



**GUIDE SPECIFICATION
ADVANCED RADIANT SYSTEMS
HD/HM RANGE
HIGH EFFICIENCY, HIGH INTENSITY INFRARED HEATERS**

SECTION 15540 - FUEL - FIRED HEATERS
(Alternate - SECTION 235523 - GAS-FIRED RADIANT HEATERS)

This section is based on the products of Advanced Radiant Systems, located at:

Location: 315 N Madison Street
Fortville, IN 46040

Contact: Toll Free: 1 (800)874-3285
Phone: 1(317-577-0337
Email: sales@advancedradiantsystems.com
Web: www.advancedradiantsystems.com

Advanced Radiant Systems manufactures a full range of gas fired, high and low intensity, infrared space heating equipment.

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. High intensity heaters.

1.2 RELATED SECTIONS

- A. Section 15050 – Basic Mechanical Materials and Methods: Fuel service, safety valves and connections.
- B. Section 16050 – Basic Electrical Materials and Methods: Power service and connections.

1.3 REFERENCES

- A. CSA – CSA Group. Canadian Standards Association (CSA).

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Rated capacities, operating characteristics and accessories for each type of gas-fired radiant heater.
 - 2. Preparation instructions and recommendations.
 - 3. Storage and handling requirements and recommendations.
 - 4. Installation methods.



5. Shop Drawings: Submit complete shop drawings indicating system components, control diagrams and load calculations.
6. Field quality-control test reports.
7. Installation, Operation and Maintenance Data: Provide copy of IO&M document.
8. Warranty: Provide copy of manufacturer's warranty statement.

1.5 QUALITY ASSURANCE

- A. Assemblies: Assemblies shall be CSA approved.
 1. High intensity heaters to ANSI Z83.19 (latest revision) and CSA 2.35 (latest revision).
- B. Approval shall include components of the complete heater, including burners, hangers, reflectors, accessories, thermostats and associated controls as noted in Contract Document plans and specifications.
- C. Code Compliance: Installations of units shall comply with local building codes, or in their absence, the latest edition of the national regulations and procedures listed below:
 1. Electrical: Heaters shall 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 shall comply with all local requirements.
 2. General Installation and Gas Codes: Heaters shall be installed only for use with the type of gas appearing on the rating plate, and the installation shall conform to the National Fuel Gas Code, ANSI Z223.1 (NFPA 54) in the US and the Natural Gas and Propane Installation Code, CAN/CGA B 149.1 & B149.2 in Canada.
 3. Aircraft Hangar Installation: Installation in aircraft hangars shall conform to the Standard for Aircraft Hangars, ANSI/NFPA 409 in the US and CAN/CGA B149.1 & B149.2 in Canada.
 4. Public Garage Installation: Installation in public garages shall conform to the Standard for Parking Structures, NFPA-88A or Standard for Repair Garages, NFPA 88B, in the US and CAN/CGA B149.1 & B149.2 in Canada.
 5. Parking Structures: Technical requirements are outlined in the Standard for Parking Structures, ANSI/NFPA 88a, in the US and CAN/CGA B149.1 & B149.2 in Canada.
 6. Gas Supply Lines:
 - a) Gas supply pipe sizing shall be in accordance with the National Fuel Gas Code, ANSI Z223.1 (NFPA 54) in the US and the Natural Gas and Propane Installation Code, CAN/CGA B149.1 & B149.2 in Canada.
 - b) A 1/8 inch (3 mm) NPT plugged tap shall 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.



7. Venting: Refer to the National Fuel Gas Code, ANSI Z223.1 (NFPA 54) in the US and the Natural Gas and Propane Installation Code, CAN/CGA B149.1 and B149.2 in Canada for proper location, sizing and installation of ventilation as required for unvented heaters.

D. Manufacturer Qualifications: Successfully completed and passed the auditing requirements for ISO 9001 - Quality Management System (QMS).

E. Installer Qualifications: Authorized distributor of products and systems.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

1.7 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.8 WARRANTY

- A. Manufacturer's standard warranty agrees to provide parts to repair or replace components of gas-fired radiant heater that fails in materials or workmanship within specified warranty period.
1. The Manufacturer warrants to the original owner that the product will be free of defects in material and workmanship. For the HD/HM Range, the warranty for all components except for the ceramic burner head assembly is limited to 24 months from the date of installation.
 2. The ceramic burner head assembly shall be warranted for an additional 8 years for units which are proven to the satisfaction of the manufacturer to be inoperative due to defects in material or workmanship.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer:

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B. Substitutions: Not permitted.

