



SHACKNEWS

HIGHVELD AMATEUR RADIO CLUB

OCTOBER 2009

COMMUNICATION IS THE NAME OF THE GAME

Meeting Thanks to Chris ZS6COG, Leon ZS6LMG and Kobus ZS6JPY who gave us a talk and demonstration on APRS. Also all about SCIBONA where us amateurs can assist in manning and demonstrated a very sophisticated amateur radio station. There you are guys, time to put back into the hobby what you have taken out. Even if one seed every so often germinates it is worth while.

SSC Meeting Thanks to Doug and Merle for the use of their home and to those who assisted with additional catering. **No meeting in November.**

---oooOOOooo---

Noah's Ark

Everything I need to know, I learned from Noah's Ark...

ONE: Don't miss the boat.

TWO: Remember that we are all in the same boat.

THREE: Plan ahead. It wasn't raining when Noah built the Ark.

FOUR: Stay fit. When you're 60 years old, someone may ask you to do something really big.

FIVE: Don't listen to critics; just get on with the job that needs to be done.

SIX: Build your future on high ground.

SEVEN: For safety's sake, travel in pairs.

EIGHT: Speed isn't always an advantage. The snails were on board with the cheetahs.

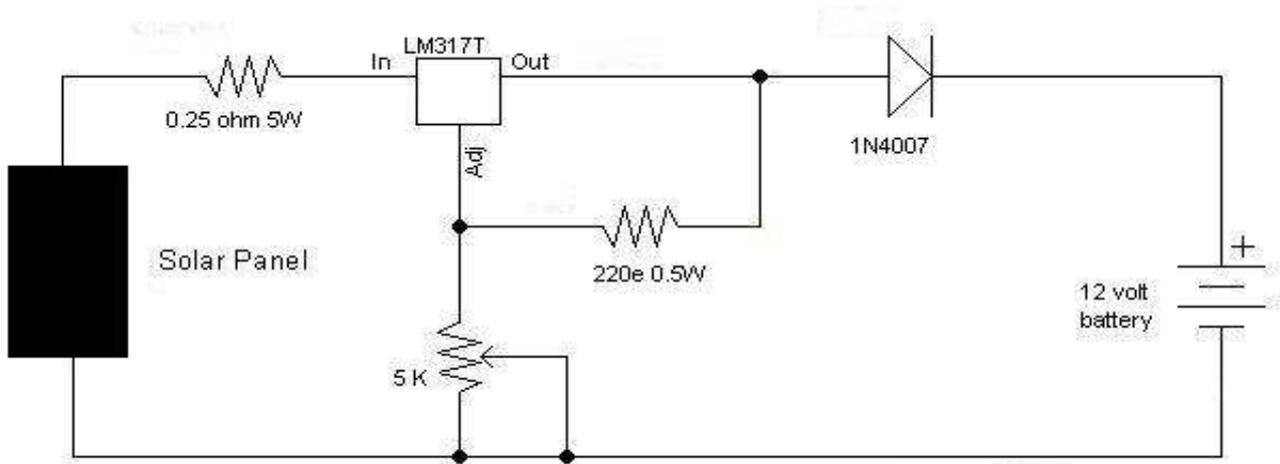
NINE: When you're stressed, float awhile.

TEN: Remember, the Ark was built by amateurs; the Titanic by professionals.

