PRO1

Pro1 Technologies

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Hours of Operation: M-F 9AM - 6PM Eastern

T905

Thermostat Application Guide

Description	
Gas or Oil Heat	Yes
Electric Furnace	Yes
Heat Pump (No Aux. or Emergency Heat)	Yes
Heat Pump (With Aux. or Emergency Heat)	No
Multi-Stage Systems	No
Heat Only Systems	Yes
Cool Only Systems	Yes
Millivolt	Yes

Table of Contents

Specifications

The display range of temperature .... 41˚F to 95˚F (5˚C to 35˚C)
The control range of temperature...................44˚F to 90˚F (7˚C to 32˚C)
Load rating...1 amp per terminal, 1.5 amp
maximum all terminals combined
Swing (cycle rate or differential) .... Heating is adjustable from 0.2˚ to 2.0˚
Cooling is adjustable from 0.2˚ to 2.0˚
Power source ....18 to 30 VAC, NEC Class II, 50/60 Hz
for hardwire - Battery power from
2 AA Alkaline batteries
Operating ambient .... 32˚F to +105˚F (0˚C to +41˚C)
Operating humidity .... 90% non-condensing maximum
Dimensions of thermostat .... 4.7”W x 4.4”H x 1.1”D

Power Type

Battery Power
Hardwire (Common Wire)
Hardwire (Common Wire) with Battery Backup

A trained, experienced technician must install this product.

Carefully read these instructions. You could damage this product or cause a hazardous condition if you fail to follow these instructions.

Una version en español de este manual se puede descargar en la pagina web de la compañia.

Wall Locations

The thermostat should be installed approximately 4 to 5 feet above the floor. Select an area with average temperature and good air circulation.

💡 Installation Tip

Pick an installation location that is easy for the user to access. The temperature of the location should be representative of the building.

Do not install thermostat in locations:

• Close to hot or cold air ducts
• That are in direct sunlight
• With an outside wall behind the thermostat
• In areas that do not require conditioning
• Where there are dead spots or drafts (in corners or behind doors)
• Where there might be concealed chimneys or pipes

Subbase Installation

① Horizontal Mount
② Vertical Mount

For vertical mount put one screw on the top and one screw on the bottom.
For horizontal mount put one screw on the left and one screw on the right.

💡 Installation Tip: Electrical Hazard

Failure to disconnect the power before beginning to install this product can cause electrical shock or equipment damage.

💡 Mercury Notice

All of our products are mercury free. However, if the product you are replacing contains mercury, dispose of it properly. Your local waste management authority can give you instructions on recycling and proper disposal.

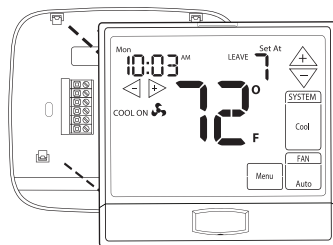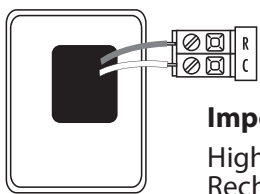Rev. 1935

Mount Thermostat

Align the 4 tabs on the subbase with corresponding slots on the back of the thermostat, then push gently until the thermostat snaps in place.
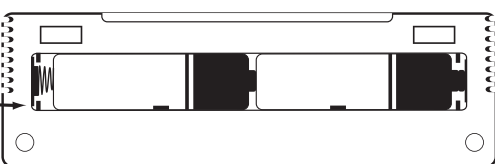

Battery Installation

Battery installation is optional if thermostat is hardwired (R and C terminal connected to 24V power).
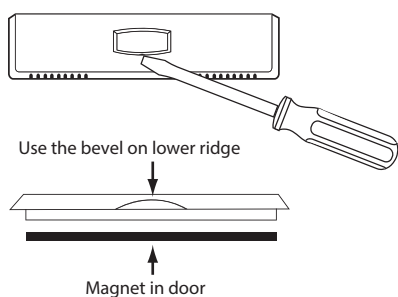
Important:

High quality alkaline batteries are recommended. Rechargeable batteries or low quality batteries do not guarantee a 1-year life span.

