

Installer : Save these instructions for future use!

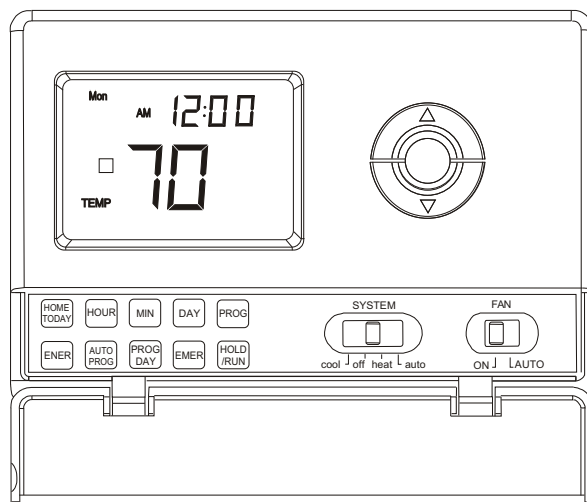
FAILURE TO READ AND FOLLOW INSTRUCTIONS CAREFULLY BEFORE INSTALLATION OR OPERATION COULD DAMAGE THIS CONTROL OR CAUSE PROPERTY DAMAGE.

DESCRIPTION

The EWT-3707 is a Programmable Digital Solid State Thermostat.

Features:

- The Thermostat can be powered by 24VAC or two AA batteries. If both power sources are used, the batteries will backup the 24VAC.
- Compatible Equipment: ULTRA-ZONE Control Panels: ST-2E/3E, NCM-300, BMPlus3000 & UZC-4. Two Stage Heating and Single Stage Cooling Equipment. Gas, Electric, Oil or Hydronic.
- LCD continuously displays 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.
- The thermostat terminal block has the following terminals: O, B, L, W2, G, Y1, C, R and E/W1.
- Filter Monitor to keep track of the systems filter use.



Contents:

- 1 EWT-3707 Thermostat
- 2 Plastic Wall Anchors
- 2 #8 x 1" Screws
- 2 AA Batteries
- 1 TB-235 Technical Bulletin

Figure 1

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)

Technical Data

Power	24VAC, 50/60Hz or two AA batteries as primary or backup source.
Working Environment	32°F~120°F
Range	5~90%RH(non-condensing)
Shell	Fire Retardant PC ABS
Dimension	3.5x5.1x1.2 in (HxWxD)
Connection Interface	Each terminal is capable of accepting 2 x 18 AWG solid copper wires.

⚠ 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.

⚠ 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. You can take your mercury thermostat to your local HVAC wholesaler for recycling.

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.

⚠ CAUTION

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

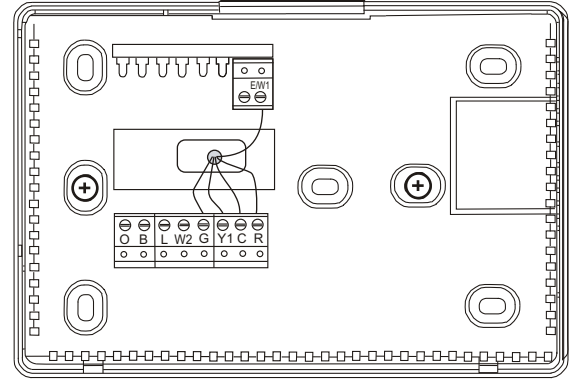


Figure 2

Mount the EWT-3707 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 THERMOSTAT BASE TO THE WALL

Position wallplate on the wall and pull the wires through the large opening. Level the unit for appearance. Mark the mounting holes for the provided wall anchors.

Drill holes with a 3/16" bit and gently tap anchors into holes until flush with the wall.

Reposition wallplate to wall, pulling wires through the large opening. Insert mounting screws provided into the wall anchors and tighten.

(See figure 2.)

⚠ 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.

