Hot Yoga Heating .com

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INSTALLATION MANUAL
HYH-32-P
UNIVERSAL THERMOSTAT

INTRODUCTION

Thank you for choosing the HYH-32-P thermostat. The thermostat should be installed by a qualified HVAC contractor or electrician. This manual contains wiring and setup functions for Hot Yoga Studio Electric Radiant Heating Panels which, if not correctly performed, may cause damage to the equipment or seriously affect performance.

Although the HYH-32-P is a universal thermostat that can be used with most HVAC equipment applications this manual is designed for radiant heating installations. Using a common sense approach to the installation will ensure this product is installed properly and to the customer's satisfaction. **Please take time to read and understand this manual so that installation and testing is performed in an efficient manner.**

IMPORTANT FACTS ABOUT ELECTRIC RADIANT HEATING SYSTEMS

In forced air applications, the thermostat reacts rapidly to the conditioned air moving across the internal thermostat sensor which is used to display and control the temperature in the space. In a radiant application, the heat energy emitted from the overhead panel(s) directly warms occupants, other objects and surfaces which, in time, indirectly heats the air. The internal air temperature for a radiant heated space may be 5 to 7 degrees lower than a conventionally heated space while achieving the same level of body comfort.

This manual is to be used in conjunction with the supplied User Manual. Please save this and keep on hand.

Although great care has been taken in the preparation of this manual, Hot Yoga Heating takes no responsibility for errors or omissions contained herein. It is the responsibility of the installer to ensure that this thermostat and the equipment connected to it operate in a safe and efficient manner.

GETTING STARTED

As with any HVAC project, careful installation is the key to a successful outcome. Time taken during the installation process will be rewarded with fewer call-backs.

The steps required to install the HYH-32-P thermostat are as follows:

1. Read and understand this Installation Manual and Operation Manual.
2. Mount the Thermostat.
3. Set the 8 system switches to match the equipment application.
4. Wire the optional remote temperature sensor(s) or devices.
5. Power the thermostat.
6. Set the Advanced Installer Setup options.
7. Program and setup the thermostat. (Refer to the Operation Manual for instructions)
8. Test heating, cooling and other functions.

INSTALLING THE THERMOSTAT

DISASSEMBLY
Insert a small coin (dime) in the release slot located on the bottom of the thermostat. Gently twist the coin to release the thermostat from the subbase. Avoid twisting the case as this may stress the LCD or bend the terminal connector pins. (Figure 1)

THERMOSTAT LOCATION
The thermostat should be installed in a location that represents the ambient space temperature. Do not install the thermostat in an area where drafts are present, near the floor, behind doors or on an external wall. Avoid placing the thermostat in areas where the air movement is limited, affected by direct sunlight or other areas not typical of the temperature in the space.

MOUNTING THE SUBBASE
When mounting the thermostat, be aware that drafts may travel down wall cavities and enter the back of the thermostat through the control wire hole in the wall. It is important to seal the hole to prevent any drafts that might affect the internal temperature

