

# Temperature Guard Plus

Model VM500-1

Manual and Installation Instructions

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For units purchased on or after July 1, 2002

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## Functional Description

The Temperature Guard Plus allows the homeowner to conveniently change the temperature of the home with a phone call.

The user can lower the temperature of the home when away to save energy, then prior to returning, call the Temperature Guard Plus and have it turn on your heating system to start warming up the home.

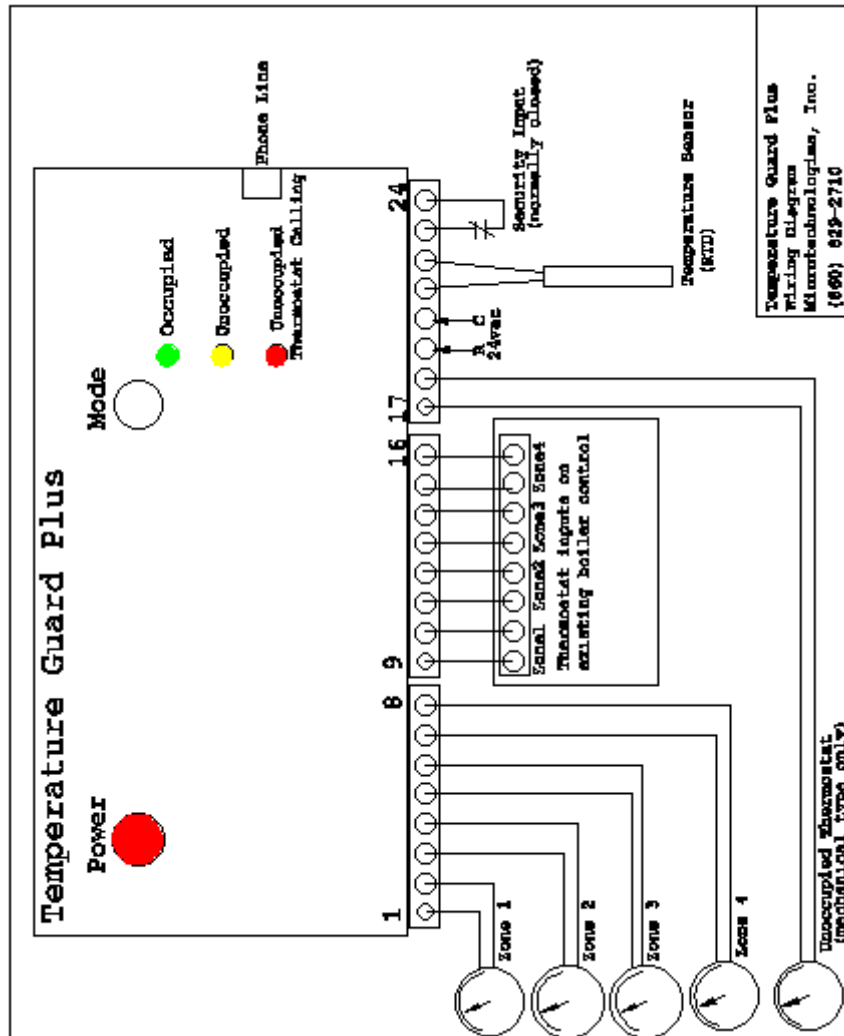
This is done by switching control of the homes heating system between the normal **already existing** thermostats and one newly installed "unoccupied" thermostat.

The system is **Failsafe**, in the event of a system failure control is simply returned to the existing thermostats in the home.

As an added safety, The Temperature Guard Plus will notify you with a phone call if the temperature of the home falls below the temperature limit which you set. This protects the home from the dangers of frozen pipes.

