RainWise Inc.

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Description of the Circuit Functions

The following is a discussion of the operation of the Linx LC series transmitter which is operated by the RainWise circuit board.

The transmitter is driven on by the UART port pin in the microprocessor. The UART is operating at 4800 bits per second (BAUD) which means that when the transmitter is on, the duration is 2.083E-04 sec. The UART outputs for each word a start bit, 8 data bits (byte) and a stop bit. The period of the duty cycle consists of a 10 bit word + the complimented of the 10 bit word + 5.5millisec delay. During this period, the transmitter is on for two start bits and 8 data bits. The transmitter is off during the stop bits. Therefore, the total on time for the transmitter is; 2.083E-04 sec * 10 bits = 2.083E-03 sec. The period is; 2.083E-04sec * 20 bits + 5.5 *E-03 = 9.67E-03 sec. The duty cycle is; 2.083E-03/9.67E-03 = 21.5%.

The transmitter outputs 38 bytes in the normal mode which is 9.67E-03*73 for 0.367 seconds total transmission time. This output occurs every 30 seconds as long as the battery voltage is above a certain voltage. When the battery voltage is below a predetermined value, the transmission time will increase to a maximum of one second and the time between transmissions will increase proportionally.

The timing for the duty cycle is derived from a 3.64MHz crystal which, in the worst case, has an accuracy of 100 parts per million.