Insert 2 AA Alkaline batteries (included). High quality alkaline batteries are recommended.

About The Badge
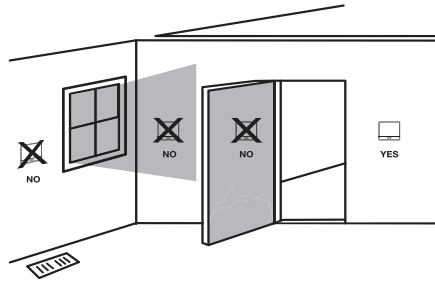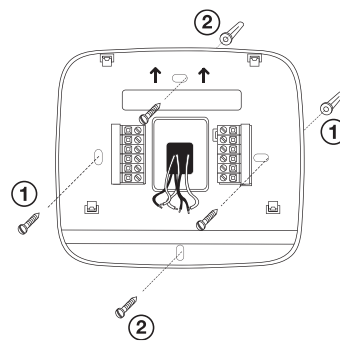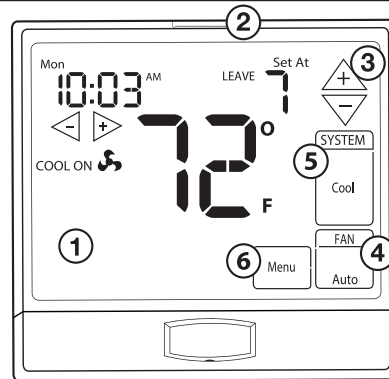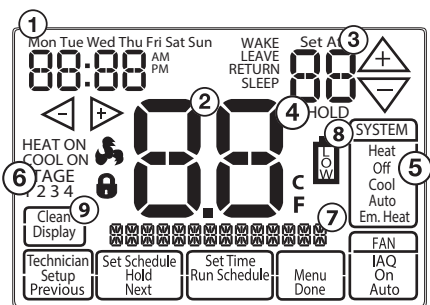

Use the bevel on lower ridge

Magnet in door

All of our thermostats use the same universal magnetic badge. Visit the company website to learn more about our free private label program.

Gently slide a screwdriver into the bottom edge of the badge. Gently turn the screwdriver counter clockwise. The badge is held on by a magnet in the well of the battery door. The badge should pry off easily. **DO NOT USE FORCE.**

Getting to know your thermostat

① LCD
② Glow in the Dark Light Button
③ Setpoint Buttons
④ Fan Button
⑤ System Button
⑥ Menu Button

💡 Important

The low battery indicator is displayed when the AA battery power is low. If the user fails to replace the battery within 21 days, the screen will only show the low battery indicator but maintain all functionality. If the user fails to replace the batteries after an additional 21 days (days 22-42 since first "low battery" display) the setpoints will change to 55˚F (Heating) and 85˚F (Cooling). If the user adjusts the setpoint away from either of these, it will hold for 4 hours then return to either 55˚F or 85˚F. After day 63 the batteries must be replaced immediately to avoid freezing or overheating because the thermostat will shut the unit off until the batteries are changed.

① Days of the week and time
② Indicates the current room temperature
③ Displays the user selectable setpoint temperature
④ Hold is displayed when thermostat program is permanently overridden.
⑤ **System Operation Indicators:** The compressor delay is active if these are flashing.
⑥ **Programmable Time Periods:** Residential uses 4 time periods - **WAKE, RETURN, LEAVE** and **SLEEP**.
⑦ **Program Menu Options:** Shows different options during programming.
⑧ **Low Battery Indicator:** Replace batteries when this indicator is shown.
⑨ **Clean Display:** Pressing **CLEAN DISPLAY** will allow 30 seconds to clean the display. The keys will be inoperable during this time. **CLEAN** will appear if your contractor has programmed a filter change reminder. Press and hold **CLEAN** when filter has been replaced to reset the filter change reminder timer.