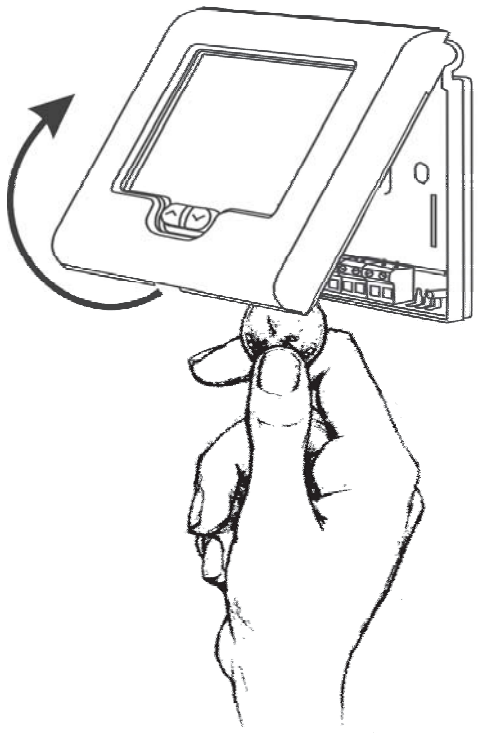


FIGURE 1

INSTALLING THE THERMOSTAT

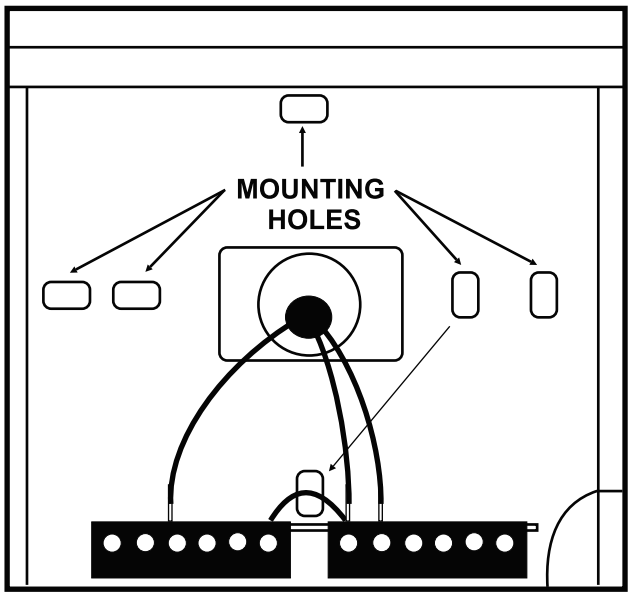
Pull the control wires through the large opening in the thermostat subbase. Next, level and mount the subbase on the wall using the supplied anchors and screws.

Do not over tighten the mounting screws as the subbase may warp causing the improper seating of the thermostat connecting pins to the terminal blocks.

Use a properly sized screwdriver and land each wire to its dedicated terminal.

Do not over tighten the terminal screws.

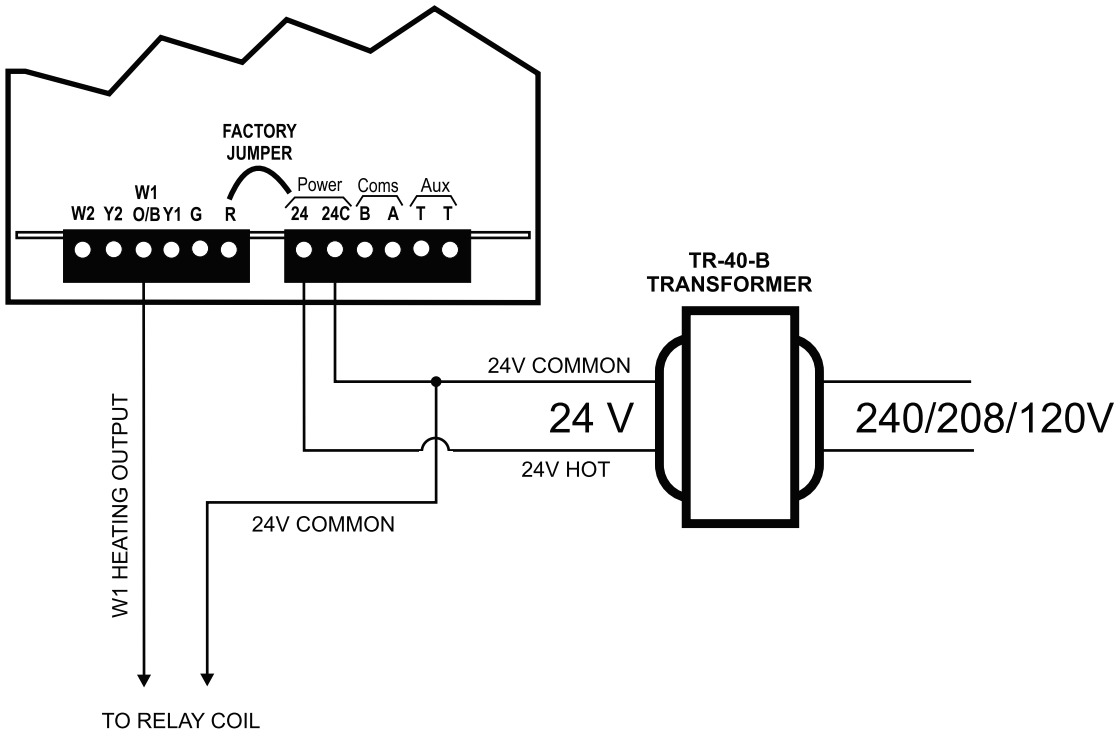
Check to ensure that all wires are landed correctly and dressed properly to prevent any shorts (refer to the “Typical System Wiring Diagrams” in the manual).