This thermostat is configured from the factory to operate a heat/cool, fossil fuel (gas, oil, etc.) forced air system. It is configured correctly for any system that **DOES NOT** require the thermostat to energize the fan on a call for heat. If your system is electric heat or hydronic system that requires the thermostat to turn on the fan on a call for heat, locate the GAS/ELEC switch on the back of the thermostat (See figure 3) and switch it to the ELEC position. This will allow the thermostat to energize the fan immediately on a call for heat. When the thermostat is configured for Heatpump, the thermostat will always power the fan on a call for heat in HEAT mode. The GAS/ELEC switch must be set to match the type of auxiliary heat your system uses for proper operation in emergency mode. Refer to equipment manufacturers' instructions for specific wiring information.

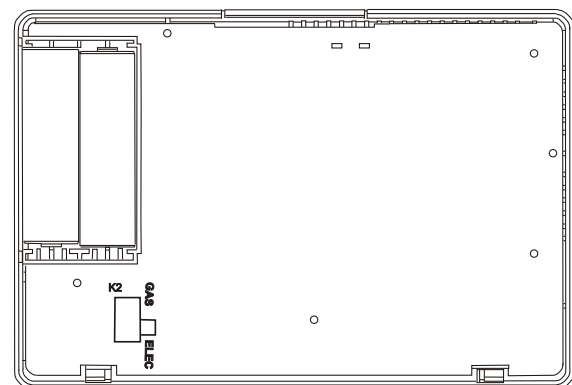


Figure 3

CONFIGURATION

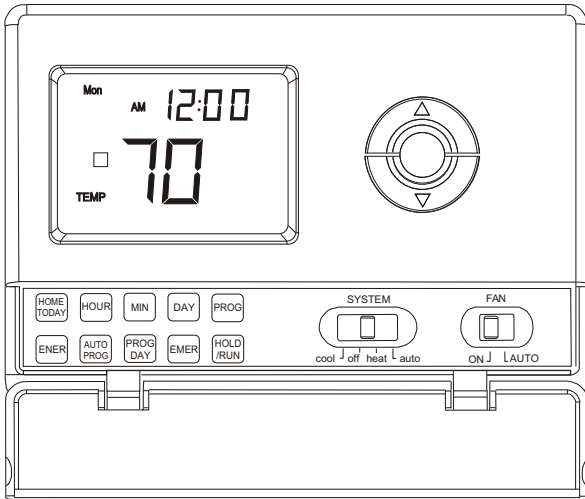


















Figure 4











-  — Overrides energy saving program temperatures while you are at home for the day.
-  — For entering hour of the day.
-  — For entering minute of the hour.
-  — For entering day of the week.
-  — Enters Program Mode for reviewing and changing weekday, weekend or daily programs.
-  — Measures and displays Heating and Cooling operating elapsed time for today, Yesterday, This Week, Last week, or Total.
-  — Automatically programs the thermostat to its default energy savings program setting.
-  — Selects the day or days to review or change in Program Mode.
-  — Emergency Mode.
-  — Provides permanent temperature setting by overriding stored programs. It also returns the thermostats to current program control from manual override or Home Today Mode. Returns display to current time and temperature.
-  — Reviews Filter usage in hours and minutes, and resets filter counter to zero. Also steps to next setting in the configuration mode. 

Thermostat Programming

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

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  and  keys at the same time 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  key to step to the next menu item. To exit the menu and return to program operation, press 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		MS 2	SS1, HP1, HP2	Selects System Configuration
2		RECO(OFF)	ON	Auto Recovery Select
3		SPAN (2)	1 or 3	Span (one stage)
4		BLIT(ON)	OFF	Backlight On or OFF
5		SP2 (2)	1 or 3	Span (two stage)
6		TEMP(F)	C	Select Temp Display F or C
7		HOUR(12)	24	Select Time Format 12 or 24 Hr
8		COMP (OFF)	ON	Compressor Time Delay ON or OFF
9		COOL (2)	1	This model must select 1
10		FACT (0)	1,2	To Restore Factory Defaults Select 1 if Desired

Note: MS2 & HP2 have no Y2 function in this model thermostat.