Wiring

1. If you are replacing a thermostat, make note of the terminal connections on the thermostat that is being replaced. In some cases the wiring connections will not be color coded. For example, the green wire may not be connected to the **G** terminal.

2. Loosen the terminal block screws. Insert wires then retighten terminal block screws.

3. Place nonflammable insulation into wall opening to prevent drafts.

⚠ Caution: Electrical Hazard

Failure to disconnect the power before beginning to install this product can cause electrical shock or equipment damage.

⚠ Warning:

All components of the control system and the thermostat installation must conform to Class II circuits per the NEC Code.

Terminal Designations

C Common wire from secondary side of cooling system transformer

O Heat pump changeover valve energized in cooling

B Heat pump changeover valve energized in heating

W Heat relay

RH Transformer power for heating

RC Transformer power for cooling

G Fan relay

Y Compressor relay

Wiring Tips

RH & RC Terminals

For single transformer systems, leave the jumper wire in place between RH and RC. Remove jumper wire for two transformer systems.

Heat Pump Systems (With NO AUX or Emergency Heat)

If wiring to a heat pump, use a small piece of wire (not supplied) to connect terminals W and Y.

C Terminal

The C (common wire) terminal does not have to be connected when the thermostat is powered by batteries.

Wire Specifications

Use shielded or non-shielded 18-22 gauge thermostat wire.

💡 **Installation Tip:** Do not overtighten terminal block screws, as this can damage the terminal block. A damaged terminal block can keep the thermostat from fitting on the subbase correctly or cause system operation issues. **Max Torque = 6in-lbs.**
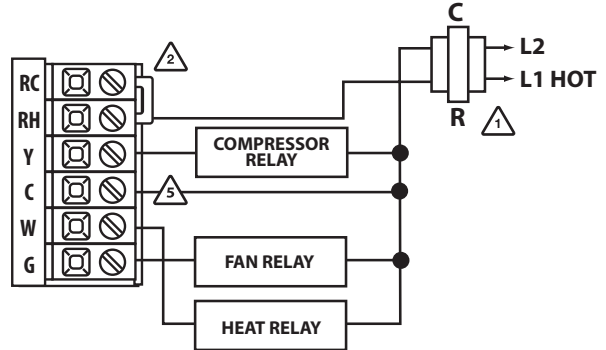
Wiring Diagrams

1. Power supply
2. Factory-installed jumper. Remove only when installing on 2-transformer systems.
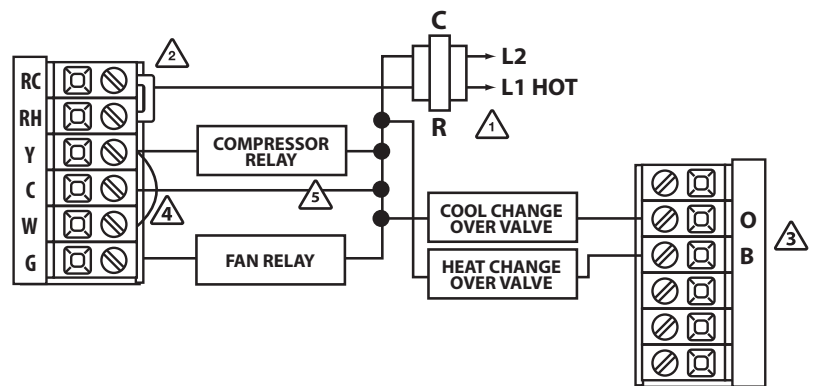3. Use either O or B terminals for changeover valve.
4. Use a small piece of wire (not supplied) to connect W and Y terminals.
5. Optional 24 VAC common connection when thermostat is used in battery power mode.

