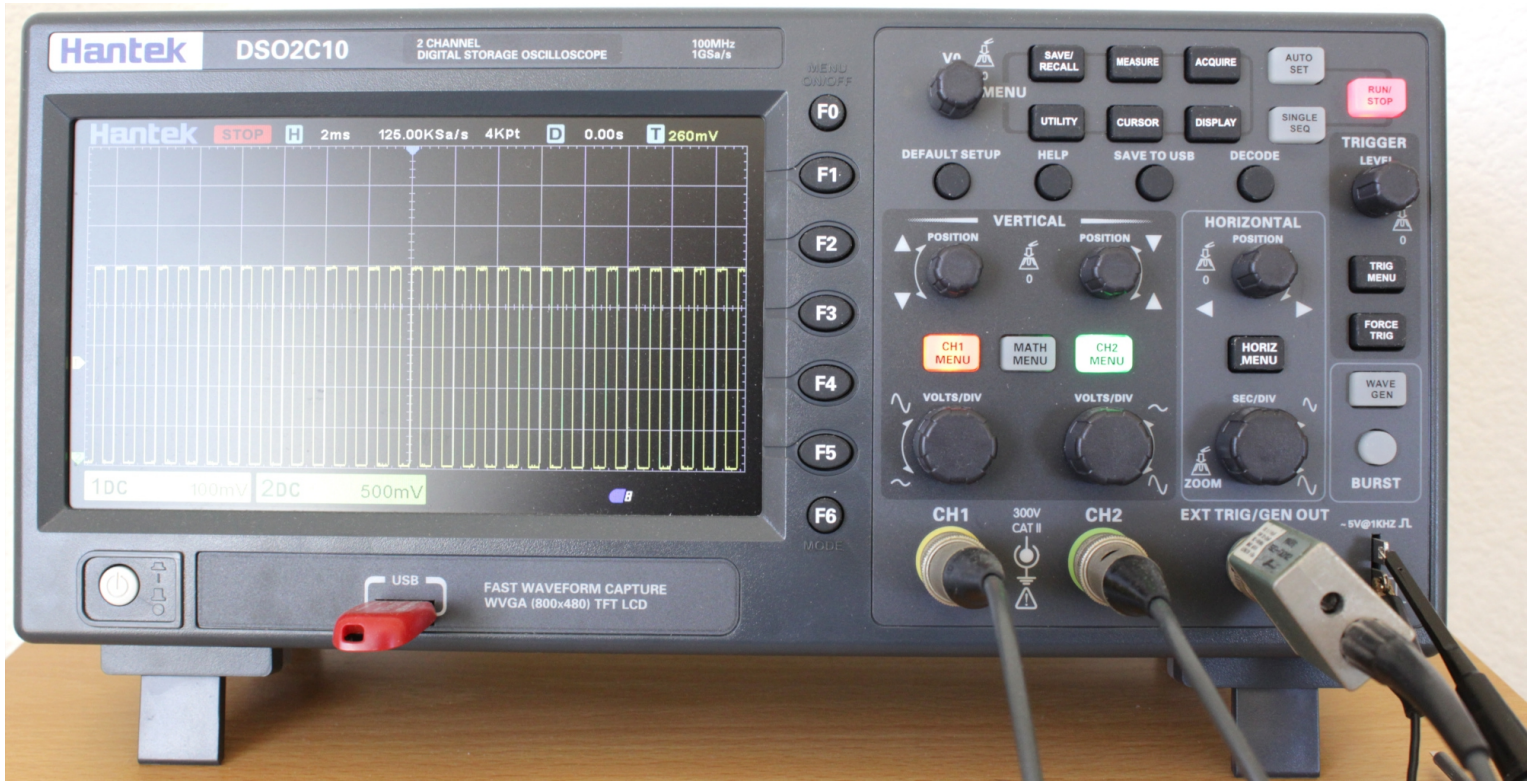
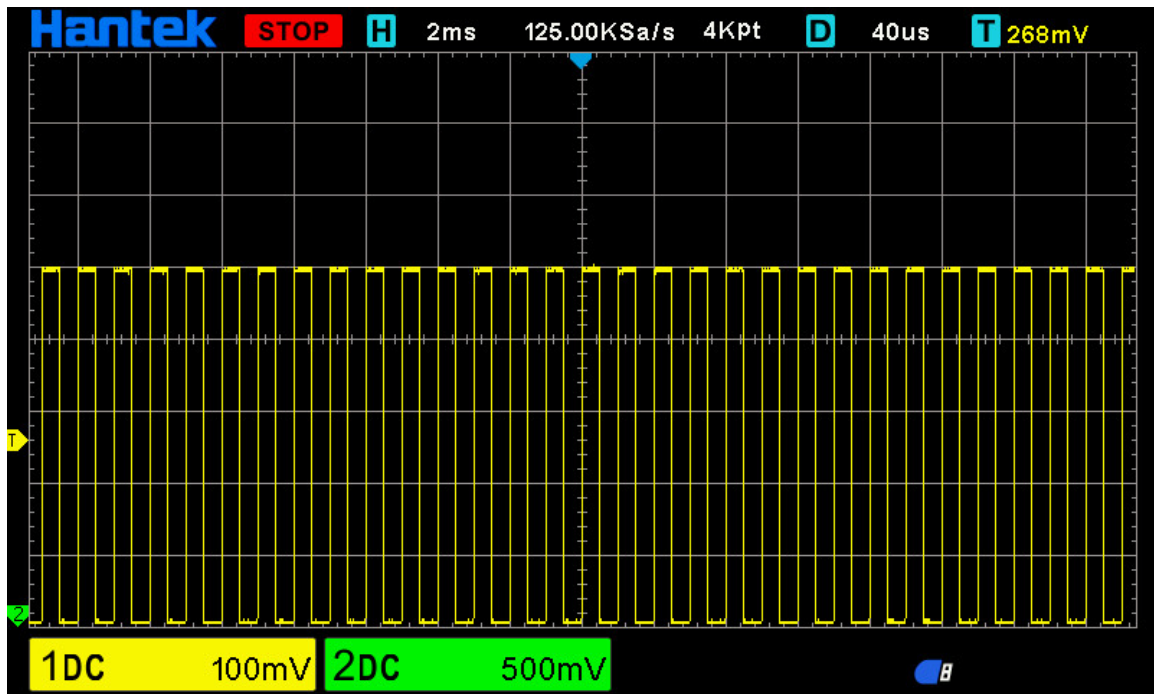