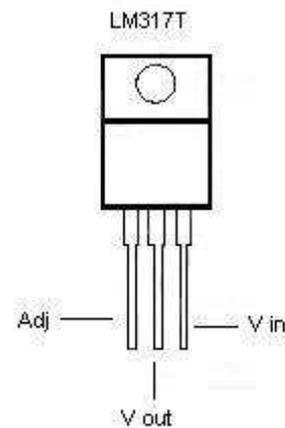
Could be useful in good ole SA



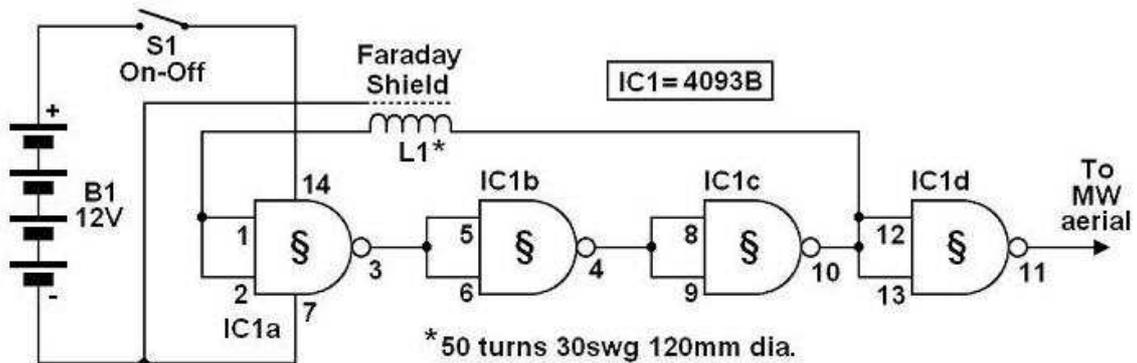
Solar Panel regulator as given by Sid ZS6GQ



Mount the regulator on a heatsink.
 Layout not critical.
 Install panel and wire up to the regulator. Adjust for correct voltage at battery connectors **before** connecting the battery



A simple metal detector



The circuit shown must represent the limits of simplicity for a metal detector. It uses a single 4093 quad Schmitt NAND IC and a search coil -- and of course a switch and batteries. A lead from IC1d pin 11 needs to be attached to a MW radio aerial, or should be wrapped around the radio. If the radio has a BFO switch, switch this ON.

Since an inductor resists rapid changes in voltage (called reactance), any change in the logic level at IC1c pin 10 is delayed during transfer back to input pins 1 and 2. This is further delayed through propagation delays within the 4093 IC. This sets up a rapid oscillation (about 2 MHz), which is picked up by a MW radio. Any change to the inductance of L1 (through the presence of metal) brings about a change to the oscillator frequency. Although 2 MHz is out of range of the Medium Waves, a MW radio will clearly pick up harmonics of this frequency.

The winding of the coil is by no means critical, and a great deal of latitude is permissible. The prototype used 50 turns of 22 awg/30 swg (0.315 mm) enamelled copper wire,

wound on a 4.7"/120 mm former. This was then wrapped in insulation tape. The coil then requires a Faraday shield, which is connected to 0V. A Faraday shield is a wrapping of tin foil around the coil, leaving a small gap so that the foil does not complete the entire circumference of the coil. The Faraday shield is again wrapped in insulation tape. A connection may be made to the Faraday shield by wrapping a bare piece of stiff wire around it before adding the tape. Ideally, the search coil will be wired to the circuit by means of twin-core or figure-8 microphone cable, with the screen being wired to the Faraday shield.

The metal detector is set up by tuning the MW radio to pick up a whistle (a harmonic of 2 MHz). Note that not every such harmonic works best, and the most suitable one needs to be found. The presence of metal will then clearly change the tone of the whistle. The metal detector has excellent stability, and it should detect a large coin at 80 to 90 mm, which for a BFO detector is relatively good. It will also discriminate between ferrous and non-ferrous metals through a rise or fall in tone.

UTP as balanced antenna feeder line.

The following comes from an article by PA3FWM in Electron, September 2009. Frank ZS6TMV summarized and translated it.

While open line ("chicken ladder") is arguably the best way to feed a balanced dipole antenna (lowest loss, lowest TVI, needs no balun at antenna feed point) it can be quite awkward to mount, and often this means that we revert to coax which, although it does not have a chicken ladder's outstanding RF properties, can at least be run out of a window or through a small hole in the wall. However, there is an alternative.

The UTP (unshielded twisted pair) cable used in computer networks can also be used as an antenna feeder. Modern data transmission rates use high frequency signaling, and modern (CAT5) UTP cable can easily handle RF signals up to 30MHz and even higher.

Inside a UTP cable we find four twisted pairs of two wires each. Every twisted pair has an impedance of 100 ohms. We use one of the four pairs to feed the antenna and ignore the other three.