Typical 1H/1C System: 1 Transformer

Typical 1H/1C Heat Pump System

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1. Press MENU button
2. Press and hold **TECHNICIAN SETUP** button for 3 seconds. This 3 second delay is designed so that homeowners do not accidentally access the installer settings.
3. Configure the installer options as desired using the table below.
4. Use the [–] or [+] keys to change settings and the NEXT STEP or PREV STEP key to move from one step to another. Note: Only press DONE key when you want to exit the Technician Setup options.

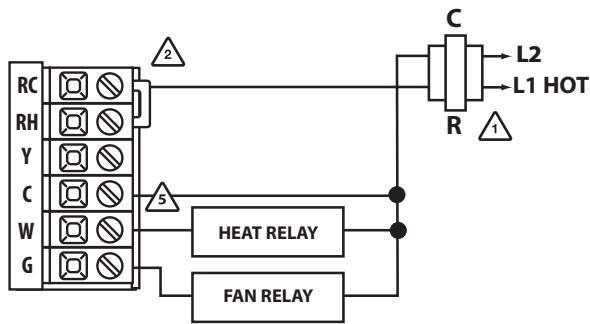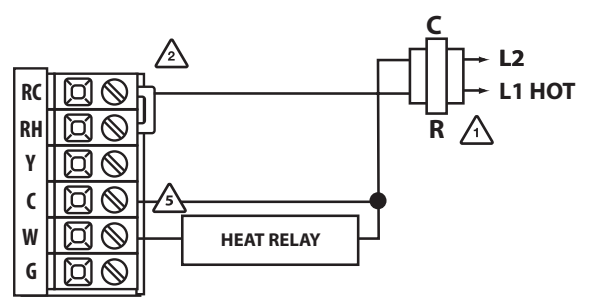| Tech Setup Steps		LCD Will Show	Adjustment Options	Default
Filter Change Reminder	This feature will flash a reminder in the display after the elapsed run time to remind the user to change the filter. A setting of "OFF" will disable this feature.	50 SE FILTER	You can adjust the filter change reminder from OFF to 2000 hours of runtime in 50 hour increments.	OFF
Room Temperature Calibration	This feature allows the installer to change the calibration of the room temperature display. For example, if the thermostat reads 70° degrees and you would like it to read 72° then select +2.	0 CALIBRATE	You can adjust the room temperature display to read 4° above or below the factory calibrated reading.	0
Minimum Compressor On Time	This feature allows the installer to select the minimum run time for the compressor. For example: a setting of 4 will force the compressor to run for at least 4 minutes every time the compressor turns on, regardless of the room temperature.	OFF ON AN MIN COMP	You can select the minimum compressor run time from "off", "3", "4", or "5" minutes. If 3,4, or 5 is selected, the compressor will run for at least the selected time before turning off.	OFF
Compressor Short Cycle Delay	The compressor short cycle delay protects the compressor from short cycling. This feature will not allow the compressor to be turned on for 5 minutes after it was last turned off.	OFF OF CO COMP DELAY	Selecting "ON" will not allow the compressor to be turned on for 5 minutes after the last time the compressor was switched off. Select "OFF" to remove this delay.	ON
Cooling Swing	The swing setting often called "cycle rate", "differential" or "anticipation" is adjustable. A smaller swing setting will cause more frequent cycles and a larger swing setting will cause fewer cycles.	0.8 dF CO COOL SWING	The cooling swing setting is adjustable from 0.2° to 2°. For example: A swing setting of 0.5° will turn the cooling on at approximately 0.5° above the setpoint and turn the cooling off at approximately 0.5° below the setpoint.	0.5

