

Caution: The user is cautioned that changes and modifications made to the equipment without the approval of manufacturer could void the user's authority to operate this equipment.

Notes: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Warning:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

**Wireless Thermometer Product**

# Freezer Thermometer Manual

Model No. 00985

Written By \_\_\_\_\_

Verified By \_\_\_\_\_

Approved By \_\_\_\_\_

**1. INTRODUCTION**

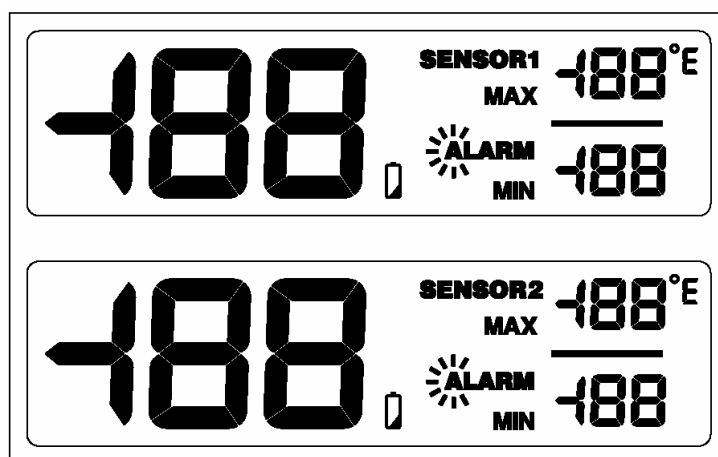
Wireless refrigerator / freezer thermometer product is composed of a receiver and two senders. Two remote sensor controllers are included in this system. The controller can receive the temperature signal and raise the audio alarm signal.

**2. FEATURES**

- 2.1 Temperature Range of Sender: -40F To 104F(-40°C To +40°C)
- 2.2 Temperature Accuracy: +/- 2F
- 2.3 Centigrade or Fahrenheit displays by a switch
- 2.4 The sender can detect the low voltage of battery and indicate this information on the display of receiver.
- 2.5 The receiver has Key tone function.
- 2.6 There is a stochastic 8 bits ID codes in every sender.
- 2.7 The system has an audio alarm with beep.
- 2.8 The Max and Min of temperature can be displayed in the display screen of the receiver.
- 2.9 The base frequency is 433MHz.

**3. LCD DISPLAY**

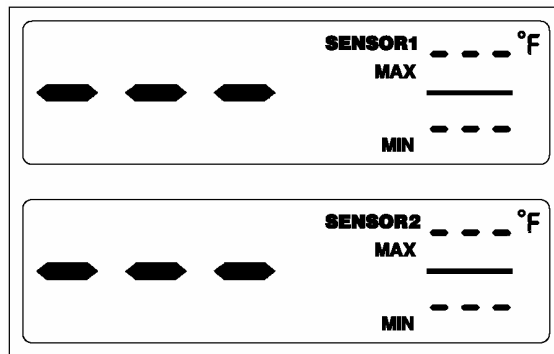
- 3.1 The senders are without LCD.
- 3.2 The receiver's LCD fully displays as following,



## 4. Operation

### 4.1 Power on / Reset

a. When power on the receiver, it will fully display with beep as the below figure,



b. Then the receiver starts to receive the signal from the sender.

### 4.2 BUTTON FUNCTION

#### 4.2.1 ALARM 1

- To press **Alarm1** button switch to on/off alarm function. The “ALARM” icon is displayed; the unit will enable alarm function after 15 minutes.
- Press and hold **Alarm1** for 2 seconds is to enter channel 1 alarm maximum setup mode.

#### 4.2.2 ALARM 2

- To press **Alarm2** button switch to on/off alarm function. The “ALARM” icon is displayed; the unit will enable alarm function after 15 minutes.
- Press and hold **Alarm2** for 2 seconds is to enter channel 2 alarm maximum setup mode.

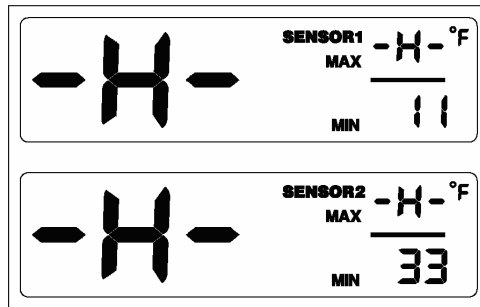
#### 4.2.3 +/-

Press “+” or “-” to change values for alarm – press and hold for 2 seconds for rapid scroll through of values.