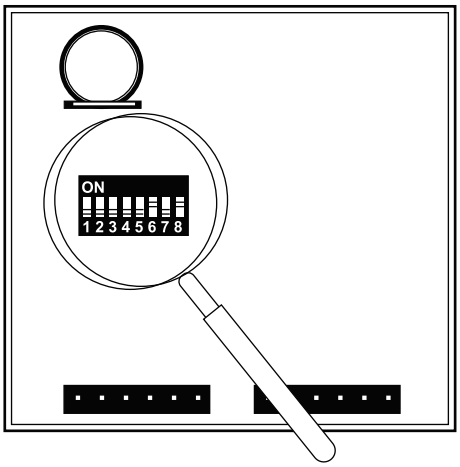
Refer to Radiant Heating System Wiring Diagrams in this manual.

TERMINAL DESIGNATIONS

The following terminals are used for radiant heating.



SETTING THE SYSTEM SWITCHES



The thermostat contains a set of eight system switches located on the thermostat printed circuit board. The switches are used to match the thermostat with the radiant heating system. The thermostat comes from the factory configured as heat only with 4 programmable events per day. We recommend that these setting be used for a Hot Yoga Studio Radiant Heating application.

Switch 1 - 5 OFF
Switch 6 ON
Switch 7 OFF
Switch 8 ON

SYSTEM SWITCH SETTINGS FOR RADIANT HEATING

Sw1 = OFF

Sw2 = OFF

Sw3 = OFF

Sw4 = OFF

Sw5 = OFF

Sw6 = OFF (NON-PROGRAMMABLE)
ON (PROGRAMMABLE) Factory Default Setting

Sw7 = OFF (4 PROGRAM EVENTS PER DAY) Factory Default Setting
ON (2 PROGRAM EVENTS PER DAY)

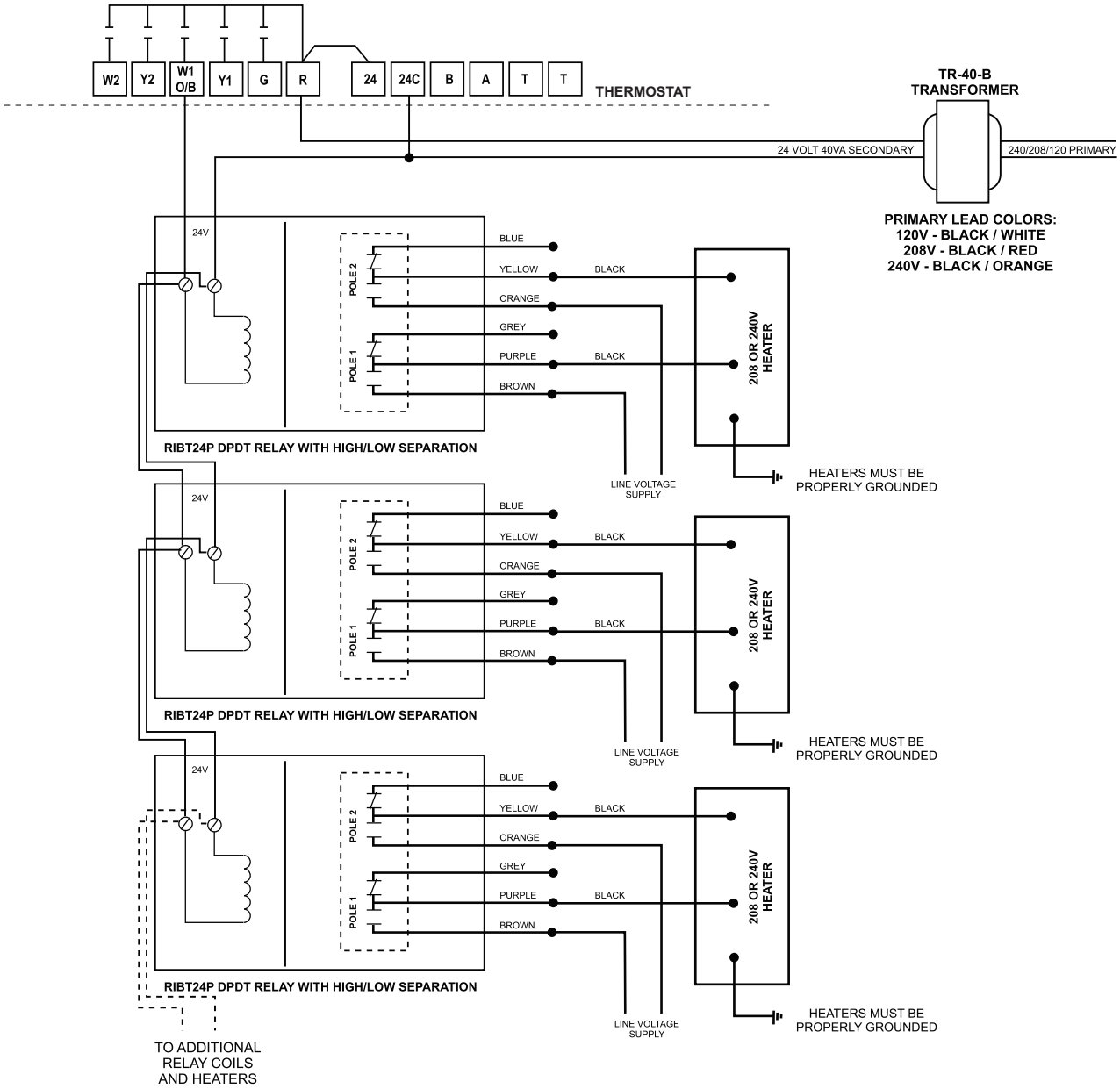
Sw8 ON (Compressor delay. Not used in heat only application)