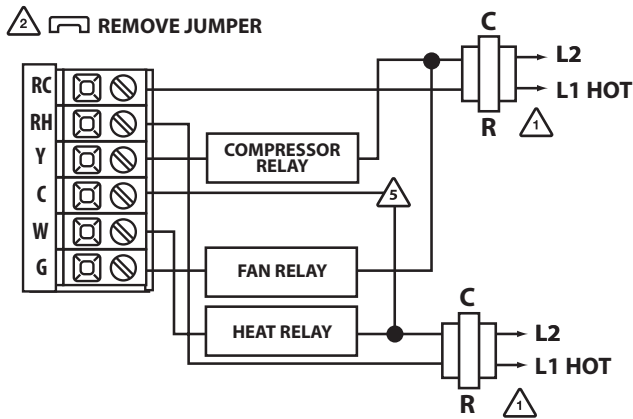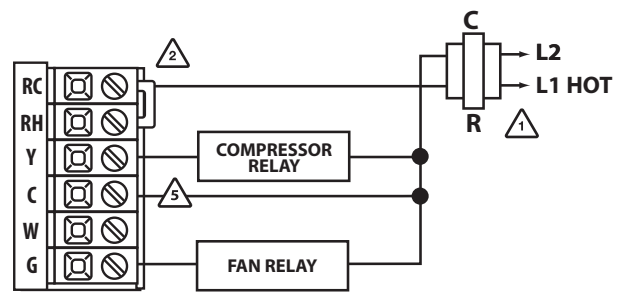| Tech Setup Steps		LCD Will Show	Adjustment Options	Default
Heating Swing	The swing setting often called "cycle rate", "differential" or "anticipation" is adjustable. A smaller swing setting will cause more frequent cycles and a larger swing setting will cause fewer cycles.	0.8 dF HE HEAT SWING	The heating swing setting is adjustable from 0.2° to 2°. For example: A swing setting of 0.5° will turn the heating on at approximately 0.5° below the setpoint and turn the heating off at approximately 0.5° above the setpoint.	0.4
Keypad Lockout	Keypad lockout allows you to configure the thermostat so that none or some of the keys do not function.	PA KEY LOCK	PA= Partial keypad lockout, locks all the keys except the ◁ or ▷ keys. FU= Full Keypad lockout, locks out all the keys. **Note:** Keypad lockout instructions on page 12.	OFF
Heating Temperature Setpoint Limit	This feature allows you to set a maximum heat setpoint value. The setpoint temperature cannot be raised above this valve.	90 HE HEAT LIMIT	Use the ◁ or ▷ key to select the maximum heat setpoint. Range 44°F - 90°F	90°
Cooling Temperature Setpoint Limit	This feature allows you to set a minimum cool setpoint value. The setpoint temperature cannot be lowered below this value.	44 CO COOL LIMIT	Use the △ or ▽ key to select the minimum cool setpoint. Range 44°F - 90°F	44°
F° or C°	Select F for Fahrenheit read out or select C for Celsius read out.	°F 74	°F for Fahrenheit °C for Celsiust	F°
12 or 24 Hour Clock	You can select either 12 or 24 hour clock setting.	12H CLOCK SET	Use the ◁ or ▷ key to select 12 or 24 hour clock.	12 Hour Clock

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Typical Heat-Only System With Fan

