

**Installer : Save these instructions for future use!**

**FAILURE TO READ AND FOLLOW INSTRUCTIONS CAREFULLY BEFORE INSTALLATION OR OPERATION COULD DAMAGE THIS CONTROL OR CAUSE PROPERTY DAMAGE.**

## DESCRIPTION

The EWT-3900 7Day/5-2 Day Wireless Programmable Digital Solid State Thermostat uses a microcomputer to provide precise time and temperature control. This wireless thermostat offers additional flexibility to design heating and cooling systems where hard wired installations would be difficult to do.

**The Model EWT-3900 Wireless Thermostat is Linked to the Receiver at the factory. Simply power up the Receiver, then program and operate the Thermostat.**

### Features:

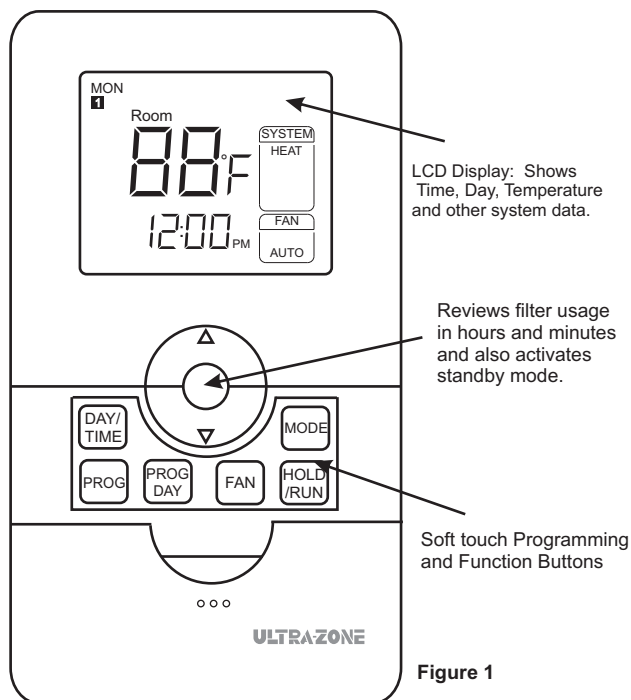
- The Thermostat is powered by a rechargeable lithium-ion battery.
- The receiver module is powered with 24VAC from a Control Panel or 24VAC Class 2 Transformer.
- The receiver module terminal block has the following terminals: R, C, W1/E, W2, Y1, Y2, G, O, B and one NC (no connection) terminal.
- Compatible Equipment: ULTRA-ZONE Control Panels: NCM-300, BMPlus3000 & UZC-4. Single or two stage heating and cooling equipment Gas, Electric, Oil or Hydronic. One or two stage compressor heat pump with electric backup.
- Simultaneous heat and cool program storage.
- Program storage is retained in case of power loss.
- LCD continuously displays time and room temperature. Temperature set point is displayed when it is being changed.
- Temperature display can be configured in °F or °C.
- The Thermostat can be programmed between 45°F and 95°F.
- Backlit display.
- Air Filter Replacement Monitor.

### Electrical Ratings

19-30VAC 50/60 Hz  
 1.0 Amp (Max load per terminal)

### Thermal Ratings

Set point Temperature Range 45°F to 95°F  
 Operating Ambient Temperature Range 30°F to 99°F  
 Storage Temperature Range 14°F to 140°F  
 Operating Humidity Range 0-90% R.H. (Non Condensing)



LCD Display: Shows Time, Day, Temperature and other system data.

Reviews filter usage in hours and minutes and also activates standby mode.

Soft touch Programming and Function Buttons

Figure 1

### Contents:

- 1 EWT 3900 Thermostat
- 1 EWT 3900 Receiver
- 1 USB Adapter Cord
- 6 Plastic Wall Anchors
- 6 #8 x 1" Screws
- 1 TB-236 Technical Bulletin

### Accessories: (not included)

- EWT-BC Wall Outlet Charger
- Replacement Battery
- Replacement Charging Cord

### Charging Requirements:


- or EWT-BC Wall Outlet Charger
- PC Computer with USB Port

### ATTENTION

This product does not contain mercury. However, this product may replace a unit which contains mercury. EWC Controls Inc. would like to advise all technicians and consumers that all mercury thermostats should be recycled.

# INSTALLATION

The installer should be an experienced and trained HVAC contractor. Failure to read and follow instructions carefully before installation or operation could damage this control or cause property damage. Test the finished installation for proper operation.

**To conserve power, the EWT-3900 leaves the factory in Standby Mode. When removed from the box, "PE" will be displayed on the LCD to indicate Standby Mode. When you are ready to use the thermostat, press and hold the  for five seconds to exit Standby Mode.**

## ⚠ CAUTION

To prevent electrical shock and/or equipment damage, disconnect electric power to HVAC system at main fuse or circuit breaker box until installation is complete.