TYPICAL ELECTRIC RADIANT HEATING WIRING DIAGRAMS

WIRING

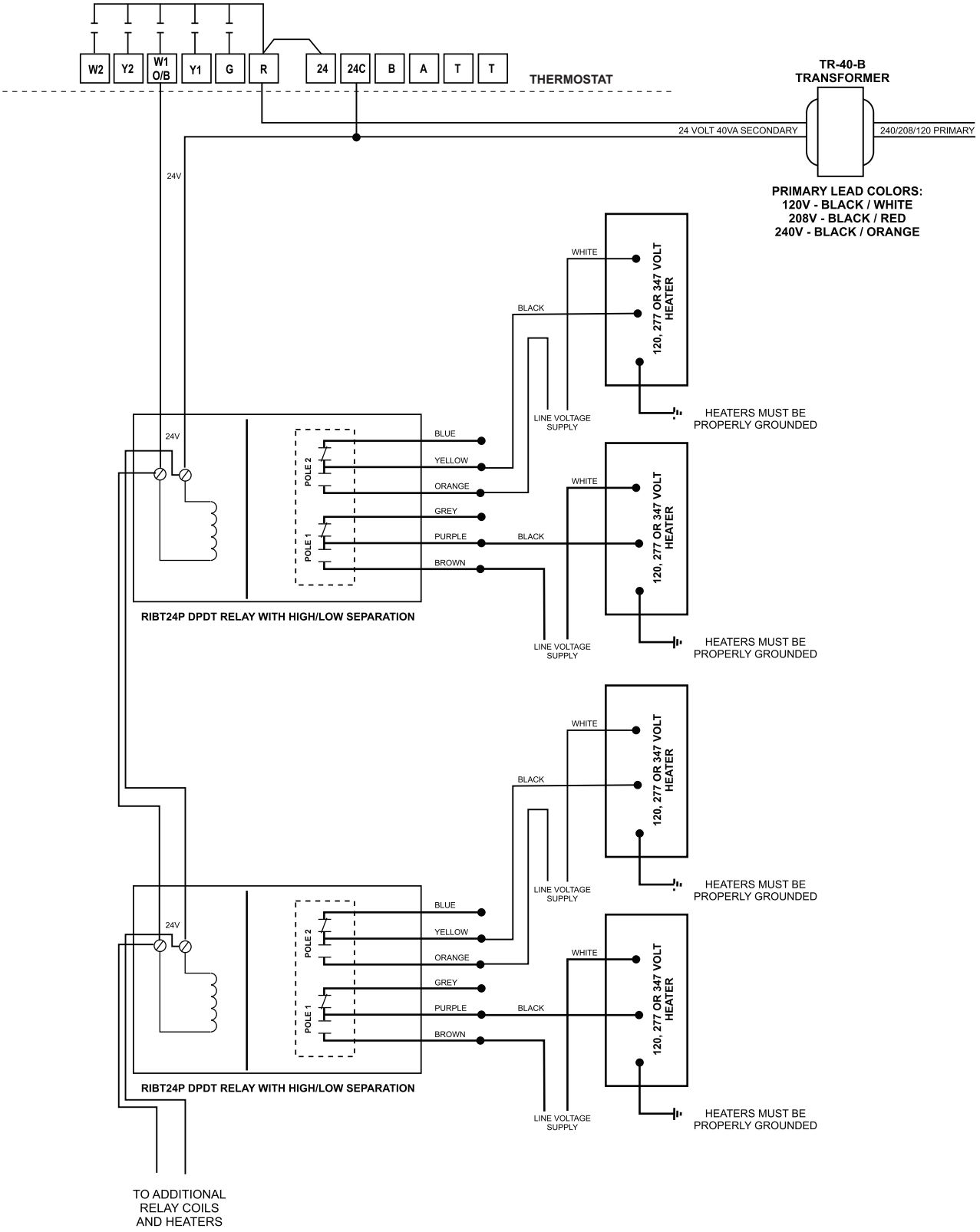
1. The maximum number of heaters per circuit is limited to circuit wiring and the contact rating of the relay. Always refer to electric radiant ceiling heat panel manufacturer's specifications and wiring diagrams. Wiring diagrams are also available on line at http://www.heatinggreen.com/thermostat-instructions-wiring-diagrams
2. The RIBT24P relay contacts are rated at 20 Amps under 300 Volts and 15 Amps over 300 Volts.
3. Always use a properly grounded junction box when splicing.
4. Install only in a location where the power supply connections will be accessible.
5. Install junction box as far above panel as possible and above building insulation where present.
6. Use field wiring suitable for 194° F (90° C) if junction box is allowed to lie on heater or is enclosed between heater and ceiling above.
7. When installed in a drop ceiling, the wiring terminals should be accessible through removable ceiling sections with adequate clearance to permit access to the top of the heater.

