

**RADIANT ELECTRIC HEAT
GERMANTOWN, WISCONSIN
SECTION 238330 – RADIANT HEATING UNITS**

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: High efficiency infrared radiant panel heaters for [portable] [cove] [wall] [ceiling] [baseboard] mounting.
- B. Related Sections
 - 1. Division 00 - General and Supplementary Conditions.
 - 2. Division 26 – Electrical: Wiring.
- C. References
 - 1. Underwriters Laboratory (UL)
 - 2. National Electrical Manufacturers Association (NEMA)
 - 3. International Electrical Code (IEC)
- D. Drawings, the provisions of the Agreement, the General Conditions, and Division 1 specification sections apply to all work of this Section.
- E. Substitutions: **** One of the following****
 - 1. [Substitutions will be considered only under the terms and conditions of Section 016000.]
 - 2. [Substitutions not allowed.]

1.2 SUBMITTALS

- A. Make submittals in accordance with Section 013300.
- B. Product Data: Manufacturer's complete product data including wiring support diagram, switching, heater size and wattage, and color selector.
- C. Warranty: A sample copy of the Manufacturer warranty for the periods stipulated. Each specimen must be a preprinted representative sample of the issuing company's standard warranty for the units specified.
- D. Certification: Documentation demonstrating UL listing.

1.3 DESIGN REQUIREMENTS

- A. Radiant heater units shall be ceramic circuit radiant panel type using porcelain enamel-coated steel plate. Calrod- or filament-type radiant heaters are not acceptable.

1.4 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in the manufacture of ceramic circuit radiant panel heaters.
- B. Installer: Hard-wired units shall be installed by a licensed electrician as applicable to the jurisdiction.

1.5 REGULATORY REQUIREMENTS

- A. Conform to applicable building and jurisdictional codes for installation of heaters.

1.6 DELIVERY, STORAGE, AND PROTECTION

- A. In accordance with Section 016000.
- B. The Contractor together with the Owner or his designated Representative shall designate a storage area for all components. The area shall be cool, dry, out of direct sunlight, and in accordance with manufacturer's recommendations and relevant regulatory agencies. Materials shall not be stored in quantities that will exceed design loads, damage substrate materials, or hinder installation.

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1.7 ENVIRONMENTAL REQUIREMENTS

- A. Do not install heaters until building is enclosed, dust- or moisture-generating activities have terminated, and substrates have been finished as specified.
- B. Ensure that substrate materials are dry and free of contaminants. Do not commence with the installation unless substrate conditions are suitable. Contractor shall demonstrate that substrate conditions are suitable for the installation of the units.

1.8 COORDINATION & PROTECTION

- A. Coordinate the work with the installation of associated wiring, panels, switches, and accessories, as the work of this section proceeds.

1.9 WARRANTY

- A. In accordance with Section 017700.
- B. Manufacturer's Limited Warranty: Provide 10 year manufacturer's limited warranty under provisions of this section. This warranty provides for replacement of failed heating element at no cost to the Owner for the first 5 years of Warranty and then pro-rated for following five years.

PART 2 - PRODUCT

Use the next Article and one or more of the following 6 Articles for Proprietary Specification

2.1 MANUFACTURER

- A. Radiant Electric Heat (Germantown, WI; 800-774-4450).

2.2 PORTABLE INFRARED CERAMIC PANEL HEATER

- A. [Model "1624;" standard black finish] [Model "1624SS;" stainless steel finish]; 1,000 Watts.
- B. Provide with thermostat and safety tip-over switch.
- C. Provide with wheels affixed to units.
- D. Plug-in installation.

2.3 COVE-MOUNT INFRARED CERAMIC PANEL HEATER

- A. [Model "1445C", 1500 Watts] [Model "945C", 1,000 Watts] [Model "645C", 825 Watts] [Model "632C", 585 Watts]
- B. [120] [208] [240] [277] Volt.
- C. Color: [Beige] [White] [Custom].
- D. For [plug-in] [hard-wire] installation.

2.4 WALL-MOUNT INFRARED CERAMIC PANEL HEATER

- A. [Model "1445W", 1,500 Watts] [Model "945W", 1,000 Watts].
- B. [120] [208] [240] [277] Volt.
- C. Color: [Beige] [White] [Custom].
- D. Option: Integrated thermostat.
- E. For [plug-in] [hard-wire] installation.