In-

TABLE 1 RTD Temperature Sensor Cable Lengths	
Wire Gauge	Cable Length (ft)
14 AWG	800
16 AWG	500
18 AWG	310
20 AWG	200
22 AWG	124



# stallation

## Required Items:

Mechanical Thermostat (Such as Robertshaw model CM80 or Honeywell model T827 or T87F)

Thermostat Wire

24VAC should be available from your control system

-Otherwise obtain a 24VAC adapter (such as Radio Shack catalog no. 273-1690)

## 1. Wiring the Temperature Guard Plus

- 1 Mount the Temperature Guard Plus close to the current multi-zone boiler controller.
- 2 Remove Zone 1 thermostat wiring going to the TT terminals on the multi-zone boiler controller and connect them to the terminals 1 and 2.
- 3 Repeat for zones 2, 3, and 4 using terminals 3 and 4, 5 and 6, and 7 and 8 respectively.
- 4 Wire from terminals 9 and 10 to the zone 1 TT terminals on the current multi-zone boiler controller.
- 5 Repeat for zones 2, 3, and 4 using terminals 11 and 12, 13 and 14, and 15 and 16.
- 6 Locate the unoccupied thermostat in an area most sensitive to freezing or losing heat the fastest.
- 7 Wire the unoccupied thermostat to the terminals 17 and 18 on the Temperature Guard Plus. The unoccupied thermostat should be set low enough to save energy, but high enough to prevent freezing. The unoccupied thermostat must be a mechanical type. If desired, two unoccupied thermostats can be wired in parallel for additional safety. The heating system will provide heat when either unoccupied thermostat calls.
- 8 Wire 24vac to the terminals labeled 19 and 20. The 24vac can usually be obtained from the existing multi-zone control.
- 9 Locate the temperature sensor next to the unoccupied thermostat.
- 10 Wire the temperature sensor to terminals 21 and 22 using 22 AWG wire up to 124 feet away. (See Table 1 for other cable lengths)
- 11 Plug the telephone line in to the telephone jack.
- 12 Set the Zone switches as described on the next page.

## **2. Zone Switch Settings**

In the unoccupied mode the entire house is treated as a single zone which is controlled by the unoccupied thermostat.

Each of the four zones controlled by The Temperature Guard Plus has a switch associated with it. Setting a zones switch to the up position will allow that zone to be heated in unoccupied mode. Setting a zones switch to the down position will not allow that zone to be heated in unoccupied mode.

### **To set the zone switch settings**

Remove the cover from the Temperature Guard Plus. You will see four switches with labels ZONE 1, ZONE 2, ZONE 3, and ZONE 4.

Set these switches to the desired setting.

For example: In a three zone house, zones 1 and 2 are to be maintained at the unoccupied thermostat temperature. Zone 1 and zone 2 switches are placed in the up position. Zone 3 switch is placed in the down position. Zone 3 will be unheated when in unoccupied mode.

## **3. Test Your System**

- 1 Press the Change Mode button until the Temperature Guard Plus is in Occupied Mode.
- 2 Raise each zones thermostat temperature setting and verify that the heat comes on.
- 3 Return zone thermostats to desired setting.
- 4 Press the Change Mode button to put the Temperature Guard Plus in Unoccupied Mode.
- 5 Raise the unoccupied thermostat temperature setting and verify that the heat comes on in each zone whose switch is in the up position.
- 6 Return the unoccupied thermostat temperature to its desired setting.

# Programming

Programming is accomplished over the phone and only has to be done once, unless it is necessary to make a change. Before programming, do the following:

- 1 Connect a phone line and power, and then turn on the Temperature Guard Plus.
- 2 From another phone line dial the number where the Temperature Guard Plus is located. The Temperature Guard Plus will pick up after the first ring.
- 3 When the Temperature Guard Plus asks you to, enter the 4-digit PIN number (Factory default PIN number is 0000).
- 4 You will hear the Main Menu options (you may enter your selection at any time):
  1. Status: temperature, security input, and power
  2. Set Limits
  3. Program System Settings
  4. Set system to Occupied Mode
  5. Set system to Unoccupied Mode
  0. Hang Up

## Programming Temperature Limits

- 1 From the Main Menu, press 2 to Set Limits
- 2 You will hear the current low limit (i.e. *“Lower limit is 45 degrees”*)
- 3 You will hear *“Press 1 to change”*
- 4 Press **1** to make a change or press any other button and skip to step 8
- 5 You will hear *“Enter number then press pound”*
- 6 Enter the temperature (Valid limits are 35° to 212° F), then press **#**
- 7 You will hear the value you just entered (i.e. *55 degrees*)
- 8 You will hear the current upper limit (i.e. *“Upper limit is 85 degrees”*)
- 9 You will hear *“Press 1 to change”*
- 10 Press **1** to make a change or press any other button to return to the Main Menu
- 11 You will hear *“Enter number then press pound”*
- 12 Enter the temperature (Valid limits are 35° to 212° F), then press **#**