208 OR 240 VOLT HEATER WIRING OPTIONS USING 20 AMP RELAY



TYPICAL ELECTRIC RADIANT HEATING WIRING DIAGRAMS

120, 277 OR 347 VOLT HEATER WIRING OPTIONS USING 20 AMP RELAY

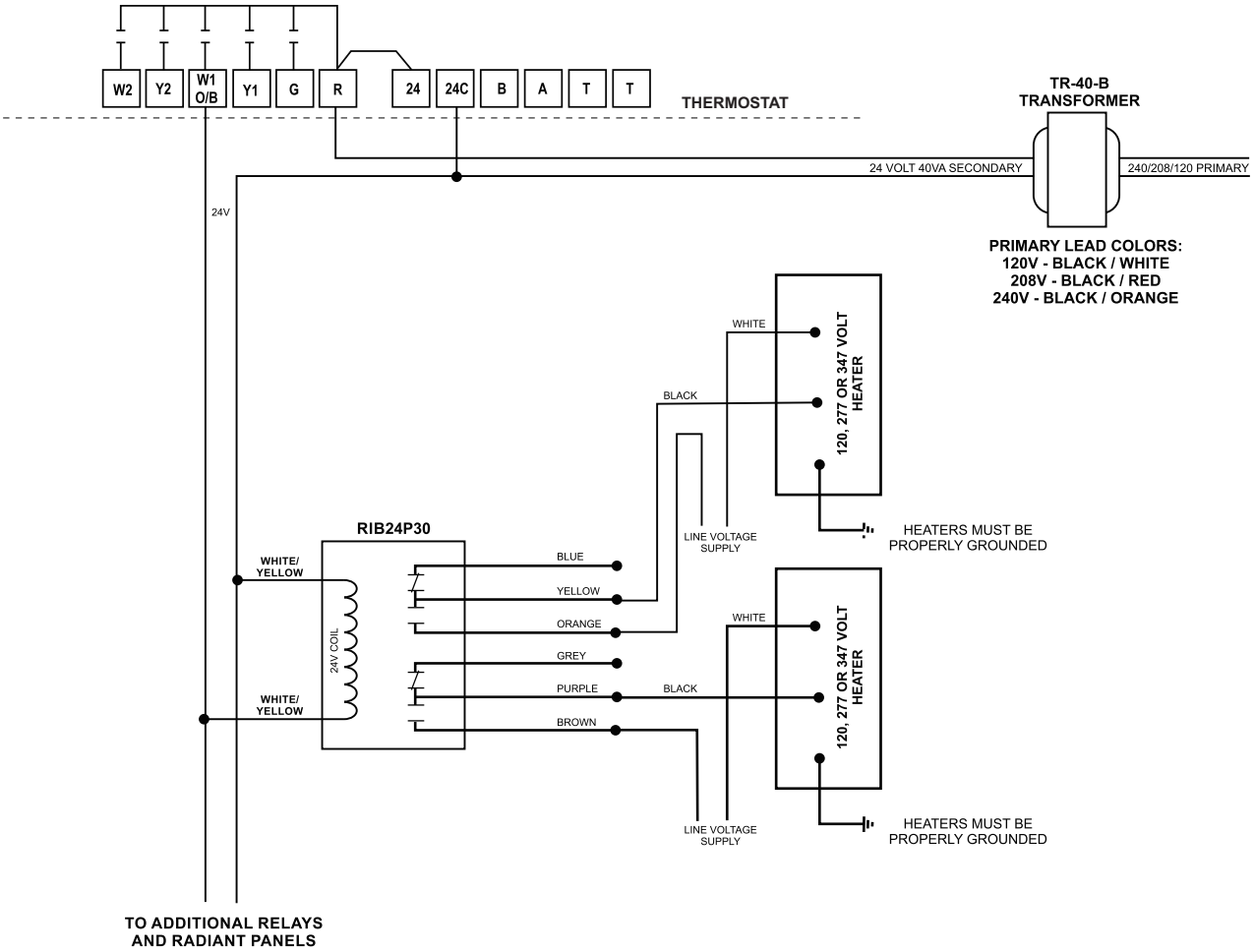


TYPICAL ELECTRIC RADIANT HEATING WIRING DIAGRAMS

WIRING DIAGRAMS FOR RIBT24P30 30 AMP RELAY

1. The maximum number of heaters per circuit is limited to circuit wiring and the contact rating of the relay. Always refer to electric radiant ceiling heat panel manufacturer's specifications and wiring diagrams. Wiring diagrams are also available on line at http://www.heatinggreen.com/thermostat-instructions-wiring-diagrams
2. The RIBT24P30 relay contacts are rated at 30 Amps @ 300 Volts.
3. Always use a properly grounded junction box when splicing.
4. Install only in a location where the power supply connections will be accessible.
5. Install junction box as far above panel as possible and above building insulation where present.
6. Use field wiring suitable for 194° F (90° C) if junction box is allowed to lie on heater or is enclosed between heater and ceiling above.
7. When installed in a drop ceiling, the wiring terminals should be accessible through removable ceiling sections with adequate clearance to permit access to the top of the heater.

120, 277,347 VOLT HEATER WIRING OPTIONS USING 30 AMP RELAY



ENTERING THE ADVANCED INSTALLER SETTINGS MENU

The thermostat requires that the Advanced Installer Settings be changed for electric radiant heating. To enter the Advanced Installer Settings menu, push the **O/RIDE** button once, then hold it down (15 seconds) until the LCD displays LC which is the first menu item. You can move forward or backwards through the menu by pressing the **O/RIDE** or **PROG** buttons. Use the up and down arrows to change settings.

