

Submittal Data

Model TA/TX/TXR

Low Intensity Infrared Heaters



SUPERIOR
RADIANT PRODUCTS

Project _____
 Engineer _____
 Contractor _____
 Model # _____

Date: _____
 Submitted by: _____
 Approved by: _____

General Specification

Fuel Type (<i>Check one</i>) Natural Gas LPG	Heat Exchanger (<i>Check one</i>) Heat Treated Aluminized Steel Hot Rolled Stainless Steel
Inlet Gas Pressure Minimum Natural Gas @ 5" W.C. LPG @ 11" W.C. Maximum Natural Gas & LPG @ 14"	Electrical: (<i>Select thermostat</i>) 120VAC, 60 Hz, 1A 36" long, 3 Prong Power Lead _____ Line Voltage _____ 24v Thermostat

Accessories (<i>Check all that apply</i>) Thermostat Vent Terminal Wall Thimble Gas Flex Connector Shut Off Valve U Bend Pkg. Side Reflectors Elbow Pkg. Flue Connecting Tee (4x4x6)

Manifold Gas Pressure Nat. Gas 3.5" W.C. LPG 10.5" W.C.	Flue/Air Connections 4" Diameter Connection Maximum Vent Length = 30 feet Maximum fresh Air Length = 30 feet Vent + Fresh Air = 50 feet max.
Gas Connection 1/2" NPT (female)	

MODEL	RATE BTUH	FACTORY APPROVED HEATER LENGTH				PROJECT MODIFICATION	Quantity on Project
		(<i>Check length - feet</i>)					
TA/TX/TXR-40	40,000 High 30,000 Low	10	20	-	-		
TA/TX/TXR-60	60,000 High 45,000 Low	15	20	30	-		
TA/TX/TXR-80	80,000 High 60,000 Low	20	30	40	-		
TA/TX/TXR-100	100,000 High 75,000 Low	20	30	40	50		
TA/TX/TXR-125	125,000 High 95,000 Low	30	40	50	-		
TA/TX/TXR-150	150,000 High 115,000 Low	40	50	60	-		
TA/TX/TXR-175	175,000 High 130,000 Low	50	60	-	-		
TA/TX/TXR-205	205,000 High 160,000 Low	50	60	70	-		
TA/TX/TXR-220	220,000 High 165,000 Low	60	70	-	-		



Introduction

Superior Radiant Products is a company in the infrared heating industry founded on the principles of product quality and customer commitment.

Quality commitments are evidenced by superior design, a regard for design detail and an upgrade of materials wherever justifiable.

Customer commitment is apparent through our ready responses to market demands and a never ending training and service support program for and through our distributor network.

Superior Radiant offers its 20 years of infrared expertise in a cost effective unitary heater design as culmination of that commitment. Series **TA/TX/TXR** models are field assembled, low intensity infrared heaters that are easy to install and maintain, and which were engineered with significant input from our customers. They are designed to provide economical operation and trouble-free service for years to come.

Important

These instructions, the layout drawing, local codes and ordinances, and applicable standards such as apply to gas piping and electrical wiring comprise the basic information needed to complete the installation, and must be thoroughly understood along with general building codes before proceeding.

Only personnel who have been trained and understand all applicable codes should undertake the installation. SRP Representatives are Factory Certified in the service and application of this equipment and can be called on for helpful suggestions about installation.

Installation Codes

Installations must comply with local building codes, or in their absence, the latest edition of the national regulations and procedures as listed below.

General Installation and Gas Codes

Heaters must be installed only for use with the type of gas appearing on the rating plate, and the installation must conform to the National Fuel Gas Code, ANSI Z223.1/NFPA 54 in the US and CSA B149.1 and B149.2 *Installation Codes* in Canada.

This heater may be approved for either indoor or outdoor installation. Not for use in residential dwellings, refer to Rating plate.

Aircraft Hangar Installation

Installation in aircraft hangars must conform to the Standard for Aircraft Hangars, ANSI/NFPA 409 in the US and CSA B149.1 and B149.2 *Installation Codes* in Canada.

Public Garage Installation

Installation in public garages must conform to the Standard for Parking Structures, NFPA-88A or Standard for Repair Garages, NFPA 88B, in the US and CSA B149.1 and B149.2 *Installation Codes* in Canada.

Parking Structures

Technical requirements are outlined in ANSI/NFPA 88B (USA)

Gas Supply Lines

Gas supply pipe sizing must be in accordance with the National Fuel Gas Code, ANSI Z223.1/NFPA 54 in the US and CSA B149.1 and B149.2 *Installation Codes* in Canada.

A 1/8" NPT plugged tap must be installed in the gas line connection immediately upstream of the burner farthest from the gas supply meter to allow checking of system gas pressure.

Electrical

All heaters must be electrically grounded in accordance with the National Electric Code, ANSI/NFPA 70 in the US, and the Canadian Electric Code, CSA C22.1 in Canada, and must comply with all local requirements.

Venting

Refer to the National Fuel Gas Code, ANSI Z223.1/NFPA 54 in the US and CSA B149.1 and B149.2 *Installation Codes* in Canada for proper location, sizing and installation of vents as well as information on clearance requirements when penetrating combustible walls for venting purposes.

General Specifications

General Specifications

Gas Supply

Inlet Pressure

Natural Gas:	Minimum	5.0" W.C.	Propane Gas:	Minimum	11.5" W.C.
	Maximum	14.0" W.C.		Maximum	14.0" W.C.

Manifold Pressure

Natural Gas:	3.5" W.C.	(High Rate)	Propane Gas:	10.5" W.C.
	2.4" W.C.	(Low Rate)		6.2" W.C.