- 13 You will hear the value you just entered (i.e. *55 degrees*)
- 14 You will be returned to the Main Menu

## Programming System Settings

- 1 To access the Program Menu:
- 2 From the Main Menu, press 3.
- 3 You will hear the Program Menu options (you may enter your selection at any time):
  1. Primary Number
  2. Secondary Number
  3. Third Number
  4. Fourth Number
  5. Local ID
  6. Recordable Message
  7. Number of Rings
  8. Change PIN number
  0. Exit (return to Main Menu)

## Programming Telephone/Pager Numbers

The Temperature Guard Plus stores up to four (4) emergency telephone or pager numbers. The Temperature Guard Plus will call each phone number until the PIN number is entered. If Temperature Guard Plus reaches an answering machine, it will leave your personal identification message, and then the alarm condition, but will continue calling.

### First Time Number Programming:

- 1 From the Program Menu, Select **1** for the primary number, **2** for the secondary number, **3** for the third number, or **4** for the fourth number.
- 2 You will hear "*Enter number then press pound*"
- 3a. For voice phone numbers enter the full phone number (**1 + area code if necessary**) followed by the # key.
- 3b. For pager numbers enter \* then enter the full pager number (**1 + area code if necessary**) followed by the # key.
- 4 You will hear the telephone number you just entered.
- 5 You will be automatically returned to the Program Menu

### Note:

If an extra delay between digits is required, entering \* will pro-

vide a two second delay. Do not enter \* for the first digit unless programming a pager number.

For example: If an a 9 were required to connect with an outside line, and a delay is needed before the number is dialed: Enter 9, \*,5,5,5,1,2,3,4,#

To program the second, third, and fourth numbers repeat above steps, entering 2, 3, and 4 respectively from the program menu.

### **To Change a Phone Number:**

- 1 Select the appropriate number from the Program Menu
- 2 You will hear the telephone number for the selected recipient
- 3 You will hear *"Press one to change"*
- 4 Press **1** if you want to make a change or press any other button to return to the Program Menu
- 5 You will hear *"Enter number then press pound"*
- 6a. For voice phone numbers enter the full phone number (**1 + area code if necessary**) followed by the **#** key.
- 6b. For pager numbers enter \* then enter the full pager number (**1 + area code if necessary**) followed by the **#** key.
7. You will hear the telephone number you just entered.
8. You will be automatically returned to the Program Menu

### **To Delete a Phone Number:**

- 1 Select the appropriate number from the Program Menu
- 2 You will hear the telephone number you selected
- 3 You will hear *"Press one to change"*
- 4 Press **1** to make a change
- 5 You will hear *"Enter number then press pound"*
- 6 Enter the **#** key
- 7 You will be automatically returned to the Program Menu

## **Programming the Number of Rings**

The Temperature Guard Plus answers the telephone line after the programmed number of rings. Valid numbers of rings are 1 – 25.

- 1 From the Program Menu, press **7** to set the number of rings
- 2 You will hear the programmed number of rings
- 3 You will hear *"Press one to change."*

- 4 Press **1** if you wish to make a change or press any other button to return to the Program Menu
- 5 You will hear *"Enter number then press pound"*
- 6 Enter the number of rings, then press **#**
- 7 You will hear the number of rings you entered
- 8 You will be automatically returned to the Program Menu

## **Recording a Personal Identification Message**

When the Temperature Guard Plus calls out, it first plays a 10 second personal identification message.

