Pet Fence

Theory of Operation / Product Description

Description
Pet Fence is a perimeter fencing system designed to constrain animals (primarily dogs) within a pre-set property boundary. The system consists of two main components – a) a transmission loop of wire laid along the perimeter and b), a detector worn by the dog.

The transmission loop is fed from a wall mounted unit within the property. The transmission loop is a low voltage loop connected to the wall unit and powered via a wall mounted power supply rated 18VDC.

The detector is located in the collar worn by the dog. This is powered by a 3.6V re-chargeable battery.

Theory of Operation
Transmitter
The perimeter transmission loop acts as an induction loop radiating a very low-energy, short-range, electro-magnetic field at a frequency of 10kHz along its length. This field radiates uniformly about the conductor length and is detectable at approximately 3m. The unit circuitry is straightforward consisting of a 10kHz generator followed by an impedance-matching power amplifier delivering a low voltage waveform to the transmission loop. The wall unit also contains a battery charger which is used to re-charge the collar batteries from time to time. Both the wall mounted and collar units are microprocessor controlled.

Receiver
As the dog approaches the conductor the field is detected using a tuned receiver located in the collar unit. At lower field strengths an audible warning is sounded to alert the dog to the boundary proximity. Following an audible warning, and if the field strength increases, a small electric stimulus is delivered to the dog via two electrodes located in the collar. The applied electrical pulse is generated using the on-board microprocessor via a step-up transformer located in the collar unit.

This stimulus is unpleasant and the dog very quickly learns to avoid triggering it. Following minimal training the animal will stop short of the boundary every time.

Receiver Battery Charging
The receiver battery is re-charged by removing it from the collar unit and placing it in the integral charger which is part of the wall mount transmitter unit. Charge times are approximately 6 hours.

Wall Unit Power Supply
The wall unit is powered from a separate power source which is rated 110-240VAC input with an 18VDC output at 300mA.