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 8 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 TERMINALS (CONVENTIONAL)		
SYSTEM	Single Stage (SS1)	Multistage (MS2)
C	24 Volt (Common)	
R	24 Volt (Hot)	
E/W1	Heat Mode 1st stage	
W2	No Output	Heat Mode 2nd stage
Y1	Compressor	No Function
L	Malfunction	
G	Blower/Fan Energized on call for Cool (and Heat if HE was selected)	
O	Energized in Cool Mode - Continuous	
B	Energized in Heat Mode - Continuous	

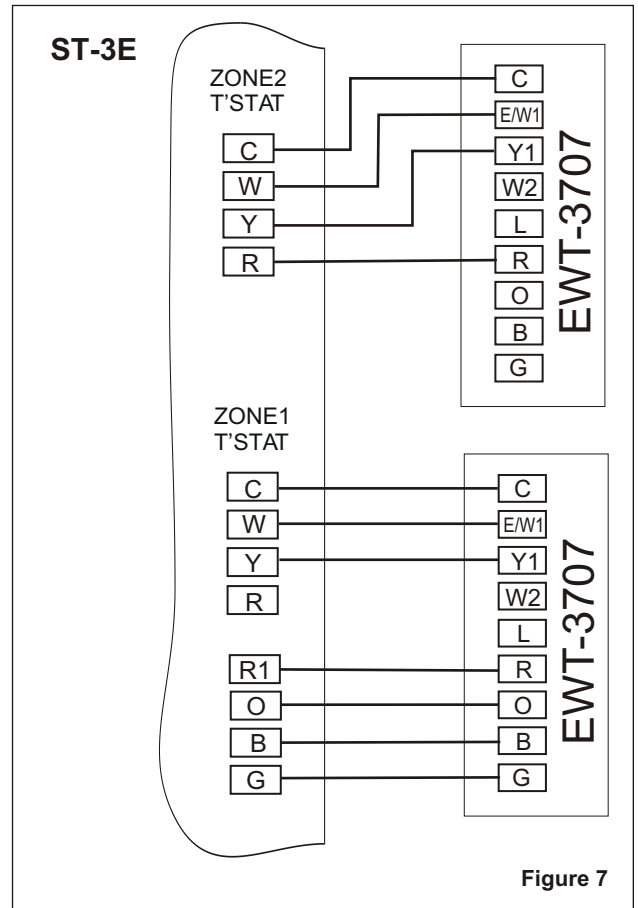