RC RH Y C W G
HEAT RELAY
FAN RELAY
C L2 L1 HOT R

Typical Heat-Only System

RC RH Y C W G
HEAT RELAY
C L2 L1 HOT R

Typical 1H/1C System: 2 Transformer

REMOVE JUMPER

RC RH Y C W G
COMPRESSOR RELAY
FAN RELAY
HEAT RELAY
C L2 L1 HOT R
C L2 L1 HOT R

Typical Cool-Only System

RC RH Y C W G
COMPRESSOR RELAY
FAN RELAY
C L2 L1 HOT R

Technician Setup

Tech Setup Steps		LCD Will Show	Adjustment Options	Default
Fan Operation	Select GAS for systems that control the fan during a call for heat. Select ELEC to have the thermostat control the fan during a call for heat.	GAS FAN SET	Gas or Elec	GAS
Morning Recovery	This feature will start heating early to bring the building temperature to its programmed setpoint by the beginning of the time period (WAKE).	OFF MORN RECOV	Use the ◁ or ▷ key to turn on or off.	ON
Program Options	You can configure this thermostat to have a 7 day program, a 5+1+1 program or nonprogrammable.	5d PROGRAM	Use the ◁ or ▷ key to select **7d** for 7 day, **5d** for 5+1+1, or **0d** for non-programmable.	5d
Display Light	The display light can be configured to come on when any key is pressed or only when the light key is pressed.	on dL	OFF configures display light to come on only with the light key, which will save battery power. On configures the display light to come on when any key is pressed.	AUTO
Contractor Call Number	Allows you to put your phone number in the display. Selecting "ON" will enable this feature. "OFF" will disable this feature.	OFF PHONE NUM	If selected on, you will see the input screen after pressing next step. Use the △ or ▽ keys to select the desired number and the ◁ or ▷ key to move from one character to another. See Note on page 12 for operation.	OFF
Beep	When any key is pressed ab audible beep will sound. There is an ON or an OFF.	on b	If ON is selected the beep will sound. If OFF is selected, there is not sound.	ON
System Switch	You can configure the system switch for the particular application: Heat - Off - Cool, Heat - Off, Cool - Off, Heat - Off - Cool-Auto Auto= Auto-changeover	HEAT OFF COOL SYSTEM SET	Use the ◁ or ▷ key until the desired application is flashing.	HEAT OFF COOL

Technician Setup & Specifications

Tech Setup Steps		LCD Will Show	Adjustment Options	Default
Cooling Fan Delay	The cooling fan delay setting will delay the fan from coming on in cool mode and keep it running after the compressor shuts off for a short time to save energy in some systems.	COOL FAN DL	You can set the cooling fan delay to OFF, 15, 30, 60 or 90 seconds. If 15, 30, 60, or 90 is selected the fan will not turn on for that many seconds when there is a call for cool and will run for that many seconds after satisfying a call for cool.	OFF
Humidity Pad Reminder	Enables a reminder for the user to change the humidity pad.	OFF HUM PAD 2000	Use the ◁ or ▷ key to select OFF, 600, 1000, 1500, or 2000. These represent hours of heat operation.	OFF
UV Lamp Reminder	Enables a reminder for the user to change the UV light bulb.	OFF UVLAMP 00000	Use the ◁ or ▷ key to select OFF, 1YEAR, 2YEAR.	OFF
IAQ Cell Reminder	Enables a reminder for the user to change the PHI Cell after 25,000 hrs.	250 IAQ CELL 2 5000	Use the ◁ or ▷ key to select OFF, or 250 (stands for 25,000 hours).	OFF

A Note About Keypad Lockout:

The function of activating your lockout choice takes place after you have exited tech setup to lock or unlock the keypad hold down the △ and ▽ buttons for 3 seconds.

Contractor Call Number Note:

If contractor call number is selected ON, your phone number will show in the display if there has been a continuous call for heating or cooling for 24 hours or if the light button is held down for 3 seconds. To remove the phone number from the display, hold the light button down for 3 seconds.

Set Time (If using programming)

1. Press the **MENU** button
2. Press **SET TIME**
3. Day of the week will be flashing. Use the ◁ or ▷ key to select the current day of the week.
4. Press **Next Step.**
5. The current hour is flashing. Use the ◁ or ▷ key to select the current hour. When using 12-hour time, make sure the correct a.m. or p.m. choice is selected.
6. Press **Next Step.**
7. Minutes are now flashing. Use the ◁ or ▷ key to select current minutes.
8. Press **DONE** when completed.

Set Program Schedule

To customize your 5/1/1 program schedule, follow these steps

Weekday:

1. Select **HEAT** or **COOL** with the system key. **Note:** You have to program heat and cool each seperately.

2. Press the **MENU** button (If menu does not appear first press **RUN SCHED**)

3. Press **SET SCHED**. Note: Monday-Friday is displayed and the **WAKE** icon is shown. You are now programming the wake time period for the weekday setting.