2.2 HIGH INTENSITY HEATERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Advanced Radiant Systems Model HD/HM Range high intensity type gas-fired radiant infrared heaters.



- B. Product shall be Model S as manufactured by Advanced Radiant Systems, firing rates as called for in the Contract documents within the range of 30 MBH to 160 MBH.
1. Service:
 - a) Electrical Rating: 24VAC.
 - b) Gas Connection: 1/2 inch (13 mm) NPT.
 - c) Minimum Gas Inlet: Natural gas 6.5 inches (165 mm) W.C. LPG 11.0 inches (305 mm) W.C.
 - d) Manifold Pressure: Natural gas 6 inches (152 mm) W.C. LPG 10 inches (254 mm) W.C.
 2. Construction:
 - a) Reduced maintenance costs with easy removal of combustion chamber.
 3. General: High intensity radiant heater (Models HD/HM Range).
 - a) CSA approved.
 - b) Complete with required, sealed burner heads, ignition control / valve.
 - c) Shall cover entire infrared spectrum – from short to long wavelengths.
 - d) Clearance to combustibles shall comply with those in the Installation and Operation Manual for the firing rate specified.
 - e) Approved flexible connectors shall be provided.
 - f) The heater unit shall operate at a minimum gas inlet pressure of 6.5 inches W.C. for NG and 11 inches for propane; maximum inlet pressure for both the fuel being 14 inches WC.
 - g) Electrical load: Unit shall draw no more than 20 VA at 24VAC, 60Hz.
 - h) Unit shall be subjected to a function test before it leaves the factory and be preset to the relevant gas type.
 4. Performance:
 - a) The heater shall perform a controlled and clean surface combustion
 5. Heater Body:
 - a) Heater body shall comprise of Burner-head(s) (mixing chamber, ceramic emitter tiles and steel mesh), outer body and reflector assemblies.
 - b) Burner head shall be aluminized steel with required venture(s). Heater burner head modules shall be removable without unmounting of the heater.
 6. Equipment Controls:
 - a) Ignition shall be solid-state direct spark.
 - b) Ignition control shall:
 - 1) Make 3 ignition attempts before lockout.
 - 2) Recycle again in one hour with 3 ignition attempts.
 - 3) Ignition module will check for false flame condition, i.e. shorted sensor to ground.
 - 4) Have openly accessible sense current contacts.
 - c) Gas valve shall include a manual valve, two magnetic operators and a standard gas pressure regulator.
 - d) Gas valve shall have pressure taps to measure inlet and manifold pressures.



PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until services and supports have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 INSTALLATION

- A. Installation shall comply with manufacturer supplied Instruction manual, approved drawings and applicable local codes and/or gas utility requirements. In the absence of any of the former, reference should be made to CAN 1-B149.1 and B149.2 Installation Codes and/or National Fuel Gas Code ANSI Z223.1 (NFPA54). Comply with manufacturer's recommendations including the following:
 - 1. Clearance to combustibles shall comply with those in the I/O manual for the firing rate specified.
 - 2. Provide approved flexible connectors.
 - 3. Wire heaters in accordance with the National Electrical Code ANSI/NFPA 70 and local ordinances and/or Canadian Electrical Code.
 - 4. Suspend heater units in accordance with manufacturer's instruction with chain and turnbuckles exceeding 540 lbs. (245 kg) pull test. 4 inch (102 mm) turnbuckles and 2/0 chain.
 - 5. Install and connect gas-fired radiant heaters and associated fuel and vent features and systems according to either NFPA 54 or CAN/CSA B149.1 as applicable for local codes and regulations.
 - 6. Install products in accordance to manufacturer's written installation instructions.
 - 7. Hang suspended units from substrate using chain hanger kits and building attachments as required for safe installation and to meet all seismic requirements for specific building location.
- B. Connections: Provide all electrical connections required for complete installation including installation of electrical devices furnished with heaters but not specified to be factory mounted.
 - 1. Install piping to gas-fired radiant heaters to allow service and maintenance as required.
 - 2. Connect gas piping to gas train inlet; provide union with enough clearance for burner removal and service.
 - 3. Connect vent connections as required.



3.3 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test and adjust components, assemblies, and equipment installations, including connections, and to assist in testing. Testing shall include the following:
 - 1. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
 - 2. Test Reports: Prepare a written report to record the following:
 - a) Test procedures used.
 - b) Test results that comply with requirements.
 - c) Test results that do not comply with requirements and corrective action taken to achieve compliance with requirements.
- B. Remove and replace malfunctioning units and retest until satisfactory results are obtained.

3.4 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain gas-fired radiant heaters.

3.5 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION