

Description of block diagram of the DesignTech TX4 Transmitter.

The TX4 consists of a microcontroller which keys an oscillator transistor in a radiating tank circuit.

When one of the buttons is pressed, a 24 bit ID code is looked up in the microcontroller's internal memory, packaged together with information identifying which key or keys have been pressed, and then split into two message groups. Each message group consists of 18 bits including overhead bits. The bits are sent in NRZ keyed format at a 1 KBPS rate. If the message consists chiefly of 1's, the message is inverted to minimize ON time. The groups are sent alternately at intervals of approximately 120 milliseconds.

In some software versions, each of the above message groups will be followed by further bits generated in a pseudorandom sequence. The sequence must be consistent with other previous messages recorded by the receiver, else the message will be rejected by the receiver software. The current "seed" value for this pseudorandom message is stored in nonvolatile memory in the transmitter. Using a special protocol, the seed is taught to the receiver and tracked in the receiver's own nonvolatile memory.