

246117 Programmable Thermostat / Heat Pump

A. Installation, Mounting:

CAUTION:

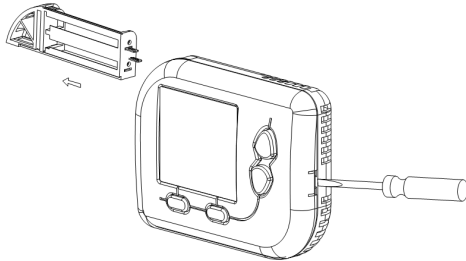
1. Turn off 246117, all electronic source and the electrical devices (e.g. heater) which will be connected before installation and maintenance.
2. The installer must be a trained service technician.

1. Installation location

The thermostat should be mounted on an inner wall 5 feet above the floor in position where it is readily affected by changes of the general room temperature with freely circulating air. Prevent direct exposure to sunlight; dripping or splashing area. Do not place this unit at a location where air circulation is low, or where it has great temperature changes (e.g. near door). Do not place the thermostat near heat generating sources (e.g. radiators, hot air vents, TV or lights). Do not expose the unit to moisture. Do not expose the unit to dipping or splashing.

2. Opening

Pull out the battery drawer and then lightly press on the spots shown below in order to detach the front shell from the base.

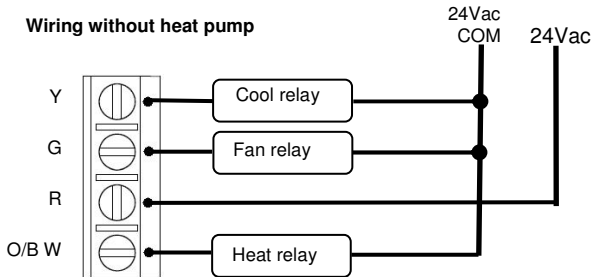


3. Wiring

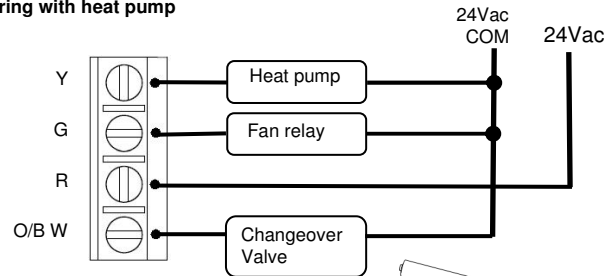
There are 4 wiring terminals at the back of the thermostat which are labeled as "Y", "G", "R" and "O/B W". The recommended wire range is (AWG) 14-22. Do not use metal conduits or of cables provided with a metal sheath.

Symbols	Terminals
Y	Cooler output (1A max.)
G	Fan output (1A max.)
R	24Vac Hot
O/B W	Changeover valve or Heater output (1A max)

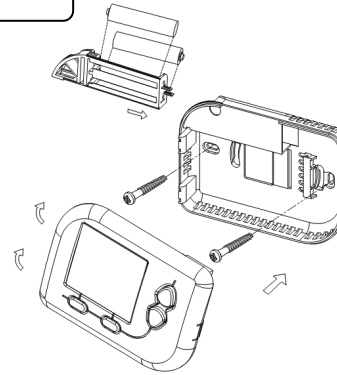
Wiring without heat pump



Wiring with heat pump



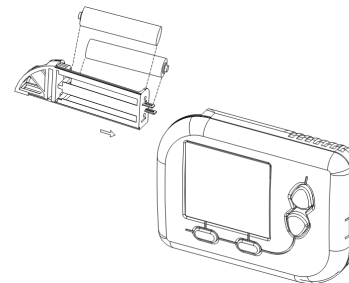
4. Mounting



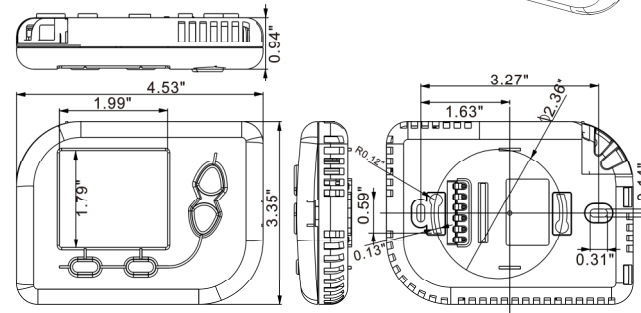
1. Ensure the surface is level.
2. Place the cables at the hole near the terminal block.
3. Insert 2 pcs of wall anchors into the holes of the wall.
4. Fasten the thermostat with 2 pcs of long screws through the 2 mounting holes.