ADVANCED INSTALLER SETTINGS MENU

Symbol	Default	Function
LC	00	Keypad Lockout **LEAVE UNLOCKED (RECOMMENDED)**
Programmable Mode (Sw6=ON)		LC=00 - All buttons are unlocked LC=01 - All buttons are locked except (▲) (▼) buttons LC=02 - All buttons are locked
LC	00	LC=00 - All buttons are unlocked LC=02 - All buttons locked except (▲) (▼) buttons LC=03 - PROG button is locked LC=04 - All buttons are locked
Non-programmable Mode (Sw6=OFF)		
HL	120	Maximum Heating Setpoint Limit **SET TO HIGHEST REQUIRED HEATING TEMPERATURE** Adjustable from 41° F - 120° F
CL	50	Minimum Cooling Setpoint Limit **FACTORY DEFAULT (RECOMMENDED)** Adjustable from 43° F - 122°
CF	F	Temperature Display **FACTORY DEFAULT (RECOMMENDED)**
		CF=F - Fahrenheit CF=C - Celsius
C1	0.0	Internal Sensor Calibration **FACTORY DEFAULT (RECOMMENDED)** Adjustable +/- 9° F in 0.2° F increments
TC	12	Time Format **FACTORY DEFAULT (RECOMMENDED)**
		TC=12 - 12 Hour Time TC=24 - Military Time TC=00 - No time displayed in non-programmable mode
AH	2	Temporary Hold Time for Programmable Mode **FACTORY DEFAULT** 0.5 - 12 hours or OFF which holds to next event
FO	0	Advanced Fan Function **FACTORY DEFAULT (RECOMMENDED)**
4 schedules per day = constant fan in 1, 2, 3 and auto fan in 4 **2 schedules per day = constant fan in Day and auto fan in Night**		FO=0 - No advanced fan function FO=2 - Constant fan during occupied mode. (Fan must be set to ON for this function to work)
FP	0	Fan Purge Adjustable from 0 - 5 minutes after any call **FACTORY DEFAULT (RECOMMENDED)**
FN	H	Mode **Set FN = H (Heat Only)**
		FN= **- - -** Manual Changeover FN=A - Auto Changeover FN=C - Cooling Only FN=H - Heat Only

