



## BATTERY CAPACITY METER MNBCM / MNBCMS

### Installation:

The Midnite Solar MNBCM is intended for indoor use only and should be protected from rain, moisture and direct sun.

- 1) Remove the front cover of the Battery Meter by using a small blade screwdriver to gently pry off the cover using the small slots on each side of the case.
- 2) Drill a small hole in the lower right corner of the mounting area of the wall for the power cable. If this is a metal penetration, be sure to use a grommet or sleeve to protect the wires from sharp edges.
- 3) Carefully route the wires through the hole and mount the base using the 4 screw holes.
- 4) Re-attach the Cover to the Base.

### Power Wire Hookup:

**Warning: A DC rated fuse or breaker of no more than 2 amps must be fitted in the positive (Red) line at the battery or power distribution panel.**

The Positive (Red) wire attaches to the battery or distribution panel “+” terminal (after the fuse)

The Negative (Black) wire attaches to the “-” terminal

The Midnite Battery Meter will automatically select the proper operation voltage for your batteries.

When power is first applied, the Battery Meter will enter its self test mode. Each LED. should light in sequence.

### Battery Type Selection Jumper:

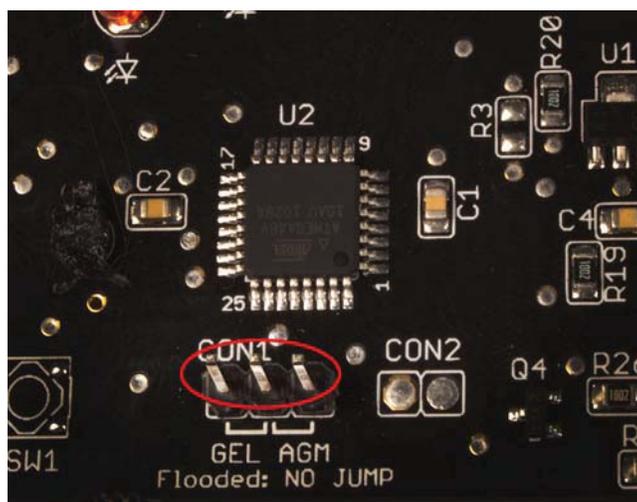
The Battery Meter is able to be used with all types of lead acid batteries. The Battery Meter will automatically detect the voltage of the battery bank, but for the most accurate readings you should set your MNBCM for the type of battery being monitored.

To select from the 3 most common types, there are a set of 3 pins along the bottom of the circuit board. Simply place the small black jumper on the pins as follows:

For “Gel” type sealed batteries, the jumper is placed on the 2 Left most pins.

For “AGM” type sealed batteries, the jumper is placed on the 2 Right most pins.

For “Flooded” type, non sealed batteries, the Jumper is not used.



# Operation:

There are 10 “Battery State of Charge” LEDs and 3 “Battery care” LEDs.  
 State of charge is displayed by the arched, 10 LED percentage “Meter”.  
 The 3 “Battery Care” LED’s are on the left side and will indicate the following conditions:

- 1- The top GREEN LED will light up when the batteries have received a “Full Charge” . ☺
- 2- The center AMBER LED will come on if the batteries have not been fully charged for 1 week. ☹
- 3- The bottom RED LED shows that the batteries have not been charged for 2 weeks or more. ☹

### Approximate battery voltages relative to percent State of Charge



| 12 Volt Battery | 24 Volt Battery | 36 Volt Battery | 48 Volt Battery | State of Charge |
|-----------------|-----------------|-----------------|-----------------|-----------------|
| 11.65           | 23.30           | 34.95           | 46.60           | 10%             |
| 11.77           | 23.54           | 35.31           | 47.08           | 20%             |
| 11.89           | 23.79           | 35.67           | 47.58           | 30%             |
| 12.02           | 24.03           | 36.06           | 48.06           | 40%             |
| 12.14           | 24.28           | 36.42           | 48.56           | 50%             |
| 12.26           | 24.52           | 36.78           | 49.04           | 60%             |
| 12.38           | 24.77           | 37.14           | 49.54           | 70%             |
| 12.51           | 25.01           | 37.53           | 50.02           | 80%             |
| 12.63           | 25.25           | 37.89           | 50.50           | 90%             |
| 12.75           | 25.50           | 38.25           | 51.00           | 100%            |

The display above tells us that the batteries state of charge is 90% and that the battery, as indicated by the RED Battery Care LED has not been fully charged in 2 weeks or more.

The Green LED will be illuminated under the following conditions:

**FOR BATTERY SYSTEM VOLTAGE:**    12v    24v    36v    48v

- For Gel batteries, the voltage must reach    13.8v    27.6v    41.4v    55.2v (for 1 hour)
- For AGM batteries, the voltage must reach    14.2v    28.4v    42.6v    56.8v (for 1 hour)
- For Flooded batteries, the voltage must reach    14.7v    29.4v    44.1v    58.8v (for 2 hours)

# Key switched version instructions:

The “S” version (MNBCMS) of the meter has an additional short wire attached. This wire is the “Switched lead” This feature allows the LEDs to be turned off while retaining the Battery Care memories. This wire should be connected through a switch to Battery positive. This is usually the ignition switch of a vehicle, but can also be any type of push button, or toggle switch.

If you do not have this extra wire and would like to use this feature, please go to :

<http://www.midnitesolar.com/pdfs/batCapMeterMod.pdf>

# Specifications:

|  |                             |
|--|-----------------------------|
| Battery voltage (Automatic select)                 | 12V, 24V, 36V, 48V          |
| Battery types supported                            | Gel, AGM, Flooded Lead Acid |
| Maximum Input voltage (Reverse polarity protected) | 70V                         |
| Average Power draw                                 | 12.5 mA                     |
| Switched version when “Off”                        | 6mA or .07watts@12v         |
| Physical Size                                      | 4.75” x 3.76” x 0.85”       |

MidNite Solar Inc.  
 17722 67<sup>th</sup> Ave NE  
 Arlington, WA 98223

midnitesolar.com  
 Ph: 425-374-9060  
 Fax: 360-691-6882