GAMMATRONIX PROGRAMMBLE LED BATTERY MONITOR (And Theft Deterrent) - J

The unit can be programmed to work at 6v, 12V, 24V. Six different display 'maps' enable the user to choose which display mode best selects their application. The voltage or charge state of the battery is indicated on the large 10mm tri-colour LED. The device makes a 'rolling average' of over the last 2 seconds, which will give a degree of immunity to false indications. Accuracy to 1%. 10mA average current (0.5mA [500uA] in low power modes). Unit will operate down to 3.8v and up to 30v. Unit is delivered programmed to Map 1, 12v.

Fitting :

The device is supplied as a LED/PCB assembly, with a removable mounting bezel. Once clipped into a mounting hole, the bezel holds the LED in place via its internal mounting clips. (You may also if desired dispose of the clip and mount the LED with your own arrangement into a 10mm hole.) The unit requires installing in a 14mm dia hole and requires approx 21mm depth behind the surface of the panel (2mm panel thickness assumed). It is best to offer up the LED from the rear of the bezel, through the mounting hole, PRIOR to the bezel being clipped into place to avoid fouling of the programming button on the 14mm hole diameter.

Connect the RED wire to supply positive, and the BLACK wire to supply negative. OBSERVE POLARITY OR UNIT MAY BE DAMAGED. The most accurate reading is obtained if connected directly to the battery and not through existing wiring which may be carrying heavy currents that may cause voltage drops at the LED. The unit is internally fused but should have the wiring to it protected by an additional suitable local fuse at a point close to the battery, rated 2A or less. Your installation may already have such a fuse fitted. If the unit is to be used outside and may get wet, seal the bezel into its mounting hole, and the LED into the bezel itself, with a small amount of clear silicon or similar.

Programming :

The unit should be programmed prior to final fitment into the mounting hole if it is difficult to reach the programming button after this time. The unit can be operated at 6, 12 or 24v. The available 'maps' are shown below for the 12v range, accurate to within 1%. For 6v, divide the scaled voltages by two, for 24v, double the figures given below :

	15v	13.2v	12.8	12.5	12.1	11.8	11.5	11.2	11	10.7	10.5
1	Red/ Gn Flash	Green				Yellow	Slow Yell	Fast Yell	Red	Red Slow	RedFast
2	Red/ Gn Flash	Green	Yellow				Slow Yell	Red	Red Slow		RedFast
3	Red/ Gn Flash	Green	Green 'Blink'		Yell 'Blink'	Red 'Blink'	Blank (No Display)				
4	Red/ Gn Flash	Blank (No Display)			Yellow		Slow Yell	Red	Red Slow		RedFast
5	Red/ Gn Flash	Green		Slow Grn	Green Fast	Yellow	Slow Yell	Fast Yell	Red	Red Slow	RedFast
6	Red/ Gn Flash	Green 'Blink'				Yellow 'Blink'	Red 'Blink'				Blank

Each of the operating Modes (1 to 6) may be selected by the user at installation time. The default applications for each mode are in the below table. The user may of course select the best mode for their application regardless of recommended use.

1	Battery Voltage Monitor	'Standard' voltage indicator mode. Low distraction, minimum of colour changes in normal operation, suitable for vehicle use, such as motorcycles, cars, boats, campers, etc.
2	Vehicle Charge Indicator	Illuminates Green when under charging conditions, i.e. vehicle alternator is working. Yellow and red will show if battery is discharging. IDEAL for on the move battery charge monitoring.
3	Vehicle Monitor (low current sby) Plus 'Pseudo Alarm Fitted LED'	Great for motorcycles, and vehicles stored long term. When riding/driving and charging, light will show green. 30 secs after charging stops (vehicle parked) unit will enter low current (500uA) mode to show battery status whilst vehicle in storage. LED will blink green, yellow or red to show stored state battery condition. *Added benefit that LED blinking looks like a vehicle alarm.* Negligible current (0.5mA) drawn from battery.
4	Charge Indicator (Stealth Mode)	Similar to mode (2) but not illuminated under normal charging conditions. IE, LED is blank in normal operation. Yellow and red illuminations will signal charging faults or discharging battery.
5	High Res 10 step voltage monitor	High resolution (Extra display modes) where maximum resolution is important, and colour changes / flashing in operation are not distracting. (IE not on a vehicle dashboard).

6	Minimal Monitor (Low current)	Simple low current (less than 0.5mA) three colour battery status monitoring. Gentle 'blink' every 2 seconds indicates current state. LED will be blank when battery below 10.5v

The unit is delivered programmed to Map 1, and 12v DC. By use of the programming button, the unit can be set to other voltages and Maps. To select a different Map :

- Apply power to the unit, and wait 2-3 seconds for the unit to start up.
- Press AND HOLD the button. The LED will go out. After approx 4 seconds, the LED will rapidly flash GREEN.
- Release the button. This will cause the unit to move to the next Voltage map, which from the delivered state, will cause the unit to go from Map 1 to Map 2. (Sequence will increment each programming cycle, Map 6 will wrap around to Map 1).
- The unit will confirm its current map setting by flashing back a colour shown in the table below.
- Repeat the process above to cycle through the Maps one at a time until you reach the map of your choice.

The voltage range (24, 12, 6v) can be selected in a similar way to the voltage Maps,

- Apply power to the unit, and wait 2-3 seconds for the unit to start up.
- Press AND HOLD the button. The LED will go out. After flashing green, in approx 8 seconds, the LED will rapidly flash RED.
- Release the button. This will cause the unit to set to the next Voltage range, which from the delivered state, will cause the unit to go from 12v to 24v range. (Subsequent settings will wrap back around to 6v, then 12v, then 24v, etc).
- The unit will confirm its voltage setting by flashing back a colour shown in the table below.
- Repeat the process to cycle through the voltages until you reach the one of your choice.

Confirmation: Once programmed, the unit will flash back a confirmation sequence to indicate current settings. It will also do so for the next th ree times power is applied. This allows you to confirm correct setup. At power on, the unit will go blank for 2 seconds, flash a colour sequence to indicate Volts setting, go blank for 2 seconds, then flash a colour sequence to indicate Map setting.

Map	Volts	RED	GREEN	YELLOW	RED/GREEN	YELLOW/GREEN	YELLOWRED
1	6v	▒					
2	12v		▒				
3	24v			▒			
4					▒		
5						▒	
6							▒

Example: An LED flashing green (Volts) , pausing for 2 seconds, then flashing red/green (Map), confirms 12v, Map 4 selected.

NOTE : Batteries exhibit different off-load voltages when discharged (or 'flat') than when under load. A flat battery off-load may read close to 24v, 12v or 6v, but will immediately collapse to a few volts if current is drawn. As with any other voltmeter, it may give an erroneous high reading if the battery is not connected to a load due to the battery's internal resistance off-load effects. The unit has inbuilt interference suppression, but in very noisy electrical environments it may require additional in-line suppression which can be purchased from car radio installation stores.

Safety, end of life, and warranty statement

This unit is an installable component and not a complete system in its own right and therefore requires installation. The installation, use and suitability in a given application is the responsibility of the installer. Any damages or consequences are limited to the replacement of the unit under the 12 month guarantee. Do not allow the unit to become damaged, wet, dismantled, or make modifications to the enclosure or internal parts. Do not use the unit outside of its operating voltage specification. At end of life, product should be taken to suitable recycling facilities