

Subject: 12V Cow Fence for /P

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 To : TECH@WW

By G8MNY (New Dec 03)

This is an active cow fence, ideal for those /P contests. It is quite safe for cows, but may not be suitable for smaller animals, or shy ones unless they are used to electric fences!

Although a car ignition coil can put out 30KV (3cm spark) when there is no load, a 100M or so of electric fence wire 1m high has quite high capacitance to ground & in practice fence voltages around 1KV (1-3mm spark) is more normal.

FEATURES

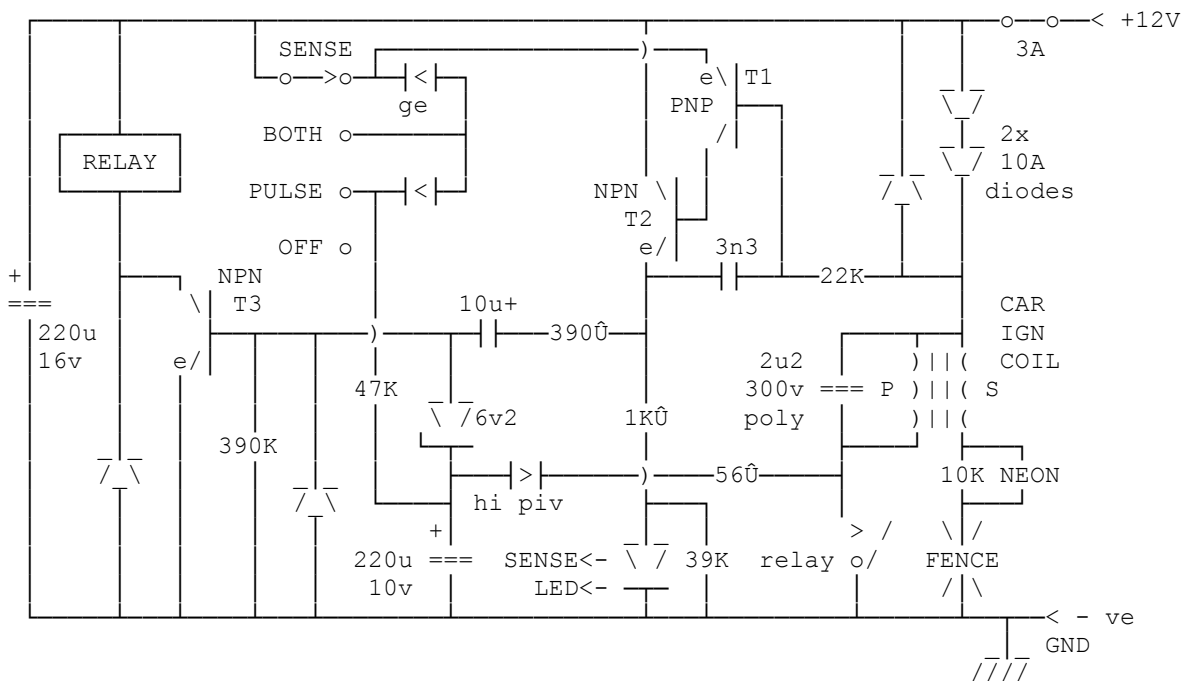
It has 3 modes:-

PULSE mode gives a steady pulse every 2-5 seconds. Ideal when you are first in the field & the cows are very interested in what is going on. However both mode may be more appropriate if there is too much interest.

SENSE mode, sends no regular pulse, but monitors the insulation resistance of the fence & fires pulses when the insulation changes. On a permanent low fence resistance it gives up & the sense LED stays on. This mode saves power & QRM.

BOTH mode, gives the advantage of pulse mode in case of insulation fault, as well as much higher animal intrusion protection (eg fence being knocked down between pulses) without the power drain of a much faster pulse rate.

A Neon gives O/P pulse & connection indication. It glows dimly on pulses & brightly on heavy loads!



CIRCUIT

The 12v relay with a heavy duty make contact (several contacts paralleled!), this momentarily powers the ignition coil's primary. On relay release the coil resonates with the 2u2 cap. The cap must be connected directly across the coil

terminals. This provides the high AC energy to make the secondary voltage. Having a small neon bulb in series with the fence wire confirms the output power is there. The relay is driven by T3 (200mA device).

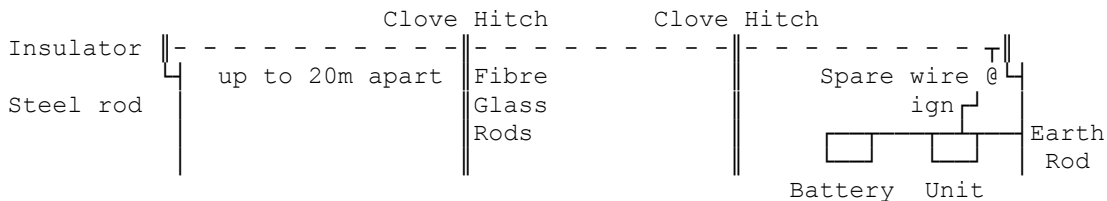
In PULSE mode, T3 turns on when the 220uF has charged up through the 47K, & is over the 6.2V zener voltage. The 220uF is quickly discharged through the high voltage diode & 56Ω to the high current contact, ensuring only a momentary on time for high current to flow through the coil, keeping power needs down. This forms the repeating pulse mode timer.

In SENSE mode, any DC load on the fence under 20MΩ will cause a voltage drop across the 2 power diodes & turn on T1. This turns on T2 with some filtering to stop mist riggers from RF etc. T2 on in turn will pulse T3 base on. T2 turning on also lights the SENSE LED. If there is permanent low resistance being sensed, then the 10uF will get charged up & T3 will no longer be turned on.

The mode selection has been done with a simple single pole 4 way switch, but this has meant a germanium diode must be used to maintain the sense circuit sensitivity when BOTH are selected.

INSTALLING

Keeping the cows away, set up the insulated fence wire (orange nylon with 2 stainless steel strands in it), I use 1.2m tall GRP rods pushed into the ground @ about 20m spacing or if tough ground I use a steel rod to make the hole or with 10cm of garden hose as a top insulator.



To attach the fence wire I use a clove hitch as it is easy to adjust & does not damage the wire. I suspend the end ball of wire & connect it to the ignition unit with tinned copper wire. Also using this wire to a good earth stake. Then connect the car battery.

WHAT A LAUGH

When the cows approach make sure the fence is in PULSE or BOTH mode. I normally spend the next 30 mins or so falling about laughing at all the cow as they must all have a lick & jump away in turn. Once this has happened the cows normally give you a wide birth, & the fence can be safely put into SENSE mode.

Why don't U send an interesting bul?

73 De John, G8MNY @ GB7CIP  
/EX