OPERATION GUIDE

VM2R

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This is the page to keep in your field box. The configuration flow chart for glitch/failsafe and voltage range selection is on the reverse side. During normal operation the 8 LEDs indicate the current average battery voltage or voltage regulator output. LED 5-8 blink to record abnormal peak low voltages (PLV) or over voltage (OV). LED 1 blinks to count radio glitches.

RED (blinking or solid) = Warning — voltage low.
YELLOW (blinking or solid) = Caution — voltage lower than normal.
GREEN LED5 blinking = PLV values approaching the yellow level, or Over Voltage with voltage regulators (ranges 5-8).
GREEN LED1 blinking = Glitch or Failsafe count
GREEN solid = Normal (voltage displayed).

Upon power up, VoltMagic displays an LED test pattern that ends with a display of the current configuration. (see **Table 1**, on reverse side). Then, if peak low voltage (PLV), over voltage (OV) or glitches were logged from the previous flight, they will display for 10 seconds, after which VoltMagic displays the current average voltage and the PLV or OV. **Glitch (or failsafe) counting is enabled after one minute.**

✓ Note that if you cycle power within a minute of turning on, you can view the previous flight data again. After one minute of operation, the previous data is erased and current data is recorded.

Batteries need some time and load for the voltage to stabilize. Exercise the servos rapidly and check VoltMagic (before starting the engine).

TABLE 2: Peak Low Voltage (PLV) and Over Voltage (OV) -- The specified LED blinks once or twice followed by a pause when voltage falls below the PLV setting, only the lowest voltage is displayed. If the average voltage is also being displayed with the same LED, it will blink off instead of on. OV is for regulators, and applies only to ranges 5-8.

LED	Blinks	Range 1-4 4-cell Ni	Range 5 5.1-5.4 reg	Range 6 5.3-5.6 reg	Range 7 5.5-5.8 reg	Range 8 5.7-6.0 reg	Range 5-8 5-cell Ni	Range 9-12 7.4v Li
Green LED 5	1	4.4					5.4	6.4
Green LED 5	**2**	4.3	5.8 **OV**	6.0 **OV**	6.2 **OV**	6.4 **OV**	5.3	6.3
Yellow LED 6	1	4.2	4.2	4.2	4.2	4.4	5.2	6.2
Yellow LED 6	**2**	4.1	4.1	4.1	4.1	4.3	5.1	6.1
Red LED 7	1	4.0	4.0	4.0	4.0	4.2	5.0	6.0
Red LED 7	**2**	3.9	3.9	3.9	3.9	4.1	4.9	5.9
Red LED 8	**2**	**3.8**	**3.8**	**3.8**	**3.8**	**4.0**	**4.8**	**5.8**

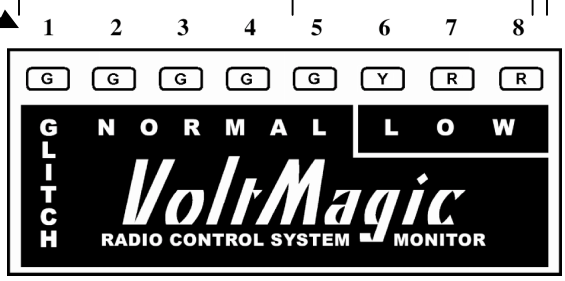
TABLE 3: Glitch (or Failsafe) Event Counter – Glitch (or failsafe) counting is enabled after one minute, unless connected without servo pulses. After a bad or missing pulse, those within 2/3 second are counted as the same glitch. If LED 1 is displaying average voltage, it will blink off instead of on.

Number of LED 1 Blinks	Glitch or Failsafe Count
1	1
2	2 to 3
3	4 to 7
4	8 to 15
5	16 to 31
6	32 or more

Average Voltage is indicated by which one of the 8 LEDs is on. The LEDs are in 0.1 volt increments per the range configured (see **Table 1**, on reverse side).

Sudden changes in voltage from servo movement are filtered out for a steady reading. **Note:** If connected after a voltage regulator, the voltage output of the regulator will be indicated instead of the battery voltage.

PLV is shown by **blinking** LEDs 5 - 8 (see **Table 2**).
If the average voltage is indicated by the same LED, it will blink off.



Examples with default configuration 3 (5.5 to 4.8 volts)

LED 3 on	Voltage = 5.3
LED 3 on LED 5 blinks once	Voltage = 5.3 PLV = 4.4
LED 5 on LED 5 blinks (off) twice	Voltage = 5.1 PLV = 4.3
LED 8 on LED 6 blinks twice LED 1 blinks twice	Voltage = 4.8 PLV = 4.1 2 to 3 glitches counted

CONFIGURATION GUIDE

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To **CONFIGURE,** first decide…

…GLITCH

Connect VoltMagic to receiver.

Set transmitter ATVs (end points) to > 85% for channel connected to VoltMagic

…or FAILSAFE (PCM Receivers only)

Connect VoltMagic to unused channel on receiver.

1. Set transmitter ATVs (end points) to maximum (typically 140% for Futaba, 150% for JR) for channel connected to VoltMagic.
2. Set the channel's failsafe position to **full high or low**.
3. Re-set the channel's ATV's to 85%.

