

DESCRIPTION OF CIRCUIT FOR PETRONIX INDOOR ZONE CONTROL

The Petronix **Indoor Zone Control** is one unit of a number of units comprising an electronic pet containment system. Use of the Indoor Zone Control enables a user to establish an electronic zone that can serve as boundary or area beyond which a pet is not allowed.

The unit is powered by an unregulated +12VDC wall plug, ungrounded power supply. The +12VDC is regulated to +5VDC for the microprocessor and related logic. The +12VDC is also regulated to +3.3VDC for the 916.5Mhz transceiver functions. The +12VDC is utilized to supply power to the FET bridge.

The microprocessor is a 16C558 with an external 16Mhz crystal. The transceiver uses an internal 916.5Mhz SAW filter as an oscillator.

The Indoor Zone Control receives instructions and transmits status reports VIA OOK 916.5MHz. The Zone Control also generates a modulated 10KHz signal radiated by an internal antenna to produce a "zone" of coverage around the unit.

The zone controller only responds to RF data packets that contain its ID address. In normal operation, this may as frequently as once every 4.8 seconds and as long as once every 2.5 minutes

The RF data transmitted is in the form of a Manchester encoded data stream where each on/off period is 1 msec in duration. A standard data stream starts by sending four (4) Manchester encoded 1's followed by a code violation bit. The code violation is a logic 0 of 3 msec duration followed by a logic 1 of 3 msec duration. After the code violation sequence a Manchester encoded start bit (1) is sent followed by 24 Manchester encoded data bits. Finally two (2) checksum bits are sent. Total transmission time of the data stream is 66 msec. During the remaining 84 msec of the frame, the console listens for a response from the addressed unit.

The 10KHz command protocol consists of a Manchester encoded signal where each on/off period is 2 msec. The 10KHz is sent out in alternating periods of 150 msec (opposite periods of the RF frames). A standard data stream starts by sending four (4) Manchester encoded 1's followed by a code violation bit. The code violation is a logic 0 of 7 msec duration followed by a logic 1 of 7 msec duration. After the code violation sequence a Manchester encoded start bit (1) is sent followed by 24 Manchester encoded data bits. Finally two (2) checksum bits are sent. Total transmission time of the data stream is 66 msec.

The microprocessor outputs signals to the FET driver, LED, piezo sounder and to the 916.5 Mhz transceiver. Signals to the transceiver provide the control over it's various modes of operation, transmit and receive. Other microprocessor lines allow snubbing of the 10KHz signal energy in the antenna.

Output from the 916.5Mhz transceiver is fed into a matching circuit to filter out the harmonics and to match the impedance of a whip antenna mounted to the circuit board.

DESCRIPTION OF CIRCUIT FOR PETRONIX OUTDOOR ZONE CONTROL

The Petronix **Outdoor Zone Control** is one unit of a number of units comprising an electronic pet containment system. Use of the Outdoor Zone Control enables a user to establish one or more electronic zones that can serve as boundary beyond which a pet is not allowed.

The unit is powered by an unregulated +12VDC wall plug, ungrounded power supply. The +12VDC is regulated to +5VDC for the microprocessor and related logic. The +12VDC is also regulated to +3.3VDC for the 916.5Mhz transceiver functions. The +12VDC is utilized to supply power to the FET bridge.

The microprocessor is a 16C558 with an external 16Mhz crystal. The transceiver uses an internal 916.5Mhz SAW filter as an oscillator.

The Outdoor Zone Control receives instructions and transmits status reports VIA OOK 916.5MHz. The Zone Control also generates a modulated 10KHz signal radiated by a wire loop arranged to create a boundary in the desired location(s).

The zone controller only responds to RF data packets that contain its ID address. In normal operation, this may as frequently as once every 4.8 seconds and as long as once every 2.5 minutes

The RF data transmitted is in the form of a Manchester encoded data stream where each on/off period is 1 msec in duration. A standard data stream starts by sending four (4) Manchester encoded 1's followed by a code violation bit. The code violation is a logic 0 of 3 msec duration followed by a logic 1 of 3 msec duration. After the code violation sequence a Manchester encoded start bit (1) is sent followed by 24 Manchester encoded data bits. Finally two (2) checksum bits are sent. Total transmission time of the data stream is 66 msec. During the remaining 84 msec of the frame, the console listens for a response from the addressed unit.

The 10KHz command protocol consists of a Manchester encoded signal where each on/off period is 2 msec. The 10KHz is sent out in alternating periods of 150 msec (opposite periods of the RF frames). A standard data stream starts by sending four (4) Manchester encoded 1's followed by a code violation bit. The code violation is a logic 0 of 7 msec duration followed by a logic 1 of 7 msec duration. After the code violation sequence a Manchester encoded start bit (1) is sent followed by 24 Manchester encoded data bits. Finally two (2) checksum bits are sent. Total transmission time of the data stream is 66 msec.

The microprocessor outputs signals to the FET driver, LED, piezo sounder and to the 916.5 Mhz transceiver. Signals to the transceiver provide the control over it's various modes of operation, transmit and receive.

Output from the 916.5Mhz transceiver is fed into a matching circuit to filter out the harmonics and to match the impedance of a whip antenna mounted to the circuit board.