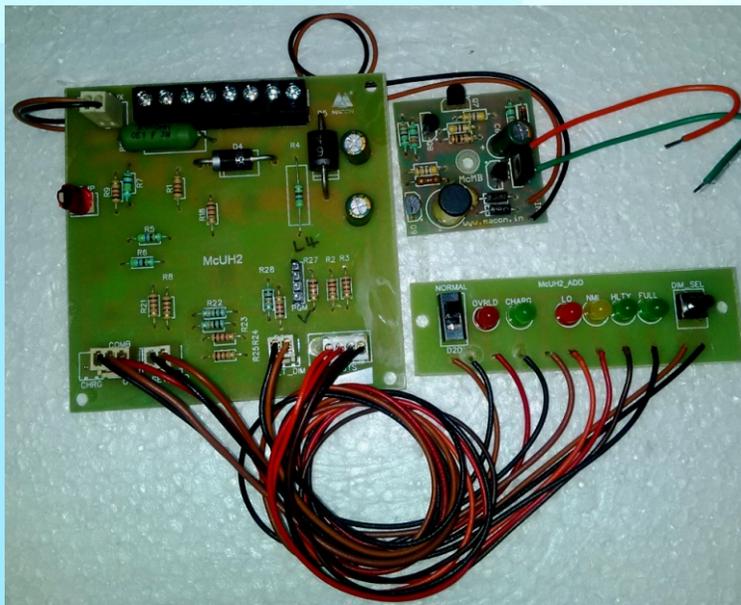
McH 2 has AUX output which is battery DC voltage available in its permitted range. If mobile charging is required as an additional output, our McMB (shown here for ready reference) can be simply plugged in with its relimate connector to AUX terminals on the controller. This mobile charger can be mounted simply with one screw on spacer for required height. Its load is added to the total load of controller.

McMB is smps based mobile charger with output set at 5.6V and output current is limited to 440mA. Its output is fully short circuit protected.

Output is provided with two cables which can be used to connect to USB, DC Socket, RCA socket etc as per requirement.

Main controller, display board and mobile charger kit can all be interconnected as shown here.

Relimate cables for all connections are of 12" length. Main controller can be fitted on chassis inside your desired housing with spacer height of not less than 6mm. Mobile charger kit can be fitted anywhere again with a spacer height of not less than 8mm. Display board is to be fitted on the front side of your housing with suitable cutouts for indicating leds and switches. It can be mounted with two spacer and screws to have height of 10mm so that indicators and switches are accessible from the front.



CONFIGURATION OF LOAD:

McUH2 has two independent outputs. LD+/LD- terminals give full dc output from battery. If some led bulbs are never to be dimmed, such bulbs can be connected to this output.

Another output is marked DM+/DM-. LED bulbs connected to this output can be controlled with Dim control switch in 4 steps, 25%, 50%, 75% and full 100% by successive presses. It is important to note that the output available from it is duty cycle controlled PWM. Driver in the LED bulb should be able to accept PWM dimming operation.

Both the outputs (LD+/LD- and DM+/DM-) can be made available all the time of the day, if slide switch is in Normal mode. These outputs can be made to be available only during night, if slide switch is put on D2D mode.

DIFFERENT TYPES OF BATTERIES: If you intend to use Li Ion or LiFePO4 type of batteries in different configuration, charge/discharge algorithm will be different than mentioned in standard specifications. Software will be customized as per requirement for MOQ to be confirmed from us.