Mount the EWT-3900 Thermostat about 5 feet above the floor in an area with good air circulation and average temperature. DO NOT install the thermostat where it can be affected by:

- drafts or dead spots behind doors and in corners
- hot or cold air from ducts
- radiant heat from sun or appliances
- concealed pipes and chimneys
- on surfaces such as an outside wall, that are a different temperature than the room air temperature.

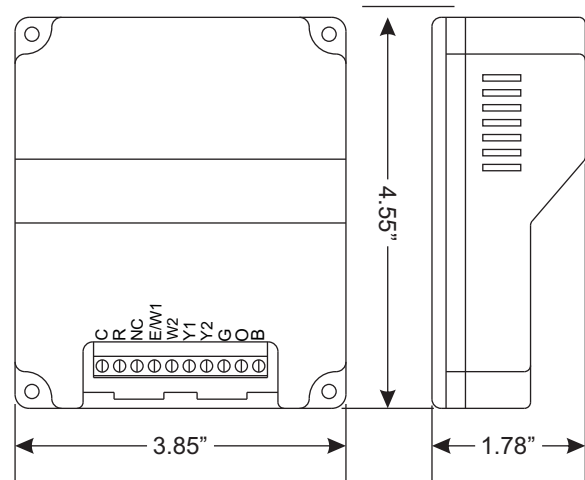
## Mounting the Thermostat

### **ATTACH THE MOUNTING BRACKET TO THE WALL**

1. Place the bracket on the wall where you would like the thermostat to be and mark the two holes with a pencil.
2. Using a 3/16" drill bit, drill out the marks you just made on the wall.
3. Insert the wall anchors into the holes pressing flush with the wall.
4. Place the bracket over the holes and fasten with the supplied #8 screws.

## Mounting the Receiver

Mount the receiver with the supplied mounting screws near the zone control panel or HVAC equipment to be controlled. **Do not mount the receiver inside the equipment cabinet or any other metal enclosure. Do not Mount the receiver in any location than is subject to freezing and/or condensation.**



## Technical Data

Power	AC24V, 50/60Hz
Working Environment	30°F~99°F
Range	0~90%RH(non-condensing)
Shell	Fire Retardant PC ABS
Dimension	4.55x3.85x1.78 in (HxWxD)
Connection Interface	Each terminal is capable of accepting 2 x 18 AWG solid copper wires.
Wireless Frequency	433MHz
Communication baud rate	2.4 kbps
Wireless Channels	1~10 Channels
Communication Distance	Beeline distance 200ft in the field. (The distance will shorten through walls and floors)

## ⚠ WARNING

Do not use circuits exceeding specified voltage. Higher voltage will damage control and could cause shock or fire hazard.

Do not short out terminals on gas valve or primary control to test. Shorted or incorrect wiring will damage thermostat and could cause personal injury and/or property damage.

Thermostat installation and all components of the system shall conform to Class 2 circuits per the NEC code.

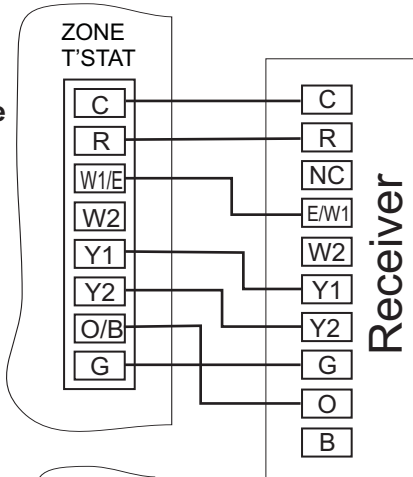
# WIRING THE RECEIVER TO THE EQUIPMENT

THERMOSTAT TERMINALS (HEAT PUMP)		
SYSTEM	Heat Pump 1	Heat Pump 2
C	24 Volt (Common)	
R	24 Volt (hot)	
E/W1	Emergency 1st stage	
W2	Auxiliary / Emergency 2nd Stage	
Y1	Heat and Cool mode 1st stage (compressor)	
Y2	No output	2nd Stage Compressor
G	Blower/Fan Energized on call for Heat and Cool	
O	Energized in Cool Mode	
B	Energized in Heat Mode	

THERMOSTAT TERMINALS (CONVENTIONAL)		
SYSTEM	Single Stage	Multistage
C	24 Volt (Common)	
R	24 Volt (hot)	
E/W1	Heat Mode 1st stage	
W2	No Output	Heat Mode 2nd stage
Y1	Cool mode 1st stage (compressor)	
Y2	No output	2nd Stage Compressor
G	Blower/Fan Energized on call for Cool (and Heat if HE was selected)	
O	No Output	
B	No Output	

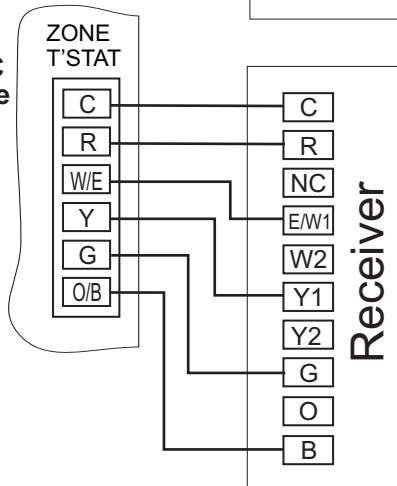
**UZC-4**  
Heat Pump 3H/2C  
O Reversing Valve

Figure 2



**BmPlus 3000**  
Heat Pump 2H/1C  
B Reversing Valve

Figure 3



**NCM-300**  
Gas/Elec. 1H/1C

Figure 4

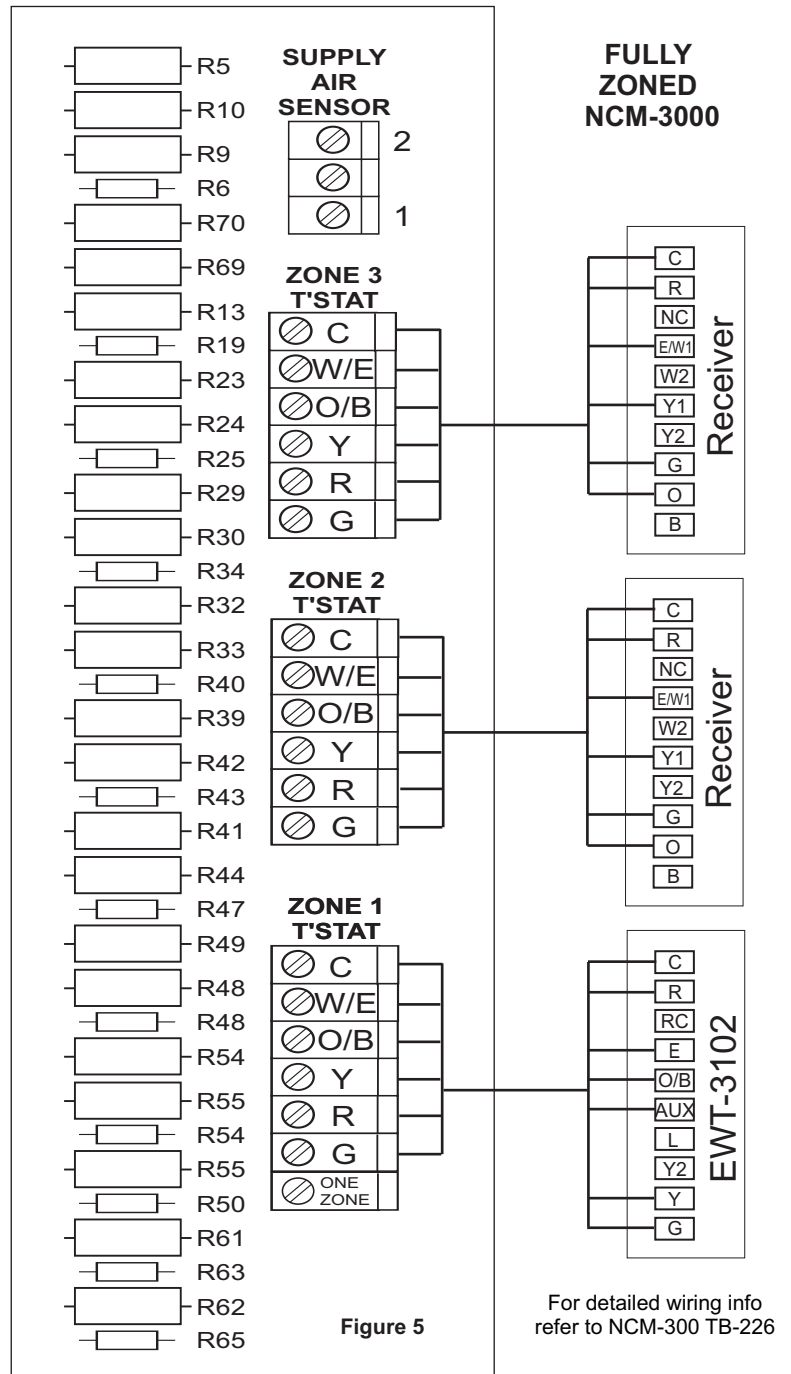
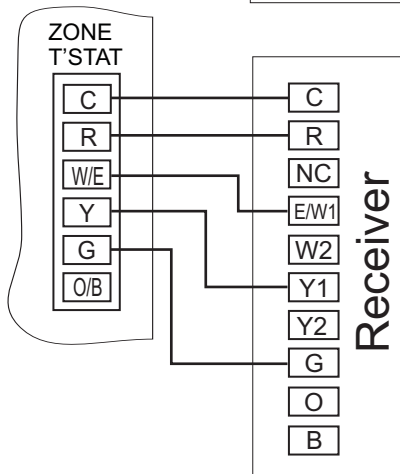


