

**GUIDE SPECIFICATION
COMMERCIAL/INDUSTRIAL APPLICATIONS
SECTION 23 83 00 HVAC RADIANT HEATERS
Solaira^o™ ICR SERIES**

PART 1 GENERAL

1.1 SYSTEM DESCRIPTION

- A. Section Includes
 - 1. Indoor Commercial or Outdoor overhead mounted, short wave, electric powered, infrared radiant heaters.
- B. Summary of Work
 - 1. Installation of the heater(s), miscellaneous or structural work (if required), field electrical wiring, cable, conduit, fuses and disconnect switches, other than those addressed in the installation scope of work, shall be provided by others.

1.2 QUALITY ASSURANCE

- A. Certifications and Testing
 - 1. The heater assembly, as a system, shall be cCSAus listed and certified to UL2021, 3rd edition. Fixed and Location Dedicated Electric Room Heaters and CSA 22.2 No. 46-13 Electric Air Heaters. cCSAus Seal and certification number must be clearly visible.
 - 2. Heaters and Controllers shall comply with Underwriters Laboratories (UL) standards and shall be labeled where required by code.
 - 3. Controller shall be UL508 Approved and CSA 22.2-286 Approved.
 - 4. The Heater Fixture will be warranted for 3 years, and the Emitter will be warranted for 1 year.
- B. General Installation
 - 1. Heaters may be wall hung, ceiling suspended or recessed into ceiling structure per manufacturers requirements in instruction manuals. Solaira ICR Series Heaters are suitable for indoor/outdoor in commercial industrial applications and outdoor use only in residential application.
 - 2. Minimum required clearances must be followed as per product instruction manuals. In recessed application, appropriate fire rated construction materials per installation region and per NFPA requirements must be followed.
 - 3. In accordance with the National Electrical Code, ANSI/NFPA 70 (USA) and Canadian Electric Code CSA 22.1 (CANADA) and complying with all local codes based on jurisdiction, heaters shall be electrically grounded.
- C. Manufacturer Qualifications
 - 1. The heater, controls and all accessories shall be supplied by Solaira^o™, which has a minimum of fifteen years (15) years of product experience in the heating industry.

1.3 RELATED SECTIONS

- A. 23 00 00 Heating, Ventilating, and Air Conditioning (HVAC)
- B. 26 00 00 Electrical

1.4 REFERENCES

- A. National Electrical Code (NEC)
- B. Underwriters Laboratories (UL)
- C. Canadian Standards Association (CSA)
- D. Nationally Recognized Testing Laboratory (NRTL)
- E. American National Standards Institute (ANSI)
- F. National Fire Protection Association (NFPA)

1.5 SUBMITTALS

- A. Product Specification Sheets – All product data including:
 - 1. Heater clearance requirements
 - 2. Rated heater capabilities in power(W), BTUs and rated voltage(V)
 - 3. Heater physical dimensions
 - 4. Heater mounting configurations
- B. Installation, Operation and Maintenance Manuals
- C. Schedule
- D. Submittal documents

1.6 DELIVERY, STORAGE, AND HANDLING

- A. The heater, controls and all accessories shall be stored in a safe location free of access moisture.
- B. The Heater shall be delivered in undamaged and original packaging and handled per manufacturers' recommendations. Packing shall have identification labels intact.
- C. The control components shall be new, free from defects, and factory tested.

1.7 WARRANTY

The manufacturer agrees to repair or replace components of radiant heater defective in material or workmanship within the specified period

- A. Heater Fixture: 3 Years
- B. Emitter: 1 Year
- C. Controls: 1 Year

PART 2 PRODUCT

2.1 MANUFACTURER

- A. Acceptable Manufacture: Solaira™

Solaira^o™ is a registered Trademark of Inforesight Consumer Products Inc.
Inforesight Consumer Products Inc., 125 Traders Blvd E, Mississauga, ON L4Z 2H3.
Phone (905) 568-7655. Fax (905) 568-7521.
www.solairaheaters.com
Email: Sales@solairaheaters.com

- B. Alternatives or Substitutions: Not permitted. Model shall be Solaira^o™ ICR Series.
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2.2 PERFORMANCE REQUIREMENTS

- A. Heaters shall be cCSAus listed and certified to UL2021, 3rd edition and CSA 22.2 46-13 with CSA seal and certification number clearly visible on back of radiant heater.
- B. Control Panels shall be cULus UL508 Approved and CSA 22.2-286 Approved with Seal and serial number clearly visible inside controls.

2.3 DESCRIPTION

- A. Design and Performance
 - 1. Emitter Design: Emitter shall utilize short wave emitter technology with peak infrared wavelength between 1000 – 1300 nm. Emitters will be manufactured utilizing tubular quartz with tungsten coil and shall be coated for glare reduction, known as Standard Low Glare or Ultra Low Glare Candel™. Emitters shall be vibration resistant and be tested to accelerations up to 29.4 m/s² in the axial and perpendicular directions of the element coil, sweeping through frequency ranges of 20-60 hz.