5. Batteries insertion

Pull out the battery drawer and insert two fresh AAA alkaline batteries into the drawer according to the polarity marked inside; then slide the drawer back into place. Do not mix batteries or different type and different brand. Do not use old and new batteries simultaneously.

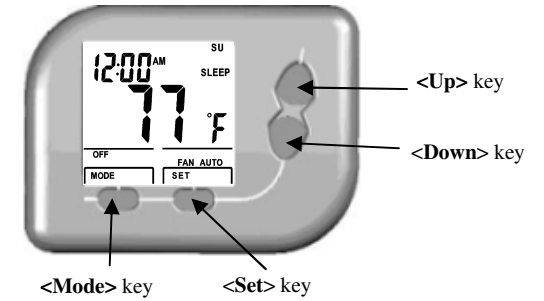


Dimension in inches



B. Operation:

1. When the unit is powered on, all the LCD segments are ON and then the first display screen is **Normal display mode** as below picture.
2. Temperature detection starts and LCD displays the room temperature within a few seconds.



3. Press **<MODE>** key to select off mode (default) / heat mode / cool mode.
4. By default, the thermostat runs at Program mode and will control heating/cooling automatically according to the default program time and temperature.
5. Press **<SET>** key to select Setting Menu.
6. Press **<Up>** or **<Down>** keys to adjust heat/ cool setting temperature.
7. In Heat mode, when temperature is below 5°C / 40°F, defrost function is activated with **DEFROST** displayed. Heater is on regardless of the setting temperature.
8. Below 0°C/ 32°F, 246117 will display **LO**. Heating will be activated in Heat mode.
9. Above 40°C/ 99°F, 246117 will display **HI**. Cooling will be activated in Cool mode.

C. Time setting:

1. Press **<SET>** key to enter Setting Menu.
2. Press **<NEXT>** key twice, until "CLOC" is displayed.
3. Press **<ENT>** key, to change the time, the Day of Week (MO/TU/WE/TH/FR/SA/SU) will flash, press **<Up>** or **<Down>** keys to select the current Day of Week, then press **<NEXT>** key.
4. The Hour will flash, press **<Up>** or **<Down>** keys to set the hour, then press **<NEXT>** key.
5. The Minute will flash, press **<Up>** or **<Down>** keys to set the minute.
6. Press **<MODE>** key to confirm the setting and return to Setting Menu.
7. Press **<NEXT>** key to resume to Normal display mode or the operation will resume to Normal display mode after no key is pressed for 10 seconds.

D. Temperature control:

This product can work as a simple setback thermostat or a programmable thermostat. By default, this product is configured as a programmable thermostat (Program On).

Program On

When Program is On, this thermostat will control the output according to the programmed time and temperature. The Default Program settings are as below:

Heat mode:

	MON-FRI		SAT		SUN	
	time	°F/°C	time	°F/°C	time	°F/°C
WAKE	6AM	70/21	6AM	70/21	6AM	70/21
OUT	8AM	61/16	8AM	61/16	8AM	61/16
BACK	6PM	70/21	6PM	70/21	6PM	70/21
SLEEP	10PM	61/16	11PM	61/16	11PM	61/16

Cool mode:

	MON-FRI		SAT		SUN	
	time	°F/°C	time	°F/°C	time	°F/°C
WAKE	6AM	75/24	6AM	75/24	6AM	75/24
OUT	8AM	85/29.5	8AM	85/29.5	8AM	85/29.5
BACK	6PM	75/24	6PM	75/24	6PM	75/24
SLEEP	10PM	85/29.5	11PM	85/29.5	11PM	85/29.5

Program Setting:

If the above program time and temperature does not suit user's preference, the program can be modified. To adjust heat/cool program settings,

- Select Heat/Cool mode by pressing <MODE> key at Normal display mode.
- Press <SET> key to enter Setting Menu.
- Press <NEXT> key, until "Prog" is displayed.
- Press <ENT> key, to enter Program setting, "ON"/"OFF" will flash, press <Up> or <Down> key to select program ON/OFF.
- Make sure "On" is selected, press <NEXT> key, to modify the program setting. Settings are adjusted in the order of: Weekday/Weekend → Hour → Minute → Setting Temperature
- The weekday will flash, press <Up> or <Down> keys to select the weekday (MO-FR) or weekend (SA, SU) program.
- Press <NEXT> key, to enter the WAKE zone program settings, the WAKE hour will flash, press <Up> or <Down> key to program the WAKE time.
- Press <NEXT> key, the WAKE minute will flash, press <Up> or <Down> key to program the WAKE time.
- Press <NEXT> key, the temperature will flash, press <Up> or <Down> key to program the setting temperature.
- Press <NEXT> key, to enter the OUT zone program settings, the modification of other zones (OUT, BACK, SLEEP) are similar to above steps.
- Press <MODE> key, to return to select Weekday/Weekend program to be modified.
- Press <MODE> key again, to confirm the setting and resume to Setting Menu.
- Press <NEXT> key to resume to Normal display mode or the operation will resume to Normal display mode after no key is pressed for 10 seconds.

Temporary Override:

When program is On, thermostat controls according to the program. If user wants to override the programmed temperature temporarily,

- Press <Up> or <Down> keys at Normal display mode, the current heat/cool setting temperature will flash.
- Press <Up> or <Down> keys to adjust heat/cool setting temperature with **VERRIDE** override displayed.
- In Heat mode, only heat setting temperature can be adjusted.
- In Cool mode, only cool setting temperature can be adjusted.
- The heat/cool setting temperature will be confirmed and return to Normal display mode, if no key is pressed for 10 sec.

Temporary Override Mode will last until next programmed time (zone) begins. At that time, the heat/cool setting temperature will follow the programmed setting temperature and **VERRIDE** will disappear. Or **VERRIDE** can be stopped manually by pressing <MODE> key.

Program Off

When Program is Off, this thermostat controls the output according to a single setpoint like a simple setback thermostat. To configure the unit to program Off,

- Select Heat/Cool mode by pressing <MODE> key at Normal display mode.
- Press <SET> key to enter Setting Menu.
- Press <NEXT> key, until "Prog" is displayed.
- Press <ENT> key, to enter Program setting, "ON"/"OFF" will flash, press <Up> or <Down> key to select program ON/OFF.
- Select "OFF" and then press <NEXT> key, to resume to Setting Menu.
- Press <NEXT> key to resume to Normal display mode or the operation will resume to Normal display mode after no key is pressed for 10 seconds.
- On this stage, the Program mode will be disabled and time zone icons will disappear in Normal display mode.

To adjust the setpoint at Program Off

- Press <Up> or <Down> key, the current heat/cool setting temperature will flash.
- Press <Up> or <Down> key to adjust heat/cool setting temperature. The symbol override **VERRIDE** will NOT display at Program Off.
- In Heat mode, only heat setting temperature can be adjusted.
- In Cool mode, only cool setting temperature can be adjusted.
- The heat/cool setting temperature will be confirmed and resume to Normal display mode after no key is pressed for 10 sec.

E. Fan operation:

If **FAN ON** is selected, Fan runs continuously.

If **FAN AUTO** is selected, Fan runs only when the heating or cooling system is on. Fan will be turned off 2 minutes after heating/cooling system is off.