Figure 5

For detailed wiring info refer to NCM-300 TB-226

**Warning:** There should be at least 1 hardwired system thermostat in the home or building to ensure the ability to control the HVAC equipment in the event of a drained battery or loss of communication.

# PROGRAMMING CONFIGURATION

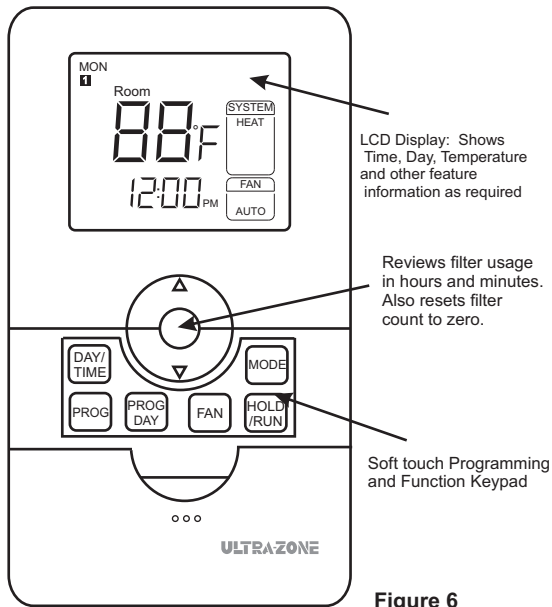


Figure 6

The configuration menu allows you to set the thermostat operating characteristics to your system requirements. Set SYSTEM mode to OFF, then press and hold the **PROG** key for five seconds to enter the configuration menu. The display will show the first item in the configuration menu. The configuration menu table shows the configuration options and an explanation of each option. Press the **PROG** key to step to the next menu item. To exit the menu and return to program operation, press **HOLD/RUN** key. If no keys are pressed within fifteen seconds, the thermostat will revert back to program operation.

## Installer Configuration Menu

Step	Press Button	Displayed (Factory Default)	Press up or down key to select	Comments
1	Mode		System OFF	System must be OFF to run Configuration menu
2	Prog	STD2	SS1, STD-2 HP1 or HP2	Selects System Configuration Conventional, Heat Pump 1 or 2 Stage
3	Prog	Fan (HE)	HG	Select Fan Gas/Electric On Heat Pump must be HE
4	Prog	RECO (OF)	ON	Recovery Function ON or OFF
5	Prog	SPAN (2)	1 or 3	Cycle Rate Selection - Stage 1 1 Fast 3 Slow
6	Prog	BLIT (ON)	OF	Backlight On or OFF
7	Prog	SP2 (2)	1 or 3	Cycle Rate Selection Stage 2 1 Fast 3 Slow
8	Prog	CF (F)	C	Select Temp Display F or C
9	Prog	Hour (12)	24	Select Time Format 12 or 24 Hr
10	Prog	COHP (OF)	ON	Selects Compressor Lockout ON or OFF
11	Prog	CANL (1)	1-10	Selects Communication Channels Requires thermostat to be re-matched
12	Prog	CRES (0)	1	This Function is not used in Installer Configuration. This Function is for Matching Your T'stat and Receiver
13	Prog	TEST (0)	1 or 2	This Function is not used in Installer Configuration. This Function is for Testing Your T'stat after Matching
14	Prog	FACT (0)	1	To Restore Factory Defaults Select 1 If Desired Requires thermostat to be re-matched

## Temperature Range

This thermostat can be programmed between 45°F and 95°F (7°C and 35°C). However, it will display room temperatures from 30°F to 99°F (0°C and 37°C). "HI" will be displayed if the temperature is higher than 99°F (37°C), and "LO" will display if the temperature is lower than 30°F (0°C). This thermostat will automatically cutoff in Heat if the temperature rises above 95°F (35°C), and automatically cutoff in Cool mode if the temperature drops below 45°F (7°C).

## Time Delay

The thermostat will provide a 4 minute delay after shutting down the heating or cooling system before it can be restarted if **[ON]** is selected at step 10 of the configuration menu. This delay applies equally to heating or cooling systems. This feature should **not** be used in conjunction with a ULTRA-ZONE Zone Panel.