- 1 From the Program Menu, press **6** to record a message
- 2 If this is the first time setup, go to step 4
- 3 You will hear the recorded message
- 4 You will hear *"Press one to change."*
- 5 Press **1** if you wish to make a change or press any other button to return to the Program Menu
- 6 You will hear a tone
- 7 Begin speaking after the tone. The Temperature Guard Plus will record for 10 seconds
- 8 After ten seconds you will hear the tone again, marking the end of your message
- 9 You will hear the message you recorded
- 10 You will be automatically returned to the Program Menu

## **Programming a Local Identification Number For Pagers**

- 1 The local identification number is printed on the display of a pager when the Temperature Guard Plus calls a pager number. This number can be up to 20 digits long.
- 2 From the Program Menu, press **5** for the local ID
- 3 If this is the first time setup, go to step 6
- 4 You will hear the programmed number
- 5 You will hear *"Press one to change"*
- 6 Press **1** if you wish to make a change or press any other button to return to the Program Menu
- 7 You will hear *"Enter number, then press pound"*
- 8 Enter the number, followed by a **#**
- 9 You will hear the number you just entered.

10 You will be automatically returned to the Program Menu

## **Programming Your PIN Number**

The Temperature Guard Plus uses a 4-digit PIN number (0000-9999) to identify you when calling the device or during callout procedures. After programming the PIN number write it down here. \_\_\_\_\_

The PIN number must be 4 digits and not include a \* or # sign.

- 1 From the Program Menu, press **8** to change the PIN number
- 2 You will hear the programmed PIN number
- 3 You will hear *"Press one to change."*
- 4 Press **1** if you wish to make a change or press any other button to return to the Program Menu
- 5 You will hear *"Enter number"*
- 6 Enter a four digit number (do not put a \* or # anywhere in your pin number)
- 7 You will hear the PIN number you just entered
- 8 You will be automatically returned to the Program Menu

## Using the Temperature Guard Plus

### Getting ready to leave:

Leave your individual room thermostats at their normal setting.

Either press the Change Mode button locally or call the Temperature Guard Plus and press 5 to set the Temperature Guard Plus in Unoccupied Mode.

When the Temperature Guard Plus is in Unoccupied Mode, all zones, whose switches are set in the up position, will be controlled by the unoccupied thermostat.

If the temperature drops below the lower limit, the system will be switched over to Occupied Mode until the temperature returns to "normal levels".

### Returning:

Call the Temperature Guard Plus and press 4 to set the Temperature Guard Plus in Occupied Mode.

When the Temperature Guard Plus is in Occupied Mode, all zones will be controlled by their normal thermostat.

### Using the Security Input

The Temperature Guard Plus can alert you to security intrusions by connecting normally closed switches (such as magnetic door switches, vibration detectors, any dry contact switch) to terminals 23 and 24. See wiring diagram. When any switch opens for at least five seconds and the **Temperature Guard Plus is in unoccupied mode**, it will begin making emergency calls to your programmed phone/pager numbers.

**To disable the security input connect the wire jumper to terminals 23 and 24.**

### **Calling the Temperature Guard Plus to hear the temperature, security input and power status**

- 1 Call the Temperature Guard Plus.
- 2 From the Main Menu press **1**
- 3 The Temperature Guard Plus will report the following:
  - The temperature
  - A security input alert (if the security input is active)
  - The status of the power

### **When does the Temperature Guard Plus make calls?**

The Temperature Guard Plus will make calls when any of the following happen:

- The temperature rises above the upper limit.
- The temperature drops below the lower limit.
- The connection to the temperature sensor is shorted.
- The connection to the temperature sensor is broken.  
*The sensor must become disconnected after the Temperature Guard Plus has had a good connection to the sensor. If the sensor has not been connected to the Temperature Guard Plus since power up, the Temperature Guard Plus will not make a call due to the open connection.*
- The security input detects an open circuit for at least five seconds when the system is in unoccupied mode.
- The power is out for greater than five minutes.