Inlet Connection

Natural Gas or Propane: 1/2" female NPT

Electric Supply

120 VAC, 60 HZ, 1 Amp: 36" cord with grounded 3 prong plug

Flue and Outside Air Connection

4" O.D. male connection for flue adapter and outside air (optional) provided at the heater

Dimensional Charts

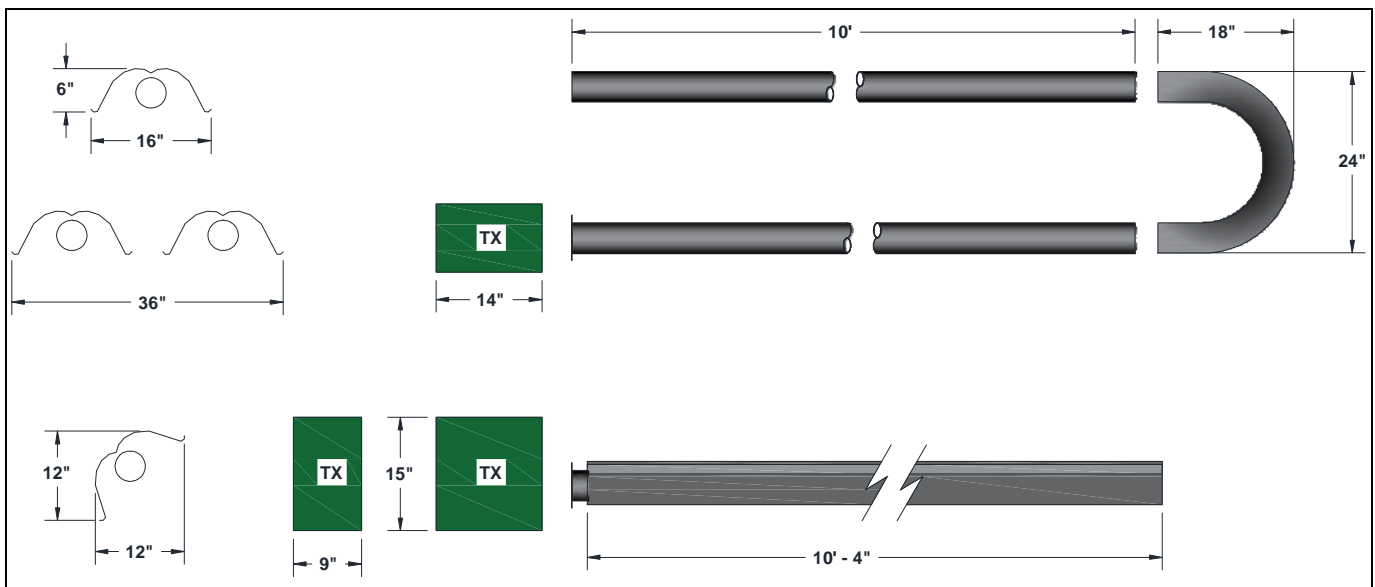


Figure 1: Overall Dimensional Information

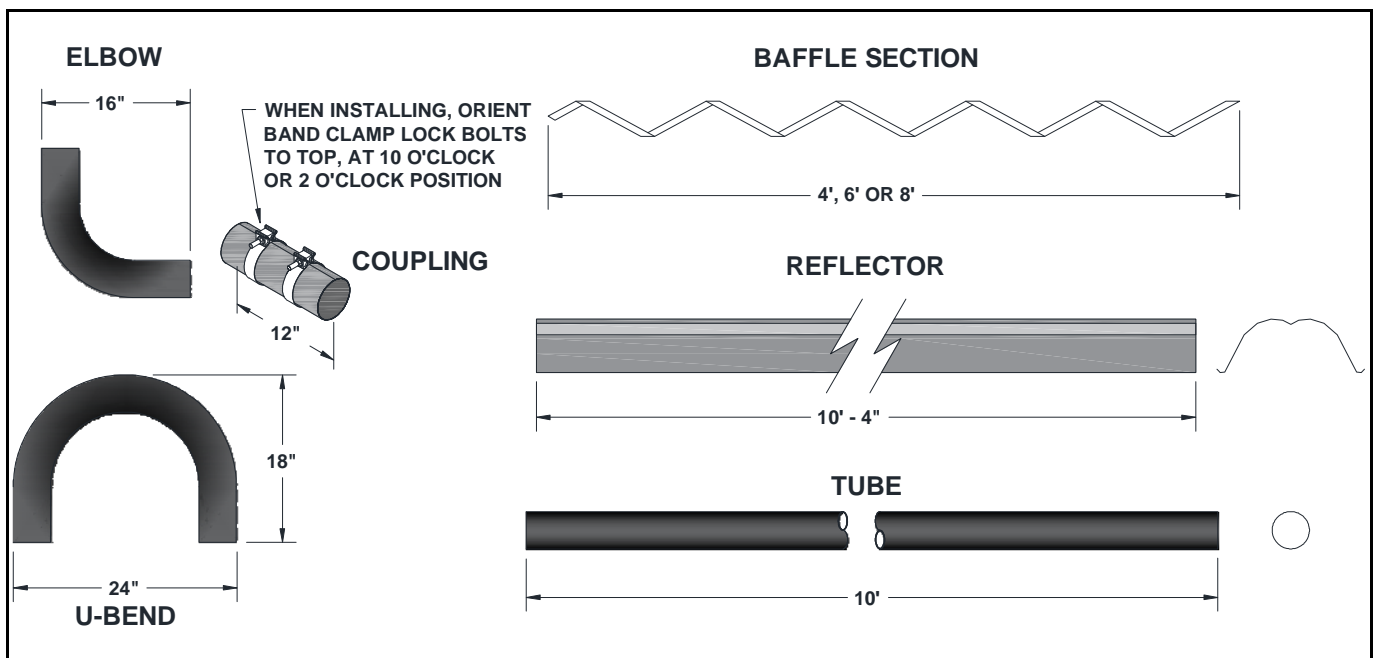


Figure 2: Component Dimensional Information

Configurations

Model * Special Configurations available – see below	High Rate (BTU/Hr)	Low Rate (BTU/Hr)	Heat Exchanger Length ft. (m)		Baffle ft.(m)	Baffle Kit P/N
			Minimum	Maximum		
TA/TX/TXR-40	40,000	30,000	10'(3m)	20'(6m)	6'(1.8m)	CT045
TA/TX/TXR -60*	60,000	45,000	20'(6m)	30'(9m)	6'(1.8m)	CT046
TA/TX/TXR -80*	80,000	60,000	20'(6m)	30'(9m)	12'(3.6m)	CT047
TA/TX/TXR -100*	100,000	75,000	20'(6m)	30'(9m)	12'(3.6m)	CT047
TA/TX/TXR -125*	125,000	95,000	30'(9m)	50'(12m)	12'(3.6m)	CT047
TA/TX/TXR -150*	150,000	115,000	40'(12m)	60'(18m)	6'(1.8m)	CT046
TA/TX/TXR -175	175,000	130,000	50'(15m)	60'(18m)		
TA/TX/TXR -205*	205,000	160,000	60'(18m)	70'(21m)		
TA/TX/TXR -220	220,000	165,000	60'(18m)	70'(21m)		

