

Orientation page for TriMetric model 2020

Please read this first:

Rev: February 2003

(A) INSTALL: A qualified person should install the TriMetric.

STEP 1: Read (or at least quickly review) section A, pages 2-3 of the manual "**METER INSTALLATION-PRELIMINARY**":

STEP 2: Study the wiring diagram on last page of manual.

STEP 3: Install according to section **B: METER INSTALLATION**.

(B) ENTER DATA: To get the TriMetric working the first time, particularly the "**Battery % Full**" and "**Amp-Hours from full**", you need to enter some system data. For "**Battery % Full**" to work properly, data in Step 2, Step 3 Step 4 and Step 5 (below) must be entered correctly. For "**Amp-Hours from full**" and "**days since charged**" to work properly, data in Step 2, Step 3 and Step 4 must be correct. For "**Amps**" to read correctly (not off by a factor of 10) Step 4, shunt type, must be specified correctly.

STEP 1: Refer to table 1 on page 13 of the instructions, which summarizes the TriMetric programmed data that may be changed, and shows how to change it. To get started enter the data shown below (steps 2 thru 5); later read the references to the instructions shown on table 1, the last column to "fine-tune" the data.

STEP 2: Enter the "charged setpoint voltage" (refer to first item of table 1, p. 13): Setting all other programmed data is done in a very similar manner, so once you've done this one, changing the others should be easy.

2.1 Push **SELECT** until the display shows **volts**.

2.2 Press and hold down **SELECT**--then (quickly!) press **RESET**. Release both and the **volts** light should flash and a number will show in the display -- the "charged setpoint" voltage. (If you hold **SELECT** too long before pushing **RESET** the meter will show "Ahr" and you will have to push **SELECT** a number of times to display **volts** again, and try this again.)

2.3 This displayed number must be set to the correct value. Push **RESET** a few times to change the numbers. As you do so notice that the numbers increase by .1 with each push. Holding **RESET** down scrolls the display. (After the numbers go above 65.0, they cycle back to 10.0 again.) If you have wet cell lead acid batteries, start by entering **14.3** if you have a 12 volt system, or **28.7** if you have a 24 V system. (More detail on choosing charged setpoints may be found in section C1, pages 4-5 of the manual.) Put in the number you desire and press **SELECT** again to get out of the program mode.

STEP 3: Enter the "charged setpoint amps": Programming this is similar to STEP 2 except that instead of starting from the "volts" display, you start from the "Amps" display. Start by programming "**OFF**". This appears just after 100, and before 1. "OFF" means that the TriMetric will not use the "amps" data when determining whether the batteries are charged. If you charge with a generator or other high powered source you should eventually change this or the TriMetric will declare your batteries are "charged" before they really are. See section C1, pages 4-5 of the manual.

STEP 4: Enter the "charge efficiency factor and shunt type": Programming this is similar to STEP 2 except that instead of starting from the "volts" display, you start from the "Battery % Full" display. If you have a 500A/50 mV shunt (the most common) enter "**H**" (which is the factory default). If you have a 100A/100 mV shunt, enter "**L**". Use "94" for the efficiency factor for either **H** or **L**. You should end up seeing either "**H94**" or "**L94**" displayed. More detail on setting "shunt type" and "efficiency factor" may be found in section "C2" of the instructions.

STEP 5: Enter "battery capacity": To give a correct "**% BATTERY FULL**" display the TriMetric must know how large a capacity your battery system has. Determine your "battery capacity", that is, the total amp-hours which your *battery system* can hold when full. Refer to section C4, p.6 of instructions for information about capacity, or ask your dealer who sold you the batteries what this value is. If you do not plan to discharge your batteries very far we suggest that you enter a *smaller* value than calculated capacity--this will expand the scale of your "Batt% ful" display, so that the display will go down more rapidly as you discharge your batteries. (Alternatively you can have the "%BATTERY FULL" display show in 1% increments instead of the normal 5% increments: refer to instructions, see section C3.) **Please note: entering the "battery capacity" is a little different from the ones you've just done** (some people have had problems with this one!): **Follow these steps: (1)** while displaying "volts", "amps" or "battery % full", push and hold "**SELECT**" down for a few seconds until you see "AH" appear in the display, then release. Now you should

(OVER)

observe the "AH" in the display alternating every few seconds with the number: ("amp-hours from full"). **If not**, repeat this step until this happens. (2) Next go to the program mode (in the usual way) as follows: Hold "SELECT" down--then (quickly!!!) push "RESET" then release both. Now you should observe a number in the display, and the 3 lights (volts, amps, batt % full) should be simultaneously flashing. If not push the "SELECT" button to start from step 1 again. (3) Enter the desired "battery capacity" value using the RESET button. You can enter a number from 10 to 2550 amp hours. Start by entering a value that is 50-75% of your actual battery capacity. Note that while showing the data, **if the decimal point is flashing**, that means multiply the number by 1000. For example, 1.20 with flashing decimal point means 1200 amp-hours. When you are finished push the "SELECT" button again to revert to the display mode.

(C) Read the one-page summary of TriMetric operation (page 12 of instructions). Note that "Battery % Full" or "amp-hours from full" will not be correct until the system is fully charged at least once. To understand these in more detail, read section D6 in the instructions. **The factory default setting on your meter has been set so that all three functions which would illuminate the "battery reminder" light are selected "off"** To activate them, read sections C 5, C6 & C8 of instructions.

(D) Afterwards Read the instruction manual to become more familiar with the TriMetric. Review section C to check and "fine tune" the programmed data which is entered. You may also want to read "Using the TriMetric (or other battery system monitor) to maintain your battery system, conserve energy and troubleshoot system problems.", written for persons with less technical background. It is available free on the internet at "www.bogartengineering.com" or by calling or writing Bogart Engineering.

Quick description of what the main numbers mean:

"AMPS" tells how fast energy is being put in or removed from the batteries: useful for conservation awareness, and checking charging systems. The "minus" sign, when lighted indicates discharging. When the minus sign is not lighted (and the "charging" lamp is lighted) indicates "charging". Turning on and off an electrical load will tell you how much current draw the load takes by comparing the difference. Turning on or off a charging source will tell you how fast it's charging.

"BATTERY % FULL" tells how full the battery is *based on the number programmed in (B) Step5, reverse. This number is not valid until the first time the batteries are charged fully. Also, it will not be meaningful if the "charged" parameters are not programmed correctly* (see section C1, instructions.) After the batteries are charged the first time causing the "charged parameters" to be attained "FUL" indicates a full battery. After discharging energy from the batteries for awhile, the number will show **90, 85**, etc. to show about how much battery energy is available. When the number becomes less than **30**, the display will say 'LO"—which indicates that the batteries are getting low on energy and should be recharged. To make this display read out in 1% increments instead of 5%, see section C3 of instructions. For other information, see sections D6 and C1, of instructions.

For a more detailed explanation of how "Battery % full" is measured refer to section D6 in the instructions. This is useful for users wishing to optimize this function.

"VOLTS" gives an approximation of how charged the batteries are, especially at the extremes of fully charged, and almost empty. It is an important diagnostic tool for checking charging systems and troubleshooting problems.

BOGART ENGINEERING

19020 Two Bar Road, Boulder Creek CA 95006 USA---Tel. (831) 338-0616

www.bogartengineering.com