

FCC ID IP9TX400

TX 400 OPERATIONAL CIRCUIT DESCRIPTION

This basic key-fob transmitter comprises a small PCB on which there is a Holtec HT-12E encoder IC, a red LED, a Radiometrix TXM-418 UHF saw oscillator transmitter module operating at 418 MHz, and a few other discrete components. Power is provided by a 12B 33mA battery fitted into clips attached to the PCB.

On pressing SW1 or SW2, power is provided for the encoder and the TXM-418 module via reverse polarity protection diodes D1 and D2. Clock rate for the encoder is determined by R3 and the encoder data output frequency modulates the transmitter via the Data IN pin of the TXM module. The RF output of the TXM module drives the 1/4 wave whip antenna. A low battery warning is indicated by Data Bit 3 going high when the battery voltage falls below the sum of the LED forward voltage (D5), the zener diode voltage (D6) and Q1 emitter base forward voltage (approx. 7.5V) and thus fails to turn on Q1. At this point the LED transmit indicator will only be faintly illuminated but the transmitter will continue to function.

Both the address and the data pins of the encoder are pulled up to the supply by weak internal pull-up resistors. The transmitter is coded by closing the DIP switches (SW3) to match the appropriate MINDA 'Family Code' (01-99 Hex, 255 possible). The unit identity is set during manufacture by fitting or omitting R1 or LK1 (see schematic). For reliable operation the address should not be set to either all 'low' or all 'high' as 'phantom'; messages may cause false decoder operation.