Big Project Racoon Repeller

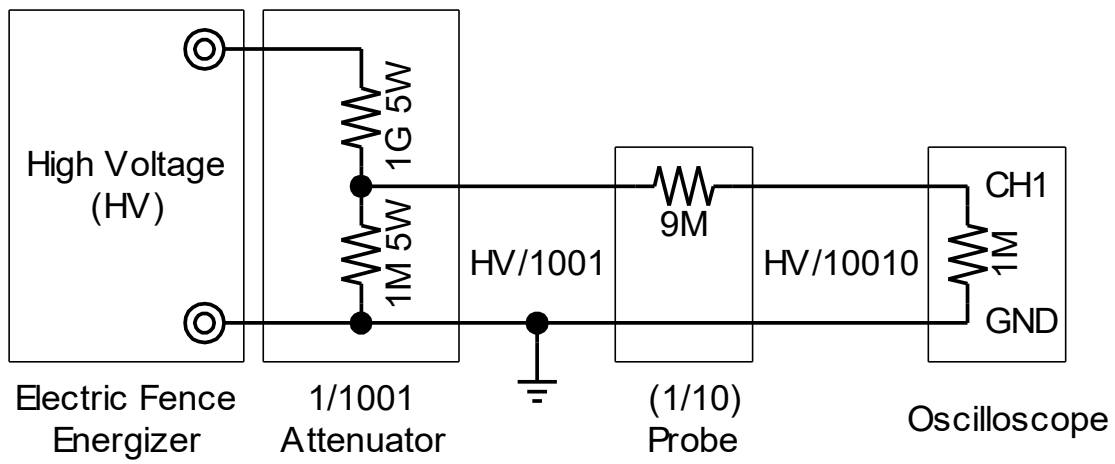
(A) Measuring High Voltage Output Waveform