## Thermostat Programming

You can program your thermostat prior to installation by following these instructions and starting at the configuration menu. This can be done while you relax in your favorite chair and is a very good way to familiarize yourself with all the functions of your thermostat.

The EWT-3900 is Energy Star rated and the following time and temperature settings are pre-programmed into the thermostat.

Program Number	Time	Temperature in °F (°C)	
		Heat	Cool
1	6:00 am	68°F (20°C)	78°F (26°C)
2	8:00 am	60°F (16°C)	85°F (29°C)
3	4:00 pm	68°F (20°C)	78°F (26°C)
4	10:00 pm	60°F (16°C)	82°F (28°C)

## Setting The Current Time and Day of the Week

- 1) Press **DAY/TIME** key. The hour will start flashing. Press the or keys to set the correct hour and AM/PM designation.
  - 2) Press **DAY/TIME** key again and the minute will start flashing. Press the or keys to set the correct minutes.
  - 3) Press **DAY/TIME** key again and the current day of the week will start to flash. Press or keys to set the current day of the week.
- After 30 seconds the thermostat will return to the current program.

# PROGRAMMING CONFIGURATION














## Programming Temperature Settings

The EWT-3900 Thermostat can be programmed for weekdays and weekends [5/2] or have a unique program for each of the 7 days of the week. Each day can have a maximum of 4 time and temperature settings for heating and cooling. With the "Auto Recovery" feature enabled, the thermostat will advance the program based on temperature difference [ t] of the current temperature and the next desired set point.


The program time can be set in 10-minute increments, and remains the same for both heat and cool programs.

The program temperature can be set in increments of 1°F (1°C).

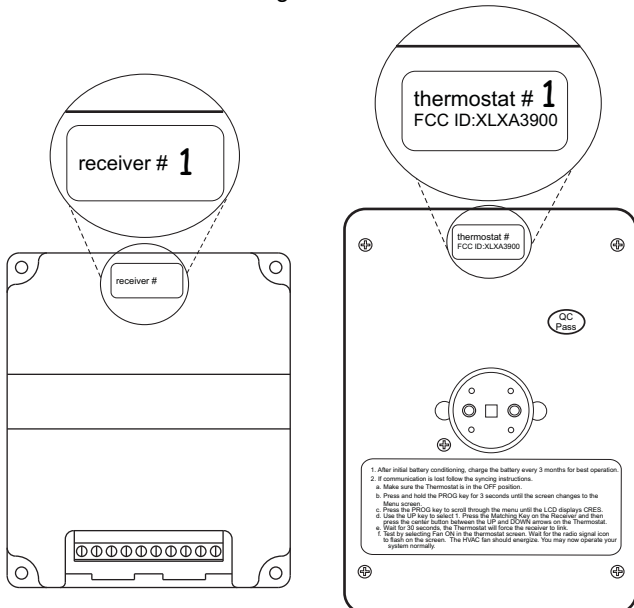
The Heat set point can not be set higher than the Cool set point, and the Cool set point can not be set lower than the Heat set point.

- 1) Put Thermostat into **RUN MODE** in either heat or cool.
- 2) Select program mode, either 5-2 day or 7 individual days by pressing  key until desired program is selected.
- 3) Press  key and in the program window will appear the hour flashing. Use the  or  keys to set the hour. Note AM or PM.
- 4) Press  key again to change to the minute position. Use  or  keys to change the minute.
- 5) Press  key again to set to the program COOL set temperature. Use the  or  keys to set to your desired temperature setting.
- 6) Press  key again to set to the program HEAT set temperature. Use the  or  keys to set to your desired temperature setting.

### Program 1 is Complete





- 7) Press  key to move to program 2, 3 and 4 and follow the same steps.

If you have more than one EWT-3900 installed on your system, be sure to number each receiver with its corresponding thermostat after removing them from the box.





## Permanent Override or a Designated Day Override


To hold your Manual Override for a designated number of days.

- 1) Press the  key once to make the current program temperature the HOLD temperature. "Permanent Override" will be displayed on the LCD and the program number will disappear.
- 2) Use the  or  keys to set the Permanent Manual Override temperature you desire.
- 3) Press  key to initiate Permanent Manual Override or wait 20 seconds for it to take effect.

You are now set in Permanent Override Mode. To set your thermostat to hold it for a designated number of days:

- 1) Press the  key once. Override Until **1 Days** will appear on the LCD and the clock will disappear.
- 2) Press the  key to adjust the number of override days.
- 3) After 30 seconds the change will take effect.

## To end Override:

To end a Designated Day Override, press the  key once. The thermostat will return to the current program and the HOLD will be canceled.

To end Permanent Override press the  key twice.