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2.5 CEILING LAY-IN-MOUNT INFRARED CERAMIC PANEL HEATER

- A. [Model “1624CL”, 625 Watts].
- B. [120] [208] [240] [277] Volt.
- C. Color: [White] [Custom].
- D. For [plug-in] [hard-wire] installation.

2.6 CEILING SURFACE-MOUNT INFRARED CERAMIC PANEL HEATER

- A. [Model “1445CL”, 1,500 Watts] [Model “945CL”, 1,000 Watts].
- B. [120] [208] [240] [277] Volt.
- C. Color: [Beige] [White] [Custom].
- D. For [plug-in] [hard-wire] installation.

2.7 BASEBOARD-MOUNT INFRARED CERAMIC PANEL HEATER

- A. [Model “545B”, 650 Watts] [Model “527B”, 400 Watts]
- B. [120] [208] [240] [277] Volt.
- C. Color: [Beige] [White] [Custom].
- D. Internal temperature limit switch.
- E. Option: Integrated thermostat.
- F. For [plug-in] [hard-wire] installation.

2.8 ACCESSORIES

- A. Thermostat: [Programmable] [Non-Programmable] [Digital Readout] [Line Voltage]
- B. Control Panel: NEMA 1 Enclosure; UL listed; 120 Volt control circuit.
- C. Mounting Brackets: As standard for type of unit specified.

Use the next Article for Descriptive or Performance Specification

2.9 INFRARED CERAMIC PANEL HEATER

- A. Heating Elements:
 - 1. Porcelain enamel coated 18 gage steel plate
 - 2. Energizing ceramic circuit on internal face of heating element
 - 3. Wattage density: Minimum 2.3 Watts per square inch of emissive surface area.
- B. Heater Body:
 - 1. 20 gage steel, high-temperature resistant powder coating.
 - 2. Provide manufacturer’s standard 7/8 inch knockouts for power feed.
 - 3. Provide heater body safety grill as standard with type of unit specified.
- C. Design: [Portable] [Ceiling Cove-Mounted] [Wall-Mounted] [Baseboard-Mounted] type.
- D. Wattage: **** Select one or more of the following****
 - 1. ****for Portable Heaters**** 1,000 Watts
 - 2. ****for Ceiling Cove Mount Heaters**** [1,500 Watts] [1,000 Watts] [825 Watts] [585 Watts]
 - 3. ****for Wall or Ceiling Mount Heaters**** [1,500 Watts] [1,000 Watts]

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- 4. ****for Baseboard Mount Heaters**** [650 Watts] [400 Watts]
- E. Voltage: [120] [208] [240] [277] Volt.
- F. For [plug-in] [hard-wire] installation.
- G. Accessories:
 - 1. Thermostat: [Programmable] [Non-Programmable] [Digital Readout] [Line Voltage]
 - 2. Control Panel: NEMA 1 Enclosure; UL listed; 120 Volt control circuit.
 - 3. Mounting Brackets: As standard for type of unit specified.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to starting work, carefully inspect installed work of other trades and verify that such work is complete to the point where work of this Section may properly commence. Notify the Architect in writing of conditions detrimental to the proper and timely completion of the work.
- B. Do not begin installation until all unsatisfactory conditions are resolved. Beginning work constitutes acceptance of site conditions and responsibility for defective installation caused by prior observable conditions.

3.2 PREPARATION

- A. Coordinate the location of heating units with other work. Ensure units are located to accommodate fittings and units of equipment which are to be placed after the installation of heating units.

3.3 INSTALLATION

- A. General: Install heating units where indicated, in accordance with manufacturer's written instructions, applicable requirements of IEC, in compliance with recognized industry practices to ensure products fulfill requirements.
- B. Secure in place with mounting brackets or by fastening back panel of unit to wall, as applicable to type of model specified, unless otherwise noted. Top of heater unit and trim shall be level. Firmly anchor heating units directly or with concealed bracing to building structure. Where heating units are mounted adjacent to each other, the top edges shall be at the same height.

3.4 TESTING

- A. Provide testing as required by Division [00] [23] [26].

END OF SECTION