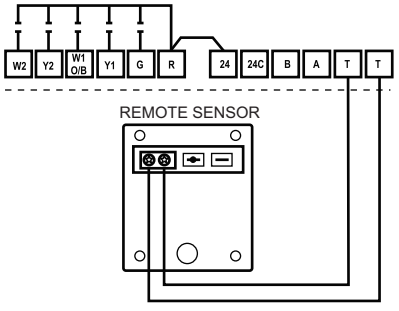
ADVANCED INSTALLER SETTINGS MENU

Symbol	Default	Function
TT	OFF	Remote Sensor **SET TT=RS ONLY IF REMOTE INDOOR SENSOR IS USED**
		TT=OFF - No Remote Sensor TT=OA - Outdoor Sensor TT=RS - Remote Indoor Sensor TT=AU - Indoor Remote Sensor Averaging with Internal Sensor
OS	1	Adaptive Recovery (Programmable Mode) **FACTORY DEFAULT (RECOMMENDED)**
		OS=0 - OFF OS=1 - ON
HB	OFF	High Balance Point Adjustable from OFF to 32° F - 122° F **FACTORY DEFAULT (RECOMMENDED)**
LB	OFF	Low Balance Point Adjustable from OFF to 14° F - 77° F **FACTORY DEFAULT (RECOMMENDED)**
AD	1	Modbus Address Adjustable from 1 - 99 **FACTORY DEFAULT (RECOMMENDED)**
BD	19.2	Baud Rate **FACTORY DEFAULT (RECOMMENDED)**
		BD=4.8 BD=9.6 BD=19.2
CD	0	Commissioning Mode **FACTORY DEFAULT (RECOMMENDED)**
		CD=0 - OFF CD=1 - All internal time delays are overridden This function must be reset to CD=0 to prevent equipment from short cycling
TS	0	Factory Test **FACTORY DEFAULT (RECOMMENDED)**
		TS=0 - Test Mode OFF Do not change this function without reading the Factory Test Mode instructions on Page 27

TT TERMINAL FUNCTIONS

REMOTE INDOOR SENSOR

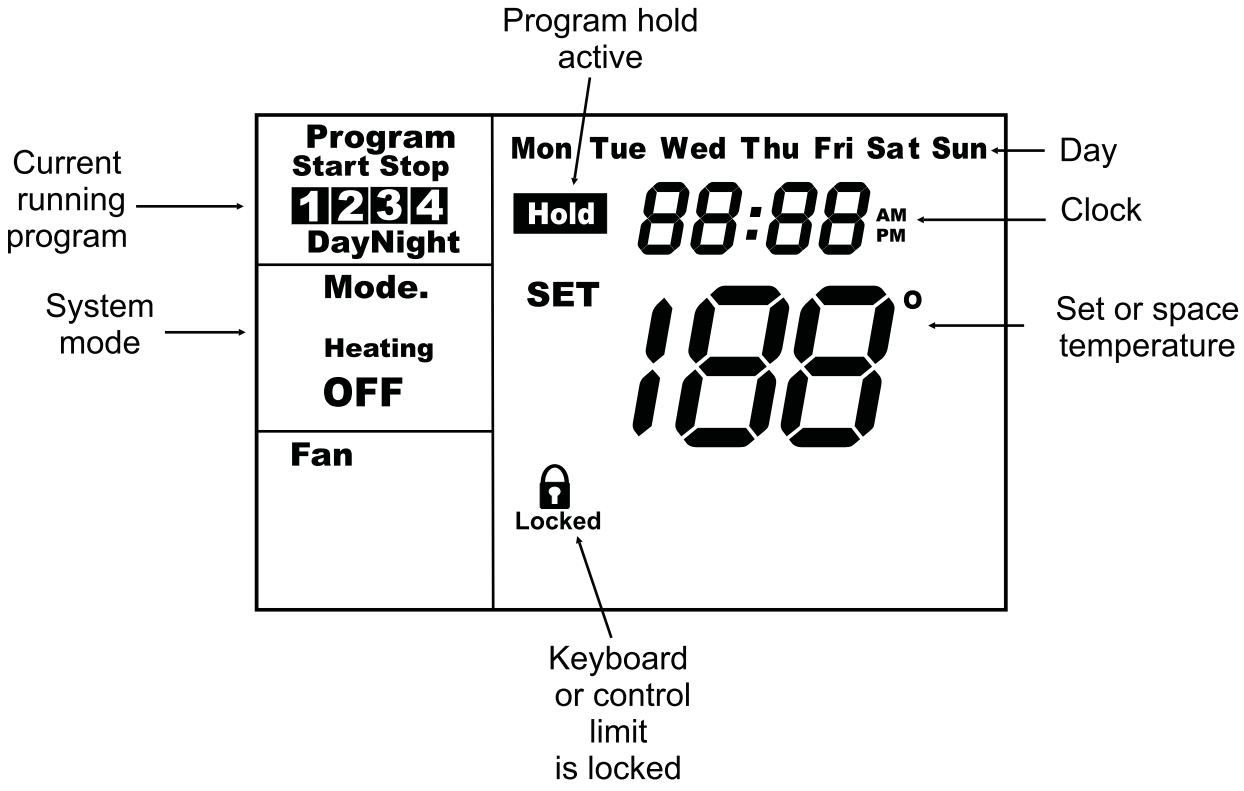
A remote sensor can be wired to the T and T terminals on the thermostat and is typically used when the thermostat is located outside the controlled space. When the remote sensor is used, Installer Setting TT must be set to RS. Refer to Advanced Installer Settings Menu.