Table 1: Configuration Information

Note:

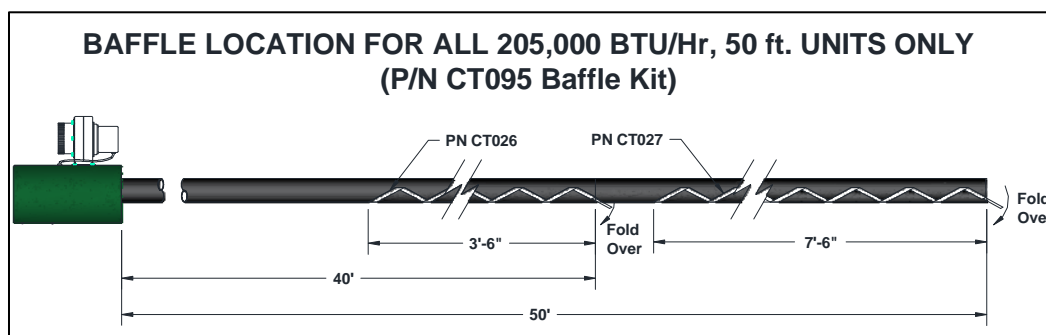
- Baffles are always placed in the last section of radiant tube.
- Baffles are either aluminized or stainless steel sections 6' long.
- When only 6' is required an aluminized steel baffle is installed, except on the TA/TX/TXR-40,000 where a special 6' stainless steel baffle with a red identification tab must be installed.
- When 12' is required, a 6' stainless steel baffle is inserted first into the end tube followed by another 6' aluminized baffle. The stainless steel baffle is now closest to the burner.

Part numbers for reference are:

- CT045 Baffle Kit, TA/TX/TXR-40,000 BTU/hr only, 6' long, stainless steel w/ red identification tab.
- CT046 Baffle Kit, 6' long, aluminized steel
- CT047 Baffle Kit, 12' long aluminized & stainless steel.
- CT095 Baffle Kit, TA/TX/TXR-205,000 BTU/hr – 50 ft ONLY

***The following Special Configurations are also approved:**

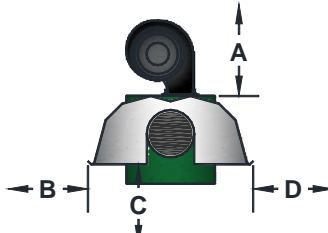
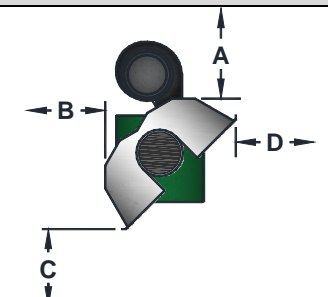
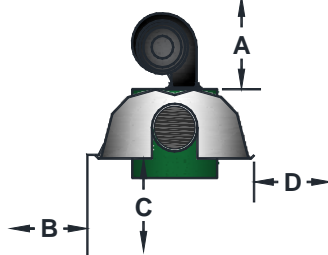
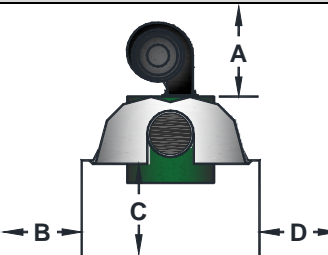
- 60,000 BTU/Hr 15' heat exchanger with 6' Stainless steel baffle with red tab (Natural Gas Only)
- 80,000 BTU/Hr 40' heat exchanger with NO baffle or 6' aluminized baffle.
- 100,000 BTU/Hr 40' or 50' heat exchanger with NO baffle or 6' aluminized baffle
- 125,000 BTU/Hr 40' or 50' heat exchanger with 6' aluminized baffle
- 150,000 BTU/Hr 60' heat exchanger with NO baffle
- 205,000 BTU/Hr 50' heat exchanger with a 4' baffle at 40', and a 8' baffle at 50'. (See figure 3)



Baffle Location TA/TX/TXR-205 Models, 50ft

Clearance to Combustibles

Table 2: Minimum Clearance to Combustibles Inches (cm)

		Model No.: TA/TX/TXR								
Reflector Configurations	Dim In (cm)	40 MBH	60 MBH	80 MBH	100 MBH	125 MBH	150 MBH	175 MBH	205 MBH	220 MBH
Horizontal										
	A	2"(5)	2"(5)	2"(5)	2"(5)	4"(10)	4"(10)	6"(15)	6"(15)	6"(15)
	B	18"(46)	25"(63)	26"(66)	30"(76)	33"(84)	36"(91)	40"(102)	44"(46)	46"(117)
	C	45"(114)	58"(147)	62"(157)	67"(170)	71"(180)	74"(188)	78"(198)	80"(203)	83"(211)
	D	18"(46)	25"(63)	26"(66)	30"(76)	33"(84)	36"(91)	40"(102)	44"(46)	46"(117)
45° Reflector Tilt										
	A	4"(10)	4"(10)	4"(10)	4"(10)	6"(15)	6"(15)	8"(20)	8"(20)	8"(20)
	B	4"(10)	4"(10)	4"(10)	4"(10)	4"(10)	4"(10)	4"(10)	4"(10)	4"(10)
	C	40"(102)	50"(127)	58"(147)	67"(170)	70"(178)	71"(180)	74"(188)	78"(198)	81"(205)
	D	38"(97)	46"(117)	50"(127)	58"(147)	63"(160)	64"(163)	67"(170)	72"(183)	77"(196)
One Side Extension										
	A	2"(5)	2"(5)	2"(5)	2"(5)	4"(10)	4"(10)	6"(15)	6"(15)	6"(15)
	B	4"(10)	4"(10)	4"(10)	4"(10)	4"(10)	4"(10)	6"(15)	6"(15)	6"(15)
	C	50"(127)	58"(147)	63"(160)	73"(185)	76"(193)	78"(198)	80"(203)	84"(203)	84"(203)
	D	35"(89)	38"(97)	42"(107)	45"(114)	50"(127)	52"(132)	54"(137)	56"(142)	58"(147)
Two Side Extension										
	A	2"(5)	2"(5)	2"(5)	4"(10)	4"(10)	4"(10)	6"(15)	6"(15)	6"(15)
	B	9"(23)	16"(41)	18"(46)	18"(46)	22"(56)	24"(61)	26"(66)	29"(74)	31"(79)
	C	50"(127)	58"(147)	64"(163)	71"(180)	78"(198)	80"(203)	82"(208)	86"(218)	88"(224)
	D	9"(23)	16"(41)	18"(46)	18"(46)	22"(56)	25"(64)	26"(66)	29"(74)	31"(79)