Figure 7

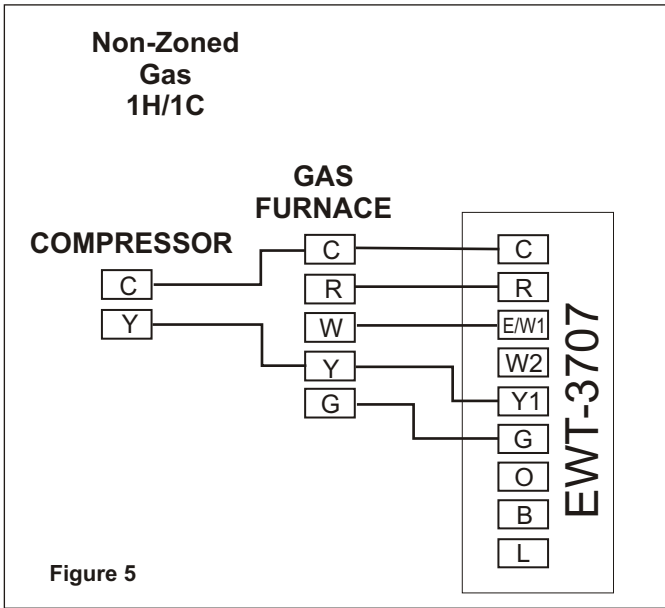


Figure 5

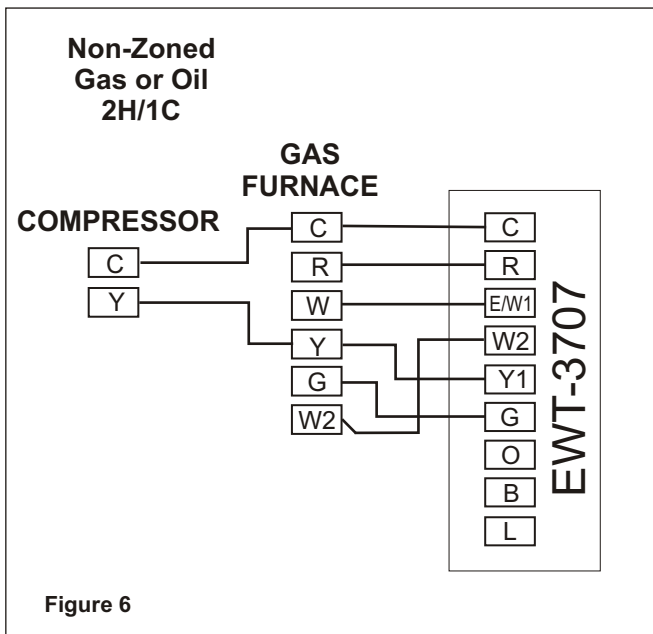


Figure 6

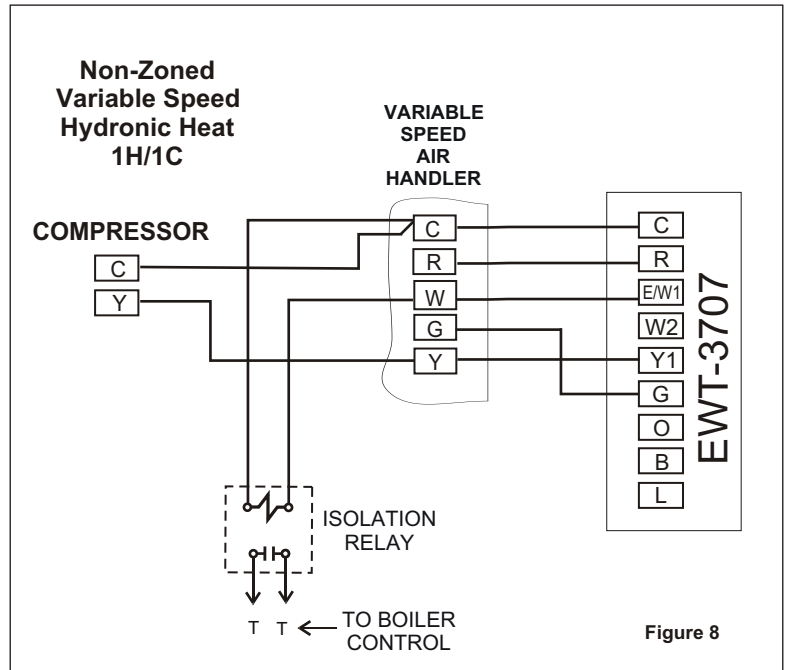


Figure 8

THERMOSTAT TERMINALS (HEAT PUMP)		
SYSTEM	Heat Pump 1 (HP1)	Heat Pump 2 (HP2)
C	24 Volt (Common)	
R	24 Volt (Hot)	
E/W1	Emergency 1st stage	
W2	Auxiliary / Emergency 2nd Stage	
Y1	Compressor	No Function
L	Malfunction	
G	Blower/Fan Energized on call for Heat and Cool	
O	Energized in Cool Mode	
B	Energized in Heat Mode	

