PenDTU Circuit Description: 18.5.2001 Otto Seknicka

PenDTU is the datatransmission station for the ProxiPen.
It uses the 125kHz frequency for datatransmission in half duplex by Modulation of the amplitude (100%)

It consists of following circuit blocks:

1. Power Supply:
   Is done by a linear 5V regulator.

2. Microcontroller:
   PenDTU uses a ATMEL AVR single chip flash microcontroller which runs with a 3.68 MHz ceramic resonator and is powered with 5V.
   It decodes the Data received from the AM- Demodulator and sends it to the PC with the help of the RS232 Converter.
   It uses the Amplifier to send a Datastream received from the PC to the ProxiPen.
   The genaration of the AM-modulated signal is done by the microcontroller by the firmware.
   The communication between ProxiPen and DTU uses the fixed baudrate of 19200Bd, the Communication between PC and PenDTU works with Baudrates between 2400Bd up to 57600 Bd

3. AM-Demodulator:
   Compares the amplitude of the voltage on the aerial with a fixed level to decode the AM-modulated 125kHz Signal transmitted from the ProxiPen..

4. Amplifier:
   The Amplifier buffers the AM-modulated Signal generated from the microcontroller and feeds it over a capacitor to the resonant circuit of the aerial.
   The level of the Startbit causes a 125kHz amplitude, while a stopbit turns the 125kHz of.
   For this there is no 125kHz field generated if no data is transmitted.

5. TTL/ RS232 Converter:
   PenDTU uses a single chip RS232 Converter wich generates +-10V with an integrated charge pump.