Installation

Installation Sequence

Generally, there is no unique sequence for installation of the burner or heat exchanger. A review of the job site will usually indicate a logical installation order. However, time and expense can be saved if installation is begun at the most critical dimension, watching for interference from overhead doors, cranes, auto lifts etc. Figure 3 provides a general overview of the components utilized in the installation, as well as their general relationship.

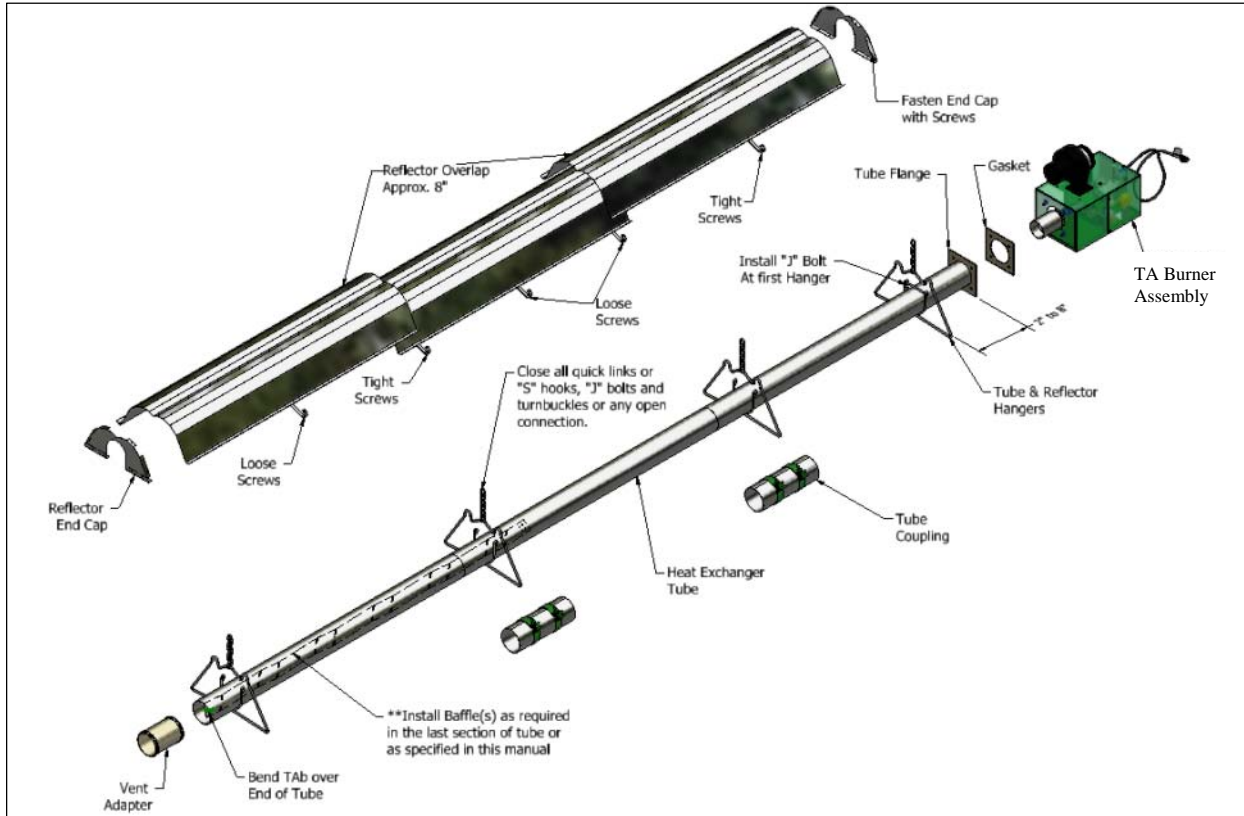


Figure 3: General Overview of Installation

A general ordered sequence for installation is provided below for reference.

HANGERS INSTALLATION

- Suspension mechanism must allow for lateral tubing expansion. A minimum 12" length welded link chain with a working load limit of at least 200 lbs. is recommended (refer to **Figure 4** for more details). **SRP recommends and make available "quick links" for connecting chain. If any open ended "S" hooks and turnbuckles are used, the open ends must be closed to avoid unhooking chain with inadvertent contact.**
- Locate hanging chain at predetermined suspension points in the structure. **It is required that the first 2 hangers** be about 8' to 9' away. Thereafter, 10' apart on average is acceptable for the remainder of the heat exchanger. At no time should hangers be more than 12' apart, (see **Figure 5**).

