3) Base Station / RECEIVER:

The base station / receiver is the unit comprised of the 315 MHz radio receiver PCB connected to the receiver digital PCB and keypad PCB. The primary function of the base station Receiver is to receive data from up to three independent transmitters, plus an internal temperature sensor(for local base temperature), and display the current temperatures/humidity on the liquid crystal display. An OKIMSM 64162 microcontroller on the digital board measures the local temperature and sends this to the OKIMSM64164C microcontroller which processes and displays the data from each channel. The power supply is 4 AA batteries. The OKI microcontrollers use a low speed 32768 Hz clock frequency (quartz watch crystal) and a 400khz higher speed RC clock. The Receiver checks for temperature alarm conditions (temperature exceeding user-specified limits). A flashing LED and a piezoelectric beeper indicate the presence of an alarm condition. Power is supplied by 4 AA batteries. A low battery condition is shown on Receiver display.

3a) Base Station Receiver Board:
The receiver is a self-quenched 315 MHz super-regenerative circuit (transistor Q2) with an input buffer (transistor Q1)to minimize radiation from the antenna. A tuned circuit is used at the input to increase selectivity. The quench frequency is approximately 500 kilohertz. A data-slicer circuit using a dual op-amp IC extracts digital data from the received signal. An NPN open-collector output circuit (transistor Q3) interfaces to the OKI64162 microcontroller on the receiver digital board. With the RF carrier ON, the data output is 0.2 volts, with the RF carrier OFF, the data output is + 3 volts. The data slicer is designed for a bit rate of approximately xxx bits/second. The receiver operates on + 3 volts supplied by an IC regulator on the base station digital board. Interconnects to the receiver board are DATA, + 3 volts, and GROUND .

3b) Base Station Digital Board:
This board processes and displays data received from up to three remote temperature sensors in addition to the local temperature. The board also monitors the keypad.

Two microcontrollers are present on the receiver digital board. These are :
a) OKIMSM64164C, a CMOS 4-bit microcontroller with 400 kHz clock and 32768 Hz quartz clock. The OKIMSM64164 processes the received data and drives the display. Data processing consists of detecting possible transmissions, determining the validity of the transmission, and updating the appropriate channel in the display once valid data has been received. Alarm conditions are also checked for, and max / min temperatures determined.

b) OKIMSM64162, a CMOS 4-bit microcontroller with 32768 Hz quartz clock. The 64162 sends local temperature data (from a thermistor sensor) to the OKI64164C.

Other IC's present:
c) Seiko S-81233 - a 3 volt regulator on the digital PCB which changes the 6 volt supply to 3 volts for the OKI 64162.

3c) Base Station Antenna:
This is a 2 inch loaded vertical whip with a protective covering.

Receiver User Inputs:
Scroll left - to scroll to new channel and adjust alarm settings.
Scroll right - to scroll to new channel and adjust alarm settings.
Detail - to view alarm settings and daily min/max temperatures for each location.
Daily High/Low Reset Key – reset daily high and low to current temperature, for each location/transmitter
DegreesC/DegreesF switch – change display of temperature information
SYNC – resets unit to startup condition, saves current high/low, alarm settings
Alarm on/off – turns alarms on an off, for all locations