

REZNOR VZ RADIANT HEATER

PRODUCT SPECIFICATION

SYSTEM

A. General

1. Mechanical General Requirements

B. Codes and Standards

1. American National Standard / CSA Standard Gas-Fired Low Intensity Infrared Heaters: Construct and certify gas-fired infrared heaters in accordance with latest edition ANSI Z83.20 / CSA 2.34 "Gas-Fired Low-Intensity Infrared Heaters" including all current supplements.

2. Installation Compliance: United States: Refer to National Fuel Gas Code NFPA 54/ANSI Z223.1 - latest revision. Canada: Refer to Natural Gas and Propane Installation Code CSA B149.1 - latest revision.

3. CSA Compliance: Provide CSA Seal affixed to each burner name plate and provide CSA Certification of heater design as vented or unvented infrared heater for indoor installation.

4. National Standard Gas Piping Compliance: Install and connect gas piping to gas fired infrared heaters in accordance with United States: Refer to National Fuel Gas Code NFPA 54/ANSI Z223.1 - latest revision. Canada: Refer to Natural Gas and Propane Installation Code CSA B149.1 - latest revision.

5. National Electrical Code Compliance: Install and connect electrical wiring to gas fired infrared heaters in accordance with: 1.) United States: Refer to National Electrical Code®, NFPA 70 - latest revision. Wiring must conform to the most current National Electrical Code®, local ordinances and any special diagrams furnished. 2.) Canada: Refer to Canadian Electrical Code, CSA C22.1 Part 1 - latest revision.

EQUIPMENT

A. Burner Box

1. Natural Gas or Propane models both constructed with nickel plated steel burner cup, outside air adapter(option), direct spark ignition, three try ignition module, all components easily accessed, durable construction, mica flame observation window, balanced air rotor, gas and electric controls are separated from the combustion air stream, stainless steel flexible gas line and high-pressure gas shut-off valve assembly included, for U.S. models only.
2. Heater shall be equipped with permanently lubricated combustion blower with thermal overload protection.

B. Burner Controls

1. Factory Wired: All burners shall be factory wired for 120 volts AC with transformer for 24 volts AC DSI operation and supplied with a grounded three wire pigtail located at rear of burner.
2. Fail-Safe Controls: To assure a high degree of fail-safe operation, the design shall include an air proving safety pressure switch to verify blower operation before gas valve opens. In the event of a power failure the gas valve in burners close in safe position.
3. Ignition Controls: All gas firing burner units shall be equipped with a Direct Spark Ignition Module (DSI) fully automatic. The DSI module shall have a 15-second flame response time per ignition trial before lockout occurs. In addition, the DSI module shall be capable of a minimum of 3 trials for ignition to provide maximum reliability.

C. Reflectors - Standard

Provide high radiant reflective (aluminum) (stainless steel) reflectors installed over all heat exchangers. Provide reflector joint pieces over each exchanger fittings such as elbows so reflector covers heat exchanger continuously. To maximize radiant output and reduce convective heat losses, reflectors are to extend below the bottom of the heat exchanger tube.

1. Over all fittings: All reflectors at termination of the heat exchanger pipe and any elbows shall have end caps to prevent convective heat from escaping.
2. Side Reflectors: System to have (aluminum) (stainless steel) perimeter side extension reflectors in certain areas of layout as shown on plan where specified. Side reflectors permanently attach to side to top reflector and are secured to the pipe by side reflector supports and two "Z" clips for each 8' (2.44 m) section of side reflector. To prevent convection losses, tilting of reflectors will not be acceptable.

D. Outside Air

Provide fresh outside air to supply each burner for the support of combustion air. (optional but recommended)

E. Thermostats

Provide where indicated Mount thermostat 5 ft. - 6 ft. (1.5 - 2 m) above finish floor or otherwise as noted on the drawing.

F. Radiant Piping - Heat Exchanger

1. Radiant Tube: Shall be 4 in. (10 cm) O.D. (Heat Treated Aluminized) (Hot-Rolled) steel tube X 16-gauge wall with an emissivity factor of 0.80 or greater. ALUMITHERM® steel (aluminized steel/titanium alloy) tubing will be supplied on the first 10 ft. of each radiant heater.
2. Fittings: Shall be 4 in. (10 cm) O.D. Aluminized steel X 16-gauge wall. The tubes shall be as described in the installation, operation, and service manual.
3. Hanging Materials: All system's tube must be supported in accordance with acceptable practices, local codes, seismic requirements, and applicable standards and as shown on plans. Heat exchanger tube shall pitch down at least .5 in. per 20' (1.27 cm per 6.1 m) away from burner box.

INSTALLATION OF GAS FIRED RADIANT HEATERS

A. General

Install gas fired infrared heaters as indicated, in accordance with manufacturer's installation operation and service manual and in compliance with applicable codes and approvals. Allow adequate space for servicing or removal of the unit without disturbing other piping or equipment.

B. Support

Suspend heat exchanger, burner, gas piping, conduit, and reflectors from building substrate as indicated, or if not indicated, in manner to provide durable and safe installation, and in accordance with manufacturer's installation operation and service manual. Mounting height to be a minimum ____ foot (____ m) from floor level.

C. Clearance to Combustibles

Always maintain clearance to combustibles as outlined and printed on burner nameplate and in manufacturer's product data. Measure clearance distance from surface of heat exchanger or as indicated by approval agency's listing.