**UZC-4
Heat Pump 2H/1C
"O" Reversing Valve**

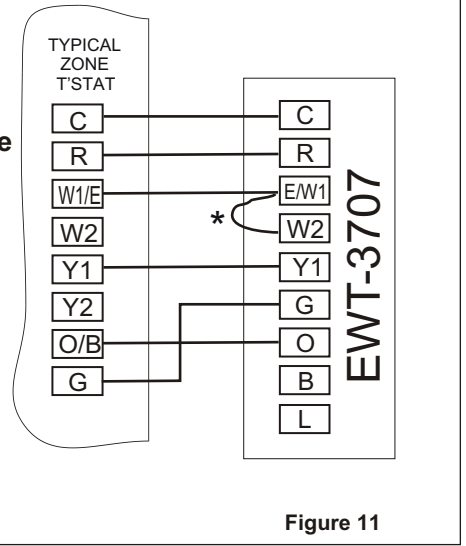


Figure 11

**Non-Zoned Heat Pump w/
Malfunction Circuit
2H/1C
"O" Rev Valve**

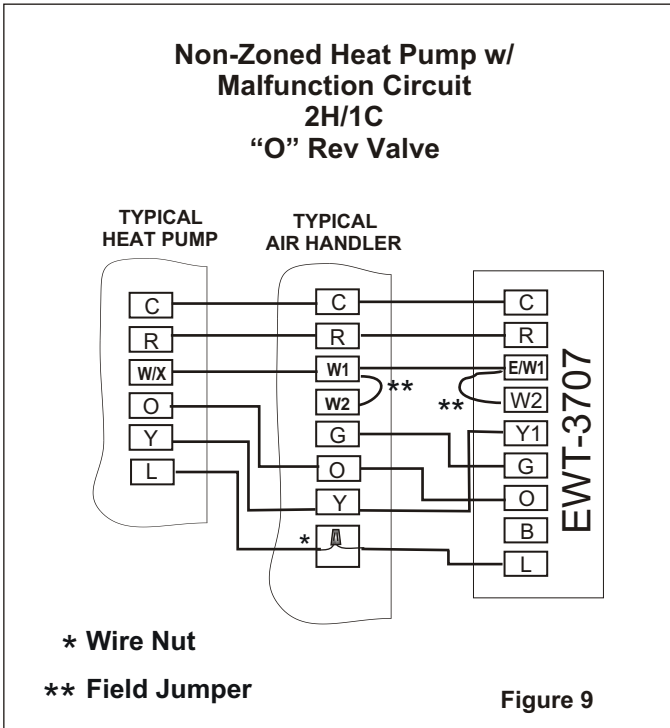


Figure 9

**BMPlus3000
Heat Pump 2H/1C
"O" Reversing Valve**

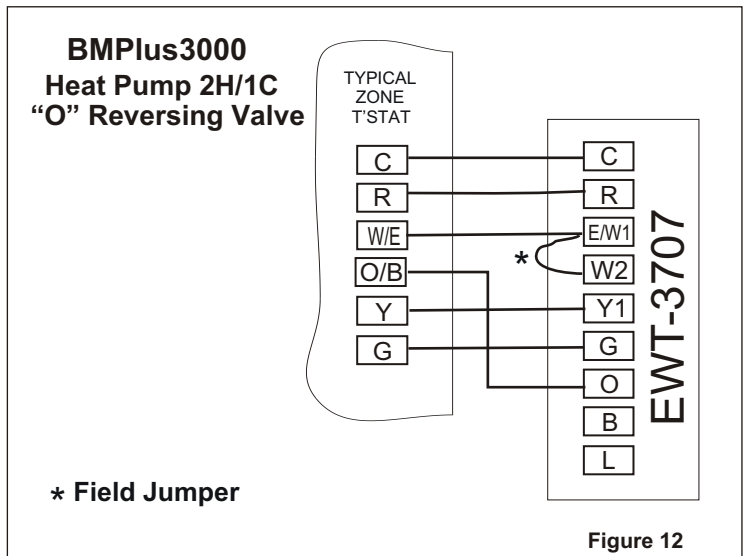


Figure 12

**NCM-300
Gas/Elec. 2H/1C
Radiant/Baseboard
w/ Hot Air**

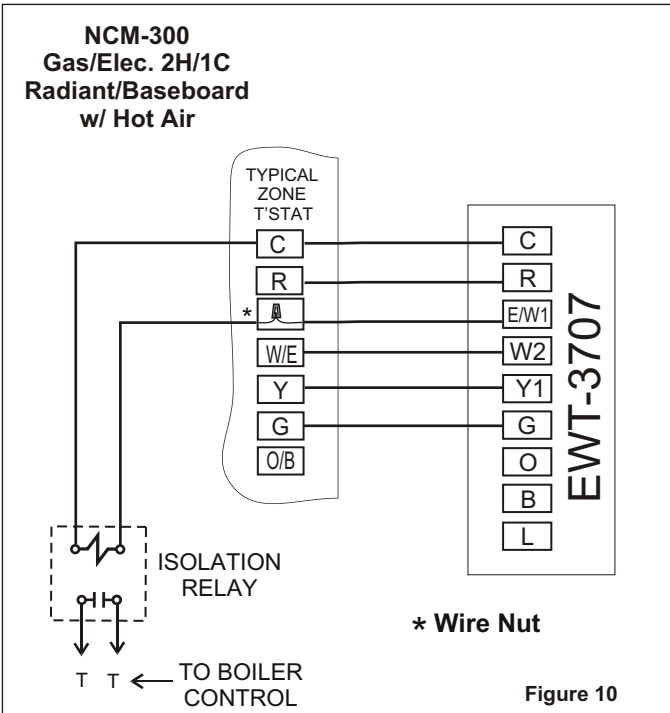


Figure 10

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

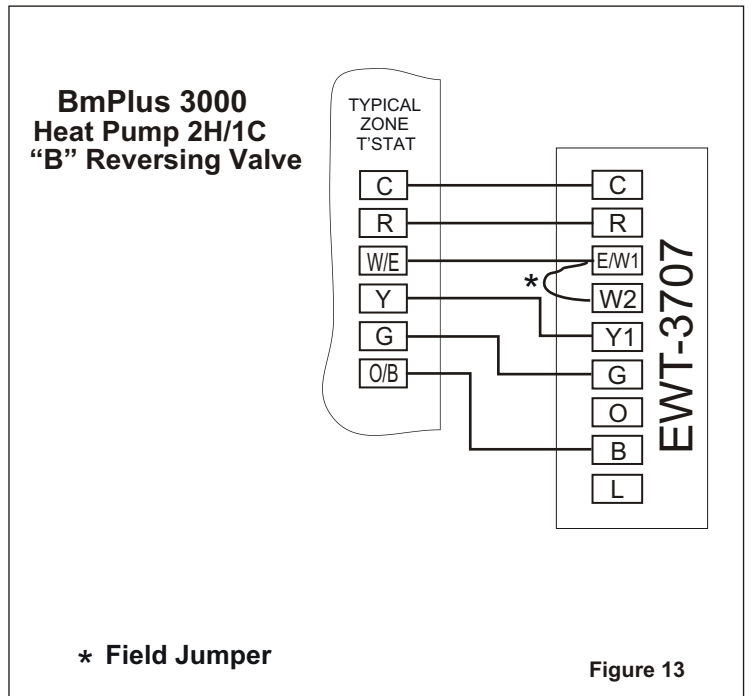


Figure 13

PROGRAMMING

Auto Programming

Studies conducted by the Department of Energy estimates that setting your thermostat back 10°F (6°C) for two 8-hour periods during the winter can reduce your fuel bill by as much as 33%. By setting your thermostat up to 5°F (3°C) for 2 8-hour periods during the summer can reduce your bill by up to 25%.

Your thermostat is capable of handling up to 4 separate programs for each day of the week. You can program all weekdays, Monday to Friday, to the same 4 programs as shown in the table, or each weekday have a different set of 4 programs. Similarly, weekend programs Saturday and Sunday, can be the same 4 programs or each weekend day can have a different set of 4 programs. Your thermostat is preprogrammed for energy efficiency. Note that it is easier to modify these programs than it is to program the thermostat manually.

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)	85°F(29°C)

Auto Changeover

When the system mode selector is in the AUTO position, the thermostat will automatically change between Heating and Cooling modes depending on the room temperature difference of your current program setting. 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.

Note: In Auto Changeover Mode, 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.

Manual Programming

Your thermostat can be programmed for weekdays, weekends, or have unique programs for all 7 days. Use Weekday/Weekend Programs or 7-day Programming to enter or revise programs to match your Personal Program Schedule. The same steps are used when entering steps for the first time, or revising programs entered during Auto Programming.