### **What happens when the Temperature Guard Plus calls?**

- 1 The Temperature Guard Plus will play the personal identification message
- 2 The Temperature Guard Plus will report any alarm conditions
- 3 The Temperature Guard Plus will ask for the PIN number
- 4 Once the PIN number has been entered, the Temperature Guard Plus will not call again because the current alarm condition has been acknowledged

### **What happens when the Temperature Guard Plus calls a pager?**

- 1 The Temperature Guard Plus will print the Local Identifica-

tion number

- 2 The Temperature Guard Plus will print the temperature.
- 3 The Temperature Guard Plus will print a 1 if the Security Input is active or a 0 if the Security Input is inactive.
- 4 The Temperature Guard Plus will indicate the power status by printing a 0 for power outages and a 1 for no power emergency.
- 5 The Temperature Guard Plus will continue to call the pager until either:
  - The alarm condition goes away
  - The Temperature Guard Plus makes contact when calling a different number
  - The Temperature Guard Plus is called and the PIN number is entered

### **What happens if I call the Temperature Guard Plus while an alarm condition exists?**

- 1 You will hear either "Warning, the temperature is XX", and/or "Warning, the power is out"
- 2 You will hear "Enter your PIN number"
- 3 If the PIN number is entered, the Temperature Guard Plus stops making emergency phone calls.
- 4 If the PIN number is not entered, the Temperature Guard Plus continues dialing the emergency phone numbers.

### **Connecting the Temperature Guard Plus to a Phone Line which has a fax or answering machine connected to it**

Program the Temperature Guard Plus to answer after one more ring than the other device. This allows the other device to always answer first.

To call and access the Temperature Guard Plus

- 1 Dial the phone number
- 2 Hang up one ring before the other device answers.
- 3 Wait no longer than 30 seconds, then dial the phone number again.
- 4 The Temperature Guard Plus will answer.

Example:

*A fax machine on the same line as the Temperature Guard Plus is set to answer after 4 rings.*

*The Temperature Guard Plus is programmed to answer after 5 rings.*

*To access the Temperature Guard Plus, dial the number, let it ring three times, then hang up. Wait 30 seconds and call again. After two rings, the Temperature Guard Plus will answer.*

### **Verifying that the Temperature Guard Plus works with your phone line**

To verify that the Temperature Guard Plus works with your phone line, perform the following test.

- 1 Using another phone line, call the Temperature Guard Plus and verify that it answers the phone
- 2 From the Main Menu, press **1** to hear the status.
- 3 Remember the temperature which is reported by the Temperature Guard Plus
- 4 Program the phone number you are calling from into the first phone number location. (See **Programming Telephone Numbers**)
- 5 Program the upper temperature limit to be 10 degrees less than the temperature which was reported by the Temperature Guard Plus
- 6 Press '0' twice to exit the Program Menu and hang up the Temperature Guard Plus
- 7 After five minutes, the Temperature Guard Plus will call out because the temperature of the house is 10 degrees above the upper temperature limit.

### **If the Temperature Guard Plus does not answer the phone**

Verify that the phone line is working. Connect a phone to the line intended for the Temperature Guard Plus. Verify that there is a dial tone.

Check that the phone line is plugged in securely.

Verify that the Temperature Guard Plus is powered up.

### **If the Temperature Guard Plus does not call out**

Verify that the phone line is good. Connect a phone to the line intended for the Temperature Guard Plus. Verify that there is a dial tone. Check that the phone line is plugged in securely

Verify that the Temperature Guard Plus is powered up.  
Verify that the Temperature Guard Plus is programmed correctly. Call up the Temperature Guard Plus and verify the programmed phone numbers and temperature limits.

For technical support call 1-860-829-2710 8am to 5pm EST.

### **Optional 20 / 30 Hour Extended Batteries**

If your unit has been ordered with an extended battery, it is installed at the factory. These batteries are trickle charged and can take up to a week to reach full capacity. The battery is charging whenever the monitor is powered on.

## **TIPS**

- Do not place the Temperature Guard Plus temperature sensor in direct sunlight as this will effect the temperature and humidity readings.
- Do not place the Temperature Guard Plus temperature sensor near heating or cooling sources if you wish to monitor the average temperature of a room.
- Placing the Temperature Guard Plus temperature sensor on the floor will cause the Temperature Guard Plus to sense a temperature that is lower then the actual ambient temperature.
- Include all necessary digits for phone numbers. Long distance numbers must include 1 and the area code.
- To monitor the power status of specific devices; connect the Temperature Guard Plus's power plug into the same power source as the device you wish to monitor. It is possible for an isolated power outlet to lose power.
- Never set an upper limit below a lower limit or a lower limit above an upper limit.