## Auto Changeover

When the system mode selector is in the AUTO position, the thermostat will automatically change between Heating and Cooling modes as the actual room temperature fluctuates. We recommend keeping the programmed heating and cooling temperature at least 3° apart to allow the Auto Changeover to occur when the appropriate temperature span has been reached. For example, you may have the following temperatures programmed at a given time:

Heat Set Temp = 68°F, Cool Set Temp = 78°F

If the room temperature rises above 78°F, then the thermostat will automatically change to cool mode and turn on the air conditioner.

Likewise, the thermostat will automatically switch to heat mode and turn on the heat when room temperature falls below 68°F. In between 68°F and 78°F - no system operation will occur.

## Auto Recovery



Auto Recovery calculates when to start the HVAC system in order to reach the programmed set-point at the programmed time. Auto Recovery can be enabled or disabled in step 4 of the installer configuration menu.

Auto Recovery will not operate if Permanent Hold or Temporary Hold is in operation.




The Heat set point can not be set higher than the Cool set point, and the Cool set point can not be set lower than the Heat set point.

## **Fan Operation**




If your system does not have a G terminal connection, skip to the next section (cooling).

1. Turn on power to system.
2. Press  key to ON mode. The blower should begin to operate.
3. Move  key into AUTO mode. The blower should stop immediately.




## **Cooling System**

1. Press  key to select Cool mode.
2. Press  key to adjust thermostat setting below room temperature. The blower should come on immediately on high speed, followed by cold air circulation. The display should show "STG1".
3. Adjust temperature setting to 4°F (2°C) below room temperature. The second stage cooling should begin to operate and the display should show "STG1+2".
4. Press  key to adjust the temperature setting above room temperature. The cooling system should stop operating.

## **Heating System (Gas)**




1. Press the  key until HEAT shows on the LCD display.
2. Press  key to adjust thermostat setting to 2°F (1°C) above room temperature. The first stage heating system should begin to operate. The display should show "STG1".
3. Adjust temperature setting to 4°F (2°C) above room temperature. If your system configuration is set to STD-2, the second stage heat system should begin to operate and the display should show "STG1+2".
4. Press  key to adjust the thermostat below room temperature. The heating system should stop operating.

## **Heating System - (Heatpump Application Only)**

1. Press the  key until HEAT shows on the LCD display.
2. Press  key to adjust thermostat setting to 2°F (1°C) above room temperature. The heating system should begin to operate. The display should show "STG1". However, if the set point temperature display begins to flashing, the compressor lockout feature is operating (see configuration menu, item 10).
3. Adjust temperature setting to 4°F (2°C) above room temperature. If your system configuration is set to STD-2, HP2 or HP1, the auxiliary heat system should begin to operate and the display should show "STG1+2".
4. Press  key to adjust the thermostat below room temperature. The heating system should stop operating.





## **Emergency System (Heatpump Application Only)**

EMER Mode bypasses the Heat Pump to use the heat source wired to terminal E/W1 on the Receiver. EMER is typically used when compressor operation is not desired, or you prefer back-up heat only.

1. Press the  key to select EMER. "EMER" will show on the display.
2. Press  key to adjust thermostat setting above room temperature. The Aux. heating system will begin to operate. The display will show "STG1" "EMER" to indicate that auxiliary heat is operating.
3. Adjust temperature setting to 4°F (2°C) above room temperature. The auxiliary system should begin to operate and the display should show "STG1+2".
4. Press the  key to adjust the thermostat below room temperature. The auxiliary heating system should stop operating.

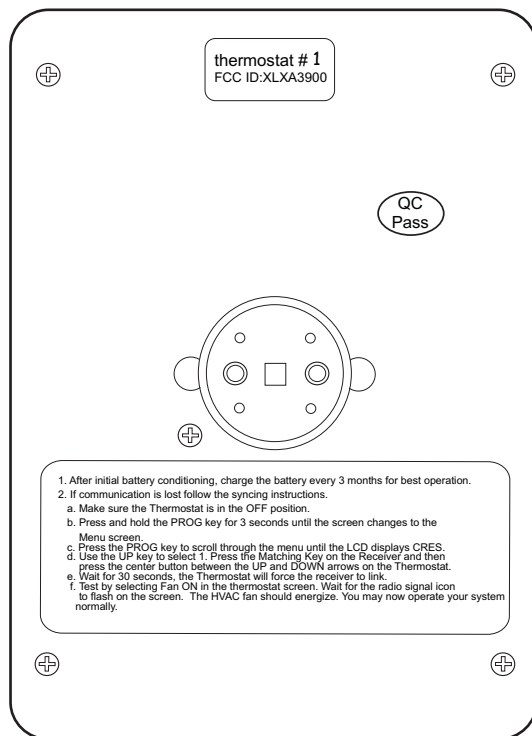
# TESTS/BATTERY/ ERROR CODES

The Model EWT-3900 Wireless Thermostat is Linked to the Receiver at the factory. Simply power up the Receiver and operate the Thermostat. Follow the instructions below **only** if you find the Thermostat and Receiver are not communicating.

