

DeLaval Activity System (Transmitter)

Dual frequency usage

Two variants are produced, one 418 MHz and one 433 MHz, they use the same design, only part list differs.

Oscillator frequencies vary as indicated below.

Battery

The battery block consists of a lithium battery and a FET that acts as a switch. The switch is used during production to disconnect the battery from the rest of the board.

Motion sensor

The motion sensor consists of a coil with a magnetic ball inside. When the ball moves, the sensor coil will output a signal. Higher force on the sensor gives higher amplitude of the output signal. This signal then goes through a low-pass filter to remove unwanted signals that are generated by the coil.

Reed switch

The switch consists of a reed switch and a hardware filter. A reed switch is a hermetically sealed switch element that can be actuated by a magnetic field close by, such as an electromagnet or a handheld permanent magnet. When there is a magnet close enough to the reed switch it will close, i.e., this part of the activity meter is externally controlled.

The activity meter can be put in two different modes: ON or OFF, mode is changed by using an external magnet in defined patterns.

rfPIC with RF module

The micro controller uses two different frequency references, an internal 4 MHz resonator and a 32.768 kHz oscillator. The 4 MHz resonator is used for program execution. The instruction cycle time is 1 μ s. The 32.768 kHz oscillator is used for the wake up timer.

The internal RF module of the rfPIC is used for transmission, the operating frequency of the RF transmitter is:

- 433.92MHz (using external 13.5600 MHz crystal)
- 418.00MHz (using external 13.0625 MHz crystal)

Saw filter

SAW filter with impedance matching net.

Loop antenna

Circuit board loop antenna with impedance matching net.