

This device has two modes of operation:

Master – Transceiver : In this mode the device receives time message thorough its serial communication input ‘data in’, and transmits RF message every 1 minute through its antenna.

Slave – Repeater : In this mode the device receives time message through its antenna , amplify the message and transmits it to the antenna.

The ‘master\slave’ input defines the mode of operation: 0 is master, 5v is slave. The micro-controller reads the ‘master\slave’ input to decide in which mode it operates. When it is in master mode it uses its UART to receive the message coming through its ‘data in’ input with baud rate 1200.

The device is based on micro-controller and a FSK transceiver. The micro-controller uses the transceiver to receive and transmit messages in frequency hopping technology in the 914-928 MHz frequency range. The micro-controller controls the direction of signals from the antenna by RF switch. When it transmits, the signals are coming out from the micro-controller to the transceiver, and from the transceiver to the amplifier. From the amplifier the signals move through the RF switch to the antenna. When it receives, the signals are coming from the antenna to the RF switch to the transceiver and from it to the micro-controller.

The device transmits the same time message in 51 different frequencies. It stays 10 milliseconds in every channel before it hops to the next channel but it transmits only 6.64 milliseconds during this time. After 51 different frequencies it transmits another 9 messages starting at the first frequency.

In worst case the device transmits the time message every 1 minute. The all transmission endure 600 milliseconds. Which mean, in worst case it stays 13.3 milliseconds at the same frequency during 1 minute.

The device is powered by 5VDC. It has voltage regulator which feeds the components of the circuit with 3.3 VDC.

The transceiver is connected to external antenna, but this antenna cannot be replaced by the user.

The 1 pps pin outputs a pulse every 1 second.

The ‘data out’ and ‘standby’ input are not used.