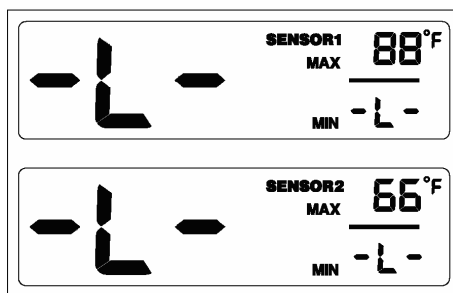
#### 4.2.4 CLEAR

Press “**CLEAR**” is to clear the max and min in the memory.

4.3 When the temperature value is more than the Max limit 104 F, the unit will display as following,



4.4 When the temperature value is less than the Min limit -40 F, the unit will display as following,



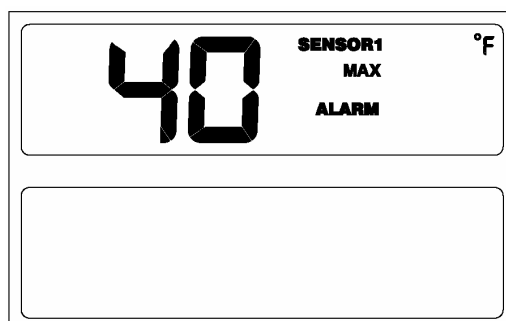
## 5. Alarm Function

### 5.1 Channel 1 alarm setup mode

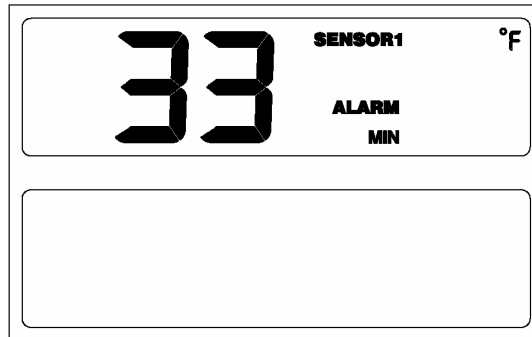
5.1.1 The maximum default of Channel 1 is 40 F. The minimum default of Channel 1 is 33 F.

5.1.2 Press and hold **Alarm1** for 2 seconds is to enter channel 1 alarm max. setup mode .

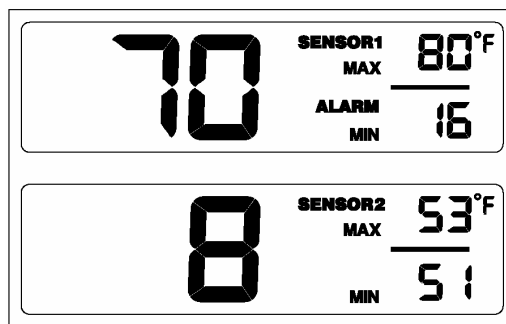
The Max. will be displayed as the below figure,



5.1.3 And then press **Alarm1** is to enter Min. setup mode (then with key tone), the Min. will be displayed as the below figure,



5.1.4 Press Alarm1 again under the above mode (then with key tone). The unit will be back to normal mode and display as the below figure,



5.1.5 If no any button is pressed within 10 seconds, the menu will be back to normal mode from setup mode.

5.1.6 After press “**Clear**” button, the menu will be back to normal mode from setup mode and display “**Alarm**” icon.

5.1.7 After finished setup maximum / minimum and exit setup mode, the unit will enable alarm function after 15 minutes.

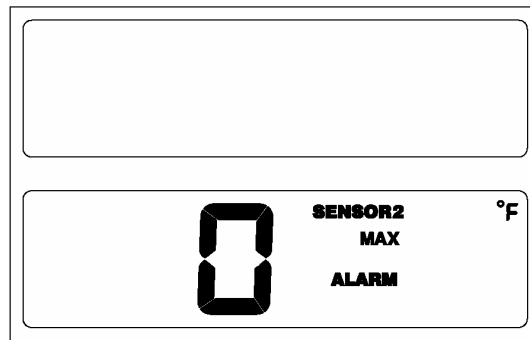
5.1.8 After set the maximum, the unit will auto adjust the minimum and make it less than the maximum.

5.1.9 The maximum is to be set within the concessional temperature range.

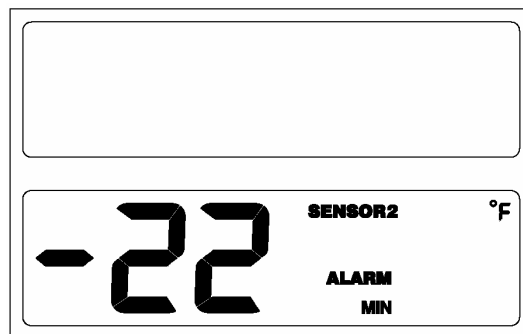
## 5.2 Channel 2 alarm setup mode

5.2.1 The maximum default of Channel 2 is 0 F. The minimum default of Channel 2 is -22 F.

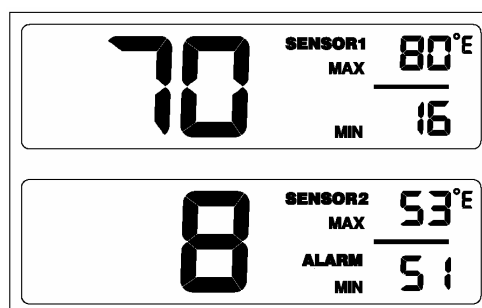
5.2.2 Press and hold **Alarm2** for 2 seconds is to enter channel 2 alarm max. setup mode. The Max. will be displayed as the below figure,



