McUH15B

Microcontroller based
Solar Charge Controller
12V / 15A. Triple Outputs.
Battery Type Selection. Dimming.
Normal or dusk to dawn selection.

- THREE INDEPENDENT DC OUTPUTS-
  ONE NORMAL, ONE DIMMABLE AND ONE USB PORT FOR MOBILE CHARGING:

- SELECTABLE NORMAL OR DUSK TO DAWN OPERATION,

- ON-BOARD BATTERY SELECTION (VRLA, LI ION OR LI FEPO4)

- BATTERY STATUS BAR GRAPH DISPLAY,

- FULL ELECTRONIC PROTECTIONS WITHOUT FUSE

- AVAILABLE IN INDUSTRIAL GRADE METAL ENCLOSURE

IEC Conforms to IEC 62093

Macon Power Pvt Ltd
www.macon.solar
contact@macon.in

General Information

McUH15B is developed with the view to providing easy and ready-to-use solution for solar home lighting system upto output load of 200 Wmax and panel input of 275Wp/15A, 12V. Its fuse-less design comes with all protections electronically for output short, overload and reverse connections.

⚫Suitable for all types of batteries, SMF(LEAD ACID, TUBULAR), LITHIUM ION or LITHIUM IRON PHOSPHATE.
    User selectable type of battery by on-board pin selection for VRLA, LiIon or LFP. For lead acid types, temperature compensation for charging and equalization mode are provided as an option if needed.

⚫On-board switch to select between Normal and Dusk To Dawn modes.

⚫Output is fully protected against over current or short circuit electronically without fuse.

⚫Protections against over charge and deep discharge of battery.

⚫Prevention of reverse flow of current from battery to panel during night.

⚫Mobile charging USB port of 0.7A/5V.

⚫LED bar graph display on board to indicate the battery status- low, reserve, normal and full.

OPERATION:

Use battery selection pin to select the battery type to be used.

After battery selection is done, connect the battery to the terminals marked. Ensure that polarities are properly selected.

If battery voltage is above LVR (see Salient Features for values), NML green LED should be on. If battery voltage is less than LVR, LOW and NML both blink (upper reserve limit), only LOW blinks (lower reserve limit) or LOW is continuously on (battery is less than LVD).

Load will be on only when battery voltage is above LVR.

If slide switch is on D2D, the controller will operate in dusk to dawn mode and load will be off during day time.

If this switch is on NML position, power to all outputs is available during day and night.

When solar panel is connected and its voltage is more than battery voltage, charging will start and CHRG LED will turn on. When battery is fully charged, it will start blinking. Panel is automatically disconnected from charging when battery voltage reaches HVD and it will reconnect if battery voltage goes below HVR.

The loads connected to terminals marked DM+/DM- are for 12VDC LED lamps which can be dimmed by using dimming switch.

4 step dimming (full light, 25%, 50%, 75%)is available in which load is dimmed by 25% per click.

Regular load (monitor, fan etc) should be connected to LD+/LD-. LED lamp needed without dimming can also be connected here.

USB port is provided for charging the mobile phones. Its output is 5V/ 0.7Awith high efficiency charging circuit.

If combined current from all the outputs exceeds 15A, controller is instantly tripped and OVR indicator is on. All outputs are off for 5seconds and then again controller checks output current. If load is restored in normal limits, it will turn on all connected loads, else it will continue tripping unless fault/overload condition is rectified.

Controls and Indicators
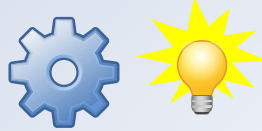
The controller has 8-way terminal for making connections to panel, battery and two independent DC outputs- one normal and one dimmable to be controlled by a switch for dimming from 25% to 100% brightness.

PV+/PV- : Solar panel upto 275Wp/ 15A,12V can be connected with proper polarities marked.

BT+/BT- : Any battery of type Li Ion 11.1V or LFP 12.8V or SMF/TUBULAR/VRLA 12V can be connected based on the selection done from BAT-SET selector on board.

LD+/LD- : DC load like fan, bulbs, display monitor etc can be connected.

DM+/DM-: Suitable to drive 12VDC LED bulbs. The brightness of connected bulbs can be controlled in steps of 25% upto 100% by pressing SET-DIM switch.

MBL : USB port for mobile charging. Output is 5V/0.7A

INDICATORS:

CHRG: Green LED to indicate charging, only if panel voltage is more than battery voltage. It will start blinking when battery is fully charged.

OVR: Red LED. If the combined load exceeds 15A, it will be on and loads are disconnected. Controller will check after 5 sec if load is reduced. If yes, load will be on and this LED is off.

LOW: RED LED. If battery goes below LVD, it will be on and loads are disconnected. If it is blinking, battery is in lower reserve mode.

NML: GREEN LED. If battery is above LVR, it will be on. For loads to be on for the first time, this LED must be on.

FULL: Green LED. Will be on when battery is full.

NOTE: *If battery voltage is dangerously high, NML and LOW LEDs will be alternately on and off. Entire system is disabled.*

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Salient Features

	BATTERY TYPE		
SYSTEM:	12V Nominal		
CAPACITY:	Input Panel 275Wp max/15A, Voc 22V typ		
	Output 15A max		
REGULATION:	Low Loss, Shunt Type		
OUTPUT VOLTAGE DROP:	<200mV at 15A (OVD)		
INPUT VOLTAGE DROP:	<400mV at 15A (IVD)		
BATTERY OPERATION (Based on selection of Link)	**Lead Acid 12V**	**Li Ion 11.1V**	**LFP 12.8**
LOW VOLTAGE PROTECT:	9.5 V	8 V	10 V
LOW VOLTAGE DISCONNECT:	10.7 V	9.6 V	11.2 V
LOW VOLTAGE RECONNECT:	12.3 V	11.2 V	13.2 V
HIGH VOLTAGE DISCONNECT:	14.4 V	12.6 V	14.4 V
HIGH VOLTAGE RECONNECT:	14.3 V	12.3 V	13.8 V
HIGH VOLTAGE PROTECTION:	15V	13.5 V	15 V
DUSK_SENSE	Panel Voltage <2V		
DAWN_SENSE	Panel Voltage > 4V, 10sec delay		
Dimming	Every press of switch changes dimming by 25%		
PROTECTIONS:	*Short Circuit / Overload *Reverse Battery *Reverse Solar Panel *Reverse flow of current from Battery to Panel during night *Lightening *No battery but panel connected. System disabled.		
Electronic shutdown	If load>15A, load off and checks after 5 seconds automatically		
APPLICATION;	In Door Use Only		
OPERATING TEMP RANGE;	0 to 50^0 C		
DIMENSIONS:	130Lx115Wx30 (mm)H		