TESTING

Testing ensures that the thermostat and the electric radiant heating panels operate properly. Follow the testing steps.

When the thermostat is powered, the LCD will briefly show all the available LCD icons, software version, then display the time and operating mode, etc.



TESTING

TESTING ELECTRIC RADIANT HEATING OPERATION

Press the **MODE** button until Mode **Heat** appears on the LCD. Use the (▲) button and raise the setpoint a few degrees above the space temperature. The heating relay will energize and the word **Heat** will change to **Heating**.

ADAPTIVE RECOVERY

Adaptive Recovery is only available in programmable mode (Sw6=ON and OS=1). The Adaptive Recovery function of the thermostat permits the user to program a time that a desired set temperature is required. The thermostat then calculates the most energy efficient time to bring on the equipment to reach the setpoint at the designated time. This calculation involves a complex control algorithm that compares the space temperature deviation from setpoint and rate of recovery history. “RECO” flashes on the LCD when Adaptive Recovery is active.

BASIC TROUBLESHOOTING

SYMPTOM	POSSIBLE FAULT AND REMEDY
No LCD display	Remove thermostat from subbase and check for 24 Volts across ‘24’ and ‘24C’. Make sure the factory jumper is between ‘R’ and ‘24’. If no voltage, check voltage at HVAC system terminals ‘R’ and ‘C’. If no voltage, fault is equipment related. If voltage, fault could be in wiring.
Temperature display inaccurate.	Air from the wall cavity may be leaking into the rear of the thermostat. Seal holes in the wall to prevent air infiltration. The temperature sensor might be folded back inside the thermostat and is not being exposed to the room temperature. Carefully move the sensor head so that it is just behind the sensor opening in the case. External influence from appliances, lighting or drafts may be affecting temperature accuracy. Move lamps or other sources of abnormal temperature influence away from the thermostat.
Lock icon flashes when trying to adjust thermostat.	This is not a fault. HL limits the heating setpoint. Check the HL limit setting in the Advanced Installer menu. (Refer to page 8 in manual)
Some buttons on the thermostat do not function.	Lock values have been set. Refer to LC settings in the Advanced Installer menu. (Refer to page 8 in manual)

SPECIFICATIONS

Input Voltage	24 VAC 50/60 Hz
Relay Rating	24 VAC @ 1Amp maximum per relay
Operating Temperature	32° F to 122° F
Operating Relative Humidity	0-95% (non-condensing)
Storage Temperature	32° F to 105° F
Size	4-7/16” W x 4-1/16” H x 7/8” D
LCD Display Size	2-3/4” W x 1-7/8” H
Temperature Sensor	10K NTC type 3
Voltage	20-30 VAC
Resistance	10kΩ @ 77° F
Tolerance	+/- 3% @ 77° F
Stage Delays	Minimum temperature change over time
Timed Upstage Delay	5 - 90 minutes
Short-cycle Delay	Off to 4 minutes
Display Resolution	1° F
Control Range	41° F to 122° F or Heat Off / Cool Off
Outdoor Air Temperature Range	-10° F to 140° F
Back Light	Blue EL (Electro Luminescent)
Optimized Start/Stop Method	Time to start vs. temperature differential
Communications Protocol	Modbus
Approvals	FCC (Part 15) (Pending) C-tick
Warranty	5 years

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