5.2.3 And then press **Alarm2** is to enter Min. setup mode (then with key tone), the Min. will be displayed as the below figure,



5.2.4 Press Alarm2 again under the above mode (then with key tone). The unit will be back to normal mode and display as the below figure.



5.2.5 If no any button is pressed within 10 seconds, the menu will be back to normal mode from setup mode.

5.2.6 After press “Clear” button, the menu will be back to normal mode from setup mode and display “Alarm” icon.

5.2.7 After finished setup maximum / minimum and exit setup mode, the receiver will display “Alarm” icon and enable alarm function after 15 minutes.

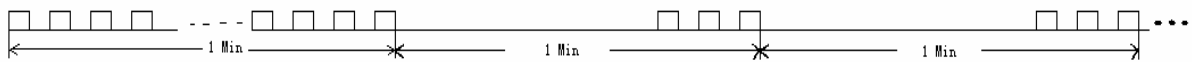
5.2.8 After set the maximum, the unit will auto adjust the minimum and make it less than the maximum.

5.2.9 The maximum could be set within the concessional temperature range.

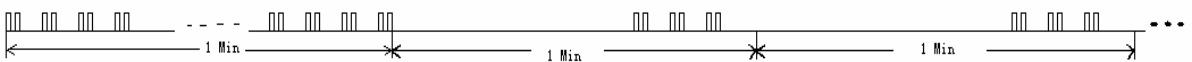
5.3 If alarm function is enabled, the unit will raise the audio alarm when the temperature value more than the max or min.

5.4 The unit will alarm for 1 minute. Then the unit will beep for three times after each 1 minute.

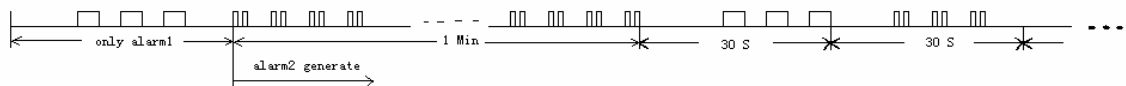
5.4.1 For alarm1, see the below figure,



5.4.2 For alarm2, see the below figure,



5.4.3 For alarm1 & alarm 2(for example: first the alarm1 generate, then the alarm2 generate)



5.5 When the unit raise an alarm, the “☼” icon will be flash.

5.6 Stop alarm when the unit is disabled alarm function.



**6. RF Function**

**6.1 Data Format**



**6.2 Transmitted Frame**

Start Bits	Synchronous	Temperature Data	ID	Channel_LowBat	Checksum
10pcs 1		8BIT	16BIT	8BIT	8BIT

**6.3 Temperature Data**

6.3.1 The more than maximum is 7FH. The less than minimum is 0FFH.

6.3.2 The seventh bit denotes negative.

6.3.3 The temperature data is hexadecimal data.

6.3.4 The first bit of Channel\_LowBat denotes channel (0=CH1, 1=CH2).

The second bit of Channel\_LowBat denotes the voltage of channel 1 (0=normal, 1=low voltage).

The third bit of Channel\_LowBat denotes the voltage of channel 2 (0=normal, 1=low voltage).

6.4 The unit transmits three groups which are transmitted within 1 second.

**6.5** The transmitting time interval of sender is 64 seconds when power on the unit. After 20 minutes, the transmitting time interval of sender1 is 7.5 minutes and the transmitting time interval of sender2 is 6 minutes.

**6.6** The sender produces a stochastic 16bit ID when power on.

**6.7** The red LED flash for a second when transmit the signal.


**6.8** The receiver looks for the sender when power on or reset the receiver. If either of the receiver sensors can not find the sender within 1 hour, it will stop receiving.

**6.9** The unit compares the received data with the max and min and updates the display.

**6.10** The sensor1 of the receiver will display “-E-“when it does not receive the signal for 4 hours and the sensor2 of the receiver will display “-E-“when it does not receive the signal for 3.4 hours.

## **7.0 Battery Detection**

**7.1** The sender detects the voltage before sending the signal. If the voltage is less than 2.5V, the unit will send the data “LowBat Bit=1”.

**7.2** The receiver receives the corresponding data. If it is low voltage, the unit will display . Else, the unit does not display.