1. Make sure the thermostat is in the OFF position.
2. Press and Hold the  key for 3 seconds until the screen changes to the menu screen.
3. Press  key to scroll through the menu until the LCD displays "CRES".
4. Use the  key to select 1. Press the Matching Key on the receiver and then press the  round button.  
The thermostat will force the receiver to link.
5. Test by selecting Fan ON in the Thermostat screen. Wait for the radio signal icon to flash on the screen.


If you continue to have difficulty matching your thermostat to the receiver please contact the engineering Department at EWC Controls, Inc. 1-800-446-3110.


When using more than one EWT-3900 thermostat on the same system be sure to set up **one zone at a time** to ensure a unique address is used for each zone.



## Keyboard Lock


The thermostat can be locked to prevent unauthorized changes from being made.


To lock or unlock the keyboard, press and hold the  button for 3 seconds. The keyboard is locked when LOCK appears on the display. Anytime a key is pressed, LOCK will appear on the screen for one second.

To exit Lock mode press and hold the  key for 3 seconds.

## Filter Monitor

Your thermostat also keeps a record of the number of days your filter has been in use. To maximize your systems performance and energy efficiency, change or clean your filter regularly. When the total fan time reaches 400 hours, you need to clean or change your systems filter, "FILTER" will continue to display until the counter is reset to zero.

Press the  center button to review filter usage. "FILTER" displays with the total number usage in days.

To reset the Filter Monitor counter, press and **hold** the  center button for 3 seconds when the filter monitor day shows. The display will blink and the counter will be reset to zero

## Battery Conditioning

Your lithium battery can be recharged from the USB port on a PC or 5V power supply wall charger (EWT-BC) (Not Included). The Lithium Battery should be charged at least 12 hours for the first 3 times to properly condition the battery.

## Low Battery Warning

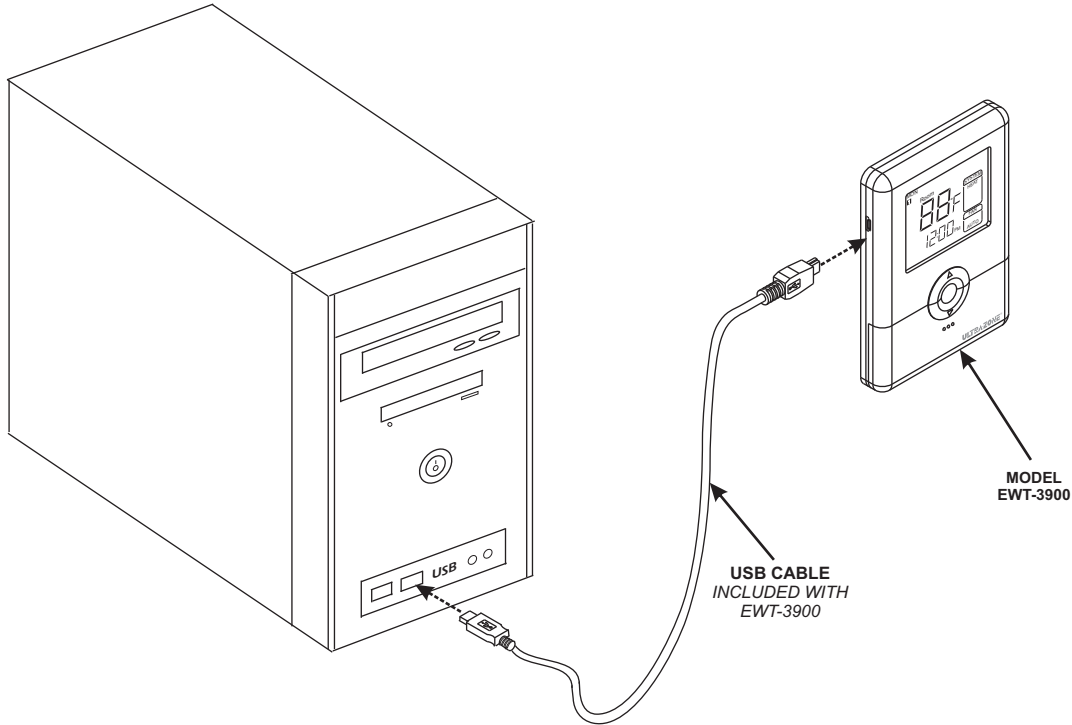
Your thermostat has a battery warning system. When the batteries become weak, the first stage low battery warning is indicated by the battery symbol flashing on the LCD display. At your earliest convenience you need to charge the batteries through a wall charger or USB port. During the charging process the battery icon will flash. When charging is complete, the battery icon will disappear.

