Outline of Circuit
(RF BLOCK)

Each Part's Functions

(1) Transceiver (IC200)

Transceiver (IC200) consists of five parts: Reference oscillator, Frequency synthesizer, Modulation, transmitter, and receiver.

1 Reference oscillator

Reference signal is generated by crystal oscillator 13.1072MHz (X200).

2 Frequency synthesizer

Frequency synthesizer consists of frequency divider, reference frequency divider, phase comparator, charge pump and VCO. Oscillating frequency is set by a control signal from the control CPU (ICI). Output frequency Lo1 of VCO is eight-ninth of the Rf, and Lo2 is one-ninth of the Rf.

3 Modulation

Baseband signal is FSK modulated.

Bit Rate is 8192bps

Deviation is 204.8kHz

4 Transmitter

FSK signal is up-converted to RF through the 1st mixer and the 2nd mixer, then supplied to Transmitter Power Amplifier. It is programmable to set the output of power amplifier and it is set by the control CPU (ICI).

To regulate transmission power, supply voltage is regulated to 1.8V in power source of Power Amp (in IC200).

5 Receiver

RF input signal is sent to the 1st mixer after amplified by Low Noise Amplifier (LNA), then converted to Intermediate Frequency RF*1/9. Next, it is converted to baseband by the 2nd mixer, and demodulated via channel filter.

(2) RF Output Part

RF signal which is input or output to the antenna (CN3) is band-limited by SAW Filter

(F1). This improves selectivity for receiving and unnecessary radiation.

（3）Controller Part

The CPU (IC1) controls followings:

1. Control Transceiver
   A) Frequency synthesizer setting
   B) RF output power setting
   C) Transmitting / Receiving Control
   D) Communication Control
2. Serial Communication Control
3. Power Monitor
4. Others

（3）Power

Transceiver power is regulated at 3V.

(External Sensor BLOCK)

Option Sensor module comes into following four types.

Temperature Measurement
Voltage Measurement
Current Measurement
Pulse Count

Main unit communicates with each sensor module via serial communication (UART) to get readings. About Pulse Count, pulse signal is counted directly by CPU (IC1) after level adjustment and filtering.