UTP cable is light, which means less weight on the antenna feed point (and less sagging of the antenna if the feedpoint is not suspended from a mast or tower). It is easy to run through a hole block. It is cheap, and its 100 ohms impedance is fairly close to the 75 ohms feedpoint impedance of a theoretically ideal open dipole.

The main drawback of UTP is that it does not have the same low loss as a "proper" chicken ladder. However it is no worse than the RG58 which is often used instead anyway, and which is then generally mismatched to the dipole's feedpoint in addition to that.

So for your next antenna installation, why not consider UTP over RG58?

Calculating an LED resistor value

An LED must have a resistor connected in series to limit the current through the LED, otherwise it will burn out almost instantly.

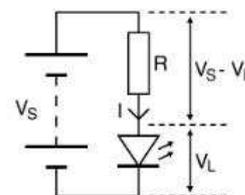
The resistor value, R is given by:

$$R = (V_S - V_L) / I$$

V_S = supply voltage

V_L = LED voltage (usually 2V, but 4V for blue and white LEDs)

I = LED current (e.g. 20mA), this must be less than the maximum permitted



If the calculated value is not available choose the nearest standard resistor value which is **greater**, so that the current will be a little less than you chose. In fact you may wish to choose a greater resistor value to reduce the current (to increase battery life for example) but this will make the LED less bright.

For example

If the supply voltage $V_S = 9V$, and you have a red LED ($V_L = 2V$), requiring a current $I = 20mA = 0.020A$, $R = (9V - 2V) / 0.020A = 350\Omega$, so choose 390Ω (the nearest standard value which is greater).

Working out the LED resistor formula using Ohm's law

Ohm's law says that the resistance of the resistor, $R = V/I$, where:

V = voltage across the resistor (= $V_S - V_L$ in this case)

I = the current through the resistor

So $R = (V_S - V_L) / I$

A lady named Sally visited the zoo. She saw a pink gorilla. Next to the cage was a sign that said, **Do Not Touch! DANGEROUS!** She wanted to see what the gorilla felt like, so she looked both ways and made sure the coast was clear.

Then she reached in and touched the gorilla. She heard someone coming, and quickly withdrew her hand and kept walking. That night after she had eaten dinner, she was resting in her purple recliner watching the news. A warning flashed across the TV. *"Warning, Pink Gorilla escapes from zoo. If found, please call the zoo."*

Immediately Sally knew the gorilla was after her. Then she heard a Bang! Bang! Bang! on her front door. She got up, looked through the peep hole and saw the pink gorilla. She ran through the house, out the back door and into the garage. She jumped into her red Mercedes and drove as fast as she could. The pink gorilla saw her leave and jumped into his green Ford truck and chased after her.

Sally looked through her rearview mirror and saw the gorilla quickly gaining speed. Soon he pulled up next to her. Sally jerked on the emergency break, jumped out of the car and started running. As she was running she saw that she was approaching the edge of a cliff. She stopped not sure what to do. She spun around and saw the pink gorilla lumbering after her getting closer and CLOSER.

The gorilla approached her, Sally threw up her arms to protect herself the gorilla reached out HIS hairy pink hand and touched Sally's head. Shaking a bit, Sally began to relax and slowly lowered her hands looking puzzled at the gorilla. The gorilla gave a little evil smirk and said, *"Tag, you're it!!!"* and he dashed off.

CLUB INFORMATION

Postal address PO Box 19937 Sunward Park 1470

Monthly meeting venue

Website <http://www.qsl.net/zs6hvb/>

e-mail zs6hvb@gmail.com

Repeater 145.1875 MHz input - 145.7875 MHz output

Linked to 70 cm - 438.850 Mhz (Sunday bulletins)

Witwatersrand Rifles HQ
Cnr Barlow and Cavaleros Str
Industries West
Germiston

Bulletins Sunday morning - 145.7875 MHz & 7062 KHz @ 08h45. *First Saturday of the month at 14:30*
Relay - 80M - 3662KHz

Committee

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