Familiarize yourself with Manual Programming, so that you can easily modify your programs as your comfort needs change. The example below demonstrates the Manual Programming method.

NOTE:

1. The program time can be set in 10-minute increments, and remains the same for both Heat and Cool programs.
2. The program temperature can be set in increments of 1°F.
3. If the system selector switch is in the AUTO mode, the current operating mode will be used for programming.
4. After 15 seconds without a key press, the thermostat will return to normal display mode.
5. When setting the time period note AM/PM indicator.
6. Auto Recovery will determine how early to turn your system on, so that the room is comfortable at the programmed time.


Auto Recovery

Auto Recovery calculates how early to energize your system back on, so that the room temperature is already comfortable by the start of the comfort temperature program. Auto Recovery can be enabled or disabled by selecting ON/OFF at Step 2 of the installer configuration menu.


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

Home Today

This feature allows you to quickly and temporarily Override your energy saving program setting with one key.

Press  to enter the Home Today override. The highest program temperature for today will be selected from your programs in Heat mode and become the set temperature. (In Cool mode, Home Today will select the lowest program temperature for today to be the set temperature. The display will alternate between "HOME" and the current time. When pressed during the day, the thermostat will remain in the Home Today mode until the first program of the next day.





If the system is changed between Heat and Cool modes (either manually or by Auto Changeover) during the "Home Today" override period, the set-point temperature will be automatically updated.

Press  to exit Home Today mode before the schedule ending time. "HOME" is no longer displayed on the LCD screen, and the thermostat returns to the current program.

You can manually change the set-point temperature while in Home Today mode. Refer to Setting New Temperature on page 8. This will not affect Home Today ending time, however the set temperature will not change automatically with a manual or automatic change between heating and cooling.







PROGRAMMING

Setting The Current Time and Day of the Week


- 1) Press and hold  to rapid advance to the current hour.
Tap to advance one hour at a time. Note AM/PM indicator, as the display will cycle through 24 hours.
- 2) Press and hold  to rapid advance to the current minute.
Tap to advance one minute at a time.
- 3) Tap  to advance one day at a time. When finished press  to return to normal mode. After 15 seconds, the thermostat will return to normal mode automatically.

Weekday/Weekend Programming







Weekday

- 1) Put Thermostat into **RUN MODE** in either heat or cool depending on what mode you would like to operate.
- 2) Select program mode, 5-2 day, by pressing  key until Monday to Friday is displayed on the screen.
- 3) Press  key and the program window will appear.
- 4) Use the  key to set the hour. Note AM or PM.
- 4) Press  key to set to the minute position. The minutes will change in increments of 15.
- 5) 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.

Weekend

- 1) Put Thermostat into **RUN MODE** in either heat or cool depending on what mode you would like to operate.
- 2) Select program mode, 5-2 day, by pressing  key until Saturday and Sunday is displayed on the screen.
- 3) Press  key and the program window will appear.
- 4) Use the  key to set the hour. Note AM or PM.
- 4) Press  key to change to the minute position. The minutes will change in increments of 15.
- 5) Use the  or  keys to set to your desired temperature setting.

Individual Day Programming

To program an individual day with its own program, first select the day in the display, then insert the desired time and temperatures.

- 1) Put Thermostat into **RUN MODE** in either heat or cool depending on what mode you would like to operate.
- 2) Select program mode, 7 day individually, by pressing  key until the individual day of the week you would like to program is displayed on the screen.
- 3) Press  key and the program window will appear.
- 4) Use the  key to set the hour. Note AM or PM.
- 4) Press  key to change to the minute position. The minutes will change in increments of 15.
- 5) Use the  or  keys to set to your desired temperature setting.

Before programming or changing programs, use this Personal Program Schedule to determine which time and temperature settings will best satisfy both your comfort and energy saving requirements. Use a pencil so you can revise your records each time you change your temperature settings.