D. Venting

Install vent piping as indicated on plans. Terminate where indicated on the drawings with a vent terminal assembly as supplied by the manufacturer. The venting must be installed in accordance with the requirements within the installation operation and service manual and the following codes: United States: Refer to National Fuel Gas Code NFPA 54/ANSI Z223.1 - latest revision. Canada: Refer to Natural Gas and Propane Installation Code CSA B149.1 - latest revision.

E. Gas Piping

Install gas piping as indicated and in accordance and in compliance with applicable codes and approval: United States: Refer to National Fuel Gas Code NFPA 54/ANSI Z223.1 - latest revision. Canada: Refer to Natural Gas and Propane Installation Code CSA B149.1 - latest revision.

1. Required Gas Supply Inlet Pressures:

Natural Gas Units	Required Minimum Gas Pressure	Maximum Gas Pressure
40,000-150,000 Btu/h	4.6" wc	14" wc
175,000-200,000 Btu/h	5.0" wc	14" wc
Propane Gas Units	Required Minimum Gas Pressure	Maximum Gas Pressure
40,000-200,000 Btu/h	11" wc	14" wc

2. Local Codes: Gas supply piping must meet local requirements and be sized in accordance with Btu/h demand, available pressure and total length of supply line required for the installation. Connection from supply line to burner unit must be made in accordance with installation operation and service manual. Gas shut-off cock, as supplied with unit, and controls in unit must not be subjected to more than 1/2 lb. or 14" wc pressure.

3. Drip Legs: Provide drip legs at all gas risers.

F. Electrical Wiring

Install electrical wiring as indicated. Connect power wiring to burners and control wiring between burners and thermostats in

accordance with manufacturer's wiring diagrams.

G. Thermostats

Mount thermostats 5 ft. - 6 ft. above finished floor, if not otherwise indicated.

H. Thermostat Guards

All thermostats to be covered with a locking thermostat cover.

FIELD QUALITY CONTROL

A. Start-Up

Start-up, test, and adjust gas fired infrared heaters in accordance with manufacturer's start-up instructions in the installation operation and service manual, and Utility Company's requirements. Check and calibrate controls, adjust burners if applicable according to manufacturer's installation operation and service manual instructions for maximum efficiency.

CLOSEOUT PROCEDURES

A. Training

Provide services of manufacturer's technical representative to instruct operating personnel in operation and maintenance of gas fired radiant heaters.

1. Schedule instruction with operating building owner, provide at least 7 days notice.

WARRANTY

Provide written warranty, by manufacturer, agreeing to replace/repair, within warranty period, components of gas fired infrared systems furnished by manufacturer, which are defective in either material or workmanship, provided manufacturer's instructions for handling, installing, protecting, and maintaining units have been adhered to during warranty periods follows:

Nortek Global HVAC, LLC warrants to the original owner-user that this product will be free from defects in material and workmanship. This warranty is limited to twelve (12) months from the date of original installation, whether or not actual use begins on that date, or eighteen (18) months from date of shipment, whichever occurs first.

- A. Extended nine (9)-year, non-prorated warranty on all tubes. Extended four (4)-year, non-prorated warranty on the burner and all electrical and mechanical operating components.

QUALITY ASSURANCE

A. Manufacturer's Qualifications

Firms regularly engaged in the manufacture of gas fired radiant systems with characteristics, sizes, and capacities required, whose products have been in satisfactory use in similar service for not less than 15 years.

B. Alternate Manufacturers

1. Other low intensity infrared heaters and with the same or lower burner firing rate capacity, and with the infrared distribution pattern shown on drawing may be acceptable provided they meet the intent of these specifications and prior approval in writing is obtained from the engineer at least twenty (20) days before the bid date. If such systems are approved, the contractor assumes responsibility for the design, performance, and expense of the same. The redesigned system, gas piping, and electric wiring shall be done by a registered mechanical engineer. Shop drawings of the entire new system shall be provided by this contractor. The contractor should state the amount to be credited to the owner due to this substitution.

2. Where approved substitutes are used, the contractor assumes all responsibility for physical dimensions and all other resulting changes. This responsibility extends to covering all extra work as necessitated by other trades because of the substitutions.

3. The engineer reserves the right to require the contractor to remove and replace any material or equipment which does not meet specifications or does not have any prior approval as a substitute item. Work shall be completed immediately

without cost or inconvenience to the owner.

PERFORMANCE SCHEDULE

A. Equipment

1. Provide gas fired infrared radiant heaters to deliver the following performance capacities.

<u>Manufacturer</u>	<u>Model</u>	<u>Input</u> (Btu/h)	<u>Overall Length</u> <u>Minimum</u> (Ft. – In.)
Reznor	VZ-40	40,000	10'-11"
Reznor	VZ-60	60,000	20'-11"
Reznor	VZ-80	80,000	20'-11"
Reznor	VZ-100	100,000	30'-11"
Reznor	VZ-115	115,000	30'-11"
Reznor	VZ-125	125,000	30'-11"
Reznor	VZ-140	140,000	40'-11"
Reznor	VZ-150	150,000	40'-11"
Reznor	VZ-175	175,000	40'-11"
Reznor	VZ-200	200,000	50'-11"