Installation

- A general overall view of the tubes and reflector hangers are shown in **Figure 11** below

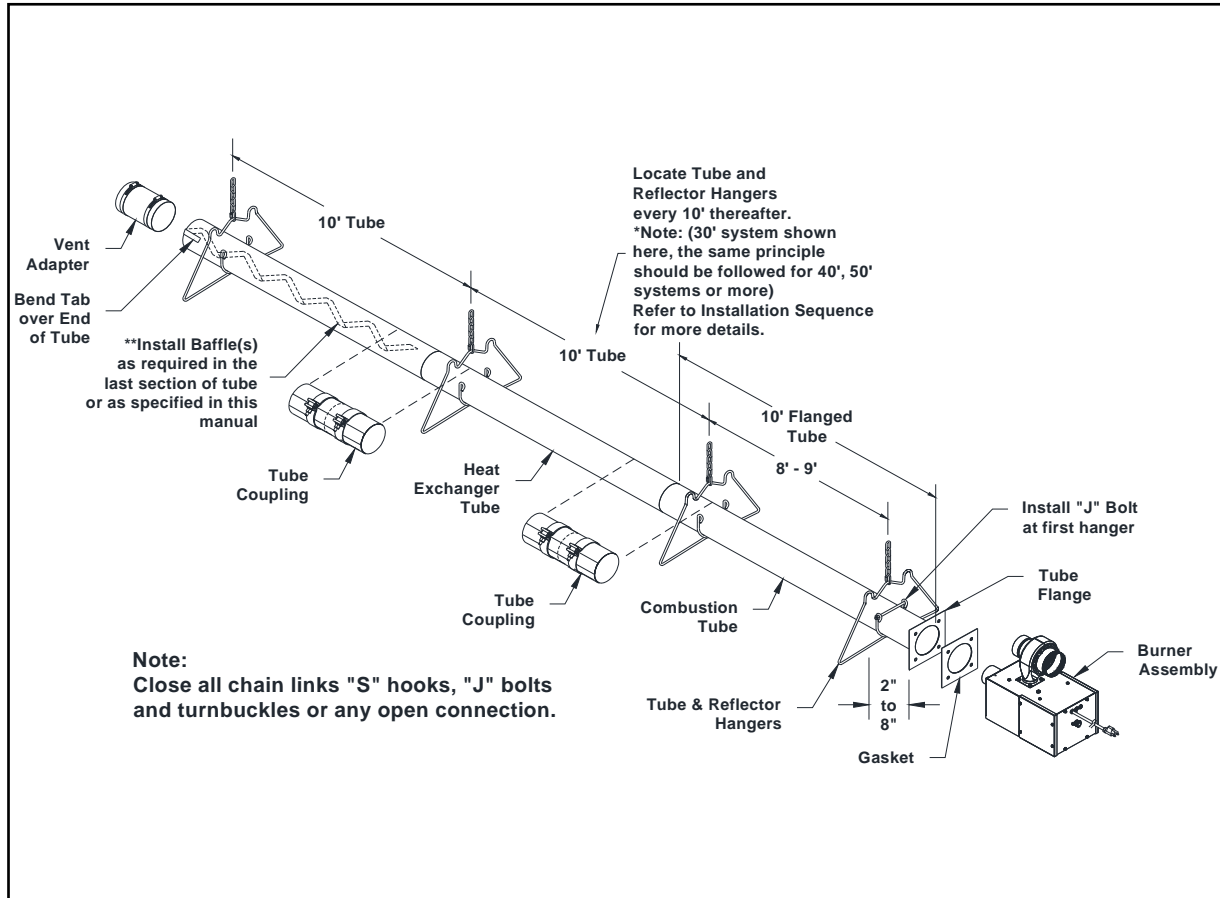


Figure 11: Overall view of Tubes and Reflector Hangers

General Requirements

- Refer to the *National Fuel Gas Code*, ANSI Z223.1 (NFPA 54) in the US and CSA B149.1 and B149.2 *Installation Codes* in Canada, as well as all local requirements for general venting guidance.
- Series TA/TX/TXR Infrared Heaters may be installed vented or unvented.
- Series TA/TX/TXR Infrared Heaters may be vented horizontally or vertically using conventional venting materials.
- If heater is to be vented horizontally, the vent from building must:
 - Be not less than seven feet above grade when located adjacent to public walkways.
 - Terminate at least three feet above any forced air inlet located within ten feet.
 - Terminate at least four feet below, four feet horizontally from or one foot above any door, window, or gravity inlet into any building.
 - Be located at least 12" (30cm) from any opening through which vent gases could enter a building.
 - Extend beyond any combustible overhang.
 - Be installed at a height sufficient to prevent blockage by snow.
- Optional outside air supply may be directed to the heater horizontally or vertically.

IMPORTANT

- Maximum total vent length allowed for any model heater is 30'(9m).
- Maximum total fresh air inlet duct length allowed for any model heater is 30'(9m).
- Total of vent length plus outside air supply duct length cannot exceed 50'(15m). For any heater with minimum heat exchanger length.
- If condensation in the vent pipe or outside air supply duct is a problem, shorten or adequately insulate the section.
- Install a minimum 18 inch (30 cm) straight length of duct for air intake or vent before any Tee or elbow.
- Do not install any elbow or 45 fitting to bring vent lower than the horizontal tube system.

Note: The above stated requirements assume a maximum of 2 elbows in the total combination of vent and air supply duct. Subtract 5' of allowable length for each elbow if 3 or more elbows are used.

Un-Vented Operation

- Requirements for combustion air supply and dilution air vary by jurisdiction, building type and specific installation details. **See local codes for guidance.** In general, fresh air ventilation must be provided to the building space at **(3 cfm per 1000 BTU/Hr in Canada).** **In The USA verify applicable codes.**
- Optional outside air supply is not recommended for unvented heaters due to possible pressure imbalances in the building space.
- Ensure that minimum combustible clearances are maintained for unvented heaters. Refer to Table 2, for required clearance dimensions.

Venting / Combustion Air Ducting

Vented Operation

In all cases, be sure vent pipes and outside air supply ducts are sealed with approved sealant, such as high temperature RTV silicone. Double wall venting (B vent) may not require sealant.

Horizontal Venting

- When venting through combustible walls, use approved vent terminal Tjernlund VH1-4, or SRP supplied deflector vent terminal with an approved insulating thimble.
 - When venting through non-combustible walls, use SRP supplied deflector vent terminal.
- Recommended extension of the terminal past the outside wall surface is 18" inches minimum.