SET GLITCH or FAILSAFE MODE:

1. Turn on receiver while continuously toggling the channel connected to VoltMagic back and forth **quickly** during the first 3 seconds after power up, until green LED 1 starts blinking (LED 1 will blink continuously during configuration).
2. If red LED 8 already indicates the desired mode (it will be off for glitch or on for failsafe as you cycle through the voltage range choices), skip to **SET VOLTAGE RANGE, step 2**.
3. Otherwise, toggle the channel slowly to step through the choices. Find the last two choices in the cycle (see Table 1), which display red LED 8 either off for glitch or on for failsafe (plus the last saved voltage range choice). If you go past, just keep toggling until the last two choices come around again. At that point…
4. Stop when red LED 8 is OFF for glitch detection, or ON for failsafe detection. (Note: This doesn't change the voltage range)

Turn power off within 20 seconds to save glitch/failsafe selection.

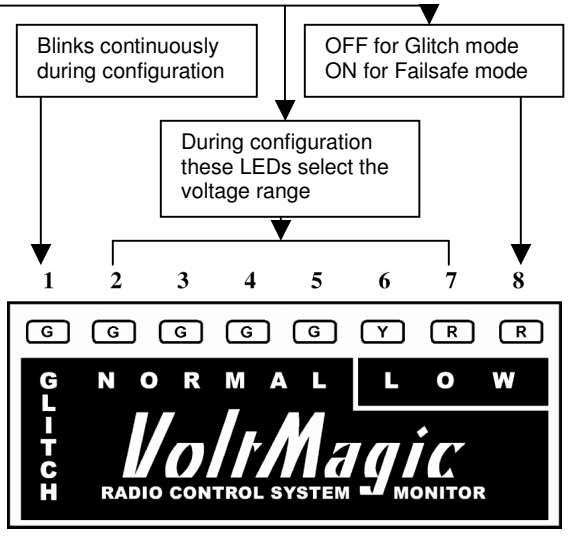
SET VOLTAGE RANGE:

1. Turn on receiver while continuously toggling the channel connected to VoltMagic back and forth **quickly** during the first 3 seconds after power up, until green LED 1 starts blinking (LED 1 will blink continuously during configuration).
2. Toggle the channel slowly to step through the choices (see **Table 1, column 2** below), then stop when the desired LED configuration is reached (if you go past, just keep toggling until your choice comes around again).
3. Turn power off within 20 seconds to save voltage range selection. You're done!

TABLE 1: Configuration of Voltage Ranges + Glitch or Failsafe Mode -- In order of appearance during configuration.

✓ Note: The default (range 3) is usually a conservative four-cell choice. Ranges 1-4 are for four cell Ni packs. Ranges 5 – 8 are for Voltage Regulators. Ranges 9-12 are for five cell Ni packs. Ranges 13-16 are for monitoring 7.4v Li packs.

	Voltage Ranges * Glitch or Failsafe are the last two choices		**Configuration LED Display**
1	**5.3 – 4.6**	PLV 4.4 – 3.8	Green LED 5 (4 cell Ni)
2	**5.4 – 4.7**	PLV 4.4 – 3.8	Greed LED 4 (4 cell Ni)
3	**5.5 – 4.8**	PLV 4.4 – 3.8	Green LED 3 (Default 4 cell Ni)
4	**5.6 – 4.9**	PLV 4.4 – 3.8	Green LED 2 (4 cell Ni)
5	**5.5 – 4.8**	OV 5.8 PLV 4.2 – 3.8	Green LED 4 + Green LED 5 (V Reg)
6	**5.7 – 5.0**	OV 6.0 PLV 4.2 – 3.8	Green LED 3 + Green LED 4 (V Reg)
7	**5.9 – 5.2**	OV 6.2 PLV 4.2 – 3.8	Green LED 2 + Green LED 3 (V Reg)
8	**6.1 – 5.4**	OV 6.4 PLV 4.4 – 4.0	Green LED 2 + Green LED 5 (V Reg)
9	**6.5 – 5.8**	PLV 5.4 – 4.8	Green LED 5 + Yellow LED 6 (5 cell Ni)
10	**6.6 – 5.9**	PLV 5.4 – 4.8	Green LED 4 + Yellow LED 6 (5 cell Ni)
11	**6.7 – 6.0**	PLV 5.4 – 4.8	Green LED 3 + Yellow LED 6 (5 cell Ni)
12	**6.8 – 6.1**	PLV 5.4 – 4.8	Green LED 2 + Yellow LED 6 (5 cell Ni)
13	**7.7 – 7.0**	PLV 6.4 – 5.8	Green LED 5 + Red LED 7 (7.4v Li)
14	**7.8 – 7.1**	PLV 6.4 – 5.8	Green LED 4 + Red LED 7 (7.4v Li)
15	**7.9 – 7.2**	PLV 6.4 – 5.8	Green LED 3 + Red LED 7 (7.4v Li)
16	**8.0 – 7.3**	PLV 6.4 – 5.8	Green LED 2 + Red LED 7 (7.4v Li)
	Glitch (Default)		Saved voltage range + **Red LED 8 OFF**
	Failsafe		Saved voltage range + **Red LED 8 ON**



* PLV = Peak Low Voltage OV = Over Voltage