4. Use the ◁ or ▷ key to make your time selection for the weekday **WAKE** time period. If you want the fan to run continuously during this time period, select **ON** with the **FAN** key.

5. Then use the △ or ▽ key to make your setpoint selection for the weekday wake period.

6. Press **Next Step7.** Repeat steps 4 thru 6 for weekday **LEAVE** time period, **RETURN** time period, and **SLEEP** time period.

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Saturday:
Repeat steps 4 thru 6 for the Saturday **WAKE** time period, **LEAVE** time period, **RETURN** time period, and for the Saturday **SLEEP** time period.

Sunday:
Repeat steps 4 thru 6 for the Sunday **WAKE** time period, **LEAVE** time period, **RETURN** time period, and for the Sunday **SLEEP** time period.

To customize your 7 day Program schedule, follow these steps:

Weekday:

1. Select **HEAT** or **COOL** using the system key. **Note:** You have to program heat and cool each separately.

2. Press **MENU**

3. Press **SET SCHED**. **Note:** Monday is displayed and the **WAKE** icon is shown. You are now programming the **WAKE** time period for that day.

4. Use the ◁ or ▷ key to make your time selection for that day's **WAKE** time period. **Note:** If you want the fan to run continuously during this time period, select **ON** with the **FAN** key.

5. Then use the △ or ▽ key to make your setpoint selection for that day's **WAKE** period.

6. Press **Next Step.**

7. Repeat steps 4 through 6 for that day's **LEAVE** time period, **RETURN** time period, and that day's **SLEEP** time period.

Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday
Repeat steps 4 thru 6 for the remaining days of the week.

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Programming

All of our programmable thermostats are shipped with an energy saving pre-program. Your thermostat can be programmed to have all the weekdays the same, a seperate program for Saturday, and a seperate program for Sunday. There are four time periods for each program (**WAKE, LEAVE, RETURN, SLEEP).**

Factory Default Program				
Day of the Week	Events	Time	Setpoint Temperature (HEAT)	Setpoint Temperature (COOL)
Weekday	Wake	6 AM	70°F (21°C)	75°F (24°C)
	Leave	8 AM	62°F (17°C)	83°F (28°C)
	Return	6 PM	70°F (21°C)	75°F (24°C)
	Sleep	10 PM	62°F (17°C)	78°F (26°C)
Saturday	Wake	6 AM	70°F (21°C)	75°F (24°C)
	Leave	8 AM	62°F (17°C)	83°F (28°C)
	Return	6 PM	70°F (21°C)	75°F (24°C)
	Sleep	10 PM	62°F (17°C)	78°F (26°C)
Sunday	Wake	6 AM	70°F (21°C)	75°F (24°C)
	Leave	8 AM	62°F (17°C)	83°F (28°C)
	Return	6 PM	70°F (21°C)	75°F (24°C)
	Sleep	10 PM	62°F (17°C)	78°F (26°C)

💡 A Note About Auto Changeover:

If in Auto you have the ability to switch between Auto Heat or Auto Cool by pressing the System key. This can be done once the current mode has reached its set-point. For example: If in Auto Heat, the heat setpoint must be satisfied before the thermostat will allow you to switch to Auto Cool. You can switch out of Auto by holding down the System key. To get back into Auto, you must toggle the System key to Auto.

💡 A Note About Programmable Fan:

The programmable fan feature will run the fan continuously during any time period it is programmed to be on. This is the best way to keep the air circulated and to eliminate hot and cold spots in your building.

💡 Reminders Note:

Once a Reminder has been turned on and set, the elapsed time can be checked by navigating to it's tech setup step. The elapsed time will then appear in the text field. It can also be reset at that time by a press and hold of the **CLEAN** button for 3 seconds. Resetting an expired Reminder can be done without entering tech setup, by a press and hold of the **CLEAN** button for 3 seconds.