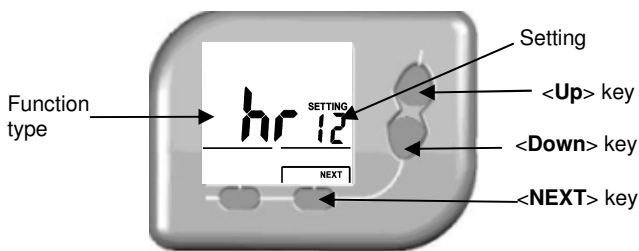
Fan mode setting:

- Press <SET> key to enter Setting Menu.
- Press <NEXT> key, until "FAN" is displayed.
- Press <ENT> key, to enter Fan mode setting, FAN ON/ FAN AUTO will flash.
- Press <Up> or <Down> keys to select Fan mode.
- Press <MODE> key to confirm the setting and resume to Setting Menu. Or the operation will resume to Normal display mode after no key is pressed for 10 seconds.

F. Advance setting:

Advance Setting contains Function Setting Selection and Temperature Calibration.

Function Setting Selection



- Press and Hold <SET> and <Down> keys for 2 seconds to enter Advanced Setting Mode.
- The left letters represent Function type; the right letters represent the settings.
- Press <Up>/ <Down> to adjust the Setting.
- Press <NEXT> to select Function type or to resume to Normal display mode at the end of Function Setting Selecting.
- Or the operation will resume to Normal display mode after no key is pressed for 10 seconds.

Table of the Function Setting Selection

Description	Function Type		Setting	
	LCD Display			
12hr/24hr selection	hr	12		
		24	(default)	
Temperature display unit	dE	°C		
		°F	(default)	
Temperature Control Span	SP	05	(+/- 0.5°C)	
		10	(+/- 1.0°C)	
		10	(+/- 1°F) (default)	
		20	(+/- 2°F)	
Fan Control	FC	E	(electrical heat) (default)	
		O	(Gas/Oil heat)	
Heater Minimum-Off Delay	dL	S	(10 seconds) (default)	
		L	(4 minutes off time)	
Heat Pump	HP	0	Disable (default)	
		1	O/B terminal energized in cooling	
		2	O/B terminal energized in heating	

Temperature Control Span controls how much the room temperature can be deviated from setpoint. A smaller degree will result in a more accurate control. A larger degree will result in less on/off cycling and usually saves more energy.

Fan Control should be set according to the type of heating system used. Select "E" for Electric heat, fan will turn On when Heat is On. Select "O" for Gas heating or Oil heating, fan will NOT turn on when Heat is On.

Heater Minimum Off Delay should be set according to the heater type. Select "L" if compressor is used for heating. Select "S" when a compressor is not used.

Heat Pump should be set according to air conditioning system. Select "0" if heat pump is not used. If heat pump is used, select "1" if it uses electric energy to move the cool or select "2" if it uses electric energy to move the heat.

Temperature Calibration

This product is calibrated at factory and calibration is generally not required. However, in case a deviation is found.

- In Normal display mode, press and hold <Up> and <Down> keys for 5 seconds to change the temperature calibration display and the current temperature will flash.
- Press <Up> / <Down> keys to calibrate the temperature. The maximum range to be adjusted is +/- 3.0°C or +/- 6°F, steps 0.5°C / 1°F.
- Press <MODE> key to confirm the setting and resume to Normal display mode. Or the operation will resume to Normal display mode after no key is pressed for 10 sec.

G. Replaceable batteries instruction:

When the **LOW BATT** appears on the display, replace the batteries promptly with two fresh AAA alkaline batteries. Batteries shall be installed with proper polarity. Do not use old and new batteries simultaneously.

H. Specification:

- Battery Voltage: 3 V DC (2 x AAA alkaline batteries)
- Battery Life: 1 year
- Relay Contact voltage: 24 Vac Max. 50/60 Hz
- Relay Contact Current: 1A Max. (inductive)
- Sensing Element: NTC thermistor
- Heat/Cool setting: 5°C~35°C / 40°F ~ 95°F
- Operating temperature: 0 – 50 °C / 32 – 122 °F
- Storage temperature: -5 – 50 °C/ 23 – 122 °F