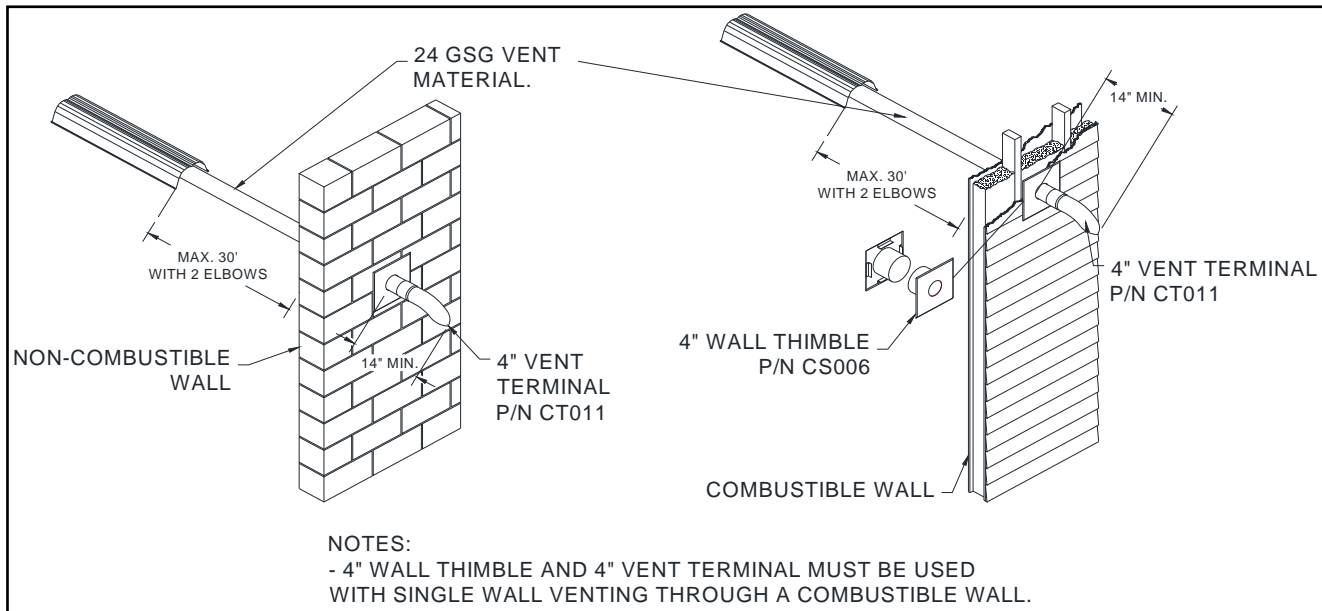


Figure 23: Horizontal Venting

Vertical Venting

- Minimum vent pipe size is 4" (10cm) for an individual heater. Additional vent pipe sizes as required to accommodate multiple heaters venting through a common roof vent are defined in the appropriate gas installation code. (Refer to common venting section below).
- Use of an approved thimble to pass through combustible roof materials is required.
- Use of an approved vent cap is required.
- Check local codes for vertical vent size

Common Vertical Venting

- Common vent sizing information is defined in the appropriate gas installation code (Refer to ANSI Z223.1 and CSA B149.1 and B149.2 for sizes and installation information).
- For vertical venting refer to ANSI Z223.1 and CSA B149.1 and B149.2
- Connection locations to the common vent should be offset to avoid pressure interferences between heaters, refer to ANSI Z223.1 and CSA B149.1 and B149.2
- Use of approved thimble to pass through combustible roof material is required. Additionally, B type vent materials are required for stacks above the roof line.
- Use of approved vent cap is required.
- All heaters to a common vent must operate at the same time. Connect the electrical circuit to the same thermostat to ensure simultaneous operation.

Venting / Combustion Air Ducting

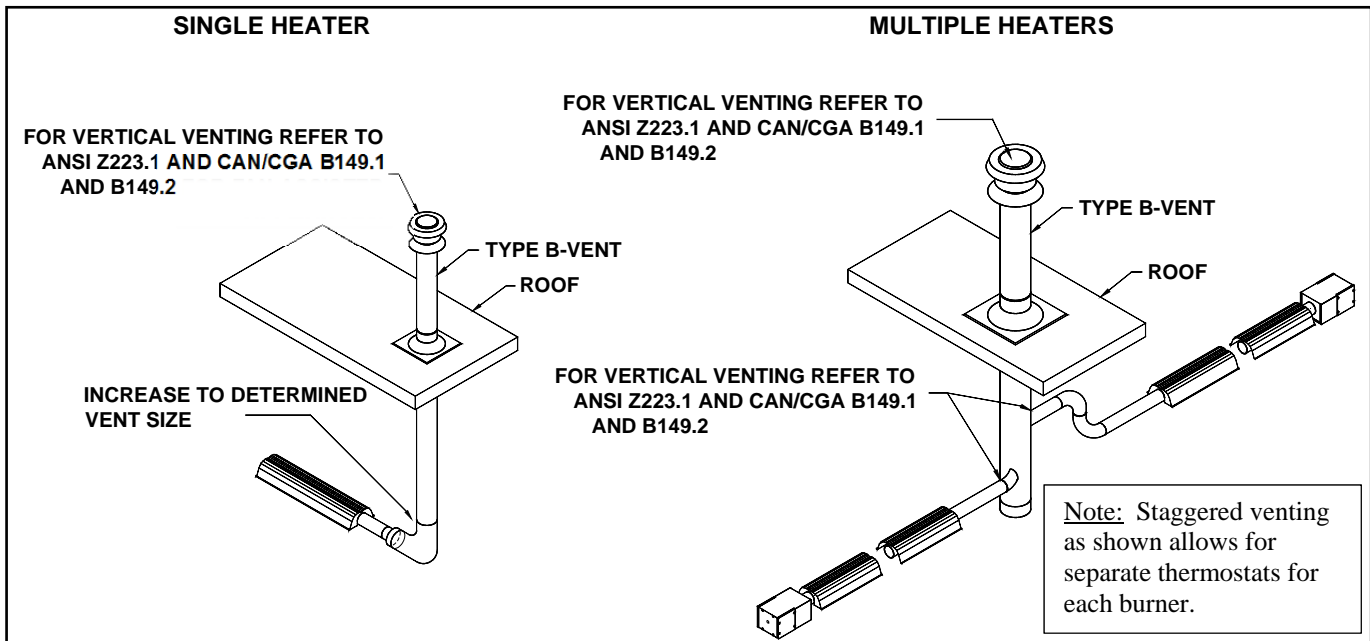


Figure 24: Common Vertical Venting

Common Horizontal Venting

- All heaters connected to a common horizontal vent must operate at the same time. Connect the electrical circuit to the same thermostat to ensure simultaneous operation.
- Fresh air supply **CANNOT** supply other burner systems.
- Refer to **Figure 25** for detailed Common Horizontal Venting guidelines.

