Digital Battery Voltage and Current Monitor – BAMVI v1.0

FEATURES

3-Digit numeric display for voltage, current, produced and consumed energy
Digital presettable thresholds for voltage, current and delays
Three push buttons for selecting display measurement and accessing the menu
Colored leds to indicate battery status
Wiring through plug in connector
Case conforms to DIN 43 880 of the British Standard
Fits onto 35mm symmetric DIN rail to BS5584 (EN 50 022, DIN 46277-3)
Humidity class, DIN 40040
Environmental protection, DIN 40 050

ABSOLUTE MAXIMUM RATINGS

Supply DC voltage	12, 24 and 48 volts
Auxiliary contact	8A ac1
Operating temperature	0 to 70°C

OPERATION

Battery voltage and charging current as well as produced (by the solar panel) and consumed energy in KWh are measured and displayed. The up and down push buttons are used to scroll between produced energy (**EnP**) which is the default display reading after power-up, consumed energy (**Enc**), battery voltage (**bAt**) and charging current (**cur**) . When a new measurement is selected, the display will briefly indicate the newly selected measurement (**EnP**, **Enc, bAt** or **cur**). A positive current causes the **EnP** counter to accumulate whereas a negative current causes the **Enc** counter to accumulate. Following is a description of the operation of this device:

1. The auxiliary power source is turned on (output relay de-energizes) after elapse of time set in **ond** when the battery voltage goes below **onu**. Yellow led labeled **AUX. OFF** goes off simultaneously.
2. The auxiliary power will remain ON for a minimum time set in **run**. After the elapse of this time, the auxiliary power source will be turned off (output relay energizes) when the battery voltage goes above the voltage set in **oFu** and the charging current goes below the current set in **oFc**. Yellow led labeled **AUX. OFF** goes ON.

Since the current range of the BAMVI is +-300A, the resolution is inherently poor for low currents. To solve this problem, remove the copper bar and pass the wire baring the battery current as many turns as possible in the rectangular hollow shaft and set the number of turns in **trn** accordingly (please refer to the menu described below). Note that each time the wire passes in the shaft is considered one turn. Entering the wrong number of turns will result in erroneous current and thus energy readings. As an illustration, in the opposite picture, the number of turns is five.

DISPLAY DESCRIPTION

The produced energy (**EnP**) and consumed energy (**Enc**) are displayed in KWh as follows:

Energy range	Format
Up to 9.99KWh	#.##
10.0 to 99.9KWh	##.#
100 to 999	###
1000 and above	######

The most significant three digits of the format ###### are displayed first and then they are scrolled to the left and the three least significant digits appear. A blank is displayed for a short period before the subsequent reading appears.

The current is displayed as follows:

Current range	Format
-300 to -200A	-.## in KA
-199 to -20A	-### in A
-19.9 to -0.1A	-##.# in A
0 to 99.9A	##.# in A
100 to 300A	### in A

SETTING

Press the push button on the right to access the parameters menu. The up and down push buttons are used to scroll up and down respectively in the menu list. Pressing the push button on the right will edit the value of the parameter displayed. Use the up and down push buttons to respectively increase and decrease the value. Press the push button on the right to save new value. **cEc** and **FSt** require the user to confirm the action by pressing the down push button. Following is a description of the parameters:

Display	Description	Range	Factory setting
onu	On Voltage threshold	0 to 99.9	24.2 volts
ond	On delay in seconds	0 to 255	2 sec
trn	Number of turns	1 to 255	1
oFc	Off Current threshold	0 to 255	2A
oFu	Off voltage threshold	0 to 99.9	26.5 volts
run	Minimum run time in minutes and seconds.	0 to 959	1'00"
cEc	Clear energy counters	-	-
FSt	Load factory setting	-	-
out	Exit menu	-	-

INSTALLATION

1. For 24/ 12Vdc BAMVI :
   - For 24Vdc operation: connect terminals **+**, **-** to the positive and negative sides of the battery respectively.
   - For 12Vdc operation: connect terminals **+**, **-** to the positive and negative sides of the battery respectively and shunt **+** and **S2** terminals.

   For 48/ 24Vdc BAMVI:
   - For 48Vdc operation: connect terminals **+**, **-** to the positive and negative sides of the battery respectively.
   - For 24Vdc operation: connect terminals **+**, **-** to the positive and negative sides of the battery respectively and shunt **+** and **S1** terminals.
2. Connect terminals 5, 6 and 7 as desired to switch on an auxiliary power source when the battery is empty.
3. With the BAMVI held up-right, the wire from the source should enter from the left side through the body of the BAMVI and connect to the battery.

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