Operational Description
TouchTronics M190 LF Transmitter

The M190 LF Transmitter is part of a passive keyless entry (PKE) system designed for use on vehicles. The user wears a transponder that allows hands-free activation of the door unlocking mechanism by walking in front of an M190 LF Transmitter and its associated LF antenna mounted on the vehicle. The LF signal from the M190 wakes up the wearable transponder causing it to transmit a UHF RF signal back to an RF receiver on the vehicle.

The nominal operating frequency of the transmitter is 125 kHz. The frequency determining element is a ceramic resonator Y1 which operates at 8 MHz. The resonator frequency is divided down to produce the output frequency.

When commanded via the LIN bus interface, the transmitter sends a wake-up signal to the antenna coil to create a magnetic field that activates a nearby transponder. After the low-frequency wake-up transmission, the transponder transmits its unique encrypted information to an RF receiver. The receiver then operates door lock actuators and lights, as required by the application.

MCU IC U2 operates on an internal clock frequency of 8 MHz. Whenever a valid transponder is present, the MCU may activate a local door lock actuator output via smart switch U4. LED outputs may be used to indicate operational status to the user. The MCU also senses door switch and node identification inputs.

The unit is powered by the vehicle's 12 VDC electrical system and regulated down to +5 V via regulator IC U5.

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2009-03-17

M190 Block Diagram