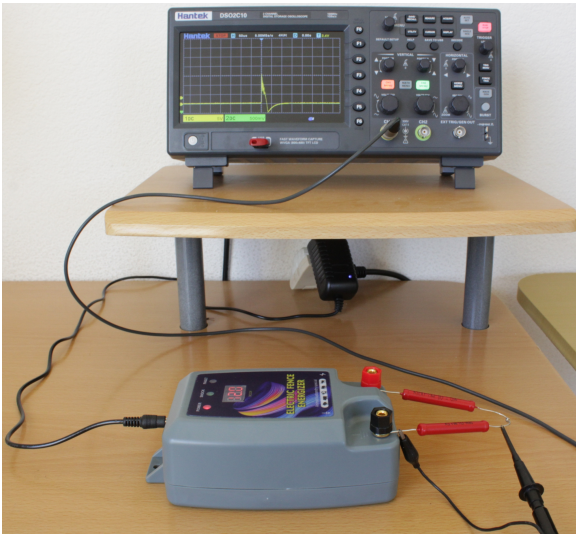
CH1 Voltage – Frequency calibration (5V - 1KHz Square wave)



Calibration screen (100mV x 5 meshes x 10 (1/10 attenuation done in probe), 5V - 1KHz Square wave input)



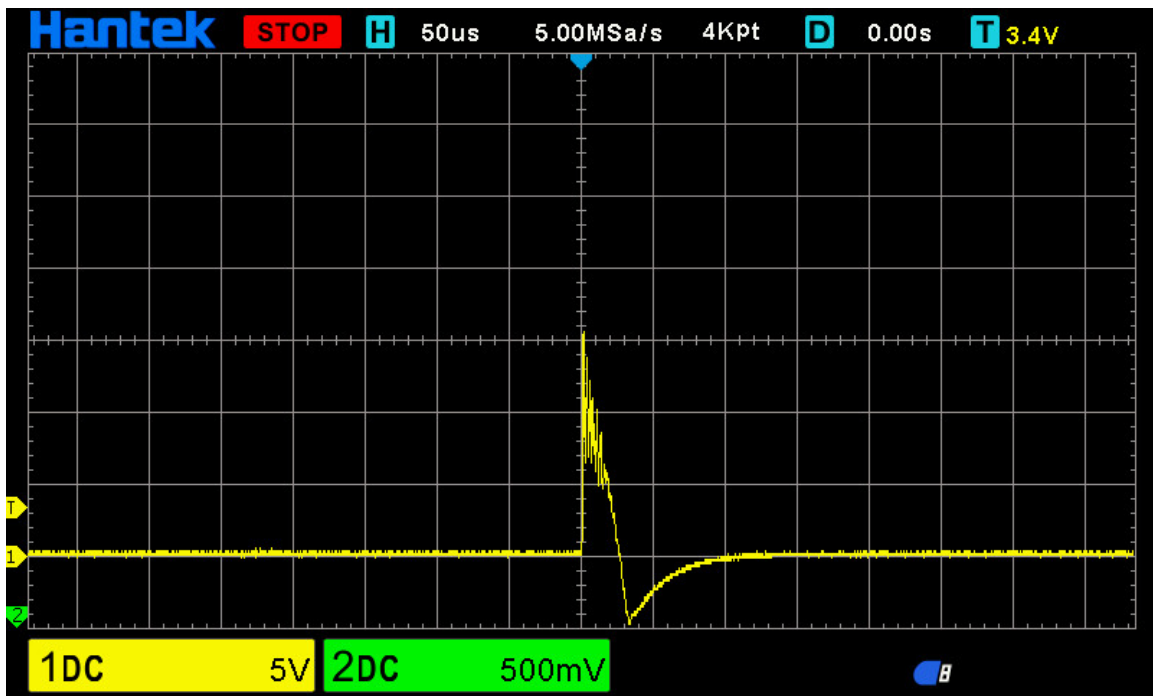
High voltage attenuation scheme



Measuring high voltage pulse



Working Electric Fence Energizer with external 1/1001 attenuator

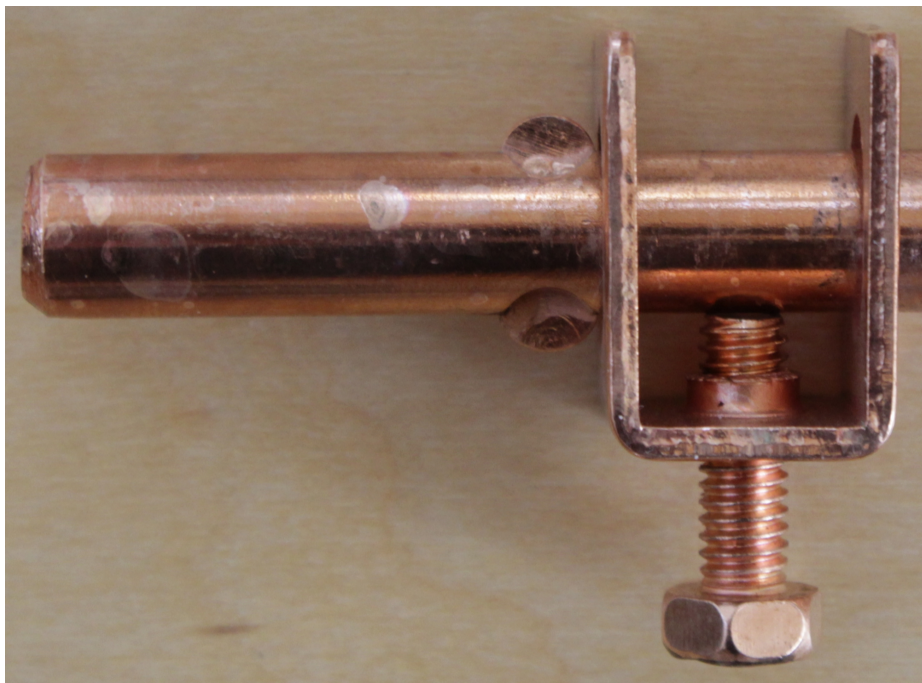


150kV peak, 75kV for 20 μ sec, -50kV peak discharge for 70 μ sec, (pulse frequency; around 1/2 Hz)

(B) Installing Earth Rod



Grounding Earth Rod (4' length, 3/8" diameter with wire clamp; Copper thin film coating on steel bar)



Wire clamp of grounding earth rod



Hole dug down for installing earth rod



Hand axe used for hammering earth rod down to deep ground (around 4') efficiently



Hammered

As I expected, the copper film coated on steel surface is so thin as seen above right photo "Hammered". To see the details, zoom up.



Charcoal scattered to hold water

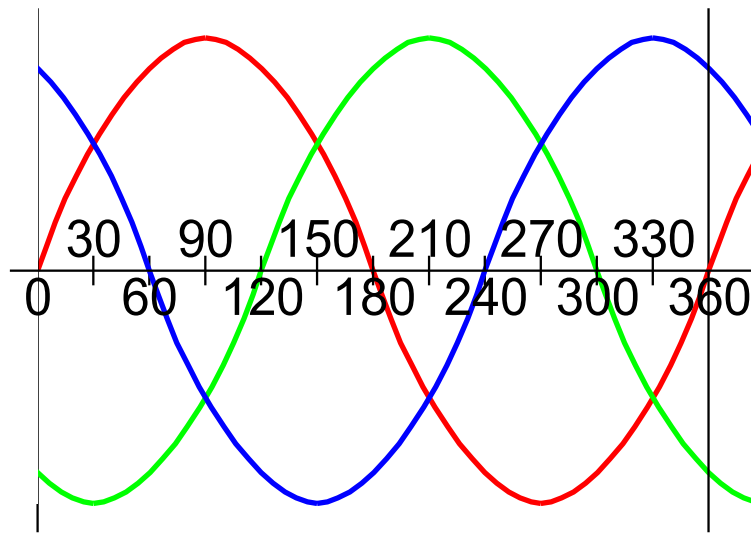


Done

(C) Functional Verification of Earth Rod



120V AC plug



Three phase AC (Alternate Current) waveform

AC wire connection to three prong AC plug is clearly defined as above unlike two prong AC plug used in Japan. In case of two prong AC plug, "Hot" and "Neutral" can be reversed by electricians with no fatal consequence. US conforming to NEC (National Electrical Code, not Nippon Electric Company) seems more strict than Japan.



Hot vs Neutral (AC 120V)



Hot vs Ground (AC 120V)



Hot vs Earth Rod (AC 120V; lower resistance)



Hot vs Quasi Earth Rod (< 120V; higher resistance)

Earth rod installed exhibited excellent earthing capability with low resistance.

The Earth contained natural rain water and ground water with rich sodium (Na), calcium (Ca), chlorine (Cl), and magnesium (Mg) ions can be conductor!

The earthing is a key method for amateur radio antennas as well as digital & analog signal connections to reduce noise significantly.



Neutral vs Ground (0V; equivalent potential voltage)



Neutral vs Earth (0V; equivalent voltage)

(D) Installation of electric fence energizer



Aluminum wire (17 Gauge)



Working electric fence energizer



Tentative connection (Ground to both earth rod & pond water)



Ground wire connected to earth rod



Partial view



Spark test (No spark observed)



Spark test (Sparked successfully between high voltage pulse wire and iron stay bar hammered into ground)