## FCC PART 68 INFORMATION

This equipment complies with Part 68 of the FCC Rules. The FCC Part 68 Label is located on the bottom of the unit. This label contains the FCC Registration Number and Ringer Equivalence Number (REN) for this equipment. If requested, this information must be provided to your telephone company.

The REN is useful to determine the quantity of devices you may connect to your telephone line and still have all of those device ring when your telephone number is called. In most, but not all areas, the sum of the RENs of all devices connected to one line should not exceed five (5.0). To be certain of the number of devices you may connect to your line, as determined by the REN, you should contact your local telephone company to determine the maximum REN for your calling area.

Connection to the telephone network should be made by using standard modular telephone jacks, type RJ11. The plug and/or jacks used must comply with FCC Part 68 rules. If this telephone equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice isn't practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in it's facilities, equipment, operations or procedures that could affect the proper functioning of your equipment. If they do, you will be notified in advance in order for you to make necessary modifications to maintain uninterrupted service.

This equipment may not be used on coin service provided by the telephone company. Connection to party lines is subject to tariffs.

If trouble is experienced with this unit, for repair or warranty information, please contact customer service at the address and phone listed below. If the equipment is causing harm to the network, the telephone company may request that you disconnect the equipment until the problem is resolved.

**DO NOT DISASSEMBLE THIS EQUIPMENT.** It does not contain any user serviceable components.

Attn.: CUSTOMER SERVICE DEPT.  
Microtechnologies, Inc.  
564 Berlin Turnpike  
Berlin, CT 06037

860-829-2710

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### **Limited Warranty:**

1. Warrantor: Dealer, Distributor, Retailer, and Manufacturer

2. Warranty and Remedy

We believe that this is a high quality product. Although we test all products for proper functionality, we cannot guaranty that there will never be a defective unit, or that a unit will function on every phone line and all communication equipment in existence. For this reason, it must be clear that the **Warrantors are not insuring your premises or guaranteeing that there will not be damage to your person or property if you use this Product.** If this warranty is unacceptable please return the unused Product for a full refund.

One Year Limited Warranty - Microtechnologies, Inc. warrants its products to be free from defects in material and workmanship under normal use for one year, and is not responsible for consequential damage or installation costs of any nature. In event that the Product does not conform to this Warranty at any time during the period of one year from original purchase date, Warrantor will repair the defect and return it to you at no charge. **Important: The Warranty is limited to replacement of the Product ONLY.** Secondly, because every phone line differs, we strongly encourage you to test this Product in its actual application. This should include a full test, involving the Product actually dialing to its designated location and someone verifying the proper response.

This warranty shall terminate and be of no further effect at the time the Product is 1) damaged by extraneous causes such as fire, water, lightning, etc. or not maintained as reasonable and necessary: 2) modified: 3) improperly installed: 4) repaired by someone other than the Warrantor: 5) used in a manner or purpose for which the Product was not intended.

**WARRANTORS' OBLIGATION UNDER THIS WARRANTY IS LIMITED TO REPAIR OR REPLACEMENT OF THE PRODUCT ONLY. THIS WARRANTY DOES NOT COVER PAYMENT OR PROVIDE FOR THE REIMBURSEMENT OF PAYMENT FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.**

**It must be clear that the Warrantors are not insuring your premises or guaranteeing that there will not be damage to your person or property if you use this Product.** The Warrantors shall not be liable under any circumstances for damage to your person or property or some other person or that person's property by reason of the sale or use of this Product, or its failure to operate in the manner in which it is designed. The Warrantor's liability, if any, shall be limited to the original cost of the Product only. Use of this Product is at your own risk.

3. Procedures for obtaining performance for Warranty:

In the event that the Product does not conform to this Warranty, the Product should be shipped or delivered freight prepaid to a Warrantor with evidence of original purchase. If in any way you are not comfortable with the product or its Limited Warranty, we encourage you to return it unused for a full refund.

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REV 50105-71802