The 809-35xx RF sensors are composed of four major functional blocks: the user interface, a temperature measuring block, a time keeper and microprocessor block, and the RF transmitter block. The user interface is composed of two switches and an LED. One of the switches is denoted as the service pin. It has three functions: it turns the sensor on, if held for ten seconds it turns the sensor off, and if pressed momentarily when the sensor is on, it will transmit the temperature with the service pin flag set, provided that the last transmission was more than ten seconds ago. The other switch is the clean/defrost termination switch. It allows the user to set a flag that the area controller can interpret to ignore the transmitted data. The LED is used to provide feedback to the user on whether the sensor is on and/or in clean mode. It will also flash when a successful service pin message is transmitted.

The temperature measuring block is composed of a thermistor and a 24.9K resistor set up as a voltage divider. This voltage is read by a 12-bit A/D converter and transmitted as counts to the time keeper and microprocessor block.

The time-keeper and microprocessor block is composed of a DS2417 time keeper and a Motorola MC68HC705KJ1CDW. The DS2417 keeps track of the time between transmissions and controls the reset line to the Motorola microprocessor. When the DS2417 determines that a transmission is required [either the clock has elapsed the predetermined transmission period (set by jumper JP1 to either one minute or three minutes) or the service pin has been depressed and the last transmission was at least 10 seconds ago], it wakes up the Motorola microprocessor, measures the temperature, checks the flags, and sends the data to the RF transmitter block via a serial interface using inverted NRZ with 1 start bit, 8 data bits, and 1 stop bit.

The RF transmitter block is composed of a Linx Technologies TXM-418-LC-R transmitter operating at 418MHz, an attenuation T-pad composed of three SMD resistors, and a ¼ wave antenna.