## ERROR CODES

If the thermostat is unable to control the system due to an unexpected problem, the thermostat will enter Error Mode. In this condition, the thermostat flashes "E1", "E2" on the LCD Display, and shuts off your system. When the thermostats wireless channel is changed without registration, the display will show "E4" to warn, it must re-register again. "E4" will disappear after registration succeeded. You can set your thermostat back to the original channel to avoid re-registration.

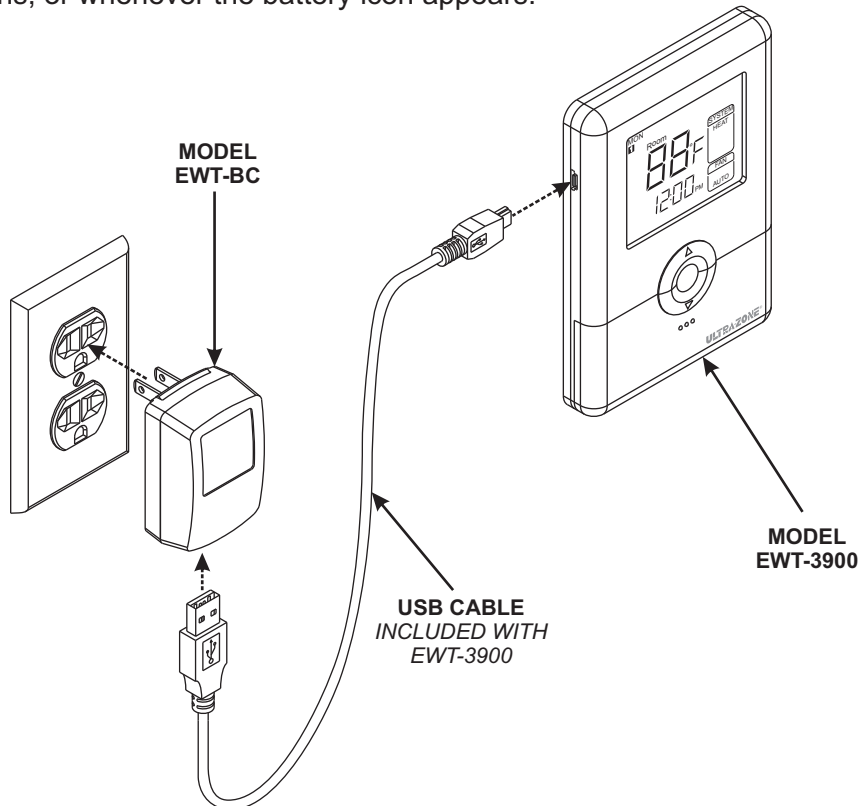
LCD Display	Error Info	LCD Display	Error Info
E1	Sensor Error	E2	System Switch Error
E4	Channel Change without matching with receiver		

The EWT-3900 comes with a USB Cable to charge your thermostat battery using your home computer. **TO USE:** Attach the USB Cable (Provided with the EWT-3900) to the Thermostat and to the USB Port on your home computer. Your computer must be on for the charge to take affect. Allow the thermostat to charge for at least 12 hours during the first three charging cycles.



The Model EWT-BC is an optional wall charger for the Model EWT-3900 Wireless Thermostat.

**TO USE:** Attach the USB Cable (Provided with the EWT-3900) to the Thermostat and the Charger. Then plug the charger into the wall. Allow the thermostat to charge for at least 12 hours during the first three charging cycles, in order to condition the battery properly. After the initial conditioning, Re-charge the battery for 24 Hours, every 3-6 months, or whenever the battery icon appears.



FCCID: XLXA3900

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.

### **FEDERAL COMMUNICATIONS COMMISSION (FCC) STATEMENT**

This equipment has been tested to FCC requirements and has been found acceptable for use. The FCC requires the following statement for your information:

This equipment generates and uses radio frequency energy and, if not installed and used properly; that is, in strict accordance with the manufacture's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause 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:

- If using an indoor antenna, have a quality outdoor antenna installed.
- Reorient the receiving antenna until interference is reduced or eliminated.
- Move the radio or television receiver away from the receiver/control.
- Move the antenna leads away from any wire runs to the receiver/control
- Plug the receiver/control into a different outlet so that it and the radio or television receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user or installer may find the following booklet prepared by the Federal Communications Commission helpful:

"Interference Handbook"

This booklet is available under Stock Number 004-000-00450-7 from the US Government Printing Office, Washington DC 20402.

*The user shall not make any changes or modifications to the equipment unless authorized by the Installation Instructions or User's Manual. Unauthorized changes or modifications could void the user's authority to operate the equipment and will void the product warranty.*

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