Heating

Day	Program 1	Program 2	Program 3	Program 4
Mon.	Time:	Time:	Time:	Time:
	Temp:	Temp:	Temp:	Temp:
Tue.	Time:	Time:	Time:	Time:
	Temp:	Temp:	Temp:	Temp:
Wed.	Time:	Time:	Time:	Time:
	Temp:	Temp:	Temp:	Temp:
Thu.	Time:	Time:	Time:	Time:
	Temp:	Temp:	Temp:	Temp:
Fri.	Time:	Time:	Time:	Time:
	Temp:	Temp:	Temp:	Temp:
Sat.	Time:	Time:	Time:	Time:
	Temp:	Temp:	Temp:	Temp:
Sun.	Time:	Time:	Time:	Time:
	Temp:	Temp:	Temp:	Temp:

Cooling

Day	Program 1	Program 2	Program 3	Program 4
Mon.	Time:	Time:	Time:	Time:
	Temp:	Temp:	Temp:	Temp:
Tue.	Time:	Time:	Time:	Time:
	Temp:	Temp:	Temp:	Temp:
Wed.	Time:	Time:	Time:	Time:
	Temp:	Temp:	Temp:	Temp:
Thu.	Time:	Time:	Time:	Time:
	Temp:	Temp:	Temp:	Temp:
Fri.	Time:	Time:	Time:	Time:
	Temp:	Temp:	Temp:	Temp:
Sat.	Time:	Time:	Time:	Time:
	Temp:	Temp:	Temp:	Temp:
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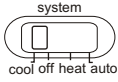
OPERATION

This thermostat will operate on a full 24vac (R&C) power supply. If desired, two batteries (AA) may be used as a backup power supply in the event of a power failure. If a full 24vac is not available, then use two AA batteries as the primary power supply.

Start-up

The LCD will show the factory default display of 70°F (21°C) when the batteries are first installed. The temperature will update after a few seconds.

System Selector Switch



The System Selector Switch on the front of the thermostat determines the operating mode of the thermostat. You may select COOL, OFF, HEAT or AUTO. CAUTION: Anytime you install or remove the thermostat from the wallplate, slide the System Selector to the OFF position to prevent the possibility of a rapid system function.

Fan Switch





The Fan Switch should normally be located in the AUTO position. The fan will be turned on along with normal operation of your system. In gas or oil furnace, the fan will be turned on by the furnace after its warm-up delay. For electric heat, air conditioning, and heat pump operation, the fan will turn on with the system. To run the fan continuously, slide the fan switch to the ON position.

Review Current Set Temperature

Press either the up or down key once to see the set temperature. The factory default is 68°F (20°C) when started with the System Switch in OFF or HEAT, and 78°F (26°C) when started with the System Switch in COOL.

Setting New Temperature

Press either  or  once and display the set temperature.


Press either  or  again to change your desired set-point temperature. Hold the key down for over 2 seconds to fast advance the set-point temperature.

Auto Shut Off

Your thermostat will automatically cut off in HEAT mode if the room temperature rises above 95°F (35°C). It will cut off in COOL mode if the room temperature drops below 45°F (7°C).

Note that if your system has malfunctioned and no longer responds to thermostat controls, the Auto shut off will have no effect.

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 system 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 system filter, "FILTER" will flash continuously 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.

System Monitor

If the System Monitor Switch on the Heat Pump is closed, completing the circuit from "R to L" the display will show "E5"

Backlighting

Your thermostat has an electro-luminescent lamp that backlights the display for easy viewing in the dark.

When any key is pressed, the display is illuminated.

The display will remain illuminated for 5 seconds after the last key is pressed.

NOTE: If the thermostat is in a Low battery warning condition, the backlight will not operate. Replace with 2 new AA alkaline batteries to restore the backlight function.

Troubleshooting

Problem	Solution
Double Display	Remove clear mylar cover over LCD screen
No Display	Check 24VAC and or batteries. Replace batteries as needed
Entire Display Dims	Replace Batteries
Batt	Replace Batteries
Program does not change at desired setting	Check and correct as needed Settings: Time AM/PM Hold Home Today
Fan does not operate properly	Check position of: System Selector Switch Gas/Electric Switch
LCD displays permanently E1, E1, E3, E4 or the Thermostat does not function at all	Replace Thermostat
E5	Heat Pump Malfunction. Call Contractor