- a. Wavelength: Emitters are 11mm in diameter and must provide shortwave wavelengths between 1000-1300nm to convert and deliver 92% radiant efficiency. Emitters failing to meet 92% efficiency shall not be allowed.
 - b. Surface temp: Emitter coil temperatures shall reach minimum 2200°C during operation.
 - c. Tube Layering: Emitters shall be Ultra Low Light Candel™ light reducing type utilizing minimum 8-layer light filter to reduce light output by minimum 40%. Emitters without 8-layer filters shall not be allowed.
2. Heater Construction:
 - a. Heater shall be constructed with 2mm 6063 aircraft grade, extruded, polyester powder coated aluminum. Heaters constructed by sheet metal do not provide sufficient structural integrity during repeated thermal expansion cycles therefore potentially resulting in deformation and insufficient performance and shall not be allowed.
 - b. Heater shall be rated IP55 or greater to protect against dust limited ingress and low-pressure jets of water from all directions.
 - c. Back mesh shall be perforated Aluminum to allow for heat shedding.
 - d. Accessories and all threaded hardware shall be stainless steel.
 - e. Heater shall be supplied with adjustable polyester powder coated steel wall or ceiling mounting bracket.
 3. Reflector: Reflectors shall be constructed of 0.8mm gold anodized aluminum, 87% reflectivity. Reflectors shall provide a distribution pattern angle of 30 degrees.
 4. Junction Boxes: Heaters shall come with IP55 Rated weatherproof junction boxes with single phase wiring capability. Electrical terminations shall be made in a high strength, high temperature resistant PA 66 watertight box OR welded stainless steel watertight box complete with silicone gasket and self tapping stainless steel screws and will be attached to the heater body.
 5. ICR H3 heater may be wired in three phase.
 6. Safety Guards: Heaters shall have safety guards on the front face to protect against accidental contact with emitter lamp. Safety guards shall be removable to allow for heater maintenance.
 7. Serviceability: Heaters shall be serviceable from the front face while installed, by removing 4 screws the operator shall be able to replace the emitter bulb after its terminated life.

B. Controls

1. The heaters shall be controlled with either an On/Off controller or infinitely variable speed, specified zoned Solaira OMNIS controller. Control should be Building Management System capable with 0-10VDC/0-4MA Input, BACnet MSTP interface.
 - a. On/Off Controller
 - i. The controller shall include on/off switch to control heater output, specified by zones.
 - ii. The controller panel shall be UL508 Approved and CSA 22.2-286 Approved.
 - b. OMNIS PASCRC Controller
 - i. The OMNIS PASCRC Controller shall include 0-10VDC/0-4MA Input for interface with the building automation system.
 - ii. The control shall be solid state, Phase Angle power control to provide smooth proportional output from 0-100%.
 - iii. The controller module shall be epoxy thermally protected for humidity and overheating.
 - iv. The control panel shall include cooling fans for any application larger than 90A.
 - v. The control panel shall be UL508 Approved and CSA 22.2-286 Approved.
 - c. OMNIS Custom Controller
 - i. The OMNIS Custom Controller shall include 0-10VDC/0-4MA Input, BACnet MSTP interface with the building automation system.
 - ii. The control shall be solid state, Phase Angle power control to provide smooth proportional output from 0-100%.
 - iii. The controller module be epoxy thermally protected for humidity and overheating.
 - iv. The control panel shall include fused outputs as defined by number of heaters and zones.
 - v. The control panel include cooling fans for any application larger than 90A.

- vi. The control panel shall be UL508 Approved and CSA 22.2-286 Approved.
- 2. Omnis Gateway Timer (PSST-MAXTIM) (Optional)
 - a. Shall allow control accessories for Omnis Control including Occupancy Monitoring and 2 Button control.
 - b. Shall be provided with 3 jumper pins to activate soft-start timer settings.
 - c. LED indication light when component is activated.
- 3. Omnis Occupancy Sensor (PSW-OS) (Optional)
 - a. PSW-OS uses a passive infrared detection to operate the heater only when a space is occupied.
 - b. The sensor shall have an effective range of 24' (7.3m) when mounted at 8' with a 360° radius.
 - c. Heater shut off from 1 – 60 minutes after space is unoccupied.
 - d. The sensor shall be constructed of high impact, injection-molded plastic.

PART 3 EXECUTION

3.1 PREPARATION

- A. The heater location shall meet the National Electrical Code, ANSI/NFPA 70 (USA), US National Electrical Code (NEC) and Canadian Electric Code CSA 22.1 (CANADA) and comply with all local codes based on jurisdiction, as well as manufactures electrical and clearance requirements outlined in the product manual.

3.2 INSTALLATION

- A. Installation shall comply with all National Electrical Code requirements (NEC) and all applicable local codes.
- B. The heater shall be installed and operated according to the installation instructions including maintaining the manufacturers' recommended clearances to combustibles.
- C. Electrical Installation must be performance by listened Electrician and shall comply with National Electrical Code ANSI/NFPA 70 and local jurisdictions and /or Canadian Electrical Code.
- D. For Recess or Flush mount, heaters require Solaira Trim Kit Accessory and installation requires 1 Hour Fire Rated Enclosure box based on federal, State/Provincial Code and local jurisdiction requirements.

END OF SECTION