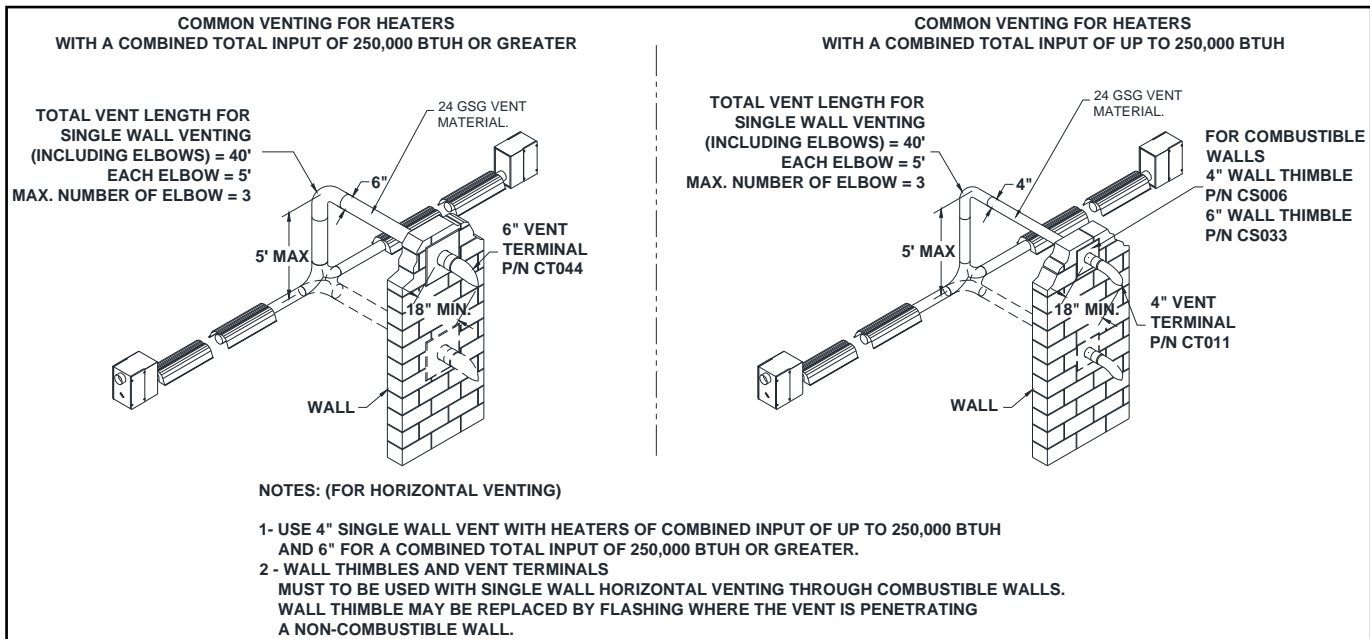


Figure 25: Common Horizontal Venting

General Requirements

Heaters are normally controlled by line voltage (120V) or low voltage (24V) thermostats. They are both wired directly. In all cases, heaters must be grounded in accordance with the *National Electric Code*, ANSI/NFPA 70 in the US, and the *Canadian Electric Code*, CSA C22.1 in Canada, and must comply with all local requirements. Heaters may also be controlled with a manual line switch or timer switch in place of the thermostat. Refer to Figure 30 & 31 for guidance on electrical wiring of heaters.

If any of the original wire as supplied with the heater must be replaced, it must be replaced with wiring having a rating of at least 105°C temperature service and 600 volts capability.

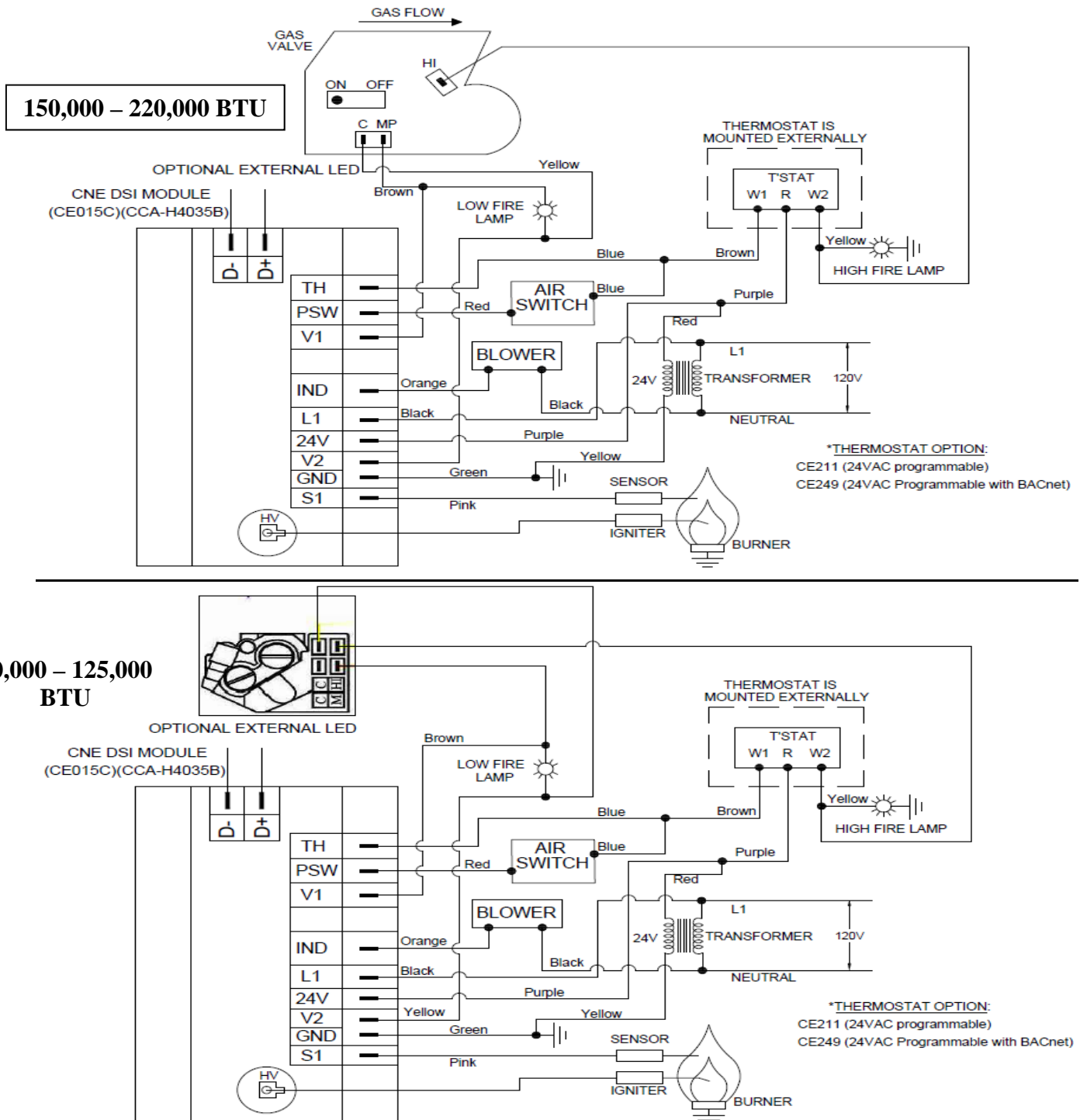


Figure 30: Wiring Diagram using 24VAC Thermostat for different range of BTU

Electrical Wiring

TXR Models Only

The following wiring diagram is for TXR models only

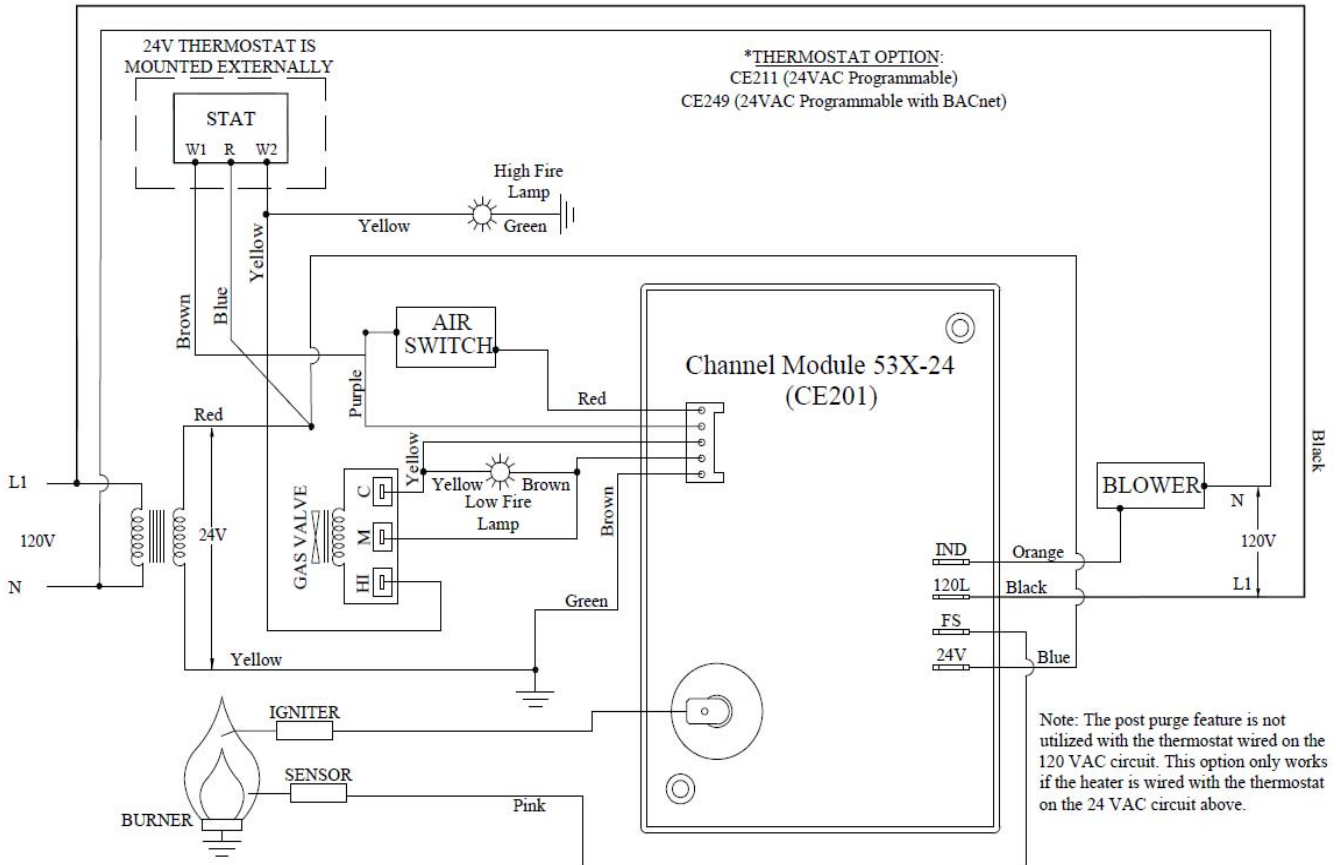


Figure 31: TXR Wiring Diagram